

ladies issues for May 12
Aug 25
Sept 1 and 8

Society of Arts.

THE BUILDER

AN

ILLUSTRATED WEEKLY MAGAZINE,

FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR,

SANITARY REFORMER, AND ART-LOVER.

CONDUCTED BY

GEORGE GODWIN, F.R.S., F.S.A.

"Every man's proper mansion-house, and home, being the theater of his hospitality, the seate of selfe-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kinde of private princedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

"Architecture can want no commendation, where there are noble men, or noble mindes."——SIR HENRY WOTTON.

"Our English word TO BUILD is the Anglo-Saxon Bȳlðan, to confirm, to establish, to make firm and sure and fast, to consolidate, to strengthen; and is applicable to all other things as well as to dwelling-places."——DIVERSIONS OF PURLEY.

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OFFICE: No. 46, CATHERINE STREET, COVENT GARDEN, LONDON, W.C.

Wyman & Sons, Printers,
Great Queen St., London, W.C.

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Vol. XXXV. No. 1770.—Saturday, Jan. 6, 1877.

The Builder

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A Vision of New Year's Eve.

It was not altogether upon professional topics that we mused as we sat before the fire on the evening of the last day of 1876. Before us was spread the *Times* of the day before, with its columns of contradictory news and telegrams with large-type headings, embodying (as it was bound to embody) the latest *canards* about the past, present, and future results of the deliberations of the Conference in the East, and its leaders with infallible receipts for keeping the world in order a little longer. Hardly a time to talk about architecture, we mused, at least with much chance of obtaining a hearing, when the thoughts of all public-spirited persons are turned towards the Bosphorus, and the game of chess between the "high contracting powers" there represented, where the chess-board is all Europe, and "check to your king" may mean the reversal of the policy of whole nations, or the fulfilment of prophecy by a kind of general "battle of Armageddon." Under such a disturbed state of things, with such great interests, whether directly affecting ourselves or not, hanging in the balance, could one really expect serious people to give much consideration to such comparatively limited interests as those involved in building must seem, just at this moment? Absorbed in these rather pessimist cogitations, as to our special field of labour, we gazed somewhat dreamily into the fire, which, taking, as fires will do, form and colour from our meditations, seemed to shape itself fitfully into a half-grotesque piece of architectural scenery,—amorphous temples piled upon still more amorphous rocks; spires and pinnacles, and gigantic buttresses, out of all proportion to anything they had to support. As we followed out, half amused, these vague semblances, fancies that seemed only partly of our own creating, gradually everything seemed to become absorbed in this visionary scenery, which, in some inexplicable way, increased in scale till it filled up the whole field of vision. Enormous rocks seemed piled on either side in the foreground, between which was visible, as through the proscenium opening of a theatre, a lane of hot, burning sand, flanked on either hand by rows of huge granite sphinxes, all carved on the same identical model. There they stood, one after another, colossal, silent, passionless in expression, as if placed there for all eternity. At the farther end of the vista stood two great truncated pyramids, covered, apparently, with all kinds of fantastic and mysterious carved and painted symbols, and finished with a curved-out cornice, whose shadow made an intense black line in the glaring sunlight; while between them an entrance-gateway allowed the eye to follow up a further vista, lined by rows of great painted columns, just discernible in a half-light thrown across them above, and giving access to yet farther recesses that were lost in gloom. An endless procession of priests, bearing symbols and strange animal-headed idols, moved in procession up the avenue towards the temple.

But as we gazed, a change came over the picture: the heated flat landscape gave way to a picturesque rocky scene under a bright blue sky, and on the rocks stood a group of temples in glistening white marble, the bright cool tone of which was the more emphasised by the delicately graduated colouring which formed the ground for the minutely-finished carving with which they were decorated. Sculptured figures, representing the very ideal of human grace and strength, adorned the structure, and carried on a mimic contest on its walls, or reclined in dignified ease in the angles of the pediments. A clatter of hoofs was heard, and a troop of handsome youths on horseback, their short tunics flying in the breeze, came bounding round the temple in procession, followed by equally beautiful women, whose long flowing drapery gave new and more delicate tones and lines to a scene which seemed the embodiment of healthy and beautiful human life, in its brightest and most joyous aspect.

But again the vision changed, and an immense pompous city was before us, crowded with buildings less refined in their beauty, certainly, than that we had just seen, but imposing for their extent and magnificence. They were not all temples, for some of the greatest of them seemed dedicated to secular and public uses; great aqueducts, too, carried high aloft on three or four tiers of arches, crossed the scene; and from an immense circular or elliptical building, decorated also with "arches on arches," came the shout of 80,000 people over some spectacle or show that pleased them. If our last vision showed the beauty, this certainly showed the pomp and prodigality of life, as illustrated in building. But the sights and sounds died away, to be succeeded by a strange, solemn, though to our ears uncouth, chant, which resounded in a building, the interior of which had now taken the place of the last brilliant and pompous scene. Everywhere great domed surfaces hung above the head, decorated with gold and mosaic that shone with a sombre splendour, from amid which there gazed down upon the spectator an array of stiff, solemn figures, embodying an intense religious feeling, which in some degree compensated for their lack of natural human beauty and freedom of action and expression. Scarcely had we arrived at this conclusion when the scene again mysteriously changed, and showed an interior in long perspective, without the gorgeous colouring of the last spectacle, but with a completeness of constructive design in pure masonic form, and a unity of conception in all its details, which impressed the judgment as even superior to that of the last interior, where the details seemed borrowed in more or less pure form from the types which had preceded it. Here, in this long arcaded interior, however, all seemed specially designed for its purpose; every part of the structure, from the base of the piers to the vaulted stone roof, which sprang from and overhung them, had a logical and inter-dependent connexion; but as we pleased ourselves with the contemplation of this completeness of architectural expression, and wondered what better could follow it, the spectacle seemed put to flight, the vast rocks which had formed the "front scene" in the panorama dwindled to their original dimensions, and the fire we had been gazing into was restored to its former aspect, at the sound of a voice from some one beside us, who said,—"Well, you seem to find some interest in

my dissolving views, in spite of what you said just now."

A little startled to find an unexpected visitor at our elbow, especially one who seemed to have heard thoughts which we certainly had not expressed aloud, we turned to see who the speaker could be, and were aware of a tall, elderly man, with a remarkably erect, firm, and square-set figure, who stood beside us, and whom we seemed somehow to know, though puzzled to name him. He was dressed in flowing and curiously-embroidered robes, with a girdle at the waist, at which hung a square and a pair of callipers, and he carried a pencil in his hand. His countenance, though expressive of eloquence and fancy, had withal a certain shrewd wide-awake business look, which showed him to be eminently a practical character. Much interested by his appearance, we inquired respectfully whom we had the honour of receiving?

"I am the Genius of Architecture," he replied, looking at us with a half-kindly, half-sarcastic smile; "and, as I observed just now, I am pleased to see that you find the panorama of a few of my past achievements worth looking at, though you were disposed a little while ago to slight me in the present tense."

"You are heartily welcome," we replied, "and perhaps we may plead, in excuse for not having recognised you at once, that you have not been about very much lately."

"That is true," he said; "the fact is, when you moderns took to imitating everything we had done before, I saw that I was quite superfluous, so far as such an aim was concerned. In fact, I may say that I never do the same thing twice, in exactly the same way; although, as you have always done me the justice to say, I act upon the same principles throughout all my undertakings."

"Yes," we replied, "we have endeavoured to keep that before the public, but it is wonderful how difficult it is to get them, or even the profession (with a few exceptions), to understand it, or to see wherein the principle consists. They will always be running after particular forms or details, and each time they get a fresh one they seem to think they have found a new principle."

"Well, of course it is possible," said our visitor, "to make too much out of principles. No doubt, when I worked with the Greeks, we did go into the principles of things, down to the roots I may say, and worked them out with the severest logic. Ah," he said, with a sort of sigh, "those were the fellows to have to work under you; I shall never have their like again: such clear heads to understand the reason of everything, and such a thoroughness of purpose in working it out in practice! But when we built the Gothic cathedrals (and I really think that is as good a thing as I have done for the world), we made precious little fuss about principle, I can assure you, whatever people may fancy now."

We observed that we had for some time begun to think that too much had been said on that score by modern critics.

"Why, yes; you see," he answered, "there was a job to be done, a puzzle to be solved, as it were; and wherever that is the case, there is always a clear course for architecture. We had the impetus, or the impulse, or whatever you like, in the ecclesiastical enthusiasm of the time, which demanded to be glorified in great buildings; and then there was the practical difficulty involved in managing the vault, and making its design and construction consistent. I think we fairly pounded at that till we solved it."

"You solved it mechanically, at all events," we observed, "in the fan vault; but why keep repeating the rib form of design there, when its reality had——"

"I told them," interrupted the old gentleman sharply, apparently rather nettled at anything like a criticism,—"I told the masons at the time that all that fiddle-faddle work had nothing to do with the structural design; but I do not know," he added, relentingly, "the fellows had got fond of ribs, I suppose, and like all the sons of men since Adam, imagined they could not get along without them. And, after all, they look very well, you must admit; and where's the good of being too pragmatical? There are many very pretty things in art which it would be difficult to defend on strict principle, and yet which one would be very sorry to lose."

We assented heartily. "But," we added, seeing that our visitor seemed rather discursive, and wishing to get at the point of his visit, "we were interested in your remark just now, that architecture was all right as long as there was a problem to be solved. Perhaps, you have some practical application to make of that?"

"The very thing I was coming to," he said. "You see I thought it was a season for old friends to look each other up, and so I concluded I would call, and I took a walk round the town first."

"Well? Eh?"

"Well, you see, I did not know much of what had been going on, because, as you yourself half hinted, my help had not been much invoked of late years. There seemed to be a good deal doing, but no very settled way of doing it."

"Did you see the Law Courts?"

"Yes; your description last week interested me; the faults there will be rather sentimental than practical, I fancy. I understand the English are very contemptuous just now about 'sentimental grievances.' They may be right; but, at any rate, I should call it a very sentimental grievance to have modern law courts put up in an ancient ecclesiastical style. But if people will have scenery I suppose they must. I don't understand it, you know; it is such an utterly different thing from what I ever was mixed up in. The people who talk about truthfulness in architecture, and all the while go on imitating these old styles, seem to me like 'serious' persons who take their children to the pantomime every year, all the while telling them it is very foolish."

"You are severe. There must be a good many new churches up since you gave us a look. Did you find nothing to admire in them?"

"Oh! pretty well, I dare say; but, you know, I think church-building (Mediæval type) has been done, for good and all. I do not see why its spirit should walk the earth in this multitudinous fashion. There is your Thames Embankment, now,—that is a thing after my own heart, at least as to the general scheme and the practical workmanship. If only you could have got something of powerful and expressive detail into it, instead of toy balustrades, that look as if they came from the top of an Italian palace, and those senseless masses of stone, which carry nothing, at the landing-places."

"That is an engineer's work. Neither the credit nor the blame belongs to us."

"Eh? I don't quite understand. But, by the way, that reminds me,—Why are your new bridges so infernally ugly, and even absurd, in design?"

"That's the engineers, too," we replied, really relieved to have so good a way out of it.

"The 'engineers' again. Pray, if it is not a rude question, who are they?"

We explained.

"Well," said our visitor, "that beats everything. Then, you have two building professions in these days, one to build expression without construction, and the other to build construction without expression! Upon my soul, I don't wonder you are rather at sea!"

"That is hardly the fact," we replied. "You seem to be a little given to antithesis, which, permit us most respectfully to observe, is a form of speech very liable to lead to exaggerated statements. As a matter of fact, both engineers and architects do a good deal of each other's work; which shapes the best all round it would hardly be good taste on our part to endeavour to pronounce. We ourselves have long thought, however, that the line of demarcation between the two professions was too strongly drawn. Whether it can be done away with entirely, with advantage, is another question."

"Well," he said, "it seems incomprehensible to me. Building is building, all the world over; and architecture is only building with expression, which no building should be without. It seems to me you are letting a separate guild of workmen monopolise what should be the common property of the whole world of constructors."

"Well, you see," we represented, "there is a great rage for iron now for all these railway and bridge constructions, and our people are not so well up in iron; and you must admit you never taught us much about it."

"How the deuce could I?" he replied, rather testily; "it was never tried as a constructive material till my *bonâ fide* reign was interrupted. But I always inculcated the best and most scientific use of all the materials you had. Though I confess I don't take to iron, as far as I have seen it, and I don't see how it can be very permanent. But if it turns out to be, on fair trial, you will, of course, have to take to it, and learn all about it, willy-nilly."

We bowed.

"But now do," he added, "try and get something settled, before my next visit, in regard to this double building profession; there may be reasons for it, in the present state of things that I don't see; but really it seems to me a curious anomaly. By the way, what are your means (if any) for providing opportunities for consultation and mutual interchange of opinion on this and other professional subjects? Have you anything like the Mediæval guilds now?"

"There is an association," we cautiously observed, "among the younger members of the profession, for mutual instruction and improvement."

"Ah!" he said, "I fancy I came across their meeting; there was a lively discussion going on the young men's ideas may be rather crude, but they seem really in earnest, and interested in their profession, which is an important point in their favour. I thought I saw lights in an upper room in the same building, too; is there another——"

"Hush-sh-sh-sh-sh!" we exclaimed, really alarmed, —"that's the Inst—— the senior society, in short."

"Well, and what then?" he asked: "what's the matter? Do they do anything too shocking to——"

"Hush-sh-sh-sh-sh!" we repeated, laying our hand on the arm of our incautious guest,—"Pray, speak in a whisper; they don't like it be talked about."

"Why, bless, my soul!" he replied, "what's wrong? What do they do?"

"Oh," we explained, "as far as we know, they read papers and hold discussions, pretty much like the younger Society."

"And are their papers good?" he asked "do they arrive at anything of practical value?"

"It is impossible to say," we replied; "it is believed, and there are even those who confidently affirm, that it is so in some cases; but everything is carried on strictly with closed doors."

"You don't say so? Then, what is the use of their researches?"

"We cannot say; an awful mystery surrounds them——but, pray, *pray*, change the subject if it were to come to the ears of the secretary that we had permitted a discussion of the Society's concerns, we——we could not answer for the consequence!"

"Dear me!" he replied (rather sarcastically, as it seemed to us). "Well, all I can say is, that if they do not honour me publicly, I do not see how I can honour them publicly. However, to come to my point——"

"One word," we said, venturing to interrupt him, "do you know anything of a sort of panacea for adapting architecture to the wants of the present day, which has been put forth by some practitioners, in *your* name? They call it the Queen Anne style."

"Give you my honour," he said, "I have nothing to do with it: never heard of it till this minute. Queen Anne? Why, that's brick building with some remnants of mongrel Classic details, isn't it? I hardly remember, for I never was consulted about it? What do they mean to use that for? Wash-houses?"

"It is given out," we said, "that it is the real way to make architecture popular, and suit it to the million."

"Whew——! How then?" he asked.

"Because, they say, it is the ordinary builders and joiners' vernacular."

Our friend stared indignantly at us for a moment, and then burst into a fit of laughing. "Vernacular?" he said at last. "By all that's holy! and so after all I have shown you in my panorama of the past,—the glories of Egyptian, Greek, Roman, Byzantine, Gothic building,—you in these modern days of enlightenment are going to raise architecture again to her former glory by reducing her to the level of what Dick, Tom, and 'Arry can understand and execute. Well, that's *too* good. Upon my word, my friend, I don't wonder that I found you in rather a brown study. But come, that can't be truth; you're 'chaffing' me now, arn't you?"

Of course, we protested our incapability of taking such a liberty.

"Well," he said, "so that's the last new 'fad,' is it? Well, it will not last long, and will go the way of all fads. But it's getting late, and I want to deliver my mind before I go. I was saying that as long as architecture had something new to achieve, there was no occasion to go hunting old trails or trying to invent 'originality.' And you must have observed that in the dissolving views I showed you of some past phases of architecture, there was nothing that

elated purely to the social architecture of the eople at large."

"No," we said, "we have often noticed that: t is all temples or palaces."

"Yes," he replied, "and it is difficult at first ight to know how any mere social architecture ould ever rise to the grandeur of some of those chievements in building; perhaps it never can quite do so. But your modern great towns are reat fields for a new progress in architecture, n a direction that has not been much travelled s yet. I cannot show you panoramas of the nture, as I did of the past; but you will agree with me that it is possible to conceive a great ity in which there shall be no unhealthy lwellings, either for rich or poor; in which the treet architecture, instead of being dreary, nonotonous, and depressing, shall be bright, xpressive, and varied in outline and colour; vhere houses will be built not in the most flimsy, ut in the strongest and most monumental nanner; where streets shall be laid out wide nough for all purposes of traffic, and light and ir, yet not with a dull formality, but with a ancy and invention which will seize every sug- estion in the site which could lend itself to icturesque effect, and develop it to the utmost, o that in every neighbourhood there should be right and interesting corners, where fountains, nonuments, and other objects pleasant and uggestive to the eye and mind will find place, nd the city be a place of interest instead of a lungeon. Find out how to do this in the best nanner, and with the best and most durable uilding consistent with true public economy, nd you will perhaps have done as much for uman happiness, through the art of building, s even the architects of the great cathedrals."

"But you would not underrate the importance nd beauty of great buildings?" we suggested.

"By no means; but take the opportunities nodern life naturally affords you: make your reat bridges and stations, and other such vorks, really fine and expressive structures; and vhen you have to deal with less utilitarian erec- ions (which cannot be very often), try to be nore sparing and more thoughtful in your deco- ative treatment of them. Endeavour to have a neaning and a thought in each detail, and you vill be surprised to find how full of interest they vill become, and how much originality you will, lmost without knowing it, evolve."

"It is a bright picture," we said, thoughtfully, reverting to the first portion of his advice more particularly, "but it seems a Utopian one; at east, as we stand now."

"Its realisation may be far enough off, I ad- mit," he replied; "but every step that is made in the right direction counts for something, and there is a visitor at hand who may advance you one step, if you will make the most of his assistance."

As he spoke there was a slight tap at the door, which was opened quietly, and a very young man, of a serious but earnest and hopeful countenance, advanced into the room. Turning to our other visitor for an intro- duction, we found that he was no longer there; and the new-comer said, with a very engaging manner, "I must introduce myself. I cannot be very long with you, but I am a firm friend as long as we are together, if you will only make use of the opportunities I offer you. Neglect these, and we must eventually part with sadness and regret on your side, and perhaps with reproach on mine. Make use heartily and strenuously of the time I place at your disposal, and I will go with you in every scheme for good, and you will never regret that we met."

"And your name?" we said, much pleased with our new friend's address.

"I have done nothing as yet," he said, modestly, "to merit a name; I am content to be known by my number: 1877."

"Ah! and so you have really come," we said, offering our hand.

"Yes," he replied, "it is I: you may hear the bells ringing to welcome me."

And here a peal of bells did ring out with so joyous a clash and clang that we awoke with a start. The fire was nearly out: the *Times* had slid down into the hearth, and a cinder had fallen and burnt a hole in the Conference telegrams. "A happy new year to you!" said a well-known household voice; "do you know it is past mid- night?"

It certainly was: and, our vision having fled, it only remains to pass on the wish to our readers, hoping that all of them may meet and part good friends with "1877."

CHURCH BUILDING AND RESTORATION.

MR. CLIVE NEWCOME, corresponding, in Rome, with his friend, Mr. Arthur Pendennis, in London, expatiated, with all the force of Thackeray, about the pang which every one who proudly calls himself English and Protestant has often felt on reflecting that he and his countrymen are voluntarily shut out from the traditional pale of Christendom. "You shall kiss," writes Mr. Clive, "the hand of a priest to-day who has given his to a friar, whose bones are already beginning to work miracles, who has been the disciple of another, whom the Church has just proclaimed a saint,—hand in hand they hold by one another till the line is lost up in heaven. Come, friend, let us acknowledge this and go and kiss the toe of St. Peter." Indeed, it is just that worn toe of the image of the apostle,—or for aught that can be proved to the contrary, of some Pagan hero,—that makes a stronger appeal to a few travellers than anything else to be seen upon, or encountered within, the walls of the great cathedral. Between, however, time- honoured ceremony or reverent ostentation and our England of to-day, an ocean is not only flowing, but an ocean which no engineer with any soul for his scientific vocation would care to span even if he could; and "yonder old statue of Peter might have been Jupiter again sur- rounded by a procession of flamens and augurs and Augustus, as Pontifex Maximus, to inspect the sacrifices; and my feelings (Clive Newcome's feelings) had been doubtless pretty much the same."

That worn toe represents the conviction of ages,—of myriads of the human race,— from the time when the Emperor Theodosius put to the vote of the Senate the important question,—"Whether the worship of Jupiter or that of Christ should be the religion of the Romans"; when, after a sway of 1,100 years, Jupiter was "condemned and degraded" by a very large majority. Gibbon did not hesi- tate to describe that revolution as a prosaic his- torical event. Nor, as far as the great mass of the population were concerned, did it mean more than a transfer of allegiance from one form of idolatry to another. The symbolism of the early Christian Church which, at a later period and at intervals, successive reformers have attempted to modify or abolish, was founded upon an earlier symbolic system of laws, which Cicero ridiculed. The tombs and trophies of spiritual heroes at- tracted, in the hearts of the faithful, a similar kind of awe and reverence to that which had before been felt for mythical deities. The tricks played upon the populace by the agents of a superstition were emulated and surpassed by the priests of a religion. Hollow statues, within which were concealed living men, had spoken to the ignorant heathen; the congealed blood of martyrs liquefied before the eyes of a true be- liever. The Pagan traveller, bent on a journey, or after his safe return, had performed a show of sacrifice to the gods of his hearth and home; the Roman Christian appealed to a tutelar saint, and prostrated himself before the conventional relics of some martyr, to ask for protection on the road, or to offer thanks for escape from dangers. Roman priests of the earlier persuasion wore robes of purple; scarlet is still the dis- tinguishing badge of eminence in the Church. Roman senators offered wine and incense at the altar of Victory before commencing their labours; a similar sacrament, though of purer intent, still precedes the deliberations of many Chris- tian assemblies. The world,—ultimately the gainer by a change of which history then took little note,—lost thereby a great deal. In the cities of the Roman Empire whole libraries were destroyed; and in Alexandria the accumulated learning of centuries was ruthlessly committed to the flames. In Milan, Archbishop Ambrose taunted the people with their instinctive con- servatism, and laughed at the deeds of their ancestors; in Tours, Bishop Martin, at the head of a faithful following, razed temples to the ground, destroyed idols, and rooted up conse- crated trees. These fanatics preached the un- conscious truth that destruction was necessary to improvement in the arts; for upon the same kind of law which is apparent in divine archi- tecture depends the progress of man's work. "From the war of Nature, from famine and death," says Mr. Darwin, "the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows." Thus, in somewhat a like manner, the fanaticism of the fourth century invoked the genius of the eighth, which, in due time, produced Gothic architecture; and, 800 years after, the pious inhumanity and icono- clastic fervour of Western Europe,—awakened to the value of antique civilisation,—have been followed, in our own time, by a fanaticism of restoration, which may yet produce another and a new system of architecture appropriate to the genius of a not distant future.

The revenges of time are the very bases of archæological science. If Pagan antiquities are now of more value, both commercially and artis- tically, than Christian ones, it is not entirely because they are older. At Arles, once a great provincial city of the empire, some of these are collected and exposed within the huge inclosure of a dismantled Mediæval church. In the Middle Ages the leisure of a devout clergy was occupied with transcribing in Gothic character the incom- parable literature of invincible unbelief. To the Benedictine Abbey of Cluny, in France, we English, as well as the Spaniards and Germans, owe more than it is usual to admit. Founded in A.D. 910, it became in the eleventh and twelfth centuries the centre of the arts. There all the learning of Western Europe was acquired; and even Italians so far acknowledged the influence of Cluny as to send an embassy to report upon its uses and usages. Two thousand religious houses adopted its discipline. The first house in England was built at Lewes, in Sussex, soon after the Conquest; and until the fourteenth century all the English monasteries of the order were governed from abroad,—indeed, it was not until the middle of the fifteenth century that the parent Abbey of Cluny was deprived of any jurisdiction over them. The fact derived there- from is that, though, before the time of Philip- Augustus and John, English architecture presents a few slight variations from the French, it is one and the same with that which sprang from the teaching and traditional practice of Cluny. If our architects now go, as they often do in com- mon with their Spanish and German brethren, to France to study, they simply seek at the fountain-head of the Gothic streams, the same models upon which was formed the invention of their respective ancestors. From the fourteenth century Gothic architecture, in France and England, developed separately, and each in its own groove, until ultimately the islanders sur- passed the workmen of the Continent,—more particularly in the science of vaulting and of timber construction; and the former were building churches and even cathedrals in accord- ance with true Gothic practice, almost a hundred years after the French building-traditions had been dispersed, corrupted, or forgotten. More traces of the old native methods of construction may still be found in the arts of this country than in the modern work of French artists, long devoted to the imitation of Italian, Roman, and Greek precedents.

Nor are the works extant of our great and often unknown builders misunderstood or un- appreciated by the average English architect and master-workman of to-day. Hundreds of com- plete copies,—we have before now called them forgeries,—prove that in this country the Mediæval method of erecting ecclesiastical buildings has been reacquired within the space of less than fifty years. Nor is there any reason why modern churches throughout the greater part of Christendom should differ in shape or decoration from those of the thirteenth century. The language to be spoken in them has altered only in accent, the ceremonies to be performed within the walls but slightly vary, the creed to be repeated under their roofs is the same. "A Christian of the fifth century, with a Bible," to quote the words of Macaulay, "is neither better nor worse situated than a Christian of the nine- teenth century, with a Bible, candour and natural acuteness being, of course, supposed equal. It matters not at all that the compass, printing, gunpowder, steam, gas, vaccination, and a thousand other discoveries and inventions, which were unknown in the fifth century, are familiar to the nineteenth. None of these discoveries and inventions has the slightest bearing on the question whether man is justified by faith alone, or whether the invocation of saints is an orthodox practice." Nor, if true architec- ture is the material reflection of current thought and manners, should the style of Roman church- building among the Gothic nations ever alter, except in petty details of minor arrangement. And though, in the English mode of worship and form of faith, Roman symbolism and superstition are said to have been eradicated, it is useless to deny that the feeling of ostracism, to which we referred at the beginning, has a vast, if un-

acknowledged, influence upon the architecture both of the Establishment and of Dissenting bodies of almost every kind. This feeling largely governs the arrangement and adornment of Protestant churches; it leads the Churchman to copy early native forms of Roman Catholic architecture, and the Nonconformist to imitate the modern edifices of the Established Church. An altar is not legally an adjunct of Protestantism, the English clergy are not spiritually endowed with any mysterious pre-eminence; but Protestant communities now write and talk about both as if they were. A chancel is still built in such a manner as to hold a species of altar, and often to divide the pastors from their flocks. Upon the window-glass heroes are often depicted in attitudes and engaged in acts subversive of the principles of the Reformation. Amongst Dissenters, even the Unitarian is sometimes careless whether the building in which he worships God possesses on its face or in its arrangement things which an earlier age would have recognised as symbolical of the Trinity. All religious denominations have the right, and some use it, to mark their buildings with towers, spires, and bell-cots. We have even known a synagogue to bear a cross, though, in the eyes of a scholar, without incongruity, since that emblem was borne by Pagan soldiers and other classes of the population of Ancient Rome.

The evident desire, intuitive or infused, of devout and zealous people, to perpetuate in new churches and similar places of worship old shapes and devices of architecture, has led to the adoption of the Gothic method of construction for almost all edifices of ecclesiastical character; and it would be useless at present to suggest any other form of church for Protestants than the Mediæval one. Indeed, the second half of this century may be hereafter signalised as peculiarly creditable to the English church-builder. The French have not been equally successful in picking up the links of Mediæval tradition; and neither M. Abadie nor M. Viollet-le-Duc has yet built churches comparable to some of those erected by English architects. The present Inspector-General of French Historical Monuments, M. Ballu, is the author of a large church near the Place de la Bastille, in Paris, which is ludicrously unlike the models it pretends to imitate; and the indignity of restoration nowhere offends with more aggravated force than in those masterpieces of French architecture which have been delivered up to the destructive experiments of native restorers.

In the matter of churches and their restoration, Sir Edmund Beckett,—in his recent book, to which we promised to return,—has collected a great deal of sensible observation and accurate criticism. He condemns the carelessness still frequent of erecting towers without an entasis, or at least without reducing their area at intervals as they rise. Towers, "not tapered by sets-off," look better if the walls diminish upwards at the rate of about 1 in 120, and rather more towards the top if very high. But that spires with an entasis are unpleasing is confirmed by a little attention to original English examples. "The king of spires" (Salisbury) is perfectly straight from its base to the very top, a distance of 200 ft.; and, referring to it, Sir Edmund adds, somewhat inelegantly, that "just as no Greek temple was ever able to surpass the Parthenon, so there is one best and perfect spire in the world." We cannot, however, be induced to think that it would be wise to copy every future spire from that of Salisbury; any more than that—should the worship of Jupiter be revived—all new heathen temples should be exact imitations of the Parthenon. To urge the desirability of simply reproducing perfection is to admit a desperate condition in the actual state of the arts. If new churches must be adorned with towers and spires,—and another age may perhaps demand some better reason for their introduction, and require a better means of investment for the money they cost, than is deemed worthy of consideration at present,—we believe that our architects are right in studying all the many varieties to be found not only in France but amongst those other peoples, who, like our own, obtained their early knowledge of Gothic building from her. It is not improbable that had fate forbidden Englishmen, during the last 300 years, to know anything at all about the artistic work of the Continent, English architecture would now reflect the style of the time. But since it has been decreed otherwise, the only remedy for what, in an art-sense, is a misfortune, is to know not a little but everything about the arts of all parts of the world; and that cannot be entirely accomplished by the mere study of photographs and pictures, as Sir Edmund Beckett, in his criticisms upon native and foreign forms of spire, seems to imagine. Nor is that judgment worth much which, having seen a church in Brittany or Auvergne, generalises therewith upon all similar works in other parts of France. We are precise on this point, to which we have before alluded in a preceding paragraph, because many excellent amateurs are in the habit of laying down rules and promulgating dogmas concerning national style and native architecture, totally unsupported, and even contradicted, by historical evidence, which, though within the research of all, is seldom examined for the purpose of testing the truth or error of brave bookmakers. The habit, however, of denouncing what is called "Foreign Gothic" is an excusable bit of vanity, and it is rampant abroad. We remember to have heard one of the best practical architects in France, who had restored cathedrals and châteaux and built churches, tell his pupils that in England there was very little Mediæval architecture; and that the few remains of interest interspersed over the island were inferior examples of Gothic art.

The subject of towers and spires would be incomplete without a short dissertation upon the best form of "conductor"; and upon this question Sir Edmund Beckett has an undoubted right to the attention of all,—though all will not agree with him. He says, at page 245 of "A Book on Building":—

"This rod, whether ending in a vane or not, should be the first part of the lightning-conductor, which is always now a wire-rope three-eighths or half-inch thick, which should be attached to the very bottom of the rod, or it may be to the nut at the bottom. It is wonderful how inveterate the folly is of putting glass rings or neckcloths round the conductors when they are fixed to the wall; as if the 'electric fluid' (as the newspapers call it) wanted to leave the wire, which is a good conductor, for the wall, which is a bad one; or would be deterred by a bit of glass if it did. . . . Another common piece of folly is taking the conductor outside through a window instead of the shortest way down inside, as if the 'electric fluid,' like a bad smell, would be less dangerous in the open air. And yet another is the idea that it ought to go down into water, which these philosophers seem to imagine will dissolve the lightning like salt, or kill it as if it were gunpowder; while it will be dangerous if left dry. All these absurdities were proposed to me at the re-building of the great Doncaster church in 1858, and for the satisfaction of the alarmists, I got Faraday's opinion: I need not say what it was. The Houses of Parliament were *conducted* by Sir W. Snow Harris, who, perhaps, had even more experience than Faraday in that matter, and he laid the copper bands actually in the walls under the plaster."

In the same book Mr. Street, "the great professor of conservative restoration," comes in now and then for some of Sir Edmund's hard hits, especially for having substituted "mere boards, visible as such, instead of the ancient plaster," in the vaulting of the south transept of York Minster. The habit of leaving rough stone-work in vaults instead of plastering it is also stigmatised as an abomination of the "vigorous-style men." It is our author's opinion that to the members of what he calls the "conservative school" is due the greatest destructiveness in restoration; and he defies "anybody of real experience to deny that, practically speaking, our great churches are conservatively restored, as much as possible in the spirit of their own builders, by the school of architects of which Sir Gilbert Scott is the head, who do not talk about it; and that they are restored in the style of radical reformers by those who do talk the cant of conservative restoration." The remarks upon the value of good restoration, and of a good "restorer" wind up appropriately with a plea for St. Alban's Abbey, coupled with a gentle reminder that 30,000*l.* are required to make the "longest Gothic nave in the world" and the "oldest great church in this kingdom" as good as new.

We use the phrase, "as good as new" advisedly, because it expresses the meaning of restoration as it is generally practised at the present moment. To restore such a building as the Parthenon,—at least, as far as its external columns and the outside of the cella go,—would be simply to replace on the old foundations the original bits of marble, and other new bits where necessary; and at the close of the work the building would present an appearance almost identical to that which it presented in the time of Pericles,—damage to the marble from time and weather being admitted. But to restore Westminster Abbey is to impart to it an effect such as it never before possessed at any given period of its history. Neither the Greeks nor the Romans had any conception of the art of restoration; the languages of the Middle Ages contain no word equivalent to the modern one. The Athenians had been building temples and improving their form and ornaments for several hundred years before they began the Parthenon and other additions and embellishments to the injured city. There was then, at the end of the Persian war, no other thought than to clear the site upon which the ruins of their buildings stood, and erect others with other and fresh-cut materials. At a later period, the Romans proceeded in similar manner; and an emperor, ambitious to possess a brand-new palace, ordered that of his predecessor to be pulled down and another to be raised in its stead. Constantine is perhaps the first great name which has been brought down to the present day on a patched monument of incongruous splendour. His triumphal arch, described by Gibbon as "a singular testimony of the meanest vanity." It was adorned with sculptures ravished from another public monument; "and curious antiquarians can still discover the head of Trajan on the trophies of Constantine." That a future historian may write with like scorn of the similar fashion, though executed in a different way, of restoration cannot be doubted. In all parts of the known world, Christian builders emulated the example set by those who had attempted to commemorate the prowess of the first Christian emperor. Constantine's new capital, at Athens and elsewhere, fragments, torn from the earlier public buildings, were cemented together to form churches, which the analytical genius of a later age has distinguished by the term "Byzantine." In other provinces of the Roman Empire, and notably in Southern France, the same procedure was adopted; and the style "Romanesque" was thereby invented. What in England has been called "Norman" is a crude and ultimately developed imitation of such buildings; and it was not until the substantial precedents of antiquity had been used up that the builders of Western Europe, forced, not unwillingly at the close of the twelfth century, to think for themselves, found out new combinations of architecture. The practice of the succeeding three centuries was not, as in Greece and Rome, a repetition of entire demolishment and reconstruction; but one of modification and addition, of underpinning and superstructural re-arrangement. Although the archæology of an old cathedral may extend over hundreds of years, as a covering for the faithful and a House of God, it took comparatively few years to build. The *master-workman* of the fifteenth century knew little of the original design and intentions of the *architect* of the twelfth or thirteenth, who, had he returned to earth, would in many instances have scarcely recognised his work. To impart to such edifices an appearance exactly similar to that which they presented to the first blush of the Reformation is the aim of restoration and the practice of restorers; and to alter them so as to make them assimilate to what their original designers intended, or even accomplished, is as much beyond the power of the one as it is opposed to the principles of the other. To pull down the chapel of Henry VII., and substitute the original east front of the Abbey, even if it were accurately known what that front was, would be called Vandalism, and condemned by everybody; yet restoration, to be logically carried out,—especially if it be permitted to destroy all that has been added to a Mediæval building since the Reformation, — ought to remove everything which is known not to have formed part of the original design, and the original design ought then to be renewed: an idea monstrous and suicidal, and as impossible to execute as to decorate St. Paul's Cathedral in the present day in accordance with the intentions of Wren, who left little or nothing to show that he had thought much about the subject.

But though the present mode of restoration is illogical, though some valuable Mediæval works have been thereby virtually destroyed, it is nevertheless a beneficent way of fulfilling the universal law of created things, human and divine.

"Imperious Cæsar, dead and turn'd to clay,
Might stop a hole to keep the wind away."

All over the world the defaced sculptures of temples and cathedrals have served at times to mend a road or barricade a ditch. But of late years, before attacking an old building it has been necessary for the restorer to have studied its history and its mode of construction. If in his zeal he has injured it in part, he has learnt how to reproduce those parts; and innumerable books, drawings, and photographs enable those who follow him to learn almost as much as he has learnt. One of the well-known "Lectures on Church-building," published

me twenty years ago by Sir Edmund Beckett, ntains a passage which thoroughly illustrates e necessity of much that has since been done. The first impulse," he said, "was to decide erything on speculative grounds, and after oing on in confident ignorance for years at last occurs to somebody to go and look for a little vidence about matters of fact, and then they nd that they have been proceeding all this time ithout any ground whatsoever, just as philoso- hers invented no end of theories to account for he motions of the planets before Copernicus and alileo thought of ascertaining what the motions eally were." That in architecture there is no nger any need to found present and future ractice upon speculative hypotheses is due to he labours of recent times; and if, instead of nthless destruction and almost equally ruthless lteration, the spirit of modern economy and efinement calls for restoration, the results, we annot but think, will be similarly beneficial in he end.

For the current history of the Gothic Revival nakes one point clear: that the good sense of s professors revolts against it, after a short xperience of its practical effects in the streets f our cities and the occurrences of our lives. Iowever pleased they may be with good restora- ion, they are perplexed and often horrified with ven good revival; and they shrink with dismay rom the inevitable issue of their own arguments nd their own labours. It is said of one of the nost accomplished decorators, not long deceased, hat, towards the close of his life, conscience requently pricked him because he had led the ublic to admire a fatal facility for superficial dornment. He would willingly have foresworn very trick of ornament to have secured a better ystem of construction and more artistic forms f architecture. It is well known that Mr. Ruskin has retired, disgusted with every section f a community whose tastes he has largely elped to cultivate. The late Rev. Mr. Petit, who for years with pen and pencil preached the Gothic faith, ended his life with the conviction hat an appreciation of the practical science and rtistic refinement of the Greek is the best prelude o architectural study. A few English architects, who are pleased to call Socrates and Cicero Pagans," now admit that the lintel and not the rch is likely to be the distinguishing construc- ive feature of the next century. Others, who ave shown themselves fertile adapters of Gothic recedents, and have imparted an "oldness" to ew houses with a success which neither time or the elements could have equalled, now de- lare that "motley's the only wear." The Castles of Francis and Louis XIII., of Queen Anne and the Georges, are now said to be the est, and they are certainly the newest, old models to copy. Sir Edmund Beckett, how- ver, remains faithful to his first and only ove, and he is fain to believe that if she be ot still the delight that others besides him- elf originally anticipated, the fault lies not with her, but her lovers. Admitting, in one of his "Lectures," that "a real architect is an rtist of the highest rank," he concluded the eries with the assurance that he was neither ired, nor had he been joked out, of Gothic archi- ecture. Others may condemn the art and praise he artists; but, said he, "I uphold the art and find fault with the artists." Twenty years after, our author, in the maturity of his judgment, maintains that no architect may with justice call himself "an artist," and that "the hope of archi- tecture" is little better than despair. Twenty years ago, in the decline of his imaginative powers, he believed that reform lay in finding out faults and the means of correcting them. It was to be obtained by censuring the particular bad thing and exposing the particular man who did it, "without respect of persons, openly, dis- tinctly, and unretractingly,—*first taking care to be right*"; and he now publishes a book in which his principle of showing up blunders and the individuals who made them is accurately carried out, sometimes with the sole exception of his concluding proviso.

Alexandra Palace.—Messrs. Norton, Trist, Watney, & Co. have been instructed by the mort- gagees to offer this property for sale by auction, at the Mart, on the 8th proximo. It is stated in the announcement that "a portion of the land (about 250 acres) having extensive frontages to capital roads, might be immediately appropriated for the erection of numerous residences, which would yield a large revenue, either in yearly rentals or well-secured ground-rents.

LONDON BANKERS.

THE joint-stock Banks of London were among the first to erect grandiose buildings for their offices, and the example set by them, and followed by others, has helped to make some of the narrow streets of the City appear to be filled with palaces. Many of the old private banks, however, still carry on their business in the most unpretending of houses; and perhaps the meanest is the dingy building by Temple Bar, which is occupied by the time-honoured bankers, Messrs. Child & Co. Mr. Hilton Price, a member of this firm, while investigating its history, "had occasion to look through a vast number of old cheques, bills, and cash-notes, extending in time over close upon two centuries," and he has com- piled from the materials at his disposal a succes- sion of lists of bankers, from the goldsmiths "keeping running cashes" in 1677, to the great houses of the present time, to which he has prefixed an historical Handbook of London Bankers, arranged in an alphabet of firms. From this interesting volume we propose to glean a few notices of the growth of banking in London, a subject which has a kind of fascina- tion for most people, from the visions of bound- less wealth that it is apt to conjure up.

The first goldsmiths were Jews, who invented bills of exchange, and accumulated large sums of money which they lent out at high interest to the nobility, upon the security of their estates. Edward I. robbed 15,000 Jews of their wealth, and then banished all of them out of the king- dom. The Lombards, who combined the three occupations of goldsmith, pawnbroker, and banker, came from Italy, to succeed the Jews, and gave their name to Lombard-street, which has remained to the present day the head- quarters of the bankers. In Elizabeth's reign a larger number of goldsmiths lived in Cheapside than in Lombard-street, but after the Great Fire the majority had removed to the latter place. We find that in 1566, out of 107 goldsmiths, seventy-six lived in *Chepe*, against thirty-one in *Lumberde-streete*. In 1677, however, thirty- seven goldsmiths keeping running cashes resided in Lombard-street, which is a larger number than at present, for now there are only twenty- five banks in the street.

St. Dunstan was the patron saint of the gold- smiths' craft, and the Company of Goldsmiths therefore paid great honours to his memory. His image—of silver-gilt, set with gems— adorned their hall, and his memory was drunk in the *St. Dunstan's cup*. They had their *St. Dunstan's light* in the St. John Zachary Church, and their chapel of St. Dunstan with a second image of him in St. Paul's Cathedral. Moreover, he is styled in their books "Seynt Dunston, our blessed patron, protector, and founder."

Several of the early lord mayors followed the occupation of goldsmiths: thus Sir Nicholas de Faringdon, who filled the chair in 1308, was the son of William Farendon, who was sheriff in 1281, and gave his name to the City ward which still bears it. John de Chechestre, goldsmith, and maker of Richard II.'s great seal, was Lord Mayor in 1369, the year that William Walworth filled the office of sheriff. Sir Dru Barentine, the refounder of the Goldsmiths' Hall, was Lord Mayor in 1391 and 1413. Sir Martin Bowes, who lent Henry VIII. 300*l.* in 1544, received the same honour in 1476. Other celebrated gold- smiths were William Shore, the husband of Jane Shore, Edward IV.'s mistress, wrongly named Matthew in the well-known ballad of "Jane Shore," where we are told by the heroine,—

> "In Lombard-street I once did dwell,
> As London yet can witness well;
> Where many gallants did beholde
> My beauty in a shop of golde;"

and Sir Thomas Gresham, the greatest of English merchants, who, as well as his less- known father, Sir Richard Gresham, filled the office of King's Exchanger in the reign of Henry VIII.

In 1677 the present system of banking had been matured, and there are now in London five firms who are the immediate successors of certain of the goldsmiths mentioned in the "Little London Directory" of that date as keeping running cashes. They are *Barnett, Hoare, & Co.*, the representatives of Humph. Stooks,—"Black Horse," in Lombard-street; *Child & Co.*, of Blanchard & Child,—"Ye Marigold," in Fleet-street; *Hoare & Co.*, Fleet- street, of James Hore,—"Golden Bottle," Cheap- side; *Martin & Co.*, of Duncombe and Kent,— "Grasshopper," Lombard-street; *Willis, Perce- val, & Co.*, of Thomas Williams,—"Crown," Lombard-street.

Mr. H. D. Macleod has exploded the old derivation of bank from the Italian *banco*, a bench or table, and proved that the money- dealers or money-changers were never called *banchieri* in the Middle Ages. The true meaning of *banco* is a heap or mound, and the word was metaphorically applied to a common fund or joint-stock formed by the contributions of a multitude of persons. Banking has grown from very small beginnings, and its growth has been very slow. The Goldsmiths of London were in the habit of depositing their unused capital in the Royal Mint until the credit of this depository was rudely shaken by the action of Charles I., who on the refusal of the City to lend him some money, seized upon 200,000*l.*, which had been placed there for safety. During the Common- wealth, the goldsmiths received the surplus cash of their various customers, and issued receipts or cash notes for various sums payable on demand, which passed from hand to hand, and were called goldsmiths' notes. They may be considered as the origin both of bank notes and of cheques. Charles II. followed his father's precedent, and dealt a heavy blow at the system of banking when he closed the exchequer in 1672, and robbed the goldsmiths of 1,328,526*l.*, which was their floating capital, lent to the Crown. The consequence of this scandalous violation of trust was the ruin of many of the principal bankers. Alderman Edward Backwell was one of the chief of these sufferers, and at the time of the closure the king owed him 295,994*l.* 16*s.* 6*d.*, in lieu of which he received the promise of a pension of 17,759*l.* 13*s.* 8*d.* The largeness of his dealings is seen by a reference to his books, which are now in the possession of Messrs. Child & Co. These ledgers contain the names of a great number of important customers, among which are Charles II., Queen Henrietta Maria, James Duke of York, Prince Rupert, Duke of Monmouth, Duchess of Orleans, Countess of Castlemaine, Prince of Orange, Earl of Sandwich, and Samuel Pepys. In the latter's "Diary" Alderman Backwell is mentioned twenty-six times. John Colvill, of Lombard-street, was another of the chief sufferers, and the amount he lost was 85,832*l.* 17*s.* 2*d.* John Collier is only known from his loss, which was 1,784*l.* 6*s.* 4*d.*; for this he received a bond from the king for payment of 107*l.* 1*s.* 1*d.* per annum as interest. Very little interest was paid by Charles II., and none by James II.; but in the reign of William III., after a great stir had been made, the bankers got back half of their original debt, which was charged upon the national debt, and became a part of the South Sea Fund. The mention of this monster bubble brings us to another great era in the banking world.

Gay, in his letter to Snow, the banker, wrote of the fearful panic caused by the collapse of this huge swindle,—

> "When credit sank and commerce gasping lay,
> Thou stood'st, nor sent one bill unpaid away;
> When not a guinea clinked on Martin's boards,
> And Atwell's self was drained of all his hoards."

The firm of Atwell & Co. was not then of any great standing, and it stopped payment in con- sequence of the panic, but Martin's house remained unshaken. Messrs. Martin & Co., of 68, Lombard-street, still continue the business, which they claim to be the oldest in the city of London. It is supposed to have been established by Sir Thomas Gresham, who carried on his trade in Lombard-street, at the sign of the "Grass- hopper," by which the house was known until the year 1770, when all the houses were num- bered, and the "Grasshopper" became No. 68. Nothing, however, is known of the house between Gresham's time and the "London Directory" of 1677. From the latter it appears that Charles Duncombe and Richard Kent were at the "Grass- hopper" at that date. Duncombe was at one time excessively rich, and bought for 90,000*l.* the estate of the Duke of Buckingham, at Helmsley, in Yorkshire, which is now known as Duncombe Park, the seat of the Earl of Favers- ham, a descendant of Sir Charles Duncombe, Lord Mayor of London in 1709. Pope refers to this transaction in the lines,—

> "And Helmsley, once proud Buckingham's delight,
> Slides to a scrivener or City knight."

Duncombe, through his connexion with the Treasury, got early news of the proposed shutting up of the Exchequer, and he thus saved his own money and that of the Marquis of Win- chester (afterwards Duke of Bolton). Soon,

however, trouble came upon Duncombe. He was committed to the Tower, expelled from the House of Commons, and, after a division of 138 to 103, the confiscation of his property was determined upon. The House of Lords released the prisoner, and it is uncertain what was the final issue of the charge. Thomas Martin was a clerk for a time, but between 1701 and 1711 he became a partner, and the style of the firm was Stone & Martin. In 1794, the "Grasshopper" was rebuilt, and many changes have since taken place in its management, so that in 1872 the four members of the firm all bore the name of Martin.

One of the earliest cases of wholesale speculation among the bankers was that of Alexander Fordyce, of the firm of Neale, Fordyce, & Co., who was found, on the failure of the bank in 1772, to have put his name to bills in circulation to the amount of four millions sterling. In 1766 he speculated so successfully in East India stock as to be left in possession of nearly 100,000*l.* He then purchased an estate, gave great entertainments, and married the daughter of an earl. Soon afterwards he lost about the same amount, and luck then continued against him. On one occasion he visited a Quaker for the purpose of borrowing money, but the worthy man wittily parried the application with the remark,—"Friend Fordyce, I have known many people ruined by two dice, but I will not be ruined by four dice."

Henry Fauntleroy, the acting partner of the old-established bank of Marsh, Sibbald, & Co., No. 6, Berners-street, was hanged for forgery on the 30th of November, 1824. He defrauded the Bank of England of 360,000*l.*, and kept an accurate account of all the frauds that he had committed. Among his papers was found the following statement:—"In order to keep up the credit of our house, I have forged powers of attorney for the above sums and parties, and sold out to the amount here stated, and without the knowledge of my partners. I kept up the payments of the dividends, but made no entries of such payments in our books. The Bank first began to refuse to discount our acceptances, and to destroy the credit of our house. The Bank shall smart for it." Fauntleroy kept an open house during the days of his supposed prosperity, and he gathered together a large circle of acquaintances. Dickens used to relate an anecdote which shows what manner of men these acquaintances were. It must be premised that at the elegant dinners in Berners-street and at Brighton some particularly choice Curaçoa always made its appearance. The night before the execution three gentlemen visited the condemned cell at Newgate, and as they were about to retire, one of them turned back to the wretched man, and said,—"Fauntleroy, you stand on the verge of the grave: remember the text, my dear man, that 'we brought nothing into this world, and it is certain we can take nothing out.' Have you, therefore, any objection to tell me, as a friend, where you got that Curaçoa?"

Very shortly after the break-up of the Berners-street bank, the old-established firm of Remington & Co., Lombard-street, stopped payment, owing to the roguery of the active partner, Rowland Stephenson. In December, 1828, unfavourable reports as to the soundness of this bank got abroad, and in order to counteract these rumours, five of the principal bankers [illegible] investigated its affairs, who were so well satisfied with the result that each of them advanced 20,000*l.* on such securities as they found the bank to possess, and induced many persons who had withdrawn their accounts to return them. It was soon afterwards discovered that the sealed packets, endorsed with the names and addresses of the depositors, and the amount of the contents, were merely dummies, and contained nothing. On the 27th of December Rowland Stephenson, who was M.P. for Leominster, and treasurer of St. Bartholomew's Hospital, absconded with 70,000*l.* in Exchequer bills, having previously made away with 20,000*l.* The panic of 1837, known as the "American Panic," caused the stoppage of the house of Sir James Esdaile, Esdaile, Grenfell, Thomas, & Co., of Lombard-street. The partners, however, paid their creditors by a loan advanced to them by all the principal London bankers; which loan has since been repaid, the last payment being made on Feb. 3, 1873. After these severe shocks to credit several years passed without any considerable failure, but in 1856 occurred the disastrous smash of the Royal British Bank, which overwhelmed many hundreds of families in ruin; and the conviction of Strahan, Sir J. D. Paul, & Bates for the misappropriation of securities left in their charge. Thus ended the old-established bank, supposed to have been founded by John Snow, a goldsmith, at the Golden Anchor, in the Strand, in 1660. In 1866, the panic, from the effects of which we can hardly yet be said to have recovered, caused the suspension of Overend, Gurney, & Co., the Agra and Masterman's Bank, and the private bank of Odling & Co., whose business had just been transferred to the English Joint-Stock Bank. The history of Odling's house is interesting to us, on account of Samuel Rogers the poet's connexion with it as senior partner. On Sunday, November 24, 1844, a very strange robbery took place at the bank: the strong-room was opened, and property abstracted to the amount of about 50,000*l.*, which was made up of thirty-six one-thousand-pound notes, 1,200*l.* in gold, and other notes and bills of exchange. Although an invalid partner was in the house, and a clerk on duty, at the time, the burglars were not heard. A reward of 3,000*l.* was offered for the recovery of the property, and a free pardon to any one giving such information as would lead to the capture of the offenders. Nothing was heard for a considerable time, either of the robbers or of the notes, until one morning a parcel, addressed in a strange hand, was received by the firm, and found to contain all the Bank notes that had been stolen.

In any notice of London bankers the firm of Coutts & Co. must take a prominent position. It was originally established by a goldsmith of the name of George Middleton, who kept a shop near St. Martin's Church, St. Martin's-lane. In 1692, George Campbell was his partner, and about 1754, after the death of Middleton, James Coutts was taken into partnership by Campbell. Campbell died in 1761, and James Coutts then brought his younger brother, Thomas, into the business. Messrs. Middleton & Campbell kept the accounts of Queen Anne, and most of the members of the royal family since her time have banked with their successors. Thomas Coutts offended George III. by advancing 100,000*l.* to his son-in-law, Sir Francis Burdett, towards the expenses of the Middlesex election. The king sent for Coutts, and having satisfied himself of the fact at once withdrew his account from the bank, which he transferred to Messrs. Drummond. This incident placed the latter firm in an awkward position, because the king's eldest son also banked with them. George III. desired Drummond not to make any further advances to the Prince of Wales. If he disobeyed his Majesty he would gain the favour of the Prince; but if he obeyed him he would offend the Prince, and lose the royal accounts at the decease of the king. He accepted the latter alternative, and the heir-apparent went to Coutts, who let him have what he required.

Messrs. Child & Co., as has already been mentioned, trace their origin to one of the old firms of goldsmiths who kept running cashes. John Wheeler, goldsmith, was one of the pikemen who formed a guard of honour to escort Queen Elizabeth through the City on her way to Greenwich, July 1st, 1559. His descendant, William Wheeler, moved, in the early part of the reign of Charles I., from his old shop to the "Marygold,"—hitherto a tavern next door to Temple Bar. The grandson of this Wheeler was Francis Child, the first banker to give up the goldsmith's business, and in consequence called by Pennant "the father of the profession." The old ledgers of Messrs. Child are full of historical names. Oliver Cromwell kept an account at the "Marygold," but the book which contained the particulars has not been heard of for fifty years. Nell Gwynne was one of the customers of the bank, and the doctor's receipt for attending "Madame Gwynne" in her last illness, and for remedies and medicines, amounting to 109*l.*, is still in existence. Dryden is said to have deposited 50*l.* in the hands of "Mr. Blanchard, Goldsmith, next door to Temple Bar," for the discovery of Lord Rochester's bullies, who assaulted him in the street. William III. and Mary II., Prince George of Denmark, Barbara Duchess of Cleveland, the great Duke of Marlborough, and Sarah, his wife, Archbishop Tenison, Bishops Stillingfleet and Burnet, Lady Rachael Russell, and Lady Mary Wortley Montagu, all banked at the little house by Temple Bar. Mr. Price tells a good story anent the marriage of John, tenth Earl of Westmoreland, to Sarah Anne, only daughter of Robert Child, the last of his name, and head of the bank in 1782. The nobleman was dining one day with the banker, when he proposed the following query:—"Child, suppose that you were in lov with a girl, and her father refused his consent t the union, what should you do?" "Why ru away with her, to be sure," was the promp reply of Mr. Child, little thinking that it was hi daughter who was referred to. Lord Westmore land took the advice, and eloped with the youn lady from her father's house in Berkeley-square A watchman found the front door open, an raised the alarm; Child took a post-chaise an pursued the fugitives, overtaking them i Cumberland. Lord Westmoreland stood up i his carriage and shot the leading horse in Child' chaise, by which means he escaped over th border, and was married before the father coul interfere. Child never forgave the pair; but h left the whole of his fortune to their daughter Lady Sarah Sophia Fane, who married on th 23rd of May, 1804, George Villiers, Earl o Jersey. Child's is now the only bank in Londo in which the clerks become partners in order o seniority. This custom was general in the early part of the eighteenth century, and probabl took its origin from the practice of master taking apprentices into partnership after they had served their full time.

Near neighbours of Child & Co. are Messrs Hoares & Co., at the "Golden Bottle," in Fleet street. James Hore, or Hoare, goldsmith, kept running cash in Cheapside in 1677, and Sir Richard Hoare was one of those who received mourning-ring of the value of 20*s.*, at Pepys's funeral, in 1703. The large firm of Glyn, Mills & Co. appears to have commenced business in Lombard-street between the years 1740 and 1754. Messrs. Smith, Payne, & Smith's house came into existence about the same time, and was started near Coleman-street, Lothbury. The early history of this bank is an interesting one. The original Smith was a well-to-do draper a Nottingham, who, for the security of his customers, took charge of their ready cash, and gradually grew into a regular banker. One o his descendants found a useful London agent i a Mr. Payne, and soon afterwards the two went into partnership, commencing the London business, which still flourishes. No Payne is now member of the firm, and all the seven partners are Smiths. The origin of bank notes is to b found in the goldsmith's notes for the amount o money deposited with him, and the earliest record of these is to be seen in "Pepys's Diary," where, under the date of the 29th of February 1667, we read,—"Wrote to my father, and sent him Colvill's note for 600*l.*, for my sister's portion." The Bank of England was founded in 1694, and on the 11th of February of the following year, the following advertisement appeared in the *London Gazette*:—"The Court o Directors of the Bank of England hereby give notice that they have empowered their cashiers, Mr. Thomas Speed, Mr. Robert Hedges and Mr. Thomas Madolees, and one of them and no other, to give notes on behalf of the Governor and Company of the Bank of England, either for payment of money or bills, for which they are to be accountable." As early as the 15th of August of the same year the Bank called in their "marbled notes," on account of some of them having been forged. About the middle of the year 1729, Francis Child introduced a printed form of promissory note, having a picture of Temple Bar in the left-hand corner. They were worded much in the same manner as the Bank of England notes are at the present day. Mr. Lawson states in his "History of Banking" that these notes were discontinued in 1750, but Mr. Price proves that they were still in use in 1793. The Bank of England did not recur to their early practice of issuing notes until the middle of the eighteenth century. Ten-pound notes were first issued in 1759, five-pound notes in 1794, and one and two pound notes in 1797. Messrs. Child used printed cheques as early as the year 1762, but discontinued them about thirty years later. When the present custom became general they were the last firm to re-adopt it, and it was only about twenty years ago that they revived their practice. Messrs. Mead & Co. (whose firm flourished in the early part of the last century) were the first bankers on record who gave pass-books to their customers. Lady Carteret, writing to Mr. Child in 1715 says, "I should be glad of a book, as I used to have at Mr. Mead's, with an account of all that you have received upon this article." Robert Herries, the founder of the present firm of Herries, Farquahar, & Co., of St. James's-street, was the originator of the system of circular notes which has been found so useful by travellers on the Continent. Before

e establishment of his own bank, Herries had ben a partner in Coutts's, and it is asserted at when he first conceived the idea, he ex. nined it to Thomas Coutts, who so thoroughly approved that he dissolved partnership rather an adopt it.

We have already noticed how the goldsmiths ve up their shops and turned into bankers, d how new firms were continually being arted; but we have still to notice that remark- le revolution in the history of banking which mmenced when the London and Westminster nk was started by James William Gilbart, in 34. In 1708 a clause was inserted in the arter of the Bank of England, prohibiting the tablishment of any other bank having more an six partners. In 1826 an Act of Parlia- ent was passed to permit the formation of nks having more than six partners, with the ght of issuing notes outside a radius of sixty- e miles from London. When the principle of int-stock banking was started in London, it et with a formidable opposition, more especially om the Bank of England. The opinion of the olicitor-General was taken as to the legality of e scheme, and he gave his opinion that any mber of joint-stock banks might be esta- ished, provided they did not issue notes within xty-five miles of London. The London and estminster Bank then came into being, to be llowed by many banks of a similar character. ne of the chief opponents of joint-stock bank- g was Samuel Jones Loyd, now Lord Over- one, who, in his evidence before the Parlia- entary committee on the Bank Charter Act in 40, said,—"I think joint-stock banks are fficient in everything requisite for the conduct banking business, except extended responsi- ity." The public were, therefore, naturally rprised when Messrs. Jones, Loyd, & Co., in 64, disposed of their business to the London d Westminster Bank.

The popular appreciation of the advantage of nking has grown since the time when the ght Hon. Sir Paul Methuen, who gave his me to the Methuen treaty, left 50,000 guineas aled up in bags; but the principles upon which e early goldsmiths first founded their banking sinesses must have been thoroughly sound, nce, as we have seen, several of the original ms, which have flourished for two centuries, e still in existence, and give promise of ourishing for many years to come.

NIONISM IN THE FRENCH BUILDING TRADES.

THE various suggestions thrown out at the orkmen's Congress recently held in Paris, have en promptly followed by movements which ill produce some effect on the building trades France. Two months have scarcely elapsed nce the Congress closed its doors, and already e hear that several provincial towns have fol- wed the example propagated in Paris. At sançon a grand meeting was held in the Town- ll, and the working-man delegate, who repre- nted the building trade of the locality at the te Congress, explained to his audience all the eories propounded on that occasion. M. Oudet, no represents Besançon in the Senate, expressed s sympathies with the meeting, and was con- quently called upon to vote for the abrogation article 291 of the Penal Code, as proposed in e Bill submitted to the National Assembly by . Lockroy. This article renders trade unions egal, for it decrees that meetings of more than enty persons cannot be held unless special rmission be obtained from the police. Hence, tead of unions, the French workmen have med Syndical Chambers, consisting of a com- ittee numbering less than twenty persons. As esult of the meeting, a considerable number workmen enrolled themselves as supporters trade unionism. From Besançon the move- ent spread to Grenoble, and there the house rpenters asked permission to constitute them- lves into a trade union; but the authorities ought fit to refuse their sanction on the ground at it would be better for all parties concerned await the result of the debate on M. Lock- y's Bill.

At Lyons, the house decorators and plasterers ve issued a manifesto, addressed to their em- oyers, and describing minutely their grievances. e old difficulty that the augmentation in ges does not correspond with the increase in at and in the cost of provisions, is, of course, e first cause of complaint; then it is ex- ained that this branch of the trade is especi- ally affected by the dull or dead seasons. Thus, it is asserted that a journeyman works on an average, for six months, ten hours per day, re- ceiving 5d. per hour, and a hundred and fifty days at 5 francs equals 30*l*. During the six other months he only works from eight to seven hours and makes little more than 3s. per day, or, in all, 21*l*., during the dull season. This gives, for 300 days' work, which, deducting holidays, &c., is the most that can be obtained, a total annual income of 51*l*. On these wages the workman must live 365 days, and he has there- fore a little less than 3s. per day. Then he must not only provide himself with food, fuel, light, clothes, amusement, &c., but he must pay an exorbitant rent, coupled with heavy taxes, and buy his own tools. It will be seen that the house decorator holds a more inferior position, financially speaking, in France than in England. Further, if this is all the remuneration obtained by skilled workmen, commoner work must be paid according to a much lower scale, and there are many workmen in the building trade who, counting the dull seasons and slack work, do not earn more than 2s. 4d. per day all the year round. The employers have been invited to verify these assertions, and to make some effort to relieve their workmen from the distress and poverty with which they are beset.

The house decorators of Paris have, on their side, resolved to reconstitute their union or Syndical Chamber, and have elected a committee of eleven workmen to draw up the statutes, &c. Perhaps the house decorators have been some- what encouraged in this matter by the success just achieved by the joiners' Syndical Chamber. This branch of the trade has been in communi- cation with the Masters' Association for some months past, and has at last obtained a formal declaration, that from the 1st of January, 1877, and henceforth, joiners shall receive 5s. per day.

From these various items of news it will be seen that the organisation of labour in the build- ing trades of France is making decided progress. At the same time, it should be borne in mind that the French working-class leaders have com- pletely eschewed the policy which results in strikes. Towards the close of the Empire the working-classes seemed infatuated with the love of strikes. Nearly every trade had its disturb- ance, but the terrible lessons administered, and defeats experienced, conclusively proved that the French working-class organisations were not sufficiently powerful to wage war by means of strikes. Besides, the French employers have the advantage of possessing better organised Masters' Syndical Chambers than the workmen have ever been able to institute; a fact which, however, is due to the partiality, not of the law, but of its administrators. The police have rarely, if ever, interfered with a master's union, while they always watch, and often dissolve, workmen's associations and meetings.

At the Congress, all the speakers proclaimed the necessity of union, not for the sake of organising strikes, but to form benefit funds, to institute classes for technical instruction, to arbitrate in the matter of wages, to give legal council and support when required, to form co- operative stores, and, finally, to open co-operative workshops. Such, in a few words, is the pro- gramme of French trade-unionism, and these projects receive active support from a great number of workmen attached to the building trades.

THE ENDOWMENT OF SCIENTIFIC AND ARTISTIC RESEARCH.

WE may, we think, assume with some con- fidence that such meetings as those of the British Association for the Advancement of Science, and the Social Science Congress, are among the most influential and important of those many influences which have for their objects the advancement of science, and the making better the whole world of human nature. Such institutions seek in the main to do this by the ventilation of questions, and the diffusion of special information among the general public. A paper read at any such in- stitution attracts attention, and is attentively listened to, and afterwards read by thousands who would not perhaps have otherwise cared to hear much on such subjects, important as they are. The "public" is thus admitted into the circle of scientific theory, and even of art theory at times.

But there is another aspect in which such institutions may be usefully viewed, and it is a strictly scientific one, and one which will some day no doubt occupy a large share of the atten- tion of those who manage these matters, viz.,— the very advance of science, and, to speak generally, sociology as influenced by science, and to discover how to do this, and how to find out and best encourage those who are most fitted to do the work of enlarging the boundaries of such important influences, and how most effectively to help those who are best fitted by nature to pry into, and to get a true and original insight into the ever new details of them.

Indeed, it would seem to be a something some- what strange that this phase of these associations' work does not stand first, and come before all other subjects as successfully taken in hand, and urged on the attention of the scientific world. The advancement of science and the endowment of science are, indeed, as it is, watchwords of them, and would seem at first sight to be their constant and ever-recurring themes; but, never- theless, these subjects are as yet new, and the problems involved unsolved, especially if we go a little, ever so little, into the heart of the matter, and come to foundational principles. What is the great object of the future of scientific advance, and progress, and increased insight? What, but the practical application of it, and the shortest way to it? How new the matter is we may soon see.

In the first place, science (and we would add art) has already made a certain advance, and the world is at this moment at a cer- tain distance from its stand-point, in the days of, say Copernicus, 1543. Newton did wonders with and for science, that is certain, and had he never existed, it is equally sure that science would not be where it now is. We might be even waiting for a Newton to solve the "gravitation" mystery for us, and the world might even now be wondering as to how it is that the very earth we live on is held to its central sun. It is a very curious fact that Newton, though he discovered, as by dint of a sort of divine instinct, the law of gravity as the universal force, or "energy," if that be a better word, as that power which holds the earth and planets to the sun, had no further notion of the (and it seemed to satisfy his mind) origin of the second force, or energy, which impressed on them their forward motion, and which now carries them perpetually round the central mass, or rather round their common centre of gravity, than that of a personal and individual effort. We glance at this for the purpose simply of showing how comparatively little it is that even the mightiest intelligences can do within the compass of the but too short period of human existence! We might go on and cite all but numberless instances of this slow progress of "research," and how little it is that any one man, however able, can do, and the consequent neces- sity there is, and must be, of many in succession to such work,—the warring with nature, and the compelling her to reveal her dark and hidden secrets. It is but a few that would seem to be gifted with the power of doing such work, and they, for the most part, have to labour under no small,—and to not a few hardly to be under- stood,—difficulties. If we but follow the great workmen of the past, who have done so much for the present and future, into their observatories and laboratories, and workshops and studios, we must see this.

And this brings us to practical matters, for had not many of those who have "advanced science" been aided and helped in some way or other, they could have accomplished but very little indeed, or nothing. Even Newton himself could not have done his life's work without some sort of "endowment," and could have had no time to work out such, commercially looked at, unprofitable problems. Newton may be said to have been a singularly fortunate man, for he got that help or endowment which effec- tually enabled him to do his work. As things were, he must at times have been hard driven, for there are details to be found by the curious in his life which show that he had need to go somewhat deeply into other calculations besides those which fill the "Principia." Yet was Newton a singularly fortunate man, taking all things into account. His immortal book itself would never have been printed had not help, and money help, too, been at the right time forthcoming. Indeed, may it not be affirmed generally that no man can possibly live on pure abstract or theo- retical science? He works for the future.

Thus it would be difficult to exaggerate the

importance of this question of help to those who so devote themselves to the future of science, and thus, though the world may not know it, to the practical and material well-being of the community at large. Nothing can at first sight seem more profitless than some of the scientific speculations, and even experiments, of to-day, though the especial characteristics of the times be so practical and utilitarian in their tendency; yet, but few at all capable of judging will doubt of their effect finally on practical action. It is not a little instructive,—and at times the fact is all but incredible,—to think of how much, all the world over, has been done to change the very face of it, by thoughtful men doing that which at the moment seems utterly profitless!

It is impossible, therefore, taking such considerations as these into account, to over-estimate the importance of the "endowment," in some form or other, of science; or, the helping the purely scientific engineer and searcher into the hitherto-undiscovered and the unknown. The only question is, how best to do this, and how to select those who are most fitted for such difficult and exceptional work? Nature does her work in strange ways, and the mysteries of the unknown are spelt out by those only to whom it has been given to do such work, and in ways the most unexpected. Not, most surely, out of orthodox schools, or colleges, or societies, but from the outer world, and as if by accident. Would it not, therefore, be the best and the most sure of all tests of worthiness to receive such help, to demand in the first place of all applicants for it a previous result; *e.g.*, a newly-discovered fact, an invention already realised, and to be seen and examined; or, a work to be read in MS.? Would not such tests as these prove the capacity and worth, scientifically, of the applicants? Would it not make certain, as certain as is humanly possible, the capacity of production of yet further work from any such applicant? No men are less idle, as a rule, than those of original or inherent power of any kind. All experience proves this. They cannot, if they would, prevent the continuous flow of original thought. Newton, had he lived to the patriarchal age of Moses, with his natural force unabated, would have gone on making discoveries instinctively, and almost as a matter of necessity.

And it is this fact, and fact it is, that compels us to a real and trustworthy mode of advancing science. Elementary schools of science, more advanced colleges,—to do that for science which Oxford and Cambridge now do for learning, to use a general term,—would, doubtless, do much good, and fill up a want, and an urgent want. But great and very profoundly original research, and discovery, and insight into the unknown, do not come from schools and colleges. No amount of "education" will elicit originality of thought or mental insight. A schoolmaster must always know far more than his pupils whom he is teaching, but no one expects from him deeper insight than is to be found in the books before him, and out of which he instructs. Nay, the very tendency of his mind is to reject anything he does not find in them, come from what source it may.

May not these thoughts and facts be utilised by such institutions as those of the British Association for the Advancement of Science, the Royal Society, the Institution of Civil Engineers, and others? Each strives for the same object,—a new and workable idea in some one definite direction, and with the ultimate object of making the condition, in the long run, of humanity better than it is. Each one of them is in search of those who can best aid in this, and who are most gifted. But, as matters are at present, the "outside" world is all but excluded from this kindly and timely help; for the real test of fitness, as above hinted at, has not been applied. May we not hope that in future it will have its due attention, and that those who have already manifested original power will be helped by these powerful societies?

And may we not here usefully put in a plea for *art* "research" help? For surely there is not in science, difficult as it is, more yet to be found out, or to be practically tested, than there is in art action and theory. As all know, there are not a few art-societies, from the Royal Academy itself, with its exceptional privileges and patronage and helps, to the newest and humblest of art associations; but yet is there a need of a something more to do the special work of research into what exists, and into what has been done, and to suggest what there is yet to do, and *how* best to set about it. This is, as all will admit, a sufficiently wide field to work in, and it is certainly a most unprofitable one as far as the immediate present is concerned. The more profound and difficult the research, the further it must be from immediate apprehension, and most surely, however suggestive it may be of immediate action, the more difficult is the position, especially of the first discoverer. The history of science is but a long-drawn-out list of difficulties as each great discovery came into the world, if only in thought and idea. Indeed, we hardly know how any society in these our days could do a better or more noble work than to help and welcome all new scientific or artistic thought. We again say artistic, because this has not as yet come into the category, and because the fact of a right method of work, as in art-workmanship, must come primarily from some at the time abstract, and apparently unworkable, and all but useless and purposeless speculation. Art most certainly is as full as science of examples of this.

ARTICLES DE PARIS.

A CUSTOM has existed in Paris, from what is carelessly called "time immemorial," of exhibiting at this season of the year such a profusion of *articles de Paris* as happily no other city in the world can display.

Every one knows that the New Year in Paris is made more than anywhere else an occasion for the interchange of presents, many of which, it is cynically said, are given with a somewhat more complex motive than the rustic donor of a "fairing" dreams of. We have long heard of costly gifts of the morning being exchanged in the afternoon for its equivalent in some other shape, again to be exchanged, and so on, until it arrives at its value *at par*, or, say, a half-franc box of M. Menier's chocolate drops.

The popular market for New Year's gifts in Paris has for many years been allowed, from the 15th of December to the 15th of January, to be arranged in light booths, erected along the boulevards; but the larger tradesmen appear this year to be so greedy for custom, and so alive to the old traditions of the wisdom of looking after small gains, that the ephemeral lessee of a New Year's booth finds it exceedingly hard to undersell his magnificent competitor.

In a recent return of that great French branch of industry, known as *articles de Paris*, a very serious falling off has been noticed, to the no little amazement and alarm of the egotistical manufacturer of such products, who naturally takes a very serious view of his playful trade, and is utterly at a loss to understand the diminished demand for his costly vulgarities. He has no conception that there may exist a gradually growing dislike for objects that many of us once thought desirable possessions, but which no longer charm us.

Men have been known to assert their objection to matrimony on the ground that marriage would embarrass them with so many preliminary bridal gifts selected from the shops of Paris, that without calculating the additional cares ill-natured people say are likely to accompany the more complicated existence, their lives would be rendered miserable by the daily contemplation of the unanimated ornamental part of their household.

Not that the manufacturer of *articles de Paris* concerns himself greatly as to what may be the opinion of people of good taste: he seeks, and is much better satisfied with, a broader field of enterprise, and he knows very well that it yet will be many a day before the whole purchasing world knows exactly the safe way to invest its sovereigns, its dollars, and its rupees; so he still goes on making year after year, and this year more than ever, hideous things to shock the thoughtful, to delight our neighbours' wives and daughters, and to encourage our children in a love for bright, breakable, ill-formed trifles.

These remarks apply, not to the ordinary toys of the season, which perhaps we ought to rejoice to find multiplying for our dear little one's sakes, but to the expensive *bonbonnières*, to design which the manufacturer appears to have utilised the ingenuity of madmen, who have manipulated objects that their insufficient minds just give them the power of knowing will be appreciated by their fellows, and hence just now the shops are filled with objects so expensive and ugly, that one really feels enraged with the manufacturer for entertaining so low an estimate of the taste of, as he thinks, the never-to-be-sufficiently-duped public.

That the sale of the higher objects of *articl de Paris* has fallen off is owing most likely the melancholy fact that England in a gre measure, and other countries in proportion, ha found out how to make, and where to sell, su things as affectionate and affluent people give each other at Christmas and the advent of t New Year; and we are constrained to adm that England is completely successful in pr ducing luxurious objects, many of which in respects are as faulty as those made by t French.

One requires at this season in Paris, in mo than one sense, a heavy balance, to protect o against the dangers of the shops, and the unf tunate individual who has neglected that ve useful part of his education which ought instruct him how to spend money wisely, mu be painfully at the mercy of the eager sal people who this year have surely over-stock their showy shops with shiny vulgarities.

Such a mass of over-coloured pots and pa have certainly never before been exhibited one time, and it becomes a matter for curio speculation to calculate what length of time a how wide a distance it will require before t many objects will be dispersed and surround by a sufficient amount of sober tones to form equilibrium of moderately good colour. All t butlers' pantries in the world would be small to supply shelves for a hundredth porti of the ornamental china that is offered for sa and many a dusty lumber-room will be ma more hideous by having to find space for t last new thing. Breakage, probably, judgi by our own domestic experience, accoun for the disappearance of a multitude of th objects, and this suggests to us surprise th the Parisians, who are so determined to gath in Paris so many of the world's wonde do not attempt to erect, as a pendant to Mo martre, a Monte Testaccio, outside the fortifi tions of Paris; it might be as large and useful, strategetically speaking, as Mont Va rien. We could name more than one manufa turer of crockery whose wares would form, carefully smashed, an admirable substratum such a mountain, and we should imagine th the present respected minister of the Beau Arts would desire no better exercise of his offic duties than having to condemn a few thousa ill-formed and badly-decorated pieces of potte What are the Legitimists about that they do attribute all this vulgarity to the Republic influence?

A suspicion exists, which occasionally fir expression, even from patriotic Frenchm that art is declining in France, not merely t art of the *bonbonnières*, but the art of t Academy, the Beaux Arts *par excellence*, t art that, commencing with Cousin and Gouj culminated in Perraud and Meissonier. It doubted whether the men who now year by ye please and amuse us at the *Salon* will ever ta the same abiding-place in our memory as t artists of the past have so perfectly done. Wh two or three living names have passed awa who is to take their place? Probably the ne great painter may be a Russian, sending us fr his studio at Constantinople the gorgeous rep sentations of an Eastern dream.

Paris.

MOVEMENT IN INDIA.

MR. WILLIAM PARKES, C.E., consulting en neer of the Madras Harbour Works, has arriv at that city on a visit of inspection.

Captain K. C. Pye, R.E., manager of the R pootana State Railway, has been appointed act as secretary to the Indian Railway Co ference, which has been summoned to assemb in Calcutta.

Mr. V. Ball, of the Indian Geologi Survey, will proceed shortly to Vizagapata Jeypore, and Bustar, to make preliminary geo gical surveys of the countries thereabouts.

Designs for the new Boree Bunder termin and administrative offices at Bombay have be prepared by Mr. F. W. Stevens, C.E., and ha been approved by the local railway authoriti The work, which will cost about twenty-t lakhs of rupees (220,000*l.*), will be commenc as soon as the sanction of the home Board received.

Colonel Shaw Stewart, R.E., the consulti engineer, Madras, is said to have pronounc decisively against the Duke of Buckingham grand scheme for uniting Ceylon with Sou India by means of a railway, his opinion bei that the project would entail such an enorm

outlay as to render it prohibitory. The works from land to land, across what is known as Adam's Bridge, would, it is stated, involve an expenditure of two millions sterling, the total outlay being probably three millions.

Property is said to be very rapidly decreasing in value in the Island of Bombay. A native paper gives the following instance:—When the Elphinstone Circle was built, about twelve years ago, a prosperous mercantile firm erected a range of offices, at a cost of 45,000*l*. A few years later, the firm in question amalgamated with the London, Asiatic, and American Company, Limited, and the building was valued at 25,000*l*. The Company named having failed this year, the property was put to the hammer, and only brought 7,300*l*., or less than a sixth of the actual cost.

The Holkar Nerbudda Bridge, which was recently opened, will cost when quite completed 168,600*l*., the outlay up to the beginning of October having been 166,000*l*. This is nearly 40,000*l*. under the estimate, and the officers of the Public Works Department concerned in its construction are congratulating themselves accordingly.

It has been finally decided that Simla is not to be deserted after all, but that the vice-regal quarters are to be removed to more commodious premises. The Simla paper speaks of "a palace" which is to be built on Observatory-hill, for the accommodation of the representative of the Empress of India.

The new scheme for the revision of the Public Works Department in Bengal, the North-Western Provinces, and the Punjab is now ready, and will, it is said, come into operation at the beginning of the year. There are at present twenty-three Executive Divisions of the Public Works in Lower Bengal alone, and six Superintending Engineers, exclusive of those in the Irrigation Branch, which is to be amalgamated with the general department. It is intended to reduce the number of Divisions to eleven and that of the Superintending Engineers to three only. The services of several subordinate officers are also likely to be dispensed with.

Colonel Rundall, C.S.I., formerly Inspector-General of Irrigation in India, has prepared an elaborate scheme of canals for Egypt; nothing being wanted but the money to carry it into effect. Should he take service with the Khédive, it is said he is to receive Indian pay and allowances and a residence in Cairo,—but rumour has surely erred for once on the side of moderation, for Egyptian appointments are usually rewarded in a much more substantial manner.

Active preparations are being made for extending the frontier railways of India in those directions whence danger most frequently threatens. A party consisting of Captain Wilberforce Clark, Messrs. Derienzi, Fox, and others is under orders to start from Kurrachee to survey a new line from Sukkur to the Bolan Pass.

There is a prospect of considerable briskness in the building trade in Colombo for some time to come. A company has been formed, with a capital of 100,000*l*., for the purpose of purchasing a plot of land and erecting thereon ranges of buildings which will be fitted with the most modern machinery and appliances for the preparation and packing of coffee for shipment.

It may be remembered that at the last meeting of the British Association, the Duke of Argyll suggested that the Government of India should erect a new observatory where solar investigations of the utmost importance could be conducted. Coming from an ex-Secretary of State, the suggestion has naturally excited much attention throughout India, and popular opinion is most decidedly against it. The *Englishman* gives voice to the general sentiment, and proposes that the Madras Observatory, which has done much good work, should be extended, and provided with improved instruments and the requisite number of trained assistants to keep the present really talented Astronomer Royal, Mr. Pogson, abreast of the demands of modern astronomy, and to render his researches and discoveries at once available by the scientific world. If funds can be procured it is not improbable that this may be done, but the Delhi assemblage will cost much money which is sorely begrudged, and, unless pressure is brought to bear upon it, the Government of India will be in no haste to extend its efforts in this direction.

At a public meeting held in Madras, Mr. Parkes has been defending himself against the strictures which have been passed upon his breakwater. He declares both its progress and its prospects satisfactory, and says he foresaw, from the outset, many of the difficulties which have been experienced in carrying out the work, especially that of driving the piers through the surf, and as far as the accumulation of silting sand is concerned, expressed himself convinced that, "at the very worst, the work would be good for fifty or sixty years, and at the end of that period the further extension of the piers for the prevention of further injury would be practicable." He stated that the work had been undertaken departmentally, not because contractors would not look at it; but because he himself was strongly opposed to giving out contracts for such work, and pointed to Sir John Coode as sharing his opinions, and as executing the Colombo breakwater without the assistance of a contractor; while, as far as cost was concerned, he declared himself more than satisfied. His critics, however, still maintain that more than half a million sterling is a ridiculous price to pay for a harbour which may only be available for fifty years.

HOW WE TRAVEL.

FIFTY-ONE years ago, when the railway system was in its earliest infancy, passenger traffic was scarcely dreamt of, and the far-sighted Quakers who projected the first public railway would have thought it a wild dream if they had been told that two or three millions of persons would travel by railway in a generation or two. But the traffic which was overlooked in the projection of the primal railway has grown until it is the most important, and until it has attained almost inconceivable dimensions. In the year 1875, whilst our British railways had conveyed over them two hundred million tons of goods and minerals, there were in the same space of time passed over them above five hundred million passengers; or, in other words, our railways carried rather more than one thousand passengers every minute throughout the whole of that year. This, roughly speaking, was the number of the ordinary passengers, of whose journeys the tickets issued are accurate records. In addition to them, there are the season ticket-holders, no account of the exact number of whose journeys can be given. These numbers were for year 1875, and the statistics are now obtainable, if not of the whole, at any rate of the chief, of the companies in England for the first half of the past year. And it may be interesting to tabulate from official records the numbers travelling on six of our largest English railways during the first six months of the past year, and to show by the division of these travellers in what modes and classes the journeys of the travelling public are accomplished. The six railways in question are the London and North-Western, the Great Western, the Midland, the North-Eastern, the Lancashire and Yorkshire, and the Great Northern; and it is a proof of the vastness of their working to find that over these six railways alone there were carried in six months ninety-four million passengers. The exact figures are for the six months:—

London and North-Western ...	21,584,740
Great Western ...	21,132,464
Midland ...	12,351,722
North-Eastern ...	13,533,287
Lancashire and Yorkshire ...	17,535,265
Great Northern ...	8,500,398
	94,637,876

The interesting question then arises,—how and in what proportion, in reference to the classes, do these 94,000,000 representative passengers travel? A question which may be answered by a detailed table for the same period of six months as under:—

	£ First Class.	Second Class.	Third Class.
London and North-Western ...	1,575,430	2,788,132	17,221,178
Great Western ...	1,407,360	4,102,765	15,621,899
Midland ...	1,237,940	—	11,113,782
North-Eastern ...	588,401	945,049	12,019,837
Lancashire and Yorkshire ...	1,182,585	1,358,036	14,996,644
Great Northern ...	598,124	1,270,451	6,331,823
Total ...	6,560,280	10,472,423	77,305,163

Thus it is evident that out of rather over 94,000,000 of passengers, 6,500,000 travel first class, nearly 10,500,000 travel second class, and the great bulk of the whole, above 77,000,000, travel by the popular third class. Within the last five years not only has there been a vast accession to the ranks of the travelling public, but there has been an increased tendency towards the lower classes, or rather towards the third class. In that period there has been a very slight increase in the number of the first-class travellers, an actual decrease in the number of the second-class passengers, and a very large increase in the number of the third-class passengers,—this movement being largely contributed to by the attachment of third-class carriages to all trains, and by the later movement of the Midland Railway Company in the abolition of second class. The result is now discernible in the fact that on the six chief railways of England, where six persons travel first class, and ten second class, seventy-seven travel third class. The above table reveals the fact that there is a difference in the proportion; thus the Great Northern carries only half as many passengers as the North-Eastern, but it has more first-class passengers; and the Great Western, with fewer passengers than the London and North-Western, has fewer first class, but a very much greater number of second-class travellers. It may be added, too, that from all the above the number of season-ticket holders is excluded, but since the extension of the issue of season-tickets to the third class, the tendency of travel known amongst ordinary ticket-holders is also evinced here.

Another interesting series of tables might be drawn, showing the railway receipts from the various classes of traffic, and without giving in detail the statistics for the whole of the companies above named, we select two illustrative companies, and give them as under, the figures being for the same period of six months:—

	First Class.	Second Class.	Third Class.
	£	£	£
London and North-Western	322,667	239,985	1,328,321
Great Northern ...	105,249	82,710	467,853

And although, as before, there are differences of detail, the principle is as stated,—the great bulk of the receipts being drawn from the third class, the first class contributing from a fourth to a seventh of the whole, the second class yielding from a fourth to a ninth of the gross receipts, and the remainder being contributed by the third class. In the case of all companies we have named, the first-class traffic was stationary or declining during the last half-year, as compared with previous corresponding periods; in every case, with one exception, the second class shows a decreasing yield comparatively, and the increase on every line is given; or the decrease in the traffic is lessened by the results of the working of the third-class traffic.

EXHIBITORS AND PATENTEES AT THE EXHIBITION OF 1878.

INTENDING exhibitors at the Paris Exhibition of 1878 will be glad to hear that it is officially announced that a committee is about to be formed for the purpose of considering the many complicated and vexatious legal difficulties connected with the rights of patents, not only of Frenchmen, but of foreigners.

In reviving the law of the 23rd of May, 1868, the Government has wished to protect, in an efficacious manner, the artistic, literary, and industrial property of the objects sent to the Exhibition; but how delicate and difficult are the questions which the application of special legislation raises with regard to patents and trade-marks, generally so badly understood even by those directly interested. And would there not be room for fear, if these latter had not at their disposition the disinterested counsels of a number of men accustomed to deal with questions of this nature, that the exhibitors would be at the mercy of unscrupulous men of business, who would speculate without fear on the ignorance of strangers only slightly acquainted with French manners, customs, or even the language?

At the Vienna Exhibition an international congress was formed to study these grave questions. Every one must feel of what importance would be, from the point of view even of the perfecting of the protective laws of international property, the creation, under the auspices of the French Government, of a committee composed of eminent men, whose opinions, acknowledged by all the inventors who will come to the Exhibition of 1878, would form a precious collection, and would settle many vexed points of jurisprudence.

But in the protection of works of the intelligence, the securities to be assured to material interests must not be lost sight of. The general regulations contain no dispositions relative to insurance against fire and other accidents; on this point all liberty is left to the exhibitors, who are in no way obliged to submit to any obligation other than the observation of the rules of the police. These considerations suffice to show all the services which can be rendered, either to the State or to the public, by the institution of a committee, combining jurists versed in the study of comparative industrial legislations, engineers familiarised with questions of industrial property and a certain number of representatives of commerce. Such a committee will be in the best condition to organise a gratuitous service of authorised information, capable of serving as a guide to exhibitors and manufacturing capitalists, or their representatives in Paris.

M. Krantz is somewhat embarrassed by the official communication from Germany that the Government intends to take no part in the forthcoming Exhibition, and as many German manufacturers are very desirous to be exhibitors, their applications for space fail in reaching any appointed authorities, as it is now very generally understood that all communications relating to the Exhibition must be made through the commissioners, royal or otherwise, that the Governments of the world have long since appointed. This difficulty with regard to Germany will probably be overcome by application for space going through some friendly source, which practically will give those Germans who have anything worth showing the opportunity they desire; but it is to be regretted, perhaps, that the usual paraphernalia and consequence of a commission, with its costly attributes, will not take a conspicuous place in Paris in 1878.

ARCHITECTURAL NOTES, BY AN IGNORAMUS.

THE REIGN OF THE POINTED ARCH.

In considering Mediæval styles of architecture, it is natural to direct one's attention chiefly to the ecclesiastical examples, these being far more abundant and magnificent than the secular remains existing, and exercising also a far more powerful effect on the imagination. The only exceptions to this are to be found in the Town-halls of Italy and the Netherlands, memorials of the municipal grandeur which was attained at an early epoch of Modern European history, and, most important of all, in our own Windsor Castle. We do not forget the ruined castles of France, Germany, and the British Islands; but the military style is now completely obsolete, unlike the Ecclesiastical, which has taken a fresh start, and retains as strong a hold on the popular taste in the nineteenth century as at any former period. One of the features of the subject which has the most enigmatic aspect in any extended study of it, is the sudden appearance of similar designs about the same time in countries widely removed from each other. This, however, is explained at once if we consider the universal presence and wide-spread ramifications of the Romish Church system, and the constant intercourse which was maintained by the clergy of even the outlying parts of Europe with Italy and the intervening countries of the Continent. There is no reason to doubt that, at least, until the later period of the Middle Ages, clerical architects had the field to themselves. So Gundulf, bishop of Rochester, designed the White Tower in London, and his own cathedral on the banks of the Medway. So Archbishop Lanfranc, besides the churches of Caen, designed or restored that of Canterbury, which the Conquest had laid in ruins, and the four easternmost arches of the nave of St. Alban's, which are probably the very earliest architectural work (excepting William's Castles) attempted in England after the Conquest, and may at once be distinguished from the others by the rudeness of their architecture. They were erected about 1070. So Wykeham, 300 years afterwards, was the architect of Winchester Cathedral and Windsor Castle.

The origin of the pointed arch has been a fruitful theme of controversy. I shall content myself with observing that the most probable theory seems to me that which supposes it to have arisen from the intersection of two round arches, which at once gives us the First Pointed style. Examples of this mode of construction have been found in the remains of the early Assyrian buildings, though so rare that they might seem accidental. There is no evidence that it was ever much employed until the Saracen Arabs in the seventh century established their domination in Syria and Egypt, and introduced it in their mosques, of which a few are known to have been erected before the year 1000. The date and circumstances of its introduction into Western Europe were for long the standing puzzle of architectural writers; but steady and persistent research has gradually cleared away the mystery. I doubt whether there is any earlier example in France than the cathedral of Bayeux, which, having been ruined by fire, was restored by King Henry I. in 1106 and subsequent years.* The nave of this church presents a beautiful First Pointed triforium and clearstory, surmounting a ground-tier of round arches richly moulded, which is supposed to form part of the original edifice. The choir is Pointed throughout, of slightly later style, and the effect of the whole so satisfactory as to be surpassed by very few mediæval churches, in spite of the modern lantern which disfigures the junction of the nave and choir. With regard to England, no difficulty could ever have existed, if our architectural writers had been acquainted with the testimony of William of Malmesbury, who, in an invaluable passage of his "Gesta Pontificum Angliæ," written about the year 1120, speaks of the new style of church-building as coming rapidly into use,—"*Novus ille et speciosus modus ædificandi ecclesias.*" Nothing more distinct or definite could be wished for, since the words can only be explained of the Pointed style. This of itself goes far to show (taken in connexion with the date of Bayeux, which is ascertained from the records) that the new method was not the invention of Western European architects, but was introduced by the clergy who had accompanied the first crusading host to Palestine, and had seen the architecture of the Saracens. The Latin kingdom of Jerusalem was founded by the year 1100, and from that period the intercourse of the Occidentals with Syria was constant.

If, however, we are required to point to actually existing specimens of the twelfth-century Pointed, these will be found to be very few in number in our own country at least. Basel, in Switzerland, and Angers, in France, are admirable examples of the very earliest type, which in the English books is generally called Transition Norman, the point, at the intersection of the jambs of the arch, being just perceptible. Both may be confidently assigned to the early part of the twelfth century, and they present a striking example of that coincidence of design to which reference is made above, the low massive arcade, with its widely-splayed and plainly-moulded supporting piers, being the most conspicuous feature in each. To these may be added Magdeburg, in Prussia, of which a very charming feature is the number of busts of saints and heroes with which the arches and pillars are adorned. A more decided type of the Pointed style is found in the grand basilica of Notre Dame in Paris, and in St. Germain l'Auxerrois, which date from a later period of the century. In England, the choir of Chichester, erected in the last decade of the twelfth century, and the rotunda of the Temple Church in London, are the correlatives of this style. But the finest examples,—as Salisbury and Lincoln,—were not reared until the thirteenth century. We need not be surprised at this paucity of surviving examples, for the process of alteration and remodelling the edifices was seldom intermitted, until the Reformation came and introduced a new state of things. The great majority of the churches, for two centuries after the Conquest, continued to be built in the Round-arched or Romanesque style. Thus the nave of Norwich, which may be regarded as unique, from its triforium being loftier than the ground tier, and thus forming the principal feature of the interior, though the effect produced can hardly be recommended as very happy, was completed by the year 1135, and rebuilt as we now see it towards the end of the fourteenth century. In the twelfth, no more pronounced example of the Pointed style can be mentioned than the choir of Glasgow Cathedral, which was finished by 1189. This we know from the fact that it was erected by Bishop Josceline, the date of whose death is given by the Chronicle of Melrose, which affectionately eulogises the munificence with which he adorned his cathedral. It is, therefore, probably the earliest example of the true Pointed style in Britain.

Here I may be permitted to suggest that the commonly adopted classification of ec siastical Gothic into First, Second, and TI Pointed, or Perpendicular, is inaccurate. two latter are certainly not identical. Y Minster, of which by far the greater por undoubtedly belongs to the fourteenth cent is not more decidedly Pointed than Glas Cathedral. If it is described as Second Poin and Decorated,—and it always is so,—how we to describe Cologne and Amiens, in wh we see the culminating glories of the Poin style, and Westminster Abbey, which built after the model of the latter? dently these are the true Third Pointed, and Perpendicular, of which England possesse monopoly, marks the unhappy period w Gothic architecture ran to seed. There is fact, no such thing as an exact classificatio style by date, though it is so often preten that the style of a building will enable yo once to assign its date. Amiens was erected a few years' time, in the middle of the thirtee century, and Westminster immediately af wards; York Minster, though nearly a cent later, exhibits a far earlier phase of the Poin style.

In comparing our insular Gothic with Continental style, the truest of Britons can cover but scant cause of exultation. The sence of correct proportion in our great churc arising from their miserable lowness as c pared with their length and breadth, is t most defective feature. The central part the nave of York is about 20 ft. wider t that of Amiens, yet the former is only 9 high, whilst the latter is 150 ft.* To give a thing like the effect of true proportion, the n of York ought to be at least 130 ft. high. must be confessed that French architects so times soared into extravagance. Beauvais which only the choir was ever completed 170 ft., and the excessive height is as painf disproportionate as the excessive lown Throwing back the head at the risk of di cating the neck, we vainly strive to obta satisfactory view of the vaulted roof. Anot matter in which our Mediæval architects w lamentably defective was window-tracery. the true flowing style, or the Flamboyant, as French call it, we can hardly be said to have old examples at all.

The roof is a feature which has lately b fully treated in the columns of the *Builder*. Continental churches it is sometimes so ov done as absolutely to dwarf the substructu Conspicuous examples of this are St. Stephe in Vienna, and Notre Dame in Amiens. In latter case, the interior arrangement is a gr curiosity. Ascending to the top of the st vault, more than 150 ft. above the floor of church, we find a perfect forest of timber, posed in tripods and double tripods, propp the roof-beams. The present leaden cover is not older than the early part of last centu I hold firmly to the doctrine that the only coming cover for any important church is old flagstone roofs. Not only is it the sole co ing which harmonises with the fabric, but i much cheaper than lead, which is continua getting out of order, and it offers a guaran against destruction by fire,—the sure fate every building to which plumbers obtain acc

* We do not bind ourselves to admit all our correspondent's dates.

THE CHURCHES OF WISBY, GOTLAN

At a meeting of the Architectural Society the Archdeaconries of Northampton and Oakh on the 11th ult. (already briefly noticed in *Builder*), Sir Henry Dryden gave an account a visit to the churches of Wisby, Gotland. Henry explained that it was about the year 1 that Gotland became important on account of commerce introduced into it. About the per that Wisby became important, Lubeck began look up, and when Lubeck became important, made a league with Hamburg and also w Wisby, and this, Sir Henry said, accounted the Hanseatic League. The Swedes appeared have become commercial at a much earlier per than the Danes and Norsemen. The latter oc pied themselves with plundering, but the Swe were not quite so bad, and taking up this par Sweden, the commerce came into Wisby. earliest date given, curiously enough, was date recorded for three of the churches, 1046, the latest date being 1200. Wisby was more than a mile long, and not much more t a quarter of a mile broad. There were origin

* 141 French feet; but the French foot is five-sixth an inch longer than the English.

eighteen churches, of which eleven now remained, ten within the town and one outside. First, Sir Henry briefly dealt with St. Nicolaus Church, which was founded in 1097, but the greater part of which was fourteenth-century work, although there were considerable portions of early work to be found mixed up with the other. It was a monastic church, and there are old houses remaining on the south, and cloisters on the north. It was upwards of 195 ft. in length, and in speaking of this church, Sir Henry Dryden explained that a great deal of beautiful marble was used in all the churches, this being a natural feature of the island of Gotland. Amongst other architectural points of the church of St. Nicolaus, the lecturer said it had a long nave and two aisles, but no tower. Of St. Maria, founded in 1190, the greater part remained. This was the only perfect church, but very curiously it was unsymmetrical. It consists of nave, aisles, western tower, and two other small towers at the junction of the chancel, and then a very short chancel, square-ended. It was 171 ft. 6 in. in extent. The whole foundation of the church was as in 1190, with the addition of a very small rich ante-chapel. There were no peculiarities that Sir Henry knew of in the mouldings, and they would get the same in England. Almost all the early doors in Wisby above the capitals had continued what was very nearly the same form—nothing more or less than the carrying up above the arch the mouldings that they had got below. He would like to know if any one had seen such a thing elsewhere. The abacus did not run along the front of the arch, but was stopped off sideways, and he should like information upon that. The church of St. Gertrude was 61 ft. 3 in., and was built by the inhabitants of the Netherlands, where St. Gertrude was very much venerated. This is the smallest of all the churches, but is semicircular inside, and has square ends outside. That is a peculiarity upon which he should be glad to have information. The only places that he knew of were St. Margaret's Chapel in Edinburgh, and he thought at Romsey Abbey, and something like it in Germany. He should like to hear of any other instances that could be given. The church of Heligands, or the Church of the Holy Ghost, was a very peculiar church, 83 ft. in extent. It was singular from the fact of being octagonal in plan. There was no church exactly like it. Like some churches in Germany, it had the peculiarity of being double. In the vault of the lower church was an aperture about 7 ft. wide, communicating between the upper church and the lower church. The upper church was vaulted also. The roof was united by a lot of gables running into a centre. St. Clemens (145 ft. in extent) was the only one out of all the churches that inclined northward from true east. St. Clemens was a very common form. It consisted of a nave and two aisles. St. Hodolph was very much [ruined indeed. It consisted of a nave and two aisles, and a chancel with western tower, but only part of the western tower remained. The next church was St. Drotten, founded in 1086. Drotten means the Lord, and the explanation given was that it is equivalent to Christ's church,—the Lord's church. It consists of a nave, two aisles, and western tower, and a chancel with apse, the latter being semicircular. The length of St. Drotten is 118 ft. The next church, St. Lawrence, was one he should like information about. It was a church of very different form to any he had ever seen anywhere. It was a cross church, only the angles are filled up with a sort of aisles, and there are just four pillars. He should have told them that all these churches were vaulted. Never were there such people for vaulting. So good and so hard was the stone, however, that the vaults had not pushed the walls out. The church of St. Lawrence is vaulted in four divisions, and its total length is 104 ft. The church of St. Catharina was a Franciscan church, and he thought it rather singular that he did not recollect coming across a Franciscan church in England. This particular church consisted of nave, two aisles, and had a western tower. It was the most complicated church of all those in Wisby, having been altered and re-altered. This church has the only crypt in Wisby, and has a three-cornered apse like St. Nicolaus. St. Hans was a church which neither he nor anybody else could make out the shape of. He should presume it had a tower on the north side of the nave. On the north was probably some chamber or other, and on the south side of the nave some very large vaulted chambers. It must have been one of the largest churches in the whole island. That, said Sir Henry, completed the whole of the ten churches in the town, and they came to the very curious church outside, built by the Russians, called St. Goran. This church had a bisective nave, and in that respect it was like the churches of Hannington in Northamptonshire, Cathorpe (Lincolnshire), and a church in Kent. Sir Henry humorously remarked on a partition arrangement in the church of St. Goran, by which the people entered by two ways, and said at first he thought this was to prevent the men and women from fighting. He remembered, however, that this was an hospital church. The church had many odd points about it, and was a very interesting edifice. There was no single church in Wisby that was regular. A peculiarity of the doors in Wisby was afforded in the fact that they generally carved the capital that came above the shaft, and left uncarved the capital that came above the jamb; and another singular thing was that the round doors had flat tympans.

THE MANCHESTER CORPORATION SANITARY WORKS.

THE members of the Manchester Town Council have recently inspected the various works established by the health committee during the past few years in Oldham-road and Water-street. The establishment is a comparatively new one, having been started within the past four or five years. It is pretty generally known that the council have decided to supplant the midden system, which has up to the present generally prevailed, with what is best known as the box and pan system, and the new plan is being now carried out at the rate of 200 per week. Of course, the change necessitates a vast amount of labour. The necessary appliances,—that is to say, a wood frame, requiring some considerable construction, and the pans, have to be made, one for each closet. The work of making the cinder-sifters is carried out at the Oldham-road yard, where workshops have been erected and fitted with machinery which, in a great measure, has been designed by Mr. Whiley. In addition to the workshops, there are also in the yard a mortuary, more especially designed to receive the remains of persons dying in common lodging-houses or in the streets. In another part of the yard are disinfecting ovens. An important work carried on at the Oldham-road yard is the making of mortar from the refuse obtained from ashpits, from which, before it is brought to the mortar-mill, all objectionable matter has been removed. The cost of material is little, or next to nothing. From the collections from the ashpits sufficient cinders are obtained to supply about a score of furnaces with fuel, and at these works and those in Water-street to propel engines to the united strength of 140-horse power. No less than about 250 tons of mortar are made during a week. Another work carried on at the Oldham-yard road is the manufacture of disinfecting powder.

At the more extensive works which the health committee have established in Water-street, mortar, disinfecting powder, patent manure, and various other commodities are produced from the refuse of ashpits, slaughter-houses, and other similar places. The committee are, by the introduction of machinery and appliances, enabled to deal with the matter as it is brought to the yard, and now there is seldom to be seen more than a few loads of rubbish on the premises; while a few years ago it was (according to the *Manchester Courier*) not an unusual thing to see 20,000 tons of refuse lying in the yard at one time waiting to be put through the process. While the members of the council were at the works several of the night-soil vans arrived, and supplied a most forcible reason for an attempt to destroy the nuisance* as quickly and as effectually as possible. It is estimated that there are about 44,000 closets within the area under the jurisdiction of the Health Committee, and the amount of material collected each week is over 3,000 tons. It may be mentioned in connexion with the new system that the saving in fuel by the adoption of the cinder-sifter is said to range between 6d. and 1s. per week per house. An analysis of the 3,000 tons of material which every week is collected by the servants of the Health Committee gives one ton of paper, three tons of rags, two tons of dead animals, 17 tons of stable manure, 33 tons of old tin and iron, 60 tons of refuse from slaughter-houses and fish-shops, 80 tons of broken glass, pots, and bottles; 100 tons of vegetable refuse, old door-mats, floor-cloths, and straw mattresses; 1,230 tons of fine ashes, and 1,400 tons of cinders.

* Formerly referred to in the *Builder*.

The committee employ, in order to deal with this large amount of material, a staff of 500 workmen, including men in various branches of trade; and there are also about 130 horses and vehicles used. Some idea of the work which the committee undertake may be formed when it is stated that during the year ending with last August 7,000 closets were re-constructed on the cinder-sifting system, making with those previously completed, a total of 24,000, and leaving about 18,000 of the old middens still to be altered. From the old-fashioned middens 111,534 tons of nightsoil were carted, of which 63,581 tons were taken to the tips. From the 24,000 new closets 48,607 tons of refuse were removed; and from slaughter-houses, fishmongers', and tripedressers' premises, 3,275 tons. These figures show an increase of 16,131 tons over the total quantity removed in the previous year, and of 32,461 tons over the quantity in years 1873–4. There are now 66 vans employed in conveying the contents of "receptacle closets" to the Water-street depôt. The 48,607 tons taken there in the course of last year were made up as follows:—Excrementitious and liquid matter, 34,000 tons; rubbish, 14,587 tons. The material taken from both old and new closets is removed from the city within twenty-four hours. Of the total quantity taken from the closets, 63,775 tons were sent into Lancashire and Cheshire by boats; 2,960 tons by the Lancashire and Yorkshire Railway into the East Riding of Yorkshire, and 8,564 tons by the Manchester, Sheffield, and Lincolnshire Railway into the North Riding, and into East Cheshire; 7,269 tons were removed from the yard by market gardeners and farmers, 1,119 tons were converted into "concentrated manure," 7,425 tons made into mortar, and 6,240 tons used as fuel or reduced in the furnaces to 2 000 tons. The 2,000 tons of material which passed through the furnaces, together with fragments of broken bottles, &c., were made, with the proper proportion of lime, into mortar, of which 9,000 tons have been sold. The refuse of which the mortar is made was formerly carted to the tips at a cost of not less than 1s. 6d. per ton.

During the year there have been constructed at Water-street eight "carbonisers," one "double destructor," and one "concretor." By means of the carbonisers 15 cwt. per hour of refuse undergoes a process of reduction, and as they are working 144 hours per week, 108 tons are weekly reduced to 47 tons, consisting of 21 tons 14 cwt. of fine charcoal, and 25 tons 6 cwt. of rough material,—broken glass, crockery, iron. One ton 3 cwt. per hour can be burned in the "destructor," and as the apparatus is also at work 144 hours per week, 165 tons of the rubbish are weekly reduced to 41 tons. The increase in the quantity of refuse to be dealt with appears to be about 16,000 tons per annum. From 700 to 800 men are employed on the various works in the department, and the committee possess 140 horses, 106 railway wagons, and 150 other vehicles.

HALIFAX GRAMMAR SCHOOL COMPETITION.

THIS competition, which was advertised in our columns a few weeks ago, has been decided. The first place has been given to Messrs. Leeming & Leeming, motto, "Pecksniff"; while Messrs. Jackson & Fox, distinguishing mark, "Portcullis on a Shield," receive the second premium, 20*l.*; and Mr. R. Horsfall, motto, "Elizabeth Regina," the third premium, 10*l.* All the above gentlemen are of Halifax. The circumstances of this competition are of the usual unsatisfactory description. The governors appear to have had hazy ideas of their requirements, and issued somewhat vague conditions, which must have sorely troubled the competitors. Thirty-six designs were sent in. There was a sort of understanding that professional assistance was to be obtained in examining the designs, but this was not done, and the awards have been hastened to a conclusion in an almost indecent manner. The committee of selection, on receiving the designs, proceeded to lay down more definite conditions for their own guidance: these ought to have formed part of the instructions, as a very small number of the designs happened to comply with them. The number was then rapidly reduced, and the final award made. We cannot, of course, question the decision, and must presume that it has been for the best, but cannot help regarding it as singular that all the awards are made to local architects. The designs are not to be exhibited, and so the matter ends.

NEW PULPITS.

Salisbury.—The new pulpit in St. Thomas's Church, Salisbury, is completed. It was designed by Mr. G. E. Street, R.A., and executed by Mr. Earp. It is of Caen stone, the steps being of Portland stone. It stands on a massive base, is hexagonal on plan, and corresponds in style with the architecture of the church.

Southampton.—To complete the restoration at St. Lawrence's Church, Southampton, a Bath-stone pulpit has been erected to replace the old wood structure, which was of mengre design. The new pulpit is octagonal on plan, with base and pedestal. At each angle of the octagon are three-quarter columns with moulded caps and bases, the interspaces being sunk, moulded, and perforated, with cusped heads and sunk spandrels, above which is a frieze and heavily moulded cornice. The pulpit-desk is of stone, moulded, and enriched with carving. It is approached from the chancel floor by Portland stone steps. The pulpit was executed by Messrs. Dacombe Brothers, from a design prepared by Mr. J. O. Parmenter, architect, Southampton.

NEW BARRACKS.

Taunton.—Taunton barracks are to be enlarged, in view of the 34th depôt brigade being stationed there. The cost of the proposed alterations is estimated at 30,000*l.*

Northampton. — Northampton having been fixed upon as one of the new military centres, the work of building new barracks adjacent to the old cavalry barracks, which are also being altered, for the permanent location there of troops of the line, has progressed rapidly of late. The old drill-ground in the rear of the quarters which face the Barrack-road has undergone a great change. On each side and across the lower part extensive blocks of buildings have been erected, still leaving a large quadrangle as an exercise-ground. Passing by the old officers' quarters, a large and imposing block of buildings has been erected for the accommodation of 120 privates and four sergeants. At right angles to this building are two blocks for the accommodation of thirty-one married soldiers, each of whom will have a separate living-room, bedroom, and a kitchen and scullery combined. The bedroom doors open to a corridor, common to all, which is reached by a flight of stone steps. The soldiers' wives have not been forgotten, for abutting upon George's-street is a new laundry, which will be fitted up with every convenience. Crossing the quadrangle in a diagonal direction to the north side, the visitor comes in front of the sergeants' mess. This is a much smaller block, consisting of a large mess-room, with larder and store-room, together with a large kitchen fitted up with a well-furnished range and boiler; and a scullery, with racks, sink, and all the necessary requisites for such an establishment. At the opposite end of the building is a reading-room and library, with recreation-room close at hand, as well as a bar where coffee and refreshments will be served. The buildings also include store-rooms for bedding materials, &c., on the north side, the building of a new guard-room in the front, with the conversion of the old one and a stable into offices, and the remodelling of the canteen. These complete the whole of the new works included in the contract of Mr. Loveday, of Kibworth, which is upwards of 14,000*l.* There still remain the old cavalry or artillery barracks, and the contract for the alteration of these, at a cost of about 3,000*l.*, was taken by Mr. Ireson, of Northampton. Gas and water will be laid into the whole of the buildings, and the total cost, ultimately, will not be less than 20,000*l.* The works are being carried out by Major Lempriere, R.E., who has intrusted the continuous personal supervision of them to his deputy, Mr. R. Beevor, of the Royal Engineer department.

The Richmond Water Supply.—Owing to the threat of the Southwark and Vauxhall Water Company to cut off their supply to Richmond unless terms were come to by the 13th inst., increased exertions have been made by the Richmond Water Supply Committee (the Select Vestry) to protect the town against such a calamity, and in a circular issued by their direction to the inhabitants they say that, although the artesian well at the parish water-works is not yet completed, the committee have made arrangements to furnish from their existing artesian well and other sources, an ample supply of pure water on moderate terms.

CHURCH OF THE HOLY ANGELS, HOAR CROSS.

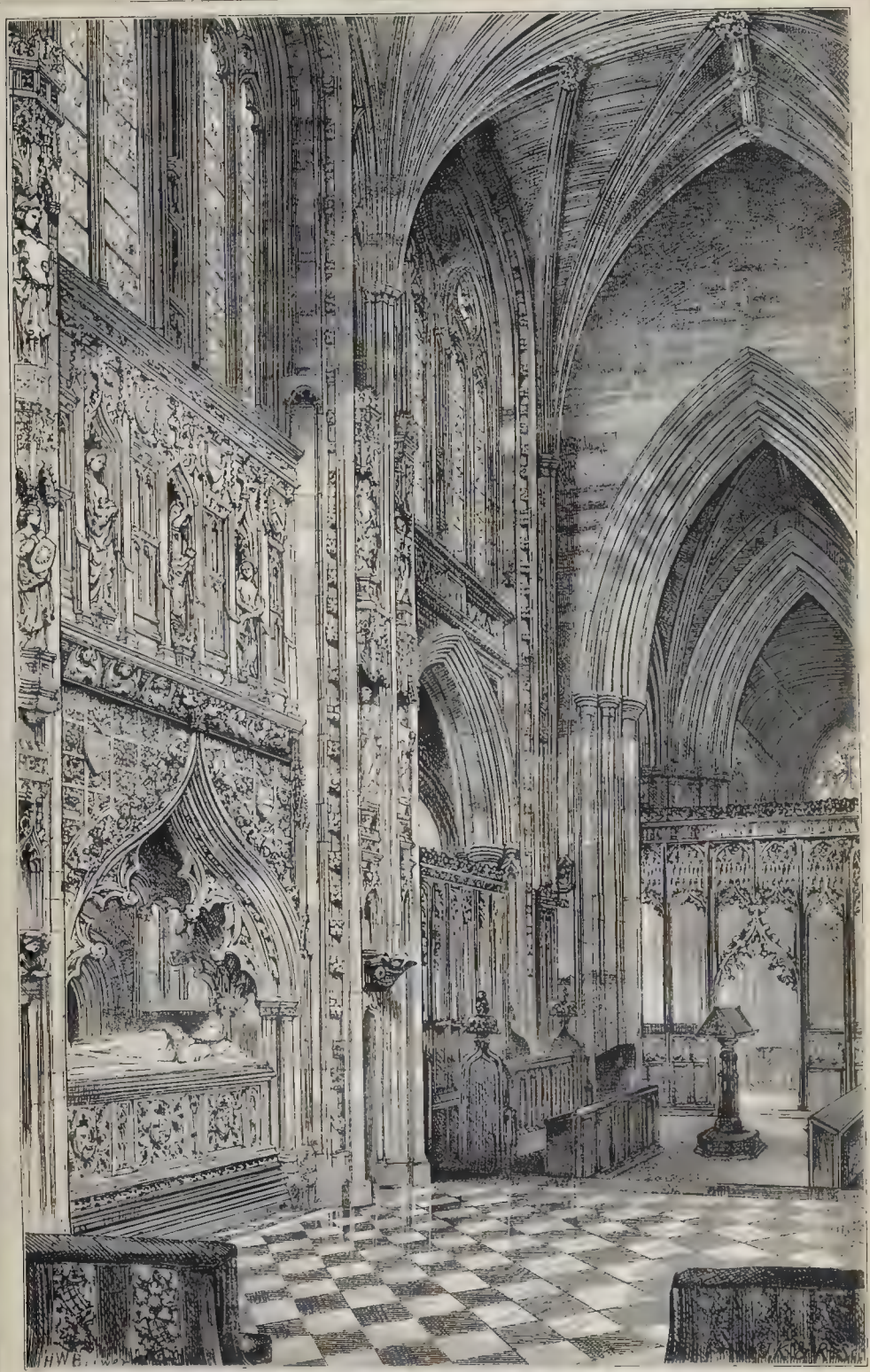
HOAR CROSS is a small hamlet in the parish of Yoxall, in Staffordshire, about eight miles from Burton-on-Trent, and ten from Lichfield; it is pleasantly situated upon the top of one of a range of hills. A few years ago it consisted simply of a rambling old house called "The Hall," and one or two cottages belonging to the dependents of the Meynell family.

In a field adjoining the house, which is called the Chapel Croft, the foundations of an ancient building have been found. This, together with the name Chapel Croft, has led to the supposition that a small church or chapel originally stood on this spot. Some few years ago the late Mr. Hugo Meynell Ingram determined to make Hoar Cross, which had formerly served as a kind of shooting and hunting lodge, into a country residence. Finding the old hall too modest an edifice for the purpose, he commenced the new hall, which is a stately mansion in the Elizabethan style of architecture, from the designs of Mr. Henry Clutton. Mr. Hugo Meynell Ingram did not live to see the completion of his house. The church which is the subject of this notice was commenced four years ago by Mrs. Meynell Ingram, as a memorial of her husband. It is situated upon a plot of ground adjoining the gardens of the new hall, and is one of the most sumptuous and carefully carried out churches of modern times. It is constructed entirely of red stone, chiefly from Alton and Runcorn, both within and without; it is all worked in ashlar. It consists of a lofty choir, flanked by a chantry-chapel on the south and sacristies on the north side; a massive central tower; transepts; and a short nave with aisles. There are porches both to the north and south aisles of the nave. The choir has a lofty clearstory, and is considerably higher than the nave and transepts; in fact, the idea of the architect has evidently been to revive one of the small minster churches of the Middle Ages, like Broadwater or Poynings in Sussex, Shottesbrook in Berkshire, or Jackley, near Oxford, and this idea is carried out through the whole building. Thus the choir is considerably longer than the nave, and is treated in a much more elaborate manner. It is also vaulted in stone; while the remaining portions of the church, with the exception of the tower and south porches, are covered with timber roofs. The interior of the church is very striking, and the massiveness and solidity of its construction, together with the rich warm colour of the stone, gave it quite the effect of an old building. The design, however, especially that of the chancel, shows much originality. The nave is separated from the aisles by two richly-moulded arches on either side. The roof is rather simple in design, but is constructed entirely of oak. Four very massive arches, resting upon moulded piers, support the central tower, which is vaulted in stone. The transepts have roofs of similar character to the nave. The choir is internally divided into three bays, and is richly vaulted. The clear-story is lighted by six large windows, and the vaulting shafts are filled with canopied niches and panelling. The great east window is of six lights, with rich tracery. The central mullion is very broad, and is ornamented with a series of small niches, with figures on its inner face, and externally with panelling. The western bay of the choir has an elaborately moulded arch on either side: that on the south side opening into the chantry chapel, and that on the north into an aisle extending the length of two bays, and forming a choir-vestry, and organ-chamber, which is very elaborately treated, the case being arranged as an architectural composition, enclosing the instrument after the manner of the ancient organ-cases existing at old Radnor Church in Wales, Strasburg Cathedral, St. Anne's at Augsburg, and Nordlegen in Germany, and the cathedral of Amiens and Perpignan in France. The opposite side of this bay is occupied by the monument to Mr. Hugo Meynell-Ingram. It consists of an altar-tomb of alabaster, panelled, and bearing a marble effigy, by Mr. Woolner, of the late Mr. Meynell-Ingram. This is placed beneath a richly-cusped and carved ogee arch, flanked by pinnacled buttresses; above is a cornice, composed of angels holding scrolls; and over this again three canopied niches, divided by panelling, and containing statues of angels, St. Michael being in the centre niche. The spandrels over the archway are filled in with diaper patterns, composed of the leaves and flowers of the rose. A double row of canopied niches, filled with statuettes of angels, holding emblems of the Passion, sacred monograms, &c. form a kind of border to this architectural composition, and give it an effect somewhat similar to that produced by the monument of Henry V. at Westminster Abbey. There is to be an ornamented iron grill in front of this monument. The most eastward bay of the choir is raised two steps above the rest, and has a carved sedilia on the south side, and an arcade on the north. The east end forms a very elaborate termination to the choir. The east window is set high up within a deeply-moulded arch, with niches running round its soffit, and below this is a reredos, composed of small niches, divided from each other by delicate pierced tracery and pinnacled buttresses. The portion over the altar is enclosed within a square, in the centre of which a cross is formed by the spaces between the niches, and upon this a metal cross, with enamelled emblems, is fixed. The niches enclosed within this square space are filled with figures of the four Archangels, St. Michael, St. Gabriel, St. Raphael, and St. Uriel, and angels holding emblems of the Eucharist. The figures throughout the whole church are very good in design. Opposite the south entrance is an especially good figure of St. Michael, holding the scales. Outside this square space are eight niches, treated in rather a bolder style, holding statues of the fathers of the Church,—St. George, St. David, St. Andrew, St. Patrick, St. Chad, and St. Augustine of England. The altar, or communion-table, is of oak, covered by rich antependia of silk and velvet. The choir-stalls are all carved in oak, as are also the very elaborate rood-screen and side-screens to the choir. The chantry chapel is entered from the south transept, through a richly-moulded arch, in which is an oak screen, composed of mouldings and tracery of delicate workmanship, and from the chancel, by a small doorway pierced through one of the choir-piers, the choir and altar are visible from the chantry chapel, through the archway, over the monument, and also through a large hagioscope, pierced through the first pier from the east. The font is of stone, and is placed near the west end of the church; it is eventually to be furnished with a lofty canopied cover. The pulpit is of oak, and is movable. The porches are provided with stone benches; that on the south side is vaulted and arcaded in a very ornamented style. There is a great deal of rich stained glass in the church; all the choir windows, and the three west windows of the chantry chapel, are filled with figure subjects, and all the other windows in the building have ornamental patterns in their traceries. The windows on the north and south sides of the sanctuary contain figures of the four fathers of the west, and the four fathers of the east. This glass was all executed by Messrs. Burlison & Grylls, under the superintendence of the architects of the church, Messrs. Bodley & Garner, of South-square, Gray's-inn. The whole building was carried out without a contract, and no builder was employed. Some portions of the work, especially the choir, are of such an elaborate description, and the detail is so varied, that it would have been next to impossible to have carried it out by contract. In fact, the whole of the works have been executed under the personal supervision of the architects, assisted by their able clerk of the works, Mr. Peed. The church has been entirely built at the expense of the Hon. Mrs. Meynell Ingram. The style is English Gothic, of the fourteenth century,—a local type has been followed. The church was opened by the Bishop of Lichfield last Easter.

An Overcrowded Workhouse.—The *Staffordshire Advertiser* says:—"After having spent in mending the Old Workhouse as much as would build a new one, the guardians at Wolverhampton have been fairly warned that such a system of false economy must cease. The indictment of the representative of the Local Government Board against the bundle of ill-jointed edifices called 'the Wolverhampton Workhouse' is a heavy one. We are told, 'It is difficult to imagine a collection of buildings less fitted for their purpose, or which offend more seriously against all established laws of health;' that 'the ventilation of the whole of the buildings is defective;' and that 'there is not a foot of space available within the walls on which it would be safe to build; the buildings are pushed to the very verge of the limits of the ground on which the workhouse stands, and children, imbeciles, and sick are packed together in a way that does not appear to me to be defensible.'"



CHURCH OF THE HOLY ANGELS, HOAR CROSS.—EXTERIOR, FROM THE NORTH-EAST.



CHURCH OF THE HOLY ANGELS, HOAR CROSS, STAFFORDSHIRE.—MESSRS. BODLEY & GARNER, ARCHITECTS.

THE COTTAGE HOMES OF ENGLAND FROM A SOCIAL POINT OF VIEW.*

HAVING pointed out some of the difficulties under which the cottages in the outlying districts labour in comparison with those situated nearer to the "house," I propose now to inquire into the reasons why the homes of the latter prove more attractive to the passer-by and more engaging to the visitor. This, I believe, may be clearly traced to natural causes.

Every lord of the manor is desirous that the cottages near his mansion shall be in keeping with it, and present an attractive appearance. They are in the full view of his visitors as well as being always under his own eyes, and anything bordering upon a hovel would not, of course, be tolerated in such a conspicuous part of his estate. They are purposely designed to lend an additional charm to the manor, and to gratify the senses of the wealthy proprietor and his numerous guests. The gardens must be tastefully laid out and neatly trimmed. There must be nothing to offend the eye, and everything must be scrupulously clean. Any neglect of these provisions is sufficient to draw down upon the head of the offender a vigorous rebuke, either from himself, or his agent who generally resides in the village.

The inhabitants of these villages themselves show signs of this supervision. In their character and general deportment its influence is plainly to be seen. There is but little slouching; every effort is made to look tidy; all seem to be more on the alert than the outsiders, and lack the careless look so peculiar to them. The result of this close inspection is to make the cottagers take a pride in the external appearance of their cottages, and vie with each other in wholesome rivalry. It is customary for the minister to call upon them frequently, and when the family is at home they are subject to visits from squire and ladies. Never knowing when they may expect any visitors, they labour to keep their homes as neat as they possibly can, so as to be prepared for any emergency. Their rooms, with simple furniture neatly arranged, with blinds and curtains of snowy whiteness, are rendered charming by the mere additions of potted flowers in the windows, and a few cut flowers arranged prettily on the table. They show what can be done, with limited means, towards beautifying a home, if persons are so disposed.

Many of these cottage homes of England would put to shame numbers of more pretentious dwellings. How cheerful, too, when the evening is gently overshadowing all things, and lofty trees intensify the settling gloom, to see the cottagers, who have given over their gardening, collect in groups, and indulge in a pleasant chat before they go in doors!

There may be heard occasionally the snatch of a song, or the sound of some musical instrument, while the supper is being prepared; but sound after sound gradually dies away, and by an early hour,—

> "Sleep and oblivion
> Reign over all."

This is equally true of cottages situated in the vicinity of convents. Under adverse circumstances (by this expression I mean the remoteness from villages or towns previously alluded to, with the disadvantages accompanying such seclusion), it is remarkable how clean,—how exceptionally clean,—are the humble cottages, and how tidy and cheerful are their inmates.

This is also owing to the constant visiting, for which they have to be prepared; tending to remind them that, although shut out from intercourse with the many, it is necessary to win and retain the approbation of the few, and in no other way can this be done so effectually as by uniformly presenting a prepossessing appearance and an orderly home. Their world is but a little one, it is true; but then it is kind and appreciative.

Very different is the lot of the poor isolated cottagers. It is theirs to plod on from one week to another without any ray of hope or prospect of comfort to throw a spell upon their toil. Before the sun rises, they must needs be stirring, and when they return to their cottage what enjoyment is *there* for them? Whilst the husband has been at a distance in the fields, his wife has been hurriedly going through some of the duties entailed by a family, and this, with her own labour in the fields, leaves but very little time, if any, for the adornment of the person or the improvement of the cottage.

If the wife were a most cleanly woman, she would have some difficulty in investing such an abode with an air of cleanliness, and if, by dint of unremitting labour, she succeeded in transforming it, what reward would she receive for so doing? Would it be appreciated? And by whom? With the dawn, man, wife, and children are away, and not till evening do they return. What matters it to them whether it is clean or dirty? It is but a place to sleep in, and with it they are content. It will answer their purpose, for being reared in similar ones they have no thoughts beyond.

When wives do *not* accompany their husbands to work, the cottages are not particularly striking either for tidiness or cleanliness. It would seem as if life had no attraction for them, and that such things as comeliness and cleanliness were but vanities—things to be dispensed with, and in no way relating to them. They may do for those who are better housed, for those who possess greater advantages, and are brought under the notice of observant eyes. Who notices them? Who visits them? What is the inducement held out to them to do differently? Week after week, year after year, their lives pass by in one dull unvarying round of toil, and they unconsciously acquire that vacant, listless look which tells that isolation from their fellows has crushed their spirits, and made them careless of themselves and their homes.

The cleanest persons, under such disheartening circumstances, must eventually lose their self-esteem, and grow unconcerned about the appearance of their homes.

It would be well if the system of visiting could be more extensively adopted.

Its advantages have been pointed out in the case of the village, and it would not only have a beneficial effect in stimulating the cottagers to take a pride in their homes, and have them always fit to receive a visitor, but it would also make them feel that there are some persons who take an interest in their welfare, and are desirous of improving their lot.

The lord of the manor, when at home, occasionally visits some of his cottagers a little distance away, and if he were but to extend his visits to the outskirts of his estate, and speak a few words of kindness to the cottagers there, they would have their effect, whilst the state of their cottages would appeal to him so powerfully on their behalf that the process of improving his estate would be materially forwarded.

The real state of these cottages is, unfortunately, not revealed to him by his agent, and hence they remain to cumber the ground, and keep the tastes and feelings of the cottagers at the lowest possible point.

Sometimes an ardent minister will do his best to visit them, but when the cottages are scattered over a wide area his visits necessarily resemble those of angels.

Religion is generally admitted to exert an influence at once exalting and tending to promote industry and cleanliness. Few, however, can read, and being situated miles away from the church, how can they attend it when roads are bad, rivulets are swollen, and pouring rain or winter's storms increase the difficulties.

What opportunities do they possess for learning its precepts or for feeling its influence?

Since, then, the squire and the minister, the only existing means of reaching the homes of all these poor cottagers, signally fail to do so, it is necessary to adopt one of two alternative schemes for the improvement of the social status of these cottagers.

One way of reaching their homes and kindling their interest in them is by appointing an agent to inspect them frequently, and give a report upon the state of the cottages as regards dilapidations, and upon the appearance of the interior of the dwellings as regards cleanliness, and the habits of the cottagers. Particulars as to the number of persons in the family should also be given in order to counteract the evils of overcrowding, which can be remedied only by transferring the tenants to larger and more commodious cottages.

Especial care should be devoted to the description of the sanitary appliances to each cottage.

In some, perhaps in most, of these secluded cottages, this last description would be a very meagre one. The sanitary requirements would be best learned by giving a truthful account of the miserable shifts the cottagers have had to make for the purpose of preserving some slight regard for decency. This frequent inspection could not fail to call the attention of the cottagers to their shortcomings, and to create a certain amount of pride in their domestic affairs, which would, by casual approbation, rapidly develope into a genuine liking for tidiness for its own sake.

These reports would also benefit them by bringing the state of their dwellings under the notice of the lord of the manor, and would constantly remind him of what he owes to the poor, and in many cases would speedily effect a change in their lot, for if the state of their dwellings were thus laid before him, it could not be that he would turn a deaf ear to such disclosures.

The poor cottager has as much right to a substantial, comfortable house as any other man, whatever his position may be. Very often his dwelling stands to him as part payment for his labour. All labour is noble, and its recompense should be commensurate. If, then, his cottage forms part of such recompense, he is justified in asking for a cottage worthy of the name, and for those conveniences which are absolutely essential to its proper working.

It may be that some would object to this inspection, and would regard it as being inquisitorial, although persons seldom object to what is likely to prove advantageous to them. It is quite open to an owner of property to have his houses inspected periodically, but whether his cottagers would take kindly to frequent visits made by his agent, partly to notice themselves, is questionable; for Englishmen of every grade possess in the depths of their nature a feeling of independence that ill-brooks any interference with their homes and liberties. That independence has asserted itself wherever the English race has worked its way, and in conjunction with their resolute will, has left its marks indelibly graven upon events that have passed.

It would still be open for him to insist upon having the cottages inspected, but if umbrage were once taken, the scheme would be defeated, for no improvement would be made by the cottagers, and things would remain in very much the same state, whilst an element of discord would have been introduced, of which there are not wanting those who would make the most.

If the subject were properly represented to them, and they were induced to see that these inspections were made for their welfare, and would tend to their advantage, it would soon be found that a perfect understanding existed between cottagers and agent, and oftentimes, in cases of sickness, his report would be the means of furnishing the sufferers with nourishing food and little delicacies.

The alternative scheme is to pull down the hovels, and build cottages in blocks (each cottage possessing its w.c., ash-pit, and other conveniences), and these cottages should be situated near the residence of the farmer for whom the tenants work.

By building cottages thus, the spirit of emulation would be introduced here also; and, under the farmer's supervision, cottages might soon be seen that would vie, in point of cleanliness, with those in the village at headquarters; but as the inhabitants of the latter chiefly consist of mechanics and gardeners engaged upon the estate, they enjoy larger incomes, and may consequently be regarded as the "Upper Ten." It would not, therefore, be reasonable to expect in the present instance so much furniture or so many little ornaments.

One point to be observed in designing these cottages is to provide as much sleeping accommodation as possible.

This scheme would be the more costly at first, owing to the expense of erecting new cottages, sinking wells, and other work required to make them tenantable; but when the cost of keeping the old huts in a proper state of repair is taken into consideration, it will be found cheaper in the end to pull them down, and replace them with substantial cottages; and, even if it should be otherwise, would a landowner grudge the outlay when he viewed the cheerful faces of a happy and contented tenantry?

THOMAS BALES.

* See vol. xxxiv., p. 1345.

"Steeple Jack" in Forres.—A few days ago a good deal of attention was excited by the appearance of "Steeple Jack," of the firm of Goodchild, Moir, & Co., Dundee, on the summit of the lofty chimney-stalk recently erected at the woollen manufactory at Forres, to which he affixed one of his firm's patent lightning conductors. The operator adopted the usual method of flying a kite over the summit of the stalk and affixing stronger ropes to the string, and met with complete success.

TIME CONDITIONS IN CONTRACTS.

IT is a curious but natural consequence of the great competition in all kinds of business how singularly careless of ultimate results it makes those who are the most eager for immediate success. This fact is never more observable than in the conditions to be found in many important contracts for the execution of buildings and other similar works. No doubt this incaution also arises from a certain speculative trustfulness in good luck or in good nature. "It is remarkable," a judge observed in a recent case, "in how many of these contracts [to do certain work], which certainly seem one-sided, one party puts himself in the power of another; but people are content to enter upon work or contracts of this description because they rely that the person named will not give them orders that they cannot do." No doubt in some cases it may happen that these one-sided contracts do not turn out to be injurious, but in many others persons must regret the exceeding and foolish confidence which they have placed in circumstances or men. It is necessary, therefore, to point out what may sound almost a truism, that those who enter into contracts should be prepared for the most improbable contingencies, and should in no case, for the sake of gaining a contract, permit one-sided conditions to be inserted which they may afterwards bitterly regret. Some instances of stringent conditions will most clearly bring before the reader the true merits of this question. Thus, if a contract is to be performed by a certain period, and the contractors (we use this word in its technical and non-legal sense), be they builders or what not, allow a clause to be inserted, that in the event of any alterations being directed to be made they will duly execute and complete the works by the same time and in the same manner as if the additions and alterations were originally in the contract, then they must finish them by the stipulated time. It may be absolutely impossible, but, nevertheless, it must be done, or the penalties for the non-performance will be incurred. This actually occurred in a well-known legal case (Jones *v.* St. John's College, Oxford, 6 Law Reports, Queen's Bench, 115) decided in 1870. We need not go at length into the facts, which were an enlargement of the amount of work and no corresponding increase of time for performance, in respect of certain farm buildings. "It may be," said Mr. Justice Hannen, "an unwise contract to enter into, and certainly if a person does in direct terms enter into a contract to perform an impossibility he will not be excused because it is an impossibility." We will, therefore, only recommend too-eager builders to ponder this instructive case. The most apparently advantageous contract saddled with such conditions may turn out to be the most undesirable in its consequences. On the other hand, the courts of law are as lenient as they can be under these circumstances, and it is now more or less settled that if a contract is to be performed by a certain time, and this time is extended, very stringent conditions as to forfeiture of money due and of tools do not apply to the extended contract. Of course, this must depend to some extent upon the actual words of the contract. But, nevertheless, contractors should be most careful not to incur this great liability, otherwise their original contract may turn out a loss instead of a gain. The clause is a usual one. Should the contractor fail to proceed in the execution of the works in the manner and at the rate of progress required by the engineer, then come the severe penalties. But, as we have already pointed out, this only applies to the first period at which the contract is to be completed, and not to that at which a new or enlarged one must end. A very good instance of this will be found in a case decided in the present year, which further exemplifies one of the most frequent hindrances to the fulfilment of time contracts, namely, the idleness or refusal to work of the workmen employed (Walker *v.* The London and North-Western Railway Company, 45 *Law Journal*, Common Pleas, 787). The clause in question had reference, the Court considered, to a reasonable time under the original circumstances, and not under the fresh ones. At the same time it by no means follows that this case would be upheld in a Court of Appeal,* for, since a definite date was fixed for the completion of the original and of the extended time, it is difficult to see why the company's engineer should not be as capable a judge of a reasonable time under the second as well as under the first contract. This doubt upon the judgment in this case renders the proposition at the commencement of this article all the more necessary to be well thought over, because, in the instance we have given, most penal consequences would result from the non-performance of the works at the rate of progress desired by the company.

The law will not take pity upon foolish contractors, and if they agree to do work by a certain time the law will not relieve them either from heavy penalties or from severe conditions, however one-sided.

* As this article passes through the press this case has come before the Court of Appeal, who have remitted it to the arbitrator to state a new fact.

CARRIAGES IN ASIA.

A SERIES of lectures on the History of the Art of Coach-building, by Mr. G. A. Thrupp, has been delivered at the Society of Arts. In the course of the first of them the lecturer said:—We will now speak of carriages used in Asia. In Hindostan are a great number of vehicles of native build. It has been frequently remarked that there is little change in the Eastern fashions, that tools and workmen are precisely as they were a thousand years ago, and the work they produce is precisely the same. In examining, therefore, what is done now by Indian coachbuilders, we are probably noticing carriages of a similar, if not identical, sort with those in use 3,000 years ago. The commonest cart in Hindostan is called "hackery" by Europeans; it is on two wheels, with a high axle-tree-bed, and a long platform, frequently made of two bamboos, which join in front and form the pole, to which two oxen are yoked; the whole length is united by smaller pieces of bamboo tied together, not nailed. In France, 200 years ago, there was a similar cart, but the main beams terminated in front in shafts; in neither the cart of India nor of France were there any sides or ends; the French cart is called "Haquet;" it is probable that the French, who were in India as well as ourselves, may have given the term "hackery" to the native cart, which was so like their own. The native name, however, is "Gharry." Other carts have sides made by stakes driven into the side-beams; the wheels are sometimes of solid wood, or even of stone. Wheels are also made by a plank with rounded ends, and two felloes fitted on to complete the circle. Again, wheels are made like ours, and also with six or eight spokes, which are placed in pairs, each pair close to and parallel with one another. If a carriage for the rich is required, the under-works are like those of a cart, but the pole is carefully padded and ornamented with handsome cloths or velvet; the sides of the body are railed or carved, and the top is of a very ornamental character, similar to the howdah of state that is placed on an elephant. It has a domed roof, supported upon four pillars, with curtains to the back and sides. The passengers ride cross-legged under the dome, on pillows. The driver sits on the pole, which is broad at the butt-end, and he is screened from the heat by a cloth which is fastened to the dome roof and supported upon two stakes, which point outwards from the body. A variety of different-shaped native vehicles may be seen in elaborate models in the India Museum, at South Kensington; although they do not show much originality in design or beauty of execution, and are said to be really creaking and lumbering affairs. When the Hindoos wished for a four-wheeled vehicle, the plan appears to have been to hook on one two-wheel behind another, connecting them with a perch-bolt, and upon the hindermost they placed the body. There is a singular addition to their vehicles outside the wheels; a piece of wood curved to the shape of the wheel is placed above it, frequently supported by two straight uprights from the end of the axle-tree outside the wheel; this acts as a wing or guard to keep any one from falling out of the vehicle, and also the dress of the passengers, from becoming entangled in the wheel. In addition, a long bar of wood, rather longer than the diameter of the wheel, curved in the shape called "Cupid's bow," is fastened to the axle-tree, the linchpin being outside of it, and the ends of the bar tied to the ends of the wing by cords. I imagine it to be placed in order to be a safeguard for the people in crowded streets, who might be pushed by the throng against the wheel. It will be seen in many of the models, and I have seen it also in ancient drawings of Indian and Persian vehicles. Many of the carts, which are designed to carry heavy loads, have a curved rest from 20 in. to 30 in. long attached to the lower-side of the front-end of the pole; this serves not only as a prop whilst the vehicle is being loaded, but, should the oxen trip and fall, it supports the cart, and prevents the load, yoke, and harness from weighing down the poor animals as they struggle to recover themselves. In England we have very few of these humane contrivances; we have, however, short rests to prop up a Hansom-cab when not at work. In India there are several huge unwieldy structures on wheels called "idol cars"; the name of the car of Juggernaut must be familiar to many. The wheels of some of these are enormous blocks of stone shaped and drilled for the work. In the Indian Museum there is a photograph of an idol car from South India, in the district of Chamoondee and the province of Mysore, which deserves examination. The car appears well proportioned, and the ornamental carvings are beautiful in design, and would bear comparison with most European work.

The *Hecca* or *Heka* is a one-horse native car, resembling an Irish car; it consists of a tray for the body, fixed above the wheels on the shafts, and has a canopy roof; the driver sits on the front edge of the tray, and the passenger cross-legged behind him. The *Shampony* is the usual vehicle for women, which resembles the former, but it is larger; the wheels are outside the body, and it is drawn by two bullocks; the canopy roof is furnished with curtains that are drawn all round, and the driver sits on the pole in front of the body. All these native vehicles have wooden axles, which, until recently, I am told, were used without grease, from the prejudices of the people forbidding them to use animal fat. Some used olive oil or soap, but in most large towns there are now regulations obliging the natives to use some substance to avoid the noise and creaking of the dry axles. The commonest carriages in Central India are called "Tongas," but the universal native word for a vehicle is "Gharry." In Calcutta there are several coachbuilders of repute, who employ large numbers of native workmen: Messrs. Dyke employ 600; Messrs. Stewart & Co., 400; and Messrs. Eastman, 300. The men are chiefly Hindoos, and are clever and industrious, but have a singular habit of sitting down at their work. The labourers who have to use grease are all Mahommedans. The wages vary from 6d. to 2s. per day.

"ENGINEERING IN INDIA."

SIR,—In the interesting article on hydraulic engineering in India, in the *Builder* for December 23rd, 1876, no mention is made of the very fine works executed in Rajputana, towards the end of the seventeenth century, by Rana Raj Sing and his successor Rana Jey Sing. The following account of them is extracted from Tod's "Annals of Rajastan":—

"*Lake Rajsumund.*—This great national work is twenty-five miles north of the capital, Oodipur, and is situated on the declivity of the plain, about two miles from the base of the Aravulli range. A small perennial stream, called the Goomtee, or 'Serpentine,' flowing from the mountains, was arrested in its course, and confined by an immense embankment, made to form the Lake called after himself, Raj Sumund, or Royal Sea. The bund or dam forms an irregular segment of a circle, embracing an extent of nearly three miles, and encircling the waters on every side, except the space between the north-east and north-west fronts. This barrier, which confines a sheet of water of great depth, and about twelve miles in circumference, is entirely of white marble, with a flight of steps of the same material, throughout the extent, from the summit to the water's edge, the whole buttressed by an enormous rampart of earth, which, had the projector lived, would have been planted with trees, to form a promenade. On the south side are the town and fortress built by the Rana, and bearing his name, Rajnugger; and upon the embankment stands the Temple of Kunkeraoli, the shrine of one of the seven forms of Krishna. The whole is ornamented with sculpture of tolerable execution for the age, and a genealogical sketch of the founder's family is inscribed in conspicuous characters. One million, one hundred and fifty thousand pounds sterling, contributed by the Rana, his chiefs, and opulent subjects, was expended on this work, of which the material was the adjacent quarries. But magnificent, costly, and useful as it is, it derives

its chief beauty from the benevolent motive to which it owes its birth: to alleviate the miseries of a starving population, and make their employment conducive to national benefit during one of those awful visitations of famine and pestilence with which these States are sometimes afflicted."

"*Lake Jeysumund.*—His successor, Rana Jey Sing, in spite of his continued warfare with Aurungzebe, completed another lake on a still grander scale. He threw a dam across a break in the mountains,—the channel of an ever-flowing stream, by which he formed the largest lake in India(?), giving it his own name,—'Jeysumund: sea of victory.' Nature had furnished the hint for this undertaking, for there had always existed a considerable volume of water; but the Rana had the merit of uniting these natural buttresses, and creating a little sea from the Dheybur pool, its ancient appellation. The circumference cannot be less than thirty miles, and the benefits to cultivation, especially in respect to the article rice, which requires perpetual irrigation, were great. On this huge rampart he erected a palace for his favourite queen, Comálá-devi, a princess of the Pramara race, familiarly known as the Roota Ranee, or Testy Queen."

I was not able to visit these lakes myself, though residing in the neighbourhood for some weeks, the rains rendering travelling difficult; but I can speak of the beauty of the lake on which the capital of the State of Mewar, Oodipur is situated. Though the lake is only seven miles round, the bund is so lofty that standing with your back to the water you look down on the summits of the mango-trees that form a grove beneath it, into which daylight hardly penetrates. It also is built of white marble, some hundreds of yards long, with a flight of steps its whole length into the lake.

While on this subject, Colonel Dixon's highly successful endeavours to improve the condition of the Mairs, by works of a similar nature, in their country, Mairwara, some thirty years since, ought not to be forgotten.

WILLIAM CARPENTER.

THE COLOSSEUM.

SIR,—The review in your pages of Mr. Parker's account of the substructures of the Colosseum is so conclusive as to the mistakes he has fallen into, and your suggestions regarding their probable intention are so accurate, that there is little more to be said without a further investigation on the spot. But the light which the French drawings alluded to may throw upon the subject will probably sustain the opinion I expressed in a paper read by me before the British Archæological Society, at Rome, two years ago, when these substructures were being uncovered; and those who are interested in the subject may find in my remarks some assistance in forming an unbiassed opinion.

These substructures may be roughly described as follows:—There is a main passage, along the major axis, connecting the two principal entrances. Along this runs the tramway, with a narrow, raised footpath (of stone) on each side; it entirely fills the central passage, and is evidently intended for heavy weights, with sleepers and long longitudinal ties or rails (all of wood), like a modern work. It was evidently for drawing machinery or cages of animals along. On each side of the main passage there are three or four parallel walls, and outside of these three or four curved walls, conforming to the oval of the amphitheatre. The space within these walls is partly free for passages, and partly occupied by chambers formed by intersecting walls. Looking down upon these substructures from the upper seats of the amphitheatre, the plan is seen to be quite symmetrical. This conformity in dimensions and contour to the amphitheatre surrounding them at once disposes of the view held by some that these buildings are Mediæval, of the time of the Frangipani, when the Colosseum was converted by them into a fortress. The same argument applies to Mr. Parker's view that they are of an earlier date than the rest of the amphitheatre; for they could not have been built in their present form to stand alone, and we hear of no amphitheatre of the size which would be required to enclose them before the time of Vespasian. They are also very roughly put together, and the materials had evidently been previously used for other purposes.

The explanation I gave of the corbels, of which you have given an accurate drawing, was this. Before these substructures were built the whole area used to be flooded for the *naumachiæ*, in which, Dion Cassius tells us, 3,000 men were sometimes engaged. On the same day, we also hear, the water was let off and combats followed. There is reason to think that these combats did not take place on the paved area, but on a platform raised above it, and I suggested that the beams to support the flooring rested upon these corbels, and were supported in the centre by trestles, run in for the purpose. They would be only 12 ft. high, the height of the corbels from the floor. Or the corbels might have been placed to support a gallery. They do not seem to be required for the poles of a velarium; and they show no indication of having been used to support arches, as suggested by the French.

Some years later, after the time of Commodus, the taste for nautical combats must have declined, or it was found necessary to do away with them, to carry out improvements to satisfy the rage for combats of men and wild beasts. It was then that these substructures were built. As the wooden contrivances for supporting the arena would now be superseded by walls, it was possible to raise the level of the arena, so that the spectators would have a nearer view of the combats, and we find, accordingly, that the walls of these substructures are of the same height as the podium of the amphitheatre (21 ft.). The corbels would be no longer required, and we find, therefore, that the wall (or arches) of the new work nearest to them is built up in entire disregard of them, the piers in many places pressing upon them and even incorporating them, and, in short, rendering them henceforth useless. This alone, as you have observed, establishes the fact that these substructures are later than the amphitheatre, as originally constructed. Thus, from the *terre-pleine* of the amphitheatre, over the tops of the walls, a permanent wooden arena was now constructed, and where the stone coping of the walls is still in its place the grooves are to be seen in which the beams rested. The vertical grooves between the corbels were undoubtedly for posts to support the netting which protected the spectators from the animals, and perhaps also to support the inner edge of the velarium.

With regard to the circular sockets, lined with bronze, which are found in the chambers before entering the area, in the centre of all the passages leading down into it, and in the centre of all the corridors or passages formed by the substructures, I gave this explanation, suggested by what I had seen at Cincinnati, in the United States. The chief manufacture of this place is bacon, and thousands of pigs are slaughtered there daily. They are controlled and handled with precision and swiftness by being driven into a series of small pens, separated by doors revolving on a pivot, like a turnstile. As the contents of one pen are despatched the doors are made to revolve, and a fresh batch of victims are induced to go forward. Revolving doors could not have been unknown at Rome. They were certainly used by the Greeks, who probably did not invent them. In this way, I conceive, the wild beasts were pushed forward, with safety to their keepers, until they arrived at the inclined planes leading up to the arena. As the animals were required upon the stage, the doors of the pens nearest to the ascent would be turned, and the beasts would at once spring upwards to the light coming through the trap-doors. That these sockets were for capstans, for the purpose of hauling up the cages is, of course, absurd. The fact that they are found in the chambers and passages before entering the area of the amphitheatre, their number, the want of space between the walls, and the mechanical difficulties in applying vertical capstans for such a purpose, renders this view quite untenable.

ALFRED PEARSON, Lieut.-Col.

ROOFS.

SIR,—I must thank your correspondents, "Signet" and Mr. R. W. Clure, for their letters in the *Builder* of December 23 and 30, conveying some information, very much to the point, in reference to my paper on Roofs. I was not aware of the peculiarity of the roof at Roslyn, which I have never myself visited. In speaking, however, of the non-existence of stone vaults forming the real roof, I was thinking of the genuine Gothic intersecting vault rather than of so simple a form as the barrel vault. It would be quite possible, by the aid of cement and of angle tiles, made to the curve of the groins, to make such a roof water-tight without putting anything else on it; but the difficulty would then be in regard to appearance, which could hardly, perhaps, be satisfactory.

Mr. Clure's experiment in concrete roofing I am much interested to hear of; but he must allow me to point out that the summing up of my paper, which he embodies in his note, is, though no doubt unintentionally, a complete misrepresentation, and that I certainly did nothing so unpractical or Quixotic as to "condemn every known material for roofing," and then "wind up" with a suggestion in favour of concrete. All I said was that the grandest and most monumental form of building could not be realised except with a permanent indestructible roof, and that the more homogeneous this was with the walls the better. All buildings cannot be, or are not required to be, of this enduring and monumental type. As to concrete, I never for a moment contemplated it as a material specially desirable in itself, either architecturally or constructively, for roofing; I merely suggested it as a material that might afford help in the problem of combining durability with economy in the roofing of ordinary town structures, such as street houses, where economy was a necessary consideration. Mr. Clure's instance is practically in favour of the suggestion; but he need not, in bringing it forward, have summed up the purport of my remarks in a way that would convey so incorrect an impression to any one who had not read them. H. H. STATHAM.

SAFETY AT THE ROYAL ALBERT HALL.

IT ought to be generally known, when fears as to safety in theatres are being expressed on all hands, that very special arrangements have long been made by the Council of the Royal Albert Hall to guard against perils by fire. Of these regulations we need not speak, but we may mention, in respect of the building itself, that, according to the manager, Mr. Wentworth Cole, — The facilities for egress and ingress are most ample, being at the rate of one door for every 200 persons. That the Hall can be cleared of 7,000 people in less than seven minutes. That the size of the staircases, corridors, and landings has proved that a crush of any magnitude cannot occur. That on the roof of the Hall are twenty tanks, containing 2,000 gallons of water each (40,000 gallons in all), supplied by a pumping-engine from an artesian well at the back of the Hall. If emptied, the tanks can be refilled in twenty minutes. The water company's service is also connected with these tanks in the event of the pumping-engine breaking down. That a special high-pressure service, quite distinct from that which supplies the tanks, surrounds the Hall with six fire-plugs, at suitable distances: this is in connexion with the company's 12-inch main, and the supply is practically inexhaustible. And that all fire appliances such as hose, hydrants, and extincteurs are inspected weekly by an inspector, who is specially employed for that purpose, and who is not on the ordinary staff of the Hall.

WORKS OF THE LATE MR. LOUGH.

MRS. LOUGH, knowing the regard entertained by her late husband for the neighbourhood of his birthplace, had the happy idea of offering the gallery of works Mr. Lough has left behind him to the town of Newcastle-on-Tyne. The mayor and some other members of the corporation came up as a deputation to view them, and we are glad to hear the offer was at once accepted, and that a building—partly free-library, partly a Lough Gallery—will be at once erected, if we are rightly informed, to house them worthily.

Immediately after the lamented death of Mr. Lough, to which we alluded briefly at the time, an eminent baronet who possesses some of the sculptor's best works, evinced his continuing appreciation of Mr. Lough's genius by commissioning the production in bronze of the remarkable shield modelled some years ago, having for the central subject the Fall of Phaëton, and which displays alike his imaginative power and his skill in the delineation of animal forms. This is now in the hands of Mr. Moore, of Thames Ditton, and will be produced at once.

Salisbury Cathedral.—The new choir screen is about to be put up in the cathedral, and further portions of the new organ are being erected by Messrs. Willis, the builders.

WATER SUPPLY.

Cupar.—On the 15th ult. the Cupar Water Works were formally opened by Provost Welch, who congratulated the inhabitants on the completion of the Water Works, which, he hoped, would long continue to yield an ample supply for the wants of the town.

Droitwich.—On the 20th ult., at a meeting of the Droitwich Town Council, a scheme for the supply of water, and for the sewerage and ultimate disposal of the sewage of the town, was submitted, when it was unanimously resolved to adopt such scheme and forward the same to the Local Government Board for approval. It was also decided to give the necessary notice that 25,000*l.* would be required for the works and purchase of land. The engineer for the scheme is Mr. E. Pritchard, C.E., of Warwick, who proposes to obtain the supply for Droitwich by means of "adits" driven in the strata overlying the brine springs.

Stone (Staffordshire).—The proposal to establish a private water-works company for the town of Stone has evoked much opposition. The subject came under discussion at the meeting of the Board of Guardians on the 19th ult. Mr. Humber is the engineer to the projected company, and it is proposed to establish water-works near the town. At present the water supply is from wells, not a few of which are said to be contaminated. The Board unanimously passed the following resolution:—"That this Sanitary Authority, approving of the resolution passed by the Parochial Committee, does not, at the present time, sanction the proposal for establishing a Water-works Company for the Stone special drainage districts."

Liverpool.—A special meeting of the Water Committee of the Liverpool Town Council was called on the 18th ult. The meeting was called to hear a statement from Mr. Mather, of the firm of Messrs. Mather & Platt, engineers, Manchester, with reference to the probability of obtaining a water-supply from local sources. Mr. Mather said it was stated upon authority of the most reliable kind that the triassic rocks below and around Liverpool had a depth of at least 1,400 ft., and beneath these the permian might be found, overlying the coal measures, perhaps of a thickness of 200 ft. But they might assume, anyhow, that for 1,000 ft. or 1,200 ft. there was a clear section of water-bearing rock, consisting of sandstones of various degrees of porosity, separated from each other by thin partings of impervious marl or clay. This vast deposit extended, as Professor Dawkins and other geologists had shown, over an enormous area, with several great depressions tending to separate into basins, but yet having continuity throughout, bounded inland by the older rocks and the coal measures, and having freedom of outlet by gravitation seawards for the water it contained in the districts of Fleetwood, Southport, and Ormskirk. In this area it was obvious there was a vast supply of water at present untouched which was kept up by the rainfall. It might be assumed that about 800 square miles of surface would contribute to this reservoir by percolation, if it were not to some extent covered by marls and clay. But at least one-third was exposed to the rainfall by being covered with sand, shingle, and drift at the outcrop. Moreover, the rivers flowing over the triassic rocks would contribute largely to this store, where not filled and overflowing with water. Now, if one-third of the rainfall be taken as the possible replenishment of these rocks, should they be drawn upon, they had a quantity of no less than 114,688,000,000 gallons annually, apart from the incalculable store now locked up in this porous strata. In the presence of these figures there was little fear of exhaustion. At present these rocks were saturated, and the surplus water flowed over the surface. It was to this enormous store of water he would direct the attention of the committee. In order to liberate it, he recommended a boring of 1,000 ft. deep of large diameter. After passing through some of the impermeable bands of marl or clay, or close sandstone, many of which existed in this formation, he would by mechanical means cut off all connexion between the rocks they had already pierced and those lying below, and the water of the sub-lying sandstone should rise to its normal level in the pipes lining the bore. The pump-barrel should be placed at such a depth as would keep it replenished with the quantity equivalent to its extracting power, and thus a continual flow of pure water might be secured, untouched by drainage or sea-water, and entirely independent of that which they now used. His belief was that there was a vast source of water in these rocks which would fill up as quickly as it was drawn upon, and that a quantity equal to what Liverpool had at present could be obtained by penetrating those lower rocks, and by putting down a series of bore-holes and pumping arrangements, such as he had described. Questioned by Mr. Forrest as to the time it would take to bore 1,000 ft. and complete all the machinery, Mr. Mather said that if a good price were paid his firm could complete the work in twelve months, putting down a pump which could lift eight or ten million gallons per day. Asked further with regard to the cost, Mr. Mather said that the whole cost for buildings, engines, boilers, erections, travelling-cranes, and everything would be about 13,500*l.* The working expenses would be about the same as that of the present wells.

WHAT CONSTITUTES A "SUFFICIENT" SUPPLY OF WATER?

CORRIE *v.* MAYO.

THIS case was lately before the Lord Chief Justice and Lords Justices Bramwell and Amphlett, sitting in the Court of Appeal. It was an action by the tenant of a house at West Clandon, near Guildford, for breach of a covenant in the lease to supply him with a "sufficient supply of water."

The covenant in the lease was that the defendant, the landlord, would complete, with reasonable despatch, such works as were necessary to secure the tenant a sufficient supply of water to the premises. The tenant entered in November, 1873, and it was found that there was not a sufficient supply of water, and the tenant made complaints, and the landlord had the well bored deeper. There was no complaint of the water until May, 1875, and then the tenant complained that this water was polluted and such as to cause ill health to the inmates of the house. The landlord then had the well "cased," but this was not finished till August; and in September, 1875, the tenant left the house, and in October brought this action against his landlord for the breach of his covenant. In the meantime, the deep well had been deepened and had been converted into an artesian well, 149 ft. deep, right down into the chalk, where pure water was obtained.

The cause came for trial before Mr. Justice Quain, who held that the covenant meant not merely a supply of water sufficient in quantity, but reasonably pure in quality; and on that there was contradictory evidence of experts as to the quality of the water.

In the result the jury found for the defendant, and the learned judge wrote a certificate to the effect that he was dissatisfied with the verdict, and it seemed a very fit case for a compromise.

Three judges of the Common Pleas division,—Lord Coleridge, Mr. Justice Brett, and Mr. Justice Lindley,—after the Judicature Act had come into operation, set aside the verdict for defendant, and directed a new trial, on the ground that the verdict was against the weight of evidence.

The case was argued at great length, and in reply to the Court the Solicitor-General said he had already proposed a compromise, but the offer was refused. The truth is, he said, when a case has gone on so long, the costs are so heavy that the parties cannot be brought to agree.

A new trial was eventually directed, costs to follow the dismissal of the defendant's appeal.

SKETCHING WITHOUT AN ORDER.

SIR,—I had read of Newstead Abbey Church having a grand west front, and decided on visiting it at the first opportunity, which was Boxing-day. On referring to the time-table I was somewhat amused on reading that at Lindby Station passengers only having business at the Colliery or the Abbey were allowed to alight, and I presumed from it that it was a private station, not worked by the Midland Railway Company's officials. Disregarding such a hint, I alighted at the station, and was not asked by the officials whither I was going. I was surprised at finding 4 in. of snow on the ground, and green fields a few miles lower down. On going through Lindby village, I found a cross at each end, a very unusual thing in our villages. The route to the Abbey is a very pleasant one, through a wood, with a disreputable road; but the morning was a very frosty one, enabling pedestrians to get along easily. On arriving at the Abbey I sketched at the west front for an hour and a half (it is of Decorated date), and had just completed, when a policeman came from the house adjoining, and asked me if I had leave to sketch. I said, "No. Whom should I ask?" He said, "No one there; you ought to have written to Mr. Webb for leave to enter the grounds." I said, "Could I not apply at the house then?" He said, "No." This suggested to me that Mr. Webb, of Newstead Abbey, had an interest in the sale of postage-stamps, since people were not allowed to apply personally, but only by letter,—but which, I humbly think, would not increase his income much. Having got what I wanted, I left at his request. During the last twenty years, throughout the length and breadth of England, I have visited many abbeys, but at none of them have I ever met with such treatment as having a policeman sent to order me off while sketching at an abbey church, to which place the public are allowed access without hindrance; and very frequently, when such churches are situated in parks and grounds, the owners have invariably and courteously permitted the public to view them, without any of the childish importance displayed by the owner of Newstead Abbey; and I can only express my surprise that the members of the Nottinghamshire Archæological Society should allow such treatment in their county to go unchallenged; but it is to be trusted that public opinion, through the press, may be brought to bear upon the matter, and compel the owner of Newstead Abbey to forego the churlish enjoyment he exercises in giving and refusing access to such as myself, who require to sketch at the churches, those places having come to be looked upon as public property. J. B. WATTS.

RICHMOND PARK AND THE PUBLIC.

SIR,—An attempt has been made to throw discredit on the article which appeared in the *Builder* of November 25, headed "Richmond Park and the Public," but without effect. Having read the article in question, I can testify to its general accuracy, with the exception of the part which reads, "Upwards of 100 acres is also inclosed in winter for feeding the deer." This should be "108 acres are kept inclosed and manured to grow hay for feeding the deer during the winter months." This part of the park is the nearest to the rifle ranges at Wimbledon. Richmond Park was inclosed during the reign of Charles I. The Princess Amelia, daughter of George II., attempted to exclude the public from the park altogether, and had it not been for the pluck and perseverance of Mr. John Lewis, a brewer of Richmond, they would have been shut out for ever. The objector does not appear to have much knowledge of the subject on which he writes, it being a well-known fact that the head keeper has had nothing whatever to do with the keeping up of the Park. At the present time the baliff (Mr. Sherratt) undertakes this duty. He was appointed by the Office of Works in 1851; and previously the late Mr. Edward Jesse, Itinerant Deputy Surveyor to the Office of Woods, Forests, and Land Revenues. It is well known that even during Mr. Jesse's term of management, the head keeper was a great impediment to all good plans. With regard to the game inclosures, the Earl of Lonsdale stated that the money was voted by Parliament to make these inclosures for the purpose of renewing the trees (great numbers of trees having been cut down to supply timber for the navy), and on condition that the inclosures were to be thrown out to the public when the trees were out of danger from the deer and cattle. The present ranger has not only caused these inclosures to be enlarged, but has had others made for the purpose of sheltering game to amuse himself and friends; some of these inclosures having been made upwards of fifty years.

Public money is annually voted by Parliament for this sport; therefore, it certainly appears hard that the public are not allowed to play cricket, or any game in this large park. There can be no doubt that the Office of Works are the proper authorities to have the whole and sole control, which would be highly beneficial to the public. ONE OF THE PUBLIC.

A DANGEROUS NEIGHBOUR.

SIR,—As one personally and pecuniarily interested in the welfare of house property, and particularly that portion of property that lies in close contiguity to the London, Brighton, and South Coast Station at "Victoria," permit me to call your attention to the enormous wooden structure, reared, I presume, for temporary purposes, but that has for the last ten years, in defiance of all Building Acts, maintained its supremacy close to that noble pile of buildings called the Grosvenor Hotel. The consequences to owners of house property in Pimlico, in case of a conflagration there,—than which nothing can be more probable,—would be something frightful; and I feel sure that it needs no more than, through the medium of your columns, to call the attention of the public to this anomalous state of affairs to find some cure for this evil.

AN OWNER OF HOUSE PROPERTY IN PIMLICO.

OBITUARY.

The Rev. Thomas Hugo, F.S.A.—The Rev. Thomas Hugo, M.A., rector of West Hackney, died on Sunday last, after a short illness. The rev. gentleman, who was descended from a French Protestant family which settled in England in consequence of religious persecution, will be best known to most of our readers as an antiquary, and as taking part in the proceedings of the London and Middlesex Archæological Society.

Sir Titus Salt.—Sir Titus Salt, one of the few remaining founders of our manufacturing prosperity, died on the 29th ult. at his residence, Crow Nest, near Halifax. He was the inventor of the clothing material known as alpaca, but he will be best known to the general reader as the founder of the model town of Saltaire. About the time of the Great Exhibition (says the *Daily News*), when Bradford was still a dirty manufacturing town, Sir Titus determined to take his works and workpeople into the country. A strip of land was bought at Shipley, near the Midland Railway and the river Aire, and a building was erected on it which was then regarded as the largest and handsomest factory in the world. The whole range of buildings covered nine acres and a half, and the ventilation, the warming, and the sanitary precautions were as perfect as they could be made. The workpeople some 4,000 in number, were housed in good cottages, and the village thus created was supplied with park, cricket-ground, public institutions, lecture-halls, and places of worship, by its founder. In explaining his object Sir Titus Salt said he hoped to draw around him a population that would enjoy the beauties of the neighbourhood, and be well fed, contented, and happy. He had, he said, given instructions to his architects that nothing should be spared to render the dwellings of the operatives a pattern to the country, and he hoped to live to see satisfaction, happiness, and comfort around him. Saltaire, at the last census, contained 820 houses and 4,389 persons.

ARCHÆOLOGICAL SOCIETIES.

Somersetshire.—The Somersetshire Archæological Society has, in compliance with the memorial of the Mayor and Corporation, decided to hold its annual meeting for the year 1877 at Bridgwater. The date of the meeting will probably be early in August.

Birmingham.—At a meeting of the Archæological Section of the Midland Institute, Birmingham, on the 22nd ult., a paper on "The Collegiate Church of St. John the Baptist, Coventry," was read by Mr. W. G. Fretton, of Coventry. Mr. Fretton said this interesting church, apparently fresh from the builders, dating back, however, 500 years, was the only church of similar origin in Coventry, and possessed so many peculiarities in its construction as to make it unique among ecclesiastical structures. The Collegiate Church of St. John the Baptist owed its origin, in the first place, to the earliest of the guilds of the city. The most ancient of these was St. Mary's, or the Merchants' Guild, founded on the 20th of May, 1340, by licence of Edward III. This was followed by the formation of St. John the Baptist's Guild, on the 6th of October, 1342, and St. Catherine's Guild in the following year. In 1344 a movement in the direction of a distinct religious edifice for the Guild services was commenced, and Isabel, Queen of Edward II., gave to the Guild of St. John a parcel of land 117 ft. long, by 33 ft. at the north and 40 ft. at the south end belonging to her, in Coventry, on which to build a chapel in honour of God and St. John. The work of chapel-building was promptly commenced by the master and brethren of St. John's, but only the eastern portion of what was now seen was so far finished as to be ready for dedication in 1350, the work of extension being continued for some years afterwards. Recent excavations in the interior of St. John's enabled them to form a tolerably accurate idea of the area occupied by the chapel as it stood in 1357, and which apparently did not include more than part of the present chancel, its south aisle, and a portion of the north aisle. In the time of the Commonwealth, much havoc was committed in the churches of the city, and St. John's did not escape. In 1726 an order in Council was made that steps should be taken to convert it into a parish church, but nothing was done further until 1733, when notice was drawn to its state by the bishop of the diocese. It was enacted by Parliament that from and after the 23rd of June, 1734, the church of Bablake should be deemed a parish church by the name of St. John the Baptist, in the city of Coventry. In conclusion, Mr. Fretton said he regarded the restoration as so far very successful. The designs had been prepared under the direction of Sir Gilbert Scott; but when subsequent discoveries had suggested a departure from the plans, so as to preserve and reproduce characters and features, this had been done.

BACK DRAINAGE *v.* UNDER-HOUSE DRAINAGE.

THE question of back-drainage came under discussion at the last meeting of the Camberwell vestry, when, as it will be seen from what follows, the vestry approved of back-drainage as compared with having drains under houses, when circumstances admit of the former system being carried out. The Sewers Committee had recommended that permission should be given to Mr. Bailey to drain some houses now being built by him in Lordship-lane, at the rear of the same, at his own expense. The recommendation was opposed by Mr. Drayner, who moved as an amendment the construction of a sewer in the main road in front of these particular houses, and that Mr. Bayley should be requested to drain into the same. He observed that sooner or later a sewer would have to go along the front road, and it might as well be made now. Mr. Roy (a builder) said there was a splendid fall at the back of the houses in question, and there would be a 9 in. drain into the main sewer. As a sanitary matter he would not put a drain under a house if it could be kept outside. He could not understand any person advising the putting of a drain under a man's house when there was no necessity for it. Mr. Denny said the disadvantage of having drains under houses was too apparent to be lightly treated, and he for one would vote for a house being drained at the rear if it could be done without any corresponding disadvantage. The vestry confirmed the recommendation of the committee, sanctioning the back-drainage of the houses in question.

THEATRES.

Newcastle-on-Tyne.—Plans having been passed by the Corporation for the erection of a permanent circus at the St. Thomas's-street corner of Percy-street, Newcastle, it has been agreed to register a company for the purpose of carrying out the undertaking, under the title of "The Newcastle Permanent Circus and Agricultural Company (Limited)." Capital 25,000*l.*, in 5*l.* shares. The building will be erected on the property of Mr. John Irving, builder, with whom the scheme is stated to have originated.

Southampton.—Gordon's Theatre of Varieties, Southampton, was re-opened on Boxing-night, after having been closed for six months, during which period it has undergone extensive alterations, additions, and improvements, under the direction of Mr. W. H. Mitchell, architect. The floors of the hall and stage have been removed, and reconstructed on the ground level, while the length from wall to wall is 117 ft., and the greatest width 40 ft.; the auditorium is nearly 80 ft. long to the front of the proscenium, and the total height 37 ft. With the exception of the hall and stage, the whole of the buildings, both in the front and rear, have been removed, and new premises erected, extending from French-street on the one side to Bugle-street on the other. The new building in front of the auditorium is four stories high, and rises 50 ft. above the pavement, and communicates with French-street. The proscenium has been increased in height, and the main wall thrown back, giving an additional depth of 8 ft., making a total of about 30 ft. from the footlights, and the opening is 21 ft. 6 in. wide.

Doncaster.—The Doncaster theatre narrowly escaped destruction by fire on the 28th ult. About a quarter to three in the morning a policeman discovered that a part of the stage was on fire, and that one of the dressing-rooms in the wings was almost consumed. Water is laid on into the theatre, and hose provided, so that no time was lost in getting this out, when it was discovered that the pipe, or directing tube, had been cut and was missing. The fire brigade, however, brought hose with them, and quickly attached it to the mains, and played upon the fire with such effect that they extinguished it before it could make much progress.

Her Majesty's Opera-house, Haymarket.—Messrs. Chinnock, Galsworthy, & Chinnock have been instructed by the Earl of Dudley to sell by auction, on the 1st prox., at the Auction Mart, the lease of her Majesty's Opera-house. The property is held on lease for the residue of a term of which fifteen years were unexpired at Michaelmas, 1876.

Liverpool.—The magistrates of Liverpool have decided that in future, before granting a licence to any theatre in that town, they must have a certificate from the borough surveyor, or other surveyor appointed by the Health Committee of the Town Council, as to the construction of the building, especially with regard to its means of egress.

ALLEGED ALTERATION OF SPECIFICATION.

AT the meeting of the Lambeth Board of Guardians last week, a letter was read from the clerk of the works at the new Infirmary building, complaining of the specification having been altered by the orders of a Mr. Street, who was acting for Messrs. Fowler & Hill, architects. It referred to the want of felt being placed between the roof boarding and the slates.

The Chairman observed that they employed a clerk of the works, and should support him.

Mr. Taylor recollected that when old Lambeth Church was rebuilt, it was considered best not to have felt; but the result was that in a short time the roof had to be stripped, and felt placed there. It was a mischievous thing to alter a specification.

The Chairman intimated that Mr. Fowler's attention had been called to the matter by the clerk of the works.

On the motion of Mr. R. Taylor, the question was referred to the Building Committee.

RECLAMATION OF WASTE LANDS.

MR. MITCHELL HENRY, M.P., is doing in Galway what the Duke of Sutherland is doing in Sutherlandshire and the Bridgwater Trustees at Chat Moss, near Manchester. He is reclaiming bog and heath lands, but on a much smaller scale than is being done in Scotland and England. The same system, however, is adopted by all, except that the Duke of Sutherland is doing his work by means of twelve steam engines and ploughs, and Mr. Henry by manual labour. Does it pay? is the first question generally asked, and Mr. Henry replies that, including farm buildings and roads, the reclamations in Galway have cost on an average 13*l.* an acre, which at 5 per cent. means an annual rent-charge of 13s., to which is to be added a sum of from 1s. to 3s., the full annual value of the unreclaimed land. The Duke's reclamations cost 30*l.* an acre, so that the rent is about double, and would render the land in Ireland too costly for renting; but, on the other hand, excellent profit may be made if the expenditure is so kept down that the annual rent is not more than from 15s. to 18s. per acre. Mr. Henry's reclamations are being made in the Pass of Kylemore, in which there is very little deep bog and an abundance of limestone. The first thing is to remove the water by drains, which must go right down to the gravel below. They are cut wedge-shape by Scotch tools, and all that is requisite to form a permanent drain is to replace the wedge-shaped sod and ram it down between the walls of the drain, where it consolidates and forms a tube which will remain open for an indefinite number of years. The surface sinks and becomes consolidated. It is then dug by spade labour or ploughed, the latter by oxen or horses (on soft land) in wooden pattens; then dressed well with lime, which "boils the bog," causing the vegetable matter to become excellent manure. Then it is broken up by the chain or revolving harrow, and is ready for root crops, to be followed by the usual rotation. The crops on the reclaimed land in Galway have proved abundant.

A Journeyman Decorator, who had been earning on an average 2*l.* 8s. per week, sued the Metropolitan District Railway Company for compensation for injuries received in a collision at the Earl's Court Station in January last. The company had paid into Court 800*l.*, to which the jury added 300*l.*

THE GLASGOW CITY CHURCHES.

LORD PROVOST BAIN, of Glasgow, has drawn up a scheme which he intends to submit to the Town Council regarding the city churches. He proposes that three of the nine city churches should be sold—the Tron, St. Enoch's, and St George's,—and that other three should be erected on sites more suitable for the population. He says that these three are in situations where the displacement of the population has been and will continue to be so great that there is not a sufficiency of inhabitants in the neighbourhood to fill a church, nor a sufficiently extensive field for the labours of a clergyman; and so it might be for the interest of the Church and the community that these churches should be sold, and others built in lieu of them in other and better situations. Mr. Thomas Binnie, valuator, reports that the value of St. George's is 45,000*l.*; St. Enoch's, 26,000*l.*; and the Tron, 21,000*l.* The Lord Provost then says:—

"Mr. Binnie makes the value of the three churches and sites to be 92,000*l.*; but deduct for safety 2,000*l.*, there remains 90,000*l.* It may be assumed that new churches, including sites, might be built for 15,000*l.* each, or say 45,000*l.* for the three. Thus, 45,000*l.* would be left in hand. Eight of the city clergymen have an endowment of 425*l.* annually, and the ninth has 400*l.* a year. It is proposed that the endowment for all of them should be reduced to 300*l.* a year each, but that the clergy should receive the seat-rents of their respective churches in addition. The endowment would thus amount to 2,700*l.* annually, and to secure this at twenty-five years' purchase would require a capital sum of 67,500*l.* Toward this apply the sum left over after building the three churches, 45,00*l.*—leaving 22,500*l.* to be provided by the Corporation. But as time will be required to dispose of the churches and build new ones, let us suppose the Corporation gives 30,000*l.* In this way the city would pay a sum equal to 1,200*l.* a year instead of losing 2,345*l.* annually. It is suggested that all the churches and the 30,000*l.* should be handed over to commissioners, to be named in an Act of Parliament, and that they should realise the churches and build the new ones. In this the Corporation would at an early date be relieved from all further claim in connexion with the city churches and with the stipends of the city ministers. It must be of advantage to the community that the clergy should be men of ability, and we may expect that with a stipend of 300*l.* a year, and seat-rents added, our city churches would command the best talent in the country."

"BYE-COMMISSIONS."

THE *Leeds Mercury* of the 16th ult. had a leading article commenting upon the recent theatrical case of Coe *v.* Sothern and Another, in which the following passage occurred:—

"But somehow, whether it be a stage-manager 'engaging a company,' and accepting commissions from the actors; or an agent putting out a contract for a Government, and accepting a commission from the contractor; or an architect who takes his commission for looking after the contractors, but also accepts commissions from them, because they enjoy being looked after by him. . . . in all these cases there is the one peculiarity, that this bye-commission or acknowledgment is underhand, and carefully concealed from the principal."

In reference to this passage, the following letter appeared in the *Mercury* of the 20th ult.:—

"In your article in Saturday's paper, referring to the case of Coe *v.* Sothern, in which you so ably and justly condemn the corrupt system of receiving bye-commissions, I am much pleased to see your reference to that of 'an architect who takes his commission for looking after the contractors, but also accepts commissions from them because they enjoy being looked after by him.' I have heard that this does apply to some architects,—and the commission has been offered to me more than once, but sternly refused,—but I sincerely hope not to many. How can the architect be considered honest who takes this commission from the contractor? Is his client made acquainted with it? I think I may safely say, in all cases he is not. Suppose his consent to be asked for,—would he consent? No. Then why, in the name of all that is honest and straightforward, do not architects, as a body, set themselves right before their employers, and firmly refuse to accept these commissions, and confine themselves to the recognised per-centage paid to them by their clients for their drawings and superintendence of work?—Yours, truly, ARCHITECTUS."

We have no hesitation in asserting that architects, as a body, *do* confine themselves to the per-centage paid to them by their employers. Let those who assert the contrary give us "instances" to prove the truth of their assertion.

A Word for the British Workman.—Dr. Acland, Regius Professor of Medicine at Oxford, in delivering the prizes to a public elementary school, on the 20th ult., commented strongly upon the remarks lately made by the Rector of Lincoln (Mr. Pattison) on the condition of art-education, and stated that he had the conviction that notwithstanding all our bad work, some of the best was to be found in every department to which the skill of workmen might be applied, and he also believed that among our British workmen were hearts as true, heads as clear, and hands as fine as among any other nation.

AN ARCHITECT'S CLAIM.

PARAIRE *v.* ARGENT.

AT the Romford County Court, on the 19th ult., Mr. Edward Louis Paraire, architect, of London, sued James Argent, of East Brook House, Dagenham, for 15*l.* 15*s.* for work done.

Mr. E. Rolland, barrister, who appeared for plaintiff, stated that in 1872 defendant was the owner of a beer-house in Sun-street, London, and in consequence of the works being carried out in Liverpool-street by the Great Eastern Railway Company, the traffic was diverted from Sun-street, and the receipts of defendant's house fell off from 4*l.* to 12*l.* per month, and the question arising as to whether he had not a claim on the railway company, Mr. Huggins, the manager of Reid's brewery, brought about a meeting between plaintiff and defendant, and after they had met at defendant's solicitors', it was decided to prepare a case for the opinion of counsel, and plaintiff was instructed to prepare plans to accompany the case. The plans were prepared and sent to the solicitors, but in the end it was feared defendant had no case against the company, and the matter dropped for a time, but someone else having brought an action and obtained a considerable sum from the company, defendant again took proceedings in the matter, and obtained 50*l.*

Evidence having been called,

Mr. Preston, for the defendant, contended that all that was done in the matter was by the direction of Mr. Huggins, the manager of Reid's Brewery Company, who were mortgagees to a considerable sum on defendant's house, and who would suffer materially from the diminution of the trade of the house, and defendant was asked by Huggins to meet plaintiff at Paul & Fearon's (Huggins's solicitors), and being willing to assist the Brewery Company all he could he did so, but at last he got tired of the protracted negotiations, and would have nothing more to do with the matter. Paul & Fearon were not defendant's solicitors, and had never charged him a farthing, and he never heard of this claim until after the death of Huggins So far from having employed Paul & Fearon, he employed another solicitor, who obtained 50*l.* for him. If there was any truth in the plaintiff's statement, why had not Mr. Paul or Mr. Fearon been brought to corroborate it, and why had he waited till the death of Mr. Huggins before sending in his claim?

Defendant having been called,

Mr. Rolland replied on the case.

The Judge summed up at considerable length, and said he thought the defendant ought to have his verdict; but, on the application of Mr. Rolland, he nonsuited plaintiff and allowed defendant costs

NON-PERFORMANCE OF CONTRACT.

GILLINGHAM *v.* MORTON.

THIS was a claim (preferred in the Crewe County Court on the 20th ult.) for 5*l.*, money paid for work done under a contract, which, it was alleged, the defendant, a builder at Crewe, had not carried out.

The plaintiff's case was, that in May, 1875, he agreed with the defendant to pay him 24*l.* 10*s.* to build a house in Samuel-street, Crewe, which was to be finished in November, 1875. The defendant was to draw certain money as the work progressed him a swing to his impecunious circumstances, he went away from the agreement, and obtained advances of money at various times until he received the entire balance due for the job. The house was eventually completed, excepting some alterations at the front palisading wall, in the foundation of which the defendant had omitted to put three courses of bricks. Finding that the agreement had not been carried out in this particular, he asked the defendant to complete the work, but this he declined to do. Subsequently the plaintiff called in a professional man, who declared the wall to be improperly constructed: hence the present action. The plaintiff had since got Mr. Henry Stringfellow to complete the work for the sum of 5*l.*

The plaintiff called Mr. Edwin Farber, surveyor; Mr. George Watson, town surveyor; and Mr. Stringfellow, to show that the work had not been done according to contract, and that the amount claimed was reasonable.

The defendant stated that at the very onset the contract was departed from, and that he had been obliged to take down the eastern wall and the whole of the foundations of the cesspool and ashpit, by order of Mr. Thomas Bromfield, who said the plaintiff was infringing on the adjoining occupier's land. He further alleged that he had done other work in addition to what was stipulated in the contract, and for which he sent in a bill for 10*l.*, but for which he agreed to accept 4*l.* odd, on the understanding that he was not to disturb the palisading wall in dispute, and that no further claims should be made upon him. The plaintiff replied that he had paid the defendant for his extra work, and he produced a number of receipts for the money the defendant had drawn from him

The Judge said there was practically no defence to the action, and he consequently gave judgment for the plaintiff, with costs.

BREACH OF COVENANT.

JANSSON *v.* BRADBURY.

THIS was an action which came before Mr. Justice Lindley, at the Manchester Winter Assizes, to recover damages for alleged breach of covenant on the part of the defendant. The amount of the damages claimed was 500*l.*

The case for the plaintiff was that prior to the month of September, 1875, he was possessed of two adjoining plots of land, with dwelling-house and premises erected thereon, in the Oxford-road, Rusholme, and that he sold one of the plots to the defendant, and retained the other in his own possession By the deed of conveyance to the defendant, the defendant covenanted that the houses should be set back 6 ft. from the road. The plaintiff resided in one of the houses upon the plot he retained, and his house joined on to certain other houses erected on the plot of land sold to the defendant. The houses belonging to the plaintiff were set back at least 6 ft. from the road, but the defendant, instead of setting back the houses on his plot of land, had brought them forward more than 6 ft., thereby violating the covenant he had entered into with the plaintiff. The defendant had converted the houses into shops, and had, by bringing them forward 6 ft, left the plaintiff's houses in a recess. In consequence of these alterations, the plaintiff's premises had been damaged, the access of light and air being obstructed, and the value of the houses considerably reduced. The plaintiff alleged that the alterations were carried out so carelessly and negligently that the land supporting the plaintiff's house had been interfered with; the house had settled to some extent, the walls were cracked, and the property was damaged to the extent of the amount claimed.

Before the close of the case a consultation took place between the learned counsel, and it was arranged that judgment should be entered for the plaintiff for 50*l.*, with costs.

"BRIDGE OR SUBWAY?"

SIR,—In your estimate of the comparative advantages of a bridge or subway, the conclusion arrived at is based on figures which I believe to be erroneous. Admitting the superiority of a subway for river traffic, the whole argument hinges upon the assumed difference between the height of a high-level bridge above Trinity high-water mark, and the assumed depth of the roadway of a subway below this level, or the comparative height to which heavy goods would have to be lifted by incline in either case. Giving the least height of the roadway of a high-level bridge at 90 ft., which by the report would still at high water shut out 523 vessels per annum, you say:—"The committee would do well to call upon the architect for corresponding information with regard to the depth below the river at which a tunnel may be supposed to be practicable. A section of the river is required for this purpose, as well as a list of the draughts of the vessels passing above St. Katherine's Docks. The hydraulic movement of the Thames at the proposed spots must also be indicated. Again, the geological nature of the bed of the river must be ascertained. If we take Trinity high-water line as a datum, we have seen that 90 ft. have to be allowed above that level for the roadway of a fixed bridge. For depth below, we must allow a fall of the tide, say 22 ft.; for the draught of a laden vessel, say 35 ft. [this exceeds the draught of the *Great Eastern*]; for the crown of the tunnel, say 3 ft.; and for the clearance of the tunnel itself, say 16 ft. This gives a total of 76 ft., or 12 ft. less to descend than we had, in the former case, to ascend. But it must be observed that these dimensions, if possible for a subway, are not possible for what we usually understand as a tunnel. A certain thickness of soil beneath the bed of the river is essential for any process of tunnelling. A subway, with the crown of its arch only 60 ft. below Trinity high-water line, could only be put in by coffer-dam, or by some process that would be equivalent to tunnelling, not through earth, but through water. Considering, then, the natural preference for a daylight line, the great extra risk and cost of the subway, and the necessary expense of pumping, to keep it dry, and of gas to light it, it does not seem to us probable that a gain of 12 ft. in the height to be ascended and descended on the approaches is such as to turn the balance, as far as the advantage of the land traffic is regarded, in favour of the subway."

Now, the whole of the information herein suggested is in the hands of the committee. Accurate soundings have been taken of the bed of the Thames, by the Conservancy, at every few yards, almost from its source to its junction with the sea. The actual depth at the proposed point of crossing, instead of 57 ft., as would appear from the foregoing statement, is only 33 ft.; and for a considerable distance below the entrance to the docks, over which vessels of the greatest draught may be assumed to pass, does not exceed 36 ft. at high water. The actual depth of roadway of subway would, therefore, be not 78 ft., a depth which would be sufficient for a tunnel; but by the figures given it is 3 + 18, or 54 ft. below high-water level, giving a difference of lift, as compared with roadway of a high-level bridge 90 ft. above high water, of 36 ft., instead of 12 ft., in favour of subway,—a very wide margin for reduction in cost and length of approaches.

Another most important point in the comparison for land traffic has been overlooked,—the access to districts adjacent to the river. The heaviest traffic passing over the bridge will be that due to the shipping confined immediately to the river's banks, and one of the principal aims of a new communication must be its accommodation. Hence the surface of the ground is only about 3 ft. above high-water level. A bridge 90 ft. above this level would give a height of 87 ft. above the bank,—assuming that single approaches only were formed with inclines of 1 in 40. The distance which a heavily-laden wagon would have to travel in passing from a warehouse on one side of the river to the opposite warehouse on the other,—making due allowance for the rise of ground on the north side,—would be 12,000 ft.,—over 2¼ miles. Manipulated no matter how, with extra approaches doubling back, with inclines of 1 in 40, the least possible distance to be travelled would be 7,800 ft., or nearly 1½ mile, to reach a point the actual distance to which is under 300 yards,—a serious difference from an equine if not from an engineering point of view.

It is objected that my estimate takes no note of the cost of Waterloo and London Bridges, which cost over 1,000,000*l.* each, and of the Rotherhithe Tunnel, which cost 455,000*l.* Both of the bridges are built with what at the time must have been a specially costly material, and cannot, therefore, be accepted as fixed standards for estimating all other crossings. Some prominent bridges have since been erected at much less cost. But if it must be assumed that, because these cost each over 1,000,000*l.*, this subway must also cost 1,000,000*l.*, on what principle is it estimated that a high-level bridge, nearly three times their height, and consequently requiring nearly three times their length of approaches, would also cost only 1,000,000*l.*? By this rule the cost would be nearer 3,000,000*l.* The cost of the Rotherhithe Tunnel was largely due to accidents, which led to reconstruction; omitting these, the true cost would be much under 455,000*l.* The proposed subway, as a subway, is entirely distinct in character and construction from a tunnel; and because of this distinction the absence of risk, and certain other peculiarities, would cost less per square foot of roadway than either a bridge or a tunnel. This, in addition to its being the most suitable for land and river traffic, I regard as the special feature of my design. A more direct test of the probable cost than comparison with that of Waterloo or London Bridges would be an examination of the quantities and prices used. These, at least of the approaches, may be readily checked; so far from the cost of

this portion of the work being exceeded, my impression is it may be reduced. The prices used for land were those paid by the Metropolitan Board for land recently acquired in the neighbourhood.

An erroneous impression prevails as to the character of this subway. It may, as suggested, be to all intents a daylight route,—if not paradoxical, as it may appear, an almost open-air route. The drainage I believe I could accomplish without annual cost. As an architectural ornament to the metropolis,—if the railway viaducts in and about London may be accepted as examples of an overhead approach,—a subway may be made a much more effective work in every sense. JOHN KEITH.

A FIRE-EXTINCTOR.

SIR,—Permit me to reply to Mr. James's remarks on my self-acting fire-extinctor.

The pin-hole is for the tiny fuse; only when that is ignited is seen the end of a pipe, through which the gas is poured down instantly on to the fire.

He objects to this in bed-rooms. Then do not have it; have a deluge instead, turned on by the fuse, provided a cistern is near, and water therein. He also has some doubt regarding the density of carbonic acid gas; thinks it would escape up the flue. Let him take his beer-jug to any chemist for a quart: he can carry it home without losing any of it, and can turn it out into tumblers; but he need not "swig" it.

He thinks the Fire Brigade is preferable. I do not disparage it; but the engines invariably arrive when the building is aglow, to protect surrounding property, if they can find the plugholes, and get water; with which element they often spoil entirely stock-in-trade of many commodities. I once saw a fire-engine belonging to the Windsor Brewery Company, their own men with it. After much display and delay, and loud shouting of "Where the —— is the nozzle?" which was not to be found, the machine was dragged home again. For a long time inquiries were made of the men if they had "found the nozzle."

To remove all doubts and scruples of Mr. J., if he will find the house, I will find the extinctor. E. T.

SCHOOLS OF ART.

West London.—The distribution of prizes to the successful students of the West London School of Art took place on the 20th ult. in the theatre of the Quebec Institute, Lower Seymour-street. Lord George Hamilton, M.P., presided. Silver medals were awarded to Madena Moore, Herbert Morris, and Emma Parting; bronze medals to John Gould and William Richardson; and national book prizes to James Murray and Louis Reich; and second and third grade and school prizes were also distributed during the evening.

Derby.—The prizes awarded to the successful students of the Derby Central School of Art were recently presented by Lord Edward Cavendish, the president. The report of the committee states that the plans of the architects, Messrs. F. S. Waller & Son, for the New Central School, are based on a scale commensurate with the present extent of the school, added to such further provision for its development as the growth of the town warrants. Although the appeal of the committee for the requisite funds had been responded to most liberally in some instances, yet the total amount promised fell far short of what was needed to complete the work contemplated. Under these circumstances it was resolved, early in the year, not to undertake the whole scheme at present, but to commence by building only the absolutely necessary portion. After consideration it was decided to erect the north wing of the design, but as the main entrance is deferred this involves the provision of a temporary staircase, &c. This wing consists of an extensive block, 100 ft. long by 30 ft. wide. On the ground-floor there will be the ladies' and the elementary and machine drawing-rooms, and on the upper floor the antique and painting rooms. Although only a section of the whole plan, yet it is the most important one, and when erected it will provide a large part of the accommodation required for the students. The foundation-stone was laid by the Right Hon. Baroness Burdett-Coutts, on the 1st of August last. The building is making good progress, and the contractors (Messrs. J. & E. Wood) expect to complete their work sufficiently early in the summer to permit a Fine Arts Exhibition to be held in the new rooms. The report of the head-master (Mr. Simmons) shows that a fair share of good work has been done during the year, the students numbering 358.

Birmingham.—On the 12th ult. the presentation of prizes to the students of the Birmingham School of Design took place, Mr. J. Chamberlain, M.P., president, in the chair. The recipients of prizes were too numerous to mention. The Chairman, in a characteristic speech, told his audience that if art made no progress in this country they would agree that it was not for want of much speaking on the subject, of much advice and admonition. Since the Exhibition of 1851 the critics had had it all their own way, and a very melancholy and depressing way it happened to be. Since that time the British public had almost grown accustomed to find itself abused as thoroughly vulgar and incapable of an appreciation of art. The British workman had been lectured and libelled, and the British manufacturer had been ridiculed and reviled, while those pharisees of art had been continually giving thanks that they were not as other men. Now, he confessed to a certain impatience with that constant carping and depreciation,—that jargon, he would almost call it,—of superior persons who were so confident in their own qualifications that they appeared to scorn accuracy whenever they descended to details, and who were so much above the horde of common men that they could only express a polished contempt for our puny struggle to elevate ourselves into some higher appreciation of what was decent and comely in the surroundings of our own ordinary life. In the addresses and speeches which he had recently been studying he had found two which appeared to him to be specially worthy of notice,—not because they were greater offenders in that respect than any others, but because they were men holding distinguished positions which invited attention and commanded respect. Mr. Poynter some time ago delivered an address to the art section of the Social Science Association at Liverpool; and the Rev. Mark Pattison, in giving the art prizes on a similar occasion, delivered an address to the students in the city of Oxford. Mr. Poynter, as they were aware, was a member of the Royal Academy; he was the director of the great national school at South Kensington. Mr. Poynter was also the painter of several pictures of the most undoubted merit, which the stupid British public had, notwithstanding, in some instinctive way recognised as containing real artistic qualities, and as being specimens of that art which a poet described as striving to attain by "shadowing out the unattainable." And the Rev. Mark Pattison was a scholar and a man of letters, and he (the speaker) found that both those gentlemen agreed in utter wholesale condemnation of all the results of art-teaching and education during the past generation. He supposed they would all admit that in an indictment of that kind, sweeping as it was, there was a great deal that was true, but what he complained of chiefly was the spirit in which the indictment seemed to him to be framed, and above all of the utter lack of practical suggestion and helpfulness which distinguished those two addresses. If he might borrow a vulgarism from the Rev. Mark Pattison he should say that both those speeches were Brummagem Ruskinism,—Ruskinism, that was, with a genius which made self-assertion endurable and eccentricity enjoyable. Now, divesting them of much illustration and collateral argument which was very disputable, he found that those addresses might be reduced to three cardinal propositions. In the first place, that all true art depended upon honest workmanship, which was no doubt correct; and that there was no honest workmanship in England, which was, to say the least of it, exaggerated. In the second place, that mechanical reproduction was fatal to the highest form of art, which was also accurate, although he doubted whether we had reached the limit of what art might do even for mechanical productions; and, in the third place, that art had made no progress in this country, and especially not in Birmingham, which was almost the *bête noir* of this eclectic school, during the past thirty years. Those propositions were illustrated by the old story about Brummagem jewelry, which had been disproved a hundred times, and by a perfectly new story about a Brummagem coal-box, which he would undertake to say never saw Birmingham, but was manufactured in quite a different town. Suppose for a moment they admitted all those propositions, sweeping as they were, *après*—what next? What suggestion had the Rector of Lincoln or the director of the great art-school to make which should enable them to amend their ways, and to make some improvement in their condition? He had read carefully those two addresses, and he did not find in them one single practical suggestion which could be usefully applied.

Bangor Cathedral.—It is stated that the Dean of Bangor has offered to contribute 500*l.* towards the restoration of the nave of Bangor Cathedral, conditionally upon a proportionate amount being subscribed by each of the four canons residentiary.

ACCIDENTS.

ON the 28th ult. the front part of the premises of Messrs. Thomas Brothers, drapers, Scotland-road, Liverpool, fell with a great crash, and a good deal of alarm was felt for some time, as it was feared several persons might be buried in the ruins. A portion of the building, however, in which two families lived, fortunately remained intact, but the inmates had to make a hasty exit for fear it might fall. The upper story of the building was used as a workroom, and eighteen young women were usually employed there, but the accident happened before they began work.

During the night of the 28th ult., and the morning of the 29th, a heavy south-westerly gale was experienced in the metropolis, in common with most parts of our coasts, and was attended with much damage to property. In Percy-street, Hackney, a heavy stack of chimneys was blown down, and the bricks fell through the roof of the back kitchen, which, fortunately, was not occupied at the time. In Albion-terrace, Peckham-road, near Rye-lane, the parapets of two houses were blown down into the front gardens, carrying with them several feet of the roof, and leaving the bedrooms exposed completely to the weather.

Mr. J. T. Hoyle, coroner, held an inquest on the 23rd ult., at Newcastle, on the bodies of Margaret Graham, aged fifty years; George Jobling, aged about forty-five years; and Bridget Parish, aged sixty-four years; who met their deaths on the 21st ult. through the falling of a house in Pandon. It appeared in evidence that the tenants had made no complaints, nor had they any impression that the house itself was in a bad state. Mr. Fulton, borough surveyor, stated that shortly after the accident he examined the place where it occurred. He found that the wall above the property had given way and fallen on to the house and thus caused the accident. The wall was not a very strong one, and the earth behind it, the principal part of which was deposit soil, would by the rain become like a sponge. It would thus become heavy and force the wall away, and then falling on to the gable it had knocked the chimney away. It was an old wall, and the property was not good. The beams appeared to be rotten; but he did not think that there was any one to blame. "It was one of those natural accidents that would always happen." It was the rain that caused the accident, and if it had been dry weather it would not have happened. The jury returned a verdict to the effect that the deceased persons met their deaths through the accidental falling of the house in question, caused by the rain which had fallen for some days previously swelling the earth and bursting the wall on the east side.

RAILWAY ITEMS.

New Central Station and Viaduct at Manchester.—The past year has seen great progress made with the new viaduct of the Cheshire Lines Committee, between Cornbrook and Manchester, which, when complete, will be one of the largest constructions of the kind in the neighbourhood. The object of its construction is to give the Cheshire Lines Committee direct communication to their new station, now in course of erection in Windmill-street, from their line to Warrington, Liverpool, and other portions of their system; in other words, it is the completion of what is known as the Manchester end of the Liverpool Extension Railway. The new line between Manchester and Liverpool has been in use for some time, but the Cheshire Lines Committee's system extends only to Cornbrook from Liverpool, and, in order to obtain access to London-road Station, it has been and is now necessary to run over a portion of the Manchester South Junction and Altrincham Railway. The new viaduct will give the committee a line entirely of their own.

Forres Station Improvements.—The improvements recently effected by roofing over the south platform of Forres Station are about to be supplemented by roofing over the platform that accommodates trains from the east. The new structure will rest on two rows of cast-iron octagon columns. The principals will be constructed on the French system of wrought-iron rafters, with cast-iron struts, wrought-iron tie-rods and purlins, all bolted together, and fixed to cast-iron shoes bolted to beams. The roof is to be covered with galvanised corrugated iron. The light is to be admitted by two rows of roof-

lights, and the ridge is to be finished with an iron ornamental cresting, of the Scottish thistle design. The gables will present an ornamental appearance to the town, will have ornamental pendants similar to the cresting, and will be finished at the apex with a large cut finial and pendant. The platforms are to have completely-covered connexions with the present refreshment-rooms and booking-office. The cost is estimated at 1,300*l.*, and the contractors are,—for masonry, Messrs. Ross & Macdonald, Forres; and for ironwork, Messrs. Wm. Smith & Son, Inverness.

Projected Short Line in the North.—A Scotch paper says:—The looks which Dundee has been casting on the civilisation of the West are growing more and more longing. The newest idea is to have a short line from Wormit Bay,—where the Tay Bridge leans on Fife,—to Newburgh, which is twenty minutes by rail east of Perth, and due north of Edinburgh on the line, which will be accelerated by the coming bridge across the Forth, and by which, per the Devon Valley route, one can get faster to Glasgow than by any present method. The land, which belongs to three proprietors,—the chief, Lord Zetland,—it is calculated, would be improved in value by the line as much as 25 per cent., but Dundee and the North-East coast would, if the rails sought were laid down, take a fresh interest in itself and in the world. If the trunk arrangement from Perth and Dundee had been through Glenfarg and Kinross to Queensferry, with the Tay bridged at Newburgh, or tunnelled where the Earn joins the Tay, as was at one time suggested, the through route from North to South would have been a thousand times better, and scores of feeding schemes and junctions like that now proposed would have been rendered unnecessary.

Re-laying of the Great Western Railway.—The Great Western Railway Company have resolved to re-lay the line between Oxford and Leamington on the sleeper system. On Sunday last a large number of men were employed at King's Sutton, near Banbury, re-laying one of the lines, and a single line had to be worked between Banbury and King's Sutton during the day. Near Oxford a portion of the line has been relaid on the new system.

Dangerous Condition of a Tunnel.—During the night of the 28th ult. all traffic on the down-line in Woodhead tunnel, on the Manchester, Sheffield, and Lincolnshire Railway, had to be stopped, owing to part of the roof threatening to fall in. All trains are being worked on one line, the tunnel, which is three miles long, being built in two sections. A large staff of men is engaged in repairs.

MASTERS AND MEN.

Durham.—The master-builders in Durham on the 28th ult. received a notice from the masons in their employment to the effect that they will require an advance of 4*s.* per week in their wages. An arrangement exists between the masters and the masons by which no alteration in the current rate of wages paid can take place without three months' notice of the same. Consequently if the demand of the masons now put in is conceded, it would come into force on the 1st of April, and it is claimed by the men that the advance of 4*s.* shall rule all the year round, as it will require that amount to bring their wages up to those paid to their fellow workmen in neighbouring towns. The present wages of the masons in Durham are 35*s.* per week, and the advance of 4*s.* per week will consequently bring their wages up to 1*l.* 19*s.* per week. The master builders had already given notice to their joiners of their intention at the commencement of the year to seek a reduction of their wages, on the ground of slackness of trade, and on this ground it is anticipated that they will resist the demand of the masons.

Leeds.—Some weeks ago the operative masons of Leeds and the district gave their employers six months' notice of a request for an advance of 3*s.* per week during the summer months, and they also intimated that they agreed to be paid during the winter months at the rate of 1*l.* 13*s.* per week for the first month, 1*l.* 10*s.* per week for the second month, and 1*l.* 13*s.* for the third month, instead of 1*l.* 13*s.* per week throughout the three months. To this notice the masters, through the Builders' Association, replied that they were willing to confer with the men, whom they took occasion to remind of the difficulties which the present system of working by the day was beset. The employers urged that the hour system would be more remunerative to the men, and would assist in promoting amicable feelings. Accordingly deputations from the Master Builders' Association and from the workmen—each empowered to come to a final decision—met in conference the other evening, the result being that a decision was arrived at adopting the hour system on and after the 1st of May next, the wages of the stonemasons to be 9*d.* an hour, the winter time-sheets to be so arranged that the average winter wages be not less than 32*s.* per week. Artificial lights to be used when necessary to allow the working hours contained in the time-sheets—such time-sheets to be afterwards mutually arranged. All men employed as setters of stone to be paid 9¾*d.* per hour when fixing, and the other working rules to remain as heretofore.

Sheffield.—A case of "rattening" recently occurred in Sheffield, two bands having been taken from the grinding-wheel of Messrs. Yates & Wood, saw manufacturers. The masters have since received a note, signed "Mary Ann," saying that the bands had been taken because of an apprentice and a non-unionist being employed, and that if the rattening was not a sufficient warning powder would be tried next time. Thinking this letter came from the officials of the union, a reply was sent to them that they might blow up the works if they thought proper, but that the firm would still continue to employ men whether they were non-unionists or not. The secretary of the Sawgrinders' Union called on Messrs. Yates & Wood, and repudiated all knowledge of or connexion with the rattening.

Cornwall.—The condition of the locked-out China Clay labourers in Cornwall is becoming desperate. The employers are determined not to employ any of the men out unless they renounce the union; the workmen being equally determined to stick to the union. A deputation of the operatives has been appointed to proceed to the North of England to lay their case before the various executives of the amalgamated trade societies, with a view to obtain pecuniary support for the locked-out men.

CHURCH-BUILDING NEWS.

Logie-Coldstone.—The old church of Logie-Coldstone, which has undergone extensive improvements and alterations, has been re-opened. The old church, built nearly a century ago, was beginning to be in a dilapidated and very uncomfortable condition. Consequently, the matter was laid before the heritors of the parish, who gave their approval at once to have it put in a sufficient state of repair. Messrs. Duguid & Sons, Ballater, gave a design with the probable expenses of the alterations, which were approved by the proprietors in April last. Messrs. Duguid were instructed to carry out the repairs, and Mr. A. Ogilvie, Aboyne, was appointed inspector of the work. The whole of the old roofing was removed, the front walls taken down and rebuilt from the window sills; height was added to the windows, and a foot of close-dressed belting was added to the height of the building all round. The gables have been put on a steep pitch, with corbie-step gabling, and ventilator along the slate ridge.

Northampton.—The foundation-stone of the new church of St. Lawrence, Northampton, was recently laid by the Countess Spencer. St. Lawrence's will be the first of four churches proposed to be built by the Northampton Church Extension Society. It will be a massive structure of brick, in the Early English style, with some special and striking features, from designs by Messrs. Barder & Baker, of the Adelphi. The church will accommodate nearly 800, and the total cost is estimated at about 7,500*l.*

Aberdeen.—It is stated that the architect and contractor for the erection of the new spire of St. Nicholas Church, Aberdeen, have found that the stones of the fine old Norman arches in the centre of Drum's Aisle, granite though they are, have become too decayed to support the superstructure of a tower and spire. The *Aberdeen Free Press* understands that the Churches' Committee have had the subject of setting forward the new spire to the extreme south of the aisle under discussion. It came out that, however the point was decided, the cost of erection would be increased some 1,000*l.* or 1,500*l.* The committee were all but unanimous in condemning the erection of the spire at the south end of Drum's Aisle, and a remit was made to the City Architect specially to consider and report as to the cost of so strengthening the arches as to render them available for supporting the fabric of the tower and spire.

Redditch.—The new church of St. George, Redditch, has been consecrated by the Bishop of Worcester. It has been built on a site at Bredon given by Lady Mary Windsor-Clive, who has also contributed largely to the building fund. The church is in the Early English style, with nave, chancel, and north aisle. The roof is open-timbered. The sittings, which are of varnished pine, will accommodate 400 persons. The reading-desk is of carved pine, and the pulpit, which is of stone, contains three panels, the centre containing a figure of the Saviour, and the others figures of the Apostles. Mr. T. Preedy, of London, was the architect, and Mr. T. Garbutt, of Malvern, the builder. At present there is no north aisle, but the space between the columns on the north side is temporarily walled up, so that the aisle can be added at any time when necessary. The total cost is about 3,500*l.*

Wallacetown, Dundee.—Plans have been prepared by Messrs. C. & L. Ower, architects, for the restoration of Wallacetown Established Church, which was erected in 1840, but for want of funds at that time the tower was not completed, and is very unsightly in its present unfinished state. It is now intended to carry out the original idea of a bell tower and clock, in keeping with the style of the building, which is Norman Gothic.

New Malden.—The parish church of New Malden is to be enlarged by the addition of a new chancel, from plans prepared by Mr. Ewan Christian. The estimated cost is 1,000*l.*, which will be borne by the family of the late Mr. John Coysgarne Sim, of whom the new chancel will be a memorial.

New Shoreham.—A vestry meeting was held at the Town-hall, New Shoreham, on the 14th ult., to consider the state of the parish church, which is being renovated,—the condition of the tower, the roof of the south aisle, the reseating of the church, the necessity of having new curtains, &c. The vicar of the parish (the Rev. Dr. Smith) presided, and opened the meeting by explaining its object, and adding, with reference to the state of the tower, that some promise had been made of a new bell, and that to receive such it would be necessary to strengthen the south tower. Mr. W. H. Harper, a churchwarden, and Mr. Arthur Loader, the architect, stated that the tower would stand 400 or 500 years, if the bells remained as they were, but if they made them swing with their mouths upwards, the stability of the tower might be endangered. The cost of strengthening the fabric was estimated at 300*l.* to 400*l.* As to the roof of the south aisle, they pointed out that water passed through it, and Mr. Loader recommended the erection of a new roof, which would cost about 80*l.*, as, if it were left as at present, the groyned ceiling below might be damaged. According to a report in the *Sussex Daily News*, the proceedings were somewhat uproarious, the point chiefly in dispute being whether chairs or pews were to be adopted. No decision was come to, and the meeting was adjourned for a month. Nothing seems to have been said as to the wisdom or otherwise of the general scheme of restoration, which has been seriously questioned.

Books Received.

A Ride to Khiva: Travels and Adventures in Central Asia. By FRED BURNABY, Captain Royal Horse Guards. Cassell, Petter, & Galpin, London. 1876.

IT is almost too late in the day for us to say more about "A Ride to Khiva" than this,—that a copy of the third edition has reached us, and that a fourth edition has since been published. It is a dashing account of a dashing act, and is agreeable and instructive reading. Captain Burnaby is a man of no ordinary physical powers, and he must have needed them all in his expedition. Mental power was required too, and his book shows that he possesses that also. The Captain is a strong anti-Russian, and urges that any advance of that power in the direction of Kashgar, Balke, or Merve should be looked upon by England as a *casus belli*, and that Russia should at once be so informed. Some valuable information as to routes is given in an appendix, together with several maps. The book came at the right time both for author and public.

THE WET AND THE WIND.

LAST week the upper portion of a house in progress in Ashburn-place, Cromwell-road, was blown off. The house on plan being angular, exposed to the force of the wind, and the brick-work being very wet, are given as the causes of the disaster. Unfortunately, the damage is not confined to the house, but extends to several sets of stables in a mews immediately adjacent, the brickwork which fell on to the roofs carrying all before it, and bulging the front wall to a considerable extent.

When this accident is mentioned, the exclamation will at once be heard, "Those jerry builders again!" We had not examined this particular structure; but looking at some houses in the same locality, erected and finished by the same firm of builders, we can speak upon our own observation as to the satisfactory manner in which the work generally was carried out; and we can safely say that on this and the adjoining estates, the properties of Lord Kensington and of Colonel Gunter, houses are built in a manner that would not have been improved upon if they had been executed under contract for special owners. We go a little out of our way to make this observation because the innocent sometimes suffer instead of the guilty.

Miscellanea.

Institute of Mechanical Engineers.—The proposed removal of the head-quarters of this society from Birmingham to London is strongly objected to by many of the Midland members, and on the 22nd ult. a deputation met the Manchester and Liverpool members at Manchester, to discuss the objections, and especially the alleged disadvantages of having all such influential bodies centralised in London. Mr. F. Ryland read a letter from Mr. F. J. Bramwell, of London, who expressed a strong opinion against the proposition to remove the institution. Mr. P. D. Bennett stated the views of the Birmingham members who were opposed to the removal. He said the brains of the institution were in the provinces, and it was feared that if the proposal were carried out the society would enter into competition with the Institution of Civil Engineers, and this would lead probably to its being placed in a position second to that body. Mr. F. Ryland said that according to Mr. Marshall, the secretary to the institution, there was a total membership of 1,054. London and a district of twenty miles had 199 members; Manchester, 142; Liverpool, 51; Derby, Sheffield, and Nottingham, 98; Leeds district, 67; north of Leeds, 168; Birmingham, 129. In the discussion which followed there was, nevertheless, almost a general expression of opinion in favour of the removal scheme, on the ground that London would be more convenient to the majority of the members.

"The Gentlemen's Club," Warrington.—A new building now in course of erection in Bold-street, Warrington, is intended as a Gentlemen's Club. It is a commodious building, with a frontage of 50 ft. to Bold-street and 54 ft. to Egypt-street. It is in the Gothic style, and is built of bricks (the facing bricks being from Knutsford), with moulded and ornamental bricks for the cornices, arches, string-courses, labels, &c. Very little stone is introduced. The principal entrance to the building is from Bold-street, and is formed by a Gothic arch resting on polished Rainhill stone pillars, with carved caps, forming an outer porch. On the ground-floor of the club-house is the entrance-hall, dining-room (36 ft. by 19 ft.), committee-room, lavatories, butler's pantry, inquiry-office, steward's-room, kitchens, &c. On the first-floor is a large billiard-room, with open timber roof, the reading-room (over the dining-room), smoking-room, card-room, and more lavatories. The second floor contains another billiard-room, dressing-room, bath-room, servants' bed-rooms, &c. The principal feature of the elevation is a large bay window, 16 ft. wide, which is carried up to the second floor. The building is being erected by Messrs. Ostle & Taylor, builders, of Haydock-street, Warrington. The architects are Messrs. John White & Co., who are represented on the works by Mr. Beesley.

Science and Art at Brighton. — The Princess Louise has consented to visit Brighton at the beginning of February, to take part in the opening of a new school of science and art. A view of the building was recently given in the *Builder*.

Formation of an Architectural Association in Leeds.—On the 14th ult. a meeting of Leeds architects was held in the Library of the Philosophical Hall, for the purpose of forming an architectural association. Mr. George Corson occupied the chair. There was a large attendance. It was resolved that an association should be formed, to be called the Leeds Architectural Association, and that its members should consist of persons who are professionally engaged in the study and practice of architecture and civil engineering. The objects of the association are:—To afford facilities for the study of civil architecture, to advance the professional interests of the members, and to serve as a medium for friendly communication between members and others interested in the progress of the art. The methods by which it will be sought to attain these objects will be by means of papers and discussions upon subjects of professional interest; by classes for the study of special subjects; by awarding prizes as an encouragement to architecture and engineering; by visiting buildings, and by the formation of a sketch-book. Rules were adopted, and members were afterwards enrolled.

A Warning Voice.—Mr. Thomas Connoly, the trade-union delegate, who has been six months in America, warns English operatives and manufacturers to keep themselves on this side the Atlantic. The former he will startle with the news that in the state of Pennsylvania, with less than the population of London, "there are more persons, able and willing to work, out of employment, than there are in all England." In the mining industry, "in the best of times, there are twice as many miners as the trade requires." A Dewsbury carpet-weaver says he gets less a yard than he was paid in England, and "has not worked five square months the whole year." A Sheffield steel-roller, who was promised seven dollars a day, gets work two days a week for half that sum. It has been contemplated by English manufacturers to establish factories in the United States, so as to abolish the influence of the protective duties. Mr. Connoly advises them to do no such thing, for he observes, significantly, there are bankrupts enough in that country. He speaks highly of the perfection and extent of the labour-saving machinery of the American mills.

Proposed Extensive Improvements at Bristol.—On the 22nd ult. an influential deputation from the city of Bristol, consisting of the mayor (Mr. G. W. Edwards), chairman of the Streets Improvement Committee (Mr. William Spark), and the vice-chairman (Mr. H. J. Mills), accompanied by the clerk (Mr. J. G. Heaven) and the city surveyor (Mr. Josiah Thomas), waited on the Right Hon. G. Sclater-Booth, President of the Local Government Board, at Whitehall, for the purpose of obtaining the sanction of that department to a proposal to raise a loan of 194,050*l.*, for the improvement of the city of Bristol and its neighbourhood. It appeared that application had been made some time ago for permission to raise 194,050*l.*, but by some misapprehension permission had only been granted to raise 50,000*l.*, an amount altogether inadequate to carry out the proposed alterations and improvements, for which the sanction of Parliament had been obtained. Mr. Sclater-Booth promised to have the matter looked into.

An Example to Employers.—Messrs. Cassell, Petter, & Galpin have established on their premises, in La Belle Sauvage-yard, capacious dining and refreshment rooms, to which all their hands,—some 700 or 800 in number,—have admission. The articles are retailed at cost price, and, what is better, are of the best quality. At one o'clock there is a capital *table d'hôte*, consisting of meat, vegetables, and pudding, with a glass of beer, for one shilling. A man could not live cheaper at home, and certainly not for the price, quantity and quality being the same, were he compelled to patronise the dining-rooms for his mid-day meal. The example is one which might well be followed by other large firms.

Robbing a Foundation-stone.—On the 18th ult. it was discovered that the contents of the jar in the cavity of the foundation-stone of the new and extensive parochial buildings at Smithston, Greenock, had been stolen. It was found that the thieves had rifled the jar of its contents, including the current coins of the realm, from a sovereign to a farthing (in all, 2*l.* 1*s.* 8½*d.*) The thieves had to pull down some 3 ft. or 4 ft. of newly-built wall to enable them to get at the stone covering the cavity.

Woodstock Church.—At an influential meeting, which was held at Woodstock on the 22nd ult., his excellency the Duke of Marlborough in the chair, it was resolved that the ancient parish church of St. Mary should be restored forthwith, according to the plan of Mr. Arthur W. Blomfield, whose report was received and adopted. It is estimated that the sum of 5,000*l.*, will be required for this purpose, and of this sum about 1,700*l.* have been obtained already. The rural dean stated that in the year 1869 the late Bishop of Oxford (Wilberforce) instructed him to prepare a report of the church building and restoration in twenty-four or twenty-five parishes during the preceding twenty years, and he had ascertained that the sum of 23,600*l.* had been expended in this deanery. Lord Randolph Churchill, in his speech, described the historical associations of Woodstock at length.

The Property Market.—The *Metropolitan* remarks,—"As might be expected, during the past week very little has been done in the way of sales by auction, only 17,734*l.* being returned as for sales for the last week, the private contract sales included. The return for the year 1876 amounts to 10,495,927*l.*; in 1873, it was 8,948,382*l.*; in 1874, 11,160,324*l.*; in 1875, 11,466,490*l.* Thus it will be seen that the present year shows about a million less of reported sales during the year as against the two preceding years. No doubt there have been several depressing causes for this difference, but at the present time, communication with several of the leading auctioneers places us in a position to say, that there is likely to be great activity, as far as regards sales, during the coming year."

Proposed New Railway Hotel.—A scheme for the establishment of an hotel for the convenience of passengers arriving in London by the South-Western Railway is on foot. The proposed site is known as the Savoy, situate on the Thames Embankment, and with frontage in Lancaster-place, at the north end of Waterloo Bridge. This ground, together with the duchy of Lancaster House, has been obtained (according to the *South London Press*) on a lease of eighty years, on favourable terms, and plans have been approved by the duchy authorities, on behalf of Her Majesty, for the erection of a fine hotel. The promoters state that "if the proposed scheme be carried out, the traveller arriving at Waterloo Station may find himself in less than five minutes in one of the most complete and elegant hotels in Europe."

Death at a Christmas Feast. — The "Wandering Exonian" (Mr. Harry Hems) gave his customary dinner to old folks at the Country House Inn, on Christmas-day. His guests numbered thirty,—men and women, all poor and deserving old people, most of whom had been present at previous festivities of the kind. "The Wandering Exonian" presided, and Mr. Pickard occupied the vice-chair. A genial welcome greeted the guests as they arrived, and at half-past one o'clock they sat down to a substantial meal of good old English fare. About five o'clock one of the guests, Mrs. Elizabeth Gliddon, nearly eighty years of age, was seized with what appeared to be a fainting-fit, and died in an adjoining room.

The Abingdon Surveyorship.—At the last meeting of the Abingdon Town Council, the Town Clerk was directed to give Mr. Townsend, Borough Surveyor and Inspector of Nuisances, a quarter's notice to determine his services on the 25th of March next; and it was resolved that the applications and testimonials of the applicants for the office of Surveyor and Inspector of Nuisances be considered by the Sanitary Committee, who were authorised to select from amongst the applicants those whom they thought desirable to attend before a meeting of the Council.

The Darlington Sewage Farm. — The umpire's award in this arbitration has been given. The question was as to the value to be paid by the Corporation of Darlington to Wilkinson's trustees for Stressholmes farm, which was required for a sewage farm for the borough. The highest valuation of the claimants' valuers was 21,521*l.* 10*s.*, and the highest for the Corporation 10,416*l.* The arbitrators were unable to arrive at a joint decision, and the case went before the umpire, who has given an award for 13,607*l.*

Proposed Clock-Tower for South London. Mr. R. S. Faulconer has offered to erect a clock-tower and clock on the site of the old parish church of Newington, which had historic associations dating back 800 years.

Winter Exhibition at the Royal Academy. The Exhibition of works by the Old Masters and by deceased Masters of the British School, now open in Burlington House, comprises 293 paintings, and will be found very interesting. It brings prominently to the front the works of Sir Henry Raeburn. It will be duly considered in our pages before long.

Enlargement of Brixton Convict Prison. Several groups of the prisoners at Brixton convict prison are employed in laying bricks and erecting new walls for enclosing the ground attached to the buildings. The men are said to turn out good work. The prisoners are taught masonry, smiths' and carpenters' work, and shoe and mat making, &c.

Water-closets Discountenanced. — The Local Board of Barnard Castle are discountenancing plans of all new buildings upon which are shown water-closets. They uniformly recommend earth-closets, a system, which, it is contended on the other hand, as applied to the town of Barnard Castle, can only with great difficulty be worked.

TENDERS

For the construction of sewers and sewerage works, Acocks-green, Birmingham, including irrigation-grounds, straining-tanks, man-holes, flushing-chambers, ventilating-chambers, and other works in connexion therewith, for the Solihull Rural Sanitary Authority. Mr. E. Pritchard, engineer, Warwick. Quantities supplied:—

Acock, Oxford	£8,370 0 0
Fisher, Dudley	8,339 6 9
Barber, Chesterfield	7,901 0 0
Nowell & Co., Handsworth	7,726 4 6
Stretton, Sheerness	7,525 14 3
Bourne, Burmingham	7,432 0 0
Cox, Shrewsbury	7,122 10 0
Bissett & Co., Bristol	7,113 19 3
Haines, Harbourne	6,885 19 2½
Robinson, Worcester	6,853 0 0
Rayner, Bootle	6,673 0 0
Green & Son, Warwick	6,525 0 0
Bushell, Birmingham (accepted)	6,177 12 2½

For alterations at the Citizen public-house, Houndsditch. Mr. Wm. C. Banks, architect:—

Parnacott	£416 14 0
Sharpe & Everard	398 0 0
W. & F. Croaker	395 0 0

For school for the Crondall School Board, Surrey. Mr. S. Stapley, architect. Quantities supplied:—

Lummings	£3,371 0 0
National Co-operative Builders and Contractors' Society	3,350 0 0
Diamond	3,270 0 0
Kemp	2,899 0 0
Duke	2,576 0 0
Cranston	2,865 0 0
Watford	2,800 0 0

For rebuilding portions of malt-houses, Kew Bridge, for Messrs. Jupp & Sons. Mr. John W. Smithies, architect:—

Barnes	£1,030 15 0
Spicer	903 5 0
Beauchamp	868 0 0
Taylor	868 0 0
Adamson & Son	847 0 0
Gibson	833 0 0
Nye & Son	822 0 0
Ironwork.	
Corcoran, Witt, & Co.	£247 10 0
Goodfellow	155 0 0

For sewering, street-making, &c., for the borough of Portsmouth. Contract No. 20. Mr. J. E. Greatorex, engineer:—

Marshall	£10,785 0 0
Burbidge	8,481 0 0
Wight	8,328 0 0
Cooper	8,323 0 0
Harrison	8,252 0 0
Hayter	7,933 0 0
Ward (accepted)	7,235 0 0

For five houses at Stoke Newington. Mr. R. Blackmore, architect. Quantities not supplied:—

Hill	£3,027 0 0
Toms	2,925 0 0
Sharman	2,594 0 0
National Co-operative Builders and Contractors' Society	2,398 0 0
Linfield	2,194 0 0
Wyatt	1,895 0 0
Jenkins	1,809 0 0

For two villa residences in Hornsey-lane for Mr. T. Mattinson. Messrs. Lander & Bedells, architects:—

Southcott	£3,991 0 0
Axford	3,887 0 0
Ebbage	3,837 0 0
Carter	3,820 0 0
Kerry	3,815 0 0
Brass	3,810 0 0
Grover	3,787 0 0
Kelly	3,775 0 0
Williams & Son	3,732 0 0

For enlargement of Park Chapel, Hornsey. Messrs. Lander & Bedells, architects:—

Grover	£3,176 0 0
Axford	2,972 0 0
Ebbage	2,970 0 0
Moreland & Co.	2,943 0 0
Carter	2,940 0 0
Dove, Brothers	2,929 0 0
Williams & Son	2,867 0 0

For chapel at Nazing, Essex. Messrs. Lander & Bedells, architects:—

Ebbage	£1,240 0 0
Grover	1,037 0 0
Bentley	1,025 0 0
Clarke	950 0 0
Hampton	916 0 0

For warehouse in Aldersgate-street. Messrs. Lander & Bedells, architects:—

First Portion.

Dove Brothers	£1,936 0 0
Williams & Son	1,914 0 0
Moreland & Co.	1,911 0 0
Nightingale	1,822 0 0
Grover	1,794 0 0
Brass	1,612 0 0
Perry	1,555 0 0
King	1,530 0 0

Second Portion.

King	£6,048 0 0

For enlarging White Hall, Hornsey-lane, for Mr. G Wills. Messrs. Lander & Bedells, architects:—

First Portion.

Axford	£395 0 0
Ebbage	391 0 0
Williams & Son	353 0 0

Second Portion.

Axford	£3,850 0 0
Brass	3,817 0 0
Newman & Mann	3,735 0 0
Dove, Brothers	3,075 0 0
Williams & Son	3,617 0 0

For "The Beechwood," Newport, Monmouth, for Mr. George Fothergill. External walls, mouldings, &c., finished with Portland cement, or with Bath-stone ashlar and dressings for two principal fronts. Messrs. Habershon, Pite, & Fawckner, architects. Quantities by the architects:—

	Portland Cement.	Bath-stone Ashlar.
Biggs	£8,012	£9,181
Burkett	7,820	—
Jones	7,422	8,061
Thomas	7,117	8,172
Baker & Son	7,082	8,042
Stephen & Bastow	6,999	7,977
Fox	6,720	7,600
Linton	6,608	7,421
Miles	6,400	7,294
Richards	6,245	7,070

For the erection of St. Mary's Church, Brighton, (excepting tower). Mr. William Emerson, architect. Quantities by Mr. W. Allen Dixon:—

Booth	£15,000 0 0
Chappell	14,300 0 0
Dove, Brothers	13,995 0 0
Killby	12,871 0 0
Cole & Sons (accepted)	12,575 0 0

For new steam corn-mill, granary, boiler-house, chimney-shaft, &c. for the Appley Bridge and West Lancashire Corn-mill Co. (Limited), Appley Bridge, near Wigan. Mr. John Dence, architect. Quantities by Messrs. Taylor, Son, & Jackson:—

Fairbridge & Hatch	£13,129 6 0
Holden	12,008 0 0
Duxfield (withdrawn)	11,720 0 0
Hutchinson	11,600 0 0
Preston	11,270 0 0
Bridge (accepted)	11,000 0 0
Cheetham	10,939 0 0
Morland & Co.	9,650 0 0

For two cottages at Frilford, Berks. Mr. Edwin Dolby, architect:—

Wyatt & Son	£596 10 0
Drew	439 18 0
Wheeler & Robins	423 13 0
Walter	390 0 0
Aldworth	366 12 0
Wheeler & Hulcup (accepted)	356 16 0

For two houses and shops at Lynton, North Devon. Mr. Edwin Dolby, architect:—

Burgess & Goss	£1,218 10 0
Pearse	1,200 0 0
Harrison	1,030 0 0
Bowden & Sons	810 0 0

For a new church in the parish of St. Paul's, Lincoln. Mr. A. W. Blomfield, architect. Quantities supplied by Messrs. Widnell & Trollope:—

Barnes & Wright	£3,748 0 0
Martin & Sims	3,718 0 0
Otter & Elsey	3,640 0 0
Close	3,565 0 0
Huddlestone & Son	3,563 0 0
Young	3,425 0 0
Chambers	3,386 0 0
Binns (accepted)	3,332 0 0

For a foreman's house, Welton Cliff, Lincoln, proprietor finding all bricks, stone, sand, and headings. Mr. W. Thompson, architect. Quantities not supplied:—

Martin & Sims (accepted)	£475 0 0

For villa residence and stabling at Hove, Brighton, for Mr. J. O. Vallance. Mr. Thomas Lainson, architect. Quantities by Messrs. Fowler & Hughman:—

Moreland & Co.	£8,886 0 0
Merritt & Ashby	8,396 0 0
Cheesman & Co.	8,243 0 0
Dove, Brothers	8,157 0 0
Chappell	7,988 0 0
Nash & Co.	7,497 0 0
Lockyer	7,292 0 0
Barnes	7,118 0 0
Howard	6,780 0 0

For alterations to No. 173, North-street, Brighton, for the Hampshire Banking Company. Mr. Thomas Lainson, architect:—

Colwell	£999 0 0
Reynolds	875 0 0
Lockyer	832 0 0
Newnham	787 0 0
Reynolds, jun.	718 11 0
Barnes	732 0 0

For the partial restoration and reseating of Rodmersham Church, Kent. Messrs. Morris & Stallwood, architects:—

Geere	£1,895 0 0
Jopling	1,732 9 10
Bridge	1,715 0 0
Butler	1,676 11 0
Naylar	1,563 0 0
Martin	1,446 15 4
Avard	1,438 0 0
Cornelius	1,421 0 0
Beaumont	1,209 12 9
Whiting	1,192 0 0
Shrubsole (accepted)	1,138 0 0

In the list of tenders for a work under Mr. R. L. Roumieu in last week's *Builder*, the lowest was one from Mr. Macey, which, by permission of Messrs. Petty, Wood, & Co., has been withdrawn by him. The next lowest in amount, that sent in by Mr. G. S. Pritchard, amounting to 23,200*l.*, has been accepted, and the works will be commenced forthwith.

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We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

With the next Number will be given, as a Supplement, an INDEX and Title-page for the Volume of last year. A COLOURED TITLE-PAGE can be had, Gratis, on personal application.

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The Builder.

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Art at the Antipodes.

IT is sometimes refreshing to the sense to turn the eyes, after a too-long poring over things close at hand, upon fresh objects wider afield. Our vision after such a change generally returns with a quickened feeling of appreciation, opened fully to the merits and demerits of that on which it had been previously incessantly but unprofitably concentrated. Let us, therefore, put such a change to the test of experience, and turn our gaze for a time from art at home to art at the antipodes.

There we shall find several considerable and wealthy vice-regaldoms, full of energy and enterprise, which have sprung into existence, like Minerva from the brain of Jupiter, perfect in organisation and in form. We shall, therefore, not be surprised at discovering that the colonies of New South Wales and of Victoria have, like the old country, their Academies of the Fine Arts and their National Galleries,—National Galleries, however, not of works of the Old Masters, as in the mother country, but of living English painters. The colonists are wise in their generation, and cannot see the force,—the logical consistency,—of collecting works of art which are utterly at variance with the spirit of the age, and of exhorting students to copy them, when they know that the prospects in life of any art-student who should unfortunately listen to such advice would be *nil*. The colonists, therefore, resolved, in this case, not to follow the example of their respected parent, but to gather together examples of modern art, more especially of the English school. They resolved also,—a very wise determination,—that, should they at any time desire to have works to remind them of the art of the past, they would obtain copies of the most celebrated pictures by the old masters.

We have no precise information as to the dates of the establishment of an Academy of the Fine Arts, and of a National Gallery, at Melbourne, but we may gather from the "Victoria Year-Book" that there was, in the city of Melbourne in 1874, a school of painting in connexion with the National Gallery, which was attended by three male and twenty-four female students, and that there was also a School of Design, which was in the same year attended by fifty-four male and 135 female students. We may just note, too, a very remarkable fact, that the proportions of the sexes of the students of art to each other are the very reverse of those in the mother country.

The National Gallery is in the same building as the Melbourne Public Library; it contained, at the end of 1874, 69 oil paintings, 158 statues and works of art, and 3,650 water-colour drawings, engravings, photographs, &c. The general public are admitted without charge on week-days, between the hours of noon and five p.m. in summer, and noon and four p.m. in the winter. The number of works collected shows that the Victorian Government's vote for the purchase of works of art must have been considerable; and it may serve to show the spirit in which the colonists have ventured upon their art enterprise if we state that they commissioned Mr. Herbert, R.A., to paint a picture of the value of 1,700*l*. Since 1874 a new and handsome gallery has been built by the Government. It contains, amongst other works, the "Departure of the Pilgrim Fathers," by C. W. Cope, R.A.; "Rachael at the Fountain," by F. Goodall, R.A.; "A Question of Propriety," by E. Long, A.R.A.; and landscapes by F. Lee, R.A., Webb, Mogford, Lewis, and others.

The art movement in Sydney is of more recent date than that of Melbourne. It springs from a very genuine love of art; for these colonial centres have not only their own excellent educational institutions, but men of culture from all parts of Europe, brought together either in the pursuit of mercantile or professional affairs. The institution of the Sydney Academy of the Fine Arts is mainly due to the energy exerted in the cause by Messrs. E. L. Montefiore, E. Combes, J. H. Thomas, C.E.; E. Du Faur, the indefatigable hon. sec., and some others. It has now, for several years, been in working order. The Academy possesses a fine collection of casts from the antique. There are classes for the study from the antique and from the life. Its founders desired to have the services of a properly trained master from South Kensington to direct its working; but that intention is, on account of the limited funds at their disposal, at present in abeyance. The drawing and modelling departments are now confided to the teaching of two Italian artists. There are, periodically, competitions, when certificates of merit are awarded to the successful student competitors. It is even proposed that there shall be an annual award of medals. Designs for a silver medal have already been asked for.

Sydney, like Melbourne, has also its incipient National Gallery, founded by the council of the Academy of Arts. The New South Wales Legislative Assembly has already voted several money grants,—2,000*l*. in all,—in furtherance of this project, and a London committee of selection has been appointed to purchase works of art, which it has done to the extent the grants permitted. This committee, we think, acted very wisely in setting apart 100*l*. for the purchase of autotypes from the finest works by the old masters. This collection of autotypes will, in itself, form an interesting exhibition, even if the collection of modern works should soon eclipse it.

The Committee of Selection has chosen many excellent specimens of our water-colour painters, and also some few oil pictures. In its purchases of oil paintings there is one very notable example, a host in itself,—we mean Mr. Madox Brown's large and fine picture of "Chaucer reading his Poems before John of Gaunt." The colonists will, doubtless, be very proud of the possession of this work, which no future historian of English art can ever overlook. But neither Sydney nor Melbourne must rest contented with what it has already done. Neither must abate in either the energy or liberality which they have displayed in this good cause, and which will, doubtless, be crowned, not only with admirable results, but with the applause of the world at large.

We have but to glance at the architecture of the Australian cities to be moved to prophesy that these antipodal vice-regaldoms will one day make a great mark in art. Architecture has there become regenerate. There is a vitality and appreciation of proportion about it which takes us back to ancient Greece. Does change of hemisphere favourably affect the minds of men, as the change of attention, we have previously alluded to, the over-strained eye? It is very possible that it may. The Australian Colonies are lands full of light,—lands in which the sun shines, and not only shines, but may be seen every day. They furnish, therefore, the eye-inspiring element, and we have prospective either an antipodal Greece or Italy. For, if the influence of the change of hemisphere has in so short a space of time produced such marked improvement in the feeling for architecture as is seen, we may reasonably expect that the two younger arts will overtake and keep pace with their elder sister.

It is most satisfactory to notice that in these new colonies art is assuming its proper politico-economical position; it is, in fact, being developed to popular demand. It is not in Australia to be forced upon the people under the mistaken notion that taste may be propagated by inoculation from Grecian and Italian art. Let us fervently hope that Victoria and New South Wales may be preserved from too much talk about art,—from that too-much talk and too-little thought which afflicts everything at home, and from the misleading of amateurs and rhapsodists, who turn by their ink-and-water sophistries the current of steady progress aside into all kinds of quaint, eccentric eddies. If the colonies should be able to escape these dangers, they will have no work to undo, and thus art-progress will be uninterrupted. Let them be advised to turn their Australian genius at once towards mural decoration, towards the decoration of all their great architectural works, as the Greeks and Italians did; for this, as it was shown by Mr. Cave Thomas at the Social Science Congress, is the key to the most thorough kind of art-education. It was the devotion of art to the embellishment of public edifices which made the art of Greece and Italy so

pre-eminently superior to that of modern times, and which enabled the ancients to imbue their manufactures with beauty. Let us, therefore, counsel the Colonial Legislatures to devote, from time to time, liberal grants of money to the embellishment of their public edifices. Home artists might be found who would lead the way, and to direct the art-talent of these fine colonies into its right channel. If these colonies can only resolutely follow the path indicated, they will in a few years have the satisfaction of finding that their art-status will at least align with, if it does not even take the precedence of, that of the mother country.

THE STREET NOMENCLATURE OF LONDON.

FROM week to week London is enforced to alter the names of its minor thoroughfares. So long as the process is confined to suburban novelties and vulgarities, the process need not be complained of; but a disposition appears, on the part of the Metropolitan Board of Works, to monotonise, if we may so term it, the street nomenclature of London, and to substitute a new ostentation for an old one. We will not claim to share the antiquarian spirit which, in certain cities of the North, would, for the sake of historical reminiscences, preserve "Murderer's-lane," or "Hang-dog-alley," or, as at Halifax, "Gibbet-row." But, in London especially, apart from its outspreading dependencies, so to call them, we have a world of tradition, or chronicles, connected with the ways by which one citizen is enabled to meet or find another in the great living wilderness of the nineteenth century. The mysteries, or rather complexities, of this labyrinth have been partly unlocked by successive indices to "the streets and places of the metropolis," ordered to be printed by the Metropolitan Board of Works since 1868; but the entire result does not represent a tithe of the curiosities in the way of nomenclature which the British capital has still to exhibit. Without being tempted into antiquarianism, we would suggest an inquiry into the significance of the Old Bailey, Fore and Watling streets, the Old Kent and the Great Dover roads. Have they not histories associated with them? Of course, as surely as "the Roman Road" signified a conquest in a former time. But, coming within the gates, which we beg the Metropolitan Board of Works to treat not disrespectfully, we find a history written, in the most distinct of characters, upon, as Mr. Kemble says, every marsh, hill, stream, and ford, and populous district of houses. Well, the Board of Works must not interfere with any of this. It may turn Cooper's-corner into Townsend-lane, or Gilbert's-grove into Showman's-alley, as it pleases; but let its invasions stop short of historical London,—of, to begin with, Finsbury, Fenchurch, and Moorfields; of the Tower, Cornhill, and Ludgate; of Walbrook, Holborn, Clerken-well, Holy-well, and St. Clement's Well. These are among the mosaics of our local tradition, and not to be trampled out of memory. Let it be borne in mind that the archæologists have very little, if anything, to do with the question in hand. It matters nothing what interest they take in the various wells,—St. Clement's, Chad, Bride, Clerken, or Sadler, or that long known as the Holy, or the others called Muss, or Bagnigge, or Coldbath, or Camber, or Stock. Very few persons are concerned in rooting up their own family histories; very few, again, care to understand why they can find their way so easily from one part of the metropolis to another. As the years go on, naturally they meet with new names,—Victoria-street, Cannon-street, Belgrave-street, and so forth; but these are additions: they are not substitutions; they displace nothing. What, however, would be thought of this all-embracing Board of Works were it, entering within the Westminster and City precincts, to tear down, from each familiar wall its tutelary word,—*clarum et venerabile nomen*,—the name of the street? The chroniclers assure us that Fetter-lane was a centre of forgery, and hence so-called; that St. Martin's-le-Grand represented a disgraceful mendicant imposture; and that Cripplegate gave rise to more trickeries than were ever practised within the walls of "The Court of Miracles" in Paris. Still, why should local history lose its colour on that account. It is true that we have, in a great measure, justified this irreverence by our neglect of historical etymology in the matter, allowing Channel to become Cannon-row; Vine-garden, Vinegar-yard; Duke's Foot-lane, Duck's Foot-lane; Mart, Mark; and Three-needle, Threadneedle; though the last is not so much of a degradation, after all. But, upon the whole, the Londoners have been faithful to their local traditions, and would not change the ancient style at the bidding of any Board whatever. They will keep their Lothbury, their London-wall, their Finsbury, and Fenchurch; and all their other saintly relics. Helen's, Botolph's, Dunstan's, Benets, Clement's, and Lawrence, though now and then allowing of a strange transmogrification,—as, for example, that of Baynard's Watering into Bayswater, and the Lady Clapa into Clapham. Let us leave Stepney alone; it was a perplexity when Domesday Book was compiled, and let us see how the Metropolitan Board of Works will improve upon the records in that golden volume. Going on, however, it is not, as yet, threatened to change the names of districts,—though nobody knows what may come in time,—such as Camberwell, Shadwell, and Stockwell, Tyburn, Kilburn, Marylebone, Westbourne, Pimlico, or Chelsea; but if ever the Board gets its grip within the City boundaries, might it not put impertinent questions concerning Aldgate, Ludgate, and Cripplegate, themselves? In and out of the City there are remembrances to be cherished:—Great Coram-street, in memory of the admirable man in whose honour it was named; Black and White and Austin (or Augustine) Friars, and the Broad Sanctuary, on account of the historical chapters attaching to them; Spitalfields, in memory of a most noble and charitable lady; Battle Bridge, in commemoration of an interesting, if not exceedingly worthy, community of monkish idlers; and Bevis Marks, which ought to have been in the close neighbourhood of St. Paul's, and is not. St. Paul's, however, has its peculiar group,—Paul's-chain, Paternoster-row, Amen-corner, Ave Maria-lane, and so forth. We read old London history, moreover, in Rochester-row, London House-yard, Bishopsgate, Chichesterrents, Saffron-hill, and Vine-street. But the Board, however it may undo the present, cannot bring back the past. It cannot restore the brilliant aspects of Bethnal-green as it was known to the subjects of the first King Edward; it cannot restore to us the "pleasant fields" of Whitechapel, or "the open downs of Hackney," or "the shady lanes of Poplar," or even "the military pass" at Tyburn, erected against "the robbers who infested the deep morass and wild heath which are now Belgravia and Vincent square." So far the change has been beneficial, because the characters of the localities, together with their names, have been altered; but we may be forgiven, perhaps, for clinging to such historical appellations of places as Westmoreland, Warwick, and Northumberland; Norfolk, Suffolk, and Worcester; with Lincoln, Furnival, and Clifford; and the humbler yet even more interesting associations of Rotherhithe, Lambeth, Queenhithe, Cornhill, Leadenhall, the Cheapes, Bread-street, Mark-lane, the Poultry, Pudding-lane, Fish-street-hill, and Friday-street, so called, says Stowe, "from the fishmongers dwelling there, and serving Friday's market." Not for any consideration should these, which might be designated as the "corner words" of the London Chronicles, be disturbed. Candlewick tells us of the wax-chandlers who sold lights for altars in the days when the Pope had his votaries far and wide throughout the land. We can all of us read a page of the past in the titles of Soper-lane (now Queen-street), Cheapside; Cordwainer, Cutler, Hosier, Inkborn, Bridge, Skinner, Founder, Tokenhouse, Sermon, Sea-coal, Pipe, Patent, and Trump streets, lanes, courts, yards, or "rolls," as the case may be; and the Board of Works, should it ever invade the City, must not dare to assail a single one of them. Not the Old Jewry itself, nor Jewin-street, not even Poor Jewin-lane. It matters not that much historical significance is evaporated beneath the drying-up process of time; that Lombard-street is no longer what it originally was; that the Steelyard tells only an ancient tale; that the "Tower Royal," as a thoroughfare, no longer "pertains to the kings of this realme"; that the Vintry is not now exclusively appropriated by wine-merchants, or that the Boulogne Gate—perverted into Bull-and-Gate—represents no more conviviality and conquest in one. We might as well regret Hangman's Gains, though famous in its day. But the point is to let these antiquities absorb themselves into the past without being violently blotted out, and to keep green such annals as we may; such, for example, as those of Bucklersbury, Farringdon, Bassishaw and Basinghall, Crosby and Cullum,—all archives, taken severally or apart; but of little account in the sight of rehabilitating Boards, who would as ruthlessly pull down the escutcheons of Wentworth and Oxford, Sussex and Brandon, Newcastle and Albemarle, Chandos and Berkeley, as they would any one of the ninety-nine King-streets and seventy-five Queen-streets which existed only a few years ago in this loyal yet uninventive London of ours. Their innovations are resisted, however, and it is chiefly the ambitious builder of the suburban district who finds his glory fallen, and Cooper-corner, or Gilbert-grove, converted into an insignificant Number 65 in Diorama-road. Bedfordbury, Brydges-street, Chandos-street, Tavistock and Southampton-streets, Howard, Arundel, Surrey, and Norfolk-streets, Somerset House, Scotland-yard, and Whitehall, have each and all preserved their historical appellations, with Warwick-place, Theobald's-road, Leicester-square, Sidney-alley, "Pickadilla," and Copenhagen-fields. And why, and how? After the Fire, "the jealousies of the citizens caused but few to recede from their claims to particular localities, and the old lines of thoroughfare were, accordingly, retained. The result, fatal as it was to the magnificent designs of renovation, suggested by Evelyn and Wren, beyond doubt, rescued much of the historical interest of early London from oblivion. Old associations, kept alive and strengthened in adversity by the *reliqio loci*, still clung to blackened ruins, and the names of their former possessors lingered on the site, long after the place was diverted to other uses." So with the names of streets. We shall never again see a time like that in which "foreign princes were carried to see Bloomsbury-square as one of the wonders of England." Still, that is no reason for booking it in a new name; or Soho either. We cannot even part easily with Birdcage-walk, or Cockpit-lane, or Pall-mall,—certainly not;—or Richmond-terrace, or Downing-street, or St. Alban's-place (re-christened in honour of Waterloo), or Mayfair. There is one magic about Cheyne-walk, and another about Craven-hill. We may give over to the stencilling three-fourths of the "Kings," two-thirds of the "Queens," half of the "Princes," "Regents," "Charleses," "Alberts," and "Georges"; but every alteration should be questioned closely, and no name which tells a story, confirms history, or suggests matter for wholesome thought should be given up.

MANAGEMENT OF THE ROYAL PARKS.

WITHIN the late year some changes have been silently carried out in the royal parks, with respect to their general management, and more improvements are contemplated, and are at present under the consideration of her Majesty's Board of Works. Some months ago a number of defects, and what many people hesitated not to call abuses, were brought under the attention of the Board, and of course through that body they finally came under the notice of the Government. One of the first evidences of a change in the usual conduct and management of the parks was the appointment of an officer or officers to act as pay-clerks at the different parks, on a stated day weekly. For long years previously the payment of the gardeners, park-keepers, and labourers devolved upon the superintendents or head gardeners at each park. Last summer the above officials and their deputies were relieved from their customary duties in this respect, and a pay-clerk was appointed to attend at the parks to pay each man, according to the returns furnished by the superintending park officials. Rumour was busy at the time in assigning cause for the change, but it is sufficient for us to state that the new method has been found to work more satisfactorily, and, it is believed, will ultimately prove more economical than the old system, in connexion with which abuses were allowed to exist. Another change, and not a less remarkable one, is now being carried out by the appointment of a Chief Superintendent, or Bailiff, of the Royal Parks. The appointment has been conferred upon a military officer of the grade of captain, whose duty it will be to act as the deputy of the Chief Commissioner of Works in the matter of the business government and management of the royal parks. Heretofore, the different park superintendents acted directly with the Board of Works, but henceforward the bailiff will be superior to them, and an officer above them, occupying a middle place between the ordinary park superintendent and the First Commissioner.

he new appointment in some quarters is looked pon with disfavour, and no doubt it is unalatable to the former park superintendents, ho for long years exercised large discretionary owers and not a few beneficial privileges. In ortioultural circles the new appointment of arks bailiff has excited some jealousy and angry eeling, because the new officer was not selected ith a view to special horticultural qualificaons. When it is considered that each of the oyal parks has superintendents who are ractical gardeners, as well as head-gardeners, eputy-gardeners, and a staff of working ardeners and assistants, it may be urged that pecial horticultural knowledge was not parcularly requisite in the holder of the new ppointment. Be that as it may, the appointent is now made, and the necessity for me such an arrangement was pointed out some me since by a writer in these pages. During he late year considerable improvement has aken place in the general management of more an one of the royal parks, and closer attention aid to the gardening wants and to the meeting f the requirements of the visitors in securing a eaceful recreation and healthful enjoyment. uch, however, yet remains to be accomlished before the parks are placed on an minently satisfactory footing. It is reported hat the holders of the larger privileges, in onnexion with the royal parks, such as the wnership of boats let out for hire for rowing r pleasure parties, at so much an hour, and ose other privileges, as in the East-end park, the matter of swings and merry-go-rounds, ill be subject to a change. In the Crystal alace grounds and other public places of ntertainment large sums are paid yearly by wners of like appliances to those seen in the oyal parks.

Some time ago it was contemplated to introuce the metropolitan police into Battersea and ictoria parks, as in Hyde Park, and do away ith the parkkeepers. In the case of Battersea e outside public looked with disfavour on the ntemplated change, and the residents in the cinity protested: so the scheme was allowed to op. Previously to this contemplated change Battersea, a paper, or notice, was circulated mong the parkkeepers in Victoria Park asking l the men who were willing to transfer emselves to the ranks of the police to sign eir names. The document got the cold oulder from the men, who came to the onclusion not to surrender their appointments, parkkeepers, without such guarantee as ould secure them the pensions they would be ntitled to as parkkeepers at the end of a stated me. As the Board of Works, or the First ommissioner at that time, would not promise a uarantee, the men withheld their signatures, xcept in a few instances; so the question of he introduction of the metropolitan police into ictoria Park, like that at Battersea, was dropped or the time. We believe that it was long felt s a grievance by the parkkeepers of all the oyal parks, who of late years are mostly ien who have served some years in the army, hat they were not at home in having a ardening official over them. They preferred a ilitary head or superior, to whom their inspector r other representative could appeal in case of eed. Their wishes are at last gratified in the erson of the new official.

In connexion with this subject we have a ord or two to say as to Rotten Row, in Hyde ark. Who has the management of the roadaking here? The operations have been going n for months, and heaps of materials of various inds have been piled up: old bricks and mortar, ravel, hoggin, and what not. We shall not be uch surprised if it form a hard, concreted ass, quite unsuited for the end in view. Who uperintends it?

British Archæological Association.—At he last meeting, after a number of interesting xhibitions, a paper by Mr. C. Lynam, of Stoken-Trent, was read, descriptive of the ancient rosses of Staffordshire, and illustrated by a rge collection of drawings and casts. These epresented several examples of Saxon date, and he similarity to those of Ireland, Wales, Scotand, and Cornwall, was pointed out. The econd paper was by Mr. C. W. Dymond, f Penalt-on-Stanton, Drew; and the chairman Mr. Cuming) read some notes descriptive of everal little-known effigies in the churches f Norfolk, and which are of considerable nterest.

CONSTANTINOPLE, AND THE LITTLE WE KNOW OF IT.

THERE is, as all the world knows, now going on and pressing towards some conclusion a series of trials of strength, shall we call them, between what may be termed broadly and generally Eastern and Western ways of work and thinking in this world. In this there is certainly nothing that can be called new, for the elements in it are as old as the world itself; but, nevertheless, the fact of its coming to the front every now and then in so mechanical an age as this is not a little significant, and has hardly, as it seems to us, excited that kind of interest which might, at least in some quarters, have been looked for. We must not generalise too much, that is certain, and must here steadily keep in view the bricks and mortar; but the distinctive difference between the ways of work of the "East" and "West" are so great and broadly marked that a thought or two about them may be of interest. There is no fear of the subject being exhausted, or all the mysteries of it solved in a moment. But if there be many curious interests surrounding the subject, looked at socially, they do not grow less singular when practical, and even fine-art matters are glanced at. We are, perhaps, nowadays a little too apt to imagine that what is being done all about us is quite unique, and that nothing like to it has ever before been even attempted. We are tempted to suppose that the wonderful mechanical power always at command about us does more than all that was ever even tried to be done in other days in places beyond the reach of that wonderful mechanism, and that the "Northern" man,—for that is, perhaps, the most descriptive term,—can do work beyond anything which the "Southern" man ever attempted. The mere existence of railroads, if there be nought else, seems to silence all further talk or argument. But this is but to glance at the matter. We owe to the East, if we but look deeply enough into the mystery, more than can well be told, and must needs go to it to find exemplars of much that is now regarded, as often as not, as quite new, and as hitherto untried and unthought of. Indeed, it must in truth be said that by dint of very closely looking we may get glimpses of things altogether beyond present ken, even in material matters; and hints as to modes of human action, in these days untried, and all but lost.

In the older architectures, for example, there are to be found modes of work, and problems encountered, which no man would now dream of, and a dealing with masses of material which would simply appal our present powers of dealing with them and handling them. There are evidences in the oldest of structures of a power of accurate "fitting" of forms together, and of artistic capabilities in the mere mechanical work of it, which it would be quite vain to look for nowadays anywhere. It is a little-noticed subject, but one well worth attentive looking into. Indeed, might it not be said, broadly and generally, that, while all things about us are mechanically wonderful and noteworthy, past work is equally noteworthy for its evidences of artistic inventiveness, absence of repetition, and power of handwork?

It is impossible to look at a map of such a city as Constantinople without thought of this distinctive difference between the old-world ways of work, and the new of to-day. A map of London also will do much to show this, and by dint of a little careful colouring of a map of to-day the old ways of town building will separate themselves from those of the past in a very instructive manner. We say with a map of London this may be done, but when we go to a town like Constantinople, where, until lately, all change from the antique ways of work has been ignored, and even steadily resisted, we may see this even more convincingly and clearly, and may well be startled at what may be done, and at the inevitable "progress" of things mundane, but, nevertheless, always at a cost, and with loss of something. The ground on which this ancient city of Constantinople stands would seem to have been intended by nature for its express purpose. A city could not be more happily placed, and there has been no need to contrive the picturesque, for Nature herself has done the work. It is surely a pity that we have but so slight a notion of this famous city, dating as it does from so distant a past. Maps do but little, and we have taken some pains to look into them, such indeed as exist. The most conspicuous thing to be noted in a "modern" plan of this famous city is the vast blank spaces to be seen on it, marked "site of the great fire," of such and such a year. There are three of these vast vacant spaces, and one wonders while looking on them where the unfortunate people are now living who at one time inhabited them, for all is quite recent, and it is frightful to add that these great fires would seem to have been all but purposely caused to "clear the ground," and to compel the new building of the old city in more modern and approved ways. All things are telling against it, and there will soon be probably but little left of the "Oriental" city but the name, and history, and here and there a note of it in modern type! What will be in the place of it it needs no ghost to tell, for it is already commenced.

Constantinople, it may be noted, is comparatively a *modern* city. The antique Byzantium was founded by the navigator Byzas, 656 years B.C. It was afterwards rebuilt and fortified by the Spartan general, Pausanius, but it was Constantine the Great who, to "instruct posterity, and in obedience to the commands of God," laid, as Gibbon tells, the "everlasting foundations" of Constantinople. A better spot for such imperial foundations could not have been found. Nature has at least done her part, and the "architecture" of it, rising to view above its human dwellings, is not unworthy of the site. But the Constantinople, as we now see it, and as it is imagined in pictures, began with the conquest of it by Mahomet the Second, 1453, and it is the *Mahomedan* city that the world is now so curious about, and not the Christian city it before was, for on the Friday following the day of its final capture, its Moslem conqueror witnessed, in the Church of Sta. Sophia, its dedication to the faith of the Prophet of Mecca!

It is this city, as thus transformed or rebuilt, that now so much interests the world, and a pity, indeed, it is that we know really so very little about it. We have not even been able to pick up a tolerably correct *plan* of it, and yet it must be well worth one, accurately laid down, as the streets and ways of it now are, and before that "improvement," which is in the end inevitable, sets in, which will destroy it all, and put a something altogether different in its place. This, as all probably know, has already more than commenced, and the old palace of the Turkish Sultans is gone beyond all recall; and their modern and but too fashionable palace is like any other place of an equally expensive kind anywhere else, and has in reality no artistic or antiquarian interest of any sort in it. While so much has been done for the perpetuation of the forms of the older and Classical "architectures," and modes of building of Greece and Rome, and even of old Troy itself, it does seem a pity that no one has set himself to the work of looking into the art curiosities, and really quite exceptional matters to be found in a place so famous and historic as this. Nothing can well be less satisfactory and less to the true purpose than what is to be got at now, go where you will for it.

We have here, as elsewhere, all the ordinary "guide-book" information and insight into this world-famous city; but surely a something more is needed, and would certainly pay for the cost of getting at. We do not specially allude to the palaces and mosques and public buildings, as the term is, solely; but to the *house-building* and the common street-building.

But leaving the present of this world-famous city, let us for a moment imagine to ourselves, if that be indeed possible, what the character of its individual buildings were, as some here and there may yet be, before it was thought for a moment to "manufacture" or to *restore* the details of them. It is difficult, indeed, for any reader, whatever his leanings, to imagine this. All about us is more or less altered or changed, and is perpetually changing, from its original state; and all modern buildings are the result more or less of a system of joint labour. Let us not be misunderstood. No one man can build up a building as one man can paint a picture; but it is possible for one man to impress his own mind, and even his hand, on a simple house-front, and to thus, in simple fact, make it his own special and individual work. We here leave out of our supposition all ornamental details,—carving, sculpture, and so on,—and confine ourselves to the simple lines and necessities of structural building. The common "house-building" of such a city as Constantinople really amounts to nothing more than this. Each house is a speciality, and a thing by itself. Some idea may be formed of this way of work by study of the little that is left of Middle-Age London house-building,—say, as it is to be seen in and

about the Strand and the adjoining narrow streets. Contrast this with what is seen where *improvement* pulls all down, and builds up its long rows of evenly-built walling, pierced with its regular window-openings and doorways, its roof all but invisible, and with all its smart trimness and baldness. No two things can well be wider apart. It is, in effect, the substitution of mere mechanism and repetition for perpetual variety and newness. Constantinople is now going slowly through this process.

If it be therefore in the very course of things, and its fate that this historic city shall pass away, to be replaced by one built by contract, and which may be imported in bits—bricks ready made, timber in lengths ready cut, and "fittings" already designed for quite other localities—why, it must needs be so! The process, be it observed, has, as it is, already commenced, and it may well go on; and it will at least be in harmony with many other influences now at work in it, which certainly are as utterly foreign to it. The world must needs be content to lose much, if not all, it now professes to value in it,—looking at it of course as a distinct and national expression of that which is peculiar to itself. "Away with it, its builders and keepers," says Mr. Carlyle; "away with them to the Asiatic side of things mundane," and there let them do their work; we may even suppose, in their own way. A yet worse fate might perchance befall them, that is certain. We are thinking of the bricks and mortar, and do not venture further; and would but speculate a little on the altered fate and uses of its public buildings, its mosques, and so on, and even its common dwellings. How long this ancient city of the Turk, and the present masters of it, can hold their own and live in it, may indeed puzzle even acute statesmen and weird philosophers, but the final eventuality of it all surely it needs no ghostly foresight to divine. Will the men or the buildings of Constantinople live the longest? We would here—things being thus dim—ask those who have opportunity to make use of it while there is time, and obtain, on the spot, as many records of Constantinople city as is possible.

ANTIQUE GEMS.

SINCE the dispersion of the Poniatowski collection of engraved gems, two thousand in number, in Paris, no similar event has attracted so much interest as the forthcoming sale, in the same city, of a cabinet supposed to have been furnished and enriched by the late M. Mohl. However, the name of the recent possessor is not, at present, divulged, so that these jewels of fancy will be offered to the connoisseur, free from the adventitious influence of tradition. Still, it is clear that many have the historical Poniatowski stamp upon them, and will be immediately recognised by amateurs, especially by those who detected, or thought they detected, in the course of the famous Parisian competitions, so large a mixture of the spurious with the genuine antique. It will be remembered, perhaps, that the Polish nobleman professed to have amassed no fewer than two thousand specimens of ancient jewel sculpture, if so it may be termed, and even challenged the antiquary to deny that he possessed some of the most recondite illustrations of the art known to cognoscenti anywhere. His successor in the market, whether the executor of M. Mohl or not, is less ambitious, and does not pretend to put up at auction the signet-ring which Judah gave to Tamar, or the seal that left its impress on the door of Daniel's den, or the works of Aholiah and Bezaleel. Yet he does assume that some of the work displayed may claim kindred with the ornaments worn by warriors at the siege of Troy, although, to this kind, Homer makes no reference whatever, in the form of either rings or armlets. Pliny denies their existence; but Plutarch contradicts him. All we know concerning that period is that Polygnotus, the sculptor, placed an engraved ring on the finger of his statue of Ulysses. One point, moreover, is plain,—that the extraordinary antiquity asserted for these gems is a thing not impossible, or even improbable, in itself. Materials like onyx, carnelian, emerald, jade, or amethyst, are practically imperishable, or, at any rate, centuries do not wear them out, and the engraving, whether in intaglio or relievo, is likely to last almost as long as the stone. The wonder is how, assuming only a moderate degree of antiquity for those gems reputed to be the oldest, the workmen found their tools and apparatus,—iron converted into steel of the hardest quality; chisels, of the minutest edge and point; lenses, diamond-powder, and something, at all events, approaching the principle of the lathe, though this, the lapidary says, never matches the perfection of pure handwork. But the evidence of antiquity is to be found less in the craftsmanship than in the subjects illustrated. It was rarely, for instance, that the artist applied himself to the past; he took note of contemporary interests, and wrought from living ideas. The modern collections, however,—and particularly that which is about to be scattered at Paris,—boast of few examples dating from earlier than the Middle Ages, if so they may be termed of Paganism. There is an Ethiop ring, we are told, venerable as a mummy, with Egyptian gems identical in character with the inscriptions on the coffins at Dendera. In fact, it is here that the collection begins to assume an archæological character, and to emerge from conjectural mists. Engraved shells or stones, worn as amulets or personal decorations, become frequent; and relievi on agate exhibit a very pure and ingenious workmanship. The rough catalogue which alone we have had an opportunity of consulting, does not, however, attempt to classify either styles or epoch, though it was quite unlikely that the collector himself was so careless. Our only guide is the progression from a rude disrespect of all shades and colours, rigid outlines, and, as it were, an Etruscan treatment of forms and tints to the florid taste succeeding them, the substitution of cameo for intaglio, and the employment of rare stones difficult to operate upon as the artists' materials. We do not observe, however, that either Prince Poniatowski, or the Parisian virtuoso who inherited his mantle, troubled himself much with the Phœnician die-sinkers or the Dædalian gems; they appear to have been satisfied with starting from ascertained dates in the chronicles of Etruscan, Greek, and Roman art, without even summoning the mythical ring of Polycrates served up to that monarch in the belly of a fish. They knew and regretted that the Julian and Palatine collections were irretrievably lost, or that, if not, the last chance remaining is, that a fragment or so may be recovered from amid the rubbish of time; though even this possibility is clouded by the fact, that every catalogue known to have been once compiled has perished. Still, the testimony assumes an historical shape from this point downwards, and Prince Poniatowski even believed that he possessed the original portrait, in emerald intaglio, which was presented to Lucullus by the Emperor Ptolemy. Thence, however, the light breaks in bright refractions upon these treasures, and we find Aspasia herself at work upon many a gem and cameo, until we come down to later times, with all their classic corruptions. The French cabinet, like the Polish, represents every stone, from the agate to the ruby,—the diamond alone excepted, for the diamond has never been engraved, and is considered impossible to engrave, though it has been used in the engraving of other gems. Agates are to be met with, cut in relief or intaglio, in all miscellaneous collections, with onyx, carnelian, amethyst, and emerald; after which inferior pebbles were used, so general was the desire for these ornaments. Inferior works, indeed, were valued when no others, superior to them, were known; but, as the art progressed, the earlier productions were no longer preserved. It is evident that the earliest would be representations of single and simple subjects, and we must never expect to find a very early engraved gem of an elaborate or complicated composition; yet this does not apply to the workmanship. The genuine Greek gem is either deeply and elaborately, yet freely, cut, or slightly, as if to constitute a master's sketch, and it is invariably hand-work, assisted, of course, by tools. The lathe, as now in use, was a modern innovation entirely. But then Greek artists had their copyists and plagiarists by scores—in Rome and Florence principally — who imitated their styles, and forged their names without scruple; so that without authenticated catalogues and signatures it is difficult to draw a distinction. The Alexandrian heads and vestal virgins attributed to the first century were often, in reality, the work of the seventeenth. Prince Poniatowski was often misled in these respects, but we are assured that the Parisian collection now about to attract the connoisseurs of Europe is infinitely more eclectic. It is smaller, of course, and therefore less likely to be adulterated as by a collector who was proud rather of the number than the purity of his gems; but the chief interest of the coming rivalry among connoisseurs and dealers will consist in the light it may throw upon the existing taste of Europe with reference to a long-neglected art.

JARROW.

ALONE among the new towns of the North Jarrow may lay claim to a name which holds a place that is classic in history. Middlesbrough has some title to olden repute, but it is associated only with the name of a cell given to Guisborough; Hartlepool, for its trading eminence in the past, has some claim to remembrance; but to Jarrow there is due the credit of being the centre of the sole light that throws its rays upon one of the darkest periods of our national history. Its time-worn abbey, looking down on the mirky marsh called Jarrow Slake, enshrines the name of the venerable Bede, who there lived, preached, wrote his ecclesiastical history, and died, leaving that which has made historic the now dingy monastery. Jarrow never fairly lost its claim to fame; for, in the early days of the Durham coal trade, coal was shipped there and at Hebburn, close at hand; and in the earlier part of this century, its sail-cloth factory and its shipbuilding yard, with its coal-trade, gave it some right to rank amidst the industrial oases that then only dotted the green banks of the river Tyne. The population of its township, however, increased very slowly: it was 1,566 in 1801; it had grown to 3,193 in 1811; and again to 3,530 in 1821, but in 1831 it was only 3,598; and this seems to have been the limit of its growth up to the date of the new departure in the shipbuilding trade, and of the growth which has been witnessed in the last two score years in the coal-trade of the Durham and Northumberland district. Jarrow was only a small village when Mr. C. M. Palmer commenced business as a shipbuilder there. He had been a coke manufacturer, became a coal-merchant, and, finding that the north-country coal was in danger of being eclipsed by the facility with which the midland coal district could send its produce by rail to London, whilst the north-country coal was delayed weeks at sea by unfavourable winds, he set himself to solve the problem, and built the first collier-steamer,—a vessel which proved the practicability of the experiment to send coal quickly to the London market. It was accomplished in the face of great prejudice by men engaged in the shipping and coal trades, who argued that it would be impossible for a vessel costing 10,000*l.*, and carrying between 600 and 700 tons of coal, to compete with vessels costing perhaps 1,000*l.*, and carrying only 200 or 300 tons of coal, but using no fuel. The first few months' work of the vessel built by Mr. Palmer proved its success, and caused what has been with reason called a revolution in the coal trade. Gradually from their Jarrow yard, Messrs. Palmer built vessels of increasing note, including the *Terror*, the first war vessel built in the Northern district, —the first vessel armoured with rolled plates instead of forged plates. As times went on, the great shipyard at Jarrow added other branches to its operations. Four blast-furnaces were built, rolling-mills were added, and a lease of royalties of ironstone was acquired at some little distance on the coast. When practical completion was given to the idea of the founder of the works, they included all that was necessary to turn the raw ironstone into vessels. At the ironstone-mines a small harbour had been formed, from which the steamers ran to convey the ironstone to Jarrow from the mines. Delivered there by hydraulic cranes, it was passed on to the blast-furnaces, smelted into pig iron, then passed to the rolling-mills, and transformed into plates for use in the ship or boiler yards. Yearly there are drawn from these mines the ironstone to make over 7,000 tons of crude iron monthly. The ships built in the yard have averaged a tonnage of 12,000 yearly, and have on one occasion reached in a year the sum of 22,000 tons. Half a million tons of coal and coke are yearly used; 2,000,000 ft. of gas are consumed every month in periods of normal prosperity; whilst the number of workmen employed by the company who are Mr. Palmer's successors has amounted to 10,000.

As Jarrow is the centre of this trade it was inevitable that it should be largely influenced by the growth of this vast industry in and near it. The 1,000 people who populated it two dozen years ago, when the Messrs. Palmer commenced their establishment with something like 150 workmen, grew, by 1861, to 6,494 only; but

efore a decade had passed after that census the nmber had been nearly trebled, for the number as, in 1871, tabulated as 18,099, and since ien a further growth has given bases for the stimate that its present population is about 5,000. Similarly, the rateable value of the town as risen. It was, in 1851, little more than 000*l.*; it increased to 9,400*l.* by the year 1861. another ten years it had risen to 47,656*l.*; in vo years more to 52 000*l.*, and now it may be ated at fully 60,000*l.*, of which the works of ie company, which are its chief support, conibute a sixth; and although at a less rapid ate, it has acquired the usual institutions and djuncts of towns, completing the list of its local overning bodies by acquiring, rather more than year ago, the dignity of incorporation, and us distancing in the race to this goal of self-overnment the more extensive town of West artlepool, which has made many abortive tempts to acquire a mayoralty. The Tyneside wn has now some 4,000 ratepayers; its streets re about eighteen miles in length; its sewers ose upon a dozen miles. Its houses number me 4,000, its schools are two dozen in number, nd it incloses a dozen places of worship. Unlike ost of the other new towns of the north, arrow depends almost solely upon the works of ie vast company, and, unlike most of them, it neither begot by coal nor iron. It is the only wn in the northern district which may be said have been built up by iron shipbuilding, and the auxiliary industries thereto; but like ost of the towns which have grown into greatss in the north in the memory of this generaon its foundations seem firmly based. There e relics of Bede still preserved, it is said, in e old church, but there are as enduring ementoes of the present claim to remembrance Jarrow, not alone in the fact that it is sociated with the development of a new dustry, and with the creation of some of the st mighty amongst our men of war, but also cause of the extent to which the merchant vy has been increased by the efforts of the rrow yards.

Seen from almost any point, the Tyneside town n scarcely be said to be æsthetically perfect. om the higher ground it is seen dimly ruggling through a pall of smoke, its streets raggling raggedly along, its works stretching wn to the river, and blast-furnaces near ereto raising their grimy heads. From the yne may be seen the barren reaches of its ke, the launching berths of its shipyards, with eleton-looking frames of vessels thereon, and e vast works that abut on the edge. The air ound may be laden with fumes, the clang of e hammers of riveters is the rough music ard in passing, but both bespeak the extent of e industrial operations which give support to e large population that has gathered near. id whilst in the past score of years the proess of Jarrow has been great, its progress in e future will be probably in a ratio of increased pidity, for yearly its repute as a site for shipilding, and the fame of the vessels it has nstructed, are extending; and whilst its imal trades thus promise to prosper, others a large scale are firmly fixing their roots.

THE MANUFACTURE OF PAPER PULP FROM WOOD.

Two different, but both very important, proucts used in the manufacture of paper are epared from wood. One is the so-called chanical wood pulp, obtained by grinding, hich, on account of its brittleness and other operties, cannot be considered a substitute for gs, especially for medium and fine papers; the her product being a cellular pulp, called wood llulose, prepared by the action of chemical ents upon the wood. The denudation of the od cell meets with greater mechanical difficulties than is experienced in laying bare the aw cell, because wood is of closer grain, and incrustated substances are, besides, more difficult of solution than those of straw. Wood, wever, being richer in fibrine, and being nerally cheaper and more easy of transport an straw, and the wood cell further yielding a per pulp of extraordinary firmness, from which e most beautiful paper may be made, the nufacture of useful cellulose has for a long ne been considered of the greatest industrial portance.

The process pursued for many years in preing paper-pulp from parts of plants rich in fibres, and called the fermenting process, but which, on account of the intermixture of substances very difficult of separation from the wood, cannot be applied in its original mode of procedure, may be considered the fundamental principle of the manufacture of cellulose.

The large paper-mill and wood-pulp manufacturing company of Jesop & Moore, at Manayunk, near Philadelphia, after a lengthened course of experiments, established in 1865 a wood cellulose factory, for the manufacture of the stuff on a large scale for practical purposes, imitating the process pursued by C. Watt & H. Burgess.

Although, in consequence of defective machinery and apparatus, the quality of the pulp produced did not come up to the expected standard, besides the cost of manufacture proving too high, the spell was broken by the erection of the manufactory; and three years later, in 1868, the Gloucestershire Paper Company, Cone Mills, Lydney, established a large cellulose factory and paper-mill combined. Profiting by the experience of the Americans, and introducing improved apparatus and machinery, they made papers, without any addition of rags, of the cellulose manufactured by themselves, thus showing that cellulose may be profitably manufactured on a large scale; that the cellulose produced may be made into medium papers without the addition of rags; and, finally, that the manufacture of paper of wood cellulose offers advantages compared with the use of rags.

The striking results of the Cone Mill Company having attracted the serious attention of industrial circles, in 1871 an association of English and Swedish capitalists established in Sweden five large wood cellulose factories. There are now, besides different American and English manufactories, five factories of wood cellulose in Sweden and six in Germany in existence, which sell the raw product to paper-mills. Those in Sweden have been in full working order since 1871, the German ones since 1872; while other methods have either not yet gone beyond the range of experiment, or have been rejected as impracticable.

The best woods for manufacture into cellulose are supplied by coniferous trees, *i.e.*, firs and pines; and they may be used either in the shape of whole trees, logs, or chips. Leaf-bearing trees supply a short-fibred, little-durable pulp; oak is absolutely useless. Cellulose may also be made of coarse saw-dust of coniferous trees, but in this form can only be used for inferior papers. The process of manufacture of wood cellulose is described as follows.

The wood, after being freed from bark (boring of the knots is not considered necessary), is cut in a cutting-machine into pieces of about 0·8 in. long, 0·4 in. broad, and 0·2 in. to 0·3 in. thick. The machine consists of a horizontal shaft driven direct by a horizontal steam-engine, at one end of which is an oscillating plate provided with a knife. The tree is pressed endways against this plate, and at each of the latter's revolutions a disk is broken off in splinters of the size of the diameter of the tree, and of a thickness of 0·8 in. The splinters drop between two fluted cylinders, are torn by them, and reduced to pieces of the dimensions above mentioned.

It being essential for the production of well-boiled pulp that the pieces of wood should be of equal size, the wood, on coming out of the cutting-machine, is passed through a refiner (an apparatus resembling a coffee-mill on a large scale), by which the pieces are again reduced, and made as uniform in size as possible.

The cut wood is put into perforated vessels of tin plate, and in these removed to a horizontal boiler. The boiler, being completely filled with wood, is screwed down, pumped full of caustic soda, and the boiling process begins by direct firing. When the liquid in the boiler, after three or four hours' firing, has attained a temperature corresponding to a pressure of about ten atmospheres, the boiling process is concluded, and the boiler is, after cooling, emptied of liquid and wood. The latter is unwashed and unbleached wood cellulose. This is then washed in a washing apparatus, bleached in a bleaching apparatus, perfectly dried in a pulp-drying machine, and finally cut by a cutting-machine into sizes suitable for transport.

If the pulp is only drained, *i.e.*, sold in a state containing from 60 to 70 per cent. of water, drying and cutting apparatus are dispensed with. In the former case, the pulp is sold in commerce in sheets like pasteboard; in the latter, in lumps, in barrels. The lye run off the boiler, after the boiling process is concluded, is boiled down in the usual manner, and converted again into natron.

A cellulose manufactory producing about 20 tons of wood pulp per week must be provided with the following machines and apparatus:—One wood-cutting machine; one refining machine or refiner; two boiling apparatus, with fittings; three washing and two bleaching apparatus; four lixiviating apparatus; one pulp-drying machine, with fittings; all the reservoirs, as well as the iron implements for extracting the lye from the boiler; all the reservoirs and implements for obtaining the caustic soda; the mixing-vat; and, finally, engines of about 88-horse power distributed over three motors. A weekly production of 10 tons of pulp does not pay, on account of only partial utilisation of heat; such a manufactory would only work with one boiling apparatus, while that described contains two.

Cellulose has now been used in the manufacture of paper for several years past, and especially on account of its tenacity, for the better descriptions of paper. In its unbleached state it takes the place of rags for common foolscap paper; bleached, it serves as a substitute for white linen rags. There being at present only a comparatively small number of cellulose factories in existence in Europe, a more extensive use of the material for the manufacture of wheel-tires, barrels, as a substitute for felt soles, or for piston-rings, such as has taken place in America, has hitherto not been possible. A patent was taken out in 1870 by Mr. Richard Smith, of Shelbrooke (Canada) for the manufacture of boxes, &c., direct from wood pulp. Lately, barrels have been made in America from pulp in its soft state. The wood pulp is pressed into sheets, and several layers of these are bent into a cylindrical shape, the two ends being joined by a ledge of wood nailed on them. Head and bottom are made of wood. Another method, for which a patent has been taken out, is to make barrels direct from the pulp, by laying it round an expansible cylindrical core to the thickness required, when, after withdrawing the cylinder, the barrel is put between rollers to be pressed into the desired form. Several analogous methods have been patented, but we are not aware whether, up to the present time, they have been put to a practical use.

The present minimum price on the Continent of air-dried cellulose is, in its unbleached state, 22s. 6d., and bleached 31s. 6d. per cwt. on the spot. At those prices, the use of cellulose in the manufacture of paper, according to the statements of a well-known German papermaker, yields an extra net profit of at least 6s. per cwt. of finished paper, in comparison with the use of rags.

In its drained-off state, *i.e.*, containing about 60 to 70 per cent. of water, wood cellulose, because of the cost of freight, can only be profitably manufactured if there are certain consumers at distances not too far from the place of manufacture; if dried, however, it may be sent any distance, and is not dependent for consumption within a confined area.

Places lying near water, and with means of transport for coals, soda, lime, and wood, are especially suited for the manufacture of cellulose; the neighbourhood of paper-mills is not essential, if the stuff is dried. The quantity of water required, which should be clear, but need not be chemically pure, amounts in average-sized works to about 450 gallons per minute. A cellulose factory may be driven either by steam or water power.

Supposing the production of a cellulose factory to be about 20 tons of wood pulp per week, a calculation as to its remunerativeness will supply the following results. For the production of 1 cwt. of dried cellulose are required about 4 cwt. of wood, 28 lb. of caustic soda, and about 3½ cwt. of coal; of course, turf, wood, or brown-coal may also be used as firing material. The production per week above mentioned requires about 55 to 65 workmen, as well as about 5 tons of lime. It is estimated that, reckoning 1 cwt. of air-dried wood at 1s., the workman at 2s. per day of 10 hours, and the other materials at the highest market prices of the day, the manufacture of 1 cwt. of dried cellulose, after deducting all expenses, would give a net yield of about 6s., corresponding to about 25 per cent. of the capital invested. If a manufactory owns forests, chemicals and coals being available in the immediate neighbourhood, and if latest improvements for saving coals and soda are introduced, the net yield would be raised considerably. At the minimum price above stated, of

22s. 6d. per cwt. of dry cellulose, the cubic foot of wood is reckoned at 1s.

The principal markets for cellulose, as far as it is exclusively used in the manufacture of paper, are Germany and Austria; in England the better descriptions of paper are still realising such good prices that manufacturers can afford to use rags at their present exorbitant prices. No data are to hand with regard to Russia.

The advantages which will accrue to industry in general, and to the timber trade especially, from the introduction of cellulose manufacture, as well as the experiences gained by the introduction of this new branch of industry, may be shortly summarised as follows. Cellulose permits the paper manufacturer to make certain descriptions of paper cheaper than he could possibly produce them if made of rags, and the new material has consequently for this branch of industry alone a very important future before it. But there is no doubt that in time, by its means, new industrial branches will be opened up, and, on the other hand, old industries will be guided into new channels.

The manufacture of inner soles, for instance, of cellulose instead of felt, as well as the production of piston rings of the same material, instead of caoutchouc, &c., have been introduced in Germany already, notwithstanding the shortness of time since cellulose has been made; thus proving its importance for industry.

The advantages resulting to the timber trade from the introduction of cellulose will not be few. It is certain to increase the demand for timber, but there will also be a greater inquiry on the spot, and at a good price, for certain descriptions of wood, and all kinds of chips—hitherto almost valueless to owners of forests and saw-mills, and not fit even for transport to a paying market—which will now be used in the manufacture of wood cellulose. The gain will be still greater where small wood and partly rotten wood, which cannot be utilised for manufacture into cellulose, can be used as firing material, which latter, if it consists of coals, is reckoned at 1s. per cwt., and which represents considerable quantities.

The establishment of cellulose manufactories cannot be recommended to owners of paper-mills for several reasons. Cellulose factories, as has been pointed out, require peculiar local conditions; they cannot be worked profitably on a small scale; they cannot be well worked in connexion with paper-mills; and, finally, in most cases, paper-makers have invested such a large capital in their mills that further means for constructing additional and larger buildings are not always at disposal. For these reasons, it seems probable that the manufacture of wood cellulose will develop itself into an independent branch of industry, and that a class of the public, consisting, for the most part, of large capitalists, but especially owners of extensive forests, will principally be interested in its development and prosperity.—(Further particulars will be found in the *Handelsblatt für Walderzeugnisse.*)

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting of this Institute, held on Monday evening last at Conduit-street, Mr. Charles Barry, president, in the chair, the following gentlemen were balloted for and duly elected, viz.:—As Fellows: Messrs. Isaac Holden, John Holden, James Murgatroyd, Francis Haslam Oldham (all of Manchester), Walter Lyon (of Lincoln's-inn-fields), and Ernest Turner (of Bedford-row). As Associate, Mr. Otho Bathurst Peter, of Haverstock-hill.

The President called the attention of the members to the proposed collection of drawings illustrating ancient buildings recently restored. A circular was issued in July last inviting members to contribute to the collection, but the appeal thus made had up to the present time elicited but a small response. A suggestion on the point made by Mr. G. H. Birch in his paper on Old London, and the donation of prints and drawings which Mr. J. W. Hugall had given to form the nucleus of such a collection, made the present an opportune moment to solicit the help of all the members. Such a collection would be invaluable for purposes of reference.

A number of books and photographs were presented, including a good view (given by Mr. Ferrey) of St. Werburgh's tower, Bristol, which, as recently recorded in the *Builder*, has been doomed to destruction to meet the supposed exigences of the traffic. In reference to the matter,

Mr. Eastlake said that the Council had memorialised the Mayor and Corporation of Bristol against the destruction of this fine tower, but with no result so far except getting an intimation that the memorial had been received.

Mr. C. F. Hayward said it would be a great disgrace to Bristol if the tower were destroyed, because there was no real necessity for its demolition. True, it slightly projected into the street, and was to that extent inconvenient, but it was possible, by an alternative plan, to retain the tower without suffering any inconvenience from its retention. It was bad enough to destroy the church, but it was mere wantonness to demolish the tower. Notwithstanding all remonstrances, however, the Municipality seemed quite determined in its purpose.

Mr. Dawson said he was well acquainted with the street in which the tower was situate, and from the nature of the improvements now imperatively required to accommodate the traffic, he did not see how the tower could possibly be retained. The site of the tower was not required for the widening of the roadway, but for the formation of a footway, the roadway having been already widened by taking in the footway next the tower. Although it would seem to have been necessary to demolish the church, he should have liked to see the tower remain *in situ*, or, failing that, it might have been carefully taken down and rebuilt, stone by stone, as an adjunct to some new church in the suburbs.

The President.—Unless the Americans could roll it back for us.

Mr. Blashill said that some years ago Sir Gilbert Scott had solved what appeared to be a precisely similar difficulty at St. Mary's, Hull. The tower of St. Mary's projected to an inconvenient degree on to the footpath of the street, but Sir Gilbert had caused the people using the footpath to pass under the tower. Possibly what had been done in the one case was equally practicable in the other.

Sir Gilbert Scott said that in the case of St. Mary's, Hull, the tower stood directly across where it was desired that the footway should come. To get over the difficulty, he adopted a very simple expedient, similar to that seen at the church of St. Magnus, London Bridge. He merely opened the arches on the north and south sides, and the people passed right through the tower.

After some further discussion, Sir Gilbert Scott undertook to write to the municipal authorities at Bristol, calling attention to the fact that, by the expedient referred to, it was possible to retain the tower without inconvenience to the street traffic.

Mr. l'Anson said that, although suffering from a severe cold, he had come to the meeting expressly on account of a letter which appeared in the *Times* on Thursday, the 4th inst., signed "A London Parson." Owing to absence from town he did not see the *Times* for the next two or three days, and did not know what had been done, not having had the opportunity of seeing the excellent letters which had since appeared. The only letters which he had seen were those which had appeared in that day's (Monday's) *Times*, and he could only say that the letter which the President of the Institute had written expressed in the best manner possible the feelings of the Institute. He could say that in his now very long practice,—a practice which had peculiarly brought him into the company of a very great number of architects,—he had never met with one whom he could for a moment suspect of any such improper conduct as that attributed to members of the profession by the writer of the letter; nor did he believe that any member of the Institute could so far forget the traditions of what had always been an honourable profession. He was sure that these were the unanimous and honest feelings of every member of the Institute.

The President said that he did not doubt for a single moment when he was writing his letter that he was speaking in the name of every member of the Institute, and that what he wrote would be endorsed by all. A communication had just reached the Council stating that the President of the Architectural Association had also addressed a letter to the *Times* informing the public and the "London Parson" that the Association looks up to the Institute in all its rules for maintaining the integrity and honour of the profession.

Mr. Boyes (president of the Architectural Association) said his reason for writing was that in the letter published by Sir Edmund Beckett the Institute was spoken of as "one of the architectural societies," and the letter seemed to imply that the matter had only been taken up by one of the professional societies, utterly ignoring the fact that what the Institute did in a matter of that kind it did in the name of all the architectural societies.

The matter then dropped.

Mr. Cockerell said he had just received intelligence of the death of one of the honorary and corresponding members of the Institute, M. Henri Revoil, of Nismes.

The President said that some time ago it was represented to the Council that some restorations were going on at New Shoreham Church, and it was rumoured, with no sufficient foundation, that the ancient character of the building was not being duly cared for by the architect employed. The Council at the same time accepted the kind offer of Mr. Edmund Sharpe to go and look at the work of restoration in progress. No one more competent for such a work than Mr. Sharpe could have been fixed upon for its performance. Mr. Sharpe had just sent in a report of his visit, fully exonerating the architect in charge of the work from any kind of neglect, carelessness, or ignorance in carrying out the work. Mr. Sharpe said:—"I paid a visit to New Shoreham Church on Saturday the 9th inst. [December], and carefully examined it, and I am happy to be able to report very favourably of the works which have been done." Mr. Sharpe then went into details to show the character of the work. "As regards the particular example in question, he" (the architect), "has had the courage to leave such portions of the ornamentation as were more or less damaged in their original condition. His conservative treatment of this remarkable church will have earned him the thanks of all."*

Mr. John Lanyon then read a paper "On some Sanitary and Practical Appliances calculated to increase the Comfort of Dwellings," including descriptions of recently-patented inventions in regard to ventilation, improved closets, slop-sinks, kitchen-ranges, and other household arrangements. Mr. Lanyon's paper was illustrated by diagrams and models of his inventions, without which anything like a detailed report would be unintelligible. Mr. Lanyon commenced by referring to the ravages of sewer gas, and pointed out how appliances intended to keep it out of the house sometimes had the contrary effect. In his appliances for ventilation, Mr. Lanyon has aimed at getting rid of surface gases, it being his experience that extracting-flues in the ceiling are not sufficient for the purpose. To carry off the smells evolved during ordinary operations, he provides a system of upcast and down-cast shafts, and in a similar manner he disposes of smells in water-closets.

In the discussion which followed,

Mr. Fogerty criticised the details of some of Mr. Lanyon's appliances as complicated and likely to get out of order. As to smells in water-closets, he thought that chemicals afforded a better means of getting rid of them than appliances which were not thoroughly reliable in action.

Mr. Turner, Mr. Dawson, Mr. Seddon, and Mr. C. F. Hayward also took part in the discussion, at the close of which a vote of thanks was given to the author of the paper, Mr. Lanyon, who replied to some of the objections raised against his appliances.

The meeting then terminated. The next meeting will be held on Monday, the 18th inst., when Mr. Fergusson will read a paper "On the Temple of Diana at Ephesus, and the Hypæthron of the Greeks." The president, in making this announcement, said that Mr. Fergusson was of opinion that recent excavations had cleared up some doubts which had long existed as to the arrangement of tetrastyle temples.

Government Fund of £4,000 for the Promotion of Scientific Research.—The President and Council of the Royal Society have resolved to advise the Committee of Council on Education to expend the above-named fund in aiding scientific research:—1, by conferring grants on competent persons, or by offering prizes of considerable value for the solution of problems; 2, by meeting applications from persons desirous of undertaking investigations; 3, by applying funds for computation, the formation of tables of constants, and other laborious and unremunerative scientific work.

* We have since received from the secretary a copy of Mr. Sharpe's report, but do not find it necessary to print it.

HEALTH IMPROVEMENTS IN GREAT CITIES.

Dr. B. W. Richardson, F.R.S., on Monday evening last delivered the first of two lectures on this subject, at the London Institution, Finsbury-circus. He observed that, for purposes of health, the houses on this island require to be rebuilt or remodelled from Land's End to the Hebrides. He admitted that there is about some of them a certain element of beauty, but he had not been able to discover one house in the island constructed on a plan perfect for the requirements of the healthy existence of its inmates. Pure air, pure water, purity from damp, pure daylight, equable temperature,—these, said Dr. Richardson, are the five fingers of the right hand of health. They are little known; but the knowledge exceeds the practice of them. The lecturer then entered upon a review of the difficulties which lie in the way of reform, difficulties closely connected with the social as well as with the physical development of man. He said that the progressive development of practical learning in the building of houses of towns had been much modified and delayed by political causes. But political circumstances in England had now become very favourable to improvement. The house for occupation is often also the house of trade. Men, women, and children sleep in conditions of dust and close atmosphere which are unfit for the continuance of a wholesome existence. The odour of the shop pervades every nook and corner, and when the business is of an offensive kind the atmosphere is devitalised. The factory system has massed people together in crowded streets, and in new houses lacking the first principles of sanitary science, where bedrooms are ventilated from kitchens, living-rooms from cellars, in which ventilation can only be carried on by open doors, and a door cannot be opened without draught or dust. The houses of the upper, middle, and professional and independent classes often concentrate the errors of all the rest and of all the past. A part of the house is below the soil, like the dungeon of a castle. The grand staircases bring the atmosphere of the vaults to the living-rooms, that of the living-rooms to the bedrooms, and the whole into a close vault above, which, like the bell-jar of the chemist, catches the gases made in the day, that the occupier may have the privilege of going to sleep in them in the night, and may revel in them unconsciously for a third of his life. The lecturer observed that in a late discourse he attempted to describe a model city, in which, however, nothing was out of the range of human science and skill. While the combination remained unproved and waiting for a gradual development, there was no reason why the details should not at once be considered, with a view to their practical application. It would answer the purpose best to take a dwelling-house of one of the middle-class, and to leave out of sight the half-filled mansions of the great, or those of the poor, which will hardly be changed till the higher class have set the example of improvement. He would propose a very simple model house for the metropolis, such a one as he would if he could build for himself. He would commence the reformation from the basement. The basement saps the health of the occupants of the house more than any other deteriorating influence. The basement walls and rooms are, however clean, always at fault on the score of dampness They are surrounded by damp earth; into them all the rain which falls near the house splutters down. The pipes which convey the water from the roof and closets find at the basement their easiest points of leakage. Kettles, pots, and all vessels containing fluids here boil and cool. Their vapour is given forth and condensed. Clothes are here put to the fire, crockery set up to dry, sinks are deluged and scrubbed. All this wet passes by evaporation, with the help of a great fire, to the upper part of the house. At night the condensation ensues. In the morning the dripping walls are re-heated and the process goes on again. A lady he attended in the west of London suffered from neuralgic pains. He put his hand on the balustrade as he descended the stairs and found it covered with moisture. He told his patient that the builder was here wanted more than the doctor. A great authority was of opinion that malaria, fever, and ague were sufficiently accounted for by dampness. No doubt colds, exhaustion, toothache, &c., are either caused or aggravated by living above wet basements with fires in them to draw up the water, so that the occupant of the house is in a worse position than if he lived in a city raised on piles above a lake. The food in the damp air is rapidly decomposed; its particles carry infection through the house. The basement in good houses is also often made the sleeping-place of women and children. Philanthropists sleep night after night over these catacombs. He had seen a house where sixteen servants slept in underground beds, who could never at any season of the year see to dress without artificial light. The barons of the Middle Ages took the precaution to cut off from all communication with themselves those who passed their lives in their dungeons. Now the basement properly should be an arched subway with a free current of air through. It should no longer be a living place, a cooking-place, a laundry, a bottle-vault, refuse store, larder, servants' bedroom, drain-trap, and lavatory. It would consist of three arches, each of which through flue-openings would communicate with the air. One of the arches would lead to the staircase at the back of the house to form the servants' entrance. In the basement would be placed the closed bin for receiving, by an outer shaft, all the refuse of the house. In the basement would be a closed tumbling bay, in which the soil-pipe would discharge. Through the basement the water-pipe for the supply of the houses and the gas-pipe would enter, and two at least of the arches might be fitted up with good furnaces or stoves, into which air derived from the upper part of the arch might be drawn and heated, purified, and passed into the upper part of the house. Nicely fitted, the basement rooms might be turned into hot-air rooms, like the Roman baths, or to other useful purposes. But about the basement part there would always be this provision, that it could never be entered by a direct shaft communicating and forming a distinctive connexion with the rooms of the house above. The next change would be in the staircase. This change is not easy in houses as at present constructed; but in new houses it should never be omitted. In the present construction the staircase is the shaft of the dwelling through which all the products of respiration, combustion, and other forms of volatile impurity rise from the lower to the upper floors. It holds an open communication with all parts, and while it allows for the diffusion of every volatile impurity and damp, it prevents all possibility of maintaining through the house an equitable and agreeable temperature. It is the great source of draughts, and it lessens the size and comfort of every floor. It enforces that all the water-closets shall be included actually in the living part of every dwelling—one of the most unwholesome and objectionable of all modern arrangements. The staircase should be placed in the rear of the house in a distinct shaft or tower of its own, leading straight from the ground-floor to the upper part above the level of the house. At each floor there should be a door, and each flat would be independently lighted, warmed, and ventilated. Through the shaft the ventilating tubes could be carried, a lift, closets, and lavatories would be in the shaft. All that should be out of the house would be in this shaft. In the third floor should be the kitchen and servants' dormitories. From a spare boiler in the kitchen hot water should pass into any floor. The kitchen would have its own sink, opening into the dust-shaft. The cock-loft above,—so called because it is the crown or cap of the house,—is now misapplied and misconstructed. Here is a pointed roof, beneath which one is roasted in the summer and frozen to death (there is actual experience of this fate) in winter. Here, upon a firm, almost level, asphalted roof, Dr. Richardson would raise a garden covered with brick and glass. Into this the stair-shaft would finally enter, and if any impurities reached this covered garden with its summer temperature always derived from the kitchen just beneath, the impurities would be eaten by the plants. Here the children and other inmates of the house would play and find relief from the monotonous contemplation of one or two rooms of limited size.

Ball in Aid of the Builders' Benevolent Institution.—This annual gathering, whereby people can do good by enjoying themselves, is fixed to take place on Thursday next, the 18th inst., at Willis's Rooms, St. James's. There is a good list of stewards, and everything promises that the ball will be as agreeable and as profitable as its predecessors. We cordially hope so. Mr. F. W. Keeble acts as hon. secretary.

BYE COMMISSIONS.

The correspondence on this subject is still continued in the daily papers, and several well-known architects have given in the *Times* the same general denial which we gave in our last. We print a letter on the subject from the President of the Institute, although, since it reached us, it has appeared elsewhere. The following statement from a barrister is worth the attention of any individual member of the profession who may think himself justified in taking a commission from tradesmen employed under him, should such there be!

The judgment of the Court of Queen's Bench (Cockburn, Chief Justice; Blackburn and Archibald, Justices) in the case of "Harrison *v.* Thompson" (L.R., Q.B., vol. ix.) should be studied by all persons who in any capacity are intrusted with the duty of acting for others in business transactions. It is clear from this judgment that our Courts never waver from that original, fundamental, and well-established principle of the law of agency, viz.:—That no agent can make any profit out of his agency without accounting for the same to his principal, to whom alone he must look for payment for his services.

Lord Chief Justice Cockburn says in that judgment, "the profits acquired by the servant or agent in the course of or in connexion with his service or agency belong to the master or principal." And, quoting from equity cases the Chief Justice says:—"The cases in equity are to the same effect,—viz., that the profits directly or indirectly made in the course of or in connexion with his employment by a servant or agent without the sanction of the master or principal belong absolutely to the master or principal." Moreover, the Chief Justice quotes with approval passages to the same effect from Story and Paley on Agency.

Upon these principles the Court decided that the defendant, as agent, was bound to pay over to the plaintiff as his employer every farthing of the commission he had received, which the Court held was the "property of the employer."

COMMISSIONS TO ARCHITECTS.

Sir,—I have not seen the *Times* of the 4th, or the letter it appears to have contained from "A London Parson" alleging his *belief* that architects are usually in the habit of receiving fees or commissions from the tradesmen employed on works under their superintendence, as well as the usual commission of five per cent. from their employers, and which allegation, I see, has most naturally brought forth the indignant denials contained in the *Times* of the 5th from Professor Donaldson, Mr. Street, and my brother, Mr. E. M. Barry. As president of the Royal Institute of British Architects I cannot remain silent, and must ask your insertion of these few lines.

A "London Parson" seems to need to be told that members of other professions besides his own have at least as high a sense of honour and integrity in their dealings with their fellow-men, and that as he no doubt would indignantly repudiate a charge against his whole profession founded on the misconduct of any one individual member of it, so I do the same on behalf of the profession to which I have the honour to belong. The practice he refers to is absolutely unknown to architects as a body, and I greatly doubt if he can really cite an example.

I think I have a right to require him to furnish me publicly (or privately, if he prefers it) with the name of any such individual, and should it be possible that he can be one of the 600 honourable men who are members of the Institute, I pledge myself that, on such a charge being proved, he shall be expelled that body forthwith.

If he be not a member of the Institute, I can only leave to "A London Parson" to exercise that charity which it is his mission to preach to others, and to ask him to believe that the so-called architect to whom he may refer is no representative of that profession whose title he has presumed to usurp and to disgrace.

Charles Barry,
President of the Royal Institute of British Architects.

Institution of Surveyors.—The next meeting will be held on Monday evening, January 15th, when a paper will be read by Mr. W. T. Marriott, entitled "Riparian Rights."



Gables at Stamford.



Old George Inn Huntingdon.



Head-quarters of Henry VII. on his Road to the Battle of Bosworth.



Old Row in Manchester.

ANCIENT HOMESTEADS OF ENGLAND.

THE very prettily got-up book published under this title* is one for the drawing-room rather than for the architect's library. It is none the less desirable on that account, of course, from a certain point of view; only as the author draws attention to the fact that our cathedrals and churches have mostly been adequately delineated as well as our ancient mansion-houses, it rather looks as if he were professing to do for the old street-houses what others have done for the greater class of buildings named. His illustrations cannot quite claim this place. They can be of no particular value to architects (except as furnishing a pleasant characteristic volume to lay on the table for turning over), for this reason: that the engravings furnish little or no evidence as to that part of the character of the buildings which depends upon details of construction and material; they are simply wood-engravings in tolerably good conventional style; they make nice pictures, but are deficient in distinctive character. Moreover, we should be disposed to doubt whether all the illustrations are, as the title-page description would seem to imply, from sketches made purposely by the author. They are in some cases so conventionally made up as to induce a considerable feeling of scepticism. Take as an instance the view of the "Jew's House at Lincoln" (p. 198); in the first place, no notion can be got of the house from this engraving, which shows it in perspective at one side of the view, and blackened over with shading lines; and the view has none of the character of the place. It is some years since we saw it, but no one who has ever visited Lincoln can forget "Steep-hill," upon the declivity of which this house stands, and which is here represented as a wide street with a gentle declivity, instead of the narrow precipitous street which (unless our memory has played us utterly false) is really there. No one who knew the Abbot's Bridge at Bury St. Edmund's, either, would accept Mr. Rimmer's engraving as giving any notion of that beautifully characteristic bit of Mediæval masonry. Many of the illustrations are much better than these, but the want of real truthfulness of local character which such examples imply makes all the difference in the value of the book from an architectural or artistical point of view.

Taking the book from a "general reader's" point of view, there is much more to be said in its favour, and we are glad that such a book should be published in a form that seems likely to prove attractive to many who have not thought, perhaps, how much of picturesque interest there is in old houses, even of a plain and simple description. The preface by the Dean of Chester contains some suggestive remarks. Whether the extensive prevalence of works of "restoration" in connexion with our cathedrals and churches can be accepted as a testimony of "the high appreciation of the importance of history written in stone," many of our readers will probably regard as more than doubtful. But in reference to the direct object of the book, Dr. Howson's remarks are much to the point, and show that he travels with his eyes open both to the present and the past. The interest of the long winding street of Kendal, "where the ground rises and falls boldly, and where even now the houses are so varied in character that on days of light and shade they supply many good subjects for pictures," is increased by the fact that through this street "the troops of Charles Edward marched or straggled in 1745, both on their way to Derby and on their return."* Another instance of local peculiarities, not touched upon in Mr. Rimmer's book, is mentioned in the preface as exemplifying the sort of slight but interesting type of relics of which it is worth while to make a note and preserve a record:—

"A second example is supplied by village after village in that widespread county of the dales which lies south-east of Kendal. Through Airedale and Ribblesdale, from Bradford to Lancaster, and northward to some considerable distance, there are a multitude of specimens of a curious kind of doorway which I do not recollect to have seen elsewhere. These doorways generally consist of two curves, more or less regular, and more or less enriched with ornament, and with the initials of the families of some now-forgotten dalesmen: the dates range from 1630 to 1730; the earlier forms are simpler than those which follow; and after the later period they seem to cease suddenly. However this provincialism of rural architecture is to be explained, it is a social and artistic fact worthy of being observed and permanently recorded.

Mr. Rimmer, who is, as he tells us, an inhabitant of Chester, of course devotes a good deal of space to that most interesting, so far as the picturesque of street architecture goes, of all old English towns. Chester has, we need not observe, already been very largely illustrated; but it would be out of the question to pass it over slightly in any book treating of the picturesque remains of street architecture. The practical side of the Chester-row architecture is touched upon, and the remarks of "an American gentleman of great intelligence," whose name is not given, are quoted, and are certainly to the

* Ancient Streets and Homesteads of England. By Alfred Rimmer; and an Introduction by the Very Rev. J. S. Howson, D.D., Dean of Chester. With 150 illustrations from drawings by the author, engraved by J. D. Cooper. Macmillan & Co.

* On the same kind of ground of historical interest we give the illustration of Henry VII.'s head-quarters on the way to Bosworth.

point. During a recent discussion at the Institute of Architects upon "business architecture," it was urged that the Row system of Chester, though picturesque, was not, therefore, unpractical; we have here the evidence of a visitor from the most practical of nations to the same effect. "Chester," said this American witness, "*is far beyond any city we possess in the New World in point of convenience.* Country towns are run up there on a uniform plan, and in some of the streets in the cities of the far West are great blocks of pretentious warehouses and stores that look like bankruptcy itself. A tradesman commencing business has little option,—he must either take one of these or else he is out of the world. And if he takes a place that is so much too large for him, he has to purchase more goods than he can pay for when the time of payment comes round. I speak," he said, "of no imaginary evil, but one that actually exists, as I have found out to my cost; but here, in the Rows, are shops and stores of all sizes, so that a tradesman commencing business may suit himself with premises to his proper requirements, yet not be out of the business world." We thank Mr. Rimmer for publishing this important practical commentary on business architecture, to which we are glad to give further currency. The remark recalls one which was made to ourselves by a respectable and well-educated tradesman, whose opinion we asked as to the architectural suitability of some very costly and ambitious-looking new buildings for shops. His reply was that the persons who took shops of that kind were generally those who were starting business on pure speculation, and wished to make a great "splash" at the outset,—so curiously is ostentation in architectural style connected with ostentation in character and principle. The last illustration in the work is an interior view of an old staircase in the author's own residence in Chester, which shows the baluster form in the stair-rail, not in solid turned balusters, but with the baluster outline cut out in the flat; a sort of imitation of the genuine baluster, which is only now and then met with. This is the only interior view we noticed in the volume, the author's object being evidently the external characteristics of the buildings; but it reminds one how much might be made of illustrations of old staircases, of which we fancy there is no lack of good instances in his own neighbourhood. The old rectory of Tarporley, a few miles from Chester (now, we believe, rebuilt), contained an old staircase with massive hand-rail and thick twisted balusters, which would be the delight of the enthusiasts of the "new movement" in architecture; this originally came from Utkinton Hall, a large old building in the neighbourhood, now a farm-house: we hope it has been preserved in the new rectory-house or elsewhere.

Much of the interest of old domestic architecture in the various districts through which the author takes us is centred in the old inns, the requirements of which in regard to plan seem to have furnished so much opportunity for realising a picturesque character in the most natural and simple manner: the inner courtyard, the entrance archway, the external stairs and open gallery on the level of the upper floor towards the courtyard, are frequently-recurring features, and almost make a picturesque character inevitably, however they are treated, so long at least as the treatment is natural and suitable. The Old George Inn at Huntingdon, of which we reproduce the illustration, is one of the simplest and most unpretending of those illustrated, and also one of the most specially pleasing. We do not think, however, that it is of any use to aim deliberately at making over again the kind of charm which certainly belongs to these old-fashioned inns. The author has some remarks in one part of his book upon this point, and deprecates the idea that an attempt to realise the same characteristics of the picturesque in a new building, which we admire in an old one, should be called a "sham"; and no doubt this kind of purism of principle may be overdone till it becomes itself an affectation. But the real interest of these old buildings to us arises from the fact that they were not *intended* to be picturesque, originally; they are simply natural; and their lesson to modern builders is to build in a natural way; to build just what is wanted and how it is wanted; which is what we so seldom get. Buildings which are so designed may look interesting to our descendants, because they will afford a true history of the requirements and habits of our own day. Mr. Rimmer hardly shows a sufficient appreciation of the fact that a great deal of the interesting impression of the old buildings is due to historical causes rather than architectural. The carriers in the inimitable little scene at the inn, in "Henry IV.," which the author quotes, never saw the inn as a place of picturesque interest; all they cared about was that they had not been properly looked after, and that "the house was turned upside down since Robin Ostler died." What makes a modern inn of the same relative calibre (not to speak of the "grand hotel,"—an entirely modern growth) so comparatively uninteresting to ourselves, is in the first place that it has no backward association or memory, which always gives an interest to a place when it is real; but also that it is not, like the old inn, a natural expression of the arrangement and the way it is planned: on the contrary, all this is carefully concealed in a uniform cubical screen of brickwork. This dull uniformity is really the legacy to us of the Renaissance Italian mansion, adopted first as a fine and grandiose form of building a large and costly dwelling, and then filtered down to the humbler structures, in which the rich and grandiose effect has vanished, and all that is retained is the uniformity, which was "dignity" in the palace, but is only "dulness" in the road-side house. It is important to take fully into account this interest of association, to avoid exaggerating the purely architectural merit of old bits of building. Mr. Rimmer gives a view of an old outhouse over a gateway in the premises of Nell Gwynne's birthplace at Hereford, and says, "some parts of it are suggestive to modern designers." This is really going too far: there is absolutely nothing in the structure, except that it is old; and the same might be said of some others of the illustrations. There are some, on the other hand, that we should have liked to have seen illustrated, as the author went over the ground. In Suffolk, for instance, the gatehouse of the park at Long Melford is most peculiarly picturesque; and in Northamptonshire, the name of which county hardly appears in the book, what is now the Talbot Inn at Oundle is one of the most charming old houses to be found in the whole country.

The illustrations we reproduce, besides those already mentioned, we have selected for the special qualities they exhibit: that from Manchester as indicating the former character of a city the name of which is hardly now associated with the picturesque of "ancient homesteads," and showing also how very little will suffice to give an interest to street architecture of a humble class. The illustration from Stamford shows a very effective treatment of gables having rather a Continental feeling, and suggestive as a "motive" in domestic architecture. The oblique gables in Warwick (p. 234), not amongst our illustrations, are an odd curiosity of building, by no means to be wantonly imitated; they remind us that the salient point in a very powerful charcoal study, by M. Lhermitte, in the last "Black and White" Exhibition, of some old houses somewhere abroad, was made by just such an oddly-introduced piece of skew-work as this. The little mullioned and glazed gable (p. 142) from Ockwells is a bit of really good and characteristic architectural design, and would look well anywhere, in a new or an old building, apart from all question of association.

An interesting extract is given in the closing chapter of the book, from an old contract for building a chapel to St. Mary's Church, Chester, —a document which, as the author observes, exhibits "a touching simplicity and confidence." Thomas Betes, mason, contracts with William Troutbeck, esq., that the said Thomas "shall make a chapell in the churchyard of Ste. Marie on the Hill, on the south side of the chancell of the said chirche there, that is to wete, the est end, the south side, and the west end, contayning the length of the chauncell, and xviii fete wide within the walls, *and as high as hit nedes reasonably to be;*" then follow brief directions as to three- and four-light windows in different positions, "and on the west ende in the best way to be deviset," and as to "iiij botras," and a battlemented parapet, "and at ayther end ij honest fynials. And the said William shall pay the said Thomas xx li. like as the worke goes forward, and also give him a gowne." The date of the document is not stated; it must have been late in the style, as the church itself is, if we remember rightly, a late one. We like the direction about the "three honest finials" very much; as to the temptation to moralise about the superior beauty and simplicity of such a mode of building, compared with the conditions of a modern contract, it is one to be avoided, as leading to "fantasies" which are of no practical value in these days. The one or two cases we can call to mind of houses erected under this kind of honourable understanding with the builder as to what "nedes reasonably be" have ended in—lawsuits; which is likely to be the natural termination of such arrangements when life is so crowded that it is absolutely necessary for most men, as a condition of making their living, to calculate their expenditure and receipts in the most careful manner. We doubt whether there is anything particularly romantic, after all, in being unbusinesslike; and it is a quality that leads to a great deal of trouble between man and man. The author seems to be alive to this, too; one comment, however, which he does make is, that the elastic nature of the provision as to the height of the building left room to the mason to judge, when the building was getting up, how high it required to be, for appearance sake, and build it accordingly, instead of trusting to a drawing. Such a way of working, however, could only be convenient in a slow-moving society, where there was a wide margin for profit; and we may go further and say that its desirability on architectural grounds would depend on the more or less refined and finished form of design that was aimed at. Those who would say, on reading such a passage, "how artificially we build now," might equally go back to the records of Greek building, and say, "how artificially they built then," and yet with what noble results. The passage, in fact, contrasts significantly (which was one reason of our quoting it) with the inferences to be drawn from those inscriptions in reference to the works at the Erechtheum, which we drew attention to the other day (p. 1234, vol. xxxiv). Another conclusion Mr. Rimmer draws from the "Chapell" contract is that architect and builder were the same person in those days. There is much difficulty in getting at any definite conclusion on that point, we admit; but it certainly strikes us as odd that the author should cite this passage as against the idea of a directing head of the works (such as would now be called an architect), when it is distinctly stated that Thomas Betes was to do the work "*by oversight of Maester John Asser.*"

We shall be glad to meet Mr. Rimmer again; he infers an intention of extending the same class of publication further. We may perhaps be excused for hinting that his writing is best when he keeps to the matter in hand; the literary style of the book is somewhat tame, and its value consists rather in the information given than in its literary form; and in his reflections on p. 168 as to principles of colour in buildings, he does not seem to be aware that the statements about complementary colours and the absorption of rays, &c., are the merest commonplaces; nor does he show in the least what connexion they have with his subsequent remarks on brickwork, though with these latter we quite agree in the main. Mr. Rimmer talks of a book on "The Gateways of England"; there could not be a more charming subject for illustrative treatment; but we should certainly wish to see it done with a little more reality and truthfulness of local character in the illustrations, and more attention to details of structure and material than we find in the present volume.

THE WORKS OF LOCAL CELEBRITIES.

I AM very glad to hear of Mrs. Lough's presentation of models of her husband's works to the town of Newcastle; and that the municipality have accepted the gift, and intend preparing a place suitable for their reception. Nothing can be more fitting or patriotic in our provincial towns than to make collections of the productions of local artists. It excites emulation in the rising generation; it adds to the historical evidences of the worth of their sons; and gives great individual interest to the locality.

I have found that to be the case in towns all over France and Italy, where they make a point of forming museums of like nature, whether for painters, sculptors, engravers, or other men of eminence; and I have urged the theme in England.

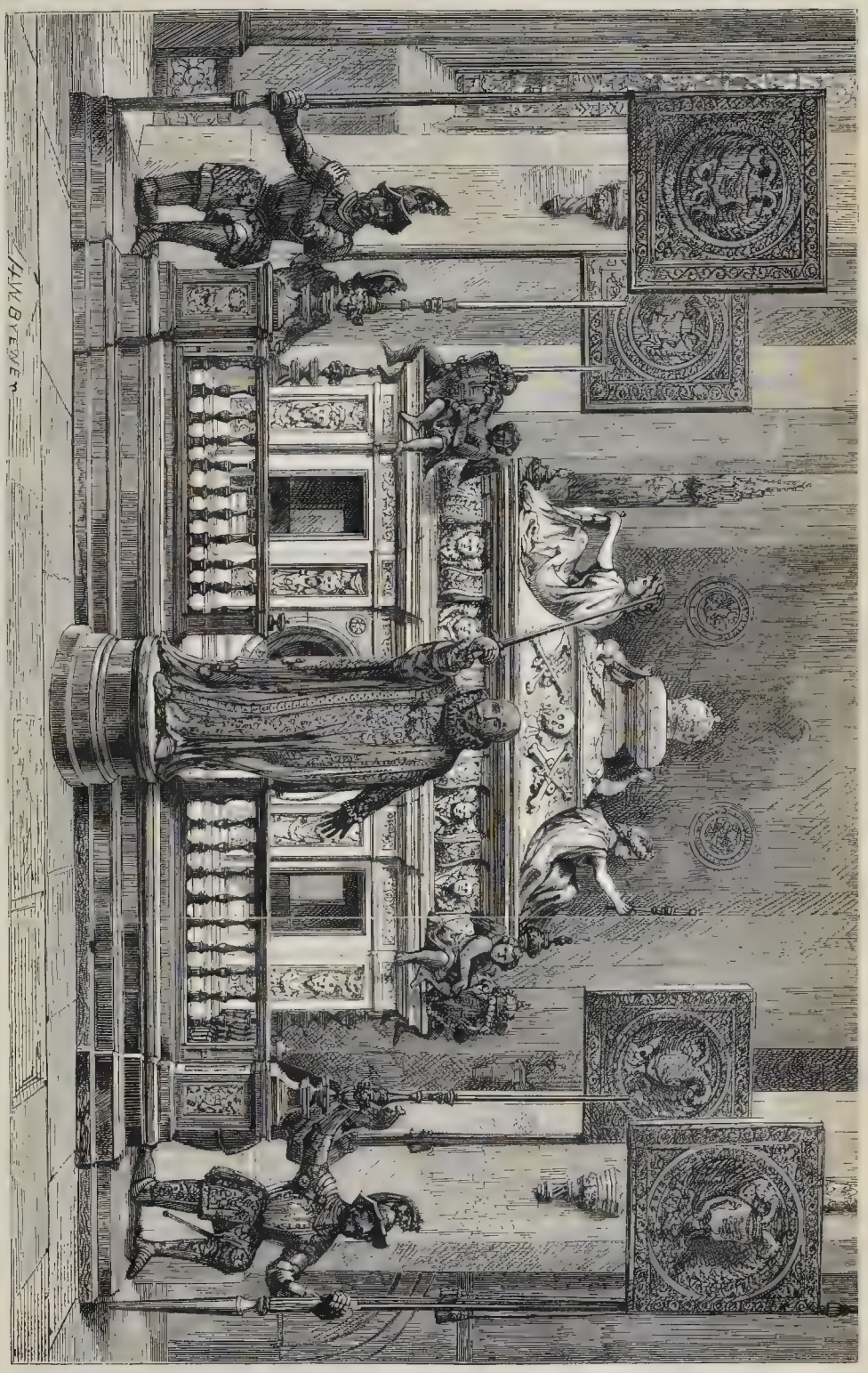
What has Devon done for its Northcote, Eastlake, Haydon, and other marked names in English art or science or literature?

All honour to Mrs. Lough for this step in the right direction, and may her example be followed by others. Ought not Dublin to get possession of her Foley's works?

T. L. D.



A NEW STREET IN STUTTGART.—Professor Gnauth, Architect.



MONUMENT OF THE EMPEROR LEWIS THE BAVARIAN, IN THE CATHEDRAL AT MUNICH.

GOETHE-STREET, STUTTGART.

NLY twenty years ago, a house built of stone a scarcity in Stuttgart, although the heights ounding the valley in which the town is osomed furnish ample material for such conctions. What a change has taken place in architecture of the capital of Würtemburg e then! There can hardly be another town architectural features of which have been so cally changed as those of Stuttgart. This sformation is especially noticeable in the outg districts of the ever-increasing city, where, nks to the two architects, Leins and Egle, re rises now an amplitude of handsome buildserected in the cheerful forms of the best naissance.

The illustration which we give in this number resents one of the most recent creations of ttgart. It is the Goethestrasse (Goethe-et), which, beginning in one of the best rters of the city, runs past the railway staon in a straight line to the foot of one of the per heights which surround and look down on it in their garb of the fresh green of vineds. The street was undertaken by a building iety, and erected after a uniform plan. Its hitect, Professor Gnauth, is a young man who, atly to the regret of the lovers of architecture, taken lately to the pallette. It will be seen t the treatment of the street is in accordance h its suburban situation, half town-house half a, forming an agreeable picture of refined lence in tasteful half-rural dress.

ONUMENT OF THE EMPEROR LEWIS, THE BAVARIAN, IN THE CATHEDRAL AT MUNICH.

THE Emperor Lewis, the Bavarian, was elected the imperial dignity in the year 1314, and gned until 1347. His monument in the thedral Church of Munich was not erected il very many years after his death. It consts of two perfectly distinct works, the first which is a magnificently carved grave-slab of rble representing the Emperor in a standing itition with his imperial robes, sceptre, &c. er the figure is a most elaborate late Gothic nopy, the whole is treated rather flatly, and is delicate and beautiful example of late Third inted sculpture work. The second portion of s monument consists of a very elaborate kind shrine or temple erected over this slab. This rine was set up in the year 1622, by the varian Elector, Maximilian I., and was dened and executed by Peter de Witte, known Italy as "Candido," a pupil of Vasari. s works are pretty numerous in Germany, d amongst others the Statue of St. Michael, in nt of St. Michæl's Church, Munich, a ntain in one of the courts of the old ducal lace in Munich, the decoration of the old tle at Landshut, and a fountain in Augsburg, e worthy of notice.

The monument of Lewis, the Bavarian, is a e work of art; it is constructed of black and ite marble, but all the figures, which are life-e, are of bronze, as are likewise the great raldic banners. On either side of the monuent is a finely-executed statue. One represnts Duke William V., and the other Duke bert of Bavaria. At the angles of the mounent are knights in full armour, bearing ndards. A balustrade of bronze runs round e tomb, upon the "podia" of which are ndlesticks bearing large wax torches. Above e tomb are figures of angels bearing the eptre, crown, &c. The skull and cross-bones e introduced into the decorative carving of e upper portion of the monument, and are the ly portion of the work which is not artistic. is said that De Witte did not live to finish is monument, and that it was completed by ans Krewzer; and it is possible that he may ve executed this portion of the work, as it es not seem to go at all well with the other rts of the monument. In the sides of this rine are square and oval openings, through nich the more ancient monument previously scribed is visible.

Architecture at the Royal Academy.—e are glad to hear that Professor E. M. Barry ll this year deliver a course of six lectures, mmencing on Monday, February 26th. The ners will follow on March 5th, 12th, 15th, th, and 22nd.

ARCHITECTURAL NOTES BY AN IGNORAMUS.

THE DECLINE OF THE POINTED STYLE—THE RENAISSANCE IN ENGLAND AND SCOTLAND.

THE aspiration of religious faith is the soul of the Pointed Style, and the eye of faith waxed dim under the influences of the sixteenth century. To this many causes contributed. The profligate lives of such Popes as Alexander VI., the infidel speculations and classical propagandism of the school founded by Leo X. and his adulators, aroused the indignation of truly religious persons, and powerfully tended to bring about the great change of the Reformation; whilst they awakened a taste for styles different from that in which the spirit of the Middle Ages had been embodied. That spirit had found its noblest and worthiest expression in the great churches of France and Germany. In Italy the style never fairly took root, as might have been expected from the historical antecedents of that country, though Milan, Sienna, and Viterbo afford examples which are eminently deserving the study of architects. There is no reason why we need feel jealousy or shame at the inferiority of English Mediæval architecture to that of the Continental countries. For more than four centuries after the Conquest, England was seldom free from the dangers of foreign war or domestic strife, and, with its trade and manufactures undeveloped, was one of the most backward countries of Europe. It was not to be expected, therefore, that its architecture should vie in sumptuous magnificence with that of France, which our greatest poet has styled "the world's best garden," or that of the Rhineland and Southern Germany, which carried on a flourishing and lucrative commerce with Italy on one side and the Netherlands on the other.

It is remarkable that, as the Romanesque held its ground 200 years longer in England than in France, so the Pointed style survived much longer in the latter country than in the former. The last English example is Bath Abbey Church, built in the reign of Henry VIII.; but Orleans, one of the noblest cathedrals of France, was raised in the first half of the seventeenth century. It is a splendid example of the Second Pointed Style, conceived much in the spirit of the Norman builders, and exhibiting nothing of the tenuity and consequent fragility which is seen in some of the Third Pointed churches,—as Metz and Amiens. The explorer of the recesses of the triforium in the latter cathedral finds imbedded in it a thick iron chain-beam, which is carried round the whole fabric, showing that the height had been discovered to be excessive in proportion to the breadth; or rather that the construction was not sufficiently solid to prevent fears for its security. The exterior of Orleans, we are inclined to think, is the grandest of any of the French cathedrals, and every eye must be delighted with the lofty and richly-sculptured transeptal gables, upon which the three Hebrew letters of the name of the Supreme form a conspicuous ornament, and with the diadems which crown the three towers of the centre and the western front. That such an edifice should have been raised after the exhaustion consequent upon the desolating strife of the wars of the League, proves the strength of the religious feeling excited by the Roman Catholic revival, whilst it stirs wonder at the inexhaustible resources of the territory. But we are already far advanced into the days of the Renaissance, and the finest example of that style, St. Eustache, in Paris, shows us the last Mediæval builders reverting to the elongated Romanesque form which we described in our first note, and which the Kaiser-Dom or imperial basilic of Speyer had preserved from the eleventh century.

It is not necessary to say much as to the distinguishing features and comparative merits of the different styles of Mediæval architecture, since these are known more or less accurately by all who have given the subject their attention. The Pointed, with its endless array of decorative detail, its flying buttresses, gurgoyles, niches, and corbels for the exterior, its fret-work and canopies, cusps, crockets, and finials, for the interior, for all of which devout ingenuity finds a symbolic meaning, affords the greatest scope for the ingenuity of the architect. The bare wall spaces of the Romanesque style, on the other hand, require the aid of the painter and the sculptor to adorn their nakedness, and afford ample room for pictorial designs. We have already alluded to the effect of the interior of Speyer, and one of its most splendid features is the series of Scripture subjects painted by the artists of Munich on the blank interval of 20 ft. or 25 ft. between the summit of the arcade and the foot of the clearstory. The chief symptom of decline which heralded the discontinuance of the Pointed, was the excessive ornamentation of exteriors, which were sometimes beautified to such a degree as completely to outshine the interior. The most remarkable example of this is Strasburg, where we have a false western frontal 200 ft. high, with a steeple of 460 ft. rising from it, which, taken by themselves, are amongst the most wonderful achievements of the architect, but are joined on to a second or third-rate interior, which disappoints every one who enters it after admiring the outside. Even greater is the contrast between the richly carved exterior of Abbeville, and the shabby inside it conceals. Something not dissimilar in effect is found in our own Peterborough, where a fine and elaborate west front is prefixed to a round-arched interior of dismal plainness; but this was one of the consequences of the enormous length of time over which the construction of the large English churches stretched, whereas those of France seldom occupied the whole term of a generation betwixt their commencement and their completion. Our own times have witnessed a marvellous revival of the Mediæval styles, upon which I need not dilate, because the subject is continually treated, and instances presented, in the columns of the *Builder*. I may, however, be permitted to specify the Cathedral of Boulogne, erected within the last thirty years, as a splendid example of the form called in these notes elongated Romanesque, whilst the Votive Church of Vienna (lately engraved in the *Builder*), and in our own country the Roman Catholic Cathedral of Salford, and the Basilic of Arundel, are amongst the finest examples of Pointed architecture.

The multiplex and incongruous forms evolved by the mixture of the Classical and Mediæval styles in the Renaissance are often such as words cannot make intelligible without the aid of the engraver. Few of the provincial towns of France are without an example of it in some of their civic or ecclesiastical edifices; amongst the latter, perhaps, no more remarkable examples can be found anywhere than the churches of Falaise and of St. Étienne du Mont in Paris. For domestic architecture, the English Elizabethan style is unsurpassed by any other. Such mansions as Knowle, Cobham, Audley End, and Haddon Hall are amongst the most cherished monuments of the past our country has to show, and sufficient of themselves to vindicate English civic architecture from the charge of inferiority or commonplace. The development of the Renaissance style in Scotland is less known. Less sumptuous and ornate than that of England, as might be expected from the comparative exiguity and poverty of the country, it is hardly less interesting in itself, and exhibits features of a difference which can only be explained by the greater authority of Continental influences north of the Tweed. So early as the first half of the fifteenth century, Crichton Castle, erected by Chancellor Crichton, presents one of the best existing instances of the palace castle, in which the object of mere protection or defence is subordinated to that of domestic comfort and luxury. When Dr. Johnson visited Scotland in company with his *fidus Achates*, Boswell, he complained that he had seen no castellated ruins worth minding, though he had been led to expect that he would find a good many. When at Edinburgh, he had three of the finest in the island almost within a stone-throw, though he seems never to have so much as suspected their existence,—Craigmillar, the favourite residence of Queen Mary, Borthwick, and Crichton, each presenting a different phase of the old military style. Poor Dr. Johnson! If he had been taken to see them, his eyesight was so bad that he would have been very little the better for it. Intermediate between the Gothic and the newer form of the Renaissance is another extensive ruin, the Palace of Linlithgow, built by James IV., one of the most interesting remains of the Scottish Middle Ages. The archivolts of the deeply-recessed windows, and the pyramidal roofs which crown the massive square towers, show the preference of the architect or his royal patron for the contemporary Continental fashions. But the most distinctly-marked Scottish building of the Classical Renaissance type is the palace in Stirling Castle, erected in the minority of James V., and now tenanted by one of her Majesty's infantry

battalions. This is a beautiful example of the Italian style of the sixteenth century, more advanced than any of the English edifices of the same period, which are all in the well-known Tudor style. It is sincerely to be hoped that the Government will interpose before very long to rescue this fine relic from the decay which is fast overtaking it, and to restore to their pristine integrity the emblematic statues which adorn the front. Another building which may be mentioned, because it is one of those overlooked in the great collection of Billings, to which all students of architecture are so much indebted, is Dalziel House, in Lanarkshire, one of the best specimens of baronial mansions in the Renaissance style, with turrets, bartisans, gabled windows, and richly-carved wall-plates, showing the *fleur-de-lis* and the thistle in amicable conjunction, and taking us back to the days when Mary was Queen of France and Scotland. It was built by the Earls of Carnwath, and seems to have escaped the notice of Sir Walter Scott, who does not allude to it. One of the most cheering symptoms of the great architectural revival which the present generation initiated, and which is still vigorously proceeding, is the conscientious zeal with which architects look upon the best models both of their own and foreign countries. For our own parts, we confess that we rejoice in this, because it is a continuance of the same course which has produced the greatest and worthiest working of architecture, and infinitely preferable to the hunting after original styles, which can only lead to the production of monstrosities.

THE ENDOWMENT OF GENIUS, NOT RESEARCH.

SIR,—The article on the "Endowment of Research," in the *Builder* of last week, reminds me that I once addressed a letter to you on that subject which, at the time, met with some favourable response. In that letter, if I remember rightly, I took exception to the title "Endowment of Research" as one indicative of only a partially developed notion, of which the complete and final expression should be the "Endowment of Genius," or, as the writer of the article in the *Builder* well puts it, the "endowment of those who are best fitted to pry into the constitution of nature."

The difficulty is, however, to get at such men. The world, or at least the *British* world, invariably overlooks the highest order of intellects. The men who are really competent to advance an art or a science, from the very fact of their advanced views, must as a rule, be at variance with received notions, they are, therefore, generally regarded as "disturbers of the peace" by those professors who either from indolence or the want of ability are content to leave the dicta of the mighty dead undisturbed, to rest and be thankful, and to pursue the customary teaching with Chinese fixity. And yet I will hazard a prediction that the larger share of a fund for the Endowment of Research would be allotted to men of this order. People, English people, have not as yet the acumen to distinguish between the dreams of genius and those of mere enthusiasts and schemers. The previsions of the former are invariably either passed over or condemned with the unsubstantial fancies of the latter. The thoroughly English saying that "the inventor or originator of any good thing never gets the credit of it" shows, not only how unfitted the nation is to recognise those who are best fitted by nature for any good work, to advance arts and sciences,—I say the proverb not only shows this, but how material that British morality must be which can recognise the rights of property in goods and chattels, but not in ideas; how material that morality must be which can wink, nay even laugh outright, at the most barefaced and villainous raids by freebooters upon property in ideas,—upon property upon which the inventor, the discoverer, the thinker, may possibly have spent much money, or at all events an unknown amount of time and brain-work.

The man who is to be a great benefactor to the world by the labour of thought must lead a life apart from the busy world, at least a life different from that commonly led by the great bulk of the people; this lays him open to misconstruction and to be over-reached by thieves. Great thoughts require long incubation and self-denial, a husbanding of the vital powers which fools cannot understand. It is these very powers of self-denial and endurance which justly entitle a man to honour and pecuniary assistance, but which at the same time from a lack of discrimination and appreciation on the part of the public, render him liable to be overlooked, and to be left to struggle on unendowed through his work.

England must mend her ways in these matters if she is to keep her intellectual work in advance of other nations. There is a depressing conviction among the brain-workers that they will be despoiled of their own, and that their lives will be lives of difficulty. We may comfort ourselves by imagining that England is equally well served at second-hand, by the despoilers, by the men who usurp the honours and the rewards due to the real benefactor; but it is not so. It is true, to a certain extent, that it is easier to carry out than to originate an idea; but, nevertheless, the pick-brain can never give the vitality to its practical application that the originator can. I am speaking now more immediately of schemes of reorganisation and of reforms. Besides, the despoiling of men of what is their due, checks them both from devoting great powers to the service of their country, and often from publishing many valuable ideas, so that the nation suffers incalculable loss from its lamentable policy towards the brain-workers. If, therefore, we cannot find out the great men and endow them, let us have no such pretence as the endowment of research, which will enable ordinary minds to preserve the *status quo* and to more firmly bolt the door against genius.

METER.

ANGLO-SAXON ARCHITECTURE.

BRIGSTOCK CHURCH.

AT the recent meeting of the Architectural Society of the Archdeaconries of Northampton and Oakham, lately referred to in our columns, Mr. R. H. Carpenter read a paper on the Parish Church of Brigstock. At the outset he observed that although the church of St. Andrew, Brigstock, in point of size and richness of detail takes but second rank among the magnificent churches for which Northamptonshire is celebrated, yet in interest, based on extreme antiquity, there are few buildings that equal it in the whole of England. He pointed out the difficulty experienced in fixing the period of the Anglo-Saxon time, when the church was erected, but his conclusions seemed to favour a middle period. It was recorded by William of Malmesbury that King Alfred, who reigned at the end of the ninth century, erected "new edifices in a manner surprising and hitherto unknown to the English," and it was within this period, when England was settling down after the disturbed times of the Danish invasions, that the churches of Earls Barton, Barnack, Barton-on-Humber, Worthing, and Sompting are generally supposed to have been built, and Brigstock, so far as its early work is concerned, was rebuilt; for here and there in the walls of both tower and turret are found many stones burnt through, and turned of a red colour, by the action of fire, leading to the presumption that in the ninth or beginning of the tenth century a rebuilding was necessary through the destruction of an earlier church by the Danes, the materials of which were re-used in the new church. It is quite possible, however, that the churches of the Mercian kingdom may date before 823, when the battle of Cellandum was fought, and the great power of Mercia fell. Mr. Carpenter then exhibited the plans and some of the elevations of several Anglo-Saxon churches, viz., Earls Barton, the restoration of which is under his charge; Deerhouse, and Brixworth, restored some years ago by his late partner, Mr. Slater; and Sompting, which his father restored in 1854. The plans showed a likeness between the towers of Brixworth and Brigstock. Both have the large western circular stair-turret, and both of them resemble Deerhurst in having been probably used as dwellings, as well as for bell-towers. It might, too, be inferred from this, that they may have been erected in the more troubled times before Alfred, and used as strongholds. Certainly the massive iron-bound door at the foot of the Brigstock turret, if, indeed, it is the original one, would only have been made so strong for purposes of defence. Both before and after the Norman conquest all the district in which Brigstock (in Doomsday Book called Bricstoo) stands, was covered by a dense forest belonging to the Crown, and, as in Sussex, these woods became available for the ironworks established in this district. The church remained under the patronage of the Crown until Henry II. gave it, in 1177, with the chapel of Stanion annexed, to Cirencester Abbey, and from th date there were seventeen priests in su cession down to Elizabeth's time. She ma one appointment to the living, after whic the appointments were by the Viscount Cra bourne. The church as it now stands co sists in plan of a west tower and stair turre nave and two aisles, which extend to the line the west face of the tower, chancel with nort and south chapels, vestry and south porch. has been burnt more than once, and has bee altered again and again in every style from th ninth to the sixteenth century. Mr. Carpente drew attention to four plans on which the succe sive alterations were shown. Referring to pla No. 1, he said the Anglo-Saxon work now stand ing is the tower up to the belfry stage, th turret stairs, the western angles and portions the upper part of the nave walls, and the sout angle of the chancel now incorporated in th southern pier of the chancel arch. The wal are built in exceedingly rough and large rubbl masonry, with wide irregular joints with man burnt stones introduced. The angle quoins the tower of the nave (of which Mr. Carpente gave sketches) are of the "long and short work," viz., alternate upright stones, and very lon bounding stones, all of great size and roughl hammer-dressed, with projecting stones at th base of each angle quoin. The arch openin into the nave is a very fine one in proportio and workmanship, and is well preserved. Th stonework of the turret is of the small loc stone marble, excepting four courses about 5 f from the ground, which are of large and roughly squared Little Oakley stone, and the morta inside was found to be as hard as the stone itself In each angle of the tower cuticle the stones ar discoloured by fire about 2 ft. or 3 ft. from the floo the turret door is charred on its face, and ther was found in the nave close to the tower unde the pavement a thick deposit of charcoal ashes No indication of fire on the Norman work exists going to show that the Normans restored th church after having suffered injury by a secon fire. The doorway of the turret is of masonry with a triangular-shaped head, joined by tw stones leaning against each other, just as i found at Brixworth, Deerhurst, and Barnack The door is a most massive one of oak, heavily coated with straps and bars of iron, probabl from the local forges and mines; it is apparently the ancient one. The stone steps have all dis appeared, leaving only the places in which they were let into the wall, and there is now a wooden ladder. At the level of the present upper door way from the top of the ladder into the tower there was originally a floor, and then the stairs started again to an upper floor, where the present later belfry-stage now is. The turret is lighted by two square-headed windows. The top of the turret has a lead flat roof and stone parapets, of the date of this belfry stage floor. In the lower story of the tower, in the north wall, over a Norman arch cut through the wall, is a window (a similar one being opposite to it) with arches and jambs of roughly-worked masonry. It widens towards the bottom—a characteristic of Anglo-Saxon work. There is a recess left all round 3 in. wide and 3 in. deep, in which a wooden frame was fitted for the wooden shutters of the days when glass was not used. In the upper story, in its north and south walls are small semicircular-headed windows, with jambs and arch of very rough rubble stonework, these also having the recess for the frame. It has now been filled with a new one of oak, and glazed as regards the north window. The south window is blocked by rough stones and a monstrously ugly clock face, which it is purposed hereafter to remove. On the east side there was an opening (since blocked up) either into or on to the roof of the nave. The head was formed by rough oak lintels, so utterly decayed that the belfry stage and spire had become very seriously fractured through the sinking of the wood. The lintels, so far as it could be done with safety, have therefore been replaced by stone. It is not easy to say whether this lintel and the lintels over the upper doorway are original, but it is possible they are. Portions of the present clearstory walls are of this period, the walls having been kept up when the arches below were inserted. The height of the Saxon roof eaves is indicated on the outside south-west angle of the nave above the aisle roof by the change in size of the angle quoins and the rubble walling just about the level of the springing line of the tracery of the clearstory windows. It is therefore possible that if the plaster were removed from the arcade walls inside, that remains of the Saxon windows might be found,

ust as at Kingsthorpe Church they discovered he Early Norman windows and the later Norman reade inserted in the old Early Norman walls. The old nave of Brigstock was evidently of lofty proportions. The small portion of Early work next the chancel arch was only discovered recently through the removal of the plaster. It formed, he believed, the south-east angle of the original sanctuary, beyond which would probably be a small apse, as at Deerhurst and Worth, and as at Brixworth, a chancel and sanctuary arch, for where the plan produced showed a chancel arch they found an early foundation projecting about 4 ft. from the column in the nave. Thus, he believed, they had arrived, as far as possible, at the original plan of the church as erected in the Anglo-Saxon days, and they had also reason to infer that it took the place of the still earlier one of the Angles, who inhabited the kingdom of Mercia, and to this church the burnt stones might belong. Possibly it might have been built by St. Wilfrid, then Archbishop of York, who built and founded a monastery at Oundle. Coming to plan 2, they saw that the Normans added a north aisle (probably not exceeding 7 ft. in width), opening by the two existing arches into the nave. They are very plain semicircular ones, and rest on a central cylindrical shaft, with a simple carved capital of probably twelfth century date. They evidently extended the aisle to the western face of the tower. The mortar used for the work at this period was very soft, like garden mould, as was unfortunately too frequently the case with Norman buildings, resulting in many failures. The builders seemed, indeed, to have lost the art of making such mortar as the Romans did, or even as the Anglo-Saxons. The church probably then underwent a restoration, through having been injured by a fire as before alluded to. At the end of the twelfth and early part of the thirteenth century, the south aisle was built with two new existing arches, and south doorway. This doorway is executed in Weldon stone, and has a richly-moulded semicircular arch, resting on shafts with moulded capitals, &c. This was the time when the church was handed over to Cirencester Abbey, and the new patrons were probably not satisfied with the small proportions of their chancel. They, therefore, set to work and built a new and much larger one, eastward of the older sanctuary arch. The new chapel had a north aisle attached to it, most probably as a chapel dedicated to the Blessed Virgin, for it was at this period that lady-chapels became a more important feature in the plans of churches and cathedrals. The south wall of the present chancel, the piscina, and some probable remains of sedilia, a portion of the east wall, and the whole of the north wall, are of this date. The width of the lady-chapel is conjectural. It is, however, certain that it did not then extend as far east as now, for the stone angle quoins of the north-east angle of the chancel are still visible for its greater height. He thought it probable that the two Saxon arches were left standing with the intermediate walls, for no traces of Norman or Early Pointed work exists in that space. The roofs of that day, like the Saxon nave roof, would be of a high pitch, with probably no clearstory to the nave. There are traces existing of simple painted decorations on the arches, consisting of lines and scrolls in red and black. They do not occur on any later arches, so they must belong to this period. Not very long after all these alterations,—perhaps only forty or fifty years,—changes were again made. Probably the narrow and dark nave and aisles were thought incongruous with the handsome new chancel, so they set to work again and just pulled down both aisles, leaving the arcades standing, and preserving a fine feature of the old work, the rich stone doorway, and holy-water stoup. They then rebuilt the aisles wider, and extended them up to the line of the new chancel and lady-chapel, adding an arch to each arcade. They evidently had a little difficulty on the north side, and had to fit the square plan of the Norman arch to their octagonal pillar by a new moulded capital of curiously irregular form. Whether or not they opened their arch into the lady-chapel is not clear, but at all events they had an altar, and therefore some sort of screen, wall, or reredos, for in the eastern piers still remains the moulded corbel on which stood the figure of the saint to whom the altar and its chapel were dedicated. The north doorway and the three-light window next to it are relics of the aisle last alluded to. The western extension of the south aisle, from present surroundings, was possibly used as a priest's chamber. After the aisles were finished the nave was taken in hand, the walls were raised some 3 ft. or 4 ft. with particularly small rubble stonework, and three clearstory windows were inserted on each side, and a new roof of a flatter pitch, covered with lead, like those of the aisles, was substituted for the old high-pitched roof. The chancel and lady-chapel were also improved. The former was rebuilt above the string course, with a beautiful reticulated tracery window of four lights, with most likely a fellow one in the extended and widened lady-chapel (as in the contemporaneous work then in hand at the chancel and lady-chapel of Higham Ferrers). The altar in the lady-chapel was raised four or five steps above the nave. The tower was added subsequently, and a new belfry-stage erected of well-wrought masonry, surmounted by a spire about 45 ft. in height. But it was late in the fifteenth century, about 1490, that the church assumed its present form, when the great idea then prevalent was to get as much more light as possible and stained glass into churches. For this purpose large three- and four-light windows, with flat four-centred arches, were inserted in the south aisle, and the north aisle was widened and covered by a new roof, the early three-light window and north doorway being inserted in the new wall. The upper part of the east wall and north wall of the lady-chapel were rebuilt (the old wall having been very much pushed outwards) with new windows and buttresses of the period. The chancel arch was rebuilt too, of fine and lofty proportions, and a chantry-chapel was built at the east end of the south aisle, opening by a new arch into the chancel; possibly this was done by Thomas Montague, of Brigstock and Hemington. The vestry and the porch, with a parvise over it (probably for the chantry priest), with its turret stairs, are also of this period. There seems, however, to be some,—as it has proved unnecessary,—fear felt about the stability of the new chancel arch, owing to the way in which it was built up against the older jamb, and through the removal of the east wall of the aisle. A double flying buttress was therefore thrown against it, springing from a massive buttress and pinnacle built against the south aisle wall, and in front of the chantry door. One arch of the buttress was under, the other over, the roof of the aisle. The work was, however, done in so unskilful a manner that the lower arch hardly held together, and owing to the sinking of the buttresses through wet soil it failed so completely that it formed an inverted curve, and the stones were tied together by iron straps. The upper flying arch, too, came away from the wall it was intended to support, and was also tied by iron. These arches had been rebuilt, but he (Mr. Carpenter) had changed the under one into a four-centred arch, like that on the north side, as being of a stronger form. The old stairs are, with one exception, re-used. The one excepted proved to be a part of an early and richly-floriated sepulchral cross, and it had been laid in the lady-chapel floor. The walls had as usual suffered much from the rising of the ground and the absence of drainage, which caused the rain to saturate the foundations. Owing to this the south aisle walls were pushed outwards, and the north wall of the lady-chapel to such an extent that a buttress had to be built. It, however, still continued to give way, pushing the old and new buttresses into the ground so as to cause the arch between the lady-chapel and the aisle to settle to an alarming extent. This arch they had rebuilt and tied in to the chancel wall by an iron rod. The roof, of the fifteenth century, with the exception of the eastern end of the north aisle, and portions of the timbers and wall plates of the lady-chapel roof, had all been re-placed by the sixteenth and seventeenth century roofs of simple but good construction. The earliest timbers, though they were most anxious to preserve them, were found to be utterly rotten, held together with straps, and in a most dangerous state. They were obliged to renew the principal timbers in strict conformity with the ancient work. Many, however, of the small timbers and rafters were replaced and showed at once their age by their dark-brown appearance by the side of the new oak. The nave roof required but few repairs, but the south aisle roof required many timbers renewed or spliced as the defective gutters had rotted the ends. The parapets in all cases have had to be repaired and refixed excepting those of the porch and vestry, for which they wanted further funds. The top of the porch turret is now covered by a rough flat wood and lead roof resting on solid stone slabs. It is most likely that there was originally a sloping stone roof as on the north side, and this it is proposed to replace. There is fortunately preserved a very fine bench of the richly carved and traceried style of the fifteenth century with some portions of well-carved drapery panels forming a front of rather later date. These show the manner in which the church was at that time reseated. As funds do not allow of such a rich style of seat, they were forced to be content with a simpler type, but the old seats will be cleaned and repaired and placed in the chancel with new seats corresponding with those on the opposite side. Fortunately, too, they were able to reproduce the arrangement of the fifteenth century, for on clearing away the modern floors they found the greater part of the dressed stone plinths on which the floor and bench ends rested in the fifteenth century. The chancel arch and the south chantry were separated from the nave and aisles by screens, of which the sills and a few portions of the lower parts remain, and also the raised dais in front projecting from the east wall, bounded by its ancient stone curbing. On this stands the original fifteenth-century pulpit in its original position. It is of lofty proportions, and rests on an oak stem spreading out to the upper portion, which has traceried panels. These have all been grained, but portions of the base, where hidden by the pews, still preserve their ancient red and green grounds, with patterns on them. The old painting will, no doubt, be found if the graining can be removed without injury to it. Portions of the stone and wood steps remain. The lady-chapel was once richly painted. On the north side of the window is a lofty canopied niche much mutilated, but showing traces of exquisite detail of painting. There has been a smaller one on the other side of the window, but it has been almost entirely destroyed. A portion of the north wall has traces of painting *in tempera*, but, with the exception of an angel and portions of a female figure, it is not now possible to make out the design. There seems to have been a screen across this chapel, with a loft on it, to which the existing turret stairs gave access. No traces of it now remain. The magnificent oak screen which now fills the western end of the chapel was, it is believed, brought from Pipewell Abbey in the reign of Henry II. The screen, with the exception of where it was cut away from a gallery, is in perfect preservation. It has, however, formerly been a parclose or side screen between two clustered pillars, one of which was circular and the other octagonal in plan, and the posts had been fitted to them. The lower part of the centre has been removed, probably to form the opening when it was re-erected in this church. The upper portion is being carefully removed, and it will be placed, as formerly, under the arch. The chancel roof is a modern one, and quite out of character with the church, and its western beam crosses the top of the chancel arch. This and other works will have to remain until further funds are forthcoming. What has been done, said Mr. Carpenter, has been done thoroughly and in a conservative spirit, so as to preserve to posterity the interesting and valuable work of nine centuries. Mr. Carpenter concluded by giving some interesting details concerning the fine old Manor House standing to the west of the church, which was of fifteenth and sixteenth-century date, and in the repairing of which he and his partner (the late Mr. Slater) were engaged some time since by the Duke of Buccleuch.

HYDRANTS IN THE CITY.

DURING the past year the Gas and Water Committee of the Corporation have done much to advance the provision of hydrants at high pressure in the City for extinction of fires and street cleansing. In their report of July 30th, 1874, the committee set forth the great importance of hydrants supplied with water at high pressure for immediate use in case of fire. The Court of Common Council at once adopted their recommendation, and they were instructed to take steps for the laying in of service-pipes at constant high pressure, and the erecting of hydrants in streets about to be repaved, at the first cost of 1,000*l*. On April 15th, 1875, they presented a further report, recommending thirty-six streets or places in which the pipes might be laid and sixty-four hydrants erected, which was approved, and the pipes were laid in accordingly. Again, in April, 1876, the committee presented a further report, seeking to obtain the sanction of the Court for a further expenditure of 2,800*l*. in utilising forthwith all the pipes which had been laid in by obtaining designs for the most im-

proved form of hydrant, and erecting the same without further delay. This report was also adopted, and the committee at once advertised for designs, and having received a number, gave the whole a very careful consideration, assisted by the engineer of the Commissioners of Sewers. In a [short time we may expect that the hydrant found most suitable in all points will be selected and forthwith fixed in the several places already prepared for the purpose. The New River Company have for nearly two years had works in progress which are approaching completion, and which will have the effect of adding about 50 ft. of pressure to the service over the greater part of the City. In other words, it will enable a jet of over 100 feet in height to be thrown from the hydrants, instead of some 75 ft., as at present. Mr. James Edmeston is the chairman of the committee.

THE DISTRICT SURVEYOR OF NORTH BATTERSEA ON THE SPECULATIVE BUILDER.

UNDER the heading "Unhealthy Building at Battersea," in the *Builder* of December 16th, we drew attention to a letter addressed to the Wandsworth District Board of Works by the Rev. John Toone, vicar of St. Peter's, Battersea, in which the writer stated that houses were being built in certain parts of Battersea "upon rubbish and dust-shoots, without basements, and with boarded floors close to the earth, and that in scarcely any of the houses was there any provision for ventilation beneath the floors," the consequence being that there was considerable sickness in the locality. Mr. Toone's letter has been the means of eliciting a reply from Mr. H. J. Hansom, the district surveyor of North Battersea, in which some statements of a grave and startling character are made in reference to the manner in which building is carried on in the suburbs of the metropolis by the speculative builder. Without denying the allegations contained in Mr. Toone's letter, the district surveyor states that there is a great distinction between building operations in Central London and the suburbs. In the one case, he observes, architects are always engaged to plan, specify, and superintend, and builders of known ability carry out the work. Inferior material is unknown, or would be out of place. In the other case, the speculative builder appears upon the scene,—a creation or organism unknown to science or art, the outcome of the growth of London, and of the compulsory removal of the working classes in large numbers to the suburbs. Architects disappear in such circumstances, except where a church, school, or factory invites or engages them. Estates have to be floated, as it is called, frequently by capitalists or financial agents distinct from the freeholder, certain improved ground-rents have to be realised, the whole and sole object being a quick return for money. In continuation, the writer caustically sketches the character of which the speculative builder is the type. "The speculative builder," says Mr. Hansom, "is frequently or generally no builder at all. He may be a bricklayer, carpenter, or labourer, a mechanic or a tradesman, a butler or a retired publican. I know them from every class and grade of society. Even clergymen are speculative builders, and one in my own knowledge and rather sad experience (as he forgot to pay my fees) built five houses in Livingstone-road, and several hundreds elsewhere." Proceeding, the writer says that the great object of the speculative builder is gain without labour, "for," he observes, "the speculative builder never works. He looks at his venture once a day, and invariably goes to the City. Hence the demoralisation and deception, economy of labour being another term for bad work, and in material for the use of the worst and the least of everything, so as just to be consistent with the strict letter, or, rather, an evasive construction of it."

After endeavouring to show how even well-constructed houses are rendered unhealthy by the carelessness of tenants in reference to surface drainage being neglected and allowed to find its way under the floors of houses and so cause dampness, together with neglect of cisterns, water-closets, and ash-pits, Mr. Hansom makes a further serious charge against the speculative builder. It is well known, he says, that streets of houses are built before the roadway is formed, and that months and often years elapse before the main sewers are put in. As a consequence temporary and insufficient cesspools are formed at the back, and when, ultimately, the main sewer is put in, the cesspool, instead of being emptied and filled in with dry rubbish, is covered over with rough planks, and the old drain left. A few boards are removed from the floor, and a drain inserted through the house, undermining the front and back walls, and leading to future settlement. The socket-joints of the drain are neither cemented nor otherwise stopped, and the earth is thrown loosely on the top of the drain. Being laid nearly level, it gets partially or wholly stopped; the sewage, after a few days, begins to decompose and throw off fœtid and noxious gases, and the atmosphere of the house is poisoned with disease and fever-breeding agencies. He proves this to be the case from two instances he gives, and which came to his knowledge whilst in the exercise of his professional duties as district surveyor. In the one case he found a space only 12 in. under the floor of the house entirely filled with sewage matter, and had to clear it out and fill the space in with concrete. In the other instance, when the floor of the house was taken up, the points of the pipes were found to be unstopped, and lumps of clay thrown on, with gases escaping. He adds that in many cases he has found dummy drains inserted, which just enter the street, but are not connected with the sewer, and he suggests that such proceedings should be made "a felonious and indictable offence, or a grave misdemeanour and conspiracy to defraud and damage," so that the builders of houses so-constructed might be prosecuted.

CHEMISTRY AS APPLIED TO ENGINEERING.

AT a meeting of the Civil and Mechanical Engineers' Society on the 4th inst. at the rooms of the Iron and Steel Institute, Victoria-street, a paper was read by Mr. Bernard Dyer, F.C.S., on the subject of "Chemical Analysis considered in its Application to Civil and Mechanical Engineering." Mr. R. M. Bancroft, president, occupied the chair.

Mr. Dyer's paper opened with some remarks on the close connexion of chemistry with other sciences, drawing attention to the marked and subtle relations between the chemical composition and physical properties of various kinds of matter. The subject of water analysis was treated at some length, both as regarded the supply of drinking-water and the suitability of various waters for boiler use, some practical remarks being introduced on the occurrence and prevention of boiler incrustation. The subject of oils and other lubricants, with reference to their adulteration with drying oils and the consequent damage to machinery, having been alluded to, the paper was brought to a close with a reference to sewage-purification, agricultural chemistry as affected by engineering, and gas.

A discussion followed, in the course of which it was suggested that chemistry might be applied with advantage to the art of building, in order that edifices might no longer be constructed in London of stone which crumbled under atmospheric influences. General agreement was expressed that the analysis of samples of material was very important, as tending to ensure greater uniformity of quality in manufactured articles used in engineering, and supplied by contract; though with regard to steel rails it was pointed out that there was great difficulty in obtaining anything like a uniform quality of product, the same bar often furnishing different results if analyses were made of two or more parts of it.

Mr. Dyer replied, observing that he did not think chemical analysis could be expected to throw much light on the nature of wood with regard to building, or in all cases on the durability of stone. He thought microscopic examination of the first-named material might possibly be found useful if carefully studied; and, as to stone, the softest chalk and the hardest marble, for example, were chemically the same substance.

Baltic Fir Sleepers.—The interpretation put upon the expression, "deals, battens, and other light wood goods," in the new Merchant Shipping Act, by the Board of Trade, as set forth in the secretary's letter to Messrs. R. Wade, Sons, & Co., of Hull, has caused great satisfaction in Germany, inasmuch as it includes fir wood. A great number of fir sleepers are shipped every winter from the Baltic ports to England, and this traffic is, by the above interpretation, allowed to continue.

ST. ALPHEGE'S MISSION COLLEGE, BLACKFRIARS-ROAD.

THE block of buildings on the east side of Blackfriars-road, known as St. Alphege's Mission College, an institution for training students intended for the Church of England, as well as for giving a middle-class education to the sons of tradesmen and others,—is at present undergoing very extensive alterations, both externally and internally, and being much enlarged. The dingy elevation to Blackfriars-road is being entirely re-faced and ornamented in Portland cement, so as to give it a greatly improved appearance. All the windows have been ornamented with moulded circular heads, enclosing devices symbolical of the various branches of art and science, and education generally, and the elevation is surmounted by a balustrade, in the centre of which is an arch, on the face of which are inscribed the words "Mission College." In the centre of the ground-floor is a porch entrance, projecting across the area in front of the building to the boundary of the footpath. The building has been extended considerably at the north end by an addition to the structure, by which the Blackfriars-road frontage has been lengthened to the extent of about 12 ft. This added portion of the building is carried much higher than the old part of the structure, and terminates with a gable and circular window, surmounting the Blackfriars-road frontage, together with a turret for the chapel and school bells. The lower portions of the new building contain school and class-rooms for the Church students and other pupils, together with dormitories for the boarders, and other apartments, whilst the whole of the upper floor is fitted up as the college chapel, containing about one hundred seats in the body of the apartment, a chancel and altar, with stalls, organ-chamber, vestry, &c. The interior of the old portion of the building has likewise been reconstructed and rearranged for the greater convenience and accommodation of the heads of the college as well as the students, and will contain the wardens' and masters' apartments, library, lecture-rooms, school-rooms, refectory, and dining-rooms, together with dormitories. A large portion of the basement area will be set apart as recreation space. The part fronting Blackfriars-road will be covered in, while that in the rear will be open.

The designs for the enlarged building and alterations have been furnished by the Rev. J. W. Rhodes, who is at present a beneficed clergyman in Staffordshire, but who, until within the last few years, was an architect carrying on business in London. Retiring from the architectural profession, he some time ago became a student at St. Alphege's Mission College, under the Rev. Mr. Goulden, the principal, and having graduated at Oxford, he was subsequently ordained by the Bishop of Lichfield.

The contractor for the works is Mr. Martin.

MASONIC BUILDINGS.

Weymouth.—Mainly through the exertions of Mr. Pelly Hooper, who has been W.M. two years in succession, new buildings for "All Souls'" Lodge, 170, Weymouth, have now been erected. They are in School-street, in the rear of the Hall, and on ground leased for ninety-nine years of Bro. Sir F. W. Johnstone, bart., M.P. for Weymouth. Mr. G. R. Crickmay, P.M., is the architect.

Birmingham.—The portion of the Masonic Hall buildings occupied by the Freemasons for their meetings has just undergone complete renovation and redecoration. The work commenced in reality with the vestibule at the New Street entrance. The walls are painted buff, and in the panels on each side are displayed griffins in gold. Upon a gold ground in the spandrels there are a number of medallions in which are inserted cameo portraits of Handel and Newton, Tasso and Raffaelle; whilst in the ceiling a series of tablets are introduced bearing the names of distinguished authors and musicians. The ceiling of the corridor has been painted in aërial blue, the cornices and belts being in buff and morones, whilst the walls are in what is known as Wedgwood green, the pilasters being in black, with blue belts and gold ornamentations. The whole of these decorations have been executed by Mr. John Taylor, Broad-street. The walls of the banqueting-room have been papered with Mr. Taylor's damaskoid, having a crimson background and amber-coloured decorations. The

pilasters are relieved with Grecian ornamentations, and in the panels have been painted medallions with fruit. The dado has a black-and-gold enrichment and moroco belts.

Ashford.—A new Masonic building is about to be erected in Bank-street, Ashford, adjoining the Post-office. It is contemplated to have the ground-floor constructed for two shops; the upper floor will be used as a hall. The contract for the construction has been taken by Mr. Wood, of Ashford, for 1,282*l.*

DETENTION OF PLANS AND SPECIFICATIONS.

SILVESTER *v.* GEE AND OTHERS.

IN this case (heard in the Newcastle County Court on the 19th ult.) the plaintiff was an iron-founder at Newcastle, and the defendants were builders and contractors at Stafford. The action was to recover the sum of 50*l.*, of which 20*l.* were for the alleged detention of certain plans and specifications, and 30*l.* damages alleged to have been sustained by reason of the detention.

It was stated in support of the claim that in the early part of last year the plaintiff wished to erect some houses in Newcastle, and he instructed Mr. Blood to prepare the plans. Two sets of plans (each for three houses) and one specification were prepared. These plans were lent to the defendants' foreman to enable him to send a tender; but his employers stated that they were too busy, and they refused to allow him to tender. He consequently returned the old plans. Afterwards the plaintiff wanted to erect seven houses instead of six, and not being satisfied with the old plans, he instructed Messrs. Beardmore to prepare new ones. They accordingly prepared two sets of plans, and one complete specification, which were the object of the present action. These plans were sent to the defendants in March, and had not been returned. The defendants' foreman had asked to be allowed to look at the old plans, stating that he could not remember the difference between the old and the new ones. The plaintiff lent the old plans, but the defendants had not sent any tender for the erection of the houses, so the plaintiff fetched the old plans back, and pressed for the return of the new plans. A reply was received to the effect that the plans had been sent back to the plaintiff's works.

For the defence it was stated that the plans had been returned. The defendants could have had no motive in keeping them back; and if they had been lost, the defendants were not liable if there had been ordinary care used.

Three witnesses were called for the defence, one of whom spoke to having taken the plans back to Mr. Silvester's works, but he could not afterwards recognise the man with whom he had left them.

Mr. Smith, who appeared for the plaintiff, in replying to the defendants' case, said that Mr. Gee was a highly respectable tradesman, and the reasonable assumption was that without his knowledge the plans had been lost by one of his servants.

The jury, after consulting together for about two hours, returned a verdict for the plaintiff for 10*l.*; each party to pay his own costs.

CASES UNDER THE METROPOLITAN BUILDING ACT.

TIME FOR TAKING PROCEEDINGS.

AT Wandsworth Police Court Mr. H. Bishop appeared to answer a summons at the instance of Mr. Field, district surveyor of Putney, for constructing two balconies in Cambridge-road not of fireproof materials.

The defendant complained of the surveyor not interfering at the time he built the balconies, which was in June last. He had since sold the property.

The complainant said he did not discover them until October.

Mr. Paget thought the Police Act applied in this case, directing proceedings to be taken within six months from the time the offence was committed. The offence was committed at the time the balconies were erected.

The complainant submitted that the offence was committed at the time the notice was disobeyed. If not, the surveyor would have no control over buildings not discovered in time.

Mr. Paget said the surveyor must look sharp to find them out. He told the defendant that he ought to have given notice, but as more than six months had expired he had no power to deal with the summons, which he dismissed.

This decision appears to us entirely erroneous. Clause 0v. provides "that the time during which the District Surveyor may take any proceeding, or do anything authorised or required by this Act to be done by him, in respect of such building or work, shall begin to run from *the date of his discovering* that such building has been erected or work done."

The Theatres in Dublin.—The Dublin Chief Commissioner of Police, Sir Henry Lake, has ordered a survey to be made of the theatres of the city to ascertain what are the means of exit in case of fire.

MONUMENTAL.

New York.—A colossal bronze bust of Mr. Horace Greeley, which has been erected as a monument over his grave in Greenwood Cemetery, New York, mainly by the working printers of the United States, was unveiled on the 4th ult. It is a bronze bust, 4 ft. in height, resting upon a granite pedestal 10 ft. high. Upon one side of the pedestal is a tablet, of bronze, on which Mr. Greeley is represented as a compositor, standing employed at the case, and upon a slip at his side is a paper bearing the date, "New York, 1831." Upon two other sides are, also in bronze, a plough, a pen, and a scroll, the fourth side containing a bronze tablet with the following inscription:—"Horace Greeley, born February 3, 1811; died November 9, 1872. Founder of the *New York Tribune*." The monument is the work Mr. Calverley, an American sculptor. The subscriptions for the memorial amounted to 6,000 dols., which is a little more than the cost of the monument.

Glenelg.—A polished granite obelisk has just been erected in the churchyard of Glenelg by the parishioners of Glenelg, Kintail, and Glenshiel, and some other friends, in memory of the late Rev. Mr. Macrae, for thirty-years minister of Glenelg. The obelisk was furnished by Mr. Legge, Aberdeen.

HOSPITALS.

Hunstanton.—It has been decided to build a new convalescent hospital at Hunstanton. Plans were obtained in competition, thirty-six sets being submitted by architects from all parts of the United Kingdom. Mr. R. Hutchinson, architect, Huntingdon, was among the number, and his drawings were accepted.

Sheffield.—At a recent meeting of the Health Committee of the Sheffield Town Council, the subject of the proposed fever hospital in Winter-street came up for discussion, and a ground-plan of the Institution was laid before the members. The plan has been prepared by Mr. Stovin, of the borough surveyor's office. According to this plan, the building will have a frontage to Marples-road of 120 ft., and a wide corridor will run the whole length of the hospital, by which thorough ventilation will be insured. On the ground-floor there will be accommodation for twenty-eight beds, with rooms for convalescents and other purposes, surgery, reception-room, laundry, and so forth. The story above is almost an exact counterpart of the floor below, and it gives accommodation to a similar number of beds. There is a mortuary to the right of the building, and in a quadrangle at the rear of the main building there is a disinfecting-house.

Ratcliff.—New buildings for the East London Hospital for Sick Children have lately been erected. The building is of solid construction, no money having been expended upon unnecessary ornamentation. When finished, the institution will contain 136 beds; but in its present state it is adequate for ninety beds, including ten for infectious diseases. The wards are spacious and lofty. For the construction of a third block, 5,000*l.* are required, and to furnish the establishment in a proper manner a further sum of from 1,500*l.* to 2,000*l.* It is intended that there shall be an opening ceremony in the ensuing Spring. The building was erected by the late Mr. Thomas Ennor, the architects being Messrs. H. S. & C. A. Legg.

Evesham.—It has been resolved to establish a cottage hospital at Evesham. It is proposed that the hospital shall have twelve beds, and the building, site, and furniture will probably cost 1,500*l.*

NEW BRIDGES.

Coatbridge.—The new bridge over the canal at Coatbridge, which completes the series of improvements which have been made during the last few years at the site of the old level-crossing, and on which upwards of 60,000*l.* have been expended, has been formally opened by Mr. W. Weir. Mr. Kay was the contractor. Mr. Weir congratulated the inhabitants of Coatbridge on the completion of this undertaking, which it had taken years to complete, and by means of which the great centre of the Scotch iron trade had become possessed of a safe means of transit for all their produce. The level-crossing had been abolished, a splendid railway bridge had been carried over the roadway, a commodious towing-path had been carried through beneath, and a substantial bridge had now been completed for the road traffic. Some idea of the traffic passing over this great centre may be obtained from the fact that the Caledonian and North British Railway carry more than 150,000 tons per day over lines running parallel to each other, while on the road and canal carts and boats are continually seen heavily laden.

Dundee.—On the 26th ult. the last of the large caissons for supporting the 245-ft. girders of the Tay Bridge of the North British Railway was floated out and successfully lowered into its place. The pier, which is if anything the highest, and consequently the heaviest connected with the bridge, is 31 ft. in diameter, or nearly 100 ft. in circumference, 44 ft. in height, has a bottom area of 700 square feet, and is about 200 tons in weight. The lower part, which is about 20 ft. in height, is built round with bricks to a thickness of 14 in., while there is as yet nothing inside of the iron covering of the upper part. After the pier has been sunk to the depth of about 20 ft. into the bed of the river, the upper part, which is 24 ft. high, is filled up, and the covering of iron removed. Regarding the completion of the undertaking, there are now forty-seven piers completed from the north side, three of them being 31 ft. in diameter. Then follows the centre gap, the last pier of which has just been deposited, as stated above, and in which six large girders have yet to be placed. From the south side there are fifteen piers finished. After the last of these is the south gap, in which have yet to be placed seven girders of 145 ft.; and, as the whole of the piers are in an advanced stage of completion, this gap will in a short time be filled up. Piers 22 to 26 have been finished, and the girder from pier 26 to pier 27 will be raised as soon as the latter has reached its proper height, which will be this week. Then there are other two piers completed, while a third is nearly finished. It is confidently anticipated that, unless very bad weather should occur to prevent the completion of the work, a train will run across the bridge on the 1st of September next. Messrs. Hopkins, Gilkes, & Co. are the contractors.

VERDICT AGAINST A BUILDER.

AN inquest has been held at the Waterloo Hotel, near Wellington College Station, Sandhurst, Berkshire, touching the death of Ada Barnes, the infant daughter of William Barnes, butler at Wellington College, whose death was caused by the falling of a part of the house in which the parents resided. It transpired that Barnes, in the month of May last, made an agreement with Mr. Blandford, of Bridge House, Sandhurst, to build him a house for 245*l.* 10s. The plan and specifications were prepared by Blandford and approved by Barnes; but the latter knew nothing of building, and left everything to Blandford. The family entered into the occupation of the house on the 1st of December. The part of the building that fell in consisted of a bedroom and parlour over a cellar. As suggested by Mr. Blandford the hollow walls were alleged to be preferable to 9-in. walls. The remainder of the house was standing. At the time of going into the house there was 1 ft. of water in the cellar, and it afterwards increased to 3 ft. Three of the four walls were built of concrete up to the surface of the ground. The builder, on being examined, stated that he could form no other opinion than that the water was the cause of the falling in of the building.

Mr. Wheeler, solicitor, of Wokingham, appeared for Barnes, and called Mr. Joseph Morris, architect, of Reading, who stated that he had examined the building. The cellar walls, he said, were built of lime-concrete. The material was improper for the purpose, and appeared to be of improper quality. The mortar of the brick-work of the superstructure of the house was of indifferent quality. These two facts, in his opinion, accounted for the catastrophe. He considered that the collapse occurred from the unequal pressure of the brick-work upon the soft concrete wall, which bulged and gave way, causing the house to fall very suddenly. Blandford stated that the cellar of his own house was built of concrete, which he considered to be of an inferior quality; but the way in which the house was built was somewhat different.

The jury deliberated some time, and then returned a verdict to the effect that the death of the child had been caused through the neglect and improper way in which Blandford had built the house. The verdict was taken as one of "Manslaughter" against Blandford, and the Coroner made out a warrant for his committal for trial at the next assizes for Berkshire.

A Dangerous Material. — Within three years, says the *Commercial Bulletin*, there have been three shops destroyed in Massachusetts through lampblack. A hand damp with perspiration, a drop of water, a bit of grease, or a sprinkle of oil, will create combustion which will start the lampblack aglow like charcoal, and so ignite the package, and hence the blaze. In lampblack factories, while great precaution is taken to prevent fires, a rainy or sharp frosty day will start a dampness upon the inside of a window-pane, and the flying particles of dust lighting upon this, create a spark, which, communicating with the pile, may send a glow of fire with wonderful rapidity through the galleries of the shop.

on the 22nd ult., after having been closed for some months, during restoration. The Ecclesiastical Commissioners led the way by good work in the chancel. The parishioners, thus encouraged, undertook the nave and chapels; and, a subscription having been set on foot by the vicar and churchwardens, a plan was agreed to, furnished by the diocesan architect.

Battersea.—The Church of St. Mary, Batterses, built ninety-nine years ago, is about to be renovated and slightly altered in its internal arrangements, according to plans by Mr. Arthur Blomfield, architect. It is proposed to remove the high pews; to remove the doors, which are most inconvenient, and which prevent the free use of the church; to do away with the square pews; and thus to gain an addition of about 100 seats. As to the choir and organ, it is proposed so to arrange the eastward part of the floor as that a platform shall be made with suitable stalls for the choir, and to bring the organ into an adjacent situation on the floor. The vestry has authorised the vicar and churchwardens to apply for a "faculty" for the legal execution of these changes, and a committee has now been formed to collect the funds necessary to carry them out. The estimated cost is about 1,200*l.*

Bengeo (near Hertford).—The parish church of Bengeo (built about twenty years since, from the designs of Mr. Ferrey, F.S.A.) has lately had a lofty organ-chamber added to it, under the superintendance of the same architect. This has been done as a memorial of the late much-respected rector, the Rev. Charles Deedes, from funds contributed by the parishioners. It is placed in the angle formed by the east end of the north aisle and the north side of the chancel. Arches, with chamferred orders, open out into the chancel and aisle. The traceried windows disturbed by this work have been refixed in the new organ-chamber, the size of which is about 13 ft. square, and the height up to the plate 16 ft. 3 in., the roof being boarded at the collar-level. A large organ, with ornamental front, is being built by Messrs. Walker & Son, this being also a memorial to Mr. Deedes. Messrs. G. Ekins & Son, of Hertford, were the builders of the organ-chamber, which has cost about 300*l.*

Baunton.—St. Christopher's Church, Baunton, has been re-opened, after restoration. A local paper states that professional opinion having been taken upon the extent of the work required, Mr. Edward Trinder, steward to the Abbey estate, prepared the necessary plans, and the carrying out of the work was then entrusted to Mr. Edward Webb, under-steward to Mr. Master. Under Mr. Webb's supervision the work has been performed in a great measure by the workmen on the Abbey estate, assisted by Mr. W. H. Wood, who constructed the new seats, and Messrs. Saunders & Sons, who supplied the door for the principal entrance. An entirely new roof has been added, and the old small lead lights in the chancel have been replaced by mullioned windows. A new vestry, opening from the north side of the chancel, has been built, and the old stone floor has been replaced by encaustic tiles. In taking the plaster from the north wall of the nave, a large fresco painting of St. Christopher crossing the stream was seen. The church is heated by a hot-air apparatus by Messrs. Haden & Son, of Trowbridge.

Bordesley.—St. Andrew's Church, Bordesley, was re-opened on the 24th ult., after restoration. The stone of which the edifice was built is very soft and of inferior quality, and gave the church a dilapidated appearance. Shortly after the present vicar (the Rev. J. Williamson) entered upon the charge of the parish in May last, Mr. G. Thomason, architect, was called in, and reported on the state of the building. He estimated that over 1,000*l.* was required to put the structure in decent repair. The mullions, tracery work, lead and glass of windows had to be made new; spouts, gutters, and other external necessaries had to be provided; joists under floors, destroyed by rot, had to be replaced; a new warming apparatus provided; and the church cleaned, coloured, and painted throughout.

Haddenham.—The parish church of Haddenham, which occupies the highest point in the Isle of Ely, is in course of restoration, and the nave and transept have been re-opened for divine service. The work of restoration was commenced in 1872. The church—a large and ancient structure—had become very dilapidated. The north aisle was too dangerous to be used for divine service at all. For some years barriers had been fixed to prevent the congregation using any seats in it, lest the roof (which was shored up with timber) should fall on their heads; whilst the walls, buttresses, and transepts in every part were decayed and ruinous. The lead covering the nave, transepts, and porch was so worn and indented that the water came in freely in many places. The timbers of the long nave roof were in a very bad condition. The fine Early English tower was seriously cracked and damaged. The Ecclesiastical Commissioners undertook to complete the restoration of the chancel, on condition that efforts were made to restore the rest of the sacred edifice. The subscriptions obtained in 1872 for this work amounted to about 2,000*l.*, including 300*l.* from the late Earl of Hardwicke as chief landowner, and 255*l.* from the Archdeacon of Ely. A first contract was then entered into for the nave and north aisle, which seemed to demand earliest attention. Unfortunately, as the work proceeded, the tower gave alarming proof of settlement, and had to be taken down. It has now, however, been carefully rebuilt with good foundations, and preserving its chief features and grand proportions, by the friends and tenants of the late Earl of Hardwicke and to his lordship's memory.

Stepney.— Christ Church, Jamaica-street, Stepney, was consecrated on the 3rd instant by the Bishop of London. The church has been erected from the designs of Mr. Ewan Christian, by Messrs. Downs & Co., of Southwark.

Watlington.—The committee of the Watlington Church Restoration Fund have resolved upon adding an organ-chamber and vestry to the church, at a cost of 350*l.* Mr. Martin, of Hereford, who has just completed the restoration of the chancel, will be the contractor.

DISSENTING CHURCH BUILDING NEWS.

Newcastle-on-Tyne.—The foundation stone of a chapel for the Methodist New Connexion has been laid in Newcastle. The building will occupy a site at the corner of Falconar and Camden streets, Shieldfield, and has been designed by Mr. J. J. Lish, architect, Newcastle, in the Gothic style. It will be built throughout of stone, faced with thin-pitched faced blockers from Tow Law quarries, interspersed with bands of Penrith red stone. On plan it will comprise a nave and two side aisles, and ministers' and leaders' vestries. Accommodation will be provided for seating in open benches nearly 900 persons. Galleries will be placed over the side aisles and each end of the nave. All the woodwork will be stained and varnished; and the chapel will be heated by means of hot water. Messrs. White, Sprout, & Gibson, of Blyth and Newbiggin-by-the-Sea, are the contractors. The estimated cost is 4,600*l.*, and the site has cost 600*l.*

Edinburgh.—For several months past operations have been proceeding in the erection of a new Free church, hall, session-house, &c., at Newington. The exterior of the hall, towards St. Andrew's-terrace, is of gable form, and the style adopted throughout is Early Gothic. The leading feature in the elevation is a wheel-window, 7½ ft. in diameter, the tracery of which consists of an inner sexfoil circle with a series of foliated circle segments radiating towards the circumference, the whole being circumscribed with a primary order of mouldings. Tall, narrow, lancet-headed lights flank the wheel-window on either side. The architect is Mr. Hippolyte J. Blanc, whose designs were selected in competition. The church or main building is expected to be proceeded with soon, and is designed to consist of a nave, with two side aisles, and north and south transepts, with handsome tower and spire, about 150 ft. high.

Gateshead.—The four corner-stones of a new mission chapel for the Methodist New Connexion were laid in Sunderland-road, Gateshead, on the 29th ult. The new building will be 61 ft. long and 32 ft. broad. Mr. Gibson Kyle is the architect, and Messrs. Shields & Cruickshanks, Gateshead, are the builders. The cost is estimated at 1,000*l.*

VARIORUM.

——THE *American Architect*, discoursing of the recent deplorable burning of the Brooklyn Theatre, says:—"We believe that the only safeguard against such disasters is in fixing by penal statute a rigid responsibility, so that not only a civil but a criminal action shall lie against those who build places of amusement recklessly; and against their architects, unless these can show that they were absolutely constrained by their clients. It is quite possi that in the Brooklyn case the faulty disp tions and construction were enforced upon t architect; but in spite of his plea of gene ignorance, unless he can show that they w forced upon him, he cannot be held guiltle We know one architect who, having built theatre, was compelled, against his energe protests, to let his exit doors swing inwar and another who had arranged for a sprink the last moment. . . . . The building seems have been cleverly planned from the manage point of view, that is,—so as to admit the sp tators from the principal street, and to ma the most of the seating-room; but very lit care was shown for the safety of the audience ——The *Gentleman's Magazine* will be publish in future by Messrs. Chatto & Windus. T January number is a very good one, and includ contributions from Mr. Hepworth Dixon, M Karl Blind, Dr. Hueffer, Mr. Joseph Knight, I Andrew Wilson, the late Walter Thornbury, a others. It also contains the opening chapters a new novel by Mr. Justin MacCarthy.——T *Leisure Hour*, speaking of the Stone, Bronze, a Iron ages, says:—"The epochs designated t Stone Age, the Bronze Age, and the Iron Ag have no real existence; they are only stages civilisation, not measures of time. The Sto Age in one part of the world may have been t Bronze Age in another part and the Iron Age another; and sometimes in the same count they so overlapped as to be of very little chron logical value. Amongst the remains of the Swi lake dwellings at Waawyl and Moosseedorf son hundreds of stone implements have been foun but no metal. These dwellings would therefo be relegated to the Stone Age; but in Meile on the Lake of Zurich, beside the stone impl ments, there was found a bronze celt, thu bringing the Stone and the Bronze Age together Besides, at Morges, on the Lake of Geneva, a iron poniard was found with bronze celts, bring ing together the Bronze and the Iron Age; an to complete the anachronism, at Nidau, on th Lake of Bienne, there were secured thirty-three axes of stone, twenty-three bronze axes, togethe with perforated stones, surrounded by a band o iron, iron spear-heads, and pottery; and a Estavayer, on the east bank of the Lake o Neufchâtel, there were two pile dwellings, in on of which there were only stone implements, bu at the other, besides stone celts there was found a knife with a bronze handle and an iron blade If these are facts, and the authorities are given for every statement, what conclusion can we reach but that any measurement of time made by these supposed epochs must necessarily lea to error? The tumuli speak the same language for in 1822 a perforated stone axe and an iron axe, with other implements, were found in cutting through the tumulus near Claughton Hall, Lancashire, in which we have together the two extremes, the stone and iron implements also in a barrow on Ashford Moor was found an iron arrow-head, with implements of flint, and at Moor Low six rude instruments of stone, a bronze lance-head, iron knives, and glass beads."—— A classified index to the first twelve volumes of *Science Gossip* (1865–76) is being prepared. This useful periodical well maintains its position.—— During the past year every number of the *Garden* has contained a coloured plate of considerable excellence. They are from original drawings by the best flower and fruit painters, of valuable new or rare plants. Each plant chosen for illustration is usually a member of some important family, and the plate is accompanied by an article enumerating and describing all the kinds, and embodying all that is known up to the present day concerning each great family of cultivated plants. Hardy subjects, which may be grown in the open air, and in all classes of gardens, and which are, in consequence, of most interest to the general public, are chiefly selected for illustration. The subscribers to the *Garden* get full value for their money.

Ornamental Zincwork.—Messrs. Holden & Co., of Wood-street, Westminster, have recently completed a large ornamental zinc ceiling for Malta Theatre. It is a very elaborate piece of work, both in design and execution, and shows to what extent their ornamental stamped zinc-work can be adapted. If we understand rightly, it is a false ceiling to be suspended from the existing roof, and zinc was adopted for lightness' sake. Messrs. Holden have done their part of the work very well.

THE WOODEN STRUCTURE AT THE VICTORIA STATION.

s,—In your issue of the *Builder* of the 6th inst. gave insertion to an anonymous letter signed "An er of House Property in Pimlico," calling "your ation to the enormous wooden structure close to the venor Hotel, &c." This description is somewhat e, and as Surveyor of the district, I beg to inform that no "enormous wooden structure" exists, except- he booking-offices, waiting-rooms, &c., belonging to Victoria Station, erected more than ten years since, "being used for the purposes of the railway," are ially exempted from the operation of the first part of 19 Vic., c. 122 (the Building Act). I cannot but k the writer of the letter in question might have been tle more straightforward and given the proper desig- on to the "enormous wooden structure" to which he lies, and which he must have well known to be the dings belonging to the Victoria Station.

o district surveyor would permit any wooden building e erected except under the regulations of the Act, or the immediate sanction of the Metropolitan Board of rks.

GEORGE LEGG, Surveyor
Of the District of Belgravia and Pimlico.

THE JOINER'S APPRENTICES.

FIRST APPRENTICE.

'Tis a terrible task; I am sore afraid,
Between these boards the dead will be laid.

SECOND APPRENTICE.

O cowardly heart! If strangers die,
No reason, I ween, for us to cry.

FIRST APPRENTICE.

Nay, don't be cross; consider, I pray,
I ne'er made a coffin before to-day!

SECOND APPRENTICE.

Be that as it may, the work must be done,—
'Tis the master's order, ere set of sun.
First cut the boards—and here is good wine
To strengthen that foolish heart of thine;
Then plane the boards as smooth as can be,
And save the shavings that flow so free;
Then in the coffin, all varnish'd and bright,
You must lay the shavings so thin and light;
For these, so soft, are ever the bed
Whereon they are used to lay the dead;
Then screw down the lid, and slowly go
With your joiner-work to the house of woe.

FIRST APPRENTICE.

I cut the boards, and the measure is true
But I tremble with fear, whate'er I do;
I plane the boards so smooth and trim,
But my arm is weak and my eyes are dim;
I join the boards so true and strong,
But my heart is heavy the whole day long;
'Tis a dreadful task; I am sore afraid,
For between the boards the dead will be laid.
[Translated by John G. Saxe, from the German of Fillgrath.]

Miscellanea.

Fireproof (?) Theatres.—The terrible fire Brooklyn Theatre has (according to the ondon Correspondent of the *Birmingham azette*) made Mr. Boucicault, who is now in the nited States, press upon the public notice his rangement for rendering theatres fireproof. n experiment was made at Wallack's Theatre, ew York. Two large pieces of scenery were posed to the nozzle of a large flame about 5 ft. ng. The scenery refused to burn, and the only feet was that the portion of canvas exposed to e flame for a long time crumbled away into a ack powder, leaving a round hole in the enery. Mr. Boucicault afterwards explained at the scenes had been saturated with a solu- on of tungstate of soda for half an hour. fter they were dry they had been primed with solution of silicate of soda. The same solution ould also render the woodwork of the theatre ractically fireproof. A still more efficient emical had lately been tried—tungstate of olybdenum. Mr. Boucicault asserted that the hole stock of a theatre might be rendered fire- roof for $100 (20*l*.).

The Scott-Moncrieff Tramway System.—he pneumatic car commenced running on the th inst. between Paisley-road Toll and Govan. cott-Moncrieff has introduced important im- rovements, both in the storing of the air nd in employing it effectively in the present ar, and is now making another for the proposed ramway line between Glasgow and Ibrox. The ew car is said to perform a journey of eight iles upon the level with one charge of air.

The New Tower Bridge.—The last day or opposing the Parliamentary Bill expired on he 9th inst., and no opposition has been lodged gainst it. A sum of over 10,000*l.* has been duly eposited in the Court of Chancery, in com- liance with the standing orders of both Houses f Parliament. The engineers, Messrs. Lefevre Cc., estimate the cost of the bridge at 50,000*l.*

Milton's House Demolished.—The efforts of Professor Masson, says the *Pall Mall Gazette*, to preserve "the pretty garden house in Petty France," No. 19, York-street, Westminster, have proved unavailing. The house in which Milton resided while he was Latin Secretary under the Commonwealth is in course of demolition. The laths and rafters may still be seen, open to the sky, of the room in which Cromwell must often have discussed with Milton the affairs of State, and that more interesting chamber where the poet saw his

"late espoused saint
Brought to me, like Alcestis, from the grave."

There Milton went blind, and he married his second wife, Catherine Woodcock, and there she died. There he commenced to write "Paradise Lost." In later years the house belonged to Jeremy Bentham, who inserted a slab with this inscription,—

"Here lived Milton,
The Prince of Poets."

William Hazlitt also resided there.

Fall of Houses. — On Saturday last, shortly before twelve o'clock, an accident occurred at Brixton, which, it is feared, will terminate fatally. It appears that a number of new houses are now in course of erection in Rapsey-street, Atlantic-road, Brixton. During the high wind on Saturday morning, whilst a number of labourers and bricklayers were at work on one of the buildings, a party-wall, 25 ft. high, suddenly fell with a crash, carrying the whole structure and the scaffolding with it. The cries of the sufferers soon brought assistance, and a number of men immediately set to work to extricate them. Two of the men were completely buried beneath the falling bricks, mortar, and scaffolding.——Some buildings in Tanter-street, Birmingham, fell down on the 1st inst. The fall of the block referred to seems to have been anticipatory of the wholesale clearance contemplated by the Birmingham Improvement Scheme. A lad was seriously injured by the falling bricks.

Proposed Shropshire Archæological Society.—Endeavours are being made to bring this about. The proposed society would be established on the basis of the Spalding Club, Powys-Land Club, and other well-known societies, and would have for its object the printing, &c., of the historical, ecclesiastical, genealogical, topographical, geological, and literary remains of Shropshire. A provisional committee has been formed.

Science Lectures. — The Council of the Society of Arts have made arrangements for the delivery of six lectures on various scientific subjects, which will take the place of the usual papers and discussions, on six Wednesday evening meetings during the session. The following gentlemen have each consented to deliver one of the lectures:—Sir John Lubbock, bart.; Mr. E. J. Reed, C.B.; Professor W. K. Clifford; Professor Alexander Kennedy; Dr. B. W. Richardson; and Mr. James Baillie Hamilton.

Distemper Brushes.—Messrs. Crowden & Garrod, of Falcon-square, have introduced a distemper brush which seems an improvement upon those formerly used. It is made with a light, yet strong, patent copper band, the bristles being first well cemented into one solid body and riveted, which ought to prevent the bristles from coming out. The handle is well rounded, and is so formed at the top that the bristles cannot come through.

New Mode of Barking Oak.—A prize of 40*l.* has been offered by the Agricultural Society of France for the best method of removing oak bark while the sap is at rest,—a matter of importance to arboriculturists. This prize, it appears, has been awarded to M. Nomaison, who has invented a method of stripping the bark off trees by means of dry and super-heated steam.

London Parks.—It is stated that the parks, gardens, heaths, and commons under the control of the Metropolitan Board of Works comprise an area of 1,004 acres, for which the Board has paid 313,859*l.*, and repaid 66,538*l.* The interest upon the balance unpaid and the cost of maintenance amount to a charge upon the ratepayers of one farthing in the pound.

The Metropolitan Asylums Board have hired a large factory at Limehouse, and have instructed Messrs. A. & C. Harston, architects, to convert the premises into a hospital for small-pox cases. The estimated expenditure is 2,000*l.*, and the buildings are to be ready in two weeks.

Reform in the City.—Mr. George Mitchell was a candidate for the office of Common Councilman, in the ward of Dowgate, and in retiring says, amongst other things,—

"I recommend the immediate destruction or removal of that disgraceful entrance to the metropolis of the world—Temple Bar. It may be said, 'Temple Bar is doomed.' So it may be, and so it has been for many years; but there it is, and there it may be, Heaven knows how long. I recommend the re-paving of the principal thoroughfares of the City with wood—not by and by, but *now*,—so that ladies and gentlemen may ride into the City without endangering their lives, and wholesale horse-slaughter may be banished to Hellesis or Wandsworth. I recommend that a fair opportunity should be given to all competitors for City or metropolitan contracts, so that honest men may have a chance of doing honest work, with a fair field and no favour. I recommend that the Common Council do forthwith take up the question of the alleged corruption in the City guilds, and the frightful robberies or misappropriations of charity property in the City,—crimes that stink in the nostrils of the country. I recommend that the gas and water companies should be overhauled, and their unjust charges prevented; that no *secret rates* be permitted to be made in the City; that any and every civic abuse be exposed, and swept away; that justice be done to the poor, equity to the ratepayers, and righteousness to the people."

Society for the Encouragement of the Fine Arts. — The first *conversazione* of the nineteenth session of the Society for the Encouragement of the Fine Arts was held on the 4th inst. at the galleries of the Society of British Artists, Suffolk-street, Pall-mall East. The company were received by Mr. Edmeston (chairman) and other members of the council.

Casting Pig Iron.—Casting pig iron into sand beds instead of chills or iron moulds is being denounced in South Staffordshire. Most of the new varieties of pigs contain silica (or sand) in a larger proportion than those made of some of the rich clay band stones, and this had greatly increased the impurity arising out of the incrustation of the pig with sand in the process of casting, for it is impossible to eliminate silicon (or the principle of silica or sand) in the blast furnace. The question was some time ago debated by ironmasters of the North of England and men of enlarged experience declared that the cost of casting in chills would not in the long run exceed that of casting in sand, while the former practice would add greatly to the purity of the raw iron. The Mill and Forge Managers' Association of South Staffordshire have now taken up the subject, and leading ironworks managers have expressed themselves very strongly upon the subject, declaring that the time has come when the practice of casting in sand should be abandoned, since the troubles which it occasions thicken, and the saving by the change desired would to the finished iron industry be many thousands yearly.

The Weather in December.—Mr. Glaisher states in the *Gardeners' Chronicle* that the total fall of rain during the month of December was 5·92 inches, and there is no instance back to 1815 when the fall in December was so large as in the last year; the nearest approach was in the year 1868, when it was 5·4 inches. Rain fell on twenty-five days during the month, being thirteen days more than the average number for December.

Electric Clocks in Paris.—For making the four electric timekeepers which the city of Paris intends to erect, fifteen names have already been entered. The competition will close on September 30, 1877, at four in the afternoon. The four clocks finally selected will be bought by the city of Paris at 200*l.* each. Three prizes,—120*l.*, 80*l.*, and 40*l.*,—will be allowed respectively in addition for the three best clocks.

Prehistoric Jewels.—Dr. Schliemann, in a letter addressed from Athens, incidentally alluding to the valuable discoveries made by him at Mycenæ, says:—"The mass of jewels is so great that you can fill with them a large museum. But what makes these jewels particularly precious is that they derive from the mythic heroic age, of which no museum has possessed as yet a single fragment of pottery."

Aberdare Local Board Pipe-laying.—Some time since a contract was taken by Messrs. S. Chandler & Sons, of Newington Causeway, London, for about 15,000 yards of pipe-laying, which was completed in three months. The cost for repairs to roads and joints during the six months has only amounted, we are informed, to 1*l.* 14s. 5d.

The Jubilee Ball of the Licensed Victuallers' Asylum, which consists of 170 houses, chapel, chaplain's residence, &c., will take place at St. James's Hall on Thursday, the 18th instant.

Mind in Architecture.—An Australian periodical, the *Two Worlds*, commenting, as far away as Victoria, on some recent observations in the *Builder*, says:—"Of necessity, all architectures, in countries which once were covered with forests, must have originated in wood, that being the material of which the earliest buildings were fashioned, on account of the comparative ease in working it; and the stone architecture which was evolved from it in the course of time would necessarily at the outset be based upon the wooden models of the past, and its developments be moulded unconsciously in some sort of accordance with the timber traditions of the race. But, to go to the root of the matter, why is it that we find the same ideas of construction obtaining now that were in vogue in the time of Rome and Greece, and earlier still in Egypt and Asia? Why is it that there is nothing now that was not 'of old time afore'? Why are ideas thus permanent, amid the rise and fall of nations and generations, the building and destruction of cities, the fluctuations of material prosperity, and the transitoriness of material constructions? Simply because *mind*, which consists of ideas such as these, is permanent amid all changing forms; simply because that very mind which built the very earliest structures, and afterwards the Karnac temples and the pyramids of Egypt, and afterwards the Grecian fanes, and then the Roman monuments, and later on the Mediæval architecture, is the very identical mind which now, in other flesh, is building slavish copies of the ancient forms, and investigating and systematising them for want of new ideas. It is the selfsame mind throughout, and there is, indeed, 'no new thing under the sun,' not even a new mind. Since the matter of which the globe is composed is identical throughout, being capable neither of creation nor destruction, so is that mind identical throughout which has moulded and re-moulded that matter to express its growing thoughts and organisation."

The Growth and Value of London.—There are eight localities with a rateable value exceeding 1,000,000*l.* Next below this group we have the Wandsworth district, with 857,422*l.*, followed by Plumstead and Lewisham with 718,493*l.*, and Hackney with 695,580*l.* The Fulham district has also made an advance, rising from the thirty-fifth place to the twentieth, the houses being more than doubled, and the rateable value trebled. Poplar has taken a step upward from the twenty-first place to the thirteenth, the houses having increased in number by about one-half, and the rateable value raised from 218,256*l.* to 558,486*l.* In rateable value Poplar now stands next to St. James's, Westminster. St. George's, Hanover-square, despite its fashionable repute, has fallen from the fifth place to the seventh, but stands second for rateable value, whereas it was third on that account in 1856. Its rateable value has gone up from 893,976*l.* to 1,499,954*l.*, the latter being about half the rateable value of the City. But St. George's has lost ground since 1856, for at that period it had nearly three-fourths the rateable value of the City, although far short in the number of houses. This wealthy parish does not increase greatly in the number of houses, but the average rateable value of a house in St. George's is exceptionally high, being nearly 142*l.* The City average is about twice as high, but we see that the average for all London is only 55*l.*—*Standard.*

New Reredos, St. Simon's, Bristol.—A new reredos has just been erected in the chancel of St. Simon's Church, Bristol. It is the work of Mr. F. Bell, of College-green, and consists of three canopies with ornamental finials and crockets in Painswick stone, supported on Devonshire marble shafts with carved capitals. In the panel on the north side are the interlaced signs,—Alpha and Omega,—on a gold ground, and on the south panel is the sacred monogram "I. H. S." likewise on a gold ground. On the centre panel is a Maltese cross in Cornish sepentine. There are also bosses of serpentine. The groundwork of the panels is diapered. The dado is of Maw's encaustic tiles, while the walls on either side of and level with the reredos are of Maw's tiles of a different pattern. The architects for the work are Messrs. Pope & Paul.

Cemeteries.—The Everton (Liverpool) Burial Board have appointed Messrs. Thomas D. Barry & Son, architects, Liverpool, to superintend the whole of the buildings, fencing, laying-out, and planting the new cemetery at Fazakerley, near Liverpool, consisting of fifty-four acres.

Consumption of Quicksilver.—The quicksilver mines of Almaden, in Spain, which are believed to have been wrought by the Carthaginians and the Romans, and which until lately constitnted the chief source whence the supplies of quicksilver consumed throughout the world were drawn, are now (according to the *Mining Journal*) exposed to a severe competition from the quicksilver mines discovered in California. The gold-diggers in California, in the course of explorations, came upon particles of a reddish mineral of high specific gravity, which on analysis was found to be cinnabar, and there are now numerous quicksilver mines opened in California. The quicksilver is brought to market in iron bottles. The total present consumption per annum is about 100,000 bottles, of which California yields about 60,000 bottles, and Almaden about 25,000 bottles. The workmen in the mines cannot work more than three hours a day without the risk of being poisoned. Under proper arrangements, and with proper ventilation, the yield of the Almaden mines could, no doubt, be very much increased.

Lectures on Capital and Labour.—A course of four lectures to the members of Working Men's Clubs and others, similar to those which created so much interest last winter, will be delivered by Professor Leone Levi on Saturday afternoons at four o'clock,—the first taking place on the 20th inst. Prizes will be awarded to those who distinguish themselves by the Council of King's College, in the theatre of which institution the lectures will be delivered. Tickets of admission for those who are not members of Working Men's Clubs may be obtained at the Office of the Club and Institute Union, 150, Strand.

Blackpool Pier.—We understand that the South Jetty Company at Blackpool have decided to carry out an extension of their pier, from the plans of Messrs. Garlick, Park, & Sykes, engineers, of Preston, and that the contract has been let to Messrs. Lees Brothers, of Carlisle and Ilkestown. The cost of the works will be nearly 10,000*l.*

A New Blasting Material.—Lignose, invented by M. Falkenstein, is the name of a new blasting agent, and is made of woody fibre prepared with nitro-glycerine. It is stated to have about three times the force of block blasting powder, but is said to be very irregular in its action and extremely sensitive to moisture.

Items from Glasgow.—An inspection of the means of egress from theatres and singing saloons, and of factories in course of construction in Glasgow, is to be made by order of the Dean of Guild.——Lord Houghton has consented to unveil the Burns statue in Glasgow on the 25th inst.

Royal Institution.—At the first evening meeting, on Friday, January 19th, Professor Tyndall will discourse on "A Combat with an Infective Atmosphere."

Heath Grammar School Competition, Halifax.—Complaints reach us from unsuccessful competitors as to want of courtesy in returning designs:—the same old story.

TENDERS

For warehouse and dwelling, Raven-row, Whitechapel. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

Coleman	£2,649 0 0
Palmer (too late)	2,371 0 0
Bangs	2,296 0 0
Morter	2,279 0 0
Hearle	2,193 0 0

For the erection of school buildings, with teacher's residence, Norton's Cross, Monmouthshire, for the Skenfrith (U.D.) School Board. Mr. E. H. Lingen-Barker, architect:—

Foster, Brothers	£1,495 0 0
Ford	1,205 10 0
Powell (accepted)	1,086 17 0

For house in the Brakespeare-road, Brockley. Mr. J. O. Abbott, architect. Quantities by Mr. Geo. Jackson:—

Allpress	£2,056 0 0
Downs & Co.	2,032 0 0
Tozer	1,961 0 0
Tyerman (accepted)	1,881 0 0

For the erection of seven houses in Bolingbroke-grove, Wandsworth, for Mr. James Lord. Mr. W. B. Brown, architect:—

Stephenson	£4,118 0 0
Colls & Sons	3,990 0 0
Bayes Bros. & Allen	3,897 0 0
Goodman	3,570 0 0
Warren, Smith, & Co.	3,175 0 0

For the erection of villa residence at Hornsey, for T. Thompson. Mr. W. B. Brown, architect:—

Goodman	£1,700 0 0

For making roads and laying pipe sewers at Claph for Mr. Adams Murphy:—

Pearson	£1,160 0 0
Tipper	1,120 0 0
Rickmoor	974 15 0
Woodard	950 0 0
Stubbs	933 0 0
Fizzey	888 0 0
Reddin	877 0 0
Harris	787 0 0
Jackson	700 0 0

For building eight houses and shops in Charles-stre Shadwell. Mr. W. S. Witherington, architect:—

F. F. & J. Wood	£2,560 0 0
Widdon	2,105 0 0
Judd & Hawkings	1,35[illegible] 0 0

For laying 460 ft. of pipe sewer, 15 in. in diameter, 320 ft. of pipe sewer, 12 in. in diameter, in Taviston terrace, Upper Holloway, and other connected wor Mr. C. Higgins, surveyor. Quantities not supplied:—

Mattock Brothers	£993 0 0
Rendall	443 8 0
Dunmore	367 0 0
Hall	346 18 4
Crockett	346 0 0
Fizzey	275 0 0
Foard	268 0 0
Taylor (accepted)	265 0 0

TO CORRESPONDENTS.

C. G. V.—C. C. H.—J. U. T.—J. B. C.—Mr. F.—J. P.—S. T Messrs. H. J. S.—C. L. E.—G. J.—A. C.—A. L. H.—Le F. & Co K. & Co.—W. B. (Chapman & Hall).—C. C. (need not trouble hims to copy from newspapers. Thanks).

We are compelled to decline pointing out books and givi addresses.

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NOTE.—The responsibility of signed articles, and papers read public meetings, rests, of course, with the authors.

We give with this Number, as a Supplement, a INDEX and Title-page to the Volume of last yea A COLOURED TITLE-PAGE can be had, Grati on personal application.

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The Builder.

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Thames in Flood.

THE floods, unexampled within the memory of the present generation, that have inflicted so much suffering on so wide an area of English urban and rural property, call on every one for sympathy with the victims. And they ask for more than sympathy,—for counsel and action in order to prevent a recurrence of these most distressing results. A great peculiarity of the late inundations has been the especial damage which they have inflicted on the metropolis itself. In some of those outlying colonies of England of which we know so little, towns and almost cities have sprung up, under the influence of the gold-digging fever, on places which have proved liable to overflow. Thus Greymouth, at the mouth of the River Grey, is situated below the ordinary flood level, and is now periodically under water. Hokitika, on the west coast of New Zealand, was laid out on a sandy area which proved to be a portion of the delta of the Hokitika river. Not many months after the commencement of the city, when streets had been laid out, and hotels and warehouses built, the river reclaimed its own, and made its main channel to the sea through the heart of the new city. We speak of these things as proofs of entire absence of due foresight on the part of the builders of these colonial works of life. And yet we are content, at least twice every year, to intrust the comfort and safety of a great part of our metropolis to the chance that an easterly wind may not accompany an equinoxial spring tide.

The damage done by floods is an evil as to the preventibility of which we have often remarked. No less than three distinct orders of consideration, of special interest to many of our readers, are involved. It is pre-eminently a builders' question, inasmuch as it concerns not only the selection of sites for building, but the protection of sites when selected. No less is it a sanitary question. At Lewisham the inhabitants complain that the furniture in their lower rooms has been saturated by a mixture, half of rain-water and half of sewage. In London itself the main drainage works appear, so far as we can gather, to have withstood very fairly the extra demand on their capabilities. The old evils of regurgitation and heading back of sewage appear to have been avoided. This is the more satisfactory when we reflect that, in the opinion of many persons competent to form a correct judgment on the point, it is a mistake to throw the storm-waters into the sewer. There can be no doubt whatever that a much larger capacity, both in the collecting sewers, in the main outfalls, and in the pumping machinery, than would be needful for the providing for sewage alone, is occasioned by this plan. On the other hand, this extra cost is not all in excess, as some cost would have to be incurred for a special provision for storm-water if this were excluded from the sewers. However, whether we regard the metropolitan drainage works as extravagant or not, it is matter of great satisfaction to find that they have not broken down under so great a stress as that thrown upon them by the excessive rainfall of January, 1877.

It is otherwise with regard to the protection of South London from the inundations which now have recurred with a frequency and fury unknown to the memory of man. The distress of a large number of blameless and suffering residents,—blameless, that is to say, in so far as the inundation is concerned,—must go home to any heart. By Friday evening (the 11th current), the Lord Mayor had received donations to the amount of nearly 4,500*l.* to be applied to the relief of these sufferers. A conference of delegates from riparian and other parishes and districts on both sides of the river was held at the Lambeth Vestry-hall on the 11th of January. The subject is urgent. It is one that admits of no delay. Every additional wet day,—it may be said and hoped,—brings us nearer to fine weather. Let us take it so. But, on the other hand, we must remember that all our subterranean lakes and stores of water are now full. They had been lowered, before the winter of 1875-6, pretty generally through the country. Even the summer floods can have done little more than restore them to their normal level. Now they must be brimful. The great chalk system of water supply, as to which we hope to hear good information resulting from the late discussion, illustrated as it was by splendid drawings, at the Institution of Civil Engineers, must now be in a condition for experiment such as has hardly been the case since Mr. Clutterbuck first sank wells to investigate the depths of water in the neighbourhood of Watford. The great pervious watersheds of the Wey, the Mole, and similar streams, in which by far the greater portion of the rainfall percolates and makes its way to the Thames valley under ground, are now so charged and choked with water, that the Wey has cut through its banks, at a point where the river makes a sharp turn at right angles to its normal course, and the torrent over the meadows that border the stream is more rapid, as well as far wider, than the ordinary course of the river. If such is the case in a soil usually thirsty and porous, it may well be anticipated what will be the case in those impervious soils which are the natural feeders, not of rivers, but of torrents; such as the valley of the Brent, which enters the Thames at Brentford. These are only two instances out of the many cases of tributary streams which, between the high ground near the Seven Springs, in Gloucestershire, which claims to be the cradle of the Thames, or the source of the Kennet, which has some claim to be considered as the parent stream, in Wiltshire, pour their united supplies into the channel, or, at least, into the valley, of the Thames. It must take many days for the vast floods of the 11th to subside, even if the rainfall be at an end. The least shower, even that which is naturally to be expected at this season, will send a fresh supply to reservoirs already brimming, and throughout London for many days the capacity of the river channel to convey the stream that fills it will be tested and probably strained. Under these circumstances, any spring tide will be attended with danger, and, if it be accompanied by an easterly wind, there is much reason to fear with disaster.

Under these circumstances, not only is it natural to ask what is to be done; but, still more, whose duty or whose right is it to act? On this latter question the law has, it seems, given divided and uncertain utterances. We do not affect to express a decided opinion on a question on which there is a legal doubt; but yet it should be stated that some reason exists for thinking that the riparian owners and occupiers are not altogether free from responsibility in the matter. Statutes special to the case may have modified the old common law. Nor, we repeat, is it our function or our will to lay down what that common law may be. But it would take very much to convince a dozen Englishmen that any proprietor of a wharf, quay, or riverside property, where the laying of a few courses of bricks on a wall, or along the edge of the stream, would be sufficient to keep back an overflow of water which, if once allowed to commence, would inundate acres of house property, would be within his rights in refusing any facility to persons authorised to carry out such precaution. Whether it be or be not a part of the tenure by which, implicitly at least, such property is held, to make it safe against any ordinary danger of inundation, may, indeed, be a moot point. The burgesses who fined the father of Shakspeare for leaving refuse in the kennel before his door would probably have made an example of any riparian owner who allowed his premises to afford means of egress to a spring tide in the Thames. As to that, it is possible that the case is clear,—it is possible that it may have to be fought out. But that the responsibility of in any way hindering the execution of such a plan would be heavy there can be no doubt. Whatever the law might say to it, the cries of hundreds of sufferers, submerged owing to the neglect, the perversity, or the stupidity of one or two riparian dwellers, would be heard in a tribunal before which none can shun to appear. The condemnation in the Court of Conscience, and in the opinion of all honest men, would be decisive. We trust that no resident along the banks of the Thames will hold back, at the risk of injury to a vast body of his fellow townsmen, until it is fought out in the Law Courts what is the exact pound of flesh to which he is entitled in the matter.

As it is, it is lamentable that the attention of the public should be directed to the quasi-scientific discussion as to who is most to blame. It may be all very well for the Metropolitan Board of Works to attempt to prove that they are utterly without blame in the matter, but the

arguments of their engineers do not go far to support this view of the case. The best defence of the Board of Works, against charges either of over action or of inaction—the only defence, in fact, must be that they have accurately fulfilled the functions imposed upon them by Act of Parliament. Had they made the northern embankment at their own will and discretion, it would be very intelligible why they should be anxious to convince the public, by any and by every available means, that this narrowing of the river had not augmented the inundation. As it is, we apprehend that the execution of a properly sanctioned work cannot involve the ministering body who executed that work in any pecuniary responsibility, although it may be quite clear that such a work had become a public nuisance. This would, indeed, be a stronger case than any which for a moment could be urged against the Metropolitan Board of Works. So far from this embankment being a nuisance, it is an advantage and a great adornment to London. But it is only one of a necessary series of works. It is one which, while it stands alone, has mischievous as well as beneficial results. No man who is a master of the study of hydraulics, unless he either holds a brief, or contrives to let his own wishes overpower the balance of his judgment, can doubt for a moment that the inundation of Lambeth was aggravated by the existence of the Thames Embankment. But we are not of opinion that it was caused by that work. It would have occurred, in our opinion, if the whole north shore of the river had presented to the eye the same expanse of fetid mud at low water that was to be seen twenty years ago. In so far as the work of the architect or of the engineer is concerned, it is a far greater improvement to London than the Thames Embankment that is mainly responsible for the extent of the recent inundation. The readers of the *Builder* will not need much information on this point. The number of those who remember the state of the Thames before the erection of the present noble structure of London Bridge is annually decreasing, but yet there must be many remaining who remember what a service of peril it was to shoot the arches of the old structure when the tide had ebbed to near its lowest. At all times, indeed, it was a matter requiring skill and experience on the part of the boatman to pass those narrow and numerous arches. Between piers, and starlings, and obstruction of arches by water-wheels, more than half the natural width of the river must have been blocked at this point. Such was the construction, that at low water there was an absolute cascade, of as much, Sir John Rennie tells us in his Autobiography, as 5 ft. in perpendicular height.

By the erection of the new bridge the waterway was at least doubled. The width from the face of the London to that of the Southwark abutment is, we believe, 780 ft.; out of which only 92 ft. are occupied by piers. There is thus an unobstructed waterway of some 690 ft., through which, when the tide flows in, an immense body of water is thrown up the river. London Bridge, in fact, can no longer be considered a gauge of the influx; or, if it be, it is a gauge of dimensions ample enough to allow the ingress of almost any amount of water that tide and east wind combined can drive up the river to its site. The ancient barrier of the bridge checked the incoming as well as the outgoing tide. In fact, it checked the former more than it did the latter; for the head, and therefore the impetus, which it gave to the land supply, enabled the river to force back the tide, and to allow of but little rise above the bridge, save that which was occasioned by the heading back of the river water. For this the wide area of the sloping shore afforded an ample reservoir. We cannot speak from personal recollection, nor are we at present aware of the exact balance of testimony as to the fact whether Lambeth was ever flooded while old London Bridge stood. But there is no doubt that floods have been, at all events, more frequent and more serious since its removal, so that the successive and repeated inundations of January, 1877, as well as the width of area which they covered, are without precedent either in memory or in record.

It is important that these engineering points should be clearly understood, because it is desirable that those interested should put their shoulders to the wheel without loss of time, in order to avoid a recurrence of the calamity, rather than seek to apportion blame in a case in which, after all, a verdict would at least partially lie, that the disaster was the "act of God." It is of course obvious that the gauge or constriction of the old bridge being removed, the relation between the body of water that is driven up at the top of tide, and the capacity of the river between Westminster Bridge and London Bridge assumes a new aspect. In the case of a slow and gradual rise of tide, the balance between the ascending and descending stream is tolerably exact. The former will be held in check by the latter. Whether the channel is broader or narrower makes no difference as to the height to which it will be filled, regarded simply as a question of hydrostatics. It is, accordingly, as a question of hydrostatics that one or two of the correspondents of the *Times* have regarded it, and their natural conclusion has been that the Embankment had nothing to do with the matter. But, unfortunately, the perfect placidity necessary to the conditions of a purely hydrostatic problem was entirely absent. It was not an hydrostatic but an hydraulic problem that presented itself for solution. It is needless to say that the arguments which held good in the first instance do not hold good in the second. The water that passed up through London Bridge was charged with a considerable momentum, and was urged from behind, by wind and tide, with a continuous and formidable force. What that force was might be ascertained if volume and speed, rate of tide and velocity of wind, were accurately known. Waters thus urged do not rest at a true hydrostatic level any more than do the waves of the sea when driven by the wind. They become piled up one on another, if any obstacle narrows their course. Thus it is certain that the abstraction of so many acres as the Embankment has redeemed from the area of the Thames, must have led to a piling up of the water to a height that could not otherwise have been obtained. Up the stream, past the bridge, rushed a given quantity of water, at a given speed. So long as the channel was adequate to the conveyance, a certain height would be maintained. Widen the channel, and that height would be reduced; narrow the channel, and it would be increased. As compared with the old channel, the actual river-course is considerably reduced. To precisely that extent has the height of the flow been increased. The fact is so obvious that we should ask pardon of our readers for supposing that they needed more than a hint as to such an elementary problem, were it not that names of some authority have been appended to arguments which ignore the difference between the hydrostatic and the hydraulic action of water.

What remains, then, is that with all speed we set to work in making safe the south bank of the Thames. All things considered, there is not an hour to be lost, if we wish to secure ourselves against disaster. Every one knows that the equinoctial springs are seasons of danger, and that if the east wind blows with the spring tide at that season, overflow is more than likely. A writer in the *Times* has called attention to another celestial phenomenon which bodes storm. The attraction of the moon is, of course, in exact proportion to the square of the distance of that planet from the earth. The varying measure of that distance, and therefore of that attraction, is denoted by the apparent diameter of the moon. A table of such apparent diameters, at new and full moon, may be taken from the Nautical Almanac, and will show that the occasions on which the east wind up the Thames, combined with spring tide, will produce inundation, are not confined to the equinoxes; and, considering the state of the land, the roads, and the proverbial impossibility of predicting anything certain as to weather, none of us can say that every spring tide in the next few months will be absolutely unattended by danger.

It is our hope that the gentlemen who have already met in conference on the subject will remember how large an amount of helpless and suffering population depends on their energy and good conduct. We earnestly trust that the settlement of any question of division of responsibility may be postponed to that of the most practical and efficient mode of executing the works required to insure absolute safety. There should be a personal canvass made of every riparian occupier, in order to ascertain what he will do for the protection of the property of himself and of his neighbours. In most cases, it may be hoped, the reply would be the expression of a willingness at once to do whatever a competent surveyor would declare to be proper. A contemporary has suggested that a guarantee fund should be subscribed, with the purpose of guaranteeing to such riparian occupiers the repayment of any cost they might incur in protecting the town which did not actually appear to be fairly chargeable to them. This seems an eminently practical suggestion. But it must be remembered that absolute union of action is indispensable. If ninety-nine river walls be complete, and the hundredth be omitted, the hundredth may give egress to a flood only measured by the area through which it rushes, and the time of its flow. If there are, as may very likely be the case, proprietors or occupiers who feel that they are incompetent to take the trouble and risk of superintending the proper closure of their own bits of bank, the committee should be enabled and instructed to take proper steps for performing such duty for them. What is the force of the staff of the Metropolitan Board of Works we are unaware; but the engineer will no doubt be able to afford valuable assistance, whether official or unofficial. What has to be done should be done at once. It can only be done in time by postponing the settlement of all open questions—by proposing a *modus vivendi*, or means of combined action of the nature above suggested, or of some equally practical and *bonâ fide* measure. If the work be at once grappled with in this spirit, Lambeth may laugh at spring tides and land-floods. If it be delayed, or quarrelled over, or discussed, or preached about, instead of being taken in hand, there are nine chances to one in favour of further disaster.

We have no room left in which to develope the third consideration at which we previously hinted, which is that of the effects of the floods on agriculture. Our readers will, we hope, do justice to the persistence with which we have remarked on the neglected and obstructed state of our river valleys; and on the sacrifice of the service of our streams, as means of irrigation and of drainage, to their mechanical utility as affording a motor power for the driving of mills,—a power that is now so frequently superseded by steam that the old objections to the reassignment of our general hydraulic system on true engineering principles have now lost their chief support. We have spoken of the loss of area of cultivable land entailed by the barbarous mode in which what are called water-meadows are usually irrigated, and of the loss to the country of the annual produce of at least a fifth of what ought to be rich and fertile meadow land. All this ordinary loss and waste is now increased to an extraordinary extent by a rainfall which, if our river systems had been under competent engineering direction, would have been an unmitigated benefit. By our neglect of the primary laws of economy and good sense we imperil our health, we endanger our dwellings, and we throw away a main source of wealth,—nay, we do worse,—we convert it into a source of impoverishment and disaster.

BYE-COMMISSIONS OR BRIBES.

IF ever the secret history of the Press comes to be written, the public may be put in possession of a clue to the mystery which, during the last few months, has affected, for good or ill, the reputation of great men and great journals. Rarely has a festive or silly season been heralded and accompanied by such a dearth of *bonâ fide* matter for comment or discussion as that which has just passed. Nor when it is remembered to what full-flavoured news the popular palate is accustomed, need there be any doubt of the supreme perplexity which is endured by the staffs of morning papers at a crisis of contradictory telegrams, reticent statesmanship, and padded correspondence. The pomp and circumstance of Delhi brought but small aid to the distressed functionary whom conscience whispered that, now, even elephants pall. The wrongs of a mediatised Nauwáb could not be effectively exposed to public sympathy between the Nativity and Twelfth Night. The comparative anatomy of the Colorado and the common beetle, though eminently suggestive of argument and contradiction, is still a subject of exclusive rather than general interest. Nevertheless, returning daylight has brought with it, six days in seven, the usual quantity of matter if not information; and as Fielding laid it down, our morning paper has contained the orthodox number of words whether it had news to communicate or not. Small correspondents have emerged from modest seclusion to provide the daily *pabulum*, and perhaps increase their own. "A Poor Vicar" ceased for a few minutes the

harassing cure of souls to calm metropolitan inquietude with a practical description of the theory of inundation. "A London Parson" came forward honestly and boldly, as parsons should do, to denounce the corruption of architects in general and church-restorers in particular. Other correspondents, with equal honesty and boldness, showed in a like manner that other professions were similarly corrupt; and a series of selected letters has been published at intervals to afford, such is the excuse, startling surprises, and, as it has turned out, to relieve the general dulness. But the Journal of the City, as the Parisians still call the *Times*, is rarely if ever dull. Even in recent flights of goody-goodyism and gush it is fresh and entertaining. Most of its leading articles are still the models of English that poor Prevôt-Paradol said they were, and they may be profitably studied on that account alone; while its private correspondence, both signed and anonymous, is invariably among the best of its kind.

All honest men must be thankful to the leading newspaper for having taken up the subject of bye-commissions, even in the inconclusive and half-sentimental method it has adopted in so doing,—a subject neither new nor startling to scholars, men of the world, men of business, and journalists. The case of Coe *v.* Sothern, in which the verdict was deplorable and unsatisfactory, was preceded by that of Rubery *v.* Sampson and Grant, the moral result of which was decisive and overwhelming. From the evidence brought forward in both these cases, the charge evolved was definite and tangible; but the charge brought against the profession of architects is neither one nor the other. We make due allowance, however, for the delicate position in which the law of libel places a journal and its correspondents; and we need hardly add that nothing would give us greater satisfaction than to assist in punishing those whose illicit acts disgrace an honourable calling, if "London Parsons," "Victims," and "Contractors," instead of being vague propagators of truth and slander, will state to us facts,—like men who sincerely desire to expose particular corruption rather than to gratify general spite.

For it is open to much doubt whether a correspondence like that upon "Commissions" can generate anything but bad blood between the players and helpless suspicion amongst many who look on at the game. Since the days of King David an indiscriminate attack upon human nature and human kind has been invariably accepted with complacent resignation by the world at large; and if the ancient poet still receives his periodical meed of praise for having said,—even in his haste,—that All men are liars, the modern journalist may yet be pardoned for having endorsed the statement,—even after the usual consideration of editorship,—that All architects are rogues. Disinclined as we are for many reasons to discuss the former proposition, in the face of it we are bound to admit the desperate and quixotic nature of any attempt to dispute the latter. It may, however, be advantageous to an accuser and salutary to an accused to learn what remedy is always at hand in aid and defence of the employer; and what penalty awaits the employed should he be proved personally "a rogue," instead of being merely gibbeted by irresponsible agency as one of a roguish fraternity.

Some seven years ago, at a meeting of the Royal Institute of British Architects, the then president, in his address, delivered at the opening of session 1870–1, half regretted that a larger number of practising architects did not belong to the Chartered Society; and we remember that Professor Donaldson, while proposing the usual vote of thanks, which was seconded by the conductor of this journal, made a remarkable statement. In justification of the limited number of members, absurdly small as compared with those of a kindred society, he declared that at the time when he became acquainted with the profession, nearly sixty years ago, there was a very intimate connexion between architects and builders. At that time Mr. Smirke and Mr. Soane were at the head of the profession, and not a word could be breathed against their honour and reputation. "But," said the Professor, "in too many cases the architects and builders shared in the profits." Soon afterwards a very grave movement took place, which resulted in the removal of an acknowledged scandal. That was the foundation of the Institute, which was incorporated by charter of William IV., in the year 1837; and was thereby empowered to make bye-laws for the regulation of the body politic and corporate, and for the admission of members. These were to consist of three classes:—"Fellows," "Associates," and "Honorary Fellows." The Fellows were to be architects who have been engaged as principals for at least seven successive years in the practice of civil architecture; the Associates were to be persons who had been engaged in the study and practice of the same for a less term, and who had attained the age of twenty-one years; the Honorary Fellows were to be persons unconnected with any branch of building as a trade or business. The election of these three classes of members is made upon the strength of bye-laws re-established in 1853, and re-confirmed, with some alterations, in 1866. Each Fellow and each Associate is required to sign a certain form, which constitutes a declaration of an undeniably binding character, as follows:—

"I, the undersigned, being elected a [Fellow (or Associate) of the Royal Institute of British Architects, do hereby declare . . . . that I will not receive or accept any pecuniary consideration or emolument from any builder or other tradesman whose works I may be engaged to superintend; that I will not have any interest or participation in any trade, contract, or materials supplied at any works the execution of which I may be engaged to superintend," &c., &c., &c.

The violation of such a promise morally amounts to perjury; and leads, if the fact can be brought home to the offender, to expulsion from the Institute and consequent social degradation. Instances of such expulsion,—of such moral ruin,—are at rare intervals on record. That there are others in which the offenders escape conviction is necessarily probable; and it is not impossible that were the Legislature to recognise such a rule enforced by any chartered society a palpable benefit would accrue. Yet in the Law the degradation of a member of the Bar, or the striking off the rolls of a solicitor, is left to the judgment of coporate bodies; and the result is said to be satisfactory. At the same time it cannot be too strongly urged upon the Institute authorities that more care and circumspection than have been lately given to the admission of members is needed; and this is a necessity which both proposers and seconders of new candidates should bear scrupulously in mind.

There is one point to which we may just allude and with sympathetic delicacy; for, obviously, the difficulties attendant upon it are better understood by ourselves than by critical outsiders who have never mounted the scaffold of a new building. We do so, however, with a little hesitation, because the quotation, either in paragraphs or advertisements, of a particular sentence often favours, when isolated from the context, a view totally opposed to the general tenour of our meaning. We would call attention to the heedlessness with which many architects allow their own or their assistant's name to be associated with the "taking off" of "quantities" for buildings erected under their superintendence. Indeed, in spite of precaution, it often leads even estimable members of the profession into dilemmas unexpected and undeserved; while in some cases it lays architects who are gentlemen open to the uttered suspicion of vulgar magnates whom, often, a long and prosperous accumulation of commissions and bye-commissions has made their employers. The chartered society has done little yet in this vexed question other than to recommend and suggest. Perhaps it might advantageously pass a resolution to enforce No. 15 of its so-called "Rules for Professional Practice," which is now worded in the following manner:—

"When an architect supplies builders with quantities on which to form tenders for executing his designs, he should do so with the concurrence of his employer, and it is *desirable when practicable* that the architect should be paid by him rather than the builder, the cost of such extra labour not being included in the commission of 5 per cent."

Instead of the words we have italicised we would fain be able to read "*absolutely required*"; and we suggest that steps be taken at the first business meeting of the present session to promote conscientious execution of a wholesome rule, which might be made to form one of the conditions of membership to the Institute. At the same time there is nothing positively wrong in the provision by an architect of the "quantities" required for his own design to enable builders to estimate the cost of carrying it out; and the gentleman who wrote a note to the *Times* on this point in a tone of triumphant sneer had simply found a mare's nest. An architect who is wise, however, will for his own comfort avoid the practice, and leave it to a third person responsible to the builders.

It is some satisfaction to find that while the public representative body is provided with the requisite machinery, and prepared to take action in substantiated cases of bribery and corruption, private persons are actually engaged in a task of censure and discrimination; and this, if followed up, may yet lead to the exposure of some few doubtless, whose practices drag their respectable brethren through the mire of disrepute. Not many amateurs have served the cause of conscientious architects better than Sir Edmund Beckett. In his early "Lectures on Church Building," he said boldly that nothing tended more to lower the profession in the eyes of the public than the "auctioneer-like" system of paying architects by a percentage on the builders' contract. Many people heartily agreed with him, and remain of his opinion. "It is difficult," said he, "for architects of the highest class to escape altogether from the odium which is reflected upon the whole fraternity from the too notorious practices of the lowest class in the form of contractors' 'bonuses,' clandestine percentages on recommendations, &c." Nothing can be truer; and, as he afterwards insisted, the most high-minded of men, if he suggest an improvement in a building which is rising under his professional superintendence, is exposed to the same suspicion that an upholsterer excites who deplores the increasing shabbiness of window-curtains and furniture he is deputed to mend or polish. Two years ago* Sir Edmund argued in a similar fashion, and told an amusing story, if we remember rightly, for no report is printed of it, concerning "hassocks" and an architect's commission thereon, which may perhaps have lingered in the mind of "A London Parson," for he also pressed heavily upon hassocks. Indeed, the first person who came forward to extenuate and explain the sweeping charge he made was Sir Edmund Beckett himself; and throughout the correspondence his somewhat odd diction has been conspicuous in more than one signed communication. Indeed, the loose composition of the extraneous article headed "Commissions," which was printed last Saturday in the *Times*, is happily unlike the official utterances of that journal. It supplied, however, the correct answer, albeit a sentimental one, to the question, How the evil of taking and giving bye-commissions is to be overcome?—and that is by elevating the tone of the professions and trades implicated "to a point which will make them sensitive to the moral stigma of taking bribes." No doubt of it; and we may consistently ask people to reflect how this desirable result can be obtained. We know well the sort of encouragement which too long and only recently has been given to such an attempt by the arguments and assertions of *Quarterly* reviewers, leader-writers in the *Times* and other papers, professors of science, and self-styled "practical" men, who have exalted the workman at the expense of his professional master; have laughed at "soft-handed gentlemen"; and heaped ridicule,—easy enough to raise in a social atmosphere tainted with exaggeration and burlesque,—upon refinement, learning, and diligence when united, as now not unfrequently happens, in the person of a well-bred architect.

After all, perhaps, the best protest that honest members of the profession can make, the safest defence for the public to use, against the malpractices of individuals, is a purely sentimental one. From time almost immemorial this has been felt and written about. The researches of German and English scholars show that in Athens, even at the period of public splendour and private economy, intrigue and deception distinguished the commerce and industry of the Greeks; and that, in their trade, adulteration and short measure were matters of course. Nowhere is the system of exacting bye-commissions more universal or better understood than in India,—a fact that points to the antiquity of a custom which refinement and the modern conscience properly condemn. Both Hindú and Musalmán receive a trifle for any sum of money, however small, which passes through their hands. Native servants of

* At a meeting of the Royal Institute of British Architects, in the "Transactions" of which, through an evident misprint, Sir Edmund Beckett is made to attribute to M. Viollet-le-Duc "the maxim that an architect ought to know everything." Every writer upon architecture has discoursed in some fashion or other upon that attractive theme from the earliest times. A celebrated passage in Vitruvius, according to Newton's translation, runs as follows:—"The ancient architect, Pythius, who erected the magnificent temple of Minerva at Prienz, says, in his Commentaries, that an architect ought to excel in all arts and learning those who, by their industry and practice, have brought things to the greatest perfection."

both creeds obtain a percentage upon everything they buy for their masters as well as a bye-commission from new-comers whom they introduce; and prefer a general claim to pecuniary recognition by all native merchants and tradesmen whom chance or regular business may bring in contact with the family they serve. Every one in India uses the common word, and recognises the fact, of which the French equivalent is *remise* among the lower orders; and, among the upper classes, is softened into *concession*. In Paris a cook,—*chef* or *cordon-bleu*,—exacts, with his or her master's knowledge, a sou from the tradesmen for every franc expended upon the purchase of victuals and provisions. During the Empire it used to be averred that some of the officials and even the chiefs of Government departments exacted thousands of francs on the same system and for the same purpose as a vile concierge received his tribute of sous from the mendicant, who was thereby permitted to exercise his calling inside the courtyard of a lodging-house. But of what use to continue or enlarge upon an old and a long-reiterated story? The language of Vitruvius is precisely that which is used by living Frenchmen and Englishmen who are honest as well as competent architects. "I have not, O Cæsar!" said the Roman, in his dedication, as it is believed, to Augustus, "endeavoured to obtain wealth by my art, having preferred a little with a good name to an abundance attended with infamy. . . . Nor is it to be wondered at that I may be to many unknown; other architects solicit and make interest to be employed; but I have learnt from authors that it is proper to be requested, not to request, to be entrusted. . . . . What can we think must be suspected by him who is requested to entrust another with the care of his property, but that the other's gain and emolument is the cause of the request? . . . . I cannot blame those fathers of families who, confiding in their own knowledge, manage their buildings themselves; judging that, if they must be committed to the unskilful, it is better to spend their money according to their own pleasure than that of another. Hence it is that no one attempts to practise at home any other art (as that of a shoemaker, fuller, or others yet more easy) except that of architecture; because many who profess it are not really skilled in the art, but are falsely called architects." Now as then, in England and even in France, anybody,—auctioneer, speculating builder, commission-agent, picture-dealer, cemetery-statuary, or undertaker,—may write himself up architect; and while vestries, boards, and some companies, are principally composed of the stuff which is now especially their own, professional speculators will contrive to be of them, and abuse their position to further private ends. Nor is there reason to believe that such men would hesitate to tag "architect" to their names if it answered their purpose. Until some sort of status is afforded to the practice of architecture by the considerate demands of the public, and a diploma created by the co-operative energy of practitioners, there is little hope of ever entirely stamping out the corruption which the commercial followers of a mixed and heterogeneous profession necessarily do their best to sustain. But even as it is, the general supply of architects in London is of a kind superior to that which some worthy clergymen and wealthy landowners seem to require, if a correct judgment thereon may be formed from many printed advertisements and public utterances. The privilege of ruining by bad advice, and killing instead of curing, is not accorded to the public at large; and it will take a long time yet before people will thoroughly understand that the difference between good and bad architecture includes the preservation or injury of health and the lengthening or shortening of lives. The remedy for an unsatisfactory state of things lies in the institution of a certificate of examination, and the consequent introduction to the professional ranks of a better class of students. There are, and always have been, architects *and* architects; but there never have been in any British community gentlemen *and* gentlemen. We advise all those who are desirous of employing an architect to inquire, before choosing one, concerning his antecedents, his social position, and the state of mental culture which his language, manner, and works reveal.

But before entirely dismissing this subject a grave protest may be made against the mode in which the whole correspondence, affecting the good name of more than one honourable profession, has been conducted. It would be libellous for us to say that Mr. So-and-So is a knave, but no law of this country can touch an anonymous correspondent or member of a newspaper staff who declares, with the calm assurance of irresponsibility, that the profession to which Mr. So-and-So belongs countenances or sanctions knavery. No clergyman would dare to say openly to any one of the practitioners who have superintended the erection of our modern churches what it has been possible for a so-called London parson to say anonymously to the whole world. The colonist in America and Australasia has been gravely informed, with the connivance of a powerful newspaper, that the British architect not only claims his commission on the total expenditure from the employer, but also a bye-commission from the tradesmen he is employed to control, and that this is "an undoubted fact." The British architect may appeal in vain to every tribunal in the kingdom for redress. It is hardly worth while, however, to waste words over the periodical fits of insular morality which Macaulay noted,—rendering virtue outrageous, and society a ridiculous spectacle. Suppose, just for the fun of the thing, we introduced into one of those archæological stories which frequently find a place in the *Builder* a description of the English clergy during the last century. Take the "Essay on the Fates of Clergymen"; and great historians have not refused to seek in the pages of Swift a confirmation of the clerical debasement which marks the eighteenth century. There will be found a description of Corndoses, "who got into holy orders, and was recommended for chaplain to some noble houses, by which his revenue (besides vails) amounted to 30*l.* a year." The quotation is useful, as showing how, through professional refinement and public discretion, the Church has risen from the slough in which it was sunk about a hundred and fifty years ago; and it may serve to encourage another equally liberal profession to aim at similar improvement. "Some time after," in Swift's words, "a country living fell in my lord's disposal," and it was bestowed for certain reasons on Corndoses. "He had a select number of poor constantly attending at the street door of his lodgings, for whom he was a common solicitor to his former patroness, dropping in his own half-crown among the collections and taking it out when he disposed of the money." My lord continued his graces to Corndoses, and ultimately gave him a parish in town, whence he was promoted to be a dignitary of the Church. "He paid his curates punctually, and partly out of the communion money"; and having married a citizen's widow, he "sold the clerkship of his parish by his wife's dexterity." Suppose that, strengthened by this narrative, we presumed to "believe" in the "undoubted fact" that dignitaries of the English Church habitually practised the aforesaid habits and abuses in the year of grace, 1730.

Again, take another case of a similar description affecting another profession as honourable as our own. Let us refer to Thackeray's description of Mr. Bludyer, and a truer or better gentleman who coloured but never burlesqued his characters, has not breathed than the author of "Esmond." Here was the story of one of considerable talent and no principle, who would write a page of praise or abuse of any man living on any subject or on any line of politics. The occasion was momentous; the introduction of a new *prima donna* (Mrs. Walker or "The Ravenswing") to the world of fashion, including gentlemen of the theatre and of the press. The presence of a tailor who was a friend of the forthcoming *débutante* annoyed Mr. Bludyer, and the latter hinted aloud that Mrs. Walker was a poor singer:—

"Then, sir," said Mr. Woolsey, "I'll thank you to pay me my little bill."

"Are you a relation of Mrs. Walker's?" said Mr. Bludyer to the angry tailor.

"What's that to you, whether I am or not?" replied Woolsey fiercely. . . . . You sha'n't humbug me any more, sir; you shall hear from my attorney to-morrow."

"Hush, my dear Mr. Woolsey," cried the literary man; "don't make a noise; come into this window. Is Mrs. Walker *really* a friend of yours?"

The answer was in the affirmative; and, after a word from Mr. Bludyer, the anxious tailor, trembling under the weight of his assumed intrepidity, offered to say nothing about his little bill. But Mr. Bludyer was not to be frightened from his duty; and mind, too, he could write a slashing article as well as any man in England: he could crush her in ten lines. Then the tables were turned, and the tailor was alarmed. He was willing to apologise. "I say—come—let me take your measure for some new clothes, eh! Mr. B.?" "I'll come to your shop," answered the literary man, quite appeased. Presume then, as we said before, that backed with Thackeray's satirically true story and the recent disclosures which Lord Salisbury ordered to be printed for the public safety, "A London Architect" addressed a letter to us expressing his "belief" in the "undoubted fact" of newspaper writers claiming, besides their usual honorarium, little attentions and pecuniary courtesies similar to those which passed between Mr. Bludyer and Mr. Woolsey. It is needless to say that we should decline to publish such a letter even if it were the *bonâ fide* production of one in whom the utmost reliance could be placed, or emanated from the very highest of the architectural profession. It is necessary to be precise and even persistent upon this point in face of the licence, savouring of two or three generations ago, which is assumed by some newspapers and condoned by the more curious and thoughtless of ephemeral readers. Nor does this attractive kind of literature appear to be generally unattended with popular satisfaction. Similarly constituted periodicals came in with the year; more are announced, and others are likely to follow, if advertisements offering capital for the purpose mean anything. Weekly prints of twenty-eight days' existence coolly style established journals of thirty, fifty, and more years "our contemporary"; and wield the pen as if the exhibition of their own virtues,—literary, not social,—required a foil in the embittered review of a colleague's, perhaps but recently a friend's, errors. Against these, and practices such as these, rendered fashionable and amusing, newspapers with names and credit to lose may fitly make a stand; and we are constrained to think that, in the hurry to shine amongst a host of lesser lights, a great journal,—until recently the absolute echo of English opinion,—has too loosely condescended, by the publication of indiscriminate charges affecting the integrity of a large number of estimable men, to emulate a practice which its cheaper and rapidly-advancing rivals seem to have wisely abandoned.

THE DATCHELOR SCHOOL BUILDINGS AT CAMBERWELL.

THE new endowed middle-class schools for girls, established by a scheme recently issued by the Charity Commissioners, under the will of the late Miss Datchelor, will be opened next week. It may be remembered that this lady, who died many years ago, left by her will a certain sum of money for the purpose of keeping her vault in the church of St. Andrew Undershaft in repair, and likewise a bequest for educating the daughters of residents in that parish, but that, owing to the constant removal of families from the City, there have been comparatively few girls to educate, and the funds have accumulated to something like 50,000*l.* This being so, under a scheme drawn up by the Charity Commissioners, large and handsome new school buildings are about to be erected at Camberwell for the education of 300 girls belonging to the middle class, the daughters of persons connected with the City of London having priority of admission. Alderman Cotton, M.P., the late Lord Mayor, is the chairman of governors under the new scheme. The mansion and grounds which have been purchased for the new foundation schools are situated between Grove-lane and Camberwell-grove, and pending the erection of the new school buildings, the mansion has during the past few months been undergoing extensive internal alterations from designs furnished by Mr. T. Chatfeild Clarke, architect, in order to adapt it to the purposes of the school. It is a large and convenient building, and the interior, as rearranged, will have accommodation for about 150 pupils. In addition to a spacious basement the mansion contains three stories besides the ground floor. The area of the stable and coach-house, and yard adjacent, have been laid out as a recreation-ground, the former being fitted as a gymnasium. The contractors for the works are Messrs. Colls & Sons, of Moorgate-street and Camberwell.

The land purchased for the permanent schools and grounds covers an area of nearly five acres. The new schools, which will have their principal frontage to Camberwell-grove, will be shortly commenced. Mr. Chatfeild Clarke is the architect.

The Temple of Diana at Ephesus.—On Monday evening next Mr. Fergusson will read a paper on this subject at the Institute of Architects.

TITIAN.

IN the course of last year we noticed at some length a new biography of Michelangelo; and now another of the great figures of the grand age of painting is delineated afresh for us by two writers whose names will be inseparably connected with the modern literature of art, and who bring to their task an extent of detailed knowledge of the history of the subject such as few contemporary students of art-history can lay claim to. There is an important distinction, certainly, between the scope and aim of the two books. Mr. Wilson's work on Michelangelo was rather a study of his character as artist and man, read by the light of special research and of newly-discovered documents, than an exhaustive biography. The two thick and goodly volumes of Messrs. Crowe and Cavalcaselle,* on the other hand, though based in some degree, especially as regards the history of the painter's family, upon new or unused material, are intended obviously as a complete *resumé* of all that is known or can now be known in regard to the personal history and character of Titian, and as in fact superseding all previous biographies.

Nor can it be said that such a claim is over-exacting, especially as regards works written in English. The authors in their preface pay a graceful compliment to Mr. Josiah Gilbert's charming book on "Titian's Country," which we noticed fully at the time of its appearance, and which relieves the barrenness of English literature on this topic; but Mr. Gilbert's book, of course, takes in only one phase of the subject, and beyond it there is nothing worth naming from a literary point of view. And Messrs. Crowe and Cavalcaselle's book seems as complete in its plan and execution as such a biography could well be made within conveniently readable limits. The family descent and connexion of the painter, the nature of the political and social life by which he was surrounded, the phases through which his art passed, the influences under which it was matured, and the relation in which it stands to that of his greatest predecessors and contemporaries, are interwoven with the attainable historical facts in regard to his life and character, and with a critical analysis of his principal productions, in such a way as to render the work a complete and continuous narrative, only slightly interrupted now and then by passages of a purely critical nature, which, however, link themselves more or less with what precedes and follows them. The construction of such a biography on this model involves a great deal of difficulty in keeping the balance of all the details; and perhaps the authors have not always been quite successful in this, and it may be open to question whether the political passages of the history, in which events are regarded from so different a point of view and on such a different scale from those which concern personal history only, had not been better, for the sake of clearness, kept a little more decidedly separate from the personal narrative. Some slight lapses of style, construction, and punctuation which we noted here and there might advantageously be amended in a future edition, but they are not such as to be of any importance. The sense of dissatisfaction with which almost every reader keenly interested in the genius of Titian will be likely to lay down the book is connected with no deficiency that can be reasonably charged upon the authors. Independently of another cause to be noted just now, such a feeling is inseparable from the perusal of a biography in which we constantly have to lament the loss, through lapse of time and untoward circumstances, of facts and evidence absolutely necessary to render the portrait complete. In spite of the acknowledged learning and research and the evident industry of the biographers, we scarcely feel that anywhere in the book we really get the man Ticiano Vecelli face to face with us. So many blanks are left, which we cannot hope at this distance of time to see filled up,—so slight and far between seem the reliable indications of his character and personality apart from his works,—that the impression is like that of the vision of the wizard Michael Scott in the poem,—

> "Some saw an arm, and some a hand,
> And some the waving of a gown";

the latter incident, indeed, seeming peculiarly *apropos*, for throughout the life of the great Venetian painter there runs an indefinable sense of sumptuousness of costume and surroundings, derived partly, perhaps, from our associations with Venice and her richly-robed "magnificences," but with a certain adequate basis, too, in what we know of the tastes and habits of the courtly painter himself. For the great period of Venetian art, whether we consider its characteristics generally, or as they are summed up in Titian, its supreme representative, was essentially the art of luxury and self-indulgence, and of the fulness and satiety of a wealthy civilisation. The connexion which this characteristic of the age obviously has with the art of Titian is one of the first things noticed by his biographers, who remark (p. 15) upon the questionable pre-eminence which Venice enjoyed in regard to facilities for loose and luxurious living; the Queen of the Adriatic having in this respect, whether rightly or wrongly, carried off the palm of vice; "and we shall see that bacchanals, or portraits of courtesans in gallant undress, were painted by celebrated masters at Venice long before such a thing was thought of in other parts of Italy. We may also observe that the poetic platonisms of Bembo and the fiery strophes of Tasso have a background of a common and unethereal sort, which is distinctly repulsive; whilst the shameless confessions of a scribe like Aretino tell of a corrupt morality which bore its fruit in the profligacy of the sons of Titian and Sansovino."

To the brief but interesting sketch which is given of the career of Venetian art previous to the age of Titian, we can here merely allude; the sum of it results in the impression that the painter's art there was curiously slow in development in the first instance; helped forward, indeed, greatly by the Bellini and their school, but blossoming almost suddenly and unexpectedly into its characteristic luxuriance at the time when Venice, losing to some extent her mastery over the seas, was extending her arms and influence by land, and thereby drawing towards her, as a social and political centre, a variety of artists from various schools, each of whom contributed something to developing that full, rich, and varied colouring which was to form the special note of the Venetian school, slow to master the process of oil-painting, but ultimately using it in the production of a rich and full style of easel-painting, for which the more limited capacities of tempera were in the end almost abandoned. Among these immediate forerunners of Titian the most prominent name is that of Palma Vecchio, whose close connexion in style and feeling with the greater master is well known; indeed, it is mentioned that they drew from the same female models for years. But Titian's earliest experiences in life seems curiously at variance with the splendour of his subsequent career. From his poor and primitive home in the hills of Cadore he was sent down into Venice,—"the city of enchantments,"—to the care of a relation, "to learn a trade," for so the apprenticeship in a studio was then regarded. "And here Venetian history leaves him, taking no heed of his life or doings until he issues from the throng of competitors, and appears a master at the Fondaco de' Tedeschi." All that can be certainly concluded in regard to his early training was that he was in close proximity with, and much influenced by, Giorgione, and in a lesser degree by the Bellini; but in some remarks further on, the authors express what there can be little doubt is a correct opinion, that Titian cannot be regarded as the pupil or artistic descendant of any *one* painter: he must be regarded rather as having gathered up into one great and many-sided style the lessons and precedents derived from his immediate forerunners; bringing to one focus, as it were, the leading characteristics of the art of his period, and superadding a power and brilliancy derived from his own intellectual insight and rare facility in handling the materials of his craft. Of the general conditions under which his earlier style was developed the authors give some suggestive hints, gathered from an application of their knowledge of the status of Venetian painters in the first-half of the sixteenth century to the illustration of the position of their predecessors at the turn of the previous age. The conclusion is, that painting was then "the business of some great masters, and of countless mediocrities. . . . The taste of the Venetian public was not yet trained to the appreciation of subjects of a domestic or homely character, and a steady demand could only be said to exist for pictures 'devout, finished, and carefully wrought.'" But the Venetians were fond of decorated house-fronts:—

> "The contract for building a house often enjoined its adornment with frescoes, and a large palace in a conspicuous position might, if tastefully painted, secure to a young man a number of useful and able patrons. Yet it seldom happened that a direct connexion united a painter to a wealthy patrician; and it frequently occurred that the architect employed, at a low remuneration, the labour of an artist, whose work was highly charged to the noble owner of the mansion."

The latter sentence may be quoted as a useful hint to modern members of the profession anxious to feather their own nests; but the immediate interest of the subject is in the fact that one of the earliest references to Titian professionally connects his name with the decoration of a house-front,—an interesting fact in the history of painting regarded on its decorative side, though singularly at variance with the nature of the artist's subsequent career.

Of this career we may just recal the main outlines as presented to us in this fully-treated biography. One of the first important incidents we come upon, after the early period of which little or no record exists, is in reference to the connexion of Titian with the Fondaco de' Tedeschi, now a public office near the Rialto Bridge,* but in Titian's day a building set apart for the residence of foreign traders in Venice, ostensibly for their convenience, perhaps, but in reality that they might be under the eye of the Government spies, who held all the permanent salaried offices connected with the establishment. The foreigners could only do business through a State broker, and were not allowed even to choose their own. The connexion of Titian with an establishment apparently so removed from artistic interests arose partly from the fact that the brokers' appointments were regarded as prizes which could be made, practically, profitable sinecures, by being farmed out or sublet to men who did the real business, while the ostensible owner of the place received a large section of the profits; and on this footing Titian and Bellini were both brokers in the Fondaco. During the commencement of Titian's career, the Fondaco was rebuilt, and decorated externally with wall paintings by him and Giorgione, traces of which are still faintly visible, and are assigned by tradition to one or other of the two artists. The probable influence of Dürer on the next stage in Titian's artistic progress,—and, indeed, upon Venetian painting generally,—is a most interesting subject, which might well form matter for a separate study. In general the authors are disposed to think that Dürer's influence, if it were not very permanent, at least retarded materially the progress of the great Venetian painters toward the neglect of line, and the almost exclusive attention to surface, colour, and modelling, which became characteristic of their art; and they quote an anecdote told by Scanelli, who wrote in 1655, which, as they observe, whether true or not in detail, gives indication of the decided influence of Dürer on Venetian art, and connects this with the style and manner of one of Titian's most remarkable works,—the "Christ of the tribute-money":—

> "Titian was visited on a certain occasion by a company of German travellers, who were allowed to look at the pictures which his studio contained. On being asked what impression these works conveyed, they declared that they only knew of one master capable of finishing as they thought paintings ought to be finished, and that was Dürer; their impression being that Venetian compositions fell below the promise which they had given at their first commencement. To these observations Titian smilingly replied, 'that if he had thought extreme finish to be the end and aim of art, he too would have fallen into the excesses of Dürer. But though long experience had taught him to prefer a broad and even track to a narrow and intricate path, yet he would still take occasion to show that subtlest detail might be compassed without sacrifice of breadth,' and so produced the Christ of the Tribute-money."

The anecdote has the air, perhaps, of having been invented to account for the peculiar finish of a work which in this respect stands almost alone among Titian's productions; yet it not improbably has a foundation of some kind, and is in that light significant.

The precise date of this typical work the authors make no attempt to fix, but it was before his visit to Padua in 1506, where he remained till 1511. The city of Mantegna does not seem to have inspired Titian with any spirit of emulation; on the contrary, he carried out his commissions there to a great extent by the help of an assistant, and with an ill-concealed indifference as to doing his best for a provincial town: such, at least, is our authors' conclusion from

* Titian: his Life and Times, with some Account of his Family, chiefly from new and unpublished Records. By J. A. Crowe and G. B. Cavalcaselle, authors of the "History of Painting in North Italy." London: John Murray.

* "On the Rialto," the authors take occasion to point out, does not signify, as is often supposed, on the *bridge* of the Rialto; but on the open space or Exchange, so called, and from which the bridge was named.

the manifest inferiority of his work there in fresco decoration. "The questions presenting themselves for consideration might be these. Was it worth while to paint conscientiously in a provincial town; was it necessary to do the best for a price not the best? It is difficult to determine in what way Titian would have answered these questions had they been put to him,"—a conclusion little flattering, one may say, to the painter's character, but certainly not very unjust to him, looked at by the light of certain other facts in his life. The records of his stay at Padua furnish some documentary evidence as to the manner in which work was carried on, and the price of artistic labour. In 1512, probably, he is back in Venice, with a clear field, almost, before him, through the death of Giorgione and the inability of Bellini to accomplish all that was demanded of him; and it seems reasonable to suppose that he brought away from Padua a fruitful influence on his own genius from the great works of Donatello and Mantegna which he had there studied. It was in 1513 that his offer was made to paint a canvas in the Hall of the Council of Ten,—a demand couched in a strain of high artistic and patriotic enthusiasm sadly at variance with some traits which become prominent in his later years. Being "desirous of fame rather than profit," and to serve the Doge and Signori rather than the Pope, he expresses himself "anxious, if it should appear feasible, to paint in the Hall of Council, beginning, if it please their sublimity, with the canvas of the battle on the side towards the piazza, which is so difficult that no one as yet has had courage to attempt it"; and asking only in return for the broker's place in the Fondaco (which, as observed, he afterwards held), and certain other stipulations, which were all granted. Of the battle which ensued between his partisans and those of Bellini, and his various shiftings backwards and forwards, in and out of favour, an account is given which illustrates in an interesting manner the trickery and underhand nature of the social and official life of Venice. Then we come upon his connexion with the Court of Ferrara, whither he went for some little time to paint commissions for Alfonso of Este, then the husband of Lucrezia Borgia, of whom one would naturally expect to find a portrait by the hand of Titian, which, however, is not known to exist. To this period, but painted on his return to Venice, belongs the celebrated "Assumption of the Virgin" in the church of the Frari at Venice, in which city he was now become "a public man in every sense of the word"; an honourable position which he had the pleasure of realising in various ways, among others, by the receipt of a curt summons before the authorities to give account why he had never finished the canvas in the great hall, and the information that, unless he began to work at it within a week, and laboured continuously till its completion, "their magnificences" would cause it to be painted and finished at his expense. Titian seems now, however, to have been in a position to disregard even so awful a threat as this; and his entire neglect, for a long period, of the work which he before asked, in such patriotic and high-minded language, to be allowed to perform, is one of the many instances, to which it is impossible to be blind, of the spirit of trade in his art which appears to have taken possession of the artist when his success was attained. He seems to have been independent in his treatment of clients (when they did not happen to be royal or noble), not so much from a spirit of pride or self-respect as from a perception that he could now always insure his own terms, and if he did not care for one commission he could be sure of a better one elsewhere. Other visits to Ferrara and one to Mantua in 1519 and 1523 and 1524, show how his practice had quite ceased to be confined to Venice, though he seems to have been rather averse to travelling about, partly on account, as he himself is reported to have said, of the difficulty of obtaining at other places the peculiar type of female model which he was used to paint from at Venice, and without which he seemed to have lost part of himself. Of the story of the Duchess of Ferrara having offered herself as a model for a Venus, in response to the painter's complaints about his difficulty in this respect, the authors say nothing, and we may conclude that they consider it apocryphal. It is to the period of one of the Ferrara visits that the "Bacchus and Ariadne," now in our National Gallery, is attributed; of which glorious painting, by the way, the authors give a small outline engraving which had been better omitted, since even the outlines, which might at least have been correct, are a travesty of the original. From 1527 dates Titian's acquaintance with the notorious libertine poet, Pietro Aretino, with whom he continued on intimate terms till the death of Aretino, whose friendship can have had no elevating influence upon him, and of whom the authors observe that "his knowledge of courts had taught him to flatter the self-love of princes, and he now imparted to Titian the secret of that flattery, subject to showing him later how the fruits of flattery might be garnered;" a lesson which Titian showed himself only too willing and able to learn. In 1530 came the competition with Palma Vecchio and Pordenone, which was to produce the great work of Titian's life, the "Peter Martyr," for which preliminary sketches of each artist were exhibited; one instance in which a work of the highest order was the result of a "competition." Titian took years to finish the work, and "quarrelled with the brotherhood" of monks for whom it was painted as to the price; and in this instance, certainly, we may say that he might have been justified in putting almost any price he could obtain on such a work. The authors express a strong opinion, derived from the presumable history of Titian's movements at this period, and the internal evidence of this picture, that in painting it he was much influenced by the genius of Michelangelo; though, as they truly observe, "he was Michangelesque without ceasing to be Titian, and this is a proof of the greatness of his genius."

In the same year in which this great achievement of his art was realised, we hear of a wife and of the birth of a son (Pomponio) to Titian; a son whose future life was to prove a melancholy commentary on the teachings of a society in which what the late Lord Lytton would have called "The Beautiful" (with capital letters), was followed, to the entire neglect of "The Good." Of the name and family of the wife, and the precise date of the marriage, nothing seems to be known; but Pomponio was the eldest son, and as the wife died not long after his birth, the painter's married life was probably a very brief one. In 1532 commenced the connexion of Titian with the ruling house of Spain, dating from the time when Charles V. saw at Mantua Titian's portrait of the Duke "of that ilk," and expressed a wish that the artist should paint his own likeness; and from this time to his death, in 1576, he seems to have had no difficulty but that involved in satisfying the demands upon his time and genius made by the greatest personages in Europe. In glancing over the remainder of this brilliant life, we just notice the episode of the painting of the "Battle of Cadore," in the Hall of Council at Venice: that well-known composition of which only sketches remain, but which must have been one of the most powerful of all the artist's productions; and which, it is noticeable, is the record of the defeat by "The Signors" of the predecessor of the very emperor to whom at this time he was owing all his greatest wealth and honours. Concerning the real meaning of this picture there seem to have been doubts, owing to the painter's intentional selection of conventional antique armour, whereby the real historical purport of the composition was veiled to the uninitiated, though well understood by those most concerned in its meaning; for of the really historical intention of the painting the authors think there can be no doubt, and even say that there is no difficulty in fixing the part of the landscape at Cadore which Titian intended to represent. Among the other incidents which form landmarks in his later career, are his visit to Rome in 1545, and that to Augsburg in 1548; and the authors picture to us the old man of seventy, with yet many years of splendid labour before him, "setting out on a long and tiring ride in the heart of winter, crossing the Alps in January, to take up his residence in one of the coldest cities of Southern Germany." It was on this visit that, as he passed through Ceneda, Titian bore with him a letter of introduction to Cardinal Madruzzi, in that city, given him by Count Girolamo della Torre, which reads like the credentials of a plenipotentiary of the highest rank, and furnishes proof of the kind of estimation in which he was held:—

"I hear," says Della Torre, "that your Lordship has left Rome and returned to the Court of his Majesty. I therefore take this opportunity of presenting to your Lordship Titian the painter, the first man in Christendom, whom I ask you to treat as you would treat myself, and who is coming at the Emperor's bidding to do work for his Majesty."

Aretino describes the excitement occasioned at Augsburg by the arrival of Titian, when his house was almost besieged by crowds demanding canvasses and panels, or any specimen of his art that was to be had.

The "work for his Majesty" was, in the first instance, the equestrian portrait of Charles, now in the Madrid Museum, on the progress of which Titian wrote to his friends with much interest from Augsburg, and on one occasion, having exhausted his colours, begs Aretino to send him half a pound of lake *cum instantia*, by the first Imperial messenger; from which we may gather that materials fit for Titian's workmanship were not to be found in the Northern capital. On a subsequent visit to Augsburg, he was mainly occupied in painting the sombre features of Philip II. as Emperor elect, and to the close of his life is continually employed on pictures for this powerful but exacting client. The last scene of his life is in sharp contrast to the splendour of his latter days. He died of the plague on August 27th, 1576, "in the midst of a population stricken with terror and heartless from panic." The regulation forbidding the burial, in any of the city churches of Venice, of a victim of the contagion, was, indeed, at once set aside in his case, and in the midst of the tumult and terror he was carried in procession to his tomb in the Frari Church. But immediately after, his son Orazio died of the same disease, not in his father's house, but in the Lazzaretto Vecchio, near the Lido; the house was left empty and neglected, and thieves broke in and carried off many precious relics, never to be recovered. A sad and strange anti-olimax to the splendid intellectual life with which the dwelling had so long been filled.

No detailed or deliberate critical analysis of the genius of Titian, or of his works taken collectively, is offered in this biography; the reader is left to make this estimate for himself; but various critical observations in connexion with some of his greatest pictures serve to indicate sufficiently the view which the authors take of their subject, and at the same time include much that is very suggestive to the reader inclined to pursue the train of thought which the consideration of such works gives rise to. That Titian is the greatest master of easel-painting,—the greatest *painter, par excellence*, that the world has ever seen,—no one who has any title to an opinion on the subject will, we apprehend, for a moment question. The evident conviction of Messrs. Crowe and Cavalcaselle on this head does not, however, prevent them from clearly perceiving that this very supremacy in the qualities that are peculiarly characteristic of the art of the colourist is consistent with, if it does not even imply, a certain limitation in other directions; in regard, for instance, to conception and realisation of form. The following general remarks on this topic seem to us very well and significantly put:—

"We look in vain throughout the annals of art for a man who combined all the excellences discernible singly in Lionardo and Raffaelle, or in Michelangelo, Coreggio, and Titian. To paint like Titian required Titian's peculiar talents and means; it required that colour should be made a speciality. To draw and render form chastened and select as that of the Florentines demanded an education of another kind, which should make colour subordinate to design. Light and shade, as pitted against each other by Correggio, were only attainable by one who gave himself up exclusively to the attainment of them. There never was a genius more universal than Raffaelle, or one more fitted by nature to combine all the highest and best elements of art; yet Raffaelle is not a colourist. Del Piombo, who came to Rome with the impress of Venice in his manner, gradually lost his originality in a grand but palpable imitation of Raffaelle and Michelangelo. His opinion was transplanted to Venice with that of Buonarotti, and set up as a text over the door of Tintoretto, but it failed to produce the expected ideal; and it would have been utterly vain to hope that colour, after the Venetian fashion, and design in the grandiose style of the Classics and the Tuscans, could amalgamate; the base and elements of both being altogether different and incapable of assimilation. The trial was finally made by the eclectics of Bologna, and every tyro knows with what result."

But while Titian has not the wonderful power over form possessed by Michelangelo and Raffaelle,—while he is even subject to criticism for palpable defects of drawing, as in the St. Andrew of the "Assumption" picture, and in others of his greatest works,—we think it must be conceded that as an executant he makes a nearer approach to complete and all-round power than any one else; and, as the authors observe, his later works "afford also innumerable proofs of an enviable power to execute at the same time pictures technically different in handling"; and equally extraordinary was his power of assimilating to his own style qualities suggested by the works of others, while keeping entirely clear of mere imitation; a power eminently characteristic (in every branch of art) of the highest order of genius. His bold manner of painting a picture for its position, regardless of its effect while on the easel, is alluded to in several instances, and in the "Assumption"

picture it may be said that he even painted the foreground pictures for their position *in the picture*; "he made his foreground broad and undefined, the figures on it supernaturally large; the sward a blur of colour, the details lost in wide sweeps of shade and a cunning generalisation of masses:" and by this means he brought into its right focus in the picture the central celestial group, in spite of its greater perspective distance from the eye; a piece of management which the authors very suggestively compare to the natural results of photography, where the foreground details are seen blurred and enlarged, while the principal object in true focus is distinct though smaller in scale. As to the general scope of Titian's genius, apart from such specialities, the comprehensive view presented by such a biography as this goes to confirm the idea which most persons who have thoughtfully studied his works will probably have entertained, that they represent the fulness and vigour of the intellectual as distinguished from what may be called the spiritual element in art and in human life. Of spiritual elevation of tone and depth of pathos we can hardly say that there is much trace in Titian: and although what his biographers say is true, that in his treatment of religious subjects he at once scared "beyond the limits which usually confine religious painting," it is equally true that he never seemed to realise the pathos and solemnity of some of the subjects which he undertook to illustrate. His picture of "Christ mocked by the Soldiers" is one which we call absolutely cruel in feeling, in the total indifference with which it is treated purely as an opportunity for the display of composition and action in a powerfully conceived group of figures: it is evident that the splendid figure of the man in armour, who kneels with his handsome profile half turned to the spectator, was as interesting to Titian as the agonised form of the sufferer in the centre of the group. On the other hand, it would be quite incorrect to attribute mere sensuousness to those of his works which might to a superficial criticism appear specially sensuous in subject. That his many "nudes" (of which there were evidently many more repetitions than are preserved) were commissioned by such patrons as Philip II. from very questionable motives, is probable enough; but the intellectual energy of the painter's character as an artist leaves no room to suppose that his own interest in such achievements was of so low a kind: nor can it for a moment be said that they possess a merely sensuous, to the exclusion of an intellectual, interest. Such works as the "Venus and Adonis" and the glorious "Bacchus and Ariadne" of our Gallery, are, in fact, typical representations, in form and colour, of impulses which lie at the root of the whole course of human life and human feelings. Perhaps a still more typical instance is the beautiful painting in the Borghese Palace, which used to be known as "Earthly and Heavenly Love," but of which the biographers indicate the real meaning with much more evident truth in their title, "Artless and Sated Love"; perhaps we may suggest that "Virgin and Matronly Love" would be still better, as indicating the intellectual meaning of the work, which completely transcends its mere sensuous beauty, remarkable as this is.

The feeling of dissatisfaction which, as we observed, this biography leaves on the reader's mind, arises not only from the meagreness which we remarked upon in the records of Titian the man, but still more from the undeniable fact that these records, so far as they go, do anything but raise him in our estimation. Of the probably very lax and self-indulgent character of his life it is easy to draw conclusions, though nothing is directly said on this point; and it would be unreasonable to make any special reproach against him for a looseness of morals which was all but universal in the society in which he lived, where depths of sensuality existed far below anything in which Titian was likely to have been implicated. More distinctly disagreeable features are his sycophancy and his avarice, which seem to crop out everywhere, and more especially in his later life. He addresses such a crowned scoundrel as Philip of Spain in language which it would be painful to read, from so great a genius, even towards the best and most virtuous of monarchs. His "greatest happiness is to find that his works have met with approval from so great a king." Having received no answer in regard to some paintings he had sent, he greatly fears either that they have not been satisfactory, or that "your servant Titian" is no longer in favour as of old. Even in earlier days, and to a lesser light like the Duke of Ferrara, he writes that he "has no pleasure so great as to be worthy of serving when and where your excellency may think me fitted to do so." Of his love of money the proofs are unpleasantly prominent everywhere; and of course it was no wonder that these "great persons" took him at his own valuation, or that one of the Spanish envoys (Garcia Hernandez) wrote to the Court that "though he" (Titian) "is old, he works and can still work, and *if there were but money forthcoming we should get more out of him than we could expect from his age;* seeing that for the sake of earning he went from hence to Brescia to look at the place in which he has to set certain pictures just ordered of him." This was when Titian was over ninety years of age. The biographers remark that Titian "was and always remained a gentleman"; but surely the "grand old name" can be used but in a restricted and conventional sense here; surely it is more applicable to the stern pride of Michelangelo, who carelessly said that it was true he had served three Popes, but he "could not help it." Compare, too (as we began by referring to Michelangelo) the noble and exalted friendship with Vittoria Colonna, which dignified his life, with the most enduring friendship of Titian's life, that of Pietro Aretino, a man notorious to all time not more as wit than as glutton, libertine, and buffoon, beyond even the licence of his own licentious day. Nor is there one word in any record of Titian to indicate that he had any wide interest in the events of his day beyond the limits of his art. "Whilst Florence is wrestling with fate and fighting against treachery, with Buonarotti on the side of the patriots, Venice stands still and watches with feline cunning the triumph of Imperialism, her greatest master being busied with nothing more than portraits of ladies and pictures of female nudes." This quotation implies, certainly, that the tone of the society in which the painter moved was as much to blame as himself. But in Titian's letters there is nothing that arrests the reader, no indication of force or individuality of character. He was a very great painter, but by no means a great man; and with all desire to think the best of one who has contributed so splendidly to the intellectual enjoyment of mankind, we cannot afford to ignore this fact, so significant in its bearing upon the question of the relation of art to the great realities of life, and in the explanation it affords of the unquestionable limitations of Titian's genius.

ARCHITECTURAL DEVELOPMENTS IN INDIA.

THE momentous changes which the vast continent of India, and may we not say the "East" generally, is now going through, make the subject of "Indian" or Eastern Art not a little interesting, and may be instructive. We have now, since the days of Clive, had a footing in "India" (to use that general but somewhat indefinite, if not misleading, word), and have held control more or less over its many millions of sun-burnt peoples. It may be recollected that India contains nearly a million and a half of square miles of area, and that but little better than a superficial knowledge is possessed by us of its almost countless number of inhabitants,—of their ways of life, manners, language, faiths, and fine art. Dictionaries and "guides" are but poor helps indeed here, and we seem, as we dive into the subject, to get at little but antique *names*, and but a confused misty idea through them of the places and peoples to which they refer. The subject, seems familiar enough, but it is not really so. India is a vast mine of difficulties, however looked at, and if, as is sometimes thought, the earliest evidences of the primeval man is to be there found, it may in the future afford the best evidences of the individuality of races, and manners, and arts, and in it the true value of them may be estimated. It is truly a wonderful land, with a history so far back in time as to be without a visible beginning.

We must need confine ourselves to matters artistic and architectural, but it is not a little difficult to treat, ever so cursorily, of these, special as they are, without reference to other and extraneous matters. Nothing in art has seemed to our mind more curious and interesting than that of the origin and primitive originality of the primal and unborrowed arts and architectures of the world. Go where we will, all the world over, there has always been found in all isolated places, continents as well as islands, evidences and examples of primitive and individualised arts and architectures, altogether unborrowed and new, however rude and even savage the people may have been who invented them. New Zealand shows a remarkable instance of this individuality and power of artistic expression, and mode of work. It shows beyond dispute that the power of artistic expression in material is part of the constitution of man, and inherent; and that if he cannot borrow and copy forms of art, he will invent them, be he where he will. The New Zealander was as individualised in his art as the antique Greek, and so also was, and even now is, the Hindoo; and there is no more difficult problem in art than that of its origin in each case, as here, and what that was which specially guided them in the production of their "ornament" and in the decorative details of their architecture, however rude that may have been when first invented.

It has often been said that the architecture of a people, as that of the Hindoos, grows out of its religion, and, doubtless, in a certain sense and way it does so; but the details of its stone carving and cutting are found ready to hand before the temple is built. The architecture may, indeed, be said in a sense to mould the religion and religious expression. In this instance of the Hindoo, with so complicated a faith and elaborate a ceremonial, it will be found that the details of temple-building and the "ornaments" to be found in the temple furniture, are all ready to hand, whenever the need arises; and the new temple is built with the materials already provided. In this work of the Hindoo, scattered as it is over so vast an area, there will be found ample means of proving this, for in no country in the world are there to be found so vast a number of temples and buildings dedicated to religious purposes as in India. These are not, as might at first sight be thought, all alike, and uniform in style and mode of treatment and detail. It is not a little surprising to find how much the north and south, east and west, differ from each other, although all be classed under the same general term. It must be confessed here that we are sadly at a loss for evidence; for the little that is available is really as nothing compared with the vast mass of materials that must exist over so large and diversified a space. Here, with us, a church or a chapel is either in the town or in the country, and it is pretty much the same wherever you go; but the Indian temples are all but infinitely diversified, both in build and in situation and surroundings. Some are found built in *gardens* of singular beauty, and their builders seem to have had the gift of selecting sites for the sacred buildings not to be surpassed in appropriateness and purpose. Sometimes, again, the very wildest and most out-of-the-way spots are selected for the temple architecture, — among stupendous mountain scenery, and looked down upon by snow-clad summits, of which but a faint idea can be formed even by those to whom the Alps are familiar. Sometimes they are deeply buried in forests, and closed in by groves of gigantic banian-trees; and then, again, they are to be found, as a matter of course, as elsewhere, in the midst of thickly-crowded cities, and surrounded by houses and divers buildings, forming items in the picturesque street architecture. Indeed, it may fairly be said that our Indian empire has had built in it a series of temples and other structures, all but unrivalled in the world, and that the genius of the Hindoo race of builders has for a long succession of ages been employed in the work of adding to the marvels of the art architectural.

And not only are the number and position of those buildings to be wondered at, but the power of the *sculptor* who has worked on the bare architectural forms not less so. For extent and elaborateness of "ornamentation" they are not, and cannot be, surpassed; and this ornamental detail is not put there for the mere sake of covering blank marble or stone wall facing, but it is all of it symbolically expressive, all helping to tell some quaint story or legend. It is *wall writing*, if there ever were such anywhere. We might cite a few well-known examples, and would refer to the few fragments to be found in the British and India Museums, which, though so few, are well worth attentive study.

It is to be borne in mind, too, though the fact is but little attended to, that not only does the architecture and its details differ so much in different parts of this vast country, but that the precise uses to which the temple buildings are put differ as much as the material forms them-

selves. In other words, the "superstitions," to use that general though somewhat vague word, are multitudinous, and influence, insensibly may be, the manners of the people, and impress themselves in the architecture, as it is found, north and south. It would be but repeating high-sounding words to catalogue them, but it would seem a pity that so much that might have been done has been neglected. It is only in the stray notes of travellers, and but through accident, that we know the little that we do about them. That such differences do and must necessarily influence the artistic forms is certain; and it would seem to be all but a duty to make and preserve records of them. It is worth note, too, that, though there are many superstitions, there are, and have been, from a remote time, very many sublime truths and hints at far-reaching thought which even enlightened Europe, as it is, is but now beginning to get a glimpse of. We may, indeed, with infinite advantage, study the architecture and fine art of the Hindoo, and must need profit by it; but it is, at the same time, all but imperative to look at the causes which have produced them, and at the special uses to which they have been put. It is for those who have opportunities and leisure to work this mine of art-wealth.

Not very much insight have we, certainly, considering the time we have held occupation of the country, and it would seem a pity if opportunity is not taken of what is now going on at head quarters to add to what we already have,—not by destroying the native buildings, but by the acquisition of carefully-taken impressions of their details, and even—which would, perhaps, be yet more to the purpose—by the observation and close study of *building*, as it is now practised by the natives themselves,—not in the Europeanised cities and towns, but in the more out-of-the-way and retired spots, where the native architect and workmen are doing their work in their own special and individualised way. We know little or nothing of the mode in which the vast structures of the Old World were built up; and, indeed, marvellous as they are in size and power of artistic expression, these qualities are hardly more to be wondered at than the way in which they were built up,—all our now so necessary mechanical appliances, as steam power, being absent,—the amazing *accuracy* of the work being not the least remarkable thing in them. In the Hindoo work we are at a loss which to wonder at most, the quantity of the work, the skill with which the parts are put together, or the quantity and intricacy of the carving in and all over it, and we may well add its refinement. Colonel Lod, Bishop Heber, and others thought so much of this last characteristic, and were so impressed by its constant presence, that they thought that the Greek himself must needs, in some way or other, have had a hand in it.

We have confined ourselves at present to the indiginous art of the Hindoos, and have not touched on that of their Mahometan conquerors,—quite a study in itself;—nor on that of the architecture which we have been, and are now, building up in so many parts of the country,—a subject in itself again of no small interest and importance. Indeed, of it may we not affirm that it is symbolical of our rule? Such native towns as Delhi and Benares, must need take a long time to Europeanise, and to thoroughly "improve" in our sense of the word, expressive of so much. But a city like Calcutta is a new city, and has sprung up under English auspices, and indeed grew up out of a mere village. It is perhaps as Europeanised a town as is possible under a tropical sun. All is most surely done here that can be, but the mighty laws of Nature cannot be gainsaid or reversed. The Hindoo even here is a Hindoo still, and with instincts and faculties peculiarly his own, and fitted, too, to the special country and circumstances in which he is placed. The architecture and the fine art to be found here are all predominantly European, admitting, of necessity, the native element in and with it; but not as in a purely native city, wherein the European is the "leavening" influence, more or less effective for change. A very curious state of things, all ways looked at; certainly artistically. It presents, indeed, a problem, and a great and comprehensive one for the future. It is "progress," there can be no doubt. But what is progress? asks the author of "Tancred," here and in such like places: "native arts forgotten, old ways of living annihilated, and literatures and even languages altogether lost!" Surely it is not *all* gain!

NOTES IN THE "OLD MASTERS'" EXHIBITION.

In spite of fears that have been expressed, that the resources for the annual loan exhibitions had become nearly exhausted, the present collection at Burlington House is little inferior in interest to any of the previous exhibitions, which, as our readers know, is saying a good deal. There could, indeed, be no fear that the real resources of England could be exhausted by eight such collections, so rich is this country in masterpieces of the painter's art; but the readiness of owners of private collections to lend their treasures is of course only to be counted upon within certain limits; and though, as far as the public are concerned, a repetition of the same collection, after an interval of ten years, would be most welcome, it may seem otherwise to those who, having lent valuable works once, are not disposed to do so a second time. For the present, however, though we have not such an array of splendid works as in some previous years, the attractiveness of this collection has been skilfully kept up by certain specialities in the selection, which have proved of sufficient interest to keep the pens of ready writers on art even more largely employed than is usual.

The "point" in the present exhibition, about which every one is talking, consists in the presence of a dozen of the works (portraits chiefly) of Sir Henry Raeburn (1756—1823), whose name has been better known than his works to "the Southron" hitherto; and whom the unthinking publicand (sometimes) equally unthinking critics, in their joy over a new reputation, are minded at once to rank with Reynolds, Romney, and Gainsborough, as another great portrait-painter. This notion we must emphatically contradict; with a strong expression of opinion as to the inane way in which a fashion or liking of this kind is set up by *quidnuncs* of the daily press, and taken up by foolish people who go about the rooms saying to their friends, "How admirable! I much prefer his portraits to Reynolds's," and so forth. There is enough in the works of Raeburn exhibited here to show that he palpably imitated Reynolds and Gainsborough, and that he had sufficient genius to come very near his models sometimes; but the best imitation cannot be allowed to rank with the original. The best of his works here is the portrait of Dr. Spens, in the uniform of the Royal Company of Scottish Archers, drawing his bow and taking aim (268): the face, a fine one, is painted in very broad vigorous style, and with admirable expression, and the distance very effectively sketched, *à la* Gainsborough, but the painter's determination to emphasise the thistle in the foreground has led to his making it so hard and prominent as to be almost an eyesore in the picture. In the portrait of "Alister M'Donnell" (271), in Highland costume, and grasping a gun, there is, with all its force and finish, a theatrical element quite alien to the art of the two great English painters, and though the portrait of "Mrs. Gregory" (91) might certainly be taken for Reynolds in one of his many humours, it would not be in one of his best. The painting, though rather white and chalky, is a very charming one; but a great deal of the charm is in the lovely and expressive countenance of the sitter. A more original and powerful work is "Lady Raeburn" (47), neither lovely nor expressive, but remarkable enough in her attitude, with her great muscular arms folded, and the dress, simple in colour and arrangement, finely and broadly treated. And no doubt the manly and vigorous portrait of "Lord Eldin" (15) contrasts favourably with the opposite work, in which Lawrence has smoothed down rough "John Abernethy" (7) into a bland vacillating old gentleman. In short, the Raeburn portraits are powerful and very interesting; but we protest against the absurdity of therefore at once placing their author on a level with such a many-sided master as Reynolds.

Among the English portraits are the two interesting half-lengths of himself and Burke, painted by Reynolds for Mrs. Thrale: the painter represents himself holding his hand to his ear to assist him in hearing; this portrayal of his own infirmity by the artist speaks feelingly of his trustful intimacy with the kind friend and hostess for whom it was painted. The portrait of "Captain John Foot" (36), in Indian costume, is traditionally said to have been a favourite with the painter, a tradition for which the work does not afford much foundation. One of the numerous "Nelly O'Briens" which Reynolds painted is fine (195); she leans on her arm on an urn, with her face and figure seen in profile. Other Reynolds's here are interesting, but not of his best; Gainsborough is more strongly and characteristically represented. Some of his works, whether intentionally selected or not, illustrate specialities of colour in the costume: thus in the portrait of "Paul Cobb Methuen" (224) we have a sort of emulation of the effect of the "blue boy," in the treatment of the blue doublet; and "Lord Archibald Hamilton" (104) leans gracefully against a tree in green coat, yellow waistcoat, and black velvet breeches; the latter form the harmonising agent in a combination more successful than, from its description in words, one would suppose possible. "Miss Isabel Howland" (41), in light-grey figured dress, is remarkable for the pearly tone of the whole. There is great character in his "Anne, Marchioness of Donegal" (123), a lady with compressed lips, of very vinegar aspect, trying to look rural as she plucks a flower in a garden; the picture looks almost like a concealed satire.

Romney's favourite sitter, Lady Hamilton, appears in several characters—Joan of Arc, Cassandra, &c. (heads or half-lengths only), and in her own character, reading in a newspaper of one of Nelson's victories; a picture with other interests than its artistic merit, which is not (for the painter) remarkable. His portrait of a Mohawk chief (6) is a fine and unusual work in subject, colour, and handling. When we get among the foreign portraits by older painters we find some of rare excellence. Perhaps the finest in the Galleries is that by Holbein (232), "Portrait of a Gentleman," in a cap and furred gown, with a keen eager face and thin beard, holding out one hand as if to enforce some point in an argument; the hand and face are most delicately modelled, and one hardly knows whether most to admire the force and individuality of the whole, or the execution of the details. Among the Vandycks are some of special excellence, among others that of the "Duke of Richmond and Lennox" (138), in Vandyck's superb court style, his hand leaning on the head of a noble deerhound; but more interesting than this, because more apart from the painter's most usual manner, is the likeness (56) of "Don Livio Odeschalchi" (nephew of Innocent XI.), a half-length of a gowned figure, with a face that has a history to tell; one hand grasps a sword, the other rests on a steel gorget, which makes a telling accessory to the picture. An interesting companion to this is the portrait of a peaceful hero, Sir Thomas Gresham (62), by Vandyck's fore-runner, Sir Antonio More: a most effective half-length of an oldish man with very peculiar strongly-marked features, in a velvet cloak and holding an orange: this is a remarkable picture, whether regarded as a portrait or as a painting.

Turning from the portraits to the more imaginative subjects, there is one work, the Marquis of Lansdowne's "Giorgione" (114), that seems to leave an impression on the mind as of something quite *per se*, distinct in feeling from all we are in the habit of seeing in ancient or modern painting. This is not one of the painter's greatest works in regard to force of colour or composition. Its charm lies in its complete unity of aim and feeling, and in the dream-like atmosphere which pervades it. We see a landscape defined only by broad, rich expanses of colour, bathed in that peculiar glow of subdued radiance of which no other painter has found the secret; no details are made out, except just where the flowers spring in the foreground; and here a youth, with long ringlets, seated under a tree, plays a low guitar accompaniment to a song which seems to be murmured rather than sung by one of two girls, who are seated on the grass opposite to him. The singer faces the spectator, her head bent down towards her music; the other girl leans her lovely face, seen in profile, against that of her companion, and seems lost in a day-dream. So visionary and romantic is the whole scene that one is almost startled to find it prosaically hung in a row with other pictures. It seems to have a world of its own, with which no other associations should interfere.

The grandly-painted and conceived figure of Christ as the "Creator Mundi," by Lionardo da Vinci (269, the property of Sir W. Miles), is one of the great things of the collection; and as a central attraction in a totally opposite manner we may mention the large Rubens, "Queen Tomyris with the Head of Cyrus" (99), a work which shows all the painter's strongest qualities with less of his deficiencies (or excesses, perhaps, we should rather say) than usual:

apart from the powerful grouping and colouring of the whole, there is admirable conception of character in the group of brutal warriors in outlandish costumes on the right, glutting their revenge with the sight of their enemy's head; and the dog slinking round from behind, attracted by the blood, adds greatly to the force with which the story is told. The Earl of Darnley, who sends this, contributes also a group of four allegorical pictures, by Veronese, which have been named "L'Amour Heureux," "L'Infidélité," "Le Dégoût," and "Le Respect;" the two latter are inferior to the others in conception and in interest; the first-named represents a noble-looking pair of lovers, in rich costume, holding aloft a myrtle (?) branch between them, while the lady bows to receive a chaplet from a Venus seated awkwardly on a pile of allegorical properties, and who forms the drawback to the composition, with her leg ungracefully kicked out toward the spectator; but there is an air of splendid and triumphant happiness in the principal group, which is wonderfully taking. "L'Infidélité" is perhaps, in an artistic point of view, superior, though less pleasing in sentiment: here a beautiful nude female, seated on a richly-embroidered stuff, with her back to the spectator, gives one hand ostentatiously to a man on her right, while with the other she slips a letter into the hand of a handsome youth on her left, towards whom her face is turned; the look of rapture in the face of the favoured lover is finely conceived, though it is not easy to account for the manner in which his figure (half reclined) is supported; the female figure is very fine in attitude and action; both these pictures are rather flatly painted, in a bright hard decorative style. The four are hung very effectively at the angles of the large gallery.

We have drawn attention chiefly to those works which have a certain special interest, or which are not very generally known. There is much more in the collection than we can pretend to comment upon in the space we have to spare. We may mention among the attractions of the galleries the splendid Cuyp lent by the Queen, called, from one of the prominent figures, "The Negro Boy"; a picture which sums up all the highest and most peculiar excellencies of the painter. Hilton's large picture of "Christ in the Prætorium," lent by the churchwardens of St. Peter's, Eaton-square, tells very satisfactorily amongst its surroundings, and prompts anew the double question why Hilton did not do still greater things, and why he has not received higher and more general credit for what he did effect? Two works by Murillo, the "Laughing Boy" and "Spanish Gipsies" (44, 206), illustrate his peculiar power, which lay much more, to our thinking, in this forcible brilliant painting of realistic subjects, than in his rather *fade* and pretty treatment of sacred and ecclesiastical subjects; of which, however, there is a remarkably pleasing example in the "El Sueño" (198), lent by Miss de Rothschild. Teniers and Ostade are well represented; and there is one very fine Terburg, "Portrait of the Princess de Condé" (277). Rembrandt's striking portrait of himself (32) in painting costume,—a picture built up, as one may say, in great blots of colour, is a typical and most powerful work; and Andrea del Sarto's portrait of himself (279) is of much interest. Rembrandt's "Potiphar's Wife accusing Joseph" is simply a powerful study of effect; and with this we might pair off Turner's strange work, "Rembrandt's Daughter,"—an evident attempt at making "a Rembrandt": an interior which is flooded with brilliant sunlight effect, and is a remarkable success, poor as the heads are. Two pictures of Etty's cause us to wonder at the reputation which he once had, and to rejoice that the idea of making a collection of his works was abandoned. Sir George Harvey's Ayrshire landscape (43) and his "Covenanters' Communion" (1) should not be overlooked, as the works of a Scottish painter who rose above what seems to be the natural level of painting north of the Tweed (for Wilkie, as far as his art goes, is English); the latter is painted with genuine feeling and pathos. There is a fine Richard Wilson, and a middling Turner, "The Lake of Geneva." The finest landscape in the rooms, however, is Constable's "Dedham Vale" (34), over which one can feel the breeze blowing; the middle distance, as a piece of reality without realism, is a perfect triumph of landscape-painting.

Gallery No. IV., devoted, as usual, chiefly to works of early art, contains nothing to compare in interest with what has been seen here on some former occasions: there is a strange tempera picture, unfinished or "gone," by Lucas van Leyden, of "Christ before Pilate"; and Lord Methuen's very fine Mabuse (or Van Eyck, for doctors differ on this head) of "The Virgin, Child, and Saints," with the remarkably real fly on the mantle of the former; and two or three specimens of Fra Angelico, rather interesting than beautiful. The portrait of Queen Mary, by Lucas de Heere (lent by the Society of Antiquaries) is a truly wonderful piece of decorative painting, and the character and lines of the countenance seem as real and as accurately studied as the minutely wrought and sumptuous costume; the background, described in the catalogue as "red velvet," is, however, obviously silk, and not velvet, from the way in which the light catches the folds. There are other works of curious interest, historical and decorative, in this room; and of the collection as a whole we may say that the difficulty of compressing into a short space anything like a sufficient notice of its contents convinces us that there is even more for study and enjoyment in this year's Loan Exhibition than we had realised before attempting to record our impressions.

DEMOLITION OF THE FIRST MASONIC LODGE IN PARIS.

ENGLISH Freemasons curious in the history of their craft, and familiar with Paris and its innumerable memorials, must remember the old *traiteur's* in the rue des Boucheries St. Germain (now the rue de l'École de Médecine), where the first Masonic lodge established in Paris was founded by Lord Derwentwater in 1725.

Every Mason must know how this antique confraternity of the arts was transformed in 1717, at London, from a mechanical and philosophical corporation into an institution purely philosophic, abandoning for ever the material portion of its labours, the construction of monuments, but preserving at the same time scrupulously its doctrines and traditional symbols.

The first towns on the Continent where Masonry thus regenerated was carried from London were Dunkirk (1721) and Mons (1721).

It was only in 1725 that a first lodge was founded at Paris by Lord Derwentwater (and two other Englishmen), under the title of *Saint Thomas*, and constituted by them in the name of the Grand Lodge of London, June 12th, 1726; its members, to the number of five or six hundred, met at Hurré's, a *traiteur*, in the rue des Boucheries, St. Germain. By the care of the same Englishmen, a second lodge was established, May 7th, 1729, under the name of *Louis d'Argent*; its members met at Lebreton's, another *traiteur*, at the sign of *Louis d'Argent*. The 11th of December, the same year, a third lodge was constituted under the title of the *Arts Sainte Marguerite*; its meetings were held at the house of an Englishman named Gaustand. At length in 1732, November 29th, was founded a fourth lodge called that of *Buci*, from the name of the hotel where its members met, situated in the rue de Buci, and held by the *traiteur* Landelle; this lodge, after having initiated the Duc d'Aumont, took the name of the *Loge d'Aumont*.

Lord Derwentwater, who had in 1725 received from the Grand Lodge of London full powers to constitute lodges in France, was in 1735 invested by the same Grand Lodge with the functions of Grand Provincial Master; and when he quitted France, to return to England, where some time after he perished on the scaffold, the victim of his attachment to the Stuarts, he transferred the powers he possessed to his friend Lord Harnouester, whom he charged to represent him during his absence.

The four lodges existing then in Paris resolved to found a Grand Provincial Lodge of England, to which the lodges, which would in time to come be founded throughout France, could address themselves directly as representants of the Grand Lodge of London. A short time after the departure of Lord Derwentwater, this resolution was put into execution, and in 1736, under the presidency of Lord Harnouester, this Grand Lodge was legally and regularly constituted.

Little by little were established at Paris, by the side of those lodges founded on the principles of the Grand Lodge of London, other lodges, constituted by a Scotchman, Baron Ramsay, a firm partisan of the exiled Stuarts. This famous Mason for some time held the functions of orator to the Grand Provincial Lodge of England, above referred to. He, however, succeeded in establishing and introducing another Masonic system, called the Scottish, with seven grades, which had been created at Edinburgh by a chapter of the Canongate Kilwinning Lodge, with a political aim,—the support of the Stuarts, the subjection of Masonry to Catholicism, and the founders of which, not being able to state its true origin, had attributed the creation to Godefroi de Bouillon. This Masonic rite has never been accepted either in Scotland or in England; but, introduced by Ramsay into France in 1730, it has served as the basis of all the Masonic systems propagated from that time throughout France and in many parts of the world.

In 1737, Lord Harnouester, the second Grand Provincial Master of France, wishing to return to England, asked before his departure to be replaced, and manifested the desire to be so by a Frenchman. The Duc d'Antin, a zealous Mason, succeeded him in June, 1738. The Duc d'Antin was chosen among those members of the Court who had shown the most zeal for the order. He had in reality faced the prohibition of Louis XV., who had forbidden any of the nobles of his Court to belong to any of the societies of Freemasons, and the duke showed much courage in accepting the functions of Grand Master, inasmuch as the king had threatened to immediately put into the Bastille any member of his Court who would preside over Freemasonry in that quality. The king, however, did not carry out his threat, but the police of the Châtelet continued the proscription against those members who could not oppose to them the influence of their names or capacities.

To follow the subsequent history of Freemasonry in France would be a study beyond the limits of these pages, but by a recent return it appears that there are at present in France no less than 203,400 active members of the craft; adding to these those Masons who have renounced any share in the work of the order, we have a total of some 500,000 Masons in France.

Within, then, a very few days, this interesting old building will have disappeared. Not far from it rises the venerable old church of St. Germain des Prés, which has existed here since the sixth century.

This quarter and its historical surroundings are about to be demolished to make way for those changes which, since the announcement that the Exhibition is to be opened in 1878, have received such an extraordinary impetus.

The Boulevard St. Germain, which has partially existed already for some years, will, by 1878, be completed. Those who believe in Abernethy's prescription, that it is healthful to look into the shop-windows, and those fond of the asphalt pavement (and really it would be affectation to be otherwise than fond) may then enjoy a walk or drive of some ten miles of *cafés* (where *bock* is chiefly consumed), *bonbon* shops, and *Articles de Paris*, between rows of trees, starting from the Place de la Concorde, pursuing the Boulevard St. Germain and the Boulevard Henri IV.,* passing through the Place de la Bastille, along the Boulevard Beaumarchais, and so along still under the trees, to the Porte St. Martin, to their beloved Boulevard des Italiens, and the Café Anglais, and the familiar Madeleine.

As for the rue de l'École de Médecine, which has now to give away, it has existed under this name but for a very few years, since, indeed, 1851, up till which time it was known as the rue des Boucheries St. Germain.

Originally only a country road from the hamlet of St. Germain, in April, 1274, the butchers of the suburb were allowed there to establish sixteen stalls, and from this time the street became one of the most commercial in the locality. After the battle of Poitiers (1356), when the English, victorious, advanced up to Chanteloup, these butchers abandoned their establishments, and took refuge within the walls, and it was only after all danger was over that they ventured back to their deserted shops.

Sauval, writing at the commencement of the eighteenth century, gives us a description of the street in his time. "The shops," says he, "are part of the houses in which live, above, the masters. Each shop is accompanied by a spacious slaughter-house in the open air." Judging by this, we can easily imagine the narrow street, lined with the stalls, while through it ran a gutter reeking of infection. Happily, the creation of public *abattoirs* in 1809 purified the street.

The butchers, judging by the appearance of the streets in Paris, seem always to have been a very important class of the *bourgeoisie*, and if,

* See *Builder* for September 7, 1876.

as vegetarians tell us, that their own innocent diet is provocative of clear-headed sprightliness, it is difficult to account for the proverbial *esprit* of the French who, we are told, are much larger consumers of meat than we in England. The fact is, that the French, who have gained, and justly gained, so high a reputation for their provident ways, are provident and self-denying merely with a view to obtain the means for the indulgence of habits and modes of life that are very much opposed to asceticism. When the people were poor, they were temperate and sober; as the workman's income increases, he eats more meat and drinks stronger wine. He is, still, thanks to some unknown reason, a far more temperate man than his English brothers, but it is evident that the use of alcohol is even here on the increase.

Paris.

THE PRUSSIAN PENITENTIARY OF THE PLÖTZENSEE, NEAR BERLIN.

THE simplest and most inexpensive mode of reaching the new Penitentiary on the Plötzensee, a small lake near Berlin, is by the "Green Carriage" (the "Black Maria" of the capital of modern Sparta), which keeps up regular daily communication between the Stadtvogtei (the metropolitan police court, on the Molkenmarkt) and the Penitentiary at the above lake. Those, however, who have not qualified themselves by transgressing in some way against the law for the privilege of gratuitous transit by this conveyance, and are yet desirous of paying a visit to the prison, may reach their destination best by using a "first-class" cab. This will take them past the Lehrte station along the *chaussée*, planted with small, stunted trees, which leads along the so-called Nordufer, the northern bank of the Berlin-Spandau Canal, past several benevolent institutions—Bethesda, the Magdalenenstift, and the plantations surrounding the Johannesstift, all three facing the canal. After a drive of three-quarters of an hour, the Jungfernheide is reached. The coachman turns to the left over the bridge, and thus deprives his fare of a view of the lake which has given its name to the Penitentiary. A mass of red brick buildings rises above the horizon, the celebrated and much talked-of new prison of the capital. In front of it, and on both sides, a not very thriving forest lingers out a precarious existence in the midst of the mournful plain of sand which, if it does not form the chief attraction of the surroundings of Berlin, certainly is their most distinguishing feature.

The first impression made by the Penitentiary of Plötzensee is decidedly pleasing. One notices first a row of pretty small houses, built, like the rest of the buildings, of red brick; some of them are overrun with wild vine, but all look cheerful and attractive. These are the residences of the prison officers. The chief entrance to the Penitentiary, guarded by soldiers, is in the centre of the row of houses. After crossing a corridor, a pretty court, or rather garden, laid out with turf and flowers, and in the centre of which rises a large gas-candelabrum, is entered. From here the prison proper is reached: the great central building, in the lower rooms of which are the offices of the chief officials, while the upper part is devoted to divine worship. This building is erected in church style, with two turrets in simple Gothic. To the right and left of the principal building, and joined to it by smaller erections, stretch two gigantic prisons, for prisoners in common confinement, containing workrooms, sleeping-rooms, washing and cleaning establishments, &c. At right angles to each of these common prisons, abutting on the latter, and parallel to the church-like centre building, is a side wing; here are the cells for prisoners kept in solitary confinement. Those five buildings, the church, the two great transverse buildings for prisoners in common confinement, and the two wings for isolated prisoners, form the real nucleus of the penitentiary establishment on the Plötzen Lake. To the right and left of this centre, and separated by courtyards from the other buildings, are the workshops. On the left side two large establishments have just been completed. The smaller one, nearest to the church, is a prison on the solitary principle for juvenile offenders; the larger one, still farther back, a solitary prison for adults. On the right side, separated from the latter by the buildings containing the machinery, the pumping-engines, &c., another prison on the solitary principle for adults, as a pendant to the one mentioned, is projected, but nothing definite as to its construction is as yet known. At present, 1,200 prisoners can be accommodated at Plötzensee, and this number is still further to be increased.

The prisoners in the Plötzensee Penitentiary lead a most regular and not at all severe life. They receive, besides a plentiful supply of bread, daily nearly six pints of soup; three times per week the latter is made of meat. The fare is wholesome, and, according to those who understand the matter, also palatable. Besides this, those prisoners who are blessed with a more than average appetite receive more than the ordinary rations. In short, the supply of food is plentiful. The quantity of work a prisoner is expected to do is not considerable, an industrious workman being able to do much more than the regulated amount of work. Extra earnings are placed at the disposal of the prisoner; with them he may either purchase certain little luxuries, such as bacon, ham, sausage, cheese, butter, lard, light beer, and so on, or they are saved up and handed over to him when he leaves. These extra earnings sometimes make up a considerable sum, and it happens that prisoners who have been confined at Plötzensee for two or three years draw at the day of their discharge sums ranging from 20*l.* to 30*l.* The workshops are cleaner, more airy, and more pleasant than they are found in any private establishment. Even the shops of locksmiths and metal-turners are kept scrupulously clean. This cleanliness, however, can only be obtained through the great number of hands at disposal, which permit of the rooms being kept tidy even during workingbours. During their leisure-hours the prisoners take a walk in the spacious and airy courtyards, or else pass away their time by reading books supplied by the prison library.

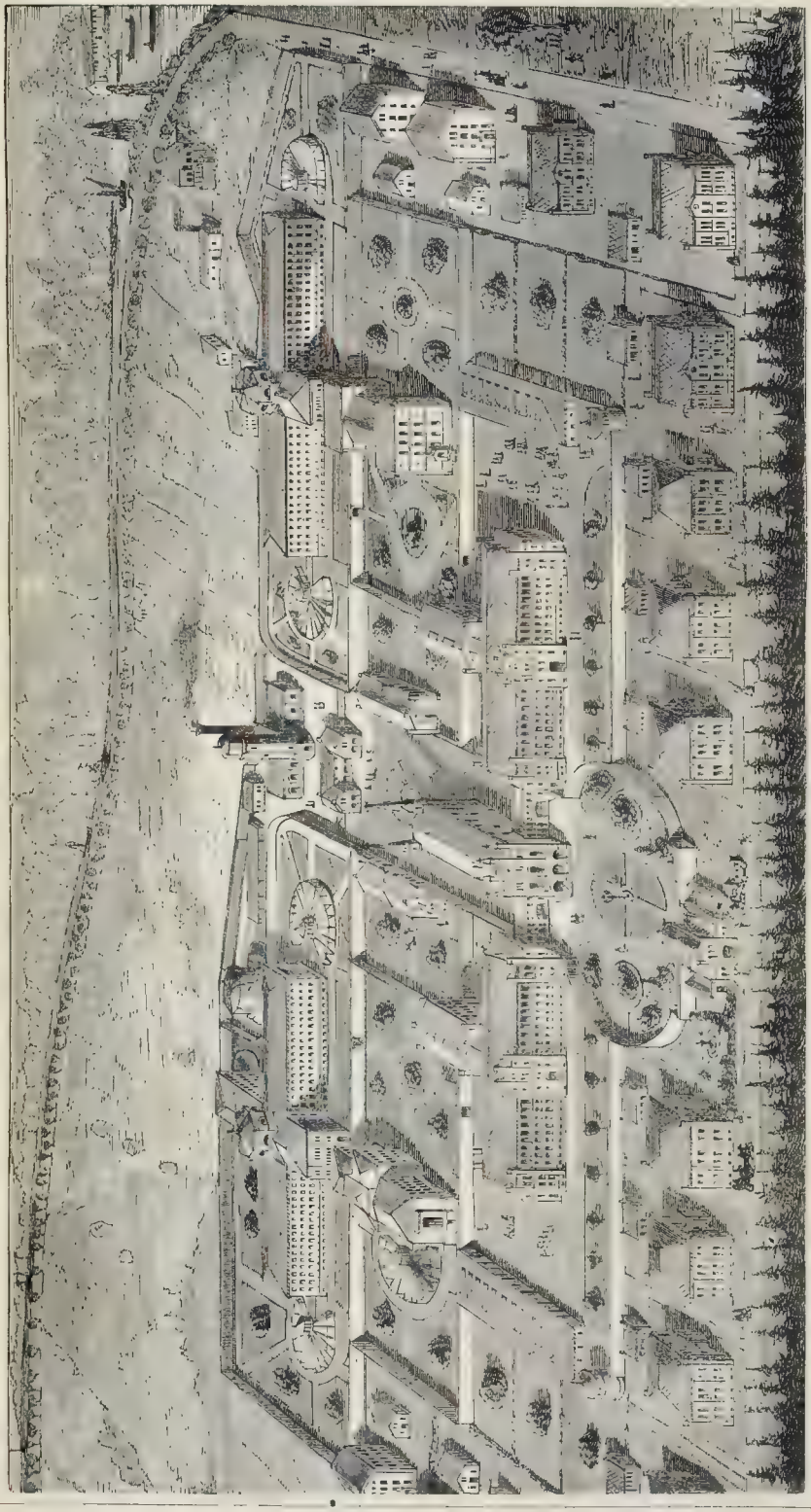
The habitations of the prisoners are also much better than many of them possess in a state of liberty. Most striking is the exceptional cleanliness. By a large supply of water—over twenty-six gallons per head per day—the great evil of infected air is obviated. On the whole, therefore, although political prisoners, to whom the feeling of forcible deprivation of liberty is by itself the greatest punishment, have reason to complain in their solitary cells of the hateful uniformity of prison fare, and the strict application of prison regulations, the great majority of the prisoners on the Plötzensee, the rabble, fare materially much better there than when enjoying liberty. They have better living and sleeping accommodation, work less and under better conditions than when free, have a plentiful supply of food, and effect savings which they would never be able to do in freedom.

The above has reference almost exclusively to those prisoners who are confined together, and work together, their usual occupation being the manufacture of cheap fancy goods and stationery. It is almost useless to speak in their case of the moral effect of their confinement. They have free intercourse with their neighbours, tell each other the pranks and base tricks which they have practised or intend to practise, are mostly jolly and in a good temper, joke and laugh, and feel their punishment either very little or not at all. Authorities on prison discipline of the present day consequently almost unanimously condemn the principle of common confinement. In the new buildings on the Plötzensee the system of isolation will be carried out with the greatest strictness. In the cell the prisoner feels that he is a prisoner; he is left alone with his thoughts. There, indeed, deprivation of freedom—mesning, at the same time, deprivation of society—weighs upon him. At present the solitary cells of Plötzensee are occupied only by respectable prisoners, to whom intercourse with the rabble is hateful, by confirmed criminals, against whose contagion the other prisoners are to be guarded, or by prisoners who have made an attempt at escape, or who have been guilty of some crime requiring a closer supervision. The juvenile prisoners of Plötzensee are now all confined in the new building erected especially for their reception on the solitary principle. This isolation is most essential in the case of young offenders, who are thus made more amenable to persuasion. The young criminal works alone in his cell, and has no company night or day. Even his daily airing he takes alone in the isolated court. Those courts are built in a semicircle, their centre being formed by a little tower in which is the prison warder. From the periphery towards the centre run a number of radii, formed by high walls. Thus a number of small courtyards are created, which on the side of the tower form an acute angle, and on the other run as far as the periphery of the semicircle. In this direction the prisoner taking his walk has a view upon a garden. There are horizontal bars where he may practise gymnastics, &c. The gaoler from his tower, of course, overlooks the whole of the radiating courtyards, and is also seen by the prisoners in the yards; but the walls are too high for the prisoners to see each other. At school and at church, also, the young prisoner does not know who are his neighbours. The pulpit of the clergyman, or the desk of the schoolmaster, is pretty high. In front of it rises, like an amphitheatre, a series of boxes; each of these boxes has a number, and each has a separate entrance. The prisoner is led into this box; he has there a stool on which to sit down and in front of him a small board on which to put his books; he may rise in it, without being able to see who sits at the right or left of him, in front or at the back. He sees, however, the teacher or clergyman, and is seen by them; for a perfect view can be had from the desk or pulpit of all those present at school or church. Under such conditions, severe but beneficial, the juvenile prisoner has time for reflection, and his offence and its consequent penalty are brought home to him. A few weeks of such solitary confinement may, under certain conditions, exert a decidedly favourable influence upon his future life, while confinement in company with others only tends to impart to easily-impressed youth a new impulse to further transgressions and crimes.

The Penitentiary at the Plötzensee is under the supervision of Director Wirth, one of the most distinguished prison officials in the German empire, an educated, practical, and, before all, humane man, who is said to be equal to his task in all respects. Herr Wirth, who is a native of Bavaria, was called to his present responsible position from the Nürnberg Penitentiary. He is reported to be unceasing in his efforts of improving the condition of the several prisoners, and at the same time, and principally, of making the punishment which they have to undergo effectual: in other words, of reforming the prisoners as much as possible. He is assisted in his onerous duties by Inspector Gennat, vice-director, the type of the Prussian official of the right stamp, who is said to understand how to gain and preserve the confidence of all prisoners by his energetic and, at the same time, kindly bearing. The chaplains of the Penitentiary are the Pfarrer Herren Jung and Feldhahn; the prison surgeon is Dr. Baer.

We may include our notice with the following extract from a well-known German authority writing on the subject:—

"The way in which the officials of the establishment on the Plötzensee and their subordinates perform their duties is deserving of all praise; and if the discussions in the Prussian Chamber on that institution gave rise here and there to the opinion that the prisoners are treated with exceptional severity, even unjustly and with inhumanity, it ought to be stated that such aspersions are entirely untrue, and that a protest ought to be entered against them. It is indeed true that those who have been sent to Plötzensee for longer or shorter periods for offences not affecting their honour or public morality have every reason to complain of the imprisonment as it is carried out at Plötzensee. Greater liberty ought to be accorded to 'political prisoners' than they can be granted at that establishment. If we consider that men such as the social democrat, Herr Most, member of the Prussian Chamber; Chaplain Paul Majunke, the editor of the *Germania*; the aged Herr von Schroetter, formerly Landrath or district councillor (the 'Protestant' of the *Germania*), are forced to spend months and years of their lives under the same conditions as most worthless individuals, offenders against property, &c.—this certainly jars harshly on our sense of justice. It is earnestly to be desired that the legislature should step in, and issue for entirely different offences different regulations as to the mode of punishment to be awarded; that it should grant other privileges to such as are deprived of their liberty for the expression of their opinion than to common swindlers and defaulters. But no law regulating the mode of imprisonment has yet been passed, and the official of the Penitentiary knows at the present time no difference between the prisoners of the one or the other category. However, we should not find fault with the inner arrangements of the institution on the Plötzensee, but rather with the want of guiding regulations; we should not criticise the officials, but expose the indolence of a legislature which permits such a state of things to exist."



PRISON ARRANGEMENTS: THE NEW PRUSSIAN PENITENTIARY ON THE PLÖTZENSEE, NEAR BERLIN.



LONDON STREET ARCHITECTURE: PREMISES FOR MESSRS. MAW & THOMPSON, ALDERSGATE STREET.
MR. H. B. GARLING, ARCHITECT.

PREMISES FOR MESSRS. MAW & THOMPSON,

ALDERSGATE-STREET, LONDON.

THE building represented by our engraving has been erected for Messrs. Maw & Thompson, well-known surgical instrument manufacturers, from the design and under the superintendence of Mr. H. B. Garling, architect, of Bedford-row. It has a frontage of 90 ft., a depth of from 50 ft. to 75 ft., and is 75 ft. in height from the pavement of the street to the ridge of the main roof. The site was formerly occupied by Nos. 7, 8, 9, 10, and 11, Aldersgate-court, belonging partly to the Cooks' Company and partly to St. Bartholomew's Hospital. The features of the elevations were regulated by this circumstance, and by the necessity of erecting the building one-half at a time only, and preserving the levels of the floors of the old warehouse in the rear. The southern half only is now completed. The northern half is to be commenced immediately. The original premises, of very considerable extent in the rear of the present new building, were burnt down and rebuilt in January, 1857.

The basement of the new building, which is very lofty, is appropriated to the packing department; the ground-floor to counting-houses and offices, and partly to show-rooms; the first, second, and third floors to show-rooms; the roof, to a range of lofty workshops.

The building has been constructed in a very substantial manner, the columns, girders, and timbers being designed for the heaviest weights.

The staircases are formed with iron strings, with teak or pitch-pine treads. The façade is of the hardest Portland stone that could be obtained; the finials are of terra cotta, from Blashfield & Co. The general contractor was Mr. A. E. Robinson, New Kent-road; the contractor for the iron-work was Mr. Joseph Phillips, Victoria-street, Westminster; and Mr. W. Crittenden was the clerk of works.

ARCHITECTURAL ILLUSTRATIONS.

ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of this Association held on the 12th inst., Mr. H. C. Boyes, president, in the chair, Messrs. A. G. Sawday, W. H. Bell, A. C. Houle, C. P. Edwards, H. Sykes, — Alford, and F. Cooke were elected members.

The librarian (Mr. Pownall) announced several donations to the library. Among the donors was Professor Donaldson, who presented a copy of his recent work, "Temple à la Victoire," lately reviewed in the *Builder*.*

It was announced that the first of the series of visits to new buildings and works in progress for the present session would be made to-day (Saturday, the 20th), the building selected being the new parish church of St. Mary, Whitechapel, which has just been erected from plans by Mr. Ernest C. Lee, architect, and which will be consecrated early next month.

Mr. Maurice B. Adams then read a paper on "Architectural Illustrations," in the course of which he said:—

In the illuminated MSS. of the Middle Ages, more especially those of the tenth and beginning of the eleventh century, ample illustrations of architecture are to be found. It is beyond the limits of our purpose to enter into this most interesting branch of the subject; suffice it to say that without these valuable records the student would have but a faint idea of the real beauty and elaborate character of Anglo-Saxon architecture, the actual remains of this date being necessarily very scanty, the rough and massive parts alone remaining. The shortness of our time will also prevent our touching upon Mediæval drawing, several examples of which have been published in fac-simile by Professor Willis and others. Their chief characteristic is their boldness and vigour, and for the most part they seem to be sketches with figured dimensions rather than measured drawings. Turning from these to wood-engraving, we find the earliest wood-cut print known bears the date of 1423, and the first engraved metal plate 1461; the first book published with plate engravings was Dante's "Inferno," which appeared in 1481. Perhaps the earliest instance of architectural illustration published in book form is the edition of "Vitruvius," by Frontini, date 1496. The earliest I have examined is the edition with commentaries by Cesar Cesariano, 1521. The work is copiously illustrated with rough wood blocks, showing many things foreign to architecture, but there is a technical appreciation of the architectural subjects, notwithstanding their roughness. The same may be said of the works of Palladio, published in 1570; in both books the materials and the construction of the buildings are shown in the sectional parts, which was not the case in most of the later editions and subsequent works of the kind. Several books with similarly executed engravings, chiefly in outline, followed Palladio, such as Serlio's "Tutte l'Opere d'Architettura et Prospettiva," &c., 1619, "Mecurius Civicus," 1643, and others, chiefly published in Italy. In Germany, early in the sixteenth century, we have the splendid woodcuts and plates by Albert Dürer, whose illustrations of architecture in the back-grounds of his pictures deserve the closest study. His drawing was thoroughly Gothic in spirit, and equally adapted for the style of work he represented. The starting-point of our subject in England dates from the middle of the seventeenth century, when we arrive at a considerable advance in the art of engraving compared to that found in the books already mentioned, but we lose that technical quality which renders the illustrations of architecture of value to the student. In making this remark, it must not be thought I undervalue the beautiful works which follow; they are of the highest importance and interest to us; but it is rather as specimens of engraving, and as the only illustrations of architecture, that we value them, and not for their technical qualities, and this is the point to which I wish more particularly to allude. If the drawing of the architect has to be rendered by other than a specially-trained hand, it is obvious that much accuracy and feeling will be lost. Hence the surpassing advantage of those modern processes by which an original drawing can be mechanically reproduced without the intervention of any hand-work whatever. But to return. The earliest works of any importance for their engraved illustrations of buildings, are Dugdale's "Monasticon," and Dugdale's "History of St. Paul's." The "Monasticon" bears the date of 1655. The plates were chiefly by Hollar. The shading of his drawings is curiously executed, and at times muddy in effect. The detail scarcely satisfies inspection, the arcades and arches having a thin, weak, appearance. Renaissance scrolls, supported by cherubims with rococo garlands, break abruptly into the perspective views of Mediæval interiors. In the later editions the plates were re-engraved by Finden and Coney (1846-9), whose style of drawing has been called the "flick and dot." Hollar's exteriors, in this case, sit most uncomfortably on the ground, but this defect was supplied in the last edition. Dugdale's "History of St. Paul's" has plates also by Hollar, those by King being very inferior. A book illustrating St. Peter's was published at Rome in 1684, which shows that building in a more technical manner, and, as a contemporaneous publication, deserves mentioning. The designs of Inigo Jones were not published till 1727, when they were illustrated by Kent, so that our next notes refer to the "Catalogue of the Works of Sir Christopher Wren," which appeared in 1668, with engraved plates by Hulfbergh. The details are exceedingly well shown for the time, especially that of Bow Church spire. The sections are taken through the buildings in perspective, but this is badly managed, more particularly in the longitudinal view of St. Paul's. Curious title-scrolls enrich the pages. The designs of Inigo Jones, incorporated with those of William Kent and Lord Burlington, were engraved by the same artist; the plates (136 in number) are a great improvement upon those in Wren's book, and, on the whole, the style of drawing is suited to the character of the work. No inscription devices are inserted to break the uniformity of the sheets, which include designs from palaces downwards. In 1728 James Gibbs published his "Book of Architecture," which furnishes an admirable series of details in his well-known style. The execution of the plates falls short of those in Kent's book, but some fine views are given from the pen of Hulfbergh; for instance, St. Martin's-in-the-Fields. Most drawings of this date have a gray and monotonous effect, the windows being treated as mere holes in the wall, so to speak. The plates are executed chiefly on copper, in what is called "stroke" engraving, the instrument used being a "graver," which gives a clear and decided line quite different in effect to the freedom of an etching-needle. It is from this period that the school of English engraving dates. Previously the work had been executed by foreigners,—Hollar, Simon, Crispin de Passe, Hulfbergh, and Vanderbank were all foreigners,—and the principal engravings of the time were their productions. Hogarth was one of the earliest English engravers, and his works are familiar to you. We now arrive at the first glimmerings which foreboded the advent of the Gothic revival. All traces of Mediæval principles had ceased to exist in the practice of architecture, and "if there is one period more distinguished than another for its neglect of Gothic, it was certainly the middle of the eighteenth century." For illustrations published at this time, few are of more interest than those of the much-abused Batty Langley, who seems to have enjoyed considerable practice. To his drawings we owe most of the so-called Gothic work of that time, and its spirit was perpetuated by churchwardens and carpenters to almost our own day. Batty Langley's most important book was "Gothic Architecture improved by rules and proportions in many grand designs of Columns, Doors, Windows, Chimney-pieces, Arcades, Colonnades, Porticos, Umbrellos (!), Temples, and Pavilions, &c., with Plans, Elevations, and Profiles, geometrically explained by Batty Langley. Published in the year of grace, 1742." If the title of the book be amusing, the designs are equally so, and the drawings are no better, their chief characteristic being their suggestiveness of cast iron. The "Vetusta Monumentum," in 6 vols., was published by the Society of Antiquaries about this time, and, as an important work, should be noticed. Leaving the works connected with the Gothic revival for the moment, we note, in the words of Mr. Fergusson, "the publication of Dawkins and Wood's illustrations of Palmyra and Baalbec in 1750, which first gave the English a taste for Roman magnificence undiluted by Italian design; but the works which permanently affected the taste of the country were the splendid series of Stuart's 'Athens' in 1762." The care of these plates is deserving of all praise, especially the drawing of the sculpture, though the stippling is overdone, and the views generally are too dark. These remarks refer to the first edition; nothing could surpass the plates published in the last, with the supplemental volume by Professors Cockerell and Donaldson (1830). Reverting again to the Gothic school, it is interesting to remark the entire absence of sympathy for the style, although its later and debased forms seem to have been studied by the votaries of the Classic revival. For instance, in the South Kensington copy of the first edition of Stuart's "Athens" is bound an autograph drawing by the author of a measured elevation to a 3-16th scale of one half of the Patio of San Gregario at Valladolid, in Spain. The style, he says, is "Gothick" (!), but his drawing is shaded in graduated tints of Indian ink the same as in his Classic sketches. Indeed, so entirely lost was the spirit of Mediæval art, that the drawings of those who professed their preference for Gothic work are made in the same feeble way, regardless of all feeling. James Bentham's "History of Ely Cathedral," and Grose's "Antiquities of England and Wales," are of this class. Horace Walpole's villa at Strawberry-hill was the subject of a monograph, dated 1784. The plates vie in wiriness with the design, which is fully illustrated. The next name in my note-book is John Carter. He was the author of several important books, the most valuable being his "Ancient Sculpture and Painting of England," 1786, re-published in 1838. To John Carter's rendering of Mediæval art the revival is greatly indebted; while his writings, extending over twenty years, had great influence in forming a taste for Gothic amongst thousands who had hitherto regarded the style as worthy of no consideration but contempt. His book just referred to is considerably in advance of anything of the kind then published, the details being to a much larger scale than that hitherto employed, while some of the plates are printed in colour. In 1786 the first professional journal in this country was started under the title of the *Builder's Magazine*. It was edited by George Cook, architect and builder, and illustrated by John Carter, to whom its chief merits are due, although his designs, which furnished materials for most of the plates, are all in very bad taste, judging by present standards. The five orders commence the series, as in most of the early apologies for Gothic, including Rickman's "attempt." The admirers of Gothic, however, were not sufficiently numerous or enthusiastic to support a journal of their own, so that the

* Page 1212, vol. xxxiv.

Builders' Magazine only lived through one volume. The enterprise and spirit of the editor deserved perhaps a better reception. He at once proclaims himself a champion of Gothic architecture, and affirms with confidence that nothing can be more adapted for places of worship than that "awful style of building." Among the books of architecture published during the Georgian period, few have more interest to us, especially at the present moment, than the works of the Brothers Adam, whose "Architectural Designs" came out during the years from 1773 to 1822. The plates were engraved by Bartolozzi, Piranesi, and others. The book opens with a beautiful drawing, representing Minerva in the act of pointing a student to Greece and Rome as the source of all true art and literature; but, however worthy the conception, and wholesome the advice embodied in it, we do not find the authors always practising their precept, charming as some of their designs undoubtedly are. For instance, they favour us with a new order, calling it the "Britannic." The design is characteristic of its name, as the lion and unicorn are used as volutes on a composite cap, and are interspersed in the foliage of the frieze, after the manner of a Chevy-chase. This was proposed for Carlton House. The general effect of the plates, like all Piranesi's engravings, is too dark, though the detail is well drawn. Halfpenny's "Gothic Ornaments of York," published in 1795, was an important book in its day, and had the advantage of the author's own hand in the execution of the illustrations, which are metallic in effect. Almost all the grotesque heads, as Mr. Eastlake remarks, are shown leering at each other with *pupilled* eyes, the true notion of sculpture being lost sight of altogether by such vulgar conceits. In 1805, Fredk. Nash, the first of the line, gave to the world his aquatint views of St. George's Chapel, Windsor, with details to 1 in. scale. The general result of the book is not very satisfactory, but there is a thoroughness of purpose in these so-called pre-Puginesque works not always conspicuous in our own contemporaneous productions. In considering the subject of architectural illustrations, few names deserve a higher place than John Britton, the author of some seventy works, a large number of which were illustrated. Among the most important were the "Antiquities of Great Britain," 1814, and the "Cathedral Antiquities," which followed, the former work having views by Prout, with plans and a few details, and the latter book was illustrated by the celebrated Mackenzie and Le Keux. The picturesque, however, predominates over the technic in both these works, the geometrical drawings being to an exceedingly small scale. It remained for the elder Pugin to supply this want of knowledge and insure those qualities to the illustrations of architecture which render them of value. Mackenzie and Le Keux had already given more attention to detail and refinement than any one, and, under the professional direction of Pugin, they soon surpassed even themselves. Pugin and Le Keux published their "Antiquities of Normandy" in 1827, and this work is so well known that description is unnecessary, especially since the recently-published edition under the direction of Mr. Phené Spiers. There is one peculiarity worthy of remark in all the elder Pugin's drawings; it is their exceedingly fine line, enriched with backlining, which at once destroys all breadth of feeling, and gives a perplexing effect. This practice of back-lining was not confined, however, to Pugin, and is to be observed in several important books published years after. The younger Pugin first brought about a change in the system, but, to quote an authority, "there is a fizziness and action in all his plates which may be looked for in vain in the real thing." If the influence of the works of Pugin is more vivid to us, the important researches of Cresy and Taylor must not be overlooked. In 1829 they published their work on the Middle Ages in Italy, illustrated by steel plates, the tinted sheets being coloured by hand. Their celebrated work on Rome appeared in 1821, with 135 plates from actual measurements taken on the spot. The views are well etched by George Taylor, but the details are poor specimens of chalk lithography, excepting those of the larger caps. The geometrical drawings are in outline, and it is worthy of remark that the various materials and the manner of construction employed are carefully shown. The last edition of this work was published just before Mr. Taylor's death, a year or two since. Turning once more to the Gothic school, the name of Lewis Nockalls Cottingham is conspicuous. To him we owe the first full-sized details of architecture ever published. They appeared in the book illustrating Henry VII.'s Chapel, Westminster, dated 1822. The plates are in outline, very well drawn. The general drawings are spoilt by over-etching, backlining being used to complete the confusion. Cottingham also tried his hand at lithography, with which he prepared his series of working drawings of "Gothic ornaments," a rather well-known book. The work was not so satisfactory as the former work, which was probably owing to Cottingham's want of skill with the crayon. The most interesting plates were those of an original design for a mansion in a late phase of Tudor. The elevations are in pure outline, with the windows finished in jet black. This is the earliest example of the practice till lately so fashionable of blacking in the windows in drawings of Gothic work. Sea-green is now supposed to be the more correct thing. In Classic architecture the first full-sized drawings published were probably those of the Erechtheion at Athens, by Henry Inwood, architect of St. Pancras Church; they appeared in 1830. Owen Brown Carter, of Winchester, was considerably in advance of his day, both as an architect and draughtsman. Some of the leading men in the profession at the present time were his pupils. He published several large plates, of great beauty, his earliest work being some views of Winchester, engraved by Le Kinx. Carter also contributed illustrations to "Weale's Quarterly Papers" on stained glass, but chromo-lithography was then in its infancy, and the result is below par. For steel engravings of this date Winkle's "Cathedrals" deserves notice, and Henry Shaw's "Details of Elizabethan Architecture," 1834, should not be passed over. The engravings were by Shaw himself, the style of drawing already referred to being employed, but with more success, since it lends itself to the style of architecture shown. Some of the sheets are tinted by hand, and some are chromolithographs. I have not yet mentioned mezzotint engraving, which was very generally employed during the early part of the present century for popular illustrations of architecture. It was invented in 1643. The impression which a mezzotint plate yields resembles a drawing executed in washes of colour. The process is exactly the reverse of that adopted in other styles of engraving. The whole of the plate is covered with a uniformly dark barb, or ground, the design having been previously traced on the surface of the plate in the usual manner. The highest lights are then scraped away and burnished, the second lights being treated next, and so on, till the work is finished, leaving the untouched ground for the darkest parts. Aquatint is similar in character to mezzotint, and is a more recent invention. In either, an Indian-ink or bistre drawing can be very closely copied; but, like all coloured drawings, the tendency is to obliterate the details of a building, so that they may mean anything. Illustrations were published of John Nash's Royal Pavilion at Brighton, in this style. They were drawn by Pugin, showing the elaborate and coloured decorations by these means. Lithography soon superseded all kinds of engraving for architectural work, and, by the time we are now speaking of, had reached great perfection, as seen by the next books to which we will refer, viz., Joseph Nash's "Architecture of the Middle Ages," and his "Mansions of the Olden Time in England," dated 1838–9. C. J. Richardson at the same time published his "Remains of Elizabeth and James." All three books are admirable examples of chalk lithography, more particularly Nash's works. Richardson was more technical in his plates, giving details in outline, as well as pictures, including several in colour. With reference to the so-called fac-similes of John Thorpe's drawings, given by Richardson, they are in chalk lithography, and by no means do justice to the originals, which deserve the closest study. These are to be seen in Sir John Soane's Museum, and a bound copy of tracings, with others, will be found in South Kensington Museum. Speaking of chalk lithography, the name of George Hawkins deserves a high place. His work in this style has never been surpassed. Wm. Richardson's "Monastic Ruins of Yorkshire," published in 1844, and several churches of the day, were drawn by his hand. J. S. Cotman's "Etchings of Norfolk," published in 1838, gave principally views, while some of the plates of doorways are good in detail. Continuing our notes, we have to record the inauguration of our present professional press. Before doing so, a deceased relative who did good work for thirty years must not be forgotten: I refer to the *Civil Engineer and Architect's Journal*, which commenced its career in 1837, five years before the *Illustrated London News* first saw the light. Its illustrations were rough woodcuts for some time, but its later numbers were enriched by lithographs by the well-known Jobbins, who also executed the plates of F. T. Dollman's "Analysis of Domestic Architecture," and J. K. Colling's "Gothic Ornaments." Examples of Jobbins's careful work are given, but his care hardly supplied his want of technical spirit. The *Builder* was started in 1843, and it consisted of five pages of letterpress, with no illustrations, taking more the form of a newspaper. The published price was 3d. Its first illustrations were of a very general character, but soon assumed a more strictly architectural form, giving wood-engraved views of buildings somewhat in the manner it has maintained ever since. The first instance of lithographic illustrations in a serial journal appeared in *Weale's Quarterly Papers*, which were commenced in 1844. This work consisted of essays on various subjects of interest to the profession. The *Building News* published its first number in 1855. A somewhat similar paper appeared in 1849, called the *Architect and Building Operative*, but it only lasted two years. Retracing our steps to 1845, we note the publication of Mr. Edmund Sharpe's grand work, the "Architectural Parallels," in two folio volumes, giving elevations, plans, sections, and views in a thoroughly technical manner. The geometrical drawings were made on the stone by T. Austin Paley and R. J. Withers, the views being lithographed by Haworth Fielding. Two and three tints are given to some of the plates, much to the assistance of the perspective views. Mr. Sharpe opened a new field of interest, and has continued to labour in it even to this day, not only delineating the purer forms of Gothic with a thorough knowledge of their construction and *rationale*, but arranging the subjects so that comparisons can be instituted, and the peculiarities of each example appreciated. Mr. Sharpe's books alone deserve a paper to describe them, for no one has done more for the development of true architectural illustration. Professor Willis was the first to apply colour to indicate the several periods of English Gothic in the plans of churches, but to Mr. Sharpe we owe its further application to detail; thus by referring to the plates of his works on mouldings one can tell at a glance the periods of the specimens shown. The colours used are adapted from the prismatic spectrum; thus showing the gradual progress of art, and indicating its rise and fall. In 1847 Messrs. David & Raphael Brandon published their "Analysis," followed by "Parish Churches" and "Gothic Roofs," a most valuable series of books. These works are too well known to need description; and the same may be said of Mr. James K. Colling's beautiful books, commencing with "Details of Gothic Architecture," dated 1851. Billings's "Baronial Antiquities of Scotland," published in 1855, deserves notice. The volumes are illustrated with steel engravings by Le Keux. We now have reached the time when Continental Gothic began to attract attenton. One of the earliest collection of drawings of this style is that found in King's "Study Book," in four thick volumes, bearing the date 1857, a former edition being published at Bruges. The plates are of special interest, as being chiefly the work of Mr. Norman Shaw, drawn on zinc plates in outline. All the subjects are shown to the same scale, which has the fault of being too small, necessitated, no doubt, by the size of the larger subjects. Back-lining is employed, and the carving is not particularly well drawn. "Wick's "Towers and Spires" is a big book, published in 1858, consisting of beautiful views in chalk lithography. Mr. Norman Shaw's "Sketches on the Continent" were completed in the same year, Mr. Nesfield's "Specimens" following four years later. Both books are illustrated by chalk, the palm being generally awarded to the lithographs in Mr. Nesfield's book, which were executed by Alfred Newman. The influence of these "twin sketch-books," as they have been called, was no doubt very considerable in the impetus they gave to the then increasing taste for French Gothic, and the more muscular forms of construction. This good work (for in one sense it was good, however much we may regret the continued neglect of the English styles) was taken up by Mr. E. J. Johnson, who published his book of "Early French Architecture" in 1864. Here, to my mind, we have the type

f what an architectural sketch-book should be. 'he plates, all drawn and lithographed by the uthor, are almost exclusively devoted to easured drawings, with a few perspectives, hiefly in outline, not fizzed and fussed up with rriggling lines all over the wall surface, with he detail at most only suggested, like some of he views we see published, said to have been finished on the spot," and interesting, no doubt, s examples of time [sketching, but wonderlly inaccurate, and misleading to a degree. Ir. W. Galsworthy Davie's "Studies in France" orm the last sketch-book which has been pubshed; many details are given full size, and ome of the sheets are in colour. The "Spring Gardens" and the Architectural Association ketch-books are also admirable collections. The lates are chiefly transfer-lithographs, executed y the authors. Among the many works of a iore pictorial character we may mention the agnificent etchings by Mr. Ernest George, the nastatic drawings of Sir Digby Wyatt, and the hoto-lithographed pen-and-ink sketches from taly, by Mr. Street. Of wood-engraved sketches, hose by H. W. Brewer and Samuel Read are both ell known and appreciated. Before concluding his part of my subject, some of the numerous orks on colour decoration illustrated by chromoithography must be named, especially those by)wen Jones, J. B. Waring, and Sir M. Digby Wyatt. Their influence in forming and extending correct knowledge of colour has been of the idest kind. Among works of this class, more ecently published, Racinet's "Polychromatic)rnament" is conspicuous, and so is the 'Keramic Art of Japan," by Messrs. Audsley and Bowes, now in progress. The remainder of the aper was devoted to the description and discusion of the processes now available for the production of architectural illustrations, including vood-engraving, plate-engraving on steel and opper, lithography, zincography, chromo-lithoraphy, photo-lithography, steno-chromy, the utotype, heliotype, Woodbury, anastatic, and niline processes, together with photography tself. While each of these methods of illustraion had certain advantages, in the author's pinion the most suitable, all things considered, vas photo-lithography.

A brief discussion followed.

HEALTHY HOUSES FOR GREAT CITIES.

DR. RICHARDSON, F.R.S., delivered his second lecture * on this subject at the London Institution, Finsbury-circus, on Monday evening last. He said that in his ideal house each floor would be independent of the others, and as each floor was dissociated from those above and below it, and from the basement, by the arrangement of having the staircase in a separate turret, the warming and ventilation would be easily effected. Before dealing with that subject, however, he would refer to the walls and floors of the rooms themselves. A really sanitary wall-covering, which should be at the same time agreeable to the sight, was a desideratum. Paperhangings afforded the most ready means of covering walls, but even when the designs were artistically good (which was rarely the case), paper was an objectionable material. The heavy "flock" varieties retained dust and particles of all kinds of impurities, while many other papers contained poisonous colouring-matters, such as arsenic, which were apt to be dislodged and inhaled by the occupants of the rooms. Then, again, the paste which was used to fix the paper on the walls was exceedingly objectionable, especially for walls in the least degree exposed to damp, as the moisture acted upon the paste, and caused it to moulder and to give off offensive odours. In fact, for walls and ceilings there was no material entirely good except such as could be thoroughly and entirely cleansed from time to time, either by fire or water. A cement was now made which answered these requirements fairly well, but it lacked in adaptation for ornament,—a fault of which no wise sanitarian could afford to be oblivious. What was wanted for wall and ceiling coverings was a material that could be fixed without paste, that would be as convenient as paper, and which, while admitting of artistic treatment on its surface, would bear repeated ablutions. Mrs. Siddons was related to have once startled a linen-draper's assistant by demanding, in her most tragic tones, "Will it wash?" This was the question which he (the lecturer) should like to be the test of fitness for any wall or ceiling covering which the decorator proposed to use in a house which was constructed with regard to the requirements of health. In this connexion, however, he would suggest to the aspiring patentee that he need not aim at exceeding durability in washable wall surfaces, for people would not always be content with seeing the same patterns on their walls, however excellent they might be, and one artist clearly ought to let his brother artists live. In one of his previous lectures he had suggested a combination of ceramic ware and flat sculpture as a wall surface, but if this were carried to excess it would give a mausoleumish character, so to speak, to the rooms, and would have a deadly-lively effect which would be scarcely tolerable. For some parts of the house, as kitchens, cupboards, &c., there was one excellent material for wall-coverings, viz., starred or frosted galvanised iron. This could now be produced very thin and of perfect colour. Its advantage was that it would wash like glass, or it could be cleansed without water, inasmuch as it would bear without injury a brush of flame from a Bunsen burner applied to its surface. Blocked-out an inch or two from the wall, it would give great internal warmth, and would exclude all damp from the wall beyond it. An architect for whose opinion he had great respect, while admitting the advantages of such an impervious wall-surface, deprecated it on the ground that unless special precautions were taken to prevent it, water would condense upon the surface. Dr. Richardson said this was a strong argument in favour of such a mode of construction, for if damp were present in a room it was as well to know it. When he had to sleep in a strange bedroom, he always ascertained whether the *room* was dry, for his experience told him that colds and congestions were more frequently caused by damp bedrooms than by damp beds. How did he ascertain whether a bedroom was dry? He asked the window-panes, the marble washstand, the looking-glass, and the fire-irons. If they were wet or damp, he knew that he was not safe in the room. If, on the other hand, they were dry, he knew he was safe. Many rooms had walls which, although apparently perfectly dry, were in reality saturated with damp. The best methods of preventing damp walls were, firstly, to cover them with cement or artificial stone; and secondly, to have the decorative surfaces blocked out in panels or medallions, leaving apertures behind for the introduction of warm air. In the present day it was quite a common thing for walls to be constructed of materials which would never thoroughly dry, or which, if they ever did dry in any exceptionally warm weather, would readily reabsorb moisture on the first opportunity. In his work on the "Diseases of Modern Life" he had related instances showing the injury done to health by damp houses, a noteworthy case being that of a row of pretty houses, twenty in number, in one of the metropolitan suburbs, in which, within a year or two of their completion and occupation, seven cases of tubercular consumption, and fourteen cases of acute rheumatic fever, had occurred, all being undoubtedly attributable to the dampness of the houses. Before leaving the subject of wall-coverings, the lecturer urged that where paper-hangings or cognate materials were used, the patterns should be not only artistic, but such as would not, when seen otherwise than directly in front of the eye, assume weird and hobgoblin-like, not to say demoniacal, shapes. Many such patterns were in vogue, however, and their effect upon nervous people and children was very serious. Nor was colour less important than form. The two colours which most largely prevailed in Nature, the blue of the sky's expanse, and the green of the fields, were particularly healthy, while as occasional or relieving colours, to be sparingly introduced, nothing could be better than the tints seen in sunsets. As to the flooring of rooms, the margin of every room ought to be constructed, for a space of at least 2 ft. 6 in. from the wall, of some perfectly impervious material, capable of being thoroughly washed and dried. For this portion of the floor, cement and tiles might be used with advantage, the centre of the floor being boarded, and over the boarded portion the carpet might be laid to the margin of the tiles. Better still would be a beeswaxed wood floor, with small and readily removable carpets. The fashion which now prevailed of stretching a carpet to the utmost limits of every nook and cranny of a room, and of allowing it to remain in that position for months at a time, could not be too strongly condemned. No brush or broom could effectually cleanse a carpet so fixed, which became the receptacle of all sorts of organic and inorganic matters, which were raised in a cloud of dust by every footfall. It was true that the ciliary apparatus with which we were provided for the protection of our lungs was calculated to arrest a great many of the floating particles of matter, but after all, the cilia were only intended to bear fair wear and tear, and when they were subjected to the severe test which was imposed upon them by people who inhabited rooms carpeted in the manner he had referred to, they could hardly be expected to do their work well. Besides, even when the cilia did intercept the particles of solid impurity which floated about in such rooms, they were only intercepted from the lungs, and passed into the stomach,—by no means a pleasing reflection, considering the heterogeneous nature of the dirt likely to be found on the surfaces of such carpets. As to warming and ventilation, the lecturer said that the vestibule which he proposed to form on the ground-floor of his model house was an arrangement which would lend itself with peculiar facility to the warming and ventilation of the building, which was rendered additionally easy owing to the isolation of the staircase. The most suitable degree of temperature for indoor life was 62° Fahr., and people ought to regard a thermometer as essential as a time-piece in a room, so that they might be able to maintain an equable temperature throughout the day,—a point of great importance to those whose occupations were sedentary. The temperature should be maintained at the same standard in all parts of the room, but in many rooms the temperature often varied in different parts as much as 20° at one moment. By the warming-stove which he would have placed in the vestibule, as a means of supplying warm fresh air to every room in the house, he would warm and at the same time ventilate the rooms for at least eight months in the year. As supplementary means of warming and ventilating, he should not hesitate, in building a house for himself, to discard all plans which presumed to ventilate by admitting cold air from an outer window or shaft, and he should follow the plan of admitting warm air only by means of the Galton and Calorigen stoves. The former was the best for fixed fireplaces, and the latter for movable stoves and for gas. As to artificial lighting, gas would, no doubt, continue to be preferred, owing to its great convenience as compared with candles and hydro-carbon lamps, and notwithstanding the deleterious gases given off during its combustion,—gases which were so noxious and hurtful to animal life that even the most effective means of ventilation would only partially counteract them. But on no account should gas ever be laid on in bedrooms. He had an idea that a great improvement might be made in candles, so as to increase their illuminating powers; but he believed that the great desideratum in respect to artificial lighting was the practical development and application of the electric light. Science had done her part in this matter, and he believed that nothing more was wanted than capital and enterprise to put us in a fair way of being able to instantly illuminate our dwellings at night with a flood of light as bright as that of the sun. As to water-supply, the lecturer said he would provide a separate cistern, open to the air, for the supply of the closets, while the cistern for water used for drinking and culinary purposes should be covered in (though not so as to prevent the air getting to it) and provided with a filter. Notwithstanding that he would thus provide a separate water-supply for the closets, he would exercise the utmost care in the ventilation of soil-pipes of closets, &c. In conclusion, Dr. Richardson said that the ideal house which he had endeavoured to describe would not be perfect without one more room, to be specially devoted to purposes of sickness or disease. When an epidemic broke out in a house there was usually no room in which the afflicted could be placed with a view to complete isolation from the rest of the inmates. With a singular improvidence, we provided billiard-rooms, smoking-rooms, reading-rooms, and even ball-rooms, but we made no suitable provision for that which was common to all men,—sickness. To his model house, then, he should add such a room, which need not be a useless room at any time. This room he should provide with special appliances for regulating the temperature and light, and would make its walls,

* For abstract of first lecture see p. 33, *ante*.

roof, and floors of such material as would enable them to be purified by fire after use. With such a room at his command, the physician would have an important ally in the treatment of disease. The general principles which he had laid down with reference to a dwelling-house he would, of course, carry out in public buildings, workshops, manufactories, offices, stables, and business premises of all kinds, and he believed the day would come when due attention would be given to the sanitation of all such buildings.

THE RHINE-MEUSE CANAL.

ON the 28th of December, a meeting of some importance took place at Crefeld, the object of the gentlemen assembled being the promotion of a projected canal, which is to connect the Rhine with the Meuse, or Maas, and for which plans had been prepared as early as 1873, by Professor Henket, of the Polytechnicum of Delft. The idea of such a canal is not modern, schemes for constructing a waterway between the two rivers having been brought forward from time to time centuries ago, without, however, any practical solution. Various circumstances combined to defeat the project; sometimes there were obstacles of a practical nature which could not be overcome; at others, political events prevented its execution. Notwitstanding the adverse experiences of the past, it was resolved, in 1873, to take up the old project once more. Professor Henket, who, it should be added, has had ample practice in the construction of canals, was commissioned to prepare plans, and in a short time he drew up a general scheme, which, submitted to other experts, was approved, and detailed plans prepared from them. The latter found such favour in practical circles that the project gained new and influential supporters.

The canal, according to the plan of Professor Henket, is to begin at the Meuse near Venlo, to run then parallel with this river until it reaches the Fort of Ginkel, next turning to the east and north-east to the North Canal, the direction of which it is to follow along Herongen and Niederdorf as far as Krickenbeck, near Herschel. From here it will lead past Müllem, passing north of Kempen, and north and east of Hüls, as far as Crefeld, whence it is to run in a north-easterly, then easterly, direction to the Rhine, which it is to enter between Uerdingen and Hohenbudberg. There is already canal communication between Rotterdam, Utrecht, and Gorinchem, and from Gorinchem along the Meuse and the Dieze with Hertogenbusch, which extends, under the name of Zuidwillemsvaart, along Helmond, Weedt to Mastricht, and from here further to Liege and Namur. Antwerp is connected with the Zuidwillemsvaart by a canal into which branch off other canals from Turnhout, Hasselt, and het Kamp van Beverloo; on the other hand, a canal leads from Antwerp to Brussels, and from here to Charleroi, and through the Sambre to Namur. To effect a perfectly practical communication, the Zuidwillemsvaart had to be connected with the Meuse near Venlo. The construction of the short canal from Meyell to Venlo has already been commenced by the Dutch Government.

By way of the Rhine and the projected Emsche and Rhine-Elbe canals, communication would thus be effected with the great centres of commerce on the Rhine, Weser, and Elbe, the Westphalian coalfields, and the North Sea. The Rhine-Meuse Canal is, besides, projected in such a manner as to ensure without difficulty the connexion of the whole district north of Kempen and Hüls by branch canals with it. This connexion will be of the greatest importance when once the coal deposits near Vluyn, Rheurdt, in the valley of Niers, &c., begin to be worked. But the undertaking will be of far greater importance for the coalfields of Westphalia, by enabling them to compete, by cheaper transport, successfully with English coal in Holland, Belgium, and leading to a far more extensive export. The Rhine-Meuse Canal, consequently, will ensure two advantages: in the first place, an important international water communication will be established between Holland and Belgium on the one hand, and the Rhine and other German rivers on the other; secondly, a local intercourse by water will be opened up which will promote the further development of the district between the Rhine and the Meuse, and is at the same time of some importance for the coal deposits on the left bank of the Rhine.

The total cost of the undertaking is estimated by Professor Henket at 445,700*l.*, or if, as is to be expected, the canal is constructed for double navigation, at 600,000*l.*; the yearly expenses for maintenance he reckons at 7,100*l.*

On January 24, 1876, a committee was definitely formed for the purpose of taking the preliminary steps. The plans of Professor Henket were submitted to the Prussian Government in June of the same year, and finally sanctioned.

THE FIRE OF LONDON.

ON Monday evening, Mr. Cornelius Walford, Fellow of the Institute of Actuaries, read a paper on the "Great Fire of London," before the London and Middlesex Archæological Society, in St. Martin's-place, Trafalgar-square. Without insisting on the reported but unverified prophecies of "Mother Shipton," or on the vague threats of the burning of the city which are to be found in the "Butcher's Blessing," published in 1642, he brought forward an advertisement from Lilly, in the "Perfect Diurnal" of 1655, in which he recants a prophecy which he had formerly made, and which, if he had only stuck to it, would have established his reputation as a prophet. It was observed by a writer in the *Pall Mall Gazette* that the same combination of the planets was in the ascendant when the fire of London in 1666 broke out and when the Alexandra Palace was burnt down. He quoted an extraordinary opinion of Malcolm, to the effect that "London was set on fire by the Government in order to annihilate the Plague." Without accepting this solution, it was quite certain that one effect of the fire was to annihilate the plague,—a feature alluded to by Dryden when he wrote of "the chemic flames." Mr. Walford then passed on to an estimate of the loss in money actually caused by the fire, and the legislative measures adopted by the Government and the civic authorities in consequence of it, and quoted largely from the Act of Parliament of 1667 for rebuilding the City, one part of which enjoined that a wide embankment should be made along the Middlesex shore of the Thames from the Tower to the Temple Stairs,—a very small portion of which injunction has been carried out, though two centuries have passed by. One of the orders of the civic authorities was to the effect that every quarter of the City should, by the ensuing Christmas, be provided with buckets, ladders, and "hand-squirts" for the immediate extinction of fires; and some of these "hand-squirts" were still in existence. He next entered into the direct and indirect results of the fire, which he contended gave a beneficial impetus to trade; for that if the fire had not occurred, London could never have become the commercial capital of Europe. The Great Fire, too, gave birth in England to the system of fire insurance,—in itself no mean or unimportant benefit. He then drew attention to the plan, so easily adopted by skilled engineers, of blowing up houses in order to stay the fire; to the curious trade advertisements which appeared in the papers after the fire as to the removal of the country carriers' offices; and to the absurd and malevolent inscriptions placed on the Monument and on the house in Pudding-lane where the fire commenced, imputing the origin of the fire to the Roman Catholics.

ENGINEERS AND ARCHITECTS.

THE Institute of France have offered a gold medal worth 120*l.* for the best essay showing the differences, theoretical and practical, which divide the engineer from the architect. It must show the advantages and inconveniences of the division between the two professions, and deduce from that what ought to be done in the interest of art,—whether a clearly-marked division or a complete fusion of the two. The essays are to be sent in by the 31st of December, 1877.

LIPSCOMBE'S GLAZED ARCHITECTURAL STONE.

MR. LIPSCOMBE, whose name is well known in connexion with filters, has patented a material under the above title which is extremely hard, and is cleaned more or less by every shower of rain. The designs of some of the specimens exhibited in Queen Victoria-street are not so good as they might be, but that really says nothing against the material, because any design can be executed in it, and therefore those who employ it may give it what shape they please. Its cost is much less than that of carved stone.

THE SOUTH-WESTERN RAILWAY EXTENSION WORKS AT NINE ELMS AND WATERLOO.

THE London and South-Western Railway Company are at present engaged in making extensions of considerable magnitude in the neighbourhood of Nine Elms and Battersea, as well as at Waterloo. The still further enlargement of their Nine Elms goods depôt, which has already been several times extended within the last few years, having been found to be quite indispensable for the purposes of the traffic, the main line, as well as the Windsor route, are being diverted to the extent of more than half a mile in length, between the Queen's private station and Battersea. The diversion of the two lines will admit of the goods depôt being extended to the extent of seven acres, the portions of the main and Windsor lines hitherto used for the general traffic, and which are carried alongside the goods depôt area, being about to be altogether removed. The works are now actively in progress, several hundred artisans and labourers being employed upon them. The diverted line, from the Wandsworth-road, is for some distance carried over an embankment, and thence continued on a brick and iron viaduct, with skew openings, thirteen in number, and 14 ft. wide, so that lines of rails may be laid between the piers if necessary. From the viaduct the line will be carried on thirty brick arches, of 20 ft. span, divided into groups of ten by three large resisting abutments, and then along an embankment with retaining walls to New-road bridge, Battersea, where the diversion again joins the old main and Windsor lines. A recess is provided over every other pier, and also along the retaining walls, so as to give ample protection to the workmen employed upon the permanent way, whilst the arches will be used as carriage-repairing shops, stables, and for other purposes. The works are expected to be completed, and the diverted line opened for traffic, in the course of the ensuing summer, when the removal of the old lines and the laying out of the additions to the goods depôt will be proceeded with. It may be added that in connexion with the diverted line the Company intend to erect a new passenger-station at Queen's-road, Battersea, for the accommodation of the large and increasing population springing up in that locality. The contractor for these works is Mr. G. Shaw, of Earl-street, Westminster, and the estimated cost, including the intended station at Queen's-road, is about 70,000*l.* In addition to the above-named works now in progress, the Company contemplate a still further extension of the station at Nine Elms, and for this purpose they are applying to Parliament for powers to purchase a large area of land and buildings on the west side of Wandsworth-road, and also in Nine Elms-lane.

The works at Waterloo for the enlargement of that station, which have been going forward during the last two years, are also on a scale of great magnitude, involving the purchase, from time to time, of extensive blocks of property. A considerable portion of this enlargement has already been completed, but other works of a costly character yet remain to be carried out before the intended enlargement is finally finished, and these are now in progress. The station has already been extended on the north-west side, in the direction of York-road, and the enlargement now going forward is on the south-east side, which, in addition to giving increased station accommodation, will also open out improved and much more direct approaches from Westminster Bridge-road and the locality immediately surrounding. In order to carry this out, Aubin-street, on the south-east side of the station, has been diverted, and a new street formed running in the direction of Westminster Bridge-road, the present viaduct being widened with the view of giving increased facilities for vehicular traffic to and from that thoroughfare. The works likewise include new booking-offices and platforms for the use of the suburban traffic, which will admit of a material widening of two of the main-line platforms. All the above-named works are being carried out under the superintendence of Mr. Jacomb, the company's engineer.

SURVEYORSHIP ITEMS.

Derbyshire.—Mr. Bridgart has resigned his appointment as county surveyor of Derbyshire.

Carlisle.—Mr. Edward T. Morley, for ten years city surveyor of Carlisle, died very suddenly a few days ago.

TIMBER NOMENCLATURE.

THE *Timber Trades' Journal* gives some further notes on this subject. The writer says:—Thorn, although generally associated with our cultivated hedges, had in its Anglo-Saxon form a more extended meaning. It implied a tree, though not of the first order. In this sense it is used in the "buckthorn" and the "blackthorn." From the study of place-names in mid-England we are led to infer that thorn implied a wood; a portion of Sherwood Forest was known as "Thorneywood Chase," and part of Hatfield Chase—an extensive wood—was known as "Thorne Waste." Indeed, "Thornhills" and "Woodhills" occur in such order that we are led to the conclusion that they are synonymous terms.

Timber is from the Anglo-Saxon "timber" and "tymber." 1. Wood; 2. A tree; 3. A frame structure or a building. From the fact of building being constructed in wood, timbering (*getimbrian*) was the equivalent of building. At the burning of the first wooden church or cathedral at York, in 626, a larger church was ordered to be *getimbrian* of stone. It does not appear to have been a term much used in a territorial sense. Henry II. confirmed the grant of the church of Tymberland to Thurgarton Priory, Notts, which may or may not be the village of that name in Lincolnshire. From this we may infer that the term applied more to the wood in a dead state than to that of the living tree; in which sense it has undergone little or no change.

Tree, from the Anglo-Saxon "treow." 1. A tree; 2. Wood; 3. A piece of wood. In the latter sense it is used in shipbuilding and carpentry, as "cross-tree," "roof-tree," "side-tree," &c. "Treow-wyhta," the tree or wood worker, was the old term for carpenter before we borrowed the French one of "*charpentier*," and "treow-geweorc,"—"tree work," was the primitive of the now general "woodwork."

Wainscot is a word of doubtful etymology. Bayley says it is from the Belgian "wandschote," wall defence or lining. Ogilvie says it is from the Dutch "wagenschot," which evidently means wagon lining or covering; whereas Loudon says it is from the Dutch "ward," a wall, and 'schoten," to suspend. These derivations are evidently sought for, the various authorities having in view the fact of wainscot being largely used in the Tudor and Stuart ages for wall framing or panelling, which appears, probably from being made of oak, to have taken up the name of wainscoting. As wainscots were articles of import centuries before this time, it is highly probable that these authors were in error. In the *Liber Albus* of the City of London in the reign of Henry II. (1215–1266), we find the following note:—"For every hundred of boards called weynecotte one halfpenny to be paid as custom upon landing at Billingsgate;" and "wainscot" formed items of assessment in the cargoes of nearly every ship arriving in Hull, 2 Henry IV. (1400). The writer records these notes to assist in the solution of this knotty term, the accepted derivations of which are in no way satisfactory. It may be further noted that wainscot in the Swedish and German dialects bears the sense or meaning of wall-lining or panelling.

Walnut, a name that occurs with little variation in the German and Swedish dialects, is from the Anglo-Saxon "wealh-knut," the foreign nut. "Wealh" was a term our rude forefathers applied to anything foreign, hence "wealh-men," Welshmen, the Celtic race formerly inhabiting this country, but driven by them into the fastnesses of the Welsh mountains.

Wood is a grand old Teutonic term. It is the Anglo-Saxon "wude," German "wald," and the Swedish "ved." It means,—1, a tree; 2, the substance of a tree; 3, a collection of trees. 'Wude-beam" was the primitive term for forest-tree, and "wood-hewer" and "wood feller" of woodman. The mention of this term reminds us of the Scriptural allusion to "the hewers of wood and the drawers of water." In early times the calling of a wood-hewer was of that importance that it stood for a family name with the followers thereof; hence the common surnames of Woodyeare, Goodyear, &c.; by the same rule the progenitors of the wood-fellers are recognised under the *nom de plume* of Goodfellow. In a territorial sense, "wood" has given its name to numerous families, some of which may be recognised under the corrupted forms of "Good" and 'Hood." Robin Hood, the popular myth of the Middle Ages, is supposed to be a name or term drawn from his calling,—"Robber of the Wood," as robbers were called "Robin-men." "Robin" is given in the "Dictionary of Phrase and Fable" as highwayman. Perhaps one of the most remarkable uses of the term "wood," was in application to timber dealers or merchants, whom we anciently called "Wood-mongers," the equivalent of the Swedish "ved-hanlare." The writer has documentary evidence of the use of this serio-comic term in London as early as 1350, and in Hull as late 1650.

Wright, the short or abbreviated form of "wroughter," a workman, may, in conclusion, be noticed. It is curious that it has affixed itself to those trades associated with wood; thus evidencing the former importance of these crafts or callings.

BUILDING OF LIGHTHOUSES OFF THE ENGLISH COAST.

IMPORTANT DISPUTE.

A BONE of contention has been found in the Bristol Channel, consequent of a £. *s. d.* contract or estimate that bids fair to eventually bring about some change in the mode of deciding on the erection of lighthouses.

Trinity House, on Tower-hill, it may at the outset be necessary to state, was, or is, "a kind of college in Deptford, belonging to a company or corporation of seamen, who, by a king's charter, have power to take cognizance of those persons who destroy sea marks, and to take care of other things belonging to navigation"; one of the chief of "other things" being in these days the important one of building and feeding lighthouses, and levying tolls on shipping.

It is a close and rich corporation, possessing arbitrary powers that the Lord Chief Justice of England cannot order; the Admiralty Courts of Law do not appear to have any authority over, and the Legislature allow to act as the "Brethren" list. The Lords of the Admiralty are as powerless as the Lords of the Treasury in the government of Trinity House, and tolls are levied on shipping entering English ports for lighthouse dues, that cause serious complaints from foreigners as well as British shipowners, and from which there is no appeal. As at present constituted the chief men in this close corporation are the master, Capt. H.R.H. the Duke of Edinburgh, a deputy-master, two secretaries, one accountant, several Brethren and professional assistants. That handsome salaries are attached to each official, ornamental or useful, is known to be the case, but we are not aware that no balance-sheets are published. The funds at the disposal of Trinity House are, however, believed to be so considerable that lighthouses could be built and kept up at every vantage point on our sea-board, and for the want of which wrecks occur that might be avoided.

The question has now arisen as to the right of the Trinity House to build lighthouses off the English coast, and the fitness of the Trinity Brethren to define absolutely the sites for such useful beacons. The maritime public of the Bristol Channel, especially of the ports of North Devon and Bristol, Cardiff, Gloucester, Newport, Swansea, &c., have boldly challenged the authority of the Tower Hill Corporation to erect a lighthouse in the dangerous channel, where, in the opinion of the sea-coast men, it would be unsuitable, if not dangerous.

The Chambers of Commerce and ship-owners are demanding to know "what are the proper limits of the authority of the Elder Brethren,—whether it belongs to them to decide arbitrarily on sites for lighthouses, or whether their duty is to avail themselves of the best assistance which can be afforded by the localities chiefly concerned, and by the interest upon which the burden of the first cost and maintenance will fall, and to give effect to their judgment."

It appears that mariners having demanded another lighthouse in the Bristol Channel, the Elder Brethren of Trinity House peremptorily decided upon a site called "Bull Point." Another light to a very dangerous part of the coast was hailed with great satisfaction by the Devonians and seamen, but the site of Bull Point was seriously objected to, for the record of wrecks had made no black mark on this Point, while against Morte Point, and especially Morte Stone, the wreckage recorded was fearful.

After much correspondence between the chambers of commerce of the ports interested, the question has resolved itself into one of £. *s. d.* The site of Bull Point being the cheapest to build on, say estimate 10,000*l.*; Morte Point 20 per cent. more; and Morte Stone, very much higher, the inferior position of Bull Point is selected. The Elder Brethren back their selection of the site with a few nautical reasons, that the practical mariners and coastmen declare to be valueless, and the latter are unanimous in favour of the most expensive site.

Trinity House speak of the dispute as chiefly of interest to local convenience, forgetting that the Bristol Channel is navigated by the ships of all countries, and which require dangerous places to be indicated by lights, more than shipping familiar with the coast.

Should the Trinity Corporation persist in building on Bull Point, the matter is to be brought before Parliament, and the issue may be a Land Board to determine on the sites of lighthouses off the coast, composed of architects and engineers in lieu of decayed mariners and ornamental Brethren. Such is the opinion of the maritime public off the Bristol Channel, an idea the ports of London and Tyne have some time considered to be both feasible and advisable.

ST. THOMAS'S CHURCH, NEW HEY, NEAR ROCHDALE.

ST. THOMAS'S CHURCH has been erected at the sole cost of Messrs. William & James Heap, flannel manufacturers, of New Hey, in memory of their late esteemed father, Thomas Heap, in accordance with designs prepared by Mr. H. Lloyd, of Bristol, architect. It was commenced in August, 1875. The plan of the church is cruciform, and it has a tower and spire. The style is the Decorated. The height of the tower and spire is 148 ft.; length of the nave, 82 ft.; width, 24 ft.; the height to the ridge of the roof is 55 ft.; width of the transept, 22 ft., and length, 24 ft. The chancel is 28 ft. by 22 ft. wide; and the organ-chamber is 19 ft. by 12 ft., to which is added the vestry and an ante-room. The chancel and organ-chamber are paved with encaustic tiles, the other parts with plain reds. The church is lighted by coronæ from the caps of the columns. The font has been carved by Mr. Sheppard, of Bristol, and the pulpit by Mr. F. Bell, of Bristol. The heating (hot water) is by Mr. Wagstaff, of Ashton-under-Lyne. There is also a peal of eight bells being now cast by Messrs. Llewellin & James, of Bristol, which will be placed in the tower. The whole of the seating has been executed in pitch-pine. The stone used throughout is Yorkshire parpoints, with Box-ground dressings.

The general contractors are Messrs. Stephens & Bastow, of Bristol. Mr. W. Young is clerk of the works.

CHURCH DECORATION.

ALL SAINTS' CHURCH, BLACKHEATH.

THE internal walls of the chancel of this church, built about 1856, have been recently decorated, the principal portion of the work at present being at the east end. The five-light traceried window has had its mullions and jambs moulded, instead of the plain internal splay; and Devonshire marble shafts and carved caps, carrying appropriate mouldings and label, have been added.

A design of Caen stone, consisting at present of five panels (eventually to be enlarged to seven panels), extends under the window, being flanked by the shafts just mentioned, which serve to connect the window with the architectural features under it, as they run down to the floor-line. The idea (suggested by the Vicar) has been to do away with the ordinary reredos or screen, and to make the whole east wall a reredos, so to speak, over the table; in the central panel is a vesica moulded, containing a floriated cross of oak covered with copper gilt-plates, modified from an old example, with a background of dark marble. The panels on each side (divided by piers with delicate balls of spar in their hollow mouldings) contain subjects in sculpture. The dado is of hand-painted enamelled tiles specially made, and this is carried round the side walls of the sanctuary, though not quite so rich. The whole of the east wall above and at the sides of the window is lined with cream-coloured tiles as a ground, sometimes diapered, and with a rich frieze of flowing pattern at the springing line of arch; this same frieze is also carried round the side of the chancel under the cornice. The text, "Holy, Holy, Holy, Lord God of Sabaoth," is inscribed (likewise in tiles) round the window label with borders. The work just mentioned is only a part of a design prepared for the decoration of the whole chancel, which will probably shortly be carried out.

The sculpture and ornamental stonework have been executed by Mr. Thomas Earp; the art-tiles by Messrs. W. B. Simpson & Sons; the cross is by Messrs. Barkenton & Krall, of Regent-street. Mr. Ferrey, F.S.A., the original architect of the church, has supplied the designs and superintended the work.

GRANITE BUILDINGS.

SIR,—I have read in your issue of the 16th ult. "An Architect's" advocacy of the use of granite in buildings, wherein he does me the favour to name my recommendation of the frequent washing or cleansing of polished granites. He further states that anyone can decide the question for himself as to whether the normal rainfall does or does not keep stone and granite clean, by taking a ten minutes' walk round and about the Royal Exchange. I agree with him that a ten minutes' walk is sufficiently extensive to decide the question as to the absolute necessity of the washing and cleansing process which I recommend.

Permit me, for the guidance of those who may be inclined to take the said walk, to mention some buildings where polished granite has been used, and which would look all the better if cleansed by the water-brush or sponge referred to.

See the polished base and pedestal of Peabody's statue, close to the Royal Exchange; the Cairngall granite in the North British Insurance Office, Threadneedle-street, the rich colour of which would have been much better preserved had it occasionally been cleansed.

Speaking of the North British Office, the bases, consoles, plinth, &c., are executed in Darley Dale, a fine-grained sandstone, which, as to cleanliness, favourably contrasts with the granite bases and plinths of the Royal Exchange and those of the Sun Fire Office, corner of Bartholomew-lane, and Aliance Fire Office in the same lane.

The red polished granite columns of Palmerston Buildings, in Bishopsgate and old Broad-street, are so begrimed by soot that one can scarcely say whether they are polished or otherwise. Not so the red Peterhead granite at the "Scottish Widows" Offices, Cornhill, which stands out prominent and beautiful.

The fine delicate Kemnay grey granite in the polished doorway and columns of 109, Leadenhall-street, is so disfigured by soot accumulation that the class of granite is scarcely traceable. The same remark applies to the polished grey granite in the entrance to the Langbourne Chambers, Fenchurch-street, and the building adjoining; also to the Kemnay grey granite used in 31, 32, and 38, Lombard-street improvements; to the blue-polished granite in the Anglo-American Telegraph Company's Offices and M'Lean's Telegraph Office in Throgmorton-street.

Many other instances might be named, but I think the above will more than suffice to settle the question.

If a pedestrian, after examining the above granites, will pay a visit either to Abney Park, Highgate, or Kensal-green Cemetery, where the monuments are well taken care of, he will find granites of all colours and classes beautifully clean, and the colours well defined, viz.:—

Greys.—Kemnay Aberdeen, Dalbeattie, Cheesewring, Carnsew, and others.

Blues.—Cairngall, Dyce, Rubislaw.

Reds.—Peterhead, Trowlsworthy, Kinsteary, Clinterty, &c.

No doubt he will say, what a pity the granites in the City are not like these. It is a well-known fact that soot and dirt do speedily eat out the colour of granites or other stones. I therefore remark that if "An Architect's" recommendation of using coloured polished granites for the façades of buildings in London be extensively adopted, the colours will be utterly spoiled by soot absorption, unless periodically cleansed.

I trust "An Architect," in recommending granite as a building material for the City of London, does not depend upon it structurally, as in case of fire it is one of the worst building materials possible; moreover, he will find that notwithstanding all the new and improved appliances, cost is no insignificant item; and also that unless granite is polished (which brings out its beautiful colour) it is not the best and cleanest stone to use in London, as the pedestrian above-named will readily satisfy himself if he looks at the axed granite in the buildings already mentioned, and more particularly at the axed granites in the following buildings, viz.:—the old General Post-office, the base and pedestal of Peel's monument, the Atlas Fire Office, the red granite in offices, 31, Throgmorton-street, the Drapers' Hall, the plinth and sub-base of the Royal Insurance Company's offices, Lombard-street, which latter, although built with red Clinterty granite, I am satisfied neither our pedestrian nor other expert can now tell what granite it is.

The doorway to the Royal Insurance Offices, Lombard-street, is red polished Peterhead granite, with the incised work which "An Architect" so highly approves; but if he will pardon me, I beg to say that this incised work can be done far cheaper by the manual labour of skilled workmen than by the sand-blast he refers to. I may add, in conclusion, my clients would be glad periodically to clean their moulded and carved stonework, if "An Architect" or his clients will give them an order to do so; and when stonework is fairly cleaned down, either on first being fixed, or years afterwards (as may be seen in the case of the Fishmongers' Hall, London Bridge, and the Church of St. Peter-le-Poer, in Old Broad-street, lately cleaned down). "A Pedestrian," I think, will say it favourably contrasts with other methods of cleaning, whether of washing granite, or by using the painter's brush on the various kinds of artificial stone in use, the latter requiring to be done again and again, year by year.

I have frequently said that façades in Portland cement, mastic, ornamental wood, and iron-work, although scraped and painted periodically, do not long look better than other façades executed in polished granites, Portland, and fine sandstones, which are generally left to be cleaned by the occasional showers of rain. I could recommend a cleaner and cheaper building stone than granite, but I forbear, and wait the report of "A Pedestrian."

SAMUEL TRICKETT.

FALL OF HOUSES.

Rotherham.—Early on the 4th inst. a two-storied building, 33 ft. by 21 ft., behind the Co-operative Stores, Effingham-street, and belonging to Mr. Woodhouse, joiner, fell with a crash, and scarcely any portion of the building remained standing. The ground-floor was used as a ginger-beer manufactory, and the upper story was used as a joiner's shop. Fortunately no one was injured. About ten o'clock the same morning a similar accident occurred in Tasmore-street, in the same locality. In the street two houses are being erected by Messrs. Hardstaff & Temple, and the walls had been carried up to the chamber floor. A scaffold had been fixed to the inner walls, and whilst Walter White, a joiner, was walking on it, to borrow a level from one of the other workmen, the walls fell in, and he was buried in the ruins. Mr. Hardstaff at once went to the rescue, and had taken off him a number of bricks, when a second fall took place, and White was again buried. In a short time, however, he was got out and taken to the Infirmary.

Salford.—On the 11th inst. a fatal accident occurred in Liverpool-street, Oldfield-road, Salford, by the falling-in of a house and shop in course of erection and nearly completed. Three workmen were employed in the building at the time, and two of them escaped injury, but the third, a bricklayer's labourer, named William Rooney, was buried beneath the *débris*, and when extricated was found to be dead. The building was one of four small shops which were being completed for Mr. James Greenhalgh, of West Egerton-street, the contractor for the brickwork being Mr. John Mills, of Lower Broughton. The doorway of the shop, which, for the size of the premises, was a large one, was at the angle of the premises, and consequently, the upper stories at the corner had no support directly from the ground, but simply by projecting joists, or beams, from the main body of the building. Within a few yards of the doorway, in West Charles-street, was an opening in the side-wall, through which to convey goods into the cellar. This opening, and the overhanging corner, detracted somewhat from the strength of the gable; but another, and what is thought to be a more important cause of the downfall, was to be found in the cellar itself. Here there was a trap, just beneath the shop doorway; and the water is said to have been allowed to run into a hole, the width of which was about 5 ft. by 4 ft., and which had been excavated out of the cellar-floor. In this pit lime was slacked, after which it was heaped upon the opposite side of the cellar. It is presumed, by some, that the water got into the foundations, and so undermined them. The inquest on the body of the deceased has been postponed in order that Mr. Littlewood, architect, Manchester, might make an inspection of the building, and report to the jury at the adjourned inquiry.

BRADFORD WATERWORKS ENGINEER'S SALARY.

AT a meeting of the Bradford Town Council, on the 9th inst., Alderman Brayshaw moved,—"That in accordance with the recommendation of the Waterworks Committee, the salary of Mr. A. R. Binnie, waterworks engineer, be advanced to 1,000*l.* per annum, from the 1st inst." This having been seconded, Alderman West moved an amendment to the effect that an arrangement be made with Mr. Binnie by which the latter bound himself to serve the Corporation for six years, from the 1st of January inst., and that his salary till the end of 1879 be 800*l.* a year, from that time to the end of 1881, 1,000*l.* a year, and from that time to the end of 1883 1,200*l.* a year; and that the Corporation be at liberty to put an end to the service by a month's notice or the payment of a month's salary, and should not be required to give any reason. This was seconded, and on being put was carried by 39 votes to 4, and became the substantive motion, to which a further amendment was moved, that the salary be fixed at 800*l.* This was lost, and Alderman West's motion was carried almost unanimously. The *Bradford Observer* states that the Corporation have determined to carry out vast works extending over the next five or six years at the very least, and involving the expenditure of perhaps half a million of money. Mr. Binnie's salary up to the present time has been 400*l.* per annum, and great opposition was raised by a section of the ratepayers to so large an augmentation of salary; but the *Observer* remarks "that time will show that their true interests have been better served than they would have been by the giving way of the Council to popular feeling in spite of its better judgment."

A SUB-CONTRACTOR'S CLAIM.

RICHMOND *v.* MERRITT AND ASHBY.

THIS was an action (heard in the Brompton County Court, on the 9th inst., before Mr. Serjt. Wheeler, judge), entered by a sub-contractor, to recover the sum of 10*l.* 16*s.*, for plumbing work done at the Notting-dale Police-station. The sum of 26*l.* had been paid on account of the said work.

The plaintiff said he had done the work he had agreed to do, and he was then required by the foreman to do it over again, as it was condemned by him chiefly on account of the lead being light.

The claim was disputed by defendant on the ground of the charge being excessive, and according to plaintiff various sums of money had been offered to him in settlement of the claim. The first work occupied forty hours, the time of the workmen being charged 6½*d.* per hour, and his own at 10*d.* This did not include the extra work done. The difference between the parties after the payment of money into court was not now as above stated, as the money had been paid into court since this action had been brought.

At the suggestion of the judge, the parties here left the court to compare the specifications, and endeavour to settle the case, but they were unable to do so, and the case was resumed.

After further evidence as to the overcharges on the part of plaintiff, the judge pointed out to plaintiff that he had charged twice over for work that had been included in the original estimate for 26*l.*, which amount had been paid. He should give a verdict for the defendants.

DISPUTE WITH WATERWORKS CONTRACTORS.

Tadman v. *Normanton Local Board.*—Mr. Tadman, of Wakefield, the contractor for the construction of a reservoir for the town of Normanton, in consequence of a dispute, commenced an action against the Local Board for the recovery of over 1,000*l.*, which he alleges is due to him for works executed. An order having been made at Judges' Chambers that the question in dispute shall be referred to arbitration, Mr. E. Pritchard, C.E., of Warwick, has been selected by both sides to act as arbitrator between the parties.

A Fountain for Liverpool.—The ex-mayor of Liverpool, Colonel Steble, has offered to present to the town a fountain of the value of 1,000*l.*, to be placed on the open plat opposite the new Art Gallery and the Picton Reading-room.

AN ARCHITECT'S DISPUTED CLAIM.

At the Bloomsbury County Court on the 2th inst., the case of Strange *v.* Hugathorn as heard, before Mr. Russell, judge, in which le plaintiff, described as an architect and rveyor, of Gloucest r-road, Regent's Park, ied the defendant, described as a cattle sales- an, to recover the sum of 26*l.*, being the balance an account stated.

Mr. Charles Williams, solicitor, appeared for the plaintiff, d Mr. Foote for the defendant.

Mr. Williams, in opening the case, said that in the nth of July last his client was introduced to the de- ndant by the clerk of the works to the Metropolitan attle Market, with a view to building a cattle repository the Roman-road, the original approximate cost of hich was to have been about 1,000*l.*; after several modi- ations, however, the specification amounted to 750*l.* he plaintiff had spent considerable time and trouble in eing the ground landlord and obtaining his consent, as ell as the approval of the vestry and the Metropolitan oard of Works, each of which the plaintiff had secured by e direction of the defendant, who had paid the plaintiff *l.* on account of his claim, and now denied further ability, as the works had not been carried out, and hence e present action to recover the balance now sued for.

The plaintiff being called corroborated Mr. Williams's ening, adding that when Mr. Johnston, the builder's, nder was obtained, the defendant changed his mind, d the work was not proceeded with, although he (the laintiff) had superintended, by the defendant's order, the urchase of timber and building materials for the pur- se, which were deposited on the spot by permission of e ground landlord.

In cross-examination, the plaintiff said he did not know e reason why the defendant refused to sign the contract. was not because his charges were unreasonable. The fendant's solicitor had asked him to refer the matter to e arbitration of two competent surveyors; but he had clined doing so, and preferred to bring his action in this urt. He considered his bill of particulars both moderate d correct.

After a lengthy cross-examination, and re-examination Mr. Williams of the plaintiff, the Judge said it was a y that the plaintiff had not, in the first instance, sub- itted to refer his case to arbitration, as it was one which e law empowered him (the Judge) to refer, which he ould certainly do.

Mr. Williams here mentioned that there were two gen- men, who were surveyors, at present in court, who re watching the case, and who would perhaps consent act in the matter.

Accordingly, Mr. T. H. Maple, on the one side, and r. Brunsden, on the other, retired into the Registrar's vate room. On going through the particulars of the se, they communicated their result to the Judge, who ded in favour of the plaintiff for 13*l.*

Mr. Williams asked that as the action was for 26*l.*, he ght be allowed the higher scale of costs over 20*l.*, to ich the Judge assented.

HOLIDAYS FOR WORKMEN.

EMPLOYERS of working-men in the North of ngland, finding their hands overjoying them- lves on festive occasions, have submitted the llowing paper on the subject:—

t must often occur to any one acquainted with the ways life, and the habits of the average working man in these rts, to ask how he can manage to take such long holi- ys, and apparently to enjoy them, in the not altogether xpensive manner common to him?

t Christmas and at Easter works are "laid off" for ny days, and, in a smaller degree, the same thing pens when there are local shows, festivals, and celebra- ns. The average business man takes his day or two at ristmas or at Easter, and he spares a few hours at other nes for recreation. But he does not altogether throw the harness, and if the works are idle he is not. If he es a fortnight or a month in the year for pleasure, he es it with an object—a set purpose. He does not "idle" ply because other men idle. Were he to do so, there uld be an end of his business. Indeed, he cannot afford

How, then, do the wages or day-paid classes afford se long spells of laziness? Who suffers? Do they e it themselves? Is it the tyranny of the few over the ny? Nothing is more absurd than to see a strong lwart artisan or labourer wasting his time about street rners, or in public-houses, and calling those lost days idays.

The men have issued a rejoinder, "All work d no play makes Jack a dull boy."

THE WORKS OF LOCAL CELEBRITIES.

SIR,—Professor Donaldson's remarks in the *uilder* of Saturday, under this heading, on the lue of local collections of works of art, will read with interest by many of your readers the provinces.

He asks what *Devon* has done for the marked mes in English art, science, and literature nnected with that county? The reply is,— arcely anything.

In or near this town were born Reynolds, rthcote, Haydon, Eastlake, Prout, and other inters of European fame; yet, beyond a solitary st and one or two portraits, a visitor sees thing in our public buildings to remind him the great artistic associations of the locality. would not be so, as your correspondent inti- tes, in the towns of France or Italy. Yet ere there has been so much neglect in the st, the difficulties in the way of forming per- nent local collections, it must be confessed, very great. The works of past celebrities are, with rare exceptions, now unobtainable, and are of almost priceless value.

Complete sets, however, of the finest engravings or autotypes of the works of deceased painters are procurable, so also are representative works of living painters; and these, with such models of sculptors' works as Mrs. Lough has generously given to the municipality of Newcastle, might form the nucleus of an interesting and valuable local gallery. It is intended next year, on the occasion of the visit of the British Association to this town, to hold an exhibition of the works of artists, past and present, of Devon and Cornwall, and it is expected that, through the kindness of owners of pictures, a large and comprehensive collection of almost unique interest will be obtained.

It is possible that this temporary exhibition may lead to the establishment of a permanent gallery in a town which has been not inaptly called "The nursery of English painters."

Plymouth. J. H.

PLAN OF DRAINS.

SIR,—I would suggest, with a view to the partial protection of persons taking the lease of a house, that it should be made compulsory on the landlord to attach to the lease a certified plan, showing the nature and direction of the drains. The tenant would by this means be saved much of the expense and inconvenience experienced at present, when, suspecting something wrong in his drains, he has to rip up half the flooring of his basement to find them, simply because the workmen have no guide by which they can be traced from the outside.

M. G.

ACCIDENTS.

DURING the gale on the night of the 6th inst., the iron pin upon which the vane revolved at the summit of the south-west tower of Lichfield Cathedral was broken, and the vane now reclines over the top of the spire at a dangerous angle. Half a century since the previous vane of the same spire was blown down, falling with immense force close to the sun-dial, and embedding itself to a considerable depth in the ground. The accident at that time necessitated a recapping of the spire.

Dr. Hardwicke, the coroner for Central Middlesex, has received information of a shocking accident which happened to Mr. Alfred George Snewen, timber merchant, of the timber yard, Backhill, Hatton Garden. It appears that the deceased was superintending the removal of a stack of timber, when it fell and buried him. When he was extricated he was seen by Dr. Milburn, of 139, St. John-street, Clerkenwell, who pronounced life to be extinct.

A sad accident happened on Saturday last., the 13th inst., at St. Mary's Church, St. James's-street, Brighton, now in course of demolition prior to re-erection. The roof having been removed, two labourers, named Watts and Murphy, were engaged in pulling down one of the cross-beams which formerly supported it, when the beam suddenly parted in the middle, where it was joined with iron clamps, precipitating both men to the floor of the building. Watts, who was working on the top of the beam, fell a distance of between 50 ft. and 60 ft., smashing his jaw, fracturing several of his ribs, and sustaining other such severe injuries that his life is despaired of. The other man, who was standing in the gallery, fell a less distance, but was also very seriously injured. They were both conveyed to the hospital. This is the second casualty that has happened at the church. A few months since, when a portion of the chancel had been removed preparatory to extending the edifice, the whole of the northern end of the building collapsed, six men narrowly escaping with their lives. The building was so shaken that it was rendered obligatory to demolish it altogether.

On the 3rd inst., about noon, the tower of the parish church of Bozeat, Northamptonshire, suddenly gave way in the manner hereafter described. Mr. R. H. Carpenter, of London, was at once consulted by the Vicar. Mr. Carpenter reports that about 300 ft. cube of stonework had fallen from the east wall, including the external arches of the belfry window, the facing and ornamental cornice above it, besides the whole of the jambs and sill of the spire light to within a few inches of the springing of its tracery, and a considerable portion of the face of the spire and its broaches, leaving exposed the rough rubble-work of the inner wall; the nave roof is also much injured. "The mass of masonry which has fallen was pointed out by Mr. Slater and myself in 1869, when we drew up our report and plans, as being in a particularly dangerous state, and the line of fracture has now followed the lines we then indicated on the plans. Unfortunately, not only the east side, but the whole of the tower, is in a most dangerous state, and has been and still is being crushed between its solid foundations and its heavy spire. The tower is of the Later Norman Period, when the style was changing into Early English, and we find the capitals of the belfry window-shafts carved in this Transitional style. Now, this Norman Period is not famous for its stability of building, and most of our cathedrals and churches have suffered from the collapse and ruin of these Norman towers; some fell within a few years of their erection, others stood till recent times, as at Chichester and Hereford. The cause of failure was alike in all—bad mortar and absence of mortar. Bozeat tower is no exception to this rule; its mortar is nothing but soft dirt, and where it is exposed to wet it becomes liquid mud. The stones of its walls are small rough rubble-work, thrown in anyhow, sometimes with and sometimes without mortar, and with no bond stones of any kind. . . . In my opinion the tower walls are in a very dangerous state, and, being now exposed on the east side, should rain or frost penetrate them, or a heavy western gale comes on, it is more than probable that further portions, if not the whole, would fall, and in such a direction as to destroy the church. I have, therefore, with your approval, communicated with Mr. Foster, of Kempston, a builder, who has done very satisfactory work under the late Mr. Slater and myself, and I have given him such instructions for securing the walls of the belfry stage, and the overhanging portions of the spire, as may, I trust, prevent further falls, and, when this is done, I will at once order him to very carefully take down the spire and the belfry stage, numbering and laying out on the ground the several stones, so that they may be re-erected as now. The work will be commenced forthwith, and I have directed one of our experienced clerks of works to be on the spot and watch all that is done."

MASTERS AND MEN.

Lambeth.—Messrs. Doulton write, on the 12th inst.:—"We have this morning received a letter from the distinguished political economist, M. Michel Chevalier, of Paris, with reference to the strike ordered by the Council of the Operative Bricklayers' Society, at our buildings on the Albert Embankment, because we declined, at their dictation, to discharge two skilled terra-cotta fixers, on the ground that they were not bricklayers. The subject appears to have excited considerable attention, not only in this country, but also on the Continent, and in America, and we have frequent inquiries as to the result. In the letter just received, M. Michel Chevalier says, 'As an economical incident worthy of record, I take the liberty of asking you what has been the result of the contest; have you been forced to submit by the dismissal of the two terra-cotta men, or did the union give in to reason?' Will you, therefore, as a matter of public interest, permit us to state that the two terra-cotta fixers are retained in our employ; that the Council of the Bricklayers' Society continues the picketing (which is a scarcely disguised form of intimidation), and that the strike, now extending over fifteen weeks, is still kept up. We are, however, glad to say that our work is being carried forward by non-society men, notwithstanding the persistent obstruction of the union."

Willenhall.—At the last monthly meeting of the Wednesbury Trades Council, some discussion took place on the hiring system, which prevails in different Black Country trades, the matter being opened with a report from Mr. Harrison, as representing the deputation appointed at the previous meeting to confer with the Willenhall lockmakers on the subject. He said a very full report of the proceedings had been published, and from what took place at the meeting he was satisfied that there was no necessity for the hiring system, and that the masters were more to blame than the men for the continuance of the system. It was unanimously resolved, "That in the opinion of this Council the hiring system as practised at Willenhall and other places, is prejudicial to the interests of trade, an injust to the workmen, very discreditable to the

ployers, and a disgrace to a civilised nation, and that the only effectual means for its suppression is the interposition of the Legislature, whereby such a practice shall be made criminal and punishable with imprisonment."

Durham.—The strike of Durham joiners still continues. One or two irregular meetings have taken place amongst the men, to ascertain if any of the masters had made any offer. At one of these meetings it was stated that Mr. Whaley, builder and contractor, had allowed his men to continue working at the usual rate of wages, and the men had consequently remained at their posts.

Dumbarton.—At a meeting of joiners held at Dumbarton, the following resolution was adopted:—

That whereas the system of piece-work, wherever it has been adopted, has been found to be injurious to the interests of the workmen, this meeting resolves to oppose its extension in Dumbarton; and, in order to carry out the foregoing resolution, the meeting pledges itself to use every endeavour to secure the enrolment of all non-Union workmen in the district as members of recognised Trade Unions.

Bromsgrove.—A meeting of the members of the Bromsgrove Nail-forgers' Protection Association was held on the 8th inst. to take into consideration the present state of the trade and its prospects generally. There were about 300 men present. It had been rumoured that the trade was in a very depressed condition, and that as orders were rapidly falling off, only partial employment would be obtained, and the question was raised whether it would be desirable to expend the funds of the Union. After a long discussion the meeting was of opinion that the trade was not in such a position as had been represented, and out of the whole number in the room only two were at the present time without employment. One thing, however, was certain: that a great many men were at work for less than the list-prices.

One-handed Bricklayers.—The rule of the British Bricklayers' Association, by which the bricklayer is made to do his work with one hand in his pocket, is, perhaps, as efficacious a means of degrading work as has yet been devised; but if we had the ear of the law-givers of the Union we should be inclined to suggest the advantage of a rule requiring that all bricklayers in good standing should have the left hand amputated. This would make it easy to distinguish everywhere at a glance, with very little danger of mistake, between a unionist and a non-unionist. It would cheapen trousers, by making the left-hand pocket unnecessary, and so leave more money for beer and tobacco; and it would be the strongest possible guarantee against forgetfulness of the cardinal rule. It would not interfere with anything the bricklayer might want to do, for one hand is enough to fill a pipe or lift a beer-mug. The loss of convenience in dressing and undressing would be a small matter; for, since this has to be done at home, the bricklayer's wife could be made to do it for him; and for disciplining a wife, one hand is probably almost as good as two; besides which, the cherished privilege of kicking and stamping on her would be left unimpared. Moreover, the sacrifice, or, perhaps, we should say the riddance, of the left hand would have the serious advantage of unfitting its owner for military service, while the resource of turning a hand-organ would remain. —*American Architect.*

New Cattle Market and Abattoirs, Dundee.—On the 26th ult. the new cattle markets and slaughter-houses at Carolina Port, Dundee, were formally opened. The new markets were rendered necessary in consequence of the inadequate accommodation provided by the old Cattle Market, and in order to provide a dead-meat market and better and more convenient slaughter-houses. The new markets cover an area of about six acres, and have cost the Police Commissioners upwards of 40,000*l.*, the site costing 17,000*l.* in addition. Mr. Mackison, the burgh surveyor, prepared the plans. Ample provision has not only been made to meet the requirements of the different branches of the butcher trade, but special accommodation has been provided for horse-dealers, agricultural produce, &c. The markets occupy somewhat sloping ground to the north of the Caledonian Railway, and extend from the Ferry-road on the north to East Dock-street on the south. The upper half of the ground is occupied by the markets, and the lower half by the abattoirs, superintendent's house, and offices. The clerk of works was Mr. Dargie.

BATT'S APPLIANCES FOR SCAFFOLDING.

BATT'S appliances, which are manufactured by Mr. Alexander Moffatt, consist of iron shoes connected by a ring, to receive the horizontal timber in whole-timber scaffoldings. Besides a saving in labour, which is obvious, the patentee claims that additional strength is obtained. For buildings at a distance from the contractors' yards, a great saving in the carriage of poles to and fro is effected, as the irons occupy but small space. Timber of any convenient size,—viz., half an 11 in. plank, or quartering,—may be used for the standards and ordinary deals and battens for ledgers. At Lett's Wharf scaffold, which is 130 ft. high, the standards are formed of three 9 in. by 3 in. deals, breaking joint every 7 ft., thus giving a 9-in. square standard. These standards are 20 ft. apart, and the ledgers are 9 in. by 3 in. deals, 20 ft. long.

CHURCH-BUILDING NEWS.

Helmdon.—The parish church of Helmdon, Northamptonshire, has been re-opened, after restoration. The church is dedicated to St. Mary Magdalene. The architects for the restoration say that the greater part of the edifice is in the Decorated style, but the tower was re-built in the year 1823, and is of the most debased character. It was substantially done, but the belfry windows had no tracery, and no arch was constructed connecting the tower with the nave. The south porch was re-built in 1841, and the north porch in 1860; both of these also in the debased character of the period. The chancel roof was erected in the year 1872, and was very badly constructed. Unfortunately the funds at the disposal of the architects did not permit of the re-construction of the porches or of the chancel roof, but they have introduced simple tracery in the belfry windows, and a well-proportioned, bold arch in the tower at the west end of the nave. The whole of the church has been re-seated, new choir-stalls and prayer-desks provided for the chancel, and a new pulpit in the nave. The roofs have been restored, the old lath and plaster ceiling having been removed, and yellow deal boarding in narrow widths placed on the under side of the old boarding, and fixed diagonally between the rafters. An unsightly gallery has been removed from the west end of the church, and that, with the new arch in the tower, is a great improvement in the internal appearance of the church. A new organ-chamber has been erected on the north side of the chancel in the Decorated style. To the exterior some repairs have been done, in addition to the new work of lengthening the north aisle. The works have been carried out from designs, and under the superintendence of Messrs. E. F. Law & Sons, architects, Northampton, and executed by Mr. Young, builder, of Lincoln. The total cost will be about 1,550*l.*

West Bromwich.—Christ Church, West Bromwich, was re-opened on the 28th ult. by the Bishop of Lichfield. For some years past the edifice had been in a tumble-down condition, notwithstanding the constant outlay of money in small repairs, and about nine months ago the congregation resolved that it should undergo a thorough renovation. The roof has been newly slated, new lead gutters have been introduced, and all faulty places in the walls have been put right. With regard to the inside of the church, the seats have been re-arranged, the old oak pews being lowered and provided with new ends. New floors have likewise been constructed. The most extensive improvement is the alteration at the east end. Formerly there was only a very small chancel; that part of the building has been extended by the addition of one bay of the nave and aisles, leaving the gallery above as hitherto. The church has been decorated in a simple manner, the ceilings being of a turquoise blue, and the ribs of the groining white. The chancel decoration is similar, with the addition of gold stars. The walls are of a warm buff, with an enriched dado where not occupied by oak framings. The total outlay, including a new organ, has been nearly 3,000*l.*, a large proportion of which sum remains to be paid. The entire work of renovation has been carried out, from designs by Mr. Yeoville Thomason, of Birmingham, by Messrs. Holland, builders, Dudley; the decorations being by Messrs. Taylor & Parker, of Birmingham.

Huntingdon.—The parish church of St. Mary's, Huntingdon, has been re-opened, after restoration. Six or seven years ago some 800*l.* or 1,000*l.* were expended on the building, but the works carried out during the past three months have been of a more extensive character. On of the most important works in the present restoration is the roofing to the north and south aisles. The old wood roof of the north aisle partly covered and obscured the clearstory windows; in fact, in removing the old roof it was discovered that a second or subsidiary roof had been placed on the original, and this extended above the sills of the windows and partially obscured the light. These new roofs are of Early English style. They are stained deal flat boarded, with oak truss principals, and leaded. The chancel roof, which is the gift of the Earl of Sandwich, is wholly of oak. The design is pointed, with wagon-headed principals. The four windows in the clearstory on the north side are entirely new. The ancient inscriptions on some of the pillars have been retained, notably that on one of the north columns,—"Cromwell Turpin Bailiffs, 1600." It was found impossible to raise the row of pillars on the south side to the Perpendicular, so they remain as they have been for a considerable period of time. The window in the tower has been restored. The flooring of the church is entirely new, the passages of nave and aisles being of metallic tiles (red and black) manufactured by Messrs. Peake & Co. The high-backed pews have been replaced by new oak open benches. The stone buttresses of the south and north sides of the exterior have been restored. A new stone pulpit has been erected, at the expense of the Earl of Sandwich. This has been supplied by Mr. William Wade, of St. Neots, and the carving was executed by Mr. H. Bates, of Stevenage. The glazing of the windows has been executed by Messrs. Page & Measures, Huntingdon. The general contractor was Mr. G. M. Bates, of Stevenage. The stonework was sub-contracted for by Mr. W. Wade, St. Neots. The architect was Mr. A. W. Blomfield. The contractor's foreman was Mr. H. Edgcombe.

SCHOOL BOARD SCHOOLS.

Langport.—New Board Schools, in North-street, Langport, Somerset, were opened on the 1st inst. The schools are built of local stone with Ham stone dressings, and fitted with stained deal. Mr. Hall, of London, is the architect; and Mr. Davis, of Langport, the builder. The cost amounts to about 2,600*l.*

Newton-Stewart.—The new school erected by the School Board of Penninghame, in place of the one in Princes-street, was opened on the 2nd inst. Besides the school-house there is a dwelling-house for the principal teacher, with garden, &c. The buildings have been erected at a cost of 2,200*l.*, from plans by Mr. R. Park, and will accommodate 135 pupils.

Moseley Village.—New Board Schools at Moseley Village were opened on the 1st inst. Mr. Griffin, architect, Wolverhampton, was instructed by the Board to prepare the plans, and on their approval by the Education Department tenders were advertised for, and the contract let to Messrs. Cockerill, of Wolverhampton, on the 3rd of April, 1876. The schools have been completed at a cost (including land, half an acre, architect's commission, &c.) of about 1,800*l.*, and will accommodate 250 children. This shows the cost to have been 7*l.* 2*s.* 6*d.* per head.

Widnes.—The first of three capacious schools which are to be provided to meet the education requirements of Widnes, was opened on the 8th inst. The school in question is situated on Warrington-road. The architects for the new building were Messrs. F. & G. Holmes.

Obituary.—On the 9th inst., Mr. T. Page, C.E., died at Paris, suddenly, in his 74th year.—On the 10th inst., Mr. J. F. Beattie, a well-known land surveyor at Aberdeen, died suddenly, while engaged in surveying at Ecclesgreig, near Montrose. Mr. Beattie, who was a native of Aberdeen, was in his seventy-fourth year. His more important works were the lay-out of Balmoral Castle and grounds, the construction of the principal turnpikes around Aberdeen, and the surveying and valuing for the Scottish North-Eastern Railway and the Great North of Scotland and Deeside Railways.—On the 11th inst., Mr. Alfred Smee, F.R.S., died at his residence, Finsbury-circus, aged fifty-eight. He was well known as surgeon to the Bank of England, and was a man of very varied scientific attainments.

Books Received.

Notes on the Portable Steam Engine. By
N HEAD, C.E. E. & F.N. Spon, London.
EAD, in these notes on the "Portable
Engine," has given a more detailed and
fic account of the construction of this
class of engine than has hitherto been
ted in trade catalogues; and in the last
e has furnished a description of a new
for burning straw and other vegetable re-
sides wood and coal, and which has already
uccessfully employed in various parts of
rld. This engine enables steam power to
ed in *every district where a crop can be*
which has hitherto been impossible,
to the great distance, in many cases, over
it was necessary to transport wood and
-the only fuel which steam-boilers have,
recently, been constructed to burn. As
nount of heating surface for burning vege-
substances is about the same as that
ary for consuming saw-dust, small chips,
r refuse from the manufacture of wood,
patent engines are eminently adapted for
ntractor's work. The portable steam-engine
e more and more extensively used as its
tages become more widely known.

VARIORUM.

HE Paper-Hanger, Painter, Grainer, and
ator's Assistant, by a Decorator" (Kent
), gives instruction in methods, tables for
hangers, and many "recipes," while it
not omit to speak of "the principles of
ny, contrast, and philosophy of colour."
not addressed to the advanced student of
principles, but to workmen, and by them
e found very useful.——The *Gardener's*
icle, speaking of the Cedar of Lebanon,
—"In England this type of indestructi-
produces only second-rate timber. In
ine documents of particular value were
n cedar boxes by preference, and there was
mon saying in reference to articles of value
hey were worthy to be cased in cedar. Not
vas the wood extremely durable, but it was
id growth, and in Hebrew families it was
common for the parents of a child to plant
lar of Lebanon at his birth, to be cut
for the construction of a bedstead at his
age. In England, where colliers marry at
en, and farm labourers at twenty, and
middle-class at twenty-five, there are no
of strength and toughness which would in
anner overtake the wedding-day, so as to
apted to the purpose above suggested.——
ame *Chronicle* has issued an appropriately
rated sheet almanac.——Sir Joseph Causton
s also have issued a sheet almanack, but
printed in colours.——

Miscellanea.

unicipal Art Galleries and Museums.
nference of representatives of corporations
owns, possessing art galleries and museums,
been held at Birmingham, for the purpose
nsidering measures for bringing before the
nissioners for the Exhibition of 1851 the
s of provincial towns to participate in the
at their disposal, and also urging upon
Government the desirability of granting
from the British Museum and other
nal collections. Representatives were
nt from Liverpool, Manchester, Leeds,
ield, Salford, Bradford, Swansea, New-
-on-Tyne, and other large towns. A reso-
n was carried affirming that arrange-
s should be made for the loan of
ples from the national galleries and
ums for exhibition in museums established
unicipal corporations; and that it was
able to urge upon the Royal Commissioners
he Exhibition of 1851 the propriety of
ing the property under their control, and
ing it in part in aid of building museums
nnexion with municipal corporations, and
oviding for the purchase of objects suitable
xhibition. It was also decided to hold an
rned meeting in London. A resolution
submitted, to the effect that provincial
s are entitled to a direct share in the
nal grants for the promotion of science
rt, and that such grants should be made
l of the provision of buildings, and for the
sition and collection of objects suitable for
ition.

The Portico of St. Martin's-in-the-Fields.—At a meeting of the vestry of St. Martin's-in-the-Fields, on the 11th inst., the Rev. W. G. Humphry, vicar, in the chair, the amended plan of the Metropolitan Board of Works for dealing with the parish church portico in connexion with the proposed new street from Charing-cross to Tottenham-court-road, was brought forward. The Chairman said that he had had an opportunity of submitting the plan to Mr. Butterfield and Sir Gilbert Scott, both parishioners, and they agreed that it was highly objectionable to have, as it showed, a number of columns set upon pedestals of unequal heights. He had given the subject some subsequent consideration, and had come to the conclusion that the plan was as objectionable as the first one which provided for the walling up of the portico. Mr. Lancaster thought that, as part of the National Gallery was about to be taken down, a little more might be taken for the purposes of the proposed improvement. Mr. Churchwarden Scott moved that "this vestry altogether objects to the plan proposed by the Metropolitan Board of Works, and that measures be adopted to oppose the same." Mr. Churchwarden Eames seconded the motion. Mr. Glazier explained the course already pursued by the vestry, and said they had submitted to the Board of Works a plan that had received the approval of Mr. Fergusson. Mr. Hill said, as the Metropolitan Board seemed to have adopted a course of "no surrender," the vestry should take up the same ground. The motion was then put and carried.

English Costumes and Armour.—A lecture on this subject was delivered by Mr. J. Roddis, on the 10th inst., to the members of the Birmingham Guild of Art. The lecturer, commencing with the very earliest period, proceeded to trace the history of the costumes and armour which had at different periods been in vogue in this country. He glanced at the singular manner in which extraordinary changes of fashion have by degrees come about, how costume had altered as the requirements of society demanded, or the peculiar taste of individual leaders directed, and graphically described the peculiarities and the occasional extravagance which were at different times exhibited. In alluding to the period of which the Tennysonian "Idylls" treat, he remarked that one of the most beautiful editions of these works was embellished by designs which clothed the characters portrayed in the garments of the Middle Ages. Dr. Sebastian Evans, in proposing a vote of thanks to the lecturer, took exception to his objections to the illustrations to the Arthurian poems of our Laureate. The period treated of was to a certain extent mythical, and it was not inappropriate to clothe fictitious personages in garments of the times in which the legends with which these names are connected were current.

An Honourable Testimonial.—At a recent meeting of the Council of Foreign Bondholders, the Hon. E. Pleydell Bouverie in the chair, it was moved by Sir John Lubbock, Bart., M.P., and seconded by Sir Francis Lycett, Kt., and unanimously resolved:—

"That this Council highly appreciate the services and exertions of Mr. Francis Bennoch, F.S.A., during the period he discharged the duties of their Chairman in the years 1874-5-6; and wish to mark their sense of the value of those services and exertions to the Corporation of Foreign Bondholders by appropriating 500*l.* as a testimonial to Mr. Bennoch, of which they would request his acceptance."

In communicating this to Mr. Bennoch, Mr. Bouverie inquired in what way it would be most acceptable to Mr. and Mrs. Bennoch that the testimonial should be handed to him. Mr. Bennoch subsequently wrote that inasmuch as his services were to be considered as entirely gratuitous, and after consulting with Mrs. Bennoch, they had decided that about one-half the amount voted should be expended in silver, and the other half devoted to educational or charitable purposes. The plate chosen is a handsome silver tea-tray, fittingly inscribed; an epergne on a plateau of plate-glass and silver; a pair of five-light candelabra; and a rose-water dish and ewer of very interesting design.

New Reading Room, South Kensington Museum.—After several years' experience as to the insufficiency of accommodation for the readers at the Art Library, South Kensington, of whom last year there were upwards of 24,000, there is now about to be built a fitting reading-room for their use. The old entrance to the Museum, with the group of "shanties" adjoining, is being pulled down to give a suitable site for a new library.

The Artisans' Dwellings Act.—A deputation from the City Commissioners of Sewers had an interview with the Home Secretary on Tuesday respecting the mode in which they proposed to carry out the provisions of the Artisans' Dwellings Act in the City. Mr. F. Cox, chairman of the Commissioners, laid before Mr. Cross proposals for bringing under the Act three different areas. The first proposal had reference to Fetter-lane, which would deal with houses accommodating 260 persons at a cost of 32,000*l.* The second referred to St. Luke's district, and would remove houses that accommodated 1,230 persons, at a cost of 90,000*l.* The third scheme would deal with property in the district of Whitechapel, removing houses that accommodated 1,150 persons, the cost of which was estimated at 162,000*l.* These three areas would entail an ultimate cost to the City of 284,000*l.* Mr. Cross expressed his satisfaction at the manner in which the Act was being adopted in London and throughout the country, and said he believed that in a few years there would hardly be a plague-spot remaining. Authorities must move a little faster than they have yet, if that is to be the case.

Goodwill to Employers.—The workmen in the employ of Mr. R. C. Allen, builder, of Ware, being desirous of showing their genuine good feeling, presented him with a handsome clock, with the following inscription upon it:—"Presented to Mr. R. C. Allen, by the workmen in his employ, as a token of their respect and regard. Ware, December 30th, 1876." We are able to say positively that its tendency to strike did not influence them in the selection.——More good feeling between employer and employed was shown on the evening of New Year's Day, when about sixty of the *employés* of Mr. Wellspring, of Dorchester, met to do honour to their master on the occasion of his marriage. The company were entertained at supper in the carpenters' shop on the premises, West Fordington, Mr. Wellspring presiding. On this occasion, also, an inscribed timepiece was the present.

New Bank at Wakefield.—New premises for the Wakefield and Barnsley Union Banking Company are about to be erected on a site now being cleared, at the top of Westgate, Wakefield, adjoining the Bull Hotel. The new building will have a frontage of 72 ft. towards Westgate, and will be 60 ft. in height from the pavement to the top of the parapet. The façade will be in the Italian style, carried out in ashlar from the Warwick Quarries, near Huddersfield. The cost, exclusive of site, will be 11,000*l.*, and the works will be carried out by Messrs. John Ives & Son, Shipley, from plans prepared by Messrs. Lockwood & Mawson, of Bradford, Mr. J. Johnstone being clerk of the works.

Convict Labour in Building.—The *Daily News* says that the unusual spectacle of convicts being employed in the midst of troops, on barrack work, may now be witnessed at the Royal Engineer Barracks, Brompton, where a number of convicts, under care of a strong convict guard of warders, all armed, are engaged in the erection of a commodious mess-room for the non-commissioned officers of the Royal Engineers. The building is being erected from the designs prepared at the School of Military Engineering, and the entire work is being carried out exclusively by convicts, who have just completed the building adjoining intended as the new residence for the commandant of the School of Military Engineering.

The Office of Works.—A large addition to the duties performed by her Majesty's Office of Works is to be effected at the commencement of the next financial year. All the Custom-houses in the kingdom will then be placed in the charge of the Commissioners of Works, the separate "Works" establishment for the Customs being abolished. We believe that all British Consulates will also be looked after by the Office of Works, which cannot fail to be an advantageous arrangement. Of course the increased duties will necessitate the employment of a larger staff, but the result will probably be a saving of expense as well as greatly improved administration.—*Globe.*

Penzance Filter-Bed Works.—At the new waterworks in progress for Penzance, one of the walls of a new filter-bed has failed, and led to much discussion and anxiety. According to the report of a second engineer called in to report, a large sum of money must be spent to set matters right.

The Late Mr. William Young.—We hear with regret of the death of this gentleman. He was a pupil of Mr. Thomas Wright, of Manchester; he erected three churches in Lancashire for a late Earl of Ellesmere, and was architect of town-halls at Chertsey and Ashton-under-Lyne. Mr. Young was one of the earliest members of the Architectural Association, and author of a "Key to the Metropolitan Building Act" for 1855. He was a partner in the firm of Pownall & Young, and afterwards chief assistant to Mr. Street. He died in penury at Bradford last Friday, 12th inst., and has left a widow and five young children entirely destitute.

The Desired Harbour at Dungeness.—A Lloyd's telegram from Lydd, near Dungeness, says the Congo, Swedish barque, from Newcastle, bound to Lisbon, with coals, went ashore at No. 2 Battery. The crew, nine in number, took to the ship's boats, which capsized, and eight were drowned. The vessel will be a total wreck. The cry for a harbour at Dungeness becomes louder and louder. The coast here is described as a fearful graveyard. The perpetual sacrifice of human life there is quite a crying sin. The harbour that was proposed at Dungeness, and which might be cheaply formed (it is now a natural cove), would be an unspeakable benefit to shipping and a magnificent defence.

French Industry.—Mr. Frederick Brittain, of Sheffield, who was deputed by the Associated Chambers of Commerce to report on the wages in France in the iron and hardware trades, the hours of work, cost of levy, &c., has just issued his report. He considers that the wonderful prosperity of the country is to be attributed chiefly to the sobriety, frugality, and untiring energy of the artisans and agricultural labourers, who usually contrive to save something out of their small wages. He attaches great importance to the damaging effect of extreme wages and short hours in this country, as having enabled French competitors to outstrip us.

Oak Pulpit, Christ Church, Woburn-square.—A fine oak pulpit has just been made by Mr. Harry Hems, of Exeter, for Christ Church, Woburn-square, London. It is designed in the Perpendicular style by Mr. Henry Hall. The church being a large one, and of peculiar construction, the proportions of the pulpit are greater than those now commonly used in churches. The handrail is carved at its terminations, and is carried by wrought-iron standards, the work of Mr. Fred. M. Rice, of St. Sidwell's, Exeter.

Projected City Improvements. — The vacant piece of ground at the corner of New Bridge-street, Blackfriars, formerly the site of a palace built by Henry VIII. (being part of the Bridewell estate), is shortly to be offered for sale by tender. This is part of some land reclaimed from the river in 1793, and is, by a special Act of Parliament, free from rates. The new thoroughfare projected by the Corporation through their recently-acquired property, on the site of the late gasworks, will, when completed, effect another great change in this locality.

Telegraph Poles and Wires.—Telegraph poles and wires have been so completely condemned that it seems but a question of time when their abolition will be accomplished. They have been condemned as an element of danger to human life, and now the gales and rains have condemned them as not only unsafe, but extravagantly costly; so that on the score of economy we may (according to the *Gardener's Magazine*) expect that all aërial wires will soon be replaced by an underground service, to the advantage of the public in every sense.

A City Improvement.—The Commissioners of Sewers are about to effect an important improvement in Long-lane, which is now becoming one of the principal thoroughfares east and west. The old *City Press* premises at the corner, opposite Aldersgate-street Station, are coming down, and the new building on the site is to be set back considerably. It is understood that other improvements are likely to be effected, the result of which will be a clear line of premises set back from Aldersgate-street Station to the corner opposite the Meat-market.

Alexander Smith & Co.'s Copper "Reflector" Stove.—The name almost explains the construction. The patent consists in this, that around the grate is a facing of bright copper, and certainly the amount of heat gained by the reflection is very considerable.

Wesleyan Chapel, Gloucester, Competition.—Fifty-four architects, submitting sixty-two designs, competed for the above chapel. The inverse mode of selection,—viz., weeding out those that would not do,—brought the number down to ten. These again were reduced to four, out of which number the designs submitted by Mr. Charles Bell, of Union-court, Old Broad-street, was finally selected. The chapel is to cost 5,000*l.* The accepted design is Italian in character.

The Victoria (Philosophical) Institute held a meeting on Monday evening; the Rev. R. Thornton, D.D., in the chair. Several new members were elected, and it was announced that 107 had joined during the past year. A paper on "Christianity considered as a Moral Power" was read by Professor Lias, of St. David's College, Lampeter; many present took part in the discussion which ensued.

Churches for Sheffield.—At a meeting to consider the subject of church extension in Sheffield, it was resolved, on the motion of Lord Wharncliffe:—"That a fund be raised for the provision of additional churches by subscriptions extending over five years, and that the scheme of patronage, and the regulations for the administration of the fund, be prepared and submitted to a future meeting of subscribers."

Lime in the Eyes.—As a remedy for the effect of lime accidentally introduced into the eye, the use of cold sugar-water has been recommended, owing to the formation of a compound of lime and sugar, which is without any action upon the eyes. A drop of sweet oil is another remedy.

TENDERS

For St Andrew's Church, Upper Norwood. Messrs. Edward Power & Wheeler, architects. Quantities by Mr. Thomas M. Deacon:—

	Church.	Lecture Hall.	Gallery.
Bracher & Son	£7,365	£1,943	£419
Smale	6,804	2,004	354
Fish	6,360	2,007	439
Merritt & Ashby	6,537	1,984	318
Brass	6,500	1,973	314
Sewell & Son	6,397	1,950	310
Newman & Mann	6,445	1,756	306
Bowyer & Son	6,243	1,856	293
Dove, Brothers	6,175	1,800	290
Bayes, Brothers, & Allen	5,447	1,555	267
Aitchison & Walker	5,396	1,530	234

For the first section of the Maidstone Borough drainage. Mr Lewis Angell, engineer. Quantities by Mr. D. W. Young:—

Bugbird	£19,470 0 0
Ball & Gammon	14,400 0 0
Cooke & Co.	13,730 0 0
Marshall	13,555 0 0
Dickinson	13,529 0 0
Leslie, Jeyes, & Co.	13,433 19 5
Neave (accepted)	12,363 9 0
Prout (withdrawn)	9,775 0 0

For erecting workshop at Hackney, for Mr. Soderham:—

Jarvis & Sons (accepted).

For erection of schools and teachers' residences, Yeoford, North Devon, for Crediton School Board. Mr. Charles Pinn, architect. Quantities by the architect:—

Berry	£1,899 0 0
Chick	1,813 0 0
Dart (accepted)	1,698 0 0
Ellis & Pardon	1,676 12 0
Durke	1,575 0 0

For the erection of schools for 200 children, at Kyo, and schools for 240 children, and master's house, at Oxhill, for Kyo Lane School Board, Durham. Messrs. John Smith & Son, architects. Quantities by Mr George D. Irwin:—

	Kyo.	Oxhill.
Wright	£2,434 14 0	£3,613 1 3
Turnbull	1,938 0 0	2,985 0 0
Burton	1,910 0 0	2,962 5 0
Hunter	1,919 5 7	2,871 9 6
Westgarth	1,747 4 10	2,838 2 9
Armstrong	1,891 9 5	2,791 5 3
Young	1,771 9 0	2,711 15 0
Robson & Trumble	1,752 8 0	2,653 10 0
Hurst & White	1,750 19 0	2,641 3 0
Ward, Robinson, & Ward	...	2,522 8 0
Routledge, Coputts, & Gibson	1,555 18 8	2,429 16 2
G. Westgarth	1,676 17 9	2,418 15 4
Forster	1,511 11 0	2,375 6 0
Elsingham & Gibson	1,562 3 8	2,311 0 3
Mordur & Gibson	1,558 2 1	2,310 7 5
Gibson, Heslop, & Surtees	...	2,263 9 5
Forster & Gibson	1,415 3 8	

For house to be erected on Putney-heath, for Mr. Walter Hudson. Messrs. Lee, Brothers, & Pain, architects. Quantities supplied:—

Smith	3,998 0 0
McLachlan & Sons	3,875 0 0
L. H. & R. Roberts	3,773 0 0
Pain	3,635 0 0
Adamson & Sons	3,515 0 0
Aviss & Co.	3,480 0 0

For new premises for the Bedford Volunteer Brigade. Mr. John Usher, hon. architect:—

Haynes	£247 0 0
Potter*	245 0 0

* Reduced and accepted at £230.

For the erection of factory, dye-house, and fore dwelling-house, at Jamaica Level, Bermondsey, fo J. T. Daintree. Messrs. George Elkington & Son, tects. Quantities supplied:—

Cooke & Green	£9,977 0 0
Battersley & Son	9,945 0 0
Rider & Son	9,889 0 0
Woodward	9,624 0 0
Dabbs	9,499 0 0
Patrick	9,485 0 0
Sheppard	9,290 0 0
Downs & Co. (accepted)	9,060 0 0

For stabling, &c., for the London General Om Company, Limited, at Athol-street, Bromley, Bow, the superintendence of Mr. Peter Tosh:—

Brealy	£5,655 0 0
Gould & Brand	5,060 0 0
Johnson	4,862 0 0
Bayes, Brothers, & Allen	4,673 0 0
Nightingale	4,456 0 0
Matlock, Brothers	4,373 0 0
Crabb	4,300 0 0
Hunt	4,250 0 0
Judd & Hawkings	4,148 0 0
Aitchison & Walker	5,105 0 0
Prebble & Co.	4,002 0 0
Curtis & Ross	3,999 0 0
Mason	3,895 0 0
Beal	3,925 0 0

For stables at Goldhawk-road, Shepherd's Bush, f General Omnibus Company. Mr. P. Tosh, archi Quantities by Mr. Bolton:—

Hawks	£3,800 0 0
Cowland Bros	3,777 0 0
Crabb	3,450 0 0
Watson	3,240 0 0
Gould & Brand	3,089 0 0
Crockett	3,064 0 0
Steel Bros.	2,942 0 0
Beale	2 749 0 0
Mason & Bristy	2,637 0 0
Perkins	2,570 0 0
Matlock Bros.	2,513 0 0
Prebble & Co.	2,484 0 0
Aitchison & Walker	1,955 0 0

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The Builder.

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Antique Art in American Schools.

FROM a small pamphlet which has been sent to us, printed in New York for the American Social Science Association, as well as from accounts previously before us, it appears that a move has been made in the States in regard to what may be called the educational apparatus of schools, which might very well be followed, as it ought indeed to have been inaugurated, in this country. The pamphlet in question is a list of the subjects and prices of casts from the antique, purchased for the decoration of the principal room or meeting-hall of the Girls' "High and Normal" School, West Newton-street, Boston, with a short description of the subject of each work, notes as to where they were obtained, and the cost of exportation; and a few preliminary remarks explaining the reasons which led to the experiment.

The plan of decorating one or more rooms in public school-houses with a collection of casts was laid before the Educational Committee of the American Social Science Association, by one of their number, about two years ago. "Casts, if selected to express the highest laws of form and the purest types of beauty, were thought to promise a favourable effect upon the mental and moral training of the young, especially if associated with their studies,—that is, their daily efforts to improve themselves." A special committee was subsequently formed to carry this design into execution; and they decided to make their first experiment by placing a number of well-chosen casts in the new school above referred to, which was in course of erection, as they considered that a school for the higher education of girls "comprised just that body of teachers and pupils with whom the experiment might most favourably be tried," and they were assured also of every co-operation and assistance on the part of the school committee and their architect. The large room, which was to form the place for "general gatherings and exhibitions of the pupils," was accordingly finished at the expense of the city, with special reference to the casts. In this point the special committee at Boston showed a perception of the fitness of things beyond that exhibited by the London Royal Academy in a similar case, as this latter body have built a room for the works of Gibson, without any "special reference" to the size, shape, or character of the works to be placed in it. In the Boston school-room we are told that, "for a series of slabs from the frieze of the Parthenon, an architrave has been constructed, resting on Doric pilasters. Between these pilasters the walls have been painted of a colour suitable as a background, and brackets or pedestals of proper form have been provided for the busts and statues." It is evident that some care has been taken to do the thing properly. The spirit in which the undertaking has been carried out it is also very agreeable to note:—

"The cost of the casts themselves, their packing, transportation, unpacking, and repairing, has been met by the subscriptions of a few members of the American Social Science Association, together with some persons not members. It has been a quiet movement, begun and ended under the competent direction of one gentleman in particular, whose knowledge of the best casts to be procured and of the best modes of procuring them, has been of inestimable value to the enterprise.

All is now happily accomplished. The casts are in their places, and the work it is hoped they will do has been begun. . . . . The collection has not been made for a single school, or for a single city, but for every school and every town or village where a similar attempt to extend and beautify our educational borders is possible."

The casts include, besides the Parthenon frieze already mentioned, one of the caryatides of the Erechtheum, the Diana and Venus of the Louvre, the Vatican Jupiter, and others; twenty-two in all.

Such an attempt to "extend and beautify" the educational borders certainly should not have been left by us, who are so much nearer the centres where means of doing this may be procured, to be inaugurated in an American school-room. We have often been struck by the cold, bare, uninteresting aspect of the interiors of large school-rooms in this country; more particularly perhaps, in the case of schools for the lower orders, of the class which are now under the control mostly of school-boards. The scholars at upper-class schools in this country are, many of them, not without opportunity of familiarising themselves with the works of art of a high class; if not in school time, in home time at all events. It is difficult to institute a comparison between the condition of English and the American schools in this respect, seeing that in American schools "class" is not a distinguishing social element in the problem as with us: and girls in "finishing schools" in and near London (to take the nearest parallel, perhaps to the Girls' High and Normal School at Boston) have their Kensington Museum open to them; though even in schools of this order a closer and more every-day acquaintance with works of art of a high order might be realised with advantage. But the suggestions arising out of the Boston experiment strike us forcibly in reference to the fitting of the great and increasing number of schools which are being built in England under the new system of educational legislation. We heartily wish that the example we have called attention to might be seriously taken up and followed by the authorities who will see or are seeing to the building of new schools in England. One of the greatest obstacles in getting the people at large (the "common people," if we may use an established phrase), to take any interest in or get any enjoyment from the works of art in our public galleries, arises from the fact that their perceptions and sympathies in this direction have never been cultivated when they were young and in process of education; and they consequently find themselves, if their attention is directed to such things later in life, in an entirely new world, which merely puzzles them instead of giving them enjoyment. If children in Board schools were familiarised with some of those works the study of which plays such a large part in forming the ideas of the more educated portion of Europeans, they would certainly be moved a very important step in advance towards that great end of education, the power of finding enjoyment in our own minds instead of being dependent on merely sensuous comforts for making life tolerable. "Happy," said Goethe, "is he who at an early age knows what *art* is"; and surely such an extension of the field of intellectual enjoyment need not be confined to the upper classes, or to the years of manhood and womanhood. On the contrary, there are, perhaps, few things which exert more important influence over the minds of people in after-life than the forms and associations which they have been habituated to in childhood. If possible, children should never see, or be allowed to get to admire, bad and vulgar drawings, prints, or groups of any kind. Let them have around them, in this impressionable time of life, forms which are beautiful and graceful, and they will almost imperceptibly grow up with a leaning towards a refined taste, and thus an important part of education may be constantly and silently performed. We cannot pass over, either, the cheering and enlivening effect which would be produced in our National Schools by the introduction of such decorative adjuncts as have been referred to. On both these grounds, we call the attention of our educational authorities to the example of what has been begun, and will, we hope, be carried further, in America; and trust that the hint will not be thrown away upon them.

It is impossible to refer to the subject without a reflection on the wonderfully enduring power and vitality of Greek art. Since the forms from which these casts are taken were modelled by the Greek sculptor, civilisation after civilisation has risen and fallen, and ideas upon religion, philosophy, art and politics have changed over and over again. Yet here is the great ultra-modern civilisation, in comparison with which we ourselves are in a way "antique," going back to those same enduring types of what is beautiful in human form and action, to forms which came into being in obedience to beliefs and theories that have long since passed away, the origin and even the meaning of which we can now but barely appreciate; yet simply through their intrinsic beauty these forms still hold their place, and become models and teachers for the children of the new world, illustrating forcibly the eternity which has been said to belong to "things of beauty."

THEATRES: THE LAW AND THE LORD CHAMBERLAIN.

WHEN about two thousand one hundred and seventeen years ago fire, playing havoc with Rome, had seized even the Temple of Vesta,—where, piously guarded, was concealed the image upon which the safety of the city depended,—Cecilius Metellus at the risk of his life rushed through the flames and bore away the Palladium; and the Roman people gratefully decreed that the man who had injured an arm and lost his sight in the accomplishment of the heroic act should receive a privilege never before granted to any one: that of being carried to the Senate House in a chariot. The Metellus of our time has probably ventured his existence more often than he is willing to own, but that his hands are still uninjured and his eyes still perfect may be inferred from what he has recorded in several excellent and some recent books.* The best honour we can pay Captain Eyre Shaw is to show that we have digested them, and thus perhaps induce others who have not yet done so to read them carefully; for he has chariots of his own, and the Senate House is one of the last places to which we should wish to see them drawn. Indeed, it is impossible to complete anything like a parallel between the good sense of a High Priest of modern Fire and the heroism of a Chief Pontiff, for the latter by the rule of his religion was not permitted either to look at or touch a corpse or even to visit a house where lay a dead body,—and who shall say how many more human sacrifices must be made ere Parliament find out that rigorous custom, in the planning and putting together of both public and private buildings, scientifically increases the chance of destruction by fire; and that even the law of this country is ranged on the side of the destroyer?

History takes naturally enough a philosophical view of the fires which have consumed great cities. The Rome of Augustus and of Nero rose, each out of its ashes, more magnificent and more populous than before; and there as elsewhere, at different periods of time, the historian of a burned capital usually concludes with the assurance that though numberless persons fell victims to the flames and property of untold value was destroyed, the result was satisfactory to the majority of mankind. It seems, however, to have been an accepted thing that somebody or some section, political or religious, of the community must have wilfully caused the fire. As in the early half of the first century a few of those people vulgarly called "Christians" were impaled, thrown to the dogs, or burned, in the very gardens of Nero, for having fired the Imperial Capital, so in the seventeenth the destruction of London was attributed to others vulgarly called "Papists"; and in the heart of the City a lofty column, "like a tall bully," commemorated the suspicion. But some practical benefits have resulted from these calamities. Both Augustus and Charles enjoined the use of more durable and less inflammable materials in the erection of new buildings. The Roman, however, wiser than the English, Government organised a fire brigade composed of some six hundred slaves commanded by officers who were permitted to wear the robe peculiar to magistrates and to be attended each by two lictors. Thus the fourteen regions of Rome were confided to the care of seven cohorts of firemen; and it is probable that even then the houses of the great were systematically guarded at night. Later in the century Juvenal, in his satire on wealth, describes how

> "The slaves of Licinus a numerous band
> Watch through the night with buckets in their hand,
> While their rich master trembling lies afraid
> Lest fire his ivory, amber, gold, invade."

Little is extant to show that anything more scientific than buckets of water and hatchets were used in the extinguishing of fires by the Romans, although Trajan's architect, Apollodorus, has left the description of a machine consisting of leathern bottles, with pipes attached to them. Nor is there any authentic record of manual engines or special machinery for the purpose until the close of the sixteenth century. After the Fire of London the architects of Louis XIV. were much exercised as to the best means of protecting the French capital in the event of a similar accident; and in 1699 an individual was permitted, by privilege of the king, to keep in repair and working order a certain number of portable pumps. If Paris has not suffered the calamities from fire,* which have attended other, and particularly English, cities, it is due to the monopoly of her quarries and the extensive use of the plaster obtained from them. This fact seems to have become patent to many Englishmen during the latter years of the last century, and the suggestions made by writers of the time that all wooden beams, joists, and rafters ought to be enveloped in plaster is indubitably of French origin. On February 2nd, 1792, at a meeting of the "Associated Architects" it was resolved that the whole club should consider in committee the causes of frequent fires and the best means of preventing the like; for, according to the pages of the *Daily Advertiser* alone, the number of fires in London during the year 1792 was sixty-four, and the number of lives lost was twenty-three; and though the supply of water and of fire-engines was greater than in any Continental city, fires were more frequent and destructive in the English metropolis than anywhere abroad. The report of the committee was printed the following year; and it was therein noted that "the great principle of prevention is to stop the progress and circulation of the air in all parts of a building concealed from the eye." According to the opinion of the "Associated Architects" the free, constant, and uncontrolled passage of air behind the wainscot-linings, between the floors, and in the roofs, and the easy access of fire from story to story through slender horizontal divisions, and up the staircase, are not only causes of fire, but prevent possible extinction after it has penetrated into the usually hidden recesses. Moreover, they advised that "as good party-walls are the means of confining a fire to one house, so other practicable and not expensive means will confine a fire to one room in a house"; and a very excellent paper concluded with a delightfully-innocent assumption, which subsequent and actual experience sadly contradicts, that future evils of the kind might be averted if the opinion of the "Associated Architects" were made public.

Thirty years before that report appeared had occurred the first of the five fires through which the National Opera of France has been burnt out of house and home. After that disaster, a new building was erected upon land presented by the then Duke of Orleans. Opened in 1770, it held 2,500 spectators, and the official description of the building was eminently satisfactory. It said that "safety was one of the points to which scrupulous attention had been directed"; that reservoirs, containing hogsheads of water, were so placed as to be serviceable in case of fire; that the actors' dressing-rooms were fireproof, and that most of the stairs were of stone. On June 8th, 1781, the building was burnt to the ground, the principal victims were the actors, half-undressed in their rooms; and though a glass of water might have effectually prevented the fire at its outbreak, not a drop was in any of the cisterns. But Parisian wit triumphed over the calamity, for modern Athenians signalised the event by wearing a new colour, that of fire, and called the "Fumée d'Opéra." Another building was occupied almost immediately, and this met with a similar fate some seven years after. The Theatre of the Porte St. Martin, the construction of which was begun in August, 1781, and finished within eighty-six days, was then used as the National Opera-house until 1794; and this theatre succumbed to the exceptional excesses of the last civil war. The building, which was the home of French Opera from 1821 to 1873, was burnt down just as the new house on the Boulevard des Capucines was ready for use; and unless Captain Shaw has recently had cause to alter his opinion, M. Garnier's work, according to him, is the model theatre of the world, in respect not only of comfort and convenience, but also of safety.

Neither the precautions adopted nor the results recorded in the case of the Brooklyn conflagration seem to vary from those of the French disaster of 1781. To quote from our young Transatlantic contemporary, the *American Architect*, "the managers of the Brooklyn theatre had not taken care that such appliances as they had should be kept in order, or that their servants should be taught how to use them." Indeed, one of the chiefs of the Fire Department of New York has reported that in the theatres he inspected the apparatus was found generally in a useless condition, that the water-buckets were empty, and the fire-extinguishers out of order. Obviously appliances to put out flame are not of every-day use; and provided that the public eye can see such things as hose coiled up and buckets of water suspended against a wall, the manager's duty is done, and the legislative conscience appeased. Suffice it that in the principal cities of the world thirty-three theatres entirely succumbed to fire during the course of ten years, from 1856 to 1865, inclusive; and that in 1867-8, fifteen theatres were totally destroyed,—the number of those partially attacked, injured, or threatened, not being deemed worthy of notice.

It has been urged that, to express alarm concerning the dangers of a theatre, is to grasp only a small portion of the risk which the inhabitants of a great city necessarily incur; and that gatherings of people in cathedrals, churches, and public halls of all kinds, are equally liable to panic and destruction. Undoubtedly; but it must not be forgotten that at the theatre, the music-hall, and similar places of entertainment, audiences are usually collected after dark. A little smoke which, in the daytime, might attract the notice of a fireman without being perceived by the public is at night a brilliant flame, and in a few minutes one part of a crowd has trampled down another part in the general struggle to escape. Moreover, no church is ever mercilessly crowded from floor to ceiling like some of the London theatres,—a regard for decency being at least the usual accompaniment of devotional exercise. The inherent dread of fire,—greater at night than in the day,—is increased as the hour for visiting such places of resort is postponed later and later, until now carriages may be seen waiting in Covent-garden during even the small hours of the morning. The destruction of the Paris Opera-house, a little less than a hundred years ago, began at half-past eight o'clock in the evening, just after the close of a performance, which had commenced at half-past five in the afternoon. With these dangers of the night the mediæval communities were not familiar; such places of carnal distraction were unknown or discountenanced in the Middle Ages. Then people enjoyed, in periodical feasts of the Church, the show and trappings of religious exercise, or sought at the fair less æsthetic joys; and common prudence dictated the expediency of being within doors at nightfall. During the earlier ages of Christianity amusements were necessarily carried on by daylight. In the time of Pericles the Athenians started at dawn for the scene of tragic woe and of comedy; they enjoyed the former before partaking of what we now call luncheon, and laughed over the latter before separating for home and the evening meal.

In a Greek theatre the arrangement of parts and distribution of seats may be traced in existing ruins; and though it is not likely that the place of each slave was absolutely marked by an incised perpendicular line in the stone wall (as in the Amphitheatre at Nimes), it is certain that at least the chief slaves, who were the clerks and assistants of their owners, visited the theatre. Most of the women who attended were of a class recognised in Athens; and if Greek ladies sometimes accompanied their husbands or fathers, it is believed that they were not present at a comedy, and it is known that their places were apart and distinct from those of the men. The same restriction or equal punctiliousness is not recorded of the Roman fashions. Ovid, in his reflections upon the different places wherein the flame of love may best be kindled, and pretty women most easily softened into tenderness, pronounces for the theatre. Nor can even a prosaic observer fail to perceive here and there, in his London experience, some confirmation of the Roman poet's opinion. In some pits a well-dressed male arm may often be seen encircling a not exaggerated female girdle, and in many galleries similar attentions, but of a more robust nature, are frequent between the sexes. It has been remarked that fewer of the fair sex are to be seen in the cheaper parts of a theatre than was usual a year, or even six months ago; and if that be really the case, so much the better while the seats in the majority of the London houses are permitted to remain in their present order and condition. It may also be suspected that while most of the pieces provided by the metropolitan managers are such as they are, a large leaven of intellect is rarely collected to witness them;

* "Records of the Late London Fire Engine Establishment" (London: Effingham Wilson). "Fire Surveys: or, a Summary of the Principles to be observed in Estimating the Risk of Buildings" (London: Effingham Wilson). "Fires in Theatres" (London: E. & F. N. Spon). "Fire Protection: a Complete Manual of the Organisation, Machinery, and General Working of the Fire Brigade of London" (London: C. & E. Layton).

* The systematic destruction in 1871 is exceptional: had Somerset House and Northumberland House been fired in a similar manner, the whole of the Strand would probably have succumbed.

that Swift's jaundiced definition of amuse-nt being "the happiness of those that cannot nk" may apply not inappropriately to the erage theatre-goer. It behoves, therefore, the nking portion of the community, if not to rise means for the protection of their less tunate brethren from possible injury or death, least to point out the dangers they run in nd pursuit of pleasure. This has been done late in the columns of the press; but some years ago it was done in a remarkable nner by M. Davioud, a Paris architect of great perience, who was deputed by the then Prefect the Seine to visit this country and draw up a port for official use concerning the structure, perintendence, and state of the London eatres.*

M. Davioud expressed astonishment that the uses of the Act relating to an English building ended to be nightly filled with spectators were slight, and compared them to the numerous quirements of Parisian authority. Few, if y, of the new theatres in and around the rand would have been sanctioned in Paris. nat the best way of separating the stage and orkshops from the auditory, and the general ode of construction, should be left to the dis-etion of speculators and the tolerance of dis-ict surveyors; that no recognised means of rotection from fire or extinction of the same xisted; that no police regulations regarding the ating of the public were in force; and, in fact, nat all the many details of theatrical manage-ent upon which the French law is most stringent ere unknown in London, seemed to him incom-rehensible. He examined all the theatres, from he public-house annexe to the Opera-house in ovent-garden. The slightness of their cross alls, and the promiscuous use of naked timber n the majority of them, seemed to him eminently angerous; and he expressed his opinion that f fire broke out in any one in the upper part f the stage, it must rapidly and inevitably pread along the roof, and thus envelop the uditory. Such chances of disaster are lightened n Paris by rules and regulations which are trictly enforced; and the strong solid wall hich ought to form a secure barrier between he roof of the auditory and that of the stage is here deemed an important point in theatre-building. He concluded by declaring that in London the *théâtre de luxe* did not exist; nor has there been erected in the course of the last ven years one which can be deemed worthy of he appellation.

Not less emphatic and certainly not less valuable than those of our French colleague, are the expressions of astonishment in which Captain Shaw sparingly indulges. He deems it subject of wonder "how any country, making even the pretence of superintending the care of its inhabitants, can allow the dangerous practice of entering and leaving a theatre by passages through other buildings." He remarks that in at least one Continental country two exits are required for every 300 persons, and three for every 500. He would have every place where a crush is likely to occur, free from steps. He objects to a carpenter's shop exactly over the principal chandelier or a main gas-burner; he would remove from within the theatre to a place separated from it by thick brick walls and double doors, carpentering on a large scale, scenery-making, painting, &c.; and he would prohibit the storage, except in specially protected parts of the building, of timber, clothing, furniture, and the thousand articles known as "property." Lastly, he would divide the stage from the auditory by a brick wall rising above the roof, arched over the proscenium, and fitted in the opening of the stage with a curtain of metal or some material sufficiently uninflammable to resist fire for at least fifteen minutes. He very properly condemns the present mode of building theatres in the metropolis, whereby an external cage of brickwork is made to surround "a mere collection of apparently temporary fittings," and covered by a wooden roof, the recesses of which are loaded with just the very materials to make a fire. The desiccation of this wood, from the intense heat which stagnates under the ceiling, is a matter of course; and this increases the danger of rapid ignition. He endorses, probably without knowing it, the opinion of the "Associated Architects," that a building intended to hold hundreds and tens of hundreds should be constructed on the principle of a fortress, with the intention of resisting an enemy from one post of defence to another; and that even when the outer walls are taken there should still be a tower or a dungeon to which the defenders can retreat. Our modern enemy is fire; and if a theatre, instead of being doomed at one and the first attack—instead, to use a homelier illustration, of all its owner's eggs being put into one basket—were so cut up by brick walls into divisions, the openings of which could be closed at a minute's notice by a fireman on duty, it would be possible to arrest the spread of flame; and if even then the property could not be saved, at least the spectators, actors, and servants would be assisted in their escape by shutting off some from danger or retarding the approach of fire to others. In building a new theatre, or in altering an old one, the first thing to be done is to divide the whole into two parts—Captain Shaw, with professional ardour, says "two distinct risks,"—and the stage, workshops, and stores must form one part, while the auditory forms another. After that it may be found possible with perpendicular brick walls and horizontal concrete ones to divide the workshops from the stage, and the stores from both.

Although quite disposed to accept such dicta as those propounded by the chief of the Fire Brigade,—that a theatre should be isolated from neighbouring buildings; that every inlet should be free from steps; that each portion of the audience should be enabled to leave by different passages, stairs, and doors,—we are bound to admit that enforced compliance with such rules would end in London being deprived of the larger number of its theatres. There is, however, one excellent building of the kind in the very heart of the metropolis; and with a few alterations it might yet be rendered comparatively safe against the ordinary accidents of fire,—we allude to Covent-garden Theatre. The slightest reference to the plan, and the description* given of it by its architect, suffices to show that twenty years ago very different ideas were entertained by professional men about fire-proof construction and fire-resisting materials than are happily usual at present. According to Mr. Edward Barry's own statement, the fire which resulted in the destruction of the old building was aided by the fact that no cross wall existed to divide the upper part of the stage from the auditory, and he says:—"Had such a fire-proof division across and above the roof remained, a check might have been given to the flames, so that the firemen on duty at the house might possibly have subdued them at the first outbreak." But in spite of these words, the experience gained from the deplorable absence of that division-wall does not seem to have been quite sufficiently appreciated in the construction of the present building. The enforced necessity of providing a back-stairs entrance for the Duke of Bedford, with a means of passage between the ducal box and "behind the scenes," is perhaps just one of those circumstances which in this case would tell disastrously should the calamity of a fire ensue. By the terms of the lease on which the land was granted, the Duke's agents, not content with ruling that the outside of the building should be coated with cement, demanded an ante-room, private stairs, and special entrance next to those of royalty; and should legislative measures be taken to inspect and enforce alterations in existing theatres, surely a clause in a ground landlord's lease should not be permitted to jeopardise the lives of less privileged people.

Nor should it be forgotten that when even the new theatres of the metropolis were rising it was still the fashion to talk of iron girders as fireproof, and that at this very hour the law of the country describes stone as an incombustible material, and ordains its use for stairs, landings, and supports of every kind. No doubt the acute lawyers, successful merchants, and others, who make our building laws, contemplate with vast satisfaction flights of stone steps, long and deep girders, slender columns, and other suicidal contrivances which help to compose our theatres; but thereon the opinion of the Fire Brigade is very clear and decisive. "No fireman has ever seen a stone stair escape when subjected to much heat."† "No internal wall supported on iron can be relied on when there is much heat." Writing, in 1876, Captain Shaw says, "At the present moment may be seen at the corner of two streets a new building, recently erected, 90 ft. long, 24 ft. deep, and from 70 ft. to 80 ft. high, supported entirely on iron columns, without any wall, wood or brick work, reaching to the ground along the whole line of front. At the ordinary temperature of from 600° to 700° Fahrenheit the whole building must inevitably fall down, and such a temperature could easily be created by the combustion of a small quantity of furniture." The accumulated experiences of the Fire Brigade show the general results of fire upon buildings in London thus:—"Bricks, uninjured; wood, seriously damaged, but only partially consumed; iron, fractured, and rendered worthless; stone shivered into fragments, and totally destroyed." In fine, no structure is fireproof, nor even fire-resisting, which depends for support or cohesion on any metal or any stone. On the contrary, walls of well-burnt bricks or of concrete composed of ashes, slag, or other materials which have been previously burnt, are fire-resisting, if not absolutely fireproof. And, to return to our previous illustration, when it is remembered that the very stability of Covent-garden Theatre depends upon naked girders and columns, and that, in Captain Shaw's words, "the cube of 60 or 216,000 cubical feet is the largest cubical capacity which can be protected with hope of success after fire has once come to a head," need there be any doubt of the necessity for early reconsideration and amendment of the existing Building Act.

It is, however, much to be doubted whether either House of Parliament will find time or inclination to take up the subject of theatre construction and superintendence until some notable loss of life has occurred in London itself,—the place best fitted for watching a catastrophe and reporting the results of it. There is, it is true, a certain exalted functionary connected with the theatres, who has uncertain duties to perform; and who, from time to time, issues a memorandum, which is published in the papers, and, we presume, is read by the managers and others to whom it is addressed. If, indeed, the traditional confidence which all Englishmen repose in a Lord Chamberlain is at last somewhat shaken, it is not because managers, money-takers, and theatre-attendants seem to ignore his instructions, but rather because, were they carried out in their integrity, they would in some particulars augment the chances of sudden death during a panic, and in others render audiences wild with indignation. Obviously the Lord Chamberlain is familiar only with the exclusive parts of an auditory, but he has probably read in the newspapers that there was once a pit to every theatre, and at the Haymarket he may have seen one. He has probably heard tell of a gallery and of "gods," but neither his subordinates nor himself are likely to mix with the demos while boxes and stalls are obsequiously opened to them. The Lord Chamberlain's memoranda are, however, jotted down with the best intentions; and they apply, in the official phrase, "to all exigencies," whatever that may mean. First, "all doors and barriers are to be fixed back while the public are in the theatre." Now this is a terrible alternative to fire and panic: in order to avoid being trampled upon or broiled, not only must the audience run the risk of pulmonary disorders, but also be debarred from hearing what is said upon the stage. "All gangways to be free of obstructions": this is read by managers and the public in various ways, and often by the substitution of the word *no* for *all*. "No part of the auditorium to be without at least two means of exit in case of need." Now this is satire. It cannot possibly be other than a veiled reproach to those managers whose theatres are so planned as to possess a single combined entrance and exit to the upper boxes, one only to the amphitheatre, one to the stalls, and one to the pit; or to others in which all the fashionable parts of the auditory converge by a narrow-winding passage to a narrow stair, at the foot of which is an equally narrow door. There are certainly grounds for the prevalence of a confirmed habit on the part of check-takers and money-takers, and itinerant supers in the garb of policemen and firemen, who, when a possible victim threatens to complain to the Lord Chamberlain, stare with strange emphasis and sometimes, like "the Alchemist," laugh consumedly.

Easy or safe exit does not depend upon the absence of obstructions; on the contrary, it is facilitated by judicious obstructions, provided they are strong enough to resist the pressure of a crowd. In all Parisian theatres portable barriers are fixed outside the doors just before

* See "A French Survey of English Theatres," in the *Builder*, 1867, p. 381.

* Transactions, R. I. B. A., 1859-60, page 55.

† Captain Shaw reports that at a fire which took place in the basement of a private house, "no fire whatever reached the stone stairs, and *nothing but heat*; no water was thrown on them, and no draught of cold air passed over them; and yet they were broken into fragments as far as the first landing."

the crowd begins to collect; and they are so arranged as to compel the public to wind into the building in single file. Safe passage does not depend upon the width of a flight of steps; on the contrary, if longitudinal barriers or railings were placed parallel to the sides of a staircase, and the stairs thus divided into passages just wide enough to permit persons to pass up or down in single file, people would be able to escape in any sudden rush with comparative safety. Staircases with open well-holes, and with their stone steps supported by one end only in a wall, are utterly unsafe; and in all theatres where they exist immediate alterations should be made. A solid wall ought to divide the flights, which should never be composed of more than thirteen steps,—short flights of nine steps are preferable, —and on either side of the stairs bounded by walls, a continuous hand-rail should be fixed at some 3 in. distance from the surface, for this hand-rail will offer a hold to people suddenly compelled to maintain themselves against a descending crowd. There are many small things which, with a very slight outlay of money, could be done in all existing theatres to improve their chances of escaping destruction. The use of hair in mortar, and the dangerous habit in England of leaving slender woodwork unprotected by any non-conducting or uninflammab'e substance, is a frequent cause of accident which as frequently leads to disaster. The covering of wooden beams with genuine plaster of Paris,—first having nailed laths upon the beam,—and the entire envelopement of a roof-truss or of floor-joists in such plaster will serve to stay the progress of fire; and wood so covered is known to have been preserved from the flames. Nor is a common stove unproductive of danger, for often a thin sheet of iron alone separates it from the wood floor; and, as Captain Shaw points out, the close stoves which burn the air are also injurious to wood and other combustible materials. In fine, so many dangers are, and must always be, incurred in scenic representations and among crowded audiences, that perhaps careful inspection of every part of the building, before, during, and after the performance, is mere likely to secure the safety of even the assemblage of boards which form the internal structure of an ordinary London theatre than the most scientific combination of brick, concrete, and plaster, without constant supervision.

We suppose, therefore, that, either by plans or ocular examination, Captain Shaw and his men are familiar with the interiors of our metropolitan theatres; and that the last short paragraph in his chapter on duties* is not added for ornament or to complete the page. It is headed:—

"Watching Duties at Theatres, Public Buildings," &c. With regard to the watches in theatres, &c., the general instructions are for the men to make themselves acquainted with all parts of the premises, and with the means provided for extinguishing fire; to be vigilant in tracing out all causes of risk; to take active measures to obviate any danger that may arise; and, in case of fire, to use every effort to extinguish it, and at the earliest convenient moment to send a message to the nearest station, stating the nature and extent of the fire, and whether further help is required or not."

This programme, condensed into one sentence, is sufficiently comprehensive; but it must be confessed that the London fireman, unlike his Parisian colleague, the *pompier*, is not a conspicuous object in our theatres, inside which it would be agreeable to see more policemen as well as more firemen. In all parts of the house seats should be divided, and marked to hold a certain number of spectators,—a number which should not be exceeded under any circumstances; and some more disinterested control than that of a check-taker is required to effect this. But we doubt if desirable reforms of the kind can be accomplished so long as the Lord Chamberlain, to quote his words, "confidently leaves it to each manager to do his best" in such matters,—at least, in any of the ill-built houses which in London serve the purposes of a theatre. Much ado is daily and weekly made about nothing, but the lives of thousands is a matter about which we may be excused for making a little extra fuss. They are at present entrusted to an authority who, if a vote of censure were passed upon his reticence,—perhaps after a disaster in England similar to that of Brooklyn,—would resign office in an honourable and a dignified manner, and so satisfy conscience and custom. Different people, however, look at duty in different ways. The watchman of Shakspeare was ordered to call at all the alehouses, and bid them that were drunk to go to bed, and if they would not,—"Why, then," replied Dogberry, "let them alone till they are sober; if they make you not then the better answer, you may say they are not the men you took them for." It would seem, from the experience of the last twelve months, that in this country managers are reasoned with in a similar fashion; and the watch kept over their theatres is doubtless of much the same quality.

* See "Fire-protection," p. 322.

OUR MATERIAL PROGRESS.

FIGURES are proverbially dry reading, but they largely lose their dryness when they relate to ourselves, and in some degree they become invested with personal qualities when they epitomise the progress of a nation. There has recently been issued an abstract for the United Kingdom, which shows its material progress for fifteen years; and it may be interesting to glance a little in detail at the outlines which mark the national advancement over so eventful a period. In its close columns of figures there is a wonderful amount of official information in regard to the United Kingdom, its wealth and its poverty, its births and its deaths, its trade, its bullion, and its mineral resources. It brings us down, it is true, only to the end of 1875, but supplementing it from other sources, we may glance for a while at the growth in these respects of the United Kingdom as a whole. First, then, as to the receipts and expenditure of the executive: the receipts at the exchequer in 1861 were rather over seventy millions sterling, and they increased irregularly, until, in the financial year ending in 1876, they were over seventy-seven millions, whilst the payments rose from seventy-two to over seventy-six millions. Neither in receipts nor in expenditure had the increase, however, kept pace with the increase of population. This increased gross income was in spite of the fact that the alterations of taxes in those years had repealed or reduced taxes to the extent of over thirty-eight millions; and it was accompanied by an increase in the property assessed to the income-tax from 335,188,318*l.* to 543,025,761*l.*, this increase being largely due to the increase in the value assessed on mines and houses. In the first year indicated we imported at a proportion of 7*l.* 10*s.* per head, but the proportion rose, in the last, to over 11*l.* per head. The animals imported increased fourfold in value; the bacon and hams increased five-fold; the butter nearly doubled; cheese trebled in value, as also did chemical manufactures; cocoa nearly doubled itself; coffee increased nearly fourfold; wrought and manufactured iron and steel increased in even larger proportions; raw sugar added about 50 per cent.; the six million pounds' worth of tea doubled itself, wine rose in like ratio; the woollen manufactures were tripled, and the value of the whole rose from 217,485,024*l.* to over 373,000,000*l.* But this was accompanied with an increase of the declared value of British produce from 125,102,814*l.* to 223,465,963*l.*; linen manufactures doubling, cotton manufactures increasing fifty per cent., iron and steel goods doubling in value, silk manufactures swelling, and woollen and worsted also increasing.

To meet this vastly increased trade we imported of gold and silver bullion and specie, in the first year, close upon nineteen million pounds' worth, and this quantity had increased to over thirty-three millions' worth in the last; but we exported 20,800,000*l.* worth in the first year, and 27,628,000*l.* in the last. There entered and cleared from our ports vessels representing a tonnage of over twenty-six millions in the first year of the period under review; but, at the close, the amount had risen to over forty-six millions; and it shows the tendency of the age to be reminded that the steam-vessels which entered increased from five million tons to over twenty-five million tons in that time. There has not been the same progress in agriculture, for the acreage devoted to corn crops,—some nine million acres,—rose only a quarter of a million in Great Britain, and slightly fell in Ireland. The land devoted to green crops,—over three millions,—increased, but at a smaller rate, and slightly decreased in Ireland. Other crops, such as flax, added half a million to the four millions in the first year to Great Britain, and the permanent pasture was enlarged from eleven million acres to thirteen millions. The orchard area fell, the market and nursery gardens slight increased, and the woods were tolerably st tionary. The horses and cattle we owned we added to, as also were the sheep; but the pi fell off in number, except in Ireland.

Our railways increased in length from 10,0 to 16,000 miles; their capital was raised fro 362,000,000*l.* to 630,226,000*l.*; they conveyed first 173,773,218 passengers, and in the last ye 597,532,187, and their receipts arose from ov 28,000,000*l.* in the year to over 58,000,000*l.*, from 2,628*l.* per mile to 3,539*l.* per mile. Th mines were more productive. We raised 83,635,21 tons of coal, and this was increased in quantit to over 130,000,000 tons. The pig-iron ro from over three millions to over six millions ton the copper fell off in quantity, as did also, thoug more slightly, the metallic lead, and the silve from lead. Finally, the estimated value of th coal and metals increased from over 34,602,853 to over 65,000,000*l.*

The population was increased from 28,974,36 to one estimated at 33,089,237 for last yea The births increased in England and Wales fro 696,406 to 850,187; the deaths from 435,114 t 546,317, and marriages from 163,706 to 200,98 whilst in Scotland there was not a materi difference in the ratio; but in Ireland there wa a slight falling off in the births, an increase i the deaths, and a falling off in the numbe of marriages. We nearly trebled the schoo accommodation; there was a gratifying de crease in the number of paupers, exclusive o vagrants,—except in Ireland; and it is satis factory to note that there was a decrease in th number of criminal offenders. In the first of th fifteen years some 593,000,000 of letters were delivered, and 85,000,000 of newspapers an book packets; but in the closing year of the series there were 1,009 million of letters delivered and 280,000,000 of papers and book packets whilst in five years the ordinary telegraphi messages increased from 8,000,000 to 20,000,000 and in the longer period the number of money orders was raised from 7,000,000 to 16,000,000 The capital in the Post Office Savings' Bank was raised from 5,000,000*l.* to 25,000,000*l.*; and in ordinary savings banks from 41,000,000*l.* to 42,000,000*l.* And, finally, the British emigrants from the United Kingdom rose from 65,00 annually to 140,675, whilst the immigrants in creased also, though in less degree. Thus, in fifteen momentous years our material and other resources have been developed and increased, and if this has been done in the past, we may regard the present apparent period of decline in trade as a mere ebbing of the tide, which will only serve as a mark for the further advance ment in the future to be gauged by.

RESTORATION OF CHURCHES IN DORSET.

AT the January meeting of the Salisbury Diocesan Church Building Society on the 2nd inst., 100*l.* were voted towards the rebuilding and enlarging of the parish church of Stoke Abbott, Dorset, the works to include the erection of a new aisle on the north side, incorporating with it the transept at present existing, the removal of an unsightly gallery at the west end, and thoroughly restoring the fabric generally. By this means the existing accommodation will be increased from 120 to 210 sittings. It appeared the estimated cost was about 2,000*l.*

In the case of Milborne St. Andrew's Church, a grant of 60*l.* was promised towards an outlay of 2,400*l.* required for the restoration and enlargement of the parish church, whereby increased accommodation will be secured for the large outlying population attending the church. It is proposed to rebuild the chancel, adding to it a chancel aisle, to erect a north aisle to the nave, and to reseat the entire edifice.

Rail and Rain in London.—At the half-yearly meeting of the Metropolitan Railway, held on the 19th inst., the chairman, Sir E. W. Watkin, said that although the Metropolitan was a line running under cover it was greatly affected by the weather. Scientific men knew that during the past six months there had been eighty-five wet days, and the total rainfall had been 18 in.; and, as a matter of fact, he could say that every wet Sunday cost the company 120*l.* The reason was that it had to run the same number of trains, employ the same staff, and took so much less money on those wet days. A wet week diminished the takings by fully 300*l.*

EARL GRANVILLE ON TASTE.

IN delivering the prizes at the Dover School of Art the other day, Earl Granville took the occasion which naturally presented itself to make some general remarks which most of our readers have seen reported in the daily papers under the heading of "Earl Granville on Art,"—a heading which we do not copy in commenting on his lordship's remarks, since these had, in fact, little immediate bearing upon art itself, but were directed rather to the consideration of the degree in which the appreciation and love of art existed among the English people at present, and whether it had increased or diminished of late years. The opinions of an accomplished man of the world, occupying a high position in the country, upon a topic of this kind, are always of interest as evidence of the attitude of society towards art and artists, even when the speaker claims no special knowledge or special faculty of teaching on the subject. Earl Granville, whom we may take to be one of the very last persons who would assume to speak on any subject further than his own knowledge of it warranted him in speaking, perhaps rather underrated his own opportunity on the occasion, and the interest which might have attached to any critical expression of opinion from him as to what was right and what was wrong in the art of the present day. But what he said upon the taste of the present day was much to the point, as bringing forward a side of the subject which has been ignored of late. Referring to two recent addresses by Mr. Poynter and Mr. Mark Pattison on the subject of art, he summed up the purport of those addresses as amounting really to this,—that there was a great deal of taste in the present day, but it was all bad. This pessimist view of the matter his lordship undertook to question, and even contradict, and we must say with considerable success. Mr. Poynter's address, which was printed and referred to in our columns not long since, no doubt was in the main absolutely true; all the artistic iniquities he complained of really do exist; and a gifted artist anxious for progress in the future may naturally be disposed to take every opportunity of pointing out how much room there is for improvement in everything. Mr. Mark Pattison's address was not, as we thought at the time, either relatively or absolutely true in the picture which was drawn of the retrogression of public taste of late years. It is true, as we have often and even recently pointed out, that vulgarities of design, which have been condemned over and over again, are continually re-appearing; and that a large proportion of persons will still, if left to themselves, buy decorations of these vulgar and inartistic types in preference to what is distinguished by a purer taste. Nor do we ever expect it to be much otherwise. More or less, true and refined taste in art will always, in all probability, be the characteristic of the few rather than of the many. But that things are rather better than worse during the last thirty years is a position which Earl Granville quite justifies himself in taking up. No one can controvert what he asserted: that far better taste is exhibited in church architecture (even if merely imitative) than formerly; that there is improvement going on, however partially and slowly, in street architecture; that the house of Minton would no longer have to complain, as its founder so pathetically complained, that every one desired to buy his worst and most tasteless productions. The increasing taste for flowers, for art-needlework (if one may thus put nature and art together), is incontrovertible; the improvement in the taste and style of illustrated books for children even more so; and this last is an important point, for much in the education of public taste depends on what a child is trained to admire and take pleasure in while quite young. As to improvements in ladies' dress, there is less room for any positive congratulation, if we take it over a long period of time; for during the last quarter of a century this very variable taste has improved and deteriorated again several times. But in regard to all the other topics touched upon by Earl Granville, we believe no one can fairly contradict his conclusion, that taste in this country has materially improved during the past thirty years; and if so, how can we say the artistic taste of the public, taken generally, is deteriorating? It is a great mistake to criticise one's own day too leniently, and to represent things as better than they really are; but, on the other hand, we cannot see either the pleasure or the advantage of representing them as worse than they are; and as there has been a little too much of this lately, we must thank Earl Granville for his word in season on the other side of the question.

The one remark in Earl Granville's address which touches directly on methods of art-education is pleasantly put and very much to the point:—

"He remembered when he was a boy learning drawing at a private school, and he remembered taking four months, under the vigilant care of its master (he believed a very good master of drawing), to draw a very beautiful church. He engaged the master's care, he copied every line and portion of a line, and he was not quite certain that he did not have some of the master's lines as well (laughter). When his holidays came round he took home the picture triumphantly, and in a state of perfect delight and astonishment. But they could not conceive how he was disconcerted, how very much surprised he was when he was asked by his father to reproduce his church on a bit of paper,—this celebrated church,—and he found himself utterly unable to make even the attempt (laughter). Now, what did Mr. Duckett do at this Dover school? He was not so ambitious as to give them a church to draw at first, but he gave them, say, a leaf, or a cup, or a box, that so they might exercise their hands and eyes too, and acquire the habit of observation in reproducing objects from the originals and not from copies which he had made. He ventured to say whether they became artists or not that they would learn in a week of such teaching more than he did in the four months he so conscientiously gave to the drawing of his church in his early youth."

The distinction between drawing from a natural object and drawing from somebody else's representation of it is, as most persons perceive now, a very important one. Perhaps we should have been disposed to carry the contrast a step further, and say something as to the difference between copying as an end in itself and copying as a means of improvement and instruction. In too many of our schools of art there is far too much of the former system, under which pupils are encouraged to labour for weeks or even months at producing a minutely finished drawing of some one object, as if that were an end in itself; whereas the whole object of drawing what we see is (or should be) to enable us to draw what we do not see, except in our mind's eye. Drawing from the model is the only sure basis; but drawing apart from the model, exercising thought and memory as well as hand and eye, should be made a more important part of art-teaching; as indeed Earl Granville's own anecdote of his early experiences implies, though he did not directly make this application of it.

EAST LONDON INDUSTRIES.*

THE interesting little book under this title, dedicated "to capitalists, manufacturers, merchants, shipowners, traders, working people, and all others engaged in carrying on, or interested in, the industries of East London," has for its main object, as we gather from the preface, to enlighten some little at least of the proverbial ignorance of one-half of the world as to the ways and doings of the other half. Mr. Crory seems to think that a very large proportion of the wealthier classes have just that degree of acquaintance with East London which was implied in the query of the gentleman at his club in *Punch*, who confidentially told the waiter that he had to go to "a place called Islington," and inquired if it was likely that he would be able to get there in a cab. In reprinting in a more extended form, and with careful revision, these papers, which were originally contributed to a local journal, the author hopes to do something in vindication of a portion of the inhabitants of this metropolis who have been, and are still, to no small extent misunderstood; and to show that, in many respects, East London stands entitled to a higher place than other divisions in public esteem; and that "unless all seaports and manufacturing towns are to be regarded as merely mission fields in religious matters, and places for little else than philanthropic effort in things social, this locality must not be spoken of or treated as if it were a part of some uncivilised country, or one in which heathenism prevails."

The method of the book consists in giving special accounts of the general nature and some of the processes of the trades upon which so great an amount of human industry and ingenuity is daily expended in the east of London, with some indications of the social status and character of those employed, and the manner in which the carrying on of the various trades influences the life and well-being of the workers therein. A large number of trades and factories are described, evidently from personal observation and with a desire to give a truthful and reliable account of each subject illustrated. The topics treated of include jute-manufacturing, iron ship-building, paper-staining, gas-making, the manufacture of matches, and many others; and no one can read these accounts without a strong impression as to the amount of useful and skilled labour which is gone through day after day in this (to many) *terra incognita* of the capital. The chapter on the silk trade is a very interesting and suggestive one, as also are those on gas-making and chemical works. In regard to the latter, it is of interest to note that the author's inquiries have led him to the conclusion that chemical works are not unwholesome; and as a proof that they are specially free from causes of disease, he mentions that in the last visitation of cholera not a single workman attached to the large establishment which he visited had died of the disease. The silk operations are largely carried on at the houses of the workpeople, which seem to have impressed the author very favourably as specimens of happy and industrious homes. He notes also the confidence which is shown in the operatives, in entrusting them with goods to be woven, the gross value of which is far beyond the wages paid for the work, but which are always safely and honestly returned to their owners after being woven. It is curious to learn, considering the infinitesimally small prices at which matches appear to be sold, that match-making is, nevertheless, a trade better paid than some kinds of sewing. The paper-staining trade appears to have impressed the writer very favourably in its results upon those employed in it. He thinks that—

"Even the men and boys at the machines in paper-staining works must be benefited by having so constantly before their eyes orderly arrangements of the most beautiful things in nature, and combinations of flowers, &c. . . . . I did not wonder then to see a superior class of workmen and very bright-looking boys in all the manufacturing departments. The conduct of these people at their work indicates that they are of a good type of the 'working classes,' as we seem inclined to call those in certain departments of labour, whilst, strange to say, others who work as much, and often get less for it, are not so designated. . . . . Such is one other of the works carried on in the East of London. I need hardly say that Old Ford is not Belgravia, but I must also add that it is neither a disagreeable place to visit or to live in, nor is it inhabited by a population in any sense or in the smallest degree uncivilised. But a few years ago the site on which stand these works was in the open fields. The ground all around even now is largely covered with good and comfortable houses. Old Ford-road has a good many shops, and Roman-road is quite a market."

Importing and dealing in foreign beasts and birds is a trade which, especially *apropos* of Mr. Jamrach's establishment, furnishes a chapter of East London Industries, in the course of which the writer's remarks upon the open profligacy in the district along the docks line east of the Tower, and the importance of doing something definite to check or regulate it, are much more to the point than his foolish and entirely gratuitous attack upon Professor Huxley for some remarks on a subject which Mr. Crory evidently does not in the least understand; indeed, he knows so little about the matter as to credit the Professor with having "invented" a theory of derivation of species which, as every one else knows, is identified with the name of Darwin. Philanthropists have a bad habit of going "beyond their last"; but the general usefulness and good intent of Mr. Crory's book cannot be denied, and we hope it may do something to further the desirable result which he thinks the visit of the Queen to East London last year tended to inaugurate, in "breaking down the inexplicable prejudice existing in the public mind against everything to be found, and all persons residing, east of Temple Bar; drawing Belgravia towards Bow, and letting Clapham and Hampstead see that Whitechapel, Stratford, and Shadwell are places of just as much importance, however different in some respects, as any others in the metropolis." We recommend our readers to get the book (it is a small and inexpensive volume), and give their consideration to the facts and suggestions embodied in it.

* East London Industries. By. E. Glenny Crory. London: Longmans, Green, & Co.

Improved Industrial Dwellings at the Commercial-road, Pimlico.—A very heavy foundation is now being put in here, by Messrs. Holland & Hannen, for the Improved Industrial Dwellings Company, nearly an acre and a half being covered with one solid mass of concrete, from 6 ft. to 8 ft. thick, also the retaining walls of concrete. Mr. W. Ward Lee is the architect, and the quantity of concrete required is from 10,000 to 20,000 cubic yards. The site is close to Grosvenor-road Station and the north end of Chelsea New Bridge.

MR. THOMAS PAGE, C.E.

ONE of the last links that connected the present rising generation of engineers with the traditions of the grand old school, of which the Rennies may be mentioned as typical, has been severed by the sudden death, on the 8th of January, at Paris, of Mr. Thomas Page. Born in London in 1803, Mr. Page was educated at Ronald Kirk, on the banks of the Tees, for the sea service, and the frank, careless, genial manners which characterise the English sailor were never obliterated during his subsequent career. The advice of Mr. Tredgold turned the attention of the young man to the study of engineering, and he acquired a knowledge of the details of the mechanical part of the profession as a draughtsman in a steam-engine factory. He subsequently became one of the assistants of Mr. Edwin Blore, architect. By this double education in scientific detail, Mr. Page laid the foundation for that excellence by which his works were, in after times, distinguished, namely, the coincidence of science and of a certain amount of good taste. A prize is now proposed in France for the best essay on the essential and characteristic differences of the studies of the engineer and of the architect. Mr. Page combined the two. While engaged in architectural work, Mr. Page made a detailed admeasurement of Westminster Abbey; and had the good fortune to discover a passage, previously unknown, leading from the south transept to the crypt of the chapter-house.

Mr. Page's next engagement was that of sub-assistant engineer on the Thames Tunnel, the works of which were being carried on by the late Richard Beamish, C.E., F.R.S., under Sir Mark Isambard (then Mr.) Brunel. No practical school for the education of a hydraulic engineer could exceed this position, in the demands hourly made on the vigilance, intelligence, and invention of the engineer in charge. The duties of the position were not confined to the daily inspection which is all that is within the power of a sub-engineer entrusted with the care of ten or fifteen miles of railway or canal. They involved constant presence, throughout the twenty-four hours, of at least one member of the small working staff. And very frequently that presence at the face of the work was attended by the conviction that the watcher had in his hand, not only his own life, but also the lives of the numerous workmen employed in the tunnel. The writer of these lines can well remember his first introduction to Mr. Beamish; and the appearance of that able engineer, clad in a suit of tarpaulin, his head encased with a large north-wester hat of the same material, as he emerged through the thin veil of falling water which at the moment was descending between the shield and the finished brickwork; looking, with his long dark hair and large dark eyes, like a young river-god disturbed from his slumbers. In 1836 Mr. Page succeeded Mr. Beamish as resident engineer of the tunnel, which he had the good fortune to complete, together with the shaft on the Middlesex shore.

Mr. Page's designs for the embankment of the Thames from Westminster to Blackfriars Bridge were recommended for adoption by the Commissioners for Metropolitan Improvements in 1842. Among the competitors were the then famous firm of Walker & Burges, Sir C. Barry, and Colonel Ffrench. The work was not, however, at that time prosecuted. In 1843 Mr. Page completed a survey of the Thames between Battersea Bridge and Woolwich. It would be at once a worthy monument to his memory, and a permanent advantage to London, if that survey were now published in a form to make it readily accessible to professional men, and to afford data for estimating the change which has subsequently been effected in the channel of the river. A report on the tidal action of the Thames was also made about this time. In 1848—1849 Mr. Page laid out new lines of communication between Windsor and Frogmore; building the Victoria Bridge over the Thames at Datchett, and the Albert Bridge near Old Windsor. The road from Chelsea Hospital to Vauxhall Bridge, the Chelsea Embankment, and the Chelsea Suspension Bridge, next occupied his attention. In 1844 he also made a report on the harbours of Holyhead and Porthdyn. His advice was repeatedly sought by the Corporation of London with reference to the Thames, and he was called on to report, in conjunction with Sir John Rennie, as to the schemes for widening London Bridge.

In 1859 Mr. Page drew up an important report as to the advantages of the noblest harbour on our coasts, Milford Haven. In 1860 he presented a very able report with reference to the improvement of the river Nene from Peterborough to the sea, a measure previously advocated by Rennie; and by his advice, and by his evidence before Parliament, he is held to have saved the town of Wisbech from decay, if not from destruction, though the Wisbech people, we hear, give him no praise for what he did. The Lendale Bridge at York, and the bridge at Thornton, were built from the designs of Mr. Page; and his design for a new bridge at Blackfriars was accepted by the Corporation, in a competition with seven others, although the Common Council afterwards adopted the plan of Mr. Cubitt, on which the present bridge was built. Mr. Page either constructed, designed, or reported on, numerous other works. He was consulted as to the reclamation of a portion of the shore of the river Tagus, where it passes Lisbon, and as to a railway from Lisbon to Cintra. But the work which remains as his noblest monument is Westminster Bridge. He constructed this without the use of either cofferdams or centres, and by the expedient of carrying over the roadway half at a time (longitudinally divided), he avoided both the cost of a temporary bridge, and the inconvenience of any interference with the traffic, either by land or water. The tremulous movement which is so perceptible to the foot-passenger on this bridge, when any rapid and heavy vehicle passes, may lead to the suggestion whether Mr. Page would not have done well to give greater weight to his girders, and, even at a considerable extra cost, to have added to the sense, if not to the prospect, of security. But the architectural effect of the structure, no less than the skilful distribution of a minimum quantity of material, are such as to reflect the highest credit on the engineer. Nor should we omit to mention the architectural merit of Mr. Page's Suspension Bridge at Chelsea. When these two graceful structures are compared with some which it is unnecessary to name, it will be forcibly seen of what advantage to the civil engineer is a practical knowledge of the sister art of architecture; and how far that which may be thoroughly adequate as far as strength is concerned, but which has been designed without any reference to architectural elegance, is from pleasing or satisfying the eye. In fact, the existence of such works not only presents an eye-sore and a grief to the man of taste, but has a positively bad effect on the education of the public. In contravention of all for what we have been labouring since 1851—all efforts to teach by the eye, and to awaken the sense and love of beauty in the English mind—the erection of any structure which may be convenient but which is undeniably hideous, is a step backwards, and a positive evil to society.

Mr. Page's death will be regretted by a large circle of friends. His works form a noble monument to his memory; but the best tribute that can be paid to it by his admirers will be afforded by their endeavour to follow his example in the particular excellence of combining engineering science with architectural taste.

THE MONUMENTAL CLOCK OF BEAUVAIS.

JUST before the disasters of the Franco-German war, the expanding catalogue of the world's wonders was augmented by the completion of a grand monumental clock, destined thenceforth to form the most cherished ornament of the Cathedral of Beauvais. This extraordinary work, upon which some of the most accomplished artists and skilful mechanists of France were for years employed, will certainly not rank last amongst the marvels of a century that has been prolific of conquests in every province of the wide realms of physical science and art. Our own country affords no example that might furnish a standard of comparison with such a master-piece; to find one we must repair to Strasburg, Lubeck, Lyons, and a few other famous towns, renowned of old throughout Europe as flourishing seats of industry and opulence. Horology, like architecture, is both a science and an art, embracing within its own scope every other, and in its most consummate forms displaying their practical application. The design of such a work as we propose to describe could be produced only by the most abstruse research and laborious calculations; its execution requires the conjoint efforts of at least twenty different classes of artists and artisans, whose several duties exact skill and intelligence of the highest order. Accordingly, its fitting place is in one of those vast temples reared by the genius and self-denying piety of our ancestors, and intended to embody in durable forms all the most precious results and choicest fruits of the scientific knowledge and artistic studies, not only of their own, but of succeeding ages. A great clock like that which has so long been the boast of Strasburg is an appropriate decoration for a great minster, since the construction of both fabrics enlists the noblest faculties of man in the service of religion. Its primary object is the measurement of time, but its vastness of size, and the multiplicity of parts and works required for illustrating the revolutions of the celestial spheres in their meted courses and periods, tend to that infinity which is only another name for eternity. Its dials show forth the wonders of the heavens, which, the Psalmist tells us, declare the glory of God, and His handiwork in the firmament. For clearness, and to facilitate the comprehension of details, we shall divide the account we have to offer of this magnificent fabric into three distinct sections, which may be styled respectively the Clock-case, the Interior Mechanism, and the Legends of the Dials.

I. *The Clock-case.*

The new clock of Beauvais far surpasses that of Strasburg in the majestic unity and symmetrical beauty of its external aspect. Unlike its ancient rival, it is enclosed in a single and self-contained structure. This consists of a square tower, with arched roof, 40 ft. high, 16 ft. broad, and 9 ft. deep, solidly compacted of the best walnut-tree wood. The design adopted for the frontal presents to the eye, on a reduced scale, the architectural members of a façade of the Romanesque or Byzantine style. The principal feature is an arcade of three bays, the summit of which is 26 ft. from the floor, surmounted by the grand dial, which occupies the place of the round or rose window in a stone edifice. Every part is richly carved with the billet, diamond, and besant mouldings peculiar to the late round-arched style, and the capitals of the columnar shafts supporting the arcade exhibit palm-branches and quaint foliations of variegated patterns. Above and beneath the dial, in the spacious tympan formed by the superior archivolt, is an elaborate series of sculptures, representing, under the forms and with the details familiar to the lovers of Mediæval art, the World, the Life of Man, and the Last Judgment. This is unquestionably one of the finest specimens existing of the wood-sculptor's art, and a minute description might demand as much space as we can afford to devote to the whole subject of this article. Every detail is studiously wrought out and arranged so as to convey symbolically to the mind the relation of the scenes and objects here figured to the immediate purpose of the entire structure. In the lower region of the composition, under the dial, and directly over the arcade, appears a turreted city with a river flowing through it, aptly imaging the world and time. The four ages of man's life are designated severally by statuettes of a child playing at shuttlecock, a youth, an armed warrior, and an old man bending under the weight of a wallet filled with gold, of which Death is soon to strip him. The seven cardinal virtues that adorn the Christian character, the seven deadly sins of its besetting temptations, guardian angels and malignant fiends, fill up the piece; St. Michael holds his balance, and above all appears the Saviour coming to judgment. The sculptor conceives human life as personifying the course of time; individual figures may be regarded as emblematic of the hours, which form one of its main divisions; and the four ages designate the quarters. Immediately before the full hour strikes, a cock,—the bird which Scripture associates with the remorse of Peter, and which has ever since been held the emblem of conscience and its warnings,—claps its wings and crows. The hour strikes, the figures seem to be suddenly embued with life and motion, and on the Saviour's left hand flames are seen to issue from the openings of niched galleries, and the condemned appear with their tormenting demons. The main dial, with its richly-enamelled surface, of course forms the most prominent and conspicuous object of the whole frontal. Its diameter is not less than 5 ft., which gives a circumference of more than 15 ft.; in the centre the figure of the Redeemer of the world, and the needles that point to the seconds, minutes and hours, thus radiate

directly from the Divine Person who is the author of time and the embodiment of eternity. Gold and colour are judiciously employed, and the effect of the whole front is grand and gorgeous to a degree which the pen can but faintly describe. In short, the case forms a worthy setting to the jewel it enshrines. Besides the main dial, the clock has twenty-four secondary or minor dials, eighteen on the front and three on each of the lateral faces. This, however, by no means exhausts the catalogue, for two of these, as will be seen by and by, are in fact, groups composed of one large central and eight subsidiary dials of the tertiary order, whilst two others form similar groups of four, so that the whole number of individual or independent dials in this great horological system, including that of the reverse face and a small seconds dial, is forty-nine. The reverse face of the clock, also highly ornamented with sculpture and carving, though less profusely than the front, has the middle section open, for the purpose of displaying to view some part of the machinery.

II. *The Interior Mechanism.*

In our social economy, correct measurement of time is an object of importance second to none, and the machinery which secures this, with its ingenious and nicely-adjusted adaptations, is a never-ceasing object of interest to every intelligent mind. The steam-engine, and the weighted train which forms the driving-power of a clock, are the two exemplifications of dynamical force which are oftenest present to our eyes, and both offer instances of practical results and applications immediately deduced from natural laws. In the one we see in constant action the chemical forces of destruction and reproduction which pervade the whole domain of matter, and maintain the balance of life and death in the animal creation; in the other we have vividly illustrated the simplest and most universal of mechanical laws, that of gravitation. Were it not for a constant and abundant supply of fuel which gluts its insatiable maw, the steam-engine would be powerless. But in the clock-train no secondary or intermediate agent is evoked; it is itself the embodiment of its principle, and derives its impulse directly and in a continuous stream from the great principle which holds the universal scheme of things together. In all clocks, large and small, the constructive principle is identical; the motive power being generated by the fall of weights acting upon wheels, whose revolutions, regulated by balances, are made in a determinate time, and produce at a precise and foreseen instant the expected effect. Ancient clocks, through ignorance of the true theory of the pendulum, were without such regulators as would enable them to go truly for any length of time. The pendulum is itself controlled and impelled by the escapement, a contrivance of which there are many different sorts, all having the same object,—that of forcing the oscillation of the pendulum to preserve the most perfect regularity. This is effected by a mechanism that seizes and lets go or "escape" alternately the teeth on the opposite sides of the ratchet or notched wheel, so that each tooth of the rotation shall exactly correspond to a single vibration of the pendulum. The component parts include the scape-wheel, the pallets with their arbor or axis, and the bent lever attached thereto, called the crutch, which maintains the motion of the pendulum, and prevents it from subsiding through the resistance of the air. By the escapement the circular motion of the train-wheels and the vibratory motion of the pendulum are equalised and made convertible. The soul of the art of clock-making is the calculation and ascertainment of numbers,—proper, when reproduced in mechanical expression, for representing given periods of time. All the wheels and pinions must be in exact geometrical proportion to each other; and unless the respective size, shape, and disposition of every limb or part of the frame are properly adjusted, the communication of motion and transmission of maintaining power will both be unequal, and the mechanism will be subject to rapid destruction. Planetary clocks represent the motions of some of the best known heavenly bodies by appropriate wheel-work superadded to the usual trains; the annual and monthly movement being effected by a combination of discs, wheels, and pinions, called the calliper. It is necessary to say thus much, because the principles of clock-making have seldom or never been explained in language comprehensible without a knowledge of the higher mathematics, aided by illustrative drawings.

In the clock of Beauvais the lesser wheel-work and the escapements are for the most part constructed of brass, and finished with exquisite nicety. The motorial system, which gives the impelling power, comprehends one principal and fourteen secondary motors, with their respective trains. A prominent object in the view of the interior opened to the spectator is the chief motor, resting upon the cases that inclose two of its subordinates. It is constructed, for the purpose of relieving the supporting pivots, in duplicate, with two weights of 24 lb. each, and two cylinders. The pendulum which regulates these powerful forces weighs 115 lb., and has a double system of compensation, in order to guarantee its uniformity of action under all changes of temperature. The main rod is a complex trunk of nine minor rods, five of steel and four of copper. The bob, which is lenticular, of the old round form, could not be attached to the trunk by its centre, because this is the place reserved for an apparatus of regulation by M. Vérité, the well-known and distinguished engineer to whom the design of the clock and the fabrication of its mechanism are due. In order, therefore, to connect it with the trunk, it is grasped at the two extremities of its horizontal diameter by steel rods inserted in cylinders of copper, which have their lower extremities resting upon cross-bars attached transversely to the upper system of compensation, leaving the bob and the rod distinct unities, and determining the length of the whole pendulum, and consequently the arc of its vibration, with the nicest mathematical accuracy against all contingencies of weather. To one looking through the open portals of the interior, the anchor-escapement, with its action, forms a beautiful and attractive object of contemplation. In order still more completely to ensure the operation of this complex machinery against all disturbances, it is fitted with the apparatus above alluded to, which the French clockmakers call the *remontoire d'égalité*, or restorer of equality, and which we may translate the equilibrator, or self-adjusting resetter. This consists of a sliding weight (only a single gramme, the five-hundredth part of a pound), and a spring lever, but we despair of making its mode of action intelligible to the reader without the aid of a diagram. By this ingenious and elegant adjustment, M. Vérité has arrived, not merely at an approximate, but complete solution of that great problem of constancy of force and regularity of action, the successful treatment of which was first made possible 200 years ago by the discoveries of Huyghens, who determined the theory of the pendulum. The maintaining power used in the clock for keeping the motion alive during the process of winding up is the same with that known to English clockmakers as Harrison's going-barrel.

Next in the order of description comes the dispart, or apparatus connecting the chief motor, which is the source of activity, and one may almost say the principle of vitality, to the whole mighty body of the clock, with its fourteen secondaries. The dispart consists of two revolving discs set on the same axis and in parallel planes, the first of them carrying a spring-pin, which takes in turn one of sixty teeth cut in the circumference of the second disc or ratchet. This latter carries on its centre an indented cone or fusee, the instrument that transmits the motive impulse to every quarter of the vast and almost animated frame. The dispart performs one rotation in the hour, and hence it follows that if the head of the spring-pin connecting the two discs is raised, and shifted only one tooth backwards or forwards, the operation will accelerate or retard by a single minute the hands of every dial in the clock, whether their revolution be accomplished in an hour or in a century. The chief motor directly communicates movement: 1. To needles charged with indicating time on more than twenty different dials; 2. To the sun and moon on the solar and lunar dials, for, by a necessity of the representation, the orbs of both are made to gravitate (as they appear to do in nature) round the globe of the earth; 3. To the needles indicating sidereal time; 4. To two planispheres, or projections of the celestial sphere on the plane surface of the dial; 5. To the rotating dial which shows eclipses of the sun; 6. To the needles of the repeating dial placed on the reverse face of the clock; 7. To the single needle of a little seconds dial, placed beneath the pendulum, and counting its oscillations. Grouped around the chief motor are the fourteen secondaries, each with its weight, and its movement regulated by a fan-fly. In two of them, the better to insure regularity, the action of the fan-fly is assisted by that of a conic pendulum. Every one of these motors, though itself an independent source of action, has its time of operation governed and indicated by the chief motor, through the connecting machinery of which we have given an outline.

III. *Legends of the Dials.*

The plan of construction adopted by M. Vérité throughout the complicated details of his fabric, not less than that of the case which incloses it, appears much superior in unity and simplicity to the plan of the long-celebrated clock of Strasburg. The latter is, in fact, a combination of a clock and an orrery, with spheres celestial and terrestrial, which aim at such unattainable minuteness as exhibiting the procession of the equinoxes. This phenomenon, otherwise known as the regression of the equinoctial points in etherial space, advances at the rate of one degree in seventy-two years, and is, therefore, supposed to accomplish a spheriform rotation through space in the prodigious interval of 25,920 years. What probability is there, supposing the existence of our globe to continue during such a period, that the materials of the clock would not be in great part reduced to dust before its expiry? The attempt, therefore, may be said to accuse itself of imposture, and the artist of Beauvais has shown sound judgment in not pretending to such an impossibility, though Schwilgué, the reconstructor of the Strasburg clock, did not consider it beyond his powers. M. Vérité is equally to be commended for having discarded what is called the millennary or perpetual calendar, with its complex apparatus of millennary and myriadetic circles, revolving in periods of 1,000 and 10,000 years, and projecting time, so to speak, into endless duration. The practical connexion and adaptation of this apparatus to the ecclesiastical computory, or to any other member of the horological system of the clock, has never been distinctly explained, and may be regarded as more than doubtful.* The Beauvais clock is solely and thoroughly a clock, and rejects the mechanism of the orrery except in miniature, exhibiting the planetary movements on some of its many dials, which we now proceed to enumerate in their order.

The main dial, to the ornate construction of which we have already alluded, shows mean time, or the ordinary division of the day into hours and minutes; the notation being of the two diurnal moieties of twelve hours each, the twelfth numerals being replaced by the words *minuit* and *midi* (midnight and morn) at the uppermost and lowermost scroll points. The central compartment of the architectural design described in the first portion of this article presents a group of twelve secondary dials, directly under the main dial, and occupying the middle section of the front. Of the twelve one is placed centrically, the others encompassing its top and flanking its right and left sides in the fashion of a garland, or rather of an embracing archivolt. The centrical dial, No. 1, shows the notation of the ecclesiastical computory. Five concentric circles, each with its own hand or needle, are inscribed on the surface of the dial. The notations of each, in white enamel on a blue ground, are admirably distinct, every needle ending in a gold ring, which at midnight of the 31st December every year indicates the figure or letter to which it is to point for the whole year ensuing.

The largest and outermost of the circular scrolls bears the notation of the twenty-eight years of the solar cycle. The succession of periods so named, it may be remembered, began nine years before our era, and at the end of each period the year commences on the same day. The second circle gives the dominical or Sunday letter for each of the twenty-eight years. The third circle gives the golden number designating the particular year of the lunar cycle of nineteen years or 235 lunations, at the expiry of which the new and full moons coincide, the sun and moon being then in the same points of the heavens as they were nineteen years before. The lunar cycle was dis-

* An elaborate work on the Strasburg clock, fully explaining its construction and action, was promised thirty years back by M. Schwilgué's son and representative, but it has never appeared. The clock, it may be observed, was originally finished in 1573, and ceased to go in 1789, the *annus mirabilis* of France. It was restored by the labours of the above-named distinguished engineer, and solemnly reinaugurated in its functions by the Annual Congress of French Savants in 1842. It contains 600 wheels, and 287 springs. Those of the Beauvais clock are probably more numerous, for, though more simply constructed, its dials outnumber those of the other ten-fold.

covered by the astronomer Meton 433 years before our era, and the Greeks in their enthusiasm engraved it in letters of gold on the walls of their temples,—whence the name took its rise. The fourth circle gives the day of the epact, or number of eleven days that is added to every lunar year to make its length correspond with the solar. When the amount of epact days exceeds twenty-nine, as it must do every third year, an intercalation of a lunar month is made, so that at the end of nineteen years the solar and lunar years again commence on the same day, and thus the epactic and lunar cycles coincide. The day of the epact assigns the age of the moon on the 1st of January in each year of the cycle, and this is what the needle indicates. The fifth circle gives the particular year of the current indiction. This is a period of fifteen years, the designation of which is traced back to Constantine and even to Julius Cæsar. The indiction was used by the Roman emperors and tribunals in dating their administrative acts, and is still employed by the Popes in dating their briefs and encyclical letters. All the effects shown upon the five circles of this dial are produced by the No. 5 motor of the clock in the following way. The chief motor itself turns the annual wheel placed behind the dial of the compatory, which carries on its axle a spiral or snail, on which rests a lever that is in contact with the detent of the No. 5 motor. The rotation of the wheel, of course, causes the lever to rise gradually, though insensibly, throughout the year, until, when midnight of the 31st December strikes, the lever falls and the detent is set free. No. 5 motor thus comes into action, and by the arrangement of its train, every needle of the compatory circles takes the position which it is to occupy during the course of the year then beginning. Thus the movement proceeds from the secondary motor, but it is the chief motor of the whole system which gives the signal, and determines the moment and measure of action.

No. 2 dial of the middle bay is placed directly over the centrical one of the group, and gives the hour of the sidereal day, which is measured by two successive transits of the same star across the meridian. The sidereal day never varies, its length being uniformly of 23 hours, 56 minutes, and 4 seconds. Sidereal time coincides with mean time once only in the course of the year. No. 3 dial gives the solar equation, or the difference existing between mean and true time,—that is, between the ordinary time of any well-regulated watch, and the time of the solar day, as measured by two successive passages of the sun's middle across the meridian. The time of the true solar day agrees with mean time on four days only of the year, the 15th of April, 15th of June, 1st of September, and 24th of December. The real or solar day may be thirty-two minutes longer or shorter than the ordinary day, and the needle of the dial-plate indicates on each successive day the number of minutes which must be added to or retrenched from the twenty-four hours, in order to produce the equation of time. The dial No. 4 indicates the declination of the sun to the north or south quarter of the heavens in its passage across the meridian, the extent of which is measured by an arc of 23 degrees, 27 minutes, and 30 seconds. When the sun is at its apogee of elevation on the 20th and 21st of June, the summer solstice occurs; the winter solstice at its perigee, or opposite extreme point of declension, on the 21st of December. The needle of this dial, traversing an arc of the above extent, shows the sun's northing or southing for every day of the year, and marks the solstices at the two extremities of the arc. Nos. 5 and 6 dials show the length of every day and night in the year at the latitude of Beauvais,—a natural phenomenon depending on the sun's declination. When midnight of each day arrives, as in the other cases, the displacement of the dial-hands is instantaneously effected. No. 7 shows the seasons, the circumference of the dial being divided into four segments, which are in fact segments of the colures, or lines marking the quaternary section of the terrestrial sphere. The needle enters or quits one of these divisions, according as the season indicated begins or ends. No. 8 dial shows the twelve signs of the zodiac, and the time of the sun's entry into each. Nos. 9 and 10, the hour and minute of sunrise and sunset on each successive day; Nos. 11 and 12 the day of the week, and the nominative planet of each day. Regularly at midnight the needle of every dial advances one degree. The main annual wheel of the clock is, of course, that on which all these movements and changes depend, every dial being provided with a subordinate wheel, performing its rotation like the other in a year.

In the left compartment of the front, No. 1 dial does not merely indicate the hours of sunrise and sunset, but represents the phenomena themselves. The circumference of its plate bears a golden coronal, on which are marked the twelve diurnal and twelve nocturnal hours of mean time. This coronal represents the apparent course of the sun, which gravitates round it; and in the centre of the plate, on the blue ground of its surface, is a terrestrial globe fitted with a gold ring that represents the meridian of Beauvais. From this projects a stylus in the plane of the meridian, indicating with its point the intersection of the meridian with the line of the sun's course. The globe has also its horizon, which inclines, as the year progresses and the sun climbs or descends, towards the solstitial points marked by a gold line on the dial-plate, above and below the earth's orb. When the horizontal hand touches the summer solstice, the sun is seen to rise at four o'clock and set at eight; when its other edge declines towards the winter solstice the sun rises at eight and sets at four; when the horizon is parallel with the face of the dial, it marks the equinoxes, and the sun rises at six and sets at six. But this is not all. The sun's place on the dial at noon is exactly over the figure of notation, but if its globe were made to cross the point of the stylus, which is, in fact, the prolongation of the meridian of Beauvais, exactly at that hour, the real time of passage would not be shown, and the indication would be false; so that provision is made for a daily displacement of the earth's globe on the dial, corresponding to the amount of the solar equation, as above explained. Evidently, in inspecting this dial, it is best to neglect the methods of representation, and look only at the indications of phenomena. If the modes are not those of nature, the results at least are perfectly correct as shown. No. 2 is a group of one central dial, and eight minor surrounding it, showing meridian time at Paris, and at eight places situated westwards of it,—London, Amsterdam, Bordeaux, Lisbon, Montreal, New York, Mexico, and Rio Janeiro. Each dial bears the name of the city where meridian time is shown, the longitude being inscribed on the enamelled plate. No. 3 dial gives the quantesimal of the year. The great circle gilding its circumference shows the names of the months, and the proper number of days for each; the date of every day is indicated, with the name of the saint commemorated on each. Leap-years are duly shown, and the artist has even made provision for indicating the secular bissextiles, when the century begins with a leap-year. Three minor dials on the surface of No. 3 show the phases of the moon, its age, and the mean time of its transit over the meridian of Beauvais.

In the right compartment of the front, the first dial shows the movements of the moon, as that of the left showed those of the sun, with similar mechanism. No. 2 also corresponds to No. 2 of the left, being a group of nine dials, the central indicating meridian time at Rome; the eight others meridian time in eight cities situated eastward of Paris,—Berlin, Stockholm, Petersburg, Warsaw, Florence, Vienna, Naples, and Lyons. No. 3 dial presents a calendar of Easter and the movable feasts depending on it for 300 years. On the blue ground of the surface are designed three lesser dials, each fitted with a hole or wicket, respectively showing the year of the world according to the ordinary Mosaic chronology, the millennial number of the current year, stating whether it is leap-year or not; and, lastly, the current century, indicating the secular bissextiles. All these calendary notations remain fixed for the year; but at midnight of the 31st of December, the interior mechanism is set in motion, and the indicators of the movable feasts point to the exact day on which each falls in the ensuing year. To the millennial number of the year a unit is added; if the unit's place had the figure 9, a 0 is substituted for it, and a unit is added to the figures standing in the place of the decimals. The secular number of 19 will, of course, remain unmoved till midnight of the 31st of December, 1899. The same arrangement holds good for the designative word "bissextile," which marks the leap-years, and replaces the word "common" at the instant when the 31st of December of the year or century expires.

We can afford room but for a very brief mention of the dials set in the lateral faces of the clock, which are all occupied by representations of natural phenomena and stellar rotations. No. 1 of the right face shows eclipses of the sun, lunar eclipses not being shown anywhere, because they are visible only at night. No. 2 shows the rise and fall of the tide at St. Michael's Mount, a point of the French coast which is celebrated in history and song. The movable dial-plates are beautifully painted in miniature, by M. Thierrée of Beauvais, and represent the phases of sea and sky in calm and tempest, the tides being ascertained by a knowledge of the exact length of the lunar day. A key to the construction may be thus obtained by such as choose to work out astronomical problems. The movement of the dial-plates is regulated by the seventh motor, which is fitted with the conic pendulum. A small dial at the bottom of the plate carries the tidal time-table, and at midnight of every day, the needles, which are moved by a different motor, No. 16, point to the times of high and low water in the twenty-four hours immediately following. The rise and fall of the tide each fill up, as in nature, two quarters of a lunar day, and the plates also show the changes of the tidal level from day to day, according to the moon's age. Nothing of this kind, we believe, has been attempted by an English artist, since Ferguson's famous clock, which showed lunar movements, with high and low water for every day at London Bridge. This clock, however, had an error of three-quarters of an hour in the lunation, the effect of which was to place the tide three hours wrong at the end of four months. In No. 3 dial the construction is equally complex. The outer plate, which has on its label the notation of the twenty-four hours, acts as a screen to the planisphere placed behind it, and seen through a slit in the plate, which represents the observer's horizon, the meridian of Beauvais being marked by a thread of silk. On the inner plate, which revolves in the time of a sidereal day, appears a chart of the boreal or northern half of the celestial sphere, in which eighty-six constellations, 4,000 stars, and upwards of 500 nebulæ, or clusters of stars, are distinctly delineated and graduated according to their apparent magnitudes. The planisphere carries with it in its revolution a movable belt or band on the outer plate, which fills the narrow space left between the hour-figures and the central screen, and is divided into the months and days of the year. By this arrangement the dial is made to indicate,—1, the aspect of the heavens at every hour and minute of diurnal mean time; 2, the rising, passage across the meridian, and setting of each star; 3, the period of the star's presence or absence on the horizon; 4, the circumpolar stars which are perpetually visible. The planisphere, which is regarded as the *chef d'œuvre* of the clock, is constructed by M. Feuet, one of the most rising astronomers of Paris. The dial No. 1 of the left face consists of a miniature planetary, in which the orbital motions of the seven principal planets are shown, Mercury revolving, agreeably to the calculations of astronomers, in eighty-eight days, and Saturn in twenty-nine years. No. 2 dial corresponds to the same of the right face, and exhibits a seascape exquisitely painted, with the rise and fall of the tides, at Montorgueil, in Jersey, a place well known to the visitors of that island for its natural beauties and as the scene of Prynne's imprisonment. No. 3 likewise corresponds to the same of the right, exhibiting a full projection of the austral or southern planisphere. The chime-system of the clock for striking the hours and quarters has its mechanism placed behind the sculptures of the top-front, and is regulated by the second and third motors. The movements of the statuettes and niched figures are regulated with the precision requisite for the *ensemble* of this curious freak of mimetic art, so congenial to the taste of our French friends, by the motors Nos. 4, 9, 11, 12, 13, and 14.

The cost of the whole clock amounted to a sum little less than 100,000*l.*, raised by subscription, the case alone having absorbed 3,500*l.* The whole fabric, consisting of about 1,700 separate pieces, admits of being taken down and put together again, with no more difficulty than is inevitable in such an undertaking. It was removed to Paris, and exhibited in action to the public of the French metropolis, previously to its being set up in the cathedral.

We are of course aware of the objections long entertained by our own clockmakers to complicated horological fabrics, as being overloaded with cumbersome mechanism likely to produce great irregularity of motion in the going train. The plan of the Beauvais clock, however, with its double systems of motorial force, compensation,

and regulation, as sketched above, appears to repose on bases of mechanical power too solid to be easily shaken. At all events, it may be fairly regarded as the greatest curiosity of its age, and as it is, in fact, in itself an epitome of science and art, it well deserves to be called a monumental clock. Its success or failure will be keenly watched by a large class of intelligent and interested observers. If horology be not entitled to be ranked amongst the fine as well as the useful arts, the term "fine arts" has no meaning. Even if it should be proved that this clock is inferior to others of simpler construction in point of extreme accuracy as a chronometer or time-keeper, it would still be admired with as much justice as the works of Raffaelle and Canova, or any other of the great artists of former or present days.

THE TEMPLE OF DIANA AT EPHESUS, AND THE HYPÆTHRON OF THE GREEKS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting of this Institute, held on Monday evening last, the 22nd inst., Mr. Charles Barry, president, in the chair, the following gentlemen were balloted for and duly elected, viz.:—As Fellows—Mr. Edward Lucchars, of London, and Mr. Alexander William Mills, of Manchester. As Associates—Mr. Charles Taylor, of Merthyr Tydfil, and Mr. George Eastlake Thoms, of Liverpool.

Mr. James Fergusson, F.R.S., then read a paper "On the Temple of Diana at Ephesus, and the Hypæthron of the Greeks." He commenced by observing that in November, 1861, he read a paper before the Institute, in which he was induced to enter into the question of the manner in which the Greek temples were lighted, not being able to believe that so ingenious and artistic a people as the Greeks could possibly have been content with merely opening a hole in the roof through which wind and rain, as well as light, would get into the cella. The cellas of Greek temples were occupied, as was well known, with paintings, sculptures, and works of art of the most delicate kind, and needing protection from the external atmosphere, and on this ground alone it was impossible that the Greeks could have adopted so clumsy a mode of lighting as that referred to. At Agrigentum, in Sicily, light was admitted under the peristyle of the temple, but, in Mr. Fergusson's opinion, the Greeks, as an artistic people, would not open the sides of their walls, but used what were equivalent to skylights, which were capable of being closed by blinds or shutters so as to prevent inconvenience when bad weather prevailed. In defence of the hole-in-the-roof method of lighting, it had been urged that the climate was such that no inconvenience would be felt; but it should not be forgotten that the climate was quasi-tropical, that in summer the heat was very great, while in winter the rain came down in torrents. That the weather in those latitudes was sometimes extremely boisterous was proved by the recent experiences of our fleet in Besika Bay. In point of fact, a mere hole in the roof would be even more objectionable in a building at Athens than in one in this country. He could not flatter himself that his proposals met with much acceptance when brought forward sixteen years ago; but in again reading over, after that interval, the discussion that followed he did not see anything to induce him to alter his views. The late Mr. Ashpitel prepared, in conjunction with Mr. Falkner, a most elaborate reply to his (Mr. Fergusson's) paper, but he could not see that they had hit upon any weak point in it. Since that time the controversy had rested, and nothing had been written on the subject, so far as he knew, except by M. Hittorff, who went largely into the question, and rejected summarily not only his (Mr. Fergusson's) views, but Professor Cockerell's and Mr. Falkner's, propounding two designs of his own which were worse than any that had been brought forward. But, in restoring the temple of Selinus, M. Hittorff adopted a mode of lighting exactly similar to that which he (Mr. Fergusson) had suggested as the mode of lighting adopted for the Parthenon. In regard to the Temple of Diana at Ephesus, he should be obliged to differ considerably on some points with Mr. Wood,—not in regard to his facts, because they were perfect, admitting of no dispute whatever, but with regard to his theories. He said this with the greatest reluctance, because he had the greatest admiration for the zeal and perseverance with which Mr. Wood dug out the temple, and for the accuracy with which he had surveyed it. The discovery of the temple deserved to rank as the most creditable archæological exploration of modern times, on account of the indomitable courage and persistency with which Mr. Wood had pursued his labours during a space of several years before meeting with the object of his search. Layard's discoveries were brilliant, and of immense importance, but it should not be forgotten that almost directly he dug his spade into the ground he (to use an American expression) "struck oil," and was almost daily encouraged by fresh discoveries. Almost the same thing might be said of Schliemann, whose success was only deferred for a year or two. But for eleven long years Mr. Wood was engaged in exploring the site of the Temple of Diana at Ephesus,—for the first half of that period without any success, and even after the temple was found, season after season was passed in merely removing 20 ft. of earth from the site of it, and such perseverance was certainly deserving of the warmest thanks. But when the temple was found, it was (to use a slightly Irish phrase) "gone,"—there was not much of it left, and it was only with great difficulty that it could be (conjecturally) restored. Mr. Fergusson here took occasion to say that it did not necessarily follow that the person who was the best qualified to explore a temple was the one best qualified to "restore" it: generally speaking, the man in the closet, who pored over all the points, was better fitted for that duty. Mr. Wood had, however, undertaken both tasks, and while admitting that the restoration which he gave in his book was a most valuable contribution on the subject, he (Mr. Fergusson) could not see that Mr. Wood had solved all the difficulties. Mr. Fergusson then proceeded to speak of the history of the temple, which, he said, had been thoroughly investigated by Mr. Falkner, and concerning which there was in the present number of the *Edinburgh Review* a very perfect *résumé*. There were eight successive rebuildings or repairs of the temple at Ephesus, of the first five of which we knew nothing. Of the three latter rebuildings Mr. Wood found remains, all on the same site, each temple being practically the same building, rebuilt on the old lines. Of these, three rebuildings may be said to belong to the age of Pericles, and consequently as contemporary with the Parthenon, and therefore would be likely to contain all those refinements of Greek architecture which characterised that building. The last temple was of the age of Alexander the Great, and probably contained all the richness and grandeur which characterised the Mausoleum and other buildings of that date. Before the remains of the temple were dug out by Mr. Wood, the only means we had of knowing what it was like was the short account of it given by Pliny: but now that we knew what the temple really was like, it was not at all difficult to understand why nobody in modern times could agree as to its form or decorations, because it was totally unlike any other temple either in Greece or Asia. The first point that Mr. Wood had settled was that the peristyle consisted of 100 columns. A passage in Pliny said there were 127 columns, which were the gifts of so many kings, but Mr. Wood, with Falkner before him, had inserted a comma in reading the passage, making it read to the effect that there were 100 columns, twenty-seven of which were the gifts of kings. Scholars replied that such a method of getting over the difficulty was ridiculous and untenable, because there were no commas in Latin books. However, the spade had decided that there were only 100 columns. The disposal of these columns was also now quite certain,—Mr. Wood's disposal of them was undoubtedly quite correct. One point in which he differed with Mr. Wood in regard to the peristyle was as to the height of the columns. Mr. Wood made the height 55 ft. 8 in., while Pliny states them to have been 60 ft. high. He (Mr. Fergusson) was rather inclined to regard Pliny's measurement as being the correct one, on two grounds. Firstly, when he undertook to restore the Mausoleum at Halicarnassus, he found every one of Pliny's measurements corresponded with the remains found on the spot. Secondly, he was convinced that the pillars were 60 ft. in height, because their height and proportion were nearly the same as those at Didyme. At Didyme the pillars were 6 ft. 3 in. in diameter, and were 63 ft. in height; at Ephesus they were 6 ft. 1 in. in diameter. Another reason why he was convinced that the columns at Ephesus must have been 60 ft. in height, was that in looking at the elevation in Mr. Wood's restoration, the façade would seem to have the defect of *lowness*, which an extra 5 ft. in the height of the columns would get rid of. As to the use of the hypæthron, he believed that when the Greeks used it they did not cut holes anywhere in the roof; they must have made it symmetrical, and to correspond with the pillars outside. Then came the question as to whether the Greeks cut nicks in the roof; his (Mr. Fergusson's) opinion was that they did not, but that the hypæthron showed above the roof. He was strengthened in this opinion by the fact that in the fifth volume of Stuart's "Athens" a sarcophagus is represented with a cover imitating a simple roof, with just such a projection above the roof; others similar were found at Cyrene and elsewhere, all showing the mode in which he assumed the Greeks employed the hypæthron in lighting their temples. This arrangement was distinct and symmetrical, and must have accorded with the external columns. Assuming this to be so, the light could then be introduced into the cella of the temple by windows in the transverse walls so provided, and these, again, could be closed, or protected by curtains or shutters, so as to protect the interior effectually from the weather. If such an arrangement prevailed. Mr. Fergusson said he had no doubt that the window-opening was closed with ornamental bronze grilles or gratings. Mr. Wood had found during his excavations what he called an "oval capital"; but it was not strictly an oval capital, it was rather the capital which had surmounted two half-columns with a square pilaster between. This pilaster was a feature which could not be used, so far as Mr. Fergusson could see, in any restoration of the temple unless on the hypæthral theory. The diameter of the pillar was 25 in., which would give an order of 27 ft. in height, which, with Mr. Wood's Ionic order, would make up 70 ft., the width of the cella, and a very probable proportion. With regard to the semicircular form which Mr. Fergusson proposed for the roof of the cella, he would refer those who wanted to go further into the question to Falkner's "Dædalus," wherein were depicted four coins representing sections of temples, and from which Falkner argued that the temples of the Greeks were covered by semicircular roofs, and applied that principle of roofing to the Parthenon, although, in Mr. Fergusson's opinion, such a mode of roofing was not applicable to that building. Nevertheless, he thought Falkner made out a good case as to the probability of its having been employed in some of the temples of Asia. At Nineveh and Khorsabadd arched forms were common enough,—gateways were arched, and nothing was more probable than that in Ionia and Asia Minor circular forms should have been employed. Such a wooden vault as that which he conceived must have been employed in connexion with the hypæthron at Ephesus must have been very pleasing. As to the *columnæ cælatæ*, or sculptured columns, they were thirty-six in number, the sculpture extending to the height of about 6 ft., and the bases being very elaborate. In regard to the remains which Mr. Wood had found of these columnæ cælatæ, one difficulty which presented itself was that while the drum in most cases was 6 ft. 1 in. in diameter (which was the diameter of the pillars generally, there being, therefore, no doubt that they were of the lower drums), there was another drum which was only 5 ft. 6 in. in diameter, and which, of course, could not be regarded as one of the lower drums. Mr. Wood had suggested that the sculptured drums of the columns were three stories or stages in height, because at 25 ft. from the floor the columns attained a diameter of 5 ft. 6 in. But since the marbles had been sent home and placed in the British Museum, there were some six or seven blocks which were found to contain sculpture to the same height as that on the drums; but as these blocks were square, Mr. Wood had assumed that they were parts of the great frieze of the temple. When Mr. Fergusson saw them he thought they were the sculptured drums of the antæ, and he came to the conclusion that as there were five angle-pieces found they could not have belonged to the frieze. Mr. Newton, however, pointed out to him that on the top of each of three of these blocks was a circular mark showing a base of 6 ft. 6 in., and it thus became evident that they were cubical bases upon which the upper smaller blocks of the columnæ cælatæ were placed. But a difficulty in the way of accepting this ex-

planation was that they could not have had the same base repeated above, for it would be almost indispensable that the columnæ cælatæ could range with those on either side. Mr. Fergueson suggested that there weretwo of these sculptured columns between the antæ at each end, and two in front. The arrangement at the sides was doubtful to some extent, but at each end there certainly were eight. The lines of the hypæthron were also brought down and marked, in all probability, by columnæ cælatæ, which was eminently an artistic and proper arrangement. But due allowance being made for the magnificence of the columnæ cælatæ, it was difficult to believe that without possessing some other special feature the temple could have been so enthusiastically spoken of by the ancients as one of the seven wonders of the world. It was the smallest of the six great temples of which we knew anything, as the following list of dimensions would show :—

Temple of Juno at Samos ..	360	ft. long,	166	ft. broad.	
,, Agrigentum ..	360	,,	173	,,	
,, Selinus	358	,,	165	,,	
,, Didyme. ..	355	,,	163	,,	
,, Athens	354	,,	171	,,	
,, Ephesus...	342	,,	163	,,	

He was strongly inclined to the opinion that the temple owed a great deal of its magnificence to its base. It was found to be raised upon a stylobate, about 10 ft. high. Pliny gave the dimensions of what he called the *universum templum*, 220 Greek feet, by 425. Mr. Watkiss Lloyd, in taking the dimensions, found that the ratios between Pliny's dimensions and those given by Mr. Wood were nearly exact; he found out that, by adding 7·6 ft. to each dimension of the peristyle from Mr. Wood's dimensions, he got a complete double-square. Working the other way, from the outside, he deducted 8 ft. from Mr. Wood's dimensions, and got a ratio of nine to five,—a very favourite ratio with the Greeks. Mr. Watkiss Lloyd's calculations had shown that Mr. Wood's measurements were as exact as they could possibly be, while at the same time they completely confirmed Pliny's measurements, and proved that his "*universum templum*" was a terrace-wall 8 ft. within the basement-stones which Mr. Wood had found. Mr. Fergusson went on to say that if he were restoring the temple he should be obliged to choose one ratio or the other, and to show how the terraces were adorned by statuary. If the Greeks worked up to a ratio of two squares they must have marked it in some way. Probably it was done by means of a bronze railing, which, as it would have been designed by a Greek architect and adorned with sculpture, gilding would very easily have constituted a feature helping at least to render the temple one of the most highly ornamented buildings in the world. As to the temple at Didyme, Mr. Fergusson went on to show that much ingenuity had been devoted to attempts to show that Greek temples were not roofed, but were open to the atmosphere, because in this temple no floor was found; the explorers dug down to the virgin soil without finding any trace of a floor; they found, however, a flight of steps leading down to the level of the ground outside. They assumed that the peristyle and pronaos were built merely as an approach to the sacred grove; but Mr. Fergusson said his reading of the riddle was that when the temple had been carried up to the full height of the external walls the builders found they could not roof it, and Strabo's account completely confirmed him in that supposition :—"On account of its vastness it remains without a roof, and there now exist, inside and outside, precious groves and other fanes to contain the oracle and the sacred things." It was evident, however, that had the carpentry of the Greeks enabled them to roof this temple, the mode of lighting it would have been hypæthral. There were still two temples of the Greeks which had not been explored,—that of Jupiter Olympias at Athens, and the one at Samos. Excavations would probably show where the transverse walls came and would thus throw some light on the question of the hypæthron. We knew sufficient of the cella of the Parthenon to be able to say that the hypæthral system of lighting just described could not be applied to it, and this would apply to all hexastyle and the smaller Doric temples. Mr. Fergusson, in conclusion, said that from all his researches he was confident that there was no single instance in which a Greek temple was not lighted by perpendicular vertical lights, and that in no single instance were horizontal lights used. And so far as he knew, all the Roman temples, with the single exception of the Pantheon, were lighted in the same manner.

[For the foregoing abstract of Mr. Fergusson's interesting paper we have had to depend on our reporter's shorthand notes, which Mr. Fergusson has kindly revised. To accurately take a full note of a paper on such a subject, when the author's remarks are interspersed with explanatory references to drawings and diagrams, is an exceedingly difficult, if not an altogether impossible, task. But the management of the Institute seems to make it a matter of policy to hinder, rather than to facilitate, the reporting of its proceedings by the professional press. Formerly our reporter was allowed the use of a copy of the paper read. Recently, however, the order went forth that in future no reporter was to be so favoured,—so-called "abstracts" being provided by the secretary instead. These abstracts, when supplied, were of the most meagre character, but latterly even these have not been "prepared." We shall next week give a report of the discussion which followed Mr. Fergusson's paper.]

THE RAILWAYS OF THE BRITISH EMPIRE.

THE last general report of Captain Tyler on the railways, issued within the last few weeks, contains several features of special interest, inasmuch as it is the first report of the kind presented by that officer which deals in detail with the railways in British possessions as well as with those in the United Kingdom. In the present document Captain Tyler shows the actual mileage of railways open in each of our colonies down to the time when the report was made up, as well as lines in progress and projected, in addition to the information which he supplies in respect of railways within the United Kingdom, the result being that he is enabled to lay before the public the entire mileage of railways in the whole British Empire, and also to point out the progress of railway construction in every colony and possession under British rule.

The report is made up to the 31st of December, 1875, and states that at that time the total length of railways open for traffic in the United Kingdom was 16,658 miles, of which 8,898 miles were laid with two or more lines, and 7,760 miles with a single line of rails. The total number of miles was made up as follows, viz. :—In England, 11,789 miles; Scotland, 2,721 miles; Ireland, 2,148 miles. In the year 1875 there was an increase of 209 miles, viz., 169 miles in England, 21 miles in Scotland, and 21 miles in Ireland. He observes that much has yet to be done in the making of still further new lines both in England, Scotland, and Ireland, and that whilst in six years, from 1870 to 1875, 1,513 miles of new lines were opened, the applications to Parliament during the same period were for 6,080 miles, of which 2,500 miles were sanctioned. Additional lines were being laid down on the busiest portions of existing railways, whilst some of the lines which had been partly constructed and temporarily abandoned would be recommenced, and new or widened lines become, as traffic continually increased, more and more necessary for separating, on through routes, the fast and the slow traffic from each other. The total capital expended on these railways in the United Kingdom down to the end of 1875, was 630,223,494*l.*, of which 20,327,563*l.* were spent in 1875. The returns showed that the average cost of railways per mile was annually increasing. In 1858 the cost was a little above 34,000*l.* per mile, whilst at the close of last year it was 37,833*l.* per mile. The total receipts from railway traffic in 1875 amounted to 58,982,753*l.*, on the 16,658 miles open, as against 56,899,498*l.* on 16,449 miles open in 1874. The expenses were 32,198,196*l.* in 1875, and 31,647,517*l.* in 1874. The total number of passenger journeys in 1875 was 506,975,234, exclusive of the journeys of 597,257 season and periodical ticket-holders. The locomotive engines employed on the railways of the United Kingdom in 1875 were 12,439, and the number of vehicles, exclusive of locomotives, was 393,799, as against 289,994 in 1870, showing an increase of more than 100,000 vehicles within the six years. The returns, however, do not represent the whole of the rolling stock at work on the several lines, as they do not include the locomotive engines and vehicles used on the lines, belonging to private owners and companies.

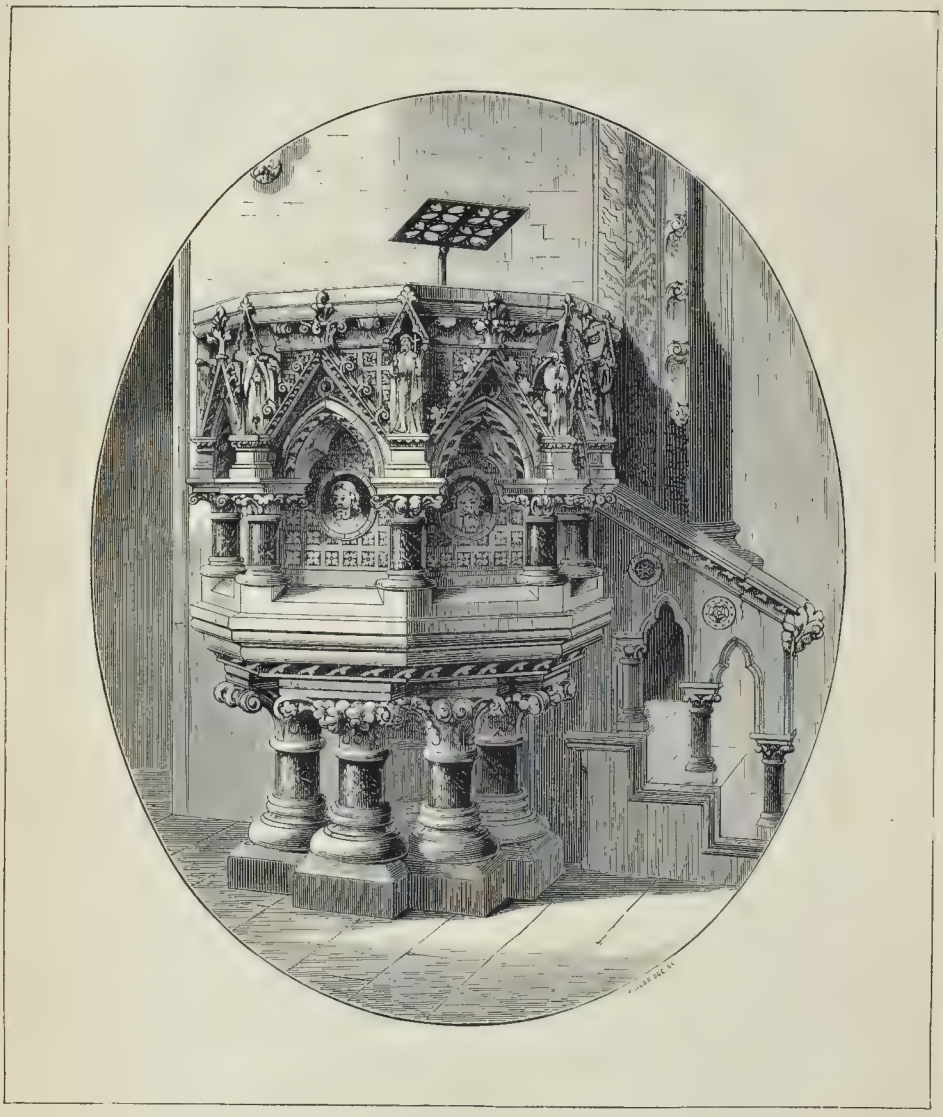
We now come to that part of the report relating to railways in British possessions, in reference to which Captain Tyler remarks that last year, at his request, the Board of Trade communicated with the Colonial Office with the view of obtaining information from various parts of the empire as to the construction and working of railways, and the prospects of their extension, to the end of 1875. He observes that this being the first occasion on which an account of the railways of the empire has been compiled, he has entered into more minute details than will be required in future reports. After stating that the particulars have been obtained from the commissioners and engineers of the several Colonial lines, he proceeds to give the number and mileage of the various railways in the different Colonies, from which we make the following summary :—

New South Wales :—At the end of 1875, railways open, 437 miles; in course of construction, 257 miles. Queensland, lines open, 263 miles; in course of construction, 258 miles. South Australia, open, 258 miles; constructing, 103 miles. Victoria, open, 618 miles, of which 569 miles belong to the Colonial Government. West Australia presents an exceptional position to most of the other colonies, the report stating that at the end of 1875 there were no lines open, but that three lines were projected, and one was in course of construction, which when completed would be 34 miles long. British Guiana, open, 21 miles. Cape of Good Hope, open, 149 miles, the whole working by the Colonial Government; 108 miles in course of construction, and in addition 188 miles determined upon for the western district, and 388 miles for the eastern district. Ceylon, open, 91½ miles, all the property of the Government, and surveys made for 126 miles of new lines. Natal, open, 5½ miles only, but in addition 119 miles of new lines determined upon. The report states that Natal is much in need of railways, and that there is every probability that in a few years it will possess a system of railways which will exercise a beneficial influence upon its commerce and industries. Jamaica, open, 25 miles. Mauritius, open, 66 miles. Tasmania, open, 167 miles. New Zealand, open, 542 miles; 463 miles under construction; and 220 miles determined upon, but not yet commenced. The report adds that the greatest portion of the lines are of Government construction. Dominion of Canada, 4,443 miles open, in addition to 343 miles in the United States belonging to the Dominion. The report gives the rolling stock on the Canadian lines as 971 locomotive engines, 986 passenger vehicles, and 1,050 coal and ore wagons. India, open, 6,461 miles, exclusive of sidings. There are 5,710 miles of guaranteed railways, and 751 miles of State lines. The total expenditure on State lines to December, 1875, was 12,070,185*l.*, and on guaranteed lines, 93,720,794*l.* The net revenue on the Indian lines for the year 1875 amounted to 3,627,194*l.*, the profit on the guaranteed lines being 3,555,840*l.*, and on the State lines 397*l.*, 302*l.*, and 95*l.* respectively.

The general summary is that at the end of 1875, as stated by the report, there were 16,658 miles of railway open in the United Kingdom, and 13,547 miles in British possessions, making a total in the British empire of 30,205 miles.

The report enters at great length into a detailed description of the several colonial and Indian railways, enlarging on their construction in respect of bridges, viaducts, embankments, tunnels, stations, and other buildings, together with materials of construction.

An Architect summoned for Breach of Building Bye-Laws. — At Durham, on the 6th inst., Mr. John Fox, architect, was summoned by the Durham Rural Sanitary Authority for a breach of the bye-laws in building a wall behind his house in New-street, Durham, thereby forming a certain street of a less width than 18 ft. It appeared that in the early part of last year the defendant sent in a plan for the erection of five houses in the street in question, but the plan was rejected because there was not sufficient space between the back of the houses and those opposite. The defendant, however, went on with the houses, and in October last commenced to build a brick wall behind them which was only 12 ft. from the property on the other side. The defendant refused to remove the wall, and hence the present proceeding. In defence it was shown that the street in question was laid out in building sites some years before the passing of the Sanitary Bye-laws, which only came into operation in January, 1876. Under these circumstances the Bench dismissed the case.



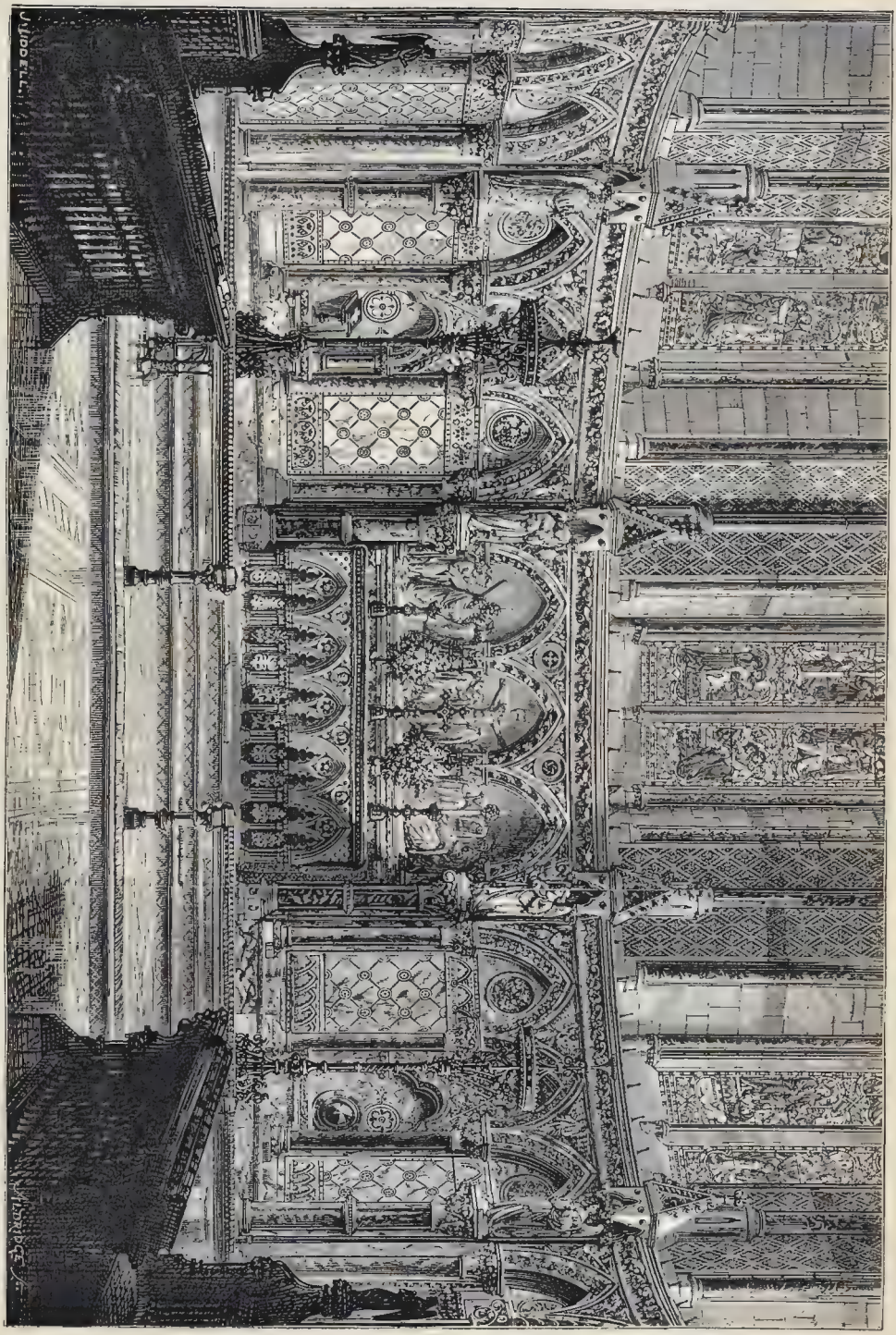
ALL SAINTS' CHURCH, CHELTENHAM: PULPIT.

ALL SAINTS' CHURCH, CHELTENHAM.

THE reredos of this church has lately been completed from the designs of Mr. J. Middleton, architect, of Cheltenham, and the work has been executed by Mr. Boulton, carver, of the same place. The reredos runs round the east end of the chancel, and is divided into five compartments, each compartment consisting of three arches. The divisions are marked by angels, 2 ft. 6 in. high, standing under canopies, above which rise marble pillars which are carried up to support the groining of the chancel. Of these angels some are holding symbols of the "Passion" while others have their hands joined in an attitude of prayer. Smaller angels playing on musical instruments occupy the spandrels. The plinth and pillars are of English, Irish, and Italian marble, the larger angels of Caen stone, and the rest of the work is of alabaster. The three centre compartments, forming the reredos proper, contain representations in relief of our "Lord bearing His Cross," the "Crucifixion," and the "Entombment," the other arches being filled in with incised work of black cement on an alabaster ground.

The pulpit is constructed of materials similar to those used in the reredos. The figures at the angles represent Noah, Joseph, Elijah, St. John Baptist, St. Chrysostom, and St. Augustine, the heads in the medallions being those of our Lord and the evangelists.

The dimensions of the chancel are 45 ft. by 25 ft.; those of the nave and aisles being 93 ft. by 56 ft. 2 in., internal measurement.



ALL SAINTS' CHURCH, CHELTENHAM: REREDOS.—MR. MIDDLETON, ARCHITECT.

THE METROPOLITAN BOARD'S "PLANS AND SECTIONS" OF PROPOSED STREET IMPROVEMENTS, 1877.

ON examining the plans of the Metropolitan Board's proposed grand scheme of further street improvements which accompany the notices deposited (in compliance with Standing Orders) at the vestry offices of the districts immediately affected by the proposed works, preparatory to Parliamentary sanction being applied for in the approaching session (1877), I observe that one of the three principal divisions of the scheme (section 3) adopts in its entirety a scheme that was projected sixteen years ago, and of which you then published a paper at my hands detailing the circumstances attending that movement, and in illustration of the design you appended a map engraved to the size of your page from the original drawing.* On comparing this map and matter with the Board's sheet, showing section 3, the identity, even to the minutest details, will be at once perceived, and leaving it pretty clear that in the preparation of this section of the Metropolitan Board's published scheme the *Builder* has been the instructor; for the proceedings in that affair were entirely unconnected with that Board; and therefore to the promoters of this former scheme—whose names will hereafter be referred to—I suggest the merit of the projection is in fairness due.

The following little history of the affair referred to, epitomised from the *Builder* article, you, Mr. Editor, may think worthy of here appending. When the Charing-cross Terminus was being established, the Terminus Company, in their prospectus, gave out the declaration of it having been carefully estimated that from 6,000,000 to 7,000,000 persons per year would pass through its portal, thus giving on an average, say 20,000 for every day. And as a large portion of the persons—either in the ingress or egress—would be conveyed in vehicles of some kind, it was generally thought that the Cross traffic, and occurring in rushes at intervals, would render the ordinary passage of the Strand at this part difficult and dangerous. Communications in reference to this matter having passed between the vestries of St. Martin's-in-the-Fields and St. James's, Westminster, each vestry appointed delegates to meet and confer together with a view of seeing if any practical measure for ameliorating the anticipated evil could be devised. The burden of the delegation, however, merged mainly into the hands of Mr. Henry Bidgood and myself, of St. James's, and Mr. Dalton, of St. Martin's, with Mr. Dangerfield, vestry clerk of the latter.

It so happened that at that time the inadequacy of the National Gallery buildings, for its greatly increased and rapidly increasing requirements, was engaging the attention of the Government and Parliament.

The vote of the House of Commons of 1856, conclusively rejecting the proposition to remove the National Gallery to South Kensington, together with the report of the Royal Commission of the next year approving and recommending the Gallery staying at Charing-cross, and its accommodation enlarged, as also the tenour of the several discussions on the subject in the House of Commons, sufficiently justified the conclusion that a new grand edifice was to be erected here, or the existing structure enlarged by new buildings in the rear, in either case, on ground to be acquired for the purpose by the buying up of the St. Martin's Workhouse, and the removal elsewhere of the St. George's Barracks. Now, the narrow thoroughfare of Hemming's-row, abutting on the workhouse to its full length, and the similar thoroughfare, Orange-street, in like manner on the barrack-yard, and these two streets being in line with the newly-made thoroughfare of King William-street, carrying the line straight into the Strand, suggested the idea of a readily, and comparatively cheaply practicable, grand public improvement, by the creating of a new length of street to continue Piccadilly in uniform width of way direct to mid-Strand, making Hemming's-row and Orange-street to constitute part of the line by their being made out to the required width by the frontage of the new edifice being kept back. It was thought that the body to whom would be confided the directing of the building of the National Gallery, would,—seeing that by it the new edifice would be given position on a main arterial thoroughfare,—be induced to concur in the scheme, and readily give up, in exchange for that important advantage, the 30 ft. or 40 ft. wide strip of land requisite for the necessary widening of the roadway in that part, and thus, inclusive of King William-street, already in existence, about two-thirds of the entire length of the new street would be provided, as it were, ready-made, and without cost. The remaining third of the line to be provided by utilising Coventry-street, widened out on its south side some 30 ft., and a short length of Princes-street (about 200 ft.) also widened out; then, by a short cutting driven diagonally through the small block of buildings (bounded by Spur-street, St. Martin's-street, Whitcomb-street, and Blue Cross-street), and through the Orange-street Chapel to a junction with the Hemming's-row line.

It should be here remarked that, at this part, there occurs a little deviation from the straight line of the designed new street. Thus: the run of the Piccadilly and Coventry-street line, and the run of the Orange-street and Hemming's-row line not being in direct line, but running in parallel course, with about 250 ft. of separation, similar to the case of lower and upper Regent-street, the new piece of street forming the junction of the two lines, is designed to take the segment form after the manner of the Quadrant. The last remark, as well as the following short summary of the various points of public improvement set forth at the period referred to as consequent on the specified works being carried out, apply in like force as respects the design now put forth by the Metropolitan Board,—viz.: 1st. Important improvement in the City approach from the west by the creation of a section of a commodious new street half a mile in length, and shortening of the way (as against the usual devious route of Trafalgar-square) by upwards of an eighth of a mile; also the avoidance of the long steep gradient of (lower) Regent-street (1 ft. in 30 ft., through a run of upwards of 1,000 ft.). 2ndly. Relief to the difficulty at West Strand by the eventual drawing off from that part of all the western through traffic. 3rdly. The doing away with the very ugly and extremely inconvenient sharp twist in the divergence of the Cranbourne-street line at New Coventry-street. 4thly. The increasing of the accessibility of the National Gallery.

The several conferences held in respect to this scheme, with her Majesty's Board of Works—the department to which at that period Metropolitan Public Improvements pertained—were satisfactorily welcomed. The honorary promoters were assured by the then Chief Commissioner (the Hon. W. F. Cowper) that the idea should be prominently brought under notice during the succeeding recess, when the Government would most certainly have under its consideration the whole matter of the National Gallery, and when the future action of the Government in respect thereto would assuredly be determined on; intimating also at the same time that he should be prepared to recommend that the expense of the new street part of the business should be made a charge on the London Bridge Approaches fund (coal and wine dues), on which account,—it was understood,—a balance was accruing sufficient for the purpose.

But the Government efforts to bring about the erection of a new National Gallery edifice—or such an enlargement at once of the existing structure as would engage the site of both workhouse and barracks—becoming frustrated by the difficulty found on the money question in the House of Commons, as also by the persistent refusal of the War authorities to allow of any interference with the St. George's Barracks; and the new street scheme (in so far as related to the thing as a joint work), not being applicable in the circumstances of the piecemeal enlargement of the building which became adopted instead, the project fell through.

It is, however, a point of satisfaction to me, and doubtless so also to my fellow honorary workers on the occasion, that now, after sixteen years, we see our project being officially taken up, and in its precise original state put forward as one to be immediately carried out.

And, furthermore, I would observe that as respects Section No. 6 of the Metropolitan Board's great scheme, this is also a revival of part of an abortive effort at street improvement of seven years ago, in which Mr. Henry Bidgood, as its original projector, and myself were prominently engaged. This division of that unsuccessful projection,—which had for its object the opening out of a more direct communication between the north and south parts of the metropolis, *viâ* Charing-cross,—was also aimed to be carried out in conjunction with another proposed kindred undertaking, viz., the construction of an underground railway intended to connect the Euston-square and Midland termini with the terminus at Charing-cross, of which project Mr. J. Wolfe Barry was engineer, and Mr. Toogood Parliamentary agent; and of which the *Builder* published a paper, also at my hands, detailing all the circumstances of the joint scheme, together with an illustrating map.* The street communication improvement projection was to be effected by the formation of a new 60 ft. wide street in continuation of Tottenham Court-road, planned to strike straight through Soho to Leicester-square, crossing the area of that square (the spot at that period an unsightly waste), then dropping down by the line o St. Martin's-street, and skirting the western flank of the National Gallery, and passing to the junction with the Whitehall line by way of the western side of Trafalgar-square and Charing-cross. The construction partnership applied only to the piece of the line from Tottenham Court-road to Leicester-square, and the conditions arranged were that the Railway Company were to buy up the properties and construct their railway, and make good the surface above it for completing the roadway of the new street, and the Metropolitan Board to contribute the fair proportionate quota towards the outlay on the land purchases, and to which that Board ultimately assented, and voted a provisional contribution. But after getting their Act, the railway promoters,—the difficulties of their position being greatly augmented at that critical juncture by the lamented decease of Mr. Toogood, the chief of the movement,—being unable to complete the formation and settlement of the proprietary, the project collapsed; and with it also went the new street project.

The Metropolitan Board's present plan for this No. 6 section of their proposed great scheme of street improvements seeks to effect the like object as was the intent of our "1870" projection, only by a slightly different route,—the change probably necessitated by Mr. Grant's works in Leicester-square. Its route from the starting-point at Oxford-street runs to the length of Crown-street, as in the "1870" plan. Thence diverging a little eastward and taking its course through that miserable quarter of Soho which lies immediately in the rear of the east side of Grafton-street and Little Newport-street; then, proceeding on, strikes Hemming's-row alongside of the new Provident Bank building, rounds the eastern end of the National Gallery by St. Martin's-place, and thence passing by the eastern side of Trafalgar-square and Charing-cross to its proposed junction with Whitehall.

One further notice! The Leicester-square route (the Bidgood line) embraced a provision which in the instance of the Board's planned line does not, of course, occur, and this a provision (having regard to the safe-keeping of the Nation's priceless treasures which that building holds) of no slight importance, as by it the National Gallery became positioned on a wide open street, instead of as now abutting on houses of a densely-populated quarter, and occasioning the risk, perpetually, of fire being communicated from that direction. And at the time of the agitation of this scheme it was confidently expected that, in consideration of so important an acquisition as the National Gallery being by the work given isolation in the now only part of the building not isolated, a fair contribution by the State in aid of the making of that part of the new street would be forthcoming.

FREDERICK CRANE,
Churchwarden, St. James's, Westminster.

* See the *Builder* for 1861, pp. 54, 55, 56.

BRITISH COMMISSIONERS FOR PARIS EXHIBITION.

THE Royal Commission appointing Commissioners for the Paris Exhibition of 1878 has been published. Strange to say that, although the President of the Institution of Civil Engineers, the President of the Water-Colour Society, and the President of the Agricultural Engineers' Association, are named members of the Commission, the President of the Royal Institute of British Architects is not included, nor is there a single architect in the list.

We are glad to see that Mr. P. Cunliffe Owen, C.B., is appointed secretary to the Commission.

Royal Academy.—We are informed that at a general assembly held on Wednesday Messrs. Walter W. Ouless, Peter Graham, and Marcus Stone were elected associates.

* See the *Builder*, March 18, 1871, pp. 203, 204, 205.

RESTORATION OF THE TUILERIES.

THE commission which in August last was appointed to consider the condition of the Tuileries, that had remained in ruins since the sad days of the Commune, have now determined on how to treat the remaining parts of a building so famous in the history of the last three centuries.

So carefully-selected a commission would not be likely to overlook the existing beauty of the object they were called upon to consider, and without encouraging the suggestion to reconstruct the whole building from the plans of Philibert Delorme, which are known still to exist in the national archives, and which would involve the serious task of reforming what may be regarded in Paris in the present day as the anachronism of a palace, they have leant throughout their consultations to the hope of preserving all that is worthy of being preserved, and confining themselves to the removal of the evidences of the injuries of 1871.

The commission, which had, at its meeting of the 14th of August last, confided to an under-commission, composed of Messrs. Krantz, Reynaud, Duc, and Viollet-le-Duc, the preparatory studies for the decision to be come to, have considered the report of this under-commission. Acting on this, the commission is of opinion :—

1st. That that portion of the Tuileries still standing ought to be preserved and restored.

2ndly. That the commission ought to confine itself to the execution of the works named hereafter: The consolidation and restoration of the exterior walls and partition walls judged necessary for the stability of the edifice; re-establishment of the roof, disposing it in the way most favourable for the new destination of the edifice, and restoration of all the exterior joinery; suppression of the walls raised above the porticoes; re-establishment of the terraces; application of a lateral façade to each of the extreme pavilions; establishment of a regular garden in form of a *parterre* round the building.

3rdly. That these works should be executed in the spirit, and according to the directions recommended in the course of the report, and that such an activity should be impressed on them that their completion for the 1st of May, 1878, can be hoped for.

4thly. That the restored palace should be transformed into an art-museum.

The commission invites the Minister (of Public Works) to prepare a scheme as promptly as possible in the sense that has just been indicated.

These conclusions were unanimously adopted, and consequently the Minister of Public Works intends, after having consulted the Council of Ministers, to lay before the Senate, which has taken the initiative in the question, a scheme, the dispositions of which will be conformable to the resolutions of the Commission of the Senate, and of the extra-Parliamentary Commission.

This latter has to decide all the questions relative to the interior arrangements. It has been decided that the administration should prepare the plans and figures necessary for the execution of the exterior and interior reparations, and that these plans, after having been examined by the under-commission, should be eventually submitted to the commission.

When the Palace of the Tuileries is restored, the Parisians will have additional reason to be proud of its new beauty, for it will occupy one side of that already pleasant thoroughfare between the Pont Royal and the Place de Rivoli, which it is proposed to continue through the rue St. Honoré, demolishing the houses round St. Roch, leaving it in a piazza of its own, and continuing the rue des Pyramides with arcades on each side until it reaches the new Avenue from the Opera House, the corner of which and the rue St. Roch they have already commenced to reconstruct.

The entrance to the Tuileries Gardens will, of course, be enlarged opposite the Place de Rivoli, giving a better position to M. Fessayet's statue of Joan of Arc, which, however, there is some talk of removing, the call for which is much less required than that of the two stumpy sphinxes at the gate on the Quai des Tuileries. These monsters are executed in the true spirit of New Road sculpture,—a spirit so rarely to be met with in the work of French artists. The fabulous animals in this case serve as a terrible set-off to the noble bronze lions which stand within so short a distance of them. If these ill-formed monsters could only be animated by the intelligence of their ancestress they would very soon, with praiseworthy mortification, destroy each other.

TEREDO AND TEREBRANS: THEIR RAVAGES ON TIMBER. THE "BEERISING" PROCESS.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

AT the ordinary fortnightly meeting of this Society, held on the 18th inst., in the rooms of the Iron and Steel Institute, Westminster Chambers, the president, Mr. R. M. Bancroft, in the chair,—Mr. W. J. Brain read a paper on "Teredo and Terebrans: their Ravages on Timber." The following is a brief abstract:—

Teredo Navalis.—This very destructive sea worm is of an elongated shape, the large anterior part of which constitutes the boring apparatus, and contains the organs of digestion. The tail portion is armed at its extremity with two shells, and has projecting from it a pair of tubular organs, through which the water enters for the purpose of respiration. The manner in which it appears to perforate the wood is by a rotary motion of the foot carrying round the two shells, and thus making them act as an auger, which is kept in connexion with the wood by the strong adherence of the foot. The teredo lines the passage in the wood by a hard shell. This shell is formed around, but does not adhere to the body; it is secreted by the external covering, which, in its first formation, is extremely fragile, but becomes hardened by contact with the water, and adheres to the wood. The interior of this shell is not filled by the body of the teredo, but a large space around is occupied by water, admitted through the small orifice in the surface of the timber, and through which the animal first entered. The author mentioned that, some years ago, when engaged in Cornwall under the late Mr. Brunel, he had, in the course of his duties, to select suitable timber for the engineering works then in operation. This timber was all American pine, and varied from 12 in. to 16 in. square. He had every opportunity of inspecting it, and pieces taken from the raft apparently sound, after going through the ordeal of the circular saw, came out quite eaten away in the inside. At first sight there appeared nothing to guide one in selecting the timber, but upon close examination there could be perceived a small mark on the outside of the log similar to a burn with a red-hot iron, where the worm had made its entrance. Sir Isambard Brunel is said to have taken his idea of the Thames Tunnel from carefully studying the action of this animal. Professor Owen suggests that the power of the Teredo to bore into wood depends upon muscular friction. Professor Forbes, Dr. Carpenter, and Dr. Lyon Playfair could not arrive at any definite conclusion as to whether the boring action of the teredo was mechanical or chemical. Dr. Deshayes made careful investigation at Algiers and Mr. Thompson at the Portpatrick Pier, Belfast, and both came to the conclusion that the borings were made by an acid secretion; but the general opinion is that the boring action is mechanical: this was the author's opinion, after some thirty years of experience in timber piling and marine work of almost every description. The author cited a case of a fir pile taken from the pier-head at Southend, in which one of these worms was found 2 ft. long and ¾ in. in diameter; no doubt this worm had grown to this large size by having fir timber to feed upon, the wood being soft and porous. There were numerous instances of the teredo attacking keels of ships made of oak and perforating them completely. The author referred also to a sample of the pier at Yarmouth which was so honeycombed by the teredo that it could be crushed between the hands as if it were paper.

Limnoria Terebrans.—This enemy to marine constructions in timber resembles a wood-louse, and is so small as hardly to be perceptible in the timber it attacks, being almost of the same colour. It is scarcely larger than a grain of rice, but it is a terrible pest. It works with great energy, and the vast numbers quite compensate for their small size, for as many as 20,000 will appear on the surface of a piece of pile 12 in. square. It proceeds in a very methodical manner, and makes its way obliquely inward, unless it meets with a knot, when it passes round the obstacle, and resumes its former direction. The surface of the timber being first attacked, it proceeds progressively into the wood to the depth of about an inch and a half. The outward crust formed by these attacks then becomes macerated and rotten, and is gradually washed away by the beating of the waves. The *Limnoria* does not work by any tool or instrument, as described in the case of the teredo, and Dr. Coldstream is of opinion that the work is effected by the use of its mandibles. The *Limnoria* almost always works under neap tides; it cannot live in fresh water; and while it is destroying the surface of a pile, the teredo is attacking the interior. Examples were given to show that at Lowestoft harbour 14-in. square piles were in three years eaten down to 4 in. square; and at Greenwich a pile 12 in. square was eaten through in seven years.

The President, in speaking of methods of preserving wood, said the "Beerising" process is the invention of and is named after Mr. Sigismund Beer, a German chemist, of New York, who claims to have discovered that by boiling it in a solution of borax, wood could be speedily freed from the albuminous sap, which, from its hygroscopic properties prevents the effectual seasoning of the timber, and which, being extremely prone to ferment, by its decomposition promotes the growth of fungi and causes decay. This process differs from all other previous methods, inasmuch as, instead of seeking to impregnate the timber with preservative agents, it aims at entirely washing out and removing the cause of decay, leaving only the pure wood fibre, which itself is very durable. Wood thus treated becomes much denser, closer in grain, and harder. The pores being only filled with water, they contract as the wood dries, hence it is not so susceptible to atmospheric changes as stove-dried timber. It is not discoloured, and can be used for all kinds of cabinet-work, as well as for rough purposes. Mahogany and other wood can by this process be seasoned in the log, and cut up as required, thus doing away with the necessity of keeping a large stock. Samples were submitted of pine deck-planks, supplied to one of the Cunard Company's steamers. The planks were sawn from logs about the end of October last, and were delivered, fit for use, on December 13th, it being asserted, more thoroughly seasoned than they could have been by any other method in two years. The increased density and hardness of Beerised timber, besides improving its appearance, must materially increase its strength and resistance to wear and tear, rendering it valuable for floors of warehouses and public buildings where there is much traffic. The process is now being tested by the London and North-Western and the Birkenhead Joint Railways. Wood so prepared has also been used by the Liverpool Corporation in the erection of Steble-street Baths, and also for repairing Cornwallis-street Baths, where, owing to the heat and moisture, the timber decays in a very few years. It has for some years been used in some of the Lancashire collieries, in which wood is found to decay in a very few months, owing to the deleterious character of the water. Insects are attracted by the albuminous sap contained in the pores of ordinary timber; from this they derive nutriment, and the nourishing properties of the albumen seem to neutralise the strongest poisons, even timber impregnated with corrosive sublimate falling a prey to the ravages of vermin (*vide* "Enc. Brit.," vol. xxi., p. 279). It is claimed for the Beerising process that, by removing the albumen it removes that which attracts insects; and although no experiments have been tried to test this, the inference is that Beerised timber would not be so readily attacked by the teredo. Unlike some preserving processes, Beerising does not increase the inflammability of the wood, but rather decreases it; and after undergoing this process timber can readily be impregnated with other substances, so as to render it absolutely fireproof. The method of treating is as follows:—The wood is closely, but not tightly, packed, in a large wooden tank, along the bottom or sides of which run perforated pipes communicating with a boiler; it is kept down by strong crossbars to prevent floating; a solution of 1 lb. of borax to every thirty gallons of water is introduced, until the wood is within an inch or two of being covered, and the whole is boiled by the admission of steam, through the perforated pipes before mentioned. After boiling awhile it is allowed to partially cool, and is again boiled. This effects the more perfect impregnation, as by the first boiling the air is driven out of the pores of the wood, and on cooling, the solution is forced in by atmospheric pressure. After the second boiling the solution is run off hot, and the timber again boiled in clean water to remove all traces of the sap now in combination with the borax solution; it is then taken out of the tank as hot as possible, when it dries rapidly. It will be noted that in this process the wood is not impregnated with borax as a preservative; the borax is merely used as a solvent to remove the putrescible sap, and the

more thoroughly every trace of this is washed away, the more durable will the wood be found.

Several members present who had been in charge of marine works abroad gave the meeting much information respecting these pests; and, after an interesting discussion, the meeting was adjourned until February 1st, at seven p.m.

NEW BUILDINGS AT BALLIOL.

A NEW hall at Balliol College has been formed at the north end of the garden, on some land recently acquired. It is built of Tisbury and Bath stone, and is of the Geometric period of Gothic architecture. The roof is covered with green slates, and from the centre of the ridge rises a *flèche*, forming an effective ventilator. The necessity of respecting the ancient lights of Trinity College has dictated a flatter pitch to the roof than would perhaps otherwise have been adopted. Internally, the hall occupies the first floor of the building, and is approached from the garden by a flight of thirty steps 13 ft. in width, which, passing through a richly decorated open archway, brings the visitor first to the ante-hall, and then through a screen on the right into the hall. A serving-room in continuation of the ante-hall is also divided from the hall by the same screen. The internal dimensions of the hall itself are, length 90 ft., breadth 36 ft.; its roof is of open timber construction, visible to the apex. The whole of the woodwork of the hall is of oak; floor, dado, screens, and roof. Over the ante-hall and serving-room at the west end a minstrel's gallery has been formed (on the occasion of the banquet, occupied by ladies). At the east end is the high table raised two steps above the rest of the hall, with a recessed window on either side, and a panelled oak canopy at its back at the end of the hall.

The hall is divided into seven bays (including that of the high table), and is lighted by twelve three-light traceried side-windows, and a large four-light window at the east end. The hall has two fire-places, and the walls are lined with Bath stone above the panelled oak dado. The carved ribs of the roof principals are four-centred, this particular form having been adopted in consequence of the comparatively low pitch of the roof. Between the constructive lines of the principals the spaces are filled in with vertical tracery, which adds materially to the intricacy and interest of the roof. The elaborate corbels which support the roof principals bear each the arms of one of the benefactors of the college. In the east window and the two windows at the end of the high table are placed thirty-two shields blazoned with the arms of some other benefactors.

It is in contemplation to place shields in a similar way in each alternate window on either side of the hall, the whole of which are at present filled with quarry glass, relieved with designs of conventional foliage in subdued tints.

The hall is lighted at night by brass gas brackets of a somewhat unusual form, having groups of burners in a semicircle placed against the piers between the windows. The rooms beneath the hall are approached by two entrances from the garden. One of these entrances leads to the Fellows' Common Room (30 ft. by 18 ft.), communicating with the dais of the hall above by means of a circular staircase. The Common Room is made interesting by being surrounded with some fine Jacobean oak panelling taken from the old chapel. Behind the common-room is a lecture-room (28 ft. by 17 ft.), from which, by means of a private staircase, the new and spacious chemical laboratory at a lower level can be reached.

The second garden entrance gives access to the buttery and shop, communicating with the stores, wine and beer cellars, and also with a balcony on the side of the east wall of the kitchen. From this balcony the college servants obtain supplies wanted for different parts of the college without interfering with the operations of the *chef* below, the balcony and kitchen floor being united by a lift.

The kitchen itself is 36 ft. by 23 ft., and 23 ft. in height. It has been fitted up with every convenience appertaining to a first-class modern kitchen. A bakery with very large oven, a pastry-larder, coal-cellars, messroom for servants, larders for cooked and uncooked meat, stores, and scullery, are arranged contiguous to the kitchen.

Most of the new work is of fireproof construction, and has been carried out by Mr. Horsman, of Wolverhampton, under the direction of Mr. Waterhouse, architect. Messrs. Jeakes supplied the kitchen fittings, Mr. Odell the ornamental glazing, and Mr. Capel the furniture of the hall, from the designs of the architect.

ROYAL ARCHITECTURAL MUSEUM.

THE museum is now open free daily from ten till four, Saturday till six, and every evening except Saturday from six till nine. There are art-workmen's evening drawing and modelling classes, at 6d. per week. The treasurer, Sir Gilbert Scott, is making a personal appeal for the support of this Institution to all those who value the progress of architectural art. The treasurer says:—"Though we, as architects, have it fully in our power to define all the more mechanical portions of our designs, such as mouldings and other definite architectural features, and that with such precision as to leave no room for error or misunderstanding on the part of the workman, such is by no means the case with those artistic touches, such as carved foliage, decorative painting, or ornamentation in metal, which add so much life and zest to architecture when well carried out, and do so much to lower it when inartistically executed. To enable the humble artists who carry out these important parts of architectural design either fully to appreciate the drawings laid before them, or to share, as in all healthy periods of art has been the case, this work with the architect,—to act, as has been aptly said, as his hand in this part of his work,—carrying out to the life his thoughts and intentions,—it is necessary that our carvers, &c., should be thoroughly acquainted with the works of their predecessors of the best periods in their several arts. They have not funds nor time to search out and visit these works *in situ* excepting on comparatively rare occasions; and the best means of meeting this difficulty is, clearly, to bring specimens of such works together for their easy reference."

The narrow views (as we are forced to call them) which have made this institution, not the Architectural Museum desired, but a collection of specimens illustrating with trifling exception only one phase of architectural art, have greatly limited its usefulness and popularity, and these limits have been drawn tighter and tighter since its removal to the wretchedly uncomfortable and ill-contrived warehouse in the undiscoverable place in Westminster called Tufton-street. We claim to be of those who originated the idea, and have long given the institution our best support. We grieve, therefore, the more at its want of success, and the constant passage of the begging-box. If some enterprising railway company, or the action of the Artisans' Dwellings Act, would enable the committee to remove to more comfortable premises in a convenient and easily-reached locality, better days might be hoped for.

THE NEW PARISH CHURCH OF ST. MARY, WHITECHAPEL.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

THE Architectural Association on Saturday last, the 20th inst., visited the new parish church of St. Mary, Whitechapel, this being the Association's first "visit to works in progress" for the present session. The church (which is to be consecrated on the 2nd prox.), has been erected almost entirely at the cost of Mr. O. E. Coope, M.P., from plans by Mr. Ernest C. Lee, architect, the builder being Mr. John T. Chappell, of Westminster and Brighton, Mr. Ansell acting as clerk of the works. In the unavoidable absence of both architect and clerk of works, Mr. Groves, the contractor's foreman, accompanied the visitors over the building, explaining the details of construction. The church partially occupies the site of its predecessor, an unsightly structure coated externally with painted compo, and dating from 1673. Mr. Groves stated that in the course of the demolition of the old church the floor of a still earlier church was discovered, 8 ft. below the level of the floor of the late church. The new church extends about one-third further eastward than its immediate predecessor, and its orientation has been inclined rather more towards the north, in order to get the whole of the building upon freehold ground, part of the churchyard being leasehold. In the course of removing the old building and digging the foundations for the new one, a large number of coffins (upwards of 300) containing human remains had to be removed; they have since been deposited partially in the base of the tower, and partially in a large brick chamber constructed for their reception beneath the gallery at the west end of the church, the remains in each case being deposited a considerable distance below the floor-line, and covered in firstly with a layer of lime, secondly, with a layer of concrete, and finally sealed up by brick arches. The foundations of walls and piers go down to a depth of 20 ft., the first 6 ft. consisting of concrete. The bed of concrete supporting the piers is continuous. The church consists on plan of nave, aisles, chancel with semi-circular end, clergymen's vestry, on the north-east; what is called the "Church-room" (intended to be used for Bible classes, "mothers' meetings," &c.), on the south-east; and tower and porch at the north-west corner. The nave is 109 ft. long from the west door to the chancel arch, and 38 ft. wide, the height being 51 ft. from the floor to the wall-plate, about 65 ft. to the apex of the wagon-vault, and about 85 ft. to the external ridge. The chancel is 37 ft. 6 in. long by about 27 ft. wide, the height to wall-plate being 40 ft. The aisles are about 14 ft. wide, and the height of the tower and spire when complete will be about 200 ft. Seats will be provided for about 1,250 persons, distributed somewhat as follows:—Nave, 582; aisles, 390; choir, 52; west gallery, 156 (children); and space under the gallery, 68. The main walls are about 2 ft. 7 in. thick, faced externally and internally with Allen's Suffolk red bricks, four courses to the foot (the filling-in consisting of stocks), with external dressings of Doulting stone, Bath (Corsham) stone being used internally except for the piers and springers. The nave consists of five bays, the piers being of Portland stone bedded with 4-lb. sheet-lead, and 16 ft. 9 in. from centre to centre. The capitals of the piers have been carved by Mr. Earp, of Lambeth, to represent the heads of the Apostles, and the pulpit (which was not *in situ* on Saturday last) is of stone, and also carved by Mr. Earp. The nave roof is carried by king-post principals, with the tie-beams cambered to the extent of 4 in., the bottom of the king-post being about 10 ft. 6 in. below the level of the top of the arched transverse member. The principals are of deal, unstained, and the roof is boarded internally with ¾ in. grooved-and-tongued deal match-boarding (also left unstained) in the form of a continuous barrel-vault, divided into bays alternately by the arched member of the roof-truss before referred to and by a projecting rib of the same size as the arched member carried up from the shaft which runs up from above the capital of each pier of the nave, the roof principals coming midway between the piers and resting on the wall-plate immediately over the centre of the comprising-arch of the clearstory windows. Externally the roofs are all boarded and covered with Whitland Abbey green slates, capped with red ridge-tiles specially designed by the architect, and supplied by Cooper, of Maidenhead. The church was originally planned with transepts where the easternmost bays of the nave now come, but, for some reason not explained, these have been omitted. The easternmost bay of the nave on the north side has its arch much loftier than those of the remaining bays, and this necessarily entails the dwarfing of the clearstory windows above, which are only one half as high as those in the other bays. This irregularity or quaintness of effect has been necessitated by devoting this bay of the nave to the organ. The organist will sit in the choir, the keyboard projecting through a sort of doorway made for the purpose, and communicating with the organ by means of trackers. The organ is being built by Messrs. Hill & Son. The clearstory windows consist, in each bay, of two double-lancets with cinquefoil heads. The large windows at the west end comprise two large double-lancet windows, each light being trefoil-headed, and each pair of lights being surmounted by two quatrefoils and a cinquefoil. In the gable above these two double lights is a rose-window, about 14 ft. in diameter, and consisting of seven cinquefoils surrounding a sept-foil. The tympanum of the west door is pierced with a cinquefoil light intended to be filled with stained glass. On either side the west door is a double-lancet light surmounted by a quatrefoil. At the west end of the church is a cross gallery with a brick front supported by an arcade of three bays ranging with the west door and the windows which flank it. The centre bay or compartment (ranging with the door) is divided longitudinally from the side bays by smaller arcades of three arches, and will contain

the font. The aisle windows face the centre of each bay of the nave arcade, and consist, in the external half of the wall, of three dwarf lancet-lights embraced within one relieving arch, the window-space being divided internally by two pointed arches, meeting over the centre of the head of the central lancet, and supported on a stone shaft or column, which obscures the greater portion of the said central light. The chancel or apse is lighted by thirteen lancet lights. The glazing throughout is in tinted glass, and has been done by Mr. Odell, of the City-road. The flooring in the nave consists of wood blocks about 2 in. thick, laid flat, herring-bone fashion, in cement on a bed of concrete, 6 in. thick. The floor of the aps is of mosaic, and is being executed by Messrs. Burke, of Regent-street, from a design by the architect. The wall space of the chancel or apse is plastered all round to a height of about 30 ft. (*i.e.* to the cills of the lancet windows), with the view of being ultimately covered with paintings either in fresco or otherwise. It was stated by Mr. Groves that no special means had been taken to keep this wall free from damp, except that it is well and solidly built, and, like all the main walls of the church, has a thickness of about 2 ft. 7 in., none of the walls being hollow. The warming apparatus is the gift of Mr. Jennings, of Stangate. The sittings will be plain open benches, of deal, varnished, but not stained. The tower, as before stated, is to be surmounted by a spire, the total height to be ultimately attained being 200 ft. At present, the tower is only completed to about the height of the wall-plate of the nave; the necessary funds for its completion are in hand, but it is thought desirable to allow the lower portion to consolidate before adding the superstructure. The lower part of the tower serves as a porch, the north door of which will have an elaborately-sculptured tympanum. The moulded bricks, used both externally and internally, came from Richmond, and the mortar used throughout was made of Dorking lime, ground. One or two relics of the old church have been preserved in the new building, notably a carved oak panel representing "David, the sweet singer of Israel," and said to be by Grinling Gibbons. This, together with the oaken pediments of two old doors, have been fitted up in the "Church Room," already mentioned. The contract for the foundations was taken at 4,500*l.*, and the contract for the works now drawing to a completion amounted to 15,500*l.* The completion of the tower and spire, the decoration of the chancel, and various "extras," will bring the total cost up to about 30,000*l.* The general opinion of the visitors seemed to be that the building reflected credit on architect, builder, foreman, and all concerned in its erection.

THE NEW CLOCK TOWER ON THE SITE OF OLD NEWINGTON CHURCH.

WITHIN the last few days practical steps have been taken to carry out the new clock tower, on the site of the old parish church at Newington, which Mr. R. S. Faulconer has offered to erect at his own expense. Messrs. Jarvis & Son, architects, of Trinity-square, Southwark, have been selected by Mr. Faulconer to furnish the design for the tower, and to superintend its erection, and, as a preliminary step, they have been in communication with the Newington Vestry as to the lighting of the clock. At the meeting of the vestry last week, a letter was read from Messrs. Jarvis, asking, on behalf of Mr. Faulconer, whether the vestry would be willing to bear the annual expense of supplying the gas necessary to illuminate the dials of the clock, of which we understand there are to be three. Messrs. Jarvis stated that they made the application thus early, on the ground that it was necessary for them to obtain the information asked for preparatory to arranging the plan of the interior of the tower. Several members of the vestry, in speaking upon the subject, said they were all deeply indebted to Mr. Faulconer for the generous offer which he had made, inasmuch as the proposed clock tower would not only be a great public convenience, but an ornamental architectural structure on the site of the old church, which was about to be artistically laid out. The vestry unanimously decided to bear the expense of illuminating the clock. The project has the approval of the rector of the parish, and the work will now be at once proceeded with. We understand that the idea is to erect the tower as nearly as possible on the exact portion of the site of the church above which the old belfry until recently stood. We may add that the new carriage-way in front of the churchyard was thrown open for traffic on Monday week, and that the churchyard will be enclosed by a wall and iron palisading, now in course of erection. The wall, which is faced with blue Staffordshire brick, with stone coping, will be 3 ft. in height, surmounted by palisading about 4 ft. high.

RAILWAYS AND THE INCREASED PRICE OF BUILDING LAND.

AT the meeting of the South-Eastern Railway Company held last week, Sir Edward Watkin, the chairman, gave an illustration of the enormously-increased value given to land for building purposes by the introduction of railways. Speaking of the threatened opposition of Lord Sidney, the Lord Lieutenant of Kent, and the magistrates of that county, to the proposed amalgamation of the South-Eastern with the London, Chatham, and Dover Company, he said:—"I think it is a little ungrateful on the part of the respected Lord Lieutenant, because it is within my personal knowledge that before the short railway near Tunbridge was opened, passing near his lordship's estate at Chislehurst, land was not worth much more than 100*l.* per acre, and a relative of mine has just been buying from his lordship two acres and a half to build a modest house upon, and has paid 800*l.* an acre for it, and it is two miles from the station. Now I contend that Lord Sidney's estate in the neighbourhood of Chislehurst has been increased from 800 to 1,000 per cent., and it is rather hard that he should be appointing a committee to resist and oppose our amalgamation without giving us an opportunity of proving to him, as I will undertake to prove to any committee of sensible men that Parliament may appoint, that whatever it may do for you (the shareholders), and whatever it may do for the Chatham Company, as regards the public there never was a greater benefit conferred upon the county of Kent, and all the other counties intersected, than by working these two companies in co-operation."

OLDHAM SCHOOL OF SCIENCE AND ART.

LAST week Mr. Joshua W. Radcliffe distributed the prizes to the successful students attending the Oldham Science and Art School. Mr. W. Richardson occupied the chair. A good report was presented.

Mr. Radcliffe, in the course of his address, said:—The present accommodation was very inadequate. Accommodation could only be found for 160 students, leaving a deficiency of 170 or 180. It was, therefore, obvious that it had become the duty of the public to provide this extra accommodation which was so desirable and so necessary. At the same time the increase that was asked for was very large, and they could not do it all at once. However, it was his pleasing duty to tell them that the sons of the late Mr. Platt dad determined to give the town the increased accommodation which was so much desired. They had concluded to personally defray the cost of raising the present building two stories, thereby giving more than double the accommodation which at present existed. This work would be completed without delay. It was not for him to dilate upon this act of generosity, but he was quite sure the people of Oldham would rejoice that the work which had been begun and continued by the late Mr. Platt would be so excellently ended, if he might use the expression, by Mr. Platt's sons.

A FRENCH MODEL.

IT is not uncommon, and we know at least of one instance, for English artists to remit to Rome small sums of money to be distributed among necessitous models, or as presents to old favourites who in former years had sat their patient days to create the golden hours of the embryo academician.

In Paris, where so many artists look back to Rome, and the happy dreamy days at the Villa dei' Medici, tales of empty *scaldini* and limited *polenta*, from the neighbourhood of the Via Porta Pinciana reaching the well-to-do painters, readily meet with a charitable response.

Dubosc, a famous French model, died on January 15th, at the age of eighty, bequeathing his boarded gains to the young artists striving for the "Grand Prix de Rome," at the Beaux Arts. Dubosc, who commenced to sit at seven years of age, in 1804, had successively posed for Louis David, Gros, Abel de Pujol, Baron Gerard, David d'Angers, Ingres, Rude, Delacroix, and so on down to Flandrin, Guillaume, Crank, Gerôme, and Baudry.

Throughout that interesting period of the first quarter of this century, when the Classicists and the Romanciats, the colourists and the puristes, were thinking and working out their great aims, Dubosc was rarely absent from one or another of their studios, and in those pictures for which he sat he took especial interest when they received the recompenses of the *salon;* and, doubtless, in investing his savings connected with the picture, he named them by the title of the subject.

During his life he had frequent opportunities of knowing the difficulties that the artists of those days, if not of the present, had to contend against, in meeting the demands on their pocket, and he has been well remembered as having occasionally supplied the young artists with the necessary funds to help them through with their work, and he must have early determined that if ever he should have the means he would do his best to make their lives more easy.

At his death it was found that he had left a will to the following effect:—

"This is my testament.

I, undersigned, Charles Alis Dubosc, declare the following testamentary dispositions:—Having commenced to sit in eighteen hundred and four, at the age of seven, and having continued to serve as a model till seventy-two, I have thus passed my life with the most distinguished artists. I wish that after my death the little fortune that I have gained with them should be consecrated to a foundation useful to artists.

Consequently, I name as universal legatee the Institute of France, Académie des Beaux Arts, to dispose of my succession in the following manner: after the payment of all the expenses, what composes my succession, in the Three per Cents., shall be distributed each year in equal portions among the young painters and young sculptors received '*en loges*' * for the 'Grand Prix de Rome'; this sum to be remitted to them at the moment of their admission.

Done and written entirely by my hand, at Paris, the 22nd of July, 1859.

(Signed) DUBOSC."

GRANITE BUILDING.

THE destructive and disagreeable effects of the London atmosphere—charged as it is with acids and soot—upon stonework, have long been known and regretted. It would, therefore, be a great advantage if a more permanent method of external construction could be introduced; and charming indeed, if, instead of our miles of streets of lugubrious smoke-defiled façades, we could substitute some method of building that would give us freedom from decay, and permanent beauty and cleanliness.

We recently† directed the attention of our readers to a few ancient and modern granite buildings, and a careful consideration of the favourable circumstances of the present day induces us to come to the conclusion that the use of granite is not only possible, but that it may help us out of a very unsatisfactory state of things. Notwithstanding our boasted science, we build to-day just as Sir Christopher Wren did, and though we see our buildings perish before our eyes, we introduce no improvement in their construction.

Not many years ago—before steam and machinery had been applied to building operations—it would have been a waste of time to suggest the propriety of facing our buildings with this hard, intractable, and durable material instead of soft stone. But what a change has taken place during the last forty years in economising labour by the aid of mechanical appliances which convert with wonderful facility the hardest or the softest materials to any form we desire, and bring them to our hands from distant parts at prices that would once have been thought inconceivably low!

We think, then, that the circumstances of the

* The competitors for the "Grand Prix de Rome" enter "*en loge*" for six weeks; they are absolutely sequestrated, and the subsidy of three hundred francs allotted them by the Administration of the Beaux Arts is paid in two terms, at the middle and the end of the competition.

† See p. 1221, vol. xxxiv.

day are altogether in favour of the suggestion we make. The attempt is worth making—nay, considering the scientific character of the age, and that, looking at the perishing state of our public buildings, somewhat of a stigma rests upon us, it is, we venture to think, absolutely incumbent, at least, upon the leaders of the profession to make it. They would then, perhaps, be able to show that the dreary hope of the second Royal Commission, after taking evidence on the decay of stone, recommended by the first Commission, "that some remedy would be found," had been realised. Of course it is only by the aid of machinery that it will be possible. As artists we may have a natural dislike of the use of mechanical power in art-work; yet, as practical men, we know that a rich architectural façade is full of detail that can, by its means, be done perfectly.

Let us then endeavour to realise the character and details of a granite structure of the nineteenth century.

As with the most costly marbles, the beauty of granite is not perceptible till it is polished. This is so far fortunate, for it is only a polished unabsorbent surface that will give permanent purity and cleanliness to any building in our smoky atmosphere, or that will secure it from the destructive acids discharged from certain manufactories. Experience shows that there is nothing disagreeable, as might be supposed, in the effect of large polished surfaces. The glare caused by refraction is only observable when the sun's ray is at a certain angle, and this effect is so limited, both in area and time, as to render it a matter of no importance. On the other hand, in every other part of the façade we should have what artists term "depth of tone," an effect altogether pleasing.

Now, as the most polychromatic building ever erected in artificial materials can be rivalled in the various colours of granites,—black, from Castle Wellan in Ireland, and from Clee Hill dhu in Shropshire; white, from Kemnay in Scotland, and, though not so pure, from Cheesewring in Wales; red, from Peterhead, the Isle of Mull, and elsewhere; grey and blue, from several localities; and yellow, according to Dr. Borlase, from Cornwall,—general treatment is a mere question of architectural design which every artistic architect will be able to determine without a word from us. With one or other of these colours for the general surface, and two or more of the others used for the different orders of the jambs and arches, and for the several members of base-mouldings, strings, and cornices, but little moulded work and ornament slightly sunk below the general surface would be required to give perfect finish of detail to a building of the highest class. The ornament might be Arabic in principle, so that the limited proportion of ground left might, if particular richness were desired, be gilt. Properly done, we apprehend there would be no gaudiness of effect in this, but only a rich lustre in harmony with the general polished surface.

In important edifices, figures in friezes, panels, and spandrels of permanent mosaic would take the place of the sooty statuary and bas-reliefs of stone buildings.

With these elements at command we cannot doubt that the application of this method of construction to our public buildings is well worthy of the serious consideration of architects. Indeed, after much consideration, it appears to us the only means of getting rid of what,—in this scientific age,—is almost a national disgrace, viz., the rapid decay of the external stonework of the public buildings of our cities.

It was but lately that we saw a forest of scaffolding about the Houses of Parliament, which may be said to have been only recently completed. Constant repairs are going on at the Abbey. Not an ancient stone exists of the Temple Church or Henry VII.'s Chapel. At the new front of Buckingham Palace the sentries were in danger from falling stones a year or two after it was built. And recently considerable repairs have been made.

As to the question of relative cost, railways and machinery have, during recent years, been gradually reducing both the prime cost of granite and the expense of working it. The steam sand-blast, for example,—recently explained in our pages,—would execute the kind of ornamentation spoken of above with extraordinary rapidity and precision; and, as is well known, polishing machinery is now in daily use.

A rough estimate of the cost per square foot of the two fronts of the New Post-office,—rough as that is as showing *minimum* cost,—gives 20s.

Polished Aberdeen granite for ashlar, 6 in. thick, and with sufficient bond stones, can be delivered at London railway stations at 4s. 4d. per square foot, thus leaving the ample margin of 15s. 8d. for the other items of a granite façade, viz., cartage in London, scaffolding, ornamentation as above described, setting, and profit.

COMMISSIONS.

SIR,—Are not both Mr. C. Barry and yourself a little hard on those who hold that the majority of architects, &c., do accept commissions from tradesmen, manufacturers, and others? You are requiring that name and address should be given. Will you kindly turn over in your mind what this involves,—viz., that one of the two parties should "split"? The professional gentleman is not likely to do this; neither is the manufacturer nor tradesman one whit the more likely to do so, seeing that he would ever after be a marked man, and there would be raised a very practical, if not an out-spoken cry, — "'Ware Smith," "Jones," or whatever other patronymic might distinguish the rash and adventurous man.

When Mr. C. Barry claims the right to be furnished with name and address, he must as a business man know that he will never get it, and that it is absurd publicly to set up such a claim, which sounds plausible enough to the outside public. Only a man who has retired from business would venture to give the information sought; and such persons would not generally care to incur the worry of bringing the odium upon himself that such disclosures would involve.

Kindly submit this view of the matter to the consideration of your readers and correspondents, which, I think, will be only justice to numerous old subscribers who are manufacturers.

FAIR PLAY.

"BYE-COMMISSIONS."

IN reference to this question, and more particularly in reference to Mr. Barry's letter, I send you copy of a local paper, in which you will see a case in point, where an architect in a public court of justice lays claim to commission from a contractor without the consent of his client. "One illustration is worth a thousand arguments." About a year ago the Local Board of Horbury discovered that their engineer, Mr. Lumley, of Bradford, was receiving commissions varying from 3 to 4 per cent. from several contractors, in addition to 3 per cent. from themselves. The whole of their discussion upon this was reported at length in the Ossett papers. Mr. Lumley acknowledged receiving 3 per cent., and justified himself in carrying out the custom. This "custom" of certain professional men is well known, and the apparent ignorance of men in high positions will not in any way tend to alter facts which cannot be gainsaid.

If ignored for the "credit of the profession," that credit will never become as it should be, without fear or reproach.

I shall be glad if you will publish this letter, also the first case *in extenso*, as this question is exciting very great interest. A. B.

Wakefield County Court, Tuesday, January 9th.
(Before Mr. Serjeant Tindal Atkinson.)

SYKES *v.* SHAW.—The plaintiff in the case, Mr. William Sykes, joiner and contractor, of Rothwell, sought to recover the sum of 32*l.* 15s. from Mr. John Shaw, architect, of Leeds and Ilkley. The case excited much interest in the building trade, many connected with the various branches being present; it also possessed features of public interest, from the attention which the subject of the relations subsisting between architects and solicitors on the one hand, and contractors and traders on the other, has received from the London and provincial press. The amount claimed was for money advanced as loans. Mr. E. Tindal Atkinson was for the plaintiff, and Mr. Hall, of the firm of Gill & Hall, for the defendant. The plaint had been heard previously, and a verdict taken for the amount; but a new trial was applied for on the ground of the trial having taken place somewhat unawares to the defendant. By this, it was alleged, he was prevented from pleading a set-off of 59*l.*, which, if allowed, would have made him a creditor for 26*l.* 5s.: Mr. Shaw not disputing the correctness of the amount for which he was sued, but contending it had been paid him on account of professional charges, of which the sum named above was still due. The plaintiff had had three contracts, namely, for a school and eleven cottages at Cragglestone, and for a chapel at Stanley. In each case Mr. Shaw had been the architect. Amongst the sums forming the amount claimed as a set-off were included 2*l.* per cent. for quantities on a contract amounting to 1,175*l.*, three guineas for three sets of plans and specifications, the costs of three journeys to Wakefield to guarantee the plaintiff's timber merchant, the measurement of extra work, half the costs of an arbitration in connexion with the new chapel at Stanley, &c. There was a good deal of conflicting evidence as to the customs of the trade, as to the payment for specifications and other matters, and the case lasted a long time. The judge, in summing up, commented on the relations which appeared from the evidence to have subsisted between the plaintiff and defendant, considering that architects should stand in a position of independence towards contractors in order to justify the confidence which ought to be placed in them by those from whom they accepted commissions; it being evident that when a person had received a loan, and, as it would perhaps sometimes happen, was not in a position to repay, the sense of independence could not exist. The jury found a verdict for the plaintiff for the full amount claimed.

CLAIMS BY SUB-CONTRACTORS.

CULLEN *v.* AITCHISON AND WALKER.

THIS was a claim (heard in the Bloomsbury County Court on the 11th inst., before Mr. G. Lake Russell, judge) brought by a stone mason, to recover from Messrs. Atchison & Walker, builders, the sum of 5*l.* 3s. for work done and materials supplied, in the building of the schools for the London School Board in Aldenham-street, Somers Town, for which the defendants were the contractors:—

"Plaintiff said he first saw the foreman to the defendants, who told him what stonework was required to be done and then introduced him to Mr. Walker, one of the defendants. He told Mr Walker he would do the work for 21*l.* 12s. The work was done to the satisfaction of the architect, and defendants paid him 16*l.* 10s. 6*d.*

In cross-examination plaintiff said he provided the stone and work according to the plan and quantities. On his receipts being handed to him he admitted that he had no doubt received 17*l.* 12s. 6*d.*

On the part of the defendants, it was submitted that the plaintiff had been overpaid 4s., as the work was to be paid according to the quantity.

Thomas Hestley, foreman to the defendants, said that the contract price was to be 21*l.* 12s., according to the bill of quantities, which he gave plaintiff, and the plan, of which he gave him the tracing.

Mr. Walker, one of the defendants, said the plaintiff was to do the work according to the bill of quantities, and for which he had been paid; no objection was made to the work. Not half the quantities were supplied; the plan supplied to plaintiff was for the working details."

The Judge: The quantities were part of the plan, but there was not room for them.

Mr. Brunsden, surveyor, said the quantities included window-sills, but as the windows were omitted the sills were not required, and the doorways were not made so thick as in the plan, for want of room; the price for these, for materials only—not work—was 4*d.* 17s. each, which would require to be deducted.

Plaintiff, recalled, said he made the reduction in the price in consequence of being told of work which would not be required.

Judgment for the plaintiff for the amount claimed, less 9s. 6*d.*

ROGERS *v.* MOORE.

THIS was an action tried in the Brompton County Court on the 16th inst. (before Mr. Serjeant Wheeler, judge) to recover the sum of 6*l.* 18s. for work done by the plaintiff, a plumber, of Shepherd's Bush, for a builder of Nottinghill.

Mr. Thomas, who appeared for the plaintiff, said the claim was for balance due for work done on three houses belonging to defendant. His client was a man who hardly knew how to read or write, and unfair advantage was taken of this in connexion with their business transactions.

Plaintiff stated that he did the work in question.

Mr. Newman, for the defendant, said he did not dispute that the work had been done.

Plaintiff, in continuation, said he made a contract with Mr. Emmerson, but had nothing to do with Mr. Moore until after the contract had been made. Mr Emmerson paid him 3*l.* on account, and told him that defendant had taken entire charge of the work, and was responsible for all payments. Mr. Moore had made payments on account of the work done, and plaintiff would not have gone on with the work had he not thought that he would have been paid by the defendant.

Mr. Emmerson was called, and said he gave plaintiff the work to do, but he never told him that Mr. Moore was responsible for payment. Witness paid plaintiff 3*l.* out of his own pocket, and the rest of the money was borrowed from Mr. Moore. The houses were built, and afterwards mortgaged to a building society at Woolwich.

Defendant said that plaintiff came to him one evening and said that he could not get any money from Mr. Emmerson, and defendant said if he would finish the work on the third house he would pay him for it.

The judge said it was quite clear that a contract had been made between Mr. Rogers and Mr. Emmerson, and the present defendant was not liable.

Verdict for defendant.

THE SGRAFFITO WORK AT SOUTH KENSINGTON.

SIR,—The following paragraph has appeared for some weeks in an advertisement on the front page of the *Builder*:—

"Messrs. Trollope & Sons have engaged the exclusive services of *the* artist who executed the sgraffito at South Kensington and elsewhere," &c.

As the whole of the sgraffito at South Kensington was designed by me, and executed by my pupils under my superintendence, I venture to beg a space to state that the above paragraph does not refer to myself nor to the two leading artists engaged on its actual execution, and that it continues to be inserted in your paper in spite of my repeated objection.

F. W. MOODY,
Instructor in Decorative Art,
South Kensington Museum.

ST. AGNES'S NEW CHURCH, SCHOOLS AND VICARAGE, KENNINGTON PARK.

THE new church of St. Agnes, Kennington Park, which has been in course of erection between two and three years, and which has already been noticed in our columns, has been consecrated. The architect of the church, as well as of the schools and vicarage immediately adjoining, is Mr. George Gilbert Scott, jun., the style of architecture of the three structures being Early English. Exactly twelve months elapsed between laying the foundation-stone of the church and that of the schools, and a similar period intervened between the commencement of the schools and the vicarage, the foundation of the schools having been laid in July, 1875, and the vicarage in July of the past year. The schools were recently completed, and have been open during the past few months, and the vicarage has just been covered in. The three structures, which form a prominent feature immediately on the east side of Kennington Park, cover an area of about 24,000 superficial feet, or upwards of half an acre in extent. There are several specialities about the church, one of which is that by a gradual spreading of the walls from east to west, the interior dimensions of the church are broader at one end than at the other. Another distinctive feature in the edifice consists in its unusually lofty nave, nearly 60 *ft.* in height within. The nave ceiling is continued at the same elevation over the chancel, admitting of an unusually lofty chancel window, 40 ft. in height, and 15 ft. 6 in. in width. This window has been filled in with richly-stained glass of elaborate design and execution, the design as well as the workmanship being both by Mr. Kemp, of Beaufort-street, Cavendish-square. The prominent subjects in the window consist of scenes in the life of Our Saviour, from his birth to his death. A central mullion divides the several groups and figures represented on the right and left hand sides respectively. The various groups are about forty in number; those on the left-hand side containing scenes emblematic of the Incarnation, and those on the left scenes from the Passion. The upper portion of the window contains grouping and figures of the prophets illustrative of the genealogy of our Lord, with the tree of Jesse. With one or two exceptions, this window is said to be the loftiest of any church window in the metropolis.

The half-barrel nave and chancel ceilings are in panels, and at present painted white, but are ultimately intended to be richly gilt and decorated, whilst the ceilings of the aisles will be groined and vaulted in oak; but this portion of the work is likewise deferred for the present, as well as other intended decorations. A dado, upwards of 6 ft. in height, is carried round the interior walls, and the piers of the nave arcades are also covered with boarding to a similar height. Both the dado and the boarding round the piers are painted chocolate colour. The chancel is divided from the nave by a lofty Gothic screen, 18 ft. in height from the nave floor. Over it is a loft carried across the nave, and surmounted by an arched beam supporting above a massive cross upwards of 4 ft. in height. The loft is intended to be utilised for an orchestral band on the occasion of high festivals. The organ is placed on a level with this loft, and when finished will be in two divisions, in chambers on each side of the chancel, similar to that in St. Paul's Cathedral, the loft serving to connect the action. The loft and organ are reached by a circular iron staircase, carried up alongside the pier of the south chancel arcade. The chancel and altar-floor level is about 5 ft. above that of the nave, and is approached by flights of ten steps. There are spacious chapels on each side of the chancel, which is very spacious, with clergy and choir stalls. The cost of the edifice up to the present time has been about 12,000*l.*, this being exclusive of the tower and other works and decorations still required before the church is entirely completed.

Messrs. Niblett & Co. were the original contractors, but Messrs. Hill & Higgs, to whom the contract has been transferred, are finishing both the church and the vicarage.

New Palace and Winter Garden at Manly Park, Manchester.—This competition was decided at the last meeting of directors, and the first premium was awarded to Mr. J. T. Robinson, Bloomsbury-square, who adopted the motto "Solo Deo Salus."

BUILDING BYE-LAWS.

DEPOSIT OF NOTICE AND PLANS,—PENALTY FOR BREACH.

AT a Petty Sessions held at Bromley, Kent, on the 1st instant, Mr. Frederick Pudney, a builder, of Lower Norwood, was summoned at the instance of the Bromley Local Board for having commenced to build a certain house within the Board's district without giving the notice, or depositing with the surveyor of the said Board the plans and sections required by their bye-laws.

The defendant pleaded guilty. Mr. Joshua Bailey, the clerk to the Local Board, prosecuted, and stated that the information had been laid to recover a pecuniary penalty for an infringement of the 29th and 33rd bye-laws; but, inasmuch as the defendant had immediately upon the receipt of the surveyor's notice discontinued the work, and furnished the requisite plans, and had, moreover, addressed a letter to the chairman of the Board expressing his regret for the omission to furnish such plans in the first instance, he (Mr. Bailey) was instructed to ask that a nominal penalty only should be inflicted.

The justices thereupon informed the defendant that as the Board were disposed to deal leniently with him, they would make an order for payment of the mitigated penalty of 5s. and 8s. costs.

WANTED, A STATUE FOR THE THAMES EMBANKMENT.

SIR,—I never saunter along the Thames Embankment without thinking of it as, in Lord Harrowby's words, the noblest boulevard in the world, carrying health, freshness, and beauty through our crowded city from end to end, and without feeling how discreditable it is to all of us that no "counterfeit presentment" of its author has as yet been set up within its range. Every year the advance of science more and more assures us of the inestimable value to people of all classes, and especially to people of the working class, of large open spaces, either within towns or in their vicinity. With this knowledge comes to all who have taken an interest in the history of this question, the remembrance of Mr. Cowper-Temple, the introducer and carrier of the Thames Embankment Bill, and the valorous champion, for more than a generation, of commons rights, of parks and village greens, and other open spaces, which, as he truly contended, have done more to promote the happiness of the English people than any other institution handed down by their Saxon forefathers. When Epping Forest was in danger from attempted inclosure, this real statesman persistently and eloquently defended, year after year, the rights of the people against the encroachments of the lords of the manor. Again and again did he generously remind the House of the rare value of the forest to the teeming population of the East-end of London; and on one memorable occasion he saved this magnificent piece of public property in spite of the opposition of the Liberal Government, actually defeating them by a majority of 100. In the General Inclosures Act, he succeeded in getting incorporated a clause that in all future inclosures of waste land certain portions should be set apart for labourers,—an idea first broached by him in the year 1843. Last year he gallantly struggled, but in vain, to get introduced into Mr. Cross's Commons Bill a clause which would prevent inclosures within six miles of London, and within certain fixed distances of other towns according to their population. For all his fidelity to the cause of health, recreation, and happiness all over the country, surely the people benefited should insist on a public recognition of the services of this gentleman on the scene of his most memorable victory in the interest of that great and glorious goddess Hygeia, whose shrines are, alas! so generally neglected, but whose supremacy will yet regenerate the world. I am confident, sir, if you were to moot the matter in your journal, a sum sufficient to raise a handsome statue to the right hon. gentleman on the Embankment would speedily be contributed. I should myself have great pride and pleasure in initiating a subscription for this purpose by putting down a guinea. Be it remembered that the vast London public are not only indebted to Mr. Cowper-Temple for their splendid boulevard, but also for the present state of the parks in summer-time. At his magic bidding, when Commissioner of Public Works, beautiful shrubs of every shade of green sprouted out all over these metropolitan reservoirs of health, and sweet flowers, judiciously selected for their charmingly harmonising colours, budded and blossomed forth in bewitching purple and gold, in crimson and buff, in blue and pink, and lilac, where before all was sombre and tintless. In the midst of the furious debates in Parliament, in July, 1866, concerning the then recent Hyde Park Riots, it was very amusing to note how eagerly and triumphantly Mr. Cowper-Temple called attention to the fact that the improvements in his department were thoroughly appreciated by the "roughs" in the crowd who had torn down the park railings in their excitement in order to baffle the police, but did not forget the flowers whose beauty had afforded them so much pleasure, and carefully avoided interfering with the beds. No one could deny this; and assuredly the man who thus succeeded in humanising to such an extent that apparently most unpromising class of bipeds—the London "roughs,"—deserves, even for this service alone, to have his face and figure copied in marble or bronze, and set up on high amongst us.

Hoping you will act instantly on my suggestion, and that some famous sculptor may very speedily be set to work on the statue proposed, I remain, a worshipper of trees, shrubs, flowers, and pure air. S. L.

PLAN OF DRAINS.

SIR,—Under the above heading your correspondent "M. G." suggests that it should be compulsory on the part of the landlord to show the nature and direction of the drainage of his letting. I quite agree with him; but I also maintain that every one should be able to find the same out for himself at the offices of the surveyor to the vestry of the district.

Such, however, is not the case; and I believe a large amount of old house property, especially of the poorer description, is still drained into cesspools, and has no connexion with the main sewer, even though the latter is at the front door.

I some time since had occasion to make inquiries as to the drainage of a property in the S.E. district. The surveyor was unable to produce any plans showing the connexion of the properties with the main drainage, or tell me how it was drained; and from a deed which came into my hands in course of business I found that the property in question,—and I have little doubt a quantity more of the same kind,—was drained into a huge common cesspool, in a neighbourhood where (and no wonder) there is always more or less disease epidemic. I also found that the pipes used were the ordinary old porous pipes, and, in fact, the whole ground appeared to me to be permeated with the odour of drains.

Surely such things ought not to be under such a body as the Metropolitan Board of Works. They should not, and the public should require of them not to be satisfied until it can be shown beyond a doubt on paper and by actual inspection that every closet and drain within the district is properly connected (and with proper materials) with the main drainage. I found not long ago that a street in the N. district was drained with 9-in. pipes instead of 12-in.!

J. H. C., Surveyor.

SIR,—Years ago I wrote you, in a letter you kindly published, a plan which, I would submit, is likely to be more effectual than that of "M. G."

I recommended that a plan of the drains of every house, warehouse, or building, should by Act of Parliament be made compulsory to be affixed to the inside of the front door, or some other eligible place, so as to be always at hand for immediate reference. It is all right that the same plan should also be on every lease, but the lease is not always forthcoming for inspection when required.

R. H. TAYLOR.

THE WOODEN HOUSE FROM NORWAY.

SIR,—Some years ago I read a most interesting account of a house built by a gentleman somewhere in the western counties, which had been bodily imported from Norway; I ought, perhaps, to say that it had been bodily put together in that country, then taken to pieces in order to be packed and shipped, and again rebuilt when it arrived at its destination. The only material used in the construction was timber. Notwithstanding the great extra outlay involved in so many preliminary arrangements, the expense was said to be far less than an architect's estimate for an ordinarily built house, whilst the result, as regarded appearance, warmth, comfort, and probable durability, was pronounced most satisfactory.

Will any of your readers kindly tell me where I can apply to learn the result of time on the building, where a similar building can be obtained, and also whether the plan would be likely to succeed in building labourers' cottages, where it is desirable to keep the expense as low as is reasonably possible?

S. M. P.

THE UTILISATION OF THE ROYAL ALBERT HALL.

SOME of our readers may be glad to hear that endeavours are being made to increase the usefulness of the Albert Hall. On the 18th inst., in the interval between the second and third parts of the "Creation" (admirably performed, under the direction of Mr. Barnby), a member of the council (Mr. George Godwin), in accordance with previous arrangement, addressed an inquiry to the audience from under a small suspended sounding-board. The speaker said the capabilities of the Hall for the transmission of musical sounds were admitted; the brilliant audience of that night, and the applause given to the singers, were sufficient attestation of that fact. But the body of gentlemen who had erected the building had always desired something more than that. The illustrious Prince who had long been mourned,—Albert the Good,—had contemplated that, around the adjacent gardens, a number of public buildings would arise consecrated to the development of the arts, science, and literature of the country, and it was with that idea in view that the Albert Hall had been built. Some difficulty as to single speakers had been found; but it had occurred to him that such a sounding-board as had been set up in St. Paul's Cathedral might have a good effect. With the friendly assistance of Mr. Penrose, the architect of the Dean and Chapter, this had been obtained, and the question he had to ask them was,—had these words been fairly heard in all parts of the building? A hearty response in the affirmative followed, and the speaker added that, the experiment being successful, the council would seek to persuade some distinguished men of science to deliver lectures in the Hall forthwith, and that they hoped to receive the cordial assistance of the public in their endeavours still further to utilise the building. It seems from accounts since received that the remarks were distinctly heard in all parts of the Hall; but that in certain lines there was an echo. There must have been about 6,000 persons present.

"ONE-HANDED BRICKLAYERS."

SIR,—I am very sorry to have to take my pen in hand to defend that trade by which for now twenty-three years I have earned my daily bread. A more malignant slur was never hurled against bricklayers than that quoted in your journal from the *American Architect*. I do not say against union bricklayers, for it is directed against union and non-union men alike, as it speaks of what bricklayers do at home, and non-union men have homes as well as unionists. But why are we designated "one-handed bricklayers," and why should we have one hand amputated? Does the gentleman, the author of this libel, wish us to put the mortar on the wall with a shovel, and then catch the bricks out of a barge, and throw them on the wall? But I will not profess to be in ignorance of his meaning. He means to say that when walls are more than 14 in. thick, the middle of the wall should be filled in with both hands. Perhaps the writer in the American paper is an architect for such buildings in America as are put up around the outskirts of London. I ask all reasonable architects if that is bricklaying proper? Let a clerk of works in London catch you putting them in with both hands, and what does he say? "Pull them out: we don't want any scamping here." But why is it scamping? I will explain. Wherever the wall is filled in with both hands, there is no regard for internal bond; and, as my friend John Woodley would say, every course that is laid covers the imperfections of the one beneath it. If the gentleman had seen what I have seen on large works, such as railways and docks (the former of which I fear for when they begin to decay a little), he would never advocate laying bricks with both hands; and, beside all this, I emphatically declare that it is untrue that the union forbids its members to work with both hands; and, sir, you know that I am in a position to know whether such rule exists or not. More than that, I send you a copy of the rules of both the London and the Manchester societies, the only two bricklayers' societies in England, and there you will see that what I state is correct. But why are bricklayers singled out as being such a besotted brutal set? I read a great deal, and I hear a great deal; but I am as yet aware that bricklayers use their boots for the base purpose that is imputed to them by the newspaper over the water. Perhaps the writer left England twenty years ago. If he came back now, he would see that bricklayers are not what they were socially twenty years ago; if they were, it would not redound much to the credit of those who are straining every nerve to improve them educationally and socially. If the writer is an architect, are all architects entirely pure-minded? Do they always conduct themselves in proportion to the intelligence they possess? Again, do they use a ruling-pen with both hands? I am glad that it did not emanate from English architects. The manner in which they have deported themselves to us shows us that they would not stoop to such slander; but, on the contrary, are doing their utmost to give us a helping hand forward, for which every bricklayer in London is grateful.

JOHN P. MORRIS.

*** We have received a number of other letters to the same effect, including one from the "Teacher of the Bricklayers' Technical Education Class."

PROTECTION OF WIRE BRIDGES.

SIR,—Looking at that very handsome bridge at Chelsea (the Albert), I was struck with the necessity for a top covering for each of the wire ropes. The vibration cracks the paint, and then the wet finds a ready way in among the wires. Any covering had best be removable, and might be made ornamental. Z.

LIGHTHOUSES.

SIR,—The erection and maintenance of lighthouses on the coast of England and Wales was, in ancient times, a part of the prerogatives of the Crown, and the king exercised the power of granting "*concessions*" — to use a modern phrase—to build lighthouses, and charge tolls on all passing shipping. Under such conditions was erected, amongst others, the original Eddystone, and "The Smalls," in the Bristol Channel.

This power appears to have been thus exercised up to the time of Elizabeth, whereby a statute 8 Eliz., c. 13,* "the Corporation of the Trinity House are empowered to set up any beacons or sea-marks wherever they shall think them necessary, and if the owner of the land or any other person shall destroy them, or shall take down any steeple, tree, or other known sea-mark, he shall forfeit 100*l*., or in the case of inability to pay it, shall be *ipso facto* outlawed." This statute is therefore the authority, granted by Parliament, under which the Elder Brethren act; but their powers were very considerably modified by the Merchant Shipping Act, 1853. This Act provides,—"1. The light dues of the United Kingdom are to form *one imperial fund*, under the control of the Board of Trade. 2. From this fund all expenses of erecting and maintaining the lights of the United Kingdom are to be defrayed. 3. The three Boards which manage the lighthouses in England (Trinity Board), Scotland (the Commissioners of Northern Lights), and Ireland (the Ballast Board), are to render an account of their expenditure to the Board of Trade. 4. The Trinity Board is to exercise a certain control over the Boards in Scotland and Ireland, and is to judge of all their proposals to erect new lights, or to change existing ones, but in every case the sanction of the Board of Trade must *precede* the acts of *each* of the three Boards." The Board of Trade is therefore responsible in the last resort for the objectionable proceedings to which you call attention, and, on the assembling of Parliament, will doubtless be called upon to answer for their misdeeds.

E. GRIMES.

* See Blackstone's "Commentaries."

OPEN SPACES IN ST. PANCRAS.

IT will be remembered that in the session of 1875, after a violent opposition, the Vestry of St. Pancras succeeded in obtaining an Act of Parliament which enabled them to rescue from the encroachments of the Midland Railway Company the two large spaces, comprising together an area of about nine acres, known as the disused burial-grounds of Old St. Pancras and St. Giles-in-the-fields, situate on the eastern side of the Pancras-road, with powers to lay them out as an ornamental garden and recreation ground for the public in perpetuity. The delay that has occurred in carrying out the plans has been, to a great extent, in consequence of negotiations which have taken place between a committee of the vestry and Mr. Albert Grant, who, it had been intimated, was, as in the case of Leicester-square, so desirous of benefiting the public that he was willing at his own cost to purchase the whole line of old and dilapidated houses, known as Cook's and Eve's terraces, and effect their removal, the result of which would be to open up the two grounds to the main road, thus giving them a fine frontage, and an area very little less than that of Kennington Park. Some drawings have been made and plans prepared, and have been laid before Mr. Grant, who has the matter still under consideration. In the meantime, however, the vestry have determined to take energetic action, so that under any circumstances the acquired space shall be available for the use of the public in the ensuing spring. A sum of 3,000*l*. has been voted for laying out and planting the grounds in a manner which, whilst it will in no way interfere with the sanctity of the dead, will, on the other hand, exhibit the monument to Sir John Soane and other prominent specimens of the sculptor's art to the best advantage. The general supervision of the work has been entrusted to Mr. W. B. Scott, C.E., chief surveyor, whilst the laying out and landscape gardening department is to be carried out from designs prepared by Mr. William Dunford, superintendent of the St. Pancras Cemetery at Finchley, who will have the supervision, in conjunction with Mr. Gibb, the vestry clerk, of the horticultural and floral arrangements.

"TOBIN'S SYSTEM OF VENTILATION."

SIR,—If this system consists of the admission of fresh air into a horizontal air-flue, and the transmitting the same into different parts of an apartment, or into different apartments, by means of smaller vertical flues above head-level in these apartments, I may state this system has been in use in Durham County Gaol ever since the year 1844, and used in every addition made since that date. The following cells were added:—In 1844, 117 cells; 1848, 48 cells; 1850, 80 cells; 1857, 124 cells; 1863, 54 cells; 1866, 116 cells; 1873, 167 cells; or 751 cells in all. Cells are situated on the ground floor, first floor, second floor, and third floor, over each other, yet all receive their fresh air from the one large fresh-air flue under the ground floor.

WILLIAM CROZIER,
Engineer and Architect for County of Durham.

CHURCH-BUILDING NEWS.

Beamish.—The Bishop of Durham has consecrated St. Andrew's Church and Burial-ground at Stanley, which is part of the newly-formed parish of Beamish. The total cost of the church is about 4,500*l*. The building, which has been erected from plans prepared by Mr. J. C. Holt, architect, Manchester, consists of a nave and aisle. All the details of the building are of the Geometrical Decorated style. The length of the building is 96 ft., the width is 45 ft., and from the floor to the ridge of the roof is 40 ft. The nave is separated from the aisle by an arcade of five arches, supported on moulded pillars, and an elaborately moulded timber arch, resting on stone shafts, marks off the eastern portion of the nave for a chancel. A belfry turret rises to a height of 60 ft. at the west end of the chancel from between the nave and the aisle roofs. The church is fitted with open benches, providing accommodation for 400 people. The pulpit is of Painswick stone, inlaid with bands of marble, and is the work of Mr. G. Hope, of Burnopfield. All the windows are of large size, and are the work of Messrs. Wailes & Strang, of Newcastle.

Burlingham St. Andrew's (Norfolk).—The parish church of Burlingham St. Andrew's was re-opened by the Bishop of Norwich on the 4th inst., after restoration, the cost of which has been largely borne by Mrs. Barroughes, of Burlingham Hall. The nave of the church has a fine hammer-beam roof, with angels holding shields and emblems at the ends of the beams. This roof was in a very fair state of repair, and required but little doing to it; but the roof to the north aisle, of good plain moulded oak, was in a less fortunate condition, and had to be entirely taken out, and has been carefully restored in accordance with its original form, and recovered with lead. The windows throughout, which are all of a Late Perpendicular character, have been made good where defective, and glazed with rough plate cathedral glass. The old high pews and brick flooring have been taken away, and new flooring of wood and massive oak benching placed in their stead. We hear that a very fine and interesting old screen which was in the church has been most religiously preserved,—on the panels there are several uncommon figures of saints, which have been refixed untouched. The principal portion of the

works has been executed by Messrs. Evans & Durrant, of South Walsham. Messrs. Cornish & Gaymer restored the screen, and Mr. Groom, of Ipswich, carved the bench-ends, pulpit, and prayer-desk. The whole of the works were carried out under the direction of Mr. Phipson, architect.

Tividale.—On the 8th inst. the corner-stone of St. Michael's Church, Tividale, near Dudley, was laid. The estimated cost of the church is 8,000*l.*, towards which Lord Dudley contributes 3,000*l.*, and erects the tower. The edifice will accommodate 800 people. Messrs. Davis & Middleton are the architects, and Mr. John Everal, Malvern, is the builder.

Farnham.—The Sumner Memorial Church, Farnham, was consecrated on the 9th inst. The new edifice is built on land given by Mrs. Lloyd, of Cheltenham, a native and formerly a resident of Farnham, and has been erected by the liberal contributions of the inhabitants of the town of Farnham and the diocese of Winchester, over which the prelate to whose memory it is erected, presided for nearly half a century. The church is dedicated to St. James, and was originally designed to consist of a chancel and nave, with north and south aisles, a tower 90 ft. high at the west end of the south aisle, a vestry, organ-chamber, and choir-passage leading to the nave on the north side of the chancel, and a transeptal aisle for children's sittings on the south side. The funds at the disposal of the building committee not being sufficient to carry out the entire plan, the north aisle has been omitted, and the tower postponed. The church is Early English in style, and the walls are faced with black iron-stone from the neighbourhood, with Bath stone dressings. The roofs are covered with tiles. There is a lofty clearstory lighted with lancet windows, the interspaces being filled with roundels, having carved monograms and crosses, the gift of the architect. The east window is a triplet, and the west window has four lights enclosed under one hood moulding. In the interior, the south nave aisle is divided from the nave by an arcade of five arches, the columns being circular, and the arches having square soffits. The architect is Mr. H. Woodyer, of Graffham, and the work has been executed by Messrs. Goddard & Son, Farnham.

Weston-under-Lyziard.—The old parish church of Weston-under-Lyziard, Staffordshire, was re-opened on the 4th inst. by the Bishop of Lichfield, after restoration and enlargement, which have been carried out after designs from Mr. Ewan Christian, of London, by Messrs. Bowdler & Darlington, of Shrewsbury, at the expense of the Earl of Bradford. The principal features of the restoration of the church have been the opening out of the chancel, the lowering of an unusually lofty pulpit, the removal of an unsightly gallery from the west end, the entire reseating of the nave, the removal of a flat ceiling of plaster, and the substitution of a ceiling in panelling of pine, stained and varnished, and the opening of the tower to the body of the church. Added to this, two transepts have been built, opening each by two arches from the chancel. That on the south side is intended for the use of the Earl of Bradford's family and guests, while that on the north contains seats for school children.

Gunley.—The parish church of St. Helen, Gunley, in Leicestershire, has been restored recently, and it was re-opened on New Year's-day. The spire has been restored to the Perpendicular, and the chancel has been rebuilt. The works have been carried out under the care of Messrs. Bodley & Garner, of London.

Castle-Acre.—The parish church of Castle-Acre, Norfolk, was re-opened on the 4th inst., after restoration. No one who has passed through the village of Castle-Acre by the Swaffham road can have failed to be struck with the stately outline of the old grey flint church, which faces the traveller for two miles of his way, standing just clear of the old Roman earthworks which mark the western limit of the somewhat desolate though striking and picturesque old village. Of late years the interior had fallen into a state of dilapidation. The church, which is dedicated to St. James, dates from the commencement of the fourteenth century, but the present structure, which consists of a nave, chancel, north and south aisles, and square embattled tower, is of the Early Perpendicular style. To the adjoining Cluniac priory the church is probably indebted for some curious relics, among which the most worthy of note are the lofty font-cover, of the type of which there is an example to be seen in Sall church, and a very remarkable pulpit, bearing on four sides the painted effigies of four doctors of the church, and supported by a single shaft, the effect of which is unfortunately, though not irremediably, lost by the present position of the pulpit. The ancient rood-screen, too, of which the lower part still remains, contains some curious painting. The chancel has been restored by the munificence of the Earl of Leicester.

Kilburn.—The new church of St. Luke, Kilburn Park, was consecrated on the 9th inst. It has been completed at a total cost of 4,500*l.*, and contains 800 free sittings. It is situated in the new parish of St. John, Kensal-green, and stands midway between that district and those of Kilburn and Willesden. The building, which is 107 ft. long, 57 ft. wide, and 54 ft. high to the apex of the nave roof, is Early English in character, and consists of a nave and chancel with side aisles. The materials used are what is technically known as "London stocks," relieved by red brick bands and arches, stone being sparingly used for constructional purposes only. Mr. John T. Lee was the architect, and Messrs. Dove Brothers were the builders.

Talyllyn.—The little parish church of Talyllyn, Merionethshire, has lately been restored. The work has been carried out under the direction of Mr. Henry Kennedy, architect. The church consists of a nave, with a chancel under a continuous roof, the demarcation between the nave and the chancel being effected by the more ornamental timbering of the roof, and a massive cross-piece of old oak at their intersection. The internal fittings, including the pulpit, prayer-desk, stalls, and open seats, are of pitch-pine, varnished. The church will accommodate 200 persons. The cost of the work has been about 450*l.*

Tendring.—Considerable alterations and improvements have recently been effected in the parish church of Tendring, Essex. These include the erection of a new tower and spire, given by Mr. J. Cardinall, lord of the manor. A reredos is now being erected, and open benches have been substituted for the pews.

Sheffield.—Sir Gilbert Scott has lately visited Sheffield, for the purpose of inspecting the parish church, with a view to its restoration. Sir Gilbert is said to have expressed himself confident that the edifice could be made worthy of the commanding position it occupied in the centre of the town. He also stated that the beauties of the church were of no ordinary character. The cost of making the necessary alterations is to be borne by Mrs. Thornhill-Gell, of Stanton-in-the-Peak, Derbyshire, whose munificent contribution of 10,000*l.* has been already lodged in the bank.

Bournemouth.—The chancel of the new church of St. Swithin, on the east cliff, was consecrated on the 23rd ult., by the Bishop of Winchester. It is made available for congregational worship during the progress of the construction of the nave. There is a reredos, given by Lady Eden, the central subject of which is the "Crucifixion." The chancel has neat stalls for the choir and an eagle lectern; and a suitable organ-chamber has been built also.

DISSENTING CHURCH BUILDING NEWS.

Wolverhampton.—Snowhill Congregational Church, Wolverhampton, was reopened on the 14th inst., after alterations and repairs. The church has been thoroughly renovated throughout, at a cost of over 1,200*l.* The work has been done under the superintendence of Mr. Fleeming, architect. The lowest estimates for the work were accepted as follows:—Builders' and carpenters', Mr. Clarke; painters' and decorators', Messrs. Taylor & Parker, Birmingham; organ improvements, Mr. Dresser, Walsall; warming apparatus, Messrs. R. L. Jones & Son.

Norwood.—A new Baptist chapel is in course of erection in Chatsworth-road, Lower Norwood. The style adopted is Gothic, and the chapel is arranged to seat 650 persons on the ground-floor, and provision is made for galleries, when needed, to seat 350 more. The builders are Messrs. Newman & Mann, and the architects, Messrs. Power & Wheeler.

Pontefract.—The Congregational chapel at Pontefract having been closed for many weeks past, for extensive alterations, improvements, and the erection of a new organ, was reopened on the 1st inst. The interior of the chapel has undergone a thorough transformation, by the removal of the pew or box system from the body of the chapel. The new organ has been erected by Messrs. Brindley & Foster, of Sheffield, at a cost of about 400*l.*

Southport.—A new Wesleyan school-chapel has been opened in Southbank-road, Southport. The building consists of chapel, 50 ft. by 30 ft., with minister's vestry and class-room, each 12 ft. by 10 ft. 6 in., and infants' class-room and tea-room, 22 ft. by 8 ft., with separate conveniences for minister, boys, and girls, in the rear. The walls are of red pressed Bolton bricks, with Cefn stone dressings to doors, windows, bell-turret, gables, buttresses, &c.; and the style adopted is Geometrical Gothic. The total cost was 1,550*l.* The architects are Messrs. Maxwell & Tuke, of Southport; Mr. Thomas Bridge, of Burscough, being the builder.

BOARD SCHOOL, KEYMER, SUSSEX.

THE second school erected by the Keymer School Board has been opened. It is 68 ft. from the road. Its total length is 99 ft. It has a southern frontage, and is approached by a lobby, 18 ft. by 8 ft., situated in the centre of the building. On the west and east side of the lobby are a school-room and a class-room, and on the west side of the playground is a covered playground for infants. The dimensions of the school-rooms are each 39 ft. by 18 ft., and the class-rooms 18 ft. by 14 ft. The class-rooms are placed at the extreme end, and project towards the south. The west side of the school is to be devoted to the education of infants, while in the other side a mixed school will be held. Connected with the lobby are the lavatories, the dry-earth system being adopted. The school is of the simple Italian style of architecture, and was designed by Mr. G. A. Burn, London. It is built of red brick, faced with cement, and roofed with ornamental red tiles. The windows are fitted with Eyre's patent fasteners, which cause the windows to open easily, and dispense with cords. The roof is partly an open one, being ceiled at the collar. The infants' part of the school is laid with solid blocks of wood, placed on a concrete floor. The mixed school has the usual deal plank flooring. The whole of the building is warmed by Bacon's high-pressure hot-water apparatus, and special provision has been made for keeping the children's clothes—which are hung in the lobby—aired, a hot-water pipe having been placed in it. The school will accommodate more than 200 scholars, and has been erected at a total cost of 3,443*l.*, which has been expended in the following way:—Builder's tender, 2,235*l.*; furniture and fittings, 167*l.*; law, architectural charges, &c., 138*l.*; balance of extra work, legal and obtaining loan, 192*l.* 7*s.*; cost of site, 710*l.* 13*s.* Mr. Simeon Norman was the builder, and Mr. R. W. Hobden was clerk of the works. The cost per head, 15*l.*, would seem large, but we are informed that it includes preparation of site (and part foundation) for all future buildings, and also all playgrounds which will hereafter be required, and boundary-walls all round the site.

Books Received.

Life of a Scotch Naturalist—Thomas Edward, Associate of the Linnæan Society. By SAMUEL SMILES. London: John Murray.

WE notice this, the latest of those biographies of self-made men for which we are indebted to Mr. Smiles, as affording an example of what can be accomplished by force of will acting on a naturally strong bent in favour of special pursuit, in spite of what might seem almost insurmountable obstacles. Mr. Thomas Edward is (for he is still living) the son of a private in the Fifeshire militia, but was born at Gosport, whence, however his parents soon removed to Aberdeen. For no accountable reason, he seems almost from his cradle to have been possessed by an unconquerable love of animals of every sort, of their ways and doings, and an equally uncomquerable desire to possess, in one way or another every sort of animal he saw. He was a terror at home, and a wonder to his school-fellows for his constant importation of animal curiosities, dead and living, into the house, and for his profound knowledge of birds and their nests, and the impossibility of persuading him that it was time to return home, when once out on a bird-catching or bird-nesting excursion. So far the story of a boy with a mania which renders him notorious and not a little trouble some, is not so uncommon. But the unrelenting energy with which his favourite study was pursued throughout his life is most remarkable. I

as by trade a shoemaker, having a wife and mily to keep on the proceeds of his trade, hich cannot have been large, as it appears he orked as assistant, and not on his own account. et he managed to collect a museum of the anffshire *fauna*, such as astonished visitors mpetent to judge of the time and labour cessary to make such a collection single- nded. His employer appears to have favoured s pursuits as much as possible, and Edward uld work through the night, satisfying him- lf with an hour or two of sleep, to gain time r a naturalising excursion the next day. When t upon such an excursion, he seems to have en utterly indifferent to cold, hunger, fatigue, the lapse of time, or even to serious injury in mbing up and down cliffs, so long as he got the ject of his search. His own account of some his chases after rare birds, when he appears metimes to have expended two days in the rsuit, remaining out all night to catch the ds when they first stirred in the morning, and e rough work he went through on some oc- sions, furnishes an extraordinary instance of al and perseverance; proving also, at the same ne, that he must be possessed of a very strong nstitution not to have killed himself long ago. it he had more serious obstacles to encounter, the form of poverty and want of appreciation; his biography illustrates even more pointedly an usual the truth that no man is a prophet in s own country; and his museum, of which erdeen ought to have been proud, attracted arcely any notice, and eventually had to be sold far below its value, and is, it is believed, en- ely broken up and dispersed now. Mr. Edward, io seems to have preserved throughout all difficulties a strong and stern self-respect, ok no steps to bring himself favourably before e world; the idea that he should write about d publish any of his discoveries seemed to ve been quite a new one to him, when it was ggested and urged upon him by some appre- ting *savans* who ultimately came to know what had done, and how valuable his labours had en towards the elucidation of many points in tural history; especially as regards the habits animals in their native haunts, with which he s more familiar, as may be supposed, than y one could be who did not go and live among m as he may almost be said to have done. ving been persuaded that his knowledge uld be of value to the scientific world, how- er, he exerted himself to overcome his defects education in order to commit to writing some his observations; but much even of what s written was used by his family for indling" (*i.e.*, lighting fires), with no care his part to prevent this destruction. But, his biographer observes, he is one of those o have lived *for* science, not *by* science; and love of nature appears to have been its own l and its own reward. Late in life he received e recognition from the Linnæan Society and m educated people who understood and valued a. But he might well feel aggrieved in think- of how much more he might have accom- shed. "I know," he said, "what I have done, l from that I can conceive how much more I ght have done if I could have got a little help. ink yourself—only think—of a poor illiterate rking man struggling against every sort of vation for so many years, with no other object view but simply to gain a little knowledge of works of creation—and say if I can be med because I occasionally grieve that I l no help, when it would have enabled me to so much more than I have already done. . . . my honours have come from a distance. I ve kept the Museum of the Banff Institution about twenty-one years, for, I may say, host nothing; and though the Linnæan Society ught me worthy of being elected an associate, people here did not think me worthy of being honorary member of their society." His e's opinion as to his pursuits is characteristic: Veel, he took such an interest in beastis, that idna compleen. Shoemakers were then a y drucken set, but his beastis keepit him frae m." In which there certainly is a moral, of tty wide application.

t is pleasant to add that the illustrations to book, consisting of engravings by Whymper Cooper, with an admirable portrait-etching Rajon as frontispiece, are above the usual k of book illustrations, and that the author enabled to make this addition through the rality of a gentleman (Mr. Reid), who be- e interested in the subject of the biography, expressed a wish to illustrate it at his own . It should be noted also that her Majesty, on the perusal of Mr. Smiles's book, tes- tified her recognition of the value of Mr. Edward's labours by conferring a pension upon him. As to the suitability of writing the biography of a man who is yet living, Mr. Smiles observes that, had the book not been written now, it probably never could have been written. To the question, "Is the life really worth writing?" he leaves the public to answer. We think no one who reads the life of Thomas Edward will have the slightest doubt on that point.

Miscellanea.

"A Combat with an Infective Atmosphere."—The usual "before Easter" series of Friday evening discourses at the Royal Institution was commenced on the 19th inst. by Professor Tyndall, F.R.S. His subject was a continuation of that he brought before the members last year. He then, at the commencement of that discourse, described the methods he adopted for testing whether organic infusions gave birth to low forms of life, bacteria, vibriones, &c., when exposed to "optically" pure air only, such as Dr. Bastian and other experimenters met with in the experiments conducted in accordance with their arrangements. Certain methods were resorted to last year for letting the air purify itself in closed chambers, and fifty or sixty various infusions were experimented upon. These infusions were found last year to be reduced to utter sterility by boiling in an oil-bath for five minutes. Every germ was destroyed. In last September Dr. Tyndall resumed his experiments, but the results were not the same as before; and in October he tried some solutions of fungi, which were boiled for three hours, and even more. Yet, nevertheless, these also gave way. Many subsequent lots were tried with increasing care, but bactarian life was more or less developed, and in November he began to suspect he was working in an infective atmosphere. Instead, therefore, of continuing to operate in the laboratory at the base of the institution, the experiments were made in the upper part of the building, and exceeding care taken to filter the solutions. New apparatus was constructed and further experiments made, the ultimate result being that at last there were many cases in which the infusions remained clear and good, and many in which organic life was germinated, and putrescence followed. Even the calcining of the inclosed air by the platinum coil and voltaic currents failed to destroy the atmospheric germs, as it had not in the previous year, and consequently Dr. Tyndall's scientific acumen was directed to the elucidation of the cause. The result has been that instead of coinciding at all with the theories for spontaneous generation, he has shown that by the use of well-devised apparatus the results of perfect preservation can be attained by the perfect exclusion of the air. The apparatus of Dr. Roberts, of Manchester, was highly praised.

The Carlisle City Surveyorship.—At a special meeting of the Carlisle Town Council on the 15th inst., a resolution passed at a previous meeting of the Council rejecting the recommendation of the committee that Mr. McKie be appointed surveyor and directing that a surveyor be advertised for at a salary of 400*l.* per annum, the person appointed to devote his whole time to the duties of the office, was rescinded by twenty to fifteen; and the following resolution was carred by thirty to fourteen:—"That Mr. Hugh Unsworth McKie be and he is hereby appointed surveyor for the city of Carlisle, at a salary of 400*l.* per annum, and on the following conditions, viz., that he shall, in the first place, devote to the duties of the office so much of his time as shall be necessary, or shall be required by the Corporation, and shall not take any private practice in matters which come under the control and jurisdiction of the Corporation or Urban Sanitary Authority." Amendments to the effect that the surveyor should devote the whole of his time to the duties of his office were lost.

Bricklayers.—We are asked to mention that a meeting will be held on Tuesday evening, Jan. 30, at eight o'clock, at the Working Men's College, 91, Blackfriars-road, with a view to commence another class for the Technical Education of Bricklayers. Mr. J. P. Morris has been appointed instructor. His employer, Mr. J. T. Chappell, builder, has made the class a present of the necessary tools and materials to commence with.

Result of not Stamping a Contract.—Mr. George Kidd, builder, of Ogleforth, York, brought an action in the York County Court on the 9th inst., against Mr. J. Duncanson, of Yearsley Bridge, York, for 18*l.*, balance of account for work done and materials supplied in building a house in Huntington-road. Plaintiff sent a tender to defendant in which he offered to construct the house for 318*l.* The tender was accepted in July, 1874, and the house was completed within a year. Defendant paid various sums on account until a balance of 18*l.* only remained, and when pressed for that sum he declined to pay, alleging that the work was badly done. The specification and tender were produced, but they were unstamped. After a brief discussion, the Judge ruled that the tender must be stamped, and told Mr. Blackburn that his client must pay the penalty, 11*l.* 1s. 6d., before proceeding farther. Plaintiff, however, elected to be non-suited.

Corrosion of Iron.—Zinc Paint.—We understand that arrangements have been made with Professor Barff to read a paper at the Society of Arts on Wednesday, the 14th of February, on the subject of his recent discovery of a method of preventing the corrosion of iron by a process of oxidation. We trust he will have an audience of sufficiently practical and scientific men to determine absolutely the value of this invention, which, if successful, must undoubtedly give a most beneficial impetus to the whole of the iron industries of this country. Professor Barff will at the same time read a paper on the manufacture of zinc white paint, the patented process of Mr. Griffiths, of Liverpool. This paint is said to possess all the virtues of white lead, and to have the advantage not possessed by white lead, of not being affected by sulphuretted hydrogen, which blackens white-lead paint, and, moreover, the further advantage of not being injurious to the workmen manufacturing or using it.

Free Public Libraries of St. Margaret and St. John the Evangelist, Westminster. The Commissioners meet on the first Wednesday in each month, at the Chief Library. The Chief Library and Reading-room are 23, Great Smith-street, and the Branch Library and Reading-room, 3, Trevor-square, Knightsbridge; these are open daily, from 9 a.m. to 1 p.m., and from 5 p.m. to 9 p.m., excepting Sundays, Good Friday, Christmas Day, and the Bank Holidays. The annual report, just now published, states that in the Chief Library the number of volumes is 10,212. During the past year 86,786 volumes were issued to borrowers for home reading and to readers in the Reference Department. The number of persons who have made use of the reading-room during the year is 111,913. At the Branch Library, 6,240 volumes were issued during the year; and the visitors to the reading-room numbered 13,490.

Snodland Working Men's Club.—A new working-men's club at Snodland has just been opened. Mr. William Lee, of Holborough, generously undertook to erect a building suitable for a club-house, and he has caused to be erected in the Holborough-road a house adapted to the purposes to which it is to be devoted. The structure and its furniture entailed an outlay of about 2,000*l.* The building was erected by Messrs. Burgess & Langridge, of Snodland, from plans prepared by Mr. H. Raven. It contains a large hall capable of accommodating several hundred persons, in addition to several smaller rooms for recreation and other purposes, the steward's quarters, &c.

Trees for London Streets.—According to the experience of Mr. W. Paul, nurseryman, there are four trees which thrive better than others in towns; these are the plane (*platanus occidentalis*), the poplar (*populus monilifera*), the elm (*ulmus campestris*), and the gigantic stag's horn sumach (*ailanthus glandulosus*). The latter, though but little known, is a very beautiful tree, from the north of China, growing to the height of 50 ft., with large handsome pinnate leaves, which, on the young trees, are often a yard long. The lime (*tilla europæa*), when it will grow, is one of the best of town trees, because it may be pruned into any shape required without injury, and the flowers are very sweet.

The Birmingham Art Gallery.—The *Birmingham Gazette* states that the mystery which for six years has surrounded the name of the donor of 3,000*l.* in aid of an Art Gallery for Birmingham was disclosed on the 18th inst., at a meeting of the trustees of the Gallery Fund. That donor was the late Mr. Clarkson Osler.

British Archæological Association.—At the fourth meeting of the session,—Mr. Thomas Morgan, F.S.A., in the chair,—Mr. R. Smith, F.S.A., reported that a large portion of the walls of Britford Church, Wilts, were those of a Roman building. The first paper of the evening was by Mr. W. F. Grover, C.E., on "The Suez Canal." After a warm eulogium upon the engineering genius of M. de Lesseps, which he considered had not been sufficiently recognised in England, the lecturer proceeded to describe the various efforts made in ancient times to form a communication from the Mediterranean on one side to the Red Sea on the other. The records of Herodotus, Strabo, and Pliny were passed in review, and the course of the ancient works traced from Bubastis to the Bitter Lakes, and thence to Assinoe at the head of the Red Sea. The second paper was by Mr. Syer Cuming, F.S.A. Scot., on "The Peculiar Stoneware Manufactured at Sieburg, near Cologne, at the latter end of the fifteenth and during the whole of the sixteenth century."

Ipswich Mechanics' Institution.—The Ipswich Mechanics' Institution was re-opened on the 15th inst., after being closed to allow of rearrangement, including the erection of a new reading-room, which is in the Queen Anne style, according to plans prepared by Messrs. Barnes & Bishopp, architects. The contractor was Mr. Robert Girling, whose original contract was 692*l.* There have been, however, extras and additions, and the total expenditure will, it is expected, exceed 1,000*l.* The gas-lighting and the decorative painting have been carried out by Mr. B. Bird. Mr. E. Sporle was the sub-contractor for the plastering, both plain and ornamental. The whole of the works were carried out under the sole superintendence of Mr. Bisshopp.

Emblematic Tombs.—As to emblematic tombs, an extraordinary example is that of Sir Thomas Parkyns, in the chancel of Bunny Church, Nottinghamshire. Sir Thomas had a great reputation in the Midland counties, as a wrestler, and the monument in question, erected in the middle of the last century, consists of a statue which represents him in the cap and dress of a wrestler, and in the attitude of wrestling with Death for an opponent. In the Brompton Cemetery the monument of a well-known Thames waterman exhibits his wherry and skulls. It is unnecessary to say that on the sepulchral slabs of the Middle Ages emblems of the calling of the persons commemorated are very general.

"Commission."—It is stated that the Admiralty have removed the names of a firm of engineers from the list of those invited from time to time to tender for engineering works to be executed for the Government, in consequence of a member of the firm having offered a sum of money to one of the dockyard officials with the view of obtaining his support in certain transactions in which the firm was concerned.

Institution of Surveyors.—The next meeting will be held on Monday evening, January 29th, when the adjourned discussion on the paper, read by Mr. W. T. Marriott at the last meeting, entitled "Riparian Rights," will be resumed. We have before us reports of this paper and of the discussion which followed, parts of which are especially interesting at this moment, but we are unable to find room for them, at any rate in our present number.

Sanitary Condition of the War Office.—Rumours have long been general regarding the sanitary condition of the War Office, and her Majesty has commanded a commission to inspect the premises, and report thereon. The commission consists of Sir William Jenner, M.D., Sir W. W. Muir, M.D., chief of the medical department of the army; Dr. Seaton, and Mr. Noel, M.P. It ought surely to have included an architect or engineer.

United States Patents.—There were no fewer than 22,408 applications at the United States Patent Office for grants of patents in the year ending the 30th of September, 1876, and the number issued in the year (including reissues and designs) was 15,911, being 1,681 more than in the preceding year. There were also 1,029 trade-marks, and 499 labels, registered in the year 1875-76.

Rheims Cathedral.—The French Minister of Public Works has authorised an expenditure of 80,000*l.* upon the restoration of Rheims Cathedral. The cathedral is 457 ft. long by 100 ft. broad, the transepts having a total width of 165 ft. The height of the roof is 110 ft.

Obituary.—We are sorry to hear of the death of a correspondent who promised to be useful,—Mr. Arthur Forbes, son of the Rev. A. G. Forbes, formerly of Glasgow. He died at 19, Boston-terrace, Hammersmith, on the 17th inst., after a severe and prolonged illness.

London and South Western Railway Works.—We are asked to mention in reference to our notice of the London and South Western Railway Extension Works at Nine Elms and Waterloo, that Messrs. Perry & Co., of Bow, are the contractors for the whole of the extension works at Waterloo, including the new approaches, and for the new workshops, &c., at Nine Elms.

A Paradise for Infants.—The *Sanitary Record* states that in the village of Harbottle, Northumberland, no child has died during the last twenty years; a farmer and his three shepherds have between them forty-seven children, and during the past thirty years not a death has occurred in their families.

Metropolitan Improvements.—Mr. Edward Stanford has issued, as usual, a map showing proposed metropolitan railway bridges and miscellaneous improvements. It includes, of course, the sites proposed to be dealt with under the Artisans' and Labourers' Dwellings Act.

Ecclesiastical Dilapidations Acts.—The Ecclesiastical Surveyors' Association has issued a report on the proceedings of the Select Committee of the House of Commons on the Ecclesiastical Dilapidations Acts. We may give some quotations from it in our next.

Sir Walter Scott's House in Edinburgh.—The house, No. 25, George-square, Edinburgh, which was occupied by Sir Walter Scott, has been sold by auction in Messrs. Lyon & Turnbull's rooms, George-street, for 2,725*l.*, the upset price being 2,600*l.*

TENDERS

For the erection of dwelling-houses and shops, Stockwell-road. Mr. T. S. Archer, architect. Quantities not supplied:—

	General Works.	Shop Fronts.
Wagner	£3,897 0 0	£284 0 0
Edworthy	3,290 0 0	230 0 0
Brown	3,100 0 0	200 0 0

For alterations and additions to a residence, Seven Sisters'-road. Mr. T. S. Archer, architect:—

Allen & Son	£1,000 0 0

For the erection of the Ramsgate and St. Lawrence Royal Dispensary. Messrs. Hinds & Son, architects:—

Elgar	£870 0 0
Duckett	793 0 0
Osborne	764 0 0
Home	749 0 0
Goodman	745 0 0
Newby (accepted)	737 0 0
Cowell	718 0 0

Accepted for a new abattoir at Wakefield for the Borough Market Company. Mr. William Watson, architect:—

Tattersall (all except ironwork)	£775 10 0
Shillito & Harrison (ironwork)	450 0 0

Accepted for enlarging the Public Baths, Wakefield. Mr. William Watson, architect:—

Flower, Brothers	£331 9 0

Accepted for five houses at Carlton-gate, near Pontefract. Mr. Wm. Watson, architect:—

Jackson & Spencer (excavating, brick, and stone)	£1,350 0 0
Stewart (slating)	150 0 0
Eastwood (plastering)	195 10 0
Wright (carpenter, joiner, and painter)	767 16 0
Johnson (plumbing, glazing, and ironwork)	265 0 0

For brick sewers at Kensington:—

Hall	£2,842 14 9
Mears	2,530 0 0
Rolwey	2,510 9 0
Pizzey	2,400 0 0
Nowell & Robson	2,310 0 0
Royes	2,187 0 0
Self	2,108 0 0

For roads and pipe sewers at Esher:—

Nowell & Robson	£2,410 0 0
Pizzey	1,939 0 0
Crockett	1,915 0 0

For alterations and additions to carriage factory for Messrs. Foster & Tofield. Mr. D. Haylock, architect. Quantities supplied:—

Ronald	£335 0 0
Tidy	320 0 0
Robinson	312 13 6
Hearn	296 10 0
Beale (accepted)	286 0 0

For erecting a new church at Beer, Devon, for the Hon. Mark Rolle. Messrs. Hayward & Son, architects:—

		Deduct.*
Moass & Redway	£3,590 0 0	£469 0 0
J. & J. Marshall	6,410 0 0	359 0 0
Kenshale	6,179 0 0	487 0 0
Parsons & Perriman	6,165 15 0	325 0 0
Stephens & Bastow (accepted)	6,079 0 0	493 0 0
Prescott	5,832 19 9	238 13 0

* If upper part of tower is omitted.

For covered vegetable market at Bursalem. Mr. E. M. Richards, architect. Quantities by Messrs. Pollard & Showell:—

Contract No. 1 (Builders' Work).

Brindley	£13,640 0 0
Grosvenor	14,570 0 0
Dawson & Bradney	14,016 0 0
H. & R. Inskip (accepted)	13,959 0 0

Contract No. 2 (Iron Roof).

Berrisford Engineering Co.	£2,355 0 0
J. & A. Glover	2,111 10 6
Silvester	1,996 17 6
Dixon	1,979 0 0
Handyside & Co.	1,939 0 0
R. & J. Rankin	1,869 0 0
Bridge and Roofing Co.	1,700 0 0
Jukes, Coulson, Stokes, & Co.	1,658 0 0
Dawney	1,615 0 0
Hill & Smith (accepted)	1,350 0 0

For the erection of a school to provide accommodation for 500 children on the site in Marlborough-road, Chelsea, for the School Board for London. Mr. E. R. Robson, architect:—

Rankin	£7,043 0 0
Scrivener & White	6,382 0 0
Pritchard	6,325 0 0
Brass	6,089 0 0
Hook & Oldrey	6,013 0 0
Wall, Brothers	5,989 0 0
Downs	5,973 0 0
Stimpson & Co.	5,970 0 0
Tongue*	5,802 0 0

* Recommended by Works Committee for acceptance, but referred back for further consideration.

For proposed church at Purley, near Croydon. Mr. James Fowler, architect. Quantities by Mr. J. Glenn:—

Pattinson	£6,088 0 0
Goddard & Son	6,049 0 0
Downs & Co.	6,005 0 0
Bennett	5,837 0 0
Staines & Son	5,644 0 0
Hide & Co.	5,550 0 0
Cornish & Gaymer	5,214 0 0
Longley	5,118 0 0

For the erection of No. 6, Warehouses, Carter-lane, City:—

Dove, Brothers	£15,575 0 0
Scrivener & White	15,017 0 0
Browne & Robinson	15,063 0 0
Morter	14,926 0 0
Brass	14,859 0 0
Hart	14,769 0 0
Crabb (accepted)	14,462 0 0
Newman & Mann	13,861 0 0
Sharman	13,000 0 0

For alterations and additions to the Public Baths and Wash-houses, Greenwich. Mr. Henry Roberts, architect. Quantities supplied:—

Linfield	£2,413 0 0
Battley	2,300 0 0
Preble & Co.	2,290 0 0
Nightingale	2,264 0 0
Sharman	2,250 0 0
M'Cormick	2,150 0 0
Beale	2,120 0 0
Le Fevre & Co.	1,950 0 0
Bridel (accepted)	1,850 0 0

For cast-iron tank and fittings, &c., for the Public Baths and Wash-houses, Greenwich. Mr. Henry Roberts, architect. Quantities supplied:—

Rennie & Co.	£1,986 0 0!
Newton, Chambers, & Co.	1,034 0 0
Abbot & Co.	850 0 0
Head, Wrightson, & Co.	850 0 0
Sheppard	819 10 0
Nightingale	800 0 0
Mason	734 0 0
Stacey, Davis, & Co.	711 9 0
Jukes, Coulson, Stokes, & Co.	699 10 0
Bretteli	696 18 6
Le Fevre & Co.	686 0 0
Gardiner	649 10 0
Merryweather & Sons	642 0 0
Richards & Co.	619 7 2
Young & Co.	540 0 0
Garvie, jun., & Co. (accepted)	523 0 0!

For shoddy-walling, rubble-walling, and cinder-walling at the Cemetery, Burslem, for the Burslem Burial Board. Mr. E. W. Richards, architect:—

Prices per yard run for finish-wa 17 ft. high.

	Shoddy.	Rubble.	Cinde
Tyler	£3 19 6	£2 15 0	£2 18
Baggaley	3 0 0	2 10 0	1 15
Mountford	2 13 0	2 10 0	—
Gouldstraw (accepted)	1 17 0	1 13 0	—
Horton (accepted)	—	—	0 15

For rebuilding the Crown and Cushion Tavern, London-wall, for Messrs. Chapman & Brothers. Mr. Thomas Chatfield Clarke, architect. Quantities supplied by Messrs. Hovenden, Heath, & Berridge:—

Colls & Sons	£7,870 0 0
Bracher	7,770 0 0
Clarke & Bracey	7,788 0 0
Kilby	7,673 0 0
Coleman	7,590 0 0
Browne & Robinson	7,510 0 0
Ashby & Horner	7,443 0 0
Newman & Mann	7,357 0 0
Pritchard	7,324 0 0
Brass	7,240 0 0
Wagner	6,725 0 0

For building granaries at Mill Wharf, Mill-street, Dock-head, for Messrs. Vogan, Brothers. Messrs. Whitmore & Kennard, architects. Quantities supplied:—

Brown	£3,273 0 0
Rivett	3,195 0 0
Wood	3,183 0 0
Morter	3,117 0 0
Newman & Mann	3,066 0 0
Rider	3,038 0 0
Bangs	2,998 0 0
Cook & Green	2,993 0 0

The Builder.

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*The Life of Sir William Fairbairn.**

IT is fortunate for, at all events, the professional reader, that the bringing before the public of the life of Sir William Fairbairn has been entrusted to a writer on mechanical science, and familiar with the work of the engineer. Mr. Pole has given us a book which will take its place on our shelves beside the Autobiography of Sir John Rennie and the Life of Isambard Kingdom Brunel. It is a contribution, and one of no little value, to the history of engineering. We need not even qualify the expression by the limitation of engineering in Great Britain. The study of practical mechanics has been so far advanced by the sound sense and thorough investigations of Fairbairn, that whenever a full history of the progress and advance of that branch of learning is written, his name must head a not unimportant chapter. It is thus the more important that a biography, even when much of it is in the form of autobiography, should be edited by a man who is able to appreciate the most salient characteristics of the person portrayed, as is the case on the present occasion.

Of course the part of the book that will be read with most interest is the autobiographical portion. To that we refer our readers, with the promise that from its perusal they may derive both great pleasure and great profit. In artless, but noble language, Fairbairn has revealed himself as a worker,—a man of great reflective and judicial power, of indomitable resolution, and of a buoyant and happy spirit, that shone only the brighter for the fanning of the tempest of trouble. Mr. Pole has, we think wisely, made no attempt to pitch his own part of the book in the same key as the recollections of Sir William Fairbairn. There is thus, it is true, a certain irregularity and want of unity in the book, if regarded as a literary work. But, what is more to our present point, the different great investigations which Fairbairn did so much to advance, are carefully illustrated and explained. The personal history is the most interesting to the autobiographer, and will no doubt prove so to the general reader. But the professional history is that which is most important, as far as the study of mechanics is concerned; and in the later periods of Sir William's life, when his labours were recorded in the form of separate literary productions, the autobiographical recollections are naturally few, or wanting. This defect in the completeness of the personal narrative has been supplied by Mr. Pole, on a scale appropriate to the detail of the book. And such full and precise references are given to the publications of Fairbairn himself, the whole being rendered of more value by a careful index, that we have grounds to congratulate the editor on having supplied a valuable addition to the standard library of the engineer.

William Fairbairn was born in the town of Kelso, in Roxburghshire, on February 19, 1789. His father was descended from a respectable though humble class of small lairds, or, as they are called, "portioners," who farmed their own land. But his mother came of a blood of no ordinary temper. She was a descendant of the border Douglases; and when we reflect on the grand "staying property," which was a main characteristic of William Fairbairn, we cannot but recall the historic name of "Archibald Bell-the-Cat." Another of our workers in iron to whom we owe more than is usually known of the progress of structures in this metal, was maternally derived from the same source. The mother of the late Sir Charles Fox was a Douglas, a noble and venerable woman, whose memory may be recalled in the same words that are applied to the mother of Sir William Fairbairn,—"She was a tall, handsome, commanding woman, and lived to a great age." Like Fairbairn, Fox was a born-engineer. His father was an eminent surgeon, and when the boy was first admitted to the dissecting-room his disappointment was great, as he had expected to find the human body full of wheels and springs. Fairbairn's first practical work was the construction of a little wagon with four wheels (the grandfather of the perambulators that now cumber our streets) for the conveyance of his little brother Peter, a child of fifteen months old, whose nursing devolved upon William and an elder sister. With an old saw, a knife, and a gimlet, a piece of thin board, and a few nails, the future engineer managed to make a respectable wagon, which, though frequently out of repair, was, he says, better than could have been expected. The greatest difficulty was in the wheels, which he surmounted by cutting sections from the stem of a small alder tree, and burning holes in the centre, to receive the axle, with a red-hot iron.

From wagon-building William Fairbairn proceeded to ship-building, thus indicating, in his boyish pursuits, his natural leaning towards an occupation the character of which he did more than perhaps any other man to transform and improve. In the formation of little boats and ships, he tells us that he became an expert artificer; and he not only built, but rigged and sailed, his miniature fleet. From shipbuilding, he proceeded to the construction of wind-mills and water-mills, of which he had sometimes five or six in operation at the same time. They were all made with the knife. The water-spout was composed of the bark of a tree, and the millstones were represented by discs of the same material. Arithmetic, bookkeeping, and a small smattering of mensuration, constituted the whole extent of education William Fairbairn ever received as a boy. He makes the sole exception of three months spent under the care of his uncle, William Fairbairn, at Galashiels, where land-surveying and committing the Psalms to memory appear to have been the chief additions to his studies. But the term is unjust. Up to the age of fourteen,—and as far as imparted instruction is concerned,—there is no doubt that the education of Fairbairn was of the most limited nature. But when, having entered his fifteenth year, he became aware of his own deficiencies, and set to work systematically to remove them, he became, as he says, both scholar and schoolmaster. He had, in consequence, such a master, as far as thorough conscientious demand for labour was concerned, as few scholars could boast; and his progress was accordant therewith. He arranged his evening studies with a very wise forethought. Monday was devoted to arithmetic and mensuration; Tuesday, to history and poetry; Wednesday, to recreation and reading novels and romances, thus feeding that portion of the mind, the imagination, to which all really great workers owe so much. Thursday evening was devoted to mathematics; Friday, to Euclid and trigonometry; Saturday, to recreation and sundries; and Sunday, to church-reading, and recreation. For a boy of fifteen to strike out, and to carry out, such a well-ordered course of study may in itself be regarded as a phenomenon. The wise interposition of recreation at appointed times, the study of the noble diction of Milton, the relief afforded to the mind by the fascination of works of fiction, were so many direct means, both of preserving that buoyant health of brain on which so much of the happiness and of the success of the subsequent career depended, and of forming that clear, vigorous, and at times racy and humorous style, which we meet in Fairbairn's writings. It is very rare to find a man who can use other tools adroit in the use of the pen. It is very rare to find a man write good English who is entirely innocent of any study of Latin or of Greek. The study of Euclid is, there can be no doubt, one of the best substitutes for grammatical studies, both as a means of training to the mind, and as a model of logical sequence of arrangement and of deduction. Thus between Euclid and Milton Fairbairn so well employed his time that in the compositions of his later life there is but little that betrays the writer's unacquaintance with Virgil, with Cicero, and with Homer. Letter-writing, under the influence of a youthful and transitory love-fever, was another means of self improvement diligently pursued.

From the age of fourteen to that of twenty-

* The Life of Sir William Fairbairn, Bart., F.R.S., LL.D., D.C.L., &c., partly written by himself. Edited and completed by William Pole, F.R.S. London: Longmans. 1877.

one William Fairbairn was occupied as an apprentice millwright at Percy Main Colliery, in the county of Northumberland. Here, after passing a time in the workshop, he was placed in charge of the steam engine and pumps; and very severe his duties must have been. He became at this time intimate with George Stephenson, who had charge of an engine at Willington Ballast Hill, only a mile or two from Percy Main Colliery. The men were of congenial dispositions; and their friendship endured through life. But the good effect of self-education on the Scottish engineer was far more apparent, in after life, than on his English friend.

Having contracted an engagement, which in due time led to an unusually happy married life, William Fairbairn embarked on a collier, at North Shields, on 11th December, 1811, with a new suit of clothes, half a dozen new shirts, a watch, and four pounds of money in his pocket,—all of his own earning,—for London, and for the pursuit of fortune. From that time till the winter of 1813-14,—the period of the great frost,—he sought her in vain, with much wandering, and undergoing many hardships. The friendly welcome which Mr. Rennie gave to the young Scotch millwright, to whom he offered employment on the works of Waterloo Bridge, was rendered unavailing by the tyranny of the Millwrights' Society,—a body which at that time strove to exert the same control over both workmen and masters which, forty years later, was attempted by the Executive Council of the Amalgamated Society of Engineers. This cruel suffering from a capricious rejection by the Millwright Society, when he stood on the threshold of his independent life, was not forgotten when Mr. Fairbairn, in 1851, earned the congratulations of the Earl of Shaftesbury for having taken the "bold, manly, and righteous course of resistance to this Louis Blanc conspiracy of the mechanics and engineers." Having been nearly starved in London, Fairbairn proceeded,—to call a spade a spade,—on the tramp, to Cheshunt; and after working on a windmill in that neighbourhood, and saving a few shillings, obtained employment, first, on a patent ropery at Shadwell, and afterwards with Mr. Penn, at Greenwich. He had learned at Cheshunt the existence of two societies, rivals of the one which had barred his employment by Mr. Rennie, the three being called the Old, the New, and the Independent Millwrights' Societies. He obtained admission as a member of the last. All the three societies exerted a supervision over the hours of labour, which were from light to dark in winter, and from six a.m. to six p.m. in summer, with two hours deducted for refreshment. Nor was any man allowed by either society to work for less than 7*s.* a day. By the beginning of 1813 Fairbairn had laid by 20*l.* out of his wages, which he expended on the model of the precursor of the present steam plough. The work proved unremunerative from want of capital to carry it out. Having retrieved his loss, to the extent of 7*l.*, by the construction of an elaborate and effective sausage-machine, he started in April, 1813, for a tour in the south of England. Coaching it to Bath, he proceeded thence on foot to Frome, Bradford, Trowbridge, Bristol, Newport, and Cardiff, and thence sailed for Dublin, where he arrived, after a voyage of four days, with the sum of 1½*d.* in his pocket. In Dublin he obtained work, in making patterns for nail-machinery, at the Phœnix Foundry. In October he sailed for Liverpool, and reaching Manchester after a couple of days spent on the banks of the Mersey, found the true field for the development of his talents.

At Manchester he worked for two years for Mr. Parkinson, and subsequently as draughtsman for Mr. Hewes. During the former employment he married. In November, 1817, having had some disagreement with Mr. Hewes as to the design for a bridge, he resolved to become his own master; and sending round his cards, in association with an old shopmate, James Lillie, obtained an order for the erection of a callender in Cannon-street, and of a calico-polishing machine in Shakspeare-street. On the strength of these orders the partners hired a shed for 12*s.* a week, erected a lathe, and with the assistance of a sturdy Irishman to turn the lathe, contrived to turn and to finish the work in a very creditable manner. The next piece of good fortune was the execution of some millwork for Messrs. Murray, large cotton-spinners, in a manner which gave such satisfaction that the Murrays warmly recommended the young millwrights, and a career was thus commenced which led to the rise of one of the principal manufacturing engineer establishments in England. Mr. Fairbairn's career can hardly be called unchequered, even after he was on the fair way to wealth and renown. It would have crushed a man with less backbone and pith to lose the large sum of 100,000*l.* by the attempt to establish the business of iron shipbuilding on the Thames. Fairbairn not only lost that sum, but afforded to lose it; and yet to retire from business in due time with an ample provision secured by his genius and perseverance.

It was not only by acting as a manufacturing engineer that Fairbairn was able at once to make his mark. His work as such was sound and thorough. But he was never contented to copy. He scorned what he thought the servile habit of taking notes of other men's works. He brought all the energy and perspicuity of his mind to bear on the true mechanical conditions of any practical problem brought before him. Thus in Mr. Murray's mills, by the introduction of light shafts, driven at much higher speed than had previously been attained, he effected such a saving in time and in power as to lead to a change which gradually abolished the practice of work on Sunday, the whole of which day had up to that time been occupied by repairs of the clumsy machinery superseded by the genius of Fairbairn. It is characteristic of the man that a success, on the strength of which so many men would at once have set up a claim to be regarded as public benefactors, is only modestly and incidentally mentioned in his autobiography.

At the end of five years of hard work, during which the erection of a new mill for Messrs. M'Connel & Kennedy, then the largest cotton-spinners in the kingdom, was a principal item, Messrs. Fairbairn & Lillie found themselves worth, in material, stock, and tools, the sum of 5,000*l.* They now went to the extent of buying a small piece of ground, and erecting a sixteen-horse-power second-hand Boulton & Watt steam-engine to drive their machinery, the cost of which they covered within two years more. In 1824, Mr. Fairbairn was applied to to construct water-wheels for the Catrine Cotton Works, in Ayrshire, where he designed and erected two powerful wheels, each of 50 ft. diameter, and yielding a power of 120 horses,—240 horse-power in all. These wheels were started in June, 1827, and their unexampled success led to the employment of the makers on the only water-mill in Switzerland. The fame of the firm of Fairbairn & Lillie thus spread on the Continent. By 1830 their stock-book showed a balance of nearly 40,000*l.* in their favour, and left them enough capital to build a foundry and increase their works, until they were capable of giving employment to upwards of 300 hands. In April, 1830,—on the proposal of James Walker, Robert Stephenson, and John Farey,—William Fairbairn was admitted as a corresponding member of the Institution of Civil Engineers.

The next subject which engaged the very careful attention of Mr. Fairbairn was that of the applicability of iron to ship-building, and the possibility of applying steam-power to traction on canals. Experiments were conducted on the Forth and Clyde Canal, and the result was published by Mr. Fairbairn, in 1831, under the title, "Remarks on Canal Navigation." The *Lord Dundas* was the name of the little vessel constructed by Fairbairn for these experiments. She was 68 ft. long, 11 ft. 6 in. in beam, and 4 ft. 6 in. deep; drawing 16 in. of water. She was built of iron plates, about 1-16th of an inch thick, strengthened with light ribs of angle iron and T iron, and fitted with cabins fore and aft. The engines were on the locomotive pattern, with two cylinders, and of about 10 horse-power. It worked a single paddlewheel, 9 ft. diameter and 3 ft. 10 in. wide, placed a little aft of midships, and intended to make fifty or sixty revolutions per minute. This wheel worked in a trough extending fore and aft, to allow of the flow of water to and from the paddles. The whole weight of boat and engines was 7 tons 16 cwt. With this boat a speed of ten miles per hour was obtained on the Mersey. But on the narrow cut from Runcorn to Warrington, so great was the surge raised a-head, that six miles an hour was the highest rate attainable. At the speed of five miles and a half per hour the *Lord Dundas* steamed beautifully, and at that rate she carried passengers from Port Dundas, Glasgow, to Port Eglintown, Edinburgh, for upwards of two years. As regarded the attempt to vie with the speed of railways on canals, the experiment was a failure. But as a step in the progress of shipbuilding, and as a proof of what can be done on the water at low speeds, the value of the experiment is of the first order. So convinced was Mr. Fairbairn of the future course of the shipbuilding trade, that he bought a plot of land at Poplar, and established, in 1835, a shipbuilding business on the premises. In the following year he had orders for twelve iron vessels for navigating the Ganges, and for four for other parts of the world. Orders subsequently were undertaken for the Admiralty, for the Emperor of Russia, for the King of Denmark, and for the mercantile marine service, and nearly 100 vessels were built at these works during the thirteen years for which they were carried on by Mr. Fairbairn. But opposition was keen; experience had to be purchased; the charge of the Manchester works and a visit to Turkey diverted much of the personal attention of Mr. Fairbairn from the Thames works, and in 1844 he closed them, selling what had cost 50,000*l.* in erection for 12,000*l.*, and sustaining a total loss of 100,000*l.* by the enterprise. The whole of this was made good by the profits of the business in Manchester.

We have little room left in which to refer to some of the chief services rendered to science by Sir W. Fairbairn. Among these were the experiments and investigations on hot and cold blast iron conducted with the aid of Mr. Eaton Hodgkinson, for the British Association; the improvements introduced in the manufacture of steam boilers, and the foundation of the Association for the Prevention of Boiler Explosions; the investigations with regard to the conduction of terrestrial heat, aided by a grant from the Royal Society; those on the tendency of tubes to collapse; on the strength of glass; and on the properties of steam; and, not least, the large share of responsibility and of merit due to Mr. Fairbairn in the construction of the Holyhead and Conway tubular bridges. At a period of life,—between seventy-three and seventy-nine,—when few men commence new studies, Fairbairn brought his great experience and thorough powers of penetration to the aid of the Government, in an investigation of the application of iron to defensive purposes in warfare. He thus contributed, perhaps more than any other man, to the development of the two stages through which the marine architecture of Europe so rapidly has passed and is passing; namely, the substitution of iron vessels, made of thin plates, for wood, as being practically lighter and cheaper; and, secondly, the setting afloat those ponderous batteries of teak and iron between which, and the tremendous ordnance intended to arm and to oppose them, an internecine warfare is now being waged.

Mr. Fairbairn was elected a Fellow of the Royal Society in 1850; his inquiries into the comparative strength of hot and cold blast iron; his investigation of the properties of all the irons of Great Britain, and of the Samakoff Turkish iron; his essay on the consumption of fuel; that on the most economical method of raising water from mines; and his papers on the strength of wrought-iron tubular bridges and girders, with a description of the Conway and Britannia tubular bridges, being cited in the certificate of election. In 1851 he succeeded Sir Mark Isambard Brunel as a Corresponding Member of the Mechanical Section of the French Academy of Sciences. In 1860 he received the Royal Gold Medal of the Royal Society. Declining, in 1861, the honour of knighthood in a letter of singular simplicity and dignity, he accepted, in 1869, the well-earned distinction of a baronetcy,—an honour at once to the self-made man of science and of practical work, and to the order of which he became a member. Of his early suffering from the action of the Millwrights' Association, and of his consistent opposition to claims on the part of a portion of the men engaged in the trade of the engineer to dictate terms to the whole, we have spoken; but it should not be forgotten that it was a strike of the boiler-makers which led to the invention of the riveting-machine, patented by Mr. Fairbairn, in the name of his assistant, Mr. Robert Smith, in 1837. "This machine effected a complete revolution in boiler-making and riveting, and substituted the rapid and noiseless work of compression for the eternal din of the hammer, besides making the work far superior in quality and in strength." In August, 1874, full of years and of honour, Sir William Fairbairn died. His funeral was attended by between 50,000 and 70,000 people. Let those who would know more of his grand career, or who would imitate his noble example, read, and read again, the record of his life.

THE VALUE AND THE COST OF WATER.

THE recent plague of immoderate waters is a subject which, coming so directly home as it does to almost every one, makes an inquiry into the value and cost of water extremely pertinent. We have felt, or seen, or at least heard, much lately of the action of water as an enemy. But in nine cases out of ten, at all events in England, it is entirely due to human neglect and improvidence that water ever becomes anything but a benefit. We measure, to some degree, the mischief caused by floods. We see the noble totals of voluntary subscriptions so readily contributed to alleviate the distress caused by some of the most disastrous inundations. We are able to compare (with gratitude, let us hope) the worst evil wrought by flood in our own country with the effects of that mighty cyclone, or, perhaps, earthquake wave, which recently rushed over the delta of the Megna, and out of tens of thousands of overwhelmed inhabitants left few alive to tell the tale. With all this we are familiar. We are almost induced to look upon the water genii as akin to the capricious and malignant Kuhleborn of that most fascinating of all imaginative tales, the "Undine" of De la Mothe Fouquet, or to regard the rivers and streams to which we owe the entire vegetable produce of the country in much the same light attention as the Nether-lander regards the sea, beneath the level of which his audacious and untiring industry has reaped so many a harvest. It is time for some one to say a word on behalf of water.

We cannot lose sight of the fact, trite though the remark may be, that water is the mother of all organic life. Without it, neither vegetable nor animal species can exist, or have ever existed, in our planet. The earlier forms of life, indeed, both animal and vegetable, whether we trace them back in the stony leaves of the geologic record, or whether we push our analysis, by aid of the microscope, as far as our powers enable us, towards the infinitely little, are aquatic in their habit. Corals, sponges, *foraminifera*, all the simple forms which the early geological seas brought forth abundantly, are aquatic. So are all the most ancient types of inarticulate, articulate, and vertebrate animals. So is the entire fauna of the palæozoic period. No trace of an air-breathing animal has been found of a date prior to that of the carboniferous system, when terrestrial vegetation also first became a great characteristic of our world. So, again, at the present day, in those arid districts which are watered by no river, and shaded by no lofty, cloud-attracting mountains, life becomes more and more rare with the expansion of the desert, until at last not even the heat-loving locusts spread their purple wings before the traveller. The great desert is far more hostile to life, and far more dangerous and difficult to travel over, than is the great sea.

Regarding water, then, in its proper character of an indispensable requisite for the sustenance of life, whether vegetable or animal, as far as our knowledge of organised species extends, it may be instructive to inquire what is the cost at which it has been found worth while for man to procure this precious fluid, and what may be called the productive value of water when it is supplied, in measured quantity, by means of the toil and skill of man.

A really cheap provision of water, so far as the times of written history go, is attendant on a high degree of political organisation. It is only by the combined labour of many men that those great engineering works which bring rivers to water dry places can be effected. Such combination of labour, in early times, has only been known to be effected under the constraining energy of regal power. All the great hydraulic works of antiquity are attributed to kings and rulers. The great object to be accomplished in order to supply cheap and abundant water, is to arrest the rainfall at a mountain level of sufficient altitude to allow of the descent of the supply, by gravitation, to the district where it is needed. To effect this object, great and important works are required. It is, however, often the case that, by the concentration of labour in one spot,—as by making a dam which turns a mountain valley into a lake, or constructing a weir which raises the level of a river, all subsidiary work is reduced to a minimum. We have seen how remarkably this is the case in India. The toil of a number of men which, applied without concert or direction, would only ensure a very scanty harvest for a single year, may be enough, when the power of the Government and the skill of the engineer are united, to secure ample harvests for an equal number of persons for a long series of years. We have cases in India where a large outlay,—that of a million sterling or more,—wisely applied, has been enough to insure an annual return of amount equal to the entire outlay. When such is the case we shall find that the cost price of water, taken per million tons supplied, or per hundreds of acres watered, for a series of years, is at a minimum; the economy thus effected being generally in proportion to the magnitude of the work executed in the first instance.

On the other hand, when we find the least degree of forethought, skill, and cost applied to the artificial distribution of water, we also find the cost of the element to be at the maximum; taking account of the mechanical work actually performed. The bullock-wheel or the *picotta*, worked by a single labourer with no apparatus but a plank, a bamboo, and a water-vessel, lifts water to the height of 15 ft. at the cost of eight-hundredths of a penny per ton. This is equal (in matter of figures, but not in matter of actual convenience) to a cost of one-tenth of a penny per ton for a lift of 20 ft. The duty of the best Cornish engines has been rated at 66·6 foot tons per pound of coal; that is to say, that the combustion of a pound of coal under a boiler produces enough steam to raise, by the mechanism of the steam-engine, a ton of water to the height of 66⅔ ft. This is equal, at 9s. 4d. per ton for coal, to a cost of one-twentieth of a penny for that duty, or to raising a ton for 133 ft. instead of for 20 ft., for the tenth of a penny. We shall find by and by, that when the object is not to get rid of water alone, but to convey water to a definite locality, the cost is very considerably more. But we are taking the lowest result of the simplest application of human labour; and we find that it is represented by the decimal ·0053 of a penny per foot ton, or, of a pound sterling for 45,000 tons of water raised 1 ft. This quantity of water is equal to a rainfall of 45 in. over 10 acres of land.

The calculations of the Indian engineers as to the cost of water supplied by artificial means are made by allowing 7 per cent. on the capital laid out on the works as the annual cost of maintenance and interest. At that rate they find the cost of water supplied by gravitation from tanks and lakes to be from 40,000 tons to 66,000 tons per pound sterling; and of water supplied from permanent canals leading from rivers, to be from 20,000 to 70,000 tons per pound sterling. In this case the gravity of the water supplies its own moving power, while in the case of of the water raised by human toil, or by bullocks, we have had an actual lift to be overcome. The average of the prices quoted for the usual supply does not come very far from the price given for raising the water 1 ft.; and this is not extraordinary when we consider that the actual unit of the cost—the labour of the workman—has been the same in both cases. The foot of rise acquired would be enough to give motion to the water for a course of four miles and upwards, and a gradient of equal pitch must be allowed for the channels through which the streams are conducted, when allowed to flow by gravitation.

The quantity of water required per acre for irrigation in India, or in Egypt, varies according to the nature of the crop which it is intended to raise. "In Egypt 26 cubic yards of water per acre per diem are required for the irrigation of land producing summer crops, and rice requires nearly three times that supply. The former quantity" (we cite the last number of the *Edinburgh Review*, in its article on Mediterranean Deltas) "is about equal to a daily rainfall of one-fourth of an inch." In India, according to Sir Arthur Cotton, 1,500 cubic yards per acre are required for what are called dry grains, and 6,000 cubic yards per acre for rice, which is grown (as a journey through the Italian rice-fields will have made many of our readers aware) in an artificial swamp. A comparison of the two rates of allowance gives an average equivalent to a rainfall of ¼ in. per diem for nearly two months (fifty-eight days) in the former case, and of double the quantity, for double the time, in the latter. The crop, however, which consumes most water, according to the rates charged for irrigation in India, is the sugar-cane. The prices now charged for irrigating rice-fields in the Punjaub, by water supplied from the Bari Doab Canal, is 9s. 6d. per acre. That for sugar-cane cultivation, in the same district, is 12s. per acre. For wheat, barley, cotton, and indigo, the requisite water is supplied at 5s. per acre. For other cereals and pulse, the rate is 3s. per acre. The quantities of water respectively supplied are not stated in the blue-book; but from a comparison of the rates, and from the remark made by Sir Arthur Cotton, that an allowance of 6,000 cubic yards per acre for rice covers great waste, it may be inferred that that quantity is about the maximum supplied in the Punjaub. On that estimate the cost of water from the Bari Doab Canal is 2s. per 1,000 cubic yards, or ·024d. per yard. This allows us to fix a valuation price on the rainfall. Six thousand cubic yards per acre is the yield of a rainfall of 60 in. The revenue for an equivalent supply by artificial means is 12s., which makes the value of 1 in. of rain per acre, which is equal to 100 tons of water, amount to 2 4d.

We have thus arrived at a "resistance value" for the supply of water for agricultural purposes, which the native of India (whose wages are probably not a penny per day, where the English labourer receives a shilling) can afford to pay, and actually does pay, for the artificial supply of that precious element, when he fails to receive it from the skies. Nor is it only here and there, for rice-grounds and for gardens, that this payment is made. The increase from the irrigation supplied by the Bari Doab Canal in 1872-1873 was 81,786*l.* This increase is annually augmenting; and is earned by only one of the numerous important works of a similar kind that are in operation or in course of construction in India.

If we apply the information thus obtained to our English circumstances, we shall be able to put a price upon our rainfall. Not, indeed, a maximum price. Such price would be obtained only by attributing to the rain the whole value of the crops which its beneficent supply had enabled the farmer to extract from the soil. But we can ascertain what it would very well remunerate the agriculturist to pay for a supply of water, obtainable at will, of an amount equal to that which descends on his soil from heaven at periods which he cannot control. The area of the Thames basin is 3,313,680 acres. The rainfall over this area has never, since records have been made, fallen short, we believe, of 16 in. within the year. The monetary value thus arrived at is 38s. 4d. per acre. The figure is modest, but yet when applied to the average it amounts to over 5,300,000*l.* That is a minimum valuation,—certainly immensely under the mark,—for the valley of the Thames alone. If we take a mean rainfall of 26 in., descending on the 77,286,981 statute acres which form the area of the United Kingdom, we have a result of about 20,000,000*l.* sterling as the minimum agricultural value of our rainfall.

If we glance, after this, at the price which, in this country, we actually pay for water, we shall find that it enormously exceeds that charged to the Indian cultivators. The water companies of London have provided works for the service of the metropolis at an aggregate cost of more than twenty millions sterling. They supply daily a mean quantity of some thirty-three gallons of water to each inhabitant, delivered in his own abode. The cost of this supply is 6s. 6d. per inhabitant, or 1·4d. per metric ton of water. When this price of one penny and four-tenths of a penny per ton is contrasted with that which we have been attributing to the agricultural supply of 2·4d. per 100 tons, the latter proves to be only one fifty-eighth part of the former. The Londoner pays for his water supply nearly sixty times as much as the cultivator in the Punjaub pays for his irrigation. The latter, indeed, would starve rather than pay such a price. The return of his labour would not suffice to enable him to do so. Agriculture would be at an end if all water were thus costly. Yet who shall say that the price is disproportionate to the value of the element?

If we look to the actual produce per acre due to a given quantity of water, we have not at hand all the data which are requisite for forming an accurate estimate. As far as our personal acquaintance with the different districts of England are concerned, we are disposed to point to the valleys of the Severn, and of the Warwickshire Avon, which falls into the former river at Tewkesbury, as among the best examples that can be afforded of the efficacy of water in producing grain crops. The two valleys somewhat differ in their physical features, and in the mode in which water is, in consequence, supplied to the growing crops. Both are, indeed, subject to floods, but the meadows of the Avon are generally more permanently wet than are what are called the Severn Hams. The last-named fertile meadow lands are subject to an inundation which more closely resembles that of the Nile than is the case with any other English river. The

gr at want of resemblance is found in the contrast between the great regularity with which the Nile rises, almost to an hour, at the appointed season, under a cloudless sky, and the capricious irregularity of the floods of the Severn, which, moreover, like all our English floods, occur exactly when they are least required; that is to say, in seasons of abundance of rain. This is a circumstance which, perhaps more than any other, accuses us of want of proper management in the storage of our rainfall and storm waters. The supply which, held back for a month or two, would be worth, not its weight in gold, but a sum of which we hope we are aiding our readers to form some estimate, is converted into a cause of disaster by the coincidence of rain and flood. Apart from that, the chief peculiarity of the Severn is, that it has burrowed for itself a bed deep below the rich alluvial plain which it not only waters but efficaciously drains. When the Severn rises and overflows its banks it deposits a rich fertilising sediment over its meadows. When it falls it allows the water, having done its work of enrichment, to run away from the roots of the grass. With this alternate supply, capricious as it is, two good scythe crops may be expected from the Severn Hams. These, in the neighbourhood of Tewkesbury (and we believe of the other riparian towns and cities), are Lammas land. That is to say, they belong to individual owners for a portion of the year, during which the scythe crops are secured. After Lammas-tide they pass into the hands of trustees, and are used for the remainder of the year as grazing ground. Their fertility is very great, and may be estimated at equal to at least three full scythe crops per annum. Of these three, from one and a half to two, in the best years, and from two to two and a half in others, must be credited to the water of the Severn. In the valley of the Avon, on the contrary, the arrangements are such as to render the farmers less dependent on the rise of the river for their irrigation supply. In compensation they have more difficulty in getting rid of surplus water; and the general fertility of the meadows is, we apprehend, less than in the case of the Hams of the Severn.

The actual produce of rice under irrigation in India Sir Arthur Cotton estimates at half a ton of grain per acre, besides straw used for fodder. The latest prices we have seen quoted for rice in India, where it is now unusually high, averaged about 8 rupees a bag of 160 pounds. This is equivalent to a price of 1·2d. per pound, considerably less than half the price for the same quality of rice in England. This gives a return of 5*l.* 14*s.* per acre for the grain, out of which 4*s.* 10*d.*, under the old rate of charges in the Punjaub, and 9*s.* 6*d.* under the present scale of payments, has been the cost of water. The return is low compared with those of English agriculture, where ordinarily good land will produce the value of 12*l.* per acre from wheat, and 6*l.* per acre from clover, yielding one scythe crop and one grazing crop. Barley and oats will yield 10*l.* per acre. But the low rate of labour in India has to be taken into account. To produce the yield of 10*l.* or 12*l.* per acre, as much as 2*l.* 16*s.* will have been expended in labour. Of the Indian labour-cost we are without particulars. The proportion of an anna paid to a native workman, where a rupee is paid to an English workman, is given by Mr. Rendel and other authorities,—that is, 16 to 1; but that applies, not to English prices of agricultural labour, but to the high prices paid to skilled English workmen when employed in India. When we compare these with the prices of agricultural labour in England it is obvious that there will be a disproportion, not, perhaps, of 16 to 1, but, still, very considerable. On the other hand, the government under the native princes, and, we believe, still in some provinces of India, took the lion's share of from 60 to 75 per cent. of the value of the crops, so that probably we shall not err in placing the value of agricultural labour in India as low as 12*s.* or 14*s.* per acre even for the most productive yield. The great difference still remains between the small and definite price which insures irrigation when required to the Indian cultivator, and the reliance on the unpriced but capricious supplies of the indispensable element which are derived from the English rainfall.

We trust that the facts which, collected from very various sources, we have thus brought before our readers, may not prove altogether useless. As to the main general idea, that agriculture is dependent on water, there is, of course, no novelty. What we have wished to show is, what price cultivation can afford to pay for a supply of water which, though rarely more, taking the year round, than that which is attainable from our English rainfall, is certain, and under control. There is, no doubt, a large area of land in England to which irrigation cannot, as a matter of practical economy, be applied. On the other hand, there is a considerable area, and that one which comprises the most fertile soil, in which the regulation of the water supply is a matter entirely at the command of the engineer. We cannot, indeed, hope to avert the rainfall from the crops, if a wet season occurs in the time of harvest. We are still obliged to wait for sunshine to make hay, although there is good reason to suppose that the facilities which science has already indicated for artificial hay-making will by and by render this time-honoured adage obsolete. But there is no doubt that we can so order our river valleys as to render damage from floods the exception instead of the rule. And there are plenty of persons who tell us that we can so store up our storm-water as to provide against a season of drought. Into that question we cannot now enter. But that *means* should be adopted, and may readily be adopted, to prevent the two concurrent evils of the waste of our agricultural resources by allowing so much of our river valley land to remain in a state of swamp, and of causing destructive floods whenever the rainfall ordinarily distributed over three or four months may happen to come down in one or two weeks, we hold to be an incumbent national duty. We suffer in health, we suffer in wealth, we suffer in comfort, from our neglect. We hope that by turning attention to the question of the commercial value of water we may do something to stimulate the activity of those who are now smarting from the recent invasion of their homesteads, or even of their homes, by flood. The question of cost is a simple one. The results of the calculations we have offered are most instructive. We have said nothing of the negative value of water. As to that let every one form his own estimate. But it must be remembered that this negative value is two-fold. In occasional bad seasons it becomes concentrated. Then each man may count for himself what loss has been caused by the floods. But whenever our property is thus injured, there must be a constant, steady, silent loss always accruing from the injury to health and to production arising from insufficient drainage. In a word, we much question whether the total loss caused, say in a century, by floods, is equal to the total loss caused, within the same period of time, by neglect of systematic drainage and irrigation.

THE ARCHITECTURAL MUSEUM.

DESIGNS FOR GOLDSMITHS' WORK.

The designs for gold and silver work made in competition for the annual prizes given by the Goldsmiths' Company are now on view at the Architectural Museum. There seems to be more originality in the collection, and less repetition of old types, than we remember in those of the last two years; though there are still a good many designs which seem to aim at success purely by elaboration of ornament without much thought, and those which are richest are not, on the whole, the best. A splendid set of drawings for a large Gothic centre-piece and vases, &c., is exhibited by Mr. Rice (of Messrs. Hart, Son, & Peard's establishment). We do not altogether sympathise with the style of it, and the tumbling Nereids round the margin of the centre-piece are not very elegant in design, but there is an unusual force and talent in the whole set, which seems (rather to our surprise) to have met with no recognition. Mr. Watkin's large shield design in illustration of Virgil shows a great deal of talent and study in the drawing and disposition of a number of figures, though perhaps with no speciality suiting it for silver work. Of the large number of drawings by Mr. Marshall Crichton, the Byzantine tankard is much the best as a design, showing at once the purest taste and the most originality among his designs; in general his drawings, though very well executed, want originality and force of style, nor can we see any reason for his having (as he apparently has) the first place of merit, except from a mere "silversmith's shop" point of view. His articles are very selling things, probably; but the award of the prizes in this, as in previous cases, suggests that there is no very clear artistic perception influencing the donors. A candelabrum of iron, with silver inlay, by Mr. Aitchison, is good and appropriate; so is a water-bottle damascened in silver by Mr. R. Roberts, and an "Assyrian cup," or ewer, by Mr. Park: the attempt to adopt or imitate these ancient styles seems to have the effect of chastening the taste of the designers, and keeping them from tawdriness of ornament and indecision of line. Mr. J. Eyre's Orpheus cup is not over good in the figures, but there is a thought in it, as also in Mr. Sharp's baptismal font; and the presentation figure for an "Eisteddfodd" prize-giving, by Mr. Ellson, is well sketched in a series of views of the figure from different points. A salver, by Mr. Francis, with a scene from "Enid," has merit in the pictorial design. As far as we had time to examine, it does not seem to us that the prizes go to the right persons.

A HOUSE BUILDING DISPUTE.

A jobbing bricklayer, named Broadman, recently brought an action in the Lambeth County Court against a Mr. Burrows, under the following circumstances. On behalf of the plaintiff it was stated that he did building work, but did not find materials. The defendant was a retired publican, and built houses for himself. He had a great number of tradesmen working for him, and many, it was stated, did not suit him. He entered into an agreement with the plaintiff to complete five houses in Evandale-road, Lambeth, the sum agreed upon for the work being 150*l.*, all material to be found by the defendant, and a certain sum of money to be paid weekly to go on with. After defendant had paid 131*l.* to plaintiff, he expressed himself dissatisfied with the work, and said he would pay no more money, notwithstanding that there existed an agreement between the parties for the completion of the work. The ostensible reason alleged by the defendant for breaking off the agreement was, that the plaintiff had not built the garden-walls to the houses, although there was no mention of the garden-walls in the contract.

In his examination the plaintiff denied that he had agreed to build the walls for the defendant, or that they were in the plans. Defendant had told him to build some walls 9 in. thick at first; but afterwards gave him instructions to make them only 4½ in.

One of the plaintiff's witnesses, named Wood, said he heard defendant say to plaintiff before the work was commenced that he was not sure whether he would have walls for the gardens or only a fence.

In support of the defendant's case the plans were put in, and the judge, having examined them, said the walls were distinctly shown, and inasmuch as the plaintiff had entered into an agreement to execute the work according to the plans he could not sustain the action, and the verdict would therefore be for the defendant.

"TERRA METALLIC PAVINGS."

Mr. Joseph Hamblet, of West Bromwich, has sent us a few specimens of his bricks for paving stables, coachhouses, and crossings. Their quality seems excellent, and if, as he says, they are coming now more and more into every-day use, we take it for a good sign. They are made by his own patented machinery, and designated Terra Metallic Pavings. Mr. Hamblet employs from 320 to 370 hands. The material is crushed between five different pairs of large iron rolls before passing through the brick-making machine.

Society for the Encouragement of the Fine Arts.—At a meeting of this Society on the 25th ult., Mr. H. Danby Seymour delivered a lecture "On the Connexion of Egypt with Babylonia and Assyria, and on Semitism in Egypt." Dr. B. W. Richardson, F.R.S., was in the chair. The lecturer traced the history of Egypt, and the progress of its art through the old and middle empires, calling attention to its principal monuments, and ending by a comparison of the remains found in Egypt and Babylonia, and the reasons which made it probable that the civilisation of Egypt had been originally derived from Babylonia; the pyramid being a form of stage temple, the simple ancient panelling found in the oldest ruin in Babylonia at Warka (Erech) resembling that found on a sarcophagus of Mycenius, and there being no traces of a stone or barbaric age in Egypt.

THE GENERAL WATER-COLOUR EXHIBITION.

DUDLEY GALLERY.

On "private view day" very various are the private views of different visitors as to the standard of the exhibition. One of our companions of occasionally rhyming tendencies embodies his opinion to us in a whisper thus,—

Pretty's the word,—
At least it's the nighest;
Much that is pleasing,
But nought of the highest.

On the other hand, amid the press of visitors who were squeezed together in the room on the afternoon of Saturday last, one might hear, perhaps, from a lady, manifestly of the artist persuasion, a loud and decisive proclamation to the effect that "I call it an uncommonly good exhibition!" a declaration accompanied by a compression of the lips and an authoritative knitting of the brows which left the bystanders no choice but to acquiesce with becoming humility. The facts are perhaps nearer to the first than the second opinion; but there is a good deal to look at, and some things to look at a good deal. Among these Mr. Arthur Severn's bold attempt, called "A Ray of Hope" (385), a stormy beach with a rainbow seeming to come almost down into the foreground, a little too close to the eye, but remarkably luminous in effect. This luminosity, it is true, is obtained in great measure by maintaining a persistent neutral grey in the sea, and therefore savours a little of trick; but the motion and turmoil of the sea is grandly given. The rainbow also, we must observe, takes a curious curve, as if it were seen in perspective; a mistake which has a precedent in the works of Turner, who, if we remember rightly, has somewhere painted a rainbow in the narrow ellipse of an abrupt perspective. If Turner and Mr. Severn had remembered that the rainbow is, as we may say, "all my eye," or at least all in the eye of the spectator, they would have perceived that it must always be a regular geometrical circle, with a plane at right angles to the direction of vision. However, the drawing is a remarkable one, and the artist adds to his laurels by another very fine and unusual piece of effect, "Morning Light at Sea" (66), to which no little thought and study has gone. Mr. Walter Severn is very clever in a different way in his drawing of "Our Boys" (58),—two little fellows in straw hats and knickerbockers, lying on the grass with their heels to the spectators, and very well drawn.

Among figure subjects is a fine powerfully-handled drawing by Madame C. Bisschop, "Mother's Help" (121), which strikes us as one of the best things this lady has ever produced. "A Portrait" (of the artist herself) by Miss Edith Martineau (103) is admirable in its carefully-studied execution and marked character and expression. The same lady contributes another admirable portrait (317). Of a very different class to these are Mr. J. C. Moore's various children's portraits. We have on previous occasions commented on the charming decorative effect which this artist succeeds always in realising in the costumes and accessories of these child portraits; this is especially observable in "Constance, daughter of W. Demain-Saunders, Esq." (90), where the tones of the dress and the tone and detail of the old carved cabinet behind make a delightful combination; "Master Stanley" (330), a little fellow standing before a large arm-chair with a horn in his hand, is also very good; and another small person (105) who has sat for his portrait in his shirt, which gives the keynote to a peculiarly-toned but very successful combination. But in these we cannot help thinking that there is a tendency to let the accessories overpower the faces in interest, and that there is a lack of individuality and diversity of character in the children: we heard the explanation suggested that when an artist has been successful in painting children of a certain type, others of the same type of face are brought to him; there may be something in this.

One of the most powerful drawings in the gallery is Sig. Cabianca's "The Vespertine Walk" (495), which ought to have been far better hung than it is. We look from the high ground adjacent to a convent over the last deep purple of a twilight landscape; some Sisters in their large white caps come slowly home from their evening walk; there is a subdued glow about the whole which is very fine, and altogether it is a work of real pathos. Mr. Arthur Stock's "A Flower for Grand-Daddy" is a good subject (73), but not equal in treatment to what he can do: the face of the old man is the best, as it is the principal, point in the picture. Mr. F. R. Stock's "Marchioness" (204: she of the "Curiosity Shop") is good, but a little too comfortable-looking for the character. Mr. Elmslie has repeated his study of "nigger" life in "Aunt Chloe's Visit" (171), a scene in the life of the better class of "people ob colour" which is clever and amusing enough. We do not see many more figure subjects worth note; but Mr. Parker's "A Morning Chat" (225), and a small study of a sleepy old crone by Mr. Walter Wilson (586), on one of the screens, should be looked at; and Miss Kate Greenaway's little procession of children on the same screen (562).

Among landscapes, besides those already mentioned, there are a good many things to look at. Among these Mr. Knight is at his best in "Twilight" (324), a large carefully-studied evening effect in his usual vein, but not too much a repetition of what he has done before. Mr. Albert Goodwin's two powerful sketches, "The Delectable Mountains" (196), and "The Skirts of the Nile" (612), show his remarkable versatility and concentration in giving the characteristic feeling of scenes of such a different nature; the former, where we look down from a hill in the foreground on to the dark purple water of a loch, is, though little more than a sketch, complete in its translation both of the feeling and of the contours and tones of the hills. Mr. Ernest Waterlow contributes a powerful but rather crude piece of effect in "The Hill Farm" (112); his less important work, "Through the Fields" (414), has, to our thinking, a truer feeling and style. Various drawings by Mr. Frank Walton have decisive originality, "Under the West Cliff, Bournemouth" (205), in particular, though open to the charge of hardness. Mr. Macallum has gone beyond his usual excellence in his coast scene (220), in which there is much truthfulness of colour, with a very real and bright effect of sunlight; and Mr. Henry sends a good specimen of his well-known style in "The Port of Shields" (290). Among others that we noted for special qualities are several by Mr. S. J. Hodson, Mr. Aston's "Low-tide Sands at Bude" (143), Mr. Dearle's "Haymaking" (164), Mr. Glennie's "Ben Nevis" and "A Study in Glencoe" (106, 183), Mr. Macbeth's "Rye" (251), an unusual little study; Mr. Long's "A Fresh Day" and "Plashing for Trout" (269, 359), the latter a very interesting study of trees, with a kingfisher making the single point of bright colour in a dark scene; Mr. Walter Field's "Waste Land" (310); Mr. Walter Crane's fine little "Sketch at Whitby" (623); and others by Mr. H. Moore, Mr. Ditchfield, Mr. Addison, &c.

The studies of Mr. Earle in the Venetian flower and fruit market claim recognition, but they do not seem to us sufficiently thorough in finish for a style of subject which is nothing if not brilliantly handled. Flower subjects proper are well represented by several works, especially "Chrysanthemums" (343), by Miss Catherine Stocks; and the "Pansies" (548) of Miss Grace Hastie. Among architectural subjects we may mention Mr. Marshall's "Whitehall" (28), where, however, the two towers of the Houses of Parliament seem too close up to the end of the street, or too large for the scale of the scene; Mr. Macquoid's effective drawing of "Old Shops, Brittany" (47), Mr. Spiers's drawing of "St. John's College, Oxford" (165), and "A Sunlight Effect in St. Mark's" (245), by Mr. N. Walsh.

THE ADAPTATIONS OF ART.

TWENTY-EIGHT years ago a Commission was appointed in Paris to examine a portrait in enamel, which was declared to be historic, and therefore genuine, of Madame de Maintenon. It resulted in a controversy which, so far from settling the question, opened up a far wider one, continued to this day,—whether three-fourths of the images extant, in sculpture or painting, of celebrated personages are authentic, personal likenesses or not, or whether they are no more than crude ideals. At last, after more than a quarter of a century of contemplation, the Academy has delivered its verdict, mixed up, however, with so many varying opinions, that no approach to a distinct authority can be said to have been arrived at, even with respect, for example, to the figure and countenance of Madame de Maintenon;—so far, at any rate, as the monuments and medals confirm or disavow the accepted views. Still, in the name and interest of even historic art, we must be satisfied with some ideals in this matter. The Greeks imagined Homer, as they imagined Hippocrates, according to fancies wrought out from their poems and their practice; but this was simply linking one form of poetry to another. In after days we know what the conquering despots did: they hewed off the marble heads of goddesses and heroes, and clamped them upon mutilated torsos, without the faintest vision of archæological knowledge, and this process of alternate mutilation and restoration went on through ages. After, then, more than a quarter of a century of investigation, it is interesting to review the results, just now circulated, albeit in but a partial form, of the Commission. Firstly, with respect to portraits. The list, as we have noted, is led off by Madame de Maintenon, clad in a mantle of royal blue velvet, surcharged with ermine, and this, it is affirmed, is simply a copy of the picture, idealised by Ficquet, of the celebrated penitent Saint Francise Hyacinthe. M. Rigaud denies it; but he adds, with a candour doing him credit,—"There is infinite incertitude in the matter of portraits." Certainly, he is, and always has been, in the right, while connoisseurs and buyers have, in an equal degree, been grievously deceived. Not a few examples are cited. In the gallery of the Louvre, the portrait of Baccio Bandinelli, long described in the official catalogue as having been painted by himself, was ultimately discovered to have been that of a sculptor, Baccio de Monte Lapo. Then, much has been heard concerning the celebrated canvas, "Titian and his Mistress," also at the Louvre, which the new generation of critics affirm represents neither the one nor the other: an opinion first set in vogue by Ticozzi, who sought to demonstrate that the male face was that of Alphonso I., second Duke of Ferrara, and the female one that of Laura de' Dianta, once his mistress, and afterwards his wife. However, faith in these matters is not necessarily more deeply duped than incredulity, and we are only tracing just now the outlines of a fresh critical theory. Again and again, no doubt, have the same portraits been painted, with different names underwritten, and thus are they bargained for in studios, and thus are they bartered in the market, and thus are they secured by connoisseurs, until they get hanging-places in other than provincial galleries. Thus, again, the lineaments of Aretino, as presented on the canvas at the Louvre, are challenged as contradicting every characteristic of his face, illustrated as it is by contemporary medals. It might be easy to pass through a long gallery of these pseudo-graphic representations; but it may suffice to point out, among the artistically-condemned, the portrait of Charles VIII., by Leonardo da Vinci; that of the Second Charles of Amboise; and that more celebrated than either of "La Belle Ferronnière," attributed, after the death of this too-notorious beauty, to an easel which must have lain long blank before the world before he (Leonardo) could, by any chance, have thus illuminated it. Leonardo finished no pictures between the years 1516 and 1519, during which interval his favourite, in the half-bloom of her enchantments, died; so that she must have been painted in her coffin, if at all. In fact, during that period, if the contemporary records may be trusted, what leisure that versatile artist had to spare, was devoted to projects of military ramparts, dykes, and canalisation, rather than to portraitures inspired by affection or loveliness; because, indeed, he was "Engineer-in-General" to Cæsar Borgia. Does not this sweep clear an entire wallful of ancestral effigies? In a similar iconoclastic vein, in the report, soon to be issued in a more regular shape, the accredited and accepted portraits of Raffaelle are brought under review, and the question is daringly put, has one of them proved its title of authenticity? Is not one, at all events, that of Biudo Aldoviti, the treacherous young Florentine peer; and another, that of the infamous Urbinese Duke; and a third, either that of the Duchess of Mantua, or of Lucrezia Crevelli? It disturbs our ideas to have these problems suggested, after Middle Age and modern art have had their histories written, in the second half of the nineteenth century. The official critics seem, however, to be making gratuitous havoc among reputed originals, even though these should appeal to "the School of Athens" in their favour; for, amid the blows dealt against sixteenth-century canvasses, a violent championship arises for "the false Adonis" and the "surreptitious Clio." Surely it is enough to deny a portrait of Christopher Columbus, without complaining that we

have not one of Alexander the Great,—the latter copied, always from the Walhalla of Greece; the former from the chronicles of Salamanca, "with his long face, pointed nose, and blue eyes, intent upon a discovery." According to a French authority, there exists of this man not a solitary graphic account, or sketch, or outline, of his countenance, or even so much as a suggestion of his costume. It may be, and probably is, true, that there is a slight amount of dogmatism and disdain in all this; yet it may deter young artists from supposing that they have the originals, when they have no more than the lay-figures before them. The artistic commissioners went even beyond this, asserting that we have preserved to us nothing like the features of Vasco di Gama, of Jean de Castro, or even of Van Eyck, notwithstanding that several volumes of biographical and anecdotical narrative associate themselves with each of these names. We might as well search, we are assured, for the photographs—though this is not the term employed—of Gargantua, Pantagruel, and Panurge, though here the Commissioners fall beneath the dignity of their subject, and seem to be no longer studying amid the true relics and the ingenious imitations of Ancient and Renaissance Art. It is slightly refreshing to pass from this atmosphere of mockery to that which, if not more serious, is nevertheless only satirical, concerning the tinted miniatures, wholly worthless from the historical point of view,—that of Madame de Sévigné, celebrated by a sonnet of Menage, the enamelled flatteries of Pettitot, and the "daintily-executed epigrams on ivory" of Nanteuil, an artist almost forgotten, yet a bright one nevertheless, but whose portraitures, of whomsoever they might be painted, were, as that flippant old Parisian critic declared, forgeries upon nature. We have four portraits of Molière, not one of which resembles the others; yet this is not more perplexing than the literary and political libels, or, on the other hand, the personal and social flatteries, or caricatures, which have been perpetrated, through all ages, in the shapes of painting and sculpture. Below these lie a number of deliberate falsifications,—as of the First Napoleon, distorted by a court artist into an image of Louis XVIII.; and the headless First Charles of England, decapitated, transfigured, by a new bust, into the likeness of Oliver Cromwell. If we want more instances, we have only to look beneath that mighty monument of death, the Abbaye of St. Denis. There stands, niched in a thick Gothic wall, the bust of Maria Lecquinska; but she who actually sat for it was the wife of the sculptor, Jean-Guillaume Moitte, and even of him an entire image could only be patched up from the fragments of at least a century. Here is an archæological investigation towards which our French Commission leads the way, and which may, in the end, confound both some old and some new ideas.

GIOTTO'S "GOSPEL OF LABOUR."

Mr. Sidney Colvin, M.A., the Slade Professor of Fine Art at Cambridge, delivered an interesting lecture on Thursday evening, the 25th ult., at the London Institution, Finsbury-circus, on Giotto's "Gospel of Labour."

Professor Colvin commenced by saying he had come before them to show an interesting series of Florentine sculptures which were executed in the first half of the fourteenth century at Florence. Their workmanship was very simple, almost rude; they consisted of twenty-six panels in marble, carved in relief with subjects chosen to represent men's life and men's industries upon earth. The particular point that made them the most interesting in the whole history of art was that they exhibited in a kind of epitome the whole essence of civilisation, the whole genius of a great people at the greatest time of their history. He called this series Giotto's "Gospel of Labour," because they set forth for the first time in the history of art those arts and industries upon which the power and the fame of the great cities of modern Europe rested. The Italian cities—and Florence first—were the nurses of modern civilisation, of modern commercial industries—the origin, in fact, of all those energies, whether of good or evil, that made the world what it now was. This rude, early, and simple series of sculpture he had chosen to illustrate the whole soul of Italy in the thirteenth century.

He was not going to trouble them with complicated matters of history, but for the purpose of his lecture it was necessary to point out the two great aspects of the thirteenth century in Italy. First of all, the beginning of the thirteenth century showed the whole mind of Europe, especially Italy, to be in a state of anarchy and change. New centres of commerce were beginning to grow up, and the urban populations were beginning to get crowded and uncomfortable, but at the same time intelligent. The church scarcely touched these populations. Owing to their abject misery and neglect, they became hot-beds and centres of rebellion. The years 1200 to 1220 threatened great religious changes, revolution, and reform; but there then arose certain influences which arrested the course of things. The greatest influence was that of St. Francis of Assisi, who was truly an "apostle of men," he being born with an overwhelming love of his fellow-creatures. He firmly grasped the doctrines of the Roman Catholic Church, and owing to the spirit of himself and his agents, there were gathered into the fold of the Catholic Church all those populations that were beginning to grow restive, and show signs of rebellion. For good or evil, this change was brought about by St. Dominic, of Spain, and St. Francis, of Italy. All the public and the collective life of the cities was dedicated and consecrated to the church. The second great aspect was the political one. There had always been all over Europe a certain number of industrial people who escaped the domination of the feudal powers; but it was not till the thirteenth century that the trading and manufacturing communities of Italy asserted their independence and established a republic life of their own, and made themselves free from, and independent of the princes, dukes, and other various orders of feudal hierarchy who asserted their supremacy over them. The aspect of political life was then a complicated one. The first of the questions was, whether the trading and artisan classes should or should not have the government of the cities in their hands; and the gradual efforts by which these classes succeeded in dispossessing the feudal magistrates of their power was one great part of these civil struggles, of which Italy was full. Another important struggle was that between the Guelphs and the Ghibellines—the spiritual and the temporal power,—the Pope and the German Emperor. These two powers could not co-exist in peace. Ultimately the imperial power was overthrown, and the Pope became the champion of all civil and religious liberties, Florence being the great centre where this great change was worked out with the most successful issue, the city where the real Republican Government was founded upon an essentially-popular and industrial basis. In the year 1250 the first rising of the people took place, and ten years afterwards the famous fight was fought out.

The new organisation rested upon trade arts or guilds upon which the whole civilisation depended. These Florentine arts or guilds had the whole government of the town in their hands, and comprised the following: — (1) Notaries, judges, and lawyers; (2) merchants; (3) wool-staplers; (4) money-changers, including bankers and dealers in finance; (5) apothecaries, including all kinds of druggists and doctors; (6) silk-weavers; and (7) tanners and hide-merchants. Then came five lesser arts—clothiers and haberdashers, butchers, bootmakers, and masters in stone and wood. Under the latter modest title all painters and artists—all men who had made Florence illustrious—were included; and as they never constituted themselves into a separate guild, their professional status was that of "masters in stone or wood." The last of the five lesser arts was that of smiths and ironfounders, including all goldsmiths and workers in fine metal. These arts or guilds became the real source and centre of government.

As might be thought, this was a prosaic time, but there were signs of greatness in the freedom of the prople; they succeeded in uniting business-like management to their commercial affairs. These practical men were the most imaginative. With the eagerness of their new life, they were not found quite so forward, historically, in raising public monuments, or in beautifying and adorning their churches like some of their neighbouring cities; but when they did begin, the work grew under their hands. The church, which became to be the expression of all they loved and cherished, was the Cathedral of Florence, the church of the obscure local Saint Reparata, as it was first called; or, as after the Franciscan preaching up of the Virgin, it began to be named, that of St. Mary of the Flower, or of the Lily. The Florentines bestowed the whole of their energies in endeavouring to make this church a monument worthy of the city. From the first it was regarded as an embodiment of the dignity of the city. This was expressly stated in an extant grant to its first architect, Arnolfo, of freedom from all public burdens. In 1334, Giotto succeeded Arnolfo, and after having completed the façade of the building, he designed the campanile, or bell-tower, which was his title to glory as an architect. The base of the campanile was ornamented by this very interesting and remarkable series of sculptures; and it was after Giotto's drawings that they were subsequently chiselled by Andrea Pisano. Of the twenty-six panels, there was reason to believe that the last five or six were done more than 100 years later by Luca Della Robbia. Visitors to the cathedral, for the most part, had not probably noticed these beautiful sculptures, for they were placed at the base of the bell-tower. By these sculptures Giotto set himself to dignify and ennoble all sorts of honest toil, and the trades of all the seven greater and five lesser guilds, in the ornamentation of the building. In them was expressed the whole essence of the time in which he lived. They were fairly comparable in all essentials with the finest works of Greek art, while they were marked with special beauties of their own,—simplicity, directness, and perfect justness. All works of history at that time began, as a matter of course, at the beginning of things. In these sculptures, too, the series commenced with the creation of man, but they showed a variation upon the conventional treatment. Instead of following with representations of the temptation and the fall after the creation, they were shown Adam with a large spade, and Eve with a big distaff, so bringing them back to the time

> "When Adam delved and Eve span."

Then it immediately occurred to the beholder that the sculptures were intended to represent the history of human industry, following upon the expulsion of their first parents from Eden. The next in order was the gentle shepherd's craft, represented by the patriarch Jabal, "the father of such as dwell in tents, and of such as have cattle." He was depicted as sitting under canvas, with his flock and sheep-dog round him. The key-note which was struck in the Book of Genesis was acted upon throughout the series, and the various arts and industries had their representations in aged patriarchal figures. The next representation was Jubal, "the father of all such as handle the harp and organ," represented as blowing through some shapeless instrument which he had succeeded in making, the drapery being extremely well executed. Next followed Tubal Cain, "an instructor of every artificer in brass and iron," who, as a blacksmith, was represented with bellows, anvil, pincers, and hammer. The cultivation of the vine, so important an industry in Italy, was said to have been symbolised by the patriarch Noah. Then came one of the seven liberal arts, astronomy; the stargazer was looking skywards, and his globe and zodiac were to be observed, this panel being the best preserved of the whole series. Building followed, the master builder (probably the patriarch Enoch, who "builded a city," although some had thought it might be Giotto himself), with thoughtful brow, directing the masons in their work. Pottery came next, women being represented as bringing cakes of clay for the potters; which was followed by a marvellously truthful representation of the art of horsemanship, the spirited horse and the daring rider who first tamed him being rendered with equal mastery, both of thought and chisel.

Weaving, in Florence a female art, as when Athene was its goddess, was depicted as being done by a woman working at the loom, while another woman looked on. Law came next,—God the Father being sculptured as its source, from whom the legislator received both codes, the civil and ecclesiastical. Dædalus, or some man flying, followed, the realism of the feathered body and of the hands inside the wings being unmistakable.

The panel representing the first boatmen on their experimental row, with dread and resolve alike on their faces, venturing forth on unknown seas, prophesied the navies of the world, the sailor's worth in the commonwealth being honestly recognised. Next came the art of war, which showed a slain man, the slayer standing with the expression of Cain in his countenance. After ploughing came the first charioteer, who had knocked a rude cart together

n the most practical manner. Then followed allegories of the arts, painting, sculpture, grammar, logic, rhetoric, and geometry (supposed to have been embodied in Euclid). Music, for the second time, was symbolised by Orpheus playing with his lute to birds and beasts. Arithmetic was represented by two patriarchs counting on their fingers; and the goldsmith's art, symbolised with the small anvil and hammer, closed the series. Further than this the Slade Professor was not disposed to trace Giotto's own.

With but few exceptions photographs of the panels were shown on a magnified scale by means of the camera and lime light, and considerably added to the interest of the lecture.

REVIVALISM OR PROGRESS?

To the intelligent mind nothing in the world appears to be the result of accident. The result may not seem to have arisen from known causes, but the causes exist, however deeply hidden; the influence may not be obvious, but it is felt to exist.

At different times the genius of architecture pointed in different directions, and her votaries obediently followed the course indicated. The road lay through varied scenes, each bearing the marks of particular modes of human culture: the massive and archaic, refined and highly cultivated, rank and luxuriant, checked and undefined, aspiring and spiritual, aspects, were each in turn passed in review; but the guide and monitor departed, and then all was confusion and disorder. Progress there was, till the desire to return became irresistible; looking backwards for a guide, there appeared a pillar of salt. Calmness and deliberation disappeared, and each strove to reach the goal of excellence by the shortest possible route. A short cut was sought which might spare weary days of travel along the highway; but these short cuts invariably led to failure; the pathway is found to be strewn with decayed branches, the bridges broken down, bogs and quagmires are formed: disappointment is the result, and the traveller returns to where he started from, bearing only the traces of his wanderings upon travel-stained garments. Yet such wanderings are not altogether barren of result; some knowledge is gained thereby, the extent and nature of the disused pathway is made known, a chapter added to the history of the district.

It is something that a particular phase of architecture has been assigned to the period when the Stuart dynasty reigned in the United Kingdom. But why should we all be harping on the same chord? Jacobite minstrelsy may be well enough occasionally, as a *pièce de résistance*; but it becomes intolerable when presented as the staple of daily fare.

There is no surer test of the ratio of intelligence as regards art than the dwellings of the people. When a public building of some importance is required, the architect may be unfettered by external interference, and have an opportunity of giving full play to his creative faculty, and may produce a work of great excellence, but this is no criterion of the taste of the general public. The few eminent men who have produced worthy works doubtless exercise a great influence upon their fellows, who have neither the opportunity nor ability to think out and design such, but it falls in the way of every practical architect to design domestic buildings of some sort. The demand for art in the dwellings of the middle classes which has arisen of late opens a wide field, and it might reasonably have been expected that a new path would have been struck out.

But this is an age of revivals: one party sets out on pilgrimages to the shrines of Mediæval saints; another assumes the discarded vestments and manners of their ancestors; while another, in the more sober garb of Puritanism, protests anew against these things; and all this time a few earnest workers are diligently employed in the field of scientific research, bringing new matter to the surface, and adding new products to the stock of mankind.

The anomalies of our social condition are striking: the modern pilgrims form a strange contrast to the pilgrims of old; there is little romance or picturesqueness as they crowd into the railway station and are swiftly conveyed to the shrine. The use of tapers and incense, sanctioned by churchwardens, is a most glaring anachronism. The divine right of kings or popes has long ago been sufficiently protested against. Let us attend to the wants of the living. The spiritual and material wants of man are more closely allied than seems to be generally understood. Where the one is low, so is the other. As regards spiritual wants, architects, as such, have no *locus standi*, but their work has much to do with the great problem of the improvement of social life. It may be pleasant and safe to fraternise with the pilgrims, and ritualists, and evangelicals, but the more manly and noble part would be to join issue with the natural philosophers, and apply scientific discoveries to the promotion of the material wants of the people, to the rehabilitation of all in a healthy and comfortable condition.

Neither spiritual nor other wants, we opine, are promoted by the exhibition of the bones of saints, the display of ecclesiastical millinery, or the weak application of far-fetched anecdotes and providential acts.

"Exact imitation is not necessary to reverence." The true priest is he who interprets the unchangeable laws of God. One of the plainest of these is the law of progress. Revivalism is but a step backwards. The thing revived never enjoys robust health. It was once nearly extinct, and will by and by be quite dead. The galvanic shock produces no permanent result, only a dreamy sentimental listlessness, with, it may be, the hectic flush of apparent health. "Life is real, life is earnest"; it is best spent in practical usefulness, not in sentimental uplifting of the hands and upturning of the eyes. Not in the reproduction of æsthetic forms which have long lain asleep in the lumber-room, but in the formation of substantial realities fitted for daily use, not necessarily devoid of beauty, but possessing a beauty which is not merely surface deep.

There are "whited sepulchres" in our cities "fall of dead men's bones," nay! not even whited,—both without and within they are corrupt and filthy. Social wretchedness and misery cannot be in harmony with spiritual purity and goodness. The germ of disease which floats over the stagnant cesspools of our cities infects both soul and body. Let us not prate of civilisation when such exist. Leave revivalism to the weak and sentimental. Let the strong men devote their energies to the solution of the complicated problem of affording to every man a healthy attractive home, whence he can go forth to labour invigorated by sound repose, and to which he will return with joy, and in which we may reasonably expect to hear the voice of thanksgiving. Then will new prospects be opened up where each may add his quota to the beautifying of the scene and enjoy the fresh air and sunshine which God has provided for all his creatures.

FLOATING SWIMMING-BATHS.

ONE of the chief wants of all provincial towns situated upon rivers of any size or importance are public floating swimming-baths. The ordinary public baths which are to be found in most towns are quite inadequate for the wants of the population. In some towns the absence of a river makes it necessary that the ordinary swimming-baths should satisfy as best they can the wants of the citizens. But wherever there is a river, there should be abundant accommodation for every class of the population. Every one nowadays recognises the use of swimming as a healthy and invigorating amusement, and as a necessary prevention against many lamentable accidents. But little or nothing is done, even in these days of sanitary reform, to utilise the means at hand by floating swimming-baths. But within the last year the town of Chester has set a very good example in this respect. A company has been formed under the auspices of the most influential inhabitants of the town, and a bath has been built which next summer will be placed in the River Dee for public use. But when this subject comes to be carefully considered, we are inclined to think that the proper body in a town to maintain and to build these baths is the Corporation; for they are essentially valuable in regard to the public health and pleasure. But corporations are not over-anxious to inaugurate improvements, and therefore certainly the next best plan is that they should be established by private companies. But the drawback in regard to companies is that shareholders must be paid a dividend, and the larger that dividend is the better they will be pleased. But in order to attain this end it is obvious that higher prices must be charged for admission than if the cost of the maintenance of the bath alone had to be provided for from the receipts. And it is most important that these baths should not be looked upon as a mere luxury for gentlemen, but should be accessible by all classes of the community.

No one on a summer evening can go upon any of the rivers in England near a town without being struck by the sight of the men and boys who are to be seen furtively bathing from the banks. It is quite certain that with better opportunities the numbers of those who wish to bathe and swim would be doubled and trebled. Therefore it is that it is very much to be wished that corporations should take this matter in hand.

But in the making of floating swimming-baths there is likely to be seen a too elaborate and expensive mode of construction. Any one who has sojourned for a time on the Seine or the Rhine, or any of the other rivers of France and Germany, must remember well the rude floating baths which are to be seen near every town. It would be well to bear this in mind: that an elaborate and costly construction must limit their number, and, consequently, on account of the higher charges which are necessary, the number of those who frequent them. Sufficiently pure water, seclusion, and shelter whilst dressing and undressing, and an absence of danger for the swimmer, are the three main desiderata in the construction of swimming-baths. To attempt more than this is to forget the object of these baths, viz., the utilising and improving of the natural bath,—the river. The floating bath must rather be considered as supplementary than substitutionary, which is what the ordinary brick or stone baths of our towns are. There seems to us to be a more useful field open for these baths in the provincial towns than in the metropolis, where they can only be a very inadequate substitute for the miles of river necessary to accommodate a population like that of London. We hope that the establishment of the bath in the river Dee, at Chester, is only the forerunner of numerous others in all the rivers in England. The Thames, the Severn, the Avon, and the Trent should not be left behind by the Dee. The experiment,—for experiment it is,—at Chester, will be watched with marked interest, and it is to be hoped that those who are likely to be employed professionally in the construction and supervision of future baths will employ their ingenuity in endeavouring to make their construction as cheap and as durable as possible. There can be nothing to which the athletic ardour of our day can be more usefully directed than the establishment of floating swimming-baths, or in which the constructive abilities of professional men may be more use fully employed.

SURVEYORS' CHARGES UNDER THE ECCLESIASTICAL DILAPIDATIONS ACTS.

WE alluded briefly in our last to the report which has been published by the Ecclesiastical Surveyors' Association,* on the proceedings of the Committee of the House of Commons on the Ecclesiastical Dilapidations Acts. We take the following from the conclusion of it:—

"A vast amount of time was spent in the House of Commons Committee upon the expenses of the Act, upon which extravagantly erroneous statements had been circulated, made on the authority of a dignitary at a meeting at Shrewsbury in the autumn of 1875. According to this authority the fees payable to the officers of a single diocese for five years would amount to 33,165*l.* The return printed in the appendix shows that on 3,011 cases the surveyors' charges amount to 19,922*l.* 17*s.*, which is just about 6½ guineas in each case. Some 830 more, on which there is no return, would at the same rate bring the total up to 25,482*l.*, being for four years and seven months considerably less for the whole kingdom than the erroneous estimate for a single diocese. This sum for four years and seven months is very nearly equal to the proportion allowed for surveyors for each year in the estimate submitted to the House of Commons by the chairman in moving the appointment of the Select Committee on the 21st of March, 1876. The like estimate was given in evidence by the treasurer of Queen Anne's Bounty. It assumes a compulsory recurrence in every benefice of the survey every five years, which forms no part of the Act of 1871, and the average of fees is arrived at on only sixty cases

* At 56, Hatton-garden.

of loans admitted to be heavy and of unusual character. The actual valuation of dilapidation works in the same period on 3,313 benefices is 470,585*l.*, being almost 139*l.* per benefice; on 530 orders there is no return, and many of them could not have had the valuation made up on the 1st of March, when the order had issued only a few days, or even some weeks before; but assuming all made up, on this average we must add 73,670*l.*, making a total of 544,355*l.*, the professional charge on it being 4*l.* 14s. per cent. Thus throughout the kingdom the whole business of every case has been accomplished for two clergymen at less than 5 per cent. formerly charged for one, and still charged in civil dilapidations, 5*l.* 6s. per cent. being at least saved, and for this much reduced charge a greatly increased labour, including the providing of specifications and the supervision of works, and granting certificates is given. For these additional labours in civil cases the invariable charge is at least an independent 5 per cent. and expenses, so that the ecclesiastical cases now get for less than 5 per cent. what in civil cases, and under the old ecclesiastical state, cost 15 per cent.

The Act of 1871 has effectually extinguished a claim sometimes formerly raised against outgoing incumbents, viz., the charge for 'progressive decay.' The excuse for making this charge can nowhere be found in the old law or old cases; the case of Wise *v.* Metcalf lends no countenance to it; yet where work was old an excuse was found for claiming a contribution towards its reinstatement when it might become worn out, thus turning a claim for dilapidations from its legitimate objects, past neglect, into a claim for insurance against what might occur in the future. It may safely be said that no such claim ever went into court in a bill of particulars. Now, when the statute of 1871, in sections 15 and 31, required every claim to be stated in a formal bill of particulars, and strictly adhering to the principle of the old law, required those particulars to be 'the works needed' (not works that might at a future time be needed), it closed the door against this unlawful charge. Insurance against future repair is of course in itself good, but it never was lawful to charge it against a past possessor; the new incumbent may very wisely give his attention to it, and bear some present expense for its sake, and thus it often becomes wise for him to do more repair, in order to free himself for the future, than it is lawful to charge upon his predecessor.

Great good has been widely produced by the Act of 1871, although nowhere noticed in the evidence, where incumbents have bestirred themselves to effect repairs, neither asking loans nor narrowly calculating the exact requirements of the law, but doing their best to uphold the property committed to them. It cannot be doubted that a great deal has thus been accomplished indirectly by the Act."

AN ARTIST'S SALE IN PARIS.

Probably no collection of pictures has ever attracted so many sight-seers, or brought together so large a number of art-lovers, as have, within the last week, visited the Hôtel Druot, in order to see the 300 pictures and sketches by the late painter Diaz.

Two of the largest rooms of the hôtel have been thrown open, and the walls completely covered with the works of the charming painter Narcisse Diaz, and a *queue* (the art, or quasi-art, of standing "in tail," being, as Carlyle says, the characteristic of Parisians, distinguishing them from all others) slowly edged itself round the rooms in delighted admiration at the sight of the accumulated treasures.

What perfect realisations of the familiar forest of Fontainebleau scenery, of which neither Diaz nor the public ever seem to tire! What bright little recollections of Moorish life, reminding one slightly of Müller's beautiful work, as Diaz's sunsets occasionally suggest the work of Turner, and showing us that in every stage of his work what he did was completely finished!

To the artist, the sketches and commencements of pictures shown in this collection are as valuable as those unfinished works of Meissonier, exhibited a few years since in London by Mr. Wallace; for in the beginnings of both painters are distinctly and clearly shown that immediately the panel is touched by the painter the work is finished; and if the tyro collectors of works of art did but know how little actual labour they get for their money, they might sometimes begrudge their idle investments.

No one unacquainted with the many private collections of art-treasures in Paris, can form a correct idea of the art of that country; neither the Louvre nor the Luxembourg possesses the choicest works of French artists, with the exception of two or three notable examples of pictures too large for private collections, and we should form a very erroneous idea of the merits of Corot, of Rousseau, of Millet, that great painter of what Charles Kingsley calls "democratic art," the revelation of poetry which lies in common things, if we looked no further.

In addition to the three hundred pictures by his own hand, Diaz has collected, with the most affectionate care, a perfect little series of the works of his contemporaries.

It is wonderful how painters and literary men contrive to find the time to get together so many treasures. M. Diaz appears to have indulged in the collector's passion with a rare discretion, and day by day for the last week the Hôtel Druot has been dispersing his collection, the result of which will endear his name to the establishment, and add a substantial embankment for the *expert's* decisive services.

Reynolds and Lawrence collected little beyond specimens of fine "old masters," many interesting old drawings by Italian and Dutch painters, and folios of splendid impressions of old engravings; but Diaz has left to us few of such treasures, one beautiful little Correggio, two or three genuine pen-and-ink sketches by Rembrandt, as many Italian drawings, and a head of a girl in coloured chalks by Reynolds, a little doubtful (it fetched nearly 130*l.*), but very beautiful.

But if Diaz has left but few old masters, how wisely and how well did he surround himself with choice and beautiful things; what charming pictures and drawings, by Theodore Rousseau; what a perfect little peasant by Millet; what bright harmonies of colour by Delacroix and Decamps; and, above all, what precious studies by Barye, with groups of living bronze by the same masterly delineator of animal life!

Hanging above all these treasures, in sober brilliancy, are suspended exquisite specimens of the tapestry art of the fifteenth and sixteenth centuries, gems of Persian carpets, sunned and faded into the colour of butterfly or moth's wings, forming backgrounds to Persian and Arabic vessels in metal and china; some three or four hundred ounces of real Louis Treize and Louis Quatorze silver; a few specimens of Italian weapons; some well-selected and well-bound tall copies of books in dwarf ebony-edged bookcases; some rare bronze and silver medals of the fifteenth century; a few old engravings; a whole suite of Louis XIV. furniture; and just enough old china to give pleasure, without exciting the envy of his collector friends; every object precisely in the condition to command the respect of the most exacting amateur, and in sufficient quantity to ornament just such a house as any reasonable being would desire to occupy.

Whether the man is most to be felicitated who owns a Turner, a Constable, a Müller, a Leighton, a Millais, a Hunt, a Walker, and a Mason, or he who hangs on his walls a Rousseau, a Corot, a Diaz, a Delacroix, a Cabanel, or a Millet, is a question very difficult to determine; but he who owns a veritable Sir Joshua can only be successfully rivalled by the happy possessor of a Gainsborough, and no French painter approaches either of those great masters.

The sale, which terminated on the 27th of January, has realised about 20,000*l.*; the pictures individually have not reached the enormous sums that we in London are accustomed to hear quoted; but in Paris, the collector does not buy to sell again, and he feels, however well off he may be, that 300*l.* or 400*l.* laid out in a picture is a large sum, and the wide circle of art-collectors here like more to pick up a treasure value from 10*l.* to 50*l.* Those are the happy collectors, and it is they who know how to get pleasure and credit out of their possessions without looking too narrowly for the profit.

Maidstone Improvements. — The Local Board have resolved to carry out a complete system of drainage, at an estimated cost of 30,000*l.*; and to construct a new bridge across the river Medway, at Maidstone, at an estimated cost of 32,000*l.* Mr. Lewis Angell is the engineer for the former work, and Sir Joseph Bazalgette for the latter scheme. The bridge project was, on the 24th ult., unanimously approved of at a large meeting of the ratepayers, after a detailed explanation by Sir J. Bazalgette.

THE TEMPLE OF DIANA AT EPHESUS.

In the discussion which followed the reading of Mr. Fergusson's paper* at the Royal Institute of British Architects,

Mr. J. T. Wood said that on a previous occasion he had pointed out the data upon which he had made his plan; he, however, went over them again, because the criticisms which had been put forth by several reviewers of his book were based on very grievous errors, which a more careful study of the plan would have rendered impossible. The position of the columns at both ends of the temple was certain; so, also, was that of the columns at the sides. There was equal certainty as to the width of the cella, 69 ft. 7½ in. In fixing the position of the central columns he was partly guided by finding portions of their foundations *in situ*. Proceeding to discuss Mr. Fergusson's remarks categorically, Mr. Wood remarked that as to the height of the columns, which he had concluded was 55 ft. 8½ in., it was true he had not been able to find sufficient fragments of any one column to enable him to arrive with certainty at its height, but the height mentioned was that given by Vitruvius, who described the improved Ionic order as being eight diameters and a half independently of the base. He (Mr. Wood) did not believe that the columns could possibly have been 60 ft. in height, and especially not 60 Greek feet. Mr. Fergusson had spoken of the walls of the cella as being 3 ft. in thickness, but he (Mr. Wood) in his exploration of the remains, did not see anything to induce him to believe that such thick walls ever existed. He found certain masonry piers, but these he believed to have been portions of a church the erection of which had been commenced, the uncompleted building being afterwards thrown down by an earthquake. On some piers he met with traces of the cella wall, and these enabled him to determine the position of the pronaos. Mr. Fergusson's 3 ft. walls were mere expedients for making his plan symmetrical, but they were incompatible with the correct plan of the temple. The question raised by Mr. Fergusson as to the *columnæ celatæ* was very important, and it would be well worth the while of a deputation of members of the Institute to visit the British Museum, and, after examining the remains, to consider whether it was possible that what he (Mr. Wood) said was the frieze of the temple could be anything else but the frieze. Mr. Fergusson had suggested that the fragments in question were portions of the pedestals which supported the columns, but the supposition was wholly untenable. He (Mr. Wood) was perfectly well aware of the marks referred to by Mr. Fergusson as existing on the upper surfaces, and he concluded that those marks had nothing whatever to do with the structure of the building under discussion, but that they existed when the temple was erected, the blocks having, in all probability, formed portions of an older temple, being worked up and re-used for totally different positions in the subsequent structure. He was supported in this conjecture by the fact that the marble of these blocks was finer in quality than that used in the remainder of the building, and corresponded with that used in a previous temple. Notwithstanding all that had been said by Mr. Fergusson, he (Mr. Wood) still adhered to the views which he had put forward in his book as to the plan and arrangement of the temple.

Mr. Watkiss Lloyd said that in studying the arrangement of the temple he had only had the materials furnished by Mr. Wood's book to go upon, and he confessed that he should have liked more materials than he had, although no doubt Mr. Wood had got as much as the site would afford. What had been obtained, however, was capable of being more clearly set forth. The discovery of the temple was much to Mr. Wood's honour; but, interesting as was his book, it was certainly wanting in some of those details which, although not necessary in a work addressed to the public at large, would be highly interesting to architects. For instance, it was desirable to have a section of the basement, as far as Mr. Wood had obtained it, with levels, because, on the great characteristic feature of the temple,—the base,—everything depended. He found it very difficult indeed to conceive that the columns could have stood on a stylobate with so great a breadth of projection in front, and with so great a depth of steps below it; such might have been the case, but one would have liked to be

* See *Builder*, p. 81, *ante*.

able to see exactly the data from which the level of the upper platform had been deduced by Mr. Wood. Another feature of the temple was the unequal spacing of the columns in front; this, to a certain extent, must have been the case, because no doubt the columns in front ranged with the cella walls, and there could only have been two more columns between them and the steps, however they might have been arranged. In studying the plan of the temple by the aid of Mr. Wood's book he was not aware that the columnar spacing was conjectural on the part of Mr. Wood, and he had devoted considerable pains to discover what principle underlay it, but, of course, without success. In concluding his remarks, Mr. Watkiss Lloyd urged Mr. Wood to do justice to himself by giving to the architectural world and the student world the net results of his discovery and examination of the temple, in the form of elevations, sections, plans, &c., of what he had found. These would not add to the interest of the book in the eyes of the general reader, but it would greatly enhance its value to those who made such subjects their especial study.

Mr. Wyatt Papworth said that Mr. Fergusson, in referring to the subject of the hypæthron, had stated that from the time he brought the subject before the Institute in 1861 down to the present paper the subject had remained unnoticed. On that point Mr. Fergusson was mistaken, for in 1866 his (Mr. Papworth's) brother read a paper before the Institute on the subject of hypæthral temples, and in explanation of the manner in which he conceived that the temples might have been lighted he brought forward two theories founded upon certain marbles which had been discovered and ultimately engraved in Professor Cockerell's work on "Ægina and Bassæ." There were two methods of lighting treated of in the paper, one of them being the very hypæthron which Mr. Fergusson had now brought forward, and which was reproduced from two sarcophagi, one from Crete and the other from Delos. There was rather an elaborate plate given in the "Transactions" of the Institute, showing the manner in which Mr. Papworth supposed the temples to have been lighted. The other mode of lighting referred to was by means of slabs of marble with holes cut in them, and capable of being covered by means of shutters during the prevalence of bad weather. As to the mode which Mr. Fergusson had suggested for the roofing of the Temple of Venus at Rome, it was one to which he (Mr. Papworth), as an architect, would scarcely like to put his name.

Mr. C. T. Newton (Keeper of the Greek and Roman Antiquities at the British Museum) said that he visited Ephesus seven or eight times during the time Mr. Wood was there, and believed he was one of the few moderns who had ever seen the floor of the temple free from water; since Mr. Wood had dug it out it was generally covered with 5 ft. of water. On that occasion Mr. Wood was kind enough to show him the lines of the cella walls, and a portion of one of the walls in position. He confessed that he was at first very much disposed to adopt Mr. Wood's view that the sculptured blocks at the Museum, before referred to, had originally been fragments of the temple burnt by Erostratus, converted into portions of the frieze in the later temple, but on further consideration of the subject he had arrived at pretty much the same conclusions as those put forward by Mr. Fergusson, whose views were corroborated to a great extent by an experiment which he (Mr. Newton) had made with the view of ascertaining whether the drip-mark corresponded with the mark on the upper surface of the stone. He heartily seconded the practical suggestion made by Mr. Wood, that the members of the Institute should visit the British Museum for the purpose of seeing the fragments of the temple for themselves, and it would give him (Mr. Newton) very great pleasure to receive them and conduct them through the marble collections. It would be desirable, however, that the members should fix upon a day for the visit, and then give him a few days' notice, for the marbles were so scattered about in different parts of the building, and in sheds, that he should be unable, without having a few days' prior intimation, to make arrangements for them to see all that was most notable in the collections.

Mr. R. P. Pullan, in proposing a vote of thanks to Mr. Fergusson for his paper, said the theory of restoration propounded by the lecturer was most ingenious, and did not materially differ, in its main features, from that put forward by Mr. Wood. When the members of the Institute visited the Museum to see the fragments they would be able to speak more definitely as to the use to which the sculptured blocks referred to had been put. He could not agree with Mr. Fergusson that the roofs of Greek temples were semicircular.

Mr. Penrose seconded the vote of thanks, and took the opportunity of saying that architects should feel grateful to Mr. Fergusson for bringing forward a plausible theory for the hypæthron. The rough-and-ready mode of cutting a hole in the roof was inadmissible with so refined a people as the Greeks.

Mr. Fergusson, in replying on the discussion, said he did not dispute the accuracy of one of the dimensions given by Mr. Wood; on the contrary, he had quoted Mr. Watkiss Lloyd's researches in proof of their accuracy. Notwithstanding the criticism to which his paper had been subjected, he saw no reason, he said, to change his opinion on any one point he had advanced that evening, and he then controverted with apparent success Mr. Wood's chief objections.

The Chairman (Mr. Charles Barry, president), in putting the vote of thanks to the meeting, said he would not, if he could, add anything to the refined speculations and arguments which had been placed before the meeting. The members of the Institute had good reason to thank Mr. Fergusson for any paper which he brought before them, for he was known to them all for his great patience and perseverance in ascertaining facts, and, having got them, for the boldness and originality of thought with which he put them together in support of his theses. In the present instance there was great probability of the correctness of some, at any rate, of the views enunciated. The mode suggested by Mr. Fergusson for the lighting of temples seemed to commend itself as a most likely method of lighting those great buildings and their contents. On the part of the Institute he cordially thanked Mr. Newton for his kind invitation to the members to visit the British Museum.

The motion was carried with much applause, and the proceedings concluded with the announcement that on Monday next, the 5th inst., Mr. F. C. Penrose would read a paper "On the Optical Refinements of Greek Architecture."

A NEW WORKHOUSE FOR CAMBERWELL.

In consequence of the existing workhouse in Havil-street, Camberwell, having been found to be too small, and in several other respects unsuitable for the purposes of the parish, the guardians have resolved upon the erection of an entirely new building on another site, and designs having been sent in by several architects the guardians have just made their selection, Messrs. Berriman, of Wilson-road, Camberwell, having been awarded the first premium for his design, whilst the design of Mr. R. P. Whellock has obtained for him the second premium.

As is unfortunately too often the case in these architectural competitions, some unpleasant feeling has been manifested in the matter, and it was more than insinuated at the last meeting of the guardians, when the subject was under discussion, that some member or members of the Board had been guilty of a breach of confidence, and were in collusion with one or another of the competitors.

The Rev. Mr. Drew, in drawing attention to the matter, said it would be remembered that their proceedings in reference to the designs were of an entirely private and confidential character, but he had since found that some member or members who were then present had made certain statements outside the building which certainly ought not to have been made. Since the meeting, a friend whom he met said to him, "Oh, you have been voting against the design of So-and-So," mentioning one of the designs submitted to them. He (Mr. Drew) answered that he had done nothing of the kind, and that the meeting had voted against nobody at all. The reply of the person he alluded to was, "You need not say so, as I have heard all you have said."

Mr. Turney observed that if such was the case some member of the Board must have been in collusion with the designers. It was a most serious matter for them, as they might easily compromise one another. He added that it was only a short time ago he saw a letter from a firm of engineers in Woolwich. In that letter was enclosed a cheque, and the official was asked if he could exercise his good offices with respect to certain work they wished to acquire. The official very honestly showed the note to his superiors, and the firm had been disqualified from doing any work for the body he had referred to.

We understand that the estimated cost of the intended new workhouse is about 30,000*l.*

ARCHITECTS' BENEVOLENT SOCIETY.

The present urgent necessities of this Society have led the Council to make an appeal for aid towards maintaining and supporting the charitable objects for which it was founded. The distress and painful circumstances under which applications for relief are made can scarcely be realised except by those who have to administer funds totally inadequate to alleviate sufficiently the many deserving cases presented to their notice.

The Society was established to ameliorate the wants of those of the profession who have failed wholly or partially in the "battle of life," and to assist the widows and orphans who have been left in an impoverished, often in a destitute condition, and its benefits are not confined to metropolitan cases, but extend to the provinces. The funds are carefully administered, and we hope some of our flourishing readers will send a cheque to Mr. J. G. Turner, 15A, Wilton-street, directly after reading this paragraph,—not to-morrow, but to-day. An old epitaph says, what many a man has thought on his death-bed,—

"What I spent, that I lost:
What I gave, that I have."

SURVEYORSHIP ITEMS.

Dorking.—At a meeting of the Dorking District Highway Board, on the 25th ult., the application of the surveyor (Mr. William Rapley) for an increase of salary was considered, and it was resolved that the salary be raised from 150*l.* to 180*l.* per annum.

Mountain Ash.—Mr. John Herbert Jenkins, of West Cross, Mumbles, Swansea, mining engineer, has been appointed surveyor to the Mountain Ash Board of Health. There were nineteen applicants for the office.

Wednesbury.—At a meeting of the Wednesbury Local Board on the 22nd ult., Mr. Stevenson, one of the members, said he had a very serious matter to bring before the Board. An arrangement was come to a short time ago with their surveyor (Mr. Fereday) by which his salary was raised to 300*l.* per year, on the understanding that he should devote the whole of his time to his duties. Their surveyor, however, had engaged in a contract in a neighbouring town. About two months ago the Sedgley and Coseley Local Board advertised for tenders for the making of some new streets in their parish. The lowest tender, which was accepted, was in the name of Harthill, a man who had formerly worked for the Wednesbury surveyor, but from what he could hear he was merely the nominal contractor. He was prepared to prove that their surveyor had visited the surveyor of the Coseley Board, had taken tracings of the plans, and brought away specifications of the work previously to the contract being sent in. He also visited the brickyard of Messrs. Whitehouse, at Bloomfield, in connexion with the ordering of the materials for making the street. He could also prove that their surveyor engaged some workmen on those streets; that his boxes and tools were in use there; and that he was in the habit of going two or three times every week to superintend the work being done. He (the speaker) did not think that the Coseley Board, as a Board, were aware that Mr. Fereday was connected with the contract, but some of the members were aware of it. When the matter was before the Coseley Board, no one knew Harthill; but the Board was informed that Mr. Fereday had given him a good character, and said he had done work in Wednesbury, and would carry out the work properly. That was a very serious charge, and if substantiated, the confidence of every member would be shaken in Mr. Fereday. He then moved that a committee be appointed to inquire into the charges. Mr. Fereday said he denied the charge. He was neither engaged nor interested in any contract, and he demanded the name of the author. After some discussion, Mr. Stevenson gave notice of his intention to move, at the next meeting of the Board, that a committee of the whole Board be appointed to investigate the charge against Mr. Fereday.

THE METROPOLITAN BOARD'S PROPOSED STREET IMPROVEMENTS, 1877, AND THE NATIONAL GALLERY.

Sir,—I have read with much interest the letter of Mr. Crane, churchwarden of St. James's, Westminster, in last week's *Builder*. He states, with justice, that the scheme now proposed, in its essentials was suggested long since by Mr. Bidgood, Mr. Toogood, and others, including himself.

It is, I think, a matter of public regret that the plan has not been carried out as then proposed. In that case the ratepayers would have been saved a heavy burden, and we should have had an underground railway, as well as new streets. The railway company would have made the streets, asking only for a reasonable contribution from the Board of Works, and the three great northern railways would have been practically brought down to Charing-cross, and there connected with the southern lines.

A part of the scheme, moreover, contemplates an improvement which is greatly required in the interest of the National Gallery, viz., the formation of a new street on the west side of it, connecting Trafalgar-square and Leicester-square, and isolating the site of the National Gallery. I say the site of the National Gallery; for although the western part of the site is now occupied by St. George's Barracks, it is impossible to suppose that they will always be allowed to hinder the development of the National Gallery, which must ere long be demanded by the public.

The military authorities are always naturally reluctant to give up anything; but the barracks have long been condemned as unhealthy and too small; and even the Duke of Cambridge has stated that the troops now placed there might advantageously occupy other quarters if these can be found near to the public offices. It is, in the meantime, quite clear that the site at Trafalgar-square is not large enough for a National Gallery worthy of the nation, and barracks also. The National Gallery must turn out the barracks or the barracks the National Gallery,—which is it to be? I sincerely trust that the Government will no longer evade this question. It must be faced sooner or later, and the longer it is delayed the greater will be the difficulty and the cost to the public. The national collection of pictures is of growing importance, and our millionnaires may be expected to follow sometimes the example of Mr. Wynn Ellis and others. The public has a right, therefore, to demand that official apathy should not be permitted to discourage such benefactions, and that advantage should be taken of the present opportunity of securing, in conjunction with the Metropolitan Board of Works, such an arrangement of streets as shall secure the isolation, safety, and sufficiency, of the National Gallery.

The plans as now published are far from answering to such a description, for they curtail seriously the already too limited site available for building, and would render almost impossible the enlargement of the National Gallery on anything like a worthy scale to the north and east, and they also omit the new street on the west side, which formed so excellent a feature of the original scheme. With reference to the railway, it ought not to be too late even now to combine it with the plan of the Board, and thus gain an immense public convenience, with actual saving of cost to the ratepayers. The whole plan ought to be carefully considered in the interest of the public, in order that we may be sure that we obtain the maximum of advantage from the necessarily heavy expenditure, which will amount to millions. Improver.

THE NEW IMPERIAL COURT THEATRE IN VIENNA.

No one looking at the insignificant and tasteless structure on the Michaelerplatz in the imperial city on the banks of the Danube would think it the representative stage of the German drama, much less the favourite theatre of a court fond of splendour and cultivating the fine arts, and of a people than whom there is none in the world who love the Muses better and encourage their disciples more. Yet the old Burgtheater, with all its inconveniences and drawbacks,—its narrow corridors and steep stairs, its unadorned auditory, its small boxes and uncomfortable seats,—is as dear to the theatre-going Viennese as to the London generation of playgoers long passed away was old Drury. For, in the old Imperial Court Theatre, with the rise of the curtain, all sense of disappointment and criticism of the surroundings vanished, to make room for admiration and the rare feeling of real and ample artistic enjoyment. No wonder that the Viennese harbours in his breast an almost affecting attachment to his old playhouse, and that the enthusiast of the Burgtheater looks upon the pending emigration of the "court actors" to a larger, more elegant, and more comfortable theatre as equivalent, with the decadence of the Vienna stage. However, the fiat for its destruction has gone forth, while a more worthy home is already in course of erection. In giving his assent to the scheme, the Emperor was especially influenced by the latter reason, but it was also necessitated by the planned reconstruction of the Burg (the Imperial Castle),—which will involve the demolition of the present theatre,—as well as by the latter's exceedingly dangerous nature in case of fire.

The drawing up of the plans was confided to the architects Gottfried Semper and Baron Hasenauer, the creator of the Vienna Exhibition buildings, of a premiated design for the façade of Florence Cathedral, of the plans for the reconstruction of the Imperial Castle of Vienna, and co-operator with Semper in drawing up the plans for the Imperial Court Museums. Baron Hasenauer was also appointed to superintend the carrying out of the works. At the recommendation of the architects, the area gained by the demolition of the Löwelbastei was fixed on as the site. No better could have been chosen, as will be seen. The new building will be on one side of a square surrounding the Rathhauspark (Town-hall Park), the other three sides being formed by the gigantic Rathhaus of the architect Schmidt, the university buildings of Ferstel, and the Houses of Parliament of Hansen respectively. Thus a square will be created which, in grandeur of its perspective and the beauty of its architecture, will form one of the principal attractions of the "Kaiserstadt," and one of the most imposing architectural *ensembles* of the world.

A few words as to the site. It is a spot memorable in the history of the world, and of especial significance now, being a boundary stone standing out prominently in the annals of that conquering race the rapid decay of which we are now witnessing. The Ottoman storm tide which would have burst irresistibly over Western Europe if a bulwark had not opposed here a glorious resistance was broken at the Löwelbastei, a very appropriate name, meaning the Lions' Bastion. Like lions at bay the citizens of Vienna battled here against the Turks when they, in their second and last siege of Vienna, in 1683, dashed themselves in blind fury against this and the neighbouring Burg bastions. Count Rüdiger von Stahremberg could hardly oppose 20,000 defenders (of whom 7,000 were armed citizens, the remainder being mercenaries) to the 250,000 Turks under Kara Mustapha. The city, in heroic sacrifice, burnt down all the suburbs, stretching at that time close to the ditch, as soon as the Turks approached, a spectacle which has been compared by a chronicler with the burning of Troy. The citizens had to resist until the united relieving army of Germans under the Duke of Lothringen and Poles under King John Sobieski could concentrate and bring assistance to their hard-pressed city. The Turks had essayed repeatedly, but in vain, to storm the Löwelbastei, barely in a defensive condition, but held bravely by the Viennese. Fresh breaches were continually being made by the Turkish heavy ordnance: their mines extended already as far into the city as the Church of the Minorites. When distress had reached its highest pitch, and further resistance, notwithstanding all the sacrifice and fortitude of the brave defenders, seemed almost useless, fire signals from the Leopoldsberg announced the approach of the army of relief, which, on September 12th, defeated the Turks, and made its entry into the liberated city, the heroic constancy of which alone had rendered that victory possible. On this historical spot, steeped by noble blood, rises slowly the new temple of the Muses.

The new theatre, standing free on all sides, is designed in the style of the Italian Renaissance. It covers an area of nearly half an acre, and is divided into a square centre building, flanked by two one-storied wings, and from which projects towards the façade a nearly semicircular rotunda. It will be seen at the first glance that the centre portion surmounted by a pediment is the stage, while the rotunda forms the auditorium. In the wings are covered carriage approaches for the court and the general public, the stairs, and offices. The much-contested circular façade, employed first by Moller at the theatre of Mainz, and next by Semper at the Dresden theatre, is in the Vienna Court Theatre developed in a happy manner. From the centre of the rotunda juts forth an imposing rectilinear projection, which, with its three doorways on the ground-floor, marks the principal entrance, while its first story has a loggia of three openings surmounted by an entablature. Of the nine openings of the rotunda, consequently, three are in the rectilinear projection, and three in each of the adjoining circular segments.

Our illustration makes a detailed description of the forms and the artistic adornment of the structure unnecessary. It need only be mentioned that in designing the façade the object of blending the forms of Italian Renaissance into an imposing effect had to be kept in view, so as to set off in a corresponding manner the theatre, of small dimensions compared with the neighbouring colossal architecture.

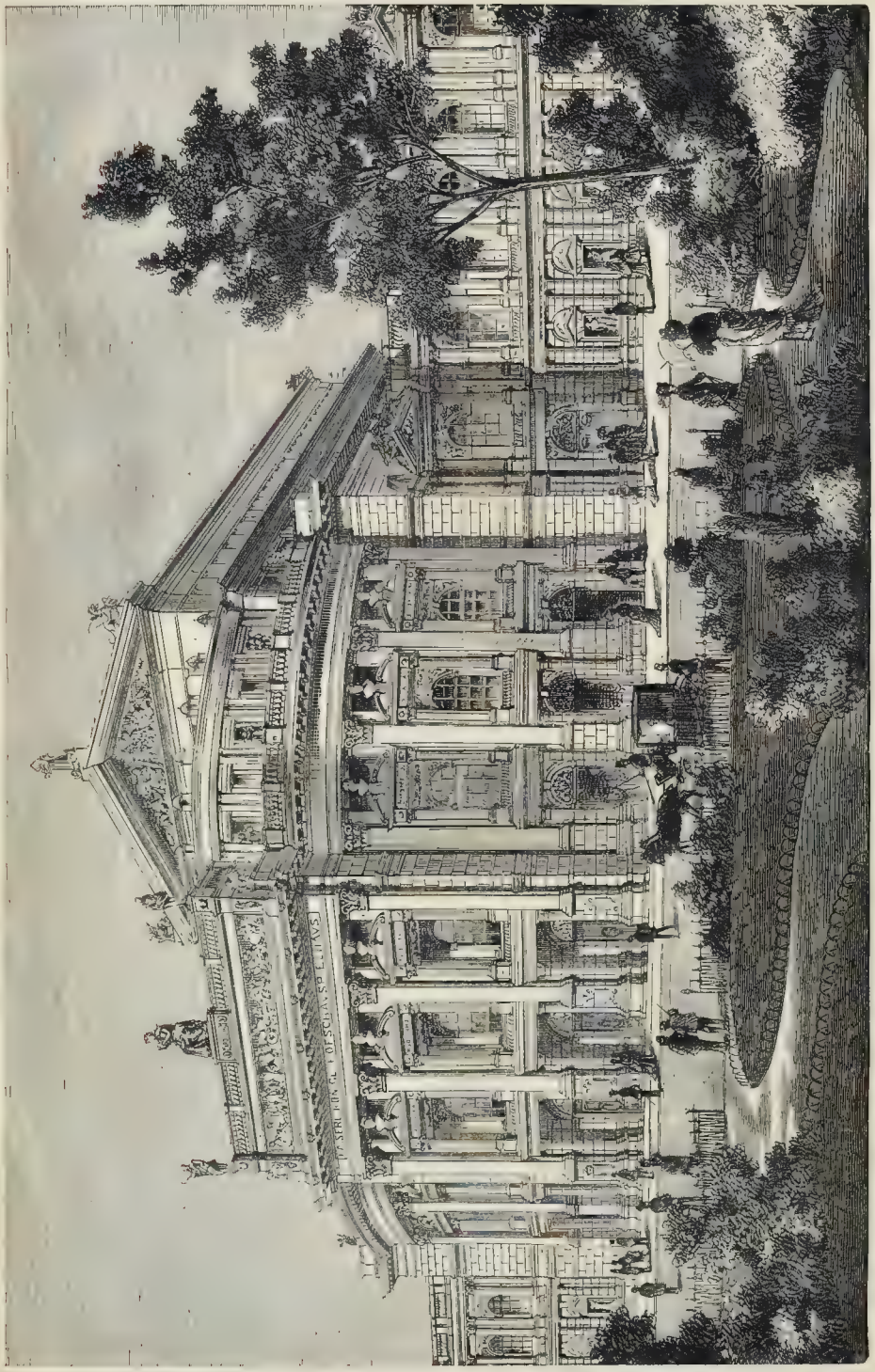
In distributing the interior space the architects had to consult, in the first place, the comfort of the public, but they had also not to lose sight of the effective arrangement of the stage portion. Visitors on foot enter through the nine arcades of the rotunda the imposing vestibule, from which separate stairs lead into the different places of the auditory. Covered approaches are provided for private carriages at the outer ends of the wings, so as not to incommode foot-passengers. At the interior end of the right wing an approach to the Imperial box is reserved, while in the left wing is that to the archducal box. The communications are so numerous, and distributed in such a practical manner, that in case of fire or any other alarm the auditory may be cleared, without crushing, in a few minutes.

Two "foyers," one for the first and second tiers, the other for the third and fourth tiers, are for the convenience of those of the public who, either before the commencement or during the pauses, wish to have a chat or to refresh themselves. The foyer in the first story adjoins the loggia opening on to the Ringstrasse and the Rathhauspark opposite. The auditorium, calculated to hold 2,000 spectators, and consisting of pit and four tiers, is nearly circular, and rises perpendicularly. According to custom, the box of the imperial family lies close to the right side of the stage, in the first tier; that of the archdukes opposite, on the left. The state box, used only on special gala occasions, is in the centre of the first tier. The three lower tiers contain private boxes, but the middle of the third tier is changed into a so-called amphitheatre, with seats. The fourth tier, the domain proper of the Burgtheater enthusiasts of both sexes, is entirely occupied by seats. To each private box adjoins a small saloon, a comfort already enjoyed by visitors to the Imperial Opera.

There are no boxes in the proscenium, which is 43 ft. 3 in. wide at the curtain. The stage proper is 75 ft. 6 in. deep; behind is a supplementary stage, 35 ft. deep, which may be thrown into the ordinary stage when large crowds on the stage require it. On both sides of the stage, in two stories, are the dressing-rooms, one side being reserved for the male, the other for the female *personnel*, with separate entrances from the street. There is no provision for painters' rooms and store-rooms, as a separate building of colossal dimensions has been erected for that purpose, for both imperial stages, in the suburb of Laimgrube.

The construction of the new theatre was begun in 1875, and may take up another four or five years. It has risen to the level of the street, which represents a greater quantity of work done than might be thought at the first glance. The foundations, standing in the former city ditch, and which, on account of the difficult ground, had to be sunk to a great depth below its bottom, have a height of not less than 62 ft. 6 in. The estimated cost of the theatre is 500,000*l*. The nature of the decoration of the auditorium has not yet been decided upon.

Improvements in Clerkenwell. — Some extensive improvements have been made in Clerkenwell, by the authority of the Metropolitan Board of Works, preparatory to the carrying out of the new thoroughfare which is destined, at no long time, to connect New Oxford-street and Bloomsbury with Shoreditch and the eastern end of London.



THE PROPOSED NEW IMPERIAL COURT THEATRE, VIENNA.—Prof. Gottfried Semper and Baron K. von Hasenauer, Architects.



NEW MUNICIPAL BUILDINGS, READING, BERKSHIRE.—Mr. Alfred Waterhouse, Architect.

THE NEW MUNICIPAL BUILDINGS, READING.

THE new municipal buildings for Reading were opened not very long ago by the Lord Mayor of London. The style adopted by the architect, Mr. Alfred Waterhouse, is modified Gothic. The buildings are of local grey brick, with red brick dressings, relieved with red terra-cotta from the neighbourhood of Norwich. The architect was somewhat cramped by the nature of the site. The principal feature in the structure is the entrance-tower, which supersedes the old entrance to the Town-hall. The portion of the buildings facing the Market-place is three stories high, and that facing Vastern-street has two principal stories, with the hall-porter's rooms above. The Council-chamber is 36 ft. long by 25 ft. wide, and 24 ft. high, with an ornamental ceiling. In this room there is a gallery for the public, 37 ft. by 12 ft. The bay-window is 18 ft. by 4 ft., and access to the gallery is obtained by a separate staircase. There is a lift in connexion with the gallery, for hoisting coal. Access to the tower is secured by a flight of steps 9 ft. wide. There are three doorways, two of which will be for the public. The old Council-chamber has been shortened, and will be used as a committee-room. On the ground-floor, in the direction of the Market-place, are two rooms for the town-clerk, and rooms for the deputy town-clerk and the borough-surveyor, also four strong rooms for deeds and muniments. Over the town-clerk's offices is a large committee-room, and above it five rooms for the hall-keeper. In the tower is a clock-chamber affording room for a carillon of bells. The roof of the building is high pitched, and covered with tiles. The total cost is estimated at 10,000*l*. Messrs. Parnell & Sons, of Rugby, were the contractors, and Mr. Buttrell, clerk of the works. The furniture of the new Council-chamber was made from the architect's special designs, by Messrs. Blowers, of Reading.

MODERN BUILDING IN THE CITY.

ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of this Association, on the 26th ult., Mr. H. C. Boyes, President, in the chair, the following gentlemen were elected members, viz., Messrs. C. M. Shiner, J. Dunn, E. H. Bruton, J. A. Thomas, R. Potts and R. Redder, and R. Kendrick.

A vote of thanks was passed to Mr. E. C. Lee for his kindness in allowing the members to visit the new church of St. Mary, Whitechapel (described in our last); and it was announced that the second visit of the session would take place to-day (Saturday) to Messrs. Waterlow's new printing and stationery works, Finsbury-market, described with illustrations in our volume for 1876 (pp. 433–437).

Mr. T. Chatfeild Clarke then read the following paper on "Modern Building in the City":—

The City of London is being rebuilt. The causes for such rebuilding are clear. Not only have the existing houses become unfit by their arrangements for the wants of commercial life as now carried on, but the mode in which the space has been covered is inconsistent with the economical use of valuable areas, and in a great measure this cause has been the mainspring of such activity. It is not the main element of my subject to touch upon the question of the value of land in the City; but it must be clear, on reflection, that the varying character and value, consequently, of special sites and areas is the factor which determines the special class of building; and the success, or the contrary, of many a development of a building site depends on that nice adjustment of the building to the special want of the immediate locality.

Looking back over a space of a quarter of a century, or thereabouts, what a difference do we find in the City of London! Improved streets, new thoroughfares, such as Cannon and Queen Victoria streets, formed; new and extensive markets; gigantic railway stations, with hotel accommodation; new City halls, enormous stacks of offices and warehouses, taking the place of many an open and almost unused garden or yard; and a viaduct formed to span Farringdon-street, with all its approaches; making a series of works, independently of new bridges, which would do credit to any city in the world. I can well recollect being concerned in the making of suggestive designs for the line Cannon-street, or rather its extension and widening, should take; and I well remember at a later date how enthusiastically and energetically the chairman of the Committee of the Corporation carrying out this improvement worked at its development, despite the prophecies of many that it would be a failure. How little was it foreseen that with all the improvements that have been made, at this moment, from the growth of traffic, especially in the east of the City, much more requires to be done, and that even with respect to Cannon-street itself, though receiving a large measure of traffic, the pressure on the open space opposite the Mansion House and in the Poultry is so great as to render it almost dangerous to cross, and the widening of the Poultry and the eastern end of Cheapside has become a matter of necessity, now, I am happy to say, in course of completion. Into the controversy about a new bridge I will not enter: suffice it to say that whether such be formed at a point near the Tower or not, I believe a new street or an extensive widening in the Eastcheap district is the great necessity of the hour, and it will be much to be regretted if the spirited Corporation of the City do not take this matter in hand, in the event of the new street to Fenchurch-street and its widening being delayed.

The task I have undertaken lies in a narrower sphere,—viz., to give some account of the principles and practice of the execution of a large amount of modern building in the City, and to render such account as full of practical hints as I can make it. Every candid man who has any experience on this matter will admit, I think, not only the difficulties surrounding a City practice, but that by a large number of architects practising in the City the difficulties have been met, and substantial and handsome buildings adorn many a City lane or narrow street,—buildings in which no elements of sound construction are wanting, and in which meanness and "scamping" are wholly absent. As to the larger question of the want of unity of design, with a certain kind of fragmentary and detached look about many buildings therein, you will, doubtless, expect me to say a few words. Each building, no doubt, presents as much *unlikeness* to its neighbour as the efforts of the designer have seemed to make possible; but it becomes worth while to consider whether those modern streets in the City, which are somewhat more uniform in general character, are equally interesting either to the artist or to the general public. Take, for instance, either Moorgate-street or King William-street: immensely in advance as they were of previously-existing streets, must it not be admitted that there is a dull monotony and flatness wearisome to the eye? Again, in Queen Victoria-street, does the street lose in general effect by a large diversity, with a minimum of combined uniformity in the designs of blocks? It cannot be denied this is a practical question of great interest and importance. Our streets have lost the picturesqueness of gabled and overhanging roof, of bay window, corbel, and carved projecting porch. Space has become too valuable to lose a foot, and the architect has been almost driven to get all his depth and play to his building in the depth of the wall itself, with what cornices and balcony he can get. If you, then, require a unity of design, carried out by the mind, not of one, but many designers, do you not lose the individuality, the genius, and scope of the artist, to produce possibly what may offend none, but which may not meet the special wants of any? I am inclined to think so, and to believe that any survey of the City of London by the young architect in search of examples or experience will show him, in many an out-of-the-way corner, a building with its own character and design, at once stamping upon it a record of personal care and thought. This detached mode of dealing with City buildings arises, in a great measure, out of the circumstances of the case. Leases fall out, the lessor naturally desires the market value of the ground, and in order to recoup himself the lessee must, without loss of time, or waiting for adjoining leases to fall in, construct the best building he can on the site. Many a time it gives a real and lasting source of regret to the architect concerned to destroy that which in substantiality, in picturesqueness, in quaintness, and character, he would gladly preserve. Such was my feeling with regard to the demolition of the houses in Lime-street. Every suggestion that I could make to myself failed as to a profitable utilisation of the whole site, which was very large, standing, as these houses did, on the only available street frontage. As you probably know, every care was taken to preserve the chimney-pieces and specimens of the carved work, and I have good reason to know that at no distant date the South Kensington Museum will have these specimens of both ready for the inspection of the public. Again, in Pudding-lane, lately, it has been my duty to have removed a building of singular interest, containing a slab in the basement with the following inscription:—

"Here by ye Permission of Heaven Hell broke loose upon this Protestant City from the malicious hearts of barbarous Papists by ye hand of their agent Hubert who confessed and on ye Ruines of this place declared the Fact for which he was hanged (vizt.) that here began the Dredfull Fire which is described and perpetuated on and by the neighbouring pillar. Erected anno 1680, in the Mayoraltie of Sir Patience Ward, Knt."

You will see by the drawing I present of the front next Pudding-lane what a capital specimen it was of brickwork, really admirably preserved, clean and sharp, and well worthy of the thought of others from its simplicity and unity of general character. My effort in the new structure has been to preserve a red brick front, but to utilise to the full the light needful for the building. I know not how this demolition of the old and replacement is to be avoided, even if interfering with many a gabled and overhanging front, with carved porch, or fine oak staircase. The law of supply and demand is asserting itself; the commerce of the City and each special market requires that those engaged in trade should be on the spot where it centres; and this necessitates that many a house of an old merchant-prince should give place to a stack of offices capable of taking twenty times the number of occupants on its area. The foresight that can see in the possible development of a site a large and profitable speculation after the payment of a large ground-rent has rewarded during the last few years many an investor, and, I am sorry to say, by some few unworthy speculators; and I know of no more legitimate field for the investment of capital than one with all the elements of soundness arising from the possession and development of a good City freehold. The difficulties encountered in such development I must not allow you to think lightly of. Our forefathers had a strange predilection for making the divisional line of their buildings often over a public passage, or one that has become such; their timber construction offered no obstacle to such an arrangement. The Metropolitan Building Act and the necessary protection against fire offer considerable difficulties in dealing with such cases. Again, our predecessors thought little of intermixed property. In not a few cases I have met with in the City of London, the vaults would run under the adjacent owner's, and his upper stories run over the owner of such vaults, requiring a good deal of equitable adjustment of values and areas. Again, our ancestors thought little of the nature of their foundations; in many cases, and notably in one recent case, I have found the heaviest class of building resting on the blackest of mud, and often the basement is found honey-combed with cesspools, drains, and dry wells.

It cannot be necessary for me to remind you of the difficulties connected with the easements of buildings that now come under the management of the architect to surmount in the construction of most modern buildings. The audacity that would construct a new building regardless of the light that may be essential to the business of the adjoining tradesmen must be met by firmness and fair consideration for each party: we stand in a position of equitable jurisdiction, not to allow such questions to be made the means of extortion on the one side, or of adding to the value of an adjacent property in the course of reconstruction at the expense of the owner of the ancient lights adjoining. It cannot be denied that this subject requires much care in the construction of a modern building, but each case rests to a considerable degree on special circumstances, and it is hard to see how any general law can be framed applicable to all cases which may not practically do an injustice. The light required for a diamond merchant cannot be defined by angles of 45° laid down haphazard on a plan. There are cases not difficult to find in the City, however, where a rigid adherence to a special angle has created such a curtailment of a building as to make it positively an eyesore and irreparable damage.

Another fruitful source of litigation and delay in the construction of modern buildings are all the questions arising out of the rebuilding of party-walls, and the injury consequent upon such rebuilding. I can recollect a case where no less than eight suits were threatened, arising from this difficulty and the light and air question, in the reconstruction of one building; and only by a

spirit of conciliation, with a firm maintenance, nevertheless, of the rights of your clients, can these questions be settled without recourse to litigation in any. It is well for an architect to recollect that the operation of the Building Act as now framed does often inflict on the adjoining owner an amount of practical loss and hardship, by laying him open, by interfering with his trade, by driving away his tenants, by dust, and the like, not provided for by the said Act, which may naturally, and specially in the mind of a short lessee, render him very sensitive, and worthy of some equitable consideration, to avoid, if possible, litigation. Nor can it be said that the difficulties connected with uniting buildings of different owners can be looked upon as slight. The necessities of trade demand an acquisition of fresh premises; the differing owners naturally object to any intermixture that may serve as the basis of litigation in the future. It is here that the architect may show a reasonable regard for the wishes of all by preserving a line of columns on the upper story, by defined walls in the basement, and clear plans on the deeds as to future restorations of the added premises intact. Again, the architect is any large town has now to deal with the powers justly and wisely given to many corporations requiring the owner to surrender a portion of his land for street widening. In the City of London this power has been exercised most usefully to the citizens at large, and on the whole in great fairness to the parties compensated. It would appear to be the wisest course here to weigh the circumstances of each case, and to make the claim commensurate with the loss, having regard to the whole property.

I am by no means mentioning these matters to discourage those who are entering on the active duties of life. Energy, resource, courtesy, straightforwardness, and gentlemanly feeling, will do much to make the arrangement of professional difficulties easy. Any man singly, anxious to advance the interests of his client, with no undue desire to hasten to get wealth, will win the regard of that class of men who are truly worth working for; and I know of nothing more satisfactory to the man in advanced practice than to feel that, as years go by, his client again and again returns to him as he would do to his family solicitor or other confidential adviser. To feel that you have, at moderate cost, and with prudent outlay, secured to a man, and probably his family, an enhanced and secure class of fortune, is no slight source of satisfaction; at the same time it may be the duty of the architect to stand firm on many matters of design, and to lose a commission sooner than consent to erect that which would be a standing reproach to him by its meanness or unsuitability. On the contrary, how great a source of lasting satisfaction a good design becomes when well and thoughtfully worked out.

Amid the persistent depreciation of architects at the present moment, the respectable practitioner can afford to smile, and treat with contempt the insinuations so freely thrown out in the columns of the press. Conscious of rectitude himself, though a member of a profession to which there is no bar at the entrance, he cannot deny that there may be a limited number of black sheep; but it is hard to stand by and hear these charges made as applicable to the whole body. It is so easy to charge jobbery, bungling, and corruption against a whole class of men, without venturing to name any,—the only point that is certain in my experience being this: that the man who is meanest in his relations to a professional man, is the man ever readiest to make these charges. Be it our duty, in our societies, in our individual practice, in our social relations and every corporate capacity, to brand the man capable of dishonouring the profession, and apart from this, "to go on our way fearlessly."

I now propose to give in a short compass some of the leading characteristics of various classes of city building, dividing the same into,—1st. Warehouses and wharfs. 2nd. Office buildings, banks and insurance offices, and the like. 3rd. City halls, clubs, and public buildings.

Warehouses and Wharfs.—The elements of design in warehouses would seem to be simple, but to be successful I believe the only way is to get clearly into your mind the working of the special business. The means of entry of goods and their discharge from the proper departments are some of the first elements of the design; with full provision, by lifts, cranes, and jibs, to raise and lower the goods to and from the different floors. This leads me to the consideration of a suggestion which has not yet been much adopted in the city of London, viz., to have a means of loading and unloading goods on a reserved area within the building. Much trouble will be saved with the police, and it is possible to combine access to two or three buildings from one yard. In waterside premises special attention must be given to the position of loop-holes in relation to unloading from barges and the difficulties of overlapping the adjacent frontage if not carefully studied. Of course the question of strength must always remain one of the prime essentials in this class of design,—so accurately to estimate your strength, from the lightest fancy goods warehouse to the heavy waterside one as to meet the speciality of each. Here great judgment will be wanted as to the substructure of the building. In the heaviest class of warehouses, if brick piers are resorted to in the vaulted basements, the harder class of bricks, such as paviours, must be used. The calculations, too, must be carefully gone into as to the iron girders, always remembering that there is a tendency on the part of the parties using warehouse property to strain the building to the utmost it will bear; and even in the lighter class of warehouses, wrought iron should be freely used in girders, lintels, and the like. It becomes, too, of great importance to consider the material of the floors themselves. Whether iron joists and concrete, brick arches and tie-rods, tile arches, joists in iron and stone, or whatever material is adopted, ample means of testing, or perhaps better, loading, should be resorted to before the building has progressed too much. One constant source of difficulty in the arrangement of large warehouses is the restriction of the Metropolitan Building Act as respects area, the fact being constantly that a building may be just over the 216,000 cubic feet without being substantially large enough for two, and some reasonable licence should be given to the district surveyor to adjudicate in such a case. In one case I adopted the plan of dividing the warehouses, but approaching them by a common staircase, fire-proof in character, with wrought-iron doors on each landing, care being taken that the goods could be run through uninterruptedly, and a perfect line of communication maintained. The point that, of course, dictates mostly the arrangement of warehouses where the exposure and sale of goods is one of the chief uses of the building, is the amount and disposal of the light. Here come into consideration the questions of internal lighting as well as window surface, by wells to the different floors, also special arrangements, to avoid a glare of light, both as injurious to the goods and to their sale, and the necessity at times of a good north light,—the great value of land and the limitation of areas making it a matter of regret that owners of property are often unwilling to give up a sufficient area for lighting, thereby diminishing the letting value of the property. The plan of internal lighting has many advantages: it enables counters so to be arranged for the exposing of goods as to be attractive and easily served; it also forms a capital air-shaft to a warehouse; but it has the disadvantage of dust falling on to the lower floors, and it is to be feared that such shafts greatly accelerate any fire that once has a hold on the premises. The building of all classes of warehouses has been very considerable of late years. Of the heavier descriptions, such waterside warehouses as Humphery's, Scovell's, Mark Brown's, Batler's, the Dublin Steam, the Leith and Glasgow, Brooks's, Spicer's, Dyers' Hall Wharf, and Red Lion Wharf, are examples. On the other hand, in the wholesale trades in the City, such warehouses as Blumberg's, Cook's, Morley's, Foster, Porter, & Co.'s, Meeking's, Copestake's, Devas's, Ryland's, &c., show a large amount of good work; whilst of the lesser class of warehouses it would be invidious to speak, they are so numerous and so rapidly increasing. It is recognisable by all that throughout an extending area around the City, warehouses are being built of no mean pretensions, and that in the character of their designs externally their real use is set forth. Simplicity of design, boldness of feature, character with either vertical or horizontal treatment, and no rigid adherence to a style of architecture unsuitable to the wants of the building, are the essential features of success. The manufacturing premises especially connected with the printing and stationery trades in the City should not be lost sight of. In such premises as Messrs. Cassell, Petter, & Galpin's, and Messrs. Waterlow & Son's, you find the plan and arrangement of the same largely subordinated to the most efficient mode of using steam power in the machinery.

Offices, Banks, and Insurance Buildings.—We have now advanced to a higher type of building, and one to which the main energies of building investors have been directed of late years. Whole streets and City lanes have been almost rebuilt; take Mincing and Mark lanes, Lombard-street, Throgmorton-street, Broad-street, and many others, and you have evidence of this fact. The guiding principles of the designers it cannot be necessary to seek far. Unless the premises have been designed for the special wants of a particular firm, then the architect commences on the basement by a development that in many quarters of the City would treat such portion as offices, utilising the darkest parts for strong rooms; on the ground-floor,—the most valuable one,—he utilises the area to the full, with ample height of story, and with often an inevitable sacrifice of the architecture for the light in the street-front, and he secures by lanterns, or otherwise in the rear by vertical lighting, that which is indispensable. In the design for the Royal Bank of Scotland I have endeavoured to deal with the difficult question of the indispensable sacrifice of the solidity of the ground-floor in a somewhat unusual way, viz., by putting the two lower stories under an arcade, but giving great depth and boldness to the three-quarter columns carrying the superstructure. I have said this is a treatment that is indispensable; with great depth in valuable premises, with questionable back lighting, and a narrow street and high buildings opposite, the treatment necessary for shop property must in spirit be maintained. You regret it, but you succumb to the inevitable; the design if executed otherwise will be to the owner in the future not only a loss of great importance possibly, but an annoyance he will ever be striving to remove, possibly by an alteration in the future that would seriously affect the whole. As you rise to the upper floor,—and, indeed, this remark applies to many ground-floors,—the possible subdivision must be dictated by the wants of the locality, the means of subdivision being supplied by the design, but the actual subdivision possibly being left undeveloped. Conveniences, such as lavatories and the like, must be provided in such numbers and in such positions as may be adequate and accessible to all. The staircases and passages it is well to consider as a sort of highway (not necessarily, as regards the latter, unconnected with another building, and if becoming a much-used passage publicity undoubtedly favours letting), and in one respect very large blocks of offices have obstacles to fight against, compared with others, in the fact that firms placed in them are to a certain extent lost and difficult to find; this, however, may be much met by clearness of method in description of the access to the various floors. Many subjects in every such class of design must engage the designer's mind as the ever-important question of the direction, class, and amount of light; the height of the entrance-floor from the street; the height and number of the floors themselves; the possibility of fire from adjacent premises; and various elements of special fitness for each trade to be carried on, all of them demand the thought of the architect, and upon these points great diversity of opinion exists. In the arrangement of banks it is obvious that security is one element to be carefully studied. Other requirements being,—good space for the public; access to certain offices without intermixture with the clerks; means of careful and easy supervision of the staff; and all the attendant and accessory offices with greatest attention given to position of the strong rooms, their security both from thieves and fire. The banks in the City of London are unequalled in the world, I imagine, in this latter accommodation, from the practice of leaving in their hands by customers their boxes containing enormous value. In relation to this part of the subject, the National Safe Deposit Company's premises offer a specimen open to much commendation for their completeness and the skill with which they have been carried out.

With respect to the insurance-offices in the City much could be said. They represent some of the finest blocks of buildings it possesses; in some cases with hundreds of clerks, all kept by a clear administrative head in their departments. The building must assist such classification, and utterly fails of its object unless designed so to assist. It seems only becoming and natural that the head offices of these gigantic concerns with their ramifications throughout the country

ld have both dignity of design, absolute lence of execution, and loftiness and space ch department. Where so many buildings of great merit and in all styles, it is ult to select; but in Palmerston-buildings, e large block at the corner of Lombard and echurch streets, in the General Credit Com- 'soffices, Messrs. Huth'soffices, Messrs. Shaw, ll, & Co.'s offices, and others, you have ples of noble blocks of offices; and in the onal Provincial Bank, the London and ity Bank, the Hand-in-Hand, the Economic, National Provident, the Queen's, the Scottish ows' Fund, the National Discount Company, ks's Bank, the North British and Mer- ile, you have banks, and insurance and other es, worthy of the City.

ity Halls, Clubs, and Public Buildings.—My head is of a more general character, and rs to those buildings of social and other use, devoted directly to commerce. I am not ous to enter into any controversy on the ect of City Guilds; suffice it to say that if, nout wholly losing sight of the traditions of past in an age of a race for wealth, the City ld becomes a centre for enlightened charity, to art, encouragement of education, and ating social intercourse, it seems to me to l no further defence, and it may well be nitted that these companies should have s worthy of our time. Some of those ting for many years are well worthy of a t; such as the Goldsmiths', Fishmongers', Haberdashers', but of late years, in the pers', the Clothworkers', the Saddlers', and Curriers', we have new halls, on which much ey and thought have been spent; and at moment the Carpenters' Company and the thersellers' also, are about commencing to ot new buildings, or to add to their present dings. We may hope that such liberal enditure of their money may be an earnest of ke liberal encouragement of art, whether in direction of technical art-education or other- e throughout the metropolis. Club life has aded the City, and at least five clubs exist, se of which are already housed in sufficient ldings, and another is now in course of erec- n. It is of course difficult to say how far this nixture of social and political life in the City y extend; but it is well to settle the principles design applicable to this class of building, as as we can doso. Nothing would appear clearer n that such buildings must partake of the racter of luncheon-houses, and that the first nciple of the plan should be to make the olic dining-room easily and first accessible, l this is the plan of the older clubs, but is being adopted in the erection of the City eral Club. The adoption of a style for a City b in a narrow street also seems to dictate t which will afford an amount of light almost ctically unlimited; and here again it is icult to see how the ordinary Classic e of building can meet such requirements. ave left myself little space to speak of those ently-erected public buildings in the City rthy of notice, but they are not very numerous. molition of such in the form of churches has n rather the order of the day, and though all l acquiesce in this when the building had no m of excellence, it is to be regretted that in or two cases, such as St. Antholin's, all uld have been removed. The Rev. Mr. Parker's apel on the Viaduct, the Memorial Hall, Farringdon-street, and the Auction Mart, are varying types of design and merit; but, as a ole, they want that interest both in style and atment which the ancient history of the City uld appear to have dictated. But if we turn the Bible Society's House, the additions to e Merchant Taylors' Schools, the Stock Ex- ange, the New Library of the Guildhall, we ve good specimens of a class of buildings hich are a lasting credit to their designers. It uld be wrong in such a paper to omit men- n of the large additional building of the Post fice, at the corner of St. Martin's-le-Grand and ewgate-street, marked as it is by scale and neral dignity. Nor should we omit to notice me of the restorations of the City churches, hich have been carried out with great faithful- ss, ungrudging use of funds, and a desire to ake them worthy of altered times. No sketch modern building in the City would be at all mplete without a reference to the immense rail- y stations and hotels adjacent, such as the nnon-street, the Holborn Viaduct, the North ndon, and the Great Eastern; but I cannot guise the fact that an architect must look on them with mixed feelings. The huge cir- cular roof of the South-Eastern Station has altered the character of the City looking east- ward or westward up the river, and, truth com- pels me to say, for the worse. It is customary to praise the works of engineers as much as it is so to depreciate those of architects. Is not thia a case (and many others might be cited) where no attention has been paid whatever to the beautiful? Whilst we admire the scientific skill, we feel a permanent eyesore has been erected. Railway bridges crossing our lead- ing thoroughfares, and in front of impor- tant works of architecture, are another form of modern building in the City, which has been a serious detriment to our streets, and the evil effects of which will remain. Of course no sketch of modern building in the City should omit also some reference to the im- proved markets, though here necessarily internal arrangement does not give very great scope for external grandeur of design. In meeting the wants of an immense population utility must be a source of satisfaction to the public.

In this necessarily hasty survey I am con- scious of many omissions, but enough perhaps has been said to show the magnitude and importance of City building and its varied character, which in no way diminishes its interest. Linked as the City of London is with the history of the past, and forming the centre of the largest and most important metropolis of the world, it would be a lamentable thing if its buildings did not reflect somewhat the great- ness of its commerce, and if the improvement of its streets did not grow with its increasing wealth and wants. He who enters the City hoping to see grand streets, laid out with symmetry, to see vistas and lines not unknown to the leading cities of the Continent, nothing but disappointment will ensue; but any one who seeks the City to find a bond with the past by many an ancient church, or, it may be, an old city hall, or buildings strictly adapted to modern requirements, sound and well executed, dignified in character and not wanting in fitness or design, his visit must repay him; and if, in addition to his external survey, he will dive into the courts, alleys, and passages of the most busy parts, such as Mincing and Mark lanes, or near the Bank of England or Lombard-street, he will find every foot utilised, all the modern appliances of building resorted to, — iron, stone, terra-cotta, encaustic tiling, best wain- scot and mahogany, plate-glass, marble not wanting, executed without pretentiousness or show in any way. He will, perhaps, speculate what is the future of this hive of industry as respects the value of property and the develop- ment of building? I cannot pretend to answer such a question, but it is possible some exten- sive depreciation in the value of money is serv- ing to raise the value of real property in comparison, though in a hidden and not well- understood way; but whatever may happen, let us each trust that there is a great future for the City of London,—that as we look on the noble dome of St. Paul's rising in its midst, there may be work and sphere for many generations of architects, and that they may go to their work animated by Wren's spirit. Certain it is that, amidst the preparations for professional life, no time can be better spent than in studying the principles of the great masters of art in the past, and the City is not wanting in specimens of their work even without reference to the works of living men. I cannot close this paper without warmly thanking those architects who have lent me drawings to assist in its illustration.

In the discussion which followed,

The Chairman said that Mr. Clarke's paper had ably treated of the many difficulties with which the architect practising in the City had to contend, but he had not alluded to the high- pressure system of doing business which arose from the great value of land and the desire of the owners to have their buildings speedily erected. These causes led to haste in the prepa- ration of the drawings and in the erection of the buildings, although it must be confessed that the buildings of the City would stand comparison with those of any other part of the metropolis, or of any provincial town, in all the essentials of good building. One great element of their success consisted in the fact that they were adapted to their purposes, and the supply of such buildings was the natural outcome of the demand which had been made for them of late years. In construction and arrangement these City buildings were well worthy of consideration, although with reference to the purely decorative portions there was room for considerable difference of opinion. To paraphrase a famous saying of the late Sir George Cornewall Lewis, City architecture (or much of it, at any rate) would be tolerable but for its "ornament." The great fault of the majority of new buildings in the City was over-decoration. If we could divest some of the City buildings of everything which the public, and (in too many instances) even their architects, thought "ornamental," the general architectural effect would be very much better than it was at present. In his (the speaker's) opinion, buildings intended simply for purposes of trade or business should not be so highly ornate in character as buildings intended for residence or recreation. There was some- thing in the strict requirements of high-pressure business life which made the ornament in many of the new City buildings appear to be very much out of place, and to jar upon one's feel- ings. This would be the case even were the ornament well bestowed, but it was still more so when it was laid on indiscriminately. It was true that in many of the buildings of which drawings were shown on the walls this redun- dancy of ornament did not exist, but they were exceptions. As to uniformity or not in street façades, he thought London showed a very good example to Continental cities in allowing every- body a certain freedom of action; the result, on the whole, was very satisfactory.

Mr. S. Knight said that with reference to the last point touched upon by the chairman, there was no doubt a very great deal to be said on the question. It could not be denied that the diversity of buildings and the variety of designs which our London streets presented had a wonderfully picturesque effect. In Paris, on the contrary, there were enormously long streets, very fine in their way, but treated throughout with such uniformity as to be without that individuality which would enable a stranger to identify them one from another. To a great extent the streets of London were monotonously alike, but each street of any note had buildings in it which gave it a character of its own, and the picturesque was attained by the diverse designs adopted by different owners,—one man having a taste for Gothic, and another a Classic taste, while a third would have a taste which could scarcely be described. At any rate, it was impossible for a man to walk through the length and breadth of the City, especially in the new thoroughfares, without finding something to please him. On the other hand, it must be admitted that the juxtaposition of different designs was often productive of great discord- ance. Taking a thoroughfare such as the new Queen Victoria-street, and looking at it as a whole, with the various buildings in perspective, it possessed a certain effect of picturesqueness; but the eye was not satisfied when it looked at one or two elevations at a time, because it almost invariably happened that the horizontal lines of each façade, such as cornices, string-courses, &c., were at different heights. He thought that the Association and the Institute might usefully aid the profession by endeavouring to bring about amongst their members some general under- standing to the effect that, wherever possible (and in most cases it would be possible), they should design their buildings somewhat in har- mony with their surroundings. He begged to propose a vote of thanks to Mr. Clarke for his able paper.

Mr. H. H. Statham said it had occurred to him that one great difficulty in the way of rendering neighbouring façades of different design less incongruous with each other was the widely- prevalent employment of horizontal rather than vertical lines in such façades. Any one looking at the picturesque old German towns, such as Nuremberg, would see that the vertical lines in adjoining buildings did not "jar" with each other, although the buildings were diverse in design and use. But where horizontal lines were used, as in the City architecture of the present time, they might be carried through from build- ing to building on the same levels, without break of continuity, even though each façade dif- fered in design. By this means incongruity would be avoided without getting in its place the rigid and despotic uniformity which was so much to be deprecated. He was glad to hear Mr. Clarke's remarks as to the desirability of retain- ing, wherever possible, the lines or contours of historic London streets, and he hoped the time would never come when such streets would be destroyed merely for the sake of getting a number of right-angled blocks, for we should thus lose a great deal of interest by the process. Reference had been made to the uncouth appearance of

railway bridges and roofs. The unsightliness of such structures was mainly owing to the sharply-defined line of demarcation which existed between the engineering and architectural professions; indeed, there ought not to be two distinct constructive professions, for as long as they had separate existence one set of men would be trained to ignore all matters of artistic taste, while the others would perhaps be too prone to neglect the scientific part of building. It ought to be the aim of both professions to draw together with the view of incorporation. When the two professions became one, there would be far less chance of ugly railway structures being put up.

Mr. S. Flint Clarkson, in the course of some remarks the drift of which our reporter did not catch, asked whether Mr. Clarke had again buried the stone which he found in the house in Pudding-lane?

Mr. Clarke.—No; it is in the City Museum.

Mr. J. Douglass Mathews seconded the vote of thanks to Mr. Clarke for his paper, and in the course of his observations said that one great difficulty which architects had to contend with in designing buildings for newly-made streets was that very frequently such new streets took a long time to develope, and it was almost impossible to hit upon the exact description of building which would suit the wants of the ultimate tenants. It was a comparatively simple matter to design and construct a building for any given purpose or trade; but the architect could not have a more difficult problem set before him than that of designing a building which would be tolerably well adapted for any one of the multitudinous and diverse businesses carried on in London. He agreed with previous speakers in preferring London street architecture to that of Paris. He also endorsed the recommendation made by Mr. Statham as to the use of vertical rather than horizontal lines in street architecture, especially in narrow lanes or thoroughfares. In this connexion he could not help expressing regret that the fine tower and spire of St. Autholin's were now entirely gone, and he feared that, unless we "looked sharp," we should lose other things of the kind. He hoped, however, that in the event of further attempts at such Vandalism being made, the architectural profession and the archæological societies would take the matter up and carry their resistance to the uttermost point. As to fireproof floors, while he thought it was impossible to make a building really fireproof, especially when it contained such things as staircases and well-holes, fireproof floors should always be employed in offices and similar buildings, because they would generally suffice to "localise" any fire that might break out, confining it to one floor.

Mr. Phené Spiers, with reference to the question of uniformity or not in street architecture, said that as he was brought up in the rigid French school of regularity, he was inclined to advocate similarity of style and continuity of line in street façades; but, on the other hand, he had had many opportunities of studying and delineating picturesque buildings and towns, and he was therefore able to see the advantages and disadvantages of both systems of building. He agreed with Mr. Statham in thinking that architects of contiguous buildings should have some regard to each other's work; in fact, he considered that an architect who had to build a new house in a new thoroughfare ought to study the buildings on either side of it as he would study the landscape were he going to build a house in the country. In the case of a *new* building in an *old* street, however, the architect should have full licence to introduce piquancy into his design, but those who came after him in erecting new buildings should follow his design to a certain extent. The reason assigned by Mr. Norman Shaw for forsaking his usual style of work when he had to design buildings which were to be erected in Kensington was that the buildings of the "new departure" would be more in harmony with the houses of the "Old Court Suburb." One could understand and appreciate such a motive, although in the result Mr. Shaw had succeeded in producing buildings as different as possible from the old houses of Kensington. But the same spirit did not animate one of the promoters of the large blocks of shops and offices at the corner of the Poultry and Queen Victoria-street, who was reported to have said,—"Here is the Mansion-house opposite; a little beyond is the Church of St. Mary Woolnoth; while further to the north are the Royal Exchange and the Bank of England, all being buildings of Classic type, besides one or two Renaissance buildings in the locality. This, then, is exactly the place to put up a Gothic building!" Perhaps, however, that was the very reason why it should not have been put there. There was a tendency towards individuality in England which was sometimes disadvantageous, as, for instance, when an architect or his client, or both, refused to assimilate the design of a new building to the style of those surrounding it. As to lifts, he happened to receive a letter the other day from an American architect, headed, "Broadway, New York, —— Block, Fifth Story, *opposite the Elevator*." This would show the importance of attached in America to these lifts. There were one or two lifts in use in the City, and one in a house in Victoria-street,—a perpetual elevator, always in motion. He should like to ask Mr. Clarke what experience he had had of these appliances, and whether there was any chance of their becoming so regular in their working as to supersede staircases in large buildings.

The Chairman having put the vote of thanks to the meeting, it was carried unanimously.

Mr. Clarke, in replying on the discussion, said the question asked by Mr. Spiers as to lifts was a very important one, for he (Mr. Clarke) knew one experienced man connected with property in the City who said that we must ultimately expect to see shops for all classes of business on the upper floors of City buildings, owing to the greatly enhanced value of land. If this prognostication were correct, the question raised by Mr. Spiers was most interesting. So far as his experience justified him in speaking, he did not see any reason why lifts should not work perfectly well.

RIPARIAN OWNERSHIPS: LAMBETH FLOODS.

In the course of the discussion at the Institution of Surveyors, which followed the reading of Mr. W. M. Marriott's paper on "Riparian Rights,—

Mr. C. Norman Bazalgette said that he proposed in the remarks which he was about to offer, to deviate from the paper to this extent that, with the sanction of the meeting, he would discuss the question of the liability of those who had permitted the floods, and the responsibility of those whose duty it was to keep out the floods, and particularly in reference to the Lambeth overflow; but he did not intend to go into the engineering question whether the construction of an embankment on the north of the Thames had sent more water to the other side of the river. That question would have to be fought out at another time and in another place, and he was content to abide the result of that discussion whenever it took place. It seemed, however, to him that, for present purposes, he should be meeting the paper fairly enough if he simply entered into the question of the incidence of the responsibility of preventing floods within the metropolitan area. The point which had been raised with regard to the Embankment, as he had already observed, was outside the limits of the discussion proper, and would only serve to embarrass the legal issue. As it was, there was no engineering argument before the meeting, and therefore nothing to combat. It was true that a mere assertion had been made that the embankment on the northern had sent more water to the southern shore, but in the absence of argument to fortify that statement, a simple counter-assertion would be sufficient for present purposes. With regard to the concluding remarks of the paper, some reference had been made to the Rivers Pollution Act which was passed last session. He agreed with the author of the paper that some of its provisions were beneficial and calculated to do good; but, nevertheless, there were one or two provisions which, to his mind, tended to place a stumbling-block in the way of efficient operation of the statute. To indicate one such defect. That statute provided that no person should send sewage into a stream, and then further enacted that no person should be convicted if it could be shown that he had taken the best practicable means for cleansing the sewage before it passed into the stream. Now, it seemed to him (Mr. Bazalgette) that those latter words impaired the beneficial effect of this provision, for they let in the whole of the vexed question of what constituted the best practicable means. One expert, for instance, would say chemistry afforded the best results, while another would recommend natural or artificial filtration through soil as effecting more complete purification. Thus it would have been far better if the statute h simply provided that, instead of its bei necessary to prove that the best practica means had been used, it should be enough show that the sewage had been sufficien cleansed, because in that case the questi of sufficient purification would depend up chemical analysis, which would probably not much at fault. The author of the paper h confined his remarks to the case of rivers beyo the range of the tide. Now he proposed to ta the subject up just where Mr. Marriott h dropped it, and to deal with riparian ownershi fringing the borders of tidal streams, and at t same time to discuss the position of seabo ownerships, and their relations with each oth First of all, with regard to the common law of t land relating to seaboard ownerships, he thoug Mr. Michael would bear him out in his statemen of the law with regard to such proprietors, wh he said that the principle was fairly laid down case of Rex *v.* The Commissioners of Sewers i Essex, 1 B. & C. In that case, Chief Justi Abbott decided that, in the absence of proof special usage binding the individual frontag all the owners upon a flat like the Lincolnshi flats were bound, in common, to contribute the expense of keeping up the sea-bank whi gave them common protection. But, on t other hand, a special usage binding the frontag on the sea might be proved, in which case would have to perform the duty of keeping the sea-bank at his own cost. That law w approved in Morland *v.* Cook, L. R. 6 Eq. C Then there was the remarkable case of Huds *v.* Tabor, which was decided in the Queen Bench, and was now being carried up to t House of Lords, and the general effect of whi was to confirm the principles of the joi liability of the owners of the flat in the absen of special usage, though special usage and pr scription could saddle any frontager with t special responsibility. His friend, Mr. Michae had called his attention to the fact that th principle of joint contribution proceeded up the view that, inasmuch as the sea was th common enemy of all, all should combine for th purpose of resisting its incursions.

Passing on from seaboard owners, he won next consider the law as affecting watersi premises situated on the banks of tidal rive or estuaries, and he thought it would found that the two cases were nearly analogou With regard to the statutes which had bee passed from time to time for the prevention floods, he should like, in order to lead his arg ment with reference to the liability for th Lambeth overflow to a logical conclusion, to refe to some of the principal. The first statute whic legislated with this intention was Magna Chart It only consisted of thirty-seven chapters, and one chapter, consisting of only about two line was devoted to that object, he would quote in its entirety. He might premise that th words "put down" meant removed or demolishe It ran thus:—"All weirs shall be henceforth utterly put down by Thames and Medway, an throughout all England," the object then being not as at present, to keep up the locks and wei to improve the navigation, but to remov obstacles in order that the upland water migh flow down as rapidly as possible at low tide, s that the accumulated volume might not h ponded back more than was necessary when th tide was at its full height. The next statute wa the 25 Edw. III., c. 4, which was to the sam effect. The next was the 1 Hen. IV., c. 1 This latter enabled justices of the peace to mak surveys, and also to make orders calling upo the freeholder to break down any such imped ment created by them. There was also a pro vision in the same Act, which made it incumben upon the owners of weirs and other obstacles t remove them at their own cost, failing whic they were subject to a fine of 100 marks to th Crown. The next was the 23 Hen. VIII., c. 5, which the preamble seems to have been con ceived in a spirit of sarcasm, for it began b calling the king "a virtuous and most gracio prince." It then proceeded in quaint languag to complain of "the outrageous flowings, surging and course of the sea, the occasion of land wate and other outrageous springs that flooded low lying grounds," and it wound up by creatin Commissioners of Sewers throughout the king dom. These commissioners had charge of certai levels, and their duty was to survey and find ou where fences against the tides, whether in tid rivers or in the sea proper, were insufficien and it gave them power to compel owners t make them good. He believed, as a matter c

atory, that the commissioners exceeded those owers, for whereas the statute enabled them to use them to be executed, they took upon emselves the duty of constructing the necessary orks. He would now supply the references to e principal Acts, for the information of those ho were desirous of looking into the subject. ey were 3 & 4 Edw. VI., c. 8; 13 Eliz., c. 9; & 4 Wm. IV., c. 22; 4 & 5 Vict., c. 45; 12 & 13 ict., c. 50; and 24 & 25 Vict., c. 133. This last as the Lands Drainage Act, which made the nure of office of the commissioners perpetual, e term having previously been limited to three ars. The last of these commissions was issued 1860.

He had now stated generally what the law of e land was, both as affecting river frontagers d seaboard owners. Next, as regarded the etropolis, the low-lying lands within the metroolitan area were, like other river-side flats, nder the charge of commissioners, and these mmissioners had power to inquire where efences were weak, and to make orders conrning them which bound those deriving benefit om their protection. The authority of these ommissioners was afterwards supplanted, in the etropolis, by the machinery provided by the etropolis Local Management Act, though, utside the metropolitan area, the authority some cases still survived. It seemed to be agined that because the Metropolitan Board of Works had jurisdiction over the metropolis with gard to some matters, they were consequently nnipotent. Their jurisdiction had been exagerated. He ventured to say that, with regard this question of floods, whether within or ithout the metropolis, no public body, as he ould shortly show, could have a much more mited jurisdiction the Metropolitan Board of Works. For instance, outside the metropolis, he Board, by virtue of the land which they had cquired for the purpose of their outfall at arking-creek, fell under the jurisdiction of the d Commission, which presided over that level, nd sometimes received the most peremptory otices to raise their sea-walls. He had brought ith him a specimen of these notices. The eading was "East Ham Level." It recited the istrict to which the level extended. Then it numerated the names of those members at resent composing the Commission, and then ade order to this effect:—"That the Metroolitan Board of Works raise their Thames ver-wall, and Barking Creek river-wall, as high the altered standard level, viz., 5 ft. above rinity high-water mark, or 10 in. above Noember level of last year." It then went on to rovide that the necessary works should be done ithin a month after notice given, and that, in efault, the master bailiff would execute such orks, and that their cost would be assessed and harged upon the Board. He had with him nother, which was much to the same effect, and hich he need not read.

A few words more, and he had done. He was raid he had exceeded the compass allowed to speaker, but, in conclusion, he wished to say a ord as to the question of liability, particularly ith regard to the Lambeth overflow. He need ardly tell them that, as regarded the metroolis, the Commissioners had been superseded y the jurisdiction of other bodies. First of all, heir jurisdiction had been superseded by the ommissioners of Sewers. After that, the etropolis Local Management Act was passed, hich was the Act now in operation; and, as garded the question at the present time in the etropolis, it had introduced an entirely new tate of things. He need hardly remind the eeting what the effect of that Act was. At he same time that it constituted a central body, constituted vestries or local bodies all over the etropolis, those local bodies sending up representatives to the central body, and so forming he Metropolitan Board of Works. The Metroolis Local Management Act, 18 & 19 Vict., 120, gave concurrent jurisdiction to the letropolitan Board and the vestries in some espects, and an independent jurisdiction in thers; and where they found independent jurisiction, they might take it that the Metropolitan oard would not meddle with the vestries, nor he vestries with the independent jurisdiction of he Metropolitan Board. Then whose duty was to prevent floods, or the overflow of the Thames the metropolitan district? As the question as at present of public importance, he hoped should be pardoned for referring to the parcular section which regulated this. A section an Act of Parliament was a dry thing enough itself, and scarcely a matter of popular interest; but still this section was so clear that it could not be put more tersely or in a more explanatory way if he adopted words of his own. Section 69 of 18 & 19 Vict., c. 120, was to this effect:—"The vestry of every parish mentioned in Schedule A to this Act, and the Board of Works for every district mentioned in Schedule B to this Act, shall cause all banks, wharfs, docks, or defences abutting on or adjoining any river, stream, canal, pond, or watercourse in such parish or district, to be raised, strengthened, or altered or repaired, where it may be necessary so to do, for effectually draining, or protecting from floods or inundation, such parish or district." That seemed plain so far, and it was clearly the duty of the vestry to give effect to the provision. Section 70 apportioned the expense, and showed how it was to be provided for, enabling the vestry to charge the expense partly on the riparian owner and partly on the district; that was to say, it might be divided between the individual and the rates. It might be asked, then, why, if the vestry had power, did they not step in to prevent the floods? The fact was, that there appeared to be some difficulty in enforcing the provision in the case of a refractory owner. The Act of Parliament seemed to be defective. If any one would take the trouble to read Woolryoh's foot-note to section 70 of the same Act of Parliament, he would find these words:—"There is some difficulty attending the mode of proving and enforcing liabilities of this nature under the present Act," the author then going on to explain the nature of the difficulty. So that, in fact, there was an obstacle in the way of enforcing the statute.

THE THAMES: COUNTER EMBANKMENT ON SOUTH SIDE.

THIS noble river, which flows for over sixty miles from the ocean, bearing to London the world's commercial wealth, continues its tidal course sixteen miles higher up to Teddington; and for sixty miles further is bordered by rich scenery of landscape unrivalled in any other country.

In former days but little was done for the improvement of its banks, and nothing for the purification of its waters. Receiving throughout its course the sewage of many towns, the shoals of mud on either side at low water were disgusting to the view, and abhorent to the senses; and even yet the citizens or Corporation have paid little attention to the redress of an evil which endangers the health and impedes the commerce of our great and populous City.

The Embankment of the south side, and the expurgation of fœtid mud-banks, is now, however, the object in view; it is a difficult matter to treat, as there are many large and conflicting interests in the way; therefore we will limit the extent, for the present, between Westminster and Waterloo bridges.

It must first be borne in mind that the waterway for the rise and reflux of the tide at London Bridge is but 264 yards; from that point to Blackfriars there is an expansion, the waterway being 334 yards at the latter bridge.

Increasing still, the stream at Waterloo Bridge (of nine arches) expands to 400 yards.

Then at Westminster Bridge (of seven arches) the waterway is 344 yards.

At the latter bridge two of the original arches are stopped, that on the north end by the embankment road and the Houses of Parliament, the other on the south end by the promenade causeway and St. Thomas's Hospital.

The range of wharfs along this line, occupying the whole space between Belvedere-road and the river, varying from 150 to over 500 yards in depth, is certainly the most extensive and important in this or any other city.

It comprehends the Lion Brewery, a handsome and spacious building, having also a large inclosure and stores on the opposite side of Belvedere-road; the great and utilitarian modern structure of Governmental East India Stores; and the lofty Shot Tower and offices; the rest being an irregular line of vast and varied stores; all having back wharfage; and at low water a hideous bank of fœtid mud, extending one full third of the river's traverse.

To obviate so great a default, it is proposed to form a quay wall and canal, *open to tidal influence*, of say 80 ft. or 100 ft. wide, extending from the south arch of Westminster Bridge to the south arch of Waterloo, embracing the whole width of both. Of course, the channel should be cleared out to a depth of 5 ft. or 6 ft. under low-water mark, and two or three openings left for access in the outer quay wall. This would give ample scope for barges which now, together with large quantities of timber balk, lie scattered over the mud-banks at low water.

Commencing at Westminster Bridge, the canal would be 36 yards wide (the span of the arch now stopped up), and an opening should be left, both laterally and through the arch, for the influx of tidal water; the quay wall being carried on in equable line to the south arch of Waterloo Bridge, which would afford free passage for the tidal ebb and flow of the canal.

This mode of embankment would rather expand than contract the free flood of water; and the quay wall being raised by the height of a parapet wall above the mark of the late river flood would vastly improve the aspect from the new and beautiful embankment on the opposite side.

As a matter of course, there should be an opening for the wharf at College-street, as well as two or three others for the accommodation of riparian wharfingers, and light iron bridges should be erected over them.

Whether the proposed embankment should be utilised as a footway or promenade may remain for ulterior consideration. That in front of St. Thomas's Hospital has but a width of 14 ft.; and as the excavation to deepen the canal might fill up the interval of walls, it could add little to the expense. T. H. H.

THE HISTORY OF THE BRITISH ARTISAN.

VISCOUNT LYMINGTON opened the Spring Session of the Exeter Working Men's Mutual Improvement Society on the 19th ult., by delivering a lecture on "The History of the British Artisan." The lecturer traced the progress of trade and manufactures in England from the Roman period, and the gradual improvement which had been effected in the condition of the British workman through successive ages, giving a sketch of the degraded state of the artisan in feudal times, and making it part of his plan to show the influence which foreigners had exerted in the development of English trade and commerce. The English artisan had ever found among the foreign settlers here some of his ablest teachers. Elizabeth's reign was spoken of as the time from which the stream of national progress could be most distinctly traced. Science awoke in Bacon's day from a long slumber. Coal, the genius of our age, was only beginning to be an important trade in Charles I.'s reign. With the names of Watt & Matthew Boulton we caught the first scream of the engine; the last flight of stairs that touched our own time was reached, the artisan had passed from the slave of the feudal ages, the child of later periods, reproved, protected, and restricted, to emerge as a great vital force, an organ of power to his country and his age. The advance in the intellectual, as well as material, condition of the workman had exactly coincided with the progress of machinery. Although in original conception English manufacturers possessed no advantage over those of other countries, yet in the practical development and application of an invention, and in administrative capability, especially in the art of economical management, they had shown a real commercial genius that was rarely exhibited abroad. The great modern cities, such as Birmingham, Liverpool, Manchester, and Glasgow, gave an impetus to trade which it had never before felt. The two great monarchs, king coal and king cotton, had hand in hand ruled over tens of thousands of subjects; and steam, by its various properties, had helped to turn all England into a nation of workmen. With the working classes now lay the means of national improvement; they had great power alike for evil and for good. But while trade was creating employment on an enormous scale, and wages were increasing rapidly, the domestic habits and surroundings of the working classes in the manufacturing districts were in the early part of this century very lamentable. Living in unhealthy dwellings and narrow pestilential streets, and working in crowded mills, sending their children to begin work at five years of age, their physical condition was shocking. The deformed were to be met with in every street of our crowded cities, and children wore the dejected and weary expression of an overwrought population. Education could hardly be said to exist among them, and at the very moment when the old order was giving way to the new; when large fortunes were

being realised on all sides; when trade was emerging from restraint and tyranny, and workmen from want and servitude, a worse slavery was commencing, and the horizon of the British artisan became deeply clouded. Yet even under these trying conditions there were found—chiefly among the ordinary artisans of the workshop—some better and more enlightened man employing his leisure by adding to what store of learning he possessed, some man endowed with the power of looking beyond the workshop to the great world outside, and beyond the workman to man himself. They could not pass from the period of transition without recognising the vast and self-denying labours of Lord Shaftesbury, whose whole life had been spent in trying to increase the happiness of others, and especially of the working classes. The various Acts of Parliament which the exertions of Lord Shaftesbury and other philanthropists had caused to be passed had produced a wonderful change in the condition of the artisans of our large towns. As their physical condition improved, their education became better, and their amusements of a higher class. Athletics, music, clubs and libraries, excursions, all exercised a beneficial effect. Friendly societies were established to satisfy the growing feeling of prudence and forethought. Trade unions were among the most remarkable signs of the spirit of combination. They represented in a great measure in modern times the part played by guilds in former days. Co-operation had proved beyond all other forms of association of the highest value. In working men's clubs they saw the workman's own wish and determination to acquire those refinements and interests for his leisure hours which belonged to men who possessed a real appreciation of enjoyment, and to whom a larger field of happiness was opened. In conclusion, let them compare the present condition of the workman with that which he had described in the opening parts of his lecture. The last Reform Bill gave to the British workman the summit of his responsibilities. He was now no longer a mere figure in the picture, a subject of passing interest on the page of history; but in his hands lay to no small extent the destinies of his country, and to him men of both the great political parties were now looking as the principal factor in the politics of the future. But the British workman, sensible of his great responsibilities, would remember that on himself alone depended the continuance of his power and influence. He should also remember that an oratory of false sentiment appealed most easily to those who were uneducated, and consequently that, while each individual workman should regard education as due to himself and to his own self-respect, so also workmen, as a body, should seek it as protecting the better interests of their class, as making them to be proof against any illusions or prejudice, as proving to them that the conditions of success in life and politics were an actual ability, a fine discrimination, and a true judgment—that politics and political influence would always be, as they always should be, in the hands of those to whom knowledge gave power and character gave weight.

The Bishop of Exeter, in proposing a vote of thanks to Viscount Lymington, spoke in terms of very high praise of the lecture, the effect of which on his mind had been that of a picture of a familiar landscape in which the artist made prominent the beauty which an ordinary spectator was likely to pass unnoticed.

ARCHITECTURAL SOCIETIES.

Birmingham.—The Birmingham branch of the Architectural Association held a meeting on the 23rd ult., when Mr. J. Roddis, sculptor, was elected an honorary member, and a vote of thanks was passed to Mr. J. A. Chatwin, architect of the new extension to the Exchange, for allowing the members to visit that building. Afterwards a paper was read by the chairman (Mr. A. Freeman Smith) on "Domestic Architecture." The author commenced by describing the primitive character of the domestic buildings of the Anglo-Saxon period, and traced their gradual development down to the time of Elizabeth.

Lincoln.—At a recent meeting of the committee of the Lincoln Diocesan Architectural Society, the place of the Society's public meeting for the current year was discussed, and it was finally agreed that Southwell should be selected for this purpose,—provisionally, first, because it was considered just that some place in Nottinghamshire should be chosen for this purpose; and, secondly, through the fresh interest attaching to Southwell as giving the title to one of the new bishoprics now sanctioned by the Crown.

WHAT IS A BRIDGE?

This question was raised at the Cumberland January Quarter Sessions, the other day, by the chairman asking whether some small bridges referred to in the report of the county surveyor were arched. The county surveyor (Mr. Cory) replied in the affirmative, and in answer to a further question said that some had parapets and some had not.

The Clerk of the Peace suggested that the surveyor might repair those which he considered to be bridges, and leave the others until some steps were taken by the parish surveyors either to repair them or proceed against the county for non-repair. It had always been a moot point as to what was a bridge, and how small it should be taken, and whether it should be arched or flat. There was a distinction between an ordinary culvert and a bridge, and ordinary culverts were not reparable by the county.

The surveyor said there was one only 3 ft. wide. He did not want to saddle the county with a lot of structures with which they have nothing to do; at the same time, he would not like to have the county indicted for not doing what was its duty to do. He had written to several neighbouring counties, to see on what rule they acted, and he had learned that in the North Riding they took nothing under 10 ft.; in Durham, they took nothing under 6 ft.; while in Northumberland, if it was arched they took it.

The Chairman.—I think that the example of Yorkshire is better than that of Northumberland.

Captain James.—Would it not be well to have a report from Mr. Cory as to the number of those places in dispute, and then come to a decision?

The Chairman.—We might authorise him now to take all those bridges about which there can be no possible question.

It was resolved, on the motion of Sir Henry Vane, that the surveyor take no bridges except such as he was sure were bridges.

COMMISSIONS.

Sir,—The recent discussion in the *Times* can hardly be less distasteful to the great body of architects, whether members of the Institute or not, than it is to those who are familiar with the practices of architects as a body, and who really know that they do not deserve the imputation which has been cast upon them. This is the experience of a firm that has never offered to pay commission to architects. We know nothing of the experience of those who do. If you will allow us to proffer a word of advice to those architects who are careful of their own reputation, and of the reputation of the body to which they belong, it is, that the utmost discouragement should be given to the employment of houses that are known to offer commission, and that architects should not generally recommend one house for a particular class of work to the exclusion of all others. Some architects we know refuse to recommend anybody at all; others give several names, leaving the client to choose. When they do not do one or the other, we find they generally pass all extra works through the hands of the builder or contractor, leaving him to levy his commission or deduct his discount as a matter of course.

Fredk. Edwards & Son.

Great Marlborough-street.

NORTHUMBERLAND AVENUE.

At the meeting of the Metropolitan Board of Works on the 19th ult., the Works Committee, reporting on a letter from the Royal Institute of British Architects, referring to clause 30 of the Charing-cross and Victoria Embankment Approach Act, and inquiring whether it is the wish of the Board to delegate to the Institute the power of controlling the architectural character and design of the buildings to be erected in Northumberland-avenue, or in what other mode the Board may desire to carry out the intention of the Act, recommended that a letter be addressed to the Institute, informing them that the Board have no power to delegate the control of the designs in question, but that it is their intention, in accordance with the provisions of the Act, to submit to the Institute elevations of the buildings to be erected in the avenue, before the same are commenced.

At a subsequent meeting of the Board (on the 26th ult.) a letter was read from the Institute, stating that they had no idea of interfering with the ultimate control vested in the Board over the architectural treatment of the buildings to be erected in Northumberland-avenue. They thought that the requirements of the Act would be met if the approval or disapproval of the Institute was formally confirmed by the Board of Works. The only object of the Institute was to prevent public disappointment in the carrying out of an Act intended to secure an artistic treatment of a noble thoroughfare. The letter was referred to the Works Committee.

EVANS & SWAIN'S FIREPROOF CONSTRUCTION FOR FLOORS, CEILINGS, AND ROOFS.

At the present moment we may be of service to some of our readers by directing their attention to a mode of construction patented by Messrs. Evans & Swain.

The patentees take ordinary timber joists of any uniform depth, generally 9 in. or 11 in. for ordinary floors and spans up to 25 ft., but deeper where greater span or strength is required, and of any thickness (the thinner the better, as there is less chance of shrinkage and an open joint being formed). These joists they place on the walls in the ordinary way, only, instead of fixing them, as is usual in constructing an ordinary floor of wood joists and boards, with a space between the joists, they are placed together without any intervening space. The ends of the joists are allowed to bear on the walls in the usual way (only no plate is required), and the last joist at each end of a series of joists is also allowed to bear throughout its whole length upon the walls. The sides of the joists are brought into intimate contact by being bolted up close at intervals with screw-bolts, or spiked together with strong spikes, or screwed with ordinary screws, or any other similar method; and the result is a solid slab or floor of timber of the size of the room, bearing on the walls on all four sides, of great strength, and exerting no outward thrust upon the walls.

A floor thus constructed would, in itself, be nearly perfectly fire-proof, but, as an additional protection, the inventors bring to their aid the fire-resisting properties of common plaster. After the floor has been constructed, as above described, and a solid slab of wood formed, the inventors drive, at close intervals, into the under surface of the floor forming the ceiling of the room below, a number of flat-headed nails; this forms a key for the plaster, and the ceiling is then plastered in the ordinary way, with a good thick coat of common plaster, care being taken to use a tough plaster that will not shrink and crack, rather than a hard and brittle one.

Under ordinary circumstances, it is only necessary to plane off the top surface of the joists, no flooring-boards or other covering being required; but, if the floor above is intended for the storage of highly inflammable goods, such as oils, spirits, varnishes, or paraffin, it is advisable that the upper surface of the floor should be floated with cement, or covered with stone or tiles, or some other similar material.

For roofs they would construct a floor of solid timber as before described, and then cover the upper surface with either cement, asphalte, tiles, stone, or any other material, laid on a coating of loam and sand or fine concrete.

It is obvious that such floors must be costly; but the inventors claim that, "taking into consideration the saving effected in the whole building, by the roof and the use of thinner walls, it will be found that this system, though offering security from the spread of fire, is very little, if at all, more costly than any other system of fire-proof construction in use." Anyhow, it deserves to be looked into.

Sanitary Institute of Great Britain.—We are asked to say that this Institute proposes to hold a public meeting, early in March next, at the Society of Arts, to consider the report recently issued by the committee appointed by the President of the Local Government Board upon the modes of treating town sewage. The Duke of Northumberland will preside, and the discussion will be opened by Sir Joseph Bazalgette.

GRANITE BUILDING.

R,—If I reply to Mr. Trickett's letter in the *der* of Jan. 20, I fear it will only be to reiterate t I have already said. I will, therefore, be rief as possible in answering him, and in r respects will make my letter as interesting ossible to such of your readers as take an est in this—as I think it—important ques-

the *Builder* of Dec. 16, 1876, you allowed me e these words :—"Where rain has access to . e. polished granite), it is as clean as any- g can be in this mundane city that does not ve constant attention. Under cornices or projections the polish is temporarily ened; and it would, of course, be well if rs or tenants would have these parts ed with a sponge occasionally, which is all hard unabsorbent material requires." And on to say that the cleaning down of stone- is, as we all know, a much more difficult xpensive operation.

his last letter, Mr. Trickett, after mention- some examples of granite-work that are rimed with soot," says of the Scottish ws Insurance Office, Cornhill,—"Not so ed Peterhead granite, which stands out inent and beautiful."

ter this confession, which is good evidence *the other side* in favour of my proposal, and xistence of a dozen other similar examples is city which any one who will take the le may see for himself in half an hour, st demur to Mr. Trickett's assertion that and dirt do speedily eat out the colour of tes." There could not be a more decided that this effect will not ensue than the nt state of the Duke of York's Column, in on Gardens, which, although it was never ed, yet, after fifty years' exposure, shows ed colour as well as on the day it was ed, and is otherwise in a state of perfect vation. Messrs. Macdonald, of Aberdeen, e that the oldest work done by their father them shows no sign of change.

s quite true, as most practical men know, re is an enemy to granite; but practical lso know, firstly, that granite or stone is sed as a thin external casing to the thick of a building; and secondly, that fires— lly soon extinguished—are internal. It refore, probable that the heat would not ficient to damage the casing. Moreover, if cept theatres, when did we last hear of an ant public building being burnt down? ot, then, as an architect, think this a s objection to granite as a building mate- pecially when the other advantages I have are taken into account.

serve Mr. Trickett says that a stone build- at has been exposed years to London soot, hen cleaned down, contrast favourably olished granite. All I can say on this and many of my professional friends agree ie, is that I never yet saw a stone building d been cleaned down that would not have tter left untouched. The only exception Buxton Memorial, the very elaborate work h seemed to render it more suitable for ration.

regard to the economy of using the sand- Mr. Newton's lecture, some months ago, ooms of the Society of Arts, convinced others. Specimens of sunk work in hard ls were exhibited, which have been exe- y this process in a fraction of the time uld have taken if done by hand.

ring and respecting Mr. Trickett as a dependent man, still, he is a stone mer- and I should, therefore, scarcely have d to him on this subject and expected a y unbiassed opinion. He deals in granite, e, but it is only to a very limited extent. emember his useful and excellent samples tones at the late International Exhibi- it he sent no specimens of granites. heart evidently prefers to soar among e mountains, dolomite ranges, and sand- ffs, than to descend to the volcanic rocks -cold now, but once, ages ago, a fiery am. It is just these ancient fires, , that have given us the materials we It is the igneous character of granite es it everlasting, even in the London ere. In fact, experience shows that ough the agency of fire can we have ut buildings. It is the firing that makes nfactured materials,—majolica, encaustic s, and terra cotta,—everlasting, or more durable; and it is perhaps a little singular that the three first, which, like granite, could not exist without the agency of fire, are just those that, having a bright surface, would harmonise best with polished granite work, if used for the ornamental details.

Thus, it is the agency of fire alone that will enable us to combat with success those unseen, but powerful and ever-active enemies in the air that are constantly attacking and ruthlessly destroying our costly and beautiful buildings of perishable stone. I venture, then, to assert that if our future public buildings were cased with granite they would be supplied with a suit of armour at once invulnerable and beautiful, and that a style worthy of this scientific age would be established.

ARCHITECT.

INTERFERENCE WITH STREET LEVELS.

FULHAM BOARD OF WORKS *v.* METROPOLITAN DISTRICT RAILWAY.

THIS case was heard on the 17th ult. It was an appeal, by the defendant railway company, from an order made by Vice-Chancellor Bacon on the 13th ult., granting an injunction to restrain the company from interfering with the levels of certain streets in Hammersmith, which are crossed by a new line of railway which the company are constructing.

The streets in question are the Broadway, the Grove, and Bradmore-lane. The company are making the level of the new line in some places as much as 2 ft. 3 in. above the level shown in their original plans, their reasons for doing so being to obtain a better fall for the drainage of the line. They contend that they have power by their Act to deviate to the extent of 2 ft. in a vertical direction, and this was ultimately admitted to be so. The question, therefore, was whether the excess of 3 in. was one which the Court would interfere to restrain. The Vice-Chancellor had granted the injunction. The company appealed.

Lord Justice James said the Court, as at present advised, were of opinion that the company were clearly going beyond their Parliamentary powers in deviating beyond 2 ft. from the originally intended level of the railway. The Court were also clearly of opinion, so far as it was proper to express an opinion upon an interlocutory motion, that the company had a right to deviate to the extent of 2 ft. Then the question to be considered was, what the effect of the excess of 3 in. in deviation was. It appeared that that excess did not exist at the points where the railway crossed the Broadway or Bradmore-lane, but only at the point where it crossed The Grove. It was quite clear that all the evidence as to damage which would be caused by an alteration of the levels of the streets was adduced with reference to the original contention of the plaintiffs that the company were not entitled to deviate at all from their originally contemplated level, and there was really no evidence before the Court to show that any damage would be caused by the additional deviation of 3 in. There was nothing to show that this would cause the slightest inconvenience to any human being. Of course this view of the case might be altered at the hearing of the action, but in this state of things, looking at the balance of convenience and inconvenience, it would be far more convenient that the company should be allowed to proceed with their works. The motion must stand to the hearing.

Lord Justice Bramwell and Lord Justice Amphlett concurred.

A CAUTION.

PLEASE allow me to caution benevolent architects and others against an impostor of French or German extraction, named De Barry. He called here with a letter, said to be from Mr. Pearson, of Harley-street, strongly recommending him as an object for charity. He tells a long story, and is anxious to display a crippled knee.

I told him to call again, and wrote at once to Mr. Pearson, who in reply states he knows nothing whatever about the man.

JOHN OLDRID SCOTT.

Spring Gardens.

*** The same man came to us last week, and we were nearly imposed on by the sight of Mr. Pearson's letter,—not quite. The letter certainly seemed to us to have been written by Mr. Pearson, and was on his "headed" note paper.

"LODGING MONEY" FOR BUILDERS' WORKMEN.

BRODERICK *v.* HODGSON.

THIS was an action (brought in the Darlington County Court, before Mr. E. R. Turner, judge) to recover the sum of 5s. 3d.

The plaintiff is a plasterer, and the defendant a builder in Darlington, and the question involved was whether a builder was liable to pay lodging money for men when working out of town.

Plaintiff stated that he was employed by the defendant to do some work at Brussleton Bank. He received his money at Shildon. He had only come into the town the previous day, as he was on the tramp. The defendant paid his fare down to Shildon, and it was the custom when a workman was sent into the country for the master to pay lodging-money. It was also the custom for the master to pay lodging-money, even on the first job the man did for him.

A man named Wood stated that he was being paid 3s. a week lodging-money at the same work. He had a wife and a house in Darlington, and had always received his lodging-money whenever he was sent out of town.

His Honour.—But you have a home?

Witness.—I do not think that makes any difference; employers do not ask questions as to whether you are married or single. He continued that he had been in many parts of the country, and had always received his lodging-money. He was never asked if he had a home before he was allowed extra money.

The rules of the Plasterers' Society were put in, but the judge said they were not binding upon the master, and on the question of custom ruled against the plaintiff, and said such a custom was only intended to meet the case of a man who had a home in the town from which he was sent.

He gave judgment for the defendant, with costs.

WOODEN HOUSES.

SIR,—In reply to "S. M. P." respecting wooden houses, I respectfully submit the following information. It is a common thing to build such houses in America. In Chicago alone there are hundreds built and shipped to various parts of the world; and it has been my lot during the last six years to superintend the erection of a considerable number of them. As to their being substantial, I have no hesitation in saying that they are far more so than 75 per cent. of the brick houses building at present in this country. I know numbers of "frame houses," as they are called, that have been built more than half a century, and are still good. They are as warm and comfortable as any brick house, while they do not cost anything like the price; and I have no doubt but the plan would succeed, providing there was sufficient energy to carry it out.

G. A. K.

BOARD SCHOOL, KEYMER, SUSSEX.

SIR,—We remark that in your notice of the above you mention that it is heated by "Bacon's high-pressure hot-water apparatus," a term that, we fear, may mislead some as to the nature of our system, and cause them to confound it with the old "high-pressure" apparatus, which is so often and deservedly condemned. Although our apparatus is based on the same fundamental principles, we have by careful study and attention entirely removed all the objections that could be raised against the old plan, having by the means of our perly-proportioned and well-constructed furnaces reduced and equalised the heat of the pipes, thus avoiding all smell; and by thorough attention to the laws of expansion and friction reduced the pressure to little more than that resulting from the height of the system and the temperature of the pipes.

J. L. BACON & CO.

IRON AND GAS TAR.

SIR,—Sir E. Beckett, in his interesting book on Building, says (p. 127),—"Gas-tar, I understand, rusts iron very quickly instead of preserving it." Is this true? I shall be sorry if it is, since for some time I have been in the habit of having my shoots, pipes, and railings painted with gas-tar.

THORNE.

PROBATIONERS AT THE ROYAL ACADEMY.

SIR,—I should like to bring under the notice of your readers, and especially such of them who may contemplate entering the architectural school of the Royal Academy, that out of fifteen sets of drawings presented in December last by would-be probationers, fourteen were rejected. The reason of this large proportion of failures cannot be far to seek; and one would like to know, on competent authority, whether it arose from want of merit in the drawings submitted, or neglect to observe some one or more of the rules,—though the latter suggestion seems beside the question, if we are to accept the assurance of the unsuccessful fourteen that they faithfully observed the rules supplied,—rules, it is said, precisely like those under which former candidates have been successful.

G. K.

Premature Occupation of Houses.—The *Sanitary Record* reports that some time ago in an application for interdict of occupation made by the Local Authority of Glasgow, against the proprietor of a new property in Lumsden-street, the defender pleaded that he had in the interval remedied the defects complained of, and a remit was made to the medical officer of health, to report. This report was to the effect that the room was still uninhabitable on account of the dampness of the plaster. The Court, thereupon, on the application of defender's agent, made a further remit to Mr. Bromhead, architect, who reported that the room was unfit for human habitation, and that probably "three weeks with a fire would be certain to make it habitable and dry." Sheriff Spens delivered an interlocutor, in which he "finds that the defender's agent states that a fire has for the last ten days been kept in said room, during which it has not been inhabited, and that he also undertakes that it shall remain uninhabited for eleven days from the date thereof, with which undertaking the petitioner's agent expresses himself satisfied. Further order unnecessary. Respondent liable in expenses."

Books Received.

Amongst Machines: a Book for Boys. By the Author of "The Young Mechanic." Trübner & Co. 1876.

The difficulty of knowing what sort of book to choose for a boy is much more frequently admitted than overcome. Boys themselves read "light" literature on the sly, but their dignity suffers if anything inferior to universal science or a journey round the world be offered for their acceptance. Some subject of an unusually heavy character, and bound in an equally heavy manner, is therefore the ordinary present selected, quite as often by the boy who receives, as the senior who gives; and when the former is a senior himself, he perhaps reads it. Although "Amongst Machines" may be advantageously studied by readers of all ages, and even classes, it is essentially a boy's book; and, although there are many people, especially in the little world of artists, who would, if they could, ignore machinery altogether,—who teach the rising generation that England was merry only when time, money, and hand-labour were slowly spent for the exclusive benefit of the few, and that the present age of machinery is the absolute destruction of real art for the use and edification of the many. But the power which has brought with it so much that is said to be fatal to art, has occasioned an extraordinary increase and spread of petty objects which, in many circles, are common adjuncts of comfort, and even in humble ones are now necessities. The author's reminder that "a native Hindoo," though an eminently better artist than his British fellow-subject, can produce only an infinitesimally small quantity of work compared with the rough and ungentle machine-made products, is a platitude which will bear repetition; but pray is the "native Hindoo" a different sort of mortal to the ordinary Hindoo? For if so, it is likely that the native Englishman claims precedence or *vice versâ* over those of his countrymen to whom the adjective is not applied. Let that pass, however; the book is systematically put together and well illustrated with good practical details of machinery and manufacture. First principles are noted, mechanical powers are described, then mechanical arrangements, and afterwards the application of the same. The story of iron furnaces and other things to be seen in the black country is interesting; and the reader is treated to a graphic description of how pens, pins, and hair-pins are made, of glass-making and wood-cutting, together with views and explanations of printing and paper machines. The last chapter gives the greatest machine of all,—the human frame. So appropriate a wind-up to a tale of artificial life tempts us to recall that "Book of the Machines," which a venturesome traveller to Erewhon found in the College of Unreason,—a delightful satire which Mr. Samuel Butler imagined and Messrs. Trübner & Co. published. The Erewhonian youth were grounded in the study of "Hypothetics," and forbidden to learn anything about machines. These had been abolished after a long civil war, lest the development of mechanical consciousness should lead ultimately to the supersession of human labour. Fragments of ancient machines were collected in the museums much in the manner of geological specimens at the present moment; and the naked, unaided hand triumphed. "Amongst Machines" tells a different story, and its author is doubtless justified in saying that the existing patent laws do not suffice to protect the inventor; the object of a patent is to secure all profits to the inventor for a term of years; the result, on the contrary, frequently shows the inventor impoverished and his luckier neighbours enriched. We fancy, however, to have sometimes heard a similar indictment of results among crafts and communities who, free of all patents, and innocent of any kind of monopoly, enjoy liberty in admired disorder.

The Aquarium: its Inhabitants, Structure, and Management. By J. E. Taylor, F.L.S., F.C.S. Hardwicke & Bogue. 1876.

The fate of spelling-bees, rinks, manufactured "antiques," and "old" china is probably of a transient character; and although the last-named has been loftily called by an artistic authority good investment, it is much to be questioned whether the greater number of plates, saucers, and "batteries" generally will be worth much some twenty years hence, when the century is dying out. Mr. Taylor very justly urges that such will not be the fate of aquaria, and most people will agree with him. True, they do in some instances deprive the inmates of a room from complete enjoyment of the house opposite; and they prevent the insertion of heads and shoulders between the sill and the sash of a window; but while they afford pleasure in private, they are sources of public education. Developed into an exhibition, they are useful for scientific research, and a nursery for the microscope. The "Jardin d'Acclimatisation," in the Bois de Boulogne, has the honour of having first opened, in 1861, a large aquarium, to which the Parisians were attracted with difficulty. In the same year the well-known Barnum contrived to get two white whales, which he exhibited alive in his notorious museum; and this was the first American aquarium show. Since then aquaria have spread from house to house and town to town, and now a watering-place which pretends to any fashion puts the aquarium into the category of public buildings, as an indispensable adjunct of progress and speculation. Mr. Taylor's work is full of excellent illustrations, and will be found useful as a handbook of varied and exhaustive information upon all matters referring to aquaria, both large and small.

Gold. Translated from the German by Mrs. Brewer, with Notes by Mr. Edwin W. Streeter. Chatto & Windus. 1877.

This is a book of "for and against"; and a careless reader may lose the path which leads through it, and which is guarded at both ends by Mr. Streeter. The question discussed in large type over some 135 pages is, whether "the precious metals which in a definite purity form the material of a nation's currency should receive any warranty or not when used as an article of commerce." Herr von Studnitz wrote a book to show that they should not; and the part interesting to the English reader has been translated and abridged. He applied to every Government for information concerning the laws and regulations in force, as well as the legal changes which had been effected in the course of ages, and the result is an interesting compilation of historical data. It may be useful to say that "standard" is the term used to express the relation between pure gold in coins or precious metal goods and the alloy with which it is mixed. The degrees of standard were formerly expressed in the case of gold "by carats (the dried kernal of the locust bean), of which in Germany twenty-four were called a mark. . . . . Twenty-four carat gold was of absolute purity. . . . . And in England this manner of determining the standard quality of gold is still in use." An abridgment is given of the laws of all nations concerning the standard of gold and silver wares; and Herr von Studnitz maintains that the experience of countries and periods has pronounced against the interference of the State. The history of the laws connected with the precious metal industry in those lands where the State has interfered with its course shows that they are gradually becoming less strict; and he looks forward to the emancipation, in the German empire, of the precious metal industry. Mr. Streeter finds fault with the German author; and, as the former has "exhibited publicly a collection of genuine Hall-marked articles which presented almost every variety of ingenious deception," he would take from the Goldsmiths' Company the privilege of testing ware made of the precious metals,—a privilege which they have held since the year 1300. He would have all articles containing less than twelve-carat gold sold as metal, and he would strive to introduce the standard of eighteen-carat gold. It is a readable book; and a disinterested conclusion may be arrived at by the indubitable assumption that both Mr. Streeter and Herr von Studnitz have uttered truths, even though they contradict each other.

VARIORUM.

The fourth edition has been published of "Spon's Architects, Builders, and Contractors' Pocket Book," edited by Mr. W. Young. It is full to the edge of valuable information.——Messrs. Cassell, Petter, & Galpin are reproducing for circulation in this country Knight's valuable "Dictionary of Mechanics," which, as issued from the American press, met with a highly favourable reception in the United States. The work is being issued here without alteration, and in the form in which it was published in America.——The *Leisure Hour* gives us a paragraph on "Brain and Iron":—"Of an earl[ier] period than Nasmyth, who also worked in t[he] shop of Maudslay & Field, was Joseph Clemen[t] Of him it has been said that he constructed s[uch] machinery that 'he made iron think.' If [the] readers have been into a great smith's shop, th[ey] have seen, most probably, a beautiful tool, cutt[ing] a long narrow ribbon of iron with its keen toc[h] This is work which is usually superintended o[r] by a lad; it superseded the old rugged meth[od] of chipping and filing. This was the invent[ion] of Joseph Clements—a marvellous stride of s[im]plicity, accuracy, and beauty in almost all [the] partments of iron work. The mathemat[ical] accuracy of Clements was so great that Profes[sor] Babbage sought him out to construct his fam[ous] Calculating Machine, an apparatus intended [to] calculate with unerring accuracy, acting so p[er]fectly, that when, through any cause, an e[rror] has been made, the machine actually revea[ls] itself, and, to use Dr. Smiles's expression, 'r[efu]ses itself out.' The machine was never finis[hed] in England; it was reserved for Sweden to [in]duce it. Messrs. Scheutz, of Stockholm, c[om]pleted this extraordinary combination of w[ork] has been called 'thinking iron,' from the draw[ings] of Babbage and Clements, and it was [first] displayed at the Paris Exhibition of 1855."—[T]he last number of "Old and New Lond[on]" speaks of Notting-hill:—"Notting-hill is [said] to derive its name from a manor in Kensin[gton] called 'Knotting-Bernes,' or 'Nutting-Bar[nes]' sometimes written 'Notting,' or 'Nutt[ing]-barnes,'—so, at least, writes Lysons, in [his] 'Environs of London.' He adds, that the [pro]perty belonged formerly to the De Veres, [Earls] of Oxford (which would naturally be the cas[e] it formed part of Kensington parish and man[or] and subsequently to Lord Burleigh, who, [as] have already seen, lived at Brompton Hall, very far from the neighbourhood of Kensin[gton] In Robins's 'History of Paddington,' we [find] that the 'manor of Noting barons, *alias* [Ken]sington, then Nutting Barns,' afterwards [called] 'Knotting-barns,' in Stockdale's new map [of] country round London, 1790; 'Knolton [or] now 'Notting-barns,' was carved out [of] original manor of 'Chenesitun.' From a [re]quisition taken at Westminster, in the rei[gn] Henry VIII., it appears that 'the manor [of] Notingbarons, *alias* Kensington, in the par[ish] Paddington, was held of the Abbot of [St.] minster as of his manor of Paddington by [the] and twenty-two shillings rent'; but sinc[e] time of the Reformation 'Notting-barns' [is] to have been considered a part of Kensi[ngton] Notting Barns Manor was held successive[ly] the De Veres, and by Robert Fenroper, alde[rman] of London, who exchanged with King Henry [VI.] It was afterwards granted to Paulet, E[arl] Wiltshire, from whom it passed to Lord Bur[leigh] The manor was next held by the Copes, [Esq.] sons, and Darbys, and in 1820 it was own[ed] Sir William Talbot. Down to a very [late] period, much of the district through whi[ch] are about to pass bore rather a bad cha[racter] for thieves and housebreakers, and was [famous] what noted for its piggeries and potteries, [but] these have all been swept away by the advi[ce] tide of bricks and mortar. The 'potteries' [are] still kept in remembrance by Pottery-l[ane] which is the Roman Catholic Church [of] Francis of Assisi, referred to in a p[revious] chapter. The ground about Notting-h[ill] high, and the soil is a stiff clay, while [that] Kensington proper is chiefly sand and [gravel] but in reality Notting-hill forms part and [parcel] of Kensington itself, which stretches awa[y] distance northward in the direction of [Hamp]green."——"The Classified Directory [to] Metropolitan Charities, 1877," is publish[ed] Messrs. Longmans & Co. The advantage [claimed] for the arrangement is that the benevol[ent] thereby easily select the most suitable [institu]tion for any person whom they may [wish] benefit. The editor in his preface g[ives] income of the charities for 1875, as [amount]ing to 4,114,849*l.*, and that the total [sum] charity in the metropolis may be put [down] between six and seven millions.——"The [Archi]tect's Almanac" for 1877, a neat quar[to] published by Messrs. Wyman & Sons, pre[sents] the reverse a number of tables useful [for] sional reference in an office.——With [the] good summary of all the news of the w[eek] comments thereon, for *a penny*, as the *[Daily] Dispatch* gives, no one need remain ig[no]what is going on the world around hi[m] very well conducted.

Miscellanea.

Decay of the City Guilds.—On Monght, at the meeting of the Social Science ation, Mr. Adolphe Smith read a paper he Decay of the City Guilds." Mr. d H. Courtney, M.P., presided, and there full attendance. The reader said the nine companies enjoyed between them at ,000,000*l.* per annum, and of this sum only tenth part was under the control of the Commissioners. What was done with maining 900,000*l.* income? This wealth, l in a great measure from the unearned ent accruing from landed property, was ncreasing. On the expiration of a lease, rdwainers' Company, for instance, had ently increased one of their yearly rentals 50*l.* to 500*l.* With one or two exceptions, alth was held by secret self-elected bodies d nothing whatever to do with the special to which the legatees had left their pro- If a Royal Commission were appointed ower to enforce the attendance of wit- it would be discovered, among many imilar and even worse instances, that a Company contrived to give fifty dinners he selection of a set of furniture. The an having invited discussion, Mr. Walaid that Mr. Smith had not correctly ed the objects and the action of these They had trained skilled artisans, progood feeling among the brethren of the fostered commerce, promoted art, and eir political power for the public benefit. done all this, it did appear to him somengracious to find fault with the guilds, fter their labours they were, so to speak, on their oars. Mr. Toker, of the Iron's' Company, said that a great part of the of that Company was spent upon educahey had between 1,200 and 1,300 schools nd and Wales. The Chairman said he ourable to such an inquiry as had been d. It would dispel many illusions, and he question to be dealt with either by islature or the Courts, in a just and e manner, while at the same time preancient bodies, who had done good suit ice.

of Scaffolding.—On Tuesday morning s accident occurred on the premises of y Commissioners of Sewers, in Comroad, Lambeth. For some time past Wharf has been the scene of extensive operations, the Commissioners erecting series of buildings for the sorting and of dust and refuse. The main building pleted, and the shaft of the furnace was of erection, with the scaffolding around re it. At the time mentioned a great of dust-sorters, men and women, were at a yard adjoining the new works, when the rain came down with such violence y flocked under the scaffolding for nd at that very moment the whole of the timber surrounding it was blown over h of wind, and came crashing down upon unfortunate people, three of them being pearance killed; but it was subsequently ed that only one had been killed outhough two more of them are so much the spine that their recovery is im-

The City Surveyor for the southern nd the surveyor for the parish of Lamnd that the scaffold had become strained gale on Monday night, and that the ry hurricane which swept over the is at 10.15 had snapped one of the and hurled the whole to the ground.

ed, Lectures on Art Collections.—*Yorkshire Advertiser* notices a new loan em, by the authorities of South Kenuseum, of pictures and miscellaneous oming under the designation of indus- and says,—"We are satisfied that ntioned as is this system of loans, its al value will continue to be trivial until ents are made for addresses, by comrsons, on the objects exhibited. This t many of the museums on the Conti- the practice is not wholly, though nknown in this country. Those who the good fortune to hear Professor lk, *con amore*, not officially, to a party on the splendid collection of minerals rmyn-street Museum, have heard a ress of this kind. Why should not the of the Wedgwood Institute set an the trustees of the British Museum?"

The Society of Telegraph Engineers.—On Wednesday, the 24th ult., an ordinary general meeting of this society was held at the Institution of Civil Engineers, Great George-street, Westminster. Professor Abel, F.R.S., the new president, delivered his inaugural address, in which he pointed out the great advantages telegraphy had derived, and was still deriving, from the science of chemistry, by a reference to the late Professor Mathiessen's investigations into the purity of copper. The presence, even to the smallest extent, of any impurity in that metal had been proved to have a most material effect against its perfect employment in telegraphy. That statement, however, must be qualified in some measure, for although even 5 per cent. of lead in the copper diminished its conducting power from 93 per cent. down to as low as 5 per cent., it has been found that by melting copper with a small proportion of lead or tin, its conductive power was greatly increased, for the lead or tin took away the oxygen of which it was very difficult to clear the copper, and analysis of the copper so treated showed scarcely a trace of those metals after the oxygen had been got rid of. After a few passing remarks on the subject of iron and steel wire as connected with telegraphy, the Professor referred to the action of decay observable in the timber and other plant used in telegraphy.

The American Slate Trade.—The *Mining Journal* learns from New York that the slate business in the Lehigh Valley never had a better outlook than at the present time. The export of slate to foreign countries is increasing. From the port of New York large shipments were made between December 5 and 16. During the time mentioned there were shipped to England, Ireland, and Scotland 2,143 cases of school slate and 515 tons of roofing slates. Taking that as an average shipment for the year, we have 47,717 cases of school slates, and 10,746 tons of roofing slate, equal to about 32,238 squares, and this vast amount is sent to the British Isles alone, from whose extensive quarries all kinds of slate were some years ago shipped to almost every nation in Europe. Should this foreign demand continue to increase in the same proportion it has for the last three years it will absorb every square of slate and every case of school slate that can be produced in the United States with the present facilities. This foreign demand will, therefore, necessitate a largely increased production for the supply of the home trade.

What a Plant did.—A little plant was given to a sick girl. In trying to take care of it the family made changes in their way of living. First, they cleaned the window, that more light might come to its leaves; then, when not too cold, they would open the window that fresh air might help the plant to grow. Next, the clean window made the rest of the room look so untidy that they used to wash the floor and walls and arrange the furniture more neatly. This led the father of the family to mend a broken chair or two, which kept him at home several evenings. After the work was done he stayed at home, instead of spending his leisure at a tavern, and the money thus saved went to buy comforts for them all. And then, as the home grew attractive, the whole family loved it better than ever before, and grew healthier and happier with their flowers. Thus the little plant brought a real as well as a physical blessing. We get this from the New York *Sanitarian*; but it originated in England some time ago.

A Buried City.—A communication from Geneva states that at Clèves, in the Grisons, a company of shareholders is at present being formed for excavating on the site where formerly stood Plurs, a flourishing town and the centre of an important transit trade, which was covered on the 18th of August, 1618, by a fall of rock. The catastrophe cost the lives of 930 persons, and 203 houses were destroyed. There were several rich churches in the place, and at the time of the terrible event one of them was filled with a congregation at their evening devotions. There were also some silversmiths' shops and others for copper utensils.

The St. Gothard Tunnel.—M. Favre, who is conducting the works in the St. Gothard Tunnel, under contract, has intimated to the St. Gothard Railway Company that unless guarantees are forthcoming for funds sufficient for the prosecution of the enterprise, he must suspend the works. It is expected that the International Conference, which will meet shortly, will provide the required guarantees.

St. Werburgh's Tower, Bristol.—Sir Gilbert Scott has given 10*l.* to the fund for the preservation of the tower of St. Werburgh's Church, Bristol. Sir Gilbert writes:—"The tower is most beautiful in architectural design, and highly picturesque in its combination and grouping with other objects; and its destruction would stamp indelible disgrace upon the authorities of the good and famous city of Bristol, handing down their names to all future generations as unworthy holders of authority, which they abuse to the injury of the city they represent."

A New Fort.—It is stated that plans have been prepared for a new fort to be constructed near Walton Ferry. Harwich harbour is already defended at its entrance by Landguard Fort on the one hand and the redoubt at Harwich on the other hand; while on the shore at Shotley, where the estuary divides into the river Orwell and Stour, and at Walton, on the left bank of the Orwell, there are Martello towers. By the erection of the fort now projected, a complete quintette of fortifications, covering the estuary from every point, will be secured.

Stall-Board Plates.—The brass stall-board plates of Messrs. Dyson & Co., of Pitfield-street, Hoxton, are well known and appreciated. The firm, however, have recently effected a considerable improvement. The background of the letters has heretofore been worked with a diamond pattern; it is now ornamented with small upright flutes which allow the wet to run off at once. The dust, too, in summer is consequently more easily removed. The lettering of some specimens we have recently examined is bold and well formed.

New Stock Exchange for Liverpool.—The committee of the Liverpool Stock Exchange recently invited a number of architects to submit designs for the erection of a new Stock Exchange, which it is proposed to build on the property adjoining Queen-buildings, Dale-street, recently purchased on behalf of the members of the Exchange. Several architects submitted designs, and we (the *Daily Post*) are informed that the first premium of 100*l.* has been awarded to Mr. Henry Sumners, architect. The second premium of 50*l.* was awarded to Messrs. H. & A. P. Fry.

The Late Mr. William Young.—We are informed that a number of gentlemen are actively engaged in the endeavour to raise a fund for providing assistance to the children of the late Mr. Young. A preliminary meeting is to be held at the office of Mr. T. Roger Smith, 23, Bedford-street, Strand, on Monday next, at three p.m.; and all those who take an interest in the matter are invited to be present.

The Surrey Gardens.—The *South London Press* states that the freehold of the Surrey Gardens is sold to an eminent firm of South London builders, and ere long the famous place of recreation, where Jullien, and wild beasts, and fireworks once held undisputed possession, will be covered with bricks and mortar.

Steam for Tramways.—A steam engine was used for the first time on the 24th ult. in drawing tram-cars through the crowded streets of Sheffield. The tramways there are about to dispense with the whole of their horses, and to adopt steam as the motive power. The steam-engine is said to make no noise, and to consume its own smoke.

Mycenæ.—According to the *Times* correspondent, Dr. Schliemann has discovered the mouth of a double circular necropolis at Mycenæ, and has found in a tomb four golden vases 18 centimètres high, richly ornamented; also, two golden signet rings, one representing a palm-tree and seven figures of women.

Bramhall Hall.—It is reported that this ancient mansion, with the land belonging to it, has been sold to a building company for the sum of 200,000*l.* It is to be hoped that the mansion will be preserved.

Society of Engineers.—The first ordinary meeting of the Society for the year 1877 will be held on the 5th of February next, when the president, Mr. Thomas Cargill, will deliver his inaugural address.

Carisbrooke Castle.—The *Whitehall Review* directs the attention of the First Commissioner of Works to Carisbrooke Castle, and says that a portion of the fabric is becoming sadly dilapidated.

TENDERS

For the erection of the new wing of the General Hospital, Nottingham. Messrs. T. C. Hine & Sons, architects:—

Hodson & Facon	£8,320 0 0
Tutin	8,033 0 0
Daubney	8,025 0 0
Fish & Son	8,000 0 0
Stevenson	7,798 0 0
Messom	7,725 0 0
Lynam	7,690 0 0
Wood & Son	7,671 14 0
Jelly	7,423 0 0
Marriott & Watnerby	7,420 0 0
Bell & Son	7,316 0 0
Vickers (accepted)	7,3'0 0 0
Hind (withdrawn)	6,555 0 0

For re-seating new vestry and new gallery to Holy Trinity Church, Forest-row, Sussex. Mr. Herbert J. Green, architect. Quantities by Mr. Samuel Tucker:—

Waters	£1,151 10 8
Charlwood	973 0 0
Morris	965 0 0

For rebuilding No. 20, West-street, Brighton, for Mr. G. J. Lem. Mr. Laison, architect. Quantities by Messrs. Fowler & Hugman:—

	No. 1.	No. 2.
Chappell	£4,265 0 0	£3,977 0 0
Cheesman & Co.	4,180 0 0	3,800 0 0
Barnes	—	3,630 0 0
Howard	—	3,590 0 0
Nash & Co.	3,888 0 0	3,589 0 0

For a villa residence at Hove, West Brighton. Mr. Laisson, architect. Quantities by Messrs. Fowler & Hugman:—

Nash & Co.	£5,593 0 0
Barnes	5,534 0 0
Howard	5,290 0 0

For rebuilding No. 65, High Holborn. Mr. C. Herbert Shoppee, architect:—

Drew (accepted)	£2,280 14 0

For villa residences, Clyde-road, Addiscombe, for Captain Turner. Mr. George Loe, architect:—

Marriage (accepted)	£1,620 0 0

For the erection of a block of warehouses, Carter-lane and Bell-yard. Mr. George Vickery, architect:—

Dove Brothers	£15,575 0 0
Scrivener & White	15,197 0 0
Browne & Robinson	15,063 0 0
Morter	14,9?6 0 0
Brass	14,859 0 0
Hart	14,760 0 0
Crabb	14,462 0 0
Newman & Mann (withdrawn)	13,661 0 0
Sharman (withdrawn)	13,000 0 0

For alterations and additions to premises, Knightrider-street. Mr. George Vickery, architect:—

Crabb (accepted)	£2,700 0 0

In the list of tenders for works for the London General Omnibus Company at Bromley, for "Mason," read *Mason & Bristy*; whose tender has been accepted.

TO CORRESPONDENTS.

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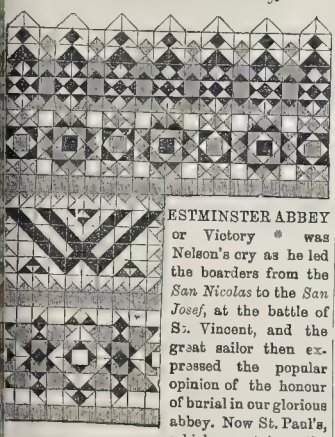
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Buried in Westminster Abbey.



WESTMINSTER ABBEY or Victory * was Nelson's cry as he led the boarders from the *San Nicolas* to the *San Josef*, at the battle of St. Vincent, and the great sailor then expressed the popular opinion of the honour of burial in our glorious abbey. Now St. Paul's, which contains the ashes of Nelson and Wellington, has come to be looked upon as the chief resting-place of military and naval commanders, and St. Peter's at Westminster as that of all other celebrities.

The registers of Westminster Abbey have been badly kept in former years, and those that exist refer only to a comparatively recent period. It is believed that the registers of the sixteenth and previous centuries are hopelessly lost, but those that still remain are of the greatest interest, and Colonel Chester has conferred a great boon upon the public by the labour he has bestowed upon the work of editing and annotating these registers, the results of which have been printed by the Harleian Society.† A work of national importance has thus been performed by the devotion of an American gentleman, and the public spirit of a private society of some three or four hundred members.

In the full notes which are added in elucidation of the original entries, Colonel Chester has been able to set right many blunders committed by the makers of the entries. In 1841 and 1843 certain extracts from these registers were published by Messrs. Nichols & Son, but Colonel Chester found upon examining these with the original that they were untrustworthy and practically worthless. The volume now under notice therefore contains the first complete and accurate copy of these important documents that has ever been presented to the public. The register of marriages begins in the year 1655, that of baptisms in 1603, and that of burials in 1607. One of the first points that strike us in turning over the pages is the large number of uninteresting names that occur in all three of the registers: thus forgotten names of officials of the abbey, of persons living in the immediate neighbourhood, &c., appear on the same pages with those of world-wide fame. The marriages are of little interest; there is, however, that one between Sir John Denham and Margaret Brooks on May 25, 1665, which only brought unhappiness and distrust, and was dissolved in January, 1666-7, by the death, under rather mysterious circumstances, of the wife. The marriage of Sir Samuel Morland to his second wife, Carola Harsnett, on October 26, 1670; and to his third wife, Anne Fielding, on November 16, 1675-6, are here registered; as is also the marriage of the great physician, Dr. Thomas Willis, to Elizabeth Calley (wrongly named Collier in the Register), on September 1, 1672. The Marriage Act of 1753 put an end to indiscriminate marriages in the Abbey, and three only are recorded during the next century. From June, 1859, to January, 1875, thirty-four marriages were solemnized; but two only of these call for mention here,—viz., those of Dean Stanley and the Earl of Carnarvon. The baptisms may be passed by as of little interest, and we then come to the burials, the register of which chiefly fills the book.

As we have already noted, the list begins in January 1606-7, so that all the early burials are unmentioned; and besides this, the register of those since that date is not altogether complete. Colonel Chester observes,—"It has always been customary to attribute the mutilation of parish registers, as well as the spoliation of monuments and sepulchral brasses, to the rough soldiers or the stern officials of the Commonwealth. Even if this were true generally, there is good reason to believe that part, at least, of the damage done to the Abbey Registers was the work of some over-zealous loyalist who had the custody of them, or access to them immediately after the Restoration. Else, why do we fail to find in them, for instance, the name of a single member of the Protector's family? Yet Cromwell himself was buried in the Abbey, as were his mother, his sister, his daughter, his son-in-law, and his grandchild. Why do we also fail to find the names of Bradshaw and Pym, and Strode and Bond, and May, all of which appear in the royal warrant for disinterment in 1661, and of whose places of burial there must have been some record, as their coffins were readily found?" In these cases the disinterment is registered, but not the original burial. In the case of the Duke of Marlborough, it is the reverse of this. On August, 1722, the great General was buried in the vault at the east end of Henry VII.'s Chapel, but between August and October, 1744, his remains were disinterred and removed to Blenheim, where they now are. No record of this disinterment is to be found in any of the Abbey registers. Having pointed out the deficiencies of these books, Colonel Chester adds that there is a reverse to the picture. "It is equally true that many persons have the historical reputation of interment in the Abbey, for whom its gates were never opened." Even the monumental inscriptions are not always to be trusted, —"in many instances they contain nothing to indicate that the persons to whose memory they are inscribed are not actually there interred, and it would be difficult to determine whether the stereotyped '*Hic jacet*,' and '*In Memory of*,' were not regarded as synonymous." Besides disinterments, where the dead have been turned out of their graves, there have been re-interments of bodies removed from other places for more honourable burial here: thus, on Saturday, March 26th, 1859, the remains of John Hunter, the great anatomist, were removed from the Church of St. Martin-in-the-Fields, by the Royal College of Surgeons, and were re-interred on the Monday afternoon following, in the north aisle of the Abbey; and, on January 16th, 1852, the supposed remains of William Lyndwoode, Keeper of the Privy Seal to Henry VI., and Bishop of St. David's from 1442 to the time of his death (October 22, 1446), were removed from the crypt of St. Stephen's Chapel, Westminster, and were buried in the north cloister of the Abbey, on March 6th following.

There is no record of the burial of the unfortunate Major André in the registers, but in the funeral-book is the following entry:—"Major André's remains, brought from America by order of H.R.H. the Duke of York in a sarcophagus, were this 28th day of November, 1821, removed from Islip's Chapel, and deposited nearly in front of his monument." He was executed as a spy by Washington at Tappan, in the State of New York, 2nd October, 1780, and his remains were subsequently removed to this country in order that they might have honourable interment in the Abbey. Colonel Chester, finding that the public interest in the unhappy fate of this brave young officer is still as intense and earnest as ever it was, has gathered some information concerning his ancestry not hitherto known. Colonel Chester does not, however, make mention of a very curious and interesting story which has long been current regarding André. It is stated that at the time of his death a young lady in England, to whom he was engaged, was sitting at the piano when she suddenly screamed out and fell back in her chair in a swoon. On her recovery she explained that André had appeared to her hanging from a gibbet. Her friends attempted to comfort her by explaining that her vision must be valueless, because, as her lover was an English officer, he could not be hanged, and if his life was taken at all, it would be by the musket-ball. The story goes on to tell that when the news actually arrived it was found that execution had taken place at the very time the young lady swooned Unfortunately, when this pretty story is brought to the test of fact, it is found to fail utterly. André was attached, but not engaged, to the beautiful and accomplished Honora Sneyd, who

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* So it is given by Southey in his "Life of Nelson," but more generally received version, "A peerage or Westminster Abbey!" is more logical, because the word "Westminster Abbey or victory" are not antithetical, Nelson could not expect burial in the Abbey if he had defeated. He did indeed obtain victory with life, but the peerage was given to his commanding officer, Jervis, whose orders he disobeyed.

† The Marriage, Baptismal, and Burial Registers of the Collegiate Church or Abbey of St. Peter, Westminster. Edited and annotated by Joseph Lemuel Chester. (Publications of the Harleian Society, vol. x.). London, 1876.

afterwards became the wife of Richard Lovell Edgeworth (the father of Maria Edgeworth), and died of consumption on the 30th of April, 1780, five months and two days before the execution of André. The representatives of André's family utterly deny the truth of the story, and consider the whole as a fabrication. Still, it is difficult to believe that there was no foundation or nucleus, however small, upon which the complete story has been raised.

The list of royal personages who have been buried in Westminster Abbey is a long one, but the names of Edward the Confessor, Henry II., Edward I. and his queen Eleanor, Edward III. and his queen Philippa, Richard II., Henry V. and his wife Katherine of France, Lady Anne, wife of Richard III., Henry VII., Edward VI., Anne of Cleves, Mary I., and Elizabeth do not occur in these registers. Henry V.'s widow, the "Kate" of Shakspeare, died in Bermondsey Monastery on the 3rd of January, 1437, and her body was brought to St. Katherine's by the Tower on the 8th of February following; from thence it was moved to St. Paul's, and afterwards was buried at Westminster in our Lady's Chapel. In the reign of Henry VII. it was taken up again, and remained neglected above-ground in a coffin of boards behind the east end of the choir for more than two centuries. At length the remains were deposited in St. Nicholas's Chapel, under the monument of Sir George Villiers when the vault was made for the interment of Elizabeth, Duchess of Northumberland, in 1776. The third entry on the roll of burials is that of the Princess Mary, third daughter and sixth child of James I. and Anne of Denmark, who died in the year 1607, aged two years, five months, and eight days. Here Colonel Chester has been able to set right a blunder made in the register, and perpetuated on the child's monument in the Abbey. The day of death, according to the chroniclers, was September 16th, and that of burial the 23rd of the same month, which is in accordance with the records of the birth, but the register and monuments give the date as December 16th, a manifest error because the Court presented a scene of unusual gaiety during the Christmas holidays of 1607. Colonel Chester remarks, "Whatever may have been the vices of that Court, and the morality of the period, it is simply impossible—if for no other reasons than those of Court etiquette, but it is hoped for far better ones—that these things could have taken place, if the royal child had been dead and buried only nine days, or as would have been more probable, was then lying a corpse in the palace. There can be little doubt that the transcriber of the old register misread December for September, and that the present inscription on the monument was cut after the new register was in use, and the date taken therefrom." A few entries on and we find the name of Henry, Prince of Wales, who died on November 6th at St. James's Palace, and was buried on December 8th under the monument of his grandmother, Mary, Queen of Scots, whose remains had been brought from Scotland in the previous month. In March, 1625, James I. followed his children, and was buried on May 5th in Henry VII.'s vault. James's daughter, the unfortunate and much-loved Queen of Bohemia, lived on till 1662, when she was buried in a vault by the side of her brother, Prince Henry. Lady Anne, Clarendon's daughter, and James, Duke of York's first wife, was buried in the royal vault April 5, 1671. The gallant and impetuous Prince Rupert found rest in the Abbey in 1682. His cousin, Charles II. followed him in February, 1685, and was buried in Henry VII.'s chapel. James II. found his resting-place abroad, and the next crowned head buried here was Mary II., in the vault of her uncle Charles II. Then followed William Duke of Gloucester, son of the Princess Anne, in 1700, and his father, Prince George of Denmark, in 1708. Queen Anne was buried beside her sister and husband in Charles II.'s vault in 1714; and after her the chief royal personages who found a resting-place in the Abbey were Caroline, queen of George II., her son, Frederick, Prince of Wales, who died at Leicester House on April 13, 1751; then the king himself in 1760, and five years afterwards his favourite son, the Duke of Cumberland, called by the Scots "the Butcher of Culloden." The mother of George III., Augusta, Princess of Wales, was buried in the royal vault in 1772; and the last royal burial in the Abbey was a foreigner, Marie, consort of Louis XVIII. of France in 1810. Her remains were taken up in the following year and "delivered to Mr. Martin, undertaker, for the purpose of being removed to Sardinia." Windsor, which was long the rival claimant for the honour of being the final resting-place of our kings and queens, has, during the last century quite supplanted Westminster Abbey in royal favour.

We will now notice the names of some of the chiefs of the nobility, the statesmen, the soldiers, and the sailors who have found an honoured grave in the Abbey. The first entry in the Register of Burials relates to Lady Hunsdon, the widow of Sir Henry Carey, K.G., first Lord Hunsdon, and informs us that both these distinguished courtiers of Queen Elizabeth were "buried in St. John Baptist's Chapel." The first Duke of Buckingham, who fell a victim to Felton's knife at Portsmouth, was buried "in a little chapel on the north side of King Henry VII.'s monument." The third Earl of Essex, son of Elizabeth's Essex, and himself the famous commander-in-chief of the Parliamentary army, was laid near the Hunsdons in 1646. After the Restoration, Monk, Duke of Albemarle, in 1670, and Hyde, Earl of Clarendon, who died an exile at Rouen in 1674, were both buried here. Colonel Chester informs us that no less than twenty members of Clarendon's family were buried in the Abbey.

The great Admiral Sir Cloudesley Shovell, who was shipwrecked on the Scilly rocks, Oct. 22, 1707, was laid in the south aisle. Doubts still exist as to the parentage and birth of this naval hero. It is asserted that he was born of a poor family and was originally an ostler, but another authority affirms that he came of an ancient family not "inconsiderable for estate." The great Duke of Marlborough was buried here in 1722; Harley, 2nd Earl of Oxford, founder of the Harleian Library of Books and Manuscripts in 1741; Admiral Sir Charles Wager, son of a naval officer of high standing, and one of the glories of the English navy, in 1743; and Field-Marshal Wade, a gallant soldier, a brilliant commander, and the successful constructor of military roads in the Highlands of Scotland, in 1748. We now come to the burial of the famous statesman, Pitt, Earl of Chatham, on June 9, 1778, which was performed at the expense of Parliament; and that of the Earl of Mansfield, which took place here at his own particular desire. Pope's "silver-tongued Murray" was one of the most brilliant ornaments of Westminster School, and his affection for that institution was very strong. This feeling is expressed in the first passage of his will. "I desire to be buried privately, and from the love I bear to the place of my early education I wish it to be in Westminster Abbey." In the same year (1806) and within the space of a few months the doors of the Abbey were opened to admit the remains of the two great rival statesmen, Pitt and Fox, who were joined by Sheridan ten years afterwards, by Grattan in 1820, by Castlereagh (then Marquis of Londonderry) in 1822, by Canning in 1827, and by Wilberforce in 1833. This list of great men takes only a small space in print, but what a history there is behind it of struggles of the past, and of deeds the remembrance of which Englishmen will not willingly let die. We now come to recent times, when nearly every entry in the register refers to a distinguished man. Lord Macaulay was buried here in 1860, the Earl of Dundonald in the same year, Earl Canning in 1862, Sir James Outram and Lord Clyde in 1863, Lord Palmerston in 1865, Sir George Pollock in 1872, and Lord Lytton in 1873.

The next series of distinguished men to be noted are the Ecclesiastics, commencing with Dr. Isaac Casaubon, the eminent scholar and prebendary of Canterbury, who was buried in July, 1614, at the entrance of St. Benedict's Chapel. Stephen Marshall, the great preacher during the Commonwealth, was buried in the Abbey in November, 1655; but his remains were removed with those of many others, after the Restoration, to a common pit in the churchyard. Colonel Chester has relieved the memory of this distinguished man from a great scandal. Pepys started the story that two of Marshall's daughters, Anne and Rebecca, were actresses and mistresses of Charles II. as late as 1672. Now, at the date of his will, his wife was dead, and five of his daughters were already married (three of them, at least, to clergymen), and had several children. His remaining daughter, Susan, was unmarried, but more than twenty-one years of age, as she proved her father's will. The remains of Archbishop Usher were placed in St. Paul's Chapel on April 17, 1656, by order of Cromwell,—an action that stands out in bright contrast to the treatment of Marshall by the Royalists. The renowned Isaac Barrow, who died Master of Trinity College, Cambridge, was buried in the Abbey on May 7, 1677. Bishop Sprat, who was dean of the church, was buried (1713) on the south side of St. Nicholas's Chapel, and the witty Dr. South, a prebendary (1716), at the foot of the steps going up to the altar. The last entry on the Register refers to one of the most distinguished churchmen of modern times,—Connop Thirlwall, late bishop of St. David's, who is described upon his monument as "Scholar, Historian, Theologian." He was buried on August 3, 1875. Two of the best-known head masters of Westminster School—the learned Camden, in 1623, and the terrible Dr. Busby, in 1695—were buried in the Abbey, which has naturally been the resting-place of several of the celebrated men who have filled the office of dean. It was well that Sir Henry Spelman (1641) should rest near his fellow antiquary, Camden.

In looking over these registers it is impossible not to be struck by the incongruity of some of the names: thus if Newton, Willis the physician, Woodward the early geologist, Herschel, Livingstone, and Lyell are here, so are Mr. Joseph Dalby, the inventor of that "sweet boon to children" known as "Dalby's Carminative" (1784), and Dr. William Buchan, author of the "Domestic Medicine" (1805). If Francis Beaumont, Cowley, Davenant, Dryden, Addison, Congreve, and Johnson are here, so are Mrs. Aphra Behn, whose gravestone is a disgrace to the Abbey, and Tom Brown, whose writings deserve to be placed by the side of Mrs. Behn's, and no greater condemnation could be meted out to them. The registers necessarily do not contain the names of Chaucer and Spenser; nor do they of Drayton and Ben Jonson, although the two latter were buried in the Abbey after the present registers were commenced. Besides the authors already mentioned as buried in the Abbey, we may add the names of Sir John Denham (1669), Nicholas Rowe (1718), Prior, poet and statesman (1721), Gay (1732); and in later days Gifford, Campbell, Cary, the translator of Dante, Dickens, and Grote. The great musical composers are well represented in the Abbey. Purcell, who was organist for a time, was buried on the 26th of November, 1695, and Dr. Blow on the 8th of October, 1708. Blow was appointed organist in 1669, but resigned the position in 1680 in favour of Purcell, and resumed it on the latter's death in 1695. Handel was buried in the south cross on April 20th, 1759, and by his will he directed that a monument should be erected to his memory in the Abbey at a cost not exceeding 600l. Dr. Arnold was another organist of the Abbey, and he was buried in the north aisle on October 29th, 1802. Shield followed in 1829, and Sir Sterndale Bennett in 1875.

The doors of the Abbey have opened with great facility to receive the remains of our great actors and actresses, and the profession is well represented. Betterton was buried in the east cloister, on May 2, 1710; and Mrs. Oldfield in the south aisle, on October 27th, 1730. Colonel Chester remarks on the latter entry,—"Although for reasons that were doubtless potential, her remains were allowed honourable burial within the walls of the Abbey, the records of the Chapter show that the reigning Dean and his successors, Bishops Bradford and Wilcocks, resolutely drew the line there, and peremptorily refused permission to her paramour, General Churchill, to erect a monument to her memory." Mrs. Bracegirdle, the pupil of Betterton, was buried in the east cloister (1748); Mrs. Cibber, Dr. Arne's sister, in the north cloister (1766); and Spranger Barry, Garrick's rival, in the same place (1777). Barry's widow married another husband, one Crawford, "who spent her money and broke her heart," and as Mrs. Crawford she was buried in the north cloister (1801). Garrick was buried in the south cross, on February 1st, 1779; and Mrs. Garrick, who "lived thirty years a faithful wife, and forty-three years a faithful widow," followed him in 1822.

Watchmakers may be proud that two of their great men have found their way into the Abbey. Thomas Tompion, called "The Father of English Watchmakers," was buried in the middle aisle in 1713, and George Graham, who married his niece, was laid in the same grave. Artists of all kinds are but ill represented in the Abbey, and architects are perhaps the most fortunate in this respect. We have already mentioned Denham as a poet, and although he was not actually an architect, he held the office of Surveyor-General of his Majesty's Buildings

d he left by will "all his fees, being twenty illings per day" as surveyor for the rebuilding St. Paul's Cathedral "towards that noble and ous work," and also 100*l.* "as a further membrance of affection to the same." Sir illiam Chambers was buried in the South oss in 1795, and Sir Charles Barry in the nave 1860. The engineers are well represented Telford, who was buried in the nave (1834), d by Robert Stephenson, who was laid side Telford in 1859. There are many re names of interest in these Registers, hich we have not room to notice, and olonel Chester proposes at some future ne to add to these, for he writes,—"It may be well to add that the editor has a large collec-n, from which he eventually may decide to int a list of such persons as were probably ried in the Abbey, but whose names do not pear in the registers, with the evidences." conclusion, we need only observe that the re Colonel Chester's book is used, the more e extreme accuracy of the mass of illustrative tter that he has collected is apparent.

HANDBOOK OF THE ENVIRONS OF LONDON.

For the selection of the environs of London the subject of a special "Murray's Guide-ok," in addition to those devoted to counties d to London itself, there can be no apology cessary. London itself contains matter enough d to spare for a separate book, without count-g the environs; but the district immediately ound London is so full of places having special torical interest, and this interest is so inti-tely connected with the proximity of the dis-ct to the capital, that merely to take the places interest according to the several counties in ich they occur, besides over-weighting the ndbooks in comparison with those of other unties, would have the additional drawback of oring the peculiar character of the district und the capital, and of the interest belong-g to it. For though in the days to which this ndbook* often takes us back, London did t live out of town to the same extent as at esent, it is around this neighbourhood that we d the scenes associated with much of the storic life of London, the favourite retreats princes and statesmen, of men of fashion and n of letters,—places whose names have been miliar for generations in the political, social, d literary annals of England. It is this ngling of the past with the present that es their peculiar interest to many of the burban districts and villages around, and w partially in connexion with, London. the midst of some village street of little arent interest, we come upon a high brick wall different work from such as is made "in these enerate days," presenting piers with some aint sculptured device flanking an old orna-ntal gateway, and find ourselves suddenly on ssic ground, and before the favourite house of ne person famous in the chronology of the dor or the Stuart period, built when this was a ired country-place, long before the railway stem and the encroachment of ordinary fourth-e houses had half-robbed the place of its old arm. In the older villages around London, there is a special character difficult to define, easily felt by those whose perceptions are ake to such local peculiarities: perhaps it is tly the contrast with the great city not far ; but certainly the sub-London villages seem uliarly to preserve an old-fashioned simplicity character, as if in protest against the ad-ncing and bustling and artificial life of the y. These and other varied interests inherent the districts around London will be found to very well illustrated in the Handbook before where the reader is presented with the most eresting facts in the history of estates and ages, mansions and churches, with their ious reminiscences of those who had in mer days dwelt in and around them, told in piquant though laconic style, which makes eresting reading in itself, apart from its use a guide to the district.

The scheme of the book comprehends "a de-iption of every town and village, and all places historical, antiquarian, and artistic interest, hin a circuit of twenty miles round London, and of the more important places lying beyond that boundary." For the metropolis "an inner circle of four miles has been taken" (four miles radius, we presume, but it is not distinctly stated) and places within that circle are not included in the present book. The accounts we are assured, are written in every instance "from personal examination and inquiry." The field thus defined includes all of Middlesex outside London, a large part of Essex, Surrey, Kent, and Hertfordshire, and some smaller portions of Berkshire and Buckinghamshire. The amount of historical interest and reminiscence connected with this area of country is extraordinary when one comes to put together, as the author does in his preface, even the names of the leading places; yet very little has been hitherto done to illustrate it. Lysons's "Environs" (published about 1791) was rather too much of the nature of a parish or county history, for reference more than entertainment; and other works since have erred either on the side of tediousness or of inaccuracy and insufficiency. The object of Mr. Thorne's book is not to be a full and exhaustive history, but a guide and memorandum as to the general facts connected with the places named and the associations which belong to them, and a description of whatever there is of interest in them at present, from the pictures and works of art in a mansion to the welding and boring of cannon at Woolwich. The arrangement is alphabetical, with no division or grouping as to neighbourhood: this is the best and simplest arrangement, if the book were only to be made one of reference in regard to places the names of which are known; but if it were to be used (as such a book often is) to discover what and where are the objects of interest in any particular part of the country, it will be less easy to use it this way. A map of the district included would lessen this difficulty, and should certainly accompany the next edition.

Looking through the accounts of some of the principal places mentioned, there can be no doubt that the chief point of interest in the Essex division of the book is Waltham, to which additional attention is, perhaps, directed just at present owing to the literary interest that has been lately aroused over the story of the early English king who rebuilt the abbey, and whose name is so closely connected with it. The early history, traditional and authentic, of the foundation, is succinctly told; the reader is also reminded of the preference which Henry VIII. showed for the place, for hunting purposes obiefly, and that it was there that he first conferred with Cranmer, then resident in the district, in regard to his celebrated divorce case. The description of the church architecturally is very complete for the space it occupies; one remarkable peculiarity, the existence in the triforium arcade of shafts recessed as if for two orders of arches, while there is only one wide square-soffited arch, is not mentioned. But we may take occasion to note that here, as elsewhere in the book, the author shows himself a very efficient architectural critic, and a far better guide on such points than the average of guide-books presents us with. He refers to the dispute which took place some years ago as to whether this is or is not Harold's church, when Mr. Freeman, in a pardonable zeal for his hero, strongly upheld the former view. "Not proven" would be our verdict so far, though there is a good deal to be said on both sides. The question as to the real date of this and other early work in England can only be settled, if at all, by a systematic collection and comparison of all the dated examples of Norman in the kingdom with the undated ones; after that a deduction may be drawn from style. In the mean time there is this in favour of Mr. Freeman's view, that England had become, before the Conquest, far more Norman than is generally recognised, and the actual advent of William was only the crowning event in a process of Normanising England which had been going on for some time. A consideration of this fact may do something to modify the existing views of most architects as to the date of Norman remains in England. In regard to the present restoration of Waltham Abbey by Mr. Burges, Mr. Thorne is evidently ill-pleased, though he does not commit himself to saying anything very positive. We will be less reticent, and say plainly that the filling in of the tower arch (now the "east end" of the church) with work that is pronounced French Gothic inside and no Gothic at all outside, has done about as much to spoil the appearance and the associations of this portion of the building as could well be done; and the designs in the windows and the gilt gingerbread sculpture underneath constitute a type of art only fit for children. What has been done in the way of preserving and restoring the existing Norman work has been very well and conscientiously carried out; but the new work, considering its surroundings, is deplorable. In speaking of Waltham Cross, Mr. Thorne feelingly laments the mistake which was made in its restoration (which had been rendered necessary to preserve it from ruin) in recutting and renewing the old work so much that it is even now difficult, and will in a few years be impossible, to distinguish old work from new, and "as an example of the art of the time of Edward I., its value is irretrievably destroyed."

Epping Forest, of course, receives due attention, and we have a summary of the recent history of the contest in regard to enclosure, and also of that now nearly obsolete institution, the "Epping Hunt," at which, in the beginning of the present century, it is recorded that as many as "200 men in pink" had been seen; but in 1873 the author says the only representative of the 200 "was the sad and serious-looking huntsman, who seemed oppressed with the weight of his responsibilities,—or the strength of the King's Oak ale." Most readers will agree with him that such a parody had better be suppressed; but it is one of the peculiarities of the district around London (and *a portion* within London) that old customs and ideas, however obsolete and useless, die very hard: there is a spirit of traditional conservatism hanging about the air of the capital which tends to keep old fashions going, and is not certainly without its interest, though often standing sadly in the way of the path of improvement. In describing some of the places about the forest, Mr. Thorne seems to have got into some mistake about Theydon Green, which is entirely a separate locality from the three Theydons (Theydon Bois, Theydon Gernon, and Theydon Mount), about two miles further west, and more in the centre of the forest district. We remember it as a place which seemed to consist of about two cottages, an elaborate modern Gothic well-shed standing on a beautiful sloping green, and a brick-pillar post-office with stumps placed at the angles to prevent the cattle injuring it; about as quiet a pretty nook as one could come upon. Among places of past interest in the country is Havering-atte-Bower, two or three miles from Romford; a place which very probably many of our readers have never heard of, but which was the seat of a royal palace or pleasure-house, founded by Edward the Confessor, the last royal resident being James I. A stone of the Royal Bower, with the arms of Edward upon it, is preserved in Bower House, an eighteenth-century house built about the time the palace was going to ruin. At Havering our attention is also called to "that venerable symbol of civilisation," the stocks and whipping-post, under a huge elm facing the church-yard, like the celebrated stocks in "My Novel."

In the Hertford part of the environs Hatfield House occupies a prominent place; its characteristics are too well known to need mention here. Mr. Thorne, who seems a very good hand at bringing in amusing anecdotes connected with the places named, quotes from Pepys his confession that one day, as he walked through the house, "would fain have stolen a pretty dog that followed me, but could not, *which troubled me*," and, indeed, the remarks and naïve confessions of that unblushing soliloquist may be quoted *apropos* of many scenes and places in and about London. To St. Alban's, which the author rightly estimates to be "the most interesting place for its historical associations and antiquarian remains within the like distance of London," a long article is devoted, and we may congratulate the author upon the interesting and full account of the Abbey Church which he has put together. We entirely echo his remark in regard to the discovery of the Roman theatre in 1847, that such a "find" at so late a period indicates how much there may be awaiting our discovery if only the search were made for it; but the English Government, which might do so much, at so little comparative cost, to aid archæology, seems even more apathetic on the subject than the English public. It seems almost inconceivable, as we have said before now, that such a discovery as this should have been made, so interesting in every sense, historical and archæological, and then that the ground should be covered in again almost immediately, merely on the plea of the value of the land, without any interposition on the part of the Government to preserve and give compensa-

* Handbook of the Environs of London, alphabetically anged, containing an account of every town and villag, of all places of interest within a circle of twenty s round London. By James Thorne, F.S.A. London: n Murray. 1876.

tion for such a landmark of the early history of the country.

Coming to the inner circle of Middlesex, we find ourselves among names which seem now to have become almost part of London, and which have a more familiar and less ancestral sound in our ears than those we have been referring to. Falham, Kilburn, Hampstead, Highgate, Hornsey, Tottenham, have now but prosaic associations for most of us, save the reminiscence of that delightful view from the top of Hampstead which, in anything like fine weather, and under an evening light especially, has always its charm. Yet Hampstead had its day of brilliancy and fashion, as a country watering-place conveniently adjacent to town, and during the season "consorts [*sic*] of vocal and instrumental musick by the best masters" were advertised in the London papers of the early part of the last century as given "at the Great Room at the Wells," at the awful hour of "11 in the forenoon"; tickets, "by reason that the room is very large," at one shilling each, in due recognition of the law of supply and demand. "Well Walk" still has its pump and its row of trees with a shady walk beneath them, though how long the spirit of improvement will allow these to remain seems doubtful. Here it was that Leigh Hunt talked with Keats one day, when the latter, sitting on the bench against the wall there, "told me" (says Hunt), "with unaccustomed tears in his eyes, that his heart was breaking." The Upper Flask tavern, on the edge of the Heath, too, is memorable for ever as the scene of part of Clarissa Harlowe's persecution; we do not gather at all clearly from Mr. Thorne's description of the changes it has gone through, whether any part of the actual house is still in existence,—whether it was pulled down or only added to and altered. It was also a summer resort of the Kit-cat Club. Finchley-common (now no more a common) has its reminiscences of Dick Turpin and Jack Sheppard, and other scoundrels, who contributed to keep up the excitement of travelling in the days of our forefathers. Memories are numerous in connexion with the old private houses in the district around Tottenham, where the village cross (Tottenham High Cross) has a history also, and among other associations the figure of Izaak Walton is connected with the place, the Swan Inn at Tottenham having been one of his constant places of call. Among reminiscences in connexion with the adjacent country-houses is the horrible story of Mr. Ardesoif, once of Grove House, who, after a cock-fight, in which his bird was defeated, thrust the unfortunate creature into the fire, and, in the state of rage to which he worked himself up, brought on an attack of *delirium tremens* of which he himself died three days after. Cowper (but this Mr. Thorne does not mention) versified the story, as a kind of "awful warning," but he characteristically represents the brutal squire as dying on the spot by a supernatural "judgment." We find no explanation of the name of "Tottenham *Court* Road," so well known as one of the main thoroughfares out of London, but which leads nowhere near Tottenham itself. It led to the manor of Tottenham Court, mentioned in Domesday. A delightful bit of description is quoted from Bernard Barton, the poet, as to his recollections of one of the old houses here, in a green lane diverging from the high road which runs through Tottenham. "It was a large house, with an iron palisade and a pair of iron gates in front, and a huge stone eagle on each pier. Leading up to the steps by which you went up to the hall-door was a wide gravel walk, bordered in summer time by huge tubs, in which were orange and lemon trees, and in the centre of the grass plot stood a tub yet larger, holding an enormous aloe. The hall itself, to my fancy then lofty and wide as a cathedral would seem now, was a famous place for battledore and shuttlecock, and behind was a garden equal to that of old Alcinous himself. My favourite walk was along a tarf by a long straight pond, bordered with lime-trees." To those who do not know the outskirts of London, this short description may convey a notion of the characteristic type of old house to be found there and hardly (in perfection) anywhere else, with its massive richly-tinted brick piers and enclosure walls, its broad level walks, and the ample dimensions of the square solidly-built house, so unpretending outside, so exceedingly comfortable inside; expressive, more perhaps than any other form of English house, of settled comfort and dignity without ostentation, but not without something of artistic effect of an unobtrusive but genuine character.

Just within Middlesex, too, in its furthest corner in an elbow of the river, is Hampton Court, with its more aristocratic memories, from the days of show and splendour under Wolsey and Henry VIII. and, later, Charles II., to its improvement under William III., and its days of awful boredom under the heavy rule of his successors, concerning which Lord Hervey tells us "no mill-house ever went in a more constant track, or a more unchanging circle," than the Court at Hampton under George II. The author rightly draws attention to the very questionable authenticity of many of the pictures in the galleries to which great names are appended, and also to the far superior interest of the tempera pictures of Mantegna, which are passed over by most of the visitors with little appreciation of their value. The tapestries in the hall are perhaps deserving of more than the reserved commendation given to them, nor do we understand what is meant by saying that the drawing is "dry." But we must just glance with our guide at one or two places in the southern counties, Kent and Surrey. Clapham is not regarded as a name of much interest now, but it is old enough, existing in the time of Alfred as Clapenham, and in Domesday Book as Clopeham, and lately, at the commencement of the present century, notable as the headquarters of the anti-slavery movement, when Wilberforce was the centre of what was called the "Clapham Sect." Thackeray, in "The Newcomes," touches in passing on the peculiarly religious atmosphere of Clapham, where also the "Bible Society" had its origin. In connexion with this it is rather startling to read in the next paragraph of "a *tract* of 250 acres"; but this is not a tract for distribution, unless into building lots. Among the more picturesque and romantic places of interest, Knole of course claims a large share of attention, and the writer's account of it may serve to inform those who cannot now see it of what there is to see when the former liberal policy is restored (as we hope the present owner may see fit to restore it before long), and the house made as accessible as it formerly was. In reference to a place not much talked about,—Stoke d'Abernon, in Surrey, Mr. Thorne returns to the charge in regard to "restoration." He says:—

"There was a church at Stoke when Domesday Survey was made, and it is customary in architectural works to speak of the present church as 'containing vestiges of Saxon architecture.' No vestige is visible now, nor has there been any for many years past. The chancel arch was semicircular, and was by some called Saxon, but it was taken down and a pointed arch substituted, when the church was *restored* in 1853. The church was restored anew, in accordance with more advanced ecclesiastical tastes, in 1866, and in the course of the two restorations so much was taken down and rebuilt, so much re-cast, remodelled, and re-chiselled, so much old work replaced by new, and so much new work made to look like old, that it would now be unsafe to trust the apparent antiquity or attempt to discuss the relative ages of any parts of the fabric."

Those who undertake such a task as Mr Thorne has undertaken must often have the spoliation and defacement of our ancient relics of architecture painfully forced upon their notice, and it is only right that they should make a protest, in hope of inculcating on the public mind the desirability of at least attempting to preserve what is left of such precious records; we cannot think the expression too strong, when we consider how utterly and entirely irreparable is the loss of these monuments of our former life when once taken away, or defaced and altered. At the same time we must say that it behoved the writer, before he made charges of destruction, to have assured himself thoroughly of their correctness, and this he has not always done.

We could be well contented to linger long over this book, which teems with suggestions and reminiscences, and enables us as we turn the pages to people the houses and districts around London with figures of the past, representatives of generations each of which had its own peculiar character, its own value in the picturesque and changeful drama of English social history. We see at Chiswick the garden where the Earl of Burlington was wont to enjoy the society of his poetic friends, and where, according to Gay:—

"Pope unloads the boughs within his reach,
The purple vine, blue plum, and blushing peach"—

(a proceeding which would have been just as congenial, certainly, to Gay himself), and with equal interest the mulberry-tree in Hogarth's garden, which the village children had an annual feast from. We come across Clive's country-house at Esher, where the country folk thought that "the great wicked lord had ordered the walls to be made so thick in order to keep out the devil, who would one day carry him away bodily." Fulham is a perfect mine of recollections too long to specify. We can dream over the precincts of Ham House, where "the lofty ornamental iron gates, flanked with piers and urns, and carrying the arms of Tollemache and Murray, which Walpole a century ago complained were never opened, have remained closed ever since, unpainted and rusting away," and which suggested Hood's vision of the Haunted House. In his account of this most interesting brick house, by the way, the writer might have pointed out how the additions to the original structure are distinguishable by the difference in bond,—one part being worked in "Old English bond," the other in "Flemish." We come across traces of Nelson at Merton-place, and read his letter ordering the improvements in the house, and the strong netting round the pond, lest "my dear little Horatia" should tumble in; and Lord Minto's extraordinary description of the household where Sir William and Lady Hamilton "and the whole set of them" were living with Nelson at his expense, with most pronounced love-making on Lady Hamilton's part, who seems to have taken the initiative in these matters. We pass over Richmond Green to find (*teste* Horace Walpole) "Lord Bath, Lord Lonsdale, and half a dozen more of White's Club, sauntering at the door of a house they have taken there, and come to every Saturday and Sunday to play whist," and look in later in the chronological scale at the dinner-party whom Wilberforce met at the Duke of Queensbury's Richmond Villa. "The party was small and very select: Pitt, Lord and Lady Chatham, the Duchess of Gordon, and George Selwyn. The dinner was sumptuous, the view from the villa quite enchanting, and the Thames in all its glory; but the Duke looked on with indifference. 'What is there,' he said, 'to make so much of in the Thames? I am quite weary of it; there it goes, flow, flow, flow, always the same.'"

Poor duke! He and his villa have both passed away long since, and the Thames goes on "flow, flow, flow," all the same. Strawberry Hill and Streatham come next to each other in the alphabetical arrangement, but are connected especially with two men as widely different as any two could be—Horace Walpole and Samuel Johnson; but while Strawberry Hill still witnesses entertainments that would have excited the envy even of Walpole,—entertainments which are said to regulate the whole Liberal party,—the place of Streatham Place knows it no more. Sydenham is almost entirely modern, with no reminiscence except as the place of abode of Thomas Campbell, when Sir Charles Bell once went down to see him, and they walked in the forest by moonlight, and then adjourned to an inn, where "Tom got glorious in pleasing gradation," and was got home again about breakfast-time, neither a sadder nor a wiser man. Alack! it was his weakness. We can remember him at a Literary Fund dinner so far elevated above himself that his audience, much as they loved him, would not listen. As to Twickenham, its memories are endless and pleasant, if sometimes not very dignified, but very fashionable, boasting, in Walpole's words, of "more coaches than there are half France . . . and very famous people,—Clive and Pritchard, actresses; Scott and Hudson painters; my Lady Suffolk, famous in her time; Mr. H——, the impudent lawyer that Tom Harvey wrote against; Whitehead the poet, and Cambridge the everything." Clive (Johnson's "good creature, who always understands what you say") was robbed, coming home in her carriage to Twickenham, losing, however, as she put it in a note to Garrick "only a little silver and my senses." And then there were the Miss Berrys; and there was *Spite Hall*, the next house to Pope's, so called because its owner, the Honourable Geo. Shiple, planned it especially to shut out the view of the Thames from his opposite neighbour. And as to the Pope domains it is needless to speak; but the reminiscence which touches a higher chord than the elegant raillery of Pope and Walpole is that of Bacon, who formerly had Twickenham Park as a river-side retreat, and in some MS. directions respecting the project for a corporation for exploring deserted mineral works, says,—"Let Twit'nam Park, which I sold in my younger days be purchased, if possible, for a residence for such deserving persons to study in, since I experimentally found the situation of that place most convenient for the trial of my philosophical conclusions"; a philosophy different at least from Pope's and Walpole's epicureanism. How p

Peter Cunningham, who commenced this or a similar work for Mr. Murray, soon after finishing his famous Handbook of London, would have revelled amongst the men and women of these parts, and what a wealth of curious reading would he have brought to bear on the illustration of them and their times.

There are occasional lapses in regard to typographical correction which may be amended in a future edition; we noted on the same page (528), "Vouissoirs" and "proportian"; and "*matrem*" should be "*matrum*" in Pope's inscription to the memory of his mother (p. 635). The biographer of Handel, referred to in the account of Stanmore (the residence of the "Harmonious Blacksmith"), is not named "Schalcher," but "Schœlcher"; and "Mr. M. D. Wyatt" (p. 676), has been "Sir Digby Wyatt" for a good many years past. In general, however, the finish of the book is very creditable. For convenience of carrying, it is divided into two volumes, but the paging of the two is continuous. The author shows sometimes a little too much of the archæologist's contempt for modern architecture, as in his remarks upon the modern Town-hall at Bromley, in Kent, which is a very good building, creditable to the taste of its architect, and with nothing vulgar or obtrusive about it. In his explorations, the author seems to have met with gratuitous assistance sometimes from brother archæologists, as when the sexton at Barking inquired whether he had been to "the battle-field by Uphall," and in further explanation added that it was the scene of "the last battle, when Oliver Cromwell druv the Romans out of England." Those who read Mr. Thorne's book need not fear any such misleading: it supplies a long-felt want, and will be welcomed.

"THE TROCADERO."

OF the many thousand strangers who visited or passed through Paris during the months of August or September last, how small a number had ever heard of the Trocadero. Its green slopes were too far from the boulevards to attract the busy pleasure-seeker or the idle man of business, and beyond its known propinquity to the Champ de Mars, it was almost a *terra incognita* to the ordinary tourist.

The Trocadero, it is true, is on a direct road through Chaillot to Passy, whose artistic and literary inhabitants can tell you many a tale of the very different neighbourhood they had to pass through thirty years ago, on their way home from Paris at night to their favourite suburb. The Trocadero (called, until 1823, after which date it was laid out as a public garden, the Montagne de Chaillot) obtained its name from the fact, that after the taking of the Fort of the Trocadero by the Duc d'Angoulême, in the Spanish campaign of 1823, a mimic representation of the scene was arranged for the Parisian public, in which the heights opposite the Champs de Mars represented the famous fort of the Trocadero, stormed by the gallant French, under the command of the duke in person.*

Until 1790, when it was suppressed by the Revolutionists, a convent (of the Visitation de Sainte Marie) existed here, founded by Henriette, the queen of Charles I., who, as everybody knows, retired to France after the execution of her husband in 1649. On the site of this convent, early at the beginning of this century, Napoleon planned and elaborated, with more than usual care, a palace that was to exceed in grandeur the Versailles of Louis XIV., the vast Escurial, the massive Pitti, the Bourbon Palazzo Reale in Naples, the Palazzo de Te in Mantua,—a palace, in fact, that was to realise Napoleon's conception of a residence worthy of a monarch of the world. The surroundings of the buildings would have included the whole of the Bois de Boulogne, with its artificial lakes and race-courses. This grand scheme, however, collapsed with the military disasters of the first Emperor.

The visitors to the Exhibition of 1867 will well remember the pleasant green slopes of the Trocadero, on the right-hand side of the river; indeed, it has long been a pet conception of the Great Exhibition projectors of Paris that this magnificent site should form a prominent feature of any new enterprise, and the commissioners for 1878 have paid their first attention to the Trocadero.

From time to time, within the last five months, we have given some account of the progress of the Exhibition, and we are now about to describe its condition up to the present date.

Not only have the foundations of the Palace of the Trocadero been firmly laid, but enormous underground works have been built to support the weight of the central hall. This rotunda presents great difficulties in its construction. The under-soil contains vast quarries, which are no more used, and which have not been for a long time; innumerable discharges of artillery at the fêtes of former days, the thousands of mines sprung in 1811,* and again in 1867, the creation of public thoroughfares, have disturbed the thick strata of earth, sand, and other matters between the surface and the quarries beneath.

To form any idea of these works, one must visit them. By an opening cut in the southern slope of the mountain, one penetrates to the galleries, which were only cut some months ago, for these new galleries must not be confounded with the ancient quarries of Chaillot, which have been abandoned for centuries. But before commencing this work, exploring wells had been pierced, and it was found that in many places the rocks were full of great gaping cracks, so that to make any advance through these disjointed blocks was a very difficult and dangerous matter. By dint of carefully shoring up the galleries as they advanced, the workmen have succeeded admirably in their dangerous task.

In order to support the enormous weight of the future palace, they are at present constructing, under ground, two arches of a strength that will resist all proof. The piers of the first will be about 15 ft. thick, and those of the second about 10 ft. These two arches, some 15 ft. asunder, will be united by brickwork. In addition, to resist the enormous pressure of the earth of the Palace du Trocadero, a little to the north of the above-mentioned arches will be constructed four masses of some 100 ft. circumference. To form some idea of the necessary labour, there will be no less than 10,000 cubic mètres of masonry buried in the vast underground works.

Upon these great arches a central hall is to rise, which promises to be externally more wonderful than it is likely to be beautiful; its regularity and manipulation of parts detracting, as in so much modern construction, from the varied outline in mass and detail so characteristic of the great works of the past. The architect too often becomes the slave of the contractor: he has to consider not what he can design well, but what the contractor can supply quickly, and the skill and the calculation of the engineer take the place of the artistic thought, and the just consideration of the strength of materials leaves little room for picturesque design.

Critics will be sure to condemn the external appearance of the Palace of the Trocadero. Rome was not built in a year. But what the Palace externally may be deficient in will be amply made up for by the contents,—the "*Histoire de Travail*" that is to decorate and illuminate its interior, and which is now occupying the labour and devoted attention of so many distinguished and learned Frenchmen, who will gather the treasures from their own possessions, and from the greatest collections in Europe.

Mr. Cunliffe Owen will find it exceedingly difficult to compete in interest with the History of Labour on the Trocadero. But we may be certain that the beautiful and the precious on his side of the river will not be neglected, and we may rest assured that the useful and the manufactured are well able to take care of themselves.

Up to the 15th of January more than 7,000 Parisians alone had applied for space to exhibit, and already more room than in 1867 has been granted to the eighty-three departments of France. Every nation in the world, with two exceptions,—Germany and Morocco,—has stated its intention to exhibit. China, that was absent in 1867, will be here in great magnificence; and the hard-worked commissioners of the Paris Exhibition are already apprehensive that the space allotted to foreigners will be insufficient.

Within the last few days the official list of the English commissioners has reached Paris. It has been noted here that, notwithstanding the distinguished names enumerated in the Commission, there are striking omissions. Neither architecture, sculpture, nor music appears represented, and surely the Lord Mayor of London would have found sympathetic aid, by the addition of the mayors of many of our great English corporations, and also he would have worked in the true spirit of friendship it is to be hoped, with the masters of our ancient London guilds, had they been added to the Commission.

The omission of the president of the Royal Institute of British Architects is, we hope, accidental, and there are great names connected with the building interests that we find absent. Might not the Educational Boards have found useful work to do here, as the French authorities intend to make a great point of the Department of Public Instruction? So minutely are the French commissions for the exhibition classified, that the names alone of their members would occupy almost one entire number of this periodical.

Mr. Cunliffe Owen, who arrived here a short time ago, has been received and warmly welcomed by M. Krantz. Mr. Owen has given the commissioner-general the most satisfactory assurances of the dispositions of the English exhibitors, adding that the Prince of Wales, in accepting the presidency of the English commission, intended to take into his own hands the practical direction of the participation of England at the Exhibition.

Mr. Cunliffe Owen, who is well known here in Paris, is a great favourite. Those who worked by his side in the Exhibitions of 1855 and 1867 remember well his enthusiasm and his extraordinary ability. In our own Exhibition in 1862, and in that at Vienna in 1873, to say nothing of that at Philadelphia last year, Mr. Owen's ability has been fully recognised, and there seems every promise that his wide knowledge and profound acquaintance with the treasures of the past will secure to the English section of the Paris Exhibition a show the magnificence of which the world has not yet seen.

Why should not Mr. Owen exhibit to the Parisians in one or two well-proportioned rooms, say 100 portraits by Sir Joshua Reynolds, together with an equal number of Gainsboroughs? What a sight would this be for a country that has had no portrait-painter to compare with either of the two great Englishmen. What a list of famous names would the 200 portraits comprise. What histories, what virtues, what worth! Why should not *two or three hundred* Sir Joshuas be obtained? There were many more, surely, some years ago at South Kensington; but they were badly seen, and not too well selected.

Another room might contain a dozen Gainsborough landscapes, a dozen Chromes, a dozen Constables, a dozen Cottmans, two or three De Wints, a hundred David Coxes, a few Mullers, a Nasmyth, and some fifty Turners. Such an exhibition as this would have but one fault,—that it would overwhelm the Parisians with so large a debt of artistic gratitude to England that it would be almost discourteous to place our friendly neighbour in so embarrassing a position.

Paris.

THE LECTURER AT THE INSTITUTE ON MONDAY NIGHT.

IT is thirty years since Mr. Penrose, who had then been engaged, as Travelling Bachelor of the University of Cambridge, in investigating some of the remains of Athenian architecture, wrote to the British Museum authorities, stating his opinion that Greek architecture was characterised by remarkable refinements of detail, affording evidence of great mathematical knowledge, which had hitherto been unnoticed and apparently unsuspected, and offered to undertake almost the whole expense and labour of a six months' investigation of them, provided he went out "armed with their sanction and authority." The purpose was considered to be foreign to the objects for which the British Museum was instituted, but the Society of Dilettanti took up the matter, though it was not till fifteen years later that they published the beautiful book in which the results of Mr. Penrose's exceptionally careful and accurate investigations were embodied and illustrated.

The surveyor to the Dean and Chapter of St. Paul's has taken a very quiet and unobtrusive part in the practice of his profession since then; and so little, unfortunately, has Athenian architecture been studied and thought of during recent years, that probably not a few of the younger members of the profession who were present at the Institute meeting on Monday evening last learned then for the first time the real nature and scope of the investigations upon which the lecturer's reputation as an authority

* Many of our readers will remember Delaroche's picture of "The Taking of the Trocadero," which, painted in 1827, gained for him the cross of the Legion of Honour, and is now hanging in the well-known galleries of Versailles.

* For the foundations of the Palais du Roi de Rome referred to above.

upon Greek architecture was based. The surprise which was evidently felt by many at the minuteness of the measurements and figures brought forward, is in itself an indication that this was so; for no one who had studied Mr. Penrose's book would have been unprepared for this.

It may be fitting, then, both as an act of justice to the author of the work in question, and also as a hint to the rising generation of architects, to take this opportunity of recalling to the attention of the younger race of architectural students, one of the most valuable and thoroughly worked out architectural treatises which is in existence in our language: the rather because such a subject cannot possibly be really appreciated and entered into by listening to a single lecture, and we more than suspect that some of Mr. Penrose's audience, who seemed disposed to regard his views in a very questioning and sceptical spirit, had not the slightest adequate idea of the amount of work, the delicacy and carefulness of the investigations, upon which his opinions, a large proportion at least of which must be spoken of as proven facts, are based.

The large and beautifully-illustrated volume on the "Principles of Athenian Architecture" supplies the fullest information on this head, and ought to be studied carefully by any who, not having already studied it, wish to arrive at a clear understanding of the arguments upon which Mr. Penrose's statements as to the optical refinements of Greek architecture are based. The investigation was one requiring the most exact instruments, and the most minute care in making and checking measurements to a hair's breadth; and demanding also full and sound mathematical knowledge, without which the measuring of such delicate matters as the curves of the columnar entasis, and the appreciation of their real character, would have been impossible. Some idea, both of the perfection of Greek workmanship and the carefulness of Mr. Penrose's measurements, might be gathered from his single remark in the course of the lecture, that the actual line of the entasis curve of the columns did not anywhere differ from the theoretic hyperbolic curve which it represented, by more than the thickness of a piece of blotting-paper. A reference to the volume, however, will show that this is only one among a number of examples of equally painstaking investigation, and equally minute workmanship. The Parthenon seems literally to have been made and put together in the way Stephenson said a locomotive-engine should be made, "as carefully as a watch." The jointing is such that the joints are often nearly invisible, even after the wear and tear of so many centuries; and this perfection of fitting, which was, of course, partly helped by the nature of the material in which the architects worked, afforded also the opportunity of forming conclusions as to the original character of the curves measured, and the proof that they were the result of no accidental disturbance of the structure, by observations upon the state of the joints in different portions of the structure, the deductions from which, as given in Mr. Penrose's book, afford in some cases remarkable examples of acute logical reasoning. Young architects should go carefully through this book both as a most interesting study, and as a work without which Greek architecture cannot be thoroughly comprehended; while the illustrations, with their minute figuring and careful execution, are examples of a style of scientific architectural illustration not often met with in these days of "sketches."

Mr. Penrose has chosen, apparently, to rest his reputation upon this publication, and has not cared to compete for the more brilliant success which some of his contemporaries enjoy, and which would seem to have been equally within his reach had he tried for it. It is, perhaps, owing to this that, except by the honourable and responsible official position which he holds, his title to rank high in his profession is less known to some of his younger brethren than it should be. His book still, as far as we know, stands alone in relation to the subject it illustrates. A question was asked at the meeting as to whether any work on the topic had been published in Germany; it appears not. We should say that all the Germans require is to translate Mr. Penrose's book. Some sadly inferior architectural works have been translated into our language from the German; it would be gratifying if the compliment of translation were returned in the shape of a work which will always be so highly creditable to English architectural investigation.

ART IN HOSPITALS.

Readers of the *Builder* from the beginning must often be amused by seeing the way in which things long ago therein suggested and urged are again brought to the front by rising individuals with all the airs of discoverers or originators. Long ago we spoke of the desirability of changing the bald and uninteresting appearance generally presented by the interior of hospitals, and on more than one occasion the Art-Union of London sent, as the practical outcome of such teaching, impressions of their engravings to enliven walls previously bare. Dr. J. Lawrence Hamilton (of 34, Gloucester-terrace, Hyde Park) now writes to us, as to others, suggesting that a fund should be raised to remedy the present state of things, and to render hospitals more inviting and cheerful. He offers 100*l.* towards this himself, on condition that 1,000 other donors will subscribe each an equal or a larger sum by the 1st of May next. We should be sorry to say anything harsh of Dr. Hamilton, but the offer is an absurdity. We would insure him for 2s. 6d. against being called on for his 100*l.* His idea as to the use to be made of the money is expressed thus:—"I advocate the brightening of the wards and the cheering of their inmates by the addition of suitable pictures, plate bronzes, carvings, *bric-à-brac*, old armour, china, sculpture, ornamental clocks, fancy glass, tasteful glazed tiles, and other art decorations of all sorts." This is much too omnivorous, and Dr. Hamilton might be likely to get more if he proposed less. *Bric-à-brac* has already too free a development in our dwelling-houses, without finding a fresh field for it in hospitals; and in a general way it may be questioned whether it would be suitable to go too far in filling the wards of hospitals, which should certainly have a predominant appearance of repose, with such a heterogeneous collection as Dr. Hamilton's list might be taken to furnish excuse for. We have heard gentlemen who did not share their wives' taste for *bric-à-brac* lament over the way in which their houses were lumbered with it; and if the class of persons who are troubled thus were thrown on hospital care, we can imagine their sigh of resignation,—"What, *here* too?"—when they found their hospital ward filled with the china and Japanese screens they had left at home. On the other hand, it may be observed that those who do avail themselves of hospital care are usually persons not accustomed to ornamental furniture of this sort, and who would not, therefore, feel the want of it, and perhaps hardly appreciate it. Our doubt, however, is only in regard to the manner in which the proposition is worded. That sick-wards usually are very dreary-looking places is undeniable; and we cannot but think that money spent in suitably decorating them, and in providing, not *bric-à-brac*, but works of art such as would be likely to interest and appeal to the sympathies of the patients, would be most admirably laid out. A good deal of taste and judgment would be needed to do it suitably; and it should not be forgotten that in time of illness objects of an unusual or puzzling character to the eye, even such a thing as an involved or intricate wall-paper, are often most disturbing and fidgeting to the patient. With these reservations, we say, as we have said before, that something of the kind that is suggested is desirable, and that the need of something to give more cheerfulness to hospitals is evident. Gifts of flowers are constantly and systematically made to some hospitals in London and elsewhere (there exist little charitable conventions of ladies to carry out this kind of aid), and nothing could be more suitable than flowers as far as they go; but they are not everything, nor can they, of course, be equally well procured at all seasons of the year. Dr. Hamilton invites intending donors, contributors, and subscribers, to communicate with him, and we gladly take this opportunity of giving further currency to his proposal; but if he wish to be thought in earnest, and to bring about the good desired, he must alter the terms of it very materially.*

The Albert Institute of Fine Arts, Edinburgh.—It has been resolved, on the recommendation of the Council, that the first exhibition of this Institute be held in the month of May next, the architect having certified that the Albert galleries will be completed in that time.

* Since this was in type the proposal has been modified.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute held on Monday last, the 5th inst., Mr. J. Whichcord, vice-president, in the chair, it was announced that, subject to the approval of the special general meeting to be held on the 5th proximo, and to her Majesty's gracious sanction, the Council recommend that the royal gold medal for the current year should be awarded to Mr. Charles Barry, president of the Institute.

Mr. T. Roger Smith brought before the notice of the meeting the death of Mr. William Young (already referred to in the *Builder**). He said Mr. Young was educated in Manchester, and in his early years of practice executed several works of considerable merit. He was afterwards in partnership with Mr. Pownall, but was, perhaps, better known as one of the fortunate "winners" in the great cavalry barracks competition, having carried off the third premium. He was one of the founders of the Architectural Association, and in many other ways had been of great service to his professional brethren. Of late years he had been employed as chief assistant in several first-class offices. He died in Bradford, Yorkshire, in circumstances of great poverty, leaving a widow and several children. It was much to be lamented that a man so highly-endowed in many respects, and who had won the affections as well as the esteem of all with whom he came in contact, should have been unable to make provision for his family. The Architects' Benevolent Society had had the case under consideration, and had made, perhaps, the largest grant it had ever made in aid of any one case. But it was greatly to be regretted that the society was not supported with sufficient liberality to enable it to render more than a very moderate amount of help.

The drawings made by Mr. E. J. May, Pugin Travelling Student for 1876, were exhibited, and it was announced that the Council had awarded Mr. May the sum of 40*l.*, to which he was entitled on the completion of the drawings.

Mr. C. F. Hayward asked whether the Council had taken any action with reference to the omission† of the name of the President of the Institute from the list of British Commissioners for the Paris Exhibition of 1878? The presidents of various learned societies had been nominated as Commissioners, but amongst them he failed to find the name of the President of the Institute.

Mr. Eastlake replied that the Council had not taken any action in the matter, for the reason that the President had himself taken the matter in hand, and had made a private communication to the proper quarter. As yet no reply had been received.

Professor Donaldson said that when it was considered that in the art sections of previous Exhibitions, both at home and abroad, the architectural galleries had formed most important parts of the displays, the omission to name the President of the Institute as one of the Commissioners was the more noteworthy, and it looked very much like an intentional slight to the profession.

Mr. Horace Jones said that in this matter the Government was merely following out the habit of many years past in studiously ignoring the architectural profession. They (the members of the Institute) were ignored in '51 and again in '62, and unless some very strong, prompt, and decided action were taken, they would again be ignored. The systematic way in which it was sought to ignore the architectural profession was also seen in the fact that in '62 some kind of commission was issued to make inquiries as to the strength of materials, but no architect was included amongst the commissioners. He suggested that it would be desirable for a deputation from the Institute to wait upon the President of the Board of Trade (or whoever might be the proper authority) with reference to the matter.

The Chairman thought it would be best to leave the matter in the hands of the President, whose name was a tower of strength. The subject then dropped.

A letter was read from Mr. Edmund Sharpe expressing his wish to meet with two young architects, in their pupilage or just out of it, accustomed to make measured drawings from buildings, to accompany him to Florence, with a view to the study and measurement of the churches of Pisa, Pistoja, and Lucca. We

* See pp. 72, 119, *ante*.

† Pointed out in the *Builder*, p. 87, *ante*.

nderstand that Mr. Sharpe has already obtained ne necessary assistance.

Mr. F. C. Penrose then read a paper "On the ptical Refinements of Greek Architecture," of hich we give below an abstract.

ON THE OPTICAL REFINEMENTS OF GREEK ARCHITECTURE.

THE author commenced by devoting some marks to the consideration of the complete stem of proportions used by the Greeks. He bserved that in the complication of modern ants there was much to hamper the architect, nd much to excuse him for neglecting to attend proportion; but it was therefore the more esirable to call attention to the subject. The areful adjustment of proportion alone would ot make good architecture, but it was not too uch to say that really good architecture could ot be achieved without it. Although the Greeks aid more attention to proportion, probably, han any other people, it was not wanting in he best Mediæval structures. The late Pro- ssor Cockerell called attention to the accurate roportions of Milan Cathedral, and the author ad found enough evidence of careful adjustment proportion in Lincoln Cathedral to enable im to read a paper before the Archæological ociety when it met there. It was in the Greek mples and monuments that proportion was ost completely and systematically applied. he Parthenon had the double advantage of aving been built at the very climax of Greek ivilisation, and of having been adequately pre- erved to the present time, so as to enable ccurate measurements to be taken of it. He ought the scheme of proportion used in its mposition had been discovered, viz., that hich was announced in a paper read before he Institute on June 13, 1859, by Mr. Watkiss Lloyd. That scheme had the ad- antage of supplying a rule applicable to any nportant design whatever. It appeared in greater or less degree in all the temples of reece and Asia Minor, and was perfectly avail- ble, *mutatis mutandis*, with Gothic designs. ractical architects would not need to be told, owever, that there was a quality of more im- ortance than any scheme of proportion, viz., hat of getting the building properly adjusted to s purpose and character, which must be one simultaneously with attention to numerical roportion. But there need not be in Mr. Watkiss Lloyd's scheme the slightest hindrance o the common-sense or artistic qualities of the uilding, for it would have a steadying and regu- ting influence on the design. That many or ost of the architectural works of the present ay would be improved by less ornament and ore studied harmony of proportion was certain. he buildings erected by Inigo Jones and Sir hristopher Wren might, at any rate, be appealed in support of this thesis; and the author had ttle doubt that had Wren known the Parthenon heme he would have used it in St. Paul's. hat he did work in regulated proportion there as sufficient proof; but in the present paper he author's object was not with Wren, but with tinus, Mnesicles, and Callicrates. These archi- cts, engaged on the works erected under ericles at Athens, having settled the general ope and mass of their buildings, found, ap- arently already recognised, the scheme of pro- rtion which they used. Mr. Lloyd's discovery as this:—A leading proportion having been osen for the principal components of the mple,—viz., the length of the upper step easured on the front and on the flank,—which as in the Parthenon the ratio of 4 to 9,—the vourite enstyle arrangement transmitted by itruvius. We could perceive that this ratio served the commendations paid to it by its me, *i.e.*, when used for an intercolumniation, ing both sufficiently complex and low-termed, nd also the duplicate ratio of still lower numbers, : 3. The rest follows by making a series in hich in every form the enumerator and the nominator differed by the same number as they d in 4 to 9. Thus $\frac{4}{9}$ was the beginning of the ries, and it certainly extended as far as $\frac{12}{13}$. here were certain favourite terms, and some, rhaps were altogether unused; but it was ite exceptional to find any proportion between ntiguous features outside that scale. To these tios Mr. Lloyd's scheme allowed in addition, r a few terms, those in which the numerator nd denominator differed by unity: such as 5 : 6, : 7, 7 : 8, 9 : 10. The temple was then planned pon certain definite considerations. Above all things it was to be the hecatompedon, or the hundred-foot. There was reason to believe that the cella of the temple of Minerva, destroyed by the Persians, was 100 ft. long, and that temple also bore the name of hecatompedon; but the new temple was made 100 ft. broad on its upper step. To prove that it was so, reference could be made to the comparative length of the standard measure of Greece compared with those of Rome and Egypt, and such comparison made it certain that the breadth of the Parthenon on the upper step was accurately 100 Greek feet. Mr. Penrose entered at great length into the application of Mr. Watkiss Lloyd's scheme to the Parthenon, and showed how almost exactly the proportions came out. Such slight differences as were found seemed to be of small importance, but in Mr. Penrose's opinion they showed that the Greek architects did not allow their rules to override them, but found some plan to save both their designs and their rules when difficulties presented themselves. The general mass of the temple and the ambulatories having been settled, it became of primary importance to obtain the diameter of the column, which was probably done in this way:—Firstly, the block size of the angle columns was settled by making the abacus one-fifth the height of the column,—a proportion which ruled exactly. Then, deducting one such abacus from the upper step and dividing the remainder on the consideration that the angle columniations [by which Mr. Penrose said he meant the distance between the columns from centre to centre] should be to the central as 6 to 7, and further, that the "distribution" of the columns, as Vitruvius called it, should be enstyle (*i.e.*, in the characteristic proportion several times mentioned, of 4 to 9), we obtained for the diameter of the column 6·2541, or if the column obtained by calculation were used, then 6·2511. The measurements of the mean of the whole temple gave 6·2495. The difference was quite insignificant. There was, indeed, a nearer and more ordinary suggestion, viz., that it was made just 6 Attic feet and 2 in., measuring 6·2496 feet English. But, in Mr. Penrose's opinion, this curious equality must be a coincidence, especially when it was remembered that the Greeks divided their foot into dactyls, or sixteenths, and not into inches. The Romans used both. The Greek word for inch, δωδεκατημόριονα, might, he thought, be quoted in favour of his argument. Another very curious proportion, and one analogous to the Parthenon system, was found in the diameter of the columns, viz.:—Forty-six columns form the peristyle, and forty-six times the square of the diameter, formed an area which had the proportion of seven to ninety of the whole surface of the temple, absolutely,—in other words, the lineal error was less than the six-thousandth part of the diameter. It was not to be supposed, however, because a great number of exact, or almost exact, relations of proportion existed in the Parthenon, that such proportions were as common as blackberries, and would come as a matter of course. Much of the merit of the Parthenon resulted from the designers having exercised a discriminating judgment in combining so many near approximations in addition to their exact proportions. It had become a recognised principle among the Greek architects that certain modifications upon the proportions as first settled had to be made for optical considerations. The horizontal lines had all to be curved vertically, so as to make them convex. This applied to steps and entablatures, to fronts and flanks, the angles of the temple, and the central apex alone retaining the levels first designed for them. The columns at the angles were reduced by this treatment from 34·424 English feet to 34·253 (or 34·484 calculated), and with it the exactness of the duplicate ratio of seven to twelve, which had been designed for them, passed away. The great stylobate was superimposed upon a sort of narrow plinth, about 10 in. high, which sometimes served the purpose of adjusting the levels of the pavement. Taking it at its height at the east front, it gave to the total height of the temple, compared with the base (including the spread of that particular plinth), a proportion forming one of Mr. Lloyd's analogies, viz., that of nine to fourteen. The whole mass of solids bore to the height of the finished column a proportion of nine to ten, and the total height given to the steps, including this plinth, together with the entablature on the flanks, bore to the height of the column the proportion of one to two. The sensitive eyes of the Greek artists were the first to perceive that the contrast of lines having different degrees of inclination, and of surfaces having different degrees of illumination, tended to make straight lines look distorted, and equal quantities to appear unequal; and they discovered means of exactly counter-balancing the unsatisfactory effects of the sight "missing its way," as their writers described it. The three principal instances in which these refinements are found are (*a*), in the curvature of the horizontal lines of a building; (*b*) in the inclination of the columns and walls away from the true perpendicular; and (*c*) in the entasis of the columns. The first-mentioned was discovered in Greek buildings about forty years ago by Mr. John Pennethorne, the brother of a recent Gold Medallist of the Institute. This discovery at once explained a passage in Vitruvius which had puzzled the grammarians, and helped to show why the Greek buildings of the best period had such an unusual charm. The cause seemed to lie in the uncomfortable effect produced on the horizontal cornice by the raking lines of the pediment. To this cause Mr. Penrose attributed it in a paper read before the Institute thirty-one years ago, and he had seen no argument which equally well explained it. A paper appeared in M. César Daly's *Revue Général* in 1875, vol. xxxii., by M. Emile Burnouf, explaining the matter on analogous principles very satisfactorily. After describing the diagrams with which his paper was illustrated, Mr. Penrose went on to say that in every case but one where curvature was applied to the entablature, the step below was parallel, or nearly so. Indeed, the curvature in the step in the Parthenon was greater than that of the entablature, but in the Propylæa at Athens the step was cut in two by the roadway, so that a parallel curve on the stylobate would have no value; in their case the middle columns were made taller than the angle columns. The plan of giving a curvature to the horizontal lines was a very ancient one, but it did not, Mr. Penrose thought there was reason to feel sure, come in until the want of it had been experienced, and then at the very point where the want was felt. The fronts at Pæstum (Temple of Neptune), a very early example, showed the curvature, but not the flanks. The Temple of Jupiter, at Ægina (earlier, probably, than the Theseium), showed it on both; so did the Theseium; and, later than the Parthenon (although the Sicilian architects did not appear to have applied all the Athenian refinements), the curvature was found both on the fronts and flanks at Segeste. The amount by which the horizontal lines were lifted was greater in the front than on the flanks, still pointing out the constraining reason. In the Parthenon it was ·228 on the step, and ·171 on the entablature, or about 1-450th and 1-600th respectively. On the flanks it was ·340 and ·306, or about 1-700th and 1-750th respectively. Proceeding next to speak of the inclination of the columns, Mr. Penrose said this peculiarity in Greek architecture was first pointed out by Professor Donaldson. It applied not only to the peristyle, but to the cella-walls. Mr. Penrose said it appeared to him invariably, in looking at a colonnade in front of a building built with perpendicular columns, the upper parts seemed to spread. He attributed this to the enhanced value of the light on the upper parts of the column, by reason of the strong shade on which they were thrown out, as compared with the light on the lower parts, where, even if the background were in shade, it was modified by reflected lights. This enhanced value of the light introduced the well-known optical principle of irradiation, and caused the upper parts relatively to expand.

A discussion followed, in which Professor Donaldson, Mr. Watkiss Lloyd, Mr. James Fergusson, F.R.S., and Mr. R. P. Pullan took part. We shall give a report in our next.

Industrial Dwellings at Newcastle-upon-Tyne.—At a meeting of the Newcastle-upon-Tyne Improved Industrial Dwellings Company (Limited), on the 3rd inst., it was agreed to invite tenders for a considerable extension of their present buildings, preparatory to the plans being submitted to the shareholders. The approved plans embrace several improvements suggested by the experience gained in the working of the present block and the teachings of sanitary science, whilst at the same time facilities for the mental improvement and recreation of the tenants will not be forgotten, as one feature will be the provision of a large room, intended to comprise all the attractions of a publichouse, without the drink.

AUTOMATA FOR SPORTING PURPOSES.

THE MECHANICAL HARE.

Some of our readers may remember a series of illustrations which appeared in *Punch* nearly a year ago, entitled "Mechanics in Sport." The series included a "steam plough express travelling-chair for lazy shots"; a "steam ejector and spinning apparatus for jack and chub fishing"; an "improved clockwork hunter, with patent camb-saddle bumping action"; and a "pneumatic-despatch fox." To this list we have to add the "mechanical hare," in the contrivance of which a great deal of ingenuity has been expended by Mr. C. Kingsford, C.E., who read a paper on the subject at a meeting of the Civil and Mechanical Engineers' Society on the 1st inst. Mr. Kingsford, we understand, is not the inventor, although he is the contriver of the apparatus. The inventor furnished all the essential points which characterised the invention, and appointed Mr. Kingsford engineer to carry out the idea to a practical result. He required that an artificial hare should be made to travel along the ground at any required pace. That it should start and get up a sufficient speed to keep in front of dogs slipped to it, as is customary in coursing the real animal (usually about forty yards start is allowed the hare before the dogs are slipped); that it should be in the power of the person who controlled the machinery to regulate the speed of the hare so that the dogs should not catch it before it ran to cover, and at the same time that it should not so much exceed the speed of the greyhounds as to cause the dogs to get unsighted before reaching the winning-post; that the hare should run about a quarter of a mile and then go into cover; and that it should so naturally resemble the living animal as to be eagerly pursued by greyhounds. All these instructions necessitated a considerable amount of thought to enable the engineer to comply with them, and having no precedent to refer to he determined to make some preliminary experiments. There is an oft-repeated wager that a man shall not move a pound weight at the end of a string half a mile long laid on a level turnpike road, and that he may choose his own string. No man can do it; for if the string is light it breaks, and, if thick, it is beyond the strength of man to overcome the friction. Mr. Kingsford's first idea was to pull the automaton by a copper wire, and in practice no better method has suggested itself, although several ways may be adopted for carrying it out. Copper wire may be wound and unwound on a drum, if not too small, without materially injuring the strength and tenacity of the metal: iron or steel would not stand this usage; the phosphor bronze which has been used may be advantageous under some circumstances, but it has this drawback,—it is less pliable than copper, and when wound on a barrel it retains the impression, and pulls out in an elongated spiral form, which is objectionable. The author having explained the manner of conducting the various experiments said he was recompensed by seeing the greyhounds run the automaton as keenly and with as much eagerness as if it had been a hare in its native pastures. The size wire employed was No. 16 Birmingham wire-gauge, which was fully equal to any legitimate strain that might be put upon it, but would break before any damage could be done to the machinery or apparatus. Having completed these experiments, it was decided to put in practice the lessons learnt, and establish the system on a permanent footing. Arrangements were made with Mr. Warner, of the Welsh Harp, to form a racecourse in one of his fields, and, although it was not all that could be desired, it was the best piece of ground that could be got in that neighbourhood, as it allowed of a quarter of a mile of rail being laid down in a straight line, but the ground was not level, the highest part being in the centre of the course, which was unfavourable for spectators, and it also proved very disadvantageous from the fact that the man who controlled the machinery for winding up the wire was unable to see the starting point, which was hidden by the rising ground. The hill also presents a greater resistance, and requires more power to pull the wire and automaton than it would have done had the course been level; but the choice of this piece of land proved most unfortunate in consequence of the recent rains having flooded a considerable portion of the course, so that it has not been possible to continue the races, which it was proposed should take place monthly.

It was arranged that the following plan should be adopted:—To lay down a tram-rail upon which a *runner* was fitted to slide, and this runner to carry a stuffed hare, the wire to be attached to the runner and to be wound on to a machine, thus causing the hare to run the course. The rail nearest approaching that which was required was made of channel iron $1\frac{1}{4}$ in. by 1 in. with a V-groove planed along each side, within the channel (as the engineer could find no section of iron rolled precisely as required, he was obliged to use the nearest he could obtain until he could get iron rolled expressly for the job); this rail was screwed down at the joints to wooden blocks, and the whole sunk flush with the surface of the ground. The reason for adopting so narrow a tram was for fear the dogs might get hurt if it were wide enough for them to get their feet into the channel; but practice has shown that such fear was unfounded, for if the dogs are slipped a little on one side of the track, they rarely, if ever, run on to it, for the receding hare, being about twenty yards ahead of the dogs, always presents an angle to their view, so that in following they do not approach the rail until the end of the course. Practice has shown that a wider rail and a narrower channel on the top may be used for the wire to run in, and instead of an inside groove, which has to be planed out, and which necessitates short bars, and consequently a greater number of joints, it would be far preferable to have a slight flange on each side of the rail to guide the runner and keep it on the track. The section now being adopted is 3 in. wide on the top, with a centre channel $\frac{3}{8}$ in. wide by $\frac{3}{4}$ in. deep, with rounded edges; no dog's foot can get into this, and there is ample room for the wire. The manner of joining the ends of the bars is to rivet two short studs or tenons $\frac{3}{4}$ in. by $\frac{1}{2}$ in. into one end of each bar, which may be rolled the usual lengths, and by riveting a plate to the bottom of the other end, two mortises are formed into which the tenons of the next bar fit accurately. The form of the rolled bar admits of this arrangement without much cost for fitting. Rails of this description may very readily be laid down where the ground is level, and as there is no fixing required in the field, they can be as readily removed, and the whole is perfectly portable.

It is rarely that a piece of suitable ground can be found perfectly level to hand. The readiest mode to adopt is to strip the turfs for about half a dozen yards wide, level the ground, and lay down the turf again and roll: a very ordinary piece of land may thus be prepared, and got ready for the rail to be laid, in a few days. The course should be level, or, what is still better, it should cross a slight valley, but in no case should it run over a hill, for the reasons already given. By crossing a valley the lowest ground would be about the centre of the course, this would have many advantages: the spectators, as well as the man at the machine, could see the whole course. The hare, starting down-hill, would attain its maximum speed in less time, and, on arriving at the goal, the rising ground would counteract the increasing speed due to the decreasing quantity of wire to be drawn in, and the speed equalised; and, lastly, the course being across a valley, would simulate to the catenary that the wire would naturally assume, and consequently reduce its pressure on the ground, and take less power to work.

The first form of runner tried was constructed to carry the hare supported directly over it; the hare was fixed on a cradle, which was pivoted in the centre, and supported fore and aft by a spring; this gave the creature a galloping movement as it went along; but, as the centre of gravity was very high, and the rail narrow, the side motion of the hare caused a great deal of friction in the grooves, and induced the engineer to alter the arrangement, and fix the hare to a trailing spring behind the runner. The weight being thus divided between two supports, the friction is considerably reduced, the spring giving a very natural movement to the animal. A winding-machine was constructed on the principle of an ordinary crab, with the motion reversed, the wire being wound on the barrel at the rate of about 20 yards to each turn of the handles. An improvement which Mr. Kingsford introduced into this machine, to enable the men to get a good start, was that instead of the barrel upon which the wire is wound being fixed on its shaft, it is made loose, and a fly-wheel of the same diameter as the outside flange of the barrel is keyed to the shaft in close proximity to the barrel. The men thus start the fly-wheel, and by means of a lever the flange of the barrel is brought into contact with the rim of the fly-wheel, and by the friction of one on the other the barrel is set in motion very quickly; the speed of the barrel may thus be controlled without varying the speed of the motor. The state of the rail materially influences the traction. When the rail is wet and dirty, the resistance is found to be about one-fourth more than when quite dry, but this is not entirely due to the friction of the wire, but is partly owing to the V-guides getting foul, and thus impeding the runner. This cause of extra friction will not exist with the new rail, as it has guides on the outside instead of being confined within the channel. It is the inventor's intention to employ steam-power for any permanent race-course, and Mr. Kingsford proposes to use a small vertical boiler, and one of the high-speed multiple cylinder engines, which can work the barrel at the required velocity without any intermediate gearing. It only remains to explain how the automaton is stopped at the end of the course, for it runs into cover at the rate of thirty-five to forty miles an hour. The engineer devised a very simple kind of brake, which answers the purpose perfectly. He places two pieces of quartering, about five yards long, one on each side of that portion of the rail which terminates in the enclosure at the end of the line; the runner which carries the hare has a spring on each side of it, and on arriving within the enclosure, where it is hidden from the sight of the dogs, it runs between the pieces of quartering (these are laid so as gradually to approach each other), and the progress of the automaton is thus arrested without much shock; by drawing two wedges the side pieces are opened out, and the runner set free ready to be taken back for another course without delay.

In concluding his paper, Mr. Kingsford said that to most people the mechanical hare affords far more amusing sport than any other kind of races, for thirty or more courses can easily be got through in a day, instead of about half a dozen at a horse-race, and often not more at a coursing meeting; and instead of wandering about on a bleak moor (often in most inclement weather), and being misled by the perpetual variations of the direction in which the dogs are running, the spectators will have a full view of the race from the slip to the finish, together with all the comfort of a well-appointed race-ground; and, whereas probably not one person in a hundred understands the abstruse technology appertaining to coursing, every one can appreciate the beautiful machine-like movement of the eager greyhounds striving in their headlong race, in the straighest of lines, to reach the goal. Another and material feature is that the sport can be enjoyed at the pleasantest time of the year for out-door sports, as well as in the autumn and winter. It is also well worthy of the attention of the opponents of sports involving cruelty to animals, as it will afford an innocent recreation and sport to all without the faintest shadow of the reproach of cruelty attaching to it. It is not intended in any way to imitate coursing, but is purely and simply greyhound racing, without whip or spur, or any stimulus other than the natural eagerness of the dogs.

ARCHITECTURAL NOTES, BY AN IGNORAMUS.

THE CATHEDRAL MOVEMENT AT HOME.—CHARTRES, RHEIMS, AND ROUEN.

At a time when it is well known that some of our greatest and wealthiest cities are anxious to wipe away the reproach of meanness and barrenness which attaches to their public architecture, and when proposals have already been made for the erection of at least three cathedrals or basilical churches,—*ad majorem Dei gloriam*, and for the more worthy celebration of public worship,—it cannot be out of place to direct our attention to some of the noblest examples already reared by the piety of Christian communities. Of all the claims to eminence which France can prefer in arts, arms, and letters, there is none of which Frenchmen of culture and education are more proud than of the building of their cathedrals. And very justly so. Individuals die, families become extinct, races are lost, empires crumble away, nations and states change their outward aspect, until the inquirer hardly knows where to look for them, but the creations of their genius remain transmissible from age to age of the most remote posterity. A cathedral is an epic poem representing in visible shape the manners, industry, and civilisation of the past, and in these venerable works, bequeathed to us

by our forefathers, are embodied their most intimate feelings, their most firm beliefs, the summary, in a word, of their entire life and being.

The question of the style to be adopted for the future remains always open, and we do not wish for a moment to prejudice the decision. No man of sound architectural principles will dispute the merits of the Classical style, as modified by the Italian architects of three hundred years back, even for religious purposes. The openness and simplicity which it imparts to the internal arrangements of a church are a great recommendation with many, but in a basilic or cathedral the disposition of the structural members is the same in principle and plan, whether the Classical or the Gothic style be adopted, as any one may satisfy himself who compares St. Paul's or St. Peter's with York Minster or Westminster Abbey. That any new style can be invented by the utmost stretch of human ingenuity worthy to rank with either of these, we utterly disbelieve. Nor do we speak without the warrant of experience, for the attempt has actually been made. It was a favourite notion with French architects for a brief period after the revolution of 1830 and the accession of Louis Philippe. And what did it produce? Such a wretched abortion as the Church of St. Roche, in the Faubourg St. Honoré, which is merely a poor imitation of the worst style of the Renaissance. New combinations and adaptations of ancient forms and methods there may be, and these varied almost to infinity; but a new architectural style never! And why should this be? Because the number of architectural forms is limited by the nature of things and the laws of the human mind, all being ultimately reducible to three simple mathematical figures,—the circle, of which the arch is a segment, the square, and the triangle, which is half of the square, and of which the cone and the pyramid are modifications.

We shall not conceal the conclusion to which our own inquiries have conducted us, and which has long ago been announced by the verdict of dispassionate students, that in the Gothic style we have the most profound science the art of building can show, joined to a boldness of which antiquity has no examples. An amiable enthusiast of the last generation, who did great things in his day, and whose appeals to public feeling did much to dispel the woful apathy and indifference which had long wrapt the popular mind in slumber,—we mean the elder Pugin,—has justly remarked that nothing can be conceived more majestic than those successions of arches divided by light and elegant clusters of shafts, running up to an amazing height, and then branching over into beautiful intersected ribs, suspending a canopy of stone at an enormous height, of not unfrequently 150 ft. Since Justinian raised the dome of St. Sophia, and Charlemagne the rotunda of Aix-la-Chapelle, and William the Conqueror transported the arches of the Flavian amphitheatre to the great church of his favourite Caen, there has been a continual progress in the application of the unchanging rules of art to the production of new forms of grace and beauty, to which the ruder conceptions and more limited experience of remote antiquity could never reach. Nor is there any reason why this progress should not still continue, or why we should not hope in the present day to emulate, and even surpass, the choicest works of the past.

It is to such models as are to be found in the three towns of which the names appear at the head of this note that we would wish, if possible, to attract the attention of our readers. The annalists of the French cathedrals, Jolimont and Chapuy, fondly boast how their favourite structures were reared at a single upcast (*d'un seul jet*) by the zealous piety and artistic enthusiasm of their progenitors. This is certainly true in several remarkable instances, as in the Abbey Church of St. Denis, which some hold to be the earliest production of the Pointed Style in France (the date of consecration is 1144), and which still charms us with its resplendent array of painted windows, depicting to the life the scenes of the First Crusade, and in Amiens, the queen of French cathedrals, which was raised to inclose the shrine of St. John. But it was not true in two of the three cases above referred to, which rather resemble, in their slowness of growth and protracted term of development, the religious edifices of our own land. Amongst First Pointed churches, none can dispute the pre-eminence of Chartres; nor amongst Second Pointed that of Rheims. The building of the former is said to have occupied a period of 120 years,—from 1140 to 1260; in which latter it was dedicated by Peter de Maincy, seventy-sixth bishop of the see; and we learn from a curious letter of Fulbert, archbishop of Rouen, to Thierry, bishop of Amiens, written in 1145, that men of all ranks and professions worked at the most laborious tasks, dragging cars, transporting materials, and the like, to forward the progress of the structure. Its dimensions are 424 ft. inside in length, 110 ft. in breadth, and 113 ft. in height, from the floor to the top of the vault. Excellent judges have pronounced the leading characteristics of the interior to be neither extreme elevation, lightness, nor elegance; but skill and grace in the whole effect, the outlines being neither too slender nor too heavy. We must add, however, of our own motion, and to evince our impartiality of judgment, that the stonework is not remarkable for its finish, and is rather distinguished by a certain coarseness, either in the grain of the stone or its dressing, which detracts from the beauty of both the exterior and interior. Both at Tours and at Lincoln the same defect is very noticeable. Its grand ranges of windows, twenty-six in each aisle, each of them displaying in the chevet or head a sun, rose, or Catherine-wheel, and decked out with the mystical glories of the pentagram and the pentalpha, have a proverbial celebrity. The west front presents a simple arrangement of three portals finely recessed, surmounted by three lancet windows, and in the upper division a grand sun-window, as it may be termed, since it has neither wheel-spokes nor flowing tracery. It consists of a large circle inclosing twelve six-foiled circlets, the central compartment being formed by an eight-foiled cirolet, from which radiate twelve foliated lobes, each inclosing one major and one minor quatrefoil. The whole window is inclosed in a square defined by cylindrical shafting on the wall-face, and above the round is a niched gallery with sixteen figures of saints, surmounted by a statue in a central niche, occupying the summit angle of the frontal. The towers are well defined by bold projections of the counterforts, their surface covered by two panelled arches in each story, but the effect rather injures the unity of the whole façade. The length across the transepts is not less than 206 ft. The rose-window of the south transept is the grandest in the edifice, the centre being a twelve-foiled circle, with a radiation of twelve trefoiled fronds, touching on twelve cinque-foiled circles, each resting on a semicircle, of which the base points join the outer rim of the rose. The window is thus made up of simple elements combined into a stellary radiation of exquisite beauty, and is probably rivalled only by one other in the whole series of rose-windows throughout the basilics of France. In the interior the piers of the nave are (like those in the quire of Westminster) massive cylinders, each with four engaged shafts round or octagonal, and with richly-sculptured capitals. The triforium is a simple arrangement of four pointed arches, on round shafts and without hoods, in each bay. The lofty clearstory is lighted by bilobiate windows, the heads showing a trefoiled circle, and in the quire a six-foiled circle with seven radiating fronds. It will thus be seen that the leading motive of the tracery is geometrical, which is perfectly appropriate to a First Pointed church; but we take this opportunity of saying that we observe with much regret that in some of the plans for our proposed new English cathedrals, geometrical tracery is employed with Third Pointed outlines, to the exclusion of the more highly decorated forms which harmonise in general better with the genius of the architecture. As to Perpendicular, we trust never again to see it in a first-class English church. We sincerely hope that the plans which have been exhibited are not meant to be taken as complete in reference to the window tracery.

Rheims was the primatial see of Gaul from the days of Clovis and Charlemagne, St. Remigius and Hincmar, down to our own, and its cathedral was the scene of the coronation of French kings, as Speyer was for the German emperors. It was begun in 1211, the first stone being laid by Archbishop Alberic, and was almost completely finished in thirty years, under the superintendence of a single architect, Robert de Conci, a native of the town. It is thus only a few years earlier than Amiens, which was begun in 1220, and not completely finished until 1288. The difference in style is so considerable that one might suppose a century had intervened, Rheims being distinctly marked as Second Pointed. The dimensions are 450 ft. inside by 95 ft., and 110 ft. in height. The effect of the west front is both more simple in the whole and richer in detail than that of Amiens, and would be perfect if the towers were surmounted by spires. The portals project some feet beyond the buttresses, masking the compartments of the façade, whilst at Amiens their projection only fills the intervals between those buttresses. The heads of the portal arches are not filled with sculptured surfaces of wall as usual, but pierced with a rose in the centre, and quatrefoils or trefoils in the compartments. In the upper section of the frontal, the rose, instead of being left uninclosed, as at Amiens, by arcature or mouldings, and raised above the lower zone by the whole height of two lofty galleries, is placed immediately above its level, and is itself inclosed within a great pointed arch, — an arrangement far superior to that of the rival cathedral. The spandrels are adorned with statuary, and flanking this in the lateral compartments are two beautiful pointed fenestrations, through the apertures between the mullions of which are seen the flying buttresses of the clearstory. The third or upper zone of the frontal presents a gallery, surmounted by a richly-foliated arcature of niches, with forty-two statues of the kings of France, from Clovis to Charles VI., each standing on a massive panelled console; the three central niches topped by a peaked gable, forming an ornamental termination of the whole façade. The simple arrangement and great height of the three zones produce a much more satisfactory effect than at Amiens, the attention not being distracted by so many different members, whilst the multitude of the details is really much greater, and the *ensemble* thus far richer in composition. The four buttresses marking the division of the nave and aisles and the lateral extremities, are of great elegance as well as strength, their faces being adorned with colossal statues of saints, each set in its niche, the pinnacles or caps formed of octagonal turrets, with panelled surfaces. In all the principal French churches the *chevet*, or eastern termination of the fabric, is an apse of seven or five members, with three in the clearstory,—an arrangement infinitely superior to the commonplace flat ending of the English cathedrals. That of Rheims is decidedly inferior in effect to Amiens.

The churches of Rouen, we are glad to think, are familiar to many of our readers, from the position of the town on one of the great lines of communication between London and Paris. It is not of the cathedral we wish to speak, since that is universally given up as a specimen of the last and worst style of the Flamboyant, just as it was about to fade into the Renaissance, and when exteriors were overrun with lacework and frippery in stone.* But the architectural crown and glory of the city is the great church of St. Ouen or Owen (said to be the fifth in succession which has been built on the same spot), and which may be fearlessly pronounced the most beautiful and perfect in Europe. The principles, so seldom realised in practice, of elevation, lightness combined with strength, and enrichment without exuberance, are here displayed in their full force and completeness. It was begun by Abbot Marc d'Argent in 1318, and carried on uninterruptedly for twenty-one years, when the choir and transepts were completed; the nave works were not resumed until 1490. It is interesting to know that the west front, one of the most beautiful specimens conceivable of richly-decorated Gothic, was begun so late as 1515, at a time when the Gothic style in England was dead. The annalist of the church is Canon Pomeraye, whose "Histoire de l'Abbaye Royale de St. Ouen de Rouen," published in 1662, is a most curious and valuable work. It gives an engraving of the famous rood-screen, considered to be the finest in France, and destroyed by the revolutionists of 1792, who established a smith's workshop in the church. The dimensions of the church, as given by him, are 416 French feet in length, and 100 ft. in height, equal pretty nearly to 444 ft. and 106 ft. English. The length of the nave is 248 ft. English, and the width of the central portion 36 ft. The construction of the quire and chevet, and their exterior appearance, are the same as at Amiens, the beautiful effect being produced in each case by the roof of the aisles not being carried up in an inclined plane to the foot of the clearstory, as in the ordinary construction, but arranged in separate octagonal compartments for each bay.

* It may be proper to say, for the benefit of some of our non-professional readers, that the Flamboyant style of ornament and tracery receives its expressive name from its imitation of the undulating flame of a torch or flambeau.

The round of the great western window is the most perfect specimen of pure Flamboyant or highly-decorated tracery to be found anywhere, the arrangement being of two roses, one within the other, and the foliation branching out into a maze of beautiful forms, which must be seen to be appreciated and enjoyed as they deserve. The lower part of the window rather detracts from the excellence of the whole, the pierced construction and the slenderness of the transom bar giving an appearance of feebleness, and of confusion between the circular and upright parts of the window, which is not pleasing. The central tower rises, according to Pomeraye, to a height of 100 ft. above the roof of the church, and terminates in a grand open crown or diadem, divided into two stories lighted by elongated lancets of the most graceful proportions, and supported by flying buttresses of a construction at once so light, so strong, and so richly elaborated, that the form becomes a study of itself. The same is true of those which support the lofty and diaphanous clearstory, with its splendid range of trilobiate and quadrilobiate windows. In the interior of the church, the height of the arches, and the size of the double row of windows in the upper and lower stories, give the building an air of lightness peculiar to itself, whilst the fancy and delicacy of the decorations, and the variety of the tracery, are not to be described in words.

In all this we have merely repeated opinions which have already been expressed by men of the highest pretensions to correct judgment in architecture, but it is unpleasant to reflect that St. Owen's has been made the subject of some very tasteless criticisms by two well-known English writers. The late Dr. Whewell unaccountably declared that the style, which everybody else finds to be decorative carried almost to excess, was "on the whole too plain, except in some particular portions, to be a good example" ("Remarks on the Churches of Germany and Normandy," p. 234). Another writer still living, whose pretensions to architectural dictatorship have given rise to considerable amusement, actually in one of his books charges the construction of the central lantern with barbarism, "the pierced buttresses looking about as much calculated to bear a thrust as a switch of willow, and the pinnacles, huge and richly decorated, having evidently no work to do whatever, but standing round the central tower like four idle servants." It is rather preposterous to expect work from a pinnacle, which everybody knows to be merely an ornamental adjunct to a summit or sky-line. With regard to the buttresses, we deny the correctness of the statement that they have any such look as above described; but a more substantial answer to the objection is that they have been found capable of bearing all the thrust to which they have been exposed for 400 or 500 years. The nave, it seems, is "a base imitation, in the Flamboyant period, of an Early Gothic arrangement; the niches in its piers are a barbarism," &c. Was the writer of this incapable of reflecting that the only real question for the architect was, not whether the arrangement had been employed at an early date, but whether it was in itself a good one? But this and much more of the like sort, which will be found in the book called the "Seven Lamps of Architecture," was to be expected from a writer who pronounces the Doge's Palace at Venice to be a model of perfection. Venetian Gothic, as shown in that edifice, is a style which has the prettiness and pettiness of a toy,—and there let it rest.

ROTTEN ROW.

Sir,—You alluded the other day to the queer-looking stuff that was being put into Rotten-row. Now that the said stuff is hidden, and the top finish put on, I am equally struck with the extraordinary amount of "barrel" which has been given to the roadway, and will make it anything but comfortable for horses until a great deal of wear has been given to it. Horsemen and horsewomen who ride along the crown of the road will doubtless have an agreeable and wide prospect of the surrounding scenery, without any drawback, but those who progress along the southern avenue will have the pleasurable sensation of riding on the side of a hill. I do not know very much about how horses are built, but I should not think it could be very good for their construction to be progressing with the feet on sensibly lower ground at one side than on the other.

A Lounger.

FROMENTIN, THE PAINTER.

Never, even in Paris, has there been so much talk about art as at the present time, and the Hôtel Drucot has never been so attractive to its frequenters as it is just now. Scarcely has Diaz's collection been dispersed, before the rooms in which his treasures had been disposed of, were thrown open for the exhibition of Eugene Fromentin's Oriental pictures and sketches, and they have attracted even a larger number of admirers, and more liberal purchasers, than did the works of the more famous but not more esteemed painter.

M. Fromentin, has special claims to the admiration of his friends; he is not only a painter, but an accomplished author, and a well-known contributor to the *Revue des Deux Mondes*. No French painter,—no painter whatever,—has realised so much or so truly the life of the Oriental. In the desert, M. Fromentin seems always at home, and able to make a convenient painting-corner for himself. Without the exquisite finish of Jerôme, he is equally, perhaps more, faithful; and in a more solemn tone of colour than Muller or Lewis indulged in, Fromentin shows quite as keen an appreciation of the marvellous hues of the East as either of our great Oriental painters.

Fromentin knew the country better than any other painter; he could paint it in pen and ink as well as with brushes and pigments, and as he saw the folly of painting *harems*, which he had never entered, or depicting *odalisques* surpassing imaginary beauty, with him to draw a group of palm-trees or a temple was to be as faithful as Bonomi, whose beautiful drawings of the East would be thoroughly appreciated here. In all that Fromentin painted he put his heart. Like our own Millais, who has been heard to say, as some excuse for the high pecuniary value he puts on his work, that "with every picture he gives a guarantee that he mixes with his colour a portion of his heart"; in some pictures it is less, in others you get a big piece, it is for you to find out how to obtain the largest share. Mr. Agnew will tell you, for a percentage, exactly how to select the heart; but here there is no Mr. Agnew, so we have to find out these secrets for ourselves, and the result is, that very exquisite pictures by very accomplished artists are to be purchased for something less than a comfortable competency.

Rarely, if ever, have the friends of an artist shown so affectionate a desire to obtain some scrap, however slight, of their favourite's work, and in this respect Fromentin's sale resembles that of poor Mason, and in both instances the pictures of these retiring painters will become more valuable the more they are known.

The exhibition of Diaz's and Fromentin's pictures and sketches, within the last two weeks, is likely to have a very marked effect on the landscape art of Paris; for never have artists had a better opportunity of studying the processes by which two very different minds directed their hands to accomplish beautiful work, and never have the secrets of the brush been so undisguisedly divulged, or so plainly expressed. We may expect to see fewer realistic landscapes, and even greater triumphs of atmospheric effects; still more lovely simple harmonies of tone and colour, painters will try to think well before they imitate too closely, and will look more than ever at the works of the older men,—of Ruysdaël, Hobbema, of Chrome, of Rosseau, or of Fromentin.

Of the Orientalist painters Fromentin unquestionably stands at the head; no painter has ever, until he painted Oriental life, altogether avoided the vulgarity of over-dressing his subjects; pots and pans from Wardour-street or the Hôtel Druot never by any chance take a too prominent place in his design. He seems to have the power of fascinating his sitters into perfect repose for just sufficient time to allow of his painting them,—whether riding, or sitting, or asleep,—precisely as he has seen them in the desert.

Fromentin's black and white work reminds one of Leighton's equally perfect method, and such drawings teach the great lesson of how great artists have been able to achieve so much excellent work; the secret they themselves will tell you consists in taking the utmost pains with the earliest processes. To the surprise of the experts, M. Fromentin's collection has realised more than double they had calculated on, and the sale which has just closed, and which has occupied the whole week, must have realised about twenty-five thousand pounds.

Paris.

LIVERPOOL ART CLUB.

The Liverpool Art Club gave a dinner the other evening to Mr. J. A. Picton, F.S.A., chairman of the Library and Museum Committee, under the presidency of Mr. P. H. Rathbone.

The President, in proposing the health of Mr. Picton, said that they had in Liverpool one of the very best organised libraries in England. He knew the library of Birmingham to be an excellent and well-organised one, and he was acquainted with the libraries of other towns, but he did not hesitate to say that for perfection of organisation he knew no library like their own, and he maintained that this was almost entirely due to Mr. Picton. The committee had, no doubt, assisted Mr. Picton, but it was that gentleman's organising ability which had given them a library of which they might be very justly proud. He (Mr. Rathbone) was sure there was no one who had to work with Mr. Picton but would acknowledge another virtue possessed by that gentleman—one of the rarest virtues he had ever met with,—and that was the virtue of perfect justice. Mr. Picton's work had been a frank and fair acknowledgment of what a man could do; while he frankly and fairly put his foot down when he saw a man could not do his work, and pretended to do it. That was such a rare virtue in Liverpool that it was worthy of especial honour. They were most fortunate, now that they were going to have an Art Gallery, that Mr. Picton would be at the head of it; for, if they were not to be flooded with rubbish, they must have a man with nerve, and capable of doing justice.

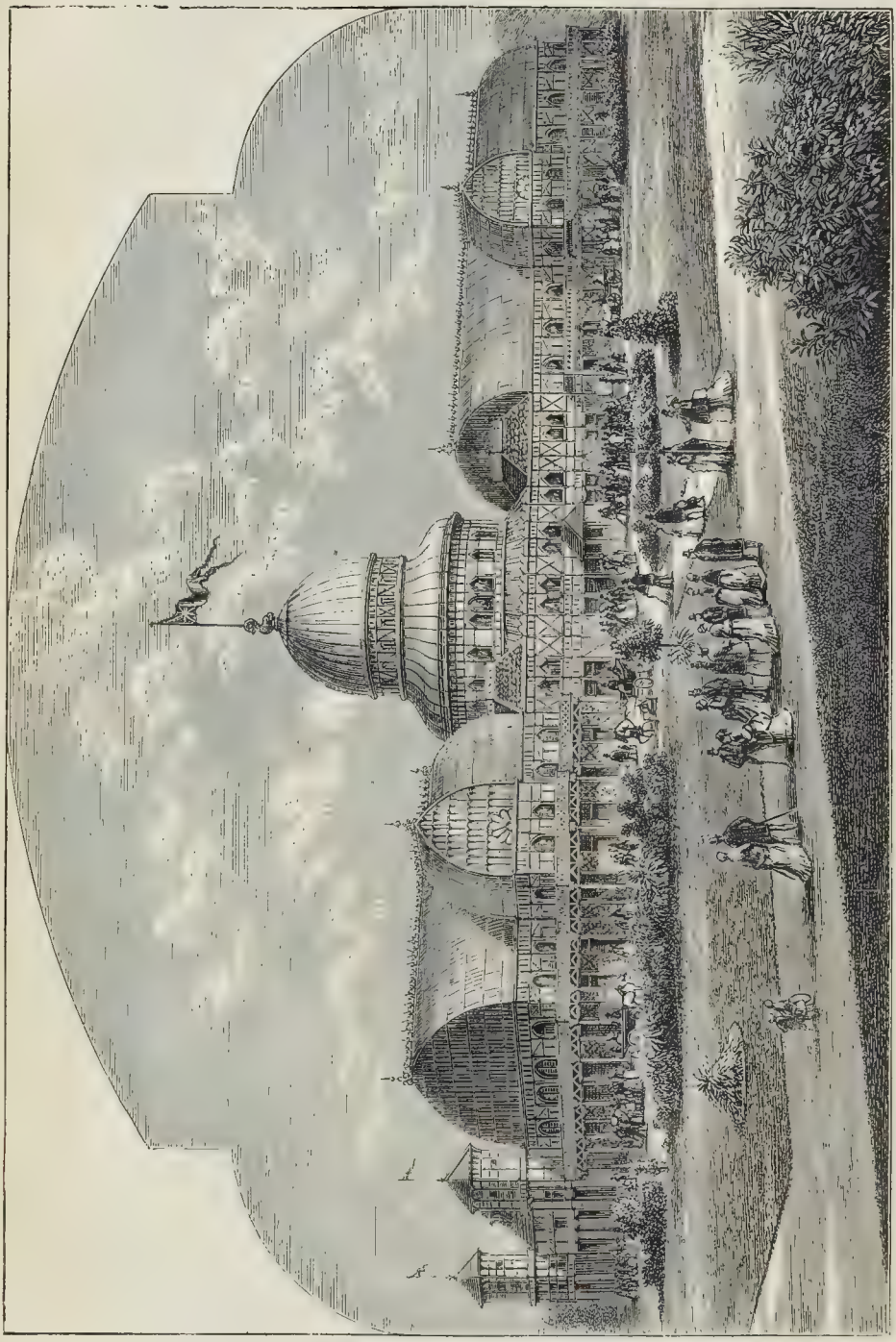
Mr. Picton, in returning thanks, said he thought that that night greatness was being thrust upon him. If in any humble way he had assisted those who were far better adepts in art than himself to carry on the great work of elevating the tastes of the people by pointing out beauties which not only pleased, but tended to instruct and elevate the character and promote the happiness of society, their favour that evening would stimulate him to do still more whenever he could. He had endeavoured to the best of his ability to develop that noble institution with which Mr. Rathbone, Mr. Higgins, and other gentlemen were associated so long. He believed good had been done, and that good would be done; and he thought, now that the institution had tided over its difficulties, it had taken fast hold on the public mind, and had now begun to be properly appreciated.

A *conversazione* was afterwards held, at which Mr. Picton read a paper on the Architecture of Liverpool. To this we will return.

PROPOSED FLORAL HALL AND AQUARIUM FOR SOUTHSEA.

The Southsea Floral Hall and Aquarium, the design for which we engrave, was proposed to cover the grounds (including that on which the skating-rink now stands) on the north-west side, and adjoining the spacious building situated on Southsea Common, known at present as the Assembly Rooms and Baths. These are bounded on the south by the sea-shore, commanding splendid views of the Isle of Wight, Gosport, and the Southsea Pier; on the west by the old fortifications of Portsmouth, and the harbour; the north-east by the Southsea Common, which ranges from Portsmouth and about a mile along the sea-shore. This being Government property is used for practising and reviewing the troops, thus enlivening the spot, and causing it to be a centre of attraction. The proposed enlargement was to be constructed chiefly of glass and iron, to form a winter garden and covered skating-rink. The portion not required for the rink was to be utilised as a ball or concert-room; also as a promenade and lounge. The present ball and assembly rooms were to be converted into spacious supper, retiring, and billiard rooms, as well as a large restaurant and café facing the sea, adjacent to and abutting upon the proposed aquarium. The designs have been prepared, under the direction of a company, by Mr. H. James; but difficulties, as we are informed, have intervened, and the fate of the scheme is at present unsettled.

Liverpool Architectural Society. — At the meeting held at the Royal Institution, on Wednesday evening, the 7th inst., there was an exhibition of designs submitted in the Stock Exchange competition, and a report upon the same, by Mr. Joseph Boult, was read.

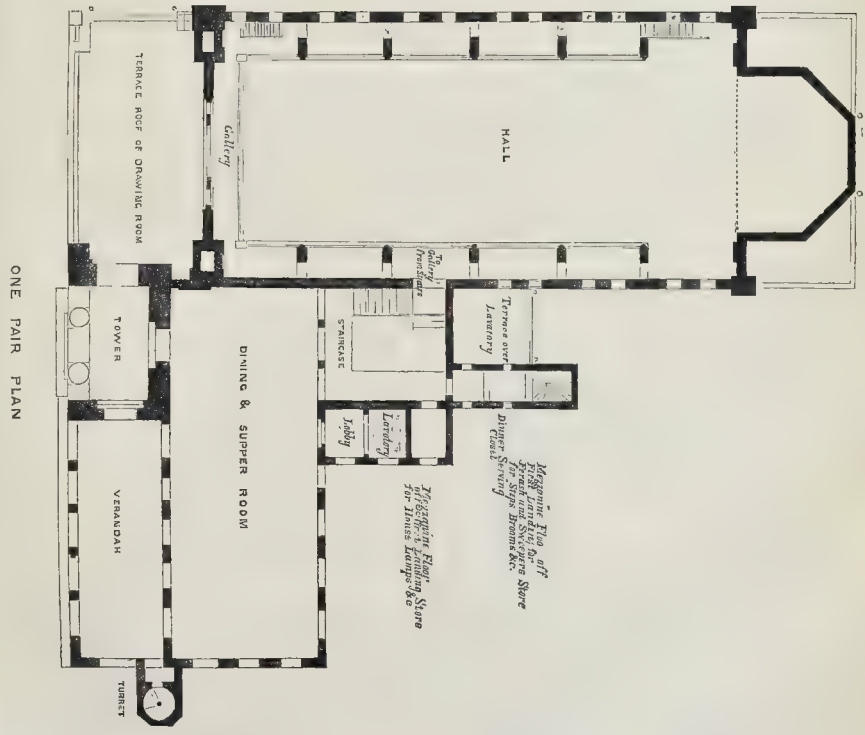


PROPOSED SOUTHSEA FLORAL HALL AND AQUARIUM.—Designed by Mr. H. James.



THE MAYO MEMORIAL HALL, ALLAHABAD, INDIA.——MR. R. R. BAYNE, ARCHITECT.





THE MAYO MEMORIAL HALL, ALLAHABAD.

F. T. Mackenzie, del.

MAYO MEMORIAL HALL, ALLAHABAD.

This building, intended for municipal and public purposes, was built partly by voluntary subscriptions and partly by a grant from the Municipality of Allahabad. It consists, on the ground-floor, of a hall, 72 ft. by 40 ft., with galleries, 5 ft. deep, and a clear internal height of 50 ft.; a ladies' drawing-room, 32 ft. by 20 ft., opening into the end of the hall; and a committee-room, 20 ft. by 24 ft. On the upper floor is a dining or supper room, 60 ft. by 22 ft. It is built of brick and stone (a white stone from the neighbourhood), with strings and bands of Minton's tiles. It was erected by native labour under European superintendence.

A moulded and carved panel at the entrance contains a slab of Silesian marble, engraved with the following inscription:—"Dedicated to the Memory of Richard Southwell Bourke, Earl of Mayo, K.P., M.A., P.C., LL.D., some time Viceroy and Governor-General of British India, who, after three and a half years of beneficent rule, during which he inaugurated many wise measures, and won the regard of all classes, fell beneath the hand of an assassin at Port Blair, Andaman Islands, on the 8th day of February, 1872." The inscription is surmounted by a carved shield of the Mayo arms, with supporters and the Earl's coronet and motto.

Medallion-heads, in red Mansfield stone, are carved in circles on the façade of the building; these represent Britannia, Europe, Asia, Africa, America, Polynesia. In the vestibule under the tower there is a floor of Silesian marble representing the sun, the twelve signs of the zodiac, and the four seasons.

The stone carving and marble work have been carefully executed by Messrs. Henry Poole & Sons, of Johnson-street, Westminster; the work was executed in London and sent out by Suez Canal steamship.

The detached turret is for the use of servants in attendance during a dinner or supper, and as an exit for dishes.

Externally and internally the hall-roof is a pointed arch, the external and internal surfaces keeping the same curve; the materials of the roof are concrete and cement on flat tiles, resting upon wrought-iron curved ribs without ties; the thickness is only 7 in. The clear span is 40 ft., the radius of inner surface being 26 ft.

The front upper verandah and that over the ladies' drawing-room have flat terrace roofs; the roof over the dining-room is covered with slates from Rewaree, near Delhi. Excepting the large hospital near Lahore, and the Thornhill Memorial Hall, Allahabad, this is almost the only other large public building with sloping slate-covered roof, slate as a roof-covering not finding favour in the Public Works Department. Corrugated iron is the usual material or flat-terrace roofing.

The Mayo Hall was estimated to cost 5,000*l.*; but extensive foundations to a depth of 16 ft. were found necessary on account of quicksands, and will considerably increase the sum named. The upper front of the verandah is to be paved with *opus insertum*, there fortunately being just now in India two Italians who are doing the work at a cost of about 2s. per foot super.

The shallow gallery fronts are of brass wire netting, with small gilt flowers at the intersections. These galleries are only intended for ladies, taking a single row of chairs loosely placed, not fixed. A firm of contractors, Messrs. Frizzioni, carried out the works, an assistant engineer's services, as clerk of the works, being given by the Government. The building was designed by Mr. Richard Roskell Bayne, A.R.I.B.A., now practising as an architect in Calcutta.

THE STREET-ORDERLY BIN.

Within the last few years, since asphalte and wood have been adopted in London for roadways, a new contrivance has been introduced into the streets for containing the sweepings that accumulate during each day. Upon the adoption of these smoother paving materials it was at once found that the dust and horse-droppings that would have worked into the joints of rough granite paving, or would simply have been looked upon as the ordinary condition of things, became not only very conspicuous and offensive to the eye, but added considerably to the dangers of the streets. Some amendment was absolutely necessary, and in the City of London a system was adopted that had been suggested several years previously under the name of the "street-orderly system." A number of boys were stationed at fixed intervals along the streets, each being supplied with a brush and dust-shovel, their business being to take up the dirt immediately on its appearance in the roadway. In the first instance, the dirt was deposited in baskets placed on the kerb, a supplementary heap being also formed in the channel, forming a great inconvenience and nuisance as well as danger to the passengers.

To remedy this, the "Street-Orderly Bin" was invented, and is now commonly adopted where asphalte and other of the cleaner kinds of paving are introduced. The invention consists of a cast-iron square pillar between the size of an ordinary guard-post and that of a pillar letter-box, and like them is fixed just inside the kerb-stone. At the top is an opening supplied with a sliding-door. The dirt is put into this opening and accumulates during the day; at night the scavengers lift up a sliding-door at the bottom and take out the dirt as it falls down the shaft. There is thus no such thing as ordinary street-sweeping where these have been used; over 500 of these bins have been supplied to the City of London alone, and they have also been used in Birmingham, Sheffield, Liverpool, Edinburgh Dundee, Plymouth, Southwark, and Walworth, as well as in Guernsey. The makers of these bins are Messrs. George Waller & Co., Engineers, of Southwark, and of Stroud, Gloucestershire.

SOMETHING TO REFLECT UPON.

Sir,—For many years past the improvement of the taste of the people has been the cry of those patriots who arrogate to themselves the possession of a keener insight into matters æsthetic, and also in respect to the true mode of improving our art manufactures. But as those agitators have, for the most part, had no thorough practical acquaintance with the subjects with which they have most concerned themselves, they have unfortunately been obliged to take their notions at second-hand. Their exhortations have, therefore, generally been,—"Look at France! Imitate her!" "Improve your National Gallery! Make it a Louvre!" "Establish more art-schools! more museums!" &c. Well, these exhortations have been listened to, and to a great extent followed. We can now, therefore, after many years' experience of the methods recommended, contemplate their results.

London,—nay, we will say the entire kingdom,—has, during the working of the adopted system of art-education, become one vast *bric-à-brac* museum, to which every dealer in Europe who has anything strange to sell turns his wistful eyes. English taste shows, notwithstanding the discipline to which our would-be taste reformers have subjected it for the last five-and-twenty or more years, an unmistakable bias towards all that is bizarre, all that is peculiar in art and art-manufactures. Of the vast influence which those incomparable Phidian marbles were to exert on English art, after the lapse of half a century, there is not the faintest trace. There they rest in passive state in Great Russell-street, useless to the nation; their silent rebukes unnoted by the gaping gazers who wander by them. What are the Elgin marbles to a public whose taste inclines them to run after curiosities, the eccentric, the odd,—to those who turn with frowns upon the few unsophisticated natures which revolt from barbarisms it is the fashion to dub "marvellous"? But not only is oddity, in the main, the peculiar characteristic of the nicknacks with which the "cultured," so called, delight to surround themselves, but we find in the pretentious art of the day a certain aberration of style, a degree of eccentricity which has no place either in that Grecian or that Italian art in which sages have discovered such charms, and upon which they are never tired of expatiating and holding up as the only performances worthy of emulation.

Let us enumerate some of the strange and wonderful things which commend themselves to that British taste which has been cultivated by the methods of to-day. Here are some of them: Nankin blue barbarities, Japanese crudities, Old Chelsea, Dresden, Sèvres, Louis Quatorze furniture and decoration, the Queen Anne style, Chippendale furniture, grotesque wood-carving, Gothic architecture, Blake vagaries, Bartolozzi's engravings, &c., and to such an extent has the enthusiasm of some earthenware souls been set tinkling, that more is frequently given for a barbarous jar than would really suffice to purchase a good work of art. Is not this literally true? Is not this a faithful record of the state of taste in England in this year of grace? And if it be, does it not demand of us that we should ponder over and reflect upon it? Does it not behove us to consider wherein our modern system of art-culture is at fault?

It is a primary position with profound thinkers that all good things await the extension of education to the masses, but then that must be the extension of the right kind of education. If, however, the education extended be not of the kind the fact will be manifest in the results, and in none more emphatically than in the perversion of taste, for taste is the infallible index of the kind of culture which men have been subjected to. If taste exhibits peculiar and morbid manifestations, we may be sure that the course of education to which the people have been subjected did not sufficiently guard the enthronement of the reason, for if it had, taste would not have run riot, resisted all the dictates of common sense, and become guilty of all those exhibitions of a corrupt taste we have enumerated. We believe, indeed, that the prevalent bizarre taste is mainly due to a glaring defect in our system of education, viz., to that leaning to quantity rather than quality. Our would-be educational reformers have increased the area of information at the expense of accuracy and depth,—a misfortune which not only affects good taste, but stops general progress.

Let us assume as facts that sound education does lead to correct taste and sound art, and that the ecstacies of the admirers of Nankin blue and Japanese crudities are just tributes to the beautiful. Then, we say, it is high time that the Committee of the Council of Education should inquire into the system of national education adopted at Loo Chou Foo, and at Nagasaki in order that the same blessing may be as early as possible conferred on ourselves. Gothic architecture, too, has long been held up to our admiration; we have, therefore, to conclude that this also is an outcome of the highest state of culture. A noble and determined attempt has consequently been made to preserve the Mediæval system of education intact,—to maintain the Mediæval cast of thought,—the social, religious and political aspects of a state of society as infinitely superior to those of any other period of the world's history. The quaint painted glass, the grotesque sculpture, and eccentric decoration have been demonstrated to be infinitely superior and higher in taste than the simplicity, the proportion, and balance of grovelling Grecian art.

If our labours in the cause of art-education and general education are to be of any moral, intellectual, and political value to the nation,—if they are to make us consistent in taste and other matters,—they must be directed to something more than the mere extension of art and general education on their own lines; they must be directed to something more than the multiplying of art schools and museums,—they must be directed to a searching inquiry into the effects which the constant addition of fresh subjects to the daily extension of the curriculum of study is producing on the intellectual status of society. It will then be discovered that it is not only injurious and dwarfing to the intellectual stature, but is shaking our national greatness and independence, and we shall have then to determine the true form of that education which is essential to the development of the man intellectually and physically, and dismiss, as of secondary and subordinate consideration, all questions relating to professional and technical education.

We are too apt to conclude that we are thoroughly acquainted with the proper courses to be pursued in both general and art education. We are too ready to accept the established systems without sufficiently examining and reasoning upon them. Whilst we have reformed and re-established some institutions, we have allowed general education to remain unmoved upon its Mediæval foundations, and have only increased its mischievous tendency by incumbering it with novelties. And as regards art-education, we have taken the system ready-made from the French. To show how readily and without sufficient scrutiny we have accepted this system, it needs only to direct attention to the kind of art-education which was pursued in the two great art-epochs, to see how very different that was to what we have ourselves adopted, and the inference ought to be that we should turn to that ancient and better system which was crowned with such magnificent results.

Our professions and practice in art matters re entirely at variance. We talk with enthusiasm, or rather a *seeming* enthusiasm, about recian and about Italian art, about Godlike nstincts, *cum multis aliis* gong-sounding expressions, till sensible men shift their hearing-umpets, and, like Sir Joshua, only take snuff. ut all this is mere talk, mere profession; it is ollow and meaningless, as we may assure ourselves if we only refer to that list, to that bill of ncongruous fare which indicates the queer and eculiar tastes of the reputed *cultivated* of 1876, nd which, notwithstanding all the high-art proestations of the time, is turned to, much preerred, and infinitely more relished than the best rt. All this *bric-à-brac* fervour is incompatible ith a genuine taste for and real appreciation of ne best Grecian and Italian art. The one class f things professed to be admired is in principle otally at variance with that other class of objects hich we now make our household gods, with the eneral consent and approbation of *cultivated* ociety.

When we come to closely examine the behaiour of that class of society which considers self "educated," we cannot help noticing that is fraught with inconsistency; that its conduct capricious, without stability; that it does not ct upon fixed principles; that its taste is more he vassal of fashion than the subject of commonense; and, even worse to relate, its capricious nd vicious taste is esteemed decided evidence hat the possessor has attained to the seventh eaven of sensitive discrimination and appreciaion. This is really a very shocking state of hings, for it indicates a falling off in intellectual obustness. If this want of rectitude and consistency, if this want of thought were confined o matters of taste alone, it would not, perhaps, ause us very great uneasiness, but unfortunately is extended over the whole field of knowledge. n the blind assumption that intellectual power in proportion to the quantity of things learned, nstead of the degree in which the mind approxinates perfection as an instrument of thought, eople are becoming shallow,—they are losing he ancient English habit of pondering upon and hinking over things; they are in consequence ertainly more plastic to the wire-pullers, and nay be turned hither and thither at will; but his shallowness will neither make us great in rt nor anything else, and if we do not mend our ways we shall lose both the respect of the world nd our national independence. METER.

THE METROPOLITAN BOARD OF WORKS' PROPOSED STREET IMPROVEMENTS, 1877.

SIR,—In a communication on the above subject, in your impression of the 27th ult., by Mr. Crane, the worthy churchwarden of St. ames's, I observe that he suggests that the herit of the projected improvements is due to he *Builder* and to himself, with some others he ames, for promoting the schemes many years go, which are now to be carried out, and I must artly agree with this, as regards Section 3 of he plans, where he is fully justified in his conlusions.

In respect to Section 6 of the Metropolitan Board's scheme, however, he states that Mr. Bidgood was the original projector of this scheme even years ago. This I submit is not so, and lthough quite willing to give the gentlemen nentioned all credit for the efforts they made to ffect the improvements so much required, but which efforts were not at the time successful, I nust claim to be the projector of the new oute from Tottenham-court-road to Charingross, now adopted by the Board of Works. Mr. Crane states that the deviation from the oute proposed by Mr. Bidgood was doubtless ecessitated by Mr. Albert Grant's improvement f Leicester-square, which is hardly correct. The "Central London Railway and New Street" Abandonment Bill having passed its second read.ng in June, 1875, at this precise time it occurred o me that the Strand District Board of Works of which I have the honour to be a member) hould at once memorialise the Board of Works o construct a new thoroughfare from Tottenham Court-road to Charing-cross, by a new and more irect route than any previously projected. In une, 1875, therefore, I purchased the Ordnance urvey maps of the district, and planned thereon street 60 ft. in width from Bozier's-court, Oxford-street, to the eastern end of the National Gallery, leaving the new Savings Bank building to form the south-eastern corner of the new street.

This plan I submitted in the July following to the Strand Board, with the following resolution:—

"That in view of the 'Central London Railway and New Street' Abandonment Bill having passed, and of the necessity for providing more accommodation for the traffic from the north-west of London to the south, this Board do memorialise the Metropolitan Board of Works to widen Crown-street, Soho, from Oxford-street to Moor-street, and to make a new street from Moor-street to St. Martin's-place through Newport-market, crossing Cranbourn-street and Hemming's-row, and that the same be carried out as a metropolitan improvement, and that the vestries of St. Giles's and St. Martin's be invited to co-operate with the Board in this object."

The motion was unanimously adopted by the Strand Board, and a memorial was duly sent in to the Metropolitan Board, together with the plans submitted by myself, and was, in November, 1875, referred to the Works and General Purposes Committee, but was too late to be included in a Parliamentary Bill for the ensuing session. Next year, however, the Metropolitan Board, on the report of their engineer and surveyor, adopted this plan submitted by myself to the Strand Board, in preference to all others, as being the most direct and the least costly to carry out.

Now, while fully recognising and giving due credit to Mr. Crane and Mr. Bidgood's exertions to effect the same object by different means in former years, I must, in justice to myself and the Strand Board, claim whatever merit is due to our, so far successful, endeavour to improve this central district of London.

CHARLES STACEY WEBB,
Member of the Strand District Board of Works.

GRANITE BUILDINGS.

SIR,—I have followed with much interest the correspondence on this subject in your columns, and while agreeing that it is desirable, if not necessary, that the work should be occasionally cleansed in London, I must take exception entirely to Mr. Trickett's last statement as to granite being one of the "worst building materials possible." Since the great fires of Chicago and Boston, I have, again and again, been met with the same unfounded charge against granite, the belief in which has become apparently very widespread in the profession; and while visiting the States last summer, I thought I could not do better than investigate the matter: so went to Chicago and searched among the *débris* of the still unbuilt ruins without finding so much as a single atom of granite, while architects and builders united in saying that (whereas the whole ruin was attributed by Europeans to the use of granite) *they* did not know of a single granite building destroyed in the city. Again, in Boston I found that, while the granite there had *lost flakes off the arrises*, when the cold water came in contact with the almost red-hot granite, yet the substance and the body of it remained unchanged and as strong as ever. But far beyond the weight of this evidence is the fact that the United States Government have in progress at the present moment the magnificent buildings for the State, War, and Navy Departments, in Washington, which are "absolutely fire-proof," and built entirely of a granite, closely resembling the Irish "Derramore" granite (that employed by Mr. Waterhouse in the New City Hall entrances, Manchester). Then the new Post Office, New York, only just finished at a cost of between 1,300,000*l.* and 1,500,000*l.*, and in the Doric and Renaissance style, is altogether granite and *fireproof*. The new Masonic Temple, Philadelphia (Norman), and innumerable other granite buildings scattered through the States, and all erected *since* the great fire, prove most effectually that in the experience of their architects granite is not, as Mr. Trickett would have us believe, "one of the worst possible building materials": a geologist would laugh at the idea.

It is remarkable also that all these buildings keep as fresh-looking and clean as though only just out of the mason's hands, while our London soot so quickly makes its mark on our buildings. In Liverpool, Aberdeen, &c., however, we find that even the unpolished granite firmly resists both time and dirt. See the Royal Infirmary and Marshall College, Aberdeen; Balmoral and Cluny Castles, &c., in Scotland; the Alexandra Buildings, Dale-street, Liverpool; and many other minor works all over the country, all showing that it is only in exceptional positions that granite becomes dirty and defaced.

The question of cost is, I admit, the more serious one; for, though Liverpool, Manchester, Bristol, and other places on the west coast can obtain the Bessbrook granites almost as cheaply as Darley Dale and Hollington stone, yet the Londoner's granite, with heavy freights and railway carriage, must come rather more expensive; but if the beauty and durability of the material be put in the balance as against the extra cost over sandstone, no one could help voting for granite in preference, and no other material would be used in London. Now that granite-working has become an art in itself, the architect can have his most elaborate decorations carried out in that material, the result being perfect freedom from the decay that is eating into and destroying most of the cathedrals and monuments of our country. Even statues are now being executed in granite, and with success.

To Mr. Trickett's list of decorative granites you may add, out of the cemeteries, &c.,—in grey, the "Derramore," and in blue the "Carrickbracken," or Bessbrook proper; the group of monuments in the latter being the centre of attraction at the Philadelphia Exhibition, and considered the most beautiful of all the granites exhibited, even when compared with the beautiful native American specimens.

As to granite being soft when quarried, I can only say that a soft granite is an inferior one, and perfectly useless for anything but common rubble work; it can, of course, be easily worked, but should never be admitted into a building.

THOS. M. H. FLYNN.

BUILDERS AND THEIR TENDERS.

IN Bristol there has recently arisen a question on the subject of tenders of considerable importance to both contractors and builders, and one in which great interest has been felt by the trade of the locality. In several cases tenders for works of considerable magnitude were advertised for, the advertisement having at its end the usual words, "The lowest or any tender not necessarily accepted." Tenders were sent in in due course, and ultimately a decision was come to by the advertisers,—notably in a contract for building a place of worship, and also one for a large factory, near the centre of the town,—to pass over the lowest tenderer and give the work to another whose figures were higher. In neither of these cases was there any doubt as to the ability of the contractor whose offer was lowest to carry out the work. The matter formed a subject of discussion amongst the builders of the locality, by whom it was generally felt that the clause in the advertisement was simply inserted to enable the advertiser to set aside the lowest tender if he was not satisfied that the builder making it could satisfactorily carry out the work. It was felt that the tenderer set aside had cause for complaint, more especially in one case where the names of the tenderers and the amounts of their offers, with the accepted one marked, were published in the trade newspapers. In the other case, of the two mentioned above, a certain sum was paid for bills of quantities, and an idea seemed to prevail that this would form a claim on the part of the contractor to the job, his offer being the lowest, in spite of the clause appended to the advertisement. We understand that in the latter case a legal opinion has been taken, and there is a probability that shortly the question will be submitted for the opinion of a court of law. Another point on the subject of tenders which has been also discussed is where advertisements have appeared in print, builders have been put to a great deal of trouble and expense in making out lists of quantities, &c., the tenders have been sent in, and then no one has been appointed to do the work, but the idea of building altogether abandoned.

SALE OF BARNETT'S ASPHALTE PAVING WORKS.

THE use of asphalte for paving in our thoroughfares appears to have received a check, as we have always believed it would. This has led to much depression in the manufacture of asphalte, and some works have been given up. On Tuesday last the lease of Barnett's patent asphalte works, at Deptford, together with the plant and machinery, were offered for sale at the Mart, Tokenhouse-yard, by order of the mortgagees. The property was described as being situated at St. George's Wharf, Deptford, and occupying an area of 26,400 ft., with a wharf frontage to the river of 125 ft. The buildings

and plant, which have been erected within the last five years, were stated to be of the most substantial character, and in perfect working order. The auctioneer stated that the mortgagees were desirous of winding up their security, and that the property would be sold to the highest bidder. In inviting offers he said that the buildings and machinery had cost upwards of 16,000*l.* The highest offer made was the nominal sum of 500*l.*, and at this sum the lease and property were actually sold; another lot, containing an experimental benzole distillery apparatus, comprising a retort, with furnace and steam-engine, being knocked down for 20*l.* The premises are held on lease from the Corporation of London, for twenty-one years from Christmas, 1871, at a rent of 250*l.* per annum.

PROGRESS OF BELFAST.

FROM a report of the borough surveyor, Mr. J. J. Montgomery, we gather the following:—The sum expended on the main drainage works in progress amounts to 50,000*l.* 5,000*l.* have been expended on permanent paving during the year 1876; and a great many improvements and other public works have been executed during the year. In addition to these, about seventy-five private streets have been sewered, paved, &c., yearly, for many years. During the last fifteen years, 18,107 houses have been built; and the valuation of the borough has increased in that period from 278,807*l.* to 503,164*l.* The population is now about 210,000. This is certainly good news from Ireland.

HOUSES SAID TO BE UNFIT FOR HABITATION.

Dickey v. *St. Giles's Board of Works.*—This case, at the Middlesex Sessions, was an appeal against an order of the respondents requiring the demolition of two houses, 48 and 49, Charles-street, Drury-lane, the questions at issue being whether or not the houses were unfit for human habitation, and, if they were so, whether or not they could by improvements be rendered habitable.

At the conclusion of the case the Court retired for a short time to deliberate, and when they returned the Assistant-Judge delivered judgment in these terms:—"The order here appealed against, which is for the demolition of two dwelling-houses, does not directly affirm that in the opinion of the Board of Works they could not be so structurally altered and improved as to render them fit for human habitation; but, inasmuch as it refers to the reports of its officers, which are to that effect, and shows upon the face of it that it proceeded upon a consideration of those reports, and after hearing the owner's objections thereto, we considered that it must by necessary implication be deemed to have been made from that point of view; and, indeed, except upon that foundation of fact,—that finding either to be expressed or to be implied,—the order itself would be illegal. But the respondents have not established this condition precedent to the satisfaction of the Court, and the evidence they have adduced for this purpose has, in our opinion, been satisfactorily rebutted by the evidence we have heard from the appellant's witnesses. We are far from saying that these houses did not need alteration and improvement when the attention of the Board was first drawn to them; but we are of opinion that the objections then urged to their sanitary condition have been practically removed, and that this order for their entire demolition was unnecessary and should not have been made. It will, therefore, be discharged with costs."

UNINHABITABLE DWELLINGS.

Rotherhithe.—David Kenning, the owner of two houses, Nos. 55 and 57, Neptune-street, Rotherhithe, was summoned, on the 22nd ult., by Mr. Edwards, the sanitary inspector of Rotherhithe, to show cause why he should not close those houses, they being in such a dilapidated and filthy condition as to be quite unfit for human habitation. Mr. Edwards stated that the roofs were partially open, the rooms full of filth, the water-closets overflowing, and that the ground-floor of the premises, occupied by the defendant and his wife, was in a most filthy state, the adjoining room being used as a stable for a donkey. Mr. Balguy, the magistrate, made an order prohibiting the use of the houses for human habitation.

Westminster.—Mr. Banister Fletcher, of 46, Wellington-road, St. John's Wood, architect, was summoned by Mr. Charles Lahee, clerk to the vestry of St. Luke, Chelsea, for not obeying a regulation applicable to the premises, 18 and 19, Oakham-street, Chelsea, made by the Vestry of Chelsea, and confirmed by the Secretary of State, pursuant to the Sanitary Act of 1866.

Mr. Pemberton, jun. (Pemberton & Reeves, solicitors to the Vestry), prosecuted, and in so doing called the attention of the magistrate to 29 & 30 Vic., cap. 90, sec. 35 (part 3), which enacted, that a vestry having made regulations for the sanitary condition of its parish, the Home Secretary for the time being should duly confirm them, and they should be put in force by the vestry. In the case of the houses at present under notice, they had been registered as lodging-houses with the vestry, and notice had been served as to the condition in which they should be kept with regard to their sanitary and habitable condition, the vestry having obtained the consent of Mr. Gathorne Hardy as to the regulations they had made. The regulations related to overcrowding, want of whitewash on the ceilings and walls, supply of water, cleanliness, repair of floors, proper condition of drains, &c.

Mr. George Sherborne, inspector of lodging-houses in the parish, proved visiting 18 and 19, with Dr. Barclay, the medical officer of health, on January 9th, and they were both in a dirty state. The passages were dirty, the water-butt unfit to supply the house and the hoops coming off, the water overflowing and the water-butt very dirty, the water stagnated in pools in the yard.

Dr. Barclay proved that there was a malignant form of typhus fever close by, and there had been twenty cases already reported. There were two other cases of malignant fever, which would form the subject of other proceedings, as the cases had not been reported to the vestry.

The defendant said he had had no notice. When the complaint was made men were put to work, and the houses were now in a proper state of repair.

Mr. Woolrych fined him 30*s.* and costs (21*s.*) in each case.

LEGAL.

The American Masons at Greenock.—In an action raised recently in the Greenock Sheriff Court at the instance of Messrs. John Coghill & Son, contractors, Smithston, to show cause why Michael Storren, one of the American masons, should not return to the service of the pursuers, which he had left, it was alleged, without just reason, or, failing to do so, be liable to a money penalty or imprisonment, Sheriff Smith has just issued an interlocutor in favour of the respondent.

The respondent, in consequence of an advertisement which appeared in the *Sun* (New York) newspaper, couched in the following terms:—"100 good stonecutters to go to Scotland, two years' work, 10*d.* sterling per hour, passage paid," went to a Mr. Abbott in Broadway, New York, who engaged him to go to Scotland, and at an after interview got him to sign a paper that he would repay his passage-money at the rate of from 15*s.* to 20*s.* per week until the amount, 5*l.* 5*s.*, was repaid. The Sheriff rescinded the contract, and refused the prayer of the petition on the ground that the respondent had not been made sufficiently acquainted with the nature of the document he signed.

Claim for Building Materials.—In the case of Eastwood *v.* H. Hall, which was heard at the Southwark County Court on the 19th ult., the plaintiff claimed 14*l.* for building materials alleged to have been supplied to the defendant.

The supplying the materials was proved by one of the clerks of the plaintiff, but the matter was disputed by the defendant, who contended that the goods were supplied to his son, James Hall. The defendant said he never ordered the goods. His son employed the workmen, and they were paid with his son's money. Everything was done by the direction of his son. Judgment for the plaintiff, amending the summons from H. Hall to James Hall.

Claim for Drawings.—In the Sheffield County Court, on the 18th ult., Messrs. E. T. Smith & Co., of Cemetery-road, Sheffield, sued Mr. Riley Carr Robson, stove-grate manufacturer, for the recovery of 22*l.* 14*s.* 9*d.*, balance of account in respect to some ornamental drawings and other goods supplied to him. Judgment for the plaintiffs for the full amount claimed, and costs of three witnesses.

"Grinding Money" again.—In the Westminster County Court, on the 25th ult., the case of Kimble *v.* Feto was heard. It was an action brought by a carpenter against a builder for "grinding money," the claim being for 1*s.* 6*d.*,—two hours' work at 9*d.* per hour. The claim was resisted on the ground that plaintiff had discharged himself, and under his agreement had forfeited his right to the money claimed.

Plaintiff said he entered defendant's service as a carpenter, on July 27th, 1875, and signed an agreement, in which it was stated that on being discharged he should be allowed the equivalent of two hours' work for grinding and re-setting his tools. In October last, feeling very unwell, he went to the foreman and told him that he was too ill to continue his work, and the foreman told him he had better go home, and he did so. After laying up for about a week he returned to his employment, and told the foreman that he then felt able to resume his work, but the foreman told him that there was no more work for him to do, and that he was to go to the cashier, and get the balance of his wages; but on receiving it, the cashier refused to pay him the 1*s.* 6*d.* for "grinding money," and when he went to the foreman he was told that he had discharged himself and was not entitled to it.—Defendant's foreman said plaintiff had absented himself for ten days, and another man was taken on in his place. The judge thought plaintiff was entitled to recover, and ordered the amount, with costs, to be paid in a week.

Claim for "Extras."—At the Chesterfield County Court, on the 17th ult., the case of Fletcher *v.* Saul was heard. The plaintiff, a painter, sued the defendant, a building contractor, of Sheffield, for 22*l.* 14*s.* 5½*d.*, being the balance of an account for work done to some cottages at Hasland, near Chesterfield.

It appeared that in January, 1876, plaintiff entered into a verbal contract with the defendant to paint twelve cottages at Hasland, inside and out, for the sum of 23*l.* During the time the work was being executed he received 20*l.* 10*s.* on the contract, but there were a number of extras which the defendant subsequently ordered. The defence was that the whole of the work was included in the contract for 25*l.*, with the exception of about 25*s.* for varnishing the stoves. Judgment for the plaintiff with costs.

A Model-Maker's Claim.—In the case of Askey *v.* Harvey & Walters, heard in the Southwark County Court, on the 19th ult., the plaintiff was a pattern and model maker, and the defendants had a contract for supplying iron sashes for windows for the Small-pox Hospital, Old Kent-road.

The defendants applied to the plaintiff to supply them with models for sashes, the defendants agreeing to provide the drawings. The actual dispute was for 3*l.* for the window sash model. The plaintiff gave evidence to the effect that he received the order, but that no time was specified as to the completion of the order. Moses Harvey, one of the defendants, stated that he had made repeated applications for the sashes, and an order was ultimately given to Messrs. Parr & Watts, of Bermondsey. The judge said that he had no doubt that when the work was ordered no time was specified. Therefore it ought to be done in a reasonable time, and the time to his mind was reasonable. Judgment for the plaintiff.

Professional Services.—At the Westminster County Court, on the 26th ult., the case of Burrell *v.* Macpherson was tried. The plaintiff, a civil engineer, sought to recover 20*l.*, money expended by agreement with the defendant.

In 1875, it was proposed to establish a company (of which defendant was chairman) to make a street tramway at Great Grimsby, and after some correspondence between defendant and Mr. Moseley (the solicitor for the company) and the plaintiff, the latter and his partner, Mr. Valpy, were chosen as engineers and surveyors of the said tramway, and under a letter (in the form of an agreement) written on the 4th of March last, by the defendant, the plaintiff was to be paid by him all costs out of pocket, and five per cent. on the outlay by the company, if the concern turned out prosperous. Plaintiff made several journeys to Grimsby, took the levels and surveys, and prepared the plans. He also, at defendant's request, got the prospectus printed, and did sundry work, in conjunction with his partner, to promote the success of the project, which was ultimately registered in July, 1875, but as the company had not proved a success, he had not (according to an understanding to that effect) made any charge for his professional services, but simply for his costs out of pocket. Judgment for the plaintiff, with costs.

Landlords and Tenants.—At the Brentford County Court, before Mr. Serjt. Wheeler (judge), two actions of Hankes *v.* Madge have been heard, involving the question of a tenant's liability for dilapidations. The plaintiff's case was that the house occupied by the defendant from Michaelmas, 1873, to Michaelmas, 1876, was left in a bad state, and would require an expenditure of 12*l.* 13*s.* (the amount claimed on the first summons) to put it into tenantable condition. The plaintiff admitted in cross-examination that the house was mortgaged at the time of the letting, and was still in the hands of the same mortgagees; whereupon the judge said that the plaintiff, not having the legal estate, was not entitled to maintain an action for an injury to the freehold. Judgment of non-suit, with costs.

Obstructing Light.—On the 26th ult., before the Master of the Rolls, Mr. Chitty, Q.C., appeared in support of a motion made on behalf of Sir Julius Benedict to restrain the erection of a building adjoining his house, No. 2, Manchester-square, which had the effect of rendering the room in which he received pupils and transacted other business so dark that he was unable to see without the use of artificial light. His lordship granted the injunction asked.

Claim for Portland Cement.—At the Whitehaven County Court, on the 23rd ult., the case of Longmire *v.* Carver was heard.

The plaintiff resides at Parton, and was an agent for the sale of Portland cement. On the 22nd of July last he supplied the defendant, who was about to build a house, with 44 cwt. of Portland cement at 3*s.* per cwt., and 1*s.* a-piece was charged for the bags containing it. The total amount due for cement and bags was 7*l.* 15*s.* Five months after the delivery of the cement the defendant complained that a portion of it was lumpy and unfit for use, and returned it, but offered to pay for the remainder. The plaintiff refused to receive the cement which was sent back, and brought the present action to recover the value of the whole of the cement supplied, and the bags. The defendant had paid 4*l.* 9*s.* 3*d.* into court, leaving a balance due of 3*l.* 4*s.* 9*d.* Judgment for the plaintiff.

CLAIM FOR PLANS AND LEASE.

NICHOLSON *v.* SIR E. BECKETT.

HIS was an action (heard in the Westminster nty Court on the 1st inst., before Mr. Francis ley, judge) brought by a solicitor to recover 3s. 6d., balance of account for preparing s and a draft copy or copies of a lease granted ord Verulam in respect of a piece of land re- ed for a roadway to defendant's premises.

om plaintiff's evidence it appeared that he was in- ted by the defendant to procure a lease from Lord lam in respect to the road in question, and that the ement was that plaintiff was to receive 4*l.* 4s. for his ces, but that after a draft copy of the lease and plans submitted to the defendant he found that sundry ations were required in both, and for this extra ple plaintiff claimed an extra two guineas. Defendant ent him 4*l.* 4s., which plaintiff refused to accept, and ued it.

r Edmund Beckett, Q.C., the defendant, who con- ed his own defence, contended, first, that the plaintiff ed to do the work for 4*l.* 4s., and that he afterwards in- ed his charges to 6*l.* 6s., in consequence of the so-called ra" work which was caused by his own negligence; ndly, he held that Lord Verulam, who granted the nment, was, according to the authorities which he , liable for all the legal expenses connected with the ting of the lease.

e Judge said he was of opinion that the defendant had s a distinct contract with the plaintiff, and had thereby ered himself liable. Judgment would be given for laintiff for the amount claimed, and defendant, if so ed, could endeavour to induce his landlord to recoup he amount.

MASTERS AND MEN.

heffield.—Two branches of the building trade heffield are now agitating for an advance of 3s. The bricklayers give notice of an advance halfpenny per hour, to take effect from the June next, and the plasterers give four ths' notice of an advance of 4s. per week.

ith.—A number of labourers in the employ- of two builders at Leith have struck work an advance of wages from 6d. to 6½d. per . The higher rate is already paid by some e builders in the town.

. Austell.—The St. Austell clay labourers ng failed to get help from other trade nists, have now been advised by their secre- to return to work. During the strike, how- the masters have taken on non-union men; equently those who have attempted to fight attle to the bitter end will have to seek work where.

eds.—The Leeds cabinet-makers' strike, h has lasted nine months, has been settled, the men have resumed work.

mbeth.—Messrs. Doulton & Co. write :—

eferring to our former communications as to the of bricklayers at our new buildings on the Albert nkment, will you allow us to state that the council Operative Bricklayers' Society have at length with- their pickets? They thus appear to have abandoned ttempts to compel us to discharge the two terra- ixers, who continue in our employ. As the action council has met with almost universal condem- , we refrain from any comment on the proceedings, to say that our experience of this case strongly m the opinion so generally expressed that picketing form is as adverse to the true interests of the work- e to those of their employers, and should be made ."

omsgrove.—The Bromsgrove nailers, at a ing held on the 1st inst., unanimously ved not to accept the reduction of 10 per in the wages list proposed by the masters. as further resolved not to take any iron the whole of the masters agree to pay the ist price. At a meeting held on the 5th it was decided to strike. A letter was read Messrs. H. W. Lewis & Co., the proprietors e nail factory, stating that in accordance the terms of their contract they should re one week's notice from their men, and in lt they will be prosecuted; but at the expi- n of the notice they had no desire to dis- rue work, but should reduce prices 10 per conditionally that if the strike maintained prices, the amount deducted should be ned to the men. The men state that they onfident the strike will only be of short ion.

inese Coolie Labour for England.—The *ee Advertiser* says that a leading colliery ietor has resolved, in spite of what has place in California and Australia, to im- a number of Coolies into this country, and as a specimen of Chinese cheap labour, and otiating on the subject with the Chinese sador.

Trade Union Congress.—The Trade Union mentary programme for the year 1877 has een issued as follows :—1. A Bill to amend w of compensation in cases of accident, so he workmen or their families may sue an yer in the event of injury or death from accidents due to negligence. 2. A Workshop Regulation Bill for women and children. 3. The extension of the Factory Acts to bleaching and dyeing works. 6. The extension of the Employers and Workmen Act, 1875, to English seamen whilst in British waters. 7. Reform of the Patent Law. 9. An Act to prevent truck, by making compulsory weekly payments to workmen in the current coin of the realm. To this programme the Congress adds the questions of "Employment of soldiers in agricultural work," the "Efficiency of men in charge of boilers and steam-engines," the "Smoke Nuisance Act," and the "Sweating system in the tailoring and shoe trades," besides other questions.

WOODEN HOUSE FROM NORWAY.

THE house was built for Mr. John Fulford Vickery, North Swanton, Devon, who would no doubt give any particulars asked for.

SIR,—I have lately been giving some attention to the subject of Norwegian timber buildings, with the same object as your correspondent, "S. M. P.," and also for another special purpose. It is my intention to visit Norway in the spring to make myself fully acquainted with the method of construction, and to make arrangements for some buildings I propose to erect in this country.

I can advise your readers that great difficulty at present exists in getting a single house constructed to a special design (and the Norwegian plans will not suit our English notions), but where several precisely similar are required, they can be obtained at a very moderate cost.

ERNEST TURNER.

SIR,—In answer to "S. M. P." in your recent issue, respecting timber buildings suitable for labourers' cottages, &c., I beg to inform the writer of a system carried out by me, when employed as building foreman on an estate in North Wales some years ago. Our *modus operandi* was as follows :—Cut all foundations to a proper depth; fill up with concrete to say 2 in. below floor-line; build fireplaces and chimney-stacks in brick, arranged in centre of cottage; then raise the walls 1 ft. above floor-line of best Portland cement concrete, to form a base for superstructure; next lay a course of timber 7 in. by 1½ in. all round the building on the top of the walls, overlapping at the angles and partitions; then insert vertical bolts of ½ in. round iron in all angles, in centre of timber, and along walls about 4 ft. apart; let the bolts reach to the top of the chamber-floor; then place upright blocks on the first row of timber, 1 ft. long, 7 in. by 2 in. on each side of the vertical bolts. Continue the horizontal timbers all round the building, as previously stated, on the top of the upright blocks; then more blocks and timber, till you reach the height for chamber floor; make the timber to carry floor joists a little stronger; lay floor-joists; put a row of timber on the same; screw down all bolts hard and firm with coupling nuts 2 in. long, the bolt end coming half-way through; then insert the bolt for the next story in the same coupling, and continue the building as previously stated, till ready for the roof, which is simply framed in couples, projecting eaves and gables. All openings for doors and windows are cut out after the building is covered in. All the buildings inside and out are lathed vertical to horizontal timbers, and covered with good lime and hair plaster, 1½ in. thick. The above can be built for about one-third the cost of brick or stone buildings, and far superior as a healthy dwelling, free from all dampness, which is the one great destructive agent to health and comfort. I speak from experience, having lived in one myself some time. The buildings I allude to are now as perfect as on the day they were finished, as a personal inspection would prove. The system would be invaluable in foreign countries subject to earthquakes and volcanic commotions, as the structure is bound together as one piece, and would resist a great amount of vibration before it would shake to pieces. Some people will say, where will your building be in case of fire? My answer is this, a timber building properly coated with good plaster, and built as I would direct, will resist the action of fire a long time,—in fact, I believe longer than some of our modern buildings of brick and iron, which are represented as fire-proof; but we have had sad experience of the fallacy of that in the last few years.

J. BROWN.

Heavy Damages.—In the Court of Exchequer last week the London and South-Western Railway were directed to pay 1,000*l.* to a builder's foreman, named Wakefield, as compensation for injuries sustained by him in an accident at Nine Elms.

A REFUGE HARBOUR AT DUNGENESS.

SIR,—I am glad to see you are drawing attention to the necessity of a harbour of refuge at Dungeness. The subject has been brought before the House of Commons by Sir E. Watkin, M.P. for Hythe; and I sincerely hope he will be well supported in carrying out his humane efforts to save human life and property. The east side of Dungeness is a roadstead formed by nature, which has also placed there in overwhelming abundance the materials wherewith to make a breakwater; and it is well known by all nautical men and others conversant with the peculiarities of the English Channel that this is the most suitable, if not the only proper place between the Downs and Portsmouth for the formation of a refuge harbour. Speaking as an old inhabitant and an agent for shipping during many years, I can testify to the great loss of life constantly recurring, and to the want of due protection to shipowners' property which now exists. Humanity calls for aid. On the first day of the new year, which will not very soon be forgotten, there were several ships in the Roads, one a large emigrant ship, which vividly brought to our recollection the fate of the *Northfleet*; but, happily, she slipped from her anchor just before high water and ran to leeward. A large steamer and other vessels rode out the gale, the holding ground being good—another fact strongly in favour of a refuge harbour. I sincerely hope that every effort will be made to carry out a proposal which would prove one of the greatest blessings not only to the mercantile marine and to the Royal Navy of this country, but also to the shipping of all nations.

T. B.

THE SOUTH SIDE OF THE THAMES.

SIR,—I notice in your issue of last week a letter from a correspondent suggesting a plan for constructing an embankment for the south side of the Thames on precisely the same principle as that which I (in conjunction with Mr. Douglas A. Onslow) proposed in a letter which appeared in the *Times* of the 16th of January. The plan was therein briefly described in the following words :—"We think the necessity for incurring this great expenditure for compensation (caused by cutting off the frontage of the wharfs if an ordinary embankment were made) can be obviated by constructing the embankment with an outer wall following, or nearly so, the southern river frontage, and an inner wall facing the present river front on the south side, the space between the inner wall of the embankment and the present river frontage to be of sufficient width to form a canal communicating with the river by either single gates or locks, the embankment to have a footpath and roadway next the river, connected at intervals with the present roads. The necessary protection would thus be afforded to the foreshore, and not only without injury to the frontages, but with the further advantage of enabling the barges and other craft to be afloat the whole day, instead of being, as now, stranded during low tide."

HENRY ROBINSON, M. Inst. C.E.

A MAP FOR CAB FARES.

SIR,—You will have remarked that this year's map of the "London Post-office Directory" is divided into squares corresponding to certain figures,—1 to 18,—from north to south; and certain letters,—A to X,—from west to east. It is pointed out in the preface to the book that these may be made useful in calculating distances. Moreover, in the street index the map letter and number is given under the name of each street.

Will you permit me to make a suggestion which, I believe, could be adopted to public advantage in connexion with this new arrangement? The map of Paris has long been similarly divided, and it has often struck me, on looking at it, that if a division of the same kind were carried out on the map of London, it might easily be made subservient to one or two important purposes of municipal administration. The one purpose to which I particularly desire to call your attention is the regulation of cab fares by means of the divisions in question.

The squares into which the Post-office map has been divided are 1½ in. across, *i.e.*, half a mile, according to scale. Now, supposing a rate of 3d. per square touched upon, in a straight line on the map, were adopted as the unit of charge,—the 1s. minimum for a single drive being retained,—it will be seen that the calculation of a fare from any one point of the metropolis to any other point, however distant, or however near, would become a very simple matter, about which no argument need arise that any police officer could not summarily decide. Take, for instance, a drive extending from the corner of Edgware-road to the Royal Exchange; the corner of Edgware-road is in H 9 square, the Royal Exchange is in O 9 square; the squares touched upon in this case would be,—H, I, J, K, L, M, N, O,=eight times 3d.=2s. Take, as another instance, the case of a drive extending from the Angel, Islington, in M 6 square, to Kennington Park, in M 13 square; the figures touched upon in this case would be,—6, 7, 8, 9, 10, 11, 12, 13=eight times 3d.=2s.

It will have been remarked that, in the instances supposed, the two extreme points of the drives had either a letter or a figure in common, whereas, in many cases, both the letter and the number might be different, as, indeed, whenever the drive extended diagonally across the map, instead of due north and south, or due east and west. Take, for instance, a drive extending from Edgware-road Station, Kilburn, in E 5, to Camberwell-green, in N 14. Two sides of the map have to be considered,—E to N=10 letters; 5 to 14=10 figures. The fare would then be reckoned thus :—10 figures plus half of 10 letters=15 times 3d.=3s. 9d. In case there had been an unequal number of letters and figures, say 10 and 12, the reckoning would have been: 12 plus half of 10=17 times 3d.=4s. 3d.,

the highest number being always taken in full, and half of the other added to it. This mode of counting would allow for the difference between the length of a side of a square and the length of the diagonal; indeed, somewhat to the cabman's advantage, but no one will grudge that, provided a stable, ready, and unquestionable system of ascertaining fares can be secured.

If the plan here suggested were adopted it would be necessary to publish, say under authority of the Commissioners of Police, a small table, which any one could buy for sixpence, of all streets in the metropolis, giving the letters and numbers of each: a sketch reduction map of London, divided into the proper squares might be added. Ample room for the names of all the streets in Paris, printed in small type, is found in the margins of the Paris map, so that a like table for London could be stowed in any coat-pocket or in any lady's reticule. By its means any one, whether acquainted or not with this big city, could at once find out the whereabouts of any part he might want to go to, and the cost of a cab-drive thither. Indeed, were the Metropolitan Board of Works to direct that the map number and letter be added to the name of every street, any stranger having lost his way in London, would find it again for himself, if he only remembered that the numbers run from north to south, and the figures from west to east.

Henry Chevasse.

DISASTERS IN THE MINE.

Sir,—Permit me again to address you on the above sad subject, for murder underground is still going on. In my former letters to you suggesting modes of prevention, I pleaded and appealed in the name of humanity. Allow me now to reverse it. In the name of property, ye owners, adopt every practicable precautions to secure your mines. The Stonehill Colliery is on fire. This might have been prevented by dipping the brattice cloth in any of the many solutions which render such things incombustible. Wood-work the same. Some mines, once on fire, burn many years; thus your property is lost. Why not have an iron pipe (size of rain-water pipe) from a blast-fan to supply vital air below? In the event of a fire, this fan and pipe would, in five minutes, extinguish any fire, however vast, by carbonic acid gas (ingredients kept ready). But, avast! owners,—first get the men out; not that they are property, but get them out. This pipe would also give timely warning when water is rising in the mine at the lowest place; holes in the pipes to admit water, which would be blown through to the far end, and squirt over an old watchman. All this is practicable; the outlay not great; besides, your property would rise in value.

R. T.

"TOBIN'S SYSTEM OF VENTILATION."

Sir,—In your issue of January 27th I notice a letter on the above subject from Mr. Crozier, C.E., the county surveyor of Durham, stating that if the Tobin system of ventilation consisted of the admission of fresh air into a horizontal air-flue and transmitting the same into different apartments by means of smaller vertical flues, there was nothing new about it, inasmuch as it had been used in the county gaol at Durham since 1844. I may say that I had arranged for a similar system of ventilation for the cells of an extension of the Ipswich Borough Gaol which was purposed to be carried out about six years ago.

I have applied the system of ventilation by upright pipes to other buildings since that time, and before Mr. Tobin gave publicity to the plan. I observe from an illustrated advertisement that Messrs. Shillito & Shorland, of Manchester, claim to be the patentees of a plan which seems to me to be identical with Tobin's.

Neither Mr. Tobin nor Messrs. Shillito & Shorland can fairly claim the system as their invention, for the plan had been practised for years before they obtained their patents.

Edward Buckham,
Borough Engineer and Surveyor, Ipswich.

*** There can scarcely be occasion for any further letters on this subject.

CHURCH-BUILDING NEWS.

Portobello.—The erection of a new Established Church for Portobello is about to be commenced in Duddingstone parish. The site is on rising ground, and the church is designed in the Early French style. The ground-floor area will measure 70 ft. long by 52 ft. broad, and 35 ft. high from floor to ceiling, and is designed to accommodate 530 sitters, exclusive of the choir seats near the organ. Additional accommodation to the extent of 270 sittings will be provided in the galleries. On the east side of the church will be a session-house capable of seating over 200 persons, and, on either side of the session-house, ladies' and gentlemen's waiting-rooms, with lavatories, &c., adjoining. The plans, furnished by Mr. T. B. M'Fadzen, architect, Edinburgh, have been approved by the Church authorities.

Godalming.—A vestry meeting was held on the 24th ult. for the purpose of considering the revised plan prepared by Sir Gilbert Scott, R.A., for the restoration of the parish church. It was resolved to adopt the revised plan, and that the committee be empowered to carry out the work.

Leominster.—The *Hereford Times* says that the work of restoration at Leominster Priory Church is being very satisfactorily carried on by the contractor, Mr. Charles Edwards, builder. The works now executed are stated to have given satisfaction, both to the representative of Sir Gilbert Scott, and to the local clergy and Restoration Committee. A few days ago the foundation-stone of one of the principal pillars of the south aisle of the nave was laid. The column has since been completed. Mr. William Prosser is the foreman of the works.

Towyn.—The committee of the Towyn Church restoration have ordered their architect to prepare amended plans and specifications, so that the work may be commenced in early spring.

Leigh.—The parishioners of Leigh, Dorset, have resolved that the churchwardens should obtain plans and estimates from Mr. Farrell, of Sherborne, for repairs and alterations of the parish church. It is proposed to add a new south aisle, also a new roof, vestry, &c.

Pirton.—Pirton, or, as it was known in ancient times, Periton, Herts, on the 18th ult. celebrated the completion of the first portion of the restoration of the old church—that of the tower. Some time ago the tower was condemned as unsafe by the architect, Mr. J. L. Pearson, and in July last the work was commenced. The tower was entirely pulled down, and has been rebuilt in exactly the same style and dimensions, with the Norman arches to nave and chancel, as originally. The cost of the work has been about 1,200*l.*, and the nave and chancel still require restoring. Mr. Bates, of Stevenage, was the contractor.

New Shoreham.—New Shoreham Church, near Brighton, was re-opened on the 8th ult., after restoration under the direction of Mr. Arthur Loader, architect. The works which have been in progress have, as our readers know, excited much criticism. The north transept has gained a spacious appearance by the removal of the old wooden partition which recently occupied half its space; and the old abortion, styled a vestry, has been swept away from the south transept. Passing into the choir and aisles, the removal of the many coats of whitewash which once overlaid them reveals the surface of stone-work, with its tool-marks and hard grain studiously untouched and preserved. The new north aisle windows are being filled in with stained glass from the manufactories of Messrs. Heaton, Butler, & Bayne, and Messrs. Cox & Sons. The formerly bricked-up windows in the clearstory and tower have been opened out, bringing to light, in the latter part, hidden carved stone columns, capitals, and bases. There is a new—said to be too large—carved pulpit from Durham Cathedral. Outside of the building the patches of brickwork have been removed, and made good with flintwork, and the "compo" on the west front has been knocked off. Mr. Bruton, of Brighton, was the contractor, and his foreman in charge was Mr. Tingley.

Moulton.—On the 16th ult. the Bishop of Chester consecrated a new church at the village of Moulton, midway between Northwich and Middlewich. The new church, which is dedicated to St. Stephen, is in Davenham parish, has been erected at the expense of the rector, the Rev. T. France Hayhurst, and, with the parsonage-house, has cost about 5,000*l.* The land was given by Mr. Robert Verdin, of the Newbridge Salt Works. The church is Gothic in style, with open roof of red pine, and seats of stained wood, varnished. There is sitting accommodation for about 300 adults and 50 children. Mr. Douglas, of Chester, is the architect; and Mr. Beckett, of Harford, is the contractor.

Linslade.—The committee appointed to carry out the repair of the church at Old Linslade, Bucks, have decided to abandon the original project of placing a new roof on the nave, and carrying out a few minor repairs, such as could only, after all, answer as a patch-up to an unsound fabric. They have called in the assistance of an architect, Mr. Lawrence, whose plans provide for the nave walls to be rebuilt, with battlements, and a new porch similar to that now existing, preserving as nearly as possible the present character and appearance of the building.

Whitechapel.—The new parish church of St. Mary, Whitechapel, was consecrated on the 2nd inst. The church (of which Mr. Ernest C. Lee is architect, and Mr. Chappell the builder) was fully described in the *Builder* for the 27th ult., p. 89.

Castlemilk.—On the 25th ult. the new church of St. Mungo, on the Castlemilk estate, in the parish of St. Mungo, Dumfriesshire, was opene The church, which is built on a picturesque si adjoining the highway, and about 200 yar south-east of the old structure, was designed b the late Mr. D. Bryce, R.S.A., of Edinburg and cost about 5,000*l.* The old church w opened on the 7th of January, 1842, but sin that time the population of the parish has great increased, and the accommodation and comfo not meeting the requirements of the times, 1874 Mr. Jardine made an offer to the herito that he would build a new church at his ow expense and on his own estate, on the conditi that he received the old church, the site, a the surrounding enclosure, his intention bein it is said, to convert this into a scho This offer was accepted. The church built of a light-grey freestone, from Broo holm quarry, Linlithgowshire. The main fe ture of the building is the tower on the nort east angle, which is 19 ft. square, and rises to height of about 70 ft. The interior measur 60 ft. by 40 ft., and will accommodate about 3 worshippers. The contractors were,—Mason Mr. Alexander Matthew, Edinburgh; joine work, Mr. T. Irving, Lockerbie; plumbing, M Beattie, Lockerbie; slating, Mr. Anderson, Edi burgh; plastering, Messrs. Laidlow, Lockerb staining and varnishing, Mr. Carson, Stirlin and stained-glass windows, Jas. Ballantyne Sons, Edinburgh.

Edenderry.—On the 24th ult. the parish chur of Edenderry was reopened by the Bishop Derry and Raphoe. The church has been clos for restoration during the past seven mont and has now undergone a complete remodelli of the interior. A new chancel has been add as also a new porch and belfry, new vestry-roo &c. Within, the former uncomfortable arran ments have been superseded by cathedral pe ing; and a Musgrave stone pulpit and readi desk have been placed at the northern southern sides of the chancel arch. The n building is of dark blue stone with white dre ings from Dungannon quarries, the plans designs having been supplied by Mr. J Kennedy, architect, Derry. The entire will be about 450*l.*

DISSENTING CHURCH BUILDING NEW

Liverpool.— Great George-street Cha Liverpool, is to be re-opened on the 11th i after enlargement according to plans by W. I. Mason, architect, Messrs. W. T. Tomkin & Co. being the contractors. The enlargem consists of a new building contiguous to chapel, and includes rooms for the chapel-kee comprising a living-room and two bedrooms large kitchen, where ample preparations ca made for tea meetings, whilst underneath is a room for storing tables, forms, &c. commodious minister's vestry, with lavato and a deacons' vestry on the same fl 22 ft. by 13 ft. 6 in. (with lavatory), which be available for a large number of committ and classes connected with the chapel. cost has been upwards of 2,000*l.*

Southleigh.—The new Wesleyan Chapel Southleigh, which has been erected as a memo of the Rev. John Wesley,—the founder Methodism having preached his first sermo Southleigh Church,—was formally opened the 23rd ult. The building has cost about 6 Mr. Charles Bell, of London, was the archit and the builder was Mr. William Cantwell Newland, Witney.

Clogher.—The Presbyterian Church at Clog County Tyrone, was re-opened on the 26th after enlargement and renovation. The w was entrusted to Mr. William Dunbarr, K faddy, Clogher, and the plans were drawn Mr. Wm. Cuthbertson, Clogher, and submi to the approval of Mr. Wm. Mullin, archit Omagh.

Brighton School of Art.—On Friday, 2nd inst., the new school of science and ar Brighton was opened by H.R.H. the Prin Louise, Marchioness of Lorne. The build which has been already illustrated and descr in our pages, has been erected from the des and under the superintendence of Mr. George Gibbins, architect. Mr. George Lockyer is the builder; Messrs. Johnson & of Ditchling, have executed the terra-cotta w and Messrs. Pinker, of Cliftonville, the s carving. The heating arrangements have carried out by Messrs. Packham & Son Brighton, hot-water engineers.

SILICATE PAINTS.

IN the course of a lecture at the Society of rts, "On the Way to make Workmen's Cottages omfortable, Warm, and Healthy," Mr. F. E. nicke said :—

I now come to a very important point ith regard to rendering workmen's cottages ealthy. I allude to the internal painting and ecoration, with silicate paint for woodwork, nd silicate wash for the walls and ceilings. hese non-poisonous paints, manufactured by he Silicate Paint Company, of Liverpool and ondon, do not owe their existence either to coidental discovery or to a "happy thought," ut are the results of long-continued research nd experiment, to produce pigments free from he well-known objections to ordinary paints. he selection of silica as a basis was not a solu- ion of the difficulty in itself, for silica in various orms and varying quality was already used in he production of rough anti-corrosive and sili- ate paints made by simply mixing silica in a nore or less fine powder with the common ainting colours. Silica was selected as the ase because, when obtained absolutely pure, t has no chemical action whatever on iron or ny of the metals; nor can it be destroyed by re or by acids. Extreme cold also has no ffect on it: in fact, it is an indestructible roduct, incapable of injury to the most deli- ate pigments with which it may be combined. he silica used by the Silicate Paint Company is btained from a natural deposit of almost pure ilex in North Wales. It is found in a basin of olcanic origin, which forms the bed of a small ake, and is doubtless the product of centuries f natural levigation. When dried it is found to e in the condition of a powder, finer than it would e possible to reduce it to by mechanical means. he first great difficulty to overcome, viz., the roduction of a non-poisonous white paint of ood body, of course necessitated the discarding f white lead and zinc oxide. The new silicate hite, a patented preparation of zinc, has all the ood qualities of white lead without its attendant ad ones. It resists foul air, and retains its hiteness and opacity under all conditions, will rithstand 500° of heat, has a covering power qual to the best lead, and, besides being non- oisonous, has no chemical action whatever on he metals. Of the other colours it will be nough to say they are one and all non- oisonous, and contain neither lead, antimony, rsenic, nor copper, in any form. The only isadvantage from which these paints suffer, n common with the ordinary painting colours, s the inability, as yet, to discover a vehicle or them to supersede linseed oil. A step n this direction has doubtless been made in the roduction of the petrifying liquid, though this s not applicable in all cases. It is certainly to e regretted that a more enduring medium annot be found, as the silicate pigments will rithstand, uninjured, a degree of heat that ould utterly destroy the oil with which they re mixed.

In a recent letter to the *Times* on the sub- ect of white lead *versus* zinc white, Mr. Barff, rofessor of Chemistry at the Royal Academy, eferring to the new silicate white, says, "I wish o call the attention of those interested in this uestion to the fact that they can obtain a better aint in all respects than white lead, and one hat has no injurious effects on the health of hose who prepare or use it." Mr. Geo. Godwin, lso, speaking at the late meeting of the Social cience Congress, on the subject of damp houses, c., alluded to the preparation of the Silicate aint Company. He said,—"When we recollect he enormous amount of injury that lead paint id every year, and the number of persons who ere damaged most seriously by it, and the diffi- ulty of keeping damp out of houses, and when hey found that this company claimed to meet hese two points, it became obvious that their reparations were of the greatest importance."

The question of the cost of the silicate paint, s compared with white lead, being in many ases the all-important one, it is satisfactory to now that, notwithstanding the many advantages f the former, they are found in working to be rom 10 to 15 per cent. cheaper. Though slightly earer in the first cost, they have nearly double he bulk of white lead, and, weight for weight, ill cover almost twice the space. Being cheap, on-poisonous, permanent of colour, of good body, amp proof, all but indestructible, and suitable ike for delicate interior decoration or the most xposed out-door wear these paints surely supply the painters' "desideratum." The increasing demand for the preparations of the Silicate Paint Company, particularly from the "trade"—met by the opening of an establishment in London—would seem to indicate that the prejudice with which innovation and improvement are generally received is in this case fast disappearing, and, I venture to predict the day is not far distant when the use of lead paint will be the exception rather than the rule.

Another specialty of the Silicate Paint Company is the petrifying liquid, for the cure of damp walls and the preservation of stone, brick, plaster, cement, &c., from decay. This preparation (also called the washable distemper) is a water paint, manufactured in two distinct forms, viz., as a transparent liquid, for indurating soft stone or brick when it is desirable to render it damp-proof without altering its character or appearance; and as a paste, in all colours. In the latter form,—apart from its damp-resisting qualities,—I propose to use it in the place of common distemper, for the decoration of bedrooms, corridors, staircases, passages, basements, kitchens, &c., presenting an appearance almost equal to paint, and, like paint, admitting of being thoroughly cleansed by washing; and I also intend to use it on the bare walls, which will save the cost of plastering; and I here invite your inspection of these samples, which I have had prepared to demonstrate the nice appearance, the economy, and the healthiness of this invaluable petrifying liquid. This petrifying liquid could also be used, at a very small cost, for the borders of all floors, and might be stencilled in patterns, as shown here on this margin. As it is also unaffected by disinfectants, the value of the petrifying liquid from a sanitary point of view cannot be over-estimated, and its recent introduction into the decorations of the School Board buildings, workhouses, prisons, asylums, and other large institutions must ultimately result in its general adoption for all buildings of this character, as well as by all persons who study the sanitary condition of the houses, not only of the poor, but of all classes.

The enamelling paint, which renders varnishing unnecessary, is the last of the decorative preparations manufactured by the Silicate Paint Company, and is a capital paint for superior interior work of all kinds. As its name implies, it is a paint drying with a hard, highly glossy surface, and, like the petrifying liquid and silicate paint, is admirably suited for damp walls. It will thoroughly prevent the penetration of moisture, however copious, when applied to the walls or foundations of dwelling-houses, railway arches, bridges, tunnels, viaducts, and other structures, and is invaluable for porous tile-roofs. Two coats of it are equal in effect to two coats of ordinary paint and two coats of varnish, while on clean ironwork one coat is, in most cases, sufficient. For the production of telling decorative effects at small cost, the paints of the Silicate Company are unequalled. As an example of this, one coat of enamelling paint, succeeding a coat of silicate paint on a surface previously treated with one coat of petrifying liquid, gives an admirable result, and has also the merit of speedy execution,—a point often of considerable importance. The enamel dries speedily, and, in combination with the silicate paint, has been used with the most complete success on damp walls, to which lead paints could not be made to adhere from the presence of excessive moisture. Recent experiment has also demonstrated that the enamel is not affected by chloride of sodium (common salt). Iron treated with one coat of this paint was exposed in the open air for months, in contact with salt, and watered at frequent intervals. After a considerable time had elapsed, the iron was removed and examined, when both the metal and paint were found to be in the same condition as when first applied. This has resulted in the use of the enamel for the protection of the iron ships engaged in the salt-carrying trade, which had always previously to be cemented internally, at great cost, with loss of space and increase of dead weight.

At the close of the lecture, the chairman, Dr. Richardson, said in the course of his address,—The silicate washes and paints which had been referred to were very important, and he considered them a great advance in sanitary science. He had seen structures where these paints were applied, and thought, with a little improvement, so as to remove the coarseness of the surface, they would be one of the greatest advantages in house construction.

Books Received.

Geography. By GEORGE GROVE, F.R.G.S. With Maps and Diagrams. Macmillan.

THIS is one of a series of "History Primers, edited by J. R. Green," and is an admirable and most successful attempt to present to children the general facts in relation to the geography of the earth in a simple but vivid and natural manner, very different from the unutterable dryness of the general rule of school geography books, and at the same time to teach the learner to think of the meaning of the words he uses, and to realise to himself the actual nature of the facts brought before him. When the tropics, for instance, are mentioned, it is explained that they are so called from a Greek word signifying "to turn," because at those points the sun seems to stop in his path, and turn back again. Some of us can remember for how long "the tropics" were mysteries to us, and regarded as having something cabalistic about them, just for want of a simple word of explanation of that kind. The manner in which rivers are formed, the meaning of the basin and water-shed, are made clear at once by the simple illustration of the roof of a house, with a gutter between two slopes. The small sketch of an iceberg, with the submerged portion seen through the water, will do more to give children an idea of the scale and character of bergs than telling them fifty times that there is "eight times as much under water as is seen above." A small map, in which the Atlantic is shown as if dry, and shaded so as to indicate the scenery and mountain ranges that lie beneath the sea, is very useful as giving an idea of the unity of character of the earth's surface. The attempt to explain Mercator's projection of the earth from the globe is perhaps as comprehensible to the youthful mind as it can well be made, though we are inclined to think this is, as some one said of the Catechism, "what they will understand when they are older." But in general the information is imparted in such a way as to make the children feel a real interest in it, and realise it as a description of the globe they live on, instead of looking at it merely as a matter of hard words. It is the very sort of book we want for them, and contains what may be very suggestive, also, to not a few older persons. The accomplished author has, we see, in preparation, a more advanced class-book of school geography, to be issued shortly.

The Church Rambler. London and Bath: Hamilton, Adams, & Co. 1876.

THIS book of more than 500 pages consists of a series of articles on the parish churches of Somersetshire and Wiltshire within a radius of a few miles from Bath. They originally appeared in that old-established journal the *Bath Herald*; and are now published at the "urgent request" of many friends of the Rambler, who from his own confession in a very modest preface is not a "professed" archæologist. In spite of, and malice might say in consequence of, this fact the description of several interesting churches—each accompanied with a sketchy illustration—is light and appropriate reading; and a good deal of local information is imparted which cannot fail to amuse, obtained as it is by personal observation and itinerant curiosity; or, in the words of the author, by "the poetic fitness of chance,"—a line of modern heroics which not the kindest intentions on our part can prevent us quoting in this slight review of a book intended for the public rather than any technical section of it. Yet at the same time the long account of Weston Church,—whose vicar during the restoration and enlargement of the building "endeared himself to his parishioners by sitting up in the churchyard through the night to see that the graves which had been uncovered were not disturbed,"—contains plenty of antiquarian incident, and is replete with anecdotes of events which have occurred in and around it during the last hundred years. The names of those who have been engaged in recent alterations or additions to the churches in question are scrupulously recorded; and both glass-painters and architects have received often the commendatory notice they doubtless deserved. Some of the quaint epitaphs to be encountered in rambles amongst country churchyards are introduced, and a curious one of the last century, which compares the world to "a city full of crooked streets" is shown to be the original of another, more refined, and of more recent date, in a

churchyard at Elgin. The latter is good enough to quote. It runs:—

"Life is a city with many a street;
Death is the market where all men meet.
If life were a thing which gold could buy,
The poor could not live, and the rich would not die."

If the old argument of the more sentimental Greek philosophy be capable of practical application,—and living people have attempted to apply it to modern schooling,—that children should be instructed in those technical matters which pertain to the trade or profession it is intended to give them,—an embryo parson, or even a budding archæologist, may get a good many hints as to training from the pages of a Church Rambler, who not only remained to pray in every church he visited, but always found something on which to dilate in situations where less good-natured critics would carelessly scoff. The book is well got up and suitable for a present both to young and old readers, especially those who are connected with the neighbourhood of Bath.

Fresh Air in the House, and How to Secure it. By Jas. Curtis, C.E. London: Ward, Lock, & Tyler.

Within the compass of thirty pages the elementary facts as to ventilation are set forth very clearly, and in the closing two pages Mr. Curtis gives his recommendation. The air, he urges, must in all cases be brought into the building from above; that is to say, by means of a pipe or pipes passing down from above through the roof, and so to the cellar or basement. It is much better during the construction of the house to leave openings in the front and back walls,—channels, in fact,—in the piers between the windows, for the purpose of admission; whilst for the exhaust, the pipe or pipes should be carried up in the chimney-stacks, so as to receive all the advantage possible from the heated flues, and as near the kitchen one as possible, because that is in use every day. The descending pipe has openings at the levels of the various floors, and is, in fact, an inverted syphon, with the long end uppermost, and will admit just air enough to replace what is consumed, and no more, whilst what it does supply is as pure as the locality can furnish. Its action will commence the moment that any diminution takes place in the rooms from whatever cause—as, for instance, the least increase of temperature of the air in the ascending or eduction pipe, and can only cease when all parts of the room are of one uniform temperature. The eduction pipe is virtually the short leg of the syphon, and cannot allow any cold air to descend through it into the room below, from the simple fact that the air contained in it is of a higher temperature, or more rarefied than that of the descending column, and is therefore specifically lighter. This pipe must be simply for the purpose described, and only have openings into the room, as close under the ceilings as possible, and on no account have any openings into the flues. Such arrangements as these would doubtless be useful.

Miscellanea.

The Alexandra Palace in the Auction Mart.—On Thursday the Alexandra Palace and grounds were offered for sale at the Mart, by Messrs. Norton, Trist, & Watney, on behalf of the mortgagees, and under an order in liquidation. There was an immense attendance, and the room not being large enough, the auctioneer sent a messenger to engage the Cannon-street Hotel; but that not being at liberty the sale proceeded. The first offer made was 300,000*l.*, the successive biddings advancing, by offers of 10,000*l.* each, to 445,000*l.* At this sum the auctioneer announced that the property was withdrawn, at the same time stating that it had cost 1,000,000*l.*, and that 800,000*l.* must be considered its fair minimum value. He invited private offers for the property.

Good Advice.—The operative rulemakers of Birmingham have presented Mr. Rupert Kettle with a handsome ivory rule. In acknowledging the presentation Mr. Kettle says:—"I trust it [the society] will hold together many years to faithfully and amicably carry out the important trade and personal benefits for which it is founded. Keep up your standard of quality, and you will maintain the prosperity of your trade against all competitors, and secure fair profit for the employer and fair wages for the workman."

London Bridge.—At a meeting of the Court of Common Council on the 31st ult., Mr. R. P. Taylor moved an instruction to the Bridge-house Estates Committee to obtain forthwith an estimate (with design) of the probable cost of removing the present granite wall, which is nearly 2 ft. on each side, doing away with the recesses, making the footpath 5 ft. wider, or 14 ft. 2in. in all, and substituting a light open balustrade. Mr. Moore seconded the motion, contending that the suggestion, if carried out, would conduce immensely to the comfort of foot-passengers over the bridge. Mr. Bedford would add words of this sort to the motion,—"And also to ascertain whether, by a re-arrangement of the present pavement of London Bridge, more accommodation could be given to passengers." Mr. R. P. Taylor was disinclined to adopt the variation. Mr. Heginbothom thought the proposal was like going back with the question relating to London Bridge. In 1869 a similar scheme was considered. It was merely playing with the subject to consider this small alteration. Mr. Shaw likened the proposal to a little patch, and submitted that it would not carry out the intentions of the citizens. It was agreed to add to the motion the words, "And report." With this alteration the resolution was carried.

Art Pottery.—Messrs. Mintons have (according to the *Staffordshire Advertiser*) just forwarded to London one of the largest pieces included in their contract for the decoration of the western staircase in the South Kensington Museum. This piece, which is not less than 54 ft. square, represents "The Triumph of Truth and Justice over Ignorance, Superstition, and Crime." Those who have visited the ceramic galleries in the Museum may have noticed that the lower part of this staircase is executed in embossed majolica by the same firm, and all the ceilings and a portion of the sides with stoneware tesseræ, cemented together in the fire, and afterwards painted with special colours. These being submitted to a strong heat, enable the work to resist the action of gas, acids, or any other deleterious agencies destructive of ordinary oil or fresco paintings. This is what is called the Campbell mosaic process, and the staircase when complete will include not less than eighty-four different parts (dome, panels, portraits, or borders). The piece just sent has been executed by Mr. H. W. Foster, an artist in the employment of Messrs. Mintons, from cartoons painted by Mr. F. W. Moody, of South Kensington.

The Metropolitan Board of Works.—Mr. Henry Bidgood, the St. James's Westminster representative,—one of the few now remaining original members of the Board,—in consequence of certain indications of declining health having set in, and yielding to the advice of his medical attendant and the persuasion of immediate friends, to relinquish the anxious and arduous obligations pertaining to the position, has resigned his seat. Mr. Bidgood first got his seat in a sharp contest with Mr. James Beal. That he has ever since retained the confidence of his vestry is sufficiently evidenced by the fact that on the occasion of each of the half dozen triennial effluxions of tenure of office, his re-election has always been by the unanimous vote of the vestry. Immediately on the announcement of the Board's official intimation of the vacation, Mr. Thomas Henry Elam, an old member of the vestry,—now churchwarden and chairman,—was unanimously elected St. James's future representative.

Cleopatra's Needle.—The *World* says,—"There is now no indiscretion in stating that the 'eminent surgeon,' recently alluded to in this column as having taken on himself the charges of conveying the obelisk known as Cleopatra's Needle from Alexandria to London, is Mr. Erasmus Wilson. He has made the necessary arrangements with Mr. Dickson, the well-known civil engineer, at an estimated cost of 10,000*l.* The obelisk will be surrounded with water-tight and air-tight casing of boiler-plates, will have a wooden keel and an iron deck, and will be towed through the Mediterranean by a powerful steamer." It is to be hoped that every necessary precaution will be adopted: it would be very easy to make a failure.

The North-Eastern Railway's Architect. Mr. Wm. Peachey, who went from Darlington to York a few months ago to act as architect to the North-Eastern Railway Company in succession to the late Mr. Burleigh, has (according to a Darlington paper) resigned his appointment just recently. Mr. Peachey's emoluments were 700*l.* a year and travelling expenses.

Proposed Widening of Walbrook.—A memorial, to which are attached upwards of 700 signatures, comprising those of Alderman Sir James Clarke Lawrence, the representatives of the ward in the Common Council, several members of Parliament, and many of the most important firms in the City, has been presented to the Commissioners of Sewers, calling their attention to the serious inconvenience and delay to business generally which is caused by the very inadequate access at present afforded from the neighbourhood of the Bank of England and the north of London to Cannon-street and the south. On the score of economy it is contended that there should be no farther delay, because at a future time the value of the property required to widen the street will be greatly enhanced, and the mere cost of the regulation of the traffic by the police in Walbrook amounts to 285*l.* per annum, whereas with a wider thoroughfare but a small proportion of that expenditure would be necessary.

Landslip in Bath.—A serious landslip, which has been in progress some months, but has grown much worse during the recent heavy rains, is causing considerable anxiety in Bath. It is in the district known as Hedgemead, and forms the central part of the declivity the summit of which is known as Beacon Hill. Over an area of more than half a mile square the surface of the land has for many months past exhibited unmistakeable signs of subsidence, fissures in the walls of houses, cracks in new and stoutly-built masonry, fractures in gas and water pipes, and the contraction of doorways and windows, being the evidences.' The city surveyor of Bath, by order of the Town Council, is keeping a vigilant watch on the district. The subsidence has recently become so active that some of the inhabitants have been warned that their houses are unsafe. It is thought the slip is the result of an underground current of water acting upon a bed of gravel or sand.

A Portrait Bust.—A short time after the presentation of a testimonial to Mr. and Mrs. S. C. Hall, on the occasion of their Golden Wedding, and in acknowledgment of their continuous and good literary services during a long series of years, it occurred to Mr. Llewellyn Jewitt, F.S.A., that some of Mr. Hall's more intimate friends might like to possess a bust of him as a memorial of the event. Mr. Jewitt accordingly asked a few to unite with him, and by his patient and friendly care the project has been carried to a successful end. The model was executed by Mr. Gallimore, who executed the Masonic bust of H.R.H. the Prince of Wales, and several other successful works,—under the eye, and with the finishing touches, of Mr. Goss, by whom it has been produced in Parian. It is an excellent and characteristic likeness, and will doubtless be sought for by many beyond the small circle for whom it was originally prepared.

The Discoveries at Mycenæ.—Dr. Schliemann, whose discoveries at Mycenæ are now attracting attention throughout the world, has returned to Athens, where he is engaged in the preparation of a work on the subject, to be published by Mr. Murray. It will be illustrated with 400 or more photo-lithographic plates of the treasures found. According to the *Levant Herald*, these photographs are now being executed under Dr. Schliemann's supervision at Athens, and he writes to a friend in that city that "they are excellent." "Unfortunately," he adds, "there is little hope that the treasures will be ready for exhibition in Athens before next summer, as the Archæological Society has not yet ordered the necessary glass cases, nor is the Academy ready for their reception. This will cause delay, as there is no suitable place here to expose a mass of treasure which would occupy an entire upper story of the British Museum." Dr. Schliemann is an American citizen.

Her Majesty's Opera House.—On the 1st inst. Her Majesty's Opera House, in the Haymarket, was offered for sale at the Auction Mart, Mr. Galsworthy (of Chinnock, Galsworthy, & Chinnock) being the auctioneer. It was stated that the rebuilding cost 60,000*l.* ten years ago, and that the theatre was held on under-lease, now held by Earl Dudley, for a term of years, expiring in 1891, at a rent of 1,834*l.* The highest bid was 26,000*l.*, by Mr. Nagle, of the Alhambra, who, however, afterwards said he had misunderstood his instructions, and withdrew the bid. Matters thus remain in suspense at the present date.

roposed Street Improvement in Chelsea. meeting of the Chelsea Vestry on the 29th letters were read (1) from Earl Cadogan o a continuation of Oakley-street to Ken-on, stating that he will be glad to promote, ny means in his power, the scheme for carry- a new street in a direct line from Albert- ge to South Kensington, believing that, in noting such a scheme, the Vestry were con- ng the best interests of the district and its bitants; (2) from Mr. Gordon, M.P. (one of borough members), on the same subject, re- ng that he will make a point of conferring Sir Charles Dilke upon the question. It resolved that the surveyor obtain a copy of original plan of the proposed improvement, that copies be furnished to the vestrymen all persons interested in the scheme.

he Institution of Civil Engineers.—The th ordinary meeting of the session 1876–77 held on Tuesday evening, January 30th, George Robert Stephenson, president in the r. The paper read was "On the Combus- of Refuse Vegetable Substances for raising m," by Mr. John Head, C.E. A description given of various means adopted; and in clusion the belief was expressed that as the and for mechanical appliances increased so ld the difficulties of obtaining the best lities of fuel for steam boilers in rural dis- ts. It was thought, therefore, that the only hod of rendering the use of steam power ersal, particularly for agriculture, would be onstruct the boiler of the engine so as to se the local supplies of combustible material very kind.

Thames Valley Drainage.—It is stated the town council of Kingston have resolved ppose to the utmost the proposed formation of nited drainage district for the several towns parishes in the Thames Valley. At a special ting of the vestry of Barnes, held on the inst., resolutions were unanimously passed demning the proposal of the Richmond Board Guardians, who are the rural sanitary autho- for the parish of Barnes, to establish sewage ks on Barnes-common, and reiterating the nion expressed by the vestry in resolutions sed in 1872 and 1874, "that it is not de- ble to establish local drainage works, but that s their wish to be united with other districts a combination which may be sanctioned by Local Government Board."

Labourers' Cottages for Maidstone.—Mr. Hornibrook, in a letter to the *South Eastern ette* on the dearth of labourers' cottages at idstone, says:—"Schools are built and kept at great expense, but as the *Quarterly Review* e remarked, crowd parents, girls, and boys one bed-room, and the Devil will far more n undo all that the school teaching can effect. idstone has never failed to aid any philan- opic work. I hope that Mr. Peabody's example l stir up a resolution to provide decent homes all our labourers, at a rent within their means. er one hundred cottages have been removed he centre of the town, and there are several ds and other cottages now crowded where few uld like to live if they could get elsewhere."

Proposed Marine Palace at New Brighton. issue of shares is announced for the erection, a limited company, of a "grand marine ace" at New Brighton, Cheshire, which is a at resort during the summer months. What is posed is the erection of an ornamental palace, h music and a variety of other attractions for tors, a convenient site of eleven acres having n secured for the purpose; and this palace l its grounds is intended to be to this seaside ort what the Spa is to Scarborough, the uarium to Brighton, and the Pavilion to thport. The total share capital is 100,000*l.* 20,000 shares of 5*l.* each.

Great Find of Ancient Coins.—A numis- tic discovery almost unparalleled in extent has en made near Verona. Two large amphoræ ve been found containing no less than two ntals, or about 600 English pounds weight, of ns of the Emperor Gallienus and his successors hin the hundred years following his reign. e number of coins is estimated at between 000 and 55,000.

Alarming!—A rumour reaches us that a ok of residences *thirteen stories high* is about be erected on the land belonging to the '51 mmissioners adjoining the east side of the yal Albert Hall. It is to be hoped the Com- ssioners have preserved power of control over elevation and arrangements.

The New Nisi Prius Court at Chester. Mr. T. M. Lockwood, architect, has presented a report to the county magistrates upon the buildings for the Nisi Prius Court now being erected under his superintendence. The works, although considerably retarded by the long-continued wet weather, have been so far advanced as to be ready for the roofing, the whole of the timbers being fixed, and the walls and stonework being very nearly completed. A considerable portion of the internal fitting and woodwork for the court is in course of preparation at Mr. Warburton's works in Manchester.

The Finsbury Printing and Stationery Works.—Messrs. Waterlow's new premises on the site of Finsbury-market were visited by the Architectural Association on Saturday last, when Mr. William Ward Lee, the architect, kindly explained the specialities in the mode of construction adopted. The premises were fully described and illustrated, with plans, section, and elevation, in the *Builder* for May 6, 1876 (vol. xxxiv., pp. 433—437), and therefore it is only necessary for us here to mention the visit of the Association.

Post Office.—The *City Press* says it is rumoured that the Government will require a very large tract of land in the neighbourhood of the Post-office for new buildings. Notwithstanding the erection of the new building in St. Martin's-le-Grand, the accommodation provided is utterly inadequate to the growing demands of commerce, so that the addition of a further building is necessary. The delays and irregularities arising from the present overcrowded state of the department are a subject of general complaint throughout London.

Worcester Dwellings Improvement Company.—The second annual meeting of this company was held on the 2nd inst. The directors purchased during the past year a building site in Stephenson-terrace, Britannia-square, Worcester, which they readily disposed of in lots at a satisfactory profit. They have also entered into an agreement for the purchase of the Worcester Model Dwellings (consisting of thirty-seven houses and other buildings). They recommended payment of a dividend at the rate of 6 per cent. per annum.

Cookery.—At *Brighton* the opening demonstration in connexion with the New School of Cookery took place on Saturday, when Miss Smithard delivered a lecture on high-class cookery, before a large assemblage of ladies. At *Canterbury* a crowded meeting has been held in St. George's Hall, for the purpose of establishing a local school of cookery. The mayor, who presided, said he knew of no subject of so much importance in the homes of the middle and working classes.

New Central Fire Brigade Station.—The Metropolitan Board of Works, at its meeting on the 2nd inst., decided to invite tenders for building the new head-quarters for the Fire Brigade at Winchester House, Southwark Bridge-road. The designs of the superintending architect, Mr. Vulliamy, embrace accommodation for the chief officers and the staff, together with workshops and other facilities for carrying on the work of the Brigade.

Yorkshire and North of England Land Agents' and Surveyors' Association.—This Association was established in 1866, and year by year the Society has gone on increasing in importance and usefulness, the number of its members being now upwards of forty. The president for 1877 is Mr. Carr, of Heslingham, near York. The Society has just celebrated its half-yearly meeting by a dinner at the Black Swan Hotel, Coney-street, York.

Proposed Raffaelle Celebration.—A movement is on foot in Italy for celebrating the four hundredth anniversary of the birth of Raffaelle, which, however, is more than six years off at present, as the great painter first saw the light on the 28th of March, 1483. It is proposed, as the first step towards the worthy celebration of such an event, to erect a statue or some other sculptured monument at Urbino, the native place of the great painter.

Burglar-proof Construction in America. Mr. Alexander Mitchell, the Wisconsin railroad manager, is building a bank building and safe depository in Milwaukee, and in the construction of his money vaults has made the floor, walls, and top, of two thicknesses of railroad rails, and has surrounded this barrier with a very thick wall of stone.

A Novel Apology.—At a recent meeting of the Killarney guardians attention was called to the defective sanitary condition of some house property in one of the lanes of the town. The chairman of the Board explained that the owner of the property,—a medical gentleman,—was so recently married that he had not had time to look after the nuisance complained of.

Iron and Steel Institute.—The Iron and Steel Institute general meeting has been fixed for March 21st and 22nd, when papers will be read of interest to the coal and iron trades. The British Iron Trade Association's annual meeting will take place on the 23rd of March; both meetings will probably be held at the Institution of Civil Engineers.

The Inhabited House Duty.—At the meeting of the executive committee of the Metropolitan Poor-Rate and Local Taxation League, held on the 31st ult., it was unanimously resolved to commence an agitation to obtain the total abolition of the Inhabited House Duty.

TENDERS

For the erection of Little George inn, and premises adjoining, at High-street, Chatham, for Messrs. Arkcoll & Co. Mr. G. Friend, architect. Quantities by Mr. T. Potter:—

Bishop	£2,471	7	2
Clements & Wallis	2,451	0	0
Blake	2,345	0	0
Tozer	2,330	0	0
Bridge	2,232	0	0
Naylar	2,144	0	0
Gates	2,092	0	0
Pankhurst	2,042	13	0

For alterations and additions to the Devonshire Castle, Harrow-road, for Mr. Brown. Mr. H. R. Cotton, architect:—

Williams	£1,324	0	0
Temple & Foster	1,183	0	0
Godden	1,170	0	0
Brown	1,163	0	0
Hanley	1,080	0	0
Toms	1,060	0	0
Lamble (accepted)	1,043	0	0

For alterations to the Unicorn public-house, High-street, Hoxton. Mr. W. A. Longmore, architect:—

Colls	£472	0	0
Gill	332	0	0
Pittman (accepted)	320	0	0

For warehouse, No. 2, Foster-lane, City, for the Rev. W. F. Dashwood. Mr. J. Lewis Holmes, architect. Quantities by Mr. Joseph Waghorn:—

Taylor & Grisk	£4,590	0	0
Merritt & Ashby	4,454	0	0
Somerville & Smith	4,434	0	0
Kirk	4,422	0	0
Scrivener & White	4,175	0	0
Kelly Bros.	4,095	0	0
Gould & Brand	3,989	0	0
Bayes, Bros., & Allen	3,947	0	0
Braid & Co.	3,800	0	0

For the erection of Wesleyan Chapel, School, and fences, at Spilsby, Lincolnshire. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

	Chapel.	School.	Fences.
Lilley	£3,000	£900	£100
Hinson	2,836	816	77
Hobson	2,796	787	89
Hunter	2,771	760	83
Hensman	2,767	765	100
Priest	2,635	766	86
Laycock, Holmes, & Co.	2,227	650	88

For the erection of two houses at Spilsby, Lincolnshire. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Hobson	£1,874	0	0
Hinson	1,691	0	0
Hunter	1,600	0	0
Lilley	1,600	0	0
Hensman	1,560	0	0
Priest	1,443	0	0
Laycock & Co.	1,341	0	0

For rebuilding the Rising Sun, Reading, for Messrs. Byles & Co. Messrs. Wm. & J. T. Brown & F. W. Albury, architects:—

Goodey (accepted)	£920	0	0

For alterations and additions to business premises, London-street, Reading, for Mr. James Winden. Messrs. Wm. & J. T. Brown & F. W. Albury, architects:—

Jenkins (accepted)	£972	0	0

For house at Henbury, for Mr. W. H. Butterworth Mr. W. H. Crisp, architect. Quantities supplied:—

Davis	£5,744	0	0
Hatherley	5,489	0	0
Hawsell	5,180	0	0
Stephens & Bastow	4,999	0	0
Veals	4,800	0	0

St. Pancras Baths and Washhouses:—

Lefroe & Co.	£27,100	0	0
Hook & Oldrey	25,675	0	0
Sabey & Son	25,500	0	0
Prebble & Co.	24,980	0	0
Manley & Rogers	24,950	0	0
Smith	24,085	0	0
Battley	23,950	0	0
Bayes, Bros., & Allen	23,930	0	0
Crocket	23,900	0	0
Aitchison & Walker	23,890	0	0
Kirk & Randall	23,860	0	0
Nightingale (withdrawn)	22,743	0	0

For sheep-pens, cattle-shedding, and auction-ring, for New Cattle Market, Dorchester. (The formation of ground, iron fencing, and boundary walls, have been before tendered for.) Mr. Wm. Norman, engineer:—

Contract No. 1.—Sheep Pens.

Tracy & Co.	£246	0	0
Wire Fencing Company	245	0	0
Hill & Smith	244	0	0
Crocker & Co.	204	0	0

No. 2—Cattle Shedding.

Wellspring	£261	0	0
Davis & Son	239	0	0
Grey & Son	237	10	0

No. 3—Auction Ring.

Davis & Son	£545	0	0
Grey & Son	534	0	0
Wellspring	528	0	0

Stables, Goldhawk-road.—The tender of Messrs. Aitchison & Walker, at 2,322*l.*, has been accepted. The amount previously given to us was erroneous.

TO CORRESPONDENTS.

J. K. C.—C. S.—T. B.—Mr. T.—S. T.—Gargoyle—P. & B.—S. F. C.—H. L.—Mr. N.—R.—E. K. J. R.—M. W.—W.—F. C.—J. L.—W. O'H. (take proper advice on the spot).—G. H. (engraving is in progress).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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Art Lessons from Mycenæ.

DR. SCHLIEMANN is busily engaged in Athens in photographing the objects recently discovered by his spirited and persevering exertions in the sepulchral vaults of Mycenæ. Mr. Murray has announced the forthcoming publication of an account of the discoveries, which will be illustrated by representations of these extraordinary relics of long-forgotten art. The British Museum, we have been given to understand, on the best authority, have commissioned an able and experienced representative to visit the locality. There is thus little doubt that the English public will soon be in possession of a large amount of information with reference to a discovery second to none ever made by the explorer, and possessing claims on the attention of the architect, the sculptor, the draughtsman, and the goldsmith, no less than on that of the student of Homer and the philosophic ethnologist. As to these details, it will be time enough to speak when they come before the world. The information which has been conveyed in the letters of Dr. Schliemann is, however, enough to throw on the most important period in the history of art a bright and altogether unexpected light. Facts which, up to the present time, have appeared to be altogether anomalous, can now be reduced to order; and the history of Greek sculpture will be removed from the regions of wonder, approaching the confines of the miraculous. It is obvious that the whole course and future development of art must be affected by our acquisition of knowledge as to the path by which the sculptors of the noblest times of Greek art arrived at their unapproached sublimity. Greek sculpture has appeared to modern thought as having sprung, like Aphrodite, from the sea, or like the Adam of Milton, from the earth, at once into full-grown and perfect beauty. We owe no little to the man who has been the first to enable us to detect, with any approach to certainty, the method by which the education of Phidias and his followers had been studiously and for a long period prepared. Dr. Schliemann's discoveries have not only put us in possession of an essential and long-lost link, but they have further given the most satisfactory explanation of the reason why that link has for so long a period been lost. The history of Greek art, down to the present time, presents a remarkable contrast with every other special section of human history. Whenever we are able to trace back the development of mankind by any positive monuments, we see proof of the activity of those very laws under which the present progress of art, of industry, and of civilisation is in operation. In some cases we can carry back this history for a very long term of years. The more distinctly we can ascertain ancient dates, the slower do we find that the progress and development of human skill and science have been. Between the earliest dated monuments, and those of which we speak as prehistoric, the time which has elapsed, judging by the difference of treatment, has been immense. As to this, however, we must not forget a lesson which has never been so clearly taught as by the discoveries of Dr. Schliemann; that is, that change cannot, taken alone, be regarded as an adequate measure of time. Another element, not less important than time itself, has to be taken into account; that element is the ethnological one—namely, race. It is indubitable that there exist, and for very long periods have existed, at the same time, and within moderately narrow geographical distances, nations in vastly different stages of civilisation. And it has been brought out, perhaps, more fully by the discoveries at Hissarlik than by any previously-known facts, that it has not unfrequently happened that the ruder and more barbarous people overcame the more cultivated and civilised people, and extinguished their light in a savage darkness. Thus the element of retrogression has at times exerted an influence more solid, more sudden, and more formidable than the element of advance. The gain of centuries, or of tens of centuries, has been lost in years or in decades. What the northern barbarians did for the corrupt civilisation of Rome, in time not unillustrated by history, other barbarous tribes, as yet unknown to us, appear to have done for that lofty, artistic, poetic state of life in which Homer lived, and which we have been but too apt to regard as fabulous or imaginary.

We wish to steer entirely clear of any matter of question as to date. For our purpose it is of comparatively little importance whether we take the period of the gold work found at Hissarlik or of that found in richer abundance at Mycenæ, at a century or at a millennium before the era of Thucydides. To refer these magnificent works of the goldsmith to astronomical time requires much fuller and clearer evidence than is as yet collected. Of two points we apprehend there can be no denial. One is that the masks, goblets, and other works in gold found in the sepulchres of the House of Atreus are of a date not more recent than the reign of these mythical, but not fabulous, chieftains, of whom the great epic and dramatic poets of Greece spoke and sang. The other is, that the reign of these chieftains and the interment of the treasures now brought to light were separated by some distinct break,—probably the result of war and of conquest,—from the earliest connected history of Greece, which has been reduced to an approximate chronology by Thucydides. Over how long a period, measured in years, this break extended, we can at present hazard no opinion; and in this resolve we apprehend that we are outside of any hostile criticism that has been applied to any of the enthusiastic, and rightfully enthusiastic, attempts of Dr. Schliemann to fix in time the era of the Homeric heroes.

At a time, then, which is uncertain, and which, there is strong reason to believe was uncertain in the age of Pericles himself, we have proof that the art of the goldsmith had attained a very high excellence in Greece. Nor was it as an exceptional thing, at rare intervals, or for special and unusual objects,—such as was the formation of the chryso-elephantine statue of Jupiter, by Phidias—that the goldsmiths of Mycenæ wrought. If we found articles of state or of worship alone buried in the carefully prepared sepulchre, such might have been the case. But we have something far more unusual—something altogether without precedent or expectation. Masks of gold, presumed to be the portraits of the great personages thus sumptuously interred, are found in different tombs. When we bear in mind the rapidity with which, especially in southern Europe, the rites of sepulture follow on death, it is certain that there must have been a class of men who were prepared, at a very short notice, to execute costly and important works in gold, and who, in point of fact, did so execute them, and a very strong argument as to the extreme antiquity of these objects is derivable from the fact of their material. We have, indeed, the remark that, about 1,000 years before the Christian era, silver was nothing accounted of in Jerusalem under the reign of Solomon. But this is mentioned as a very exceptional state of things. It is not one which appears to have endured. Neither can it be taken as at all a literal statement, for the prices of horses and chariots, during the same reign, are quoted in silver in the same passage that speaks of the use of gold for the vessels of the sanctuary and of the palace. And the purchasing price of silver, thus ascertained, is not so far different from the ordinary purchasing power at the present time as to allow of the supposition that the value of that metal had been very seriously debased. In the absence, therefore, of objects of silver or of electrum, interspersed with, and, indeed, considerably outnumbering, those of gold, we have an unquestionable sign of a very remote antiquity in the Mycenæ treasures.

That we have no means of measuring the width of the gap in time intervening between the death of Agamemnon, if we attribute the tomb to that Homeric king, and the era of Phidias, derived from the existence of a series of intermediate works in the royal metals, is at once intelligible when we reflect on the great and steadily increasing value of gold. Ancient writers often speak of a golden age. We have been apt to take this as the language of imagination. It now appears more likely that it is a veritable tradition. Gold, occurring for the most part in a virgin state, would naturally have been one of the first metals in which man wrought. But experience of newly-settled countries, moreover, tells us that when the earth was but little

peopled, the occurrence of virgin gold in any districts which, geologically considered, are of an auriferous nature, was likely to be abundant. As the natural supply was exhausted the value of gold rose. In historic times it has risen from ten to sixteen times the value of silver. Thus the greater the profusion with which this most precious of metals was at any time employed, the greater (other things being equal) the antiquity. The constant, steady increase in the value of the precious metals must have rendered the preservation of any sepulchral deposits matter of continually more and more difficulty. Either the most awe-inspiring precepts of religion, or the constant vigilance of an orderly government, must have been active and uninterrupted in order to preserve from violation tombs known to contain treasure. And when war and conquest supervened, it is more than probable that both the sanction of religion and that of police would be at an end. It would be one thing to rifle the tomb of a king or chieftain of a ruling family, and quite another thing to pillage the treasures of the heroes of a vanquished race. The evidence that we have of the successive waves of war and conquest that swept over Greece is becoming more and more felt. And if we had no other proof than the negative one of the absence of sepulchral remains of this precious nature between the date of this very ancient and hidden mausoleum and historic times, that very absence might tell us of barbaric conquest.

The wonder, then, is not that the postheroic work of the goldsmith has disappeared, but that the extraordinary treasures discovered by Dr. Schliemann should have been left to tell a tale of the purport of which there can be no doubt. At Hissarlik their preservation was due to the terror of an assault, and to the fury of the flames. We can as well understand why the golden vessels there found had not been unhesitatingly sent to the melting-pot, as we can tell why we are still discovering precious relics imbedded in the volcanic ashes that overwhelmed Pompeii. At Mycenæ there is not the same cause for escape. But there has been an extraordinary amount of care bestowed, in the first instance, on the protection of the tombs. We cannot doubt that both the sanction of religion and the piety of the ruling families watched over these golden tombs so long as the polity under which they were founded endured. And such was the care bestowed not only on the preservation but on the concealment of the sepulchres, that when, in the course of time and change, other races ruled at Mycenæ, the treasures of the tombs of the Atridæ were unknown and unsuspected. Whatever be the date to which we ascribe them,—few will place it at less than 600 years before the era of Pericles,—we have thus the evidence of the existence of a craft apt to work in gold, and to execute, not only goblets and beakers, sword-hilts and sceptres, but portraiture in metal, at that long distance of time before the date of the sculpture of Phidias.

This unquestionable fact shows that we have hitherto been looking in the wrong direction for the filiation of Greek sculpture. Our usual effort has been to trace it to the influence of Egyptian art. We know that in Egypt both sculpture proper and that curious combination of sculptured relief and vivid colouring which is known by the name of koilanaglyph was characterised by a remarkable permanence of treatment. We have undoubted relics of the art of Egypt under the fifth dynasty of Manetho. We have hieroglyphics of the date of the Great Pyramid. The differences to be observed between the sculpture dating under the fifth and that dating under the eighteenth dynasty, or between the hieroglyphics used by the builders of the Great Pyramid, and those sculptured under the reign of the Ptolemies, are such as to require a special knowledge of Egyptian art to appreciate. They are probably less marked than the differences in Greek art between Phidias and Lysippus; that is to say, in a single century. Our relics of Greek art before the era of Phidias are few and rude. They chiefly consist in the sculptured metopes of a temple at Selinus, which are attributed to the middle of the sixth century B.C., and to a statue of Apollo, found at Tegea, which presents much of the aspect of Egyptian sculpture. It has always been inexplicable how such marbles as those wrought by Phidias and his school should have been the successors, after so brief a period of time, of such archaic types as those to which we have referred. It is this difficulty which Dr. Schliemann has done so much to dispel.

It has not escaped the attention of some of the keenest critics of sculpture, that the marbles of the noblest Greek time bear no mark of resemblance either to works in stone, or to works in wood. The same may be said with regard to terra-cotta; only we have not such ancient relics of terra-cotta as a material for statuary, as we have of either wood or stone. Each of these materials demands a treatment proper to its physical nature, and the style of treatment thus demanded is instinctively recognised by the artist. Thus, in works in stone there are generally found a closeness and massiveness of grouping which afford a strong contrast to the somewhat poor and naked boldness which is often attained by the carver in wood. The first relies on mass for effect; the second on audacity of detail. Neither of these influences is to be traced in Greek sculpture. We may take an example, which, though only a copy, is no doubt a copy of one of the masterpieces of antiquity; namely, the Apollo Belvidere. This noble statue, as will at once be remembered, is famous for a boldness in the thrusting forward the left arm, which is not of a nature to be readily executed by a worker in stone. The position of the arm is what we might expect from a carver in wood. But no wood-carver could have relieved and supported the projected limb by the hanging folds of the chiton. When we regard the combination thus effected we see at once that it was designed to meet the exigencies of the founder. The Apollo was a design, there can be no reasonable doubt, for a molten statue,—either in silver or in brass. The same may be said of many of the other most famous semi-draped statues of antiquity. The grandeur of the drapery, and the self-contained drawing of the figures, are such as are consistent with the control of the exigencies of the foundry. The molten metal must have free course when flowing into the mould; and thus from the very difficulties with which he had to contend the ancient founder of statues drew a new inspiration. There can, we think, be little doubt that the draughtsmanship of the early artists was greatly raised in elevation of conception by being subjected to the rules of mechanical necessity. And as the pose and composition of so many noble statues betray their relation to the founder, so does their finish. The modelling of the trunk (if we take again the Apollo, or the Psyche of the Museo Borbonico, or the Cupid of Centocelli) is the modelling of a worker in wax. Winckelman, if we rightly remember, has made a remark to this effect. We have lately seen modelling in clay brought to a pitch of excellence that is almost startling, by French artists. But there is no resemblance whatever in their treatment to the manner of the antique. Modern Italian sculpture, again, if we regard it as mere manipulation of marble, has reached a degree of excellence which can fairly challenge competition with the work of all time. But the realistic treatment which characterises the terra-cotta is found also in the marble. The sculptor now sketches in clay. He sketches with a power acquired by long tuition, and by the experience of successive generations of artists. But he is limited by the nature of his material. And when he comes to work out his sketch in marble, the treatment imposed on him by the clay is stereotyped in the nobler material. But no one would propose to cast one of these very life-like works in bronze. No one,—that is to say,—who regarded bronze as a material for something nobler than lampistry or domestic ornamentation. The waxen finish of the antique is at once understood when we reflect that the models from which the castings were made must have been finished in wax. It was the melting of the waxen skin spread over the wooden or clay substructure that left the space that was to be filled by the molten metal. Thus from an analysis of the most remarkable characteristics of the sculpture of the grand Greek period we are led to the conclusion that one cause of its peculiar excellence was that each statue was designed so as to admit of the exercise of the art of the founder, and that the exquisite delicacy of finish was the result of modelling in wax.

It may not be for the first time that this opinion has been brought forward. Hitherto, however, it has been a somewhat unsupported speculation. Its acceptance has depended on the apparent probability of the view, or has been due to reliance on the taste and insight of those who propounded or supported it. Now we can add another link to the chain of evidence. We have found, within the last few years, in Epirus and elsewhere, bronze statuettes of the most exquisite delicacy of workmanship. And the mask or fragmentary head of a female, which is one of the last additions to the bronze room of the British Museum (and the lighting of which may be cited as one of the happiest and most successful examples of true sculptural illumination with which we are acquainted), is an example of bronze statuary of full size. The masks found in the tomb of Atreus prove that these statuaries in bronze were the pupils of a long line of workers in yet more precious metals. Thus, while nothing has occurred to diminish our admiration of the genius displayed in the marble statues of the age of Phidias, their existence can no longer be regarded as an exception to the universal law of human progress. Art, in Greece as elsewhere, was not a creation, but a growth. For how many centuries the goldsmiths, the silversmiths, and the bronzesmiths of Greece toiled before they arrived at the skill which modelled the masks of the Atridæ, the head of the Aphrodite, or the exquisite little Neptune from Epirus, we are as yet unaware. That man must be more positive than wise who would add we can never know. The great change which, so far as present information goes, appears to have come over Greek art in the time of Phidias, was a change rather in material than in workmanship. Statues originally designed as castings were wrought by Phidias in marble. We can understand how the introduction of the new material might have been comparatively sudden,—due, for example, to the discovery of some new mode of hardening the sculptor's chisel, so as to enable him to give to the crystalline stone of Pentelicus the finish without which the cultivated Greek eye would have been unsatisfied. But it is one thing to regard a great artist as the introducer of a new material, and another to look upon him as what can only be called a creator in art. Phidias, in so far as his works are illustrated by the relics of preceding artists in stone or marble, was an inexplicable phenomenon. But when regarded as the pupil of a long line of goldsmiths, silversmiths, and bronzesmiths, whose craft he himself followed in his principal work, and whose trained skill and exquisite taste he was perhaps the first fully to apply to the less precious, but more durable, material of marble, Phidias was no less the master artist of antiquity, although he ceases to be an anomaly or a prodigy.

It will, we trust, be not the least agreeable of the reflexions with which Dr. Schliemann will, we trust, cheer many a year of advancing and honourable age, that his magnificent discoveries will prove to have even more than their great intrinsic value. Nor do we mean by intrinsic either their value as gold,—a mere trumpery item in comparison to their actual worth,—or their value as the nucleus of a museum worthy the country of Phidias. Dr. Schliemann himself, we conceive, has chiefly regarded that light which they throw on the truth of mythic tradition, and on the harmony that exists between poetry and history, as the chief result to be expected from his discoveries. How far they may illustrate the chronology of history is as yet uncertain. Of the light they shed on its general course there can be no doubt. Nor can it be denied that they form the most pregnant comment that has ever been offered on the poetry of Homer. They give a new life to the majestic forms of the Homeric heroes. We have ventured to suggest a new utility for the sepulchral masks of the Atridæ. Apart from the illustrations which they give of history and of poetry, of life and manners, of the passing into oblivion of a high and cultivated state of artistic excellence, they open a new chapter in the chronicle of the growth of art, and of her development of human faculty. And that chapter was the very one as to which modern study was most in ignorance, and of which the value is the highest.

Domestic Economy.—With a view of aiding in the teaching of domestic economy in elementary schools, the Society of Arts will give three prizes for the best syllabuses of a course of instruction in that subject,—30*l.*, 15*l.*, and 10*l.* Under the head of Domestic Economy are included (1) food, cookery, and clothing; (2) health, the management of the dwelling, and the sick-room; (3) cottage expenditure, and thrift. The syllabus should give in detail the heads of such instruction as can be taught in an ordinary elementary school, and should be accompanied by explanatory notes as to the manner of imparting the instruction, and the various requirements for conducting the classes efficiently.

ROYAL PROCESSIONS,—AN ARTISTIC GLANCE AT ONE.

A ROYAL progress was certainly, in more antique days than these, looked forward to, and eventually regarded, with feelings somewhat different from those which such an event,—rare as it is,—now causes. The sovereigns of the world, as it was, showed themselves to it with a presence, and surrounded by a show and glitter, of which we can now-a-days form but a feeble, if indeed any, idea. A "procession," in past days, from the palace of the sovereign to a legislative assembly or to a cathedral church, was a really artistic sight, and a remarkable one, all ways looked at. All the surroundings were in happy "keeping." The architecture of the old cities, the costume of the populace who flocked to see the preparations made in the streets and ways through which the procession passed, the carriages and horsemen, and trappings and furniture generally of it, and, perhaps more than all, the costume and bearing of those who made up the show, altogether formed a spectacle of which those, perhaps, who figured in it hardly to the full appreciated,—certainly not to the extent they would have done could they but have pictured to themselves to what these gorgeous and harmonious processions and progresses would in process of time have come, if not dwindled to. Progress, to speak generally, and enlightenment and superiority to things external, to show and glitter, and so on, have done this, and doubtless the time will come when "processions," like their pictured and sculptured representations, will be numbered among the things that were.

But we may here find a subject not a little artistically important, and worth the consideration, and thoughtful consideration too, of those who are interested in the art of the time, and in its probable future, and in it as contrasted with the things of the past and as they were. The world is a long while in abandoning its time-honoured prejudices, and, may we not add, its amusements and modes of eye gratification. Be it remembered that all things, and such as these among them, have been things of growth, and that it has taken many generations to elaborate some of the "shows" which we now see so dimly in what is left of them and in mere representations. They were not the mere trifles that so many "practical" people suppose. Processions of all kinds, shews, outward displays, things that pass away the day on which they occur, fine costume in use but one day, may be, in a year, and occasional glitter and display, are looked upon by a large class of practically-minded people as simple waste of means, and a trifling away of time and work; and, had such their own way, all of it, however rare the occasions, would soon vanish and be no more. But it may well be seriously asked,—is this altogether wise, and can it be entirely successful? Can the mind, it may be asked generally, give up sights, however enlightened it may grow, and however intellectual and advanced? Is it not inherently instinctive?—does it not seek for such, and look out for and anticipate eye gratification and outward show, and artistic excitement,—good if it can be found, bad if there be no better?

The royal progress we have but just witnessed is surely a proof of this, and the vast crowds gathered together to gaze at it prove beyond all cavil how eagerly people will flock from far distant places even to witness such passing show, however fleeting, and however full of shortcomings it may be. The progress of Queen Victoria from Buckingham Palace to the Houses of Parliament was a "procession" just as much so as an antique triumphal entry into the imperial city,—as much so as the "triumph of Maximilian, Emperor," as seen in the—we wish we could say it—so well-known print. Why is this not exhibited, by the way, somewhere or other, either at the British Museum or at South Kensington, and in a place where it could be seen easily? It was just as much a procession as that drawn on the Greek Cella Frieze, and ought to be as well worth sculptured or pictorial representation. Pains, in some respects, would seem this time to have been taken to make a little more than usual of this occasion, and to make of this progress a speciality. Did it, we may ask, looking at it of course from a purely artistic and pictorial point of view, rival the shows we have above hinted at, in keeping, as painters would say, in harmony of colouring, in forms, in surroundings? We must need every one answer for himself, according to his likings and knowledge of past ways of doing these things, in artistic feeling and proclivities. What is done on these occasions, and was on this, has been the result of all but pure accident: a coming together of things and items at times, and here and there not a little incongruous both in form and colour.

It is a little difficult to single out a key-note whereby to test this grand and in many ways notable show. But we shall not be far wrong in noting the state-carriage itself, as that item in it which gives to it a special and, as things are, artistic character. *The* "state-carriage," though not in the show, has been entirely regilt and renewed, and may be praised if looked at closely. It is a remarkable relic of past days. It was designed by Sir William Chambers, and built in the year 1761; and really, as you look at it, it carries the mind back to the Augustan days of Queen Bess. It is just the carriage for a regal procession; and most surely it would be well to use it when occasion offers. And not only to do this, but to introduce others which shall harmonise and be in keeping with it; for, if a procession at all, why not one as good and artistic as may be? Such might, indeed, be made instructive to the public, as showing in a vivid way what it was that the older-world art grew up out of. Not, as is sometimes thought, out of idealisms, and inventions, and imaginings, but out of matter-of-fact realities. Some disappointment was felt in the crowd, certainly, at the absence of this famous coach, regilt as it has been, and expressly, as it was thought, for this occasion. Many hints here, indeed, occur to us, as to what ought to be to make a show of this sort worthy of the great occasion on which it takes place. A *moving picture* it might most surely be, and should be.

This quaint artistic work, the great state carriage, thus so conspicuous for its absence, is, or ought to be, the key-note to the whole of the rest of the long procession. And we may in a measure through it realise to ourselves what a royal progress or procession of Queen Elizabeth was, by imagining, if any can do so, what such a procession as this present one would be if the whole of it harmonised and corresponded to this single item in it. We are now in these days surrounded by incongruities of all kinds; no two things which come together, either by wit or by accident, harmonise either in form or colour, or style of art, or method of treatment. In this procession of carriages, and horsemen, and footmen, there was to be seen in the "Beef Eaters" but the one single item which harmonised with the state coaches, and from these there might be seen almost every shade and tone of sombre colour and incongruity of artistic style, to the "police," who make up so conspicuous a part of these public gatherings,—for they are everywhere, and always in sight. It is with an actual show, as with a painting of one,—harmony is a one thing essentially needful, and harmony of parts and details there certainly is not; but without this a picture cannot be. And here it must needs strike the most unobservant that what were "state carriages," as of ambassadors, have, may we not say it, totally disappeared. No Minister of State, or ambassador or public functionary, falls into the procession, as might have been expected, with a "state carriage," made for the special purpose, which, if it be worth anything, is surely worth doing well, as well as may be. Did the newly-made Earl think of this, who has passed along life's way in so many ideal shows and pageants!

And this brings us, still looking at all with artistic intent, to a singular item about it, and in the naming of it in the same breath with such grand doings an apology of some sort may be needed, for it may seem but too trifling. But it really is not so; it is not a little significant. Progresses and processions were of the old world's invention, that is certain; and it was in antique and Gothic times that they found most favour, and were necessities; and no small cost and painstaking must there have been to make them what we know from representations they were. The great procession to the Minerva Temple must have been a studied masterpiece of living art; and we now see in marble what the greatest of sculptors thought of it, and made of it, and the magnificent record he has left of it. The triumph of the Emperor Maxmilian must have been a notable sight too, in another way, and with its surroundings and in its own way must have rivalled even the Greek work in striking novelty and attracting picturesqueness; and a notable record has been left of that too. Old Rome put her artists' hands to the like work, and we get a notion of a Roman Imperial triumphal procession, and a knowledge of some details of it, of surpassing interest, in a carved stone record of it. We might cite many others, more or less descriptive and noteworthy, in many ways. But how do we make and leave record of this notable progress? A clever and hasty sketch, here and there, there may be seen of a part of it; but of the whole scene, as a procession, or a connected progress, there will most surely be none.

But one item of this sort there is worth the noting, but, as we hint, with an apology,—the record of the procession sold in the streets on the eventful day. Contemptible enough this may, indeed, be; but had we but such as this of many of the notable "progresses" of past days, how glad should we be, in the absence of all else, to peep at them. This coarse print, indeed, and this only, records the line of the procession,—after a fashion! And there are those in far-away country places, out of the smoke of London town, who get no other notion of a London procession but this. The Greek of old sculptured his famous "procession" in enduring marble, or we should now know nothing about it; and could not, that is quite certain, have, in any way, imagined it. Parts of it are still not a little puzzling to many. The antique Greek, with all his fine taste, thought it worthy of enduring representation. Does it not, therefore, seem a strange thing that, with all our wealth and means, and extent of empire, and fine-art longings, and schools, and opportunities, no man should think it worth his while to make enduring record,—say in stone or marble,—of this show? Would it not appropriately adorn a public building, and be a something to *read* on its walls? Not to be, however, as mere matter of contract, and no man getting the right credit for it, however done; but in true artistic way. Details as to how are needed here, certainly; but we can hardly afford them. In a place where such could be seen should such sculptured work be placed, drawn and sculptured on the wall surface. Will any do this? Can any do it? The New Law Courts might afford opportunity; but not as the carved work there is now, as usual, being executed. We are dreaming of true artistic work; but to end, perhaps, as dreams do!

NEW BUILDINGS AND IMPROVEMENTS IN GLASGOW.

THE growth of large towns has always been one of the principal symptoms and attestations of the material progress and prosperity of a country. When the trade and manufactures of the Netherlands were at their highest point, before the troubles of the sixteenth century, Ghent and Antwerp were computed to have a population of 300,000 to 400,000,—an amount to which neither has yet reached during the long peace of the present century. Amongst British cities none, not even London itself, has grown with such unexampled rapidity as Glasgow. In the first year of the century it had 83,000 inhabitants; in 1820 about 130,000; it has now 600,000. Only a trifling portion of this increase has arisen from the annexation or absorption of outlying hamlets and villages, which could never have contained more than 5,000 inhabitants altogether. The crowd in the main thoroughfares is now quite equal to that of London. The Trongate, which used always to be viewed by English visitors with admiration for its breadth and spaciousness, is now found to be unequal to the exigencies of modern traffic, especially since tramways have been laid down. It is about to be widened for a quarter of a mile west of the borough Cross, and operations are expected to be commenced about May next. All the houses on the south side of the street will be removed, and replaced by a new line of frontages. This offers a great opportunity, of which it is to be hoped that the corporation will avail itself as the inhabitants would wish and expect. The old Scottish style of building, with its gabled fronts, picturesque oriel windows, and crow-stepped roofs, is not inferior to any in point of external attractiveness, as is shown by more than one modern block of houses already erected; and if this style is adopted for the new portion of the Trongate, and effectively carried out, the result will be unmatched by any view to be found in the public places of European cities. These possibilities of improvement would never have been brought within reach but for the great change which has been made by deepening and widening the channel of the Clyde. In former days this was so shallow that the waters of the river have been known to rise as much as 20 ft., as

in the great flood of March, 1782, and nearly to the same height in December, 1815. Forty years ago it was a common sight in winter to see the lower part of the town, from the river-bank to the cross, a distance of fully a quarter of a mile, under water, with boats plying in the streets, and intercourse between the houses only possible in this way.

The winter just passed has been marked by the completion of several important public buildings, of which some account may not be unacceptable to the readers of the *Builder*. The chief of these, so far as architectural effect is concerned, is the Stock Exchange, in St. George's-place. It is in the German Gothic style, and looks like a piece of masonry transplanted to this northern clime from Nuremberg or Wurtzburg,—at least, as Wurtzburg was before the ruthless hands of improving Vandals had swept away the picturesque houses and suggestive fronts of the Mediæval style, and replaced them by the fashionable lines of plain square boxes, relieved by the exquisite decorations of vernacular Classic. The choice of the style in the present case is perfectly justified by the historical associations of the country. For the four chief centuries of the Middle Ages, during two of which North and South Britain were known to each other mainly as hostile powers, engaged in the amiable occupation of tearing out each other's vitals, Scotland was intimately connected by bonds of commercial intercourse or political alliance with the Netherlands, Germany, and France, and one of its most curious diplomatic documents is the letter addressed by the Governor, Sir William Wallace, in 1298, to the Senates and Consuls of the Hanse Towns, requesting protection and good treatment for Scottish traders, and promising the like to all their citizens visiting Scotland. The new edifice is crowned by the isolated blocks of attics, narrow and lofty, which form a main feature of old German Gothic, and may be said to differentiate the style. It is in two stories, each of considerable height, about 20 ft. and 30 ft. respectively. The lower story will be occupied by shops, as in the London Exchange, and most of the ancient edifices of the same kind. The east front has three bold pointed arches, with plain broad mouldings, resting on cylindrical shafts, and a projecting porch, the entrance vault of which forms the segment of an ellipse,—a construction which has the aspect of great strength and solidity. The lateral pillars have their capitals ornamented with figures representing the natives of the four quarters of the globe, in appropriate costumes. The north front has four arches and a side-porch, corresponding to those of the others. The upper story, which is the loftier of the two, has its windows arranged in triplets of single lights, with round shaftings and Byzantine foliations. There are wall-plates or tablets, carved with the arms of the three kingdoms, and the cities of Glasgow, Edinburgh, and Dublin. In the gabled fronts of the attics, the windows are variously arranged, singly or in couplets. The interior is of course fitted up in a corresponding style. The vestibule is lined with white and black marble, the fireplace having an antique carved chimney-piece, and a broad staircase, solidly panelled in oak and walnut, leads to the hall, which forms the principal feature of the interior. This has a finely inlaid ceiling, with an elegant round skylight, and is adorned with painted windows, on which the armorial bearings of the Scottish royal boroughs appear.

The new Merchants' House, in George-square, of which, as well as of the former building, Mr. Burnet is the architect, is of larger dimensions, but in a style so often adopted nowadays,—the modern Italian,—as to lose much of its impressiveness on the observer. In finish and elaboration it will bear comparison with any that has been erected of late years. In Palladian edifices a common fault is the want of depth and massiveness in the cornices and architraves, which gives a scraggy and poor look to the whole, but in the present instance this is fortunately avoided. The north front has two projections, one of which rises into a fine tower of 130 ft. in height, and the various porches are deeply recessed and very richly ornamented with sculpture.

A third edifice of no mean pretensions is a very extensive and splendid hotel at a point to the west, marked by the junction of several thoroughfares, to which the name of Charing-cross has been given, in ambitious rivalry of the great metropolis. This palatial structure is in the immediate neighbourhood of the new Music Hall, and is in the French Renaissance style, of which it offers a very tasteful and judicious adaptation. It has four stories and an attic, with dormers, facing to the east, west, and southward. The principal decoration, besides the oriel windows and fine cornices of the summit, is reserved for the central compartment of the south front. In the third floor the square billet panelling is particularly admired. The same pattern is found on the wall-faces of many old French and Scottish buildings, and it is profusely employed in Crichton Castle, near Edinburgh, which dates from the fifteenth century.* The whole elevation rises to 80 ft., and will contain 200 apartments, some of great magnitude, the drawing-room being 52 ft. long and 38 ft. broad. The architect is Mr. Thomson, of the firm of Baird & Thomson, Glasgow. This and other buildings afford some hope that we may see a more extensive adoption of the style which was coming into use under James I. and Charles I., when progress was cut short by a civil war which plunged the country into anarchy during a whole generation. Ostentatious architecture in buildings intended for the accommodation of trading firms is not to be commended, but nothing that has yet been done in Glasgow is chargeable with this fault, and, on the other hand, the Old English or rather Puritan crotchet of entire outward plainness generally accompanied with shabbiness and dirt,—Quakerish bareness without Quakerish neatness and cleanliness,—is equally objectionable. Variety in street fronts is desirable, and it is not attainable without a moderate allowance of decoration of some kind or style. Generally the fault of our modern street architecture has been that it is too uniform. It is common to hear the Hausmannic lines of beautiful new streets and open places, which are the boast of modern Paris, decried as monotonous; but what shall be said of the interminable miles of square ugly brick boxes in the vast suburban districts of mighty London? Nor is the case much better in Edinburgh and Glasgow. These cities have undoubtedly the advantage in point of material, which is freestone, of excellent quality, but until within the last twenty years the modern style was one of uniform plainness, without attempt at relief or variety, wearying to both the eye and the mind. The durability of the freestone raised from the Lancashire quarries has been very thoroughly tested in the old cathedral. Black and grimy as is the outside, the stonework is no more frayed or worn by the storms of centuries than if it had not stood for more than fifty years.

* It appears to be of Classical origin, for panelling almost exactly similar may be observed on the massive ruin sometimes called the Basilica of Maxentius, and sometimes the Temple of Peace, in the Foro Romano.

THE WORKS IN THE CHAMP DE MARS, PARIS.

The first Napoleon proposed to erect at the corner of the Champ de Mars an enormous palace, as a depository for the archives of the whole world. Had he carried out this slightly ambitious project, as he intended, the palace he had planned would not have been a hundredth part as large as that which the Republican government are now erecting for the Exhibition of the Industries of the world; and, notwithstanding that some hundred thousand workshops from Germany will be unrepresented, what is called the strangers' side of the Exhibition promises to be greatly insufficient for the multitude of exhibits that are already talked about.

Some while since, a report was current in uninformed circles that the works on the Champ de Mars had stopped. Nothing, however, was more devoid of truth than this statement, which simply resulted from the fact that the few hundred workmen who had been employed for some time past on the surface, having commenced the underground work, disappeared from the public view. Indeed, contrary to the opinion expressed, the number of workmen was increased to more than two thousand, and so rapidly and noiselessly have these done their work, that on the completion of the underground foundations, and the reappearance of the labourers, another false report spread, to the effect that an additional activity had suddenly been impressed on the works of the Champ de Mars.

By this time all the subterranean galleries are completed, as well as the 1,300 yards of underground air passages. Of the fourteen kilomètres (or about six miles) of drains to be constructed, three and more are already terminated, and the remaining eleven are rapidly and daily progressing. The foundations of the gallery of the Fine Arts are now on a level with the soil; the stout wall which is to serve as base for the Machine Gallery is completely finished, and the pillars are ready to support the metallic colonnade which alone remains to be put up. In the centre of the vast quadrilateral, the site of the future central garden is being filled with vegetable earth; this space, which will be no less than 200 yards and more long, by some 50 yards broad, will be by no means one of the least attractive portions of the Exhibition, for here many of the plants of the whole of France and other parts of the world will be exposed, and successive flower-shows will add a charm to the effect of the whole.

One can easily form a just idea of the great activity which reigns on the Champ de Mars, when it is stated that no less than from 1,500 to 1,600 sacks of Portland cement are daily used; that from 700 to 800 yards of masonry are constructed every day; that 25 mills are constantly employed in grinding mortar; and that 1,200 carts bring each day and deposit on the quays the building stone and materials necessary for the works.

All the sand and stones employed in this gigantic enterprise are happily to be found on the spot, and an immense trench opposite the École Militaire supplies all the desired materials. The steam excavator at work there brings up more than 1,000 cubic yards a day. This trench, which at the end of the year will be filled up again, will have furnished, by the aid of steam, more sand and stones in the fifteen months that it will have remained open than most quarries in as many years. In short, of all the constructions of which the palace will be composed, the central pavilion, on the side nearest the river, is the only one that has not been commenced; but this in a few weeks will be completed.

Before quitting the Champ de Mars let us not forget to mention the ingenious semaphore that has been rigged up in the centre of the vast yard, which has for object the call of any official or foreman desired from some distant part. If the contractors or engineers desire to communicate with any workman, they hoist a flag of a certain colour, which, as soon as he sees, he hastens to present himself at the office.

On a small scale we are promised shortly in Paris an exhibition that to many people will be even more interesting than the great show on the Champ de Mars and the Trocadero.

The familiar doors, with their emblematic *bâtons*, of the Duc d'Aumale's comfortable house in the Rue du Faubourg St. Honoré are to be thrown open next month to the public for the exhibition of his magnificent gallery, the value of which, arrived from Twickenham at Chantilly, represents nearly 200,000*l.*, it is said.

This gallery is composed of 3,953 pictures, in addition to an important number of engravings and etchings. The schools are all represented by their masters, and there is cited, among others, a collection of Rembrandts, the finest which exist, and in which is to be found the first sketch for the famous "Night Watch," and the picture representing the "Raising of Lazarus," which, it will be remembered, some fifteen years ago the Czar of Russia wanted to buy for no less than 28,000*l.*

Paris.

The Traffic at Hyde Park-corner.—In the House of Lords on Monday last, Lord Fortescue asked whether the Government were prepared to take early steps for opening a new communication between Piccadilly and Grosvenor-place, for the purpose of obviating the inconvenient block of vehicles at Hyde Park-corner, and whether in the meantime they would cause the roadway at Hyde Park-corner to be widened by throwing the footpath further back and carrying it through the two little gardens at each side of the arch at the top of Constitution-hill. Lord Beaconsfield said that several plans had been under the consideration of the Board of Works, but the difficulty to be encountered before any of them could be carried out arose out of considerations of the expense. With regard to Lord Fortescue's last suggestion, the Board of Works were unwilling to adopt it, as they thought that, while the expense would not be trifling, the remedial effect would be extremely small. Lord Powis, Lord Redesdale, and Lord Dunsany threw out some suggestions on the subject.

LENT SERVANTS AND FELLOW WORKMEN.

THE law of master and servant ramifies into many directions, and is of so much importance every trade at the present day, that each new velopment or expansion of any of its various anches affects the interests of a large number the community; and there is an ever-con-uing effort made by the expounders of the w to explain principles propounded years ago the light of modern ideas, and to harmonise em with the words of the men of our own day. ere is no part of the English law which it is re difficult to explain than the irresponsibility masters for the negligent acts of their servants ereby fellow servants are injured, and yet it is cessary for the bench logically to follow out e chain of decisions which have now made this ard and fast rule.

As we say, it is now too late to question the ality of this rule; whether the Legislature will er it or not remains to be seen, but day by day ceeives a more extended application, so that it not unreasonable to suppose that it has gone rther than those who originated it ever antici-ted that it would.

Of course, when two or more workmen are the gularly engaged and regularly paid servants a single master there can be no doubt about e application of the principle. But the fficulty arises where workmen are engaged re or less on the same work, but are not com-etely and in all respects the servants of one aster. We do not imagine that any practical n engaged in the building profession or any adred occupation, with a moment's reflection, u fail to think of numberless occasions in ich workmen become to some extent fellow-rvants or fellow-workmen. But this moment's flection will also show him the difficulty of iding whether these men can, in the eye of the r, be considered fellow-workmen so as to de-ve them of the right which exists in every mber of the community to be recompensed injuries done to them, and to take away liability which naturally rests in the n or the master of the man to make d harm which he has inflicted. So long ago the year 1856, in a well-known case of gett *v.* Fox, which arose out of some work the Crystal Palace, it was decided that servant of a head-contractor is the fellow-vant of the sub-contractor's servant, under tain circumstances, so as to take away right of action, which he would otherwise re, for injuries received from another. t the case of Rourke *v.* The White Moss liery Company, decided by the Court of peal a short time ago, has gone further than r decision has yet done. It has by this case ome a proposition of law that where a vant is lent to a man he must be dealt with the law so far as injuries to or from a servant he person to whom he is lent are concerned, he servant (if we may coin a convenient word) the lendee. The facts of the case are so rt and simple that they may well serve as an mple of this proposition. The White Moss mpany were colliery-owners, and they con-oted with a man named Whittle to raise the coal n the shaft, and Rourke was one of Whittle's rkmen, employed and paid by him. An engine s required to raise the hoppets, and bring the tents of the pit to the surface, and the Com-ny accordingly lent Whittle an engine, and a n to manage it. This engineer was paid by company, and they alone could dismiss him, ugh, of course, Whittle could complain to the mpany if the engineer did not do his work perly. This man by his negligence injured rke, who accordingly brought his action inst the company. It was decided that ugh the general servant of the company, the ineer was, as regarded this particular work, the servant of Whittle, so that, of course, liability for injuries done by him rested Whittle's shoulders, and since the engineer his servant he was, of course, the fellow-vant of Rourke; so that, as a further con-uence, an injury could be inflicted without recompense to the injured man. If this sion be considered for a moment with any it is obvious how very far it carries this al doctrine. Take an instance of a homely pertinent sort. Men are engaged in painting outside of a house, and have a ladder to the '. The owner of the house thinks it a con-ient time to have certain repairs done to a of the roof, of a trifling kind, and sends a builder to execute the work. At the same time he says that, the painter having a ladder, the builder need not bring one. It is a crowded street, and the boy kept at the bottom of the ladder negligently leaves it while the builder ascends it, it falls, and he is injured. He cannot recover from the painter because he is a fellow-servant of the painter's workmen. Dozens of similar examples could be placed before the reader with very little trouble, which, certainly, before the case we now are commenting upon was decided, would not have been considered instances of the doctrine of the non-liability of masters for the acts of fellow-servants. It is quite clear now that a common employer, as well as a common object, does not form an essential part of the facts which constitute fellow-workmen. That the originators of the rule in question seemed to consider the common employer a necessary element in the fact seems pretty certain, and once this portion of the case is eliminated, the doctrine becomes so elastic that it may be stretched to almost any length. In view of the approaching renewal of the labours of the Committee of the House of Commons on this question the case we have touched upon is of the highest importance, as it is also both as regards masters and workmen engaged in the building and other trades. We do not now wish to argue the advisability or usefulness of the main rule or of the extension which it has so recently received. It is enough now to call attention to the state of the law and to its most recent development, and to point out its paramount importance. On some other occasion we may possibly take an opportunity of reverting to the principle in question and to its chief bearings.

VITRUVIUS REDIVIVUS.

SIR,—Although the tacit rejection of my avowedly "able" articles upon "Architecture and the Private Feelings of the Aristocracy" has precluded my reaching the public ear through your columns, except with the conventional prefix of an absurd monosyllable, I bear you no malice; and I shall continue to contribute to your humble periodical in spite of those rebuffs, which, to mere literary scribblers, are as thorns in the flesh. It is unnecessary for me to remind you that the publication of my letter in the *Builder* of Sept. 2, 1876, was attended with ill-concealed sensation among the few who then remained in town. On inquiry at my brother Fitz-Boodle's house, I found that all the servants were individually possessors of a clean copy, a compliment which I cannot be induced to esteem lightly, for both the footmen hold retainers from a high-class periodical. Indeed, the butler is sleeping editor of the *Scandalmonger*, having under him two literary men employed night and day by turns in opening letters from anonymous correspondents. Nor has the emotion of the principal functionaries who attend upon me at the club abated one jot in its intensity; the secretary, on his own responsibility, had ordered fifty copies even before explaining to the committee that such was the proper line of conduct to pursue, when any favourable notice of men or things appeared in a newspaper,—the number depending upon the quality of the review and the value of the criticism. Thus the thing has been talked about publicly to my advantage, but in social intercourse to an extent which has bored me insufferably. When I dine out,—*grace à Dieu, cela n'arrive pas souvent*,—I am inevitably planted next some chit of a girl who talks High Art, puts perplexing questions about Fine Art, and pooh-poohs Industrial Art. Even if I chose to give the subject mature reflection I could not do so immediately after the first spoonful of soup. Such things ought to be discussed among men quietly, *entre la poire et le fromage*; but the other night at dinner in Park-lane, some middle-aged woman shouted to me across the table,—never done, I'm told, among the *bourgeoisie*,—that the "Queen Anne Style" was the only panacea for dulness and symmetry and all that sort of thing. Of course I temporised in as low a tone as it was possible to use between three bucketfuls of camellias and two silver jugs of heavily-loaded claret; for really some little study is necessary before entering concisely upon an historical question which prejudice has largely confused. This *contre-temps*, however, decided me to take steps towards the serious prosecution of labours which have long been the desire of my heart. I consulted every artist I met; and, oddly enough, many men who absolutely earn a decent livelihood by painting pictures are now in society. The answer invariably was "My dear fellow,"—a little patronising, I thought, but let that pass,—get up the subject, read up for it, hunt up old works on art at the cheap bookstall in the Brompton-road,—in fine, look up Parsons.* At first the whole proceeding seemed an enigma; but, at last, I reached that home or rather temple of learning. The shop was crowded with supplicants for cheap means of fashionable knowledge, and I caught the first man or high priest I could lay hold of. I told him in a few words of my intention, and he hinted that perhaps it would be as well for me to begin at the beginning. Without a moment's hesitation, Parsons,—for it was he,—placed his hands upon the ten books of Marcus Vitruvius Pollio, an architect of eminence who flourished in the Augustan age, and of whom, perhaps, you have heard. The books were in English, and looked "deep"; and Parsons said they were much "deeper" in Latin. I am not proud; and if critics, whom I despise, affect wonder at my choice of a translation, I can only reply that the mode of teaching the classics both at school and college is of such a character as to prevent a gentleman from undertaking tasks which mere bookworms of no liberal education accomplish with ease.

Ah! many people think Boodle Fitz-Boodle flippant in thought, and careless of the world's ways, for I have not loved the world nor the world me; but they little know the ardour with which at times I can enter upon the pursuit of a new idea, and worry it into submission, almost with the acuteness of my poor uncle. An agreeable *soupçon* of myself may be seen in the portrait of my father,—who is turned eighty,—which has just been published by a fashionable section of the press, in the garb of to-day and the features of sixty years since: by a process technically termed "restoration." With all the strength of mind which distinguishes him, and the advantages of modern culture, I am eminently formed to gauge the theory and practice of Architecture as it was, is, and possibly will be. Nevertheless, I approached the author before me with submission, for he had heard Cicero argue in the Forum, had trembled at the news of Cæsar's death, had plucked the robe of Augustus and thanked God that Heaven had sent him such a patron. Strange as it may doubtless seem to you, I opened his pages with awe, in the hope of reading history; I closed them with disappointment, for I found satire and cynicism. It says something, however, for his honesty and right sense that his *confrères* depreciated him, and hinted he was not practical. That he was ill-favoured and small is equally flattering, for *tous les grands hommes sont petits*,—witness Alexander, Cæsar, Napoleon, and the majority of those who made the history that historians edit. Perhaps one day I shall re-write Vitruvius, identifying the heroes he imagines with well-known men of the present day, and adding a key to the Architectural Dunciad; and, in that case, I shall publish his Commentaries under my own more familiar cognomen.

It is perhaps not generally known that up to this hour annotators have invariably mistaken Vitruvius's meaning. He talks of the moderns—"moderns" who are nearly twenty centuries old—with such an air of sincerity as to deceive a casual reader into the belief that antiquity is miserably new. But the fact is—and no one but myself has yet found out the fact,—he was a satirist, and foretold in his terse sentences, for the good of his contemporaries in a pretended description of themselves, the Victorian era of commerce and affectation. His books are really the earliest attempts to describe a "Coming Race," with the sole exception that even his imagination never soared so giddily as to give force of mind to girls, or to deprive properly grown men of bodily strength. Tully† himself must have seen through the joke, for I remember in one of his works he admitted a predilection for the ancients; and he actually studied to depreciate a national style of architecture. Ah! of all the heroes of Vitruvius, Dinocrates is the ideal after my own heart. Here was a man who had a call,—a sudden inspiration, which made him leave the wilds of Macedonia to overtake Alexander, then engaged in those conquests for more of which, to quote from the "historic page," he afterwards sighed. In his own land there was neither a convenient Forum nor even a

* I have since been reminded by my brother's butler that the introduction of names in this manner is open to imputations of commercial immorality, but *tant pis*.
B. FITZ.-B.

† Marcus Tullius Cicero,—a Roman orator, celebrated for his impeachment of Verres.—B. FITZ-B.

Temple of Health, whence Dinocrates could preach to the multitude of new cities in which Death should lose its sting, and at whose gates Poverty might knock in vain. So he sought another in which he might be esteemed wiser and a prophet. Divested of conventionalities, he wore only a lion's skin over the left shoulder, and a wreath of poplar leaves in his hair; and in this garb,—Hygeian in its pleasing simplicity,—he implored Alexander for permission to carve Mount Athos into the form of a Colossus. But this being refused to him, our amateur merely got a city to erect, which was called after his patron's name, Alexandria,—so true it is that *on est né architecte*, as the French say. Indeed, any human creature who possesses wealth is generally endowed by nature with the aspiration of designing new buildings and restoring old ones. However incongruous it may appear for the prelate to preach war or the soldier divinity, the patronage of the arts, and particularly architecture, is no man's prerogative; it is every man's privilege.

I do not wish, however, to take the bread out of your mouth; for whenever I design churches, or, indeed, private mansions for myself and others, I shall employ a professional architect to work out my conceptions, and negotiate with plebeians generally concerning their execution,—always keeping an eye, trained to discover defects, upon the proceedings.

It was all very well for the Greeks,—the ancients, I mean,—to say that an architect ought to know everything better than anybody else; but Vitruvius, in the bitterest manner, declares that to be able to describe an intended building upon paper,—to draw the plan and make the model of it,—is about as much as can be reasonably expected of the moderns. Cries he, "I have acquired but little; yet I still hope, by this publication, to become known to posterity." In other words,

> "I twine
> My hopes to be remember'd in my line
> With my land's language."

Nor was it wonderful that he should be known only to a few: "other architects canvassed and went about soliciting business," but he never solicited or asked to be intrusted with the care of another man's property. Up in his garret,—probably near the very spot where the poet Codrus lived, some hundred years after, in a little room with a little bed "too short for his Procula,"* he saw the noble science practised by "the unskilful" and "the wholly ignorant," and prophesied the use of amateurism both hysterical and practical. "Study and application are of small avail to the moderns without money or a good connexion, or a good address, or other methods of persuasion." Here is the first allusion extant,—and that in a satire,—to future professional corruption; and this Vitruvius shows is partly due to public ignorance of the arts. "It is scandalous," continues he, "that friendship and connexion should lead men for their sake to give partial and untrue opinions,"—an evident fling at the immoral custom of the moderns in giving commissions to those who introduce business. Moreover, the words "a good address" seem to hint at the practice of those architects who, fitted to inhabit the "Surrey" side of the Tiber, migrated to the West end of town and vulgarised a fashionable street with painted windows and parti-coloured thresholds of perplexing ingenuity.

But the Roman wit is signally at fault in his prophetic appreciation of the details of possible practice. He says that the architect must be able to give a reason of the ornaments of architecture,—a passage of so doubtful a signification as to be ever open to dispute. The delightful old Heathen, as Ignatius calls him, also condemns those who, borrowing from others, publish as their own that of which they are not the authors; or who, distorting their bad copies of ancient work, glory in the profitable perversion of the original. It is of course difficult at this advanced stage of general civilisation to understand the true meaning of Vitruvius in this incomprehensible passage; and thus his satire again fails to touch the moderns. Nor is it possible to follow the drift of his argument regarding stucco ornaments and profuse carving; for he says that filth enters into their crevices and that no wiping will fetch it out. Putting aside, however, these undoubted blemishes, it is impossible not to perceive under the thin veil of satire which covers some of his thoughts erudition of an unusual standard of excellence. But his remark that law should be an object of study to an architect,—"especially those laws which relate to party-walls, to the free course and discharge of the eaves-gutters, the regulations of cesspools and sewage, and those relating to window lights,"—points to an extremity of debasement which the moderns have not yet reached. Nevertheless, the following sentences will repay perusal. They might haply form part of the great address which, I am told, architects of the United Kingdom are now preparing on the subject of their wrongs with a view of presentation to the Legislature. The question is to be found at the very beginning of the tenth book, and is as follows:—

"In the magnificent and spacious Grecian city of Eobesus an ancient law was made by the ancestors of the inhabitants, hard indeed, in its nature, but, nevertheless, equitable. When an architect was entrusted with the execution of a public work, an estimate thereof being lodged in the hands of a magistrate, his property was held as security until the work was finished. If when finished the expense did not exceed the estimate he was complimented with decrees and honours. So when the excess did not amount to more than a *fourth part* of the original estimate, it was defrayed by the public, and no punishment was inflicted. But when *more than one-fourth* of the estimate was exceeded he was required to pay the excess out of his own pocket."

"Would to God," continues Vitruvius, "that such a law existed among the Roman people, not only in respect of their public, but also of their private buildings"; and so say I,—merely taking the precaution to read English for Roman, and commending the thought to professional discretion. The sort of incisive argument I should employ in my suggested explanations of the Latin author for or against any particular dictum, or any satirical reference to the moderns, is beyond the province of this brief communication; and as probably by this time you, at least, Sir, see the true force of my observations, I need only add that you may yet command the services of

BOODLE FITZ-BOODLE.

* English commentators of Juvenal have assumed this to be the wife of Codrus, but the majority of German scholars have argued with apparent reason that the assumption is based upon imperfect data.—B. FITZ-B.

GREEK ART.

At a meeting of the Society for the Encouragement of the Fine Arts, held on Thursday evening, the 8th instant, in Conduit-street, Mr. Augustus Babington (secretary) read a paper, entitled "An Historical Inquiry into the Perfection of Greek Art." The chair was taken by Dr. Doran, F.S.A.

Art, the reader said, was representation either by invisible objects or invisible symbols, and when it took the form of a picture or sculpture it appealed directly to the eye, and indirectly to the mind; but art, when it took a dramatic or literary form, appealed directly to the mind. The eye was merely the handmaid of the mind, and became with education more and more subordinate. In the recognition of truth great artists, great dramatists, and great writers had, more or less clearly, before them but one object,—the character of man, either with the view of improving, ameliorating, or directing the desires of men, or of influencing them for some specific end. True art, however, consisted in none of these. This was the part befitting a teacher, a philosopher, a moralist, but not an artist. An artist of the higher type depicted life as it was, man as he was, with all his weaknesses and passions; for realism in art could be and ought to be superior to idealism. The aim of art was the depiction of the character of man, or the influence, by the aid of what it depicted, which it exercised thereon. Certain persons considered high art to be simply a sublime perception of the beautiful. Æsthetics constituted the sole formula of this school; they shrank from all that was material and real. The ideal and the beautiful were all in all. The fallacious tendency of such a school must be apparent to none more thoroughly than to men and women of the nineteenth century. For many ages art was the ally of religion; but gradually and surely this alliance was severed by the relentless demands of science. Science and religion became ostensibly antagonistic, the latter declining to yield what the former had fairly gained; art stood betwixt and between; she lost an old friend, but gained an unknown ally. The commencement of Grecian history dated, according to Grote, from 776 B.C., little being known of any art prior to 600 B.C.; yet it undoubtedly existed in certain forms. In early times Greek poets, such as Homer and Hesiod, were not merely poets, but historians, philosophers, moralists, and general educators of the people. Their verses were committed to memory and handed orally from one generation t another, consequently their influence must hav been practically unlimited. These poets wer the commemorators of the intercourse betwix the gods and heroes; they established marriage between mortals and immortals. A wild field indeed, had religious fancy in Greece. Beside their great gods of Olympus, there were demon and heroes, nymphs, gorgons, harpies, and animali nay, even rivers of divine lineage and descent Grecian mythology was capable of exercising t an undefinable extent the powers and imagina tion of a race that proved itself to be equall receptive and inventive. Owing to the inter communication with Egypt, which was esta blished B.C. 660, Greece, heretofore hetero geneous and uncivilised, came in contact wit a magnificent and long-standing civilisation Colossal architectural monuments met the view of her sons; large cities, vast pyramids, a certai knowledge of astronomy, philosophy, and geolog were all here apparent. Egypt gave the firs stimulus to a country that was so soon to equal not eclipse her. In philosophy and learning th instructor was soon outrun, and, in beauty o design and symmetry she certainly equalled her Even now, after a lapse of over 2,000 years, there was something truly wonderful in their achieve ment in every domain of knowledge and ar No other nation before or since had bequeathe to posterity so enormous a mass of origina thought, and, truly, these Greeks were intel lectual giants! One great feature to be born in mind in considering the rapid growth of ar in Greece was the spirit of emulation. Th mode of life that prevailed in Greece and Athen was simple, hence the money was spent i adorning the public edifices, temples, and worka and we, who stood amazed at the reckles expenditure necessary for the construction of marble and gold statue of Jupiter 60 ft. high and inlaid with jewels in the most exquisit manner, must recollect that national pride wa the great incentive to the public administrator and to individuals, which was continually illu trated in the most striking manner possible. had been roughly estimated that 700,000*l.* wa the amount expended upon public buildings i Athens during the ascendancy of Pericles. I like manner, they felt the bond of sympath which they created between themselves an posterity by means of these splendid building and sculptures. The remarkable quality of un selfishness, so frequently among nations con spicuous by its absence, was most apparent i these various Grecian communities. The Stat was to them no impersonal substance that gua ranteed the protection of person and property but it was a vital, breathing personality. Wit the Greeks, patriotism was a religious duty without which it was impossible to avert th anger or obtain the favour of the gods. In spit of the material philosophy of Aristotle, the kee imaginative vivacity of the Athenians, thei proneness to anger and resentment, and yet the loving kindliness and discrimination, were every where apparent. These Greeks, laborious to wonderful extent, husbanded with the mos economical care their mental energies. Di cursive education, the great bug-bear of moder times, was rapidly eliminating those marvellous i dividual types of excellence which formed some the most notable landmarks of the past. A super ficial acquaintance with all subjects was neve substituted by these wise men for thorough converse with one, hence their heroes had bee such as had survived and would survive throug all time. Beneath such a sky, and in such a lan were the fibres of imagination extended so usa fully and so wonderfully as to raise art to position so high and so perfect that we, with a our knowledge and advantages, could not for on moment delude ourselves into the idea that w could equal. Works of art depended as much o the constituent mental elements of the man a on the skill of the artist. As the mind depende on instruction and education, so did art depen on the course that education took after bein filtered through this medium. Hence he ha considered art apart from its technical principle and more from the influence it received fro the dispositions and habits of a nation. The could not but think that art suffered a great de from being regarded from a purely technica point of view, apart from the manifold auxiliaria and accessories which now cultivated an encouraged, now diverted and annihilated, i spirit. After Greece became a Roman province an utter loss of original thought seemed to hav been incurred with her loss of freedom. He philosophers fled to Rome, and became then

gnosures of emperors, soldiers, and slaves. bservicncy and selfishness seemed soon to ve eradicated all nobler sentiments in the suc- ssors of a Diogenes and a Socrates. To ad- inister to the pleasures of the body engrossed e whole attention of those who hitherto d held up self-culture as the primary ty of man. Artists followed the same ample, and fell in with the habits of luxury d sloth, and Grecian art obeyed the behests a Roman emperor. It was not surprising at from the subjugation of Greece by the mans, 140 B.C., her history was one long series failures and application. With the loss of edom departed that primary source of Grecian nius. Art suffered, together with philosophy d history; and the lamp which the Roman addin had stolen was never recovered. With gard to the influences that had prevented a rival of the ancient artistic Grecian spirit, ilisation was essentially material. It helped en to subdue the forces of nature, to enjoy re pleasures, to see more places, objects, and ople, to travel a hundred miles in a day, to l hundreds of men in an hour, to print ousands of words in a minute, to telegraph m places far apart in a few seconds, to pro- ce from the soil the maximum of sustenance th the minimum of labour. Such was the rk of the advance of knowledge in man. But, far from these circumstances aiding art, they t destroyed it. Man's nature, finding that proved mechanical contrivances tended to a re easy enjoyment of life, lost, and must lose, power of imagination, and the portrayal of ideal. Religion, again, which operated powerfully on the ancient mind, was ll nigh a closed sepulchre to modern artists. no longer presented that mixture of realism l idealism which was so happily portrayed in sculptures of the ancient gods. Railroads t destroyed scenery, though they had also de it more easily accessible. What scope was re for imagination when they found them- ves, at the English lakes, face to face with ure, but surrounded with excursionists? Did the crowds of tourists detract from the rm of Mont Blanc and solitude? Where, a usand years hence, would there not be tele- ph wires or some new appliances whereby ritualists might convey their much-talked-of l abused "odyllic force" from continent to tinent, and town to town. All these various umstances at work were tending to prevent possible resuscitation of sculpture such as was in days gone by. No Government of se times would be allowed to employ large s of money in placing at the disposal of the ptor such costly materials as the Greeks ked upon. So long as the age of utility was ontinual warfare with art, so long the useful st and would preclude the beautiful. He had avoured to look at facts as they were, not dvance art by holding forth Utopian ideas, ch were very pleasant no doubt to hear, but rly incapable of realisation. If they wished licit the truth regarding the present state of it was an indispensable mode of proceeding to manfully in the face at the causes connected rewith. How ridiculous and sophistical it ld be to ignore the lessons that history ght and the laws of psychology revealed. wever unpleasant truth might be, they must evade it to construct a specious and agree- prevarication. Art might be restored, and 's imagination be brought into that condition n which master subjects might emanate, by embering that the primary source of excel- ce which the Greeks attained in every branch rt was the high perfection in which it pos- ed the two varieties of mental faculty on ich success in every human undertaking ended,—the faculty of imagination and the ulty of intellect,—the just blending and ancing of which seemed to the same favoured ple an equally happy endowment of the facul- of invention and taste. A realistic age like present, that was gradually driving to the fines of nihilism all that was emotional, all t was ideal, in human life, might well despair ever being able to do anything more than ire the Greek statuary models of past ages. y had to contend, subjectively and objectively, h two great difficulties. Subjectively, it was hard a task to bring their feelings into any mony whatsoever with the union of truth beauty, which, from lack of a better term, called idealism. Objectively, the cold, k temperature was more than sufficient to olour the whitest marble, to impair the effect he most exquisite workmanship.

Dr. Doran (the chairman), at the close of a brief discussion which followed, said all art began with religious emotions. The Christian religion was first taught by the artist, and there was not a church originally established but what was covered with art pictures to teach people through the eye. That great building at Wearmouth was one grand gigantic pictorial museum of religious art, which radiated all over the country. With respect to art in modern civilised times, in this metropolis it had produced a number of poets which no other capital in the world could equal. Chaucer was born in Cheapside, and, in a street turning out of that thoroughfare, the poet who was destined to sing of "man's first disobedience" (Milton) first saw the light. Not far from the spot where they were then seated, the second of their great dramatists, Ben Jonson, was born. Farther within the City, one of the master poets,—Pope,—whose every line bore a meaning, and in whose poetry there was a continuity of inspiration, was born; while within a short distance from Conduit-street was the birth-place of Keats, crushed out of life by the critics, and whose every line breathed of divinity.

ARCHITECTURAL ART IN LIVERPOOL.

Mr. Picton, in commencing his paper at the meeting of the Liverpool Art Club, mentioned in our last, said:—

I have promised my friend Mr. Rathbone to say a few words on the development and progress of architectural art in Liverpool. It is not a very prolific theme, nor is it one calculated to excite much enthusiasm, but as *Touchstone* said of *Audrey*, it is "a poor thing, but our own." Let us, therefore, make the best of it. You all doubtless remember the celebrated chapter in Pontopidari's "History of Norway," headed "Of Snakes in Iceland," which contains only six words, "There are no snakes in Iceland." If I were to treat of ancient architecture in Liverpool, it would be in the same words,—"There is no ancient architecture in Liverpool." The Roman invader, so far as we can discover, never set his foot here. Roads and camps and tesselated pavements are entirely wanting. The earliest building in the neighbourhood of which we have any record is the castle or manor-house built by Edward the Confessor in West Derby, not far from Croxteth Hall, which is alluded to in Domesday Book, and of which the memory is still kept up in the "Castle Field." Of its style and construction we know nothing. In Liverpool proper, the castle built by King John was the centre and cause of the town, the "*fons et origo*" of all its future greatness. It was well placed for defence according to the strategies of the day, and admirably suited for the protection of the intercourse with Ireland. The plan of the *enceinte* of the building has been well preserved in the irregular open space round St. George's Church, extending from the crescent to Preeson's-row. What were the original features of the building we do not know; but from views of the town taken at a later period, it consisted of a curtain wall with semicircular towers or bastions at intervals, with an entrance gateway, towers, and drawbridge fronting Castle-street, resembling on a smaller scale the Edwardian fortresses in North Wales, such as Conway Castle. Another fortified stone building, called the Tower, was constructed by Sir John Stanley, at the foot of Water-street, at the beginning of the fifteenth century, which survived through all the changing fortunes of the port, and was finally removed in the year 1819. Liverpool, for an ancient commercial town, is singularly destitute of ecclesiastical buildings. Most of the other ports at an early period distinguished themselves by the magnificence of their churches. Hull, Yarmouth, King's Lynn, Newcastle-on-Tyne, Bristol, with many others, possess Mediæval churches on a grand scale, which bear testimony to the liberality, taste, and piety of the mercantile classes; but in Liverpool no church at all existed until near the end of the fourteenth century, and then it was a mere chapel-of-ease to the mother parish of Walton. It was but a humble structure, built in three aisles, with a square west-end tower. It remained until 1776, when the body of the church was taken down, and replaced by the present hideous building. After giving a description of the architecture and principal buildings in the town in the seventeenth century, Mr. Picton proceeded:—We have brought our view of Liverpool architecture down to the end of the seventeenth century. It is poor and feeble enough, but from the beginning of the eighteenth century we enter upon a new phase. A manifest improvement now set in in the architecture of the town, and from this time to the latter part of the century many buildings were erected which are of very creditable design. The first in order of these, but not in merit, was St. Peter's Church. Liverpool was first made a separate parish in 1699, and very soon after measures were taken for the erection of a new church. At that time Liverpool could not boast of an architect, and the plans had to be procured from London. The general design is a poor copy of the church of St. Andrew, Holborn, erected by Sir Christopher Wren. There are four doorways to the church, each of different design. It appears that four drawings having been sent from which to choose, the committee could not agree on the selection, and so to please all parties they adopted the whole four. Better times, however, were at hand. Not long after the completion of St. Peter's, the Corporation felt themselves strong enough to undertake the erection of another church, that of St. George, on the site of the castle. Mr. Thomas Steers, who had been brought down to Liverpool to construct the old, then the new, dock, was employed to prepare the design. The result was very satisfactory. Though not entirely free from defects, the original church, which was altogether different from the present one, was bold, simple, and effective. Whilst speaking of this church, it would be unpardonable to omit reference to an act of the old corporation for which as an art club we should hold their memory in grateful remembrance. They wished to have a stained-glass east window, and employed William Hilton, R.A., to prepare the design, for which they paid him 1,000*l*. The result was the magnificent picture of the Crucifixion now hung in the staircase of the Free Library and Museum, which for grandeur, simplicity, and feeling, has rarely if ever been excelled in modern times, and entitles the artist to a very high place in the English historical school of art. A little before this time a new Custom-house had been erected at the east end of the dock, which was not a discreditable structure for the period. With many alterations and enlargements it did duty in this capacity for about 120 years. The front of the Bluecoat Hospital was erected in 1717, by whom designed I know not. There is a certain amount of quaint picturesqueness about the design which is far from unpleasing. The style of the private residences began to improve in the early part of the last century. Many large mansions were built by the prosperous merchants of the day. At first they were built in the densest part of the town, such as Water-street, Redcross-street, &c., but afterwards they emerged to the higher parts of the town. They were usually of brick with stone dressings; the bricks of excellent quality, and beautifully set. A fine house of this class formerly stood in Lancelot's-hey. Even in houses of a humbler description considerable taste was often displayed in the doorways, of which many specimens remained until a recent period in Drury-lane, Fenwick-street, and the neighbourhood. Hanover-street was lined with noble mansions, some of which still remain despoiled of their beauty and degraded to baser uses. One in particular may be mentioned, formerly the Branch Bank of England, and now occupied by Messrs. Evans & Co. It was built of hewn stone, decorated with sculpture in a very good style. It was designed by Mr. Thomas Steers, the engineer of the old dock and the architect of St. George's Church, for his own residence. Mr. Steers was a man of considerable capacity and taste, who did much to improve the architecture of the town. It is pleasant to reflect that whilst serving the town he did not neglect his own interests. He was successful in his profession, became a member of the Corporation, and filled the civic chair in 1739. His descendants have always filled a respectable position in the town, and some of them remain to the present day. The front of this building has been so destroyed, altered, and defaced as to give no idea of its condition in its palmy days. The next building erected of any note was St. Thomas's Church, Park-lane, built in 1750. I do not know who was the architect. The body of the church is of pleasing character, but the principal beauty lay in the tower and spire, which were very effective in their outline, broad and massive in the substructure, with sufficient richness in the middle portion to attract the eye, which was carried up by the converging lines of the spire rising to the height of 240 feet. We have been very unfortunate in Liverpool in the matter of spires. I

have already mentioned St. George's, which, owing to its bad foundation, had to be removed. The spire of St. Nicholas's, unfortunately, collapsed, and fell in 1810, causing considerable loss of life, and St. Thomas's spire was equally unfortunate. About seven years after its erection about 42 ft. of the upper portion was blown down. In 1783 the spire was struck by lightning and considerably injured. In 1822 considerable alarm was caused by the vibratory motion which it began to assume. On a careful survey it was found that the stone, being of a yellow porous description, had become so decayed as to necessitate the destruction of the spire, much to the injury of the picturesque appearance of this part of the town. We will now return to the town-hall. After the second town-hall had stood about seventy years it was found that the growing greatness of the town required something more in accordance with the spirit of the age. The scheme of a new building was brought forward in 1742, but it was not until 1749 that any progress was made. John Wood, of Bath, whose memory is perpetuated in the beautiful crescent and squares of that city, was the architect employed. The first stone was laid on the 14th September, 1749, and the building was opened with great rejoicings in 1754. The town-hall, in its original design, differed materially from its present appearance. Being designed for an exchange as well as a town-hall, it had an open area in the centre surrounded with arcades. The projecting portico in front was wanting. The north wing containing the ball-room and council-chamber was no part of the original design. The original dome was low, flat, and ugly. The west and north sides were densely crowded with buildings. In 1795 the interior was destroyed by fire, which led to an entire reconstruction of the plan. As the building now stands it well deserves its prominence as the centre of the town. There is about it a harmony of proportion in the design and an amount of taste in the details which is satisfying to the eye. The dome gives dignity to the general aspect, whilst there is a modesty and absence of pretence which it is rare to meet with in modern structures. The old infirmary was built on the site of the present St. George's Hall, and opened in 1749, with two detached wings for the seamen's hospital. The buildings were of dark red brick with stone dressings, with a cupola over the centre of the infirmary, and smaller ones over the wings. The general effect was pleasing. The central building was set back in an ample space, united with the advanced wings by curved colonades, such as formerly existed at Burlington House. From this rapid sketch, it will be gathered that the half-century from 1720 down to about 1770 produced many very creditable specimens of architecture in Liverpool. From that time—from what cause I am unable to say—a deterioration set in. The public buildings erected up to the early part of this century were poor in design. Such churches as Trinity, St. Anne's (recently taken down), St. Mark's, St. Mary's, Edge-hill, St. James's, are perfectly contemptible, and evince a complete change in public feeling in regard to architectural taste. To this period we owe the rebuilding of the parish church of St. Nicholas in what is called the Batty Langley school of spurious Gothic. However, though taste might be at a low ebb, the spirit of improvement was alive. The year 1786 saw the commencement of schemes for the widening of streets and opening up the thoroughfares, which has continued almost without intermission ever since. Castle-street was the first operated on. The west side was thrown back, and an extensive quarter of squalid buildings behind was broken up and removed. Uniform façades for the west side and part of the east side of Castle-street were designed and carried out. These were in brick and stone, with pilasters, entablature, and attic. The general effect was decidedly noble and pleasing. The fronts have been altered, and the façades plastered with the cement, which prevents the original effect from being realised. From the commencement of the present century the new exchange,—now, alas! among the things of the past,—is the first to be noticed. It was commenced in 1803, and completed in 1808, forming three sides of a quadrangle, the old exchange or town-hall forming the fourth. The façades of this quadrangle possessed considerable merit Pitched in the key of the older structure they harmonised thoroughly with it, whilst in their distinctive features they exhibited a dignity and repose which approached, if they did not reach, grandeur of style. The entire group from Castle-street to Oldhall-street, as a combination of municipal and commercial buildings, has never been surpassed. It is to be regretted that in the rebuilding, which was necessitated by the progress of the times, the style of the previous structure was abandoned for one which, whatever its merits may be, cannot be said to harmonise and reciprocate with the old town-hall. It would be useless in a short paper like the present to attempt an historical review of the architecture of Liverpool during the present century. All I can venture to attempt is to throw the modern buildings into groups, with a few remarks collectively on each. Of the public buildings erected during this period, the principal are the Custom House, St. George's Hall, the Municipal Offices, and the group of buildings forming the Library, Museum, and Gallery of Art. They are all in the Classical style. The Revenue-buildings, including the Custom House, the Post Office, and the Dock Offices, and Inland Revenue Department, form a massive block, the very size of which imparts a certain air of dignity. The style and order adopted in the architecture,—that of the Ionic of the Temple on the Ilyssus,—is in the original structure light and graceful. Whence comes, then, the intolerable air of heaviness by which the building is characterised, the sadness and gloom which predominate to an almost painful degree? It is the reproduction of the letter without the spirit. The body is there, but the soul is wanting. A Greek temple, constructed of white marble, glittering under the blue sky of Athens, its mouldings encrusted with carvings, its frieze adorned with sculpture, and probably glowing with brilliant colour, would present a very different aspect from the most slavish copy of the same building in the murky and moist atmosphere of Liverpool, built with dingy sandstone, with the omission of all the sculpture which gave it life and character. Turn we now to St. George's Hall, upon which we may dwell with a feeling of pride and satisfaction as the architectural glory of the town. Taking it all in all, it is one of the noblest modern embodiments of classical art. Though Roman in its order and general principles, the architect has avoided the coarseness usually exhibited in Roman buildings, even of the best period, and has imparted to his design a degree of refinement altogether Greek in its feeling. Though the dimensions are huge, the plan and arrangement are exceedingly simple, and are clearly indicated by the external elevation. The large central mass rising above the surrounding roofs marks a spacious apartment within, attached round which are the porticos, corridors, and other accessories. The central mass, in its plainness and horizontality, forms a sufficient counterpoise to the richness of decoration below, and to the vertical lines of the columns, without any painful predominance. It may also be mentioned that another important element of beauty—that of gradation,—is developed from the cornice upward by the receding lines of the attic, forming an intermediate step between the main order and the crowning mass. The southern portico, with its sculptured pediment, is a pronounced and noble feature, whilst the western *stoa*, with its range of sixteen columns, would form a fit ambulatory for the *stoic* philosophers of old. The semicircular northern end forms a very graceful termination. The west front is perhaps the least satisfactory; but, on the whole, the exterior of the building is a grand and noble work of genius, and causes a sigh of regret that the amiable and accomplished architect should have been cut off at so early a period of a promising career. We now pass to the interior. The grand central hall, with its polished granite shafts, its alabaster balustrades, its richly-decorated vault, and its gilt bronze doors, brings to mind the description of the temple in Carthage, described in the second book of the Æneid:—

> "Hic templum Junoni ingens Sidonia Dido
> Condebat, donis opulentum et numine divæ
> Ærea cui gradibus surgebant limina nexæque
> Ære trabes, foribus cardo stridebat æneis."

It is almost painful to turn from the beautiful exterior to the internal arrangements, which are faulty in the extreme. These defects an art club may condone, as taste does not suffer by the result, whatever may be wanting in convenience and comfort. I cannot pause to offer any remarks on the remainder of the group of buildings I have classed together. Suffice it to say, that the collective buildings devoted to literature, science, and art will not suffer by comparison with any similar group in the kingdom. A link is wanting which I trust may ultimately be supplied,—I mean the continuation of the present high level platform by a viaduct spanning the Haymarket, and extending in a gentle curve to the Municipal Offices. This would give a picturesque and noble access to the centre of the town, and would form a feature almost unrivalled. I will next say a few words on the church architecture of Liverpool during the present century. I have already mentioned that at the latter end of last century, and during the early years of the present, ecclesiastical architecture had fallen into the lowest stage of degradation. The revival of the Mediæval styles, commenced by Horace Walpole in his bizarre constructions at Strawberry-hill, and thence gradually gathering strength, owes much of its success to a Liverpool man. Thomas Rickman, who was a member of the Society of Friends, filled a position in a mercantile office in Liverpool. He took up as an amateur the study of Gothic architecture, at a time when a knowledge of its principles and details was in a very confused state. About the year 1810, Mr. James Smith,—who belonged to the same religious body as Rickman,—an enterprising printer in Liverpool, issued a work called "The Panorama of Science and Art," for which he engaged Rickman's services to write an article on architecture. This was afterwards published separately, and attracted much attention. Rickman was the first to establish the classification of Gothic architecture according to its progressive styles, and to discriminate the characters of their leading features and details. The nomenclature he applied was long adopted as the ordinary descriptive phraseology, though now to a great extent superseded. There can be no doubt that he rendered considerable service to the progress of the art. His book became exceedingly popular and went through five editions; the last published by Parker, of Oxford, in 1848, being copiously illustrated. The principal defect in the work is the limited sphere of the survey being confined by the circumstances of the time almost exclusively to England, the rich treasures of Continental art not having been opened up. Mr. Rickman erected several churches in Liverpool and the neighbourhood, but the practice did not come up to the theory. It is not given to any man or to any art to reach perfection by a single bound. Many feeble and painful efforts have to be undergone, and many difficulties surmounted before the right path is reached. St. Philip's, Hardman-street; St. George's, Everton; St. Michael's, Toxteth Park; St. Jude's, Hardwick-street, exhibit the characteristics of plastered ceilings, wooden galleries, cast-iron tracery, and in some cases stuccoed fronts, with a general feebleness of conception which may be pardoned under the circumstances. Others besides Rickman had taken up the revival. The corporation of Liverpool, about seventy years ago, resolved to build a church in the most advanced style of architecture, which resulted in the erection of St. Luke's, which cost about 60,000*l*. The result was not fortunate. The architect obtained his effects by picking up his details from all sources, but was not successful in their combination, the true principles of the Mediæval style being overlooked or ignored. Since that time we have made rapid advances. Many of the churches erected in Liverpool during recent years are fit to take rank in priority of design and general effect with any in the country. Without being invidious, I may point to such instances as the churches at Mossley-hill and Allerton; St. Margaret's, Prince's-road; and St. Margaret's, Belmont-road. The Roman Catholics and the Nonconformists have not been slow in their advance in the same path, and on the whole the condition of ecclesiastical architecture amongst us may be pronounced satisfactory. Another class of buildings is very distinctive of modern times. I allude to the piles of commercial offices which now line our streets. The palazzi of Genoa, Florence, Rome, Turin, and other Italian cities are characteristic of their age and country. Modern commerce has an equally interesting development, as illustrated by the buildings in question. The circumstances being different, the *motif* has to be changed. Light, which, in the sunny climate of Italy, is rather shunned, is with us the great desideratum. Hence, our commercial buildings assume somewhat of a glazed which may at first sight contrast unfavourably with the sober and dignified aspect of their Italian congeners; but if fitness and adaptability be the first requisite, many of our modern buildings of this class are en

led to very favourable consideration. Our reet architecture of late years has undergone nsiderable improvement, owing partly to the ening out of old streets and the construction new ones, and many noble façades have been ected. There are two circumstances, how-er, which go some way towards marring these fects. One is the odd mixture of the Mediæval d Italian architecture in juxtaposition. The e looks for something like consistency. The reets of Paris, perhaps the finest in the world, ve their façades, however varied, all conceived the same general principles of design. Hence ere is a unity and consistency which contribute ach to the general effect. But when we see, in Liverpool, an Italian façade, with its suc-ssive stories of columns and entablatures, nked by a towering structure with high conical of and dormers, and its Gothic corbels and ades, the mind is struck with a degree of incon-uity which is rather painful. In an ancient y like Chester or York, where the keynote is ven by the gabled and mullioned structures ll lining the streets, it is desirable that the dern buildings should be in keeping; but ere the tone has been given for many years the ordinary quasi-Classical style, it seems nething like an intrusion to change all this by erting to a mode which for street architecture d been altogether abandoned. Certainly the sults are hardly such as to recommend the ange. The other circumstance which, in verpool at least, injures our street architec-e, is the utter disregard of symmetry. In st places where a vacant piece of land is to covered belonging to one owner, some general sign is adopted, to which the builders are to form. In Liverpool this seems to be alto-her neglected. In this respect our corporate horities have much to answer for. Land is d in our principal streets without any stipu-ion whatever for uniformity of design, leaving o haphazard whether the flanking buildings ll be high or low, Classical, Gothic, Egyptian, Chinese. The intersections and meeting nts of our streets also, with a little care d attention, might have elicited means of uty and effect where there are now only dis-dance and ugliness. In one department of hitecture there has been a vast improvement recent years. I mean that of villas and vate residences. The square brick mansion fifty years since has been replaced by the ny-gabled and picturesque Gothic villa, or by stately Italian palazzo, with its arcaded cor-ors and lofty belvedere. In Liverpool, Sefton k has been the culminating point of this pro-ss. Wealth and luxury have here found their strations in many noble structures. Whether results, in an artistic point of view, have n in all cases commensurate with the outlay, d be a question to be resolved by those who compare the suburban residences of our lity with those of London, Paris, Glasgow, other large towns. There are other branches the architectural art which might be referred lid time permit, such as our railway stations, h their grand proportions and their noble fs, but I have more than sufficiently exhausted r time and patience. One word more, and I clude. I think the establishment of an art o amongst us a happy event for the improve-nt of taste and the progress of the industrial s. It forms a centre towards which all infor-tion may tend, and from which it may again liate in such directions as able and earnest rt may be able to guide it with advantage, exhibition of works of art in various depart-nts which you have been able to place before public eye cannot be without good results. influence you will thus gradually acquire st undoubtedly lead towards purifying the ndard and disseminating amongst the public true principles of art. In so doing, you are plying a national want, and serving, in a verful degree, your day and generation. I st you have before you a long career of use-ness and success.

St. Werburgh's Tower, Bristol.—The stol and Gloucestershire Archæological So-y, pursuant to a resolution of a general sub-bers' meeting, held at the Bristol Museum Library, have very properly formed a mittee for the purpose of memorialising Town Council of Bristol, collecting subscrip-s, and taking other steps for averting the natened destruction of St. Werburgh's Tower. is sincerely to be hoped that this fine relic be preserved.

HALF-TIMBERED HOUSES AND THEIR CONSTRUCTION.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association, on the 9th inst., the President (Mr. H. C. Boyes) made an announcement with reference to the proposed new rules of the Association, for particulars of which see advertisement in this week's *Builder*.

A vote of thanks was accorded to Mr. W. W. Lee for accompanying the members on their visit to the Finsbury Printing and Stationery Works, a fortnight ago; and it was announced that to-day (Saturday) a visit would be paid to a new church now being erected in Red Lion-square, Holborn, under the direction of Mr. J. L. Pearson.

Mr. C. G. Maylard then read a paper on "Half-timbered Houses and their Construction," of which the following is the substance:—

I propose to confine my paper principally to the construction of our old half-timber houses, and then to see how far such construction can be utilised in houses at the present day. I think no one can deny that the old examples scattered throughout nearly every part of England are at the least suggestive, if not decidedly picturesque. The villages of Kent, Sussex, Herefordshire, Surrey, and other counties are full of them, and our own sketch-books show the interest we take in the subject. The village street at Chiddington, Kent, is known to most of us, and has been sketched and published more times than any other building of its kind we have. While the student and the architect and his client have all been impressed with its picturesqueness, and with a desire to adapt the style to country situations, I venture to say that the result has not always been so successful as it ought to have been. We see a lodge in a charming situation, with a quaint porch, overhanging upper floors, gabled roof with barge-boards, chimneys with ornamental caps, the quartering all seemingly framed and braced together, and with white plaster panels between; the whole perhaps a copy of an old example in the neighbourhood. When we examine the framing, we see that the timbers are only brown paint, and the plaster-panels white paint on a brick wall carried on the overhanging timbers. This brick wall may keep out the wet, but is certainly not built in truth when it is intended to represent what it is not. Again, we see the whole carcass of a cottage or mansion with its outside walls built of brick up to the roof; false joists are carried out at the first-floor level to form the overhanging, and the necessary quarterings, all properly framed and braced together, erected round a thin false joist. A half-timbered house is produced, but the whole is a delusion and a sham. There are many examples of both these instances which I have seen; of the latter, a large villa and a mansion, with the casing as I have described. The drawings for the mansion were exhibited in the Royal Academy some years ago. There has been a revival of this style of late years, and those of our eminent architects who have adopted it would not have been so successful had they not made a complete study of it in theory. I am an admirer of and have long thought Dutch gables very pretty; and while I still do so, I have, nevertheless, come to the conclusion that instead of keeping the wet out of the houses, they really act as a conductor for it, and are not suited for our climate if we are to have more such weather as we have had during the last few months. With this fact in view, I believe many more of our country houses will be executed in half-timbered work in the future than in the past, as one of the characteristics of the style, the barge-board, is intended for the protection of gables from wet. The barge-board can, of course, be used with brick buildings instead of the Dutch gable, and would thus keep the brickwork dry; but it is a question whether the effect of the whole building would be as successful.

The general objections to the half-timbered style of building are,—first, that if carried out in entire conformity with its principles it is expensive, and even then there is a great liability of the shrinkage of timbers; secondly, that in case of fire, such an occurrence would leave nothing standing except the foundations and chimney-stacks. The objections as to cold and wet are trivial, and will be met before the conclusion of this paper. Houses built of timber are no doubt expensive, but I do not think more so than a first-class brick and stone building of the same size. Clients are apt to look at them with a view to a remunerative return, forgetting there are two classes of building,—one to last ninety-nine years, and another to last for several centuries. Old examples of timber houses have done the latter, and if we, as architects, so construct our works with the strength necessary, and massive appearance desirable, and without the waste of materials so apparent in the houses built by our forefathers, our clients may be led to see that the money they spend at the first is money saved. The timber question is an important one; there is no doubt it is a difficulty to procure seasoned timber at the present time, whether in foreign deals or home-grown oak. Many landed proprietors have stocks of seasoned oak, which their professional advisers can use, and foreign timber can be procured in a sufficiently-seasoned state. It is not, therefore, my intention to enter into the question of the seasoning of timber, as a whole paper might be written upon the subject. I may, however, remark that our forefathers did not fell their trees when the sap was rising, but rather when the sap was down; they thus got more seasoned wood than we get, as we fell our timber in the spring and autumn, in order to save the bark, and we get in this way unsound material. The construction of half-timbered houses varies as to the locality,—southern counties, such as Kent, Surrey, and Sussex, being much plainer than the West of England counties; in all, however, the same principles of construction are apparent. The foundations are of stone or brick, to receive the plate at the ground-floor level. The plate is usually a massive piece of oak, framed and pinned together at the angles. Angle-posts, the whole height of the building to the roof-plate, are then framed to it, and horizontal ties are then again framed into these posts at the level of the heads and sills of the windows. These, again, are framed and braced together with braces and intermediate quarters. In all cases the depth of the timber is less than the width showing in the front, except the sill, which is often laid flatwise. The uprights, when forming the doorposts, usually had the mouldings to the jambs worked off the same, and the plate so overhanging them formed the head, with the mouldings also worked off the edge, as to jambs. This method of construction is without overhanging, and there is an example at Leys Farm, Weobley, of the date 1582. The gables have large rafters framed to tie with the collar and intermediate quarters, all mortised and tenoned, and pinned together. The upper panels formed by the quarters have foliated braces. The whole of the quartering is plain, with the exception of the bays, where they are moulded under the windows, and the plaster is set back. The mullions, transoms, and jambs are all sunk and worked off the solid,—no moulding planted on. The rooms have panelled ceilings, formed by beams, the large beams of which run through beyond the outside face of the bays, and form plates for outside tie and rafters, with penthouse roof, a peculiarity I have not noticed anywhere else.

When the first-floor overhangs only to the front, the angle-posts are framed into a stout plate, which again receives an angle-post, the joists running parallel with the side walls and ends groined into a beam under, running parallel with the front. The overhanging is in many instances strengthened by the addition of a bracket under the overhanging joists, as at Weobley, sunk off the solid. These brackets are often also continued, as in the case of another house at Weobley, where they occur once to every other joist. In all these cases the joists are flatwise, and simply pinned from the top through the plate above. I have only in one instance noticed the overhanging joists framed to the plate above, as at Leominster, where the plate is notched on the underside to receive these joists. The head to lower quartering and sill to upper quartering are both moulded and sunk off the solid. An illustration of this house is given in Parker's "Domestic Architecture," but is not drawn correctly. In the cases of overhanging I have illustrated there is only a projecting front; when, however, it was desired to carry not only the front, but either or both of the sides also over, it was necessary that, in addition to the parallel beam mentioned, diagonal or dragon beams should be framed into the same, running over the exterior angles and supported there by a large bracket. This large bracket was sunk out of the solid and often richly carved, as at Derby, Bury St. Edmund's, Gloucester, &c. Illustrations of these are given in Parker's "Domestic Architecture." In other cases it was a plain curved bracket, in some instances with a

cap in addition. In many town houses, as at York, Gloucester, Bristol, and other places, the upper floors overhang, but the lower is in stone; in this case the bracket at the angle rests on a stone corbel at the foot, and is framed above into the dragon tie in the usual manner.

The half-timbered houses of the seventeenth century are constructed in the same way, with the exception that we find the scantling of the timbers not so great, and in many instances the mouldings, the plates, transoms, and other parts are only planted on. The angle brackets in all but a very few instances are still cut out of the solid. Instead also of the joists now showing outside, they were framed into a moulded fascia, which served the purpose also of a plate for the quartering above. In the latter part of the century this fascia was only a moulding planted on, which concealed the rough trimmer plate.

At Ford's Hospital, the drawings of which are kindly lent us by Mr. May, the construction is as described. The fascia is a solid moulded one, 12 in. by 12 in. There is a tie under the window-sill to receive the plaster cove, and the uprights have buttresses, with pinnacles and bases all sunk off the solid. The windows are traceried, and the overhanging joists are concealed by a bracketed and plaster coved ceiling, stopped on the horizontal tie at the head of the window. The mullions to the windows are richly moulded. At Lincoln in a small court is a fine house, where the horizontal ties are moulded, and form the head to the panels; the windows are traceried, and the uprights have moulded columns and bases. The cove here is panelled. I have an example here of another window with a cove, from Gillet's Farm, Bidborough. The construction of the house is similar to the others that I have described. The mullions, jambs, head, fascia, and sill are even more richly moulded than at Ford's Hospital, but the lights have no tracery, and the quarters are perfectly plain. The barge-boards are not ornamented, but simply foliated. The beams are moulded inside. The bay windows, as at Ford's Hospital and Bidborough, form an important feature in these buildings, as well as in other buildings of the class; and though in some cases they are framed together independently of the main constructive timbers, in these instances they are not so, the moulding to the jambs being worked off the solid posts. As an example of bay windows and projecting windows of later date, an old house at Rye, Sussex, of the early part of the seventeenth century, which I believe has been lately restored, shows both kinds. The bay window is carried up from the ground, and above the upper window a gable is carried on a plaster cove cornice. The five windows each side of this bay, with the sill higher from the floor than the bay itself, is a common type of the houses of this century, and may be noticed on other sketches on the wall, as at Tonbridge,—Ivy Cottage and the Chequers Inn. I think, however, that it is more often met with in the South than in the West of England. The two windows on the upper floor at the side of the bay are square, projecting over with bold plaster coved cornices and gables above. There is a peculiarity in this house that the fascia to the first floor above the square bay on the ground floor is carried over at the side, and is framed at the angle into a return fascia to the wall with brackets and pilasters, and forming a porch. The fascia is moulded only over the porch. The three openings to the square bay have evidently been filled in with mullions and jambs to form three two-light windows. The details of mullions, jambs, heads, sills, &c., are a good type of the houses of this period,—the mullions being single-quarter round at each angle; the sills weathered, and with double-quarter round projecting from face below; the transoms single-quarter round, with wide sunk groove in the same to front. All are framed together, and pinned at angles, and the transom, heads, and sill are nicked and shouldered to the mullions and jambs. The bay window is the main feature to Ivy Cottage and the Chequers Inn, Tonbridge, the mouldings to the mullions and jambs being similar to the house at Rye. The Chequers Inn is of older date than the cottage. Both have brackets to the overhanging floor and gables sunk off the solid. The barge-board to the former is plain moulded, and the latter foliated. The same principles of construction apply in both cases, according to their respective dates, the one having overhanging joists tenoned into a trimmer with a fascia moulding planted on, and the other with them showing to the front. In some instances square bays are carried up from the ground to the gable, as at Maidstone. In this instance the plate to receive the quarter rests on the joists, and the fascia is merely planted on the face of them. The gable projects to the face of the bays, and the quarters above the fascia are moulded on edge, and plain below the overhanging. I have only as yet drawn your attention to houses where the timbers have been perpendicular to the ground, with the exception of the horizontal ties, but in many houses in Cheshire, Staffordshire, Herefordshire, Gloucestershire, and other West of England counties, we find that the spaces between the constructive timbers are made available for ornamental purposes. The simplest form is as at a house at Lichfield, where the filling-in between the constructive timbers is by raking horizontal quarters, forming a wavy line along the front. At the back of Ford's Hospital the panels are filled in with curvilinear braces. At Stafford, a house there is filled in on the second story with the panels formed into a quatrefoil with curved braces, and on the first floor and top floor curved horizontal timbers, forming a wavy line, as at Lichfield. At Hereford and Leominster there are numerous gables, with curved and serrated braces, forming various devices in the panels. At St. Peter's-street, Bristol, is a large block of buildings, called St. Peter's Hospital, which I have illustrated, with bold bay windows,—one of 27 lights. The panels between the quarters are filled in with plain curved ribs, and the serration is formed by a trowel-nick in the plastering. These ribs are all flush with the plastering, which is set back from the face of the quarter and ties, which are all moulded. The gables are filled with quaint devices of angels blowing trumpets and serpents forming evolutions, all in wood. The barge-boards, fascia, hip-knobs, and brackets are all richly carved, and are every one of different design. The mouldings to the windows are quarter-round, moulded, and the fascia has a carved frieze and moulded cornice. The space between the quarters in all the examples I have drawn your attention to is filled in with plaster on laths, the laths in some cases being joined crosswise in order to form a better key. In most cases the plaster face as finished is set slightly back from the face of the quartering; this plaster is in many instances very bad, being what is commonly called wattle and daub,—that is, plastered only with clay or loam and chopped straw mixed together; in the best examples, however, it is prepared with lime and sand, and shows a good face, and evidently keeps out the weather. The timbers are in many cases grooved as a key to receive the plastering. I have endeavoured to lay before you the principal features of pure half-timbered houses, and can only regret that business engagements prevented me enlarging more fully on this section of my paper, as I intended doing, and preparing drawings for its further elucidation, and I can only briefly refer to several parts I have not touched upon. The drawing for Vine Cottage, and a sketch on the walls of a cottage at Sutton Valence, show porches, both having moulded balusters; in the former the entrance is from the front, and in the latter from the side. Many of the houses of the types I have alluded to have porches, but in most cases entries from the front. In Dolman's "Examples of English Architecture" are several good examples. At Maidstone, the entrance to an old church grange is a very good example of an open-timbered porch, forming a staircase up to the upper story. In the drawing of Ley's Farm, to which I have referred, there is also a very good example of a porch, which is enclosed at the sides. A timber house at Reading, of late seventeenth-century work, has an open porch, with low panelled balustrade to the front and a seat at each side inside. Some small sketches on the walls show another peculiarity of this work in the centre part being recessed, the ends thus forming two wings, while the roof is continued straight, the plate being supported by large curved braces. At Lewes is an example with a coved ceiling, with round sill, the window beneath having richly-moulded mullions and jambs, stopped fair to a beam at the head, which is stop-chamfered.

Many half-timbered houses have the spaces between the quarters filled in with brick nogging, a fine example of which style can be seen at Orpington, where this filling-in is herring-boned. The date of the house is 1633. There are three bays on the ground floor, which project as far as the overhanging, and above are shown smaller projecting bays, with brackets under. The construction is the same as the other houses I have alluded to. At Wincheap, Canterbury, is another type of house where the joists project and carry half-brick walls, without any timber quarters: this, though not strictly a half-timbered house, I have ventured to bring under your notice as one of a somewhat numerous class. I very much wished to bring before you drawings of the several classes of shops of which Bristol possesses so many examples. I have rough sketches of these, but time has not permitted me to make drawings; I can only, therefore, refer you to one drawing from Corn Market-street, and briefly describe its characteristics. The first floor overhangs with a penthouse roof, from which starts two projecting bays, two stories high, where there is another penthouse roof. The space between the bays and at either end is entirely filled in with windows, and all have transoms. The gable is the full width, and has another projecting bay. The ground-floor has the remains of a bay, a shop-door, and a large gateway, which I have restored. The cornices, mouldings, and fascias are all very small and very effective, and the brackets are shaped as fascias, with panelled and carved sides and fronts, with moulded pendants at the bottom of the scroll. In King-street there is a nearly similar house,—the windows on the ground-floor being in their original state. In St. Mary-le-Port-street is a house of similar character, with much wider frontage and one story higher the floor over the top story is formed into a flat, with railing round and the two gables set back. In all these examples the whole width of the house is filled with lights. The doors are of the same type as in the sketch on the wall from Rochester, with numerous panels and with stop-moulded frames. I have endeavoured to draw your attention to the principal features of half-timbered houses; but I am aware that that there are many of these which I have not yet touched upon, such as roofs, staircases, cornices, chimney-shafts, and doors. These have not specially brought before you, as a whole paper might be written upon each.

As to how far half-timbered construction can be utilised at the present day, Mr. Norman Shaw, Mr. Davis, and other architects, have shown that buildings can be designed and constructed so as to bear out modern requirements, and yet be in accordance with the picturesqueness of our old examples. As to the construction followed by them I can speak from experience having been engaged on the drawings and superintended the erection of scores of building of the class. I cannot do better than explain the methods used and the construction followed, and by so doing I shall answer the objection to wet and cold urged against the adoption of the style. I will suppose that a gable-end is to be built. In order to protect the inside and keep the wet from penetrating, three thicknesses of plaster should be used, the outer face finished with trowel stucco in Portland cement. The quartering ties, heads, sills, &c., should all be double grooved and filleted for the outer and intermediate coats of plaster; the quartering having the widest part on the face, say 7 in. by 4 in. deep. Dry hair felt, lime-washed both sides to prevent moths, should be nailed to the inner face of these quarters, and then the inside should be battened and plastered in the usual manner. The battening of 2½ in. by 2 in. would allow for the timber being tied together, if necessary, inside in the thickness. I am supposing that it is necessary to have as small stuff as possible consistent with character, in consequence of the difficulty of procuring large seasoned stuff.

In the case of overhanging joists an extra thickness of floor-boards should be used under the panelled floor, as the joists should be kept down, and extra joists framed on top and pugged. In some cases it is desirable, and much better, to have the lower story built in brick or stone, especially in case of fire, and to avoid the use of overhanging joists, as this is, no doubt, an expensive kind of construction. We should have the dragon-braces (not perhaps so stout) with curved or moulded braces under and framed to spring from a stone or brick corbel. The joists should be the usual scantlings, framed at the overhanging into or wrought on the face trimmer, and resting on a chamfered or moulded plate on the outside face of the wall. The fascia should be moulded and planted on the face of the trimmer, leaving the upper part exposed to the bottom of the fascia 2 in. below it. The fascia and plate should be grooved as a base for plastering the underside of soffit. The top of the fascia should be weathered, and an apron flash

g of 4-lb. lead laid on the same, copper-nailed and rned up against the exposed part of the trimmer, which there should be a groove to turn the lead which should be finally faced with an oak let or wedge in white lead. Especial care ould be taken at the junction of the timber-ork with chimney-stacks. Both the quartering d the brickwork should be grooved, and a ut lead or zinc tongue inserted to prevent trance of wet. If these methods are adopted ere is no reason to fear that the wet will pene-ate, or the cold be felt, by the tenant.

In conclusion, I wish to draw your attention this,—that, while it is necessary for us to e all these precautions against wet and cold, r forefathers also took others. The first nber houses were no doubt only one story gh; when an extra story was added it was nd necessary, in order to protect the lower e, that the upper should project or overhang, d so on for each successive story, to the roof, ere, in order to protect the gable, barge-ards were introduced for the same purpose. annot but think that this is the reason, as I ve found that in houses, such as Ley's Farm. here there is no projecting story, damp is com-ined of by the inmates, and at an old farm-use, near Malvern, in Worcestershire, which is the same character, the whole of the house is rrounded by deep projecting penthouse roofs, pported on brackets, the roof being a continua-n of the main roof, though not of the same ch, and which, no doubt, was introduced for protection of the walls below from the ather.

The next meeting will be held on Friday, the d inst., when Mr. S. Flint Clarkson is nounced to read a paper "On Early Churches Asturias."

THE COST OF THE EARL'S COURT RAILWAY ACCIDENT.

At the recent meeting of the Metropolitan istrict Railway Company, Mr. J. S. Forbes, the irman, made some remarkable statements pecting the cost of railway accidents, as strated by the large sum which the District mpany had had to pay in compensation the accident which occurred some time at Earl's Court. He said the accident se out of a collision in a dense fog, under cir-nstances which no human foresight could ve prevented. On the line all modern appli-nces, such as the block system, the interlocking nals, &c., were adopted, with the view of uring the safety of the public, so that the ectors spared no expense under that head. ring the past year, however, they had paid 800*l.* compensation, arising out of that ident. They had 120 claims, and all had v been settled at an average of 90*l.* per case. t twenty-seven cases had cost 8,330*l.*, or an rage of 309*l.* per case. The remainder of the es, consisting chiefly of slight contusions, a shed hat, or a torn coat, averaged 26*l.* 10*s.* case. Two or three of the cases showed dreadful iniquity of the operation of the of compensation. In one case a working n claimed 5,000*l.* The company, of course, d no alternative but to contest the case; wever, they paid 800*l.* into court as the full asure of damages sustained by the plaintiff, l were complimented by the judge for their rality; but the jury were not satisfied with t, and they awarded the plaintiff an addi-nal 300*l.*, making a total of 1,100*l.*, which, h 400*l.* law costs, amounted to 1,500*l.* The npany took 2*d.* for his railway fare from plaintiff, and the compensation awarded n was at a rate at which no accident nrance company would effect an insurance. another case, settled by mutual consent for 0*l.*, the company had to pay 46*l.* for law costs. another case a workman claimed 1,000*l.*, and company settled for 400*l.*, with 70*l.* law costs. another case a claim was made for 2,000*l.* on alf of a mere child, on the alleged ground t the shock had produced diphtheria. The pany contested that case, and won it, but at gal expenditure of 270*l.* He considered that ailway like the Metropolitan District, which ferred enormous benefits upon the public, uld not be subject to such outrageous penalties compensation, which, besides did not go into pockets of the victims, but chiefly into those set of "rascally lawyers" who made a trade 'speculative actions." The 120 passengers o made claims paid the company 22*s.* 6*d.* for e, and the compensation awarded them had unted to 10,800*l.*

CHAM OF THE "CHARIVARI."

THE Comte de Noe, better known as Cham of the *Charivari*, was, on the 8th inst. decorated as a member of the National Order of the Legion of Honour, in recognition of "services rendered to the State." No French caricaturist is so familiar to the English as Cham, unless perhaps Philipon and Daumier, whose Macaire picture-gallery more than thirty years ago many of us remember.

It is easy to decorate, but dangerous to compliment caricaturists. We all remember how, when Hogarth visited France after the peace of Aix la Chapelle in 1748, the president of the Académie des Beaux Arts at Paris, a pseudo-historical painter, wishing to say something pleasant to the English artist, expressed his pleasure at making the acquaintance of "so great a caricaturist," to which Hogarth replied to the effect that France was more than compensated by the claims that the French painter had to a similar distinction; and we fancy that Tenniel of the London *Charivari* would not be too well pleased to be compared to Cham of the *Charivari* of Paris, notwithstanding that Cham has amused two generations of fun-lovers.

Tenniel will be regarded as a serious authority by future historians, when Cham will have to take his place in collections of "*facetiæ*."

French-speaking people will never owe to Cham the debt of gratitude that all English people owe to Tenniel, who for so many years has furnished our countrymen abroad and at the Antipodes with the most faithful representations of our leading politicians and statesmen; and Tenniel's carefully-designed "cartoons" (as they are absurdly called), paraphrasing innumerable popular incidents and travesting old classical stories, without having on any single occasion wandered even to the margin of vulgarity, entitle him to a position amongst our artists that in point of fact has long been accorded to him.

REBUILDING THE KING'S HEAD, IN FENCHURCH STREET.

ONE of the most ancient historical buildings in the City has just been swept away, and on the site a new structure has been erected, and is now nearly completed, which is likely to attract attention. The building to which we allude is the King's Head tavern, at the corner of Fenchurch-street and Mark-lane, which had stood for upwards of three hundred years, and is identified with the times of Henry VIII. and Queen Elizabeth. The old building, which has been demolished, contained several memorials of its historical character, and in designing and carrying out the new structure it has been the aim and object of the architects to perpetuate its past celebrity. The style adopted partakes of Elizabethan, although there is a free introduction of modern ornamentation. The principal elevation is to Fenchurch-street, and is upwards of 50 ft. in length. It consists of the ground floor and three stories above. The former is carried up with granite piers, surmounted by carved capitals, the main entrance to the ground and upper floors being near the centre of the Fenchurch-street frontage. In the spandrels on each side of the door arch the following inscription is carved in stone:—"Queen Elizabeth dined here on her return from the Tower, May 15, 1554." The key-stone of the arch is a shield, and the decoration includes a bust, in stone, of Henry VIII. The first and second floor contain each a range of five three-light square mullion windows, between which are stone pilasters with polished granite panels. In the upper part of the front are pedestals in stone, on which stand life-size sculptured figures of the Earl of Essex, the Earl of Leicester, Lord Darnley, and Sir Walter Raleigh, not so well done as they might be. At the angle of Fenchurch-street and Mark-lane there is another entrance, which forms a special feature in the structure. This doorway is recessed, and overhanging it is a projecting bow window and stone corbel, whilst above on a line with the figures already named, is a life-size representation in stone, of Queen Elizabeth, and immediately beyond it, in Mark-lane, a similar figure of Lord Burleigh. All the windows, including the ground floor and the upper portions of the structure, are filled in with stained glass, the central parts of each window containing portraits of Henry VIII. and his several wives, together with Queen Elizabeth, and the nobles and other distinguished persons of the period. The whole of the building is intended to be devoted to the purposes of a hotel (retaining the original name), and all the apartments will be finished and decorated artistically, so as to indicate, both murally and otherwise, the historical traditions of the old building and site. The entrance in Fenchurch-street will be to the hotel proper, and that at the angle of Fenchurch-street and Mark-lane, to the luncheon bar, which is already open. The mural and general decorations of the restaurant approached from the Fenchurch-street entrance, will serve to indicate the style in which the rest of the interior will be finished. The ceiling is in diagonal oak panelling, the floor in tiles and mosaics, whilst the walls are divided into panels, containing art-tile paintings of the scenes in several of Shakspeare's plays, including "Henry VIII.," "Midsummer Night's Dream," "Macbeth," "King Lear," "Richard III.," "Henry V.," &c.

The architects of the building are Messrs. F. & H. Francis, Old Bond-street, and the contractors are Messrs. W. Bangs & Co., of Bow; and it may be added that, at the rear of the building in Mark-lane, another large block is also being simultaneously erected for office purposes, Messrs. Francis and Messrs. Bangs being likewise the architects and contractors respectively.

ENCAUSTIC PAINTING.

THE columns of the *Builder* have from time to time furnished information relating to the various modes of external and internal mural painting, and a few weeks since an esteemed correspondent suggested that our columns should be opened to communications from those whose experience had led them to the practice or the consideration of the ancient and durable method of decoration, known to us by the name of encaustic painting.

M. Henri Cros has communicated to the world the result of his exceedingly interesting experiments on the method of wax-painting practised by the Greeks of the best period of art, and the Minister of Fine Arts has accorded him his support in the researches that M. Cros is now making at Naples to complete his treatise, which, when published, will bear the name of "*Les Secrets de la Cire.*"

By the aid of notes which, for some time, we have had by us on the subject of encaustic painting, we will endeavour to give an account of M. Cros's system.

M. Cros's studio reminds one of the earliest workshops of antiquity; in a conspicuous place he inscribes the motto:—

"Ora, tace, et labora";

and in picturesque irregularity are displayed on his walls the result of his laborious silence. Small squares of larch wood, prepared according to the directions of Pliny, who says that that wood was held in high esteem for painting on by the ancients, may be seen in one corner, and the somewhat alchymical apparatus for painting beneath his window. The small furnace of charcoal is burning brightly, and the temperature of the room is carefully moderated at about summer heat, a point so important as to add immensely to the difficulty of encaustic painting in a climate like ours. The painter places on his furnace a palette of metal constructed with four hollow cups,* and furnished with a wooden handle, or occasionally he uses a heavier palette, which carries beneath it a receptacle for lighted charcoal. In the hollows of this he distributes in fragments the coloured sticks of prepared wax. On the hot palette, with a brush, are easily mixed the desired tints. But first, at his leisure, by means of sticks of wax, which he uses on the wood as he would a pencil, the figure is drawn out. The sketch traced, with the brush (*penicillo*) the different tones are juxtaposed; he places them one beside another just as one would with the small coloured cubes in mosaic work. Now is the moment for the use of the *cauteria*, or iron brushes, whose flattened extremities are slightly toothed, and which are at the present moment heating. The sketch is at present as we left it, with its tones each laid side by side. Now he seizes a *cauterium*, and approaches it to the wax fixed on the sketch. The wax shines, and then softens; then, directing them by fusion, he mingles the colours according to his will. Thus the work is done by the agency of fire inclosed in a rod of iron, and as we look at it at work evoking life from the wax we cannot help thinking of the classical story of how Prometheus stole fire from heaven, and

* White, red, yellow, and black.—See Pliny, xxxv. 32.

inclosed it in a rod, with which he was enabled to inspire life into the first man and woman who inhabited this earth.

M. Henri Cros has copied a Greek encaustic painting in the Louvre, in which he has successfully shown the action of the metal "cauterium." So faithful is this copy in the aspect of the matter and the trace of the instruments, that it suffices to compare it and the original to be assured that the processes of execution are the same. M. Cros has copied also some of the Pompeiian paintings in the Louvre, in which, step by step all the work of the artist is shown, sometimes laying on the wall a flat tint in distemper and "cuirassing" it entirely with wax, on which he painted afterwards his figures by means of the "cauterium," sometimes covering with wax a composition finished with distemper, but which he retouched by means of of the hot iron

Nothing is more endurable or capable of resisting the effects of atmosphere or of rough usage than encaustic painting; the ancients, in fact, painted their ships in encaustic (*incrementum navium.*—Livy, xxviii. 45), and where splendour was required, gold grounds were sometimes used. In fact, M. Cros's system is almost identical with that described by the ancients, and those who are desirous to consult the authorities on tolerably easy terms may find the subject exhaustively treated by Müller.

In Count Caylus's rare work * he describes minutely the process of encaustic painting as he had gathered it from Pliny and others: he observes, as a chief merit, that it does not crack or change colour or get black like oil-painting; that the heat of the sun or that of apartments, cannot affect it; years cannot cause it any injury; dust makes few ravages on it. Wax, he goes on to say, in every way that it is employed, preserves wood from worms and the inconveniences of damp.

As to the prepared colours which M. Cros makes use of, Count Caylus gives us the method by which he succeeded in obtaining the desired sticks. He tells us how he made a tin box (covered with a ground glass of some thickness), in which was placed a quantity of boiling water, always remaining at the same temperature, and having placed a piece of white virgin wax on the glass, he leaves it there to completely dissolve. While this is going on, the muller is being also heated; when all is ready, the liquid wax and the desired colour are ground up precisely in the same way as oil colour. When arrived at a certain consistency, the result is taken off with an ivory spatula, and transferred to a china plate, to be carefully kept away from the dust. The further usage of this prepared coloured wax has been described in M. Cros's method. As for the palette, and the ground on which one works, these have also to be warmed; indeed, everything must be of a sufficient temperature to melt the wax, and allow of its fixing a very short time after its application.

Hence the extreme care and difficulty necessary, and hence, also, from the exacting nature of the materials, the reason why encaustic painting cannot be successfully applied to works requiring elaboration and alteration from the original idea. It is, in fact, alone suited to the reproduction of emblematic and conventional forms, which have long been recognised as familiar.

The two accomplished artists who are now so successfully decorating the walls of the South Kensington Museum must be perfectly familiar with all the ancient methods of mural painting, and they probably reject the practice of encaustic on the score, which cannot be kept too much in sight, that without the earliest and the most familiar practice, the method is, as the ancients found it, suited simply to ornamental details,—to flowers, fruit, animals, and chimera,—to, in fact, the surrounding portions of actual pictures on the walls, such as we see around that lovely series of wall-pictures known as the Dansatricci, or to the ornamental designs that once surrounded the so-called marriage Aldobrandini, dug up in the Esquiline in 1606,† and now to be seen in the library of the Vatican.

Without question, to M. Henri Cros is due the credit of successfully putting into practice the exceedingly irksome and embarrassing method of wax-painting as practised by the graceful painters at Herculaneum and Pompeii; but the method he describes so well, and pursues so skilfully, has been long known in England through Caylus's work, which must have been known to Sir Joshua Reynolds, who, however, failed to understand the process described, or, what is more likely, experimented in his own way, and fell into the fatal error of loading his canvas too heavily with the wax, and also by mixing it with volatile oils, which has led to the creeping and disturbance of much of his beautiful work.

* "Mémoire sur la Peinture à l'Encaustique," 1755 Geneva. Translated into English by J. H. Muntz. "Encaustic, or Count Caylus's Method of Painting in the Manner of the Ancients." London, 1758, 8vo. See also "Mémoires de l'Académie des Inscriptions," xxvii., p. 179.

† During the pontificate of Camille Borghese, Paul V.

BUST OF MR. ALEXANDER THOMSON, ARCHITECT.

At the time of the decease of this lamented architect, better known in Glasgow and neighbourhood as "Greek" Thomson, we published in these columns a brief sketch of his life and career. A number of important buildings in some of the principal thoroughfares of Glasgow testify to Mr. Thomson's professional taste and skill, and these, no less than his social and personal qualities, won him many admirers among his fellow-citizens. Some time since a subscription was set on foot for providing a memorial of the deceased, and the appeal thus made met with a ready response. It was decided that the memorial should take the form of a bust, the commission for which was handed to Mr. Mossman, sculptor, and on the 2nd inst. this bust was publicly unveiled in presence of a large meeting of subscribers, and formally handed over to the representatives of the town council in the sculpture-hall of the corporation galleries. The Rev. John Stark, of Duntocher, in addressing those present, said they had the satisfaction of knowing that the memorial was not unworthy of their departed friend, and nothing he could say could add to their love, admiration, and regret that a friend so dear, a comrade so genial, a professional fellow-worker so outstanding, and, above all, a genius so true and rare, intense and original, should have passed away from them for ever. The rev. gentleman having touched on some of the more prominent events in the life of the deceased architect, concluded by moving "That the subscribers approve of the action of their committee, and accept with thanks the offer of the Lord Provost and magistrates to give the bust a permanent place in their galleries, and direct that it be handed over to them for safe custody and preservation." Mr. Mossman, sculptor, having unveiled the bust, amidst loud applause, it was formally received by Bailie M'Donald, on behalf of the corporation.

THE "HOUSE" OF THE SOCIETY OF ARCHITECTS OF BERLIN.

The building now appropriated as the meeting-house of the Berlin Society of Architects, situate in the upper part of the Wilhelmstrasse, and opened last December, owes its origin to that frenzy of mad speculation and over-building which, after the late war, seemed to seize upon German capitalists, and which is commonly known in Germany as the "Gründerperiode." Like hundreds of similar ventures, the undertaking succumbed during the reaction which spread ruin in commercial circles. It was originally designed by Herr Tietz, its architect, for a great public hall, but, in a half-finished state, passed into the hands of the Society of Architects, the members of which readily raised among themselves the capital required. The task of adapting the building, with as little expense as possible, to its new destination was confided to the two architects Ende and Böckmann, both able men, who had long worked together, and to whom the German capital is indebted for many of its best modern buildings, such as the so-called Rothe Schloss, the edifices of the Bodencreditgeselischaft and the Meiningen Bank, a handsome bazaar known by the name of Industriegebäude, the houses of the Centralstrasse, the new buildings of the Zoological Gardens, &c. They accomplished their task with little changes, the most important alteration being, perhaps, the shifting of the great staircase.

The façade, simply and powerfully arranged, gives to the building a certain prominence among its surroundings, and need not have shunned even a more ambitious neighbourhood. Five large circular-headed windows break the two upper stories, rising over a rusticated basement of freestone, and impart to the whole a character far from oppressive. This character is strictly preserved in the treatment of its members and their decoration; in the pillars and mouldings; in the projecting roof carried by consoles; in the columns and piers bounding the windows of the upper story; while the spandrels formed by the circular heads of the windows are filled by genii in relief.

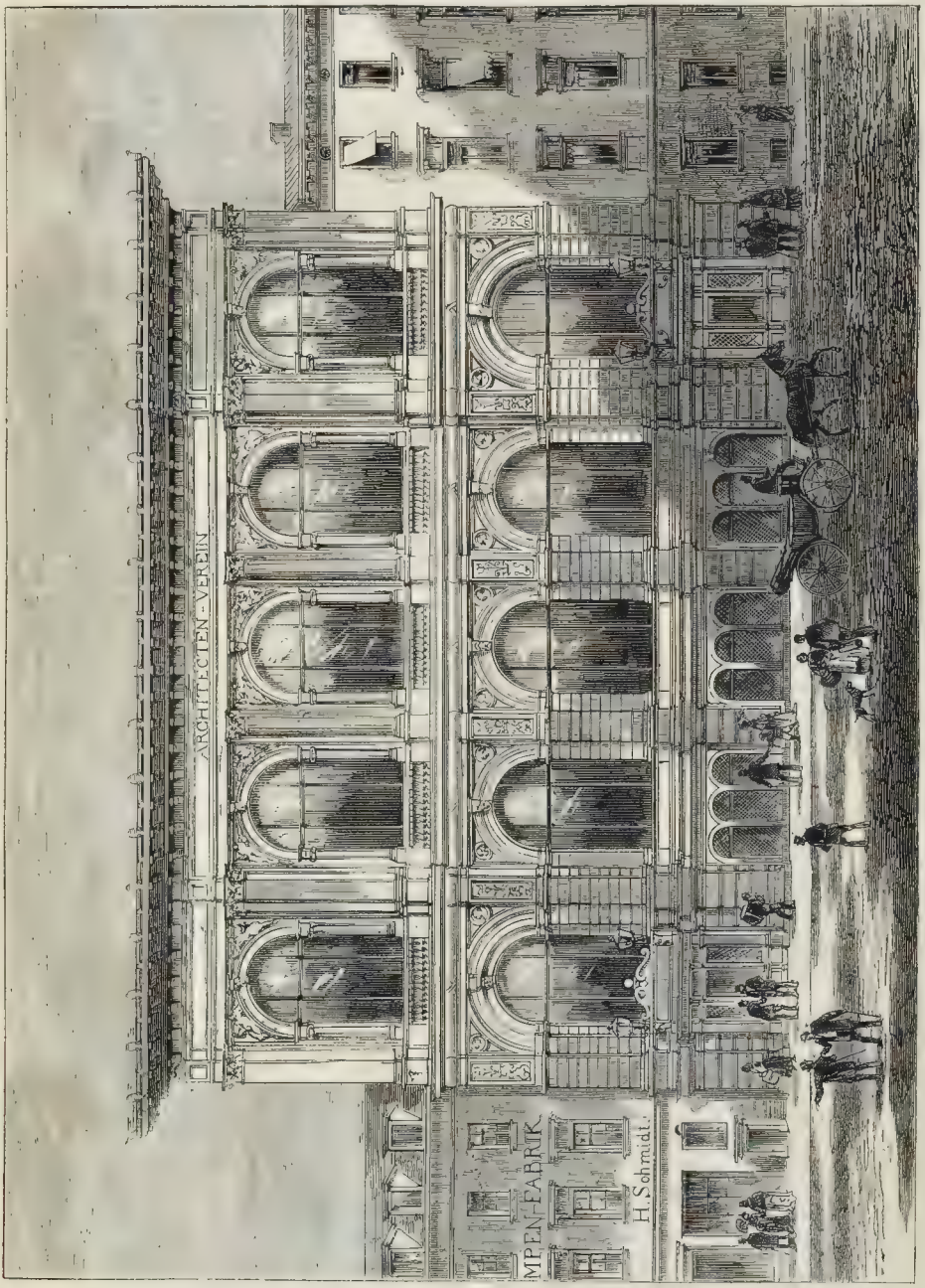
The basement of the building has been adapted to a public *restaurant*, to be used also, however, for the social gatherings of the architects. The story above is almost entirely taken up by a large hall, extending the whole depth of the building, double its frontage. This hall is divided by two rows of columns into three compartments of equal width, vaulted by groined arches. It opens at the back on to a terrace abutting on the garden of the War Office, and forms with it an excellent *locale* for a permanent architectural exhibition first here founded; it is at the same time used as a Building Exchange. The centre of this extensive space is broken by an octagon surrounded by eight columns, and projecting into the two side aisles, the columns being carried through to the upper story, the eight arches thus forming a loggia, connecting in an easy manner the two stories. The upper story is divided by the exalted octagon into two parts; the space in the front of the building, lighted by three centre windows, forming the ordinary meeting-room, the back being occupied by the hall for festive occasions; while on both sides are ranged smaller rooms of the width of one window used for offices and the library of the society. Above this rises an attic story, lighted by skylights.

The inner decorations need not be particularised; but the details of the festive hall, nearly completed, deserve some mention. Notwithstanding its comparatively small dimensions, it creates an imposing effect. From each of its four walls project two columns, the shafts of which are formed of a yellowish "stucco lustro," and which support the beams of the coffered ceiling. The centre bay has been reserved for the reception of a painting, the others have received elaborate compositions in stucco lustro. In its forms this decoration partakes of the character of the Italian Renaissance; in its colour it is confined to a deep blue, and corresponding nuances of gold bronze and dull grey-silver, seen also in the bases and capitals of the columns. The greenish-blue wall-paper, with gold tracery of the bays, the patterned curtains of the windows, and the four chandeliers in gold bronze, suspended from open-work brackets on the wall, complete the *ensemble* of an interior decoration at once peculiar and striking.

Communication between the different stories is effected by the principal staircase, moved to the right side of the building, which, leading from its portal to the first story, is continued behind the entrance to the exhibition rooms, and, here dividing, ascends to the second story. It is terminated with a richly-ornamented barrel vault. The building was adapted, in the first place, from its original destination, for the use of the Society of Architects, and for the purposes of the permanent architectural exhibition. But it also offers suitable accommodation for similar societies, for meetings and for festive assemblies. Being the first "society" house, and the property of one of the most important and influential among scientific and art associations of Berlin, the hope is entertained that in time it may become the established and permanent nucleus of the greater number of the artistic societies.

EDINBURGH ARCHITECTURAL ASSOCIATION.

At a recent meeting of the above Association, held in the rooms, 11, Hanover-street, Edinburgh, Mr. D. Robertson, architect, in the chair, a debate on "The Use and Abuse of Iron in Architecture," was opened by papers by Messrs. Balmain and Wheatley. The general tone of the discussion, in which nearly all the members present took part, went to show that iron was held to be almost indispensable for building purposes, but at the same time, its proper use and application were held to be very imperfectly understood and applied by many who made free use of it in their buildings, resulting in many cases in waste of metal by want of proportion in beams, girders, &c., heavy pressure on walls, for which there was no practical use, and other similar defects in construction.



THE MEETING-HOUSE OF THE BERLIN SOCIETY OF ARCHITECTS.



LONDON STREET ARCHITECTURE: MESSRS. CURTICE & CO.'S OFFICES, CATHERINE STREET, STRAND.

MR. GEORGE HALL, ARCHITECT.

ESSRS. CURTICE & CO.'S NEW OFFICES, CATHERINE STREET, STRAND.

THESE premises, 12 and 14, Catherine-street, rand, are built with Gault bricks, with Port- nd and Bath stone front, and produce a con- derable improvement in the hitherto dingy pect of this street.

The floors are supported by wrought-iron veted girders, on cast-iron columns, and the emises are well lighted and ventilated, back d front.

The whole of the work has been designed and perintended by Mr. George Hall, architect, of estminster-chambers; the contractors were essrs. Charles Aldin & Sons, of Queen's Gate- rdens, South Kensington; and Mr. J. Wyld as clerk of works. The modelling and carving ve been satisfactorily executed by Mr. H. quest.

Mr. Curtice, whose business is carried on in e handsome building illustrated, is one who s, by his industry and energy, risen from the nks. He commenced business forty years o in a humble capacity, and attended the market" or "exchange" for newspapers held Catherine-street, where at certain hours of the y the *Morning Herald* could be exchanged r the *Morning Chronicle*, the *Times* for the *rning Post*, and so on. A slight vestige of is newsmarket still exists, but its business very small, and is transacted by one man.

1852 Mr. Curtice started in business for him- lf in Pimlico, and in a few years he succeeded establishing the largest newspaper business that neighbourhood. In 1865 he opened a anch establishment in the Strand. This soon ew in extent, until now the business is one of e largest of its kind in London, employing ny hands, some fourteen horses, carts, and ns, and distributing daily 5,000 copies of the *mes*, 15,000 copies of the *Daily Telegraph*, d other papers in proportion. A large busi- ss also is done in the weekly newspapers and riodicals, Mr. Curtice disposing of 1,400 quires *Lloyd's Newspaper* (twenty-seven to the quire) ne; while a goodly share of our weekly issue the *Builder* passes through his hands. In 70 printing and bookbinding were added to business. Mr. Curtice prints and publishes gely in connexion with the Temperance move- nt. He has been a teetotaller for many years st, and to this fact he attributes much of his ccess in life.

Such a story as this, and a thousand similar ay be heard in London, should give courage to e humblest; showing, as it does, what energy, egrity, and a clear head can do, even under e most unpromising circumstances.

THE TESTING OF PORTLAND CEMENT.

A PAPER on this subject, by Mr. I. J. Mann, sistant engineer, Port and Docks Office, Dublin, ll be found in the first part of the session 76-77 of the "Minutes of Proceedings of the stitution of Civil Engineers," just issued. e properties usually examined were tensile ength, pulverisation, weight, and colour. In ungauged condition, good Portland cement of a uniform dull grey colour, but this test ne was insufficient. The method of weighing nerally adopted as giving the most uniform s as follows:—Dry cement, as received from e manufacturer, was allowed to flow from a all hopper-headed shoot into a counterpoised easure of known capacity, usually referred to e imperial bushel. Weighed after this manner, rtland cement varied from 78 lb. to 102 lb. r cubic foot, and bore a very uncertain ratio to strength, as was evident from numerous periments made by the author, as well as by r. Grant and Mr. Colson ("Minutes of Proceed- gs, Institution of Civil Engineers," vols. xxv. d xli.). It was, therefore, suggested that the esent unscientific and comparatively useless eration of weighing should be discarded, d the specific gravity be taken instead. enable this to be done, the author had vised an extremely simple gravimeter. consisted of a small glass vessel, holding, ien filled to a mark on the neck, a given quan- y of liquid, and of a glass pipette furnished th a graduated stem and stop-cock, and con- ning, when filled to a mark on its upper ex- emity, a volume of liquid equal to that held by e first-mentioned vessel, *minus* the quantity splaced by 1,000 grains of the densest substance ended to be examined. In using the gravi- ter, the pipette was filled to the mark with parafine; 1,000 grains of the cement were then introduced into the smaller vessel, which was placed under the pipette and filled to the mark. The height of the column of liquid remaining in the pipette determined the specific gravity, which could be at once read off on the graduated stem. As the result of about fifty experiments it was ascertained that the specific gravity varied from 2·77 to 3·03, the average being 2·91, showing that Portland cement was heavier than ordinary building stone.

The degree of pulverisation at present demanded varied greatly. Experiments showed that coarsely-ground cement, when gauged neat, generally possessed greater tensile strength than finely-ground cement, the age of the samples being seven days; after one month's immersion the breaking-weight of $2\frac{1}{4}$ square inches was, for fine screened sand, 939 lb., and for coarse unscreened, 989 lb. When the age of the samples was six months the results were similar. In the case of cement containing not more than 10 per cent. of coarse particles, it was found that they might be replaced by sand without affecting the strength of the aggregate; beyond 10 per cent. the results were increasingly in favour of the coarse particles as compared with sand. In order to ascertain the effect of coarsely-ground cement on mortar, experiments were made with cement of various degrees of coarseness, and sand gauged in equal volumes. From these experiments it appeared that, when diluted with an equal volume of sand, coarse cement did not give such favourable results as fine. In many instances, the cement containing 25 per cent. of coarse particles possessed little more than one-half the tensile strength of mortar gauged in the same proportions with fine sifted cement, the age of the samples being four weeks. On the whole, the author believed that cement, of which not more than 10 per cent. was stopped by a sieve with perforations 1-50th of an inch in diameter, probably approached the present economical limit of grinding. In connexion with what might be called mechanical agency, experiments had been made on the effect produced by sands of different degrees of granulation, on the strength of cement mortar. These tests showed that extremely fine sand diminished the tensile strength to less than one-half of that of mortar made with coarse sand.

The test of tensile strength was of all others the most important, and, if properly applied, not only to the cement in its neat condition, but also when diluted with sand, would answer all practical purposes. The method of making the sample briquettes to a great extent determined the breaking weight. The author recommended that the cement should be packed closely into the mould, heaped a little higher than the edges, and pressure applied, by which pressure superfluous water was forced out, and the strength of the sample was increased 25 per cent., the best test-blocks being made with from 6 oz. to 7 oz. of water to 32 oz. of cement. The shape of the sample briquette was also capable of improvement, as the irregular strains produced by the clips holding the sample, which clips had a tendency to collapse, led to crushing strains. To avoid the use of clips, the author had had holes drilled in the samples and the narrow part reduced in area, with a view to prevent fracture through the eye; they were then broken by steel pins passing through the eyes. A comparison between samples of the ordinary shape broken with clips, and of others having circular ends, broken with steel pins passing through eyes, showed an increase of nearly 20 per cent. in favour of the proposed shape. In regard to the age at which the sample briquette should be broken, it was remarked that generally cement sets with sufficient quickness to enable its quality to be determined by the seven-day test; but the difference in the strength of seven-day and twenty-eight day samples was found, from numerous experiments, to be about 20 per cent. The standard of tensile strength, specified at the commencement of the London Main Drainage Works, was a breaking-weight of 400 lb. on an area of 2·25 square inches (equal to about 178 lb. per square inch), after seven days immersion. At present, a tensile strength of 350 lb. per square inch was frequently demanded and obtained. In the author's experiments, a strength of from 400 lb. to 500 lb. per square inch, after seven days' immersion, was not uncommon, and in some instances it rose to 600 lb. per square inch. The average of a large number of tests within the last three years had been 380 lb. after seven days, and 450 lb. per square inch for twenty-eight day samples.

WHAT IT *MAY* COME TO.

SIR,—In the year 1977 the study of archæology was at its height. So great was the interest excited in the excavation of ancient buildings, that numbers of architects voluntarily exiled themselves for life, and spent their substance in trenching the surface of the earth in all directions, to find the footings of walls and the bases of columns, for which exertions they obtained great praise from their friends at home, combined with wholesome criticism, besides receiving from the Government of the country the distinguishing privilege of being entirely let alone, and permitted to pursue their investigations without the annoyance of official interference or assistance. The spirit of critical insight developed by these numerous excavations was most remarkable, and a brief report of the proceedings at a meeting of the Free and Republican Hodlogical Society will best convey an idea of the great advance of archæologists in this respect.

On the occasion in question considerable excitement had been aroused by the intimation that several learned professors would conjointly, completely, and satisfactorily restore the Temple of Pash, the remains of which had recently been brought to light in Egypt, through the unparalleled exertions of Professor Smith and his staff, who had for twenty-seven years made trenches in the sand, to look for the temple, which, though fully described by several ancient authors and a good many modern ones, had been quite lost sight of since 2000 B.C. They had at last, however, been rewarded by complete success, having one morning come upon the temple, and found the bases of two columns, a broken step, and the nose of a statue. In the position to which modern archæological science had been brought, it became easy from these data to reconstruct the whole building.

Professor Jones, in opening the proceedings, while complimenting Professor Smith and his assistants on their energy and perseverance, pointed out that they must not think too much of themselves on that account. That people should take so much trouble to find and bring home relics of ancient architecture was highly creditable to them, but they must remember that such relics were of no value without the help of himself and his learned friends to interpret them. To find a temple was one thing, to restore it was (as they would soon perceive) quite another. He would now come to the matter in hand. In restoring the temple of Pash from the full and interesting remains that had been found, they, of course, had to take into consideration the descriptions of ancient writers. The great Egyptian author, Pih, was the highest authority on this point, and the coincidence between his description and what had been deduced from the remains, as to the plan and dimensions of the temple, was very remarkable. Pih described the great hall as containing 800 columns; and the setting out of the plan from the position of the two columns found *in situ*, gave 640 columns, which was very close; indeed, by the alteration of a word or two in the text they might make the two amounts nearly agree. The testimony of Pih in these matters was most valuable, as he was a remarkably accurate writer, and always to be relied on for correctness in statistics. This, therefore, was a remarkable confirmation of the correctness of their inference, that this was the very temple described by Pih. Then in regard to the exterior dimensions, Professor Smith (whose measurements were most careful) gave the dimensions as 547 Egyptian feet in length and 330 ft. in width, measured along the bottom step; this was a good way from Pih's figures, which were 630 ft. by 397 ft. But by merely supposing this step to be one of the top range instead of the bottom range, then allowing for the width of space required for the ten steps described by Pih (who was undoubtedly correct in his figures) they would have dimensions of 597 ft. by 360 ft.; they had then merely to add 33 ft. to the length and 37 ft. to the width to make the restoration coincide entirely with the recorded dimensions, and thus every difficulty was got over.

Professor Smith said he could not admit this in the least. The step found was evidently from its size and shape, a bottom step and not a top one.

Professor Jones inquired in what position the step was found.

Professor Smith explained that it was not found on the site of the excavations at all, but built into a tomb three miles off, but no one who

saw it could have the slightest doubt that it belonged to the temple.

Professor Jones pointed out that the question was much simplified, as it was clear that in that case they could place the step wherever they pleased, to make it fit with Pih's dimensions: nothing could, in fact, be simpler.

Professor Brown desired to invite the attention of the meeting to what was, in fact, the most interesting point in connexion with the subject, the evidence on the lighting and decoration of the temple afforded by the portion of the nose of the statue which had been found. Some of his learned friends, he might observe, did not think this was a nose, but considered it to be a fragment from the capital of a column; but he thought they would all admit that it had much more the shape of a nose. It was true that Pih said that there was no statue in this particular temple; but then Pih (though, as his friend Professor Jones had already observed, a most accurate writer) must not be permitted by his mere statements to interfere with a theory so consistent and interesting as that which he had to set before them. He had shown years ago that the Egyptians (anticipating the modern idea of footlights) lighted their temples through the floor, by an ingenious system of reflectors from the exterior. His views on this subject had been, he was aware, attacked by various writers; but he was happy to tell them that in his judgment (and on such a matter he surely must know best) all attempts to answer him had signally failed (applause). Now this fragment, which he did not doubt was the nose of Pash, afforded ample and remarkable confirmation of this view, and, in fact enabled them to completely reconstruct the temple in imagination. The unusual projection of the nose as compared with its length was evidently designed for its effect when lighted from below; and how could that be done except in the manner he had described in his previous writings? At the same time the broad and bold finish of the lower portion showed that it was not intended to be seen in a very strong light; and they would at once gather that the light through the floor was tempered by an elaborate open iron grille, doubtless beautifully gilt and ornamented; and thus an admirable effect was realised; and, in fact, they got over every difficulty. He would draw their attention to the fact that a trace of red colour was found upon the nose, which clearly indicated that the face of the statue had been coloured bright red. They would at once conclude from this that the interior had been entirely coloured; and as there could be no doubt that the scheme of colour would be such as to emphasise the countenance of the goddess, which would, in fact, be the "high light," if he might so speak, in the picture, he would leave it to them to imagine how striking and gorgeous must have been the effect of that interior, decorated in the most powerful scale of colour, and illuminated by a flood of light from below, as they were now fortunately enabled to restore it.

Professor Robinson said he entirely concurred in the details of the restoration so ably carried out by his esteemed and learned friends, Professors Jones and Brown. He regarded their position as perfectly impregnable; still he would point out that one objection had been made to the idea of the Egyptian temples being lighted through the floor, on the vulgar ground that it was most natural to look for light from above. The scheme of his esteemed friend wanted no support from him; but still, by way of entirely silencing such ill-considered objections, he would just observe that, if any one thought the scheme of lighting through the floor questionable, they had only to suppose the temple to have been built upside down, with its floor uppermost, and the bases of the columns in the air, and the statue standing on its head, and the whole thing became perfectly simple. There was a good deal to be said in favour of such a view; indeed, there were several passages in ancient Egyptian authors which might be construed to refer to statues standing on their heads. As to the architectural effect it was most satisfactory; he had himself followed this system in his restoration of the temple of Pub, of which a sketch hung on the walls. He feared the drawing was too small for them to see; but he was quite sure that if they could see it they would concur with him in thinking that it produced a noble result, and one of which any architect might be proud.

Professor Smith, in reply to the several views which had been urged, said, briefly, that he believed none of them. He was not going to argue the point; he had formed his own opinion, and he should stick to it through thick and thin. (Applause.)

Several other gentlemen having expressed themselves to the same effect, the proceedings terminated. An Admirer.

DIVE DEEPER.

Sir,—At the congress of the Social Science Association held in Liverpool last October a very interesting account was given by Mr. George Godwin of the use that the Art-Union of London had proved to be (to quote the writer's own words) as an "art populariser" in this country; and not only in England, but also in our colonies. And this Association most undoubtedly has been the means of diffusing amongst the middle and even the poorer classes some knowledge and appreciation of art, and cultivating a taste for the beautiful; and if the good work of a more general knowledge of art which that gentleman has so strenuously advocated were to receive more assistance, not only from individuals, but from the nation, and be carried on in a more extended and developed form,—such as in an increase of art galleries for the people, and free schools of art for the people,—the legislator, the philanthropist, the doctor, the clergyman, would find in a fresh impetus given to an art movement their ablest coadjutor and the best arm with which to combat vice, squalor, misery, poverty, and drink. For undoubtedly with a knowledge and spread of the beautiful would come a desire for better things. Refinement can be carried into the poorest home. A whitewashed wall can be adorned by some good print for the smallest sum, and the commonest delf ware may yet be of pretty shape and design. And as the home gets cleaner and brighter, the poor will try to keep themselves cleaner and brighter, and, from caring for the outward shell, some desire may begin to dawn on them that the soul within ought to be kept clean and bright too. A man instead of wasting his wages would begin to keep them for what had really become "home." All this sounds Utopian,—all this sounds unreal. But, notwithstanding all that has been done for art in this country, no machinery powerful enough, vast enough, or general enough, has yet been put in motion to entice the people to good, to instruct, while amusing them. For it is by that latter bait you must first catch them. You cannot educate the masses,—deadened, childish, ignorant as they are,—up to knowing and understanding the progress of art by letting them wade through dreary galleries of Mediæval pictures. The shouts of laughter I have sometimes heard when passing along some public galleries would prove that to the uneducated art so demonstrated is simply ludicrous. My idea is that small and inexpensively constructed galleries should be formed in the worst and most miserable parts of London and our large towns; that plaster casts of the best works known to us,—the most elevated and pleasant subjects alone being selected,—should be obtained; and that copies of the best pictures, ancient and modern, should be added; to the people they would be as good as the originals. A tablet should be affixed to each picture and statue (thus doing away with the necessity for catalogues for those who cannot afford them), giving the painter's name and life, with the "story" of the subject, and thus things of beauty would really become joys for ever; and the noblest works of Greece and Rome, of Germany and France, become as familiar as "household words" to the masses. A lecture might be given every Saturday night, the galleries being lighted up; and, to encourage return to these galleries, every six months there might be a distribution of prizes, in the shape of cheap but good engravings, plaster casts, and delf ware, to those who, on examination, could give the best and clearest account of the lectures, and the subjects of the pictures and statues. Little by little they would thus be drawn to appreciating such collections as the National Gallery and South Kensington Museum. But these at present are too far out of the beat morally and physically of the utterly indigent and neglected, who would even be ashamed to parade their poverty-stricken appearance in what to them is like a palace. And that is why, up to the present time, the humanising effects of art have never yet reached what we might call the North Pole of the Social Scale. And as history has proved that with the decadence of art the decadence of a nation begins; so with a school of a bold, vigorous, and elevated character the tone of a nation should be raised. And if it should be the privilege of some of the immensely wealthy scattered through the State to begin such a work and carry into the miserable fever-stricken Saharas of this great city some palest reflex of their own comfort and refinement, it might be said of them as of Sir Christopher Wren in St. Paul's,—"*Si quæris monumentum, circumspice.*" Hopeful.

FARNHAM AND ITS FAILINGS.

In the most dreary spot through which that important tributary to the Thames, the Wey, flows, is built a town, yclept Farnham. The channel of the river is so undefined that "the glories of an April day" cause an overflow, and its course could be changed about from time to time at little expense; indeed, for a few thousands sterling, a dam might be constructed across the valley, through which it wriggles, that would make Farnham a large pond. The soil is gravel, which is so porous that every cellar which is below the level of the river,—and most of them must be so,—is also a water-tank. Of this surface water the inhabitants make tea, coffee, beer, and various other beverages, as they can obtain it from wells less than 10 ft. deep. They also try to make some of their refuse run into this river, and in this respect they only do as other bimana who dwell upon the banks of this much abused stream do; but as liquids will not voluntarily move up an inclined plane, when the river is high the refuse and slops remain where they are deposited, and, consequently, the soil being so porous, the limpid fluid so necessary for the well-being of animal life is rendered abominable.

The principal street in Farnham is a very long one, and follows the course of the river, but not its windings. One end of this appears to elongate itself towards Winchester and the other towards London; but the march of progress is more towards the former city, for an estate is laid out for building purposes there. To rise in the world the progress should be at right angles to the river, where water would have to be obtained at a greater depth, and where there would be a good fall for sewerage. The street, however, which eschews the river, is a short one, in which no one, it is presumed, was ever seen to walk, except on his way to church; but just where it intersects the long street, Farnham has concentrated all its attempts at modern architecture. The bank of Messrs. Knight & Co. is a very meritorious attempt to improve Farnham, and some of our young architects would gaze upon it with delight if it were in the City; but architecture in timber, perhaps, would not be allowed there, so we have to put up with the horrid style called after Queen Anne. There are several erections of that queen's reign in Farnham. These are the residences of hop-growers whose pedigrees are connected with hops. Such another place for hops as Farnham it would be difficult to find, and a man without a pole, or hops on the pole or brain is a rarity. Every inch of ground is devoted to hops, and all the surrounding country to the production of poles. Should Sir Wilfrid Lawson ever get the people of England to think with him, great will be the tribulation in Farnham, for "Othello's [one] occupation's gone." One would doubt the wisdom of the whole people of a place staking their all in one venture, but this Farnham does. Outside of Farnham, beyond the reach of the hop mania, many modern mansions are met with, and the scenery eastward is truly enrapturing, and the whole course of the Wey from Farnham to Guildford,—about twenty miles,—is extremely interesting, and will before the celebrated New Zealander puts in an appearance be covered with mansions. There are several architects in Farnham, but what for nobody knows; for there is nothing with any architecture in it, therefore it is only just to suppose they have had nothing to do with what little building there has been in modern times. There are also some very large buildings, whose presence must be attributed to the many mansions that have sprung up in the neighbourhood, which are not the work of local architects. Workmen are plentiful and wages are low, land is cheap and rents are not high. Your London workman is cooped up in two rooms on his 9d. per hour, whilst here the workman who receives 6d. per hour lives in a semi-detached four-roomed cottage with a large garden to grow hops in. They have their institute, as have the shopkeepers,—so-called young men,—but the *Builder* they have no opportunity to study. There is a Local Board which can point with pride to what they have left undone, and so saved the pockets of the ratepayers who elected them. Gargoyle.

ON THE OPTICAL REFINEMENTS OF GREEK ARCHITECTURE.

In the discussion which followed the reading Mr. Penrose's paper,*

Professor Donaldson said the dissertation to which the members had just listened was so learned and abstruse that it was impossible to discuss it properly without considering it very thoroughly; besides, it required a great deal of mathematical knowledge to enable one to enter into all its details. In the first instance, with respect to the length of the upper step, as forming a basis upon which the dimensions of the temple had been decided, it seemed to him that the upper step was an insignificant feature of the whole building. Mr. Penrose had alluded to the errors made by some of those who had measured the Parthenon, and he attributed those errors to the use of wooden measuring-rods, but he (the professor) had always found the rods very exact: his own measurements taken with them did not perceptibly vary from the measurements of the same features taken by Mr. Penrose. It could not be laid down that, because certain proportions were found to exist in some of the Greek temples, they would necessarily be found in all the temples of the Greeks.

Mr. Watkiss Lloyd said that if any subject at all would interest him it was the one before the meeting. Mr. Penrose's book offered the first complete record of a series of measurements which had evidently been adjusted to each other with the utmost nicety, and at the time the book appeared he (Mr. Lloyd) was induced to take up the study of the subject upon the data afforded by Mr. Penrose. With reference to the further development of the subject which Mr. Penrose had laid before the meeting, he agreed with Professor Donaldson that it required time for special study and consideration. At present, his impression was that a great many of the cubical proportions which Mr. Penrose had revealed were ,but the necessary consequences of simple linear proportions. He thought that the proportions were considered in lengths, breadths, and heights, and in dealing with these in simple numbers one would be certain to bring out, by necessity, a great number of coincidences of cubical proportions. The only instance in which he was able to trace that was in the columns, and there he found some very remarkable coincidences. The general principle appeared to him to involve the difference between the system which the Greek architects pursued, and that which was now ordinarily practised. At the present day the 3-ft. rule was the grand standard of everything, and by it the height of every piece of furniture and of every room was regulated. Now, although the Greek foot was known to us to the utmost fraction, excepting in the top step of the temple we nowhere found the Greek foot used as the standard of measurement. It was, therefore, quite clear that in the adjustment of the dimensions of their buildings, the Greeks adopted some other unit of measurement. His own idea on the subject was that in Classic times the architect, having a conception of the design which he desired to produce, made a sketch or model of it in the rough, so as to express as early as he could his idea, just as the painter made a general sketch of his subject first, and then, as his work advanced, he elaborated and refined on it, and made it exact. That, he apprehended, might have been very much the method of procedure in making the design for a Greek temple. But in carrying out the work the actual dimensions had to be furnished. How were they obtained? The only conclusion he could come to was that they were obtained by templates and models. By emphasising a particular proportion in different ways, it gave a general harmony of the whole. Architecture had been called "solid music"; but it was so in the case of the Greeks in a more serious sense than might be supposed. Music, like architecture, had its own system of proportions. To illustrate what he meant: if some air were played on the very best and most perfect piano in London, and the notes written down in their numerical values, and if afterwards the same air were executed upon the violin by a perfect performer, and the notes also written down numerically as to value, the two lists of numbers would not agree,—on this account, that in the piano the notes were fixed, and therefore there could be only a certain number of notes, and because the same key used for the sharp of one note was used for the flat of another note. To persons of very refined ears for music this resulted in discord. Far different was the effect produced by a skilful violinist, the violin being capable of expressing the minutest differences of intonation, and of satisfying those mathematical principles which the piano was constantly breaking. Likening the piano to the 3-ft. rule, and the violin to the more subtle standard of proportion used in the Greek temples, Mr. Watkiss Lloyd said that the Greeks decided to go by the violin and not the piano,—in other words, to adopt other means for obtaining exact proportions if they could not secure them by adopting the Greek foot as a standard. In conclusion, Mr. Watkiss Lloyd said he was glad to see the continued interest that was taken in the subject by the members of the Institute. When he read his paper eighteen years ago, he did not meet with much sympathy beyond a friendly word from Mr. Godwin, who was in the chair. The subject was one of the most interesting in the history of architectural study, and the correctness of the general principles which he (the speaker) had laid down was now demonstrated.

Mr. Fergusson, in proposing a vote of thanks to the author of the paper, said Mr. Penrose was the first, by his careful measurements of Greek temples, to put the science of harmony in architectural proportions on a good basis, and he had not the least doubt that it was a true science which had been elaborated by Mr. Watkiss Lloyd and Mr. Penrose. The paper was not one on which much could be said without previous study, but he was perfectly convinced that the views advanced by both gentlemen were quite correct, and the architectural profession owed a great debt of gratitude to them for having worked out one of the most pleasing and interesting problems of Greek architecture.

Mr. R. P. Pullan seconded the motion, and said he had had some experience in measuring Greek temples, and, without having any theory of his own, or even thoroughly understanding Mr. Lloyd's theory, he had measured several temples and had sent the measurements in to a committee of which Mr. Lloyd was a member, when the measurements actually carried out were found to agree in almost every case with those laid down by Mr. Watkiss Lloyd's system of proportions. One noteworthy point was that in the temples he had measured there was hardly a rectangle to be found in the building except at the corners, the walls being battered and the steps raked.

The Chairman (Mr. Whichcord), in putting the motion, said that if the Institute wanted an example of the desirability of having further opportunities for discussion amongst its members, it was afforded by the discussion on Mr. Penrose's paper, in which even the most learned pundits amongst them found it difficult to take part.

Mr. Penrose, in acknowledging the vote of thanks, said it should not be forgotten that the rules to which he had referred in his paper were entirely plastic in the hands of the architect, who, after making the building fitted for its purpose, would apply the rules for the sake of refinement.

At the meeting to be held on Monday next, the 19th inst., Mr. A. Waterhouse will read a paper descriptive of the new Town-hall at Manchester.

* See *Builder*, p. 127, *ante*.

Proposed Opera House in New York.—Under the class of the "may-be's," says the *American Architect*, should properly be placed the work of Mr. Arthur Gilman upon a grand opera-house for Mr. Strakosch, the impressario. The body of the house measures about 200 ft. by 125 ft., with projections for stairways, &c. It is a close copy of the La Scala of Milan. Without, the work is in Italian Renaissance. Within, there is a stage 50 ft. by 67 ft., and an auditorium 105 ft. from curtain to back of boxes, and a width of 90 ft., with a height from orchestra floor to ceiling of 65 ft. There are five box balconies, with 80 boxes in each tier. There will be seats on the orchestra floor for 650, and in the upper gallery for 500 more, making the total capacity of the house about 3,000. The specifications call for a fire-proof construction throughout; concrete, tiling, and Tiel blocks are liberally used, with iron supplying the place of wood. It is a grand design on paper, and before long we shall know how many millions it will need to give this fancy a tangible shape,—says our authority.

THE DWELLINGS OF THE LABOURING POOR IN IRELAND AND ENGLAND.

A WORTHY charge to the grand jury is that recently addressed by the learned Recorder of the city of Dublin, upon the subject of the heading of this notice. Its great length, however, prevents a *verbatim* report, but the following digest embraces its salient features. Old readers of the *Builder* will say, "We have read every word of it before, over and over again." No doubt of it; and more's the shame. Eleven years ago a present Cabinet minister to whom we had sent, in a book form, similar statements and proofs of their truthfulness, wrote in reply,—"You have made these statements quite often enough; there can be no occasion to repeat them; every one knows the state of things, and all we have to do now is to remedy it."

The Recorder of Dublin does not think so:—"Our people," says he, "need more amusements, wholesome and harmless, than they have,—more solicitude and active sympathy from the classes and governing powers above them; and society, which neglects its obligations towards them, will have to pay for that neglect at compound interest in the long run, as we, perhaps, are doing now.

In the application here, in Dublin, of the Act for Improving the Dwellings of the Labouring Poor, a practical advance has been made by our Corporation, but all, for its success or failure, depends on the support it receives from public opinion. I am convinced the problem this statute aims at solving is the gravest social question of our period. At last it comes to possess the minds and consciences of thinking men, not only of statesmen, philanthropists, but even crowned heads; but, what makes more for its ultimate success, on the minds of our practical men of business, our merchants, and municipal bodies. High time, too, it did. The simple God's truth is, that whilst the homes of the masses in our great cities, and notably in Dublin, remain as they have been, our boast of progress has been fantastic, and our talk about our Christianity almost profane. Thousands upon thousands of the multitudes in our great cities live and die in a place whence a humane sportsman would be ashamed to whistle forth his spaniel. Surely it is vain that we should bid them, steeped in squalor and besieged by disease, joyless, hopeless, Godless,—not to seek the light and warmth of the gin-palace, and the oblivion, however temporary and baleful, they can purchase there. It is preposterous to think society can be regenerated by sentences of penal servitude and the refusal of spirit licences, if nothing more be done. 'It makes one's heart ache,' said Mr. Councillor White, when moving the adoption of the approved scheme in the Birmingham Town Council, 'to listen to the tales of the poor people, in going from court to court in the forlorn portion of the town. "No good," says one, "trying to be clean here. We give it up as a bad job." Another said, "What have people to do but to drink here? There's nothing but dirt and nastiness to live in, and stinks and smells. The only thing to make people jolly is a drop of drink. I never drank too much till I came to this here hell of a place. The parsons tell us to be good. Nobody can't be good in such places as these."' Mark, this is Birmingham; but he knows little of Dublin who does not know that we have pendants for these pictures here.

'Englishmen and Christians,' says a dignitary of the English Church, 'tolerate scenes of festering corruption, both for body and soul, where everything tends to crush self-respect, engender and facilitate vice, to make a night's repose hideous and unholy, where decency is outraged, shame unknown, and chastity impossible.' If we change this awful paragraph to 'Irishmen and Christians,' alas! it is at least equally true. Hundreds and thousands in this city are never in a wholesome home until they are sent to gaol, hospital, or poorhouse. What a travestie of, perhaps, the healthiest of all the old maxims, —'There's no place like home,' when it means there's no place so foul, abominable, and objectionable. Though if it be true that the people themselves have been largely to blame, equally true it is that they cannot, without a radical reconstruction of their houses, and often of their districts, effectually help themselves; but it libels them to say they are incapable of improvement. That they can appreciate cleanly homes has been demonstrated, not merely in London, but here in Dublin the experiment has been tried successfully. The Corporation of Bir-

mingham are applying the statute on a gigantic scale. They passed a provisional order last August to deal with ninety-four acres in the middle of the city. Their project combines street with sanitary improvements,—a few handsome new streets from the wealthy quarters, as approaches to the poor districts, where acres of unwholesome buildings are to be thrown down, and a new artisan city re-erected in their place. They propose to spend no less than two millions of pounds, but spread perhaps over ten years, the capital borrowed from Government on the fifty years' system, so that 20,000*l.* will be the annual maximum of the city rates. Against this they calculate on getting back directly at least three-fourths by the enhanced value of the cleared areas, which they will sell or re-let, and the enhanced saleable valuation, when the buildings have been reinstated; whilst by the indirect economy, in poor-rates, gaols, hospitals, and police, they confidently hope their scheme will in a few years be self-paying. Nor is this speculation. The trial has been made in Glasgow, since 1860, with glorious results; and in Edinburgh, which has more analogy to Dublin, on a smaller though still on a very extensive scale. I went to see how these things were done across the Channel. The secret of their success is, that society is in earnest, and united. It has been recognised, in the language of the Lord Provost of Edinburgh, that though the question is one of money, it is also one of life and death, and that they must choose between these. In Birmingham the Town Council passed the scheme by a majority of forty-nine against none, and all classes and organs of opinion have gone with them hand-in-hand, till the voice of selfishness was hushed, whether coming from parsimonious ratepayers or extortionate proprietors: otherwise the thing would be impossible.

I could hardly believe when I heard that out of a schedule of owners, covering 220 printed folio pages, the confirming Bill was opposed in Parliament by a single gentleman only, who had the satisfaction of paying his own costs of his unsuccessful opposition; whilst though their powers were compulsory, they have not yet been used in a single instance, but 85,000*l.* worth of property has been purchased by agreement. They offer a fair price, but when they meet with a cantankerous owner the very largeness of their scheme enables them to leave him in the lurch, and exclude his holding from the improveable area.

It is this example of union and foresight, rather than the scheme itself, which Dublin has to imitate, where we have neither the means nor the necessity of one on so large a scale. But though the conditions of the towns are unlike, our need for this statute is just as great as theirs. Dublin is not, like Birmingham, a city of artisans; but as a Government centre of our judicial system, and a university city (which Birmingham is not), we have here in permanence an immense scattered army of artisans for dwellers in our proprietary streets and squares."

THE SEWAGE QUESTION.

THE INSTITUTION OF CIVIL ENGINEERS.

As the ninth ordinary meeting of the session, on the 6th of February, Mr. George Robert Stephenson, president, in the chair, the paper read was on "The Sewage Question," by Mr. C. Norman Bazalgette.

The object of this communication was stated to be twofold. First, to limit and define the proper application of the various systems introduced from time to time for dealing with the sewage of towns. Secondly, to direct attention to certain subordinate questions arising upon the practical operations of such systems. For the purposes of this paper, the following classification had been adopted:—1. Treatment with chemicals; 2. Application of sewage to land, including irrigation and intermittent downward filtration; 3. The dry-earth system; 4. The Liernur or pneumatic system; and 5. Seaboard and tidal outfalls.

1. *Treatment with Chemicals.*—In this section of the paper, reference was made in considerable detail to the practical experience of the lime process at Leicester, Tottenham, Blackburn, and Birmingham; the A B C process at Leicester, Leamington, Crossness, Hastings, Southampton, Bolton, and Leeds; the sulphate of alumina process at Coventry; the phosphate of alumina process at Tottenham, Barking, and Hertford Goodall's process at Leeds; Bird's process at Cheltenham and Stroud; Dugald Campbell's process at Battersea; and Whitthread's process at Tottenham. It was stated, generally, that the experience of these processes was more or less identical with that which had been derived from Holden's, Hille's, Lenks's, Suvern's, Scott's, and in fact all other methods in which, by the admixture of chemicals, it was sought to effect the purification of sewage by the precipitation of the dissolved and suspended impurities, and the ultimate realisation of the precipitate in the form of a manure. This experience, coupled with certain opinions of Professor Frankland, Mr. Krepp, and Dr. Corfield which were cited, was relied upon as establishing the following conclusions:—That no chemical process could efficiently deal single-handed with sewage, but must be assisted by subsequent natural or artificial filtration of the treated sewage, and therefore no chemical process *per se* should be adopted for the purification of town sewage. The principal objections to chemical processes, which appeared upon the experience of the places where they had been adopted, and upon which this conclusion was founded, were, inefficiency of treatment, cost of treatment, and difficulty of manipulating the accumulations of sewage sludge.

2. *Application of Sewage to Land.*—The author first considered whether sewage could be made to yield an agricultural profit. The Parliamentary return of 1873 was referred to, and the financial position of the Warwick farm was specifically examined. The question was also raised, whether sewage possessed any fertilising value beyond ordinary water for the purposes of irrigation, and the experience of the Barking farm having been appealed to upon this point, the conclusion was laid down that no profit ought to be expected from the cultivation of crops by sewage irrigation. The next point discussed was whether any definite standard could be laid down as to the proportion population should bear to acreage in the practice of irrigation, the proportions exhibited by eleven towns being referred to, and it was determined that it was impossible to frame a specific rule. The theory of intermittent downward filtration was then investigated, as based upon the laboratory experiments of the Rivers Pollution Commissioners; and it was argued that the proportions which they had affirmed population might bear to acreage, ranging in the case of 1 acre drained 6 ft. deep from 2,000 to 3,300 persons to the acre, were too high, and were not justified by the experiments. The practice of downward filtration at Merthyr was next referred to, and it was shown that the extent of its practical operation there had been exaggerated, and that the results confuted instead of confirming the proportions of the Rivers Pollution Commissioners. The experience of Walton and of Kendal was also reviewed, and the following general conclusion completed this section of the paper:—That where land could be acquired at a reasonable rate, irrigation was the best and most satisfactory known system for the disposal of sewage, but that intermittent downward filtration might be practised where the necessary surface area for broad irrigation could not be obtained. Experience, however, showed that the permanent proportion of population to acreage, where land was drained 6 ft. deep, should in no case exceed 500 or 600 persons to an acre.

3. *The Dry-earth System.*—The applicability of this system to towns was next considered, and it was shown that it must be supplementary to, and not substitutive of, a water-carriage system, thus enormously increasing the cost of making sanitary provisions for towns. The effect of its introduction into the metropolis, as a test case, was illustrated by figures, to prove that it would be superfluous, costly, cumbrous, and impracticable. Indeed, its applicability became diminished in the inverse ratio to the increase of population, to which it was proposed to apply it; and though it might be occasionally used with advantage in hamlets or detached buildings and institutions, it was unsuitable for the wants of towns.

4. *The Liernur or Pneumatic System.*—A description of the mechanical characteristics of this system was first given, and then the experience yielded by its operation at Leyden, Amsterdam, and Dordrecht was specifically analysed. It was supplementary to, and not substitutive of, a water-carriage system, extremely costly, and its mechanism was complicated and liable to get out of order. The accumulation of sewage residuum in the central reservoir, and its subsequent decanting into barrels, were operations which could not fail to be objectionable and offensive. Its appliances were therefore not suitable for a high-class community, and no return from the manufacture of "poudrette" could be expected. In conclusion, it was urged that the system was of such a character that, though it might have a partial province in the tide-locked cities of the Hague, where no system of sewerage was available, it should never be imported into an English town.

5. *Seaboard and Tidal Outfalls.*—The first point considered was the return of the sewage of seaboard towns upon the beach; and it was maintained that where care had been taken to determine by float observations the force and set of the currents to which the sewage was to be committed, there was no difficulty in preventing such a result. The sea constituted the most natural and economical outfall for the sewage of towns situated upon it, and such means of outfall should be adopted. With regard to sewage outfalls upon the tidal portions and estuaries of rivers, there ought to be, arguing from the experience of the metropolitan outfalls, and assuming that proper precautions were taken in the selection of the outfall, and the exclusion of silt from the sewers, no danger of the silting up of the navigable channel.

MYCENÆ.

At a meeting of the British Archæological Association, at its rooms, 32, Sackville-street, Piccadilly, Mr. H. S. Cuming in the chair, on the 7th inst., Mr. Thomas Morgan, the treasurer, read a paper "On the Ruins of Mycenæ, with reference to the late Discoveries there." Although, he said, the shores of ancient Argolis and the Ægean Isles might seem altogether beyond the range of such archæology as their association took cognisance of, yet the great interest excited by Dr. Schliemann's discoveries quite justified their stepping out of the beaten path to look at them. In his remarks he would endeavour to keep in mind the unities of time and place. Accordingly, he spoke of the traditional date for the capture of Troy by the army of Agamemnon, king of Mycenæ, as given by the great chronologist of antiquity, Eratosthenes, —viz. B.C.1184,—and of other determinations of the same epoch by others of the ancients, as well as by some modern authorities. Whatever haze of mythical obscurity might hang over these times, it was now quite clear that some notice must be taken of historical events that happened before the age of Pisistratus and Cyrus. Mr. Morgan appealed in proof of this position to the great progress made in the present century to the knowledge of facts many hundred years older than what need to be deemed the highest limit of trustworthy record. The interpretations of hieroglyphical and cuneiform inscriptions, made accessible to all in the valuable publications of the Society of Biblical Archæology, and the writings of Sir Henry Rawlinson, Dr. Birch, Messrs. Chabas, Lenormant, Maspero, and others, could no longer be ignored. Under the Pharaoh Thothmes III. (B.C. 1600 1550), one of whose splendid obeliaks, the so-called "Cleopatra's Needle," it was not to the credit of its owner, the British nation, to leave at Alexandria, Egypt had reached the height of its power, and there was reason to believe that Greece and its isles were then subject to Thebes on the Nile. Under Egypt's next dynasty, the 19th, reigned the great Sesostris, whose accession was placed by the French critics in B.C. 1410. He conquered the powerful Kheta, with part of whom Mr. Gladstone had identified the Keteroi, whom Homer places in the Troad. Under Menephtha, son of Sesostris, hieroglyphical inscriptions recorded an unsuccessful invasion of Egypt, in which Greeks took part. About a century later, under Rameses III. of the twentieth dynasty, a similar attempt was made, just like what is related in the "Odyssey," in which, as in the poem, Pelasgi from Crete really fought. Reference was also made to the contact of the Phœnicians with the Greeks, who borrowed much from that great seafaring and civilised people in the earliest times. Coming to Greece itself, and to the rule of the Perseids and Atridæ in Argolis, where, as the bard says, they held Argos, and Tiryns, and Hermioné, and Asine, and Eionæ, and Epidaurus, and Ægina, and Mases, and Mycenæ, Mr. Morgan cited from the "Iliad" the famous passage giving the history of Agamemnon's sceptre, from the time when it was first wielded by Pelops. The trilogy of Æschylus was also referred to for the traditions relative to Agamemnon's matricide son, Orestes. The text of Pausanias, the Greek

ographer, on which Dr. Schliemann so much ies for his identification of the tombs of amemnon and other members of the great nse of the Atridæ, was cited and commented on at length. "The Gateway of the Lions," he Treasury of Atreus," and other circular ildings in the oldest style close by, were scribed in detail, and illustrated by constant ference to drawings on the walls of the room. e strong points of Dr. Schliemann's case were t with much force, and yet with due candour, fore the audience. At the same time, while pressing the greatest admiration of Dr. Schlie- nn's self-sacrificing devotion to his archæo- ical enterprises, both in the Troad and Helias, d recognising fully the great worth, as throw- g light on the earliest history of Greece and ia Minor, of his extraordinary discoveries, e need for caution was not left unmentioned. ch excellent judges of these matters as Mr. wton, of the British Museum, and Ernst rtius, the great historian of Greece, were out to follow in Dr. Schliemann's footsteps, d to test the truth of his statements. Their port would be looked for with great eagerness, d meanwhile we could hopefully await the sult.

MUSIC AS WELL AS PAINTING IN HOSPITALS.

Sir,—The way in which we English take up a bby and ride it to splinters is certainly most traordinary. "Art is good," therefore the troduction of art any where and any when ust be good. That is our too facile and illogical nclusion. So now on all sides we have the y of "Art in hospitals!" all over the walls d at all times without any qualification or atement whatever.

We have in our hair-brained temerity never opped to inquire whether art is good any when d any where, at all times, and in all places? nd yet on the decision of this important estion depends our proceedings for good or ill, t only in respect to the introduction of art into spitals, but also into our homes and public ildings.

Is it not, I would ask, one of the most im- rtant desiderata to obtain repose for the tients in hospitals? And what can be more nducive to that than quiet, clean surfaces, disturbed by the softer or wilder harmonies of e music of form and colour, the absolute nega- on of plain walls?

Music is good: why then have we not also ought of introducing music, as well as gravings, pictures, and statues, into hospitals? he efficacy of music has, for ages past, been cognised as a curative agency. No one, how- er, would for one moment insist upon music ing constantly performed in the wards of spitals, because the absurdity of insisting upon performance at all times is too palpable; still ere are times and seasons when its perform- ce would not only be a relief, but also in other ays beneficial. This discrimination of times d seasons should also guide us in the adoption measures for the introduction of art into spitals. Art in hospitals should be a movable ement, not a fixture. It should only be exhi- ted at certain seasons,—some when, not any hen and every when. Pictures, &c., play upon e optic sense, and would, at times, be as sturbing to the sufferer as music itself. It is the convalescent ward where both arts might most beneficially introduced. A library of ustrated books, we take it, would be the most rviceable form of art for the other wards. ich books might serve to while away the tient's painless intervals.

But have we at all considered what effect the gal adornment of hospitals would have upon e patients cured on their returning to their vn poor homes? Would it render them more ntented with their lot or not? You know, sir, is question of art in hospitals is not to be de- ded offhand.

Enthusiasts are too apt to forget that the nstant presence of the same works of art upon e walls would defeat the very objects for which ey were introduced. The pictures and other orks would become a portion of the furniture the ward, and would cease to be noticed, or exercise any influence whatever, just as it appens in homes, that it needs a stranger to me in to call the attention of the inmates to e presence and the beauties of the art-treasures ey contain. We have not yet, in our art pro- ots sufficiently considered that human nature emands alternation in its enjoyments. Your modern art propagandist insists upon it being thrust upon you at all times, at all seasons, and at every turn. We want Spartan simplicity in the adornment of the home, and magnificence in public buildings. When we shall have completely mastered that idea we shall spend the public money voted for art in the right way, and shall quickly have a glorious school of painting and sculpture.

W. C. T.

HERALDIC GLASS, BALLIOL COLLEGE, OXFORD.

We mentioned recently the opening of the new hall which has been erected for Balliol College. We may add that the shields of arms of noblemen and gentlemen educated at Balliol College have been executed from the cartoons, and under the superintendence of Mr. John Henry Metcalfe, of Well-walk, Hampstead, London, whose skill in this species of delineation is becoming admitted. The following is a detailed list of the shields of arms above the dais:—

East Window.—No. 1. St. Catherine Wheel. 2. Arms of John De Balliol, the Founder. 3. Arms of Devorgilda, daughter of Alan Lord of Galloway, and wife to John De Balliol. 4. The Right Hon. and Most Rev. Archibald Campbell Tait, D.D., Lord Archbishop of Canterbury. Arms of the See of Canterbury impaled with *Tait*. Quarterly: 1 and 4 *Tait*, 2 and 3 *Murdock*. 5. His Grace the Duke of Bedford. *Russell*. 6. His Grace the Duke of Westminster, K.G. Quarterly: 1 and 4 City of Westminster, 2 and 3 *Grosvenor*. 7. The Most Hon. the Marquis of Lansdowne. Quarterly: 1 and 4 *Petty*, 2 and 3 *Fitzmaurice*. 8. The Most Hon. the Marquess of Londonderry, K.P. Quarterly: 1 and 4 grand quarters, quarterly, *Tempest* and *Vane*, 2 and 3 grand quarters, *Stewart*. 9. The Rt. Hon. the Earl of Camperdown, *Duncan*. 10. The Rt. Hon. the Earl of Airlie, K.T., *Ogilvy*. 11. The Rt. Hon. the Earl of Morley. *Parker*. 12. The Rt. Hon. the Earl of Jersey. Quarterly: 1 and 4 *Villiers*, 2 and 3 *Child*. 13. The Rt. Hon. the Earl of Elgin. *Bruce*. 14. The Rt. Hon. the Earl of Donoughmore. Quarterly: 1 and 4 *Hutchinson*, 2 *Hely*, 3 *Nixon*. 15. The Rt. Hon. Viscount Cardwell. *Cardwell*.

North Window.—No. 1. The Rt. Hon. Viscount Middleton *Brodrick*. 2. The Rt. Rev. Frederick Temple, D.D., Lord Bishop of Exeter. Arms of the See of Exeter impaled with *Temple*. Quarterly: 1 and 4 *Leofrick, Earl of Mercia*, 2 and 3 *Temple*. 3. The Rt. Rev. George Moberley, D.C.L., Lord Bishop of Salisbury. Arms of the See of Salisbury impaled with *Moberly*. 9. The Rt. Hon. Lord Coleridge, Lord Chief Justice of the Court of Common Pleas. *Coleridge*. 5. The Rt. Hon. John Inglis, P.C., Lord President of the Court of Session in Scotland. *Inglis*. 6. The Rt. Hon. Stephen Cave, P.C., M.P. Quarterly: 1 and 4 *Cave*, 2 and 3 *Cox*. 7. Sir Benjamin C. Brodie, Bart. *Brodie*. 8. The Rt. Hon. Sir Stafford Northcote, P.C., M.P. *Northcote*. 9. The Hon. L. Tollemache. *Tollemache*. 10. The Very Rev. Arthur P. Stanley, D.D, Dean of Westminster. Arms of the Deanery of Westminster impaled with *Stanley*.

South Window.—No. 1. The Very Rev. Robert Scott, D.D., Dean of Rochester. Former Master of Balliol, Arms of Balliol Coll. impaled with *Scott*. Quarterly: 1 and 4 *Scott of Harden*, 2 and 3 *Johnstone of Hilton in the Merse*. 2. The Rev. E. H. Cradock, Principal of Brazenose College. Arms of Brazenose Coll. impaled with *Cradock*. 3. The Rev. James John Hornby, D.D., Head Master of Eton. *Hornby*. 4. The Rev. George Ridding, D.D., Head Master of Winchester. *Ridding*. 5. Stanley Leighton, Esq., M.P. *Leighton*. 6. William Spottiswoode, Esq. *Spottiswoods*. 7. Arthur Hobhouse, Esq., Q.C. *Hobhouse*. 8. M. E. Grant Duff, Esq., M.P. Quarterly of six: 1 *Duff*, 2 *Grant*, 3 *Gordon of Lesmore*, 4 *Ainslie*, 5 *Cunningham*, 6 *As the first*. 9. Ralph R. W. Lingen, Esq., C.B. *Lingen*. 10. The Rev. William Macdonald Sinclair, of Ulbster. Quarterly: 1 Earl of Orkney, 2 and 3 *Sparre*, Earl of Stratherne, 4 Earl of Caithness. Over all a cross engrailed for St. Clair, Earl of Rosslyn. All within a bordure of augmentation for Sutherland, Earl of Sutherland

AN IMPROVED FIREGRATE.

We spoke in our last of the reproduction of old ideas which is going on. Here we have another instance,—Mr. Mechi, a Country Parson, and others have been making known, through the newspapers, a new, cheap, and good grate, and a model has been set up for public inspection. To use Mr. Mechi's words in a letter addressed to us by that gentleman, "the grate may be described as a long, deep, but narrow trough, with fire-brick ends, back, and floor The front is an iron hurdle, having from eight to ten bars of round iron, 7-16ths of an inch thick, with intervals of 1¼ in. A trough 16 in. deep and 14 in. wide, would heat a full-sized room, containing 450 superficial feet. The interior of the grate is only 4½ in. from the back to the front at its base, and 5½ in. at the level of the top bar. This thin stratum of coal permits the air, which enters only through the front bars, to circulate freely between the coals, and thus causes perfect combustion. Except when fitted to previous register-stoves, the floor of the grate is level with the floor of the room; when applied to existing stoves, the trough is fitted into the grate." We have had one of these grates for twenty years in a sitting-room of ours, where it cured a very smoky chimney, and did its duty well. They were first introduced by Mr. John Leslie, of Conduit-street, now a member of the Metropolitan Board of Works, and whose useful investigations as to heating and lighting are well known to many. Messrs. Barnard, Bishop, & Barnard write to show us that they are fitting up stoves of this kind tastefully (their works are usually very artistic), but the merit of introducing the principle belongs to Mr. Leslie.

IMPROVED INDUSTRIAL DWELLINGS COMPANY.

The report presented at the half-yearly meeting of this company on the 6th inst., states that the capital subscribed is 370,310*l.*, viz., 250,000*l.* stock fully paid, and 120,310*l.* in new shares of 10*l.* each. The total amount of capital received to December 31st was 262,031*l.* The loans received from the Public Works Loan Commissioners amount to 99,000*l.*; 9,000*l.* will be taken up in a few days, and further loans amounting to 41,000*l.* have been applied for. The total expenditure on capital account is now 424,034*l.* 8s. 3d. The capital expended on works in progress and wholly unproductive during the half-year, has amounted to 60,254*l.*, while that expended on estate brought into occupation, and therefore only partly productive, was 11,000*l.* The rents, &c., for the half-year amount to 18,932*l.* 13s. 8d., and dividends on investments, and other items, amounting to 2,237*l.* 10s. 6d., make the total income 21,170*l.* 4s. 2d. The total expenditure, including the proper contributions to the leasehold redemption funds and repairs account, has been 10,062*l.* 9s. 8d., leaving a profit of 11,107*l.* 4s. 6d. Of this amount 631*l.* 10s., repaid to the Commissioners during the half-year, has been carried to the Public Works Loan Redemption Fund, and the balance, 10,465*l.* 4s. 6d., added to the balance, 331*l.* 15s. 8d., brought forward from last half-year, gives a total of 10,808*l.* 0s. 2d. available for dividend. Interest on the large sums expended on works in progress, as above referred to, has been paid out of revenue. But for this charge, the balance of revenue would, at five per cent., have been increased by upwards of 1,250*l.* The directors recommend the payment of the usual dividend at the rate of five per cent. per annum, which will absorb 6,523*l.* 1s. 2d.; that 4,000*l.* be added to the reserve fund for the equalisation of dividends, and that 284*l.* 19s. remaining, be carried forward to the next half-year's account. The estates continue in a very satisfactory condition, are fully occupied, and have been maintained in thorough repair. At the meeting the report was adopted.

NEW TOWN AND PUBLIC HALLS.

Warwick.—In consequence of the proprietors of the Corn Exchange having decided not to hire that building for entertainments and public meetings again, a project has been set on foot for providing, by means of a joint-stock company, a new public hall, suitable for the requirements of the borough. It is roughly estimated that the new building will cost about 5,000*l.*

Dalkeith.—A new Foresters' Hall is about to be erected on a site adjoining the Free Church in Buccleuch-street, Dalkeith. The ground acquired has a frontage of upwards of 60 ft., and is upwards of 140 ft. in depth, narrowing to about 53 ft. at the back. The building will consist of shops on the ground-floor, dwelling-houses on the two flats above, and a hall at the back. The area of the hall is to be 80 ft. by 45 ft., and it is estimated to seat comfortably 800 persons. The plans are by Mr. C. R. Sey, architect, Edinburgh, and the cost is estimated at 4,750*l.*

Middlesbrough.—The new Temperance Hall in Gilkes-street is almost completed. The cost is between 5,000*l.* and 6,000*l.* The principal hall is 100 ft. long by 56 ft. wide and 34 ft. in height; it has an open-timbered gallery on three sides, and this is supported by nine iron columns. There is a platform at the north end of the hall, and at the end facing it are fifteen rows of seats. The hall will be lighted at night by two coronas of 120 jets each, suspended from the ceiling. It is estimated that it will seat over 2,000 people. There are thirteen windows in the hall. Mr. J. Hunter was the architect and Mr. J. Lord the contractor. The hall will be formally opened on the 5th proximo.

Barrow.—The Barrow Town Council have determined to build a new town-hall, and for this purpose have purchased a large plot of land in the centre of the town.

Gosforth.—The foundation-stone of a new Presbyterian Hall was laid at Gosforth on the

5th inst. by the Mayor of Newcastle. The building, which is now in progress, stands at the entrance to West Avenue. The dimensions of the hall are 50 ft. by 36 ft. outside, and in addition to the main building are two class-rooms at the south end. In style it is Early Gothic, and it is being built of snecked rubble, with stone dressings to the openings. The interior of the hall will be divided into three groups of sittings by two passages, affording accommodation for about 280 persons. The contractor for the works was Mr. Matthew Robson. The cost will be about 1,300*l.* In addition to the site for the present buildings, sufficient land has been purchased for the site of a church on the east side of them. The buildings have been designed by, and are being carried out under the superintendence of, Mr. Thomas Parker, architect, Newcastle.

Bishop Auckland.—A new Temperance Hall has just been opened at Bishop Auckland. The building, the foundation-stone of which was laid in June, 1875, is in the Gothic style, and contains a large Band of Hope room on the ground floor, 45 ft. by 30 ft., and a committee-room, 30 ft. by 21 ft. 6 in. There is also a tea-preparing room and store-room. The upper floor is chiefly taken up by a large assembly-room, 58 ft. by 45 ft., and 22 ft. high, approached by two staircases. The total cost of the building is over 3,000*l.*, exclusive of the land. The architect is Mr. James Garry.

Grantown.—The committee for carrying out the erection of a new public hall at Grantown have approved of the plans prepared by Mr. A. Marshall Mackenzie, architect, Elgin. These plans provide for a substantial building, consisting of a large square block, in which there will be two shops, each 30 ft. by 25 ft. The hall will run above the shops, the entire length of the building, and will thus be 60 ft. by 30 ft. The entrance will be by a large corridor in the centre of the building.

Oldmeldrum.—The company established for the erection of a public hall in Oldmeldrum has commissioned Mr. William Smith, architect, Aberdeen, to draw up plans for the new hall.

Edinburgh.—The Edinburgh Merchant Company have adopted a recommendation by the master and assistants that a tenement in Frederick-street should be purchased, at the price of 13,500*l.*, with a view to the erection of a new hall and offices.

SURVEYORSHIP ITEMS.

Swansea.—At a meeting of the Swansea Board of Guardians, on the 1st inst., Mr. Thomas, of Llangafelach, was appointed district surveyor, at a salary of 120*l.* per year. There were nine applicants for the situation.

Sandgate.—At a meeting of the Sandgate Local Board of Health, on the 27th ult., Mr. J. Drayner was elected surveyor, in the room of Mr. B. Harman.

Huddersfield.—At a meeting of the Huddersfield Town Council, on the 17th ult., it was resolved "That on the recommendation of the Districts Committee the salary of the borough surveyor be increased from 500*l.* to 750*l.* per annum."

Chelmsford.—At a meeting of the Chelmsford Board of Health, on the 31st ult., a letter was read from Mr. C. Pertwee, the surveyor, asking, in view of a sub-committee having been appointed to consider the duties and salary of the clerk to the Board, that his remuneration as surveyor be also taken into consideration, more especially with regard to the market and drainage schemes.

Withington.—Mr. W. Y. Hardie has been appointed surveyor to the Withington Local Board and Urban Sanitary Authority.

COMPETITIONS.

Pulteneytown U.P. Church.—The plans submitted in competition for the new United Presbyterian Church, Pulteneytown, have been on exhibition. The premiums offered to competitors were 15*l.* and 10*l.* for first and second designs, and the number of competitors is worthy of special notice in view of the smallness of the premiums. The referee, Mr. David Smith, of Thurso, architect, has decided in favour of the plan marked "Individuality," which is by Mr. J. Russell Walker, of the firm of Sutherland & Walker, Edinburgh. The second premium was given to Mr. Munro, architect, Wick, for plan marked with a star enclosed in a circle. It is possible, according to the *John O'Groat Journal*, that neither of these designs will be carried out. There were twenty-eight competitors, the stipulation price being 3,500*l.*, and 750 sittings being the accommodation required. The plan marked "Peace and Dove" was set aside as being the best, but it could not be erected for the sum stipulated.

Dartmouth Park, West Bromwich.—At a meeting of the West Bromwich Improvement Commissioners on the 7th inst., the general purposes committee reported that they had received eight competition designs for laying out Dartmouth Park, and they recommended that Mr. C. Turner, Brereton, Rugeley (a landscape gardener known to Lord Dartmouth), be instructed to inspect the plans, estimates, and the specifications sent in with a request to report to the Board specially upon those plans that could be carried for 2,500*l.*

Camberwell Workhouse.—At a meeting of the Camberwell Board of Guardians on the 7th inst., a letter was read from Mr. R. P. Whellock (who, as already stated in the *Builder*, took the second premium in this competition, for his plans bearing the motto, "The poor ye have always with you"), to the effect that he considered it impossible that alterations of the character required could be accomplished for 26,000*l.*

MASTERS AND MEN.

Wigan.—On the 3rd inst. the Wigan painters struck against a reduction in wages of ½d. per hour. An attempt has been made to settle the dispute by arbitration (Mr. Clarke Aspinal, of Liverpool, representing the men, and Mr. W. Hardy, of Wigan, the masters), but without success, the men declining to be bound for twelve months from the award being given. After the meeting of the arbitrators, the masters sent a notice to the men, that unless they agreed to refer the dispute to arbitration on the grounds previously decided, the reduced wages would be paid after the 10th inst. The reduction brings the wages from 8d. down to 7½d. per hour.

Dudley.—The operative painters of this town have given the masters notice for an advance of wages. In a circular just issued they state that "the trade of the past season, and the prospects of the coming season, entitle us to the fulfilment of the promise made by you at the general meeting of last year."

Swansea.—The masons' strike at Swansea, which has now continued some six or seven weeks, has entered upon a new phase. Mr. Thomas White having, it is stated in a local paper, several contracts on hand requiring immediate execution, agreed with the men formerly in his employ to resume work on the old terms, which they did. It is stated that this step on the part of Mr. White was altogether without the consent or sanction of the Masters' Association, and that he has since seceded from that body. The men in the employ of the other builders have offered to resume work upon the old rate of wages, leaving all matters in dispute for settlement by arbitration.——A deputation from the Operative Stonemasons' Society has waited upon the master builders in reference to the dispute. The masters offered *inter alia*, 7½d. per hour, and that the system of payment by the day should be superseded by the hour system. The men, it is understood, still adhere to their demand for a recommencement of work on the old terms, and under the old system of payment by the day, and that notice of any alteration of existing rules shall be given in November next, and come into operation the following May. The dispute is now rendered less important owing to the resumption of work by a large number of men.

Leith.—The masons' labourers in the employment of Mr. Baxter and Mr. Ligertwood, builders, Leith, have been on strike for some time, the question of dispute being a reduction of ½d. per hour on the wages of 6½d. recently received. Several employers still continue to give the larger sum, but in the execution of one large job in the burgh only 6d. per hour is paid to the labourers. On the 27th ult., the men in the employment of Mr. Anderson, builder, joined the others on strike, after being informed that the reduction was to be put in force. The men contend that the proposed reduction is quite uncalled for, and that, in assisting the labourers who went out on strike some time ago, they are doing their best to equalise wages.

The Durham Joiners' Strike.—The strike in the Durham building trade still continues, without any disposition on either side to come to some satisfactory arrangement.

Dundee.—The journeymen slaters in Dundee have for the last six months been agitating for an increase of wages from 8d. to 8½d. per hour; and on the 7th inst., after a conference with the men, the employers agreed to give the advance requested on and after the 19th of April.

Glasgow.—A committee of fifteen, representing the Associated Carpenters and Joiners, have just concluded a week's conference in Glasgow. The principal subject before the meeting was the consideration and revision of the rules of the Association, and several important alterations have been agreed upon and accepted by the executive. Instead of its being necessary to have the votes of two-thirds of the members of any branch in order to agree upon a strike, it has been resolved to substitute two-thirds of the members voting in the district. It has also been recommended that the contributions to the trades' section of the Associated funds should be increased from 3d. to 4d., and instead of receiving 12s. per week of an allowance during a strike, the men are to receive 15s.

Cardiff.—The Cardiff operative masons have sent a notice to the Master Builders' Association for a general advance of wages from 7½d. to 8d. per hour. Mr. S. Morley decided against the men last year on account of bad trade.

ALLEGED TAMPERING WITH TENDERS.

HOLT *v.* HOOSON.

In the Exchequer Division of the High Court of Justice, at Westminster, on the 3rd inst., Barons Cleasby and Pollock on the bench, judgment was given in the case of Holt *v.* Hooson, which came before the Court recently, on appeal from a judgment of Mr. West, recorder of Manchester, sitting at the Salford Hundred Court, on the 21st of January.

The plaintiff, who brought his action for slander, was described as being clerk and surveyor of the Meardale and Moordale Local Board, while the defendant was one of several persons who had put in tenders invited by the Board for certain works. The alleged slander had reference to some allegations on the part of the defendant that the plaintiff had tampered with the tenders to the defendant's prejudice, and the result of the trial at the Salford Hundred was a verdict of 60*l.* for the plaintiff.

The Court was now asked for a new trial, on the ground that the verdict was against the evidence.

Their lordships had gone through the evidence very carefully, and they had had the benefit of seeing the judge who tried the case at the Salford Hundred, and the report which the learned judge made to them was that he could not see any ground for being dissatisfied with the result. In these circumstances the Court were of opinion that the verdict ought not to be disturbed, and that the rule ought to be refused.

Judgment accordingly, in favour of the plaintiff, with costs.

"GRINDING MONEY."

At the Wandsworth Police-court, on the 3rd inst., Mr. Mark Chamberlain, of Lavender-hill, builder, appeared to answer an adjourned summons taken out under the Employers and Workmen Act, 1875, by Charles Allen, of 10, Shelwood-road, Battersea, carpenter, for 9d., one hour's "grinding money."

It appeared that the complainant had been employed for five days by defendant, who then discharged him, paying him one hour's grinding money, whereas complainant claimed for two hours.

The complainant handed to the magistrate a printed copy of the society's rules under which he worked, by which it was settled that "such time, not exceeding two hours, shall be granted as shall be sufficient to grind the tools."

Mr Bridge said complainant must, therefore, prove that two hours were necessary to him under the circumstances, and he ought to bring the evidence of some carpenter on the point.

Complainant said the timber he had been employed on had been used as scaffolding, and was all over mortar. It would take him, therefore, more than two hours to re-sharpen his tools.

Walter Jackman, foreman to the defendant, said one hour would be quite enough.

Mr. Bridge said complainant had failed to establish his case, and the summons would, therefore, be dismissed.

Subsidence of Houses.—An exciting incident occurred on Sunday at Dudley Port. Near the railway station are the limestone pits of Messrs. Dixon, Burne, & Co. Preparations have recently been made to re-open some old workings, and new plant was put down. It was known that some day these old workings would cave in, but this was not expected for many years. On Sunday morning the inhabitants of the houses close by were startled by the sudden rocking of their dwellings and cracking of the walls. About sixty houses are more or less injured, but the tenants have saved their goods.

ACTIONS AGAINST BUILDERS FOR ALLEGED NEGLIGENCE.

WHITE *v.* BULL AND SON.

THIS was an action (heard in the Lord Mayor's ourt on the 12th inst.) brought by the plaintiff, barman at the Haunch of Venison Tavern, ll-yard, Temple Bar, against the defendants, essrs. Bull & Son, the contractors for the ilding of the New Law Courts, to recover mpensation in damages for loss of time, pain d suffering, and expenses consequent upon uries sustained by him through the alleged gligence of the defendants' servants.

The defendants pleaded not guilty, and a denial that the ident occurred through the negligence of any one in eir employ.

According to the plaintiff's case, he was sweeping the vement outside his master's house, on the morning of he 22nd last, when a piece of Portland stone, weighing out half a pound, fell from the scaffolding connected th the New Law Courts building, from a height of been 35 ft. and 40 ft., and struck him on the head. He tained a contused scalp wound, and a slight shock to brain.

The defence was a total denial of the allegation of the ligence on the part of any one in the defendants' emoy, and it was submitted that the plaintiff's claim was exaggerated one in support of a threat he had been ard to utter that he would make the most of it, and get much as he could, as he was displeased at having been nied by the defendants the privilege of handing beer er the hoarding to the men on the works.

The jury found a verdict for the defendants.

TROTT *v.* MERRIT AND ASHBY.

IN this case, heard on the same date in the me court, the plaintiff was a compositor in the ploy of the *Sportsman* newspaper, and it was leged that on the morning of the 19th of August t he was walking up Ludgate-hill, on his way me, about five o'clock in the morning, when passing a scaffolding which had been erected the defendants, Messrs. Merritt & Ashby, he as struck by a falling "dog iron," and suffered uries for which he now claimed compensation.

There was no dispute as to the accident, but the deendants alleged that the negligence lay on the part of the intiff. They were taking down the scaffolding in ection, and took every precaution for the public safety placing a man outside the erection to warn passers by inst walking under it. The watchman had warned the intiff earlier in the morning not to pass under the ection; and seeing him approaching it a second time in cautioned him; but he passed under unheedingly, d the dog-iron fell on him.

t was further stated by Mr. Ashby in evidence that en he was asked for compensation for the plaintiff he s willing to give him something rather than be subjected a law suit; but the plaintiff's solicitor before the writ s issued asked 11*l.* for his client, and 2*l.* for his own ts, and thinking it an imposition, he placed the matter the hands of his solicitors, with instructions to defend action.

The jury found for the plaintiff, damages 15*l.*

THE MARMOREAN MARBLE COMPANY.

THE chief object for which this company is ablished is to purchase of Emile de Laroque patent right for the United Kingdom for the nufacture of his artificial marbles, which is ne by a new process, from a petro-vitrifying rous concrete, capable of resisting great pres-e. They bear a good polish, and they can be livered in the market at one-fourth the price marble, and in some cases at a cost less than inting or graining. The co-operative principle applied, and marbles, artificial marbles, stoves, es, bricks, slates, cements, and other similar nufactures can all be had, with six months' dit and discount, by all builders holding not s than five shares.

It is urged that great advantages would be tained by all builders now taking shares, on count of the coming spring and summer sea-ns. Non-shareholders are not supplied by this mpany. There has been a great want of a neral emporium for the building trade, which is company promises to supply. Some strong stimonials have been submitted to us.

A Claim for £90,000: Award, One hilling.—A great dispute between the Dunaburg and Witepsk Railway Company of Russia d Messrs. Hopkins, Gilkes, & Co., Limited, nmasters, &c., Middlesbrough, has just been deled. Originally the railway company claimed ,000*l.* for alleged failure of rails under a contract long ago executed, certified, and paid for. ter passing through the law courts, this dite was referred to the arbitrament of the corder of Leeds, Mr. Maule, Q.C. The decision this gentleman has just been received by essrs. Hopkins, Gilkes, & Co., and (according a north-country paper) awards only 1*s.* to the lway company, who will have to pay their n costs and those of Messrs. Hopkins, Gilkes, Co.

COMPLAINT OF CONSTRUCTION.

STAMFORD ENDOWED SCHOOLS.

THE monthly meeting of the Governing Body was held on Tuesday in last week, the Rev. Canon Arnold in the chair. The Boys' Middle School Committee reported that in consequence of defects in the new building (the hostel), Mr. Browning had been instructed to make an examination of the entire structure, and had discovered very serious faults. In the roof the wall-plate has been altogether omitted, and the feet of the principals, which support the entire weight of the roof, have been bedded in the stone work. The effect of this has been to concentrate the weight and thrust of the roof at the feet of the principals, instead of distributing them uniformly over the entire length of the walls. Nine trusses are placed directly over window-openings and supported only by ordinary lintels. Evidence of the bad effects of the imperfect construction may be seen in the serious cracks between the partition of the assistant master's bedroom and the front wall facing south. Similar cracks are visible at the junction of the staircase wall, and the adjoining cubicle. There is scarcely a window-head in the upper story that does not show that a serious spreading of the roof has been going on. In addition to this, the north wall of the building has been thrust out of the perpendicular. Mr. Browning recommends that wrought-iron ties be fixed to each pair of principals. He adds that the present slating will never carry dry, and that the only remedy is the entire removal of the present covering, and the substitution of Cumberland or Westmoreland slates. After considerable discussion, it was ordered that a copy of the report be sent to Messrs. Hay & Oliver, the architects, with a request that they would state what they intend to do in the matter.

NORWEGIAN HOUSES.

SIR,—The house erected by Mr. J. F. Vickery, at North Tawton (not Swanton) may be considered a fancy. The idea does not seem to be taken up in this part of the country, neither should I care about recommending it to others. The house was landed at Exmouth, and there the idea met with its death-stroke, for it was found to consist of timber squared from refuse trees from the forest, and containing a very large proportion of sap. I consider this in itself in sufficient to condemn it. CHARLES PINN.

HOUSES IN THE KENSINGTON-ROAD.

SIR,—Referring to the building proposed to be erected on the Commissioners' land at Kensington, and mentioned by you in your last week's issue, under the head of "Alarming," we, as the architects of the intended structure, beg to inform you that there is no intention of erecting the building of any such height as "thirteen stories," for, as designed, it will only consist of *six stories*, and such rooms as can be ordinarily obtained in the roofs. DRIVER & REW.

THE SURREY GARDENS.

SIR,—In your issue of the 3rd inst. you quote from the *South London Press* a paragraph to the effect that "the well-known Surrey Gardens are sold, and will ere long be covered with bricks and mortar." This statement is so utterly at variance with facts that I must beg of you to recall in your next issue the announcement to the effect that these gardens are to be closed. Whatever sale may have now taken place by the freeholder (but of which I have no particulars), it cannot possibly cause the closing of the Surrey Gardens as a place of public amusement for several years to come, as my client is the lessee of the gardens for the remainder of the leasehold interest, and it is his intention not only to continue the gardens as a place of public recreation for the remaining years of his term, but to make the place more and more worthy of the patronage which in years past was accorded to this favourite place of amusement. W. A. GX.

EMBANKMENT OF THE SOUTH SIDE OF THE THAMES.

SIR,—A letter from Mr. H. Robinson, in last week's *Builder*, complains that an article written by me, and published in your number for 3rd February ("The Thames: Counter Embankment on South Side"), was an iteration of the plan published by him and Mr. D. A. Onslow in a letter to the *Times* of the 15th January. Many years back, the embankment on the north side was urged in the *Builder*, under my *nom de plume*, "Quondam." More especially in 1868, '69, and '70, the completion of quay walls was recommended also on the south side; and amongst many other metropolitan improvements, the state of the wharfs and the hideous mud banks on the Belvedere range, at low water, excited my attention for some months back; more particularly after the recent flood tides, inducing me to make inquiries of the several riparian owners as to the best remedies for wharfage convenience, &c. With this view I took the trouble to measure the bridges and their several waterway widths, which occupied some time previous to the 29th of January, when my counter embankment article was delivered at the *Builder* office, never having seen Mr. H. Robinson's letter in the *Times* of the 15th January.

Having no object nor interest in engineering works, I would not interfere with the projected design of any engineer or other qualified person, and much regret the "contretemps" which drew my attention, perhaps, at nearly the same time, to this important public requirement. T. H. H.

SOUND-PROOF FLOORS.

SIR,—Will any of your readers kindly inform me whether there is any risk of sound being transmitted through a floor by means of iron rolled joists employed in its construction? The bearing of the floor to which I allude is 24 ft., and as little depth as possible between floors being desirable, the joists will be placed at intervals, on an average of 6 ft., and wood joists inserted between them (resting on plates on the flanges), the tops of which will be flush with the upper edge of the iron. Under these it is proposed to put the ceiling joists flush with the soffit of the iron. Over the ceiling joists will be placed pugging, thus leaving several inches of air space between that and the floor boards above.

Now, bearing in mind the principle enunciated by several of your correspondents lately in respect to "sound-proof" construction, *i.e.*, solid materials, however thick their substance may be, transmit sound more or less, am I not justified in fearing that the movements of the billiard players may be rendered audible to the room below through these iron joists, although they occurred at intervals of 6 ft. or 7 ft.?

This subject is an important one, now iron is being used so extensively. We are all aware how good a conductor wood is of sound; but of iron the acoustic qualities are not so much known. CAUTION.

P.S.—The ceiling joists in this case cannot be fixed *under* the iron joists without too much decreasing the height of the room below.

STAINED GLASS.

Somers Town. — A stained-glass two-light window has been added to St. Mary's Church, by Messrs. Heaton, Butler, & Bayne, to the memory of the late Mrs. Stevenson, the beloved wife of the vicar, who died at Eastbourne on Ascension Day, 1876. The window has been erected by the congregation as an expression of regard and affection for the deceased lady, and of their appreciation of the great services rendered to the parish by their zealous and valued pastor, the Rev. Thomas Stevenson, M.A. The subjects illustrated in the window are, "I was an hungered, and ye gave me meat; I was thirsty, and ye gave me drink."—St. Mat. xxv. 35. The window has been executed under the superintendence of Mr. James K. Colling, who has been the architect throughout for the whole of the restorations in the church, which have been carried out gradually for some years past, and are still in progress as funds are available.

Windsor.—The officers of the Coldstream Guards have caused a window to be erected in Holy Trinity Church, Windsor, to the memory of the late Lieutenant-Colonel Harvey Tower, Surgeon-Major Wyatt, C.B., and the Hon. Alfred Charteris. The work has been executed by Messrs. Clayton & Bell, and represents the figures of Joshua, David, Gideon, and St. Matthew.

Chapeltown.—A stained-glass window, to the memory of Mr. M. E. Chambers, has just been erected in the parish church, Chapeltown, Sheffield. The window is placed on the north side, near to the pulpit, and has been supplied by Messrs. Hughes, London.

Broadwey.—A stained-glass window, in memory of the late rector of Broadwey, Dorsetshire, has been placed in the parish church. It was designed by Mr. G. R. Crickmay, architect, to harmonise with the old Perpendicular window at the west end of the church. The stonework has been executed by Mr. Hounsell, of Broadwey. The glass lights are the work of Messrs. Lavers, Barraud, & Westlake, London, the subjects being three: in the centre-light, the Good Shepherd; on the right, The Saviour at the Tomb of Lazarus; and on the left, Our Lord Blessing little Children.

Gestingthorpe.—On the north side of the chancel of Gestingthorpe Church, near Halsted, a memorial window has just been erected, to the memory of John Eley Collis, who died in July, 1876, aged fourteen years. The subject is that of our Lord blessing little children. The work has been carried out by Messrs. Lavers, Barraud, & Westlake.

Peckham.—The east window of St. Jude's Church has just been filled with Munich stained-glass, in memory of Mr. Aug. L. Cope, who took a great interest in this church. The window represents the three principal events of Our Lord's life: the Nativity, Crucifixion, and Ascension. It has been executed by Messrs. Mayer, of Munich and London.

Wrotham.—A stained-glass window has just

been placed in Wrotham Church, Kent, in memory of the late Mr. Gabriel Hamilton Laing, and Catherine Elizabeth Saltmarsh, his wife, by their children. The subject is the adoration of the Magi, in three lights; in the centre compartment are represented the Virgin and Child; the right hand, the Magi presenting gifts, gold, frankincense, and myrrh; in the left are the shepherds. The work has been executed by Messrs. Clayton & Bell.

DISSENTING CHURCH BUILDING NEWS.

Outlane.—It is proposed to erect a new Wesleyan chapel at Outlane, Yorkshire, to seat 500, at a cost of 2,000*l.* Mr. T. L. Patchett, of Halifax, has prepared plans, and the several works have been let to the following contractors, viz.,—mason, Mr. Bottomley, of Lindley; joiners, Messrs. Schofield & Boocock, West Vale; Mr. Goodall, jun., Marsden, the plumbing work; and Messrs. Eli Morton & Son, the plastering and slating work.

Dundee.—Hilltown Free Church, Dundee, has been reopened, after alteration and enlargement, at a cost of about 2,500*l.* The church is seated for a little over 1,100. The architect was Mr. M'Culloch, of the firm of Messrs. M'Culloch & Fairley. The contractors were:—Mason work, Mr. James Scott, Broughty Ferry; joiner work, Messrs. Crichton & Sinclair; plaster work, Mr. Alex. M'Ritchie; plumber work, Messrs. J. & W. Kinnes; slater work, Messrs. Ramsay & Reid; painter work, Mr. David Pirie; smith work, Messrs. W. Foote & Son.

Spittal. — The foundation-stone of a new Presbyterian Church at Spittal, N.B., was laid on the 31st ult. by Sir D. C. Marjoribanks, M.P. The building will take the place of an older structure which has become inadequate to the requirements of the congregation. It is designed in the Early Gothic style, and is intended to accommodate 330 sitters, exclusive of the platform for the choir. Accommodation to the extent of 170 sittings will be provided in the galleries. In the rear of the building will be the session-house, vestry, and other conveniences adjoining. The main gable will be flanked on the south side by a tower and spire measuring 93 ft. to the top of the weather vane. The plans of the building were prepared by Mr. James Alexander Doull, Edinburgh; and the contractors are:—For the mason work, Messrs. Craig & Sons, Berwick; joiner work, Mr. J. M'Call, Castlegate, Berwick; slate and plaster work, Mr. Dickson, Tweedmouth; plumber and glazier work, Mr. Sidey, Tweedmouth; smith and founder work, Messrs. Robertson, Tweedmouth. The cost was about 3,000*l.*

Didsbury —A new Wesleyan chapel, adjacent to the Wesleyan College at Didsbury, has been opened. The chapel has been built through the liberality of Miss Heald and Mr. W. N. Heald, of Didsbury. The architect was the late Mr. H. H. Vale, of Liverpool, but the work has been carried out under the superintendence of Mr. Barry, of the same town, in consequence of Mr. Vale's death. The chapel consists of nave, aisles, transept, organ-chamber, and vestries, with iron columns supporting nave arcade. The style adopted is Gothic, and the tower and spire rise to a height of 132 ft.

Bury St. Edmund's.— The tender of Mr. J. Williams, builder, of St. John's-street, for the erection of the new Wesleyan Chapel and Schools, in Brentgovel-street, for the sum of 1,605*l.* 8s., has been accepted.

SCHOOL BOARD SCHOOLS.

Prescot.—New Board schools, situate in Warrington-road, Prescot, were opened on the 23rd ult. Accommodation has been provided for 650 boys, girls, and infants. Spacious classrooms adjacent to the principal rooms have been erected, together with lavatories and large playgrounds. The walks are asphalted, the front of the schools being laid out for landscape gardening. The architects were Messrs. Chapman & Snape, of Newcastle-under-Lyme, Staffordshire.

Culsalmond.—New Board schools have recently been opened at Culsalmond, Aberdeenshire. The old school-room still stands, and will be used as a classroom. The new building, which is erected at right angles with the old one, is 48 ft. by 24 ft., and 14 ft. to the ceiling. The school has accommodation for 150 scholars, and has been built at a cost of a little over 800*l.*

Yarmouth.—The Yarmouth School Board have just opened new school-rooms at Cobholm Island. These are the first new buildings opened by the Board. Mr. J. W. Cockerill was the architect, and Mr. B. Springall the builder. Accommodation is provided for 100 infants and 80 girls. The cost was 856*l.*

Peterhead.—The Burgh School Board have accepted the following tenders for the addition to the Buchanhaven School:—Mason work, Mr. William M'Donald, 132*l.* 7s.; carpenter work, Mr. John Taylor, 22*l.* 15s.; blacksmith work, Mr. Lauchlan Fraser, 17*l.* 14s.; and slater work, Mr. Wm. Simpson, 6*l.* 7s.

SCHOOL-BUILDING NEWS.

Rickerscote.—A new school-church, for the hamlet of Rickerscote, Stafford, was opened on the 30th ult. The plans, which were carried out by Mr. Moss, at a cost of 350*l.*, were prepared by Mr. S. Ginders. The main building is 40 ft. by 18 ft., and will accommodate 120 persons.

Low Conisclife.—New school buildings, erected at the cost of Mr. A. Pease, have been opened in the village of Low Conisclife. The material used is brick, with stone dressings, and the roof is high and open. The lower part of the walls is covered with Minton's glazed tiles. The school accommodates 100 scholars. Its style is Gothic. The cost will be about 1,000*l.* Mr. W. Bell is the architect. The contractors were Mr. A. Boyd, bricklayers'- and plasterers' work; Messrs. T. Gargate & Son, joiners'; Mr. Emerson Smith, plumbers'; Messrs. Atkinson & Son, slaters'; and Mr. J. Swinbank, painters'.

Chester.—On the 31st ult. the new King's School, Chester, was formally opened by the Duke of Westminster. The building just opened adjoins the west front of the cathedral, with whose ancient architecture it is in harmony. The rooms are spacious. The cost of the school, when complete, will be about 10,000*l.* Mr. John Douglas is the architect.

Books Received.

Acoustics, Light, and Heat. By William Lees, M.A. With 200 Illustrations. London and Glasgow: Collins, Sons, & Co. 1877.

The Messrs. Collins's "Advanced Science Series" of educational books promises to be a valuable and at the same time a cheap contribution to the special literature provided for the fortunate students of the present generation. The number of the series which is now under our notice is a development of the elementary treatise prepared by the same author, and both are in conformity with the syllabus of the Government Department of Science and Art. The references throughout the book to solved problems and the diagrams of practical illustrations will be found eminently useful to an architect in any attempt to find out for himself the acoustical enigmas which surround him in the construction of buildings; for it is right to say no chapter in the book is devoted, as it might have been, to such a practical application of principles. In the section of "Light," the defects of the eye in different persons, and the delusions to which it is liable, are well explained, both in the text and by diagrams; in fact, a great deal can be agreeably learnt from Mr. Lees's easy description, even by people who seek not so much solid instruction as general information; and if the ordinary reader can but overcome a certain dread at the awful sobriety of headings to chapters of scientific discourse, he will find plenty to amuse him therein. In the section devoted to "Heat," there is a short and incomplete reference to smoky chimneys, and it terminates with an illustration of the principle of ventilation explained by the following experiment,—elementary, no doubt, but one that cannot be too often shown at a time while the ceilings and roofs of crowded rooms and public halls remain often totally innocent of any means of escape for foul air. "Place," says Mr. Lees, "a glass receiver, with an aperture at the top, over a candle, put into a flat dish, in which there is water. In a short time the air in the receiver becomes vitiated by the combustion, and the candle-flame, gradually dwindling down, is at last extinguished. If, however, the candle be relighted, and a card be placed in the funnel or chimney, dividing it into two parts, the candle continues to burn, preserving its brightness almost unimpaired. The reason of this is that the vitiated air now escapes through one of the passages, while fresh air gets in by the other." The cause of many other apparently complicated effects is explained with equal lucidity, and we therefore recommend the book, with some satisfaction, to a host of readers.

Ure's Dictionary of Arts, Manufactures, and Mines: containing a clear Exposition of their Principles and Practice. Seventh edition, completely revised and greatly enlarged. By Robert Hunt, F.R.S., Keeper of the Mining Records; assisted by F. W. Rudler, F.G.S., and by numerous Contributors. Illustrated with more than 2,100 Engravings on Wood.

This work, which appears in the remarkable list of dictionaries advertised by Messrs. Longmans & Co. in our last, has been commended by us on more occasions than one, and it should suffice now to state that the present edition, the seventh, published under the able care of Mr. Robert Hunt, F.R.S., is even more valuable than its predecessor.

Every division of the arts, each special process of manufacture, and all branches of mining, have been cautiously examined, and such improvements as have been proved to be of real utility have been recorded in all necessary detail. This has led to an increase in the size of the volumes, to the rejection of many articles which had become obsolete, and to the curtailing of others which are of less importance than the new ones. The more important articles have been, for the most part, re-written, and all of them subjected to a critical revision, while many entirely new articles have been introduced.

The list of contributors shows to whom the dictionary is indebted for its numerous and important technical articles, while the articles themselves afford evidence of their having been treated, in all cases, by men thoroughly experienced in the processes which they have described.

To all those gentlemen who have favoured the editor with contributions his thanks are tendered in the preface,—especially to Mr. Higgin, whose article on "Calico Printing" gives a more satisfactory description of that industry than any other to be found in any language; to Mr. Hilary Bauerman, who has brought the articles "Iron" and "Steel" up to the most recent date; and to Mr. John Darlington, who has submitted to a complete revision all the articles connected with mining. The book is a library in its own department.

VARIORUM.

"Cracroft's Trustees' Guide" (Stanford) deserves recommendation. It has reached a twelfth edition since its first issue in 1873, and though simply called the "Trustee's Guide," might very appropriately be called the "Trustee's and Investor's Guide." It is divided into three parts:—1. On the powers of investment by trustees; 2. A digest of reported decisions bearing on investments by trustees; and 3. Tables of securities. The third part of the work is as useful to investors generally as to trustees, and forms of itself fully two-thirds of the entire book. In Part I. the special and general directions are very important. For example, every trustee should ascertain from the instrument creating the trust the securities in which he is authorised to invest; and before sale or investment have the authority, in writing, of the person whose request or consent to the sale or investment is required. If the instrument does not name the securities, trustees may invest in Consols; and, if having some power as to making investments, and if not expressly forbidden, and if the investment be in other respects reasonable and proper, they may invest in other securities named in the book. The book shows how mistakes may be made by trustees which would render them liable.——"Debrett's Illustrated Peerage, Baronetage, and Knightage" appears as usual, and maintains its character. It supplies more details than any other book, concerning the naval, military, and civil services, not only of the head of the family but also of his younger sons; and would seem to be the only work that furnishes the addresses of younger adult children and of the widows of peers, baronets, and knights; with surnames and inferior titles in alphabetical order in the body of the work, a system that facilitates reference. It claims to have been corrected to the 15th of January.——The last volume published by the Sussex Archæological Society is a General Index by Mr. H. Campkin, F.S.A., to the first twenty-five volumes of their published Transactions, called "Sussex Archæological Collections." A mass of valuable matter is thus rendered available to inquirers and students.

Miscellanea.

The Portico of St. Martin's.—We quite agree with the Vicar that it is time that public attention should be drawn to the onslaught which is to be made in the present session of Parliament on the portico of St. Martin's Church, Trafalgar-square. Any serious interference with its proportions is a matter of general concern. The Metropolitan Board of Works, with a commendable desire to improve the communications of this district, are applying to Parliament for power to construct a new street from Tottenham-court-road to Charing-cross, entering Trafalgar-square by the narrow thoroughfare between St. Martin's Church and the National Gallery. At this point it is proposed to gain an additional width of 20 ft. for the roadway by removing entirely the present steps in front of the portico, and instead of them placing flights of steps inside, between each pair of columns, and three or four steps at each of the doors which open immediately into the church. The result of this alteration as regards the columns will be that, instead of standing on the platform of the portico as a base, with a graceful flight of steps in front of them, they will appear elevated on pedestals of unequal heights, rising from 3 ft. on the north to 5 ft. on the south (the inequality being commensurate with the inclination of the roadway), and there will be no steps projecting in front." We trust there will be such an expression of opinion both without and within the walls of Parliament, as will either cause a diversion of the intended new street to another line, or lead to the omission from the Bill before Parliament of so much of the schedule as relates to the portico of St. Martin's.

The Sanitary Condition of the War Office.—In reply to a question in the House of Commons, Mr. Gerard Noel said the attention of the Government had been called to the deaths of certain officers referred to by name, and he was glad to be able to state that they were not in any way to be attributed to the unhealthy condition of the War Office. From a War Office return issued on the 19th of January last, it appeared that out of the total number of *employés*,—namely, 630,—there were nine absent owing to sickness. One of the illnesses was typhoid fever, and the others were bronchitis, congestion of the liver, stoppage of the bowels, rheumatic gout, sprain, and a disease of the mouth. Complaints had been made as to the condition of the buildings, and whenever made they had been attended to with every desire to remedy the evil. It would not be usual to lay such complaints on the table of the House. A committee had been appointed to inquire into the sanitary condition of the War Office, and their report was ready and would forthwith be printed. He could assure the House that every exertion would be made on the part of the War Office and the Office of Works to carry out stringently and effectually the recommendations of the committee.

Tenterden Steeple. — A correspondent writes: — "A surveyor, said to have been appointed by Mr. E. Christian, has reported 'that the four pinnacles, with the turrets on which they stand, must be pulled down and rebuilt.' Now it will be satisfactory to non-residents and all 'lovers of national monuments' to hear that the pinnacles, &c., have been recently examined by a person of great experience and of as great authority as the surveyor said to have been appointed by Mr. Christian, and pronounced to be perfectly sound, and only in want of a little 'pointing,' &c., at an expense for material and labour, exclusive of scaffolding, of about 5*l*. As the pinnacles have withstood the gales of last month, about as violent as any the oldest inhabitant can remember, *without showing the smallest symptom of weakness*, the inhabitants generally are perfectly satisfied of their stability, and it would be difficult to find any other person in the parish besides the vicar and churchwardens of a contrary opinion. Do what you can to save our steeple."

Oxford Main Drainage.—The Local Board have accepted tenders for the rising main of 24-in. cast-iron pipes from their Pumping Station to the intended Sewage Farm, a distance of a mile and a half, and the work will be commenced early in March. The contractors for the supply of the pipes are Messrs. Cochrane & Co., Woodside Ironworks, Dudley; and for the laying, Mr. F. C. Bugbird, Enfield; and the engineer is Mr. W. H. White, Assoc. Inst. C.E., Oxford.

Footprints in Dumfriesshire Sandstone. Some years ago geologists were much interested in the discovery of fossil footprints in the red sandstone of Corncockle Quarry, near Lochmaben, Dumfriesshire. According to the *Dumfries Courier*, there has recently been bought at Corncockle a number of slabs intended for headstones, by Mr. M'Meekan, monumental mason, Dumfries, on which are a great number of impressions of the feet of an animal. On one slab, 3 ft. 4 in. broad, there is a double row of footprints, resembling those of a tortoise. There are twenty impressions in each row, and each is 1¾ in. long by 1¼ in. broad. The distance between the rows is 4 in. There are also impressions, on other parts, of claws, five in number. These marks are from ½ in. to ¾ in. in length. On other slabs there are similar rows of footsteps running diagonally across the slabs.

Newcastle and the Artisans' Dwellings Act.—Matters of life and death appear to be treated somewhat lightly in the North. In 1875 (according to the *Social Review*) the medical officer of health for Newcastle, during the course of a house-to-house visitation, declared that certain houses in Pandon Ward, from their condition, situation, and surroundings, were unfit for human habitation, the average death-rate in that district being about double to that of the rest of the town. The Corporation, after having these important official statements before them for twelve months, decided that there was no occasion for hurry in placing the district under the Artisans' Dwellings Act, as then proposed. Recently, one of the houses in this unhealthy area fell down, and killed three persons thereby, and the neighbouring houses fronting the street have for some time been standing ominously out of the perpendicular.

Speculating Builders in Glasgow.—At a meeting of the Glasgow Landlords' Association, on the 30th ult., Mr. Alex. Stewart, who presided, expressed astonishment at the recklessness of builders and of speculators. The high prices which ruled in the city were, he said, in a great measure caused by speculation. There were men passing through their hands properties worth 50,000*l*., who, when they began, had not a single farthing of the purchase-money. The secret of their financing he did not know. These builders without capital found possessors of ground willing to assist them with pecuniary advances; but sometimes these ventures proved unsuccessful. It would be for the benefit of the community if purchasers of property eschewed such speculators, and made certain that the persons with whom they were dealing were engaged in *bonâ fide* transactions.

The Wilson Lamp, Sheffield.—The old site of Elliott's monument, in the Market-place, Sheffield, will shortly be occupied by the large lamp which the town authorities are having made from the design of Mr. C. E. Wilson, a student at the School of Art. The lamp will stand on a stone basework 3 ft. 6 in. square, and about 2 ft. deep. Around this are slabs forming the ground work, which will be 9 ft. square. The lamp is 22 ft. in height, and is of cast-iron. It consists of a square column, panelled on each side, and decorated in the Italian style. From each side springs an arm, supported by a dragon, and bearing a lamp at its extremity, whilst a fifth lamp rises from its centre. Two of the panels in the base are occupied by figures in bold relief, representing "Theory," and "Practice."

New Court-House and Police-Station, Whitby.—The new Court-house and Police-station, ordered to be built about two years ago by the North Riding Court of Quarter Sessions, are now finished. The building is in the Elizabethan style, and occupies a site on the Springhill road. The entire building is heated by means of an efficient hot-water apparatus, supplied by Mr. James Naylor, of Northallerton, who has had the contract for the iron work and bells. The builder is Mr. W. Langdale, of Whitby, and the other contractors are Mr. Thomas Alderson, of Northallerton, painting and decorating; Mr. W. Banes, of Ripon, slating; and Mr. Smithson, Whitby, plumbing, glazing, and gas fittings. The building has been erected from the plans of Mr. Walter Stead, North Riding, architect and surveyor.

House Building Regulation in York.—On the 7th inst. a numerously attended meeting was held at York, the Lord Mayor in the chair, at which it was resolved that every new street shall have in connexion with it one or more back streets or roads at least 10 ft. in width, to afford access for carts to the back of every house.

A Roadside Fountain at Byfleet.—Travellers on the high-road from Weybridge to Byfleet and Cobham cannot fail to notice an ornamental drinking-fountain and cattle-trough, recently erected by Admiral the Hon. F. Egerton, M.P., just without the lodge-entrance to his residence at St. George's-hill. The admiral has had some private waterworks constructed on the estate, for the use of the mansion, and with kindly consideration he embraced the opportunity to have a pipe laid from the same spring as that which supplies the reservoir to the road, in order that the weary and thirsty traveller might at all times obtain a refreshing draught of pure water. The work has been carried out by Messrs. Anderson & Son, of Erith and London, and Mr. Woods (builder), of Cobham.

Learning a Trade.—The annual meeting of the American Social Science Association was held recently at Boston. At the sitting of the 10th of January there was a discussion on the subject of school-shops. It was urged that boys could be better instructed by this way in two years than in seven under the old system of learning a trade; and the Rev. Everett Hale maintained that it was the duty of the State to work up every man and woman to the best ends to which they were adapted. Industrial education found general favour at the meeting.

Assistant Architect, Metropolitan Board. The committee have submitted, in compliance with the instructions of the Board, the names of six candidates for the post of assistant architect and surveyor in the Building Act Office. They are as follows:—Mr. Daniel Robert Dale, Mr. William Fogerty, Mr. John Hebb, Mr. George MacDonell, Mr. W. Hilton Nash, and Mr. Jasper Wager.

Settled at Last.—The question which has agitated the Manchester Corporation for some time,—whether the new Corporation building should be called the "Town-hall" or the "City-hall"—has been settled. By thirty-five votes to twenty-three it was decided that the building should be called the "Town-hall," as we have urged it should be.

St. Helen's Surveyorship.—At the Quarterly Council Meeting, held on the 1st inst., Mr. James Hart, district surveyor of Pendleton, was appointed surveyor to St. Helen's, at a salary of 300*l*. per annum. There were eighty-six candidates, and eleven were selected. Mr. Brunton, of Durham, was second.

Bricklayers' Technical Educational Classes.—The first annual distribution of prizes and diplomas took place on Thursday, February 15th, at the Society of Arts, John-street, Adelphi, when Mr. Charles Barry, president of the Royal Institute of British Architects, officiated.

Professor Weekes, R.A.—It is announced in a Birmingham paper that Mr. Weekes, R.A., is so much out of health that he has been obliged to resign the Professorship of Sculpture at the Royal Academy. Mr. Weekes is seventy years of age. He is one of Chantrey's pupils, and succeeded to his study in Pimlico.

The Parish Church at Hatton is to be rebuilt, and the parishioners have approved of the design by Mr. W. Young, of Exeter Hall, Strand. The same architect has been commissioned to restore a portion of the east front of Haddington Abbey.

The Proposed Shropshire Archæological Society.—A few weeks back we announced that a Society of this description was in course of formation in the county of Shropshire. We learn that a large number of persons have already intimated their intention of joining the Society.

The Scaffold Accident in Lambeth.—The jury returned a verdict of "Accidental death," adding their opinion that scaffolds of 130 ft. in height ought not to be erected without more supports than the scaffold itself afforded. We will give some precise particulars of the scaffold in our next.

Asphalte.—The tender of the Brunswick Rock Asphalte Paving Company has been accepted for paving the ground floor of Messrs. Kinahan's bottling stores, Great Tichfield-street. It will be laid with 3-in. concrete and 1-in. asphalte.

The Carpenters and Joiners of Brackley have given notice to their employers of an advance of a halfpenny per hour from February 23, 1877, to be paid to all hands.

Royal Architectural Museum.—The Merchant Taylors' Company have given thirty guineas in aid of the Royal Architectural Museum and School of Art, Westminster.

TENDERS

For rebuilding No. 7, Maddox-street. Quantities by Messrs. Williams & Gritten. Mr. Lewis Solomon, architect:—

Palmer	£2,244 0 0
Browne & Robinson	2,065 0 0
Fatman & Fotheringham	2,050 0 0
Downs & Co.	1,873 0 0
Mark	1,900 0 0
Elkington	1,870 0 0

For eleven warehouses in Milton-street, Cripplegate, for Mr. Alderman Knight. Quantities by Messrs. Karslake & Mortimer:—

Adamson & Sons	£21,657 0 0
Fish	20,980 0 0
Crabb	20,865 0 0
Hart	20,740 0 0
Colls & Sons	20,670 0 0
Scrivener & White	20,456 0 0
Newman & Mann	20,422 0 0
Stimpson & Co.	20,393 0 0
Morter	20,215 0 0
Ashby & Horner	19,941 0 0
Brass	19,785 0 0
Nightingale	19,512 0 0
Peto Brothers	19,450 0 0
Ashby Brothers (accepted)	19,386 0 0

For the erection of five houses in Lisson-street, Lissongrove, N.W. (late Little James-street), for Mr. J. Elmes. Mr. Christopher Eales, architect:—

Harris Brothers	£8,457 0 0
Watson Brothers	8,320 0 0
Kelly Brothers	8,190 0 0
Macey	8,120 0 0
Braid & Co.	8,000 0 0
Scrivener & White	7,987 0 0
Nightingale	7,952 0 0
Green	7,900 0 0
Scott	7,787 0 0
Temple & Foster	7,745 0 0
Crockett	7,694 0 0
Mark	7,540 0 0

For works required to be done in the erection of No. 1 Block of new buildings at the National and Industrial Crippled Boys' Home, Kennington. Mr. E. C. Robins, architect. Quantities by Mr. G. R. Tasker:—

Scrivener & White	£6,438 0 0
Macey	6,297 0 0
Brass	6,191 0 0
Manley & Rogers	6,097 0 0
Adamson & Son	5,971 0 0
Newman & Mann	5,934 0 0
Lathey Brothers	5,870 0 0
Lucas Brothers	5,133 0 0

For painting and repairs at 21, Delamere-crescent, Paddington. Mr. Tabberer, architect:—

Cohen	£195 0 0
Norris	185 0 0
Mark	184 0 0

For sundry repairs and alterations to premises, 197, Queen's-gate, S.W. Mr. Burn, architect:—

Blore	£1,053 0 0
Stimpson & Co.	940 0 0
Mark	796 0 0
Cook	699 0 0

For the erection of an infants' school at Lyncombe, for the Bath School Board. Messrs. Hay & Oliver, architects. Quantities by Mr. A. Deane:—

Mann	£1,670 0 0
Mercer	1,649 0 0
W. Long	1,620 0 0
Garland	1,611 0 0
Birth	1,596 18 0
Stephens & Bastow	1,567 0 0
Jacob Long	1,548 0 0
Bladwell	1,490 0 0
Ambrose	1,462 0 0
Morris & Son (accepted)	1,452 10 0

For the alterations and additions to Paul's Meeting-house, Taunton. Messrs. Hay & Oliver, architects. Quantities supplied by Mr. G. R. Tasker:—

Spiller (accepted)	£1,345 0 0

For alterations to 64, Charlotte-street. Mr. Lewis Solomon, architect:—

Davey	£837 0 0
Patman & Fotheringham	825 0 0
Sayer	787 0 0
Williams & Co.	662 0 0

For alterations at 40, Holborn. Mr. Lewis Solomon, architect:—

Colls	£434 0 0
Sayer	430 0 0
Drew	329 0 0

For the erection of the Admiral Keppel Tavern, High-street, Shoreditch. Mr. E. L. Paraire, architect. Quantities by Mr. Joseph Waghorn:—

Manley & Rogers	£4,877 0 0
Green & King	4,770 0 0
Canning & Mullins	4,705 0 0
Chapman	4,591 0 0

For the erection of Board schools at Crowlcrne. Mr. J. Mountford Allen, architect:—

Paull	£1,700 0 0!
Lye & Sons	1,150 0 0
Trask	1,000 0 0
Munford	889 0 0!

For building house on Upton Manor, West Ham. Mr. J. T. Newman, architect.—

Martin	£1,031 0 0
Hosking Brothers	897 0 0
Sayer	740 0 0

For providing and laying York paving, kerbing, &c., at Acton, for Local Board:—

Knight	£4,417 0 0
Serff	4,359 0 0
Watkins	4,345 0 0
Mowlem & Co.	4,344 0 0
Coat	4,262 10 0
Turner	4,200 0 0
Wilson	3,998 0 0
Nowell & Robson (accepted)	3,906 5 0

For new warehouse, St. John's-street, for Messrs. Dillsmore & Rowley. Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove:—

Palmer	£1,735 0 0
Pugsley	1,596 0 0
Lindstone	1,549 0 0
Woodward	1,530 0 0
Parfitt & Taylor	1,479 0 0

For the erection of stables, &c., in Trinity-road, Upper Tooting. Mr. Chas. Bell, architect. Quantities by Mr. H. Lovegrove:—

	Stables.	Conservatory.
Downs	£1,277 0 0	£382 0 0
Ball & Wicks	1,093 0 0	350 0 0
Hobson	1,120 0 0	367 0 0
Wade	1,150 0 0	420 0 0
Chessum	1,202 0 0	422 0 0
Tarrant	1,023 0 0	316 0 0

For new dormitories, infirmary, laundry, swimming-bath, &c., at Commercial Travellers' Schools, Pinner. Quantities by Messrs. Batterbury & Huxley:—

Kiddell & Son	£11,858 0 0
Linzell & Son	11,500 0 0
Larter	10,650 0 0
Downs	10,477 0 0
Ashby Bros.	10,235 0 0
Sewell	10,155 0 0
Newman & Mann	10,112 0 0
Fish	9,695 0 0
Bird	9,657 0 0
Manley & Rogers	9,307 0 0

For paving works and macadamising roadways in St. Pancras parish. Mr. W. B. Scott, C.E.:—

A. & F. Culverhouse	£13,511 0 0
Griffiths	13,300 0 0
Aspinal & Son	12,890 0 0
Mowlem & Co. (accepted)	12,760 0 0
Wilson	12,600 0 0

For laying out and forming paths, &c., to the St. Pancras and St. Giles Burial-grounds. Mr. W. B. Scott, C.E.:—

Neal & Son	£4,600 0 0
Anderson	3,665 0 0
W. Perkins	3,480 0 0
A. & F. Culverhouse	3,374 0 0
Killingback	3,356 0 0
Mowlem & Co.	3,353 0 0
R. Perkins (accepted)	2,193 0 0

For re-instating the mill, engine-house, and boiler-house, at Queen's Wharf Rice Mills, Rotherhithe, for Messrs. Woodbridge, Smith, & Co. Mr. G. Legg, architect:—

Shurmur (accepted without competition)... £6,490

For slopping, watering, and dusting Holborn District:

Reddin & Co.	£4,700 0 0
A. & F. Culverhouse	3,755 0 0
Dodd	3,750 0 0
Jackson	3,600 0 0
Harris	3,460 0 0
H. Williamson	3,295 0 0
Irons (accepted)	3,200 0 0
J. Williamson, jun.	2,998 0 0
W. T. Williamson	2,744 0 0

For alterations to the City of Hereford, Cleveland-street. Messrs. Lamb & Church, architects:—

Taylor	£195 0 0
Shurmur	189 0 0
Hockley	175 0 0
Godden	170 0 0

For rebuilding the Union Tavern, King's Cross-road, for Mr. F. Guyer. Mr. John Viney, architect. Quantities by Messrs. Lamb & Church:—

Shurmur	£3,465 0 0
Staines & Son	3,272 0 0
Eaton	3,260 0 0
Downs	3,133 0 0
Latta	3,020 0 0

For alterations and repairs to the White Lion, Hackney Wick, for Mr. Coltman. Mr. John Viney, architect:—

Shurmur	£848 0 0
Latta	845 0 0
Hooper	835 0 0
Godden	797 0 0
Staines & Son	784 0 0
Hanley	690 0 0
Eaton	620 0 0

For rebuilding the Horse and Sacks, Harrow-road, Mr. Ridge, architect. Quantities by Messrs. Hovenden, Heath, & Berridge:—

Wagner	£3,775 0 0
Hoskins Bros.	3,292 0 0
Scrivener & White	3,245 0 0
Beale	2,987 0 0
Bracher (accepted)	2,930 0 0

For making up Kensington Vestry's Cremorne Wharf. Mr. W. Weaver, Surveyor. Quantities supplied:—

Williams & Co.	£1,690 0 0
George	1,498 0 0
Nowell & Robson	1,450 0 0
Mears	1,450 0 0
Neave & Sons	1,438 0 0
Turner (accepted)	1,400 0 0

For the erection of villa residence, Belmont-road, Leatherhead. Mr. John W. Smithies, architect:—

Nye	£1,061 0 0
Walker	1,049 0 0
Beauchamp (accepted)	979 0 0

TO CORRESPONDENTS.

J. P.—J. M. A.—J. T. N.—Mrs. C.—D. C.—G. R. T.—W. Y. L. B.—P. S.—S. H.—A. M.—J. & H.—H. de M.—J. M.—H. L.—F. S. J. W. S.—Messrs. C.—G. T. C.—H. T. (beyond our province) M. J. (ditto)—B (under our mark).—H. H (already mentioned).

We are compelled to decline pointing out books and giving addresses.

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Seyssel, Patent Metallic Lava and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [ADVT.]

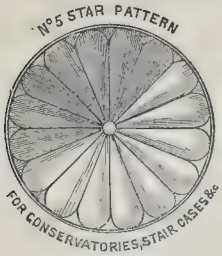
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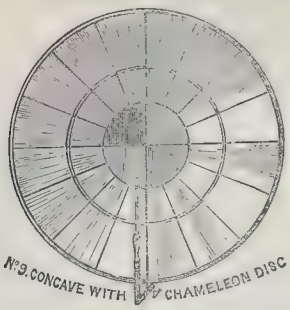
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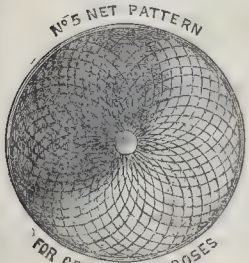
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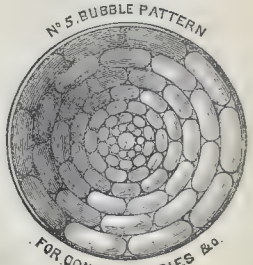






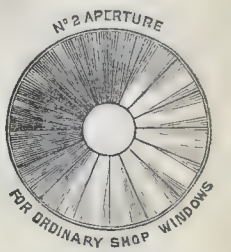


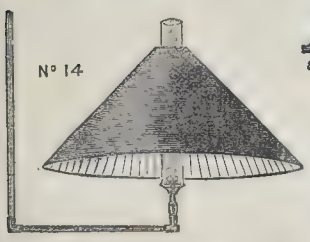


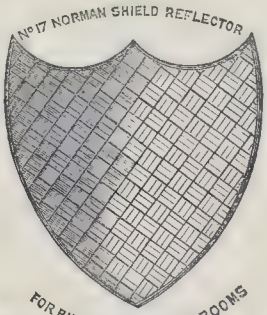


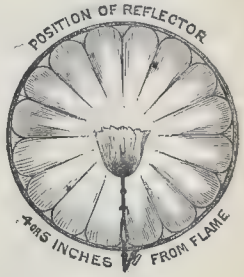


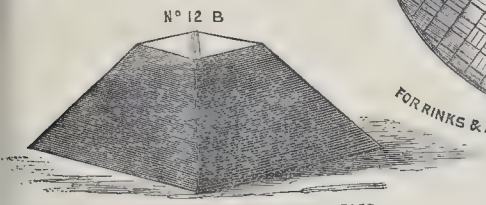


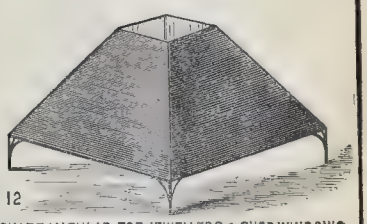












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CONTRACTS—*Continued from p.* ii.

TENDERS required for a Pair of VILLAS and a detached HOUSE, at Sharesbrook. Drawings and specifications to be seen at Messrs. THOMSON & PORTS, East India Chambers, Leadenhall street. The lowest or any Tender not bound to be accepted.

TENDERS are required for PRIMITIVE METHODIST CHAPEL and SCHOOL, King's-cross. Plans and specification seen and quantities obtained on application to Mr. A. J. ROUSE, Architect and Surveyor, 21, Bramley road, Notting-hill. Tenders to be delivered and addressed to the Rev. R. R. CONNELL, 49, Marquis-road, Camden-square, N.W. on or before FEBRUARY 28 endorsed "Tender for King's-cross Chapel, &c." The Trustees do not bind themselves to accept the lowest or any Tender.

TENDERS for TOWN HALL and MARKET at MAESTEG.—The Gwendu Local Board of Health invite separate TENDERS for the above-named BUILDINGS. Plans and specifications may be seen at their Offices, in Maesteg, from the 12th day of FEBRUARY, to the 12th day of MARCH, both days inclusive. Sundays excepted. Sealed Tenders, marked "Tenders for Town-hall and Market," are to be sent to the undersigned not later than the 22nd day of MARCH, 1877. The Board do not bind themselves to accept the lowest or any Tender, nor will they make any allowance for expenses of Tendering.—By order.
WM. POWELL, Clerk to the said Board.

TO BUILDERS. — Persons desirous of TENDERING for the ERECTION of CORN STORES and COAST HOUSES, at Rainham, in Kent, may see the Plans and Specification at my Office, and at the Office of Messrs WAKELEY, at Rainham, on and after TUESDAY next the 13th inst. Tenders to be delivered to me not later than TWELVE o'clock at Noon, on FRIDAY, FEBRUARY 23rd, endorsed "Tender for Corn Stores, Rainham." The lowest or any Tender not necessarily accepted.
JOHN DRAKE, Architect.
Rochester, February 6th, 1877.

FARNHAM and HARTLEY WINTNEY DISTRICT SCHOOL. — To BUILDERS. — TENDERS are required for SUNDRY WORKS to be performed at the above School. Bills of quantities will be supplied to applicants by Mr. WONNACOTT, Architect, Farnham, Surrey. Sealed Tenders to be sent to the CLERK not later than the 3rd of MARCH next. The Board of Managers will not bind themselves to accept either the lowest or any Tender.
W. HOLLEN, Clerk.
Farnham, 12th February, 1877.

DEVON and CORNWALL RAILWAY COMPANY.—CONTRACT for WORKS.—The Directors of this Company are prepared to receive TENDERS for the CONSTRUCTION of a VIADUCT, near the Holsworthy end of their Okehampton to Holsworthy Extension Railway. The drawings and specifications can be seen, and bills of quantities and forms of Tender obtained, on application at the Office of the Engineer Mr. W. R. GALBRAITH, No. 1, Victoria-street Westminster, S.W. on and after TUESDAY, the 20th inst. Tenders sealed, and marked on the outside "Tender for the Holsworthy Viaduct," must be sent to the undersigned on or before SATURDAY, the 3rd proximo. The Directors do not bind themselves to accept the lowest or any Tender.
GEO. READDY, Secretary.
No. 17, Tokenhouse-yard, London, E.C. February 15th, 1877.

BOROUGH of TENBY.—The Sanitary Authority of the Borough of Tenby invite TENDERS for CONSTRUCTING an ELM TRUNK and other Works required in Extending the Culvert draining the St. Florence Valley Plans, specifications, &c may be seen on application to the undersigned, and Tenders must be sent to JOHN GURPINE, Esq. Town Clerk, on or before MARCH 31st, endorsed "Tender for Culvert Extension." The lowest or any Tender not necessarily accepted.
HENRY T. MORLEY, Borough Surveyor.
Tenby, February 19th, 1877.

BOROUGH of BELFAST. — To CONTRACTORS for PUBLIC WORKS.—The Town Council desire TENDERS for the EXECUTION of the WORKS required in the SEWERAGE and PAVING of a large number of streets, including brick and pipe sewers street-gullies, drains, ventilating-shafts forming and paving streets with pebbles and setts, flagging footways, and various works connected therewith. The specifications and particulars of the works may be inspected at the Office of the Engineer, Mr. J. J. MONTGOMERY, M.Inst.C.E. in the Town-hall, where sealed Tenders, on the Offices forms, fully filled up and endorsed "Tender for Sewerage and Paving Works," must be delivered on or before TUESDAY, the 27th day of FEBRUARY, 1877 at NOON. The lowest or any Tender will not necessarily be accepted.
JAMES GUTHRIE, Town Clerk.
Town-hall, Belfast, 7th February 1877.

DEWSBURY and HECKMONDWIKE WATERWORKS.—PIPE-LAYING.—The Working Committee of the Dewsbury and Heckmondwike Waterworks Board are prepared to receive TENDERS for the FRENCH CUTTING and the LAYING and JOINTING of about 4¾ miles of CAST-IRON PIPES, 18 inches in diameter, across the Valley of the Calder, between Whitley and Staincliffe. Plans can be seen, and specifications and forms of Tender obtained, on payment of 1l. 1s. at the Offices of Messrs. BATEMAN & HILL, Engineers, Albert Chambers, Albert-square, Manchester, or at the Office of the Waterworks Board, in Bond street, in Dewsbury, on and after MONDAY, the 12th day of FEBRUARY, 1877. Sealed Tenders, endorsed "Tender for Pipe-laying," to be sent in addressed to JESSE SMITH, Esq. Clerk to the Waterworks Board, Dewsbury on or before THURSDAY, the 22nd day of FEBRUARY 1877. The Committee do not bind themselves to accept the lowest or any Tender.—By order,
JESSE SMITH and WILLIAM SYKES,
Clerks to the Dewsbury and Heckmondwike Waterworks Board
Waterworks Board Offices, Dewsbury, 8th February, 1877.

TO SEWER CONTRACTORS. — The Board of Works for the Greenwich District is prepared to receive TENDERS for LAYING DOWN about 433 feet run of 15-inch PIPE SEWER, in Tyrwhitt-road, Deptford, and other Works, according to the specification. The specification and plans can be seen, and particulars obtained, at the Offices of the Board, in Church street, Greenwich, between TEN and FOUR o'clock (on Saturdays, between Ten and One). Tenders (which must be made on the forms to be supplied at the Board's Offices), sealed up, and indorsed "Tender for Sewerage Works in Tyrwhitt-road" should be sent to the Board's Offices, as above, before FOUR p.m. on WEDNESDAY, the 28th of FEBRUARY inst. and parties tendering, or their Agents, should attend at the said Offices at Seven p.m. on that day. The Board does not bind itself to accept the lowest or any Tender.
J. SPENCER, Clerk of the Board.
Greenwich, February 15, 1877.

TO ROAD CONTRACTORS.—TENDERS are required for certain EXCAVATIONS and EMBANKMENTS, with TWO BRIDGES, CULVERTS, FENCING, QUICKSET HEDGES, &c. comprised in the Construction of a New Public Road (about one mile in length), at Widford, in the county of Hertford, according to the drawings, specifications, and bill of quantities, which may be seen at the Office of the Engineer, as under, on or after MONDAY, the 12th inst.
Copies of the bill of quantities may be had at Two Guineas each, which sum will be returned on receipt of a bona fide Tender.
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February 1st, 1877

TENDERS for AGRICULTURAL DRAIN PIPES. The East Barnet Valley Local Board invite TENDERS for the SUPPLY of 100 3-INCH PIPES, 2,500 4-INCH Ditto, 6,000 4-INCH Ditto, 12,000 3-INCH Ditto, and 2,000 2-INCH Ditto. All to be delivered at Colney Hatch Station on the Great Northern Railway by the 15th MARCH next.
Tenders, endorsed "Tenders for Agricultural Pipes," giving the price per 100 of each size, to be sent to the Local Board Offices, Station road, New Barnet, before SIX o'clock on MONDAY, the 19th inst. addressed to the Chairman of the Finance Committee.
The Board does not bind itself to accept the lowest or any Tender.

WOOD PAVING.—To LOCAL BOARDS, VESTRIES, CORPORATIONS, and OTHERS.—For particulars as to WOOD PAVING, laid complete by the Cheapest and Best Method, apply to JOSEPH B. GABRIEL, Grellier's Wharf, Belvedere-road, Lambeth, where Estimates for same may be had or application.

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EXHIBITION of Sanitary Appliances.—The Manchester and Salford Sanitary Association contemplate holding an EXHIBITION of SANITARY APPLIANCES during the Visit of the British Medical Association to Manchester in AUGUST next.—Applications for Space should be made forthwith to Mr. F. SCOTT, Secretary, 75, Cross-street, Manchester

LECTURES to WORKING MEN.—ROYAL SCHOOL of MINES, Jermyn-street.—The Third and Last Course of Lectures, consisting of Five Lectures, on Applied Mechanics, by Professor GOODEVE, M.A. will be commenced in Jermyn-street on MONDAY, the 26th of FEBRUARY, at EIGHT o'clock. Tickets can be obtained, by Working Men only, on MONDAY Evening, the 19th inst. from SEVEN to TEN o'clock.
TRENHAM REEKS, Registrar.

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VOL. XXXV. No. 1777 SATURDAY, FEBRUARY 24, 1877.

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The Temple of Diana at Ephesus.

It is now about five years since we gave (in the *Builder* of February 10, 1872) what was the first illustration published in this country of one of the remarkable fragments of the once great Temple of "Diana of the Ephesians," the discovery of which has rewarded the long and steady perseverance, under great drawbacks and hardships, of an English architect, whose name will henceforth be historically associated with Ephesus. The public are now put in possession of the full history of the laborious process of investigation which led up to the discovery, and of the detailed illustration of the principal remains which have been found up to the present date, by the publication of the large and handsome volume in which Mr. J. T. Wood has summed up the result of the researches by which he has gained so honourable a position among archæologists.* The principal and most interesting portions of the temple that have been recovered are now deposited in the British Museum; not all, it is true, in view of the public eye, as some of them are at present *perdus* in those dangerous and unsightly sheds which still fill up the space in the colonnades of Smirke's façade. The possible restoration of the temple from the remains discovered formed, as our readers will remember, the subject of a recent paper by Mr. Fergusson at the Institute of Architects, in which, and in the discussion that followed, a good deal of pure conjecture was mingled with what could be regarded as logical deduction. Interesting as the portions found are, we can scarcely regard them as furnishing data for anything like a restoration of the temple, beyond the most general conjecture, leaving a very wide margin for individual imagination: nor is it either necessary or desirable to exaggerate the information which these relics convey to us. It is enough to say that they are the most valuable and interesting acquisition to this department of the British Museum since the discovery of the Mausoleum by Mr. Newton, and that they include specimens of a style and method in the application of sculpture to architectural decoration such as we have had no accessible examples of before; while the whole history of the investigation has the interest which always attaches to a record of unflagging perseverance and energy in carrying out a settled purpose.

For the details of the preliminary portion of Mr. Wood's adventures and endeavours, previously to his finding the true site of the temple, we must refer the reader to his pages. The unhopefulness of the prospect when he was first landed at the wretched railway station at Ayasoluk, and reconnoitred the ground without, as he considered, a clue to lead him decisively in one direction or another, is what the reader cannot but realise and sympathise with, especially when added to this doubt and perplexity were the annoyances and difficulties with which he had to contend in encountering stupid and malevolent Turkish officials, idle and worthless workmen, wretched fare and lodging, or the alternative of a weary journey of nearly three hours and a half twice daily, to and from Boudjah (a village near Smyrna, at the hotel of which he lived at this time), on the slow, ill-found Smyrna and Aidin Railway, and its concomitant discomfort and loss of time, which had to be made up by extra hard work and close attention while on the scene of his labours. The whole day's work during the earlier period of the excavations, extended, including railway journeys, to fourteen or fifteen hours; and the author says that on returning he was sometimes so over-excited by the hard day's work, that he ran most of the distance from the railway station to the village. Mr. Wood subsequently occupied a châlet in the Ephesus Pass, which was more comfortable, though considered a dangerous place in regard to brigands; but the coolness and readiness and personal courage of the "Excavator of Ephesus" (as one of his temporary neighbours addressed him in a wonderfully-spelt epistle) seem to have stood him in good stead on a good many occasions of embarrassment, and some of real danger. In short, a reader may very well gather from Mr. Wood's pages that digging out temples in Asia Minor, under Turkish rule, is no mere holiday pastime. Turning to the main subject of the book, however, we may observe that a portion of his doubts as to the direction of his labours Mr. Wood might have cleared up sooner, or even before he commenced at all. On this head there is something to be set right both in regard to Mr. Wood and to his critics, in reference to what was said when the news of his discovery first reached England. It was remarked then, and has been remarked since, that little has been said by the discoverer of the temple in regard to the names and the suggestions of those who have contributed something to Ephesian archæology before him; and it is certain that he ignored one piece of prior information which might have saved him a great deal of trouble. His first idea in looking for the temple seems to have been to find traces of the stoa or covered arcade, 600 ft. long, which was said by Philostratus to have been built by one Damianus to connect the temple with the Magnesian Gate, so that the priests need not be kept away from the temple by rain. As he truly said, it seemed that if the line of this covered way could be found, there was nothing more to do but to trace it for 600 ft. till the temple or its *peribolus* was reached. We now know that the problem could in no case have been so simple as this, as the nearest angle of the peribolus is distant more than a mile from the gate in question, and there must be some mistake as to what Philostratus intended to convey. But Mr. Wood commenced trenching on the west of the city in the hope of striking the line of the portico, although the position of the Magnesian Gate is shown in the map appended to Guhl's "Ephesiaca," at the south-east angle, just where Mr. Wood did eventually find it when he got upon the right track. It would seem only common reason that any one going out to hunt for a buried temple should first take into consideration all that had been said and suggested as to the locality; and though, if this had been so, we should have lost the spectacle of Mr. Wood's admirable perseverance under long disappointment, there is no doubt that he would have saved a great deal of time and some money; and it is at least a lesson to be laid up by future excavators, not so far to ignore previous researches as to waste time and strength in hunting on one side of a city for a spot which was indicated (it now appears correctly) by a learned archæologist many years before, as being on the other side. It was also, however, said, and we remember that at the time when the discovery first became a subject of talk here, we printed a letter addressed to us on the point (under the signature "Ephesus": *Builder*, vol. xxix., p. 610) that the roads to the temple, and the approximate site of the temple itself, were suggested by Guhl; but this was a misapprehension. Guhl's position of the Magnesian Gate is quite right, and the road from it up to a certain point; but his suggestion for the site of the temple is more than a mile wrong, being in the low land to the north of the town, near where Mr. Wood at first ineffectually tried for it, and Guhl's road from the Magnesian Gate to the temple is a road running in a north-westerly direction; whereas the true road which Mr. Wood unearthed by dint of really acute and careful observation and research, branches off from this in a nearly north-east direction. The tomb of Androclus, too, which it was claimed that Guhl had shown, is, in his plan, half a mile out of its true place. No other archæologist before Mr. Wood had indicated the correct site of the temple; though what Mr. Watkiss Lloyd remarked in these columns,* at the time of the discovery, is quite true, that the data for finding the temple existed long before, had any one made use of them. Mr. Wood attributes the turn in his fortunes in the exploration to his discovery of an inscription in the Great Theatre, giving an exceedingly interesting

* Discoveries at Ephesus: including the Site and Remains of the great Temple of Diana, by J. T. Wood, F.S.A., with numerous illustrations from original drawings and photographs. Longmans, Green, & Co.

* See vol. xxx., p. 103.

and detailed account of the progress of a periodical procession from the temple round the city and back, and which is a valuable discovery in itself; but its influence in regard to his excavations was simply in getting him into the right track, which he might have been on before by the help of Guhl's suggestions; indeed, even Falkener, whose general theory of the position of the temple and the city is wildly wrong, not only shows a gate in the position of the true Magnesian Gate (though he does not give it that name), but even dots a colonnade down the line of the road where, if we rightly understand Mr. Wood, he really did find the remains of the portico of Damianus. Falkener's colonnade has no connexion, it is true, with *his* site of the temple; but this and Guhl's plan and Philostratus's statement together certainly do seem to make about as broad a hint where to begin as could well be supposed, short of certain information.

This, however, certainly does not alter the main fact that Mr. Wood is the man who has found the temple; and now a few words as to what it is that has been found, and what has and may be deduced from it. Considering, first, the building as a whole, the principal dimensions may be considered to be established by the remains found. The two bases of columns in the outer and inner colonnades of the flank, on the south and north sides respectively, in conjunction with portions of the cella wall gave the line of the flanking colonnades, while the remains of buttresses or sleeper-walls at regular intervals gave the width of the intercolumniation; Mr. Wood assuming, and we cannot doubt correctly, that such regularly-recurring piers in the substructure would be identical with the positions of the columns above. Only a fragment of the south wall of the cella, and a piece of the cross wall between the vestibule and the cella, were found, but the width of the cella was given by the marks which the courses of the north wall had left on a building erected within the cella walls in the Byzantine period. The positions of the two columns in reference to the line of the south wall would, however, almost have sufficed to deduce the width of the cella. A piece of the lower step of the platform found *in situ* at the east end gave the dimensions of the temple lengthways, with close approximation to certainty. We may regard the dipteral colonnade as absolutely fixed, and the size of the platform, unless Mr. Wood has been deceived in regard to his "step"; but this we do not consider probable. We have the portions of the flanking walls of the cella, and of one cross wall; but here certainly stops. The restoration of the cella and opisthodomus, and the arrangement of the end columns behind the dipteral colonnade, and even the intercolumniation of the latter at the ends, are matters of almost pure conjecture, and the variety of arrangement that has been suggested in relation to the historical records of the building is rather curious.

The puzzle which has been set restorers in regard to the general arrangement of the temple arises, in part, from the great number of columns specified for it by Pliny, their uneven number (127), and the statement that thirty-six of them were sculptured; and the additional statement (also by Pliny) that each column was the gift of a king. It is difficult, in the first instance, to know what to do with so many columns; then we wonder where the 127 kings were to be found; and lastly, where to place the odd column and the thirty-six sculptured ones. Numerical statements are always and justly regarded as vulnerable points in ancient authors, and accordingly various restorers have invented various readings of the numbers, according as one theory or another seemed probable to them. That the temple was octastyle and dipteral has been generally considered a settled point, and is now finally proved by Mr. Wood's discovery, and the portion of his deductions which follow necessarily from it. The difficulty is to arrange the columns so as to suit Pliny's numbers. Guhl gets fifteen columns on the flanks, sixty in all, and makes up the eighty-two with the end columns, and four in the *pronaos*, and two in the *posticum*, and regards the thirty-six *columnæ cælatæ* as interior columns, though he does not seem to get them all in on his plan. Falkener gives nineteen columns on the flanks, which is nearer the fact, but he makes the temple decastyle: he arranges the sculptured columns at the ends in the rear of the ordinary columns. He set the example of manipulating Pliny's numbers by introducing a comma after "viginti" in the phrase "centum viginti septum," making 120 columns, *seven* of which were the gift of kings. Latin scholars tell us this is absolutely inadmissible by the construction of the passage. Mr. Watkiss Lloyd (in his papers contributed to the *Builder* for February 10–17, 1872) suggested a decastyle plan, with ninety exterior columns and thirty-seven *columnæ cælatæ* in the interior, thus making the full number of 127, and adding the odd column to the thirty-six *columnæ cælatæ*, on the supposition that Pliny's remark that "one of the sculptured columns was by Scopas," referred not to one of the thirty-six, but to an additional one mentioned separately. His plan had the advantage of providing a definite and separate place for the sculptured columns, placing them altogether in the interior, instead of mixing them in any way with the others. Now we come to Mr. Wood's restoration from his own discoveries. His measurements and working out finally show that the temple was octastyle, as always stated by ancient writers, and further confirmed by the two medals with representations of the temple, which he engraves on pages 266–7, and which are good auxiliary evidence, though they would not go for much by themselves. These medal representations also serve to confirm Mr. Wood's conclusion of a wider intercolumniation between the centre columns of the ends (which is also shown, we may observe, in Guhl's plan). Mr. Wood's plan shows twenty columns on the flanks, and though we do not feel quite so satisfied as he does that the position of the step at the east end entirely settles the length, we can hardly think it probable, on his facts, that there could be a mistake of as much as one intercolumniation; and the width of the intercolumniations on the flanks is definitely ascertained, so that we think we may accept the twenty columns as proven, or almost as good as proven. But now Mr. Wood falls again to quarrelling with Pliny's figures, and wishes to manipulate them just as Falkener did, by putting in a comma after "*centum*" in the Latin, and rendering "*one hundred* columns, of which *twenty-seven* were the gift of kings." The same objection applies to this, exactly, as to Falkener's comma. Mr. Wood insists upon having all the columns mentioned by Pliny, including the *columnæ cælatæ*, *outside* the building; and as it is impossible to arrange 127 in the space he has at his disposal, he reduces them, by this conjuring of a comma, to 100. To our thinking it is not improbable that Pliny's numbers are wrong in some way, but not in that way: he may, for instance, have counted interior and exterior columns together, or he may have been in some confusion himself as to the number; but which precisely is the way out of the discrepancy we suspect that it will never be possible to say positively. Both Mr. Wood and Pliny perhaps should give way a little. Mr. Wood's peristyle is, we believe, unassailable; but his cella and altar and pronaos are almost pure conjecture, except the width of the cella and one portion of the cross wall separating it from the pronaos: and it is certainly not out of the question that in so large a temple there may have been some arrangement of the sculptured columns, or a portion of them, internally, such as to make up the number without crowding the exterior. The sculptured columns Mr. Wood arranges in the double row of the peristyle at either extremity of the temple, the four rows of eight columns, with two in each pronaos, making the total of "thirty-six" *columnæ cælatæ*. That some at least of the sculptured columns did duty at the entrances seems highly probable, and to our mind is brought almost to certainty by the evidence of the two medals before referred to, one of which shows the front columns with statuary at the base, and the other, though not showing statuary, shows a surbase round the columns above where the sculpture would come, and evidently refers to some feature similar to that in the other representation; and the feature in each, rudely as it is represented, is so marked and unusual that its presence on the medals cannot be mere accident; it must refer to some actual feature of the kind which is intended to be here imitated. It does not follow, however, that the whole of the sculptured columns were in this position; we are quite at liberty to suppose either that the back row were not sculptured or that those at the east end, next the opisthodomus, were not, and that the rest of the sculptured columns may have been in the interior of the vestibule—a suggestion which will be found to have a bearing on what we have to remark upon the sculptured fragments considered in detail. One difficulty that has been raised as to Mr. Wood's general scheme of the temple we may refer to before passing on; the immense bearing of the architrave stones which an octastyle scheme necessitates, over the centre opening especially. Mr. Wood's plan shows 28ft. from centre to centre of the columns, for the central block of architrave. It certainly seems an enormous bearing for stone of any kind, but we cannot think this objection anything at all against the strong evidence before us. Ancient writers, even in those days when stone trabeated structures on a great scale were familiar, speak with astonishment of the enormous weight and size of the blocks in this temple, and we cannot suppose it impossible that a block of marble large and sound enough to carry 23 ft. clear of its supports, even with the weight of the pediment on it, should have been found and fixed. The consideration gives a vivid idea of the scale of the building and the imposing aspect it must have had; bearing in mind that a trabeated structure, with square openings, impresses the eye with a greater idea of size and grandeur than an arcuated structure of the same proportions.

Coming from the building as a whole to the sculptured remains which have been brought to this country, we may remind our readers that the principal objects, not counting numberless small fragments, are the portions,—in one case nearly the whole,—of five of the circular sculptured drums of the columns, and several large square angle blocks with sculpture in high relief. Of these the three largest of the drum fragments and the largest of the angle blocks are now to be seen at the end of the Elgin Marble Room in the British Museum. In addition there are to be seen there the base and lower drum of the fluted column first found by Mr. Wood *in situ*, and which presents no special feature beyond the dimensions and largeness of style which lead us to think, as we look at it, that there were giants on the earth in those days. Two portions (not very incomplete) of the Ionic capitals, a lion's head from the cornice, remarkable for its vigour and force of execution, and a beautiful piece of scroll ornament from the cymatium of the cornice, are also to be seen there, and the Corinthian capital, oval in plan, upon which Mr. Fergusson supports a good deal of his hypæthral system of lighting the temple. There are also to be noticed two pieces of sculpture of a much more antique cast,—a lion's head and a considerable portion of a draped figure, which no doubt belonged to one of the earlier temples on the site. These are what are now accessible to the public; but it is with the sculptured fragments that we have special interest, as they represent an application of sculpture to architecture of a very unusual kind, and are largely concerned in Mr. Wood's restoration of the design of the temple. The sculptured drums differ a good deal in character. The most complete one, that first found, which forms the frontispiece to Mr. Wood's volume, and was engraved in the *Builder* for September 14, 1872, is a most beautiful piece of work, in the most refined style and delicate execution, and forms one of the greatest ornaments of the Museum; it is a bas-relief in not very high relief, and with the figures so arranged as to interfere very little with the general circular outline of the column. The relief is not more than about 5 in.; and the two portions, called by Mr. Wood "parts of sculptured drum, No. 4" (pp. 222, 246), appear, judging chiefly by the drapery, to be of similar character of work, only less interesting because more fragmentary. The one called by Mr. Wood No. 3 (p. 218), in the Elgin Room, is of quite a different character, with figures having the appearance of a slightly larger scale (only the heads and upper parts of them are left), and in much higher relief; this has been much more damaged on the surface by weather, besides breakage, than the others, but it conveys the impression of having been a decidedly different style. Round the upper part of this drum is visible a slightly relieved band, about 3 in. wide, the origin of which is puzzling; it cannot be called a moulding, and is like nothing in Greek moulding; but it may possibly only have been an extra thickness left on for finishing down afterwards when the stones were set and jointed: this idea seems plausible when we observe that on the Ionic capital standing near it the foliage on one side is complete and on the other side only blocked out; so that there were evidently some unfinished bits left in the work. Now the question is, how and where these sculptures were placed in the design. Mr. Wood prefers to think that these drums of sculpture were placed one

over another; his reason being that while two of the drums, whose diameter can be ascertained, are 6 ft. 0½ in., the third is only 5 ft. 6½ in., and his deduction is that this latter must have been at a considerable height, reasoning from the amount of diminution of the column. He gives one elevation with these drums of sculpture reaching nearly halfway up the whole height of the column, and another with one drum only at the base. All we can say is that, as a question of architectural effect, we repudiate the three-drum arrangement *in toto*: it makes the column ugly and ill-proportioned to a degree; and how any architect can say he prefers it is a mystery to us. The argument about the different size of one drum really seems to us to count for little or nothing, because we have only three examples to go upon, and the differences between some of them in point of style, as already noticed, are too great to allow of our supposing that we have got any real data for the system on which they were applied. We may observe also that the evidence of both the medals before referred to is against it, each of them indicating one band only at the foot of the columns. Nor do we think Mr. Wood very plausible in other deductions he draws from the differences of style in the sculpture. He thinks No. 3 drum, the one with the bolder sculpture in higher relief, must have been so made because it was one of the inner columns of the peristyle, "where a greater projection would be considered necessary." Why? Surely it is more reasonable to think that the greater projection would be required, if at all, in the external column, the sculpture on which would be seen most prominently from a distance; and more probable still that the sculpture on two ranks of columns in the same peristyle would have had a uniform treatment. On the other hand, we take it that any one comparing No. 3 drum with No. 1 (the beautiful low-relief one before mentioned) will come to the conclusion that No. 3 has been in a far more exposed position than the other, and has been greatly weather-beaten before its final submersion; whereas the preservation in which some of the most delicate details of No. 1 are found (the beautiful faintly-relieved wings of one of the male figures, for instance) and the general appearance of the surface of the stone, would lead us strongly to the supposition that it had stood in the interior of the building, and is in fact one of the reasons which led us to suggest that the sculptured columns were not all external. The sculpture on this one really does not seem to have suffered any damage except sheer breakage, and the contrast between its smooth surfaces and clear sharp lines and the honeycombed surface and worn figures of No. 3 is certainly significant of a great difference in the conditions to which they were exposed.

Now we come to the square blocks with sculpture before mentioned. These Mr. Wood calls the frieze; but we can find no reason in his book for this opinion, except that when he found the first piece he thought it was the frieze, and he prefers to keep to it. But we think he will be obliged to give up this part of his restoration. In the first place, the figures, 6 ft. high, and in a very bold style, are on too large a scale for the frieze, which looks very disproportionate in his drawing of the restoration of the entire temple; and they appear too ponderous and too thick on the bed for such a situation. Secondly, there are four of these pieces (omitting a fifth to be mentioned just now), all angle-pieces, as is shown by their being sculptured on the two adjacent faces. Now, it is contrary to all rational probability that all the four angles of the frieze should have been found, and no other parts of it. But then there is a fifth piece of the same kind, which Mr. Wood, in his anxiety to keep to his original opinion, adroitly puts out of the way entirely in his book, giving no illustration of it, and merely casually referring to it (p. 271) as "a large fragment of sculpture representing the winged figure of a man leading a ram," and which he says was probably the corner-stone of a large sculptured altar which might have stood outside the temple. This seems to us a curious instance of Mr. Wood's perversity in adhering to whatever he has once said, whatever the arguments against it. Any one carefully comparing this block with the others just mentioned, must see that it has all the same characteristics; the same projection in the reliefs, the same distance from the outer angle to the rubbed joints on either side, and would be the same height (as we can see from the indications of the winged figure, of which, however, little but the wings is left) were it complete. Now as the frieze could not at all events have five angles, this disposes of it at once. A still further fact against the theory is that two of these square blocks which have the top face left uninjured, show a circular dripmark which is found to correspond with a circle of the same radius as the plan of the columns, plainly showing that the bases of circular columns had stood upon these sculptured cubes; an arrangement which Mr. Fergusson has illustrated by comparison with the Trajan column. Here one would think was about as complete negative evidence, at all events, as could possibly be, yet Mr. Wood actually proposes to get over this by assuming that old base stones of the columns of the former temple were used for the frieze of the new one. To take such a roundabout theory as this, and throw aside so many facts that conflict absolutely with it, rather than admit an error in his first opinion, is, to say the least, not very logical. If we are asked where these square sculptured pedestals may have been placed, we should say that for the present we do not know, and we do not think any one else does; suggesting to some of our very imaginative restorers a consideration of the wholesome spirit of reticence embodied in Gubl's concluding sentence in regard to the restoration of the temple: "Conjecturis autem, quæ nullo argumento evinci possunt, de industriâ abstineo."

Of Mr. Wood's restorations of the temple, as portrayed in this volume, we cannot, we confess, say very much. The drawings are but poor and spiritless, the perspective view a very curious affair, not indicating the proportions of the plan, as it looks much too wide for its length, and exhibiting a very inartistic-looking arrangement of the tympanum sculpture, based, as far as we can make out, on some rough indications on the two medals aforesaid. It is worth notice that both these medals indicate, in a clumsy and grotesque way, something like a recurring decoration above the cornice of the pediment, in one case suggesting the idea of something like Gothic crocketing. We should imagine there was some sort of foundation in fact for this, though it is difficult to imagine what it could have been; but the temple is exceptional in so many ways that one need not be surprised to find it exceptional this way also. The subject of the hypæthral lighting of temples in general, and of this one in particular, we must defer for the present; we may endeavour presently to gather up into a consistent theory the various skeins of the various arguments that have recently been brought forward anew; but in regard to the present case we can only say that however Greek temples were lighted, we are quite certain their architects had more sense of the fitness of things than to adopt any system which would have so unsightly and clumsy an effect as the *notch* in the roof in Mr. Wood's restoration. In short, we can hardly congratulate the author on this portion of his work; and fear that he has attempted in a hurry, and in rather too cheap a form, what should have been done much better if done at all. We cannot but think, with not quite satisfactory feelings, of the kind of illustrated publication that would have been brought out in France, had the temple at Ephesus been discovered by a French architect.

Mr. Wood's book, in fact, is really not so much a publication for architects as for general readers. Not only are the strictly architectural illustrations unsatisfactory, but there is no attempt to place together in a coherent and logical manner the data upon which the restoration of the temple is founded. We have to pick them out from different parts of the book as well as we can, and in this way the author has done himself an injustice in regard to the more serious object of his publication. On the other hand, the very desultoriness of a narrative in which an account of the finding of a base or a capital is alternated with a spirited sketch of a "row" with brigands, or of the manners or scenery of the locality, gives the book a literary interest quite different from that usually supposed to belong to archæological works, and makes it (we can assure our non-professional friends) very entertaining reading. We call attention to this aspect of the book, considering it as one which ought to be generally read, and which the circulating libraries certainly ought to take up. Its more general perusal might do something towards arousing the English public from that stolid indifference to the architectural and artistic remains of antiquity, of which Mr. Wood justly complains, and of which he quotes such unhappy and only too-characteristic instances; and no one will read the book without a lively interest in its graphic descriptions, and a feeling of respect and admiration for the indomitable perseverance of the author, and for the healthy, manly, unaffected tone which pervades his narrative.

IMPROVED METHOD OF MANUFACTURING CEMENT.

In a communication lately made to the Société de l'Industrie Minérale, M. Judycki describes an improved method of manufacturing cement, patented by him, and based on the experience acquired in superintending the fabrication of hydraulic cement for the Mont Cenis Tunnel. He observes that it is a well-known fact that the readiness with which limestone falls to powder when slaked after burning depends upon its composition. A rich lime will fall to powder at once; a limestone containing 8 to 12 per cent. of clay will take a day or two before it crumbles; another with 12 to 22 per cent. of argillaceous matter will take four to six days; whilst a limestone with 28 to 34 per cent. will not fall to powder, but requires grinding or pounding. Limestones containing over 34 per cent. of argillaceous matters are not pulverulent, and are used for puozzalano.

Generally, the different beds of stone in a quarry differ in chemical composition and hydraulic properties, and so require different treatment. Besides this, the same bed oftentimes is not homogeneous in quality throughout. Hence arise differences in the cement, as regards quickness of setting and hardness. By M. Judycki's method these differences are said to be eliminated.

The stone can be worked in any part of the quarry, and is burned in ordinary kilns. After burning, it is picked over, to separate the burned from the unburned fragments. The latter, of course, are burned over again. The former are put aside, and slaked by carefully sprinkling them with water, and are then left for eight or ten days to crumble. The crumbled mass is next riddled through a screen, which only allows particles small enough for cement to pass through. The fragments retained by the screen are then put back in the kiln and burned a second time, to get rid of the imperfect hydrates formed during slaking.

This second burning is a delicate operation, and is best performed in the following manner:—

Some fire-bricks are laid upon the fire-bars of the kiln, and covered over with a sufficient depth of fine coal without dust. The fragments of limestone to be re-burned are then built up round the sides of the kiln, so as to form vertical flues, 4 ft. from centre to centre, each flue having a horizontal section 10 in. square. The interior of the flues and the space between them are filled up, as they rise, with fine coal without dust, and at every 18 in. in height a layer of fine coal is spread over all. When the kiln is thus filled, it is lighted, and left to burnt out. After re-burning, the lime is further comminuted by pounding. As examples of the results obtained, it is stated that,—

A lime containing 10 to 16 per cent. argillaceous matter when treated as above, yielded 10 to 25 per cent. of lime.

A lime containing 16 to 22 per cent. argillaceous matter, when treated as above, yielded 25 to 50 per cent. of lime.

The expenditure of fuel,—anthracite from St. Michael, giving 40 per cent. of ash,—was 200 kilogs. (3 cwt.) for each ton of lime produced at the *first* burning. The fuel used for the *second* burning was siftings from the first, but without dust.

It is claimed for the method that with a judicious apportionment of the time allowed for the lime to fall to powder after slaking, and with care and attention to the temperature of the kiln in the second burning, it gives a superior description of hydraulic cement of perfectly uniform quality.

New Reading Room, Great Corby.—On the 10th inst. the memorial-stone of a new reading-room for the village of Great Corby was laid. Mr. Howard, of Corby, kindly presented a site and all the timber necessary, as well as the services of a joiner from Corby. A design of a suitable character was drawn by Mr. Stewart, architect, Carlisle, and a contract for the erection of the building was entered into with Mr. Thomas Ormiston, builder, of Wetheral Plain,—the estimated cost being 200*l*.

THREATENED RISE OF WAGES IN THE METROPOLITAN BUILDING TRADE.

The annual meeting of the Associated Master Builders of London was held on Tuesday last, and after the transaction of formal business, a memorial of the operative masons of London was read, asking for a rise in wages, to take place in July next, and a reduction in the hours of labour from 52½ hours to 50 hours per week. The latter request was grounded on the fact that the railway companies had taken off many of the workmen's trains, and so prevented the men reaching their work so early as six a.m. In regard to this, the masters were generally of opinion that there would be no objection on their part to the work beginning at 6·30 a.m. and leaving off at 5 30 p.m.; but they most strongly objected to any reduction in the present hours of work, as their establishment-expenses of shops, &c., bore already a very heavy proportion to the amount of work done in the short time of 52½ hours per week.

In regard to the suggested rise of wages, the masters were unanimously of opinion that in the present state of trade a rise of wages was out of the question. The present wages amount to nearly 2*l.* a week, which exceeds the wages of engineers and other skilled trades. Building work has now become so costly that many builders during the last year have been compelled to close their works.

Other questions of importance to the trade were discussed, and referred to a committee.

THE KING'S-CROSS THEATRE IN THE AUCTION MARKET.

On Tuesday, the King's-cross theatre, situated in Liverpool-street, Euston-road, was offered for sale by auction, at the Mart, Tokenhouse-yard, by Messrs. Lumley. It is held on lease for a term of twenty-seven years unexpired, at a ground-rent of nine guineas per annum. It was described as a handsome and comfortable bijou theatre, situated in a very populous and lively locality, without any competitive place of amusement near. In submitting the property the auctioneer stated that a considerable income was derived from letting it to amateurs for private theatricals, but it was suggested that the conduct of the place as a public theatre, in a systematic and popular way, would yield a much more lucrative result. He added that, as an additional source of income, 52*l.* per annum were regularly received for Sunday services. He estimated its present annual value at 350*l.* at the least, with a prospect of great improvement. The first bid made was 1,000*l.*, and ultimately 1,350*l.* were offered, and there being no further advance, the auctioneer said he could not sell at that price, but that the reserve was very low. On the withdrawal of the property, it was stated in the room that 2,000*l.* was the reserve, and that the theatre would in all probability be purchased at something like that sum.

ROYAL ACADEMY.

The following is a list of the admissions to the Architectural School this year: Mr. Phené Spiers, master:—

As Students of Lower School:—H. Bradfield, H. W. Borrows, H. B. Cullerne, A. Frampton, W. S. Fraser, A. J. Gale, F. Hemings, J. F. Hennessy, A. S. F. Kirby, R. J. Lovell, W. Millard, R. J. Morris, H. A. Pelly, G. H. Prynne, J. Robbins, G. Vigers.

As Probationers: — J. M. Brooks, Max. Clarke, E. L. Drew, S. W. Grant, P. P. Green, A. Gillespie, W. G. B. Lewis, C. Mariner, W. Murray, W. H. Peek, H. O. Pinchin, G. C. Richardson, G. H. Shackle, E. C. Shearman, H. W. Stock.

Memorial of the late Lord Lyttelton.—A few months since it was resolved, at a meeting held in Worcester, to raise a public subscription for setting on foot a memorial of the late Lord Lyttelton. The committee appointed to carry out the resolutions of the meeting determined to place a monument in the cathedral to the memory of the late nobleman. The subscriptions raised amounted to 1,684*l.*, and Mr. Brock and Mr. Forsyth, the sculptors, were invited to send in models for the proposed monument. Within the last few days these gentlemen have submitted their models to the committee, and the work has been entrusted to Mr. Forsyth. The monument will represent a recumbent figure.

THE NEW TOWN-HALL AT MANCHESTER.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting held on Monday last, the 19th inst., Mr. Charles Barry, president, in the chair, the following new members were balloted for and duly elected, viz.:—As Fellows—Mr. A. R. Stenning, of Fenchurch-street, and Mr. J. T. Wimperis, of Sackville-street. As Associate—Mr. James Fairley, of Edinburgh.

Mr. Eastlake, the secretary, read a letter from General Knollys, on behalf of H.R.H. the Prince of Wales, expressing the hope that the President of the Institute for the time being would allow his name to be added to the list of British Commissioners for the Paris Exhibition of 1878.

The President said he had complied with this request, and attended the first meeting of the Commissioners on the 17th inst. The Prince of Wales had arranged for the division of the Commissioners into various committees, and had thought fit to include in the *personnel* of the Committee on Fine Arts the name of the President of the Institute.

Mr. Hansard suggested to the Hon. Secretary for Foreign Correspondence that it would be desirable if he could obtain some description from the foreign members of the Institute of the interesting monument recently found at Palestrina, and described in a letter from a special correspondent of the *Times* appearing in that paper on the 17th inst. It was believed to be the monument of some sovereign or great hero who fell fighting in battle some six or seven centuries B.C. He suggested that if Mr. Cockerell would communicate with Signor Vespignani or Signor Rosa one of them would be able to furnish an architectural description of the monument.

Mr. Cockerell said he would write at once to Signor Rosa on the subject.

The drawings and sketches submitted by candidates for the Pugin Travelling Studentship for 1877 were exhibited, and it was announced by Mr. Eastlake that the Council had awarded the studentship to Mr. W. Talbot Brown, and a medal of merit to Mr. Geo. W. Brown; whilst the drawings of Mr. Sidney Vacher and Mr. W. H. Wood received "honourable mention." Nine candidates submitted drawings, and the Council had great pleasure in reporting that the standard of excellence had been fully maintained by the competitors.

Mr. A. Waterhouse then read a paper descriptive of the new Town-hall at Manchester, of which, as most of our readers will know, he is the architect. He prefaced his account of the building by referring to the circumstances which led to its erection. In the year 1825 Goodwin erected its old town-hall, at a cost of about 40,000*l.*, for the Police Commissioners, Manchester having then no corporation, and, for the size of the town, with its 120,000 inhabitants, and the comparatively light duties of the Commissioners, the accommodation was, no doubt, on sufficiently ample a scale. Since its incorporation, however, some forty years ago, the municipal importance of Manchester has enormously increased, the Town Council having undertaken almost every department of public work within the scope of local government, such as the water-supply, the gasworks, city gaol and police courts, markets, cemeteries, charitable trusts, public parks, and free libraries. The municipal work of the town having thus far outgrown the capacity of the old building, the Corporation began seriously to consider, about eleven years ago, the question of the erection of a new town-hall. Different sites were canvassed, some considering that the new building should stand upon the highest land of the city, near the Infirmary, while others preferred a newly-formed square, on what was partly the property of the Corporation, a little lower down, and more to the west, but still on the ridge separating the Irwell from the Medlock. This open space, graced by Worthington's beautiful memorial to the Prince Consort, has taken the name of Albert-square. The advocates for the town's yard or Albert-square site ultimately gained the day; but then it was discovered to be triangular, whereupon, on this ground, a crusade was preached against it. It was declared that no architect could put as many rooms upon a triangular site as upon a square one; and a real objection was urged that it was impossible to get a good view, from any point, of two sides of a triangular building. Many, therefore, wished to square the site, in the direction of Dickinson-street, and to improve its approaches and surroundings, even at the cost of an extra 100,000*l.*, and though Edward Walters, the great architectural authority in the city, had declared that a good building could be erected on the triangle. Meanwhile, the Corporation had determined upon having a competition for the design for their Town-hall, or rather two competitions, one being preliminary to the other. In the first competition the drawings were limited to three elevations and two plans, and in July, 1867, 136 designs were submitted, out of which, guided by Mr. George Godwin, the Corporation selected ten, the authors of which they invited to compete a second time. It was subsequently found that four of the ten designs selected were the works of two architects, so that the number of competitors for the second and final competition was reduced to eight. These eight had their drawings immediately returned to them, in order that they might at once proceed with their developed designs, and meanwhile such of the 126 unselected designs as their authors chose to leave for the purpose were publicly exhibited, and great was the outcry at the removal of the successful ten. On the 14th of February of the year following (1868), the drawings illustrating the matured designs of the successful eight were sent in, when it was found that each competitor had submitted about twenty drawings. The general geometrical drawings, thirteen in number, were to 1-16th scale, according to instructions; the rest were either details of portions of the work to an enlarged scale, or perspective views. Professor Donaldson and Mr. Street were invited by the Corporation to advise them in the selection of a design, and on the 3rd of March they furnished a report in which they placed the various designs in order of merit under various heads, stating that in their opinion the design of Messrs. Speakman and Charlesworth was first under the head of excellence of elevation; "Speramdum" (Mr. J. O. Scott) second; "True to the line" (Mr. Worthington) third; and "St. Valentine" (Mr. Waterhouse) only fourth. In other matters, however, such as general arrangement and convenience; simplicity of plan and facilities of access; light, ventilation, cost, &c., they thought fit to give Mr. Waterhouse the first place, and so recommended his design for adoption, coupling with their recommendation, however, certain suggestions for the improvement of the elevations: as that the main entrance required better apertures, more light, and greater dignity; the clock tower and angles of the front some modification and improvement. The referees went on to say:—

"We regret very much that the interior courts of this building (as indeed those of almost all the designs) have not been more carefully designed in regard to their appearance. They will be seen by most visitors to the building, as the whole of the corridors open upon them, and as they are all as spacious and open as could be contrived on the site, it seems a fatal mistake to leave them entirely unadorned."

On this recommendation a warm controversy arose between Messrs. Speakman and Charlesworth's supporters and those of Mr. Waterhouse, it being contended by the former that their favourites' design took the first place as a work of art, and had not been subjected to any criticism on the part of the referees; that, therefore, the Council ought to set aside the recommendation of Messrs. Donaldson and Street, and give Messrs. Speakman and Charlesworth the commission; whereupon the Town Council demanded a further report from the referees, which (though it has never been published) was understood to imply that they did not, when writing their first report, consider it necessary to criticise what they were not going to recommend for adoption. The result was that Mr. Waterhouse was appointed the architect. He was the more particular in giving the history of this affair, because, as would be seen by examining his competition drawings with the working drawings, he was under obligations to the referees, not only for the way in which they pointed out defects which, perhaps, were too patent to have escaped even their author in working out the details of his design, but for what they remarked with reference to the internal courts. The fact was, the sum at disposal was too small to allow of anything but a bare treatment of these courts. Encouraged, however, by the report of the referees, the sub-committee for erecting the building had allowed Mr. Waterhouse to finish them with as much care and elaboration as the rest of the exterior of the building. At this time also, owing to the unsuccessful competitors each receiving 300*l.*, and their designs

becoming the property of the Corporation (though immediately afterwards they were returned to their owners) something was said about Mr. Waterhouse hiding the bare places of his design by splendours borrowed from his fellow-competitors. This one or two of the Council wished him to do, and considered that it would have been quite fair; but the friends of the former were justly indignant at the idea of such massacre and dissection, both parties being oblivious of the fact that it would take a much cleverer man than "St. Valentine" to have successfully engrafted on to his own stock any of the choicer flowers of Worthington or Charlesworth. The foundation-stone was laid by Mr. Robert Neill, the Mayor, on the 26th of October, 1868; on the 23rd of December of the same year, the basement-story was contracted for by Messrs. Clay & Sons, the excavations having been previously made. On the 18th of October, 1870, the contract for the superstructure was let to Messrs. Geo. Smith & Co., and was carried out by them with great spirit and energy. On the 6th of October, 1873, Messrs. Clay & Sons took the third contract, which comprised the completion of the towers, and the fittings and fixtures. On the 4th of December, 1875, the Chairman of the Building Committee fixed the top stone of the tower, and on the 4th of January, 1876, the gilt ball above the stone was fixed by the Mayor. On the 10th of July, 1875, the Water Department took possession of its rooms, and from that time to the present one department after another has taken up its quarters in the building, the Council meeting there for the first time on the first Wednesday of this present month,—within a few days of nine years after the competition drawings were sent in. There now only remain the great hall and the entertainment rooms to be completed. The building stands on an area of about 8,648 square yards. Each principal front, of which there are three, is between 300 ft. and 400 ft. in length. That looking to the north-west faces Albert-square, the south-west front is towards Lloyd-street, and the north-east front is towards Princess-street, the building coming nearly to a point at its southern extremity in Cooper-street. The ground-floor is raised a few steps from the street, thereby gaining a cartway from Lloyd-street into the three courtyards on the basement level. Most of the business-rooms look towards the street, the corridors and staircases being lighted from the internal courts. The public hall is placed in the centre of the building. It is approached by the public from Albert-square by the grand staircase, through the hall on the main floor, which forms a sort of ante-room to it; by entrances on either side of the orchestra, and by two lateral doors in the centre of each side communicating directly with the Lloyd and Princess-street corridors by covered bridges thrown across the internal courts, which bridges formed no portion of the original design. The reception-rooms, which are on the same level as the hall, face Albert-square, the large committee-room and the council-chamber being placed in a line with them, so as to make a suite of entertaining-rooms 300 ft. in length, occupying the whole of the principal front of the main floor. For the warming of the building three hot-water boilers (one always being kept as reserve) are placed in a large sub-basement. The smoke from the furnaces passes through two wrought-iron tubes placed within ventilating shafts, with an intervening air-space for the extraction of vitiated air. From the boilers hot-water pipes traverse the main rooms and corridors in channels below the floors, everywhere on the window side, coils being placed in all convenient and desirable positions. Into the two central ventilation shafts referred to, the vitiated air of the public hall is conducted through the space above the ceiling, from which there are connecting channels. The same shafts ventilate the corridors also, while separate extraction flues are carried up in the chimney-shafts from all the principal rooms. Fresh air is admitted behind the hot-water pipes and coils, brought in through perforations under the window-cills; other ducts for fresh air discharge under the coils at the bottom of the wells of the circular staircases, for the supply of warmed fresh air to the corridors, while over the doors of the rooms flapped or louvred ventilators, opening and closing at pleasure, admit fresh air to the rooms from the corridors. The plan has been so arranged, with its continuous corridors, as to allow of the redistribution of the rooms among the different departments without the necessity of much, if any, structural change. The building contains about 6,000,000 cubic feet, and is made fireproof so far as seemed practicable. The floors are of the Dennett arch, and the wrought-iron girders are encased in plaster, while from the neighbourhood of the staircases all inflammable material is removed. The pavement of the corridors is of marble mosaic, on groined Dennett arches, and the roof is divided into fireproof compartments. As to materials, the building is of brick, cased with stone. The brickwork is set with mortar, made from Warmsworth lime (slightly hydraulic), there being a slight admixture of ashes with the sand. The mortar for the plastering, on the other hand, was selenitic. The foundations of the towers, at any rate, go down through the hard clay to the solid red sandstone which underlies all Manchester. After taking considerable trouble to investigate the matter, the Spinkwell, a coal-measure stone, from Messrs. Wood's quarry, near Bradford, Yorkshire, was selected as the best for the exterior of the building, it having been found to stand remarkably well in the peculiar climate of Manchester. The stone is a light brown in colour, very free from lamination. In order to get it to bond in a satisfactory manner with the brickwork behind it, every horizontal bed coincides with a joint in the brickwork, the ashlar being of alternate courses of 3 in., and either 6 in. or 9 in. in height, the 3 in. courses tailing 4½ in. further into the wall than the deeper courses, which are 7 in. on bed. Internally, the "white rock," another coal-measure stone, has been largely used. After going very fully into detail as to the construction and arrangement of the buildings, Mr. Waterhouse concluded as follows:—"It now only remains for me to mention a few of those who have been associated with me in this work, to whom my thanks are due for the very important aid they have given me. First come my pupils and assistants, especially Mr. Isaac Steane, now of Coventry, and the Rev. Ernest Geldart, who has exchanged architecture for the Church, to the benefit of the latter, I doubt not, though I regret that our profession should lose, even for the Church's gain. Then I must mention my very zealous clerk of works, Mr. Osborne, and the general contractors, whom I have already alluded to,—Messrs. Hart, Son, Peard, & Co., who have executed almost all the wrought-iron work and gasfittings; Mr. Burke, who has laid the marble pavements; Mr. Odell, who did the ornamental glazing; the decorative artists [Mr. Heaton and others]; Messrs. Farmer & Brindley, to whose care has been entrusted the carving and decorative statuary; Messrs. Haden & Son, who have put in the elaborate system of warming apparatus; and, lastly, though not least, the various gentlemen in connexion with the corporation of Manchester who have so cordially and efficiently aided me in a great variety of ways. To the Mayor, the Town Clerk, and various members of the Building Committee I owe my special thanks for the confidence reposed in me, and the support on all occasions given me during the nine years that the building has been in progress."*

In the discussion which followed,

Mr. Powell, M.P., said he hoped he might be permitted for one moment to congratulate Mr. Waterhouse upon the distinguished success which he had achieved. It had fallen to the lot of Mr. Waterhouse to erect three great buildings in Manchester, viz., the Assize Courts, Owen's College, and, lastly, the Town-hall. Each of these buildings was erected in what was, in common parlance, described as the Gothic style, and as each of the two first-named buildings was satisfactory to those who used it, he had no doubt that the mayor and corporation of Manchester would be well pleased with their new municipal buildings. He felt sure that all who were friends to Gothic architecture would heartily congratulate Mr. Waterhouse on the triumph he had attained, for it could no longer be said that Gothic architecture was a mere amusement of the rich. Mr. Waterhouse had proved it to be eminently adapted to the requirements of public buildings, and the influence which his three great buildings in Manchester were exercising on the street architecture of the city was beginning to be apparent.

Mr. Street, R.A., said it was nine years ago almost to a day since he and Professor Donaldson were asked to adjudicate upon the designs submitted in the second competition. As adjudicators, they represented what might be fairly called slightly-divergent views in architecture, which was, perhaps, an advantage in the examination of the designs; at any rate, it would be admitted that the result fully justified the recommendation which they made to the Town Council. Mr. Waterhouse had mentioned that their second report to the Council was not published. It was not published because in the exercise of the duty committed to their charge by the Council they found it necessary to speak plainly, and to say things which, while they could be amply justified by an appeal to facts, it was not thought advisable to publish. Mr. Waterhouse had very modestly referred to the fact that they did not put his design first in point of architectural design; but they felt that, on the whole, his design was so very much better in all the requirements of a good design, that they had no hesitation whatever in recommending it for adoption. The Town Council unanimously affirmed their report, and appointed Mr. Waterhouse as architect for the carrying-out of the work. This was a very satisfactory result of a competition, the Town Council deferring entirely to the opinion of the referees. If all competitions were managed in this manner, competing architects would have very little to complain of. As to the building generally he was glad that the Manchester Corporation had been so generous as to give Mr. Waterhouse the means of elaborating his design in certain particulars, especially as to the large internal courtyards. It was however, only too common to leave large internal areas of public buildings completely bare. In the Manchester Town-hall the courtyards and the bridges crossing them were particularly interesting and picturesque. There was a great deal of ingenuity about the planning of the staircases. Indeed, the building generally was about as scientifically and well planned as it was possible to be. Architects owed [Mr. Waterhouse a great deal for showing them that it was possible to get a good plan on such an awkward site.

Mr. Mocatta said he had not had the good fortune to see the building, but from all he heard of it he judged it to be one of the most successful buildings which have been erected in England of late years. How was it that such a result had been attained? Simply by adopting the advice of efficient professional referees as to the merits of the designs. Was it to be supposed that people who really knew nothing of architecture were competent to decide as to the merits of 136 different designs? Not for a moment. In every such case men of the first reputation should be called in, as in this case,—men who were accustomed to see plans, who knew the difficulties connected with construction, and who could appreciate the inconveniences of site. Although he was no longer engaged in the work of the profession, he called upon the Institute to take such steps as would ensure equally satisfactory results in competitions generally.

Professor Donaldson said that as the colleague of Mr. Street in the examination of the designs in the second competition, he could say that they devoted several days to the work, and cordially concurred in agreeing to recommend for adoption the very excellent Gothic, or rather Mediæval, design which had been carried out. He agreed with all Mr. Street had said, and would add that several of the competitors whose designs were not selected had shown a great deal of ingenuity in planning. It was a great satisfaction to the referees that the design which they had selected had been so satisfactorily realised. The new Town-hall at Manchester was a building which reflected credit not only upon the city in which it stood, but upon England and English architects. He begged to propose a vote of thanks to Mr. Waterhouse for the elaborate description which he had given of the building.

Mr. T. H. Wyatt said he begged to second the vote of thanks, and to bear testimony to the extreme excellence of the building in every way.

The President said that before putting the vote of thanks to the meeting, he could not help endorsing all that had been said in praise of the Manchester Town-hall, which was one of Mr. Waterhouse's numerous great works. He had had the happiness of seeing the building quite recently, and the simplicity of arrangement which the plan exhibited was apparent. The unity of effect both in plan and elevation which distinguished all Mr. Waterhouse's works was strikingly exhibited in the Manchester Town-

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* We gave a view of the Manchester Town-hall, with plan, soon after the decision, also one in last year's volume of the *Builder*, p. 952; and articles describing in detail the construction and decoration have appeared in our pages as follows:—Vol. xxxii. (1874), pp. 339, 859; vol. xxxiii. (1875), p. 898; vol. xxxiv. (1876), p. 941.

Hall. At the same time, there was great variety in the detail. The courtyards and bridges were most picturesque and beautiful features, and the circular staircases were peculiarly charming. They were of large dimensions, and he ventured to say that their study would be as profitable as the study of some of the Greek buildings of antiquity. The other buildings which Mr. Waterhouse had distinguished himself by in Manchester were equally worthy of admiration. In fact, much as he (the President) admired the Town-hall, he rather thought he preferred Mr. Waterhouse's first great work in Manchester,—the Assize Courts. He had heard it whispered that Mr. Waterhouse was partially indebted to the refined taste of the ladies for the design of some of the stained-glass windows; it would be interesting to know if such were the case. There was one point only upon which Mr. Waterhouse had been reticent. He had told the meeting that the building contained 6,000,000 cubic feet; could he tell them what was the cost of the building? Probably there was a reason for his reticence on that point.

Mr. C. Fowler asked whether Mr. Waterhouse, in choosing the stone for the exterior of the building, had striven to attain variety of colour on the exterior?

Mr. Edmeston asked how it was proposed to complete the decoration of the great hall? He understood from Mr. Waterhouse's description that above the dado was a series of large panels for pictures. How was it proposed to treat these panels? He was interested in the question because it happened that at his instance the Court of Common Council of the City of London had referred it to the City Architect (Mr. Horace Jones) to make a design for the decoration of Guildhall, but the matter had not yet got much further. He had been endeavouring to find some specimens of ancient Gothic Guildhall decorations.

The vote of thanks having been carried by acclamation,

Mr. Waterhouse expressed his thanks to the meeting for the kind way in which it had listened to his paper, and to the speakers for the flattering terms in which they had spoken of his buildings. He said he felt it to be a great honour that the members of the Institute should look upon his building so favourably. He was especially glad to think that the gentlemen who recommended his design for execution should think well of it now that it was completed. Professor Donaldson, however, used one expression to which he (Mr. Waterhouse) must respectfully demur. The learned professor spoke of "Mediæval" architecture as if the Manchester Town-hall were a Mediæval building. On the contrary, the architecture of the building was essentially nineteenth-century, and was fitted to the wants of the present day. With regard to the ornamental glazing, Mr. Waterhouse said he was certainly indebted to many ladies, and to his wife in particular,—but not for the glazing of the Manchester Town-hall. As to the cost of the building, he had thought about mentioning it, but there were two difficulties in the way. The first was that he did not yet know what the cost was; the second was that he did not think it fair to mention the cost of a building for the first time to anybody but one's client. When he knew what the total cost would be he would communicate it to the Corporation of Manchester, and the information would soon be diffused into other channels. He had not sought to obtain any variety of colour with the materials used for the exterior, because, although he did so in the Manchester Assize Courts, he found that within about three years after the building was finished, all traces of colour were obliterated, and therefore it seemed useless to attempt the same thing in the Town-hall. The question ashed by Mr. Edmeston was one of very great interest. The corporation of Manchester had gradually come round to the determination that they would, if they could, have some very good pictures in the building, and that they should be mural pictures,—*i.e.*, painted in fresco on the walls, and not on canvas. The great question was as to the mode to be employed for the execution of these pictures. The water-glass process used in Belgium was said to produce pictures which retained their colours remarkably well. A great prejudice seemed to exist in this country against the process of fresco, and he thought it was quite clear that the splendid pictures by Maclise in the Houses of Parliament did not lead us to expect that the method would prove a success in this country; but whether its failures were due to our artists not having had experience of the method, or whether the climate was against the process, he was unable to tell. It was quite clear, at all events, that Maclise's pictures had, to a large extent, gone in some of their parts. A plan which had been spoken of to him by Mr. Richmond, junior, and one or two others, consisted in painting on the dry plaster with colours mixed in lime,—a sort of *tempera*, in fact,—the colours, when they were dry, being coated over with wax burnt in, so that the work should be encaustic at top, and tempera below. Mr. Richmond believed that pictures so executed would be very lasting and brilliant. Should the wax ever get dirty it could be removed by spirit, and a new coat put on to preserve the picture.

The proceedings closed with the announcement that the next meeting would be held on March 5, to consider the recommendation of the Council as to the award of the Royal Gold Medal, and to receive the report of the Committee on the Improvement of the Institute.

THE HOUSEHOLD AT DIFFERENT ÈRAS.

We propose to ourselves a task which has so little of novelty in it as to include nothing more than a critical reconsideration of the Home, in successive phases of development, from the authenticated period of Grecian history to the beginning of the present century; and this endeavour we hope to accomplish in a short series of sketches or studies. We shall treat of Antiquity, at Athens; of the Christian Era, at Rome and Pompeii; of the Middle Ages, in Western Europe; of the Reformation; and of the Epoch of Louis XIV.; and we shall conclude with a chapter of deductions bearing upon the practice of the nineteenth century. Our reasons, or perhaps the excuse for re-entering upon the subject, will be perceived in some of the quotations cited from modern authors who have touched upon it; but we make no pretence of searching classical, mediæval, or later works, in the hope of detecting errors of commentators. On the contrary, we accept the information actually extant, as it has been sifted by scholars upon whom reliance can be placed; and from whose researches definite results have been obtained. We merely desire to put together facts, relating to household arrangement and "art at home," in a manner consonant with our special knowledge; and in this undertaking we invite the co-operation of our readers, prepared as we are to sustain discussion upon possible points of dispute or misconception,—provided only that correspondents will confront us with facts, or at least with careful inferences drawn from historical data.

ANTIQUITY.

Montesquieu said with Pliny: "C'est à Athènes que vous allez, respectez les dieux."

The dignity of history is nowhere more severely represented than in the records of ancient architecture. They form a catalogue of varied splendour and magnificence: of temples and palaces, of tombs and trophies. The remains of theatres and porticos tell of huge buildings constructed for the use and amusement of thousands whose homes were obviously situated in the immediate vicinity. The events of which Athens was the seat from the battle of Marathon (B.C. 490), to the peace concluded with Philip of Macedon (B.C. 346),—the great era of Greece,—form part of the common education of Englishmen, and to them the Acropolis, the Marketplace, the shrines of gods and heroes, are as household words; but the aspect of the city, its mass of houses, and the crowds who inhabited them, are matters seldom or never admitted into an orthodox history. That they have been treated as romances is well known; and the best have come from France, notably the "Travels of Anacharsis," written at the end of the last century, and the "Habitations of Man in all Ages," lately produced by the imaginative genius of a living architect. The pages of the former at least are never without confirmatory references to the ancient authors; and, though they are full of mere surmises, interspersed only at intervals with undoubted facts, they are not absolutely precarious vehicles of information. The pages of the latter, which form a novel of exciting interest, are, on the contrary, dangerously erratic; for that M. Viollet-le-Duc,—at least in the matter of Grecian houses,—has drawn upon his imagination for his facts requires not a moment's hesitation to affirm. The more profound Mr. Fergusson, in his notice of ancient domestic architecture, is contented with the assurance "that, in this as in everything else, the Greeks displayed the same exquisite taste." Happily, German scholars have neither treated the subject hastily, like M. Viollet-le-Duc, nor summarily dismissed it, like Mr. Fergusson; for with Schneider's "Vitruvius," with Böckh's "Public Economy of Athens," and with Becker's more recent learning in "Charicles," there are abundant materials for studying the dwelling-houses, both of the time of Pericles and of that later period when Demosthenes regretted the decay of public magnificence in the increasing abuse of private ostentation.

The references made by philosophers, comedians, and others to the houses of their day are numerous, and necessarily conflicting. Certain taxes imposed by Hippias upon house-doors opening outwards; external stairs or ladders; balconies and projecting stories, afford information concerning the state of the streets and houses at the close of the sixth and beginning of the fifth century B.C. It is known that Themistocles and Aristides succeeded in preventing the increase of building obstructions to the public thoroughfares; but the plan of Hippias and Iphicrates for breaking down everything that projected into the streets was not carried into execution. These were tortuous and narrow; there were sewers in parts, but nowhere any pavements, and even the Marketplace was not paved. In front of each house, on what would be now the pathway for pedestrians, was fixed a small obelisk of stone, carved at the top in the shape of a male head; and a laurel-bush was often planted next to it. The houses were squeezed together, and some were divided by a single wall of slight strength and thickness. The house-tops were flat, and in the form of terraces; at festivals the processions were witnessed from them. The house-fronts were of low and mean elevation; and though doubtless generally of two stories, a ground and an upper floor, the larger part of the building at the back was of one story only. In the "enchanted palaces" of Homer, the women's apartments appear to have been placed on an upper, and those of the men on a lower, story; but in the time of Aristophanes it is certain that the men occupied the front, and the women the back, of the house. With some exceptions, both dwelt on the same floor. The rough walls were at first whitewashed only; and when the fashion of plastering and painting them began, Xenophon, as an old conservative, did not approve of it. Towards the middle of the fourth century B.C. Demosthenes, in an often-quoted oration, cried:—"In ancient times everything that belonged to the State was costly and splendid, and no individual distinguished himself from the multitude; and the proof of it is that if any one of you know the houses of Themistocles and Miltiades, and the famous men of that time, he will see that they were not more magnificent than those of other people." Yet a long time after these words were spoken, about 300 B.C., Dicæarchus, whom Cicero called "an eminent and eloquent Peripatetic," and who was a disciple of Aristotle, described the city as full of houses small and mean in appearance, with crooked streets. His words are,—"A stranger might doubt upon a sudden view whether this was really the city of Athens,"—that same Athens where had been built the extravagant houses which Demosthenes condemned.

The only technical description extant of an Athenian house is in the sixth book of Vitruvius. It is an incomplete and a disjointed narrative, composed from ancient writings, and not improbably from the verbal explanations of Greeks employed in Rome. Vitruvius never visited Athens; and he wrote his book more than four hundred years after the building of the Parthenon. The Roman architect's words have been treated by commentators and would-be restorers in a variety of ways. Some have discarded the only absolute fact we possess, the details of which are partly supported by earlier native writers; others have blindly adhered to points of arrangement and nomenclature which Vitruvius has mentioned. But Schneider, in his "Commentaries," and Becker in his "Excursus" on the Grecian house, have explained many of the perplexing and contradictory statements of the Latin author, who has described "The arrangement and parts of Grecian houses," thus:—

"The Greeks, using no *atrium*, and not building as we do, make a passage of no great breadth from the entrance-gate, on one side whereof the stable is placed, and on the other the porter's rooms, which immediately adjoin the inner gates. The space between the two gates is by the Greeks called *thyroreion*. From this you enter into the *peristylium*, which has a portico on three sides. On that side *facing the south are two antæ*, at a considerable distance apart, which carry beams; and the recess behind them is equal to one-third less than their distance from each other. This part is called *prostas* by some, and by others *parastas*. Interior to this the great *œcus* is placed, in which the mistress of the family sits with the spinsters. On the right and left of the *prostas* are the bedchambers, of which one is called the *thalamus*, the other the *antithalamus*. Round the porticos are the *triclinia* for common use, other bedchambers, and the *cellæ familiaricæ*. This part of the building receives the name of *Gynæconitis*."

Now, the term "Gynæconitis" means the women's part of the house, and Vitruvius has applied it to a building, the different divisions of which constitute an entire dwelling-house,—what in the fifth century B.C. was the ordinary Athenian residence; for Becker, with a host of quotations to support him, says,—"In early times, when a private citizen passed most of his time amid the grandeur of the public edifices, his own abode was simple enough, and certainly did not possess two peristyles. . . . . Beyond the peristyle, and separated from it by a door, was the 'Gynæconitis.'" This is Becker's mature opinion, in spite of what follows in the narrative of Vitruvius, which, as will be perceived, refers to detached houses, separated from the street by an entrance-yard enclosed by a wall. The first part treats of one house; but the remainder is a description of houses, and is in the plural number, thus:—"Adjoining this [the *Gynæconitis*] is a larger house, with a more spacious *peristylium*, in which there are four porticos equal in height, though that towards the south may have higher columns. *If a peristylium have one portico higher than the rest it is called a Rhodian portico.* These houses have magnificent vestibules, elegant gates, and the portions of the *peristylia* are decorated with stucco and plastering, and with inlaid ceilings. In the porticos to the north, the *cyziceni*, *triclinia*, and *pinacothecæ*, are situated. The libraries are on the east side, the *exedræ* on the west, and to the south are square *œci*, of such ample dimensions that there is room therein for four *triclinia* and the attendants on them, as well as for the games. These *œci* are used only for entertainments given to men; for *it is not the practice with women to recline on a couch at dinner.* The *peristylium* and this part of the house is called *Andronitis*, because the men employ themselves therein without interruption from the women. On the right and left, moreover, are small sets of apartments, each having its own door, *triclinium*, and bedchamber, so that on the arrival of guests *they need not enter the peristylium*, but are received in rooms [*hospitalia*] appropriated to their occupation."

All this is perplexing and contradictory. The fact is Vitruvius has mixed up houses, built in a row and close together, with detached houses; and he has probably confounded the country residences, referred to by Xenophon, with the town-houses to which Thucydides, Lysias, and others have alluded. If women did not recline upon divans, while dining, why give them *triclinia* in the private part of the house reserved for them? The only way to arrive at any possible solution of the difficulty is by supposing,—and the supposition is assisted by good evidence extant of the time,—that, in the fifth century B.C., a little before and a little after, the men inhabited the parts of the house lighted and entered from the peristyle, and the women were restricted to a building at the back; and that when the men were away, the former used the peristyle as if it were their own. At a later period, this was evidently found inconvenient; for the women had thereby too much facility of freedom and consequent intrigue. A separate house was ultimately devoted to the uses of the men and their guests, and the old residence was handed over for the exclusive occupation of the women. The confusion of words may also have deceived Vitruvius. The *œcus*, which with the Romans implied a reception or sitting room, was, among the earlier Greeks, a house or hut; and Vitruvius, at the close of his chapter on Grecian houses, has noted other differences in the technical names for apartments and passages in Athens and Rome. There is little to show that, even as late as Demosthenes, the mistress of a household had a separate establishment of male slaves to wait upon her. She may have had a few female attendants, and her daughters probably helped to spin and in other ways work; but that these women had separate bedrooms, or even bed-rooms at all, is most unlikely.

The first part of the description of Vitruvius would be perfectly logical and explicit were it not for the assertion he has added that his words refer to the women's apartments. Of course it is useless now to say that the text is corrupt, or that a part has been omitted, or that distinct passages have been jumbled together. We must accept our Roman brother's instructions, and work them out, so as not to be at variance with history and ancient custom or with what we know of contemporary facts. We will construct a plan from that part of his narrative applicable to houses such as those to which writers of the fifth century B.C. have alluded. Now the Acropolis lies lengthways east and west, and the entrance colonnades face the west; and therefore if fig. 1 be a house situated on the slope of the hill, somewhere between the Odeum of Pericles, which was on the south-west side, and the Pnyx on the south-west, the *prostas*, D, will face the south; and the hill on which is

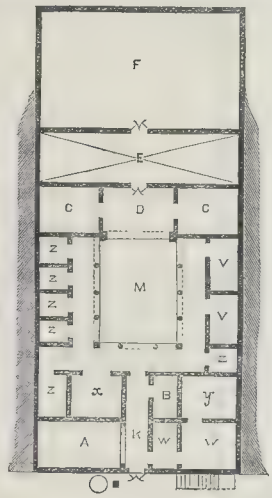
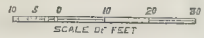


FIG 1.



now the ruined Monument to Philopappus may be said to stare down at the house-door of our supposed dwelling. The winter sun would reach the part D through the open peristyle M. The *thalamus* and the *antithalamus*, C,C, are in the men's part;* and the women's part of the house, separated by doors, is at E. An open yard, F, to which the women had access, is surrounded by a dead wall as high as the building itself. A is the stable; B, the porter's cell; the *cellæ familiaricæ* are Z,Z,Z,Z,Z,Z; the *triclinium* or master's dining-room is at X; the "other bed-rooms" are V,V; the entaance-passage is at K; the guests' rooms and W,W,Y, to which it is possible to enter without going into the peristyle. The herma or obelisk, with the laurel-bush, are close to the street door, at a little distance from the wall: for it is known that thieves and other malefactors often escaped pursuers by concealing themselves behind the hermæ. Throughout the whole building there are only three doors, for the other openings are doorways only. The doors were folding or bi-valve, and these are shown between the street and the entrance-passage, K; between the *prostas* D and the women's apartment, E; between E and the enclosed yard F. There were probably small windows near the ceiling of the rooms in the front part of the house; and also similar holes in the walls of the women's apartment, E. A passage in the "Thesmophoria" proves that there were windows in the houses, and it has been even thought that the women could look through them into the street. The Chorus of Women, who had been previously compared to a plague, are made to sing:—

> "If a plague peeps out of the window,
> Up go the eyes of the men,
> If she bides, then they all keep staring,
> Until she looks out again."

But, any one who has seen, in India, a woman's eye peeping through the vent-hole of a covered wagon, will understand what was meant by Aristophanes. It is utterly impossible that the mistress of a household or her daughters were permitted, even if so inclined, to stare through a window into the street. From the hilly character of the site upon which Athens was built, it is possible that people on the housetops sometimes commanded the narrow openings in the women's apartment of adjoining or neighbouring houses; and a stealthy view was, doubtless, often obtained by the women, from their place of seclusion, of the master's friends, standing or reclining under the porticos or within the rooms of the peristyle.

The primitive house of the ancients may be studied in India. The Indian hut is constructed with a framework of bamboo, and the walls are composed of unburnt clay. There are no windows, and both light and ventilation are obtained from the door-openings. We shall, doubtless, be told that the climate there is very different from that of Greece; but it must be remembered that the majority of Greek temples, and all the early ones, were lighted simply from the doors. Fig. 2 is a diagram of an Indian house, as it may be seen in different parts of Bengal and elsewhere. A is the man's apartment; C, that of the women; and though the latter are obliged, in pursuit of their daily occupations, to pass freely through the house, and into the verandah, B, the arrival of strangers drives them to their proper seclusion, C. Such houses in some of the country districts are thatched, but in the towns, and particularly near Calcutta, they are flat-roofed,—and as a rule have no upper story. The principle of a primitive dwelling is an enclosure of four walls, with an opening at one end. Around the inside of that enclosure the master ultimately contrived a shelter for himself and his sons, his women and cattle, and the stranger within his gates. The early Grecian dwelling is the refinement of that system of habitation. It may be reasonably affirmed that in the fifth century B.C. there were few, if any, houses in Athens as good as that we have composed from the description of Vitruvius. Such a house as that shown in fig. 1 was partly put together with timber framing. The base was sometimes of masonry, but the walls were built of unburnt bricks. The supports or columns of the peristyle were of wood, and all the beams and lintels were of the same material. The floor was of an earthy composition, much like the *aire* upon which carpenters in France draw their full-sized diagrams. The roof was of wood, and probably filled in with pounded brick and some kind of cement; and these were beaten into consistency by a flat wooden mallet, secured to the palm of the hand,—a method traditional to the natives of India and in vogue at the present day. It is not unlikely that in the summer blinds or louvre-boards were placed between the supports of the peristyle; and even the open court may have been partly covered with matting or boards. In hot climates light is heat, and the way to keep the inside of a house cool and agreeable is to barricade every opening exposed to the sun's rays.

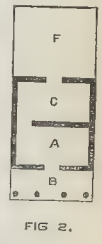


FIG 2.

That passage in Xenophon, which has puzzled even German commentators, seems perfectly clear when it is remembered that Socrates was thinking about houses of one or at most two stories in height, built round an open internal court, all the rooms of which were approached by an open colonnade running round the court. His words are: "In houses that look to the south, does not the sun in the winter shine into the porticos, while in the summer it passes over our heads and above the roofs and casts a shade? If it is well, therefore, that houses should thus be made, ought we not to build the parts towards the south higher, that the sun in winter may not be shut out, and the

* Our plan is rectangular; but the houses were mostly irregular in shape and size. The three plans are drawn to the same scale.

parts towards the north lower, that the cold winds may not fall violently on them?" The kind of portico raised higher than the others, to which Socrates alludes, has been explained by Vitruvius in the quotation we have given, and it will be seen, on reference to fig. 1, that the beams over the recess D, between the two *antæ*, might easily be placed much higher than those over the three other parts of the peristyle M, for only through the recess D could light and air reach the rooms C, C; and probably the women's apartment, E, received the greater part of its light and air from the same side. Referring to the words of Socrates, Becker says, "Hence the main front mostly faced the south, or at least the porticos on this side were built higher." We presume by "main front" he, or his translator, means that facing the street; but how could both sides of a street face the south? Indeed, the two are sometimes at variance, and the latter, who talks about the "arcades" of the peristyle, would do well to remember that until the Roman domination arcades were not built by the Greeks.

Architects in Italy and France, and afterwards in England, who have constructed plans of ancient houses from the description given by Vitruvius, have imagined palaces such as even at the present day an English prince might deem extravagant. Both Perrault and Galiani have divided the house into two peristyles, one of four porticos for the men and another of three porticos for the women. Perrault has placed the women's half next the street and the men's half at the back of the house, so that it would have been necessary to pass through precincts reserved for the use of the matron and maidens to reach the master's court and dining-rooms; and Galiani has placed the two halves side by side, giving an entrance from the street to each division. These architects have made the various parts of the house perfectly symmetrical—a set of stables on one side of the entrance, a similar set on the other. The saloons in which the women are to spin wool are adorned with rows of columns. An infinity of doors and windows, broad staircases, huge libraries and dining-rooms, fireplaces, bedrooms and boudoirs, surround the peristyles. Their columns are surmounted with Roman arches, and both in the illustrations and the commentator's notes it is assumed that nothing less magnificent than a building which might have pleased an Italian of the sixteenth century, or the Earl of Burlington in the last, could have aroused the wrath of Demosthenes or suited the taste of his contemporaries.

Newton has followed Perrault in the distribution of the different parts. Both have devised a palace of some 275 ft. frontage to the street by 350 ft. in depth; and, as no scale is given by either, these figures are purposely under-rated. The plan of a Grecian house, published in the "Travels of Anacharsis," and stated to be "after" Vitruvius, places the women's peristyle at an angle of that of the men; and the whole building is in a garden surrounded by a wall. The site would occupy about 360 ft. square, and is shown with streets of about 25 ft. wide on three sides of it. Stalls for twenty-nine horses are provided in the stable, and in a courtyard adjoining are places evidently intended for coach-houses. The *thalamus* is represented as a comfortable bedchamber with two windows looking on the garden, and it measures about 32 ft. by 25 ft. It, moreover, communicates with the "workshops," as they are called in this plan of Barbié du Bocage; and these workshops are adorned with two *antæ* and eight columns, their area being about 2,650 square feet. The period chosen for the "Travels of Anacharsis" is the middle of the fourth century before the Christian era.

Becker is a very different kind of authority; and, though he has confessed to some mistrust about his geographical references, and is undoubtedly innocent of any architectural training, his description of a Grecian house is the most valuable contribution to the study of Athenian domestic architecture that has yet been published. His plan also is a more practical, and of course a more learned, interpretation of Vitruvius than any architect has yet produced. It is printed to a reduced scale in Dr. Smith's "Greek and Roman Antiquities," and there recommended as the probable house of an Athenian gentleman. We give a *fac-simile* of Becker's plan* in fig. 3, which, in his own words, is intended to represent a large dwelling-house, such as might have been in vogue at the date of his story; and, we take this to be about the time of Demosthenes. It will be seen that the house is not a detached building, and it is entered directly from the street. The men's peristyle is in front, that of the women behind; the men's rooms are marked O, and those of the women S. The door of communication is at X. The stable is at A, and B, B, B are the porter's rooms; C, C, are the *thalamus* and *antithalamus*; D is the *prostas*; and E, E, E are the saloons for woolworking, whence a door leads into a garden. The principle of the plan is no doubt correct; it is merely the development of an early house of one peristyle into a more modern and larger one of two peristyles.

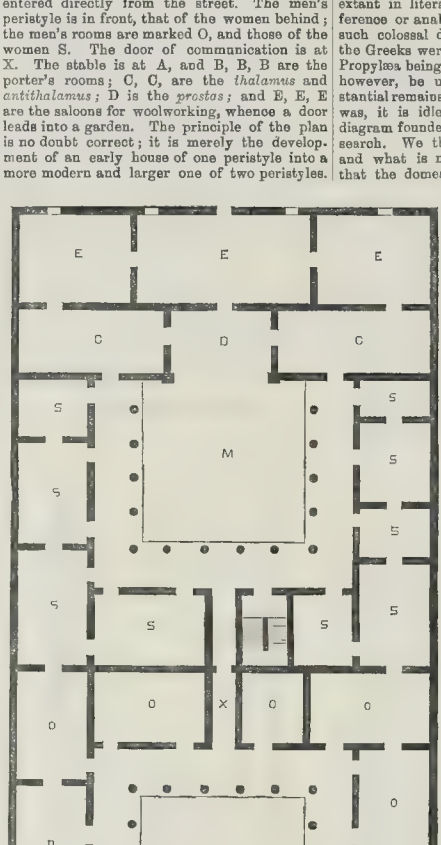


Fig. 3.

A reference to our plan (fig. 1) will serve to show how easy it would be to build round the yard F, and thus form a peristyle for the women,—a mode of enlargement and addition which doubtless did occur; but upon such hypotheses it is useless to dwell. Our criticism of Becker's plan must be confined to its proportions and the size of a house for Athens, which, in Xenophon's time, is said to have contained 10,000 houses. No scale is given; but by allowing 5 ft. (thus leaving 3 ft. for the door) for the width of his entrance-passage, K, the technical critic obtains an area of construction not much less than 100 ft. in width by a little more than 200 ft. in depth. That is about the size of the Parthenon measured upon its topmost step. By the same gauge the stable is about 40 ft. by 18 ft.; the smaller rooms, O, are about 24 ft. by 16 ft.; and the rooms, in which the matron sat with the spinsters, comprise a suite measuring some 90 ft. long by 40 ft. Nothing is extant in architecture,—and, thanks to Becker, we now know that there is nothing extant in literature,—to indicate, either by reference or analogy, the presence in Athens of such colossal dwellings. The public works of the Greeks were small,—the Parthenon and the Propylæa being comparatively colossal. It may, however, be urged that, since nothing substantial remains to prove what an Athenian house was, it is idle to attempt a refutation of a diagram founded as it is upon vast literary research. We think not; for both what is left and what is not left at Athens help to show that the domestic architecture of the Greeks never attained the proportions which Becker has given it. Let any one examine the extreme pettiness of existing remains even upon the Acropolis: the three little temples joined together and known as the Erechtheum; and the temple of "Wingless Victory," now restored with most of its original stones. Moreover, though such small and fragile works as the temple of "The Winds" and the "Choragic Monument" that once stood in the "Street of the Tripods," remain *in situ*, and are but slightly injured, not a vestige has been found of these presumed palaces, which must have been in existence 300 years B.C. Surely Dicæarchus would not have doubted that the city before him was really Athens, had he found even 1,000 double peristyled buildings as broad and as long, though of course not so lofty, as that magnificent temple dedicated to the acknowledged saviour of the city and of all its citizens.

But if Perrault, Galiani, Newton, and others are preposterous in their surmises, if the learned Becker is extravagant, M. Viollet-le-Duc is sublime in the grave oblivion of every fact concerning the Grecian household. We refer our readers to the "Habitations of Man in all Ages," and there they will find the plan of an "Athenian Merchant's" house, supposed to have been erected, we may assume, for no date is given, towards the close of the fourth century B.C. It is described as one of the finest detached houses in the city, and is situated in the second zone,—the first zone being occupied by houses built close together,—and from the great dining-room a view is obtained of the Areopagus on the left, and of the Acropolis just opposite. His plan shows a large house surrounded on three sides by streets, and on the fourth by a romantic garden. Two peristyles are provided: the one near the principal entrance is a sort of *cour de service*, containing rooms for the slaves, a private oratory, a kitchen, and a latrine. Passing from this peristyle to the other, the *Gynæconitis*, or women's part of the house, is reached; and there everything necessary for domestic life is to be found, except bedrooms. In revenge, and, mark, at the very end of the women's peristyle, is the large dining-room, in which the master entertains his guests and enjoys the licence of the symposium. Under an open portico, facing the north-west *and a street*, are the bedchambers of the women. Every detail of this plan is opposed to even ordinary research. Nothing that Barthelemi introduced into his imaginary "Travels of Anacharsis" was so monstrously fictitious as the house of Chremyle, which M. Viollet-le-Duc has seriously offered as the last contribution upon this subject to archæological science.

To support our assertion, it can only be necessary to refer to the social habits of an Athenian.

*. Becker's "Charicles." Fourth edition. Longmans. 1874.

His daily life was essentially an out-of-door one. As the sun was lighting up the entrance pediment of the Parthenon, business began in the Market-place. The later custom of rich Romans to receive visitors in the morning was not usual in Athens, although if any one wished to find a citizen at home, he had obviously to catch him at daybreak. The places of encounter for the men were numerous; at the Public Assembly, the Gymnasia, the Baths, and the Market-place. Slaves attended their masters with folding chairs and cushions, for use at the meetings or at the promenades. The rich were sometimes carried in litters and in chariots; but the use of the latter by women was deemed by Demosthenes a proof of arrogance. Xenophon, when he rode of a morning, had his horse led to the city gate, where he mounted him for a gallop across country. As a rule people walked, the men with a cane, and the women under a parasol; but the latter,—always excepting a certain class and the slaves,—seldom quitted the house. The women who sold or bought provisions in the Market-place were of the lowest kind; no married woman ever went "marketing"; nor was any married woman or any maiden of birth or respectability to be seen in the streets, even accompanied by slaves, except at special times, on their way to a temple, or at a religious festival. Most of the business of the city was done in the forenoon at the Market-place, which was a combination of colonnades surrounding open spaces; and most of the shops were wooden booths or *baraques*. Provisions of all kinds were sold upon stalls; comestibles, vegetables, and similar articles of food were sold hot. Money-changers sat at tables in the open air; the flower-girls and garland-makers squatted with their goods around them. There was a stand for cooks waiting for hire; and slaves of all kinds, some for sale and others for hire, stood at specially-appointed places. The Fish-market has been rendered famous by incidental description. Around and in the immediate vicinity were the shops of the barbers, in which men congregated to learn and enjoy the latest scandal; those of the doctors, perfumers, goldsmiths; and those of the artisans, some of which were fashionable lounges. Shops were not indiscriminately dispersed about the town; particular trades occupied particular localities, and streets were called after the kind of business transacted in them: for instance, the "Street of Sculptors" is celebrated. A bazaar in the cities of North-Western India is probably the nearest approach to a part at least of the Athenian Market-place. "Often in the Indian bazaars," says Sir Alexander Grant, in his charming essay on Xenophon, "may you see Socrates in the person of some stout Brahman, good-humouredly lounging about in loose robes and with bare legs, ready to discuss for hours with all comers any topic that may turn up."

Socrates approved the great and general objection, among the upper classes, to trade and commerce of every description. But to the Athenian his numerous slaves were sources of revenue. They worked for him in the mines, on buildings, or at his farm; he let them out on hire, and for a sum of money granted them the right to carry on business for themselves. If some of these slaves, doctors, pedagogues, architects, returned at night to the shelter of their owner's house, they probably ascended to rooms in the upper story by the external stairs. As for the household slaves, no more thought was given to lodging them than is expended at the present day upon native servants in India; they lay, coiled up in rugs in the peristyle,—between the columns, or under the curtains of a doorway. Nor were the free members of the household always provided with either bedrooms or bedsteads. They lay on the floor upon carpets and cushions covered with rugs and sheepskins. The few bedsteads, not unlike our own, were of wood or metal, covered with a kind of mattress over girths or cords. Skins often formed the "bed-clothes." In the doorways, not provided with doors, hung parti-coloured curtains. The divans upon which the men reclined, and upon which they often slept, were covered with carpeting; and cushions were laid loosely upon them. At dinner two * men occupied one divan, though there were exceptions, such as the arrival of an uninvited guest, when room had to be made for him. A small tripod table, placed in front of each divan, held the dishes, and sometimes a separate table was put before each guest. Women and boys always sat at meals; and the women of the household were never present at a dinner party, or during the dessert, if a symposium may be so translated. At the private meals the wife and her attendant women may have dined with her husband and his sons, but they more probably assisted to cook the dinner and serve it. For dinner parties a cook was hired from the Market-place. At ordinary times the domestic hearth,—a portable brazier,—was placed under a portico of the peristyle; and, doubtless, most often in the *prostas*, D (fig. 1). There sat the wife during the day; and on the arrival of strangers she retired into her apartment, E. The *thalamus*, though really the bridal chamber, was the husband's bedroom, which the wife visited not at her own, but her husband's pleasure; and to which one of the female slaves was sometimes called by that same husband. His treasure was often concealed in the *thalamus*, and Becker says this chamber possessed a door.* His books, if he collected MSS. and copies of the Homeric songs, could all have been kept in a bandbox. At home he walked about bare-footed and sometimes bare-shouldered. As he entered, a slave washed his feet and after dinner his hands, for he ate with his fingers. His toilette was neither complicated nor protracted. Baths were sometimes taken at home; and if the women regularly indulged in the bath they must have done so in the house. The wife's or a favourite slave's dresses barely filled a small chest. Their cosmetics and toilet-articles were consigned to a similar, perhaps the same, place of security. Continued confinement to the house rendered women so pallid that they painted their cheeks and eyebrows; and the golden hair, which has long delighted some of our most promising Royal Academicians, was generally the result of dye.

The Athenian wife had only a physical value in her husband's eyes. Before her he preserved the utmost decorum; and philosophers insisted upon this studied dignity in presence of virtuous women. Married often at fifteen, the wife was incompetent to converse with or assist her husband; for she had received little if any education, and her natural *esprit* was necessarily undeveloped. But it may well be said, What of Phryne and her adorer Praxiteles? What of the mistress of Pericles, who had such influence over him as to become his wife? The one is a legend too charming to be disbelieved; and if Pericles married his mistress she must have originally belonged to the class of "Heteræ," who, from the indiscriminate freedom they enjoyed with the ruling sex, had the opportunity of cultivating their minds, although at the expense of their bodies. All grades and all conditions of men passed hours of relaxation in these circles of demi-society, of which the flute-players and dancing-girls, who attended festivals and dinner-parties, formed no inconsiderable part.

The domestic festivals were periods of rejoicing for the men and of comparative freedom for their wives; and they were always accompanied with religious sacrifices. Between the solemn betrothal and the wedding-day sacrifice was offered to the tutelar gods of marriage. On the day in the earlier times both bride and bridegroom bathed in a certain fountain, a ceremony which afterwards was symbolically performed. Towards evening the bride was escorted to her new abode; she was seated between her father and the bridegroom in a carriage drawn by oxen, and preceded by torch-bearers, the nuptial torch having been lighted by the bride's mother. At the bridegroom's house a banquet was served at which women were allowed to be present; on one side the men reclined upon divans, on the other the women were seated. The bridegroom had a "best man"; and after the lady, veiled, had been conducted by her husband to the *thalamus* the "best man" kept guard at the doorway, before which the *epithalamium* was sung by a chorus of maidens. The flame of small oil-lamps, made of clay and sometimes of bronze, illumined the interior of the house; the guests reached their abodes by the aid of pine torches borne by their slaves. At the advent of a son, an olive was suspended over the house-door; that of a daughter was announced by a woollen net. A first child, particularly a male, was kept by the father; but, as the household increased, he exercised the right which was accorded him by the Athenian law. He "exposed" the child: that is, it was laid in an earthen jar at the Altar of Pity or elsewhere.* This fate frequently attended the birth of girls. If the child was comely, some childless wife perhaps adopted it; or it was brought up on speculation by a trader and sold. The ranks of the taxed women, or "Heteræ," were largely swelled in this way. If the father consented to keep his child, he registered it as an Athenian citizen; and at the ceremony a sheep was sacrificed on a rough altar, or often perhaps at the domestic hearth. Taking it by the hand, he called the gods to witness that the child was his own by an Athenian wife lawfully married. A child born to him by a slave was sometimes acknowledged and brought up within the household. On festivals and other anniversaries, flowers were strewn about the rooms and upon the beds and divans; garlands were suspended between the *antæ* at D (see fig. 1), and between the columns of the peristyle. A guest who had participated in a symposium, on quitting the house sometimes placed his chaplet,—for at symposia wreaths of myrtle, ivy, and other leaves were presented to the guests and worn round the brow,—upon the herma at the street entrance, as a compliment to the host. Spoils gained in battle were suspended to the lintels, or displayed on the jambs, of the victor's door. The heads of animals sacrificed were hung round the sacred walls of a temple, and intertwined with leaves and flowers. If a man were long ill, he was carried to the Temple of Æsculapius, where cells were let to the sick. When he died, an earthen vessel filled with water was placed at the house-door, probably as a sign or vehicle of purification; and hired mourners wept in cadence to console his near survivors. These wore black dresses, and cut short their hair as marks of mourning; the corpse arrayed in white was crowned with flowers, and a coin, inserted in the mouth, was thought to satisfy the fatal ferryman. Except in rare instances, when interment took place, the body was consumed, the ashes collected and preserved; and at the annual festival of the dead, the graves in some instances, the monuments in others, were decorated with wreaths and other offerings.

The story of the religious and social life of Athens was solidly portrayed upon the public edifices, and depicted even upon the walls of private houses, by artists of the time. At the distance of twenty-three centuries, living men are able to confirm the words extant of the ancients by the marble of their monuments; and though even in Greece that may not have been the aim, such is the use, of the sculptor, in the genuine architecture of nations.

* In the "Habitations of Man in All Ages" a plan of the Grecian house shows the three divans or *triclinia* properly arranged, but in the guests' dining room each divan is about 12 ft. by 5 ft. According to M. Viollet-le-Duc fifteen people are to lie upon the three divans; and in the private dining-room six persons, including the women, are to recline upon two divans. The fiction is increased in interest by his picture of a symposium.

* A glance at fig. 3 will show that three doors would have been required. The *thalamus* was closed with a curtain.

* To this method of fulfilling the natural law of the "survival of the fittest" is partly due perhaps the beauty of the ancients.

ZINC WHITE AS PAINT, AND THE TREATMENT OF IRON FOR THE PREVENTION OF CORROSION.

AT the ordinary meeting of the Society of Arts, on Wednesday, the 13th inst., Mr. George Godwin in the chair, Professor Barff, M.A., read a paper on the above subjects. He said, treating first of

WHITE-LEAD:

Some years ago, when I first had the honour of delivering a course of lectures before this Society, my subject was artists' colours and pigments. In these lectures I pointed out very earnestly the great objection I had to white-lead as a pigment for artists. The following reasons which I then assigned for its disuse I have still further confirmed by long experience. First, white-lead is discoloured by sulphuretted hydrogen, which is known as foul air. In small quantities sulphuretted hydrogen changes the tint of white-lead to that of a dirty brown colour, and in larger quantities it blackens it completely. It is manifest that such a pigment ought never to be employed where the permanency of a delicate tint is desired, and where foul air can have access to the painting in which it is employed. Another reason I then explained was, that oil with which lead is ground up is decomposed, first, by the action of the oxide of lead in the white-lead, forming a lead soap known as lead plaster; and further, after the lapse of a long time, an interchange takes place between

the acids of the oil and the acid of the carbonated lead: take, for example, the oleic acid and the carbonate of lead forming oleate of lead, which is, in fact, lead soap. I shall presently show you a specimen of lead soap, and you will be able to distinguish the difference of opacity between it and lead paint; therefore, if lead paint, that is, carbonate of lead, loses its opacity, it loses that quality for which it is so much valued. It is true that a saponification of the oil by the oxide of lead and the carbonate of lead gives to the paint at first a quality for which it is much valued; and this quality consists in the facility with which the workman can lay it on, and make it cover the ground which it is intended to conceal. But this very change, which in the first instance is an advantage, brings about future calamity, for the saponification increasing, the transparency of the pigment also increases, and so at last that which it was intended to conceal again reveals its existence through it. I do not intend this evening to enter upon the subject of white-lead manufacture. I have, on one or two occasions, very fully explained it in this room, and other gentlemen in treating on subjects in which it occurs have also treated its manufacture in an exhaustive manner. It is enough for me to remark that wherever white-lead comes in contact with the digestive organs of a human being, whether it be by passing in a state of fine division into the mouth, and thence out, as it must do, without excessive precautions, into the system—in places where white-lead is manufactured and ground,—or through the carelessness and want of cleanliness of painters, who eat their meals with hands sullied by noxious materials, so that it passes into their system, it produces the same disease, which is known by the name of "lead-poisoning." Experience tells us that many, even most men, will for temporary ease run the risk of future pain and calamity. It is all very well to say that precautions are taken to save men from the consequence of their carelessness and indulgence. Similar precautions are taken in coal-mines, which, if attended to, would prevent the awful calamities which so frequently result from their neglect. We must not content ourselves with these precautions when we can, if we choose, do away with the danger altogether. It is clear we cannot give up the use of coal, but now we can give up the use of white-lead in those employments where it is injurious to the health of the employed; and nothing but a miserable prejudice, and, what is worse, a miserable clinging to commercial interests, can stand in the way of this reform, which, I believe I can show you to-night, will not require any sacrifice on the part of those who use this material for the decoration, cleaning, and beautifying of the houses in which they dwell. I have to introduce to your notice a zinc pigment, which possesses nearly, if not quite, as good a body as the best white-lead, and which will neither turn brown nor blacken by the action of foul air, nor will it become semi-transparent, as I have already shown you white-lead does. The processes of its manufacture have been patented, and it is now being made on a large scale for the inventor, Mr. T. Griffiths, of the Silicate Paint Company, Liverpool.* It has for its basis the white sulphide of zinc, a precipitate well known to chemists in their analysis, but one which usually presents a most dingy and uninviting appearance in the test-tube. It was found, however, that this precipitate, properly treated, possessed what painters term "body," and the problem to be solved was, how to prepare it pure in tint. Like most important inventions, the first laboratory experiments were disappointing and unsatisfactory. It was attempted to precipitate pure sulphate of zinc by pure sulphide of sodium. But it was found that, even after several crystallisations, the zinc sulphate still retained sufficient impurities to injure the brilliancy of the white, and the sulphide of sodium was liable to the same objections. For a time this was abandoned. Sulphuretted hydrogen was tried, the zinc solution being made alkaline as it became acid. It is well known to chemists that zinc frequently contains traces of cadmium, which it is very difficult to remove. The cadmium at once showed itself in this method, being precipitated as a yellow sulphide. Of course, the cadmium might have been easily removed, by saturating the acid zinc solution with the gas, and filtering from the precipitate thus formed; but the process had the great objection of being too expensive for large manufacture. Sulphide of calcium was found to answer as well as a precipitant; but, for some unexplained cause, the product lacked "body." It was determined to try sulphide of sodium on a large scale, no attempt being made to purify the zinc solution, and the sulphide of sodium only being allowed to deposit such solid matters as did not remain in solution. Strange to say, the zinc sulphide precipitated was perfectly white, and the original impurities remained in solution. The washed and dried precipitate, although having better body than ordinary zinc white, still fell far short of white-lead in this quality, and calcination was resorted to to remedy this. The result was satisfactory as regarded body, but the pigment acquired a yellow tint, which could not be removed; besides this, it acquired a degree of hardness which necessitated much grinding to make it fit for use as paint. If the particles of zinc sulphide could be kept asunder in the process of calcination, this might be remedied. Sulphate of barium promised well for this purpose, and it was accordingly tried. Zinc sulphate was first precipitated by sulphide of sodium, and to the mixture was added a certain proportion of chloride of barium. The resulting precipitate of sulphate of barium was intimately mixed with the first precipitate of sulphide of zinc, and the washed precipitates were subjected to a red heat for several hours in a reverberatory furnace. On examining the product it was found to be excellent as regards body, far better than the sulphide of zinc alone, in fact quite equal to white lead, and the tint was pure. These results were most satisfactory, and it was clearly shown that sulphate of barium was far from being detrimental, and therefore could not be looked upon as an adulterant. One quality was still wanting, "softness." The product, when ground with oil, did not work kindly under the brush, but had a tendency to drag and become streaky. Many remedies were suggested to obviate this, but for various reasons had to be rejected. It was found, however, after much experimentation and research, that magnesia in small quantity imparted this quality of softness to the pigment and caused it to unite kindly with oil. This admixture was effected in the precipitating vats along with the sulphide of zinc, and no doubt saponification is brought about between the magnesia and the oil similar to that produced by white-lead and oil, but not to the same extent, and thus ease in working is imparted to the paint. This pigment is now being manufactured on the principles I have described, such small modifications only being introduced as the growing knowledge of the peculiarities of the process suggest.

* The "Patent White" is manufactured for the owners, Messrs. Griffiths, Fletcher, & Berdoe, by the Liverpool Silicate Paint Company, Seel-street, and have offices and warehouses in Cannon-street, London, and are, we understand, about to erect works in London for the manufacture of this and their own paints.

IRON.

While experimenting, two or three years ago, with my friend, Mr. Hugh Smith, on different methods for preventing incrustation and corroding of steam boilers, I was led, through the failure of all the processes employed, to believe that, if it were possible to convert the surfaces of iron plates into the magnetic or black oxide of iron in such a manner that the particles of black oxide formed in the position of the original particles of iron could be rendered perfectly adherent to the iron surface, which does not become per-oxydised, and perfectly coherent with one another, the object would be effected. I do not intend to enter into the chemistry of the oxidation of iron to its full extent. It would take too much time, and it would rather tend to confuse than to enlighten those who are not well up in their chemistry, and would raise questions which would bring on prematurely a collision with the views of some of my brother chemists, which collision, under suitable circumstances, at some future time, not very remote, I look forward to with considerable satisfaction, as it will be the means of solving many phenomena which have never yet been explained. A piece of dry iron, its surface being polished, may be exposed for any length of time to dry air without rusting, but it begins to rust at once as soon as the slightest moisture comes in contact with it. We have to consider only two oxides of iron,—one containing 56 parts, by weight, the metal, to 16 parts of oxygen, and the other containing twice 56 parts of iron, and three times 16 parts, by weight, of oxygen. We speak of these oxides as the protoxide and the sesquioxide, or as ferrous and ferric oxide. Immediately the protoxide is formed, it being more moist, it unites with oxygen, and becomes gradually converted into the ferric oxide. Now, let us suppose a moist iron plate to come into contact with oxygen. It is clear that the protoxide will be first formed, and this rapidly becomes converted into the higher oxide. Now, suppose you take a solution of the salt of the higher oxide and put into it metallic iron: in time,—the air being excluded,—this higher salt will become converted into a salt of the lower oxide. Let us now see how this bears upon the rapid oxidation of iron in the presence of moisture. We have seen that when oxygen comes in contact with moisture the first oxide is formed, and becomes rapidly oxidised into the higher one. But this higher oxide is in contact with metallic iron, which will reduce it to the lower oxide, thus becoming oxidised by the oxygen which it has taken up from the higher oxide. You will now see clearly how it is that iron rusts throughout its whole substance with such rapidity, for the oxide of iron serves as a carrier for atmospheric oxygen to the iron to almost any depth. There is another oxide of iron, called the black or magnetic oxide, containing three times fifty-six parts by weight of iron, and four times sixteen parts by weight of oxygen. Some chemists consider this oxide to be a sort of mixture of the two others, and they call it ferroso-ferric oxide. Whether this be the case or not does not matter to us this evening; but it is a most important point for our consideration, that this oxide undergoes no change whatever in the presence of moisture and atmospheric oxygen. Nor does any temperature to which it can be exposed, in any of the ordinary uses to which iron is applied in the presence of moisture, either decompose it or produce its further oxidation. In every school where chemistry is taught, in the most elementary lecture on hydrogen, the pupils are told that if they pass steam over red-hot iron filings contained in an iron tube, they will be able to collect and burn hydrogen gas at the opposite end of the tube to where the steam enters. For a long time it was thought that the particles of black oxide formed by this decomposition of the steam were pulverulent, and could not be made to cohere into a solid mass. The result of a considerable number of experiments has been to prove that they can be made not only coherent amongst themselves, but adherent to the body, and that both these produce a proper formation of this black oxide on the surface of iron plates; for, as I will show you later on, the oxidised surface of the iron resists for a long time, and more effectually, the rubbing with emery-paper, than does the simple metallic iron itself, and that there is a very manifest difference between the ease with which a sharp rasp is able to cut away the surface of the iron, and the difficulty with which this black oxide is removed from the surface by that same instrument. The method which long experience has taught us is the best for carrying out this process for the protection of iron articles in common use is to raise the temperature of those articles in a suitable chamber, say to 500° F., and then pass the steam from a suitable generator into this chamber, keeping these articles for five, six, or seven hours, as the case may be, at that temperature in an atmosphere of superheated steam. I will presently call your attention to the diagram of the furnace and muffle which I have employed in all our later experiments, and in which all the specimens before you, which will be alluded to in this paper, were prepared. Differences of temperature are employed where different objects are to be obtained. If it be wished to act upon surfaces of polished iron or steel, it is desirable to let the temperature remain at 500° F., until the operation is completed. Articles coated in this way will not resist the action of continued moisture such as has prevailed for the last two months, when exposed out of doors; but they will resist the action of any amount of moisture with which they may come in contact in a house or building; and the reason of this will be very obvious, because only a thin film of the iron on its surface is transformed into the black oxide. This I will explain more fully to you when I call your attention to individual specimens. At a temperature of 1,200° F., and under an exposure to superheated steam for six or seven hours, the iron surface becomes so changed that it will stand the action of water for any length of time, even if that water be impregnated with the acid fumes of the laboratory. Before calling your attention to our failures and successes as they lie before you on the table, I will just allude to a few of the uses to which this process may be, as I consider, successfully applied,—to water-mains, also

to water-connecting pipes, as well as to the water-pipes used inside the house, which, in this case, would supplant their leaden predecessors. In this hall of hygiene these words will, doubtless, sound as sweet music to the ears of many of those who have honoured me with their attendance this evening. The greatest objection to the use of iron pipes for the supply of water in houses hitherto has been this, that by rusting they caused the first quantities of water drawn off in the morning to be dirty and turbid; now this will be entirely prevented if the pipes be first exposed to the treatment which I have just explained to you,—of course, gas-pipes could with advantage be similarly acted upon,—and as the surface, when oxidised, is harder than the natural surface of the iron, the friction of large bodies of water through the pipes, and the friction necessarily employed in fixing them in their places, would be much better resisted than by the untreated iron itself. I cannot overestimate the advantages which the employment of this process must confer on architects, who will be by it enabled to employ iron, whether wrought or cast, much more largely, not only in the decoration, but in the construction of their buildings. Last summer I was at a very large house in the country, where the entrance portico, some 20 feet high, was being painted and decorated, when one of the large plaster ornaments of the ceiling broke away from its holdings, and would have fallen to the ground except that it was caught by a workman. This ornament weighed not less than 25 lb., and if it had fallen from this height upon the workmen below, it must have killed them. The ornament had been there many years, and was fixed up in the best method possible, it being supported and secured by iron rods. On examination I found that these rods were rusted through completely to the very centre. I need not make any comment upon this, since I have been able to introduce you to iron treated in such a way that it will never rust. Of course, if the process will answer for architectural ornaments, it will answer for statues, so that iron may be used instead of bronze, which will materially lessen the cost of casting statues, both in the material and in the expense of making the moulds. You well know that when a tinned saucepan is allowed to get dry on the fire and burns, as the servant calls it, that it is rendered useless until it is tinned again. Now, if such a saucepan be treated by the method I recommend it may be allowed to get red-hot without suffering injury, for the protection on its surface is produced at a red heat. We have experimented on some screws, hinges, locks, keys, bolts, with complete success. It has been suggested to me that the iron nipples used in gas-lights would not corrode, and would, therefore, be more useful if submitted to this action of super-heated steam. Wherever iron is used, railings, street gas-posts, iron safes for keeping documents fire-proof and thief-proof, the framework of filters, tanks, cisterns for domestic and other uses, iron employed in the erection of temporary buildings,—which, I flatter myself, if treated by this process, would become permanent buildings,—all these, and many other applications of iron to the arts, would immensely gain by being submitted to this oxidising action. I think I need hardly take up your time by enumerating other applications for the preservation of iron, for it appears to me that they would be commensurate with most of the uses to which iron is applied, save and except those where friction,—such as that to which rails and iron wheels are exposed,—would necessarily wear away the coating, as they wear away the material itself. I am happy to see a namesake of mine here present this evening, who will tell you that he is carrying out a process for the manufacture of peat into charcoal by the action of super-heated steam, and that he is enabled, by super-heated steam alone, to raise the temperature of his chambers to a red heat, quite sufficient to effect his carbonising process. I will now call your attention to the specimens here before you, and to a description of the furnace which we employ, and I shall be most happy to explain, on being questioned, any parts of my process which may appear to be obscure, and to answer, if I can, any objections which you, gentlemen, in the interest of science, will feel it your duty to bring against it.

At the conclusion of the paper, Prof. Barff exhibited various specimens of white-lead and zinc-white, showing how one was discoloured and the other not, and also the zinc pigment in the various processes of manufacture. He also exhibited a number of specimens of iron objects which had been oxidised in the two methods described, some at the lower and some at the higher temperature, the latter not being so black in appearance.

Mr. Ward, who had been working with Prof. Barff in these experiments, stated that iron so treated was very much harder than before, and resisted emery cloth and steel wire cloth, which common iron would not do.

DISCUSSION.

The Chairman said that two such important matters had seldom been brought forward at the same time; and he would invite gentlemen to treat them separately. They all knew the evils resulting from lead paints, but they did not all know the difficulties which attended the use of zinc. Twenty years ago, a house was painted with zinc white under his direction, which did not succeed, but he hoped the present efforts would be more successful. With regard to the preservation of iron, it was too grand a thing to be achieved without many difficulties, and they must not suppose that the question could be solved by three or six months' experience. Iron buildings were always getting weaker and going to decay, and any invention which would prevent that, and render iron available for construction in the way they hoped to see it, would be of such immense importance that it might well become the subject of a long series of careful experiments. They must ask what would be the effect in 100 or 200 years by this process before they were satisfied they had achieved all that was required; but even if it preserved iron for a much shorter period it would be a very great advantage.

Mr. George Howe said he had used this pigment as a decorator very successfully, and if others would only take it up they would find its covering properties were quite equal, if not superior, to most white-leads. It was well known in the trade that a painted ceiling done with white-lead would very soon come to grief, and a few months ago he had painted a ceiling with that material a delicate grey, but it was now of a light brown colour. Six or eight months ago, however, he had painted a ceiling with this new pigment, and, although it had several argand burners under it, it was still as white as when first done. He had a relative who was now suffering from the evil effects of lead poisoning, and therefore hoped that this new paint would generally supersede it. If anything, it was cheaper than white-lead.

Mr. Laing said he should be very much rejoiced to see something which would replace white-lead. He had tried years ago to introduce oxide of zinc, but it would not do, because the oil would not mix with it, and when it was cleaned the zinc washed off by pailfuls. The oil and lead mingled, and if the lead was varnished it would last for many years; but it was very pernicious, both in the manufacture and use. At the present moment an effort was being made by some of the manufacturers to do away with the noxious effects in the manufacture, and he was experimenting on some which had been produced by the new process. He only feared that this new pigment might have the same properties as the older zinc whites, which were not stable; for, if the pictures round the walls had been painted with that material, when they received such a scrubbing as they had many years ago, there would not be much left of them. He should be very glad, however, to have some of this new pigment to experiment with.

Mr. Williams said one of the greatest difficulties met with at first was that the sulphide of zinc would not commingle with the oil, and worked badly under the brush, and that led to the introduction of magnesia. This united with the oil and formed a kind of soap, just in the same way as the lead did, but it did not produce semi-transparency, as was the case with lead soap. This magnesian soap gave the peculiar property of softness to the pigment. It occupied about twice the volume, and had the same covering power as lead, so that it might be reckoned at about half the price. One point of great importance was its good drying qualities. He at first took it for granted that it would not dry well, but when it was well washed—and this was an important point in the manufacture—so as to remove all the chloride of sodium and other impurities, it was by no means a bad dryer. He had proof of that a few days ago, in preparing the specimens for the lecture, for when he suggested to the workman the use of sulphate of zinc or borate of zinc as a dryer, he said it was not necessary, as it would dry quicker than the lead, which proved to be the case. Another point was that, as far as he had yet experimented, it had no effect on other colours; it might be that it would not work with arsenical greens, but he thought they might well do without them both for decorative and artistic work. Professor Barff had suggested that it might not stand with Prussian blue, but he had a specimen with him which had been painted some time and had not changed colour, so far as his eye could tell.

Mr. Laing asked if it would not be necessary to add any driers?

Mr. Williams said decidedly driers should be added. At the present time they were experimenting to find a drier which would not injure either the body or the colour of the pigment, and would make it dry quickly. They had met with some little success, but he was not at liberty just at present to point out what the result was.

Mr. Tozer said he had been out of the decorative trade for some years, and now represented a large house in the colour trade; and if any new white were brought out it was pretty sure to be brought to them. Having been apprentice, journeyman, and master, he took a great interest in all these matters, and his idea of a good white was one which would cover black best. He had always attributed the great blistering of paint work to the use of white-lead, and he had found that a front door grained in the ordinary way would not blister on the zinc paint, though it would on white-lead. It would be always found that the blister brought you down to the priming, or second coat, and whatever was the outer it was generally primed with white-lead. He had tried this new white, and found it did not blister. He also found that it "bore out" as well as covered; no man could grain until the work bore out, and you got a solid surface. Now this zinc paint bore out well, and you could grain as well on three coats as on four coats of white-lead. He mentioned several instances in which it had been found to answer admirably for church decorative work.

Mr. Wills remarked that there were two aspects in which this pigment might be regarded; one as useful for domestic purposes, and the other for artistic use. The latter, he thought, was much the more important of the two, as they would only have, in that case, to take care that the paints should not be acted upon by any normal condition of the atmosphere. If this zinc paint was to be used in ordinary work, it must not be used over lead, as had been done at the laboratory at the Royal Naval College at Greenwich, the result being that after a few months the sulphuretted hydrogen, which was always present in such a place, got behind it, and the upper part of the room was now almost black. This was a zinc sulphide, and he should fancy that on exposure to the air for some time it would become oxidised, which might be accompanied by a separation of free sulphur, and this would, no doubt, give a slightly yellow tint to the paint, such as was found when some of the zinc white was calcined. The sulphide of zinc would finally be converted into a carbonate or sulphate, and then, if any free sulphur were present, it would give rise to a yellowish tint. He should like to know if this had been tried for a sufficiently long time to show that decomposition did not take place. White-lead was a carbonate, and, under normal conditions, was unalterable, because you could not consider the presence of sulphuretted hydrogen in the air as a natural phenomenon, and it could be prevented. A painting could be glazed, or could be placed in such a position that sulphuretted hydrogen could not have access to it, and under these circumstances the great objection to white-lead would be removed.

Mr. Glasse said sulphide of zinc oxidised very readily, and was converted into sulphate, leading to the separation of sulphate, which was soluble, and thus he feared this pigment would not be permanent, especially for outside work. This was the explanation of the oxide of zinc paint,—which underwent a similar change,—washing off so readily.

Mr. Harland asked how much magnesia was required in the preparation of the paint. It appeared to him that the magnesia had been taken as a base, combined with the fatty acids of the linseed oil, and the sulphide of zinc used as a kind of varnish, so as to be covered up by this soap. The same action took place with white-lead. There was a chemical combination with the oil, and you covered up the carbonate of lead. Some chemists believed that there was

also an affinity between carbonate of lead and the combination produced by the oxide or some salt of lead. It appeared to him that sulphide of baryta, or some other insoluble compound, which was not acted upon by sulphuretted hydrogen, would answer every purpose as well as sulphide of zinc, because there could be no chemical combination between this body and the oil.

Mr. Pearsall inquired if this new pigment had been tried in the simplest form, namely with water; either with or without the magnesia. He should be very sorry to throw any doubt on an excellent experiment, but he would remark that they did not know the history or composition of the oils which were used with it, and probably impurities in them might affect the result.

Dr. Le Neve Foster asked if the proportion of barytes used in connexion with this new pigment was considerable, because if so, it would affect the mines producing that substance if it were introduced commercially.

Mr. Stinson spoke at some length on the impurities commonly present in boiled oils, and suggested that if a pure oil were used it might do away with the necessity for using magnesia.

The Chairman having intimated that it was now time to discuss the second branch of the paper,

Mr. Cobb asked whether this new process of oxidation would be applicable to plates for iron shipbuilding? At present the oxidation of these plates was prevented, as far as possible, by the use of cement, but this was liable to danger, as was proved some time ago in one of the ships in the navy, which would have been lost in the Indian Ocean but for the discipline and bravery of the crew. In the merchant service, ships were continually taking in cargoes which affected their plates, and these sometimes became very much like strong brown paper. If, therefore, this process was applicable to such a purpose, Professor Barff had a magnificent future before him.

Admiral Selwyn said that, in considering this magnetic oxide, they could not do better than look to what nature taught them of its properties. In New Zealand you could find any quantity of this substance, which had remained totally unchanged even by the action of salt water during all the centuries which had elapsed since the creation of the world. Man generally put together substances with which nature did not furnish him, but in so doing he put them into a state of unstable equilibrium, and the air then set them to work to undo and disintegrate what he had put together. If you looked at the old pictures in the great galleries of the world, which were mostly painted with earths and ochres, you found no change in the colours, and in the Florentine galleries you would always find that those who were engaged in copying the works of the old masters refused all chemical ingredients, and relied on ochres and earths, and their colours remained, whilst those of many modern masters did not. There was already some experience of the lower form of this process, for Mr. Perkins, in his steam-boilers, pressed the steam up to about 450 lb. on the square inch, and his tubes had been found after thirteen years' use not to have undergone any change of the slightest description. They had an imperfect coating of magnetic oxide upon them, but Mr. Perkins, while he knew that they had not decayed, was not aware of the reason, which Professor Barff had so ably brought before them. Professor Tyndall also, in his "Heat a Mode of Motion," stated that by the use of a powerful gas metals might be varnished. Now, this was a very powerful gas, and although he had told Professor Barff that he did not see his way to subjecting riveted structures, which had to stand a heavy tensile strain, to a great heat, which might alter their tensile strength, he had no doubt that in the future this invention would be largely used for such articles, and he would thus be able to introduce it into structures which now became quite unsafe in the course of a few years from the tendency to rust, which had never yet been overcome. The girders along the Metropolitan Railway were becoming rotten much more quickly than the proprietors could wish, and many iron railway bridges were rapidly failing from the same cause, because it was impossible to properly protect them. He thought, therefore, the Society should hail with satisfaction even the beginnings of such an invention, and he should deprecate the notion of saying you must try a great deal more before we could accept what has been already accomplished. He feared that a great many good inventions had perished for want of a little encouragement, which might have brought them to success.

Mr. A. Barff said that when charring peat some three years ago on the Duke of Sutherland's estate, they used superheated steam, and he had brought with him two pipes through which the steam was conveyed into the hot chamber, the inside of which was covered with just the product of which Professor Barff had spoken. The pipe had been broken in consequence of a stoppage, and had been knocking about ever since, but it showed no sign of change. The chambers used were about 32 ft. by 6 ft., and the superheated steam was conducted into them along with the products of combustion, which probably would interfere with this process.

Dr. Le Neve Foster said it occurred to him that this process might be very usefully applied to mining pumps. Those who had anything to do with copper mines and mines containing iron pyrites were aware how quickly the water acted on these pipes and destroyed them, and sometimes various expedients had to be resorted to in order to protect the iron.

Mr. Penrose asked if this process would in any way impair the strength of the iron.

Mr. Pearsall said the invention would be of immense importance if it could be applied to steam-boilers to prevent corrosion; and asked if any experiments had been made to ascertain whether the magnetic oxide would withstand the action of hot water and steam, or acids.

Dr. Graham remarked that those who were not acquainted with chemistry might suppose that this magnetic oxide would take up more oxygen and so undergo decay; but of all the oxides of iron there was none so stable as this, and it was capable of doing that which the sesquioxide would not, remaining in the position in which it was formed without disturbing the molecular arrangement of the surface. This was the great invention of Professor Barff, that he had been able to form this black oxide *in situ* without disturbance of the molecular arrangement. It could be applied not only to utensils and other small articles, but to many other purposes, such as iron railings, which were usually let into stone with lead for the express purpose of wearing away by oxidation. He believed the invention had a grand future before it.

Professor Barff, in replying to the various observations, said, that sulphide of zinc was not oxidised in the presence of atmospheric oxygen, and, if it were, it would not set free sulphur. Sulphide of zinc was represented by ZnS, whilst sulphate of zinc was replaced by $ZnSO_4$, so that the sulphide could only become sulphate by taking up oxygen, not by setting free sulphur. Why sulphur was set free in the experiment which had been mentioned, he believed to be because the precipitates were not properly washed from the alkaline sulphides. He could not say the exact proportions in which the materials were used, not having the laboratory books with him. He could only say that the amount of sulphate of baryta was extremely small, the object of using it being simply to keep the particles of the sulphide of zinc separate from one another in the heating process, so as to render the mass more pulverulent when ground. The magnesia-sulphate was mixed with the zinc-sulphate, and both were precipitated with an alkaline solution of sulphide of sodium; the consequence being that the magnesia was precipitated as an oxide, and was intimately mixed mechanically with the sulphide of zinc. The magnesia itself had little or no body, it did not take up much space in the bulk, and therefore would not interfere with the opacity which was found to exist in the fine sulphide after it had been calcined. If the sulphide were simply precipitated from an aqueous solution, it went down in a sort of gelatinous state in order to bring the particles together, and alter their molecular arrangement, which, it was well known, had an important effect both on the colour and transparency of bodies. Mr. Griffiths told him that, for a year, he had used this sulphide of zinc with water, and therefore he did not anticipate that there would be any change if it were exposed to the action of water, but the experiment could be easily tried. With regard to the iron process, of course three or six months was no trial, if it were classed with other processes which had been used for coating iron, because a coat of paint would last for twelve months; but if that were scraped off anywhere, and oxidation took place, it would rapidly spread underneath, and throw off the paint. This was not the case with this process, however, as would be seen by examining some of the specimens, where the oxidation would be found to be localised, and not to have spread in any direction. The only point to be considered in reference to its durability was whether the oxide adhered perfectly to the iron, and that had been vouched for by Mr. Ward, because emery cloth would not touch it. Admiral Selwyn had called attention to the fact of the sea-shore being covered with magnetic oxide, which did not rust; and some of the articles on the table had been exposed to the action of salt water, and others to water charged with the acid vapours of the laboratory. No doubt pure hydrochloric acid would affect it, but mixed with nitric acid it would not. Common iron would withstand strong sulphuric acid, but if diluted it would act upon it. In answer to Mr. Penrose, he could not see how the strength of the iron could be affected, as it was never raised to a white heat, and only a film of the surface was affected; but it would be easy, if necessary, to add so much to the thickness of the iron, which had to bear a strain. The temperature could not affect it, because the metal had previously been welded or worked at a much higher temperature, and there was no contact with the steam lower than the oxidised surface. The superheated steam would no doubt penetrate in the course of time, because the pieces of pipe produced by Mr. A. Barff showed that half the thickness had been converted into oxide.

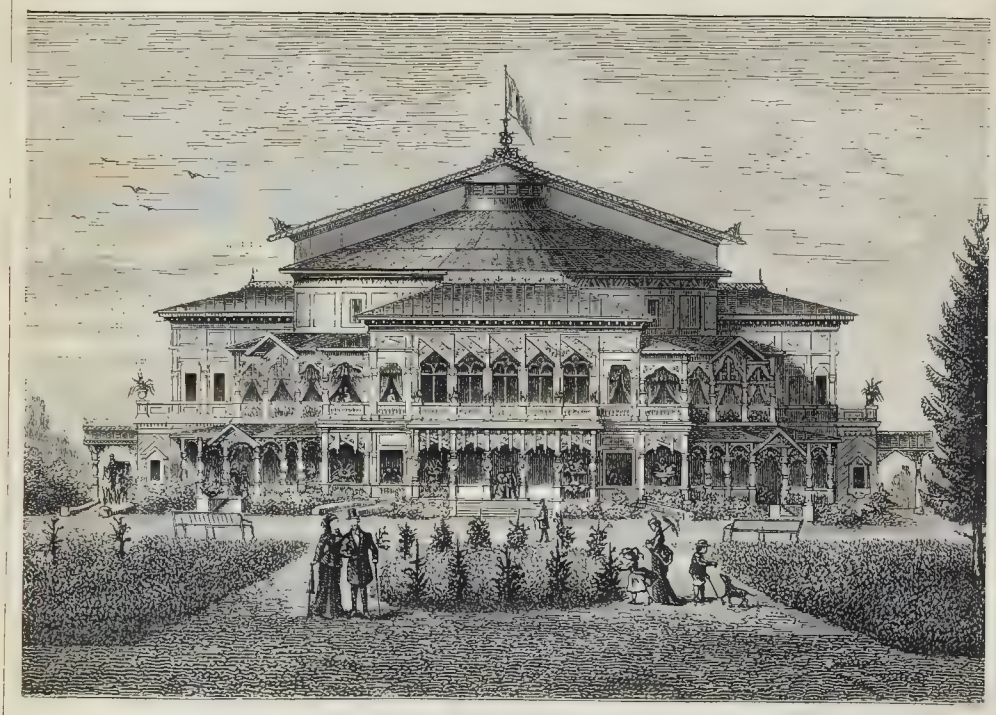
The Chairman then proposed a vote of thanks to Professor Barff, which was carried unanimously, and the proceedings terminated.

"THE PEACOCK ROOM."

At No. 49, Prince's-gate, Mr. Whistler, whose "harmonies" and whose etchings are well known, had *carte blanche* as to the decoration of the dining-room, and determined on making it a harmony in blue and gold, and to use the peacock as a means of carrying out this arrangement. Taking the ingenious artist's own explanation, a pattern, invented from the eye of the peacock (portions of concentric circles) is seen in the ceiling spreading from the lamps; between them, in panels, is a pattern devised from the breast-feathers; and these two patterns are repeated throughout the room. In the cove, the eye ornament is seen running along beneath the small breastwork or throat-feathers. On the lowest shelf the eye is again seen, and on the shelf above these patterns are combined,—the eye, the breast-feathers, and the throat. Beginning again from a blue carpet on the floor, the dado shows the breastwork, blue on gold, while above, on the blue wall, the pattern is reversed, gold on blue. Above the breastwork on the dado the eye is again found, also reversed,—that is, gold on blue, as hitherto blue on gold. When we add that there are blue peacocks on the gold window-shutters, and gold peacocks on the blue wall at one end of the room, the completeness with which the idea is carried out will be seen.

The whole work, including the portrait of a lady in Japanese dress in a frame over the fire-place, has been executed by the artist's own hand, and there is plenty of thought in it, and many cleverenesses to be found out. It will please a few very much and be disregarded by the majority. At a certain height above the dado are shelves carried and divided by a slight wooden framework, the whole of which is carved and gilt, forming a series of receptacles for choice specimens of china,—we hope not all blue. The lights are pendent from the ceiling, and are to take a shape in accordance with the forms in the decoration.

Ventilation.—We called the other day at the office of Mr. S. Hannington, to see his patent filtering air-chamber ventilator. The ventilator is constructed as an article of furniture, and admits of a variety of designs, as the filtering-chamber only occupies the lower portion, the upper part, which conceals the upright air-shaft, being used for book-shelves, cupboard, or drawers, in fact, it can be adapted for any purpose that may be required. The air enters the air-chamber direct from the outside, through an air-brick placed in the outer wall (or from a skylight or roof, by means of a shaft); it is then filtered by means of a muslin screen and a cotton-wool filter, and ascends into the room up the air-shaft. This chamber is fitted with an air-tight door, so that easy access may be had to the filter, for the purpose of renewing the cotton-wool from time to time, as required: and this is not seldom.



THE THEATRE AT PAVLOVSK.—Mr. N. L. Benoi, Architect.

THE THEATRE AT PAVLOVSK, PETERSBURG.

Pavlovsk, to which the aristocracy of Petersburg have taken a liking, will soon afford new means for distraction. In the middle of May the opening of the newly-built theatre, near the railway station, will take place, and we now give a view of it. This theatre is erected on the ground belonging to his Imperial Highness the Grand Duke Constantine Nicolaewitch, and is built after a design by Mr. N. L. Benoi, architect, the plan being confirmed by his Highness. The initiative of the building of this theatre belongs to Mr. A. F. Fedotov, who has undertaken, at his own expense, the building of the stage and provision of scenery, and to whose troupe the right is given to have the use of the theatre during twelve years, on condition that the character of the pieces produced, both in the Russian and French languages, shall be similar to the *repertoire* allowed at the Opera-Bouffe and other Imperial theatres. The artists of Imperial theatres are permitted to perform at the "Pavlovsk Theatre." There will be daily performances, except in extraordinary cases.

The theatre has three tiers of boxes, each having a separate room, with a door communicating with the box. The box of the Emperor and that of the Grand Duke Constantine Nicolaewitch are decorated luxuriously. In the first tier there is a lounge. Round the theatre there is a covered verandah for a promenade. There are 270 orchestra stalls, 164 seats behind the stalls, a balcony with 164 seats, and a gallery in the third tier for 174 places: altogether, about 1,000 places for the audience. The theatre is lighted with gas. A tank for water is constructed over the stage, whence pipes pass through the whole of the theatre, and both on the stage and in the passages hydrants are arranged; besides this, in the building of the theatre there is a separate place for the fire-brigade instruments.

The highest prices for places are stipulated in the contract; for benefit nights, however, the prices may be raised. After the performances there will be run every night an express train from Pavlovsk (stopping at Tzarsko-Selo) for all classes. The direction and the administration of the theatre will be under the sole management of Mr. Fedotov, and not of the railway company.

STREET ARCHITECTURE: No. 42, CORNHILL.

The premises, No. 42, Cornhill, at the corner of St. Michael's-alley, have been recently rebuilt for M. Alfred M. Kino, from the designs and under the superintendence of Mr. Benj. Tabberer, architect, of Coleman-street, City. They have a frontage to Cornhill of 15 ft., and to St. Michael's-alley of 46 ft., and are six stories in height. The ground-floor is arranged so that it may be let as a shop or shops, or as an office for an insurance or other public company, the window-fittings being not yet inserted. The upper floors are arranged for offices, with a staircase and separate entrance in St. Michael's-alley. There is also a back entrance from a court leading into Cornhill. The materials used are polished red Aberdeen granite for the piers on all stories, and for the fascias of the ground and first floors, and polished grey granite shafts for the window openings, the other facings, cornices, &c., being of Box-ground Bath stone, with carved capitals and friezes. Incised ornaments have been introduced on the face of the red granite shafts of the first floor. The general contractor for the works is Mr. Mark, of Bell-street, Edgware-road; the granite was supplied by Mr. Fyfe, of Aberdeen; and the carving has been executed by Mr. Seale, of Walworth.

Remains of an old wall, of great solidity, formed of Kentish rag and chalk, with a few tiles intermixed, were met with in excavating for the foundations near the south-eastern angle of the premises, possibly part of the ancient church of St. Michael, Cornhill, the earliest record of which, although there was probably a church here in Saxon times, says Godwin's "Churches of London," shows that previous to 1133 the patronage was vested in Alnothus, a priest, who transferred it to the Abbot and Convent of Evesham. In that year it was granted by them to Sparling, a priest, for the rent of one mark a year, and lodging, salt, water, and firing to the abbot when he was in London.

A POSSIBLE CAUSE OF DANGER.

An observant friend, who spends half his time in running up by rail to London and back from his charming residence in Sussex, found the train at a dead-lock the other day, and looked out for the cause. The bar which coupled the wheels in the next carriage had been disrupted and twisted up. It was a strong, large bar of steel, but it was nevertheless broken up. The bar was removed and the train resumed its way. Somewhat startled by the incident, our friend kept on the look-out, and to his surprise noted that in a very short time the arms on the two wheels heretofore coupled by the smashed-up bar were revolving at entirely different angles; in other words, it was obvious, as it seemed to him, that the two wheels did not revolve in the same time, and, *ergo*, that when coupled, there must have been at recurrent intervals a pretty considerable wrench somewhere,—a wrench which, if such a state of things be common, might have led to some of the accidents for which a cause had not been discovered. A sharp curve or a tilting of the train might increase the evil conditions, and a defective rail concurring, an accident might be the result. The conviction took possession of him, and he eased his exercised soul by confiding it to us. We must confess we do not see the matter in quite so serious a light as our friend, and can scarcely believe that if there were any possibility of danger through the arrangement referred to it could have escaped the many eyes to which it is daily submitted. Still, as a rule, people are wonderfully blind in matters of routine, and as unquestionably the bar was broken, we mention the matter to the traffic-managers of our various railways, and very seriously invite them to inquire into it.



STREET ARCHITECTURE: No. 42, CORNHILL.—Mr. Benjamin Tabberer, Architect.

THE DECLINE AND FALL OF BRITISH ARCHITECTURE.

ON the 6th inst., in connexion with the Whitehaven Scientific Association, the Right Hon. G. C. Bentinck, M.P. for the borough, delivered a lecture on "The Decline and Fall of British Architecture," in the Town-hall.

Mr. Bentinck said:—I will take two things for granted; first, that good reasons exist for considering the subject of architecture; and, second, that those reasons are founded not upon the present perfections of art, but upon its imperfections; not upon the success of its professors, but upon their failures. Notwithstanding the enormous amount of employment of architects that exists in the present day,—notwithstanding the number of societies and institutions, and schools that abound all over the country, the periodicals and speakers that deal with the subject invariably,—I may say universally,—declare that art and architecture have not progressed in our age; but that, on the contrary, it has retrograded. I think I need hardly furnish proofs to establish the truth of the proposition, because all who read the newspapers and other serial literature will see the same thing repeated day after day. As I have said, the proposition is almost self-evident, but I would refer (coming down to our present time) to the Social Science Congress which was held in Liverpool last autumn. On that occasion (and I believe for the first time in the annals of the Association) the question of art was made a prominent feature; and Mr. Poynter, a highly-educated gentleman, delivered a lecture which was followed by a discussion, the result of which was highly unfavourable to the present condition of things. Coming to a still more recent date, we find the President of the Royal Institute of Architects saying the same thing. Only last week there was a meeting in Manchester, attended by distinguished persons and orators, the founder of the South Kensington Museum (Sir Henry Cole), and others; and it was found that although for many years the necessity for a school had existed there was not one in Manchester. I refer to these things simply to show what is the general opinion on this point. Then, take the Byron Memorial. I did not think that it was requisite to erect any memorial to a man like Byron, but some time ago a subscription-list was set on foot, as it was considered desirable that what I might call a new monument should be erected to his memory. What was the result? An extensive competition; and designs were sent in, none of which could be accepted. That is another instance of the want of execution of art that exists. I might cite to you another authority, and a great one—the Bishop of this diocese—a highly-educated and accomplished gentleman, who is known to most ladies and gentlemen in this room. And these lamentations are universal. What are the remedies? The remedies are proposed apparently without any distinct cause to direct them. Some say it is trade unions; others, that it is the competition in designs requested by the Government, private individuals, or corporations; others, that it is competition amongst the architects themselves,—each trying to out-bid the other. Then, the last authority to which I would refer you on this point is one who is eminent in his profession, and successful as regards employment,—Sir Gilbert Scott, the last president of the Royal Institute. In November, 1873, in his inaugural address to the Institute, he attributed the cause of the decline of architecture to the neglect of architects to learn their business, and the inability of the public to discern good architecture from bad. That is the opinion of a gentleman who is known to you all; whether it is deserved or not I shall not pretend to discuss. Now, I am going to do a very bold thing. I am going to be bold enough to state to you what my remedy is for these evils. Of course, I hope that you will give me credit for taking the bull by the horns, and not being afraid of any consequences. Under these circumstances, I shall state to you plainly and explicitly that in my humble judgment one cause of this evil is what is called the Gothic revival. I must, however, exempt from all remarks I make such architects as are not affected by this (I think) pernicious cause. I shall put them entirely on one side, and the remarks which I will humbly offer to you apply only to those who are following the principles which have either been originated by, or which arise from, this Gothic revival.

I shall not attempt to trace the progress of the Gothic revival from its rise in the last century, with the experiments made by Horace Walpole at Strawberry-hill, nor do more than merely name such structures as Fonthill Abbey and Lowther Castle, which were erected at a later date, and which, for a brief space, had many admirers; but I will come at once to the period, some thirty-five years since, when the late Mr. Augustus Welby Pugin, who was born in 1813, and who was of French origin, became a man of mark,—for it is he who must be regarded as the true author of the pseudo-mediæval movement which still sits like a nightmare on the art of this country, and paralyzes its life and energies. No one conversant with the subject will, I think, doubt the correctness of my estimate of Pugin's influence; but still, to support my opinion, I shall cite Mr. Charles Eastlake, secretary of the Royal Institute of British Architects, who is a leading advocate and apologist of Modern Mediævalism. Mr. Eastlake, in his "History of the Gothic Revival," writes as follows:—

"There can be little doubt that the revival of Mediæval design received its chief impulse in our own day from the energy and talents of one architect (Pugin), whose name marks an epoch in the history of British art, which, while art exists at all, can never be forgotten."

Though I dissent absolutely from the principles which Pugin professed, and the practice which he followed, I will not deny that he possessed great abilities, if not actual genius; but Pugin's mind was so poisoned with fanaticism, and obscured with prejudice, that he could judge nothing artistically fairly, and I cannot resist the conclusion that his whole career gave constant, and even early, indications of the terrible visitation of Providence which was destined to be the calamity of his later life. But, whatever his mental condition might have been, he laid down the most absurd and extravagant doctrines as essential articles of the new faith. According to Pugin's views, all art was subservient to what he chose to believe was true Christianity, and Christian architecture, limited to the Pointed style, which prevailed and was practised in England during the thirteenth, fourteenth, and fifteenth centuries. For reasons which he was unable to state either with clearness or consistency, he denounced the inventions of Palladio, and the great Italian and other foreign architects of the sixteenth century, as "Revived Pagan," simply because they were derived from perfect Greek and Roman models; and upon similar grounds our illustrious countrymen Jones, Wren, and Reynolds, equalled by few and surpassed by none of their predecessors, were placed under a ban of proscription, and Wren was even charged with clumsiness and imposition. But Pugin's delusions led him to other conclusions equally untenable. He taught that early in the fifteenth century this so-called Christian art, if not, indeed, art in general, ceased, practically, to exist, and that no revival of what had been lost was possible, except by servilely copying forms which for centuries had fallen into disuse, and which alone (as Pugin contended) were truly English.

"Let us choose," said he, "the glorious epoch before the Reformation as our type, and reproduce the gorgeous effects of the middle ages, before the accursed light of reason destroyed the phantasm of that massive darkness."

And, to this proposition he added two others even more preposterous:—

"I. That the moral and social conditions of England were infinitely better during the middle ages than at the present time."

"II. That an architect to achieve success in his profession must conform to the faith of the Roman Catholic Church."

Notwithstanding the transparent fallacies upon which Pugin's delusions, for they were nothing else, were based, they obtained even in this enlightened age a remarkable and decided success. They had an air of romance and a halo of antiquity which gained the ear of fashion and captivated the vulgar mind; and, moreover, the great Church movement in favour of an improved ritual observance, which had then come into active existence, enlisted the sympathies of the vast majority of the Anglican clergy, and gave the new ideas much popularity. Thus Pugin attained his object, and the result is the more surprising, because the works which he professionally executed were all, in a greater or less degree, signal failures. He could talk, write, persuade, and draw with facility, but to design an original building of any pretensions was entirely beyond his capacity. After criticising with some severity a long list of Pugin's works, Mr. Eastlake concludes with the confession that in "Pugin's house and church at Ramsgate he recognises more thorough and genuine examples of Pugin's genius than elsewhere." Few here present will have seen this church at Ramsgate, Pugin's isolated success: but when you learn that the chancel is 35 ft. in length, and the remainder of the edifice, withits appurtenances, on a like diminutive scale, you may, perhaps, share my surprise that such a man of many failures should attempt to persuade the public that his pen could destroy the European reputation of Inigo Jones, or diminish the existing glories of St. Paul's and Greenwich Hospital. Pugin, in fact, either could not, or would not, appreciate the excellences of the golden age of modern art, and the spirit in which he worked is thus accurately and happily expressed by Mr. Fergusson in his "Handbook of Modern Architecture":—

"The true bent of Pugin's mind was towards the theatre, and throughout life the theatrical was the one and only branch of his art which he perfectly understood. The circumstance which would have brought his inherent madness to a crisis would have been to see Garrick play *Richard III.* in knee-breeches and a full-bottomed wig; and we cannot but regret that he died before enjoying the felicity of seeing Charles Kean perform the same character with all the perfection of stage-scenery which he introduced. What Kean did for the stage Pugin did for the Church. The one reproduced the drama of the Middle Ages with all the correctness and splendour that was possible, and with but the same amount of reality as the other introduced into the buildings and decorations of the Mediæval churches of the nineteenth century."

All those who are intimately acquainted with the public action of the two men will see the force and point of Mr. Fergusson's comparison. Having thus expressed, with some freedom, my opinion upon Pugin's writings and works, in order to avoid any imputation of unfairness I will give the precise grounds upon which my judgment and conclusions (whatever they may be worth) are based. Disregarding the elements of religious controversy and religious symbolism, which are irrelevant to the trial of an artistic issue, Pugin's pleas for the exclusive use of Gothic may be succinctly stated as follows:—1. That Christian and Gothic architecture are convertible terms. 2. That the Gothic architecture which was in use in England from the reign of Henry III. until that of Henry VII. (though alleged to be much debased towards the end of this period) is the only style which can be considered as thoroughly national. 3. The Gothic architecture being, as regards construction, convenience, and beauty, superior to all other styles, nothing new could be suggested. In Pugin's own words,—

"Moderns must rest content to follow, and not to lead. They may widen the road which our Roman Catholic forefathers traced, but cannot depart from their track without a certainty of failure being the result of our presumption."

The two former of these wild theories are most conveniently refuted by the irresistible logic of fact. The pointed arch, as everybody well knows,—by this time,—is of Eastern or Saracenic origin, and the type rather of the "Mahometan" than the "Christian" faith. Of our own early national architecture we know but little. Our recognised Saxon remains are few, imperfect, and in some cases of doubtful origin. The Anglo-Norman churches erected during the century following the Conquest were built, for the most part, after the plan which the earlier Christians had borrowed from the heathen Basilica, and the style employed, as its designation "Romanesque" imports, was but a rude imitation of the Classic idea; and, finally, when the Pointed or Gothic style was introduced into this country towards the end of the twelfth century (Mr. Fergusson fixes the date 1174) it had already been the fashion in France for at least a century, and could, under no circumstances whatever, have any pretensions to represent English sentiment. When Gothic architecture had taken root and come into general use in this country, like every naturalised race or thing, it gradually acquired a national individuality, and after a strictly independent development culminated in the rich and elaborate productions of Tudor art. But the conditions and changes which are incident to all human creations are not limited to Gothic architecture. The revived Classic style followed a similar course, and assumed its varieties through a long series of years, in Italy, France, Germany, and England; and these varieties, as I shall presently show, as easily distinguishable and quite as national as the respective Gothic styles in the same countries.

In dealing with the remaining Puginistic assertions concerning the superiority of Gothic architecture, as regards "construction" and "truth," I am content to rest my faith upon the authority of Sir Christopher Wren, who (apart from his artistic merits) is universally admitted to have been a builder unsurpassed in science and success in his own or in any other age; and

I confidently submit that the following extracts, which I will now cite from his reports upon old St. Paul's Cathedral, Salisbury Cathedral, and Westminster Abbey, ought to induce any unprejudiced mind to accept the reasoning whereby he gives the preference to the Roman rather than to the Gothic mode of building. . . . . The rude intervention of the Great Fire of London in 1666 settled the old St. Paul's question, but two years later Salisbury Cathedral was *in extremis*, and Wren was summoned by his friend, Dr. Seth Ward, then bishop of the diocese, to prescribe the necessary remedies. Wren's report highly commends the beauty of the architecture, but entirely condemns the construction.

Nearly half a century after the Great Fire, Westminster Abbey was trembling on the brink of ruin, and Wren was commissioned by another intimate friend, the celebrated Bishop Atterbury, then Dean of Westminster, to propose the scheme of repair which he afterwards executed with so much success and ability. Wren's report, addressed to the Dean, states that the stone vault, finished twenty-three years after the accession of Edward I., was "the worst performed of all done before," and expresses his (Sir C. Wren's) surprise "that the choir had not fallen in consequence of the mode in which the cloisters were built at a later date," and subsequently deals with the question of construction in these words:—

"The Saracen mode of building, seen in the East, soon spread over Europe, and particularly in France, the fashions of which nation we affected to imitate in all ages, even when we were at enmity with it. Nothing was thought magnificent that was not high beyond measure, with the flutter of arch-buttresses,—so we call the sloping arches that poise the higher vaulting of the nave. The Romans always concealed their butments, whereas the Normans thought them ornamental. These, I have observed, are the first things to occasion the ruin of cathedrals, being so much exposed to the air and weather; the coping, which came to defend them, first failing, and if they give way, the vault must spread. The pride of a very high roof raised above reasonable pitch is not for duration, for the lead is apt to slip; but we are tied to this indiscreet form, and must be content with original faults in the first design. But that which is most to be lamented, is the unhappy choice of the materials; the stone is decayed 4 in. deep, and falls off perpetually in great scales. I find, after the Conquest, all our artists were fetched from Normandy; they loved to work in their own Caen stone, which is more beautiful than durable. This was found expensive to bring hither, so they thought Rygate-stone, the nearest like their own, being a stone that would saw and work, like wood, but not durable, as many of our English freestones. And though we have also the best oak timber in the world, yet these senseless artificers in Westminster-hall and other places would have their chestnuts from Normandy. That timber is not natural to England; it works finely, but sooner decays than oak. The roof in the Abbey is oak, but mixed with chestnut, and wrought after a bad Norman manner, that does not secure it from stretching and damaging the walls; and the waters of the gutters are ill carried off." "I have yet said nothing of King Henry VII.'s Chapel, a nice embroidered piece of work, all of it cased with Tonlier Caen stone, and, though lately built, in many places rotten by our weather, that it begs for some compassion, which I hope the next foreign power will take, as it is the regal sepulture."

I submit to you, then, with some confidence, that the arguments of Wren are conclusive, and entirely dispose of Pugin's craze, that the builders of the Middle Ages understood construction better than the Romans. If, however, you doubt the physical instability of Mediæval buildings generally, I shall refer you to the perpetual appeals, under the misleading term of "restoration," which come to you by every post, and which should "feelingly persuade" you that "Gothic" churches in England are perpetually calling upon the hand of charity to save them from ruin; while it is notorious that Roman buildings are so strongly knit together, and rooted, as it were, in the earth, that they can scarcely be removed without the aid of the strongest power which human ingenuity has as yet invented.

Truth in architecture is a quality not easy to define. From very early times it has always been questionable what this particular "truth" might be; but if there be such a thing as "untruth" in this science, the offence was committed with far less scruple in the Middle Ages than at the present time. My admiration for the Mediæval architects and their sublime creations is unbounded; but if their imprudent advocates in the present day charge the "Classical Revival" with the vice of shams, I might retort by showing that the Gothic system, as every important Gothic building will show, cannot exist without shafts that give no real support, windows that admit no light, roofs of an unnecessary height of pitch, fronts that are merely screens, and an overloaded ornamentation which may be likened to a "tale told by an idiot, full of sound and fury, signifying nothing." I have dealt at length with Pugin and his principles; because, as the chief apostle of the new creed, he is mainly responsible for the false doctrines which his disciples ultimately abandoned, but which, in their development, hastened the "decline of British architecture" with an appalling rapidity.

Time will not now permit me to detail the progress of this calamity, but for my present purpose it will suffice to explain that the action of a chief motive power, namely, the well-known and still existing "Cambridge Camden Society." This society was founded about the year 1840. Its aim, as the "Pagan" motto, "*Donec templa rejeceris*," adopted by its authorised organ, the *Ecclesiologist*, implies, was highly commendable, and was directed to most legitimate objects, such as "the study of Mediæval architecture, secular as well as ecclesiastical," the "restoration of architectural remains," the "adoption of decent and improved ritual arrangements," &c. Notwithstanding these laudable and harmless pretensions, this society in its infancy met with strong opposition within the Church itself, and notably from the present Dean of Carlisle, who, on a memorable 5th of November, preached from his pulpit that the "restoration of churches was the restoration of Popery." These attacks, however, naturally failed by their own weakness, and in truth assisted the society to obtain a firm footing, and achieve a decided success. Unquestionably the operations of the society brought about a vast deal of good, and had the governing body limited the field of their exertions to antiquarian research and judicious restoration, the end might have justified the beginning; but unfortunately the reins of power were held by narrow-minded men, who knew nothing of art in its most elevated form, and who were too tightly bound by the fetters of religious sentiment and sectarian prejudice to learn their own deficiencies. Consequently, for some fifteen years, they "out-Pugined Pugin." . . . . The leaders of the Camden Society and the Gothic movement which the society directed, committed this fatal error. They condemned the idea of *progress*, which was the very life and soul of the works of the Mediæval architects, and the real secret of their success. These great artists never halted upon one opinion. They were always quick to learn, and ready to adopt true improvement in all branches of their art. The buildings they have left in nearly every parish in England tell this tale far more plainly than it can be written. It is absurd to suppose that if the difficulties of foreign communication had not existed, and political troubles, including the Wars of the Roses, had not intervened, English patrons and architects would have failed to avail themselves of the extraordinary power which Italy, towards the end of the fifteenth century, sent forth like sunshine through the clouds, and illuminated the artistic horizon wherever its beams could reach. Mr. Fergusson says, "The architecture of the Church has been one continued series of unremitting change from the age of Constantine until this hour," and the reflecting mind cannot believe that our forefathers, who accepted Pointed architecture from France in the twelfth century, employed Holbein and Torrigiano in the fourteenth and early fifteenth century, and adopted Rubens and Vandyke in the seventeenth, would have rejected Leonardo da Vinci, Michelangelo, Raffaelle, and Titian, on the childish pretext that the mastery over design and execution which these great men had acquired was not of a religious type, and inconsistent with the spirit of Christianity. But the Camden Society saw none of these things. On the contrary, as they increased in subscribers, they decreased in wisdom.

After some years of active existence in London, the society, apparently dissatisfied with their previous efforts, determined to build a model church, upon their own responsibility, and without reference to cost. Under these circumstances, "All Saints, Margaret-street," well known to fame, was commenced in 1849, and completed about ten years later, at an expenditure of 70,000*l*. I do not desire to be too hard upon the authors of this undertaking, but its best friends will scarcely contend that their fond hopes were realised.*

* To be continued.

Royal Society Conversazione. — The "season" is upon us again! The president and council of the Royal Society are issuing invitations for two undress evenings, March 7th and May 30th, and their more formal Reception on April 25th.

THE OPTICAL EXPRESSION OF STRESS.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

At an ordinary meeting of this Society, held on the 15th inst., Mr. R. M. Bancroft, president in the chair,

Mr. J. Love, of the Engineers' Office, Great Northern Railway, read the following paper "On the Optical Expression of Stress," illustrating it with numerous experiments of the nature described in support of his views:—

When matter is acted upon by forces tending to change its dimensions, and is resisting such change, it is said to be under stress. By using suitable means it is possible to make this condition of matter manifest itself to the eye, and this result I have termed "The Optical Expression of Stress." In the present paper I shall treat of matter in its solid state. If we assume the molecules of a solid in its quiescent state to be spheres, then we must expect some of them to be spheroids in a solid under stress; so that those which are acted upon by a pull are changed into *prolate* spheroids, while those resisting a push go into the form of *oblate* spheroids. In a loaded strut, therefore, the molecules are oblate spheroids, but in a loaded tie they assume the form of prolate spheroids, their axes being, in both cases, along the line of reaction. This being the case, a loaded beam must have the molecules in its upper portion compressed into oblate, while those in its lower parts are pulled into prolate spheroids, the axes of both being in the same direction, that is parallel to the axis of the beam. But this is not all; for the spheroids are more elongated the nearer they approach the lower surface of the beam, and more flattened near the upper surface, gradually changing from these two maxima and the limiting surfaces to a minimum at the centre of the beam, where the molecules retain their spherical form. This central position is usually known by the term "neutral axis," and it has sometimes been asserted that there is no stress along this part of the beam. The stress, however, is of the nature of a couple tending to cause a rotation of the spheres; and the term "neutral" should not be understood to mean "no stress," but no change of form in the spherical molecules.

This so called "neutral axis" has, at one time and another, been the subject of much discussion. Mathematicians have long regarded it as coincident with the centre of gravity; but engineers have placed it in a variety of positions, some agreeing with the mathematicians, while others suit the position to the nature of the material. Quite recently, the columns of a professional paper have been occupied by a controversy bearing upon this point. I shall endeavour to show that the mathematicians are right.

If we take some transparent homogeneous solid of the required form, and subject it to the forces necessary to induce stress, we can ascertain the state of the solid by passing through it a beam of light in that wonderful and beautiful condition which is known as polarised. We have such a solid in glass, and by means of the polariscope we can obtain a beam of polarised light. Having described the polariscope, the author continued:—Here is a rectangular bar of glass, 12 in. long, 2 in. wide, and 1 in. thick; and here is an iron frame furnished with bearings and screws for pressing the glass into a condition similar to that of a loaded beam supported on its two ends. When this glass bar is under suitable pressure, its molecules are arranged as described above, and the glass has then the curious property known as double refraction. But this property is possessed by only those molecules which are driven into the form of spheroids, and not by the unchanged spheres. Moreover, the greater the change that the molecules undergo the more decided is the double refraction. Now, doubly refracting bodies have the power, when suitably placed in the dark field of the polariscope, of so twisting the plane of the polarised beam of light as to enable it to be reflected by the analysing plate. If a piece of unstressed glass be placed in the dark field of this instrument, no effect whatever will be perceived; but if the glass be put under stress, as may be done with our bar, allowing its direction to form an angle of 45° with the plane of polarisation, the following effects will result:—Those portions which suffer the greatest change will be the most strongly illuminated, and the rest will gradually decrease in brightness until they attain a minimum of illumination where there is a minimum of change of form. In the case of our rectangular bar the maxima occu

lose to the upper and lower surfaces at the middle of its length, diminishing towards the ends and towards the centre of depth, where the illumination approaches zero. If the pressure be increased in intensity the phenomenon will be complicated by the appearance of curves which enter at the limiting surfaces of the bar, and increase in length as they travel towards the "neutral axis." These appearances are due to the stresses that are set up by a distributed load; but with a load on the centre only they are not quite the same; for the dark nebulous band showing the "neutral axis," instead of being straight and unbroken, takes a sort of bracket form, with its middle part bent towards the point where the load is applied. It is clear, then, that we have here the means of presenting to the eye the actual internal arrangement of the particles of a solid while in a condition of stress; and hence you may judge as to the fitness of the phrase,—"the optical expression of stress."

It may be well, at this point, to inquire how these phenomena bear upon the theories advanced in controversy for defining the position of the so-called "neutral axis." Since the centre of gravity of a rectangle coincides with the geometrical centre of figure, which is in the centre of depth, and our optical experiment shows the "neutral axis" to be also in the centre of depth, it follows that all these positions are coincident. It is clear, therefore, that the optical and the mathematical expressions are in complete accordance.

I will now examine the theory advanced by engineers, viz., that of suiting the position of the "neutral axis" to the nature of the material. The favourite solid used by engineers in their discussions of this theory is cast-iron, and the logic employed is something like the following:—"Since the strength of cast-iron to resist compression is six times its strength to resist tension, therefore the position of the 'neutral axis' in a horizontal rectangular beam must be one-seventh of the depth of the beam below its upper surface, and, of course, six-sevenths above its lower surface." If the same theory be applied to our glass bar, it will run thus:—"Since the strength of glass to resist compression is twelve times its strength to resist tension, therefore the position of the 'neutral axis' must be one-thirteenth part of the depth of the bar from its compressed side, and twelve-thirteenths from the side under tension." But our optical experiment shows the correct position to be half-way between the two surfaces, and therefore demonstrates the complete failure of the theory. You see then this theory will not bear the test of experiment any better than it will bear the test of mathematics.

The foregoing experiment was first performed by Sir David Brewster about sixty years ago, but I have failed to discover whether it has been repeated upon bars of any other section than that of rectangular form, and although the experiment is a very elegant confirmation of the mathematical theory of the position of the "neutral axis" in this particular form of cross section, there is nothing in it to show that the theory would hold good if applied to any other form. The thought occurred to me that it would be interesting to see whether an extension of the experiment to bars of other forms of cross-section would show the theory to be restricted to one form, or to be applicable to all forms. Acting upon this idea, I have experimented upon other forms of bar. The form that has received the greatest attention in my experiments is one that is very much used by engineers in their ironwork structures, viz., the T-shaped section. I built up several bars of this section, and varied the proportions of their parts so as to vary the position of the centre of gravity of the section, but they all failed to give good results, in consequence of the cement employed for fastening the pieces together refusing to transmit the stresses in a uniform manner. Finding that nothing could be done with the cement, I had T-shaped bars cut out of solid glass, and varied their proportions as before. In these the optical experiment unmistakeably shows the "neutral axis" to lie in the centre of gravity, and therefore proves that the theory holds good when the centre of gravity is not in the centre of depth of the section. Now, when a mathematical theory can be experimentally proved to be true, it passes at once into a law; and since the theory is proved to be true in several cases it may very reasonably be assumed to be a general law.

Thus far we have dealt with computable stresses. We come now to others, which are beyond the reach of ordinary computation, viz., those induced by the action of heat. All engineers who have to do with cast-iron have, sooner or later, to learn something about the stresses that are set up by the unequal rate of cooling, and consequent unequal shrinkage of castings. These stresses are sometimes a source of much trouble and annoyance to moulders. They cannot be resisted, but must be humoured; a task which often taxes the skill and ingenuity of iron founders to the utmost. In cast iron their presence cannot be detected, except by the distortion or fracture to which they sometimes give rise. Oftentimes the fracture does not occur until after the castings have been fixed into their positions, and subjected to the external forces incidental to their load, and when, should the load be such as to give rise to motions of a rapid vibratory character, those castings which are suffering high internal stresses are very likely to break without giving the slightest warning. Hence the well-known danger of using material of such a nature in any position liable to concussion. Now, for showing these stresses we can resort to a modification of the same means as before.

If we place a circular disc of annealed plate-glass in the dark field of the polariscope no effect is produced; but if, while the plate remains in its position, a hot iron be placed upon its centre, a very curious phenomenon may be witnessed. As heat is communicated from the iron to the middle portion of the glass, the particles of the latter expand; but, as the expansion is exactly synchronous with the conduction of heat, and conduction through glass is extremely slow, the elastic property of the glass is brought into action. The middle particles in expanding press hard upon the annulus of contiguous particles. These, again, press against their neighbours, and so on to the circumference.

Thus we have a radial compressive stress due to the glass expanding in all directions from the centre. This is resisted by a tangential tensile stress. Thus the molecules, excepting those in the middle of the glass, are driven into the form of spheroids having their shorter axes arranged in the direction of the radius, and their longer axes parallel to the circumference, or rather to the tangent; while those in the centre, being pressed equally in all directions, remain unchanged in form. This condition of the glass is declared by a black cross whose rays intersect at the point of contact with the heated body. The cross remains as long as one part of the glass is at a higher temperature than the rest; but disappears as soon as the glass attains an equilibrium of temperature throughout the disc. This, however, does not exactly show the usual condition of a casting; but I bring it before your notice because it is an easy experiment to perform, and is instructive from the fact that it enables us to see the cross "grow," if such an expression may be allowed.

The actual state of a casting may be shown by reversing the foregoing experiment, thus:—If our glass disc be placed in a fire and heated up to its softening point, and then be allowed to cool somewhat rapidly, it will have its molecules arranged in the following antagonism:—In obedience to the laws of radiation, the outer portions will be solidified first. For the sake of simplicity we may disregard the flat surfaces of the disc, and consider only the cylindrical surface. By the above-mentioned laws the outer ring or cylinder of molecules, solidifying while the rest of the mass remains in a plastic state, can take up their natural positions without stress. The next ring of molecules, in solidifying, cannot take up their natural positions in consequence of their attachment to the contiguous outer ring, which will hold them in a state of tension, and will be held by them in a state of compression. The same will subsist between these and the third ring; and this again and the fourth ring, and so on to the centre of the disc; so that ultimately we have a disc in an opposite condition to that described before, viz., with a radial pull and a tangential push. This condition is also declared by a cross, whose rays intersect at the centre of the disc. The cross in this case is permanent. The phenomena may be varied by simply varying the form of the glass; but the circular form has been selected for the present occasion on account of its simplicity.

In the discussion which followed,

Mr. Perrett said it must be admitted that the experiments which Mr. Love had performed were conclusively in favour of the views he had advanced so far as one material, glass, was concerned; but it was open to question whether iron or other materials behaved in the same manner as glass when under stress.

Mr. Bancroft, the president, said that Mr. Love's experiments, though they could not be gainsaid, did not bear out the conclusions of other investigators of the subject. Mr. Richard Moreland, jun., in a paper read before the Architectural Association in 1874,* expressed a similar opinion to that entertained by Mr. Perrett as to the position of the neutral axis of cast-iron girders. Mr. Moreland said:—

"The neutral axis [in cast-iron girders] is not in the centre of the girder, as is sometimes supposed, nor in the centre of gravity of the section, but it is that point in the line which, passing through the web and flanges, and dividing the girder in two parts, makes the product of the area of the upper flange, multiplied by the crushing strain of 42 tons, equal the product of the area of the lower flange multiplied by the tensile strain (which is 7 tons), equal sums: thus, to have the flanges of a girder in the theoretic proportion of 6 to 1, the lower flange, say, is 24 in. area, and the upper one 4 in. area, the lower area 24 × 7 tons tensile strain = 168 tons, and the upper area, 4 in. × 42 tons crushing strain = 168 tons; so that on either side of the line the forces are acting in different directions, and that the neutral axis must exist where the forces rotate in different directions about a common centre."

The discussion was continued, substantially to the same effect, by Messrs. H. E. Hill, A. Payne, H. Valpy, W. F. Butler, and C. H. Driver, and at its conclusion the thanks of the Society were tendered to Mr. Love for his paper, the interest of which was, of course, greatly enhanced by the experiments with which it was illustrated.

METROPOLITAN BOARD OF WORKS.

ELECTION OF ASSISTANT ARCHITECT.

We stated in last week's *Builder* (p. 169) that a committee of the Metropolitan Board of Works had selected the names of six candidates for the post of Assistant Architect and Surveyor. At the meeting of the Board on the 16th inst., the Works and General Purposes Committee reported as follows:—

"Your committee have proceeded on the resolution of the Board of the 12th ult., referring it to them to examine the applications and testimonials, and submit the names of six candidates for the post of Assistant Architect and Surveyor in the Building Act Office, at a salary of 600*l.* per annum. Applications in answer to the advertisement were received from only eight candidates, who have attended your committee and have been questioned as to their qualifications, and one of whom, it is found, did not possess the requisite certificate from the Institute of British Architects. Your committee have selected the undermentioned six, whose names they beg to submit, in compliance with the instructions of the Board:—Mr. Daniel Robert Dale, Mr. William Fogerty, Mr. John Hebb, Mr. George MacDonell, Mr. W. Hilton Nash, Mr. Jasper Wager."

Mr. Roche moved,—"That so much of the report of the Committee as relates to the appointment of an assistant architect be approved, and that the election be now proceeded with." This having been seconded,

Mr. H. Lowman Taylor said he could not help thinking that the determination of the Board to appoint an assistant architect, at a salary of 500*l.* a year, had not been sufficiently advertised. The fact that such an appointment was about to be made by the Board could not have been generally known in the architectural profession, or surely instead of eight† candidates there would have been fifty. He had seen a small advertisement in the *Builder*, but he believed it had only appeared once. He moved as an amendment that the election be postponed for a fortnight, in order that the vacancy might be further advertised.

Mr. Elam seconded the amendment, because, he said, he thought it would be advisable to postpone the election. The matter might be referred back to the Works Committee, with instructions to re-advertise the appointment, and with power to increase the amount of salary attaching to the office to 600*l.* per annum, if deemed expedient ("No, no"). No effort should be spared to get the most able and competent men to become candidates.

Mr. Legg asked in what papers, and how many times, the vacancy had been advertised?

The clerk of the Board (Mr. Wakefield) replied that the advertisement had appeared in the *Times* twice, and once each in the *Builder*, *Building News*, *Architect*, and *Metropolitan*, making six insertions in all.

On being put to the vote, the amendment was

* Noticed in *Builder*, vol. xxxii., p. 45.

† The two candidates in addition to those whose names were submitted to the Board by the Works Committee, were Mr. G. O. Lanesborough (late Lane), of Wells-street, Oxford-street, and Mr. A. W. Maberly, Surveyor to Exeter Hall. The last named candidate was the one referred to by the Committee as not possessing the requisite certificate from the Institute of Architects, but he undertook to obtain one "at the next meeting of the Committee of the Institute."

rejected by 20 to 8, and the motion submitted by Mr. Roche having been carried, the election was proceeded with, the candidate lowest on the list at each voting being dropped until the candidates were reduced to two, upon whom the final vote was taken. The voting was as follows:—

Candidate.	First vote.	Second vote.	Third vote.	Fourth vote.	Fifth vote.
Dale.....	18	16	16	9	—
Fogerty ...	2	—	—	—	—
Hebb	23	20	19	18	20
MacDonell .	10	11	8	—	—
Nash	24	22	18	18	15
Wager.....	3	3	—	—	—

Mr. Hebb was therefore declared elected, having, in answer to the chairman (Sir J. M. Hogg), stated that he had read the memorandum relating to the duties which he would have to perform; that he was prepared to carry out such duties in every respect; and that he was prepared to devote the whole of his time to the service of the Board.

Mr. Hebb thanked the Board for his election, and said he would endeavour to fulfil the duties of his office in such a way that the Board would never regret the choice they had made.

Bearing in mind what has been so often said by correspondents of the *Builder* as to the unremunerativeness of the architectural profession except to a comparatively few of its members, it would really seem that the fact of there being only eight applicants for an appointment of 500*l.* a year, with prospects of advancement, must be accounted for on Mr. Lowman Taylor's hypothesis of insufficient advertising.

Mr. Hebb was articled to Mr. Edward I'Anson, whom he assisted for some years in his business, at the same time practising as an architect and surveyor on his own account. He is well acquainted with the Metropolitan Building Act, and those sections of the Metropolis Local Management Acts which relate to the formation of streets and the construction of buildings. He has had considerable experience of the duties of a district surveyor and the practical administration of the Building Act, and was lately appointed, with the approval of the Board, deputy-district surveyor for Clapham and South Battersea.

NEW CHURCH OF ST. JOHN THE EVANGELIST, HOLBORN.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

On Saturday afternoon last the members of the Architectural Association visited the church now in course of erection in Red Lion-square, Holborn, and which is to be dedicated to St. John the Evangelist. The church is being erected from the plans of Mr. J. L. Pearson, and occupies an irregularly-shaped site at the south-west angle of the square. Mr. Pearson was present to receive the visitors, but as he was suffering from a severe cold he was compelled to delegate the task of explaining the plans and showing the visitors over the works to Mr. James Bubb, the clerk of the works, whose practical acquaintance with vaulting, and resource in meeting somewhat uncommon problems of construction, were highly spoken of by some of the visitors. The church consists of nave, 80 ft. long by 40 ft. wide; chancel, 40 ft. long by 22 ft. wide; morning chapel, 17 ft. long by 16 ft. wide, with semicircular end; together with aisles to chancel and double aisles (*i.e.*, two on each side), to nave, with principal porch in base of tower on the south side. The nave is divided into four bays by three massive stone piers on either side, 5 ft. by 4 ft. on plan, and 16 ft. 9 in. from centre to centre. With the exception of the piers, arch-moulds, and windows, the whole of the interior is faced with white brick, the walls of the nave being 3 ft. thick, and those of other parts of the building proportionately substantial. The whole of the interior, including the nave, will be vaulted in white brick, with stone ribs. The height to the springing of the chancel-arch is 37 ft. 6 in. The wall-plate, upon which the king and queen post trusses, for carrying the outer roof of the nave, will rest, is 53 ft. above the floor-level, while the height to the apex of the roof will be 70 ft. The tower is placed nearly in the centre of the south side of the church, to the west of the morning chapel, and will at present only be carried up high enough to clear the roof of the chapel; it is designed, however, to have a total height, with spire, of 200 ft. The portion of the church westward of the tower recedes behind the houses in Fisher-street; while the west end is hidden from view by the houses in Kingsgate-street, and the north side by the houses on the west side of Red Lion-square and on the south side of Orange-street, so that only the east end of the church and the eastern portion of the south side will be visible from the street. The church will, however, have an entrance from Kingsgate-street. The gable of the east end of the chancel is flanked by two large turrets, and the chapel has also its own turret. These will group well with the great tower and spire when it is completed. The exterior of the building is faced with red Suffolk bricks supplied by Gibbons, of Hadleigh, the stone inside and out being three different varieties of Bath, viz., Corsham, Corn Grit, and Box-ground. Sitting accommodation will be provided for 1,000 persons. Running entirely round the nave and chancel is a triforium. The lighting will be principally obtained from the clearstory windows, in addition to which there are large windows at the east and west ends. The style is Transitional, and the arches at the east end are effectively decorated by means of dogtooth and kindred ornamentation. The church rests on a solid bed of gravel, the foundations being carried down 13 ft. below the pavement level. No concrete was used. A great portion of the ground beneath the eastern end of the church has been excavated and utilised for the provision of vestries, &c., together with a meeting-room or lecture-hall capable of seating 300 persons, and a mortuary chapel at the south-east angle. At the north-east angle a house for the clergy is being erected, with communication between the church on three levels, viz., on the basement, into the north aisle of chancel, and into the triforium. The church will, it is expected, be consecrated in July next. As already stated, Mr. J. L. Pearson is the architect, and Mr. J. Bubb the clerk of works, Messrs. Dove, Brothers, being the contractors, and Mr. Joseph Chant the foreman of works. Our reporter could obtain no information as to the cost of the buildings.

THE LAMBETH SCAFFOLD ACCIDENT.

As Batt's patented appliances for scaffolding were used at Lett's Wharf, where the scaffold was blown down by the violent gale on Tuesday, the 30th of January, it seems desirable that its construction should be well understood, so that the invention, which seems to have advantages, may be correctly judged of. The brick shaft for which the scaffold was required is octagonal on plan, being 12 ft. in diameter at base, and is to be 120 ft. high from the ground-line to the cap. The foundations of the shaft go down a depth of 30 ft. below ground-line.

This shaft forms part of the building contract of Messrs. Perry & Co., of Bow, who, having had the patented appliances brought to their notice, decided to have such a scaffold erected for the purpose of building the brick chimney-shaft, in preference to a pole scaffold. The new scaffold occupied five weeks in erecting, and was completed and trimmed off only the day before the accident occurred. The bricklayers had commenced to work on the chimney-shaft about a week before. The scaffold was thus constructed:—

The *standards* consisted of three deals, each 21 ft. long, 9 in. wide, 3 in. thick, breaking joint every 7 ft., so that the joints occurred alternately outside, middle, and inside, and thus the standards measured 9 in. square. A bolt and nut secured the three deals together at each joint, and at the outside and inside joints wrought-iron tie-plates were used. The *ledgers* consisted of deals 20 ft. by 9 in. by 3 in.; the *braces* of battens, 7 in. by 2½ in.

By using three deals for the standards great strength was obtained, as the grain of the wood would be irregular. The ends of each ledger were received into the wrought-iron patent shoe, the horns of which gripped a wrought-iron ring or link, and which by its construction gripped firmly the square standards. The ends of the ledger were secured to the shoes by coach-bolts, so that the ledgers formed a strong tie between the standards. Braces were taken up continuously on each of the four sides of the scaffold. These were secured to the standards by bolts, and at the centre, where the braces crossed the ledgers, a bolt was passed through both. Thus this scaffold, as constructed, became a square latticed girder, and its strength and stiffness were illustrated by its being literally twisted off and bending before the hurricane, which proved too powerful for it.

At the adjourned inquest, Mr. Vulliamy, Superintending Architect of the Metropolis Board of Works, who was summoned to give evidence as to the nature of the scaffold, said, "He considered the scaffold was scientifically built, and there were many advantages attending the mode of construction, the principal one, in his opinion, being that, as the timber used did not sustain any damage, it was available for building purposes afterwards. He considered it a very good scaffold, and well and carefully put together."

The surface acted upon by the gale was by actual measurement 2,240 square feet, and the force brought to bear thereon was a pressure of 24 tons, the registered pressure of the wind being 24 lb. on the square foot. The patented appliances, it may be added, are now being used by Messrs. Perry & Co. for the building in course of erection by them on the South-Western Railway Company's premises at Nine Elms; also for a large contract which they have now in hand at Dartford.

BRICKLAYERS' TECHNICAL EDUCATION CLASSES.

At the first annual distribution of prizes to the successful students of these classes, on the 15th instant, in the hall of the Society of Arts, to which we alluded last week, several members of Parliament and a number of architects expressed by letter their interest in the movement which is announced as under the patronage of the Royal Institute of British Architects.

In opening the proceedings, Mr. Charles Barry, who presided, said the movement as he understood it was the result of a desire on the part of the working bricklayers to know something of the principles as well as the practice which should guide their work. It should be a pleasure to any man to foster such a movement because it was by united action in the different sections of society that all real progress must be made. He was present through the earnest request of Mr. Thicke, the originator of the movement, and his earnest solicitation to the Institute of British Architects to take the movement under its patronage. In bringing together and forming these classes he and the council thought a movement had been initiated which would be productive of very beneficial results, its object being to increase a true friendly spirit between employers of labour and employed. He said "the increase" this feeling, for he believed it already existed to a very considerable extent. Another object of the movement was to induce a greater interest in the work in which these classes were engaged,—to induce them to do the work for the work's sake, which was once the spirit which gained for English work and English manufacturers that credit which had made our country the mistress of the commerce of the world. Neglect of these principles would surely lose us that proud position, and, indeed, was now putting it in jeopardy. The Institute was greatly induced to become the patron of the movement by this sentence in the letter,—"We allow no politics to be introduced, and trade questions are not permitted to be discussed, the object of the committee being simply to improve the men in their technical knowledge." The Committee, he added, could have no better object.

Mr. Thicke then gave a brief history of the establishment of these classes. He said the real origin of the classes was a paper which he had read at the Architectural Association upon the relationship between architect and workmen, which elicited letters upon the subject in the *Builder* from various bricklayer foremen and clerks of works, and amongst others from Mr. Woodley and Mr. J. P. Morris, two of the present teachers. Afterwards these two gentlemen addressed him a letter asking for an interview for the purpose of conferring as to the best mode of establishing technical classes. It was subsequently arranged that a public meeting should be held, at which meeting the names of students were taken and he was pleased to say that they now numbered fifty-four, the average being thirty every Friday evening at the Artisans' Institute. The men were very desirous of receiving instruction, and were most attentive and orderly in their conduct. The whole of the students with the exception of a younger brother and a clerk in his office, were *bonâ-fide* bricklayers. As a stimulus and encouragement, and an opportunity offering itself, he had appointed Mr. Berry, one of the teachers, as a clerk of works to a building which he was erecting. The examinations which were held in December last were creditable to the students considering they had only commenced their work since last June. Mr. Thicke went on to say that there was undoubtedly, a general desire throughout the country for education, and the diffusion of it is working, and cannot fail to work, a great change in the habits of the mass of the people. Technical education was very much neglected, and he thought if the promoters of the classes could show that they were *bonâ fide* pioneers of a crusade against the ignorance which unfortunately existed among bricklayers, and that they were likely to do a good work surely they were only doing their duty in seeking the support and advice of the public generally and the archi

tectural profession and employers of labour in particular.

The prize winners were then called up to receive from Mr. Barry the prizes, which consisted principally of cases of instruments and books; with each prize was given a certificate or diploma, but in some cases only a certificate was given.

The Rev. H. Solly, in moving the first resolution, to the effect that the classes were deserving of support, said he considered the Chairman, in presiding on the present occasion, was fulfilling an important public duty in recognising the endeavours of humble workers in their attempts at self-help. He alluded with satisfaction to the aid the Artisans' Institute had been able to give the cause of technical education generally.

Mr. George Savage, in seconding the resolution, said he had agitated this subject for the last thirty years, and had been witness of many attempts to establish classes for technical instruction, and he felt bound to say this was the first substantial success. He thought the City guilds did not do quite as much as might be expected of them in the fulfilment of their duties. He considered they lived upon reflected virtues which did not belong to them.

The resolution was carried unanimously.

In reply to a vote of thanks to himself, the Chairman said he hoped Mr. Savage and others would not forget that the guilds had not only a glorious history and had done good work,—industrial, social, political, and religious,—both for freedom and education; but they were as desirous as ever of continuing their past career of usefulness.

The names of the prize winners are as follow:—James Wakeford, Alfred Ticehurst, John Peter Morris, Godfrey Gibson, James Hawkes, and John Clayfield.

The certificates went to—William Gardner, James Ward, Peter Mortlock, James White, James Eyderman, and Charles Sillitoe.

DWELLINGS FOR THE POOR.

At the last meeting of the Architectural Section of the Glasgow Philosophical Society, a paper by Mr. David Thomson, I.A., on "Dwellings for the Poor," was read. The chair was occupied by Mr. Honeyman. After alluding to the importance of the subject, Mr. Thomson went on to say that, for the purpose of bringing before the meeting the state of accommodation for the poor of the working classes, he might mention that there are in the city at present 35,226 houses of one apartment and 48,550 of two apartments. Of the former 9,560 had been erected since 1866, when the new Police Act was passed, and 20,112 of the latter had been erected since that date, so that they might assume the difference between these numbers, namely, 25,666 houses of one apartment and 28,468 of two apartments, were either houses built for this class prior to 1866, or larger houses that had been sub-divided. He might also state that 31¾ per cent. of the population of the city lived in houses of one apartment, and 44¾ in houses of two apartments, making a total of 390,000 persons. The greater portion of these persons lived in the worst parts of the city, and in houses generally small and unhealthy, and as the work of demolishing those houses was proceeded with, the question arose—"Where were their occupiers to go?" After pointing out the means which had been adopted in London to provide house accommodation for the poorer classes of the community by associations, and describing the plans upon which the houses were constructed, Mr. Thomson stated that the difficulty in connexion with the subject was not the planning of suitable dwellings or their construction, but the price of land in suitable localities. In designing dwellings of this class, the essential requirements were that they should be substantial, the rooms large and well lighted, and that there should be a free circulation of air about the entries, and these as far apart as possible. All direct connexion between the sewers and the houses should be avoided; water should be supplied convenient for each house, with sinks to run off the waste, and water-closets on landings should be isolated, so as to secure sufficient ventilation in and around them. The staircases should be open at one or both ends as in the London houses, the courts should be open and asphalted, and the blocks of houses so arranged as to permit a free circulation of air around each block. For the construction of the walls of such houses he knew of no material so suitable as concrete. Waste-pipes from sinks, &c., should not be connected with the drains, and no sewer gases should be permitted to enter the houses by the waste-pipes. The difficulty was not to devise suitable arrangements, but to get the public to see that such houses were a want which must be supplied, if not by private enterprise, by the public themselves, in their corporate capacity. He did not suppose it would be possible to build suitable houses of this class to pay sufficient interest to induce private enterprise to provide them, and as we had no associations such as those in London, he had come to the conclusion that this duty must be undertaken by the community through its representatives. The community was responsible for the state of things now existing; for through want of proper foresight in framing the regulations under which houses were erected and continued to be inhabited, they had permitted houses to be sub-divided and occupied, though by that process they were rendered quite unfit for healthy dwellings, and the community had to suffer from all the attendant evils of this system, such as a high death-rate, a low average of health, constant exposure to the outbreak of epidemic disease, besides increase of crime and the enormous expense entailed in its repression. By the Artisans' Dwellings Act the community, in its corporate capacity, was empowered to acquire land compulsorily, and to cause to be constructed a sufficient number of healthy dwellings for the inhabitants displaced by their operations, or it might, by special approval of the Secretary of State, build such houses, and for that purpose might obtain loans from the Public Works Loan Commissioners, at 3½ per cent. of interest, to be repaid within fifty years, so that the Local Authority stood in a very favourable position compared with that of any association or private person, both as regarded their power of acquiring land, and the low rate of interest at which they might borrow the necessary capital, and the completeness with which they might make all needful arrangements for the supervision of the houses and their occupants. The exercise of this power of continuous inspection he considered to be as important and necessary as the sound construction and good sanitary arrangements of the houses themselves. He believed it would be possible to build such houses in blocks of four flats, and to rent the rooms at 7s. per month, yielding a rental of rather more than 4 per cent. on capital, and he was convinced that the Local Authorities should be pressed to begin the work, at the same time obtaining powers to prevent unhealthy houses being occupied by any class of persons whatever.

HALF TIMBERED HOUSES.

At the close of Mr. Maylard's discourse, reported in our last,* —

The Chairman said the paper had been very interesting, as well as practical, seeing that it dealt with the use of half-timbered structures for modern purposes independently of the archæological aspect of the subject. He (the chairman) had been trying his hand at half-timbered work, in a small way, and he had found that in the South of England, where old half-timbered houses were most abundant, the art of building in this manner had died out, so that in erecting modern half-timbered buildings it was necessary to instruct the workmen. He should like to ask Mr. Maylard whether, in other districts, he had found this mode of construction to have been handed down to the workmen of the present day, or whether he was not obliged to instruct the workmen.

Mr. Aston Webb asked whether, in half-timbered houses, it would be objectionable to use brick nogging between the quartering? Where it overhung probably the weight would be an objection, but on the ground floor it might, he thought, be used with economy in lieu of the three coats of plaster mentioned by Mr. Maylard. Again, was cement used by the old builders for coating the outside surface of plaster? Modern builders of such houses insisted on the necessity of using cement, but the colour was objectionable, and not at all like the clean white appearance of the plaster in old half-timber erections. It was a very interesting question which Mr. Maylard had started in reference to the reason for the projection of the upper stories of half-timbered buildings. If it was done with the view of protecting the floors below, it would seem that it was not so weathertight a mode of construction as Mr. Maylard contended for. It was supposed by some that the projections were due to a desire to economise space, and this supposition would be unquestioned were projecting upper stories confined to half-timber buildings in towns; but they were found in country as well as in town,—where space was almost unlimited, as well as where it was restricted. He thought Mr. Maylard was quite right as to the *raison d'être* of barge-boards; they were obviously out of place in brick or stone buildings. He proposed a vote of thanks to Mr. Maylard.

Mr. H. W. Pratt said he should also like to ask, as to brick nogging, whether Mr. Maylard did not consider it more advantageous for use in modern buildings than lath-and-plaster; and when it was used, should it not be rendered in cement inside, in addition to being battened?

Mr. M. B. Adams suggested concrete as a material which might sometimes be used for filling in the spaces between the timbers, provided proper precautions were taken. As to modern half-timbered houses, they generally presented a miserable appearance, owing to the "match"-like dimensions of the timbers used. The half-timbered mode of construction was very well adapted to small buildings, such as cottages, lodges, &c., but in his opinion it was unsuited to large mansions; it was scarcely monumental enough, particularly where the timbers were small. As to barge-boards, it was most necessary that they should be solid, or pierced very slightly indeed. It was true that there were some very elaborately-pierced specimens to be found, but they were more curious than worthy of being copied.

Mr. A. Payne said that he had some *sgraffito* work done some two or three years ago, and he experienced the same difficulty as to the bad colour of cement which Mr. Aston Webb had referred to. Some one suggested that the mixture with the cement of some white stone-dust, Caen or Bath, would give the surface a better colour; it was tried, and was found to answer admirably. If concrete were used for filling in the spaces between the timbers, it would be necessary to form some sort of key between the wood and the concrete, which could readily be done by driving large nails partially into the wood. Of course the Metropolitan Building Act would not tolerate half-timbered buildings in London.

After a few words from Mr. Marnock and Mr. H. H. Stannus,

Mr. Neale said one great difficulty in the way of the more general use of half-timbered buildings was the difficulty of getting them constructed: no one understood anything about them now. As to the filling-in of panels, it should be noted that in Hertfordshire, Gloucestershire, and Worcestershire, the old builders had a method of "springing in" their laths between small cross-pieces extending from timber to timber, and so forming a good key for the plaster. He strongly objected to the use of concrete, on the ground of its liability to shrinkage.

Mr. Todd observed that a great deal had been said of late as to the advantages of concrete, but his experience of that material was not so favourable as that of others, and he, therefore, doubted its applicability for use in the manner suggested. He had had to entirely reface with Portland cement a concrete building erected about twenty-five years ago, and which was being ruined by exfoliation. The material used for the concrete in question was that known as *puzzuolano*, which was supposed to last for ever.

The vote of thanks having been carried,

Mr. Maylard, in reply, said that in no part of the country with which he was acquainted did he find any lingering traditions of this method of building amongst the workmen. It was necessary to instruct the workmen who were to be employed on the building, and it was generally easier to instruct country builders than those in London; the former would do what they were told, but the latter would want to bring to bear some new-fangled notions in carpentry. With regard to brick nogging, he had no particular objection to it, but he thought plastering was better for keeping out the wet. As to concrete for filling in, he thought it was open to great objection; even if it did not shrink, how about the wood with which it came in contact? The shrinkage of either material to the extent of only one-hundredth of an inch round a panel, would cause suction to be set up and the wet would pass through to the inside. He was of course quite aware that half-timbered houses were not tolerated by Building Acts, but he contended that unless better bricks were made than were now to be had, there was likely to be a large demand for half-timbered houses, which, when properly constructed, would effectually keep out the wet.

* See p. 153, *ante*.

Technical Classes for Building Trades.—A bricklayers' class meets every Tuesday evening at the Working Men's College, 91, Blackfriars-road. We are asked to say teachers are desired for other classes—for masons, carpenters &c., particulars of which are given in our advertisement columns.

DWELLINGS IN PORTSMOUTH.

In a paper on the Dwellings of the Poor read at the Portsea Island Literary and Scientific Society, Mr. Archibald H. Ford said,—Without statistics it would be presumption on his part to indicate the exact districts in Portsmouth which were unhealthy within the meaning of the Act of 1875. That duty devolved upon the able medical officer of health, who would as fearlessly and wisely discharge that duty as he had discharged all the other great and responsible duties of his office. Mr. Ford trusted that the greater number of the artisan class of the borough had by their industry and thrift provided themselves with healthy and comfortable homes. But that there were in Portsmouth a considerable number of the poorer classes living in dilapidated and overcrowded tenements, under conditions similar to those he had described, no one who had any knowledge of the geography of the borough could for a moment doubt. If any were sceptical of the existence of unhealthy areas in our midst, let them note and examine on a map of Portsmouth the position and extent of its courts, alleys, and narrow streets, and then wander through those districts and observe the condition of the dwellings. It would enable them to form a fair conclusion in which portion of the borough we might expect to find the greatest ravages of disease and death. Personal knowledge and observations led him to the conclusion that there were many acres of land in the borough covered with overcrowded and insanitary tenements, which might, with great advantage to the health of the population, be cleared and rebuilt under the Act of 1875. Often had he wondered how many of our poorer fellow-townsmen were housed under conditions that must make health impossible; how many, in fact, were passing their lives in districts where death, perhaps, was the only expected visitor. Remembering the epidemic that had been allowed to ravage the town during the past year, and which, to repeat the words of Dr. Thorne-Thorne, had resulted in a great and needless loss of life, and remembering also that the epidemic originated in a crowded part of the borough, and was especially fatal and prevalent in a district where, as Dr. Thorne-Thorne said, the accommodation of the houses favoured the spread of the disease, it was certainly the duty of our municipal authority to obtain similar statistics to those he had referred to, and, having learned the extent and nature of unhealthy and overcrowded tenements in Portsmouth, to follow the example of the authorities of other large towns, and take advantage of the important powers conferred by recent legislation to deal with unhealthy areas. The Borough Sanitary Authority had recognised the necessity of carrying out important works for improving the sanitary condition of the inhabitants, although they had hitherto been blind to the positive necessity of providing efficient means for coping with epidemic disease. The cry of economy, once so rampant in the borough, was now seldom heard when questions affecting the public health were concerned; but, if there were any who would say, "we cannot afford to improve the dwellings of the poor," he answered them in the words of a Lord Provost of Edinburgh, "If it is a question of money, it is also a question of life and death; the town must make its choice between the two." He would remind the economist, too, that we had found money for building those necessary institutions, the new gaol and asylum, and that a true economist would say, "Use every means to keep them empty; and improve the dwellings of the poor, because that must tend in that direction." He would say to the economist that we had found money for our School Board, which has been spent with no stinting hand in the work of education, and in the construction of school buildings palatial in their design; and he would ask to be shown the wisdom of teaching children in buildings like these, and allowing them to live in dark, damp, repellant houses, unfit, in many instances, even for occupation by the lower animals. He would ask to be shown the sense or the economy of teaching children to be good, and allowing them to live in hotbeds of disease and crime. Let him not be misunderstood. He did not object to education, or to children being taught in sightly and well-ventilated buildings; both must further the desire amongst the poor for better habitations. But the conclusion he arrived at was, that the work of providing these two great social wants must go hand in hand if either was to result in the full benefit we anticipated. We had heard much lately about our local water-supply, and, as it had an important influence on the sanitary condition of the dwellings of the poor, he desired to say that a constant supply of water was the first great want of Portsmouth. If it necessarily entailed a charge upon the borough he should give it precedence even of a scheme for improving the dwellings of the poor, so essential was it to the health of a town where the water-carriage system of drainage had been adopted. He trusted, however, that the expense to the borough of purchasing the Waterworks would be avoided, and that by prompt action,—and, if it was needed, bold expenditure by the directors, the Waterworks company, with the co-operation of the Sanitary Authority in enforcing the necessary house-fittings,—a constant supply of water would soon be provided to every house in Portsmouth. Public abattoirs, a public market, public offices, and last, but not least, a public library, were required; but he ventured to think that the Authority would not be justified in expending the funds at their disposal while, from any motive of economy, a single unhealthy area was allowed to exist in our midst. Their first duty was to provide for the health of the inhabitants, and the institutions named would promote that end to a very limited extent only in comparison with the demolition of unhealthy districts, and providing for the proper housing of the population. The necessity of at once adopting the Artisans' Dwellings Act of 1875 in the borough could not be too strongly urged upon this important Society, and, through the influence of its members, upon the inhabitants of Portsmouth; for it would be discreditable to a town of its size and importance if another session of Parliament were allowed to pass without our authorities availing themselves of the new and favourable provisions of that Act. It must not be forgotten that when the unhealthy tenements in this town were swept away a wide field would be opened for commercial enterprise. To Mr. Ford's mind much of the work of providing improved dwellings could be better carried out in the interest of the poor by a company like that formed by Sir Sydney Waterlow, which had accomplished such good work in London. If not before, when the Local Authority had performed its part of the work, there would, he hoped, be found in the borough influential citizens, capable and willing to undertake the formation and direction of a company to execute a similar good work in our midst, and many of the inhabitants ready to put their money in a safe and profitable investment, that must bring health and gladness to thousands of their poorer fellow creatures. It would be a reproach to this country, where the strictest conditions are enforced for providing sufficient light and air in the dwellings of the criminal and pauper classes, if thousands of the poor and honest citizens of our large towns were allowed to live with their wives and families in crowded and unhealthy tenements. The improving the dwellings of the poor was a noble, if a vast, work, and if it was to be carried out under the Act of 1875 all classes of society would have to co-operate for many years,—every intelligent man and woman would have to recognise as a duty the use of their influence to return to the town councils and sanitary authorities of our large towns men who were prepared to grapple with the question. A disregard of sanitary laws entailed consequences relentless in their severity upon the community over which they exercised control,—physically, morally, and spiritually. By individual exertions in promoting this great work of social and sanitary reforms we might hope to bring not only health and comfort into the houses of those whom Christians were especially charged to care for, but also to foster in our land, hardy, home-loving, and God-fearing men, who would never fail their country in its time of need.

Royal Recognition.—We hear with extreme gratification that her Majesty the Queen has been graciously pleased to send a large photograph of herself, and two lithographs of herself and the late Prince Consort, to Mrs. S. C. Hall, with an autograph letter, commencing, "The Queen has the greatest pleasure in presenting to Mrs. S. C. Hall," &c. This recognition of one who has spent a long life in the service of the public will give pleasure to thousands who are acquainted with her works. Mrs. Hall had been very ill for some time previously, but has been getting better and better ever since this agreeable event, and may, it is to be hoped, yet do more good work.

STREET TRAMWAYS.

A paper was lately read at the Society of Ar on this subject by Captain Douglas Galton, w said:—

I cannot better commence than by calli attention to the remarks made last autumn b Mr. E. Chadwick at Glasgow, in which he poin out that the best remedy for the insanitary co dition of towns by overcrowding is to cheap transit by every means, so as to spread t population to fresh suburban lands, whe grounds are less expensive, and sites more ope Science has now rendered this comparative easy by providing mechanical appliances th will, to a great extent, supersede the use horse-power in public vehicles. The social pr blem in this matter is at least as important the engineering problem, but it is only by publi discussion that these appliances can be brough into more extended use. The railway afford communication between *foci* of population, bu the railway is especially calculated for conveyin large numbers of passengers, and large quant ties of goods in each train; and for the efficien working of the railway the distance betwee the points where the traffic is collected must b sufficient to allow of the train acquiring spee between its several stoppages; for, unless thi is the case, one of the main advantages of railway, viz., speed, is lost. In towns, the point at which passengers desire to be taken up or se down are so numerous that the number of sta tions cannot be multiplied sufficiently to accom date everybody. In the country districts, o the other hand, the traffic is scattered, and th railway itself has to be fed by roads, along whic the traffic comes to the station in quantitie which would be insufficient to fill a complet train. The ordinary railway is inapplicable t either of these cases; but cheapness of transpor is as desirable in the collection of traffic as it i in its subsequent conveyance. The cost o transport depends on the smoothness of th road. Thus the tractive force required to dra one ton on a level on well-laid iron rails on railway is about 7 lb.; stone tramway (smooth) 20 lb.; asphalte, 27 lb.; wood pavement, 38 lb. macadam (very good), 40 lb.; ditto, gravelly 50 lb.; ditto, new, 96 lb.; soft, sandy, and gravelly ground, 210 lb. Thus, after the iron rail, the smooth granite affords the best surface The provision of a smooth surface for wheel tracks for ordinary horse traffic is of old stand ing. A description of this system, as adopted in Italian towns, was given by Mr. P. Le Neve Foster, jun., C.E., in the Society's *Journal*.* It may be seen in the Commercial-road. Mr. Chadwick has proposed, in lieu of the granite slabs, asphalte wheel-tracks. These wheel-tracks must necessarily be somewhat broad, to enable them to accommodate the various widths o vehicles. When one horse is used, the inter mediate space may be so paved as to afford a foothold for the horses; but where two horses abreast are used, a proportion of their useful power is lost by the slippery foothold afforded by the broad slabs. The harder the material of which the wheel-track is made, the more slippery does it become. It follows that, for the convenience of horse traffic, it is preferable to limit as much as possible the width of the wheel track; but when this width is closely limited it becomes necessary to provide it with a flange, or some means of keeping the wheels in their place.

After speaking of tramway legislation and inquiring into the advantages of steam-traction over horses or other mechanical appliances, the writer said the general conclusion to which the consideration of this subject brings us, is that the problem of the application of steam to tram ways has been so far solved by the Grantham and Merryweather steam-cars and engines, that steam-traction may now be advantageously brought into operation on all tramways. The cost of steam-traction would certainly not exceed two-thirds (probably not one-half) of that of horse traction; and it would be more humane and convenient. Its adoption will, therefore, afford a large margin of profit to the existing tramway companies, who now work their lines with horse-power. As a result of the application of steam-traction to tramways, we may safely look to the extension of steam worked tramways for supplying cheap and convenient locomotion to the small towns and large villages which do not now enjoy railway communication, whose traffic would scarcely repay the construction of the more complete and expensive railways.

* See *Journal* for June 25, 1875.

FLOATING SWIMMING-BATHS.

SIR,—We have perused your very interesting article on "Floating Swimming-Baths," and as there is more than one reference in it to the bath which has just been constructed for the Chester Floating Baths Company, Limited, we take the liberty of sending you a few lines to show how the Chester Bath, designed by us, embodies the principles which you so justly lay down for the guidance of those who are directing their attention to the provision of such structures on rivers, estuaries, protected shores, or bays. The Chester Floating Bath aims simply at utilising and improving the natural river-bathing on the Dee.

The bath is a cellular iron structure, the pontoons of which surround a space 70 ft. long by 30 ft. wide, which forms the water area of the bath. The bottom of the bath is formed of wood planking, resting on iron beams, and set on an incline so that the depth of water at one end is 6 ft. 6 in., and 3 ft. at the other; but the bottom is not made up solid, the planks being made 1 in. apart. Thus the water of the river circulates freely through the bath, and a surface-current is promoted by means of wrought-iron tubes placed through the end pontoons.

The top of the pontoons surrounding the water area is decked with wood, and upon this deck are dressing-boxes, closet, urinal, keeper's-room, towel and drying room, &c., and while these are roofed in, the roof extends only to the edge of the water. Thus those in the bath have the sky above them, and are to all intents and purposes enjoying the pleasures of river-bathing, but surrounded with all the comforts of a well-regulated land establishment, and are in the same state of security against deep holes and strong currents.

The subject has had our best attention, and the floating bath which was constructed from our designs some years ago for the committee of the training-ship *Indefatigable*, and is now in use on the River Mersey, embodies the ideas expressed in your article, with this addition, that the bottom of the bath is hinged at one end, and lifting apparatus supplied, so that in case of accident to any of the swimmers the depth of water over the whole area could be reduced to 2 ft. 6 in. We have long been of opinion that a little enterprise was all that was necessary to place similar or improved structures on the many rivers and protected shores that are scenes of the somewhat unsafe and often indecent style of bathing practised at present.

WM. R. MCKAIG.
J. CARLTON STITT.

THE TREATMENT OF TENDERERS.

SIR,—In your issue of the 10th inst. you called attention to some irregularities in the way in which contracts by tender had been allotted in a provincial town. Your readers will be surprised to learn that similar irregularities have occurred in London. We do not mean in the case of some obscure private individual inviting competition among contractors for sweeping his chimneys, clearing his drains, or such work; but the iniquity we refer to has been perpetrated by a public corporate body,—once, indeed, notorious in London for its peculiar manners and customs, but now enjoying with the public a very superior reputation for all the virtues. You will be shocked to learn that it is the rulers of the parish of St. Pancras who have backslidden.

The commissioners of baths and washhouses of St. Pancras have determined to build new ones, and for this purpose they magnanimously agreed to put the designs,—the engineer's work and the builder's work,—separately to competition. We will not bore you with all the details of the history of these contests, but neither of them happened to be conducted without a hitch. The instructions to the competing architects were varied, it is said, so frequently that at last hardly two sets of the drawings were sent in to the same scale. Whether the worthy commissioners were able mentally to reduce the plans to a uniform scale we are unable to say, but at last one architect was selected.

Then came the engineer's work, which was to be inserted in the builder's contract, and which consisted of a variety of work,—cast-iron pipes, boilers, engine, valves, wrought-iron frames, &c. Eight firms were allowed to tender, among them being ourselves, who had the honour of executing similar work for the old baths in St. Pancras, erected ten years ago. The sealed tenders were to be delivered to Mr. Gundry, the selected architect, in the usual way, by a certain hour on a certain day, when they were to be opened. Punctual to the hour, the majority of the firms attended, and shortly after the time specified the tenders were opened by the architect in their presence, and the amounts announced, and ours being the lowest we were informed that our name would be reported to the commissioners, from whom we should hear after the next meeting. On our attending this meeting, we were astonished at being calmly informed that after the meeting of contractors at the architect's had dispersed, another tender had been received which was about 25 per cent. below ours, and that it was proposed to accept this.

Of course, we remonstrated, and the commissioners adjourned their decision for a few days. At their next meeting it was found that the late comer had withdrawn his tender, having made a mistake, and then the contract was definitely given to another firm, whose tender was in *excess* of ours.

We suppose we have no legal remedy, as they would no doubt fall back on the conventional clause in the general specification as to not being bound to accept the lowest tender; but every one knows that this is only put in to avoid committal to a shaky or incompetent firm, who might creep in unawares, and if it is applied to firms like ourselves, who were in the very limited number of competitors, and whose work of the same kind, done ten years ago, has never been complained of, we do not see how any respectable firm will care to go to the expense and trouble of tendering. Moreover, it was not inserted in the engineer's specification. We think it only right to make this affair public, so that contractors may know of what sort of people some of our London vestries consist, and perhaps in course of time parishioners may discover that by electing such men they are not taking the course most likely to ensure their affairs being managed economically.

THE ST. PANCRAS IRONWORK COMPANY.

"THE PULLEY OF THE FUTURE."

SIR,—Much as I feel flattered by seeing a small invention of mine, which you published on December 11th, 1875, described as above in the advertisements of a Mr. Meakin, I cannot testify my gratitude by allowing him to monopolise the manufacture by putting it into a patent of his own, as I have only just now learnt that he has. He is the very man referred to anonymously at p. 206 of my "Book on Building," where these sash-pulleys with oil-holes are described. I suggested them to him in February, 1874, when he came to try and persuade me to order some of his other window contrivances for the house I was building, which I declined, preferring simpler ones of my own. When I was ready for them, I ordered my own pulleys of my own builder, Mr. Longmire, and he ordered twelve dozen of them of Messrs. Nettlefold, for whom they were made by A. Kendrick & Co., and used in the aforesaid house, many months before it occurred to the above-mentioned benefactor of mankind to try and appropriate them by a patent, just about the same time as you published them.

I have no objection to his making them for as long a future as he pleases; but I think it right to inform other people who want to do so that they need have no difficulty in proving, if he tries to meddle with them, that he was not the "true and first inventor," as the Patent Law has required for 250 years, but was told of the invention by me; and also that it was known to all the above-mentioned tradesmen and all the workmen in my house long before his patent, which, for both those reasons independently, is bad.

EDM. BECKETT.

The Pendulum Donkey Pump.—Mr. J. Stannah has effected some improvements in donkey-pumps. He has adopted the mechanical arrangement of the pendulum, in which the chord of the arc described by its bottom centre determines the stroke of the pump, and by an ingenious use of eccentric motion to work the steam valve he is able to dispense with the usual connecting and guide rods, to simplify the bearings, and to reduce the size and weight. The bearings are adjustable, and from the small number of working parts, the pump ought to be very durable, and little likely to get out of order.

THE HOUSE TAX ON OFFICES IN THE CITY.

THIS tax is now in a very anomalous position. Originally all premises were liable to the tax if a care-taker and his family slept therein. An Act of Parliament was passed which allowed a caretaker and his family to sleep on premises used for the purposes of *trade*, and rendered them free from the tax.

The Law Courts have decided that if a solicitor or other professional man occupies a single *suite* of offices in a block of offices where a caretaker and his family sleep on the premises, it renders the whole block liable to the tax, they not being *traders*.

All blocks of offices are exempt from the tax, except the above described. It is hoped that the Chancellor of the Exchequer will remedy this anomaly this session, as the tax thus levied is manifestly unjust, and its operation is to deprive the City of any sleeping population; for owners of offices will not let any person sleep on the premises, as it renders them liable to the tax.

TENTERDEN STEEPLE.

SIR,—With reference to a paragraph in your paper of Saturday last, I beg to say that I have never appointed any surveyor to examine and report upon the pinnacles of this fine old tower, and for the best of all reasons, that I have never been consulted on the subject, or authorised to do so. I restored and refitted the church in 1863–65, but have done nothing since, and am quite ignorant as to the present condition of the tower. I would, nevertheless, join your correspondent very heartily in deprecating any tampering with the old structure, and cannot think that in the few years that have elapsed since my first survey, the pinnacles can have got into such bad condition as now to require rebuilding.

EWAN CHRISTIAN.

SEWER CONSTRUCTION.

RODERICK *v.* ASTON LOCAL BOARD.

ON the 14th inst. this case came before the Judicial Committee of the Privy Council.

The plaintiffs are the owners of the Aston Tavern and adjoining property within the district of the Board. The tavern has pleasure-grounds attached to it, which slope down to the river Tame, and form a natural hollow or dell, and they are laid out and planted with trees and shrubs. Across this hollow the defendants proposed to carry a barrel sewer, 4 ft. 6 in. in diameter, upon the top of an embankment 7 ft. above the level of the natural surface of the ground, the embankment extending 362 ft. in length. They do not propose to purchase any of the plaintiff's land. The plaintiffs allege that this construction will seriously affect the value of their property, and the action is brought to restrain the defendants from doing what they propose. The Master of the Rolls refused to grant the injunction, and the plaintiffs appealed. For the appellants it was contended that the word "through" in the above section only authorised the defendants to construct the sewer underground, unless they chose to purchase the land, which the Act gave them power to do. The plaintiffs would sustain an injury for which the compensation clauses would supply a wholly inadequate remedy.

Their Lordships were of opinion that, whatever hardship might be inflicted, they could not read the words of the section in question in any other than their natural sense. If the word "through" did not authorise the defendants to do what they proposed it would have no other meaning, the word "under" being there also. The plaintiffs must get their remedy from a jury by way of compensation. The appeal must be dismissed, with costs.

ALLEGED MANSLAUGHTER BY A BUILDER.

AT the Oxford Assizes, on the 17th inst., before Mr. Justice Lindley, John Snelling Blandford, a builder at Sandhurst, Berks, surrendered to his bail to answer the charge of manslaughter of Ada Barnes, aged one year, at Sandhurst, on the 22nd of December last.

It appeared that Mr. Barnes, butler at Wellington College, Sandhurst, made a contract with Mr. Blandford to build a house not far from the college, for the sum of 245*l.*, in May last. At the end of November he was informed that the house was ready, and soon afterwards he went into occupation. He had been in the house three weeks when, about four o'clock on the morning of December 24, he heard a noise as of the falling of water from the upper floor. At seven o'clock he heard noises of a more alarming character, which led him to tell his wife to go into another room. Before that could be done, however, the floor gave way. He and his wife fell through, and the infant was suffocated by the falling of the brickwork and dust. The cellar walls were built of concrete, alleged to be of improper material, and the weight of the upper walls caused them to collapse.

Scientific evidence was called, to the effect that the concrete was as good as any used on ordinary occasions, but that the cellar had filled with several feet of water, which operated upon the foundation, and so caused the wall to fall down.

The inquiry lasted six hours, when the jury interposed and said they were satisfied the defendant was not guilty of culpable negligence, and he was discharged.

WASTE LAND IN GREAT EASTERN STREET.

SIR,—Having watched the good you have done on several occasions by hints in the *Builder*, I for one among the many thousands that have had to shift about through the Board of Works and other improvers humbly ask you to throw out a hint or two about the waste land lying idle in Great Eastern-street, where there is plenty of room to build about twelve blocks of model lodging-houses for the poor of this densely-populated spot;—and in no part of London do they require them more. What with the house-agents running up the rents of rooms which the poorest people have occupied for years, and the influx of foreigners daily coming over here, this is the spot more than others where such dwellings are needed. As for Peabody's Buildings in Commercial-street, they are not, and never have been, occupied by the class for which they were intended, and only one small block out of an expenditure of 300,000*l.* has been thought of here where they are most required, and these too are occupied by people earning from 2*l.* to 3*l.* per week. Perhaps they will let the land lie idle for thirty years, like that in Commercial-street, there being now two spots not built on yet. Sir, I think a hint from you would be likely to wake up some of Peabody's or other benevolent company, and I with thousands more would return our sincere and heartfelt thanks for the same.

SPITALFIELDS.

MASTERS AND MEN.

Durham.—The persistency of the Durham joiners in holding out against the proposed reduction of one penny per hour threatens to terminate adversely to the men. In two of the principal building yards in the town fresh workmen have been put on at the reduced rate.

Clevedon. — At a meeting of the master builders of Clevedon, it has been resolved to give notice of a reduction in the wages of masons of 2s. per week.

Bromsgrove.—A large meeting of the nail-makers on strike was held at the Town-hall, Bromsgrove, on the 13th inst. Mr. Abraham Ashfield, president of the Nailforgers' Protection Association, in the chair. It was announced that Mr. Arthur Ryland had offered his services as arbitrator between the masters and men, with a view to a settlement of the dispute, but the meeting was unanimous in deciding not to submit to arbitration.

Rothesay.—The operative joiners of Rothesay lately gave their employers the requisite three months' notice of a demand for an advance of ½d. per hour on their present wages of 8d. per hour, and the adoption of certain bye-laws. The masters replied by giving notice of a reduction of ½d. per hour; but at a conference a compromise was arrived at, leaving the rate of wages as it is, but adopting bye-laws.

Dundee.—The journeymen slaters in Dundee have for the past six months been agitating for an increase of wages from 8d. to 8½d. per hour, and a deputation of the men recently met, in Mathers's Hotel, a deputation from the employers for the further discussion of the matter. The deliberations were terminated by the employers resolving to give the advance requested on and after the 19th of April next.

Edinburgh.—The *Scotsman* understands that a correspondence has taken place between the secretary of the Edinburgh and Leith lodges of the United Operative Masons' Association for Scotland and the secretary of the Edinburgh and Leith Master Builders' Association, with reference to the agreement entered into a year ago as to the rate of wages. The secretary to the operatives wrote on their behalf, offering to renew the agreement for another year, from 1st May, 1877, at the present standard of 9d. per hour for average workmen, and the secretary of the Masters' Association replied to the effect that at a meeting of the Association it had been resolved to agree to the proposal of the operatives, the president and the secretary being at the same time authorised to sign the agreement on behalf of the Association.

Bangor.—The operative painters of Bangor have demanded an increase in wages, viz., to 24s. per week in winter, and 27s. for three-quarters of the year.

The Potteries.—Mr. Davis has presented his award in reference to the long-standing dispute as to the potters' wages in the Staffordshire potteries. It is in favour of the men. The masters gave notice of a reduction, but Mr. Davis has now awarded that the wages are to remain as before the notice.

Shrewsbury.—The journeymen painters in the town of Shrewsbury are at the present time out upon strike for an advance in wages of 1d. per hour. The employers, having had several meetings, have resolved unanimously to resist this demand, feeling that the present rate of wages, namely, 5½d., and more often 6d. per hour, is a fair wage for the average quality of the men in the town.

Lancashire.—A largely-attended representative meeting of master builders of Manchester, Liverpool, Bolton, Oldham, Wigan, Warrington, Chester, Bowdon, &c., has been held in Manchester to consider some demands of the joiners of that city. The men work at present during the greater part of the year fifty-two hours per week, at 8½d. per hour, making 1*l.* 16s. 10d.; but they have given notice that on and after the 1st of May next they will only work forty-nine hours and a half per week at 10d., making 2*l.* 1s. 3d. They have also given notice of numerous alterations about walking-time, overtime, and other matters, which the employers state, if granted, amount in the whole to a rise of between 7s. and 8s. per week per man. The present rules contain a clause making it compulsory on both parties to have the matter settled by arbitration.

Swansea.—One or two joint meetings between deputations of the employers and operatives have taken place during the past few days. The men have now been on strike for nine weeks. The employers have suggested that the central corresponding secretary of the Stonemasons' Society should be asked to mediate, with the view of deciding the point whether or not the old code of rules, supposed by the men to be in existence, but denied by the masters, was in reality cancelled, and, consequently, could not now be acted upon. The contention by the masters is that the rules in question, dated the 1st of May, 1874, were cancelled by a code submitted by the men themselves, bearing date October 20th, 1875, but which was not accepted by the masters, and on which the men went out on strike for a few weeks; but, as it is alleged, went in again on the understanding that the code should be settled by arbitration. On the other hand, the men say that the rules of May, 1874, are still in force, no proper notice of alteration having ever been given.

THE NEW STREET FROM SHOREDITCH TO OXFORD-STREET.

SYER *v.* THE METROPOLITAN BOARD OF WORKS.

THIS was an appeal from a decision of the Master of the Rolls. A motion had been made for an injunction to restrain the defendants from entering on the premises, No. 56, Turnmill-street, in the plaintiff's occupation, which the defendants required for the purposes of the Metropolitan Street Improvements Act, 1872, until the defendants had given to the plaintiff the notice required by section 18 of the Lands Clauses Act, 1845, and either paid him or deposited in the bank the purchase-money or compensation agreed or awarded to be paid under the Act for the plaintiff's interest in the premises. The defendants had purchased the premises under their compulsory powers, and had served the plaintiff with notice to quit in June, 1876, or at the expiration of his tenancy. The plaintiff contended that the defendants could not take possession without giving him compensation. In the court below it was held that the plaintiff had no interest in the premises under the Act. His tenancy had been determined legally by notice to quit, and the defendant stood in the shoes of his former landlord. On the appeal their lordships upheld the decision of the court below, being of opinion that the plaintiff had no interest in the premises within the meaning of the Act. The defendants were only exercising their common-law right, and there was not the slightest foundation for the claim of the plaintiff.

CLAIM FOR QUANTITIES.

WOODMAN *v.* FILEWOOD.

THIS case (heard in the Reading County Court, on the 14th inst., before Mr. J. H. Stonor, judge), was a claim for 4*l.* 14s. 6d., for quantities alleged to have been supplied for carpentering work done at premises in the King's-road.

It was stated by plaintiff, who was formerly borough surveyor of Reading, that he was engaged as architect by Mr. Boorne, to draw up plans for his picture-gallery. Mr Matthews was the contractor for the carpentering work, and he supplied him with quantities, to enable him to tender. In the mean time Mr. Filewood purchased Mr. Matthews's business, and he agreed to take Mr. Matthews's contract upon the same conditions. He said he asked the defendant to pay him the amount claimed for supplying quantities, and the latter asked him to let the matter stand over for a while, as he was a beginner in business. He had repeatedly written for the amount, but the defendant had taken no notice of the claim whatever. Supplying quantities to builders was quite apart from architectural duties, and it was the customary thing to charge commission from 1½ per cent. (for large sums) to 3½ per cent. This was a very intricate job, and defendant could not have tendered without having these quantities supplied.

For the defence it was alleged that there was no such agreement entered into by Mr. Filewood, and, in fact, that the quantities were never supplied, and the defendant said he had never received the numerous bills for the amount which Mr. Woodman stated he had sent him in. Further it was alleged that plaintiff had no legal claim because he was paid by Mr. Boorne for being architect, and it was contended on behalf of the defendant that it was the duty of the architect to supply all the necessary information to the contractors, to enable them to tender; otherwise the architect would be receiving fees from both employer and employed.

Mr. Matthews was called, and he denied all knowledge of any such agreement as was alleged by Mr. Woodman, and, moreover, supported the defendant in his statement that it was customary for builders to measure the quantities themselves before tendering.

The plaintiff was non-suited, with costs.

A MANCHESTER LIGHT AND AIR CASE.

SYKES *v.* GILL.

THIS case was before the Chancery Court of Lancashire the other day.

It was an application for an injunction to restrain the defendant from obstructing the light and air to the premises, in Fetter-lane, Manchester, by the erection of buildings from 29 ft., their present height, to 54 ft. The plaintiff held his premises under a lease for fourteen years from 25th March, 1869, and he submitted that the proposed erection of the defendant's building seriously would interfere with the light of his warehouse and counting-house, in which he examined patterns.

When the case had proceeded for some time, Mr. Robinson stated that, as the plaintiff had only six years and two months of his lease to run, it was merely a question of damages, and he thought the parties might arrange this. An adjournment was therefore taken to later in the day.

In the course of the afternoon the parties re-assembled and consented to an order for the defendant to pay to the plaintiff the sum of 400*l.* within fourteen days in full discharge of all claims in respect of the proposed interference by the defendant with the access of the light and air to the plaintiff's premises, the plaintiff's costs to the suit to be taxed as between party and party, and to be paid by the defendant.

A BRICKLAYER'S CLAIM.

FROUD *v.* CROOK.

THIS was a plaint laid in the Winchester County Court, on the 14th inst., for a balance of 8*l.* 15s. 8d., for work done by a bricklayer of Owslebury, for a contractor, for buildings at Lane End.

The plaintiff was employed by the defendant to do work at some new schools, partly by day-work and partly by measure. It was the former which was disputed, and this 6*l.* paid had not been allowed.

Mr. Crook said he arranged with Froud to do the brick-work for 2*l.* 10s. per rod, and that Mr. Stopher was to measure and value the work, but when the plaintiff sent in a bill for day-work he did not recognise it, especially as the excavating upon day-work came to 2s. 6d. per yard.

Mr. White (for the defendant) said his client was willing to have the work done, not already agreed upon, measured and valued by Mr. Stopher, but not to accept plaintiff's charges for day-work without any check.

Mr. Carter, jun., said the fair charge for digging would be 8d. per yard, and, of course, 126 yards, as set forth in the bills of quantities, would not come to anything like the money charged. If several large trees had to be grubbed for the work that would add to its cost.

Judgment for the plaintiff for 6*l.* 15s. 8d.

CENTENNIAL EXPERIENCES.

SIR,—In the spring of last year we were persuaded by some American friends to send a few articles of our manufacture to be exhibited with their own, and assured that beyond freight and shipping costs, &c., we should have no further expense; and it was agreed that any resulting business should pass through the hands of our Yankee friends, and that they should dispose of the articles sent for their own account.

We are now favoured with an account of charges from these gentlemen, and an accompanying explanatory letter, which sets out that they now find the goods were not suited to their market. And we are also informed that, of our exhibits, what had not been broken during the Exhibition were stolen; and that the material of an extra stand, which had been put up to give "greater prominence" to our exhibits, and for which (contrary to agreement) we are charged, was taken off by the man who had kept the things "dusted" in satisfaction of his claim, and which, we are told, "was a good arrangement for you."

A draft upon us for the amount of these charges, passed through an American bank, we have ungratefully declined to accept. We "guess" we should like to know if the dusting gentleman assisted in clearing the stand before he took it off, and if, allowing all that was not broken to be stolen, this is what Brother Jonathan calls "taking care" of articles entrusted to his charge; for, if so, we "calculate" it will be a long time before we again exhibit in his country.

The only legitimate source which occurs to us whence these demands of our friends can be satisfied, is the surplus from the *Alabama* claims, paid by this country, which remains in the hands of their Government. Our friends, in conclusion, say that although "business may not accrue to you, yet we think, on reviewing the whole subject, you are fortunate in having occupied a conspicuous place in the Centennial of 1877."

However apparent this may be to our cousins, we confess that, unaided by a pair of Philadelphian Centennial spectacles, we do not quite see it.

FELDSPAR.

Royal Institution.—The discourse on Friday, March 2, will be by Professor Huxley, "On the History of Birds."

FLORAL HALL FOR SOUTHSEA.

SIR,—I observe in a recent issue that you published a esign for an intended floral hall, &c., at Southsea. I beg o acquaint you that it was not personally designed by ne, but by Mr. Leslie Jeyes, I simply acting as the com- any's engineer. H. B. JAMES.

STAMFORD ENDOWED SCHOOLS.

SIR,—We should esteem it a favour if you will give us pace to say in answer to the report upon the state of the chools recently erected from our designs, which appeared n your issue of last week, that, as soon as we can obtain a neeting of the governors before whom we shall lay our nswer to the statement of Mr. Browning, we shall ask ou in justice to ourselves to insert a copy of the same in our valuable journal. HAY & OLIVER.

Miscellanea.

Rotten Row.—In the House of Commons, on he 15th inst., Mr. Noel, First Commissioner of Works, in reply to Mr. Locke, said it was im- portant that accommodation should be provided or those who rode in Hyde Park during the winter. Every exertion had been made by the department to carry out the works in Rotten-row as rapidly as possible, but they had had two great difficulties to contend with,—one was the exces- ive amount of rain, and the other the great difficulty of obtaining sufficient and proper mate- ial for the foundation. Rotten-row was opened on Monday, the 12th inst., and he hoped it would give satisfaction to the public. With regard to he other part of the ride adjoining Kensington- gardens and opposite the late Knightsbridge Barracks, they had done everything they could to put it into proper order during the winter. The foundation, however, was very defective, in many parts being nothing but mud and sand; and the more they put on it in winter the worse it became. Since the weather had cleared up he had given orders that the whole of that part of the road should be thoroughly overhauled and all the defective parts put in proper order.

Beating Down a Surveyor.—At the last meeting of the Uxbridge Sanitary Authority, the question of appointing a surveyor to square up the building work at the hospital was finally considered. Mr. Haynes, of West Drayton, applied for the office, mentioning that he had had considerable experience in surveying archi- tectural works, and had been employed by many gentlemen in the neighbourhood. The Clerk said he believed Mr. Haynes was quite competent to measure up the work, and the same opinion was entertained by Mr. Corderoy. In reply to a question, the Rev. W. Bullock mentioned that the fee required by Mr. Noble at Southall was 1½ per cent., but the Chairman objected to pay- ment by percentage on the ground that it was an inducement to a surveyor to run the price up. The Rev. W. Bullock (humorously): Just now we were not allowed to make these aspersions. Mr. Liddall spoke in favour of Mr. Haynes, and ended by proposing that he should be em- ployed, provided that he agreed to perform the work for 10l., and on this being seconded by Mr. Classon it was carried unanimously.

Leeds Architectural Association. — On the 15th inst, Mr. J. W. Harding, C.E., read a paper before this recently-formed association, on the subject of "Ventilation." Mr. G. Corson, president, occupied the chair. The reader remarked that ventilation could not be thorough unless provision was made for the admission of the requisite quantity of fresh air, and the exit of the vitiated. Most of the systems employed only made provision for the latter, leaving the inlet to chance. He laid great stress on the importance of schools being properly ventilated, remarking that it should be the first duty of parents in sending their children thither to see what provision had been made for the protec- tion of health in this direction. If this were done, he was afraid there would be many deserted schools in Leeds as in most other places. He described various methods by which ventilation might be effected, referring particu- larly to the advantages of Tobin's system.

New Church in Eccles.—At a meeting of the committee to decide upon the plans sub- mitted in competition for the new church at Monton-lane, Eccles, it was resolved "that the design of Mr. Herbert E. Tijou, architect, be accepted." The other competitors were Messrs. Speakman, Son, & Hickson, and Messrs. Corson & Aitken, all of Manchester.

Manchester Society of Architects.—We have received the report of of the committee on the Students' Competition, 1876-7. It shows that they have received thirteen sets of drawings and sketch-books from students and assistants residing in this district for the Society Prize, of the value of five guineas (measured sketches of Stockport Parish Church). Mr. Frederick Edwards is recommended as entitled to receive the prize. For the prize of the value of five guineas, offered by Mr. James P. Holden (elevation section, and plan of the Bond-street front of the Royal Institution, Manchester; also section through the Main Hall), the committee recommend Mr. J. D. Mould. For the prize of the value of five guineas offered by Mr. Thomas Worthington (president) (for the best selection of sketches illustrating objects of architectural interest in the neighbourhood of Manchester), Mr. Raffles Davison is selected.

Obituary.—The *Bath Chronicle* announces the death, on the 11th inst., of Mr. G. C. Mann, formerly in business as a builder at Bathwick. The deceased some time since was thrown out of a vehicle, and has ever since been in declining health.——On the same day Mr. Pictor, senior partner of the well-known firm of quarry- masters, left his residence at Box for the pur- pose of taking a walk, and on the following morning was found lying dead in the road lead- ing from Corsham to Stratford-on-Avon. The cause of death is supposed to have been heart disease.

Sir Rowland Hill, K.C.B.—Steps are being taken to erect a permanent memorial—in Kidderminster, where he was born, on December 3rd, 1795—of Sir Rowland Hill, to whom the nation is indebted for the uniform penny postage system, and for that capital invention, the ad- hesive postage-stamp. The committee have issued an appeal for a national penny subscrip- tion; and collecting-cards have been prepared, to enable postmasters and other friends in every locality to assist in the movement. This penny subscription is a very silly resolve.

Association of Sanitary Engineers and Surveyors.—A meeting of the members of the Association, under the auspices of the Home Counties Committee, will be held at Portsmouth on the 1st of March. Amongst other proceed- ings Mr. Angell, C.E., will read a paper on the drainage of Portsmouth, and the works to be visited will be explained by Mr. J. E. Greatorex, the borough engineer, who will read a short description of them, and also a description of a paving-stone particularly applicable to the southern counties, which he will exhibit to the Association.

Claines (Worcester).—At the last meeting of the Droitwich Rural Sanitary Authority it was unanimously resolved that works of water supply and sewerage be constructed for the large district of Claines, which adjoins the city of Worcester. Mr. E. Pritchard, C.E., of Warwick, was instructed to prepare the necessary plans, &c., for the scheme.

St. Stephen's Club.—It is stated that in consequence of the rapid progress now being made by the St. Stephen's Club, some adjoining ground fronting the river is to be utilised for the further convenience of the club, and that the façade of the building will be both extended and embellished.

The King's Head, Fenchurch-street.—We may add to the particulars given in our last that the whole of the asphalte work in the above building (of which there is a great deal) was executed by the Seyssel and Metallic Lava Asphalte Company.

Builders' Clerks' Benevolent Institution. The annual general meeting of the subscribers will take place at 27, Farringdon-street, on February 27th, Mr. Edwin Lawrence, president elect, in the chair.

Cambrian Archæological Association.—The Cambrian Archæological Association have fixed Carnarvon as the *locale* for their annual Conference, to be held in August next.

TENDERS

For alterations and additions to No. 8, Wimpole-street, for Mr. H. Phillips. Mr. John Noyes, architect; Mr. S. T. Thacker, surveyor:—

Morter	£3,642	0	0
Brass	3,337	0	0
Patrick	3,325	0	0
Hill, Higgs, & Hill	3,198	0	0
Braid & Co.	3,043	0	0

For three warehouses, Tabernacle-walk, for Mr. W. Ratcliff. Mr. J. Groom, architect:—

Prout	£6,100	0	0
Lewis	5,956	0	0
Warne	5,939	0	0
Wyeth	5,635	0	0
Crockett	5,630	0	0
Aitchison & Walker	5,587	0	0
Smith	5,468	0	0
Marsland	5,287	0	0
Cowland	5 147	0	0
Burman	5,114	0	0
Warr	5,112	0	0
Allen & Son	5,000	0	0
Bayes, Brothers, & Allen	5,000	0	0
Sabey & Son	4,985	0	0
Judd & Hawkings	4,892	0	0
Mattock Brothers	4,859	0	0
Bracher & Soo	4,820	0	0
Nightingale	4,792	0	0
Stamp & Bowtle	4,743	0	0
Crabbe	4,587	0	0
Battley	4,536	0	0

For Roan's Girls' School, Greenwich. Mr. T. Diswiddy, architect. Quantities by Mr. Lansdown:—

Schools.	Front fence.	Extra if Portland stone and red brick.
Smith, Bros.	£5,530	£225	£335
Bridel	5,350	200	265
Batley	5,300	205	244
Coles	5 245	205	180
Tongue	5,211	238	216
Bayes, Bros	4,997	238	—
Hart	4,983	235	221
Cox	4,949	221	—
Nightingale	4 883	234	217
Marsland	4,870	215	325
Prebble	4,820	187	162
Thomas	4,800	215	320
Fabey	4,770	233	113
Jerrard	4,681	197	164
Kilby (accepted)	4,656	205	118

For the erection of stables for forty horses, for the Corporation of Portsmouth. Mr. J. E. Greatorex, architect:—

Bramble, Brothers	£2,200	0	0
Cooper	2,198	0	0
Light	2,179	0	0
Burbridge	2,127	0	0
Lowe	2,125	0	0
Ward	2,115	0	0
Rapley & Son	2,070	0	0
Lewis (accepted)	1,948	0	0
Barnes	1,9 0	0	0
Hayter	1,899	0	0

For erecton of a warehouse in Bartholomew-close, for Rev. J. Abbise. Mr. W. Hudson, architect; Messrs. Forge & Hudson, surveyors:—

Palmer & Son	£2,292	0	0
Newman & Mann	2,089	0	0
Holland & Hannen	1,994	0	0
Hill, Higgs, & Hill	1,993	0	0
Sewell & Son	1,968	0	0
Weeks & Son	1,899	0	0

For erection of proposed new church for the dis- trict of Holy Trinity, Beckenham. Messrs. Daukes Clarke, architects; Mr. George Hackford, surveyor:—

Nightingale	£8,772	0	0
Hill, Higgs, & Hill	8,750	0	0
Perry & Co.	8,535	0	0
Wellicombe & Oakley	8,403	0	0
Williams & Son	8,310	0	0
Manley & Rogers	8,260	0	0
Kirk & Randall	8,170	0	0
Tongue	7,623	0	0

For erecting three warehouses in Bath-street, Newgate- street, for Alderman Sir B. S. Phillips. Mr. Thomas Chamberlain, architect; Mr. S. B. Wilson, surveyor:—

Fish	£11,621	0	0
Pritchard	10,717	0	0
Ashby	10,651	0	0
Killby	10,560	0	0
Trollope	10,555	0	0
Patrick	10,190	0	0
Hill, Higgs, & Hill	9 941	0	0
Brass	9,757	0	0
Morter	9,746	0	0

For dwelling-house and offices at Addiscombe, Croydon, for Mr. W. H. Woods. Messrs. C. & F. Rutley, archi- tects. Quantities by Mr. H. Blackwell:—

Hearle	£1,535	0	0
Smith	1,513	0	0
Taylor	1,504	0	0
Hart	1,445	0	0
Jarrett	1,441	0	0
Baker	1,417	0	0
Loe	1,395	0	0
Marriage	1,378	0	0

For extension of premises at Nos. 124 and 126, High- street, Camden-town:—

Kelly, Bros.	£497	0	0
Gould & Brand	439	0	0

For alterations and additions to Nos. 52 to 58, Hamp- stead-road, for Mr. Tom Boocock:—

Beaton	£4 0	0	0
Turner & Henderson	420	0	0
Gould & Brand	358	0	0

For new premises, High-street, Hampstead, for the London and South-Western Bank (Limited). Messrs. J. & I. S. Edmeston, architects. Quantities by Mr. Geo. Mortimer:—

Cook	£1,720	0	0
Watts	1,696	0	0
Burford	1,670	0	0
Ball	1,662	0	0
Grover	1,482	0	0
Bracher	1,345		
Smith & Co.	1,390		
Perkins	1,297	0	0
Gould & Brand	1,269	0	0

For alterations and additional story at Lisson-grove, for Messrs. Spencer, Turner, & Boldero :—

Watson	£1,520	0	0
Parks & Roberts	1,297	0	0
Temple & Foster	1,234	0	0
French	1,196	0	0

For the erection of houses and shops in St. Andrew's-road, Hastings, for Mr. J. Reeves. Messrs. Cross & Wells, architects :—

Bridgeland	£3,099	0	0
Crittenden & Co.	3,030	0	0
Womersley	2,995	0	0
Wood	2,973	15	0
Howell & Son	2,765	0	0
Rodda	2,750	0	0
Hughes	2,725	0	0
Herman	2,627	7	0
Parker & Co.	2,354	0	0
Russell (accepted)	2,250	0	0

For steam cooking and engineering works at the new union workhouse, Chester. Messrs. Perkins & Sons, architects :—

Jeakes & Co.	£3,350	0	0
Bennett, Bros.	3,300	0	0
Darnell	3,325	0	0
Benham & Sons	3,215	0	0
Warner & Sons	2,965	0	0
Heaps & Robinson	2,580	0	0
Goddard & Massey	2,395	19	0
Nelson & Sons	2,278	10	0
Wood & Howitt (accepted)	2,250	0	0
Armstrong, Whitehead, & Co.	2,125	0	0

For reinstating after fire No. 91, Hampstead-road, for Messrs. Walton, Hassall, & Port. Messrs. Batterbury & Huxley, architects :—

Baugh	£455	0	0
Lathey, Bros (accepted)	435	0	0

For new shop-front, &c. :—

Lathey, Bros. (accepted)	192	0	0

For alterations at the Hanley Arms :—

Shurmur	£890	0	0
Horley	940	0	0
Cuthwaite	873	0	0

For rebuilding villa residence, stable, and coach-house, at Forest-gate, Essex, for Mr. A. Quail. Messrs. Lamb & Church, architects :—

Shurmur	£1,598	0	0
Wood & Son	1,454	0	0
Steel	1,095	0	0

For drainage works, Wouldham, Kent, under the Rural Sanitary Authority. Mr. J. H. Andrews, surveyor :—

Jefferys	£299	0	0
Osbourn	244	0	0
Ames	242	0	0
Gates	235	0	0
West (accepted)	220	0	0

For the erection of probationary wards at the Holborn Union Schools, Mitcham. Mr. H. Saxon Snell, architect :—

Bamford	£1,550	0	0
Carter & Son	1,445	0	0
Howard	1,433	0	0
Warr	1,397	0	0
Linfield	1,384	0	0
Dover, Bros.	1,365	0	0
Coles (accepted)	1,315	0	0

For the erection of a block of model cottages at Peckham. Mr. Banister Fletcher, architect :—

Fisher, Bros.	£6,167	0	0
Bayes, Bros., & Allen	5,890	0	0
Shapley	5,740	0	0

TO CORRESPONDENTS.

A. P. S.—A. M.—T. W.—P. C.—H. E. T.—X. Y. Z.—E. S.—E. P.—A. & H.—W. W.—O. S.—W. R.—H. H. & H.—S. T.—Dr. G.—L.—J. R. P.—M. & S.—P. Bros.—C. L.—B. & H.—W. S.—C. & F. R.—T. O.—G. T.—H. C.—H. S. S.—E. & Co.—S. J.—E. S.—G. McK.—A. P. W.—J. C. H.—E. S. B.—W. H. W. (depends on circumstances Take proper advice) —J. C. H. (shall be looked to).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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The Railway Companies and the Passenger Duty.

WITHOUT doubt the representatives of the railway interest of the United Kingdom, or at least of that of Great Britain, have definitively committed themselves to the policy of attempting to obtain the remission of the passenger-duty on railways. So large is the amount of capital affected by the question, and so serious is the effect, on the public at large, of any great movement affecting the working of the railway system, that it is well worth while to inquire into the grounds, and to anticipate the results, of the claim now urged by the companies. It will be our endeavour to do this, not in the spirit of partisanship on other side; but as bringing before our readers the data, as well as the arguments, on which it is for them to form their individual judgment.

The first point to be regarded is the magnitude of the question. It has definite and easily-ascertainable limits. The figures published by the Board of Trade state the total capital, in shares, stock, and loans, invested in railways at the end of 1874, at 609,895,931*l.*, or in round numbers 610 millions sterling. The distribution of this sum between England, Scotland, and Ireland is not given in the return. But the respective mileages of line open in the three countries are as follows:—In England, 11,622 miles; in Scotland, 2,700 miles; in Ireland, 2,127 miles. The importance of the distinction, in this case, arises from the fact that no passenger-duty is paid by the Irish lines. As far, therefore, as we can gather from the returns, the average pressure of the duty is understated in the analysis of expenses furnished by Capt. Tyler, as regards the English and Scottish lines, by bringing the untaxed Irish traffic into the general total. The correction thus due, however, is only 15 per cent. on the ratio of the charge in question to the total income of the Scottish and English companies.

With this slight correction, the Government returns enable us to arrive at the incidence of the passenger-duty thus:—The total expenditure per mile, on the average of the railways in the United Kingdom, during the year 1874, was 1,924*l.* Of this sum, the Government duty amounted to 36*l.* In 1873 it amounted only to 31*l.*, to which figure it had gradually fallen since 1870, when it stood, as in 1874, at 36*l.* This amount is equivalent to a charge of 1·04 per cent. on the average income of the railways of the United Kingdom, or to about 1·19 per cent. on that of the railways of Great Britain. It may here be remarked that the rates and taxes borne by the railways amounted, in 1874, to exactly double the amount of the passenger duty. Thus, the entire incidence of taxation and rating, during the year quoted, was 3·12 per cent. of the average incomes of the railways of the United Kingdom; which is equal to an income-tax of 7½d. in the pound; so that 2½d. in the pound is the proportion of the passenger-duty to the gross revenue of our railways.

The railway advocates describe this charge as an exceptional and onerous tax, which not only unduly presses upon them, but which is also injurious to the interests of the public. This is a grave and uncompromising statement, which was contained, in so many words, in a memorial addressed by the shareholders of one of our great companies to the First Lord of the Treasury and the Chancellor of the Exchequer. It is clear that if such a statement be verified there is a case for careful consideration.

We have been so frequently accustomed to see the interests of the railway companies, and those of the public, not only regarded, but treated, as antagonistic, that we hail any expression, on the part of the managers of the former, that shows a disposition to regard them as identical; or, at all events, as harmonious. It is extremely desirable that it should be borne in mind how large an amount of national interest is invested in the form of railway property. Viewed as nominal capital, the railway stock is not quite three quarters of the magnitude of the National Debt. But a more accurate mode of investigation is to compare the annual incomes of the fundholder and the railway stockholder, using the latter term to cover shares and all other forms of railway security.

The interest of the Permanent National Debt, together with the payments of terminable annuities, for the year ending March, 1875, amounted to 26,953,681*l.* The net income of the railways of the United Kingdom, for the year ending 31st December, 1874, was 25,251,971*l.* Thus the net income derived from railway stock equalled, within, 1,700,000*l.* that derived from the Funds.

But this comparison, exact as it is, by no means represents the total income derived from the railways of this country. The twenty-five millions and a quarter of net revenue only form 43·4 per cent. of the gross revenue of our railways. The large sum of 31,647,517*l.* was spent in the year referred to on the working of our railways; that is to say, it was spent, more or less directly, in wages; as even the cost of materials, in the first instance, resolves itself into either rent, royalty, or cost of labour.

Thus as a source of income supporting, either as wages or as interest of money, a given amount of population, the railways of the United Kingdom assume an importance fully double that of the National Debt. It is evident, therefore, that to regard the railway shareholder as a person to be considered as an adverse creditor of the public, or as the holder of an interest hostile to that of the public, is as unwarrantable as to regard the fundholder in the same light. Indeed, as far as the labour-supported part of the population is concerned, their interest is far more closely bound up with that of the companies than with that of the public creditor.

The arguments urged by the advocates of the holders of this great property for the remission of the tax of 2½d. in the pound on their gross income are as follow:—

It is stated, no doubt correctly, that the duty on railway passengers was originally imposed by Parliament upon the model, and according to the precedent, of the stage-coach duty. It was first fixed at the eighth of a penny per mile per passenger, and afterwards altered to five per cent. upon the gross receipts from passengers. From this duty, however, it must be remembered that the third-class traffic is, to a great extent, free. The great development of this class of traffic, in proportion to that of the first and second classes, is, therefore, an important feature in the case, as alleviating, to a considerable extent, the incidence of the burden of duty on the companies. In 1858 the passenger receipts of the railways of the United Kingdom were,—from first class, 3,002,838*l.*; second class, 3,527,377*l.*; third class, 3,616,192*l.* In 1874, the receipts were,—first class, 4,499,351*l.*; second class, 4,099,181*l.*; third class, 12,346,605*l.* Thus, while the first-class passenger income has increased 50 per cent. in eighteen years, the third class revenue has more than tripled, and rather less than quadrupled.

It is not, however, on the entire third-class revenue that the duty is remitted. From recent judicial decisions, first in the Court of Exchequer, and then, on appeal, in the House of Lords, it is declared to be the law that the remission can be claimed only on third-class trains which stop at every station. Here the companies certainly have a pretty clear case in their favour. It would seem to be within their power, by making all trains conveying third-class passengers at not more than 1d. per mile fare stop at every station, to escape payment of passenger-duty on 60 per cent. of their total income. It is clear that the whole body of passengers would be seriously inconvenienced by such a step. Nor is it obvious that any advantage would accrue to that class in behalf of whom the provision was introduced by the Legislature. Unnecessary stoppages are as irksome to one class of passengers as to another. The question of the stations at which traffic of any particular description may best be collected, at any particular hour, is one eminently suitable to be decided by the traffic manager. It is one as to which Parlia-

ment can know nothing, and the Board of Trade can only be guided by the experience of the working of the lines. It is very hard, therefore, to show upon what grounds, except the fiscal ground of disinclination to surrender any tax, the present difference in taxation of the third-class traffic can be sustained. The companies may, as the case actually stands, be very strongly driven to inconvenience the entire travelling public, for the sake of saving 5 per cent. on a portion of the third-class traffic. Apart from the wider question, what share of the public burden is it fit that the railway shareholder, as such, should support, one or other of two solutions of this difficulty may be found. Either the whole 1d. a mile traffic should be free, or the whole should be taxed. The distinction confirmed by the House of Lords, no doubt, is law. With equally small doubt it may be pronounced unpractical and unwise. It involves much contingent disadvantage; while there is no single sound argument that can be urged in its favour.

The total amount paid for passenger-duty is not stated in the Board of Trade return; but from the figures given by Capt. Tyler it may be calculated at 592,000*l.* for the year 1874. The total receipts from the passenger traffic, for Great Britain, in that year, were 20,805,735*l.* Of this 11,762,354*l.* was for third class traffic. Five per cent. on the former sum is 1,040,286*l.*; five per cent. on the latter is 588,117*l.* The difference is 452,069*l.*, or 140,000*l.* less than the actual tax. But there is an amount of a little over a million received from periodical tickets, the distribution of which is not given; although very little of it can be derived from third-class passengers. It results that something like 100,000*l.* per annum is the outside that the companies could expect to save by the alteration of the existing law as far as it relates to the third-class traffic.

As far, therefore, as the contention between the companies and the tax-collectors has taken a legal form, the total amount in dispute amounts to something less than a halfpenny in the pound of the gross revenue of the railway companies. The saving to be effected is not very considerable. But the interference with the powers of the companies to arrange the stoppages of their trains in the mode best suited to the traffic, though enforced by only so slight a penalty, is in principle objectionable. The financial question might be left in the *statu quo*, and the hands of the companies left untied, by a very simple expedient. If the passenger-tax were reduced to 1 per cent. on all traffic not paying more than 1d. per mile per passenger, the companies would be free from interference, and the revenue would remain what it actually is.

We have spoken of the strongest point in the memorial of the railway shareholders; their claim for the remission of the duty, as far as regards the penny-a-mile traffic, which is the only part of the question that can fairly be described as in any way "injurious to the interests of the public." Even if it be a grievance, it is but a trifle; and, such as it is, might very easily be adjusted. There remains the general question of the claim for the total abolition of the duty, which opens a wider field of inquiry.

The arguments of the companies, as put forward by the Great Western directors, are these:

As the railway-passenger duty was framed on the model of the stage-coach duty, and as the latter has been abolished, the former ought to be abolished also.

Secondly, the duty is a tax upon trade, and therefore objectionable on the principles of a sound economy.

Thirdly, it is excessive in amount, being equal to 10 per cent. on net passenger receipts.

Fourthly, it is unequal in its incidence. Railways carrying little except passenger traffic pay a larger proportion of their gross revenue than do those which carry a large mineral traffic. Some railways have the power to raise their fares to cover the duty; others have not.

Fifthly, the companies have done more than they are legally bound to do to facilitate traffic, and thus have a claim on the consideration of the State.

Against these reasons it may be urged, on the other hand, that all taxation is onerous to those on whom it falls; and that special objections exist to every tax. But taxes are necessary for the State. The only question, therefore, that remains is: which are the more and which are the less objectionable?

The railway companies have been invested by the legislature of the United Kingdom with powers and privileges such as are altogether exceptional. Instead of being the usufructuary holders of the lines for a certain number of years, as is the case on the Continent, they have been made permanent proprietors of communications that are usually held as the property of the State. In the exercise of their powers they have extinguished important interests which, before the introduction of the locomotive, maintained the internal communications of the country. By fair competition they have run the coaches off the road, and reduced the turnpike trusts to bankruptcy. By measures which have not always been those of fair competition, they have in a great measure closed the canals. No compensation has been paid by the railway companies to the interests they have injured. Public policy demands the maintenance, as far as practicable, of highway communication. The removal of the stage-coach duty has been a step taken in pursuance of this public policy; and the transference of the burden of maintaining the roads from turnpike trusts to the ratepayers has also been necessitated by the change in the course of traffic. It is difficult to see how this acceptance by the taxpayer and ratepayer of a load thrown upon their shoulders by the railway companies can entitle the latter to the remission of the only tax which they bear, and under the condition of which they applied for their powers of incorporation.

The statement that the tax, as being on trade, is contrary to economical principles, applies with equal force to most of the sources from which the public revenue is derived. Customs duties and excise are as much taxes on trade as passenger duties. So is a large portion of income-tax. If it be admitted that such taxes are objectionable, we should sweep away more than half the public income of the State at one blow.

With regard to the amount actually paid, whether excessive or not, a comparison with the regulations of other countries shows that the English railways are exceptionally favoured as to their contributions in support of the State. For rates, taxes, and passenger duties, altogether, the English companies pay the average amount of 108*l.* per mile per annum. The French companies pay about 600*l.* per mile per annum. In the latter case, indeed, the Government have contributed to the construction and establishment of the railways, in a manner that has not been the case in this country. But if five per cent., with an addition by way of a sinking fund that will repay the Government advances by the time of the expiration of the concessions, be allowed *per contra*, the benefit which the State annually derives from the railways in France is still five times as much as that obtained by the English Government. Add to this that the traffic is less per mile in France; that the companies have been compelled to make a second, and a third system of branches, which are worked at a very small profit, and in some instances at actual loss; and that in two-thirds of a century the French lines will all be the property of the State. It cannot be doubted that the relations between the English Government and the railways are very far more favourable to the latter than is the case in France. The difference in imposts per mile alone, if taken at twenty-five years' purchase, is equal to a subvention of 12,500*l.* per mile in favour of the English lines.

The last argument, which is to the effect that the passenger-tax presses unduly upon those lines which have only, or mainly, a passenger traffic, is one that tells both ways. It is no doubt the case that when the passenger-tax was imposed, no one had any clear insight into the magnitude of the traffic of the future. No one had any idea of the different rates of profit at which the different kinds of traffic would be carried on. It so turned out, however, that it was just the most lucrative traffic on which the tax was imposed. In England, this tax weighs, as we have shown to be the case, mainly upon the first and second class traffic. In France, the tax of the "*double decime*" is imposed, not only on all passenger traffic, but on the goods traffic *a grande vitesse*—the fast goods traffic.

The average receipts per train mile on the railways of the United Kingdom, in 1874, were 68·11d. The average cost was 37·89d. But while the receipts per passenger train mile were 60·72d., those from the goods trains were 75·84d. The receipts *per head* from the passengers are about the same as the receipts *per ton* from the goods; that is to say, that to carry a single passenger earns as much as to carry a ton of goods. The number of miles travelled by goods and by passenger trains are nearly equal; the former being 96,749,953 miles, and the latter 100,025,939 miles. It results (as indeed any one may see by watching the line of a great railway) that the goods trains are far longer, heavier, and more costly to run, than the passenger trains. But if the goods trains only average three times the weight of the passenger trains, they must cost three times as much per mile, subject to a small correction for difference of speed. On that view the profit made per mile by a passenger-train would be rather more than double that made by a goods train; the figures being respectively 41·78d. for the former, and 18·94d. for the latter. This, of course, is only an approximation. But there is reason to believe that it is not very wide of the mark. At the allowance above made the passenger-traffic would be worked at a cost of 31 per cent. of the gross income, and the goods traffic at a cost of 75 per cent. Now the Metropolitan Railway is almost exclusively a passenger line, having carried, during the last half-year of 1875, only 5 per cent. of goods. The working cost of the Metropolitan is rendered higher than the average by the special circumstances of the line. In point of fact, a train mile on the Metropolitan, in the last half-year, cost 41·75d., which is much above the average cost. But the working expenses were only 3½ per cent. of the gross receipts. It is pretty clear, therefore, that the gain from the passenger traffic is so much more in proportion than that from the goods traffic, that the incidence of taxation on the former alone is highly favourable to the railway companies. Nor should any individual line which limits its traffic to the most lucrative branch complain on that account.

Such, in brief, are the main arguments for and against the abolition of the passenger-duty on railways. We content ourselves with endeavouring to place each in its fair light, without attempting to strike the balance between them. That we leave our readers to do. But the main point on which it is well to dwell is the comparative unimportance of a question that has been put forward as though it were one of vital magnitude. On the broadest view, however, that of the total remission of duty, the gain to the companies by this measure would only amount to 1 per cent. on their income; while on the alternative claim, that of the abolition of all tax on the third-class traffic, the companies are not asking for a higher amount of relief than a saving of less than a halfpenny in the pound on their receipts. Such a saving is of microscopic amount in comparison to that which may be effected by means entirely within the control of the companies. So long as the entire coal traffic borne by the railway trains is carried at a price that is limited by a competition with the freight of coasting from the Tyne and the Tees to the Thames, which is about 3s. 10d. to 4s. per ton for 250 or 300 miles, the railway companies are incurring a loss, if not in actual expenditure, yet certainly in wear and tear, in comparison to which the whole amount of the passenger-duty is but a trifle.*

The Walker Art Gallery, Liverpool.—The Liverpool Town Council were lately asked to confirm two recommendations which appeared on the programme of business in connexion with the approaching completion of the Walker Art Gallery. One recommendation referred to the approval of a plan which had been considered by the Finance Committee for the Improvement of Old Islington Market, at an estimated cost of 3,100*l.*, subject to modification in matters of detail, the amount to be paid out of the surplus income; and the committee also recommended that the offer of Lieut.-Col. Steble to present a fountain of the value of 1,000*l.* to be placed opposite the entrance of the Walker Art Gallery, be accepted. The site of the Old Islington Market is the triangular area within which the Wellington column is erected. When some progress had been made with the Walker Art Gallery, it was felt that the adjacent associations were altogether out of character with the marked improvement which would be visible when the Art Gallery and the Circular Reading-room adjoining it came to be completed. Mr. Shelmerdine, the borough surveyor, proposes to flag the whole area and enclose it with pedestals and chains similar in design to those which form the enclosure of the west front of St. George's Hall.

* This article was in type before the recent interview of a deputation with the Chancellor of the Exchequer.

PROFESSOR E. M. BARRY ON ARCHITECTURE.*

INTRODUCTION.

BEFORE commencing a new series of lectures, I wish to preface them with a few introductory remarks as to their purpose and scope. I will observe in the first place that they are intended for students, students of art, as taught in this Academy,—not for those only who propose to devote themselves to Architecture as a profession. My earnest wish is to interest you all, if I can, in the subject,—to make you feel that there is something in architecture worthy of the attention of reasonable men,—that it is an art, the oldest of all, able not only to hold its own with its sisters of Painting and Soulpture, by giving delight to the æsthetic faculties, but also to take its place in the ever-onward movement of culture and civilisation.

Having regard to this object, I do not propose to treat at length of the complicated details of the technical practice of architecture. This, it seems to me, can be better taught in classes of architects only, and it is, in fact, so taught within these walls by our excellent Curator in the architectural school. I shall be satisfied if I can bring before you certain salient points, and thus lead you to take an intelligent interest in architectural matters.

I propose to attempt to trace the rise of the various phases of domestic architecture as they have prevailed in this country. My illustrious predecessor, Sir Gilbert Scott, in dwelling on ecclesiastical types, has made that aspect of the question so fully his own, that I will not seek to touch, with weaker hands, that which he has so exhaustively dealt with. I shall, therefore, confine my remarks, this session, to domestic architecture alone.

It seems to me, indeed, that the latter is emphatically the problem of the day. Custom and tradition determine the spirit, and even, to a great extent, prescribe the forms of our church architecture, but the laws which are to govern the future of house-building are ever in debate. The habits and wants of whole classes must be studied, under the guidance both of science and even of political economy, before we can hope to succeed in bringing "sweetness and light" to the toiling millions by providing them with healthy and artistic homes.

If I were tempted to despair of the progress of architecture, it would be from seeing it regarded with apathy. I am not anxious to impose my own views upon you. I want you to think for yourselves, and to bring to the solution of architectural questions that common sense with which the average Englishman is happily so largely endowed.

In seeking progress, we must have no fear of criticism. Even if it seem to us often one-sided and unfair, it is better than indifference. This is true, in a special sense, with regard to criticism of professional doings proceeding from laymen. We may perhaps be surprised to read books on building enforcing, in the midst of good advice, well-known things as if they were novelties; but we cannot fail at the same time to notice with satisfaction the hold which such things show architecture to possess on the affections of our highly-educated laymen. Anything is better than the resigned ignorance which proclaims, as if it were a merit, that it knows nothing of architecture.

Do you suppose, if our rulers in Parliament had cared for architecture and for social matters as they do for politics, that our public buildings would be what they are; that our streets would have been handed over to railway companies for disfigurement; and that it would have been left to the present generation to deal with the great difficulty of providing dwellings for the poor in our crowded courts and alleys, foul with the neglect of ages? How is it that not one of the great architectural works now under construction by the State in London has escaped mutilation of features, considered important by their architects, while the very spirit of delay has seemed to preside over their conception and execution? The answer must, I think, be apathy,—an apathy which refuses to be stirred amidst the absorbing anxieties of power and place. This being so, I say again that I welcome any signs of lay appreciation of our noble art.

And now I wish to say a few words to those of you who are studying architecture as a profession, to be followed by you hereafter as a means of livelihood. You do well if you are conscious within yourselves that you love the art for its own sake. If not, you will be sorely tried by the cares and responsibilities with which you will find the practice of architecture to be surrounded. It is difficult, for example, to overstate the depression which comes upon the architect, when he has to descend from his day-dreams of solemn cathedrals and airy palaces, to the prosaic realities of estimates and "quantities," builders' contracts, and "extras and omissions." I wish, for many reasons, that he could avoid these things, and perhaps some day it may be possible to do so; but at present this cannot be, and the architect must often devote his energies to that which appears to be unworthy labour.

The mention of this part of the duties of an architect at the present time leads me to add a word or two on a not very welcome topic, which has lately occupied the attention of newspaper readers. It can scarcely be needed for me to say to you that before all things it is necessary for an architect to be a man of honour, a trustworthy agent, a gentleman in the best sense of the word. I am happy to believe that such is the rule; but it has been lately said, chiefly by anonymous writers, that exceptions exist, and that some architects have allowed themselves to touch the wages of dishonour. I could wish, as I have just said, that the architect could follow his art alone, and have nothing to do with money matters. In any case, however, his integrity should be beyond question, and the public bodies which represent the profession rightly make this all-important matter the keystone of their regulations.

We are told that this is not enough, and a distinguished member of the legal profession has insisted that legal enactments are needed. Be it so. I would welcome any well-considered scheme which would give legal effect to the moral reprobation of abuse. I recognise fully the responsibility which attaches to any one who is engaged to render professional service. I gladly welcome any practical suggestions to fix this responsibility, and I would do so all the more willingly when they are found to emanate from that great irresponsible profession, the Bar of England,—that profession which alone asserts the complete freedom from liability of its members, even in cases where important duties have been liberally paid for, but have not been performed.

I say this because it is not too much to hope for, that the "eye for defects" so appropriate in the case of a law reformer will have its keenness of vision so strengthened by observing the deficiencies of other professions that it will not suffer itself to be closed as long as any blemishes can be seen nearer home. By enforcing on *agents of all kinds* the full extent of their responsibilities we may thus obtain reforms which, without impairing the lustre of a noble profession, may increase its claims on the respect and confidence of the public.

This is not the opportunity for dealing further with this subject; but I have felt that in addressing those who have the future of the architectural profession in their hands, I could not do wrong to suggest to them a ready acceptance of anything that may serve to show that their honour is unimpeached and unimpeachable. Believing as I do that the fair fame of architects will stand comparison with that of any other class or profession, I shall gladly see enacted any general law that may be thought desirable to recognise the principle of responsibility of all professional men in a full and comprehensive manner.

Having now indicated the spirit in which I propose to address you, I will proceed with the first lecture of the season, from which I hope I have not detained you too long by these introductory explanations.

I think I cannot begin my fourth course of lectures better than with a few reflections on originality.

In considering our subject last year, I took occasion to inquire into the influence of Nature on architecture, and we found, as you may remember, that it was of an indirect character, leading us to attempt to grasp general principles rather than to court inevitable defeat by efforts of direct imitation. It is well, I think, to bear this conclusion in mind when we come to inquire into the question of originality in architecture. We all appreciate the spontaneous and unconventional charms of Nature, but for art there are rules which we must frankly recognise. Originality in architecture, therefore, must be subject to certain restraining circumstances, which it is our duty to study with care and attention.

Many a young man of talent begins with the idea that it is easy to be original; the wisdom gained from the experience of ages seems to him foolishness. A new life opens before him. All things are to be new; the beaten track is to be deserted, or left to the timid and worn-out. His art is to take a new departure, and whatever he does, at least it shall not be common-place. I suppose most of us, at some time or other, have experienced feelings akin to these. It is well that it should be so; they are a part of those generous impulses of youth without which the world would, indeed, be badly off,—a prey to the sordid calculations of selfishness, ever sinking deeper and deeper into the hopelessness of a fatalist philosophy. We may, therefore, well rejoice that a spirit of independence exists among us; for in it is life, and where there is life there is hope. The architect, if he have not originality, must, at any rate, be possessed with the spirit of a true reformer. He will do little in his art unless he has enthusiasm, and an enthusiasm that needs to be checked is better than a sluggishness always requiring to be spurred and stimulated, working at best spasmodically, and often to little purpose, for lack of zeal.

Now, in architecture, I need scarcely point out to you, originality is subject to very considerable limitation. In its quality of usefulness, in its dependence on material considerations, and also in its financial aspect, you will at once perceive the elements of restraint. These will soon make themselves felt by the young architect, and it is well for him if they do not crush his high aspirations, and so dishearten him. He has to learn that his art must be exercised in accordance with common sense, and that originality is not to be attained by conscious effort.

It has been well said by Sir Joshua Reynolds, that "as our art is not a divine gift, so neither is it a mechanical trade. Its foundations are laid in solid science; and practice, though essential to perfection, can never attain that at which it aims, unless it works under the direction of principle." This is true of architecture, even more than of other forms of art. The architect must be versed in science before he can design a building that shall stand; he must enter into the spirit of the rules of his art before he can apply them intelligently; and while ever remembering the artistic side of his calling, he must not neglect the more prosaic considerations of utility and sound construction.

If this be conceded, you will follow me the more readily in the inquiry into originality which I propose to prosecute in this lecture.

Now originality in architecture is not likely ever to be manifested in an absolute sense. The various forms of detailed construction, such as arches and columns, which are scattered over the surface of the globe, may have exhausted the combinations of possible forms, and I do not think we need concern ourselves to-night with the question of the invention of a new style of architecture. It is indeed not necessarily creditable to an architect to have done that which has never been done before, for he may have neglected considerations which have very properly prevented others from falling into mistakes,—in which, it may be, he is foolish enough to glory.

If we realise properly the true nature of our art, we shall not be always seeking for novelty as the chief desideratum. Architecture is the outcome of accumulated experience, and we cannot, therefore, imagine that we are wise enough to dispense with the assistance which such experience offers to us. To do so would be to destroy the scaffolding before we have raised the building.

An originality, again, which is sought for only in strange and startling combinations, is, more often than not, no originality at all, but merely a tasteless jumble of discordant details which may have struck the fancy of the young architect at different times and places. An opportunity offers, as he thinks, for their employment,

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* First lecture: delivered at the Royal Academy on Monday, February 26th.

and the sketch-book is emptied, and the *disjecta membra* scattered, with a result which is neither beautiful in itself nor consistent with any sound principles of composition.

I have said that our architecture must be reasonable, for we have to bear in mind that men do not erect buildings to please architects, but to serve their own needs and purposes. If this necessity be (as doubtless to some extent it is) a difficulty in the way of originality, it will, nevertheless, if fairly recognised, save us from some other snares which lie in our way in the direction of imitation. Our architecture must as we know be affected by a variety of causes external to ourselves, such as climate; and there are other influences which I may call internal, which are not less powerful. We know that the Parthenon would not bear transplanting, and the direct imitation of existing buildings in other styles is confessedly intolerable. If the sunny porticos of the south are out of place in our more rigorous climate, it is no less true that where the sun is a friend only too rarely seen, we do not act wisely in excluding his rays by heavy mullions and clumsy bars for no better reason than that these details have been used at a former period.

The temptation to rely too absolutely on the past is ever great, and to some minds almost irresistible. "We have seen and admired the masterpieces which have excited the admiration of ages. Let us imitate them,—like causes produce like effects. They are great successes,—we shall succeed also." Such reasoning as this has the fatal effect of unreality. It ignores the differences of time and circumstances, and, if literally followed, would degrade our art into the mechanical trade which we feel it cannot be. No; good architecture must be something more than a blind imitation of the works of others, and this it is which makes the question of originality of so much importance.

I have spoken of differences of time. These cannot but affect our architecture, for they enter into all our public and private habits. It is true that the essential requirements of mankind must (with certain limitations) be always and everywhere the same, but, as ages roll on, various phases of those requirements come with exceptional prominence, and demand the attention of the architect no less than that of the statesman and philosopher.

Thus the architectural splendours of Mediæval art mark a period in which ecclesiastical influences were dominant. Churchmen represented the intellect and refinement of the age, and they have earned the gratitude of posterity by the splendid works with which they have endowed us. How great was their power and skill we may see throughout our land, in our stately cathedrals, abbeys, and churches. No one must underrate the importance which religious influences have brought to bear on art, and the support given by them to the whole framework of manners and morals in the Middle Ages.

But a time came when society, thinking itself able to move alone, began to disdain leading-strings, and to regard as mischievous the guides and safeguards till then seemingly indispensable. It was to these awakening perceptions that we owe that great revolution of thought which we call the Reformation. We cannot here speak of its religious aspect, but we may briefly consider some of its influences on architecture.

In the first place, it brought about a disposition to break with precedent, to adopt change, and to welcome novelty.

In the preceding times men were content to follow in the footsteps of their immediate predecessors; they were accustomed to take their architecture, as they did their religion, on trust; gradual alterations of detail might be allowed in either, but in no case could any radical changes be permitted. You can see the effects of this spirit in almost any of our great historical churches, in which you may trace with precision the modifications of mouldings, tracery, and sculpture, that mark the successive phases of Mediæval art so clearly as to enable us to fix without difficulty the dates of the erection of each portion of such buildings.

The clergy, being the great church-builders of the time, were the keepers and preservers of architectural traditions. A certain uniformity of plan and proportion was maintained, subject, of course, to limitations due to local or peculiar circumstances in certain cases. The workmen knew only the forms of art which they saw around them, and were therefore ready to submit to the authority which claimed their obedience. Originality was not sought for its own sake, and the whole progress of architecture resembled the gradual growth of natural objects.

The change which came with the Reformation broke with all this. It was not only a change in the forms or even in the essentials of religion. It was a great uprising of the human intellect, demanding reasons where formerly it was contented with commands. Knowledge was sought in all directions, and printing, newly discovered, came to its aid. Not only the Bible, but literature generally, became spread throughout the world, the priceless possession of the many, no longer the exclusive privilege of the few. Nations began to interest themselves in each other, and an approach was made towards free communication between countries. Everywhere there was excitement,—a longing for light, a determination to assert freedom.

Can we wonder if a revolution such as this has left its mark on architecture? It led naturally first to an indifference towards the old forms of Mediæval art, and then to a hatred and contempt for all that seemed to speak of a yoke that had been once broken never again to be imposed. Such feelings soon manifested their destructive tendencies, and the spirit of iconoclasm was let loose. Destruction and demolition followed in its wake. Fortunately for us, in this country, the native moderation and prudence of the English people prevented the occurrence of extravagances on the scale witnessed elsewhere, and their conservative instincts were readily enlisted on the side of preservation after the first whirlwinds of enthusiasm had somewhat spent their force. We owe to this spirit the exceeding richness of our country in Mediæval remains, which constitute a very mine of art.

But, apart from any local limitations, such as were due to the character of particular nations, the movement as a whole went on, and everything was ripe for change in architecture. The direction it was to take was soon indicated by the interest shown in the revival of classical literature. It is not easy to account at first sight satisfactorily for the previous neglect of this subject. The great works of the classic authors had not been lost, and Latin was the language of the Church, understood more or less by all ecclesiastics with any pretensions to education. It is certain, however, that classical literature had become almost forgotten, and that the revival of it in the fifteenth century came upon the world as a startling novelty,—a new discovery,—to be hailed with the enthusiasm which, as we have seen, was ready to welcome all things new.

The spirit of the times was thus strengthened and stimulated by the literary revival, and both causes tended to break with the rules and precedents which had heretofore guided our architecture.

With these changes came a development of social wants, and Domestic architecture began to assert its claims. Church building was no longer the chief business of the architect, and, indeed, almost ceased for a time to be his business at all. The ecclesiastical edifices which had been left to us seemed to be sufficient for all time, and if they were not suffered to fall into actual decay, no attempt was made to enlarge them, or to increase their number. We know that this feeling extended to a late period, and that the present generation has had its energies tasked to the utmost, in its attempt to cope with the difficulties bequeathed to us by an age of ecclesiastical neglect.

Setting aside, however, for the moment, any consideration of excesses, such as perhaps must always mark every great public movement, we may notice that the age of church building on a large scale appeared to pass away with the Reformation, and that ecclesiastical architecture and influences lost at the same time their predominance.

The enlargement of views consequent on the spread of education, the tendencies induced by the revival of classical literature, the nascent importance of science, the gradual uprising of the middle and lower classes,—all tended in one direction, and some of the results to our art soon showed themselves in the increased attention that was paid to Domestic buildings.

In estimating the importance of this movement, you will readily see how completely it altered the duties of the architect. In ecclesiastical work he had positive orders, and well understood precedents, to guide him. Domestic architecture, however, introduced new considerations, and would not suffer the neglect of that condition of usefulness, which constitutes one of those limitations of originality to which the architect must submit.

It is from this time that the influence of the laity began to make itself felt. The old ecclesiastical force had spent itself, at least for a time, and individual tastes came into prominence. A battle indeed there was, and in the edifices of the Renaissance we find columns and entablatures, borrowed from Rome or Greece, in close juxtaposition with mullions, gables, and Gothic tracery.

Most of you, probably, are familiar with examples of this mode of work, at Haddon Hall, Hatfield, Crewe Hall, Knole, &c. It constitutes the Transitional style of English work, indicating at once a taste for the new and a love for the old. It marks a period when men began to feel that they had achieved their liberty; that no one had a right to make them afraid; and that they might in consequence direct their energies to the improvement of their estates, the splendour and convenience of their houses, and the welfare of their dependents. No longer compelled to be armed *cap-à-pie* against war or tumult, the ponderous coats of mail became peaceful ornaments of the hall or castle. Swords were left in their scabbards, or were hung up on walls for decoration, and if not literally turned into pruning-hooks, became the protectors instead of the foes of all peaceful industry. While the squire devoted his leisure to the sports of the field, the mistress of the house occupied herself with domestic management, and, with her handmaids, executed marvels of patient work in embroidery, tapestry, and the like.

Such was the result of the calm which had followed the fierce storms that had swept over public affairs. The instinct of our people turned then, as now, to country life, and we have evidence in many a stately home how well it was loved and cared for by its founders. Locomotion was not as yet easily practicable. Packroads, traversed by horses, were often the sole means of communication, and even my lady would have to ride pillion if she desired to visit her market-town. To stay at home was therefore the rule, and *home* was consequently beautified, not only by handsome architecture, but by all the means at the disposal of its owner. We owe to such circumstances the quaint formal gardens, the well-kept bowling-greens, the avenues and mazes, such as exist, for example, at Hatfield.

Hospitality was not forgotten, and we find great quadrangles surrounded by quarters for retainers; also stables, not only extensive, but often ornamented in an elaborate manner. In fact, a great man's house in the time I am speaking of was an example, in a small way, of a kingdom, and possessed an individual importance of which it is difficult to form an adequate idea in the present day.

I have not, however, called your attention to these buildings because of their social importance, although such considerations must always possess interest for the student of history; but I wish to suggest to you their bearing on originality in architecture. They do not, as we have seen, altogether break with the past, but at the same time, they show no slavish regard for precedent. New principles are admitted, but the new work is based on development rather than destruction. The chapel, for example, is recognised, and forms an integral part of the structure. If it be no longer devoted to the old ritual, it clings to the old shapes and usage, and stands forth as a witness that the ruling spirit in our land has ever been one of reform and not of revolution. If we can trace evidences of this spirit in the results of the fierce conflicts which have excited the minds and passions of men, it would be strange if we found no signs of its influence on our architecture, which had not yet ceased to be a truthful exponent of the manners and customs of its age.

But such conservative instincts did not altogether suppress originality. Our old English mansions have a character all their own, and reflect with fidelity the changes which I have endeavoured to indicate. They are evidently dwelling-houses of various degrees of magnificence, according to the wealth, rank, or position of their owners. They cannot be mistaken for anything else,—they are not like churches or castles, although they may possess features borrowed from both. They are evidently truthful, and therefore pleasing, even when, as often happens, their actual details are not in the best taste. They are thus a good example of that originality of architecture which may be sought

in the application to new circumstances of knowledge gained from experience. Rightly studied and understood, they contain valuable lessons for ourselves. While giving evidence of originality and beauty, they do not kick against the pricks of that law of usefulness which must be obeyed by the architect. But, arising naturally from the requirements of their owners, they frankly recognised that the first necessity of a building is that it shall be suitable for the purpose for which it has been erected.

In later times, this important truth has been too much obscured, and reproach has been cast on architecture accordingly. The architect, while ever striving to elevate his art, so as to refine and purify the taste of his time, must always remember that his work is for use as well as for show, and that it must not be undertaken to glorify himself, but to serve his fellows. With the experience of the world before him, he must not be satisfied with the evanescent reputation which waits upon those who, by dragging to light disused forms of architecture, raise a spurious claim to originality. He must be content to apply his art to existing needs, rationally, carefully, and lovingly; and in so doing, may find the means of endowing his work with an interest which will confer on it a real claim to be truly original.

Let us now consider the bearing of another of the limitations of originality, to which I have referred. I allude to the question of materials. Here the architect comes in contact with difficulties of a very uncompromising sort. He is often tempted to envy his brethren of the brush. Not only is all nature open to the painter, as his guide and instructor, but he is also unfettered by material considerations. The architect, on the other hand, deriving but limited and indirect assistance from nature, can do nothing of himself, but must trust to others, not only to enable him to call his creations into being, but also to manipulate the very materials necessary for this purpose. He must study the characteristics of stone, timber, bricks, iron, and other matters before he can even know how to begin to design, and his projects must vary according to the materials to be employed. This is, as you will readily perceive, a limitation to originality, but it is a limitation which has ever been accepted by all really good architects.

The Greeks are supposed to have evolved these columnar designs of temples from an older timber construction. If so, however, they have, in the spirit of true artists, avoided the error of actual copying, in one material, forms only suitable to another. The proportions of the parts of a Greek temple are beautifully appropriate to the material used, and while in a wooden construction they would doubtless have achieved lightness and elegance; their colonnades of marble express the qualities of strength and repose, which satisfy us at once as the perfection of art under the circumstances of the case.

When the arch became subsequently employed by the Mediæval architects, similar principles were observed. Vaulted roofs were the favourite mode of covering spaces, and the spans of the arches had to be regulated by the nature of the materials available. Arches could only be practically built within certain limits of size, and the thrust of such arches had to be carefully provided for by the erection of buttresses, turrets, and similar features. In this respect the Northern architects showed pre-eminent skill. The beautiful curves of their groinings are not interfered with by ties or other visible support, and the necessary buttresses which exist outside contribute in no small degree to the external beauty of the buildings. Even where these buttresses are exaggerated, they are not without an effective character, as you may see, for example, at Notre Dame, Paris, where the buttrsses around the choir have a somewhat undue influence upon the other architectural features of the building.

In the South, the Gothic architects of Italy showed less constructive ingenuity. Ignoring buttresses, they sought other means of combating the thrust of their arches. They found it in a system of iron ties, which connected the columns with each other, and with the walls, and prevented the arches from spreading. This expedient, faulty as I conceive it to be, has attracted admirers, and even some imitators; but, in my judgment, it cannot be approved by the thoughtful critic. It brings evidently under notice the defect which attaches, more or less, to all arched buildings,—their quality of unrest. It gives, therefore, an idea of imperfection, destructive of confidence in the solidity and stability of the structure. We may, perhaps, accept it as inevitable, where it is found; but it is not a feature to be commended or imitated. It is, however, a striking example of that limitation of the architect's power by materials to which I am at present referring.

The same principle of suiting design to materials guided the architects of our Gothic wooden roofs. In these there was naturally greater latitude for freedom of design than with the more intractable material of stone. We, therefore, find in such roofs an infinite wealth of ornament in tracery, framing, and carving, from the palatial roof of Westminster Hall to the covering of a humble village church; but always designed on principles befitting wooden construction.

As with the roofs, so with the fabric. When stone abounded the mason was master; when stone was scarce, the carpenter or the bricklayer displayed his art. We have some fine examples of brickwork in our own country, as at Costessy Hall, in Norfolk, and elsewhere. In Holland and the Low Countries, and parts of Prussia, brickwork was carried to great perfection, and has recently attracted much notice from ourselves. You will find, by a careful study of its forms, how naturally the latter have sprung from the materials used. The massiveness of stonework is exchanged for a multiplicity of parts, small in themselves, but often exceedingly rich in effect. Tracery, on the other hand, is clumsy, or altogether absent, and we thus miss an important element of design, which is, however, to some extent compensated by the varied and picturesque outlines of chimney-shafts, corbels, and gables, stepped or otherwise.

Progress in brick architecture, in modern times, was long hindered by an excise duty levied on bricks, which practically controlled their manufacture, and hindered improvement. The evil of such things lives after them, and though the duty has been abolished for many years, its depressing influences have remained until very recent times. Now, there are evidences of a greater freedom in the use of bricks of various forms and designs. There is consequently a greater field for the exercise of originality of design; but in availing himself of his liberty, the architect must take care that his liberty does not degenerate into licence, and not therefore try to execute in brickwork details borrowed from stone or marble architecture.

With brickwork is closely allied terra cotta, which may, in fact, be described as high-class brickwork. It is possible that the use of this material may become more common with us than is now the case. If you wish to see the elaboration of which it is capable, you have a splendid specimen in the great Hospital at Milan. The terra cotta of North Italy is generally very good, but this is perhaps the most elaborate specimen of its use. We find in it mouldings, festoons, tracery, and other details which we are accustomed to see worked in stone, all carried out in the most beautiful manner in red terra cotta.

Nevertheless, it may be doubted if such an employment of terra cotta be founded on true principles. From the necessities of its manufacture, terra cotta must consist of many pieces, and in them truth of execution cannot be obtained, in the case of mouldings, arches, columns, and the like. For the more decorative portions, such as the festoons of flowers, enrichments, and the parts generally described as carving, terra cotta has some advantages; but these, it must be remembered, are of a mechanical nature, and will not allow the moulded and burnt clay to compete on equal terms with the life-giving touches of the sculptor's chisel. The general effect of a building, where terra cotta has been freely used for the general features of its architecture, may often please, at a distance, but it will seldom be found to gain on a closer inspection. The spectator then finds that the mouldings are coarse, untrue, and badly jointed, the construction often faulty, while the ornaments, by much repetition, cease to interest and please.

The value of terra cotta as a resource for the architect is, however, so great, that it is well worth his while to study its essential qualities, and regulate his designs accordingly. If it be rarely desirable to adopt it as the framework of the building, it may frequently be effectively and economically employed for subsidiary details; and when combined with brickwork this is both pleasing and appropriate. In the difficulties of its application we find another instance of that limitation of architectural originality by materials of which I am now speaking. The architect must do what he can, not what he will.

Before leaving this part of my subject I wish to add a few words on the use of iron in our buildings. Iron has, as you know, been used more or less in all but the most primitive times; but it has been reserved for the present generation to witness its application on a vast scale. It was formerly employed as an aid to the carpenter and builder; it now frequently supersedes him altogether. It covers huge spans; it bridges mighty rivers. It forms our roads, and furnishes us with floors and roofs. It is, in fact, the slave of our constructors, and will do their bidding in a great variety of ways.

Notwithstanding all this, iron is a great difficulty to the artist. The architect is glad to take advantage of its constructional assistance; but the application to it of artistic design, to make it a thing of beauty, is a problem hard to solve. Our studies of art are based on examples of the præ-iron age, and it is not easy to take a new departure, and to treat what may almost be termed a new material in its bearing on architecture on new principles appropriate to its nature. This, however, must be done, if iron is to enter effectively into architectural design; and we may be sure that as men have now discovered and appreciated the gain which iron has brought to them, they will not easily surrender it. The world will not stand still for architects any more than for others, and if we do not avail ourselves of the materials at hand others will certainly do so, and the great works of the day will develope more and more of an exclusively engineering character.

While architects have been restoring, engineers have been inventing. Greek temples, Italian Palaces, and Gothic churches have risen, on the one hand; while, on the other, we find huge and ugly railway stations, roofs of unprecedented span, and bridges till now impossible. If the former class possess beauty, more or less worthy of their predecessors, whose traditions have inspired them, the latter may claim that they at least owe no filial allegiance, but indicate a development of actual originality.

In the meantime, it may be well to observe, by way of caution, that the use of iron on an extended scale, for constructional purposes, is too recent for us to repose a perfect confidence in its permanency. We know by experience what reliance may be placed on timber, stone, and brick; but the gradual deterioration of iron is still an unsolved problem. Depending, as it does, on artificial protection, we are at once confronted with the difficulty of renewing such protection in concealed positions. I saw but recently two pieces of iron which had been hanging up in an uncovered yard for twenty years. One piece had been protected, and the other left in its natural state. The piece of unprotected iron had become one-third less than the size and weight of the protected specimen; and knowing, as we do, how often iron is employed in inaccessible positions, this experience does not lessen the anxieties we must naturally feel as to its stability and permanence in such cases.*

I might go through the list of materials with which we have to deal, but I think I have now said enough to show you how varied and great are the limitations imposed upon the architect in search after originality. He has not only to consider carefully the peculiar qualities, the genius, so to speak, of the inanimate matter to which he has to communicate the life-giving breath of art; but he has also to be careful that his work shall not be deficient in the less artistic, but not less important, matters of stability and permanency.

It may seem to many that an architect is so much the master of his work that he may fairly be held strictly accountable for all defects, whether of originality or of other things.

The world is now listening for the decision of an absolute monarch, on whose individual will appear to depend questions of peace and war, of momentous importance to millions of people.

* Two pieces of iron cut from the same plate, of equal superficial dimensions and thickness, were, in 1850, hung in an exposed position; one piece having been galvanised, the other being in its ordinary condition. The results of this experiment at the present date are as follow:—

The ungalvanised iron is about 1-8th of an inch less in thickness than the galvanised, and about 15½ oz. less in weight, the respective dimensions and weights of the two plates being at present,—

Galvanised 9¼ in by 3½ in. by ¼ in. weighing 3 lb. 1½ oz.
Ungalvanised 9¼ „ by 3½ „ by ⅛ „ „ 2 „ 2 „

Unfortunately, the original weight and thickness of the iron were not recorded, but to all appearance the galvanised plate retains its full thickness and weight.

Here, at least, appears to be unlimited power. Greater knowledge leads to a clearer perception of the inaccuracy of such judgments. The despot is, after all, often the mouthpiece of others, the agent of some national sentiment which sweeps onwards with the force of a torrent, and would overwhelm all obstacles. So, to compare great things with small, it is with ourselves. Those who follow the profession of architecture in these days know well how false is the notion of an architect's complete responsibility for designs executed by his orders. He practises an art which cannot find expression except by the will and co-operation of others. He may find the skill, the intelligence, the genius, but all are useless till some one else will provide the means. From the commencement to the end of his work he has to contend against difficulties, and is fortunate if he is able to surmount them without seeing his designs curtailed of their fair proportions. Of course, there are limits to such restraints, beyond which no artist with proper self-respect will consent to be driven; but if some of our irresponsible critics would give an occasional thought to these things, their views on our art, and their opinions of architects, might sometimes undergo a change which would render them more appreciative without making them less just.

We see, therefore, that a modern architect, in carrying out his art, has to take into account at least three considerations from which his painter brethren are free. They may indulge without stint their glorious visions. He is bound down to the practical, and, before he can commence his design, must see that it will serve its purpose of usefulness; that its materials are suitable, both for artistic expression and for wear and tear; and lastly, that its cost shall be kept within carefully-prescribed limits.

On other numerous conditions which branch out from these heads I will not now dwell, though they range from a scientific study of the laws of health to the efficiency of a fastening. Our highly-organised and artificial mode of life in the nineteenth century is attended with complications, from which the architect of old was free, but with which he must now grapple, and on which he must bring his art to bear. He must not chafe against such difficulties, but must conquer them, and in them he may sometimes ultimately recognise his best friends, as having led him onwards in the path of a true originality.

The saying is often quoted that the best definition of genius is "a tremendous capacity for taking trouble," and without subscribing absolutely to this dictum, I cannot impress too strongly on young architects the necessity of attention to details. In a perfect architectural work nothing is a trifle, and no amount of *soidis ant* originality will atone for bad proportions, badly contoured mouldings, and the like. Completeness and attention to little things are necessary to the production of all great works, and I cannot, I think, do better than quote here a piece of advice recently given by the veteran Emperor of Germany to his grandson, on the occasion of the entry of the latter upon a military career. His Majesty, while pointing out the importance of discipline and zeal, declared emphatically that "in the appreciation of what might appear to be a trifling matter was to be found a guarantee for the performance of great things." This counsel is as valuable to the architect as to the soldier, for we, like him, must march with the times.

Not that we can afford to despise the wisdom of our ancestors. It is doubtless well that we should study antiquity in a reverent spirit. Buildings which have received the admiration of thoughtful men for successive ages are not to be dismissed with the shrug and nonchalance of well-satisfied ignorance. In examining such works, commence by the conviction that you have much to learn. They may, perhaps, in some cases, be opposed to your own favourite ideas of art, whether these be Greek or Mediæval, but you may be sure that they will teach much to those who come to them in a proper spirit. Modern work lacks of necessity the "cachet" which the approbation of ages alone can give. Do not believe, therefore, that careful study of admitted masterpieces, followed under proper conditions, will render your own work, when you are called on to compete with them, less effective and original.

I have on former occasions warned you against the snares and pitfalls of a slavish imitation, and you will remember that as a child developes new wants on his way to manhood, even so do successive ages present to us diverse and more complicated requirements, as the world grows older.

The architect, while learning from antiquity, must not bury himself in a dreamy past; he must bear his part in the existing activity of the state of things around him. Accepting forms which have already prevailed as the alphabet and language of his art, it is for him to give them an originality of expression and development which shall be beautiful as well as reasonable. If he have the gift of genius, he will not lack opportunities for its display; if he possess great inventive skill, it will find a vent, even in spite of the limitations which, as we have seen, surround him.

Genius, however, is the Divine gift to a very few. It cannot be learned or communicated. Must the many, therefore, despair? Not so long as there is a firm determination to labour, a fixed resolution to do our best. If great opportunities for the display of architectural genius are not likely frequently to occur, there is still plenty of work in the world for the architect to do; and in carrying it out faithfully, to the best of his power, he will often experience a development of the latter akin to the originality of genius itself. The problems submitted to him may appear small and mean, as compared with those of the builders of olden time, but to be called upon to take his part in the social advancement of his day is no light privilege, and in bringing to bear upon seemingly little things the refining influences of art, he may teach, as well as practise, the sublime lesson, that there is nothing common or unclean.

MR. BENTINCK'S CRUSADE.

THE Right Hon. member for Whitehaven, whose address on the "Decline and Fall of British Architecture," with trifling omissions, we have printed, seems to have some strong convictions, and unquestionably expresses them strongly. The term "Crusade," it is true, can only by analogy be applied to his demonstration, since he is in fact the open enemy of the architectural style which used to be said to have been transplanted here under the influence of the Crusades. He renounces the Goths and all their works. The incident of his address may perhaps be taken as one out of many symptoms of the turn of the tide,—a turn which we have always kept in view, and not unfrequently predicted, even at the time when the Gothic mania was at its height.

But we have always recognised, what Mr. Bentinck does not recognise, the really renewed vigour of architectural interest and enthusiasm which was at the bottom of that movement, and but for which it could never have produced the effect, or run the course which it has run. It is all very well to quote the fanaticisms of over-excitable enthusiastic Pugin; and oddly enough they read now, no doubt, when the tide of feeling upon which they came up has ebbed. But the English Gothic revival was, at all events, just as genuine a movement as the Italian Renaissance, which Mr. Bentinck appears to sympathise with, and sprang from very much the same kind of causes. A period of stagnation was followed in each case by one of those general and apparently spontaneous awakenings of intellectual activity which now and again recur, arising partially out of the feeling that something at any rate must be done to improve matters, and the perception of a contrast between the existing state of things and that of a greater past,—a contrast which seems so striking that all the spirits of the new era rush to the conviction that if we could only bring back again those glorious times, and reproduce their works, we could demand nothing more for our perfect happiness. In this case the Classic Renaissance had run its course and died out, and the stern reality of Mediæval art and architecture could not but fascinate by contrast with the utter weakness and inanity of the Georgian era. It is all nonsense to deny this,—to say that the Mediæval revival was a retrograding. It was not so at the time. It was, at the time, a distinct and unquestionable revival of a renewed desire for at least some art and some architecture, in a generation which had been content with nothing worth calling either. In denying this, Mr. Bentinck and those anti-revivalists of whom he is a type are damaging their own cause by urging views which are palpably overstated and one-sided, to a degree which will repel many who, if the considerations referred to were more moderately and critically presented, might be much more prevailed upon to consider them dispassionately. Take the one matter of churches, for instance, and compare many of the churches which have been built under the influence of the Gothic revival with the sort of edifice in which our predecessors of a generation or two before used to worship, and what reasonable person can deny the improvement? Though the modern Gothic church be a mere imitation,—a mere revival of an old style,—still it is a style, and it is architecture; but what immediately preceded it was neither architecture, nor style, nor anything; it was simply nonentity—negation of art. It is one-sided and illogical to forget this, and to ignore the fact that the Gothic revival has also been the parent of a most extensive parallel movement in relation to ornamental art and workmanship generally. If Mr. Bentinck found himself for one day relegated to the England immediately preceding the revival, and realised (what he seems just now to have forgotten to realise) what kind of dead level in matters artistic was prevalent then, he would be constrained to admit that almost any method of shaking up was better than that dead sea of smugness and indifference which pervaded the society of that period in its relation (or non-relation) to art.

Mr. Bentinck is not only one-sided in his feelings and deductions, but he is wrong in some of his facts, or his way of stating them. It is by no means a settled point that Gothic architecture is "of Eastern or Saracenic origin," and Mr. Bentinck would hardly have dogmatised on that point had he been properly *au fait* with recent architectural criticism and deduction. The idea of Western Gothic being specially connected with Saracenic architecture in its origin belonged to the period when it was supposed that the pointed arch was the principle and essence of Gothic architecture. Not only is this view no longer held by the leading students and critics of architecture, but it is pretty well admitted, whatever may be thought as to the importance of the pointed arch in giving the character of the style, that this form of arch in Western building grew naturally out of certain constructive necessities and difficulties, and that Pointed Gothic has a far closer connexion with the round-arched Romanesque styles than with anything Saracenic. What Mr. Bentinck means by saying that a Gothic building cannot be constructed without windows that give no light, and a front that is a sham, he may possibly know, but we certainly do not. No Gothic front can be called one-half so much a sham as the fronts of the Renaissance churches of Italy, which were so completely and purely ornamental as to be built in general quite separately and at a different time from the rest of the building (some of them have never been built yet). He complains that a Gothic building has shafts which carry nothing; but here he is confusing the facts of building with its ornamental expression. The only sense in which the jamb-shafts of Gothic architecture (to which we suppose allusion is made) can be said to carry nothing is in the practical sense that the mouldings above them would not in many cases come down if they were removed. But the eye requires something for the archivolt mouldings to spring from, and that something can hardly take a more appropriate form than a shaft and capital. We might ask Mr. Bentinck whether there are not a few sham columns in Renaissance architecture, which carry nothing and are of no use. Then when he comes to talk with so much admiration of Wren (in which, of course, in general we entirely concur), he surely cannot be aware that Wren's great building, besides having a front which is at least as much a sham as any Gothic cathedral front, is one gigantic sham in the whole of the upper story of the nave, not to speak of the double dome: and as to artistic merit, no person in his senses, or with the remotest idea of what constituted artistic ornament, would venture to compare the best ornament of Wren with good Mediæval ornament. Then again, with reference to the practical criticisms of Wren on the construction of Westminster Abbey, which are, no doubt, quite true, Mr. Bentinck thinks they entirely disposed of the idea that the Mediæval builders were better constructors than the Romans. Now, we do not believe any critic whose opinion is worth anything ever said they were. The difference was of another kind. It is not that the Mediæval builders constructed better, but that their design and manner of building was in accordance with the construction, and was their own invention springing naturally out of the practical method employed; while the Roman and Renaissance

design is generally unrelated to the construction, and frequently totally contradictory of it. As to Mr. Bentinck's criticisms against overloaded ornamentation in Gothic, he has been looking at and thinking of florid specimens of late Gothic, which, however, are hardly so overloaded with ornament as most Roman designs, nor with such bad ornament; while the best Gothic works of the early period in England are almost as pure and harmonious in style, and in the restrained disposition and distribution of ornament, as Greek buildings.

Such an attack as Mr. Bentinck has made upon existing fashions and ideas in architecture may do no harm, but rather good, in stirring people up to think for themselves about the subject, and the reasons for their likings and dislikings. But criticisms of this kind will hardly produce the effect intended by those who pronounce them, or receive any serious consideration, unless they are worded more moderately and critically, and with more recognition of the two sides of the question, and somewhat more accurate historical and critical knowledge of architecture than are displayed in the lecture we have printed.

THE DECLINE AND FALL OF BRITISH ARCHITECTURE.*

ALL SAINTS, Margaret-street, had scarcely been completed when the Gothic Revival was torn asunder by a schism, which struck a heavy blow at the very foundation upon which it had hitherto rested. A powerful section of the modern "Goths" made the discovery that Gothic was, after all, not a national style, and that its English form, which has been so much upheld by Pugin, should be abandoned in favour of importations from Italy and France, which were alleged to be preferable in every respect. Mr. Ruskin was the leading exponent of these ideas, and the publication of the "Seven Lamps of Architecture," and the "Stones of Venice," gave a new direction and a new motive to the Gothic Revival. The author of this new phase of art, which Mr. Eastlake calls "Ruskinism," did not approve of the Gothic Revival, as ordinarily understood. He limited the choice of a style to four particular types, which he selected, viz., 1. Pisan Romanesque; 2. Florentine of Giotto's time; 3. Venetian Gothic; 4. English Gothic of the time of Edward I.; and he proposed, moreover, that a universal system of form and workmanship should be adopted and enforced, but how this last condition was to be secured he failed to explain. I desire to speak with the greatest possible respect of Mr. Ruskin, not only because he is to some extent our neighbour, and a man of great ability and truth, but because I have reason to think he has of late greatly modified his opinions, and is not ashamed to own it; but at the period to which I have just referred, when the architectural mind was hesitating, he rushed into the fray, and by the extraordinary power and eloquence of his writings turned the heads of those who did not know or did not think, and effected irretrievable mischief. The well-known Oxford University Museum was the first great practical result of Mr. Ruskin's teaching. In designing this building, the architects deliberately dismissed all Pugin's cherished principles to the "wall and to the waves," and exclusively adopted the foreign element. The result of their labours is so well described by Mr. Fergusson, in his "Handbook of Modern Architecture," that I will give you the substance of his criticism as far more instructive than any I could myself devise:—"This Museum was designed to be Gothic in conception, Gothic in detail, and Gothic in finish. Nothing was to betray the hated and hateful nineteenth century, to the cultivation of whose sciences it was to be dedicated. Unfortunately the style selected on this occasion was not English Gothic; for the architects having exhausted all the specimens found in their books, and, according to the new canons of art, being obliged to be original without being allowed to invent, they have latterly, in consequence, been forced to borrow from Germany or Lombardy such features as are yet new to the English public. Generally speaking, these foreign forms and details are neither so beautiful nor so appropriate as our own; but if the architect can produce a certificate of origin, and prove that he has copied and not invented them, the public are satisfied that all the exigencies of true art have been complied with. The roof of the Great Central Hall of the Oxford Museum, and the ironwork that supports it, are made purposely clumsy and awkward. The lecture-rooms are cold, draughty, and difficult to speak in. The library is a long, ill-proportioned gallery, with a rudely-constructed roof, painted in the crudest and most inharmonious colours; the windows glazed in the least-convenient manner, with the worst possible glass; and the bookcases arranged not to accommodate books, but to look monkish. You take a book from its press, and are astonished to find that men who could spend thousands on thousands in this great forgery, have not reprinted Lyell's "Geology," or Darwin's "Origin of Species," in black letter, and illuminated them, like the building, in the style of the thirteenth century. If the student of architecture gains but very little gratification, in an artistic point of view, from a visit to the Oxford Museum, he may at least come away consoled with the reflection that the Syndics of that learned University have gone far in producing a *reductio ad absurdum;* and that a system which results in such a mass of contradictions and follies as are found here is too childish long to occupy the serious attention of grown-up men, and when the fashion passes away we hope for something better. Till it does, architecture is not an art that a man of sense would care to practise, or a man of taste would care to study."

Although the Oxford Museum was a manifest failure, and pleased nobody, yet the novelty-mongers felt neither discouraged nor disgraced. True, they had set up a hideous, extravagant, and inconvenient structure; but, on the other hand, they had converted the Oxford Dons, who had plenty of money to squander, to the pleasing belief that the architecture of their collegiate predecessors was merely tentative, and that to them was reserved the glory of elucidating true principles. Thus, set in motion by clever but unsafe guides, impelled by that craving for change which is distinctive of our age, and aided by the fostering hands of both universities (wherein, except the Cambridge Fitzwilliam Museum and a few other rare examples, not a shred of respectable architecture has been erected for the last eighty years), the "Fall" of British architecture commenced in real earnest. While Pugin chastised with whips, the architects of the "Fall" chastised with scorpions. Like the fox that had lost its tail, they taught their hearers that deformity was preferable to beauty, distortion to proportion, the imperfect to the perfect. Eccentricity, exaggeration, and extravagance became with them the real orders of the day!

In dealing with the architecture of the "Fall," I shall pass by their attempts to reproduce what is called "Venetian Gothic" and "Italian and German Romanesque," for such impositions are too transparent to need criticism, and proceed to their greater efforts which depend upon an eclectic process whereby Gothic and mutilated Classic details, stolen from all ages and countries, are huddled together in a fashion so wild and illogical that they stand, on their own showing, in direct contradiction to the Mediæval motives which they profess to follow. Many popular architects now-a-days advise their clients and customers to build in Gothic, "because," say they, "this style is elastic and subject to no precise rule. You can have a door or a window here or there just as you please. If an irregular front suits your purpose, or if you fancy projections, or towers and turrets to be raised without reference to the symmetry of the outline, the authority of the style we recommend will give you what you want, and the effect cannot fail to be picturesque." No reasoning can be more unsound than this; it is merely a device to cover ignorance and incapacity. The real Gothic architects had no such ideas. They held equally with the ancients and with the "Classical Revival," that to insure beauty *uniformity* was an absolute condition, and they adhered to this principle with a tenacity that no inducements could relax. The most cursory observation of Old English Gothic buildings will show that their irregularity is not due to *intention*, but to *accident*, for the true Goths, as a rule, worked only in the particular style which they considered to be the best. Such notions as making "a thing to match," or "levelling down to the imperfections of a ruder time," never occurred to their acute and cultivated minds; on the contrary, they sacrificed advisedly, and without scruple, the designs and ideas of their predecessors, in order to give harmony and regularity to their own. There is an instance in our own mother-church at St. Bees. What was originally the lady-chapel at the east end of the church was built in the thirteenth century, and there is no more resemblance between that and the body of the church than there is between the lady-chapel and St. James's Church. The architects of the thirteenth century, when they added St. Bees Church, added it in the style that they thought best; and any further additions would be made according to the style of their own time, just as my friend, Mr. Fletcher, explained in an excellent lecture which he delivered the week before last at Cockermouth, when he referred to Carlisle Cathedral. The architects never levelled down to the imperfections of ruder times. These facts—for such they are—the modern Goths and their employers have never been able to understand, and their combined persistence in stopping their ears to the teaching of the past has led to the incoherence of design and confusion of detail which are the characteristics of our luckless period. Their vices are most strongly marked in the municipal and domestic buildings which are now rising in every direction, and which seem to compete as it were for some prize destined to the most "ugly." In the north, the Assize Courts at Manchester and the Town-hall at Preston are leading examples of the "Fall." The interior of the former has been much praised for its convenience, but the exterior is merely a hotch-pot (the Italians would say "Pasticcio" *Anglicè* "muddle") of pure foreign Gothic detail, strung together without either unity of purpose or grandeur of effect, and the tower which rises from the rear apes to be an Italian "Campanile," but is, in fact, a ventilating shaft. Nor has the architect the excuse of unintentional error to defend these strange combinations, for his more recent works—such as Pembroke College, Cambridge, and a university club in St. James's street, London—show that it is his purpose to devise barbarous and uncouth effects, precisely as in days gone by the sect of Quakers invented their costume as a standing protest against the worldliness of beauty. [Mr. Bentinck here produced a representation of a recently-erected church, the quaint architecture of which, he said, was called a modern adaptation of the Romanesque. He did not see why there should not be a modern adaptation of Stonehenge. Should such a style be tolerated at all? It was an imitation of the rudest architecture that was ever in this country. It was a corruption of the Classic. The windows were actually square, with a semicircle on the top to try to convert them into Norman, Saxon, or whatever they might like to call it. To any one imbued with right principles going into such a place, the first impulse would be to turn away again.] The illustrated pages of the architectural periodicals disclose to us weekly how fatally in truth the "Fall" has set in, but the worst of these attempts will soon be cast into the shade by the huge and monstrous "Palace of Justice" which is now rising into supreme ugliness on the west side of Temple Bar. A noble and dignified elevation might at least have been expected, but the architect threw away his opportunity, and from sheer ignorance of the principles of his art has broken this great space into at least fourteen compartments, pierced them with irregular and deformed windows, and intends to add a lop-sided tower, which, as an able critic has tersely written, will not be worth the cost of its foundation. Let any reasonable being examine these new courts with attention, and let him then walk down to Westminster and enter the Abbey. If the contemplation of that glorious and unsurpassed interior does not persuade him that Gothic architecture is dead, and that not even a million of the public money will resuscitate it, I shall be surprised indeed.

But the mention of Westminster Abbey leads me to the consideration of another deplorable result of the "Fall," namely, "The present condition of Church Building." I have shown you how, for the first quarter of a century of the "Gothic Revival," nothing was admissible but to copy literally ancient English work, and how gradually Pugin's influence was sapped and fell away. At last his fading light has been finally extinguished by the recent erection of the Church of St. Agnes, Kennington, which the newspapers report as being built in the "Middle Pointed" (English) style, but which does not possess a single English feature; for it is, in fact, a literal copy of the poor and lean churches, destitute of ornamentation, which abound in Flanders and the North of France. Beyond its extravagant cost, stated at 16,000*l.*,

* By the Right Hon. G. Cavendish Bentinck, M.P. A lecture delivered at Whitehaven. See p. 187, *ante*.

and its Continental aspect, this church is only remarkable as indicating the desertion of the leading architect of the English "Goths" to the foreign party, and we may assume that ere long his followers will submit to the same authority. Thus the beginning of the end is in sight, but meanwhile we are still tied by the Church architects of the "Fall" to the observance of unnecessary and obsolete practices, some few of which I will now describe.

Our modern churches must be strictly laid out according to the Mediæval plans, notwithstanding that these forms entail enormous loss of space, and impede both the sight and hearing of a large portion of the congregation. High-pitched roofs are declared to be obligatory, but these roofs, except in isolated cases, are neither solid, convenient, nor beautiful. They perish easily; they interfere with sound, and give an effect of intense depression to the external elevations, which, in most cases, present a confused mass of ugly penthouses. I have already stated Wren's condemnation of this form of roof, which no good modern architect has ever used, and which was virtually abandoned by the English "Goths" themselves about the middle of the fourteenth century.

Again, as concerns church decoration, no element is admissible unless derived from some authority dating, at latest, from the Edwardian period. Painting and sculpture, to be orthodox, must be conventional. In the fourteenth century power to draw the human figure correctly had not been acquired; therefore, the matured knowledge of the nineteenth is compelled to repeat the earlier imperfections. The holy personages now portrayed on the windows and walls of the sanctuaries are goggle-eyed, crooked-necked, and baudy-legged, for the slightest attempt to give them the noblest forms with which the Creator has endowed the human race would be profanity itself, and ensure their summary exclusion. Experience dearly bought, especially by Parliament, has shown that painting in oil and on canvas is the only pictorial effort which will certainly withstand our trying climate; but this branch of the art was unknown in Northern Europe until a period comparatively recent, and it is, therefore, repudiated by the church architect of the "Fall," who will agree only to water-colour or mosaic on a wall. The great Italian schools of painting all over Europe were created and supported by the requirements of the Church, and after oil-painting came into use it was generally adopted for ecclesiastical purposes. I am at a loss, then, to conceive any reason, religious or logical, why the same rule cannot apply now. The annual exhibitions of the Royal Academy make known to the public numbers of artists whose labours would, both artistically and economically, be preferable, in every way, to the coarse daubs and outlandish "reredos" which are patronised by the so-called Church architects, and executed by mechanics employed by enterprising firms and "limited companies." But the decrees of the "Fall" decide the contrary.

The last point, relating to this branch of the subject, with which I will trouble you, is "Church Restoration," a question which has, as we know to our cost, been prominent for many years past, and has given rise to much controversy. Being myself a strong advocate for the preservation, in its integrity, of ancient work, I feel that those are its best "restorers" who interfere with it the least, and I cannot join in the unlimited abuse hurled at the clergy and churchwardens of the last century because they, as a rule, merely patched up, and mended, and left the buildings very much as they found them; for the white and yellow wash which they used so plentifully, and the pews they set up, did comparatively but little mischief, and can easily be removed without any serious detriment. But the moment "Gothic architecture" began to be "studied" and "understood," that frenzy for destruction commenced, which has continued for many years, and which, I regret to say, rages at the present time more perniciously than ever.

James Wyatt was, no doubt, a great offender in his day, but I concur with Mr. Fergusson, who writes:—"We are horrified at what Wyatt did with our cathedrals, and full of wonder at the blindness of our fathers in not perceiving how wrong he was. Do we feel sure that our children will not be equally shocked at what we are now doing with the same buildings?" I believe our children will perceive that we have eaten the "sour grape"; because now, at the eleventh hour, when the sacrifice is well nigh accomplished, and the victims expiring, we find the "Goths" of the day divided into two hostile camps, each denouncing the other as the authors of the crime. Sir Gilbert Scott, in his address as president of the R.I.B.A., in 1873, said:—

"Our old buildings too often, nay, in a majority, I fear, of cases, fall into the hands of men who have neither knowledge nor respect for them, who, even amongst those who possess the requisite knowledge, there has too often existed a lack of veneration, a disposition to sit in judgment on the works of their teachers, a rage for alteration to suit some system to which they had pledged themselves in their own works; and even the preposterous idea that the ancient examples they were called upon to repair were a fitting field for their own originality! Nor have the official guardians of our ancient buildings exercised much restraint upon these vagaries; on the contrary, they have too often been most culpably careless as to the hands to which they have committed their trust, and are usually the inciters to ignorant tampering, the needless removal of valuable features, and even to the condemnation and destruction of the buildings under their charge. The result has been truly disastrous; so much so, that our country has actually been robbed of a large proportion of its antiquities under the name of 'restoration', and the work of destruction and spoliation still goes on merrily; while, at the public festivities by which each *auto da fé* is celebrated, we find ecclesiastical dignitaries, clergy, squires, and architects congratulating one another on the success of the latest effort of Vandalism."

These are bold sentiments, and strictly true. But, according to Sir Edmund Beckett, a powerful section of the Gothic party actually charge Sir G. Scott with unfaithfulness to his own ruling, and declare themselves to be the only representatives of "Conservative" and "Vigorous" restoration. Sir E. Beckett endeavours to refute these "Vigorous" restorers, alleging that our great churches, practically speaking, are conservatively restored by Sir G. Scott and his school as much as possible in the *spirit of their own builders*, and defies any one to prove to the contrary. I am afraid that Sir Edmund Beckett, when he wrote thus, had neither seen nor heard of the devastation now in progress at Salisbury Cathedral, or his logical mind would reject his own proposition. Salisbury Cathedral (which I saw a fortnight ago), "like Niobe, all tears," is ever in misfortune. While the results of the "sack" by Wyatt were yet distinctly visible, more modern "Goths" in 1856 disfigured and virtually destroyed the chapter-house, by painting all the figures so as to make them look like dolls in a toyshop, and now the disaster is complete. Fifty thousand pounds and upwards have been expended, and how has the money in great part been applied? Not in reverent restoration, not in judiciously removing displaced old work to original positions; but upon the tasteless vagaries of a so-called church architect. Thus the choir is paved with gaudy gingerbread tiles, and, what is worse, mechanics are employed to daub the walls of the noble choir with coarse and flaring colours, and its roof with sham Mediæval paintings,—in direct violation of the *spirit* of the old architects, which was "art," not "manufacture." It is incredible that capitular bodies should have power to do such deeds, and the interference of the Legislature at an early period would seem expedient.

And, now, having thus followed the downward course of British architecture, we come to the question whether there is any remedy for the evils which are admitted to exist. Suggestions without number are being constantly made from all quarters.

Mr. Fergusson holds that both the Classic and the Gothic styles are wrong, and sets his "hope for architecture" upon what he terms a *tertium quid*—a style which he says is sometimes, for want of a better name, called Italian, but which he thinks should be called the "common-sense style."

Accomplished writers in the *Quarterly Review*, who made some stir by articles published in 1872 and 1874, contend that the "hope of architecture" rests upon disestablishing architects "bag and baggage," and establishing builders and handicraftsmen, or working-men, in their stead.

Sir Edmund Beckett, a voluminous amateur writer and critic, who, though a professed Goth, is more candid and sensible than any one of the party, in his recent book on building, ridicules the *Quarterly* notions, and lays down that no new style is possible, and that if we are to build artistically we must adhere to the old forms, not excluding Classic.

I have cited these opinions to prove how different the casts of thought are upon the subject, and I could mention many more authorities, all showing a divergence of opinion impossible to reconcile. But, in this wilderness of confusion I nevertheless perceive a safe and straightforward path which will extricate our struggling senses from the besetting difficulties, and which will avoid failure, if indeed it does not ultimately lead to success. As we have now reached our second childhood in art, if we would not perish altogether we must needs submit to another birth,—in short, to another "Renaissance," as it is sometimes called; for, in our present enfeebled condition, if we attempt to run before we can walk, we shall only leap forward in the dark, with the absolute certainty of falling to rise no more. Therefore, we must take our stand upon a system governed by wise and well-tried laws, and then obedience, patience, and discipline will give us victory where we now suffer defeat.

Our only alternative, then, according to my view, is to follow the course adopted by Inigo Jones before the great Rebellion, and by Wren after the Restoration, and conform to the teaching of the great masters of architecture, because this teaching is certain and intelligible, and a sure foundation upon which genius and ability can thrive.

One obvious cause which maintained the long and brilliant series of successes achieved by Jones, Wren, and their English followers, is that all those who then practised art, even in the inferior branches, were united in a common cause to elevate their work by emulating the best masters, and following the best models, and were free from the ignorance and darkness which in our time has led to copying the inferior and the imperfect, and to the never-ending "Battle of the Styles." Nor was originality in any way fettered. The original architecture of past ages may be followed upon two principles,—the one true and the other false. The true principle is to adapt the invention to the requirements of the time; the false principle is to do exactly the reverse. Upon the former principle the Romans adopted the architecture of Greece; and thus Palladio, Sansovino, and the great Italian architects of the sixteenth century founded a school which has hitherto held, and must continue to hold, its ground against all comers. Of that school Jones and Wren were disciples, and their power of thought and purity of taste exercised a beneficial influence on English art to the commencement of the French Revolution. "Genius," says Sir Joshua Reynolds, "at least what is generally so called, is the child of imitation; it is in vain to endeavour to invent without materials on which the mind may work, and from which invention must originate. Nothing can come of nothing." The false principle upon which the modern Goths proceed either appropriates wholesale the inventions of an ancient style in the mass, or else employs them, not as their authors intended them, but perverts them ignobly and by main force, as it were, to serve the purpose of the hour. Practical results are, after all, the most convincing arguments. The buildings of the "British Classical Revival," from the earliest work by Jones to the latest by Robert Adam, may be sneered at as formal, cold, and uninteresting, but they were never bad; and the most hostile critic dare not venture to decry the excellence with which all external and internal ornamental fittings, such as windows, doors, chimney-pieces, glasses, frames, and furniture were designed and executed. The present market value of these works sufficiently attests their high merit, and even a greater value attaches to the productions of the contemporary silversmiths, which are estimated by their artistic qualities, and not by their weight in metal.

For reasons which will be obvious I forbear to mention any building in this town; but if you inquire whether any good architectural work exists in this immediate neighbourhood, I refer you to an adjoining parish, where you will find Moresby Hall, which is thoroughly English, and yet possesses all the qualifications required by Vitruvius, and which is tenanted by a most excellent tenant, who will take the utmost care of it. It is both solid and commodious, and so universally acknowledged to be beautiful that tradition has assigned the design to Inigo Jones himself. Carry Moresby Hall in your mind as you travel by rail to Manchester, and if you will impartially trust your common sense, you will see how superior our Cumberland gem is to the "harum-scarum" mansions of modern Lancashire. If you ask me to show you a beautiful and genuine English interior, we will go to Cockermouth and enter the house where the poet Wordsworth was born, and where we shall find the ever-hospitable welcome of our friend, Mr. William Wood. We will ascend into the drawing-room, and there you will behold a beautiful proportioned apartment, strictly classical according to rule, but executed, both as regards

its principal features and its details, in the entire spirit of English originality.

The career of the celebrated Thomas Chippendale reads a useful lesson to the present generation. He was a London tradesman, and kept a cabinet-maker's shop in St. Martin's-lane, and yet in his own day he gained a European reputation, which, since his death, has increased rather than diminished. In 1754 Chippendale published a large and beautiful volume (unhappily now so scarce that even the British Museum does not possess a copy), under the title, "The Gentleman and Cabinetmaker's Director, being a Collection of Elegant and Useful Designs of Household Furniture and other Ornaments, to which is prefixed a Short Explanation of the Five Orders of Architecture and Rules of Perspective. By Thomas Chippendale, St. Martin's-lane. March 23rd, 1754."

Chippendale thus identified cabinetmaking with the craft of architecture, and in his preface states the following unanswerable argument in support of his contention:—"Of all the arts which are either improved or ornamented by architecture, that of cabinetmaking is not only the most useful and ornamental, but capable of receiving as great assistance from it as any whatever. I have, therefore, prefixed to the following designs a short explanation of the five orders. Without an acquaintance with this science, and some knowledge of the rules of perspective, the cabinetmaker cannot make the designs of his work intelligible, nor show, in a little compass, the whole conduct and effect of the piece. These, therefore, ought to be carefully studied by every one who would excel in this branch, since they are the very soul and basis of his art." If, then, the cabinetmakers in 1754 thought it necessary to undertake such studies and acquire such knowledge, the architects and builders in 1877 should go and do likewise, and rescue British art from the discredit which it has so largely incurred.

I maintain that in the instruction given in schools of art all pupils should be made to understand thoroughly the principles of the great Italian architects of the sixteenth century, and of the English of the seventeenth century. They should know all the rules of architecture and perspective, and when they know these they may do something original. I will mention one incident which will illustrate my present argument. Some years ago the question arose of erecting a new apse or chancel at the Church of St. James, in this town. The then incumbent consulted a church architect, who sent in a most villainous design, which I implored the incumbent not to accept; and said that rather than the church should be spoiled I would undertake the matter myself, without any architect at all. I summoned my assistant, and all we had to do was to complete the church according to the intention of the original architect. It was plain enough, and I do not think any one ever thought that the work was done unsatisfactorily. If you had had to engage one of these church architects you would have one of those harum-scarum things which is neither fish, flesh, nor fowl; and instead of being a credit it would be a disgrace. The church architects will not learn to follow the example of men to whom I have referred, and learn the alphabet of their profession.

I have endeavoured to set the facts of the case before you to the best of my ability. I have said much that is contrary to fashion,—much with which you will disagree; but I know that I have spoken conscientiously, and I am firm in conviction that the day is not far distant when that belief in the superiority in the old masters, which has been so rudely shaken, will resume its sway, and then only shall we tread the right road to improvement which this generation finds it so difficult to discover.

Permit me, in conclusion, to read to you the views of Sir Joshua Reynolds, our greatest painter, on this momentous subject, who, in his admirable "Sixth Discourse," addressed to the students of the Royal Academy, on December 10th, 1784, expresses himself as follows:—

"The great use of studying our predecessors is to open the mine to shorten our labour." "From the remains of the works of the ancient the modern arts were revived, and it is by their means that they must be restored a second time. However it may mortify our vanity, we must be forced to allow them our masters: and we may venture to prophecy that when they shall cease to be studied, arts will no longer flourish, and we shall again relapse into barbarism." "Study, therefore, the great works of the great masters for ever. Study, as nearly as you can, in the order, in the manner, and on the principles on which they studied. Study nature attentively, but always with those masters in your company; consider them as models which you are to imitate, and at the same time as rivals with whom you are to contend."

THE LATE MR. TALBOT BURY, ARCHITECT.

WE see with regret the announcement that Mr. T. Talbot Bury died on the 23rd ult. at his residence, 50, Welbeck-street, Cavendish-square, aged sixty-five. Mr. Bury was a pupil of Augustus Pugin, and in the early part of his career assisted Augustus Welby Pugin as lithographer and engraver in the production of some of Pugin's works on Furniture, Ironwork, and Goldsmiths' Work, as well as in his "Examples of Gothic." Mr. Bury also engraved the principal plates in Owen Jones's well-known work on the Alhambra. He was at one time in partnership with Mr. Chas. Lee, of Golden-square, but the connexion did not last very long.

His works as an architect, several of which were illustrated in our pages, comprise the church at Bovington, Herts; Christchurch, Battersea; All Saints, Clapham; St. John's, Weymouth; St. James's, Dover; St. Ann's, Stamford-hill; St. Andrew's, Beadpole; St. Fagan's, Aberdare; St. Peter's, Symondsbury, Dorset; All Saints, Windsor Forest; and churches at Kilmington, Devonshire; Askerswell, Dorset; Aldenham, Herts; Child's-hill and East Moulsey, Middlesex; St. John's Common, Sussex; Christchurch, Kintbury, Berks; Burton; Jeffreystone, Pembrokeshire; Upper Heyford, Oxfordshire; Welford and St. Mary, Woodlands, Berks; Southleigh, Devon; and others; houses and parsonages at Welford, Kintbury, East Moulsey, Child's-hill, Hook, Barton-grove, Hanger-lane, Middlesex; Aberdare; Windsor Forest; Weymouth, &c.; various schools; two hotels at Weymouth; a market-house; a residence in Windsor Forest for the late Mr. Van de Weyer, then Belgian Minister, which cost 34,000*l.*; mansions at Falcondale, Lampeter, and New Tonbridge, near Brigstock, Northampton; alterations to Shaw House, Newbury; and Haughton House, Northamptonshire; and some other public and private buildings. He wrote a "History of the Styles of Architecture" for Weale's series, and contributed on more than one occasion to our pages.

In conjunction with Welby Pugin he assisted in developing the designs of the late Sir Chas. Barry for the decorations of the Houses of Parliament. When the youngest Pugin some years since claimed for his father the merit of originating what had been done, Talbot Bury immediately replied, doing justice to his employer, Barry, and ignoring the claim that was set up.

All who have attended the congresses of the Royal Archæological Institute, while regretting his loss, will remember his genial good nature and his constant desire to contribute to their comfort and to the success of each meeting.

Mr. Bury became an Associate of the Institute of Architects in 1839, a Fellow in 1843, and in 1863 was elected a Fellow of the Society of Antiquaries.

ANOTHER VIEW OF DR. SCHLIEMANN'S FIND.

UP to the present time, we have only heard the views of the explorer of Mycenæ as to the value of his discoveries. It is, therefore, interesting to read the following letter from Athens (published in the *Cologne Gazette* of the 16th ult.), in which an estimate of the discoveries is made by a competent critic. The writer says:—

"The gold ornaments contained in one of the four boxes sent from Mycenæ were exhibited for a few days at the Bank, and the most eminent men of the city were invited to inspect them. Their criticisms form the general theme of conversation. The learned of Athens seem to think the name of Agamemnon already too young, and they date by King Danaos. Others acknowledge readily that there are many ancient pieces, especially seals, among the objects found; but they cannot recognise in the large quantity of gold ornaments anything characteristic of the oldest epoch of Asiatic gold-work, massiveness of metal, chastity of style. The gold objects are all hammered out of thin gold-plate, the forms and drawings are mostly without style, pointing more to a period of decay than the remote time during which the first specimens of Phrygo-Lydian art reached the shores of Europe. The locality where they were found also does not guarantee such a high antiquity. For although the perpendicular pits in the castle date from far distant times, no one has yet been able to prove that those pits were originally graves. They may very well have been underground stores, as they existed in all old castles; and those spaces may afterwards have been used as sepulchres by princely races which nestled here in much later times. The newly-discovered graves bear no traces of the monumental art of heroic times; and the unburnt bones lowered into the deep, and covered by masses of earth, by no means testify to the Homeric age. But buildings of a very late epoch are without doubt in the immediate neighbourhood of the graves. Under such conditions, it is easily explained how the chronological determination of the graves vacillates between the times of Danaos and those of the Byzanto-Frankonian middle ages; and as it will be months yet before all the objects of the find will be exhibited together, it is impossible to pronounce a safe judgment at present. The public both here and abroad, which already now demands decisive answers to their inquiries, will therefore have to curb their nervous impatience. The treasury of Priam was already found four years ago, and it has not yet been satisfactorily solved to what epoch those ornaments belong, which by some are considered as having decorated the neck of Andromache, while others look upon them as trinkets from a Turkish harem. The gold of Ilium soon disappeared, and has been withdrawn from discussion. The golden treasures of Mycenæ, however, because they are public property, will be exhibited as a complete collection, but hardly before April. No sane person has doubted the high antiquity of the pottery and clay figures found at Ilium as well as at Mycenæ. The age of the gold objects, in both places, however, is still problematical, the different chronological estimates diverging by thousands of years. The history of Mycenæ is generally confined to the times of the descendants of Atreus, and is considered finally concluded with the year 460 B.C. The many later buildings, which have been uncovered recently, prove that this is a mistake; and it is also wrong to consider the middle ages of Greece, with its splendid courts, as non-existent because we do not know it. The present problem will give rise to fresh inquiries, and lead before very long to important results."

GOLD AND SILVER IN KING SOLOMON'S TIME.

SIR,—With reference to your recent interesting article on Dr. Schliemann's discoveries, I send an extract which will show that the writer was in error on one point, because it was *gold* and not *silver* that was nothing accounted of in the days of Solomon.

1 Kings x. 21.—"And all King Solomon's drinking-vessels were of gold, and all the vessels of the house of the forest of Lebanon were of pure gold; none were of silver: it was nothing accounted of in the days of Solomon."

Verse 27.—"And the king made silver to be in Jerusalem *as stones*." EWAN CHRISTIAN.

*** If we admit with our correspondent the power of the colon, his quotations nevertheless surely serve to prove the correctness of the observation to which he objects. How does the first passage stand in the Hebrew?

The Royal Dramatic College.—A public meeting has been held in the Saloon of Drury-lane Theatre for the purpose of considering what steps should be taken to relieve the institution from its perilous financial position. Lord William Lennox presided. It was stated that the Council were without funds to provide for current expenses, and that if the public and the dramatic profession did not come forward and help at this crisis they would have no alternative but to dispose of the building and thus deprive the inmates,—aged and infirm actors and actresses,—of their home. Upon the motion of Mr. Webster, seconded by Mr. Anson, the meeting pledged itself to do all that was in its power to re-establish the institution in a good position. An account of the money that has been squandered on this establishment would startle the public. An entirely fresh system of management is needed.

New Auction Mart at Forres, N.B.—A new auction mart for the sale of cattle, furniture, &c., has been opened at Forres. The cattle-shed is 80 ft. long by 24 ft. broad, partly covered in, and will hold from eighty to a hundred cattle. Fifteen pens have been put up for pigs, and five for sheep. The contractors were,—Messrs. Tulloch & Forrest, joiner work; Mr. Deason, slater work; and Mr. Squair, mason work.

LONDON STREET IMPROVEMENTS: 1877

THE Parliament of the metropolis is nothing if not practical. Nobody who takes a decent interest in its proceedings can have forgotten the congratulatory reunion of its members when Northumberland House was presented to the public. A duke had been paid a big price for his house and land, and a bigger one was to be got out of eager and speculating individuals. The Chairman of the Metropolitan Board rattled the loose coin in his pocket, and declared, over the beaming countenances of his supporters, that if any of their constituents wanted the land they must be prepared to lay down plenty of solid lucre. It is consequently difficult not to admit the practical character of the Board. We will not, however, suppose for an instant that: given the necessity of making a new street, say from the Strand to Regent-circus, the Board deputes any two of its members—regular attendants at the meetings, and remarkable for their practical conclusions—to point out the true direction or inclination of the same. We will not surmise that these gentlemen resort to the shadow of St. Martin's Church, and having chosen the hardest-headed cabman they can find there, order him to drive them to the "Criterion,"—the result being the widening of the route taken by the cabman aforesaid. This kind of rule-of-thumb science is no doubt sometimes successful, and in the question of metropolitan improvements art is only an intruder. Not that we would place the claims of the latter above those of utility. We would only hint that a little more artistic feeling, a very little knowledge even of the experience of similar difficulties in another and really beautiful European capital, would enable our Ædiles to perceive the recurring incongruity which spoils their projects of improvement. This, although patent in a part, at least, of the latest scheme of the Metropolitan Board of Works, is unperceived by a House of Commons so careless of results, either judged from a utilitarian or an artistic point of view, as to complacently acquiesce in the explanations of an official advocate who stultified a principal feature of the Board scheme by properly withdrawing the only item of it which was supposed to be objectionable.

The Bill to be called, when it becomes law, "The Metropolitan Street Improvements Act, 1877," was hurried through the second reading on Thursday, the 22nd ult.; and it is now referred to the investigation of an ordinary committee. The important piercings and minor rectifications at the West End which are proposed by the Bill we leave for the moment; and come at once to a host of indubitable improvements which affect many and remote parts of the town. At Westminster, Abingdon-street is to be enlarged on its eastern side, and thence the roadway on both sides is to be equalised and increased to within 80 yards of Ponsonby-place; and the embankment recently formed at the south end of the Houses of Parliament is to be continued, we presume, to join that actually in existence in front of the Millbank Penitentiary. The road originally known as Gray's-inn-lane is to be improved: that is to say, Gray's-inn-road is to be widened on its eastern side from Holborn to Henry-street; and a short street is to be made, partly by a viaduct, from the corner of Liquorpond-street and Gray's-inn-road to Mount Pleasant,—a once salubrious spot close to Coldbath-fields. The Kentish-town-road is to be widened, on its eastern side, not far from Clarence-road. In Islington, Goswell-road and St. John-street-road* are both to be widened in parts. In Hackney, Mare-street is to be improved from near its junction with Amhurst-road to a point about 80 yards north, opposite to the churchyard. On the other side of the river, Tooley-street and some adjacent streets are to be widened; while Bermondsey-street is to be increased in width on its western side from Snow's-fields to Star-corner. A new street is to be made from the Southwark-bridge-road to Blackman-street at its junction with Mint-street, thus opening out a direct communication between Southwark Bridge and Great Dover-street. Alterations whereby Jamaica-road and Union-road in Bermondsey and Rotherhithe, the Camberwell and Peckham high roads, and the approaches to Deptford Bridge will be considerably improved, are proposed by the Bill. All these form a comprehensive programme of petty benefits which can be executed at comparatively small cost and without much destruction of houses or interference with property in land. But the important change contemplated, in Soho and around Leicester-square, is worth, we think, a little reconsideration,—even though sixteen years have elapsed since we first suggested a part of it, and in a more artistic manner than is now proposed,*—before Parliament blindly sanctions its execution.

We venture to believe that the proposed route from the Strand to Regent-circus will be found to be not less rambling than the description given of it in the Bill is perplexing. This thoroughfare is to be formed "by the widening of Piccadilly on the north side, then by the widening of Coventry-street on the south side, and the widening of Princes-street on the west side, and thence by a short length of new street from the south end of Princes-street to St. Martin's-street at its intersection with Blue Cross-street, thence by a widening of Orange-street on both sides, and by a widening of Hemming's-row on the south side, and terminating at the east end of Hemming's-row." The plan† we publish to-day will show at a glance the irregular character of the proposed route. Objections to the two other streets refer not so much to the route as the details of the route. For instance, the manner in which the widening, or rather rectification of streets leading to such open spaces as Leicester-square and Soho-square is absolutely shirked, says little for the completeness of the scheme. It is perfectly true that such subordinate improvements can be effected after a principal route is made; but are they? As a rule, adjoining owners are in far too great a hurry, for many and different reasons, to build in the vicinity of a freshly-pierced thoroughfare, to think of improving the approaches to it. Neither is it usually their interest to improve them, nor has the Board generally time, inclination, or money enough to do more than complete the thoroughfare in question. It must, therefore, occur to all earnest reformers to advocate not only the study of a new route, but also of the subsidiary streets which lead into it. If this has really been done by the Board, there is nothing to show what such study has produced. But one thing is certain and inevitable, and it is that when the new streets are finished, correspondents however eminent may write to the newspapers, or publish pamphlets, about the error committed, without the ghost of a chance that their complaint will be even read. They must cry out before they are hurt; and we believe, or at least hope, that there is yet time to oppose, to advise, and to amend.

The probable results of the proposed improvements, as they concern the new streets at the West End of the town, are not difficult to foresee. Take the projected route from Trafalgar-square to Tottenham-court-road. On the west side of St. Martin's-place a slice of land adjoining the National Gallery will remain at the disposal of the Board; and if the National Gallery authorities will not purchase it, at probably an exorbitant price, it will be let for building purposes, and shops or dwelling-houses will be erected almost against the wall of the new picture-galleries. Again, in order to avoid touching certain property, the new street is to be curved round the back of it; and consequently one side of that new street will be composed, for a short distance, [of a dead-wall enclosing the yards of houses in St. Martin's-lane. At the west side of the new street, at its junction with Hemming's-row, there will be an elongated triangle, sharply pointed at two of its extremities. Upon them we may expect to see built at one end a lofty shaft of a house, crowned with an attenuated box roof, and at the other a mediæval tower, perhaps, with an extinguisher, terminating in some elaborately-devised cast-iron vane. This triangle, moreover, blocks the most frequented entrance to Leicester-square. Passing on to the other side of Cranbourne-street, the new thoroughfare creates a number of pointed or acutely-angular sites. Preserving the western side of Cranbourne-passage, it knocks off a bit only of Newport-court, a narrow alley like an Oriental bazaar, devoted to the sale of butchers' meat, and pestiferous on a warm Sunday night. Further on, the western side of Crown-street is to be left in its actual integrity; and though the common dictates of personal interest would naturally induce the freeholders of this side of Crown-street to pull down and relet, such is the complicated and uncertain character of house property in London, that a dozen or more years may elapse before so desirable a result will be attained. In the meantime, the value of the houses erected upon the new side of the street will be vitiated, and their quality in the first instance affected, by the propinquity of the old and miserable tenements standing opposite to them. The proposed street from Holborn to Regent-circus is attended with the same objection. The whole of one side of Dudley-street, of King-street, and of Richmond-street is to be left untouched. The land in that part of town belongs to several owners, and the majority of the houses possess a frontage of less than 20 ft. If some of the owners do pull down the actual houses, it may be confidently expected that they will, and indeed must, erect others of exactly the same type; and thus a host of narrow and inconvenient houses of two small rooms over two small rooms approached by a steep staircase-ladder, will confront the big blocks of shops and warehouses likely to be built upon the opposite and entirely new side. To look at the matter in another light,—in the practical light in which the Board looks at such things,—it cannot be denied that the creation of a broad thoroughfare in front of a line of old tumble-down tenements of comparatively small value, is to virtually present a large sum of money to the owner or owners of the land upon which those tenements stand. The experience of Paris showed more than once the impossibility of making an owner pay the Municipality for having, unasked, tripled or quadrupled the value of his property; and were we certain, with the experience of the French capital before our eyes, that clever speculators, knowing beforehand the intentions of the Board, had bought at its original value the property on the untouched side of the proposed thoroughfares, we should be quite convinced that the worn-out houses would be pulled down and others erected in their stead. But that is not likely to happen, at least not twice, amidst the publicity which is enjoyed in this country. In fine, looking at it in the most favourable manner, a gratuitous donation to the owners of such dilapidated property as that in Crown-street and King-street is certainly not a business-like proceeding on the part of a practical body of men like the Metropolitan Board of Works.

We have devoted, for a number of years, considerable attention to the subject of the principal improvements now before a Parliamentary Committee. We have lately visited the proposed lines of route comprised in the triangle formed by Regent-circus, Holborn, and Trafalgar-square, and we have been amazed at the apparent increase of filth, squalor, and ill-fame with which the neighbourhood is polluted. To several communications addressed to us about the streets in question, we have been compelled to refuse insertion from sheer want of space; although we are convinced that ignorance alone of the proposed alterations prevents many, who would otherwise speak, from urging upon Parliament, through the newspapers, the necessity of a little more thought before beginning the work of demolishment. Surely the authorities of the National Gallery should bestir themselves to obtain for their building a means of that isolation which to a public repository of the kind is absolutely essential. Are there not also, in the immediate vicinity, certain places of concentration, such as Covent-garden-market, the western approaches to which require enlargement and addition? A broad highway, like the Haymarket, now redeemed to a great extent from its originally offensive character, requires only a slight impetus to become a useful and fashionable part of the metropolis. The new garden in Leicester-square is really an ornamental acquisition, and an opening on the southern side would improve the square and its surroundings. To Regent-circus, already crowded with vehicles, the new streets will bring no relief; on the contrary, two new thoroughfares from north and south will increase the confusion which now reigns within it. A large open *Place* is as feasible as it is necessary at the junction of the six, we may even say seven, streets, which are to disgorge their traffic in front of the "Criterion." That building, too, is an example to adjacent owners if inducement be offered them to improve their property, for it is one of the few good things of the kind in London, and its front towards Piccadilly is an excellent innovation upon the established dreariness of metropolitan architecture. We say, emphatically, instead of leaving, as the Board proposes, two petty and inconvenient building sites between Tichborne-street and Piccadilly, clear them away altogether; for the

* Now that street nomenclature is elevated, among a few ardent spirits, to the dignity of a hobby, it seems odd that this tautological barbarism is still maintained.

* See the *Builder*, 1861, p. 56; see also vol. for 1871, pp. 263-5.

† See p. 208.

whole should be made into an open and spacious centre, commanding, as it will do, highways leading directly to every part of the town.

The Strand and Coventry-street communication, as it is now proposed by the Board, will be straight (except on the north side of Chandos-street) from its Strand entrance at King William-street as far as the baths and washhouses in Orange-street. Then it is to ascend the hill of Princes-street with amazing crookedness. We would prefer after recent reconsideration to continue the new street in a straight line to the Haymarket, entering the latter at its present junction with Panton-street. This would permit a gradual rise from Orange-street to the Haymarket, instead of the rapid ascent to Coventry-street which the proposal of the Board involves. The Piccadilly entrance to the Haymarket could be easily facilitated by rounding off the corner block of houses on its western side, and the improvement of its eastern corner is contemplated by the Bill. Such a street connecting in a straight line the Strand with the top of the Haymarket would form a noble thoroughfare; and one which those who planned King William-street evidently had in their mind's eye. Again at right angles with the aforesaid straight thoroughfare we would connect Leicester-square with Trafalgar-square. We would construct a straight street along the flank of the baths and washhouses before mentioned, out through the present barracks, and descend by the western side of the National Gallery to exactly opposite the portico of the College of Physicians.

The Trafalgar-square and Tottenham Court-road communication is to pass in a somewhat sharp curve behind the National Gallery, and then proceed along Castle-street, which, however, is already at right angles with the other new street from the Strand to Regent-circus. This, as we have said before, leaves a triangular site which is neither desirable nor likely to be profitable. We see no reason why, if carriages are to go behind the National Gallery, they should not go just a little further; and so leave a right-angled site for new houses on the eastern side of the new street to the north. To reach that highway carriages from the Strand will not go as far as the National Gallery; but their direct route will be up Bedford-street, Garrick-street, and Newport-street towards the new circus to be formed a little to the west of Seven-dials. The lower part of the suggested street from Trafalgar-square to Tottenham Court-road will be used principally by carriages coming from Whitehall and Westminster; and, convinced of this, we think it desirable that a means of using both the eastern and the western sides of Trafalgar-square, and of passing upwards on either side of the National Gallery, should be provided. The possibility of such an evident and necessary improvement ought not to be overlooked in the haste to pass an incomplete Bill.

Seldom has this haste been rendered more apparent than in the profound satisfaction which the House of Commons evinced upon receiving Sir James Hogg's wise announcement that the portico of St. Martin's would be spared. Mr. Beresford Hope in a glow of satisfaction withdrew his opposition; Lord Elcho oracularly hinted that the House would never permit utilitarians to run riot with our public buildings; and the two chief Imperial authorities upon art being satisfied, Parliament was contented. But it seems to have escaped the general wisdom that the feasibility of a route from Trafalgar-square to Tottenham-court-road depends very much upon that portico. The new highway, even if it were 100 ft. wide, would be of doubtful benefit if throttled at its entrance; and there reduced to less than 25 ft.,—about the present width of the roadway between St. Martin's Church and the National Gallery. Taking therefore this fact into consideration,—besides the fact, which we repeat, that the lower part of the new street from Trafalgar-square northwards is not required for the Strand traffic, but almost entirely for that of Pall-mall and Westminster,—it should indubitably begin on the western side of the National Gallery, and proceed in almost a straight line through Leicester-square to the junction of the two new streets, descending respectively from Bloomsbury and Tottenham-court-road. We have tried this upon paper, and consulted the large Ordnance maps of the localities through which such a street would pass; and, we may add, should it be too late to alter the Board scheme, the construction of a thoroughfare on the other side of the National Gallery is the only means of relieving the gullet of St. Martin's of its inevitable load of stoppage,—unless indeed the trustees of our art treasures are prepared to pull down a part of their eastern wing and give up some of their land for the public benefit.

The evident determination of the Board not to trouble itself, until the property will be infinitely increased in value, with the widening of that part of Chandos-street which is included in the proposed route from the Strand to Regent-circus, is accompanied by a similar disinclination to know anything about what is going to be done in the immediate vicinity of its own projected alterations. We believe it is no secret that the agents of the Duke of Bedford at last intend to open out Bedford-court, by prolonging Henrietta-street to Bedfordbury. This last-named slum,—some of our correspondents have thought that it belonged to the duke,—is, we are credibly informed, only an off-shoot of the ducal estate,—a sort of burgh or bury which has clung parasitically to its walls; and reformers have now taken it in hand. Plans are prepared for the construction of artisans' dwellings on one side of Bedfordbury; and under that Act of Parliament which, as yet, has done literally nothing for the artisans it professed to befriend, the demolishment of several human dens is imminent. Now, since that is the case, we respectfully invite those concerned to examine their maps: to look at Adelaide-street, and then raise their eyes to the junction of Garrick-street and New-street. By a little negotiation it will be possible to construct a highway from the top of New-street, on the edge of the Bedford Estate, to Adelaide-street, and thus the increasing traffic from Covent-garden Market, finding two new outlets into an improved Bedfordbury, will pass in a direct line by Adelaide-street to the Strand and Charing-cross. If Bedfordbury and its horrible tenements are at last to fall, the direction of the new street can surely be so inclined as to facilitate the communication of Covent-garden with Charing-cross. Indeed, whether the Board, in its sad craving after curved lines, has been wise in altogether avoiding St. Martin's-lane is open to needful comment; for it is impossible that the crowded wynds and confused courts, which abound on both sides of the lane, can be permitted much longer to escape official condemnation.

The promised new streets will form some of the most important thoroughfares in the metropolis; and consummate flights of architecture will not suffice to correct a radical error in their shape or inclination. Though we have a great love for Hogarth's line of beauty, we do not appreciate the wisdom which goes out of its way to obtain it. We still believe in the truth of that proposition which declares two sides of a triangle to be greater than its base; and we therefore think that the nearest and simplest way from one point to another is in following a straight line. Of course, our argument in favour of straight thoroughfares merely refers to certain lengths of streets. It would be impossible to travel in a straight line from one end of town to another without making an infinity of awkward angles. These are what we would avoid, for we want not only straight streets, but as many right angles as possible. If, moreover, we confess this partiality,—weak no doubt according to the opinion of many excellent artists,—for straight lines and right angles in the prosaic distribution of an improved London, it is because, other things being equal, a square plot of land is a more useful and valuable building site than a triangular plot of equal area; and all the new streets proposed by the Board necessitate the formation of irregular and awkward bits of ground, upon which even Gothic ingenuity will be puzzled to contrive satisfactory buildings. This story, got by heart from constant repetition, is a very old one. When the Romans set to work after the destruction of their capital by the Gauls, "so little taste had they for order and beauty," says an historian who dedicated his book to Pope, "that the city when rebuilt was even less regular than in the time of Romulus; and though in Augustus's time, when Rome was become the capital of the world, the temples, palaces, and private houses were more magnificent than before, yet those decorations could not rectify the fault of the plan." Then war, famine, pest, and fire, effectually created the open spaces which the complicated machinery of modern communities can only partially obtain. If Nero fiddled while his capital was burning, it was a matter for rejoicing that Rome should be cleansed even by fire. If the Napoleonic system deprived the French of their political liberties, it rebuilt their principal cities. Wise men accept these contradictions and seek for remedies. To control the doings of metropolitan government is a part of the business, if not the duty, of an Imperial Parliament; and yet the Bill for making these three new streets has virtually passed the House of Commons, we really believe, without a member knowing anything about the details of the scheme. Unless a Bill is opposed, and vigorously opposed, the merits or demerits of the reform it is intended to effect do not and cannot appear. The press is not encouraged to notice them. Yet a radical alteration of a large part of the West End ought not to be made until the House of Commons has patiently considered the arguments for and against schemes of alteration. A select Parliamentary committee ought to take the evidence of professional men and others, not only on a particular scheme, but on the whole question of possible improvement. Such a committee, if it be properly composed, might then be enabled to recommend better and more suitable lines of communication than those suggested by the Board; and which the latter might be invited to adopt. There would be a little delay; but in this instance, after a reticence of sixteen years, the delay would consist, not in the loss of the session's work, but in the postponement, for another twelve months, of a project for piercing important thoroughfares in Central London—a project not yet scientifically matured, and certain of condemnation when it will cost too much to rectify an accomplished blunder.

"A POSSIBLE CAUSE OF DANGER."

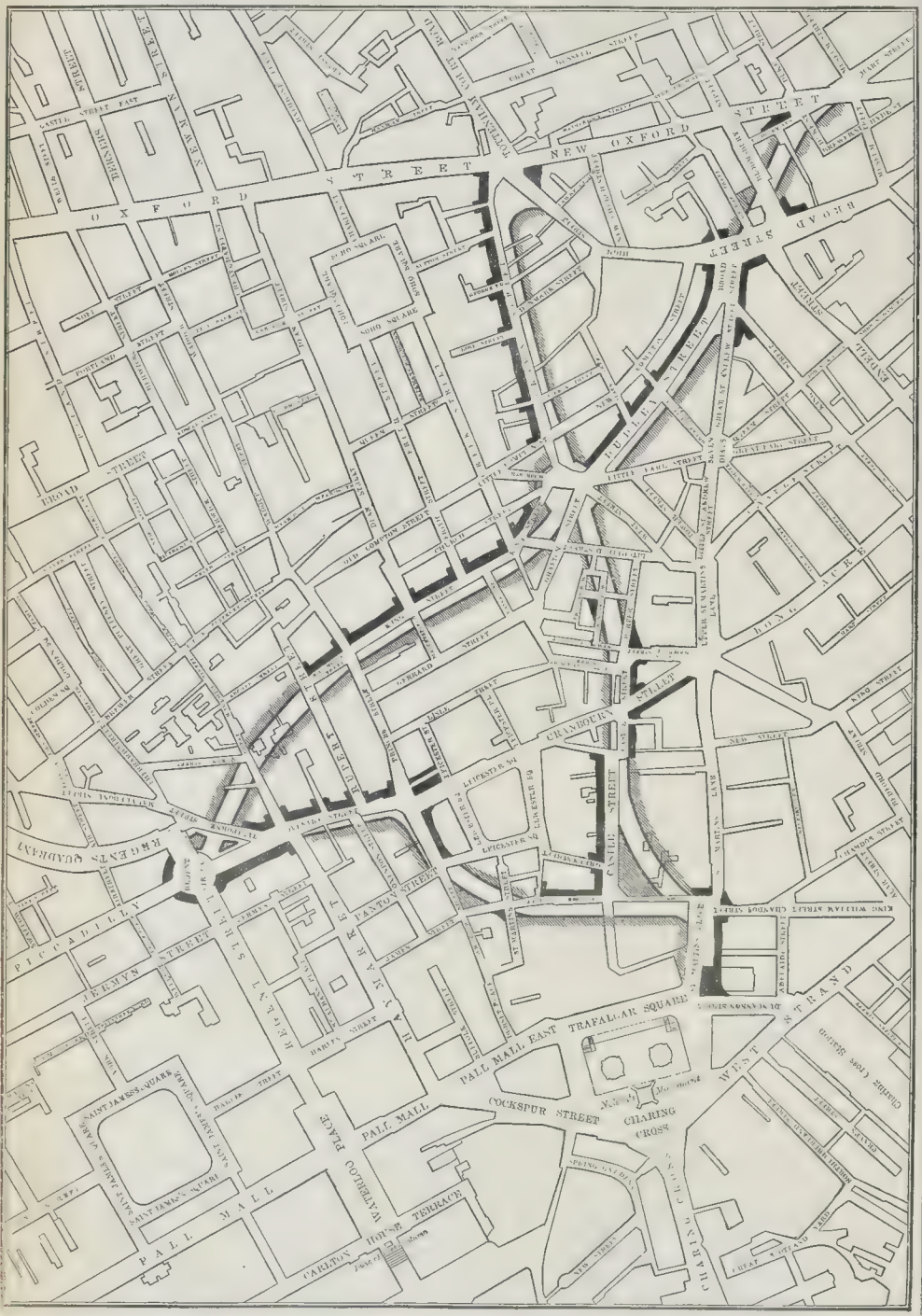
BY a slip of the pen we described our correspondent on this subject, in our last, as having observed the coupling disrupted of the wheels of the adjacent "carriage" instead of the adjacent *engine*, but this was, of course, obvious to all who are acquainted with a railway. Pointing this out, our correspondent repeats his views on the subject, and says,—What I object to is having the driving-wheel of the engine (to which all the force of the steam is applied) coupled with other wheels. The coupling-shaft is frequently broken, and fortunately, for if the wheel should give way instead, the consequences would be most serious. This will probably account for many of the numerous accidents hitherto unexplained. In the case under consideration, when both coupling-shafts were broken, the train was brought to a standstill, and the coupling-shafts were removed. The outer cranks of the wheels being thus free did not revolve in unison; it is obvious, therefore, that when coupled there must have been an intermittent strain attended with great danger.

CHARLES HILL.

THE BISHOP'S THRONE, CHESTER CATHEDRAL.

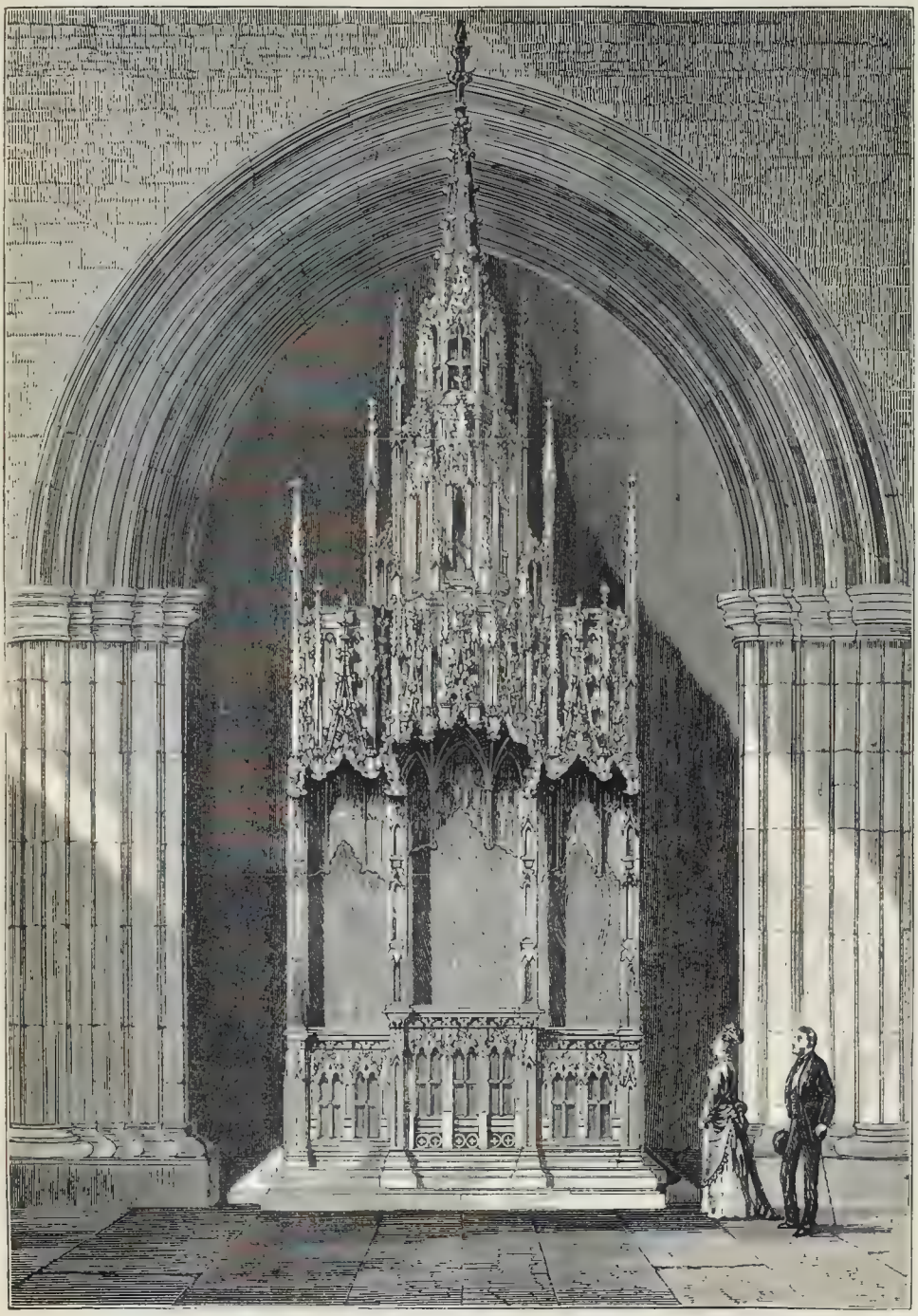
WE add a view of the new throne to the illustrations already given in our pages of the recent works in Chester Cathedral. It is executed in oak, from the designs of Sir G. G. Scott, in the style of the old stall-work there. In the centre is a seat for the bishop, and there is one on either side for the chaplains. We believe that the throne at Hereford is the only one which has a similar arrangement.

Passage of Trains near Observatories.—The observatory syndicate have made the following report to the senate of the University of Cambridge:—"The syndicate have learnt that the Great Northern Railway Company have a Bill now before Parliament for the construction of a railway from Shepreth to March, which will pass at a distance of not more than 1,700 ft. from the observatory. From the experience of other observatories, and from the evidence of private letters which Professor Adams has received from several eminent astronomers, the syndicate have strong reason to believe that the passage of trains so near the observatory would very seriously affect the accuracy of the observations, or even cause their entire loss. They learn that the tremors produced on the surface of mercury by an approaching train are often sensible when the train is at the distance of a mile from an observatory, and before the noise of the train can be heard. . . . . The syndicate, therefore, recommend that the University should petition Parliament against the passing of the Bill."



PLAN SHOWING NEW STREETS IN LONDON PROPOSED BY THE METROPOLITAN BOARD OF WORKS.

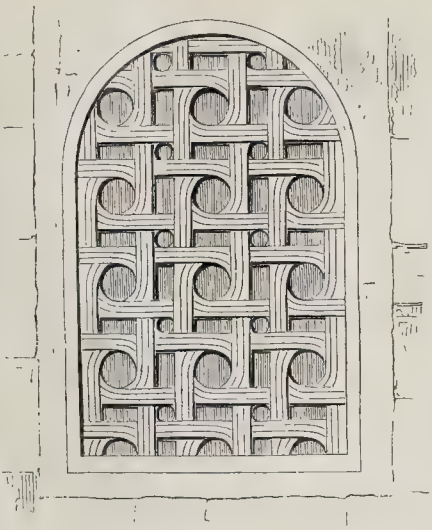
The Etched Parts show the New Line of Houses; the Black, the Old Line suffered to remain.



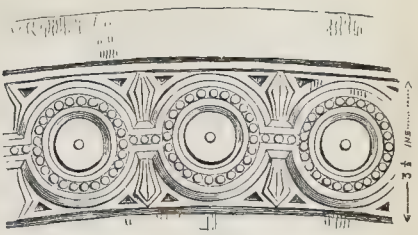
THE BISHOP'S THRONE, CHESTER CATHEDRAL.



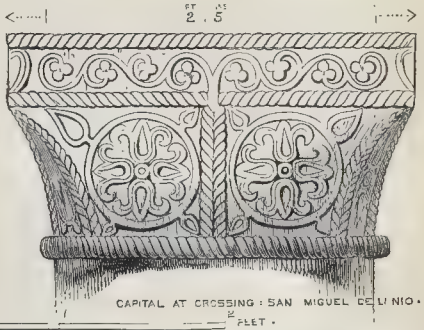
St. Miguel de Linio.



· WINDOW IN PORCH · VALDEDIOS ·



· PORTION OF ARCHIVOLT · TOMB · COLEGIATA · COVADONGA ·

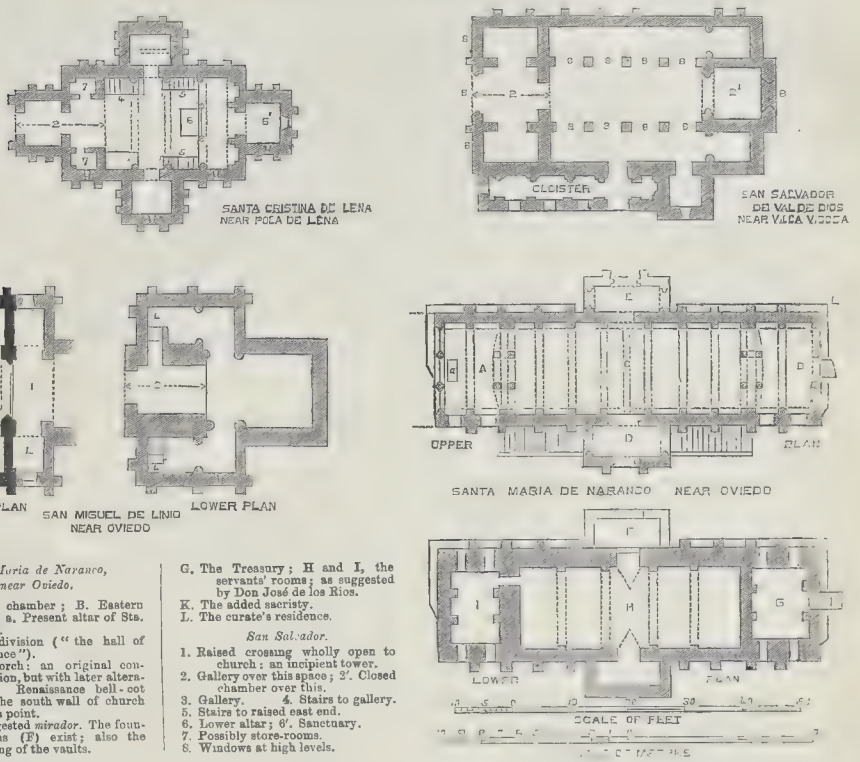


CAPITAL AT CROSSING : SAN MIGUEL DE LINIO ·

ASTORIAS : SPAIN .

EARLY CHURCH-WORK IN SPAIN.

EARLY CHURCH-WORK IN SPAIN.—*Plans.*



Sta. Maria de Naranco, near Oviedo.

A. Western chamber; B. Eastern ditto; a. Present altar of Sta. Maria.
C. Central division ("the hall of audience").
D. South porch: an original construction, but with later alterations. Renaissance bell-cot over the south wall of church at this point.
E. The suggested *mirador*. The foundations (F) exist; also the starting of the vaults.
G. The Treasury; H and I, the servants' rooms; as suggested by Don José de los Rios.
K. The added sacristy.
L. The curate's residence.

San Salvador.

1. Raised crossing wholly open to church: an incipient tower.
2. Gallery over this space; 2'. Closed chamber over this.
3. Gallery. 4. Stairs to gallery.
5. Stairs to raised east end.
6. Lower altar; 6'. Sanctuary.
7. Possibly store-rooms.
8. Windows at high levels.

EARLY CHURCHES IN THE ASTURIAS, SPAIN.*

WHEN I obtained an offer to show the photographs exhibited on the present occasion, I was mindful of Sancho's principles, and "the heifer being offered, made haste with a halter." Probably few Spaniards, and fewer Englishmen, have taken such pains to know the Asturias as the two holiday travellers,† whose tours led them through the towns, villages, and hill districts, and afforded them leisure and plentiful subjects for photography. Not a few buildings appear in this probably unique collection. Some yet unpublished notes, by Mr. J. McAndrew, were put at my disposal, and I agreed to look up the subject, and bring some remarks into the form and within the limits of a paper.

The Asturias.—The heir-apparent to the throne has been Prince of The Asturias since 1388. This Wales of Spain is in round numbers 140 miles east to west by forty from north to south. A grand inner mountain barrier runs along the southern margin next Leon,—some elevations 10,000 feet above the sea level; one of them is—

"Europa's summit, where the snows
Through all revolving seasons hold their seat."

Lateral valleys and dips run from this great dorsal spine, and all the rivers reach the Bay of Biscay through the gaps in the outward range fringing the sea. This seclusion from the rest of the country has of course affected the history and the character of the people. Asturias was a refuge of aborigines, scarcely known before the time of Augustus, and brought into subjection by the Romans more in name than in reality. It again furnished strongholds to the unconquered when the Arab invasion had swept northwards over the peninsula, to and beyond the Pyrenees. This seclusion has been less complete since the "paved-with-silver" Camino real—the high road from Gijon by Oviedo to Leon and Madrid over the Pajares Pass (4,450 feet)—made transit safe for wheeled vehicles. Even now the railway from Leon carries only to the foot of the hills, and the pass must be crossed to Pola de Lena before the next section of the rail for Oviedo and Gijon is reached. Traffic, mines, and industries once in full work, will bring about rapid changes.

Scenery.—Cervantes did not omit to note the becoming pride of the natives in their country. Does not Doña Rodriguez take occasion to say to Don Quixote, "I am of Oviedo in Asturias. . . . . my husband was a personable man, and, what is more, as good a gentleman as a king, for he was of the mountains"? What Ford describes with unction as "the sweet interchange of hills and valleys, rivers, woods, and plains, now land, now sea," is the theme of much interesting description in the MSS. There are accounts, illustrated by the views, of the finest and most fertile part of Asturias,—the valley of the Pilona from Ynfiesto to Las Arriondas; and of the scenes of rich beauty, set in circles of distant hills, on the Sella, traced from Las Arriondas to the sea at Rivadesella. The Dobra, at its junction with the Sella, runs in a secluded, narrow valley,—filled with the rapid hill streams and rocks. On the Lena, bare limestone precipices frame in the lower ranges of sandstone hills, covered with masses of verdure. Rough limestone rocks appear beside the Ponga, with plenty of picturesque character; but wholly outdone by the weird heaps of jagged hills which hold among them La Peña Santa (nearly 9,000 ft. above the sea). Over Lake Enol hang rugged sterility and silence. All is water and mountain, scant trees and grass;—gloom over the deep clear waters even on the brightest day. Eagles and vultures inhabit these rugged recesses of the mountains, reached from the river valley at Cangas by ascent through and beyond Covadonga. The Caranga gorge (some twenty miles south-west of Oviedo) is also, no doubt, sufficiently impressive:—a narrow fissure in the rocks, just wide enough to allow the river to rush through,—the sides of immense height, their summits invisible from the dimly-lighted road scooped from the overhanging rock.

Generally.—Bad roads and none at all, crazy vehicles, the waywardness of mules and mule-drivers, insomnolence and its causes, borona, and ollas are all duly celebrated in the narratives,—with the proper admixture of market-days and festas, dances, methods of killing time, Paris fashions, lace veils, and mantillas. I have made due use of a very fine-meshed screen, and it may suffice to mention that limestones and sandstones for building purposes are found almost throughout the province, and much slate in the west. Marbles are plentiful,—white, pink, and green,—at Rengos, three leagues south-south-west of Cangas de Tineo.

Miscellaneous Buildings. — The ordinary modern buildings in the little towns have broad wall surfaces, projected balconies or recessed galleries, wooden-bracketed wide eaves, and flat-pitched tiled roofs. A good solid whitewash, plentifully bestowed on the general walling, gives emphasis to the quoins, jambs, and other cut stonework left to nature. In churches internally the pure white areas are contrasted with well-pronounced washes of yellow and blue; externally a greater simplicity of colouring prevails.

The picturesque barn peculiar to the province has detached wooden posts, with caps like grindstones, about 7 ft. from their tops to the ground. A rough stone wall is carried round outside all the posts, bracketed balustraded balconies on all sides, and a tiled roof over the barn and balconies.

The bridges, with pointed arches, pointed barrel-vaults of masonry, and great piers of level-bedded ashlar-work (such as those at Ynfiesto and Cangas de Onis), are Mediæval designs of much grandeur, entirely without decorative detail. With a spectator in the river that at Cangas frames for him the upper length of the valley of the Sella,—the Sierra del Andrin on the right, and the Pico Pierzo in the far distance. The great height of the centre arch above the

* By Mr. S. Flint Clarkson. Read at the Architectural Association, Feb. 23rd.

† Mr. J. C. Stenning and Mr. John McAndrew, two English merchants.

water-level (58 ft. from the top of the parapet to the water), and the ivy which festoons its piers and cusps the arch outline in p'aces, fit it for this function. Its narrowness and the steepness of the roadway, "affording the sensation of climbing a well-pronounced house-roof," however, lead the degenerate inhabitants to make use of a modern bridge a few yards lower down the stream.

Among curiosities, La Cueva, just by Ynfiesto, is worthy of a word. The modern domed church and the chaplain's house (all in the neat commonplace style) are built completely under the nature-formed cave, a recess in the yellow sandstone precipice. The recess has no domed roof, but its ceiling is the flat underside of a gigantic stone landing, which carries the rock masses right up to the field levels. The well-built stone tower, at Salas,—almost unwindowed, crowned with pyramidal Moorish battlements, and the groined gateway, giving access to the Palacio,—are illustrated. A house in Calle del Aqua, at Villaviciosa (altogether the most attractive of the Asturian towns), has bold corbelling forward of the end walls, apparently in preparation for balconies and pents,—six pointed windows, in groups of two divided by columns, and a pointed doorway. A house on the west side just opposite has attracted its share of notice. A year after the death of Ferdinand, his grandson, afterwards the Emperor Charles V., landed at Villaviciosa (1517), seventeen years old, to take possession of the rich inheritance. The upper story, now used as a lumber room, is divided by characteristic panellings of chestnut. A windowless chamber, about 15 ft. by 10 ft., with a coffered ceiling, was Charles's bedroom. The table and bed were removed to Madrid in 1861. Sardines here lost for a time the royal favour, on account of their plenty and cheapness hereabouts. The Emperor was a *gourmand* to the end,—all the fierce discipline of gout and other ills could not tame him. In the monastery of Yuste,—"fish of every kind was to his taste, as indeed was anything that, in its nature or habits, approached fish, eels [especially eel pasties], frogs, oysters, potted fish [especially anchovies]. . . . Soles, lampreys, and flounders came in great quantities from Seville and Portugal." The views of a wild valley, "with overhanging rocks abrupt," show the cave of Covadonga,—rising to some height in the precipice. Levelling approaches, building works,—centuries of pilgrimages,—have not destroyed the solitude which dwelt here in the early centuries. "Here we seem at the outskirts of the world." When the eye is allowed to range over the rocks from some distance down the valley the great works of Ventura Rodriguez, and the white walls of the Colegiata, most surely compel notice of the dark hollow of the cave, where Pelayo and his little band made their stout defence and successful sally.

1550 *to* 1300.—The church of S. Salvador had existed a good number of years, on the site of the present cathedral, before Alphonso II. made Oviedo his capital. He founded the see in 810, and made ready the Holy Chamber (Camara Santa), about 830, for the ark containing the relics brought from Toledo at the time of the conquest (712.) Thereafter the city was "Holy Oviedo." The rebuilding was commenced in 1301 with the chapter-house (east side of present cloister). In 1345 an impulse was given to the completion of the cloisters by a visit from Alphonso XI. The church was begun in the episcopate of Bishop Gutierrez de Toledo (1376—1389), continued through the fifteenth century, and brought to completion in the time of Cristobal de Rojas (1546—56). The spire was added in 1575. Since then the works of alteration and addition have not been considerable. [Here followed an account of the other features in this largest and finest church in the province.] . . . . The south tower is the open porch of the south aisle. It has a large turret at the south-east angle, and large double buttresses at the others. Traceried windows surmounted by ogee-crocketed and finialled labels occupy the three stages above the great lower arches, and a boldly projected gallery, with open-work parapet, terminates the tower proper. The next stage is somewhat smaller than that below the gallery. Each of the circular turrets at the angles has a spirelet. There are a couple of crocketed pinnacles on each side between the turrets. Another open work parapet crowns this midway stage,—part tower, part spire,—and makes the transition easy to the open-work spire, octagonal on plan, crocketed at the angles, which reaches the total height of 269 ft. (English). From the south, the outlines and the not too elaborate piercings of the rich yellow sandstone spire are well defined by the intensely blue sky; the great red mass of the Sierra-de-Naranco forming the background to the church and tower. Altogether this is one of the best of the pierced spires. The relative heights of the tower and spire, the moderate length of the pierced octagon, the transition from the square through an intermediate stage of mixed outlines, the proportion of the tower buttresses and of the pinnacles terminating near the top of the intermediate stage,—all seem incapable of improvement. A thorough simplicity is made to result from complexity of idea and detail. The fullest value is given to the height of the tower by the square forms being so long continued, and so emphatically crowned. The cloisters adjoining the south transept have four bays east to west, and three north to south. Sets of five-light openings, filled with late geometrical tracery, are very English in general character. Six-light openings on the other sides have flame-like tracery. In the later side the caps are their whole depth above their earlier neighbours; but character, scale, and spacing match sufficiently as usual in these workmanlike pieces of self-assertion. The internal vaulting is plain quadripartite with bosses, but without ribs; and the effect of the whole is of much elegance.

Complete and important churches in well-developed Gothic are most rare in the province.

Thirteenth Century.—S. Antolin de Bedon, a now-deserted church, near Rivadesella (founded, according to an inscription on a pillar by the high altar, in 1205), is cruciform, and has lean-to aisles to the nave, raised crossing, three eastern apses, western bell-cot, corbelled eaves, buttresses instead of columns in apses, &c., semi-arches over windows very deeply splayed externally. The transepts are vaulted in stone. This little church is notable for grouping, proportions, and the grace of its simple details.

Twelfth Century.—A large number of the churches are of this period. Rectangular unaisled naves, with square-ended chancels, narrower than the naves, occur in the smaller churches (*e.g.* Lloraza, Sebrayo), as well as similar naves, short chancels, and semicircular apses (*e.g.* Ujo, Narzana, Villamayor). Complete triapsidal east ends are found in larger churches, with aisled naves and transepts (as Valdedios,—Vallis Dei, near Villaviciosa); on a very small scale with nave in a single span at Villanueva.

The south transept of Valdedios rises to form a short tower. Towers are rare. There are gabled bell-cots, with arches for single and for several bells on west walls (Villamayor, Sebrao, &c.).

At Amandi three divisions (on plan) are formed in the apse externally, by bonded shafts running the whole height. Smaller shafts, at the eastern angles of the square chancel, reply to three-quarter shafts on the curve. There are three spaces in the height: (1) the base course ranges with the bases of the shafts, and the window-sills,—formed of a combination of billets,—are continued as strings and as annulets to the shafts; (2) the square abacus above the carved caps of the shafts in the window-jambs, forms in its turn a string and annulets; (3) carved caps to the shafts and moulded corbels at intervals support a continuous stone eaves course. This is the usual apse of the twelfth century (also Villamayor, &c.). The fertility of design at the command of the designers would probably render it impossible to find instances of complete identity. General resemblance to examples named by Mr. Street from La Coruña (Galicia) eastwards shows prevalence in Northern Spain. In Southern France also,—in La Charente for instance,—numerous examples (Plassac, &c.) will be called to mind by all who have sat at the feet of Mr. Sharpe. Low-pitched gables, with stone barge courses, semi-cones over apses, all tiled; semi-arched windows, few, small, and high,—the abaci of jamb-shafts carried as strings; boldly-projected stone eaves courses on shaped corbels; (mostly) regular coursed masonry rather large in the stones:—this would describe most of the external features of a number of the small Asturian churches.

The south doorway at Villanueva is probably the finest of its century in the province. The design would be remarkable anywhere for its graceful vigour. It is of four orders with jamb shafts,—the caps in the west jamb *historiés*. The story on the capitals is explained as the parting, hunting, and death of Favila, the son of Pelayo,—a favourite subject (south door, Villamayor, &c.),—commemorated in this church with some appropriateness since the monaste was first founded by Alphonso the Catholic, Favil son (739–757). Doorways in other church have the usual decorative features of the Tran tional period, with the usual endless variety details. At Sta. Maria, the original parish chur of Villaviciosa, the pointed west doorway h four orders. The surfaces of the jamb-shaf are all diapered in low relief. Figures, abo one-third the height of and on the same ston as the shafts, face towards the centre,—a pec liar and not very elegant feature,—occurri also in the vestibule of the Camara Santa Oviedo on a larger scale. A foiled inner orde the cusps pierced, has been substituted (thi teenth century). With the (8) blunt-edg cusps in the inner order (west door, Nave giving a Moorish tinge, compare the fringes eight cusps to the arches between nave an transepts at St. Isidoro, Leon. Many of t wooden doors, now filling in these twelfth-centu doorways, are characteristic pieces of framin that at Villanueva has the date 1700; the pane are raised-moulded, incised, and constant varied.

Several instances occur of cloisters (later galleries) covering the lower walls,—sometim on the south only, and sometimes on the sout and west. The chancel and apse at Villamay are both vaulted; the former with a barrel-vaul the latter with a semi-dome. Similar sem domes at Ujo and Amandi are of horizonta coursed masonry. The abacus of the shafts the one (centre east) window, at Villamayor, carried round at the springing of the vault The sill crowns the arcade which runs round,— two bays (each side) in the chancel, and in fo bays in the apse (a shaft on the axis).

The carving is often of great excellence, *e.g.* the caps to the chancel arch at Villamayor,— vigorous, interlacing forms carrying the squa of the capital down more than half the spa from abacus to necking.

The Early Churches.—The churches of t ninth and tenth centuries would have occupi the whole of my paper, if I had not been b guiled into noticing Asturian buildings of s dates, and if I had wished to do more than ca attention to salient features. These ear churches are probably new to many; for M Street did not visit them, and Villa Am illustrates no Asturian buildings. I am told th the papers by the Rev. H. T. Tozer* are the mo detailed accounts published recently in Englis of personal studies of them.

The work† being published by the Spanis Government Commission contains pretty com plete engraved illustrations. Parcerisa ha lithographs. There are remains at Covadong and at Pravia; two churches (Priesca and Va dedios) stand between Cangas de Onis the earl capital, and Oviedo the later. Three building are close to Oviedo; and Sta. Cristina de Len is on the road from Oviedo to Leon, whithe Ordoño II. moved his court in 913. San Migu is not used, and Valdedios only forms a portio of the enclosure of the monastery grounds. Th rest are in use.

It has been the custom to call these building "works of the Goths,"—an awkward nomen clature for us with whom the nickname (Gothic is a title of honour for most of the work fro the eleventh to the sixteenth century in all th countries west of the Gulf of Venice and of th eastern shore of the Baltic. "Estilo Latino Bizantino" (Don José de los Rios) is perhap likely to find more general acceptance, tha "Asturian" or "Early Spanish" (Mr. Fer gusson).

Santa Maria de Naranco,—since Parcerisa' discoveries and illustrations in 1856,—has dwel in the imagination of ecclesiologists. It ha been pointed to as evidence that "the Spaniard in the ninth century adapted a Paga temple to Christian purposes,—a Roman tetra style [distyle in antis] amphiprostyle temple, i such terms can be applied to a Christian edifice. . . . as if the Romans had left no basilicas i the land, and as if the Goths had been unable t elaborate any kind of *ecclesia* in which the might assemble for worship." The buildin consists of an upper and a lower stage; parallelogram on plan, 67 ft. by 20 ft. outsid

* *Gentleman's Magazine*, July, 1865, page 128; Augus 1865, page 155.

† Monumentos Arquitectonicos de España, commence 1856, now at its forty-sixth part, consequently nearing th two-hundredth plate. The paper grand aigle, type specially made for the Royal Press, Madrid; these an 100 reals (say, 21s.) for four plates and four pages of tes might excuse envy in some English illustrators of arch tecture.

the walls. The lower story is about 10 ft. to the crown of the semicircular vault; and the upper 15 ft. 6 in. to the springing and 22 ft. to the crown of the vault. Arcades of three semi-arches carried on clustered piers divide the upper story into three sections in the length; the end spaces each 12 ft. long, and the centre 39 ft. The east and west ends have open arcades,—three arches to each,—descending to the floor, now wholly built up at one end, and a sacristy built against the other. The doorway to the upper story, reached by flights of steps, is in the centre of one of the sides. These circumstances being known, it was not an unreasonable suggestion that "the altar was placed originally in one of the porticos and the worship probably external; the lateral entrance, however, leading to the belief that some of the communicants must have been accommodated in the interior." Considerable study has been devoted by Don José Amador de los Rios, a member of the commission for the publication of the "Monumentos Arquitectonicos" (on the churches near Oviedo of the second period,—Estilo Latino-Bizantino, pp. 17-36), to the history and details of these early buildings. He has at length published his conclusion that this parish church was originally the palatium (completed 848) of Ramiro I., who died in it 1st February, 850. It is chronicled that Ramiro, the conqueror of the Normans and at Clavijo, constructed "Palatia et balnea, pulchra atque decora . . . quoque in spacio LX. passuum ab ecclesiâ" (San Miguel de Linio). The argument runs that whereas the church is standing close at hand, and the remains of contemporary buildings are otherwise absent, Sta. Maria may well be the palace itself. Arguments, dangerously circular if they stood alone, point out that Sta. Maria wants the distinctive characteristics of the churches of its own and earlier date; and that, whereas San Miguel obeys (albeit, not very exactly) the custom of orientation observed in the other buildings, Santa Maria has the façade to the east and the altar to the west. The consecration as a church would be fixed between 905 and 1065. At the latter date is terminated the chronicle which records that the palatium having been "*In ecclesiam postea versum Beatæ Dei Genetricis, Virgo Maria inibi adoratur.*" It is suggested that the Naranco Palatium was a kind of occasional residence, of less bulk than some *aula*. The chambers at the ends of the upper story would be for habitation; and the central saloon,—separated from the chambers by screens,—the hall of audience for receiving dignitaries and nobles, the court of the rising monarchy. The method of dealing with the five openings in each of the end chambers, in order to make royal habitation feasible, would permit further suggestions. There are no windows in the north wall. The central opening on the north, opposite the vestibule, might give access to a *mirador* (belvedere) from, which Ramiro in the last years of his life could overlook the growing city of Oviedo. The foundations, and the remains of the springings of the vaults under and over it, would give the mirador the same size as the porch on the south side. The lower story is also divided into three portions; not as the upper story by open arcades, but by walls; the east part for treasures, the central for those engaged in the personal service of the prince, and the western might be "*une sorte de dépense.*" Some discrepant accounts in chronicles which can be reconciled by ingenious emendations or excisions, and the very ancient inscription now at the altar of the church, present of course no insuperable difficulties to a resolute mind, bent on establishing this ingenious, simple, and yet apparently perfectly novel theory.

The plans of the buildings that have been churches from their foundation are various. San Miguel de Linio, Ramiro's church near Oviedo (before A.D. 848), is a Greek cross, with (practically) equal arms. Santullano (S. Julian), near Oviedo, is a cross with the western arm three times as long as the others. Sta. Cristina de Lena, near Pola de Lena, is an unaisled nave with transepts reached only by small archways, and a short chancel. Valdedios (A.D. 893) has nave and aisles; chancel and eastern chapels to the aisles; and no proper transepts. Priesca and Santullano have also aisled naves. There is an odd controversy as to an apsidal termination of the eastern arm of San Miguel. The evidence of foundations exposed a few years ago was loosely taken. There are combined in this church at least three other distinctive features found frequently later,—the cross form, the raised crossing (afterwards to be the cimborio), and the western choir gallery.

The sizes are not considerable. At Valdedios, for instance, the extreme dimensions are 53 ft. by 36 ft.; at San Miguel, 33 ft. 6 in. by 36 ft. The height of the nave of San Miguel is 26 ft. 6 in.; the total height of its lantern, 40 ft.; and from 2 ft. under the floor level its bulk is 31,300 cubic feet.*

Four, at least, of the churches have western galleries, a vaulted narthex under them,—not insertions, but integral portions of the structures. Without some number of specimens in the intermediate centuries, the mere recurrence to the custom of western choir galleries in the fourteenth century remains of course only a curious accident. Mr. Street describes ten western galleries (stone). The earliest, apparently of the middle of the fourteenth century; the larger number of the fifteenth century.

Crypts occur at Oviedo Cathedral (chapel of Sta. Leocadia) and Santa Cruz, at Cangas de Onis.

The approach to the Sanctuary, at Cristina de Lena is by seven steps upon each side.† The central space is occupied by a screen on the higher level, forming a reredos to the nave altar placed against the raised floor. The screen above the altar is a most distinctive piece of decorative carving. It is rectangular in five panels (really three stones, about 5 in. thick), the whole surface ornamented,—secured to the columns of the arcade which cuts across the church.

The windows are square-headed, circular, semicircular, and horse-shoe,—few and small, high up in the walls, and not prepared for glazing. In several instances these "ajimez" windows are filled in with slabs of marble (2¼ in. to 4 in. thick), the surface much perforated, after the manner of Moorish traceries.

Some caps of columns and piers are carved with an early Romanesque foliage with stumpy leaves. At Sta. Cristina, and at Naranco, the caps have ropes arranged W.-wise, and figures in low relief in the spaces thus enclosed; the same feature occurs in a modified form in the cloister of Valdedios. The strings are frequently of a favourite rope decoration. The columns are plain at times; at others with plain ropes, twisted spirally over all their surfaces (sanctuary at Sta. Cristina). The architraves of some internal arches have foliage in low relief.

The figure sculpture in the arched recesses of the bases of San Miguel, and in the strange bas-reliefs (extreme relief about 1½ in.) on the single stones which flank the western doorway, is of an archaic type.

The general walling (walls 1 ft. 9 in. thick at Sta. Cristina) is usually in small irregularly bonded stones; the angles and buttresses with more perfectly squared stones. The nave of Valdedios, except the detached piers, is of brick (covered with plaster for painting); the mortar all extremely hard, and nearly as thick as the bricks. The arches of the sanctuary, coro (western gallery), and sub-coro at Valdedios (also some at San Miguel), are also of bricks. The main vaults (Valdedios and Naranco, for instance) are semi-circular, of *hormigon romano*;—concrete, with small and not too numerous stones, and burnt clay in considerable quantity reduced to small pieces. The original existence of wooden roofs does not appear to have been considered and cleared up.

The arts of the times of the Visigothic monarchy are, no doubt, obtaining careful investigation. Some decorative fragments, some walls (possibly), the treasure of Guarrazar in the Hôtel Cluny, and the crowns at Madrid, seem to be all the data at present. Parts of buildings may well have survived both the tooth of time, and the usual periodical clearances of consecrated sites for rebuilding. The buildings constructed by the immediate successors of Pelayo have not remained. In the absence of facts there is good reason to conjecture that the early buildings continued the traditions of the time before the Conquest, in a ruder and poorer form. Between that time, 711–714, and the foundation of Sta. Maria, Covadonga, and St. Pedro, Villanueva, by Alphonso the Catholic (reigned 739 to 757), probably not more than thirty years elapsed. Fresh buildings were erected from time to time during the rest of the century and a half, interposed between the conquest and the works of Ramiro. A slow rate of change might be looked for after observing the small changes in detail in the fifty years between Ramiro's San Miguel and the Valdedios of Alphonso the Great.

It is, of course, impossible to adopt the language of chroniclers and Morales, and class these early works among the wonders and triumphs of our art. Separated also so widely from Spain, in many ways, our sympathy with the aims, now petrified in her history,—with the methods, and with the results,—must be very imperfect. There is counter-sympathy for those who were overthrown, and at the end mercilessly ground under the heel, in the attainment by the nation of its unity of territory and faith. Still, it is easy to understand how Spaniards may choose to cast back their thoughts to the days of eminence, to the long struggles through which the cherished ambition was gratified, and then to the small beginnings of this empire among the mountains; and it is impossible not to respect the affectionate interest of their antiquaries in the small temples of the infant monarchy,—the early churches of the Asturias.

* An idea of the size may be conveyed by the fact that at 9d. per cubic foot it would be valued at 1,170*l.*

† At Coire Cathedral (between Ragatz and Ems on the Rhine) the sanctuary is elevated twelve steps above the nave by staircases placed similarly north and south of the nave. There is a crypt under the choir and sanctuary a few steps down from the nave. See Street's "Italy," p. 36.

"FARNHAM AND ITS FAILINGS."

OF course we have had several correspondents for and against the views of our correspondent, "Gargoyle," including "One of the Local Board"; but the objectors simply give assertion against assertion. The *Surrey and Hants News* devotes a leading article to the subject, and with candour admits a certain amount of truth in the strictures. We willingly reprint the last portion of the article, and express a hope that the editor of the paper will lend his aid to bring about improvements:—

"We must agree with our writer to a certain extent in the matter of buildings, as, in the case of some houses which may be fit for human beings to live in, we are only surprised to find them inhabited at all. He evinces a charitable spirit towards the architects of the town, and because, in his opinion, there is no architecture in the town, he comes to the conclusion that they have had nothing to do with 'what little building there has been in modern times.' This sounds rather like an advertisement for all of them, and no doubt he would congratulate amateurs on what buildings we have, unless he thinks they 'grow' like Topsy in 'Uncle Tom's Cabin.' We rather think our writer is a little mistaken in saying 'land is cheap,' and if he should ever muster up enough courage to attempt to purchase a building site in Farnham he will be inclined to retract this statement. He hints at a delicate subject to close with, which perhaps he thinks best not to elaborate on. 'There is a Local Board, which can point with pride to what they have left undone, and so saved the pockets of the ratepayers who elected them.' While some persons may admire the policy that it is alleged our Board possesses, and in fact act up to it, we think it no policy at all; but perhaps, after all, it is better that some should try to act in this way to serve as a check on others who possess a stronger natural desire to spend money; and while we wonder what the consequences would be were the members of our Local Board all of one stamp in this respect, we feel bound to congratulate ourselves on having a mixture which is successful to a degree to produce the 'happy medium.'"

A YARMOUTH ARCHÆOLOGIST.

THE people of Yarmouth owe much to Mr. Chas. John Palmer, and they know it, and so they have presented him with a testimonial. The presentation took place on the 5th ult., and the testimonial consisted of a handsome silver flower-basket, a gold watch, and a purse of guineas.

The Mayor officiated, and the intellect of Yarmouth assisted.

Mr. S. Tucker, *Rouge Croix*, had acted as hon. secretary, and gave a pleasant account of his stewardship. The subscription of each individual was limited to a guinea. The number of subscribers was 235, and the amount received 233*l.* 9s. 6d. After paying for the silver flower-stand and the watch, and the incidental expenses of printing and so forth, there was a balance left at Messrs. Gurney's of 100 guineas, which, with the other presents, constituted the testimonial they had that day presented to Mr. Palmer.

Mr. Palmer, in the course of a very interesting address of thanks, showed how his antiquarian tastes had been originated by living in an ancient house in the town full of wood-carvings. He said:—As soon as his hand was old enough to hold a pencil he took drawings of the carvings, and went on drawing them until he got views of them in such a state of perfection that when Mr. Henry Shaw came down from London he undertook to engrave them, and Mr. Shaw had produced some of the most elaborate works that ever came from the press. He (Mr. Palmer) went to a day-school in Yarmouth, but he never had the advantage of a public school or of a University education,

He had referred to his liking for drawing, and the first master he had was J. S. Cotman, a man of remarkable genius, whose talents, however, were not appreciated then as they are now. A picture of his would sell now for double what his income was then. The second master he had was J. B. Crome, who was a man of considerable talent, but not possessed of the genius of his father, Old Crome. The style of these artists was very different: Cotman liked castles, ecclesiastical ruins, and such like; while Crome chose landscapes, trees, and so forth.

The incident is as creditable to the town of Yarmouth as to Mr. Palmer.

LINEAR PERSPECTIVE.

SIR,—In Thomas Malton's great work on Perspective, avowedly written on the principles of Dr. Brook Taylor, and now upwards of a century old, he enlarges upon a discrepancy to which I think too little allusion is made in perspective manuals. Speaking of some objectors to the strict results of the rules of perspective, he says:—

"They would have all objects represented in perspective exactly as they appeared to the eye. There is no such thing to be done; it is not in the power either of art or science to represent on a plane any single object (except a sphere or a regular plane figure having the eye opposite to its centre, and the picture parallel to it) as it appears; and yet perspective will give a true and just representation of every regular object. The cause of all their errors and false notions of perspective is their not rightly distinguishing between the representation of an object on a plane and the true appearance of it—two distinct things which can never be united on a plane surface or picture. The representation of any object on a plane is the section of the cone or pyramid of rays by a plane, and the appearance of an object is the section of the rays by the surface of a sphere only, to which every visual ray from the eye to the object must be perpendicular. . . . The true appearance can only be represented on a spherical surface, the eye being in its centre, but that is not a perspective representation."

Selecting a globe by way of simplest illustration, he points out that, although it is certain that globes appear round, let the eye be situated where it may, yet it is only in the single case above specified of the eye being opposite to the centre that they ought to be represented by a circular form upon the picture plane; and he asks,—"Can any person be so unreasonable as to expect that a representation of a solid object on a plane surface can appear truly to represent the original in any other point of view but in the vertex of the pyramid of the visual rays under which the object itself is supposed to be seen?"

Yet I imagine there are few, if any, artists, who, having to introduce spheres into their pictures (as ornaments, for example, on the tops of the piers of a balustrade), would not shrink, even instinctively, from representing any one of them except by that perfect circle which every sphere presents to the eye. True, if the observer never looked at the picture except from the station corresponding with "the vertex of the pyramid of the visual rays" of the artist, perspective deviations from the perfectly circular form would not be apparent, because (the different parts of the picture-plane being at various distances from the eye) the details of the picture itself are subject to perspective alterations of appearance. But as people do not, and often can not, look at a picture from precisely the right point of view, the eye would rebel on detecting the smallest deviation from a circular form for a globe; and the artist who disregards the strict requirements of perspective to the slight extent just indicated may plead this circumstance, and no other, in his defence. The actual difference thus disregarded by the painter of a picture is very small; but in published perspective diagrams the limited paper-space causes the station to be commonly chosen at an unnatural closeness to the objects, and there is thus produced, between what Malton calls their perspective and their true appearance, a divergence so great as to be manifest (particularly with curved objects) to every learner. It is therefore well that all instruction-books should state and discuss the subject.

S.

A Town-hall for Barrow.—The Barrow Town Council have given instructions to Messrs. Paley and Austin, architects, of Lancaster, to proceed with the plans for the proposed Town-hall. It is intended to adopt an elaborate design, but for the present only to build a portion of the grand block which is now required for municipal purposes, and to leave the main block till circumstances warrant its erection.

THE SALE OF SERJEANTS' INN AND HALL.

THE result of the sale of Serjeants' Inn and Serjeants' Inn Hall, Chancery-lane, which took place on Friday week, appears to have disappointed many persons interested in the value of land and buildings in the neighbourhood of Chancery-lane, who believed the property would have realised a much higher sum, considering the price which land in the immediate locality is said to have fetched recently. It is stated that some land in a less eligible situation in Chancery-lane, on which new buildings are in course of erection, was sold at the rate of 6*l.* per foot, whereas the Serjeants' Inn property, covering an area of 17,000 superficial feet, realised a little more than 57,000*l.* only, being at the rate of little more than 3*l.* per foot, although the buildings are of a substantial character. The general impression in the room at the time of the sale was that the property would fetch from 80,000*l.* to 100,000*l.*, and it transpired after the sale was over that Serjeant Cox, the purchaser, was prepared to have gone to 65,000*l.*, but there being no further competition against him after the last bid of 57,000*l.* odd on his behalf, he, of course, obtained the property for that sum. In addition to the three blocks comprising the Inn, and which contain about 100 offices and other apartments, the hall buildings occupy about one-fourth of the entire area, and were described as comprising the dining-hall, 38 ft. by 21 ft., with five richly-stained glass windows; also a large coffee-room; together with the chapel, 31 ft. by 20 ft., with three richly-stained glass windows; and the judges' robing-room, serjeants' robing-room, and domestic offices.

NORTHERN ARCHITECTURAL ASSOCIATION.

THE annual meeting of the Northern Architectural Association was held at the Old Castle, Newcastle-on-Tyne, on the 20th inst.,—Mr. Thomas Prosser in the chair.

The Hon. Secretary read the annual report, which stated that the number of members now amounts to forty-six, and the finances of the Association are in a satisfactory state.

Mr. T. Oliver, in announcing his resignation as hon. secretary, gave a short sketch of the history of the Association, which is about to enter on the twentieth year of its existence. He said: The Association originated in a felt want. There had previously been several local societies, all of which had collapsed; and it was with fear and trembling that the then senior members united themselves with us. Some who afterwards joined us pronounced a malediction at the time upon us, while others watched observantly to see our failure. Even Bonomi questioned our policy, Grainger seemed sceptical; but Dobson, who was always clear-headed, never wavered either in his confidence or in his allegiance. After passing through attacks both from without and from within, we settled down very gradually into what is equivalent to, and may be called, middle life. We had worked hard in our youth, and we were not disposed to undertake anything extraneous; but what we did undertake to do, we tried to do it well. We had formulated much that had been desultory, and in educating each other we refined ourselves. Our labours extended beyond the sphere of our local influence. We were asked for opinions and advice in regard to some of the international exhibitions, and in regard to the many questions that arose within the walls of the Royal Institute of British Architects. We gained a national position when we established an etiquette of conduct and fees. Our *esprit de corps* infused vigour into every existing society, and roused into existence several new ones, one of which was in phlegmatic Scotland. We suggested an architectural alliance, which has resulted in a bi-annual architectural conference, led now by the Royal Institute. Our funds have always been ample, and we subscribe more handsomely than any other association to the Architects' Benevolent Society. We are ready to advise and to help, and although we are a purely professional society, we are, nevertheless, glad to see visitors, and to receive instruction from those without the area of our constitution. The advancement of the art and science of architecture has not been altogether lost sight of. Nearly every member has had his taste cultivated by the healthful influence of our meetings, and some of their buildings now rank high as works of local art. The only fostering hand to help the struggling architectural artis has been found here, while the public has derive the advantages of this voluntary schooling. It augurated during an artistic revolution, w passed through the "Battle of the Styles," eac taking our respective humble parts. The Classi of our fathers had to yield to the mighty in fluence of our national Gothic; whilst it, in it turn, has already yielded to that other phase fashion, called Queen Anne, leading up, I sup pose, to the more perfect development of th Renaissance. There is "fixity and pliancy" i art as there is in nature. Man changes, an generic man progresses. Our architecture mus do the same to be living and truthful. Durin these years, with the exception of a single inter regnum, when I stopped a gap by acting as you president, I have been honoured by your con tinuous confidence as secretary.

It was arranged that, in recognition of Mr Oliver's services as hon. secretary, a testimonia should be presented to him.

The officers of the Association were the appointed as follows:—President, Mr. T. Oliver vice-president, Mr. Gibson Kyle; hon. treasurer Mr. M. Thompson; hon. secretary, Mr. W. H Dunn; hon. solicitor, Mr. Hodge; committee Messrs. F. Charlton, J. Johnstone, W. L. New combe, S. Oswald, J. Oswald, T. Prosser, T Reay, W. J. Shotton, G. Connel, and J. H Robinson.

Mr. W. H. Dunn read a paper on "The Rela tionship of Geology to Architecture," for which he received the thanks of the meeting.

Mr. Oliver laid before the meeting the claim upon its consideration of the Architects' Benevo lent Society.

CONSTRUCTION OF THE LONDON THEATRES: SADLER'S WELLS.

WE understand that a consideration of recent events has led the Lord Chamberlain to carry out a more rigid supervision of the several metro politan theatres than that which has hitherto been enforced with respect to the facilities for ingress and egress, and as regards several of these establishments we are informed that they will have to undergo structural alterations of an extensive character, whilst it is not improbable that others will be rebuilt. Amongst them is Old Sadler's Wells, which has been almost entirely reconstructed at a large outlay, and which it is said will be opened about Easter with Mr. Phelps, who was for so many years connected with the establishment, as its leading tragedian. It was originally the intention of its present proprietors to convert it into a skating-rink, and with this view the interior was almost completely dismantled, the stage removed, and the space which it occupied, together with the pit area and that under the boxes, excavated to a considerable depth below the former level. The open space to the area of the stage, in the direction of St. John's-street-road, to the extent of 40 ft. in depth, was also enclosed for the purpose of enlarging the interior, admitting of a skating area of about 10,000 superficial feet.

The building has, however, been reconstructed as a theatre, with enlarged and improved internal arrangement, at a cost of about 12,000*l.* We learn that at the request of the Lord Chamberlain the proprietors are incurring a still further outlay in constructing additional entrances and improved means of exit, and that when these works are completed the theatre will be again licensed by the Lord Chamberlain, and opened for dramatic purposes. We are likewise informed that it is not improbable that the Grecian theatre in the City-road will shortly be rebuilt, whilst it is further understood that the owners of some of the West-end theatres will be called upon to comply with the Lord Chamberlain's wishes in providing improved facilities for ingress and egress.

Tower Subway Company.—On the 24th ult. the ordinary half-yearly general meeting of the shareholders of this company was held at the office, 26, Great George-street, Westminster, Mr. Peter Barlow, F.R.S., in the chair. The accounts showed that the expenditure on capital account to the 31st of December was 28,203*l.* 10*s.* 4*d.*, being an excess of expenditure over capital authorised of 1,603*l.* 10*s.* 4*d.* From the balance of the revenue account it was proposed to pay the dividend on the 7,830*l.* of five per cent. preference stock, after which there would remain a balance of profit of 494*l.* 8*s.* 1*d.* The adoption of the report was carried.

THE BURNING OF THEATRES.

The following digest has been prepared by r. Nelson L. Derby, at the request of the mmittee on revision of the New York Building ct, appointed by the New York Chapter of the merican Institute of Architects. It consists of condensation of the chief facts contained in a eatise by Aug. Fölsch, of Vienna, on the general bject of theatre fires.

All experience has shown that in theatre fires, ther the incipient flames are immediately tinguished, or the whole building is consumed. here is no half-way in the matter. At the aymarket Theatre [Her Majesty's] in 1867 in ondon, seventeen steam fire-engines and as any hand-engines were unable even to restrict e flames of the burning building to itself alone. such a fire once gains headway, from the resence of the vast amount of combustible atter about the stage, no fire-proof construction n long arrest it. The strongest masonry is estroyed, marble burns to quick-lime, cast iron cracked and broken, wrought iron bends and ves way, and the building is as fully destroyed if it were of wood. Statistics of fires show, fur- ier, that in no theatre fire has anything of value er been rescued, so quickly do the flames spread. Within the last century 130 theatres have been estroyed by fire. Some theatres, as Astley's mphitheatre in London, have been burned three mes. Of these 130 theatres, seventeen were rned in London, nineteen in Paris, and fewest all in Italy, though in that country there are ore theatres in proportion to the population an in any other part of the world. The mild limate of Italy requires little heating of heatres in winter, and spectacular pieces are ncommon. These reasons account for the act stated. Between 1863 and 1869,—seven ears,—forty-three theatres were burnt in fferent parts of the world.

Of all such fires, it is found that 52 per cent. ke place between December 1 and April 1; 3 per cent. take place during the two hours er the close of a performance; 21 per cent. ring a performance. This is occasioned by par s from fireworks, &c., used in spectacular eces, which fall unnoticed, and cause a re to break out after the close of the erform nce. This shows the necessity of eeping a sufficient number of watchmen, pecially during the night, in theatres, who all be ready to extinguish the incipient flames. he necessi y of a constant, even daily inspection theatres, is proved by the burning of the erlin Oper House in 1843. The reservoir could ot be used because the machinist was at home ith the key in his pocket. Such doors should ever be locked. At the Dresden fire, the wire urtain was found rusted and immovable, and l the reservoirs empty. In the fire at the auntnerthor Theatre in Vienna, in 1761, many eople were lost because the lower windows were overed by an iron grating. In the fire at arlsruhe, in 1847, some of the stairways from he upper galleries were locked. This was done save doorkeepers' wages. Not only were they ocked, but nailed and battened fast, while their xistence was unknown to many. This suggests he desirability of compelling managers to hang lans of their theatres on a large scale at various oints in the building. These doors were broken at last; and this, with the accidental presence several oil lamps which burned after the gas as shut off, saved many hundred lives.

In a large theatre it is necessary to keep on and scenery and decorations for three or four ieces at least. This, with the vast amount of ordage, bridges, traps, &c., found on every age, points to the fact that the most important easure of all is to require all these inflammable ubstances to be soaked in or painted with some reproofing solution. Most desirable also is a w requiring that all draperies and decorations churches and ball-rooms, as well as in theatres, hould be thus protected; also the costumes of ctors, especially the gauzy coverings of ballet- ancers. It appears, however, that many fire- roofing solutions which have been tried have een found after a time to lose their efficacy, esides affecting the colours used in decoration. Vienna, among other substances, borate of agnesia has been tried, and found to fail. After any attempts there, to-day no substance is in se. Mr. Bouicault, I see, recommends tung- ate of molybdena; but there is no doubt that he matter should be placed in the hands of hemists, and thoroughly experimented upon.

In 41 per cent. of all theatre fires, the flames have reached and destroyed the adjacent buildings; in 36 per cent. of all cases these buildhave been attacked, but saved. This points to the absolute necessity of isolating theatre buildings on all sides.

The loss of the Dresden Theatre was caused by the use of benzine in painting. This substance should never be allowed to pass the door of a theatre.

To show that the Brooklyn fire was by no means the most destructive of life of all theatre fires, I quote from our author that at Saragossa, in 1788, 600 lives were lost; in Quebec, in 1846, 500 perished.

The author now goes on to describe the Vienna Opera-house, which in comfort, interior taste, excellence of ventilation, solidity, and ingenuity of arrangement, is second to none in the world except the new Paris Opera-house, and is fully equal to this in many respects. On each side of the stage are two 3-ft. walls 7 ft. apart. These are stiffened by vaults running their whole length, and forming passages nine in number upon each side. These walls support the iron stage roof under which is suspended an iron and brick ceiling. A wire curtain, weighing three tons and counterpoised, is suspended above the proscenium opening. It is let down every night, and is seldom raised during rehearsals. Its meshes are only three-fourths of an inch wide. It takes a quarter of an hour to raise it, but by loosening the windlass and applying a brake it can be lowered rapidly, though gently. The building is warmed by steam and well ventilated, while it is possible to shut off the gas from the stage and auditorium without extinguishing that upon the stairs and corridors. Two mains supply this theatre with water; one supplying exclusively the daily use, the other the fire service. Could we not, in view of the scarcely of water, connect pipes with the rivers, and fill our reservoirs with salt water for the latter purpose, with the aid of steam pumps?

Reservoirs in the Vienna Theatre are placed above the rear stage. In the inspector's room gauges indicate the height of water in the same, whilst other registers show the temperature of thirty different points in the building. Through speaking-tubes, telegraphs, pipes, &c., he has control of the temperature and the water and gas supply of all parts of the theatre. The reservoirs above mentioned feed pipes running through the vaulted passages already described, also across the stage-bridges, under the stage, and to the store-rooms. These pipes are above 10 in., below 5 in., in diameter. At frequent intervals are stop-cocks to which are attached flexible tubes with ½-in. nozzles. In each passage by the side of the stage are small slits opening to the stage and closed by iron doors. Through these 150 openings half as many streams can be directed upon any portion of the scenery upon or above the stage. Ten men are employed to watch this theatre, and of these eight are on duty during the performance and four by night. They are controlled by six dial registers.

The author concludes with a few suggestions, among them that theatres should be connected with the nearest engine-house by telegraph; once a week all fire-extinguishing apparatus should be overhauled (this is a regulation in the Vienna Theatre); only Swedish matches should be used (also in force at Vienna); and the watching of all theatres should be placed in the hands of the city fire brigade.

DESTRUCTION OF HISTORICAL SITES IN CLERKENWELL.

In the line of the new street now in course of construction from the East to the West end of London, which is to pass through Clerkenwell, there are several sites which can only remain standing for a few weeks, in consequence of the requirements of the new thoroughfare necessitating their speedy removal. A writer in the *City Press* gives some interesting particulars. Commencing, he says, in St. John's-street, the new street (opposite Wilderness-row) will pass through the block of dilapidated buildings forming what is known as Pewter Platter-yard, of which there is a record that as early as the year 1690 an inn stood here which gave the name to the yard, and that "to the Pewter Platter came the Biggleswade carrier" (*vide* "The History of Clerkenwell," by Pinks and Wood, 1865, p. 307). The south side of Albemarle-street will pass away in the demolition. In this street resided, at No. 12, James Carr, the architect of the present parish church (St. James's); this house, however, will not as yet be doomed, as it stands on the north side of that street. Samuel Ware and Edmund Aitkin, once well known as architectural writers, passed their youth in this street. Ware was the author of "Tracts on Vaults and Bridges," and a work on "Arches and Abutment Piers" (now very scarce); and Aitkin is known as the author of "Designs for Villas and other Rural Buildings" (1808), "Essay on the Doric Order of Architecture" (1810), and "Plans, Elevations, Section, and View of the Cathedral Church of St. Paul, London" (1813). . . . . Continuing our journey of doomed houses, we come to No. 1, Red Lion-street, where once dwelt Mr. Mendham, wine and spirit merchant, to whom was apprenticed a Mr. John Britton for a term of six years, who toiled for five years and six months, until broken down by ill-health. His uncle, for such was his master, cancelled his indentures, and handsomely presented him with two guineas to fight the world with. Having a turn for literary pursuits, he commenced a careful study of antiquities, especially architectural, and after many years of toil, produced the well-known work, in conjunction with his friend Brayley, "The Beauties of England and Wales," in 26 vols., and alone he was the author of "Illustrations of the Public Buildings of London," "Pictures of London," "History and Antiquities of the Tower of London," "Architectural Antiquities of Great Britain," "Carter's Ancient Architecture, with Notes," (which are very valuable), "Beauties of Wiltshire," "Brief Memoir of Sir John Soane," "Union of Architecture and Sculpture," "Dictionary of Architecture," "Cathedral Antiquities," "Beauties of England and Wales," "Historical and Descriptive Account of Cathedrals," and other works. This house was called Jerusalem Tavern, but originally the Red Lion, derived from the Red Lion of Scotland. Latterly, within the past twenty years, it was used for the private wine and spirit business of Mr. Mendham. After his decease it was again converted into a public-house known by the name of Jerusalem Tavern. Rose-alley, Bitt-alley, Frying-pan-alley, and Lamb and Flag-court, will also pass away.*

NEW MUNICIPAL BUILDINGS AT KIDDERMINSTER.

The new municipal buildings in Vicar-street, Kidderminster, have been formally opened. The buildings have been erected with a view to provide more convenient accommodation for the magisterial business of the borough and county, and for the borough police; and at the same time to concentrate the offices of the borough officials. The purchase by the corporation of the borough of the Assembly-room and Corn Exchange (until now known as the Music Hall) presented a favourable opportunity for erecting suitable buildings on a portion of the property, and thus acquiring the complete accommodation for a town-hall under municipal management. The new buildings (comprising the municipal offices proper), having a confined frontage to Vicar-street, convey a very inadequate idea of the amount of accommodation provided at the rear, the desirability of presenting a façade harmonising somewhat with that of the old Music Hall, coupled with the necessity of preserving the light to the Assembly-room, having influenced the general plan. The principal entrance is through a vestibule, with sliding ornamental iron gates, from which there are two doorways, the one being designed for the use of the central municipal offices, and the other for the use of the public frequenting the police-court and council-chamber; the former doorway opens at the foot of a well-lighted and spacious staircase, round which are grouped the offices for sanitary inspectors, borough rate-collector, and borough surveyor, the staircase leading to the town-clerk's offices and mayor's parlour, and, by a corridor, to the council-chamber and police-court, the latter of which has attached to it a magistrates' retiring-room and a witnesses' waiting-room; the other doorway from the vestibule leads by a direct passage to a secondary staircase, at the head of which are the doorways to the public galleries in the council-chamber and the police-court. A bridge corridor on the upper floor connects the new building with the old one, and in the latter are two large committee-rooms. The police-court and council-

* Of some of these frightful places minute accounts will be found in early volumes of the *Builder*.

chamber are warmed by Constantine's stoves; the retiring-room by Whiting's stove; and the cells by hot-water pipes; all other rooms having open fireplaces.

The buildings were erected by Messrs. Binnian & Sons, builders, of Kidderminster. The fittings in the police-court and council-chamber were supplied by Mr. Stringer; those in the town clerk's offices, sanitary offices, and police-rooms and cells, by Messrs. Downton & Sons; those in the borough surveyor's and magistrates' retiring-room, and witnesses' room, by Mr. Field.

The whole was carried out under the superintendence and from the designs of the architect, Mr. J. T. Meredith, of Kidderminster.

THE FUTURE OF THE OLD QUEEN'S BENCH PRISON.

WE understand there is a strong probability of the historical and grimy old Queen's Bench Prison being shortly numbered amongst the things that were, which is not to be regretted, for, not taking into consideration the fact that it has for several years past been practically useless, a more hideous or unsightly structure does not exist in this vast metropolis, whilst its having for so long a time been allowed to remain after its proper work was done has prevented much needed improvements from being carried out in the locality. Since it was closed as a debtors' prison it has been used for several purposes in turn, which have from time to time been abandoned, and latterly it has simply stood to be looked at and condemned. When all its incarcerated tenants were set free by Act of Parliament, it became a military depôt and a military prison in succession, but events caused it to be disused for that purpose, and it was subsequently turned into a kind of auxiliary convict penitentiary in connexion with Millbank, but for some cause or other its use for that purpose was not long protracted, and during the last eighteen months or two years its solitary occupants appear to have been a few warders from Millbank, who only enter its walls after the labours of the day are over. Under these circumstances it is satisfactory to hear a rumour to the effect that the Government are not indisposed to surrender the few remaining years of their lease which have yet to run,—it is said about five years,—and allow the site to be applied to some more useful purpose. In case of the lease coming to an end it is understood that the site would fall into the hands of the Corporation, and that in that event they will be prepared to negotiate for its transfer to those interested in erecting tenement blocks for the industrial classes, several of which have recently been erected in the immediate locality. Its demolition would also admit of opening out improved thoroughfares between Southwark Bridge-road and the Borough. The prison occupies an area of something like two or three acres in extent, and we believe that a short time ago an offer was made for it by the Midland and London, Chatham, and Dover Railway Companies, but rejected.

ENCAUSTIC PAINTING.

SIR,—The *Builder* of the 17th ult. contains some remarks on the use of the ancient system of encaustic painting, by M. Cros. The method of encaustic painting, as practised by the ancients, was investigated with considerable interest in the last century, both in this country and on the Continent. Pliny's description of the ancient method was critically examined, and sought to be explained, but never, I believe, with complete success, owing to the difficulty which exists of reconciling the word *inurere* with any process but that of enamel painting. Paintings on the walls of Pompeii and Herculaneum, representing artists at work, do, however, go far to establish the correctness of the process adopted by M. Cros.

Modern encaustic painting, or rather wax painting, has entered upon quite another phase. Chemical science has suggested other means of painting in wax than by heat, viz., by dissolving it in spirit, &c. Wax painting, therefore, no longer presents those intractable characteristics, which, as your correspondent justly observes, would confine its use to within very narrow limits. Some of the fine historical works of Schnorr, in the Residenz, at Munich, were painted in wax, and with the most complete success, and for the decorations of rooms of moderate dimensions it is, perhaps, preferable to fresco. The extended range of colour which wax painting permits, as compared with fresco, would doubtless render it more attractive than the latter to English eyes. It would, therefore, be well, as I have already suggested in the columns of the *Builder*, that painters who may have opportunities of testing any special forms of wax painting should make memoranda of their experiences, in order that the method may, if possible, be improved. The term "Encaustic," as applied to the modern system of wax painting, is, of course, all but a misnomer.

W. CAVE THOMAS.

COST OF DISPOSAL OF SEWAGE.

IN the 1876 volume of the *Builder* (pp. 1164-66) we gave the conclusions arrived at by Messrs. C. S. Read, M.P., and Robert Rawlinson, C.B. (who were appointed by the Local Government Board to inquire into the subject), as to the relative merits of the chief systems of sewage disposal now in operation. In an appendix to the report, the statistics of a number of towns are worked out in detail, with the purpose of showing what is the ultimate burden thrown upon the rateable property of the respective districts by the sewage and sewering processes there at work. The results are summarily tabulated below:—

1. By Irrigation and Scavenging:—

Towns.	Rateable Value. £.	Annual Cost in the Pound. d.
Banbury	34,104	1
Bedford	65,000	1
Blackburn	235,127	11¼
Cheltenham	217,840	0¾
Chorley (Lancashire)	54,407	7
Doncaster	68,721	3½
Harrogate	50,000	5¾
Leamington	113,400	6¾
Merthyr Tydfil	135,000	7¾
Rugby	45,000	1¾
Tunbridge Wells	142,914	10
Warwick	43,339	6¾
Wolverhampton	210,000	3¾
West Derby	163,000	5¾
Wrexham	32,000	0

2. By Chemicals and Scavenging:—

Birmingham	1,229,844	10
Coventry	101,438	5¼
Bolton-le-Moors	311,563	3¾
Leeds	945,141	9¾
Bradford	745,671	6

3. By the Pail System:—

Halifax	212,581	4
Rochdale	222,000	8¾

4. By Land Filtration:—

Kendal	41,6 0	4

The range of proportionate burden in the first section is wide: from "nothing" against Wrexham to 11¼d. in the pound at Blackburn. In the second section the poundage varies between 3¾d. and 10d. At Coventry the sewage is worked by a private company, and its disposal imposes no charge upon the town; the 5¼d. in the pound is for scavenging alone.

THE METROPOLITAN WATER SUPPLY.

AT the meeting of the Metropolitan Board of Works on the 23rd ult., the Works and General Purposes Committee brought up a lengthy report with reference to the water supply of the metropolis, in pursuance of a resolution passed by the Board on the 2nd ult., referring to the Committee for consideration and report the whole subject of the water supply of the metropolis, especially as to the advisability of introducing a Bill into Parliament to authorise the Board to purchase the interests of the several water companies. The substance of the committee's report was that in their opinion the time had arrived when effect should be given to the report of the Royal Commission on water supply, so far as the same refers to the water supply of the metropolis being placed under the control of a responsible public body. They therefore recommended that the subject should be referred back to the committee, with instructions to prepare a Bill, empowering the Board to take under its control the water supply of the metropolis, with power to purchase the existing companies and extend existing works; and that the committee should be authorised to confer with her Majesty's Government, and to report the draft Bill to the Board.

Mr. Roche, the chairman of the committee, in moving the adoption of the report, pointed out that the question had been for many years under the consideration of the Board, and it had been reported upon from time to time. The Board had over and over again expressed its opinion, and considering the vital importance of a mat affecting the health of four millions of people, question was deserving of most serious attenti He contended that so far as inquiry was c cerned, the subject had been thoroug exhausted, and what remained now was,—acti What the committee recommended was t effect should be given to the resolutions of Royal Commission on the Water Supply. T Commission commenced its labours in 1866, the report was not issued till 1869. The Co mission distinctly advised that the water sup should be in the hands of the municipal author The question was, however,—what pu authority in the metropolis should take the c trol of the water supply? After referring to time that had been wasted in waiting for so great reorganisation of the government of metropolis, and which, he said, seemed as utop as ever it had been, he expressed a hope that Metropolitan Board of Works would decide th so far as they were concerned they were prepa to carry out the recommendations of the Ro Commission if Her Majesty's Government w prepared to support the Board in their det mination to do this. He believed he might st that the purchase of the water companies and supply hereafter could be effected at a total c less than the cost of the water supply at presen and as time went on there would be a consid able saving, whilst there would be more cha of obtaining a purer supply of water. In co clusion, he claimed these advantages if the Boa could have the supply of water in their o hands,—(1) that there would be a purer suppl (2) a constant and copious supply; (3) a co pulsory supply to the poorer districts; (4) grea facilities for supplying water for extinguish fires, cleansing of streets, and flushing of sewer and (5) that the water could be supplied at l than it cost now. It would be next year, ho ever before that Bill could be introduced, as need scarcely say there was a good deal to done in preparing it.

After a long discussion, the recommendati of the committee was carried, on a division, 26 to 9.

PREVENTION OF OVERFLOW.

SIR,—On May 13, and June 3, of last yea you were kind enough to insert letters of mi on a method of utilising the tide. In the form of these I incidentally mentioned the influen the scheme would have in preventing overflow adopted in a tidal river. Such scheme woul no doubt, speedily refund the outlay, but t necessity for the purchase of a sufficient ar adjoining the river would render the undertakir somewhat costly at first. Will you, therefor kindly grant me space for making another su gestion, the requisites for carrying out which a only labour and material. By way of elucid ting the subject, I will make two statements:— 1. If we widen a river-bed, in order that durin extraordinary seasons a greater quantity of wat may be carried off, we render the river durin ordinary weather more shallow; we diminish t mean head of water, and, consequently, t proper scour of the current, and during dr seasons cause an increased quantity of mud t be exposed to the view of the beholders. 2. I on the contrary, we narrow the bed, so as to hid the mud, to improve the scour, and render th stream more rapid, we render overflow during stress of weather all the more probable. Neithe of these plans, therefore, is worthy of adoptio But in the scheme which I beg to submit to th notice of your readers, the advantages of thes two methods are combined, whilst their disad vantages are completely eliminated.

It consists in an alteration, not of th width of the river-bed, but of its form and may be described as a disposal of th bed into longitudinal terraces, as in a slopin garden. The principle may be adopted in th upper reaches of a river, as well as in its tida portion. Let a central channel or trough b formed by wooden piles or otherwise, with section-area equal to the present section-area o the river in the given part of its course, when a summer level, or (if in the tidal regions) whe at mean low-water. Let the sides of this centre channel be almost perpendicular, and its bas almost flat, and flush with the lowest portion o the river-bed in that part. To effect this dredging will be required. Let the resultin ballast be massed up behind the piles, and suffi cient shingle be added, to form the first ledge o lower barge-walk on each side, receding by slight gradient upwards and outwards from th

rgin of the central channel, and limited ernally by a second row of piles.

The height and width of the secondary channel is formed must be such as to comprise, with narrow central channel, a section area equal that of the particular portion of the river when mean spring-tide high-water mark, or when respondingly full if above the tidal influence.

om the summit of the second embankment, d extending to the present river-bank, let a el (or nearly level) area be preserved, bor-ed on the inner margin by an upper barge-lk or promenade, and bounded externally by rick wall or other barrier for the prevention damage to riverside property during extra-linary seasons. The intervening space can devoted to the growth of plants which do not fer from an occasional inundation, or to other rposes which may be deemed more fitting. equent steps should be provided leading over wall, for the benefit of foot-passengers; and quent inclines should lead from the upper to lower barge-walk, for the convenience of rge-men and horses.

By the adoption of this scheme, the tide and land water will be kept to a considerable ent distinct from each other. The latter, ch its mud in suspension, will occupy the low-g central trough, and the tide will roll up on ledges at either side and on the surface of land-water, with very little effect in stirring the mud. The flow of the land-water will rease in rapidity, the scour of the river will improved, the mud will very rarely make its pearance, and, unless there be a gross mis-nagement of the various weirs and locks, ds will become a thing of the past.

D. B.

NOT GIVING NOTICE TO DISTRICT SURVEYOR.

WHAT IS A BUILDING?

A few days since, Mr. F. Mortimer appeared the Hammersmith Police-court, before Mr. dge, charged with having done certain work No. 151, King-street West, without giving ice to the district surveyor, Mr. Knightley. e work consisted of inclosing a building 40 ft. ength, 14 ft. in depth, and 8 ft. in height, h wooden boarding instead of with brickwork, required by the Building Act. The defence s that the building had not been inclosed as eged, but that some uprights had been fixed the outside of an open shed, with a space ween them and the posts supporting shed, o which boards were dropped, capable of ng removed if required.

Mr. Knightley said he did not dispute this, but tended that the Act did not recognise any h mode of inclosure, it being calculated to ead fire.

he Magistrate doubted whether this was an inclosure, t was said to be capable of removal, and also whether the absence of any defiction in the Act) the shed was building" within the meaning of the Act; whereupon district surveyor urged that Sec. 38 entitled him to a ice two days before the following act or event, *i.e.*, wo days before any building, or any work to, in, or n any building is commenced," &c. The defendant d admitted, and a witness also, that certain *work* had n done. As to the shed, if such was not to be con-red a building to which the rules of the Act applied, n it would become the duty of the defendant to make application to the Metropolitan Board of Works to ction the construction; but he submitted that as this d was inclosed, and used as a stable, which found no e amongst the exempted buildings in Sec. 6, it was, refore, under the control of the Act. And further, t as a "building" was a "structure," as defined by dictionaries, and if dilapidated would be dealt with er Sec. 69 as a dangerous structure, these circum-ces were sufficient to define the present shed as a ructure" or "building." And the magistrate, after atient hearing of the case, fined the defendant in a inal penalty and costs of summons, for having exe-ed without due notice the work above described.

SPUTE AS TO THE CONSTRUCTION OF A DOCK.

WALKER *v.* LONDON AND NORTH-WESTERN RAILWAY COMPANY.

JUDGMENT has been given in this case by the urt of Appeal.

his was an appeal from the Common Pleas Division, er the following circumstances. In 1871 the Messrs. lker, the plaintiffs, tendered for the construction of a r, at Garston, near Liverpool, for the sum of 14,000*l.*, ch was accepted by the railway company. By the ns of the contract the works were to be completed August, 1873, and were to be executed to the satisfac-of the company's engineer, who had reserved to him right to make any alterations he might deem fit during r progress, such extra work to be measured and paid according to the contract prices. There was a stringent se in the contract that if the contractors did not pro-t with the work at the rate of progress required by the engineer, the contract was, at the option of the company, to be void, and there was to be a forfeiture of all the plant and stock, and all sums then remaining due on notice of the termination of contract being given. Early in June, 1871, the Messrs. Walker commenced operations, but they were not put in possession of the whole of the ground required down to January, 1874. In November, 1872, they wrote to the company asking, on account of the highly advanced price of materials and wages, which enhanced the price to them 50 per cent., and showed a deficit of 8,757*l.* either to take the works and plant off their hands at a valuation, or repay them their outlay, less 4,000*l.*, or to make such addition to the prices as would cover the actual loss. After some negotiations a new agreement was entered into, and between December, 1873, and January, 1874, the works were proceeded with. In the latter month the resident engineer sent a report to the head engineer of the company that the works were being proceeded with in a very unsatisfactory manner, but no communication to this effect was made to the contractors, and on the 22nd of January, 1874, the company sent them notice of the determination of the contract, and took possession of the works, plant, &c., and also claimed a forfeiture of all sums then found due. In February, 1874, the plaintiffs brought their action, and by consent a case was stated for the opinion of the Court of Common Pleas. The case, as stated by Mr. Manisty, Q.C. (now Mr. Justice Manisty) did not state that the engineer was, when notice was given to terminate the contract, dissatisfied with the progress of the works. Mr. Justice Brett and the late Mr. Justice Archibald gave judgment for the plaintiffs, and against this decision the company appealed.

The Lord Chief Justice, without calling on the learned counsel for the plaintiffs (the present respondents), delivered the unanimous judgment of the Court. He said the real question before the Court was, how they were to interpret the clause in the contract as to the forfeiture of stock and plant and all sums then remaining due. The counsel for the defendants had argued that was sufficiently met by an expression of dissatisfaction on the part of the engineer of the company, and no more. The contractors had, on the score of an immense increase in the price of all materials and wages, appealed to the liberality, if not to the mercy, of the company, and if they had said "We have nothing to do with that," it would have been thought a requirement within the stringent terms of the contract. But the Court could not hold that the requirement had been satisfied. The company might have put an end to the contract, but they had gone too far in taking possession of the works and all plant and material, and in claiming the forfeiture of all sums then due. The judgment of the Court below would, therefore, be affirmed, and the appeal dismissed with costs.

Judgment for plaintiffs accordingly.

BOARD AND LODGING MONEY.

ANDREWS, JARRETT, AND TREMAINE *v.* STRONG.

THESE were three several claims (heard in the Bloomsbury County Court on the 15th ult.) made against Messrs. Strong & Sons, carvers and art decorators, Riding House-lane, and as the facts were the same in each case, they were tried together.

It appeared from the evidence of the plaintiffs that they were cabinet-makers, in the employ of the defendants, and were sent to Ireland to put up some carved wood chimney-pieces for Sir Arthur Guinness, at Ashford House, County of Mayo. Andrews was foreman, and according to his statement they were to be paid according to the rate of the county. Had been in North Wales for the defendants, and was then allowed 14*s.* a week extra for board and lodging, in addition to the usual rate of wages, which for him was 10*d.* an hour, and expected to be paid the same in Ireland.

Jarrett and Tremaine gave similar evidence.

On the part of the defendants, William Strong the elder said the men were in his employ as joiners, not cabinet-makers. He expected a weekly account, but he did not get one, though his son wrote for it. Was only working for the trade. Paid his men 2*s.* a day extra when they went for a few days only, as they might have to stay at a public-house. The usage of the trade was to pay the men 3*s.* a week for lodgings.

W. Strong, jun., deposed that no terms were mentioned at the time, but understood the men would be paid 3*s.* a week for lodgings. They had the advantage of working overtime while away; instead of 54 they had 69 hours a week, and so put a good bit of money into their pockets, more than they could earn in London.

Frederick James Palmer, foreman to Messrs. Hearne, builders, and David Anderson, foreman of the joiners in the employ of Messrs. Johnson & Son, of Bond-street, stated that it was joiners' work, not cabinet-makers', which the plaintiffs had to do, and the ordinary trade allowances to the men when from home was 3*s.* a week.

The judge considered that this was not an ordinary case, and that the plaintiffs were entitled to the 14*s.* a week claimed.—Judgment for the plaintiffs, with costs.

DUTY OF ARCHITECT TO SUPERVISE WORKS.

PHILLIPS *v.* JENNER.

THIS was a case heard in the Lambeth County Court on the 13th ult., before Mr. J. Pitt Taylor, the judge. Mr. Wildey Wright appeared for the plaintiff, and Mr. H. Smith defended.

Mr. Wright said that the plaintiff was an architect and surveyor, and the defendant was a retired publican. In the month of August last, defendant wanted some alterations done to some houses in Wells-street, Camberwell. Defendant consulted the plaintiff, who surveyed the houses, and communicated with the builders, and got tenders for the work. A contract was signed by the defendant for certain work to be done for 289*l.* It was subsequently agreed that extra work should be done at 43*l.*, and other works at 3*l.* 10*s.* On the plaintiff's certificate the builder was paid. Everything went on well from August till December 2nd, no complaint having been made, when on that date the plaintiff received a letter from the defendant's solicitor, stating that the work was to be stopped. The claim of the plaintiff was for five per cent. commission on work done, which, with expenses for specifications, &c., amounted to 14*l.* 5*s.* 6*d.*

Plaintiff, in cross-examination, said that on November 2nd, plaintiff received a letter of complaint from the defendant, saying that some of the ceilings had been damaged by the rain. The contractor was to provide tarpaulin to prevent the rain getting through; this was only provided part of the time.

The judge pointed out that a surveyor was appointed to see that the builder carried out his work. It would certainly be a gross violation of duty on his part to give the builder a certificate for the payment of work that had not been done according to the contract.

Cross-examination continued.—The front wall of one of the houses did not, to his knowledge, bulge out. Was positive that the mortar was of the best quality. Was sure that there was 289*l.* worth of work done.

Mr. Everett, builder, said that he had done over 289*l.* worth of work to the houses.

For the defence, Mr. W. Colman was called. He said that he was an architect of forty years' standing. The work was quite unfinished and was done so badly that the highest value he could put upon the work was 75*l.* Visited the houses on November 13 and December 5. On the first-named day it was raining hard, and the rain was coming through the roof plentifully. On the other day the wet was coming into the back rooms and running down the staircase. This was in consequence of the want of tarpaulins on the roof. The damage done by the want of tarpaulin could not be under 10*l.* or 15*l.* The plaster was of very inferior quality. As an architect he always held himself responsible for work being done. One of the walls was about three-quarters of an inch out of the perpendicular. The chimneys were very fairly done; but most of the work had been scamped.

The judge said that if he took a cab and went down and inspected the houses he would be the better able to form a judgment of the work done.

Mr. Wright said he had not the slightest objection to his Honour doing so; but the buildings had not been guarded since the work had been stopped, and the neighbouring children had been permitted to run in and about the buildings.

Mr. Smith agreed.

On the judge's return into court he said that he had had an opportunity of seeing the work which had been superintended by Mr. Phillips, and had come to the conclusion that he had not performed his duty in an efficient manner as an architect; consequently he had not earned his commission.

Judgment for defendant, with costs. Short order.

COMPENSATION CASE.

CHANDLESS *v.* SCHOOL BOARD FOR LONDON.

THIS was a case (heard in the Sheriff's Court, Red Lion-square, on the 16th ult.), to award compensation for some leasehold property, under the will of Mr. T. Chandless, Q.C., in Stafford-street, Marylebone, the site of which was required for a new school.

For Mr. Chandless it was stated that the property was held from Sir Edward Baker, on lease, of which about sixteen years were unexpired, at a rental of 29*l.* 8*s.*, and the houses in Stafford-street produced to Mr. Chandless, as trustee to his father, 49*l.* 4*s.*, showing a net profit of about 21*l.* The question was the valuation of the unexpired term, and he would show that the same was worth 240*l.*

Mr. C. Long, a surveyor, gave evidence that the interest to the claimant, under the will of his father, was worth 240*l.*

Mr. Rain said he was not prepared on the part of the School Board to rebut the evidence.

Mr. Under-Sheriff Burchell told the jury that if they were satisfied with the evidence they would find a verdict in accordance with the valuation given.

The jury immediately returned a verdict for 240*l.*

THE PRACTICE OF HIGHWAY BOARDS.

SIR,—Can any of your readers give me any information as to the mode usually adopted by the various Highway Boards in reference to doing the repairs of the highways, whether by contract or day-work? Some time ago the Frome Highway Board decided to let by contract the whole of the work, including quarrying, carting, breaking, spreading, scraping, &c.

The quantity of stones was of course to be measured after they were broken ready for spreading; but soon after the contracts were signed the Board decided that all stone should be stacked up "by the contractor" one yard high, before being broken, for the purpose of measurement (the stone here, before being broken, is in most irregular blocks), which of course the contractors readily agreed to, as it was putting 20 per cent. into their pockets.

As I consider this very hard on us ratepayers of Frome, I should be glad to know the course usually adopted by other District Boards.

X. Y. Z.

SOUTHERN EMBANKMENT OF THE THAMES.

SIR,—Some of your correspondents seem to be anxious to claim priority with reference to the scheme of a river-wall for the protection of the southern side of the Thames. Some time in February last year I forwarded you plans, &c., of a scheme which had been submitted by me to many parties early in the previous year, and which the inundations of the latter part of 1875 induced me to have printed for circulation.

This scheme is a definite one, and I believe it would cheaply as well as efficiently secure the end in view. You were kind enough to notice it at the time.

WM. WIGGINTON.

Fire at Auction-rooms in Manchester.—The auction-rooms of Mr. J. P. Mutteen, Moss-side, Manchester, have been partially burned down. A picture by Salvator Rosa, valued at 1,000*l.*, was destroyed.

A NEW DOCK AT BRISTOL.

THE Mayor of Bristol opened the Avonmouth Dock on Saturday, the 24th ult. The inaugural ceremony was of a most successful character. Mr. P. W. J. Brunlees, C.E., is the chief engineer of the docks.

The new dock is situated at the mouth of the river Avon, a few miles from the city of Bristol. It has been nearly nine years in progress, the first sod having been cut in August, 1868, and the total cost of the dock, lock, warehouses, machinery, &c., is something like 600,000*l.*, or 200,000*l.* more than the original capital of the company. The basin of the dock contains a clear area of 16 acres, it being 1,400 ft. long and 500 ft. wide, and it has a depth of water at ordinary tides of 31 ft. 3 in., while a height of 26 ft. can always be maintained. The dock-gates are the highest in the world, having a depth of no less than 49 ft. Their width (70 ft.) has been exceeded. The lock is 600 ft. long, and 70 ft. wide, with a depth of water of over 40 ft. The hydraulic apparatus for opening and closing the gates, and supplying the six large cranes which surround the dock with motive power, was provided by the firm of Sir W. Armstrong & Company, of Newcastle.

TREATMENT OF TENDERERS.

THE complaint by the St. Pancras Ironwork Company, in your last issue, is, in my opinion, perfectly reasonable. In the first place, it is manifestly unfair to punctual tenderers that any tender delivered an unreasonable time after that stated in the instructions should be recognised in the same way as the others.

My rule, as an architect, in limited tendering (that is, where a fixed number of firms are selected, either by the architect or the proprietor, or both) is this:—In case any one firm of those invited to tender be absent at the time named for opening them, I announce the name, and leave it for those present to decide how many minutes shall be allowed. This avoids all cause of complaint. But should any tender arrive late, (that would be after the last tender is opened), I open it, and publish it with the list, taking care, however, to note that it arrived late. Should it happen to be the lowest, I should certainly advise my client that it would be unfair to the others to accept it.

I think late tenders should be always opened, because it must be very galling to a firm of builders, after having taken all the trouble to prepare the tender, to have it returned unopened, especially if it should be the fault of the clerk in delivering it, and not of the firm at all.

In the next place, the lowest tender in all limited competitions should, as a rule, be accepted, or a reasonable sum allowed to the firm for preparing it, unless any misgiving should arise as to that firm's stability and responsibility to carry out the tender, before it is actually accepted, in which case it is the duty of the architect to act cautiously and conscientiously for his client's sake; and for this reason I always, without exception, insert the clause, "The proprietor does not bind himself to accept the lowest or any tender."

The Vestry [of St. Pancras are not immaculate, and certainly not exceptional in the case quoted; but respectable and responsible firms ought not to be put to the expense of tendering when it is already settled beforehand whose tender is to be accepted, whether it be the lowest or the highest. There is a want of principle in it. Some definite custom should prevail among architects as to this question of tendering, and so prevent a great deal of unnecessary ill-feeling.

H. H. B.

The Inter-Oceanic Canal.—The Commissioners appointed by the President of the United States to examine the reports of the officers in charge of the surveys of the inter-oceanic canal routes across the Isthmus of Darien and contiguous territory, have pronounced the Darien route superior to all others, both for the construction and maintenance of a canal and its profitable use. The route thus approved of begins on the Atlantic side at Greytown, running by canal to the San Juan river, following it, by what is designated "slack water navigation," to Lake Nicaragua, and thence by canal to the Rio del Brito, on the Pacific coast. The cost of construction is estimated at upwards of 100,000,000 dols., and the time required to complete it is ten years.

CAMBERWELL WORKHOUSE COMPETITION.

A LESSON FOR COMPETITORS.

SIR,—I have seen in your paper reference to the above competition. From a perusal of the columns of the *South London Press* of February 10th, and from other local sources of information, I feel assured that this is a case for a little wholesome ventilation.

The most ordinary experience, and a comparison with other buildings of a similar nature (even after making full allowance on account of an existing building to be adapted for the reception of 100 children, but which will still require radical alterations), must show that the figure quoted by the selected competitor is inadequate for a building to accommodate between 400 and 500.

Another South London workhouse for 600, very simply built, and with otherwise very similar requirements, excepting that it has an out-door administration, cost, to my knowledge, 67,000*l.* from first to last; yet the sanguine author of this design, whose only supposed merit, so far as I can learn, is cheapness, proposes to erect his building complete for 26,000*l.*!

Of course, the guardians, honest men, are not supposed to know the value of bricks and mortar. They have also to study economy, and to meet their electors; and, consequently, are only too glad to pounce upon such an attractive scheme.

The lesson which, I think, competing architects may learn from this is plain, viz., that in such matters a sanguine temperament, which sees its way to doing things for half the usual amount, is of more value than all the talent in the world. A man has but to clap down 26,000*l.*, instead of 46,000*l.*, sign himself "Veritas," and the thing is done.

SURVEYOR.

IMPROVED FIRE-GRATES.

SIR,—In reply to what appeared in your paper on the subject of "Improved Fire-grates":—

The exact shape of the fire-basket, or trough, may have emanated from Mr. Leslie, but the principle of slow combustion, upon which these stoves are constructed (that is to say, having a solid fire-brick bottom), was used by the late Mr. Barnard forty years since.

We have always advocated the principle, and some five years since, when Mr. Jeckyll designed for us our ornamental fronts, we published these stoves, and have sold many thousands of them. We therefore think we can with justice claim "the merit of introducing the principle to the public."

BARNARD, BISHOP, & BARNARDS.

UNSTAMPED TENDERS.

EWERT *v.* WOOLRIDGE.

THIS was a claim (heard in the Bloomsbury County Court on the 22nd ult., before Mr. G. Lake Russell, judge) to recover the sum of 14*l.* 10*s.*

It appeared from the evidence that the plaintiff is a zinc manufacturer, No. 346, Euston-road, and the defendant a builder, at Beckenham, Kent. In the month of August, 1875, the defendant, who had been in the habit of employing the plaintiffs, wrote to them, asking for an estimate for fixing some gutters to two blocks of houses he was building at Beckenham, and Charles Salter, foreman to the plaintiffs, went down and saw the buildings, and gave the defendant a verbal estimate of 14*l.* 14*s.* An estimate was afterwards sent by the plaintiffs in writing. Two cisterns were to be lined with zinc, but which were not done, and the plaintiffs deducted from their account 1*l.* 10*s.* The zinc for that purpose, however, was sent down to Beckenham, and had been detained by the defendant, for which they charged 1*l.* 6*s*, making the total amount of the claim 14*l.* 10*s.*

For the defendant it was submitted that the contract should be stamped.

The judge concurred, and nonsuited the plaintiffs without costs.

Coffee Taverns.—We willingly call attention to an enterprise which seems calculated to promote the public health as well as the public morals. At a meeting held recently at the house of Mr. Ernest Hart, Queen Anne-street, it was resolved to attempt the formation of an association in London to provide for the working classes, in densely-populated neighbourhoods in which they reside, places of resort where they may find unintoxicating refreshment, plain food, warm, well-lighted rooms, and the opportunity of spending hours of leisure removed from the temptations of the gin-palace. The endeavours have resulted in the formation of a limited company for the purpose under the presidency of the Right Hon. Cowper-Temple. About 1,500*l.* have been privately subscribed. Mr. J. C. Barnard, solicitor, of 15, Lancaster-place, Strand, gives his services as secretary. The capital required is about 10,000*l.*

NEW REREDOSES.

Rotherham.—There has just been placed in Rotherham parish church a new reredos, the gift of the Earl of Effingham. It is made of oak, carved and gilded, and in the centre of panels, overhung by a canopy. The panels are immediately behind the communion-table, and in each is a full-length portrait in oil. The ob one is that of Jesus Christ as the Good Shephe the other four are figures of St. John the Evangelist, St. John the Baptist, St. James the Apos and St. Stephen, the first martyr. The rered was designed by Sir Gilbert Scott. The carvi was the work of Mr. Rice, Lambeth; and t painting was executed by Messrs. Burlison Gryl.

Brighton.—A new reredos, the gift of an anon mous donor, is about to be placed in St. Pete Church, Brighton. It is thus described Mr. E. L. Blackburne, the architect employed the donor for the work. It will consist prin pally of Caen stone, enriched with alabaster a coloured marbles; the former to be used chie for backgrounds, the latter for the shafts of t columns, and for bosses or ornaments. T general plan may be described as a range arcaded niches, five in number, to correspo with the lights of the chancel window abo crowned by projected canopies of O-G. forr the whole, excepting at the two ends where buttresses pass down to the chancel floor, resti on a dado or surbase, the cornice moulding which will form the floor of the recessions. these gables, the central one will extend to considerable height above the general face of arcading; the two others on each side be lower, to accord with the graduated outl given to the elevation. With reference to de ration and finish, the background of each nic will be covered with rich diaper-work of carv foliage, upon which, in the centre one, will placed a panel of alabaster and coloured marbl containing a jewelled cross of pure white a baster. The two niches to the immediate rig and left of the centre will have similar pan with alabaster grounds, for the reception emblematic representations of the four Evangelists. The two outer niches will be witho ornamentation, but as respects the diaper background will correspond.

ACCIDENTS.

AN inquest has been held at Tunbrid Wells on the body of Mr. Benjamin Tom sett, a retired farmer, who was killed by t falling of a building in course of erection Granville-road. From the evidence of James Weeks, architect, it appeared that throu the work being thoroughly saturated by wat the key pier in the main wall was pushed in, a the others necessarily followed. If the wall h been built of the best possible bricks and t best possible mortar, it might have fallen in the same way. Had the mortar been sufficien set it would have stood for a fair average numb of years. He did not attribute what had occurr to any fault in the building or the mortar use The verdict of the jury was that the death w occasioned accidentally, and that it was con quent upon the extreme wet weather, follow by a frost, and though they thought it w injudicious on the part of the builder going with the building while it was in such a w state, they did not attach any blame to t workmen or foreman.

On the 12th ult. the inquest respecting t deaths of two men named Sadler and Beresfo who lost their lives through the fall of a lof chimney-stack at the electro-plate works Messrs. Deykin, in Birmingham, during a hea gale which prevailed on the 30th January, w concluded. The stack in question was 70 ft. hig and the thickness varied from 18 in. at the t It parted about the middle, and crashed throu the roof of the manufactory, burying the wor people, several of whom were severely injur but the above were the only fatal cases. Te graph wires were carried round the chimne and the main object of the inquiry was to asce tain whether these had pulled the chimney dow Mr. Henry Pilacy, engineer, stated that he h examined the point of fracture. The mort was black in colour, showing that smoke h been getting in between the bricks, and th there had been a fracture in the stack for so time past. He did not attach much importan to the weight of the five telegraphic wir upon the stack, but the affixing of them mig have caused the fracture. For affixing the wi

preferred a band, which would have surrounded the stack, to brackets, in fastening which large nails were used. The men who fixed the wires for the Post-office authorities stated that they used bands or brackets as they chose. There was no periodical inspection of the stacks to which the telegraph wires were attached. The coroner, in summing up, said "it would be for the Postmaster-General to say whether steps ought not to be taken to put a stop to the barbarous practice of fixing telegraph wires to tall stacks at manufactories." The jury found a verdict of accidental death, caused by the fall of a stack from the force of the wind acting upon the chimney and the telegraph wires.

An inquest has been held in Sheffield on the body of Patrick M'Glyn, a labourer, who was killed by the fall of a wall whilst working at some buildings in course of demolition in Sands Saviours, Bow-street. From the evidence it appeared that William Smith, foreman over the navvies engaged in excavating, had said to Mr. Battersby, the contractor, "That wall's not safe; my men are afraid to work there." Mr. Battersby replied, "It's quite safe"; and Smith rejoined that he did not want his men killed. The jury returned a verdict of Accidental death, at the same stating "that Battersby was highly blameable for the insecure state in which he had left the wall, and for allowing deceased to work under it at the same time."

The Tay Bridge, which is now far advanced towards completion, sustained very severe damage recently. A gale came on in the afternoon, and by five o'clock it was blowing with hurricane violence at Dundee, and had lashed the Tay into a perfect fury. Fifty-four workmen were on the bridge, and all efforts to take them off by a steamer proved abortive. The men, not being very sure of the stability of the part of the bridge where they were, located in a pothy that sheltered them from the storm, removed to another part, and it was well they did so, for about half-past eight two of the large girders, each measuring 245 ft. and weighing 250 tons, and which were not fixed, were "blown down, and the pier on which they mutually rested was snapped asunder like a thread, and the iron work upon it crumpled up like burnt paper." The pier next to it was also destroyed. The damage is estimated at 3,000*l*.

The New York papers give the verdict of the coroner's jury concerning the burning of the Brooklyn Theatre. The jury strongly censure the management for the lack of responsibility and discipline among the *employés*, the inadequateness of the appliances for extinguishing fires, the overcrowding of the stage with old scenery, and the closing of the means of exit from the dress-circle. The jury append a recommendation that in the erection of theatres there should be a brick wall extending from the roof, dividing the stage from the auditorium, with the additional provision of a fireproof screen, which could be used to shut off the stage from the auditorium in case of fire.

The tower of the parish church of Coychurch, near Bridgend, fell down on the 10th ult., destroying the south aisle and an harmonium, and disturbing several monuments. The body of the church was restored a few years ago, but the tower was, it is said, neglected for want of funds.

On the 14th ult. the well or tank of the new gasholder which is being constructed for the Corporation of Middlesbrough on the Marshes gave way. The excavations had been proceeding for several months, and concrete walls had just been got in round the foundations. The weight of the outside earth appears to have pressed heavily on these walls, which were not able to bear the pressure. The loss to the Corporation will be very considerable.

On the 12th ult. two buildings, situate in a yard in Sidney-street, Sheffield, fell down. There was no loss of life. It is conjectured that the recent heavy rains had undermined the foundations.

Restoration of Tewkesbury Abbey.—The "National Committee" for promoting the restoration of Tewkesbury Abbey are making an appeal for funds to enable them to complete the work of restoring this fine specimen of Mediæval architecture to something of its former grandeur. A meeting will be held in the library of Lambeth Palace (by permission of the Archbishop of Canterbury) on this Saturday, the 3rd of March, at three o'clock p.m., to promote this object.

STAINED GLASS.

Hadley.—A stained-glass window to the memory of the late Mr. John Millington, of Ketley, has just been placed in the chancel of Hadley Church. It consists of two lights and tracery, and the subject selected is the blessing of his sons by Jacob. The window has been executed by Messrs. Hardman & Co. in the Decorated style.

Hurley.—Two memorial windows have been lately fixed in the old Norman church of St. Mary, Hurley, Berks, one of them in memory of the late vicar, the Rev. T. J. Wethered, who died in 1867. The glass is painted by Messrs. Clayton & Bell.

Ewell.—A stained-glass window has just been placed in the chancel of Ewell parish church. The chief subject is the Descent from the Cross. This occupies three lights of the window; on either side of it are representations of Christ breaking bread with the two disciples at Emmaus, and John the Baptist pointing out Jesus as "The Lamb of God that taketh away the sin of the world." This window is by Capronnier, of Brussels, and it has cost 357*l*.

Belchamp Walter.—A painted window (by Messrs. Wailes, of Newcastle-on-Tyne) has just been placed in the church by the Rev. J. St. Clere, of Belchamp Hall, to the memory of Mr. George Washington Brownlow, artist.

Yatton.—A new painted window has just been placed in the chancel of St. Mary's Church, Yatton. It is the work of Messrs. Clayton & Bell. The subjects are four in number, with appropriate legends attached. First, the Resurrection; second, the final charge of St. Peter; third, our Lord's appearance to St. Thomas; fourth, the Saviour and the disciples in the storm on the Lake of Galilee. The cusped heads of the window are filled with canopies.

Wolverhampton. — The *St. Peter's Magazine* (Wolverhampton) says that the last window on the south side of the old church chancel has been reserved since 1869, at the request of Mr. Staveley Hill, to be filled with stained glass as a memorial to his parents. Mr. Hill died in August, 1872, and in October, 1875, Mr. Staveley Hill directed Messrs. Clayton & Bell to prepare a design from the text "Mercy and truth have met together; righteousness and peace have kissed each other." After some delay, the design was completed, and forwarded in July last. Subject to some alterations, the late rector approved of it; but Mr. Hill rejected it, as not being at all what he wanted, and subsequently requested Dr. Sebastian Evans to prepare another design on the same text. This was submitted to the late rector, and he, not being able to appreciate its beauties for an ecclesiastical building, asked the opinion of the church architect, Mr. Christian, on the two designs of Messrs. Clayton & Bell and Dr. Sebastian Evans respectively. It was given as follows:—"The design of the latter is very unsuitable for a church window, and too materialistic in treatment for the subject proposed. The drawing of the figures also is bad, the bodies and feet not belonging to each other, and they seem to me utterly wanting in anything like spiritual character. Messrs. Clayton & Bell's design is not good in several of its details, but the treatment of the subject is, I think, far more satisfactory than in the other case, and, with proper care and instructions, I doubt not but that they could produce from the sketch a suitable and beautiful window." This criticism was forwarded to Mr. Hill, who has since intimated that he does not intend to proceed with the execution of the window.

Acton.—The large west window in All Saints' Church has recently been filled with stained glass, from the designs of Messrs. Powell Bros., of Leeds. It contains six subjects illustrating the life of Moses, commencing with the institution of the Passover, and concluding with Moses addressing the multitude. The cost was 400*l*.

New Saw-mills: Coleraine and West Hartlepool.—New saw-mills have been erected at Coleraine by Messrs. Bellas, and commenced working on the 19th ult. The facilities for timber importation at West Hartlepool have naturally caused the erection of several large saw-mills in that town, and to their number another is now to be added. A site five acres in extent has been secured to the east of Belle Vue, and the erection of a large saw-mill, with all requisite machinery, is intended to be immediately commenced. The proprietor is Mr. C. Brown.

SCHOOL-BUILDING NEWS.

Hay.—A new British School has been opened at Hay, Breconshire. The structure is substantially built of native stone, with Bath stone dressings, and lined with brick. It is furnished with varnished deal desks and forms, manufactured by Mr. Lewes, of Ross. Accommodation is provided for 120 children. The architects were Messrs. Haddon, Brothers, Hereford; and the contractor Mr. James Webb, of Hay. The total cost is about 570*l*.

Tarporley.—On the 5th ult., a school to accommodate 100 children, and of the type known as British Schools, was opened at Tarporley. By the kindness of Mr. Ralph Harding, of Capetown, a suitable site was obtained on Rhuddal Heath. The committee, who were the principal supporters of the project, were in a measure their own architects, and when they had brought their plans to maturity, let the contract for the work to Mr. Amos Cookson, who commenced building in August of last year. The internal woodwork has been executed by Mr. Fleet, of Kelsall. The building is of red brick, and after the Gothic style of architecture. The whole of the work, including the interior fittings, has been executed for about 500*l*.

Middlesbrough.—The suite of buildings which has been erected at the sole expense of Messrs. J. W. Pease & Co., for the use of the Middlesbrough High School, has been formally opened and handed over by the donors to the representatives of the town. Only the centre block is at present completed, but it is intended to add a wing at each side so soon as the growth of the town demands and warrants it. The building is in the Gothic style, and is built of red pressed bricks, relieved with moulded stone strings. In the centre is a clock-tower, rising to the height of 100 ft., and surmounted with wrought-iron cresting and finials. The clock was supplied by Messrs. Gillett & Bland, of Croydon. The roofs of the building are covered with dark Westmoreland slates, with bands and diaper-work of green Westmoreland and red ridge-tiles and cresting. The front doors are of oak, moulded. Immediately within the front door is a spacious hall, on the right and left of which are rooms for the boys to hang their hats and coats in. At the end of this hall are lavatories for the boys. To the left is a corridor leading to the boys' class-rooms. On the first-floor of the left-hand wing are the boys' class-rooms and school-room, the latter being a lofty room, lighted by three large windows on each side. The roof over this room is supported by five principals of pitch pine, cut and moulded. The girls' department has the same number of class-rooms on the ground-floor and first-floor as the boys' department. There is also a range of lavatories and closet, constructed on Underbay's patent. The lavatories are by Finch, of London, and the gas-fittings by Messrs. Hart, Son, Peard, & Co. The rooms are warmed by Boyd's hygiastic stoves. The contract has been carried out by Mr. J. Johnson, builder, Middlesbrough. The cost of the buildings, so far as at present constructed, is over 10,000*l*.

CHURCH-BUILDING NEWS.

Salcot.—Attention has lately been drawn to the church in the outlying district of Salcot, Essex, and the tower being the only portion of the edifice found to be worth preserving, has for the last two or three months been in the hands of the church restorer. Owing to the nature of the soil, and neglect, the building had suffered very much from settlements at various periods, and was at last found to be in almost a dangerous condition; so much so, that the two buttresses on the north and south sides were obliged to be taken down and rebuilt in rubble and Bath stone. The large fissures or cracks east and west have been filled up, the walls having been previously secured by tie-irons. The dilapidated battlemented parapet has been restored, and coped with Bath stone moulded coping; the pantiled roof removed, and a massive oak flat roof, covered with stout sheet lead, substituted, in accordance with the original construction, with outlets through carved stone gargoyles. The expense has been chiefly borne by the rector, the Rev. F. Watson, and his sister; and the works have been carried out under the superintendence of the diocesan surveyor, Mr. Fred. Chancellor, of Chelmsford, and executed by Mr. Joseph Grimes, of Colchester.

Sudbury.—The restoration of St. Gregory's

Church, Sudbury, is rapidly progressing, the contractors being Messrs. Grimwood & Sons and E. Keogh for the stonework, and Mr. E. Green for the plastering, floor, &c. The monumental slabs are being carefully preserved, and are being relaid in the south aisle.

Middleton in Teesdale.—The Duke of Cleveland has promised the sum of 2,000*l.* for the new church, which there is a prospect of being speedily commenced. The Rector offers a site and 500*l.* on the completion of the chancel, and it is expected that other liberal contributions will be forthcoming.

Halifax.—Some time ago Sir Gilbert Scott was called upon to inspect, and report upon the restoration of, Halifax parish church. Sir Gilbert has just sent down a ground plan and interior view of the restored church, and has promised, as speedily as possible, to complete and transmit his report and estimates. A paragraph, which has gone "the round of the press," stating that his estimate has been received, and that he fixes 40,000*l.* as the cost of the restoration, has no foundation in fact.

Brighton.—The Chapel Royal, Brighton, was reopened on the 6th ult., after extensive alterations. The chapel was built in the Georgian period. All who remember what the building was like a little over a year ago,—with its uncomfortable and ancient high pews—will find the appearance of the interior entirely changed. The restoration has been carried out under the direction of Mr. A. Blomfield, architect, by Messrs. G. Lynn & Son, of Brighton. The building has been re-seated throughout, the gallery above the Communion-table removed, the front of the other galleries repaired and generally improved, the windows altered, and provision made for the organ and choir. The total cost has been 2,500*l.*, exclusive of church furniture. The "royal pew" no longer exists. The side windows and skylight have been filled with stained glass, and the gasfittings have been improved by Mr. R. Shrivell, of London. A reredos has been erected, and the chancel has been decorated by Messrs. Heaton, Butler, & Bayne, by whom some paintings, including one representing "The Good Shepherd," have been executed. The accommodation of the church has not been decreased, for though the west gallery has been removed, the space formerly occupied by the vestry under the southern gallery has been thrown into the building, and nearly 900 persons can be seated.

Barrow-upon-Trent.—The old parish church of Barrow-on-Trent was re-opened on the 7th ult., after re-seating and re-fitting. The square and unsightly pews have been replaced by modern open sittings of stained and varnished wood. The ponderous gallery, which blocked up the west end, has been removed, opening the western arch and window. Messrs. Lilley & Son, Ashby-de-la-Zouch, carried out the works.

Stepney.—Christ Church, Jamaica-street, Stepney, was consecrated on the 3rd inst. by the Bishop of London. The church has been erected from the designs of Mr. Ewan Christian, by Messrs. Downs & Co., of Southwark.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Tudhoe.—The Roman Catholic Church at Tudhoe has been re-opened, after being re-decorated. A new altar has been placed in the chancel. It is from the establishment of Messrs. Mayer & Co., Munich; the material is carved oak, and its cost is estimated at 500*l.*

London.—The restoration of St. Etheldreda's Chapel, Ely-place, having been steadily carried on through the last eight months, has thus far resulted in the excavation of the crypt underneath, and fitting it for divine service, and in the repair of the roof from end to end. The plaster ceiling having been removed, the oak timbers of the high-pitched roof stand out to the eye just as they did when first put up 500 years ago. In a few places, where the ends of the old beams were decayed, fresh oak timber has been spliced and dovetailed into them, so that the lofty pitch of the roof has been retained. The tie-beams and hammer-beams are new, and new boards of oak have been laid on the rafters throughout.

Harborne.—The opening of St. Mary's Retreat, the new church of the Passionist Fathers, at Harborne, took place on the 6th ult. The mission at Harborne was commenced in 1870, when the Fathers purchased the old Methodist Chapel; but, as their duties increased, it was found to afford insufficient accommodation, and the residence and grounds of Mr. Ralph Heaton were taken by them. Adjoining the house, which serves as a most commodious residence and monastery for the reverend gentlemen, a neat and substantial church has been erected. It will accommodate 400 persons, and is Early Decorated in style, adapted to the materials used. The exterior is of red bricks, and the roofs are covered with green mottled slates. The interior is of cream-coloured brick, pointed with red. Bands of buff terra cotta, made by Messrs. Gibbs & Canning, of Tamworth, are built in with the brickwork. The work throughout is simple in character, and the chief ornamental features are the west and north windows of the nave, which display some geometric tracery. These, and all the other windows, are filled in with tinted cathedral glass, by Mr. Benjamin Gay, of Bristol. The nave and chancel are 23 ft. wide, and the total length of the nave is 92 ft. The south aisle is 62 ft. by 12 ft., terminated by a chapel of the same width, and 19 ft. long, which is dedicated to the Sacred Heart. At the west end is a gallery for the organ and the choir. The sacristy is 20 ft. by 15 ft., and is placed at the south of the building. It is connected by a corridor with the monastery. Under it is a vaulted chamber, containing the heating apparatus supplied by Messrs. Redfern, of Hanley. The open timber roof, gallery, and dado round the walls of the church and sacristy, and all the woodwork, are executed in pitch pine. The benches in the church are of the same material. The west front faces the main road, and at the junction of the nave and aisle is an octagonal turret containing the staircase leading to the gallery, and above is an arcaded belfry in stone, terminated by a stone spire. The entire cost, including benches and fittings, is 4,000*l.* Messrs. Barnsley & Sons, of Birmingham, are the builders, and Messrs. Dunn & Hansom, of Newcastle-on-Tyne, are the architects. Mr. R. L. Boulton, of Cheltenham, has executed the carving.

Books Received.

A Manual of the Historical Development of Art. By G. G. ZERFFI, Ph.D., F.R.S.L. Hardwicke & Bogue.

THIS book is intended, we are told by the author (who has been for some years a lecturer in the Department of Science and Art at South Kensington), to "suggest and excite to the study of art-history" in schools and colleges. Dr. Zerffi seems to aim at connecting art with ethnology and history more directly than is usually attempted. There is no doubt that there is, as he says, a unity in the progress and development of a race, and that its art cannot properly be considered as a thing apart from and unconnected with the geographical situation and social character of the people. We are all beginning to see this now; all who think at all, at least. We do not know that Dr. Zerffi throws any new light on the subject in this book, and perhaps that was hardly intended; and we must regard it as putting in a compact form what is already recognised. This end would perhaps have been better attained if the author had aimed more at simplicity of style and confined his subject more within the limits which the size of the volume would seem to suggest. As it is, the book is full of very large ideas, which there is not room to develop or work out properly, and we think to a student taking it up to gain a first idea of art history it would prove rather puzzling than instructive. A small treatise on such a subject should keep a very definite line, but Dr. Zerffi branches off to so many illustrations from all things in heaven and earth that it is not always easy to see what he is driving at; and some of his analogies, such as that between the bubble and the Indian tope, are probably rather fanciful than real. We should like to see upon what specimens Dr. Zerffi founds his *six* varieties of the Doric style; considering the limited number of Doric buildings of which remains exist, we should call that rather over-refining. The book is far too full of long words, introduced for no adequate purpose except to impress the reader with an idea of the author's learning. How much the better are we for being told that "Everything is either stereometric or planimetric"? Very likely it is. We dare not dispute with an author who seems to have so much dictionary at his fingers' ends. But in all this there is pretentiousness. We have always a suspicion of books full of these big Anglo-Greek expressions, which serve only to deter young readers, or to make them think they are learning something very wonderful, when matter-of-fact statements are concealed under all this verbiage. Such writing argues that the author is thinking more of himself than of his readers. We can see no sense, either, in the affectation of putting aside the recognised English form of Greek words, and writing "Kyrus" and "Kentaurs" and "Dirké," instead of "Cyrus" and "Centaurs" and "Diroé," &c. To do so is really obliterating a part of the distinctive character of the English language in its method of altering and assimilating Greek words, and disturbs all our associations. Besides it is not even consistently done; for if we were to have the Greek word, it ought to be "Kuros," not "Kyrus."

The preface is taken up a good deal with the subjects discussed in the Art section of the last Social Science Congress, under the head of four questions, which the author tells us he answered by anticipation in his lectures at the Art-Training School. He summarises his answers here, however, and in the main we do not differ from them, and are entirely with him in the opinion that if people, instead of running after old china, Mediæval candlesticks, or old pictures that can scarcely be seen (this last we must take *cum grano*) would spend more in providing greater opportunities and encouragement for our own artists, they would be doing more for art. And we quite concur also in his closing remark, that such a collection as the South Kensington is a better commentary upon lectures than any book-illustrations can be. People should see things with their own eyes if they want to understand them; but it must be remembered that every one does not live within reach of great museums. In his comments on the fourth of the "Social Science" questions, as to the influence on society of decorative art, Dr. Zerffi falls into the common error of exaggerating the horrors of modern taste. He says, among other things, that "we have coarse china frogs and lizards, crabs or lobsters, from which we eat our fruit or fish; or a life-like salmon with staring eyes is brought on our table, its back takes off, and we scoop out the real cooked salmon with which its inside is filled." What Dr. Zerffi may have seen we, of course, cannot tell, but we can only say that where we dine we do not now see such things, and as far as our experience goes they would be scouted as vulgar even by those who make no profession of artistic taste or principle. Plenty of weak senseless, poor ornament there is to be seen doubtless, but nothing so bad as this, unless it be in the houses of those who may claim the distinction of being in every sense "vulgar;" and when the author adds, "form of dish, association of ideas, and action of the host, are more worthy of anthropophagi than of civilised beings," we wonder more than ever from what section of "civilised" society he draws his experience.

VARIORUM.

"THE Amateur Mechanic's Practical Handbook," by Arthur H. G. Hobson (Longmans), is addressed to the amateur engineer, and treats of the lathe, drilling and planing machines, how to make a horizontal engine, and such like.——For the "City of London Directory," 1877 (Collingridge), special pains appear to have been taken with the compilation of each section, and efforts made to render the work as free from error as it is possible in a book containing such multifarious information. A glance at the contents will show that the work is arranged on a plan different from that of any other volume of the kind, and that nothing has been omitted likely to be useful. In addition to the usual directory information, which is of the amplest, the Official Directory furnishes details as to the public offices and officials of the City, both municipal and parochial. At the present time, when the ancient guilds of the City occupy so much public attention, the information contained in the Livery Companies section will be found peculiarly valuable. The Commercial Companies section will be seen to furnish the latest changes in the *personnel* of the respective directorates as well as the last dividends of all the important companies,—some of the latter declared so late as February, 1877.

Trees in London Thoroughfares.—The Newington Vestry has decided to plant trees along Kennington Park-road, and also along New Kent-road.

IE ROYAL INSTITUTE OF ARCHITECTS' GOLD MEDAL: 1877.

Sir,—It is rumoured that the President of the Institute ll, on Monday next, be named as the recipient of this nour. You, Sir, will know how far this is correct; t if true, though one can have nothing whatever to urge ainst the respected president personally, yet I should e to protest against a step which I cannot think "well nsidered," and for the following reasons:—

The Council of the R.I.B.A., of which the president is turally the head, suggests upon whom the honour of the old Medal should be bestowed, and although we can adily understand the president protesting against any im on his behalf in such a case, yet if he is overruled, e fact remains that he is practically (or is at least a rty to) conferring an honour upon himself.

I am aware there is a precedent for this course; unrtunately it seems likely to become stronger, until we n imagine it shortly becoming the rule. Most certainly member of the body awarding the medal should be the cipient. No matter how worthy he may be, all will nfess such a phase has an ugly appearance.

If rumour is in this instance correct, I trust the present mmittee may have sufficient moral courage to decline an nour which, bestowed under such circumstances, may most be considered a doubtful one.

A JUNIOR.

Miscellanea.

Newspaper Press Fund. — The annual neral meeting of the members of the Newsaper Press Fund took place on the 24th ult., the offices of the Association, Lord Houghton, e president of the Fund, in the chair. The nnual report and balance-sheet for the year nding December 31st last stated that the new embers elected during the year numbered ty, while nineteen had been removed from e roll for non-payment of subscriptions, ree had resigned, and there had been eight eaths. The roll now presented an aggregate 357 members, 249 being resident in London nd 108 in the provinces. The existing life embers were fifty-nine. The grants during e year were forty-six, and the amount awarded 16*l*. The total grants since the formation of e fund had been 266, and the amount awarded 3991. 9*s*. 6*d*. The Marquis of Hartington, M.P., as consented to take the chair at the anniversary stival, on Saturday, May 5th next, at Willis's ooms. The following additions were made to e rules:—"That every annual member who as paid his annual subscription of one guinea r fifteen consecutive years shall thenceforward e deemed a life member, and entitled to all e rights and privileges of life membership." That any annual member may become a life ember on tendering at any time the difference etween two-thirds of the amount of his subriptions already consecutively paid and n guineas." "That every applicant for life embership may, on election, have the option paying the subscription of 10*l*. 10*s*. by exnding it over three years, in sums of 3*l*. 10*s*. r annum."

English Landscape Art.—At a meeting of e Society for the Encouragement of the Fine rts, on the evening of Thursday, the 22nd inst., r. G. F. Teniswood, F.S.A., gave a lecture upon English Landscape Art in the Past and Present enturies." Mr. B. L. Mosely, LL.B., occupied e chair. The lecturer commenced by showing e debased condition of art at the first part of e last century, and how foreign ascendency fected the taste of the day. Detailing the rly beginning of English art, he pointed to ogarth, Wilson, Reynolds, and Gainsborough the instruments of its revival. Placing Wilson the founder of the English Landscape School, d noting his immediate followers, he traced course to its culmination at the time of rner. Comparing the characteristics of men later date, he concluded by reference to the uses influencing its growth in modern times.

The Turners' Company and Technical ducation.—This company, according to the *ty Press*, have issued their programme for the mpetition for prizes in hand turning for general d for horological purposes. Medals and prizes th the freedom of the company for those who ke first prizes will be awarded. For this purse a sum of 50*l*. has been voted by the court which the Baroness Burdett-Coutts has kindly ded 25*l*. An exhibition of specimens will be ld at the Mansion House in October, and the izes will be presented by the Right Hon. the rd Mayor.

Mycenæ.—Mr. William Simpson, who has en specially commissioned by the proprietors the *Illustrated London News* to make sketches the recent discoveries at Mycenæ, has arrived Athens.

Holborn Improvement Scheme.—In reply to Mr. Kay Shuttleworth, in the House of Commons, who asked with reference to the Holborn Improvement scheme, dated November 19, 1875 (named in the return No. 294 of last Session), under the Artisans' and Labourers' Dwellings Improvement Act, 1875, what had been the fate of that scheme, Sir J. Hogg said the scheme was not approved by the Secretary of State. The Board has brought in a Bill, which has just been read a second time, for the purpose, among others, of widening Gray's-inn-lane, and the property thus required will include a great portion of the unhealthy dwellings which were comprised in the scheme, and in these circumstances the Board did not think it expedient to deposit a new scheme.

Hilton's "Our Lord Crowned with Thorns."—In the Consistory Court, Sir James M. Hogg and Mr. Payne, the churchwardens of St. Peter's, Eaton-square, applied for a faculty to sell a picture, painted by Mr. W. Hilton, and presented by the British Institution when the church was opened in 1826, of "Our Lord Crowned with Thorns." It was originally placed over the communion-table, and afterwards removed to the north transept, where it was hardly seen. The picture had been lent to the Royal Academy, and Sir Francis Grant had made an offer of 1,000*l*. for it. The Churchwardens were anxious to dispose of the same, and invest the purchase-money in Consols, and apply the dividends to the ornamentation of the church. The application was granted.

The Royal Academy.—In the House of Commons on the 20th ult., Mr. G. Noel, replying to Mr. Goldsmid, said that negotiations were in progress by the Council of the Royal Academy for the purchase, out of the interest of the funds bequeathed by the late Mr. Chantrey, of a picture which was to become the property of the nation if suitable room was provided for it by the Government. At the present moment there was ample room in the National Gallery to provide accommodation for sculpture or pictures, but if at any future time the collection should become much larger the Government would have to consider the propriety of finding additional accommodation.

Fall of a Gallery.—An accident occurred on the 25th ult. at the Marine and Locomotive engine works of Messrs. Hawthorne & Co., Newcastle-on-Tyne. In the erecting-shop of the locomotive department the usual large number of men were engaged at work when an extensive gallery, consisting of wood and supported by iron girders, fell without warning, and a number of workmen were buried in the ruins. Heavy pieces of machinery also fell with the gallery, and the removal of these was a work of much difficulty, so that the extrication of the unfortunate men proceeded but slowly.

The late Mr. W. H. Skyring, Surveyor.—This gentleman, whose name is known in connexion with "Skyring's Builders' Price Book," died at his residence, Stamford Hill, on the 17th ult., in his 81st year. The "Price Book" was projected by Mr. Skyring's father, who published the original edition 67 years ago. It still appears annually, under the auspices of one of Mr. Skyring's fellow-workers, Mr. F. Fisk. The late Mr. Skyring held several appointments in the City of London as surveyor, but had retired for some time from the active duties of the profession.

Technical Education.—A meeting of City companies interested in this subject has been held at the Drapers' Hall to make efforts for the promotion of technical education. The course suggested is to establish a central technical University, with affiliated schools of instruction in connexion with the various industries carried on in the suburbs of London and the manufacturing districts of the United Kingdom.

Another Good Theatre Gone Wrong.—At night, on January 27, a fire broke out in the Academy of Music at Indianapolis, Ind., destroying the entire building together with five stores. Fortunately no performance was in progress. The loss will probably amount to $150,000 or $200,000.

Pour Encourager les Autres.—A remarkable incident has come to the knowledge of the authorities at Lower Gornal, Scotland. For some time five generations have resided in one house, the oldest of whom is 85, next 55, third 30, fourth 17, and the fifth a few weeks old. They are all females; some of them are widows.

City and Spitalfields School of Art.—A course of lectures has been arranged for art students and others who may be desirous of receiving information concerning the various employments connected with art and design in which they might find occupation. They will be given on the evenings of the first four Thursdays in March by Mr. N. H. J. Westlake, F.S.A., Mr. Thomas Chatfeild Clarke, Mr. G. Aitchison, B.A., and Mr. Charles L. Eastlake.

Birmingham Branch of the Architectural Association.—On the 20th ult. a meeting of the members was held at their rooms, Bennett's Hill. The chair was occupied by the President (Mr. Yeoville Thomason), and a lecture on "Internal Decoration" was delivered by Mr. J. W. Tonks. The lecturer described and compared the decoration of the Birmingham Town-hall and that of St. George's Hall, Liverpool, contrasting the evident effort at unity of design in the former with what he considered the respectable tameness of the latter.

British Archæological Association.—At the ordinary meeting of the Association last week, Mr. George Godwin in the chair, after the exhibition of a number of very interesting objects, with descriptive particulars, Mr. J. R. Planché, Somerset Herald, read a critical paper on the picture in the National Gallery called, "The Battle of St. Egidio," and attributed to P. Ucello. We will give the pith of his observations in our next.

TENDERS

For the erection of the Foresters' Arms and shop adjoining, at Goose-green, Dulwich, for Messrs. Morgan, Bros. Mr. Gordon Stanham, architect:—

Battwell	£4,036 0 0
Hearle & Son	3,975 0 0
Adamson	3,175 0 0
Hockley	3,150 0 0
Downs	2,939 0 0
Shapley	2,833 0 0

For pipe sewers, in the parish of Battersea, for the Board of Works for the Wandsworth District:—

	Sheepcot Lane.	Hope Street.	Blondel Street.
Pearson & Kampling	355 0 0	236 0 0	396 0 0
Serff	353 0 0	227 0 0	456 0 0
Taylor & Brown	304 0 0	189 0 0	377 0 0
Jackson	300 0 0	250 0 0	516 0 0
Foard	294 0 0	182 0 0	294 10 0
Thompson & Son	233 0 0	164 0 0	394 0 0
Torkington	222 0 0	153 0 9	297 0 0
Denyer	217 15 0	297 5 0	377 15 0
King (accepted, all)	211 10 0	162 10 10	412 5 0
Pizzey	202 0 0	193 0 0	435 0 0
Corry	193 6 3	221 10 0	314 17 0
Turtle & Appleton	— —	444 0 0	—

For the reconstruction and extension of pier at Eastbourne, for the Directors of the Eastbourne Pier Company. Mr. E. Birch, engineer. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Haywood	£8,777 0 0
Williams & Co.	8,550 0 0
Laidlaw, Sons, & Caine	8,396 0 0
Philips	8,100 0 0
Head, Wrightson, & Co.*	6,985 0 0

* Accepted.

For building a factory in St. Peter's-square, Hackney-road, for J. H. Sawards, esq. Mr. W. Mundy, architect:—

Croker	£893 0 0
F. & J. Wood	843 0 0
Thomason	845 0 0
Nightingale	760 0 0
Batchelder	753 0 0
Hearle	723 0 0

For additions to Mr. J. T. Morton's manufactory, Millwall. Mr. William Eve, architect:—

Crabb	£1,420 0 0
Nieser	1,334 0 0
Sheffield	1,292 0 0
Woodward	1,210 0 0
Salt	1,175 0 0
Williams & Rowe*	917 0 0

* Withdrawn in consequence of error.

For alterations to No. 51, Broad-street, Bristol. Messrs. Ponton & Gough, architects. Quantities supplied:—

Pugsly	£800 0 0
Church & Phillips	792 8 0
Dowling	788 10 0
Clarke	788 0 0
Wilkins	764 0 0
Stevens & Bastow	750 0 0
Chorley	747 19 0
Eastabrooke & Son	735 0 0
Lewis & Edbrooke	723 19 0
Munro	714 5 0
Humphries	679 3 0
Davies	675 0 0
Stevens & Gardiner	667 15 0
Wilkins & Son	642 0 0

For alterations, for Mr. Robert Beardall, at No. 110, Oxford-street. Mr. George Edwards, architect:—

Sanders	£814 0 0
Stimpson & Co.	720 0 0
Aitchison & Walker	719 0 0
Scharien (accepted)	592 0 0

For works to the King's Arms Inn, Shepherd's Market, Mayfair, for Messrs. Watney & Co.:—

Lamble	£243 0 0
Hockley	232 0 0
Grimwood & Sons	220 0 0

For additions to Springfield Lodge, for Mr. B. J. Hudson. Messrs. Lamb & Church, architects. Quantities supplied:—

Hockley	£1,075	0	0
Shearman	963	0	0
Godden	877	0	0
Long	870	0	0
Aviss & Co.	860	0	0

For the erection of new boys' and girls' schools in connexion with the Martyrs' Memorial Church, St. John-street-road, Clerkenwell. Mr. Jesse Christian Hukins, architect:—

Staines & Son	£1,982	0	0
Bayes, Bros., & Allen	1,800	0	0
Ebbage	1,799	0	0
Cowland, Bros.	1,692	0	0

For additions to schools, Lower Park-road, Peckham, for the London School Board. Mr. E. R. Robson, architect. Mr. W. H. Barber, surveyor:—

Roberts	£4,840	0	0
Newman & Mann	4,769	0	0
Hobson	4,724	0	0
Nightingale	4,711	0	0
Jarrard	4,659	0	0
Thompson	4,656	0	0
Downs	4,644	0	0
Tyermann	4,600	0	0
Tongue	4,553	0	0
Hill, Higgs, & Hill	4,464	0	0

For new Wesleyan Methodist Chapel, Winterton, Lincolnshire. Mr. Hanger, architect:—

Parker	£2,150	0	0
Sutton	2,100	0	0
Lumley	2,100	0	0
Richardson, Bros.	2,080	0	0
Bray (accepted)	2,020	0	0

For building bath-room, and alterations at Green-street, Bethnal-green, for Mr. Brad rook. Mr. Mundy, architect:—

Anley	£456	0	0
Nightingale	430	0	0
Batchelder	423	0	0
Thomason	399	0	0
Beale	397	10	0
Hearle	389	0	0

For the erection of new schoolrooms to the Victoria Wesleyan Chapel, St. John's Wood. Mr. Chas. Bell, architect:—

Bresly	£1,809	10	0
Tarrant & Sons	1,737	0	0
Tavener & Son	1,706	0	0
Scrivener & White	1,704	0	0
Densham & Sons	1,697	0	0
Burford	1,633	0	0
Hackworth	1,604	0	0

For corn stores and oasthouses at Rainham, for Messrs. Wakeley. Mr. John Drake, architect. No quantities supplied:—

Jeffreys (too late)	£2,100	0	0
Gates	1,879	0	0
Callund	1,855	0	0
Naylar	1,833	0	0

For additions to the Rosbear Board Schools, Camborne, for 400 children. Mr. James Hicks, architect:—

Peters & Treleaven	£1,170	0	0
Clifton & Pengelly	1,140	0	0
Trounson & Peters	1,100	0	0
Nettle & Dellbridge	1,070	0	0
Mills & Bellman	1,067	0	0
Julian & Sons (accepted)	900	0	0

For new Board School at Kehe.land, Camborne, for 120 children. Mr. James Hicks, architect:—

Clifton & Pengelly	£491	14	0
Trounson & Peters	458	1	6
Peters & Treleaven	456	15	0
Mills Bellman	424	4	7
Nettle & Dellbridge	407	0	0
Julian & Sons (accepted)	400	0	0

For works to premises for Messrs. Jones, Brothers, Holloway. Mr. A. E. Hughes, architect:—

Williams & Sons	£1,588	0	0
Grimwood & Sons	1,508	0	0
Grover	1,494	0	0
Watson, Bros.	1,444	0	0

For the erection of mission-hall, Creek-street, Deptford, for the Rev. J. T. Wigner and the Building Committee. Mr. Edward Clarke, architect. Quantities supplied:—

Gammon & Sons	£2,213	0	0
Cain	2,143	4	0
Macey	2,066	0	0
Allpress	2,000	0	0
Hill, Higgs, & Hill	1,982	0	0
Cocks & Co.	1,887	0	0
Green	1,877	0	0
Rider & Son	1,823	0	0

For three cottages at Mere, Wilts, for Mr. Meyrick Bankes. Mr. William Wing, architect:—

Hooper	£680	0	0
Farthing (accepted)	605	0	0

For alterations and additions to Radcliffe's School, Steeple Aston, Oxon, for the Governors of the Charity. Mr. William Wing, architect:—

Hopcraft & Bennett	£480	13	3
Hopcraft & Austin	414	0	0
T. Hopcraft	412	0	0
Eglinton & Grant (accepted)	400	0	0

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J. S.—C. M.—M.—C. C. H.—J. W.—A. & Co.—M. P.—H. H. B.—Dr. P.—R. & Co.—W. W.—Mr. S.—E. L. B.—T. W.—C. G. B.—W. H. D.—A. G. F.—F. G.—G. R.—R. P.—H. S. P. & Co.

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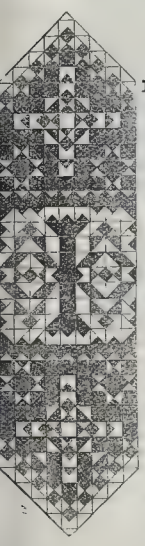
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A New Work on Venice.

IN a novelette containing some of the worst and best of his writing, Balzac has represented a young noble, the last descendant of one of the old Venetian families, musing sadly over the contrast between the past and the present. As he glided dreamily along the canal in his gondola, enjoying the modern consolation of a cigar, "Emilio could not but think of the days when the Memmi Palace had blazed with light at every window, and resounded with music heard far over the waves of the Adriatic; when gondolas by the hundred were to be seen moored to its painted posts, and the water-laved steps were the landing-place for all the dignitaries of the Republic crowding in together; when the saloons and galleries were gay with an assemblage intriguing and intrigued with" (*intriguée et intriguant*); "when the great banqueting-hall, furnished with festive tables, and its open colonnades filled with music, seemed to contain all Venice coming and going on the staircases that resounded with mirth. The art of the best sculptors from age to age was shown in the bronzes which carried here the elegant or sumptuous vases brought from China, there the candelabra with thousands of lights. Every country had contributed something to the gorgeous display of the walls and the ceilings. To-day the walls, despoiled of their rich hangings, the ceilings bare and gloomy, seemed silently to mourn. Gone were the turkey carpets, the lustres festooned with flowers, the statues, the pictures, the mirth, and the money, that great vehicle of mirth! Venice, that London of the Middle Ages, was falling to pieces stone by stone, man by man. The dank vegetation on the base of the palace, which swayed to and fro with the motion of the water, seemed in the eyes of a prince like a black fringe which nature had attached as a sign of death. Finally, a great English poet had come there to feed upon Venice, like a crow on a dead carcass, to croak over it in lyric poetry, that first and last language of societies, the stanzas of a *De Profundis*. English poetry thrown in the teeth of a city that had given birth to Italian poetry! . . . . Poor Venice!"

The musings of Prince Emilio represent the more shaded side of what gives to Venice in modern eyes so much of its enduring charm. In its great days it must have been one of the most attractive, perhaps the most attractive, city of the modern world. Its peculiar situation as the link between the West and the East,—the "exhaustless East," as Byron calls it, and as it really must have seemed then,—and its no less peculiar picturesqueness of site and surroundings, must have given a strange and varied interest to Venice, in the high tide of its gay existence, and surrounded its gaiety even then with a kind of rich and poetic charm. But it may be doubted whether the interest of the place is not far deeper now than it ever was in the great days of the Republic. As its outward aspect derives the more beauty from the ever present reflections and shifting lights of the water from which it rises, so its poetic interest in decay is rendered all the stronger from the reflection of the memories of its gorgeous past. As we turn to the first page of the book which is before us,* we find that we have unwittingly dropped into almost the very phrase of the author. Venice, he says, adds to the historic interest of its past "l'attrait de l'art, la curiosité de la situation, la singularité de son origine, le prestige qu'un passé plein de grandeur donne fatalement à un monde resté tout entier debout, mais qui semble avoir perdu son âme et sa vie, et ne présenter plus que le majestueux décor d'un immense théâtre dont la scène est restée vide." Even under the bright sun which glares and sparkles upon everything, the city of St. Mark keeps a sort of elegiac sadness of aspect. A residence at Venice, he thinks, will hardly harmonise with the mind of any one who is enamoured of the bright side of life and the stir of society; but to those whom circumstances or temper have led to a different turn of mind, Venice has an inexplicable charm, in the clearness of its atmosphere, the silvery light which plays over it, the steel-like glitter of the lagunes, the softness of the Venetian speech, the nights as clear as the days, "et le je ne sais quoi qui chante au cœur et dans le ciel et sur les eaux."

M. Charles Yriarte, who writes thus sympathetically about modern Venice, is known already in connexion with the subject as the author of a charming work, half history, half fiction, called "La Vie d'un Patricien de Venise," in which he has given a sketch of the social life of the city in its great days. He now comes before us as the illustrator of the history of the place rather on its artistic side; for though his work includes "Histoire," illustration is its main object, and his history is not much more than a summing up, with occasional more detailed accounts of special crises in the narrative. The book must be regarded as illustrative; as the narrative proceeds, we have engravings and woodcuts which bring before us the places and scenes mentioned, from the portrait of Dandolo, and the scene of the death of Marino Faliero, to the likeness of Daniel Manin, president of the Republic of Venice in 1848, and "the last great political name in its history"; the spectacles and frock-coat of this modern Doge contrasting oddly with our associations with the past.

Whether it is possible to say anything new about Venice from an artistic point of view, our readers will perhaps doubt. That M. Yriarte has some qualifications for doing this,—that he has a keen eye for generalising artistic characteristics,—is evident from his remark in the opening chapter as to the abnormal character of things Venetian. Not only is the order of things apparently reversed or confused in the scenic effect of the place, so that "one knows not whether lagune is sky, or whether sky is water," but even "things the most real and solid are paradoxical; in the architecture the solids are carried by the voids, and the exquisite embroidery of Mediæval carving supports halls and palaces of massive walling. All the principles of art are violated, and yet from this there results an art peculiar and charming, which Venice has stolen from the East while putting at the same time her own stamp and impress upon it."

The chapter on the architecture of Venice naturally begins with Torcello, which is rather inadequately illustrated, considering its unique interest, and the author proceeds then to discuss St. Mark's, and the extent and degree of its Oriental connexion in regard to style. He notices some objections to the theory that some of the work was done by Byzantine hands, but concludes, as is inevitable in the face of many of the details of the church, that Byzantine taste, at least, if not Byzantine workmen, must have largely influenced the work.

The crypt of St. Mark, of which we reproduce the illustration, is, we believe, not often visited. It is more distinctly Eastern than any other part of the building, and dates, according to M. Yriarte, from the ninth century, and its close connexion with Byzantine architecture is obvious in the style of the capitals, though the vaulting approaches more to Gothic character. The commencement of the work is attributed to the Doge Partecipazio, in 829, and he left directions to his son Giovanni, who succeeded him in his office, to place in the crypt the remains of St. Mark, brought about that time from Constantinople by Bono, tribune of Malamocco, and by Rustico da Torcello. As the crypt is below the level of the lagune, it became gradually inundated with water, and for a long period all celebration of service in it was consequently abandoned. In 1563 there was an attempt at restoration, which ended in nothing; and in 1604 it was determined to raise the images of the saints that adorned the altar which were then under water, but which were successfully recovered, and deposited in the treasury of the church.

Up to 1800 all attempt at restoration was abandoned, but towards that time, in making some repairs to the high altar of the church, it was found necessary to strengthen the substructure on which it rested, and it was in doing this that the crescent of the patron saint of Venice was discovered (in 1811). Up to 1866 the floor of the crypt was still under water, but at length the engineers, MM. Meduna and Milesi,

* Venise: Histoire, Arts, Industrie, La Ville, La Vie. Par Charles Yriarte. Paris: Rothschild.

contrived successfully to render the crypt watertight by a specially-prepared cement. They opened means of ventilation to keep the air circulating in the crypt, and it is now easily accessible, and is one of the most interesting of ancient remains to be seen in Venice.*

Of the smaller illustrations of details of early Venetian architecture given in the book, we select three. The first is the piece of sculpture representing two peacocks drinking from a font, which is found in the wall



of a palace on the Grand Canal. The connexion of Venice with the East is again significantly indicated by this emblematic sculpture, which is found in nearly the same form at St. Sophia, at the church of the Theotocos, and also at St. Vitale, at Ravenna, an edifice always recognised as distinctly Byzantine in its style and detail. The accompanying illustration of one of the capitals from Torcello, that centre of so much



architectural history, is a remarkable and unusual instance of the blending of Classic and Gothic feeling in detail; the form of the Classic acanthus-leaf being still preserved, but used with something of the freedom and natural growth which characterise Gothic foliage. The other capital is a very elegant and beautiful example of a Romanesque type from the building called



the House of the Apostles; a type still retaining clear traces of its Classic origin, and suggesting a mode of treatment and outline which might even now be further developed into something new and original, as well as suitable, in the design of capitals.

The Gothic period of civil architecture in Venice is well illustrated. Some few of the illustrations have appeared in previous years in our pages; all refer to buildings well known. Renaissance architecture at Venice forms the subject of a separate chapter, which, we may observe, is headed by an engraving of Mr. Wallis's picture of a sailor showing an antique to two Venetian senators, which was exhibited at the Royal Academy under the title "From Naxos," and is given here without, as far as we notice, any recognition of the artist or allusion to his name. The author observes that the very same position between east and west, which led to the adoption of an Oriental taste in the Gothic work of Venice, also made that city, the centre of so much foreign travel and foreign intercourse, quick to take up the newly-awakened influence in classical literature and art. And at the same time it may be said that no city, not even Florence, turned to account the new motives supplied by Classic architecture in so romantic and picturesque a manner. The library of St. Mark has, it is true, something of the staid and formal character which belongs more especially to the forms of the Italian Renaissance practised at Florence and Rome, and, elegant as it is, is a somewhat weak building æsthetically, as it turned out to be practically. But in such a building as the Spinelli Palace we see the most charming and effective combination of Classic refinement with Gothic playfulness and variety, illustrated again in the Palazzo Dario and the Casa Giudetti. No form of window has been more copied, and seems more constantly satisfactory to the eye and the judgment, than that in which, in the Spinelli Palace, the idea of Gothic tracery was carried out with a Classic treatment; and one may well be disposed to ask, why the mere compliment of bare imitation has been paid to this form of window design; why no one has tried to work out from this hint Classic traceried windows with the same elaboration and richness which characterises Gothic tracery. There is, in fact, quite a mine of hints for original treatment, not yet developed or worked out, in this quasi-Gothic Renaissance of Venice, the charm of which even constant repetition has hardly availed to obliterate, and which might well furnish the ground-work and suggestion for a great deal of novel design, eminently suited both to the requirements and climate of the modern cities of northern and western Europe.

Under the chapter on sculpture comes a good deal that might, from our point of view, be put under the head of architecture; architectural decorative design, at least. M. Yriarte draws attention to the special form which sculpture so largely assumes in Venice, that of mural monuments in churches. As a typical example of these he refers to Leopardi's tomb of the Doge Vendramini; and we give his illustration of this singularly elegant and appropriate design, and may append the author's remarks thereupon.*

"The sepulchral monument of the Doge Vendramini, in the church of SS. Giovanni e Paolo, opens admirably the series of works of this kind, which we may class as belonging to the Renaissance. The work is that of Leopardi, who lived towards the close of the fifteenth century, and was already at that time in the full plenitude of his talent. This same Leopardi was a worker in metal (*fondeur*); it is to him that we owe the admirable bases of the masts which rise before the portal of St. Mark's, and carry the standards of the Republic. A distinctive element in the Renaissance period is this multiplicity of talent among the artists; this one was professedly a metal-founder, since it is to him that we owe the execution of the celebrated statue of Colleoni in the Piazza Giovanni e Paolo, designed by the famous Andrea Verocchio; nevertheless, though a practical workman, he showed himself great enough as an artist to be able to claim, both as his composition and execution, the famous candelabra of the Academy; the tomb of Vendramini, which is no mere sepulchre, but a monument complete in all its conception and distribution; the direction of the construction of S. Justinia at Padua; and a considerable number of works demanding at once the knowledge of the architect, sculptor, and painter, without taking into account his practical acquirements. At the same time that he cast the Colleoni horse, he sculptured the exquisite pedestal upon which it stands, proud and fiery; and neither the Lombardi, nor Bergamesco, nor Antonio Rizzo, could go further than he in science of arrangement, taste in composition, certainty of execution, and profound knowledge of modelling."

"This funeral monument of the Doge Vendramini is one of the most pure in taste, perhaps, of all Venetian works of art; it has all the nobleness and grace of the antique, with a restraint, a reserve, in the midst of variety, which is perhaps superior to Greek art, presumptuous as such a judgment may appear. The science of proportion is here at its height, and it is impossible, among the pompous and disordered compositions of the eighteenth century, and the dry productions of the previous centuries, to restrain our admiration for the great period when a metal-worker of genius was capable of designing such a *chef d'œuvre*, of putting it into execution, and, working as a sculptor on his own architectural composition, of adorning it with such a number of figures, allegorical statues, portraits of patricians, theological virtues, images of the Virgin and Saints, chimeras and symbols which go so well with the monument, that one feels at once that one sole thought and one inspiration of genius have created this work, carried into execution by one sole hand."

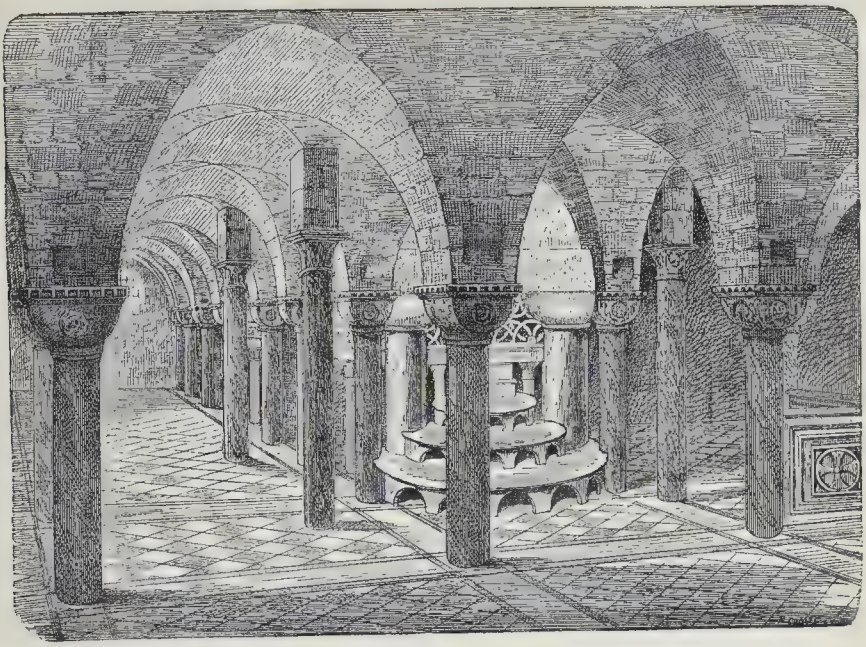
Perhaps M. Yriarte's criticism, or rather applause, is a trifle too enthusiastic; but of the great merit of the monument in regard to general conception, and the spirit and variety of the details, there can be no question; and the fact as to the *status* and occupation of the artist is, as he says, highly significant of the healthy state of art at the period. In a subsequent page the author draws a contrast between such a monument as this and the more pompous and pretentious monumental works of the same kind in the decadence of the Renaissance:—"Ces immenses *machines*, dont le monument du Pesaro des Frari est le plus curieux type, touchent au délire d'imagination. L'orgueil humain n'a plus de borne, il lui faut des mausolées Babyloniens." The specimen to which he refers, however, is a modest work of art, so far as idea and conception are concerned, compared with some of the "immense machines" which are to be found in our own Abbey, which, nevertheless, are not without a certain historical interest.

The separate chapters devoted to the account of the Lombardi, Vittoria, and Leopardi are among the most interesting portions of the letter-press, and constitute a good summing-up, in a not too diffuse form, of the main facts concerning the lives and works of artists with whom England (and perhaps France) is less familiar than with some names of no greater real eminence. In the chapter on Leopardi some particulars about the celebrated chieftain Colleoni, whose statue he cast, are illustrated by a facsimile of the portrait which forms the frontispiece to his life, by Pietro Spino, and which is by far the best and most characteristic of all the illustrations in the book. It is a truly remarkable head, with an almost savage expression of force and determination. In general the illustrations of the smaller details are better than the views. Those given of some of the well-known palaces on the canal, though effective in general treatment and free in style, are too sketchy and uncertain in regard to the architectural detail. The book is not yet completed, what we have been noticing being, we believe, about half of the whole issue contemplated. It will form, when complete, a very comprehensive survey of the history and the character of Venice as a city, and a very convenient collection of illustrations of Venetian art and architecture, whether as a memorandum of past visits or a hint for future ones. The large number of handsome and expensive works of this class which are got up in France, and which, we are assured, find a large sale and prove a profitable outlay, is certainly remarkable. Such a work would be an almost certain loss in this country, or would only be published by subscription.

An Important Industry Threatened.—According to a Newcastle paper, the craft of railway spring-makers is threatened with a very serious competition. A new circular spring has been invented; it is made entirely by machinery, and is said to be free from many defects of the present hand-made springs. The new springs are made of solid round bars of steel, highly polished, cut and bent into elliptical forms, and bound together in sets, to form springs. Four or five bars form the top and bottom of each spring; and it is intended as a further improvement to have a spiral spring, also machine-made, to be placed at the centre between the top and bottom set of springs. This would act as a duplicate; in case of accident it would support the entire weight of the carriage.

* A detailed account of, and criticism on, the architecture of the main church of St. Mark will be found in the *Builder*, vol. xxvii., pp. 37 and 77.

* See p. 238.



CRYPT AT ST. MARK'S, VENICE.

PROFESSOR E. M. BARRY ON ARCHITECTURE.*

DOMESTIC ARCHITECTURE, TWELFTH CENTURY.

Last session, I asked you to give some consideration to the domestic architecture of the ancients, to their hearths and homes, and to the details of their every-day life. Fortunately for us, there exist abundant materials for the study of this question in the ruins of Pompeii and Herculaneum. We saw there how the Romans followed Greek precedents, although with important differences introduced by themselves, both in ornamentation and construction; Pompeii being indeed almost a Grecian city, having been originally founded by colonists from Greece. This peculiar circumstance does not, however, wholly account for the prevalence of Greek traditions to be seen in the ruined cities, for the plan of the houses there adopted was common with the Romans in every part of their extended empire, and was not without influence, as we may hereafter have occasion to recognise, in the far-away land of the then savage Britons.

When we come upon the traces of Roman work in these islands, we find that the proud conquerors of the world, in crossing the seas, and changing their sky, had not lost that spirit of allegiance to the customs of Imperial Rome which distinguished all their life, whether public or private. Here, at the extremity of their vast organisation, the pulse may have beaten feebly, but it was in unison, nevertheless, with the stronger impulses of Rome itself. We seem, indeed, while noting the slender architectural remains of Roman work, now and again discovered amongst us, to witness the last expiring effects of that wonderful civilisation which could do much, but not all; which could inculcate the virtues of the patriot and the citizen, but which needed the vivifying influence of a purer faith to bring out the duty of man to man, with all its far-reaching consequences, social, political, and architectural.

The later Roman did not adopt forms from his conquered enemies. He rather imposed his own upon them; and this, not only in regard to details, but also as to principles of design. He followed Greece indeed, but he added ideas of his own, and had imperfect sympathy with the beautiful execution, and the fastidious delicacy of refinement in which the Greek architects delighted. With the semicircular arch came the frequent use of curved and circular forms in the plans and sections of buildings. Thus, the Basilicas, as you are aware, had frequently semicircular ends, or apses, which proved the forerunners of the choirs and chancels in Christian churches. In the splendid ruin at Rome, known as the Temple of Peace, you further see in its curved and vaulted roofs the application of the arch to the transverse sections of such buildings. The perfection of the application of this principle was, of course, the dome, the crowning glory of Classic architecture. The Romans, while starting from Greek art, added to its forms, changed its decoration, and which, gaining freedom, lost in purity of taste. The use of the arch enabled them to exercise greater boldness in construction, and the massive ruins of their baths, aqueducts, and public works, have justly excited the admiration of succeeding ages.

The decay of Roman architecture was sudden and complete; and when we take leave of Pompeii, and of the tawdry finery of the debased and falling empire, we come upon a period of pause and interregnum, out of which issued the glories of Mediæval art.

In prosecuting our inquiries into Mediæval art, and comparing it with its Roman precursor, it must be remembered that in the case of Pompeii and other ruins, we have examples of a far older civilisation than that of the twelfth century, which we are about to discuss. Pompeii was destroyed as early as A.D. 79, and it is interesting to trace in its remains principles of design and arrangement which we shall come upon elsewhere in our investigations of the architectural works of the Goths. Thus, the atrium, the distinguishing feature of the Roman house, foreshadowed, in some respects, the hall of northern climes. Here, as in a public place, the Roman Patrician received his dependents, and transacted business. Around it were grouped the cubicula, or separate bedrooms the private apartments, and the women's chambers, an arrangement far in advance of the domestic provisions of the Saxons and Normans in this country. Although, in the later days of the Roman Empire, corruption of manners had led to profusion and extravagance, the Roman gentleman had, at least, inherited maxims of moderation and frugality, and his domestic arrangements give no indication of the rough and profuse hospitality which prevailed in Mediæval times. The atrium might serve many of the same purposes as a Gothic hall, but the modest dining-room of a Roman house, with its triclinia for a few friends, or members of the family, bore no resemblance to the Gothic banqueting-room, with its roaring fire, its wassail bowls, and its miscellaneous assemblage of roysterers. He had, moreover, no reason to surround himself with walls and battlements, or to keep bands of armed retainers in his train. A free citizen of a free country, he reaped the advantages of a settled Government and well-ordered system of public affairs, in which it was his right to take part.

All the circumstances of the life of the day have left their effects on the architecture of Pompeii, as I attempted to describe to you last year. We saw then how much the Romans lived in public, in their temples, in the Forum, the basilicas, the theatres, and the public baths, noting, at the same time, the spirit of cruelty which lurked beneath the varnished surface of Latin civilisation. This was the spirit which delighted in the sufferings of gladiators, and stained the arena of many an amphitheatre with the blood of Christian martyrs. It was one of the many signs that the olden glories of Rome were gone, and that the time was come for a new and purer system. This was arrived at, as you know, through bloodshed and disaster. The barbarians who conquered the great empire of the world were no gentle reformers, but they nevertheless laid the foundations of mighty and beneficent changes, the consequences of which are even now scarcely exhausted. I only claim your attention, now, for a small part of these changes, as they have affected architecture; but I purpose to ask you to continue the inquiry which I initiated last year, into the domestic architecture of our ancestors.

Leaving, therefore, the works of the Greeks and Romans, we shall turn our attention to our own country, and endeavour to trace the various steps which were taken by our forefathers to provide themselves with handsome and comfortable dwellings. This inquiry is not unattended

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* Second lecture: delivered at the Royal Academy on Monday, March 5th.

with difficulty. Mr. Parker, in his admirable works on domestic architecture, has brought together a mass of valuable information, of which I shall gladly avail myself; but we cannot expect to find as many materials for our present purpose as those which exist so richly around us, in connexion with ecclesiastical architecture. This branch of the subject has been so fully discussed of late years that it may, perhaps, be desirable to leave it for awhile, and turn our attention to the scarcely less interesting questions which I have indicated. The study of domestic architecture has, indeed, as suggested in my introductory remarks, a special interest in these days, when the spread of manufactures has led to the aggregation of multitudes in our great towns and hives of industry. We recognise, as one of the chief problems of our time, the urgent necessity of providing healthy homes for the people. Can nothing be done to bring to bear upon these the light of beauty and art? This is the difficulty with which artists have to contend, and though we cannot get from our predecessors any absolute instruction on the subject, we may, at least, endeavour to profit by their experience; to study the principles on which they worked; and to consider whether they may not serve as lights to our path. Not that we are to suppose that they were always successful any more than ourselves. Their difficulties, moreover, were not ours, and we utterly misread the lessons of history if we do not bring to bear upon them the freedom from prejudice, the patience, and the common sense which, with the stores of information now at our command, we in the nineteenth century, are bound to cultivate.

We find at the outset of our investigation that the Romans certainly did not bring these qualities to bear on their domestic architecture in this country; for, as far as we can tell, the plans of their dwellings here did not materially differ from those in Italy. These, again, were almost copied, as we have seen, from Greek plans, suitable only for a hot and dry climate. Even in Italy such an imitation must have led to inconveniences, and it is difficult to imagine anything more uncomfortable, in a northern climate, than a Greco-Roman house, transplanted from the banks of the Ilyssus or the Tiber. Take, for example, that important part of it, the atrium, to which I have just referred. This was open, as a rule, though often temporarily protected, and sometimes, but rarely, crowned with a permanent roof. Necessity must have prescribed the latter arrangement for dwellings in this country; but, in other respects, the distribution of parts, which the Romans had reduced to a system, was the same here as in other parts of their empire. The atrium, when covered in, and lighted by a clearstory, or by windows, may be regarded as the type of the hall, which became a feature in all considerable buildings in Mediæval times. The Gothic architects at first adopted the simplicity of construction in their works generally, which was a characteristic of Roman work. With a freer run of the arch, came, later on, a boldness of construction which the Romans never approached, a freedom, which was, indeed, sometimes indulged in at the cost of solidity. Wherever we find traces of Roman modes of building, in this country, they are of a substantial character. The mortar, used very plentifully, and often combined with pebbles and small bricks as concrete, deserves special notice, as being the forerunner of a system of building now much used by engineers in those vast works which are entrusted to them, which may rival the colossal achievements of the Romans themselves. The qualities of concrete, the limits of its useful application for building houses, and the right method of treating it architecturally, are questions which the young architect will do well to study. The Romans obviously had great confidence in their mortar and concrete; they did not practise the art of moulding brickwork, and employed bricks, or rather tiles, but seldom in any great architectural work. The Roman brick, as we term it, is more like a paving tile than a brick, and is not more than an inch, or an inch and a half, in thickness. You will find it in most Roman works, and in a great many Anglo-Saxon and Norman examples erected during the eleventh and twelfth centuries. The materials used were much the same as at present, with the exception, of course, of what I may call the engineering development of iron, which it has been reserved for us to witness. Apart from this addition, the science of building has scarcely advanced from the days of the Ptolemies, and the modern builders have little to boast of.

We find in Saxon and Norman times masonry, plasterwork, timber, iron, lead, bricks, and, though sparingly, glass. Some of these materials were used in their simplest forms, but by a process of gradual improvement they each ultimately became an example of artistic progress, which, perhaps, culminated in the thirteenth century. The more solid constructions of masonry were at first reserved for important public works, such as castles and minsters, as, for example, Rochester Castle and St. Alban's Abbey. After the departure of the Romans, the Saxon invaders of Britain would naturally make the best they could of the buildings of which they became the possessors. With some modifications, therefore, the Roman houses, which then existed, became their dwellings. As repairs were needed, changes arose, the old houses would be altered or pulled down, and their more solid materials used elsewhere, a circumstance which often explains the presence of what we call Roman materials in buildings of a later date.

At a time when roads scarcely existed, the carriage of heavy articles must have been very costly and difficult, and our forefathers had, therefore, very good reasons for treating the Roman works about them as quarries. It was thus that the original structure of the church and abbey of St. Alban was built from the remains of the ancient city of Verulamium. The private houses were less fortunate. For them the expense of durable materials was too great, and the people had to live in huts of wood or mud, covered with reeds, thatch, or shingle. In Saxon days there was little comfort or safety in single dwellings, and the common people were the "hearth-men" of their lords, or thanes, around whom they clustered, and with whom they lived. The thane lived in a semi-patriarchal state, and not only shared his table with his dependents, but even his sleeping-apartment. The hall, from its importance in the dwelling, gave the name to the whole structure. It was the direct successor of the covered Roman atrium, and, like it, was the central feature of the house. In it the lord and his dependents took their meals by day and their sleep by night. The master had, indeed, sometimes an apartment of his own, but even this was often shared by him with his principal retainers. Chimneys there were none, and when there was a fire it was lighted in the middle of the hall, and the smoke was left to find its way through a hole in the roof, or by other openings as best it could.

It was by slow degrees that these simple arrangements were improved. Houses were used for protection from the weather,—not as *homes* in anything like our sense of the word. They were the results of the simple requirements of a rough and hardy population, living much out of doors, and given to war and sports.

At the time of the conquest of Britain by the Romans, there is no reason to doubt that the latter found in these islands a race of active and vigorous people, well inured to hardship, and skilled in all warlike exercises. Some have thought that the introduction by the conquerors of luxurious manners and habits tended to enervate the Britons, and so to incapacitate them from maintaining their freedom in their subsequent struggles with other invaders. There is little doubt, however, that a hearty taste for field sports and manly pursuits has always prevailed in this country. Rowing, swimming, archery, hunting, wrestling, and such like pastimes, were common, and we have recorded, in one case, the following boast of a Saxon thane, named Kolson. "I know," he says, "how to play at chess; I can engrave Runic letters; I am expert at my book; I know how to handle the tools of the smith; I can traverse the snow in skates of wood; I excel in shooting with the bow; I use the oar with facility; I can sing to the harp; and I compose verses." It is not to be supposed, indeed, that such a list of accomplishments was common; but such a chronicle may serve to indicate to us what was the ideal aimed at in the education of a Saxon nobleman. His followers would naturally emulate his prowess in the sports of the field, though they would have no chance of imitating him in his knowledge of letters and other softer accomplishments.

From their simple mode of life, the Saxons did not expect elaborate provision for their comforts. They gathered around their lords, and were easily contented with food and shelter. The houses of the time were, therefore, of corresponding simplicity. From the perishable nature of their construction few remains are left by wh we can determine their architectural charact We can suppose that some of the greater than may have desired to display their importance decoration, the woodwork may, therefore, ha been occasionally carved with representations the animals, fishes, and reptiles with whi they were familiar from the sports of the fie and these may also have been painted and gi with a certain rude magnificence. Spoils fr enemies would also grace the "hall," and e courage the armed retinue of the lord.

Gradually, as time went on, the hall wou become more architectural, wooden posts ga way to walls of stone, and the thatched coveri to more solid wooden roofs, covered with shing stones, or tiles. In the more important buildin stone columns took the place of wooden pos and semicircular arches carried the roof abov adding both to convenience and to architectur effect. The capitals and bases of the colum often indicated their Roman parentage, by a rou imitation of ancient forms. Windows becan common, though glass was as yet too great luxury for general use. The openings we formed by stones placed as lintels, and al angle-wise; were ultimately arched in, and times carved and frequently decorated with t zig-zag ornament, which now came into us Iron work was scanty, but some beautiful sp cimens of hinges, locks, &c., show us that t smiths of those days possessed both skill an taste. This was perhaps only natural among warlike people, whose first cares would directed to the manufacture, and after that, the decoration of their arms.

The Saxon houses followed Roman precedent and consisted, for the most part, of a ground flo only. There may have been exceptions in t one case as in the other. That the Romans use an upper story we know, especially in cities but the arrangement was unusual, and it was n until the twelfth century that it became commo in English houses. We then find the building planned of a rectangular form, longer one wa than the other, and divided into two separat stories by a floor. The upper story was the hal and the room under it was vaulted, and ap proached by a different entrance. The stairs t the upper story were, in early example arranged in flights outside the building. After wards the stairs were covered, and some o you may know the beautiful staircase at Can terbury of this desorption, Attached to th hall, and behind the dais, was the principa chamber, which was called "solar," or "sollere," a name supposed to be derived from "sola rium," the word used by the Romans for th upper story or terrace, where the inmates wen to enjoy the sun. It was only by slow and gradual steps that glass began to be used fo windows, which were at first filled with canvas or some such material, or closed only with shutters. The openings were small, and often mere slits in the wall. Inside they were splayed widely towards the apartment. Wooden shutters internal and external, were fastened to the walls by iron hooks. In some instances they were hinged at the top of the window, and opened outwards, being kept open, when required, by props. The interior of the window was finished so as to form a stone seat; and when the wall was thick enough, double seats were contrived transversely, as is shown by one of the diagrams before you in the case of Aydon Castle.

In passing from Saxon to Norman work we find a gradual transition. The general distribution of the plan remained the same, while new and improved details took the place of more primitive constructions. The Normans may be credited with more fastidious tendencies than the conquered Saxons, but it was not at first that their influence became visible. The chief care of the conquerors was to secure their footing, and it was to military, rather than to domestic architecture, that they first devoted their energies. The Saxons had but few fortifications, an embattled wall surrounding their homesteads being the usual mode of exceptional protection of this nation. The Normans, however, soon indicated the nature of their tenure of the country by the erection of strong fortresses, with towers, walls, and gateways, recalling the structures of their own country, rich in all the resources of military architecture. In these castles nothing was neglected to give them strength, so as to enable them to stand a siege, whether they were attacked by the subject population or by rival lords or rebels.

In some of the later examples are found chimneys of good design, and even mangers for

ne horses, massively constructed in stone. As egarded houses, however, of small importance, ne Normans followed the custom of the country, nd building in stone was a rare and costly xception to the general rule. Their style, hich is familiar to most of you, is based on the omanesque, an imitation, more or less, of the orms of old Roman art. Their work may be oughly described as that of the twelfth cen-ry, during which the principal Norman build-gs in this country were executed. If the emains of their domestic architecture are anty, we must remember that the latter an only flourish in times of tranquillity, and ublic order was at this time far from ecured. The house of the great lord was, in very sense of the word, his castle. Within its alls, and around them, dwelt a motley host of rmed retainers, scorning commerce and the arts f peace. The tillers of the soil lived in huts, nd if some few Saxon thanes kept up a sort of dependence, it was but fitful and rare, and the orman influence retained throughout the ountry its hardly-won predominance. At indsor, Rochester, Norwich, Pevensey, and any other places, you may find specimens of e work of this time, illustrating the military chitecture of the Normans.

In respect of domestic work, we find the ll continuing to dominate the plan. It was e general living-room as before, and the occu-nts often slept in it. Adjacent chambers gave, important cases, the additional convenience of parate sleeping-apartments. The Latin of the riod gave the title of "aula" to the great om, and the palace of the sovereign was known "aula regis." By the French, the room was lled "salle," and the Romans naturally ought this designation with them. From ese names, the transition is easy to our own ord "hall," which in time came to be applied t only to the principal room, but to the house elf of an English nobleman or gentleman. As u are aware, it still remains the rule in many rts of the country, as, for instance, in Lanca-ire and Cheshire, where every country-house, of y pretensions to importance, is termed a "hall." The halls of later times were often of great agnificence, and were sometimes on a grand ale, as at Westminster. The roof was fre-ently supported by posts of wood, or by lumns and arches of stone. In certain cases, ese supports were in the centre, and supported e ridge of the roof. More frequently, how-er, they were placed at the side, adding an le or aisles to the great room. The kitchen as in a separate building, often detached. The linary arrangements were not elaborate, and re often performed in the open air. This will pear a natural arrangement for the rough okery, which piqued itself on roasting oxen hole, and indulged in similar achievements, markable rather for magnitude than delicacy. courtyard separated the kitchen from the hall. round it were grouped the subsidiary apart-nts, for larder, buttery, scullery, &c., and the nner was taken across to the hall, through the en air. In some buildings the kitchen and ttery adjoined the hall, very much as we now e them in the college halls of Oxford and mbridge. In such cases there was often a stibule, or entrance corridor, cut off from the ll by a screen, according to the arrangement hich is still familiar to us in those examples. e kitchen and buttery would thus open into e vestibule, and the inconvenience of carrying e dinner through the open air was avoided.

The plans above described were, as far as we ow, the usual arrangements of the domestic ildings of the Normans. The hall of the vereign differed in magnitude, rather than in neral design, from the manor-house of his rds and vassals. Some halls were, of course, re magnificent in adornment than others, but seem to have had the same essential features, d the type, thus adopted, has influenced the ans of our English houses during the succeed-g centuries. The great hall is now, indeed, the xury of the rich, in modern domestic buildings, t this arises from the love of privacy which s distinguished later times, and from the con-quent preference of comfort and convenience, the ruder, if more stately, arrangements of cient days.

Before proceeding to point out to you any mains of Norman dwellings, it may be well to vote a short time to point out to those of u who are not architects some of the aracteristic details of the architecture of e period. In so doing, it is not necessary to nfine ourselves to secular examples, for the features which illustrate the style were, as a matter of course, common to all buildings erected at the time. The distinction between the architecture used for ecclesiastical, and that employed for domestic purposes, is altogether modern. In Mediæval times, the workmen knew but one style of design, and used it for all purposes. The building to be erected might be a palace, or a barn; a church, a castle, or a dwelling-house. It might be plain or decorated; dignified or severe; but the style was the same. As a consequence, we are able to recognise the work of the time, by almost any relics that are left to us.

We have seen that the Normans followed the traditions of simplicity left to them by the Saxons. Their works were, at first, indeed, undecorated, even to baldness; but they added gradually an amount of decoration which renders their architecture (as, for example, various Norman doorways) often ornamental in the highest degree. The mouldings were at first few, simple, and such as could be easily worked. The columns were of great size when they were used to support arches, although the attached shafts to doorways, windows, and arcades were of moderate dimensions. The arches were semicircular, of plain mouldings, or even with members plain on plan, with square angles. The doorways were often deeply recessed, and very effective, with attached shafts, and bold mouldings, sometimes highly enriched. In the ornaments of the latter, the Romanesque influence may be clearly traced.

The same remark applies to the arrangement of the windows when anything more ambitious than a single light was attempted. In such cases, the mullion and tracery of future days were prefigured by the arrangement of a double arch springing from a central shaft, with capital and base of its own, just as we see it in the Romanesque and Gothic architecture of Italy. In the latter, the columns are frequently twisted, and sometimes decorated with shallow flutings. The same method of ornamentation is found in Norman work, in which the large columns often have their surface ornamented with flutings of a similar character, in zigzag or spiral lines. The zigzag ornaments of various kinds in which the Norman architects delighted, may also be traced to a similar source. These zigzag enrichments are often of great beauty, and sometimes of great complexity, being so arranged as to interlace with one another in a very complicated manner, as may be seen, for example, in the archway on College-green, at Bristol.

The large columns, from being circular or polygonal on plan, became gradually clustered, with more or less elaboration, thus paving the way for one of the most graceful features of the succeeding styles of Gothic art. There is, I think, a special beauty, however, in the plain circular columns of early days. It is essential in a column that it should not only be adequate in fact, but also obviously sufficient for the due performance of its duty, which is to support a weight. This office was well discharged by the plain and sturdy Norman columns, and it may be doubted if the refinements of later days, with their clusters of numerous vertical shafts, sometimes with carved mouldings between them, did not involve some compromise of principle.

The early Norman arches were semicircular, sometimes a little stilted, but never pointed, except when they intersected, and until the transition to Early English had begun. They were of moderate dimensions, and resting, as they did, on massive walls and pillars, were not calculated to exercise that destructive thrust upon the building which so often deranged the plans of succeeding architects.

Norman buildings have, however, suffered from defective construction of the apparently solid walls, which are often built of rubble, and only cased with stone. In some cases also, as at Peterborough Cathedral, the abutments have been insufficient, and the thrust of the arches has proved too great for portions of the walls. In the case of abutments, the science of building was not far advanced, and the Norman architects relied little on buttresses, which were broad, and of small projection, often resembling pilasters rather than buttresses, and here recalling once more the Italian type of work. The boldly-projecting buttress, with its wealth of decorative construction of arch and pinnacle, was not as yet introduced, but turrets were not unusual, and they terminated frequently with high pyramidal roofs, thus indicating the development of the spire in the future.

Vaulted roofs were only occasionally employed, but at Canterbury we have a good specimen of a late Norman groining, carried out by a Frenchman, William of Sens, who was, of course, well acquainted with the more frequent arched roofs of his own country. A beautiful feature in Norman buildings was introduced by the construction of arcades, sometimes complete, but often applied to the walls, so as to form a surface decoration. We have a good example of the perfect arcade in the staircase at Canterbury, to which reference has already been made, and numerous instances exist of the wall arcades, which sometimes served also as shallow niches. Corbel courses, with intersecting arches, are often to be met with, and are once more a feature in common with Romanesque work.

As the style advanced, the decorations increased, and gave richness of effect to the portions of the building in which they were used. This richness was enhanced by the contrast with the simplicity and general plainness which still characterised the great masses of the structures built by the Normans. The large plain spaces of the walls were enriched by surface decoration, consisting of diapers and interlaced patterns of much beauty, and round panels or bosses were employed, to add a further ornament in the jambs of recesses and the soffits of arches. The earliest designs of rough zig-zags, with diagonal and rectangular ornaments, were such as could be executed by masons with little skill, and by the use of the axe. The later work would tax the chisel of the advanced workman. The columns had capitals of a peculiar character, with a square abacus. The section of this member was almost uniform, and is composed of a large hollow, with a broad fillet above it. Between the fillet and the hollow there is often a little sunk channel, which is a common sign of Norman work, and gives to this apparently very simple moulding a certain piquancy of effect. The rough and early ornament was generally shallow, but afterwards we find details more elaborate, and carved with great effect of deep undercutting. You are, doubtless, familiar with the ordinary type of Norman capitals, which has been called scolloped, from its resemblance to a scollop-shell; but this is only one form of those commonly used. In others, we find, again, traces of the origin of the style in the obvious imitation, in a manner more or less skilful, according to circumstances, of the volute in the Ionic, and succeeding styles of Classical architecture. This feature is very clearly seen in the very beautiful capitals in the choir of Canterbury Cathedral, and here may be found a further reminiscence of the Roman capital, in the cutting off of the angles of the abacus. These capitals are, however, of so late a style as to be properly called Transitional, rather than Norman. They are among the richest examples of this important feature, and contrast greatly with the earliest and simplest form, known as the cushion capital, which is developed from a square block, by cutting and rounding off its lower corners.

The base mouldings were plain and severe. Sometimes an imitation of the Tuscan and Attic bases of Norman times is evident. They are usually placed on a plinth, or sub-base, which serves a constructional use, and adds to the apparent solidity of the columns or piers. The latter often supported wooden roofs, for Norman vaults and groinings are not found until the style was far advanced. The barrel vault was naturally the first form used. It came naturally from the employment of the arch in windows and doorways, which, with their deep recesses, are, in fact, specimens themselves of barrel vaulting. The addition of flat-arched ribs soon followed, and then a plain mode of groining without ribs. Ultimately the latter feature was introduced, and from diagonal ribs the step was not long or difficult to the employment of the pointed arch.

Arched vaults, however, of great span are not found in Early Norman work, and where the width was considerable a wooden roof, and ceiling were employed, as at Peterborough Cathedral. Such ceilings were intended to be painted, and at Peterborough we see the original design carefully restored. However interesting such decoration may be in an archæological sense, it must be confessed that it is very inferior to even the simplest form of vaulting, and it appears to be especially unsatisfactory when considered with reference to the plainness of the work below, the massive piers and arches of which would seem to be justified only by the necessity for supporting a roof equally solid in character.

In the later examples of Norman architecture, the intersecting arcades of which I have before

spoken, became common. The two semicircles cutting each other produced an acutely-pointed arch. The ribs of the vaults developed a similar form, and the pointed arch, with its almost boundless facilities for elaboration, became an accepted fact in English Mediæval architecture. The carver's chisel was freely used, and sculptured decorations became frequent. Round and pointed arches were found in the same building; the tooth ornament made its appearance, and everything was ripe for a new transition. We will, therefore, leave at this point the description of the peculiarities of Norman work. I hope it has been sufficient to enable you to apply it in practice, so as to distinguish Norman details from those of later times, further allusion to which I will defer till a future occasion.

For examples of the various details which I have endeavoured to explain to you, I have referred, in some instances, to ecclesiastical buildings, as being the most important and best preserved specimens of the style which are left to us. They apply, however, to all buildings of the period, to a greater or less degree. In those of the Saxon era, erected before the Conquest, we find also some marked peculiarities, which may be now further mentioned. One of them relates to the manner of constructing masonry at the angles of the buildings, by the introduction of long and short stones alternately, the walls themselves being constructed of small stones roughly shaped. This has been called "long and short work," and is not to be recommended as good masonry. It is, indeed, so much at variance with the tradition of the craft that some archæologists have supposed that it was introduced by men familiar with the plane, rather than the mallet and chisel; and as the Saxons were, as we know, well accustomed to wooden construction, this long and short masonry has been stigmatised as "carpenters' work."

Another peculiarity is found in the baluster-like form of shaft introduced in windows and arcades. There is a good specimen of this feature in the tower window at Earl's Barton, in Northamptonshire. The shaft is here obviously taken from a baluster, probably of Roman origin, and would also be more appropriate for a wooden construction than for a building of stone.

The changes which the Conquest introduced brought about the Norman style of building, and the circumstance that the change was complete, though gradual, seems to show that everything was ripe for such a consummation, and that the so-called Saxon architecture had served its day. We know that our forefathers had little of that respect for antiquity which most of us at least profess to feel. Although recognising precedent, they were fully persuaded that they were advancing and gradually improving upon the forms of the past; they had, therefore, no scruple in destroying the latter to make way for newer constructions of their own. Thanks to greatness of scale and to solidity of work, we possess numerous remains of Norman buildings, for they have not proved easy to be pulled down, and are too large in their parts to be easily adapted to the lighter and more elaborate architecture of succeeding times. At Winchester, a not very successful attempt was made to case the Norman piers with moulded stonework of a later date. The effect was heavy, and not such as to encourage similar operations. The work, however, is interesting as showing the daring spirit of those days in matters architectural.

We have at Lincoln some considerable remains of domestic work in the buildings known as St. Mary's Guild, or John o'Gaunt's Stables, and the Jew's House. Both of these buildings are interesting, and deserve some explanation. The former is the more extensive, but is modernised by the addition of a later roof. It possesses a handsome cornice, and has the flat pilaster-like buttresses, typical of Norman work. The entrance doorway is decorated with ornaments of the later or Transitional period, and the windows are partly Norman, and partly Early English, in their details. There is a doorway of the square-headed trefoil form, and the windows are coupled together with a shaft between them. The bricks are of the thin tile-like description, which were used by the Romans. A fireplace, with a chimney, exists in the upper story. The back of it is formed of thin bricks, placed edgewise. The whole presents to us a valuable example of Norman domestic work.

Lincoln is rich in such remains, the most perfect of which is that already referred to as the Jew's House. It is small, and has but two rooms, though others may have originally existed. The chief interest it possesses arises from the richness and characteristic design of the external ornamentation. We find in the latter many of the details which I have already pointed out to you, as illustrating the style of the time. There is first, the deeply-recessed doorway, with its shaft, and double zig-zag archivolt. The archway over the door is made use of in a curious manner to support the fireplace and chimney belonging to the upper story. The chimney itself has been modernised. The name of the Jew's House may possibly be a misnomer, but if not, it is remarkable as being indicative of the position of the Jewish people in England at this time. It is curious, therefore, that by tradition it should be ascribed to a member of the Jewish race, too often despised and ill-treated. They were, however, as we know, powerful at this period, as they have ever been, by the possession of wealth, although not daring to display the same too openly. The cruel manner in which King John dealt with a Jew capitalist, by extracting his teeth until he yielded to extortion, has often been referred to.

If the house we are now discussing was in reality the dwelling of a member of the same ancient race, we may be sure he must have been a personage of wealth and importance, for such houses were very rare in the twelfth century, and the decorative character of its architecture marks it out as an exceptional instance. The windows deserve attention, particularly the two-light window, with its double order of mouldings. We find here the characteristic shaft as a mullion, and the upper part of each light is made square, as is frequently the case with Norman openings. The small window with a trefoil head, and a pointed arched drip-stone or label, is no doubt a later addition, and the lower part of the elevation is altogether modernised. The principal chamber was evidently on the first floor.

The peculiar treatment of the arched doorway, and chimney supported by it, is found in another house, near to the Jew's House, so that it was probably a favourite expedient in the locality. We see by this interesting monument, first, how easily, and yet how faithfully, the Normans applied to domestic work the details with which we are familiar in their sacred buildings. We notice, secondly, that we are approaching the period when men began to display some care for architectural beauty in their dwellings. We have left behind us the plain wooden huts of the Saxons, and are presented with a style of solid construction and decorated masonry.

It must not, however, be supposed that such houses were common, for up to the time of Stephen, and even later, the domestic buildings of our towns were constructed of wood, and in London we know, from the destructive effects of the Great Fire, as late as in the reign of Charles II., that the wooden mode of building still existed, even at that comparatively recent date. The municipal authorities, however, did their best to encourage the citizens to build in a more durable way, and as a precaution against the spread of fire, to use stone instead of wood.

In the days of Richard I., certain definite regulations were laid down in this respect, and were contained in a document known as the "Assize" of 1189, and published in Mr. Parker's work. In order to facilitate the change from wood to stone, we find various privileges accorded to the improvers, one of which savours of confiscation, for it provides,—"If any one would build of stone, and his neighbour, through poverty, cannot, or perchance, will not, then he shall yield unto him desiring to build 3 ft. of his land, and the other shall make a wall upon that land, at his own cost, 3 ft. thick and 16 ft. in height." Party walls have been enormously increased in height since this regulation was made, and it would have been well for the solidity and comfort of our houses if they had not, at the same time, decreased in thickness.

The regulations of the "Assize" refer in great detail to the erection of party walls, but they say little about the fronts of the houses towards the streets. The materials for such fronts, therefore, continued to be chiefly of wood, as being cheaper than stone, and more convenient in reference to the prevailing habit of gaining space in the upper stories, by projecting stories over the ground-floor shops or rooms. In spite of all regulations improvement was slow, and destructive fires frequently occurred. In London there was a serious outbreak in the reign of Stephen, and another in the reign of King John, in the year 1212. After the latter event the rules, which may be described as the origin of our Building Acts, were revised and strengthened. One of the new rules runs thus:—"Whosoever wishes to build, let him take care, as he loveth himself and his goods, that he roof not with reed, nor rush, nor with any manner of litter, but with tile only, or shingle, or boards; or, if it may be, with lead."

All wooden houses which imperilled their neighbours, by causing danger from fire, were to be pulled down by the aldermen and their assistants, and before every house there was to be a tub, either of wood or stone, kept constantly full of water. The removal of dangerous houses was not evidently thought a difficult task, for every alderman was to be provided, under pain of a fine, with "a proper hook and cord," and with these simple implements the houses, or hovels, were to be pulled down, in summary manner, on their condemnation.

The wages of the different classes of building workmen were fixed, and orders were issued to coat with plaster, or a kind of concrete, the roofs previously covered with reeds or rushes. Specific directions were given as regarded the cook-shops, which were the eating-houses or inns of the period. Mean sheds had arisen round these cook-shops, and as they were considered dangerous, they were marked for their destruction, "so that there may remain only the house (or large hall) and bed-room." Some of the cook-shops or inns acquired considerable importance, and with lodgings for students and others which gathered around them, became centres of resort for those who followed similar pursuits, as, for example, the inns of court where the lawyers congregated. Flues were apparently forbidden in party-walls, and the cooking-stove was commonly placed in the middle of the kitchen, with an opening in the roof above for the smoke. Regularly constructed chimneys were not, however, unknown, as we have seen in the case of the Jew's House at Lincoln, and they may have been constructed in the front and back walls, and in some cases carried up in the gables. The "Assize" contains further provisions for sanitary contrivances, which indicate an increasing attention to domestic comfort, and mark a distinct advance upon the ruder customs of the Saxons.

We have now sketched, though imperfectly, the arrangement of the houses of the twelfth century. The remains of them are, as I have said, necessarily scanty, but enough can be found to indicate with tolerable clearness the general plan on which the Normans worked. These did not in all probability vary much in the various parts of the country, except from accidental circumstances, such as the prevalence of particular building materials in different districts. The architectural details, as has been seen, followed much the same rules that were observed in the more important ecclesiastical buildings. Painting and gilding were employed for decoration, particularly in the capitals of columns; and some approach to external contrast of colour was often obtained by the use of flint and stone, and contrasted materials of various kinds. The hall was often spacious, and treated in a handsome architectural manner, whether with or without pillars. A gradual advance was being made, at the same time, towards domestic comfort and privacy, and rules were found necessary to restrain the caprices of individuals in our large cities. We find every where that willingness to improve on the past without wholly breaking with it, which, if common with our ancestors of the twelfth century, is certainly not unknown to the Englishman of the nineteenth.

St. James's Church, Bury St. Edmund's. A new vestry has lately been erected on the north side of the chancel of this church from designs prepared by Mr. J. Drayton Wyatt, architect. The work has been carried out by Mr. Lot Jackaman, of Bury. The inside dimensions of the vestry are 32 ft. by 16 ft., and it is approached by an open porch at its north-east angle. It is covered with a wagon-headed panelled ceiling of English oak, with an embattled cornice, from which hang two gas pendants of two lights each, supplied by Mr. Cooper. The stonework of the east window is the same as that which at one time occupied the space above the chancel arch, after the erection of the present nave roof, and before the consequent elevation of the arch to its present proportions. The cost was upwards of 500*l.*

RAMBLES AND STUDIES IN GREECE.

THIS is the title of a small but by no means unimportant book which may be read with special interest by those architectural students whose attention has from various recent circumstances been a good deal redirected towards Greece. It embodies the remarks and reflections of a recent visitor to the Peloponnesus who has brought to that classic ground a combined interest in and comprehension of history and art. The author, Mr. Mahaffy (of Dublin University), is known by previous publications as a gentleman of brilliant acquirements and great historical knowledge, and has devoted himself in a special degree, as he observes in his preface to the present book, to the endeavour "to make English-speaking people intimate with the life of the old Greeks." In visiting the ancient monuments and ruins whose names are so well known to us all, and describing his observations and impressions, Mr. Mahaffy throws over them and their meaning that fresh interest and reality which we always gather from the impressions of a cultured and original observer; and his book contains descriptions and some illustrations of some more lately unearthed specimens of Greek art, chiefly archaic, of which little is at present known in England.

The very interesting and vivid way in which the landscape of the Peloponnesus is sketched, and the connexion between the character of the country and of its States and individual inhabitants brought out, we must merely refer to in passing, just observing that the author thinks, and gives good reasons for his opinion, that there is far more similarity between the modern and the ancient Greeks, in point of character, than is generally supposed, and that the ancient Greeks, outside of the artistic faculty in which they were supreme, were by no means a people peculiarly noble or exalted in character; but they had that faculty of expression in art and literature which enabled them to make the most of their own thoughts and actions, and to leave their brightest side illustrated for posterity. The tone which he says on this subject, and on the modern politics and position of Greece, is very suggestive; but we must pass on to notice some passages which more directly bear upon the artistic and architectural side of the subject. It may not be uninteresting to give, in the author's own words, his description of what many have elected to as a moment of interest in their lives,—the first sight of the Acropolis and its ever-memorable ruins. He had an early morning shot:—

"When I saw my dream and longing of many years realised, the first rays of the rising sun had just touched the heights, while the town below was still hid in gloom. I saw rock, and rampart, and ruined fanes, all tinged in uniform tints; the lights were of a deep rich tone, and the shadows of dark crimson, with the deeper hue of purple. There was no variety in colour between the nature and what man had put there. No whiteness came from the marble, no smoothness showed upon the hewed and polished blocks; but the whole mass of beige and crimson stood out together into the pale pure blue air."

The subdued tone of yellow brown to which the ancient marble is reduced by time Mr. Mahaffy says as harmonising most beautifully with the deep sky of Greece in the daytime, and lighting up with great richness in the rising or setting sun: he even thinks we should feel a distinct loss of effect if we regained the original lustre of the marble. The one exception to this which he noted is in the remains of the Sunium Temple, which are still perfectly white. The author attributes this to its having been free from the effect of dew on its lonely site; but the explanation hardly seems satisfactory. Now that the idea of the Greek architecture as a colourless marble style is almost eliminated, one is inclined sometimes to question whether these yellow-stained marbles were ever white, even as to the ground of the decoration; whether some stain was given to the whole stones of the structure similar to that which there is so much reason to think was applied to the nude portions of statuary. Upon this much-vexed subject of the colour in Greek works of art, and the right and wrong of the matter critically and historically, Mr. Mahaffy has some good remarks to offer. He is convinced that the Greeks could not have sanctioned or admired anything that could be legitimately termed to have a tawdry effect, for no people, in all the world positively know of their art and literature ever showed such a complete distaste for the tawdry and extravagant. But what seems tawdry in our imagination may cease to be so if we realise the circumstances more

"Where all the landscape, the sea, and the air are exceedingly bright, we find the inhabitants increasing the brightness of their dress and houses, as it were, to correspond with nature. . . . . We know that the colouring of the old Greek dress was quite of the same character as that of the modern, though in design the dress of our day is completely changed. We must, therefore, imagine the old Greek crowd before their temples, or in their market-places, in very white crowd, with patches of scarlet, and various blue; perhaps altogether white in processions, if we except scarlet shoe-straps and other such slight relief. One cannot but feel that a richly-coloured temple,—that pillars of blue and red,—that friezes of gilding, and other ornament, upon a white marble ground and in white marble framing—must have been a splendid and appropriate background,—a genial feature, in such a sky and with such costume. We must get accustomed to such combinations; we must dwell upon them in imagination, or ask our good painters to restore them for us, and let us look upon them constantly and calmly. To me they appear far finer and richer than *our* attempts at ornament."

The suggestion that some of our painters should endeavour to realise such decorative scenes for us is a good one; it would be a great gain in our perceptions as to the reality of Greek architecture and ornament if we had another artist, equally gifted, to do for it what Mr. Alma Tadema has done for Roman art and life. But the painters would have to take up the subject more seriously than they have as yet done. At present the one or two eminent artists among us who seem to have a certain degree of preference for Greek subjects rarely touch architecture in their works, and when they do they invariably make blunders.

The museums of Athens, small and in some respects uninteresting as they are (except in the matter of inscriptions), now contain some specimens of archaic sculpture which are of the most singular interest in reference to the origin and growth of Greek art. The illustration given (p. 61) of what Mr. Mahaffy believes to be the votive statue of Theseus sent by the Marathonians to Athens (mentioned by Pausanias), suggests a type of art so completely conventional and semi-barbarous as to open up, by itself, quite a train of thoughts and questions as to the first beginnings and the geographical relations of the art which culminated under Phidias. The style of the figure, with its expressionless face, stiff modelling, and conventional hair, reminds us more of Assyrian art than of anything we are accustomed to connect with Greece. There are other specimens of archaic work to be found in the museums at Athens and elsewhere, equally significant as to the early history of Greek art. What we want, as the author observes, is the link to connect these with the art of the Periclean age, which, as far as we have any testimony on record, might have sprung into life at once in full glory, but which we may be assured did not do so, but followed the course of development which is universal in art history. We have ourselves ventured on a theory which might lessen the difficulty.*

Another class of remains touched upon and illustrated, is that to be found in the street of tombs in the outskirts of Athens, only recently discovered. One of these sculptured memorial stones is illustrated (p. 69), and is of extreme beauty of treatment and sentiment. It represents a female figure standing, giving her hand, as if in farewell, to a man who is seated and looks up at her as he takes her hand; behind him stands a male figure with head pensively leaning on his hand. The consideration of this and other monuments on the same site leads the author to some admirable remarks on what he well calls the *reserve* of Greek art, which we commend to the notice of art-critics. The following paragraph we may quote:—

"The commonest epitaph" (on a Greek tombstone) "was a simple χαῖρε, or farewell; and it is this simple word, so full and deep in its meaning to those who love, which is pictured in the reliefs of which I am now speaking. They are simple parting scenes, expressing the grief of the survivors, and the true simple grief of the sufferer who is going to his long home. But what strikes us most forcibly in these remarkable monuments is the chastened, modest expression of grief which they express. There is no violence, no despair, no exaggeration,—all is simple and noble; thus combining purity of art with a far deeper pathos—a far nobler grief—than the exaggerated paintings and sculptures which seek to express mourning in later and less cultivated ages. We may defy any art to produce truer or more poignant pictures of real sorrow,—a sorrow, as I have explained, far deeper and more hopeless than any Christian sorrow; and yet there is no wringing of hands, no swooning, no defacing with sackcloth and ashes. . . . . There is no exaggeration, no speciality, no individuality, I had almost said, in the picture. I feel no curiosity to inquire who these people were,—what were their names,—even what was their relationship to the deceased. For I am perfectly satisfied with an ideal portrait of the grief of parting,—a grief that comes to us all, and lays bitter hold on us at some season of life; and it is this universal sorrow,—this great common flaw in our lives,—which the Greek artist has brought before us, and which calls forth our deepest sympathy."

The author has here hit on the true aim and scope of ideal sculpture, so little understood at present. The chapter is well worth reading.

In the course of his remarks on the more familiar ground of the Parthenon, Mr. Mahaffy suggests that there is the greatest possible difference between the artistic merit of the metopes and of the other two sections of the sculpture, the pediments and the frieze of the *cella*. We are inclined to concur in this judgment; and his suggestion of the reason for it is worth consideration; namely, that the metope sculptures were a repetition of the same kind of "motive," in couples of highly relieved figures in violent action, mainly with the object of architectural effect, and to relieve the squareness and straightness of the other members of the Doric frieze and architrave. This comparison will hold good, at all events, in regard to the pediment sculptures, which have an intellectual interest and meaning, of course, quite beyond that attaching to the metopes. But the conclusion is rather one-sided in respect to the frieze. That the style of the work in the frieze is more refined can hardly be questioned, but it can scarcely be said to have more significance or meaning than the metopes. It is simply a translation into sculpture of the bare facts of the annual procession. We looked for some remark on the fact, so peculiar and so alien from all our notions and practice in regard to sculpture, that this beautifully-executed work is merely a reproduction, in the slightly conventionalised form of art, of what the people saw going on before them. We may realise the sort of relation which this art had to fact and to real life, if we imagine the Houses of Parliament sculptured all round with a succession of figures representing the Royal procession on the way to open the session. If Sir Charles Barry had proposed such a decoration he would probably have been laughed at; yet a precisely similar proceeding is what produced some of the most beautiful of Greek sculpture. We do not say necessarily that because the Greeks did this we should do it; we do not even say that it was altogether the best use to make of such exquisite powers of execution, merely to repeat on the walls of the temple the model of the real procession which went round it; only it should be realised what a very practical and almost prosaic interest some of this work, which we look at with the reverence due to what is hallowed by time, may have had for those by whom, and for whom, it was executed.

It would seem, from Mr. Mahaffy's account, that the Greeks profess to feel very keenly the loss of the Parthenon sculptures, and talk habitually about expecting England to return them before long. What real claim they have to such consideration may be deduced from the fact that the drums of the columns blown down by the explosion during the bombardment in 1687 have been left lying on the ground ever since, and not an attempt made to put them in their places, and that during Mr. Mahaffy's visit he saw an Athenian gentleman practising with a pistol at one of the sculptured fragments in the theatre of Dionysus, his apparent object being to chip a piece off the edge with each shot. Our author therefore rejoiced, in spite of his strong feeling as to the careless manner in which the removal of the sculpture was unquestionably carried out, that the finest parts of it were safe in the British Museum,—until he went to study them afresh there on his return from Greece. *Then*, he confesses to having experienced a revulsion of feeling. "I found that these wonderful fragments lost so terribly by being separated from their place,—they looked so unmeaning in an English room, away from their temple, their country, and their lovely atmosphere,—that I earnestly wished they had never been taken from their place, even at the risk of being made a target by the Greeks and the Turks." It is impossible not to understand and sympathise with this feeling; but, on the other hand, if this had been so, what would be left of them now?

Among the interesting points in the subsequent pages are the accounts of a visit to the

* See "Art Lessons from Mycenæ," p. 145, *ante*.

Chæronean lion, or its fragments (which certainly ought to be put together again before it is too late), and to Tiryns and Mycenæ. The author found bees swarming around the upturned head of the colossal lion, and the honeycomb between its teeth. "The old Hebrew story came fresh upon us, and we longed for the strength which tore the lion of old, to gather the limbs and heal the rents of his marble fellow." Tiryns Mr. Mahaffy regards as having been an old fort rather than a town. It is curious to read that, in comparison with the Tiryns ruins, Mycenæ, with its wheel-tracks yet visible in the gateway, and the marks of the fastenings of the gates, "has quite a modern appearance." The so-called Treasury of Atreus, which Mr. Mahaffy believes to have been a tomb, suggests, of course comparisons between this and the analogous structures,—the raths of Ireland, one of which, at New Grange (County Meath), of which our readers have often heard, is compared in detail with the structure at Mycenæ. The chapters on visits to Corinth and Argos are interesting, and contain some new suggestions; and the book is concluded with two short theoretic essays on the probable attributes of Greek painting and Greek music, which evince much thought and critical insight, and a thorough comprehension of the subjects in their historic and æsthetic aspect. It is, in short, rare to find a "book of travels" of this kind combining so happily an interesting and picturesque style with really valuable information and suggestions, and its perusal ought to do something to awaken a real interest in Greek art and its remains among the many English readers who have at present little comprehension of the subject, while those who are better informed will find not a few points placed in a new and striking light.

CLEOPATRA'S NEEDLE.

EVERY one has read with interest the announcement recently made in the English papers to the effect that, through the beneficence of a well-known member of the medical profession, we shall soon see erected on the Thames Embankment the famous Cleopatra's Needle, which has been so long our unclaimed property.

The mention of the erection of an obelisk in London very naturally reminds us of the obelisk of Luxor, which forms so conspicuous a feature in the midst of the Place de la Concorde.

It was at the period of Napoleon's victories in Egypt, at the commencement of this century, that the idea was first proposed to transport to Paris some trophy of the campaign, but political events having prevented the execution of the project, it was not until thirty years later that the idea was again taken up.

Numerous were the plans by which the two obelisks, standing on a portion of the ruins of ancient Thebes, were to be transported to Paris. At length the project of M. Lebas, an old pupil of the École Polytechnique, was agreed upon, and accordingly, in March, 1831, the vessel, the *Louqsor* (so named from the village where stood the two obelisks in question), started from Toulon, and in due course of time arrived at Alexandria, and, after considerable difficulties in mounting the Nile as far as Thebes, the vessel anchored off the Palace of Luxor.

The first duty was to examine the monuments, and after having carefully cleared them from surrounding *débris*, it being found that one of the two obelisks was to the extent of 3 ft. smaller than the other,* M. Lebas immediately decided on taking this latter, as being in a better state of preservation. The next operation was the "felling," so to speak, of the monolith, and here commenced the real difficulties; of the first necessity was an inclined plane, along which was to slide the enormous monolith, which, be it remembered, weighed no less than 500,000 lb., or more than 200 tons. After three months of incredible labour, in which no fewer than 800 men had been employed, two hillocks of ruins cut through, and half the village destroyed, the inclined plane was ready; now commenced the lowering of the monolith. This was done by means of a simple cable, fastened to the upper portion of the casing of the obelisk, and fixed to a very strong anchor at some 150 yards distance; the cable was retained on the opposite side by a beam turning on a strong pivot. As for the obelisk itself, at its base had been arranged a species of wooden ball and socket movement, which allowed of the mass turning in any direction by the application of sufficient force.

Everything prepared, eight men were put in charge of the cable, who lowered the monument slowly on to the inclined plane ready to receive it; for some two minutes the solid mass hung suspended in mid-air at an angle of 30°, and then slowly sank down amidst the rapturous applause of a numerous crowd of spectators. Now commenced the operation of hauling the mass to the river's bank, where the vessel was awaiting its cargo. This was a matter of some little time, but, when at last arrived, the next question was how to get the obelisk into the vessel: by an ingenious process, the whole fore part of the ship was sawn off, thus opening up completely the hold; strong hawsers having been attached to the monument and passed out by the stern of the *Louqsor*, the obelisk was thus hauled fairly into the vessel, and the bows having been readjusted with minute care, all was ready for starting. In due time the Nile rose at the customary season, and the *Louqsor* afloat, was tugged down the river to the Mediterranean; needless to follow its journey through the "tideless sea," or the stormy Bay of Biscay. The vessel arrived safely in France, and it having been determined to erect the obelisk on the Place de la Concorde, all that had to be done was to carry out the suggestion: here again M. Lebas's sagacity overcame all difficulties. A pedestal of Brittany granite (weighing in itself some 20 tons) having been, after some considerable trouble, constructed on the Place de la Concorde,* it only remained to raise the obelisk; again, the inclined plane was made use of, and the base of the huge monolith having, after many vicissitudes been raised to the level of the pedestal (some 28 ft. high), the next difficulty consisted in hauling to an upright position the enormous weight. By again using the movable scaffolding, M. Lebas succeeded perfectly; for, having fastened a stout cable to the upper portion of the monument, the other end of which cable was attached to a beam moving on a pivot, and having passed through a pulley fastened to this beam another cable, one end of which was firmly anchored and the other connected with the wheel of a strong forty-horse power engine, on the first turn of this machine, the beam beginning to describe on its pivot a quarter of a circle, dragged with it the enormous monolith. Amidst the unrepressed plaudits of the assembled thousands, gradually and slowly the massive block rose to a perpendicular position, and finally stood erect.†

Thus on the 25th of October, 1836, in the presence of a large crowd, and under the auspices of Louis Philippe, the ancient relic, some thirty centuries old, was finally erected in the centre of the Place de la Concorde.

When we think of the costly and complicated system adopted by Fontana (some three centuries before Lebas's time), when the obelisk of St. Peter's was erected, all praise is due to the simplicity and efficacy of the Frenchman's invention.‡

The inscriptions of the obelisk of Paris recall the name and exploits of two kings, Rhamses II., who, it appears, caused the stone to be hewn from the quarries of Syene, and who transported the two obelisks to Thebes; and Sesostris the Great, Rhamses's brother, who erected, and thus terminated, the two monuments. The reign of Rhamses II., who commenced these obelisks, carries us back some 1,580 years before Christ.

Objections have from time to time been raised against the erection of single obelisks, as, say many persons, these monuments were not intended to stand alone; we must, however, be careful to distinguish the ideas which have been attached to obelisks at different epochs.

When the Egyptians placed them before their temples, they were then only a small part of an enormous whole. Since the genius of the arts has reduced public monuments to smaller but more perfect proportions, such as we see in the edifices of Athens and Rome, we have considered obelisks in themselves, and we find a beauty in their material, and especially in their workmanship, which demands that they should stand alone, and thus they have been placed, at t two most remarkable epochs of the arts,—in t century of Augustus, and in that of the Rena sance. Among a score of obelisks which t ancient Romans brought from Egypt, four alo were placed before public buildings,—two at t temple of Isis, and two before the tomb Augustus. The others were all isolated; a so it was in modern Rome, with the obelis erected in the Piazza San Pietro, in the Piaz Porto del Popolo, on Monte Citario, and t largest of all in the Piazza of St. John Later

* This was owing to the extreme difficulty of extracting from the quarry of Syene,—where the stone came from,—two such large blocks, which should be of the same size.

* On this pedestal are engraved diagrams of the apparatus used in the removal and embarkation of the monument and its final erection in Paris.

† In the early days of the Royal Institute of British Architects a full account of this ingenious operation, illustrated by models, was given at one of the evening meetings by the conductor of this journal.

‡ A joke exists in connexion with the great expense of this monument (80,000 *l.*), which, say the Parisians, cost them no less than *four francs a pound*.

ARCHITECTURE IN THE ROYAL SCOTTISH ACADEMY.

THE drawings annually exhibited in the Ro Scottish Academy may be said to be fai representative of the position of Architect in Scotland, for although there are some arc tects in good practice who never exhibit, yet t great majority of those who have anything importance on hand make a point of informi the public of its nature. The intelligent server can hardly fail to note that the characte of the work differs in many respects from t of their southern brethren. The Scottish arc tect is not so easily swayed by fluctuations fashion as his neighbour, and does not willin submit to the influence of any one individ who may have attained a good position in t art. There is, however, a natural peculiar of manner which persistently holds its pla influenced, no doubt, by external agencies, still retaining its own characteristics, and t may, probably, be attributable to the fact t stone is the invariable material used, even domestic buildings, whenever an architectu effect is intended to be produced. The Sto style, as it existed in Scotland, has never b entirely disused, but it never exhibited in st the redundancy of unmeaning features wh are produced in brick; any redundance t does exist is constructive, and takes the form towers, turrets, and gables, all more or l useful, although, in rare instances, usel turrets have been constructed as ornamen features. As regards church architecture, established religion being Presbyterian, ther much less regard paid to Mediæval precedi than elsewhere, as no provision requires to made for a ritualistic service, whereas in c buildings, of a classical type, a more conservat tendency has been exhibited.

The total number of works exhibited in galleries is 1,016, and it is said that an eq number have been rejected. In such circu stances we suspect that architectural drawi would be received with somewhat of impatien and we are informed that a considerable numb —some of them illustrating works of impo ance,—have been returned for want of space

Looking over the catalogue, we find only f architectural designs for churches (there several water-colour drawings of old church to which we do not refer), and upon examin these we observe that they are each good examp of the modern Gothic school.

The "Church at Greenock" (evidently E copal), of which Mr. R. Anderson gives both exterior and interior view, displays no atter at introducing anything new; it is Early Eng in style, and unexceptionable as to detail and p portion.

Mr. R. Thornton Shiells aims at giving "The Free Church at Leslie, Fife," a distinct character. In a Presbyterian church, wh chancel and aisles are forbidden, the architec under the necessity of accentuating ot features. In this instance the accompany "hall" has been made to form a conspicu feature in the principal elevation, and is pla so that it, the spire, the main gable and pro tion containing the staircase to the gallery, bl into composition.

The "New West Church, Fraserburgh," Messrs. McGibbon and Ross, depends mai for effect upon the spire, which is well set on ground, muscular, and effective.

The "West Fonntainbridge School," by R. Anderson, looks better in reality than it c on paper. We have already given a full scription of it.

In the "Inverness Town-hall" Mes Matthews and Laurie have attempted to g new expression to the Scottish style, having parted to it somewhat of a Flemish charac The effort does not appear to us a succes one. The square corbelled angle-turrets forced, and the gablets which flank the to

e apparently useless pieces of constructed ecoration, which do not help the composition, erely introduced as tit-bits which the designer uld not part with.

The "Premiated Design for Paisley Town-ll," by John Robertson, is a rather heavy othic design, lacking expression and concen-ation. The leaded louvre rising from the ntre of the block is a poor substitute for a wer, which gives character and importance to e chief civic building of a town.

Mr. Gowans is not content to leave the Buildings in Castle-terrace, Edinburgh," *in tus quo*. The West End Theatre, which forms e centre block of the buildings, is the only rtion erected. It was originally intended that e group should be distinguished by four towers rather fantastic design; for these there is w substituted a large square dome, greatly to advantage of the composition. In the esent position of matters it is very question-le whether it will ever be realised.

The "*Dundee Advertiser* Office," by Messrs. & C. L. Ower, is a large block of buildings, ring a distinctive commercial character, to ich an architectural effect is given by a low ad tower at one end, which is evidently ful, as well as ornamental.

The "Hotel and Arcade at Blythswood Holme, sgow," by Mr. J. Dick Peddie, is a carefully-sidered design, in the modern French style. e manner in which the second and third floors brought together, and yet kept distinct, is pily carried out; it gives dignity to the ration without departing too freely from the vailing horizontality of the fenestration ch is thereby brought into harmony with the king pavilions, these being covered by man-l roofs. The reticence as to detail, which s not descend to niggardliness, is highly mendable.

here is quite a rage for new hydropathic blishments in Scotland at present; we have d of several that are contemplated, and we here the designs of two which are in course rection. One of these is situated at Dum-e, and is designed by Messrs. Peddie & near; the other, at Moffat, is by Mr. F. T. Pil-ton, and the difference between them is hy of observation. The former is essen-y English in character, and its effect depends proportion and balance, combined with elike simplicity; the latter is as dis-ly French in aspect, redundant in detail, uresque and restless in composition. The when new and fresh, will appear at its ; the other, when age has toned down its gly-pronounced features.

cidedly the most interesting design exhi-d is that for the "New Buildings for the ical School, Edinburgh University," by Mr. nderson. The style adopted is the Venetian ae-cento, and the disposition, arrangement, grouping of the parts is varied, yet homo-ous and highly effective. The fenestration e principal elevation is arched throughout, indows of the first floor being of two lights a circular tracery opening at the heading. the north-west angle there is a square ion having a low roof rising to a point, and ed with tiles; the centre is accentuated by micircular pediment filled in with a bas-; equidistant from the pavilion rises a cam-e, from which there proceeds a rounded-off r to the south-east. The manner in which est elevation is broken up so as to get over kwardness of the slope to the south dis-considerable skill in getting rid of abrupt ing up of the line of cornice. The cam-bears a distinct likeness to the well-known ple in the Place of St. Mark's, Venice, but faces are introduced about three-fourths up slightly projecting balconies in front of and above the clock-faces there are bas-. If we were to be hypercritical, objection be taken to the position of these bas-reliefs, ough they look pretty on paper, their effect be quite lost at such a height. These ngs are to be commenced forthwith, and rm one of the most attractive features in ty. The site, at the north end of the w-walk, is a good one, and the tower if d (of which there appears some doubt) seen to great advantage.

achope House, Roxburghshire," by Mr. C. Kinnear, is Gothic in style, more after the r practised in England than in Scotland, may be that the surrounding landscape is lar character.

"additions to Drybrough House," by . Peddie & Kinnear, are in the Scottish Baronial style, and while showing nothing novel or peculiar, are satisfactory.

"The Mansion House of Gala" bears the name of David and John Bryce as architects, and does not, therefore, give us any indication whether the cloak of the uncle has fallen upon the nephew. It bears a marked resemblance to other designs of the late Mr. David Bryce.

Mr. Leiper has the power of impressing his personality upon his designs; they have a character of their own which at once declares them as his, although at the same time he has no want of resources either as regards style or detail. The "additions to Carnock, Lancashire," are Scottish Baronial in style, with a distinctly modern aspect of homely comfort combined with dignity.

"Coatbridge Hall," by Mr. T. B. M'Fadzen, has been exhibited before, and we see no reason why it should appear again merely because the drawing is now coloured.

"Ashfield Grange" is the residence of the architect, Mr. D. McGibbon, and may, therefore, be looked upon as his utmost endeavour as far as the means extend. It is a residence of some importance, designed in the Scottish manner. The projecting wooden canopy over the doorway, and the large raking staircase window are effective, and the chimney-stalks form an important and good feature in the skyline.

The "Dining-hall," designed by Mr. J. W. Small, is a fair example of the Stuart style not overdone.

We will treat of the paintings in our next.

OF TASTE, NATURAL AND CULTIVATED, IN ARCHITECTURE AND THE FINE ARTS.*

> "What then is taste, but these internal powers,
> Active, and strong, and feelingly alive
> To each fine impulse? a discerning sense
> Of decent and sublime, with quick disgust
> From things deform'd, or disarranged, or gross
> In species?" —*Akenside.*

Taste is the governing power in the sphere of the fine arts, and enables us to discriminate the beauties of nature and of art; and the first step towards acquiring an exact taste and judgment in respect to visible objects, is to gain an accurate knowledge of their leading characters. The meaning of the word taste has been variously defined. At the present period this subject is seldom treated of, although of great importance in training the mind, naturally prepared for the reception of correct principles.

Poets sing of the "golden age," the "silver age," and the "iron age." The present age has been termed the "flimsy age," everything being made to suit a temporary purpose, to catch the eye, and to gratify the eye for novelty, without any regard to real and substantial excellence. The passion for novelty has been the principal means of corrupting taste.

In all professions,

"Those who live to please, must please to live."

The restless desire of novelty, so general among all mankind, may, perhaps, be the principle of both; to the extravagances and caprices of which, those who make it their business to supply the gratifications must, of course, conform; for, whether an artist or an author work for money or for fame, he is equally dependent upon public opinion. Hence the importance of public education. The object of education is not to bring all minds up to a certain standard, but to do the best that nature permits with each individual separately. And this raises a question of grave interest. A total revision of the system of education must be enforced. The education of the people demands that science should be reconsidered, and reduced to simple elements. To the great universities we are much indebted. When they were instituted, bear in mind, Classical learning was enjoyed only by the few. Since which period the Classics, and all books written in foreign languages, have been freely translated. In the present advanced age, all the terms in architecture, geometry, astronomy, botany, entomology, &c., can be reduced, and concisely expressed, in a more simple language. The Universities at Oxford and Cambridge have had their day, the people now require universities in every chief town throughout the kingdom.

Of course, a crusade against the Classical system would have as much chance of success as Mrs. Partington's attempt to keep out the Atlantic tide with her mop. The sanction of the learned men of all ages and nations for many centuries to a Classical association with the familiar phraseology of Pagan times is too deeply rooted to admit of an immediate change. Still it is no argument to say that the Classical systems which have taken so many centuries to build up, would require as many more to change for another, which would decidedly recommend itself to unlearned people, although not likely to satisfy a pedantic professor. We need not throw our Homers and Virgils into the fire, and dismiss from our minds the beautiful conceits which inspired a Phidias and a Praxiteles, and those later gifted artists. Yet we must educate the people, if artists and authors are to be dependent upon public opinion.

In the Roman times, Pomponius Secundus, a celebrated author, consulted with his friends about the "polishing" of his writings, and if they happened to differ in their opinion about the elegance, justness, and propriety of any thought or expression, he used always to say, "I appeal to the people," as the best deciders of the controversy.

In more recent times, Cowper says,—

> "From education, as the leading cause,
> The public character its colour draws."

The early Greeks were not averse to educating the public, and rendering science intelligible to the popular intellect. This has been exemplified in the grand hymn of Cleanthes, preserved by Stobæus, and quoted by M. Le Clerc de Septchenes. Of course the appeal is to their immortal Jupiter, but still it exhibits the wisdom of the Greeks. The following quotation will suffice:—"Thou bringest order out of confusion, and by thee is the jarring of the elements composed. Thou has so mingled good and evil, that general and universal harmony is established. The wicked alone amongst all thy creatures disturb the general harmony. They do not comprehend thy universal law, that *making them wise would make them good.*"

Numerous critics and connoisseurs have written voluminous theories, but have somewhat confused the inquiry by not sufficiently distinguishing between natural and cultivated taste. Of these writers may be enumerated Bacon, 1597; Locke, 1632; Kames, 1696; Pope, 1711; Addison, 1719; Franklin, 1728; Watts, 1732; Hume, 1738; Burke, 1756; Gerard, 1758; Blair, 1759; Alison, 1790; Reynolds, 1791; Stewart, 1792; Price, 1794; Jackson, 1795; Sulzer, 1806; Knight, 1806; Hogarth, and many others.

The professors of the Royal Academy,—architects, painters, and sculptors,—have learnedly lectured on taste; prominently among them, Green, Howard, Westmacott, and Cockerell may be consulted, as well as Sir Joshua Reynolds.

Natural taste is easily distinguished from cultivated taste. Children exhibit the rudiments of it. They are passionately fond of every novelty; pleased with order and regularity, consequently quick at discerning irregularities. For want of culture and exercise, they are delighted with childish trifles, such as dress or equipage. But of the sublimity of nature, the ingenuity of art, the grace of painting, the charms of poetry, they understand nothing. Gerard accurately observes that it is only in the few who improve the rudiments of taste which nature has implanted, by culture well chosen and judiciously applied, that taste at length appears in elegant form and just proportions. All works of art are in bad taste when only art is met with, or where only nature prevails. Every work of art owes its excellence to a judicious union of both. The artist, who forms the plan of his work in a moment of inspiration, invents every particular part without long inquiry; the thoughts rush into his mind and spontaneously assume the position which they ought to take; and the plan often merits the highest praise, without the artist's knowing the reasons which governed his choice. This is nature. But when he again considers his plan with cool deliberation, when he revolves the nature of the whole, and of the particular parts, and finds that this or that should, for obvious reasons, be different from what it is, in order to render the work more perfect, he adopts the necessary alterations. This is consequently art.

The genuine critic has been considered as the teacher of the artist, and correctly so, when we reflect how much time, diligence, and practice he ought to possess, and this in addition to his possessing a natural genius for the arts.

Taste has been regarded as a unity resulting from the equilibrium of all the powers that con-

* By Mr. W. Petit Griffith, F.S.A. Read at the Liverpool Architectural Society, on the 7th inst.

stitute the human mind,—a complacency arising from the equable excitement and gratification of the whole man, as far as his character is exclusively human.

Prior to entering upon the question of taste, it must be recollected that elementary principles which have been correctly deduced cannot be changed.

Price correctly observes that it is not by copying particulars, but by attending to principles, that lessons become instructive. And Westmacott asserts that the elementary principles of sculpture and painting are the same; the same rules are prescribed for the acquisition of a correct view of nature, both as respects character and the harmonious combination of parts.

In the bulk of mankind the powers of taste receive no culture, though they were naturally imparted in all. Consequently the public rarely give themselves the trouble to judge.

As the poet must be born and not made, so also the architect; and although every one is not capable of forming an opinion on subjects of taste, still taste is capable of being acquired. The mind must next be divested of classical associations, inspired by the remains of ancient Greece and Rome, extending to all who receive the advantages of a learned education. The authority of these is great, and, until recently, architecture and sculpture were so consecrated by established opinion as to preclude all criticism. Natural or local associations, and personal associations; fashion, transient and useless, losing all connexion with reason and the moral principles, must be ignored. The only species of taste to be followed is that founded on the study of universal beauty, called philosophical taste; implying a sensibility, deep and permanent, accompanied with an enthusiastic love of nature, simplicity, and truth in every department, both of art and science. Sir Isaac Newton wisely asserts that Nature is pleased with simplicity, and affects not the pomp of superfluous causes. The two distinguishing characteristics of perfect taste are correctness and delicacy; the former detects blemishes, and the latter perceives those more refined beauties which cultivated minds alone can feel.

The propagation of a philosophical taste has, from an early period, experienced the vicissitudes ever attendant upon efforts to maintain the supremacy of the mind over the body.

The Romans, originally of a rough and warlike disposition, fearing that the minds of the people would be softened and enervated by study, issued a decree, bearing date A. U. C. 592, by which it appears, "that, whereas Marcus Pomponius, the Prætor, had made a report to the Senate about the philosophers and rhetoricians, the fathers did hereby order the aforesaid Prætor to take cognisance of the business, and to suffer no such men in Rome." This prohibition only allayed the eager passion for learning for a time, as it was not many years afterwards the people showed as much diligence in their pursuits of knowledge as they had ever done in their applications to war.

To produce a perfect work of art, in architecture, painting, or sculpture, requires great attention and accuracy, not easily to be conceived. Virgil used to compare himself to the bear, who from gross and unformed lumps, as her young ones are at their birth, gives them shape and proportion by the pains she takes in licking them. Thus excellent works are formed.

Burke says, by the word taste he means no more than that faculty or those faculties of the mind which form a judgment of the works of imagination and the elegant arts.

Alison considers taste as that faculty of the human mind by which we perceive and enjoy whatever is beautiful or sublime in the works of nature and art.

Taste and genius, observes Blair, are two words frequently joined together, and therefore, by inaccurate thinkers, confounded. Taste consists in the power of judging, genius in the power of executing.

Guibert, in his "Essay on Tactics," says that taste is a talent which may be improved, but is not to be acquired by practice. It is an intuitive faculty, and the gift of Nature, a gift she bestows only on a few favourites in the course of an age. Stewart asserts that taste is susceptible of improvement from culture in a higher degree, perhaps, than any other power of the mind. Kames, however, argues that a defective taste is incurable, and that it hurts none but the possessor, because it carries no authority to impose upon others." This is a grave error, as works of art in depraved taste poison the public mind.

Judgments on taste cannot be formed without first producing a test and standard to appeal to. Pope says,—

> "First follow Nature, and your judgment frame
> By her just standard, which is still the same;
> Unerring Nature, still divinely bright,
> One clear, unchanged, and universal light,
> Life, force, and beauty must to all impart,
> At once the source, and end, and test of art."

This standard must be accomplished in the following manner:—

First,—Sensations of the palate, dreams, sudden love, dancing, &c. are excluded from our inquiry. Impressions caused by seeing and hearing are naturally placed in the mind where they really are, and upon that account they are conceived to be more refined and spiritual than what are derived from tasting, touching, and smelling; for the latter feelings seeming to exist externally at the organ of sense, are conceived to be corporeal.

Secondly,—It must be admitted, and there is no reason to the contrary, that in the beginning, when God created the heaven and the earth, all, whether animal or vegetable, was perfect.

> "The gen'ral Order, since the whole began,
> Is kept in Nature, and is kept in Man."—*Pope.*

Thirdly,—From a variety of circumstances, abortions and degenerations altered or distorted, modified or perverted, the original perfection.

Michaelangelo paid an implicit deference to Nature, and a due respect for the works of his predecessors; and matured his studies by contemplating the principles of the ancients; for he who takes for his model individual nature, and confines himself to exact imitation, cannot hope to attain to the perfection of ideal form. Phidias, when he made his Jupiter, copied no object he had ever seen, but contemplated only that image he conceived in his mind from Homer's description.

Pliny mentions an excellent painter, named Zeuxis, who selected five fine maidens after having seen all in the city, "to take out, as from several patterns, whatsoever he liked best in any of them; and of all the lovely parts of those five, to make one body of incomparable beauty."

Writers on taste have somewhat mystified the subject by indulging in wordy intoxication; for

> "Words are like leaves; and when they most abound,
> Much fruit of sense beneath is rarely found."

It requires much time and attention to sift lettered grain from lettered chaff. Theories are valueless when they are contradicted by facts.

The standard of natural taste is nature perfected. In architecture a standard of cultivated taste is required for every country in the world based upon the climate and the wants of the people. For instance, the inclination of a roof depends much on the climate as well as the style of the structure. In Eastern countries flat roofs are still very common. In Northern climates a high-pitched roof is indispensable. In China the pagodas are peculiar to the country; and in India the excavated rocks require no artificial roof at all. Each cultivated country has, therefore, its own characteristics, which must be judged of by the standard of taste of the country. Architectural taste in England is as variable as the climate, consisting of "all sorts." There is consequently no particular standard of taste in England; but a standard of taste can be applied to each style selected from other parts; for example, if the style be Grecian, the standard taste of Greece must be sought; and so of other styles borrowed from abroad.

It is understood that any style may be adopted which best accords with the object of the building, and which is most suited to the taste of those for whom it is erected. But one thing is indispensably required, the ornaments are to be in character with the style selected, and should be in accordance with the most approved examples which it affords; this is due even to consistency and good taste. As Shakspeare says,—

> "Old fashions please me best; I am not so nice,
> To change true rules for odd inventions."

It is surprising that Bacon, Burke, Hume, and others should display so much ignorance of true taste. Bacon was evidently a utilitarian.

Burke urges that proportion is not the cause of beauty in the human species, animals, or vegetables; and Hume asserts that all beauty is merely ideal and imaginary, and not in any case an inherent quality in external objects.

John Hunter, the celebrated surgeon, used to maintain, and Knight thinks he proved it, that the African black was the true original man. To prove this assertion, it becomes necessary to ascertain where the Garden of Eden was situated. Many conjectures have been formed, but not one of them satisfactory. Hunter's original Venus or Goddess of Love, would consequently have a broad, flat nose, high cheeks, woolly hair, a jet black skin, and squat, thick form,—a piece of deformity; but in the eyes of the African black man she would be a beauty; and with the same people, so far from thinking the whiteness of European skin conducive to beauty, it only excited the idea of dead flesh sodden in water.

Associations not common to all mankind are peculiar to the individual. They take their rise from education, from peculiar habits of thought, from situation, from profession; and the beauty they produce is felt only by those whom similar causes have led to the formation of similar associations. The admiration of architecture, furniture, and ornament, which is derived from antiquity, though very justly due to these for themselves, originates, in the greater part in mankind, from the associations which they connect with these forms. The associations, however, are merely accidental.

If proportion be not the cause of beauty in animal and vegetable forms, it at least forms the basis; and, no doubt, the generality of mankind live in the world without receiving any kind of delight from the various scenes of beauty which its order displays, in consequence of the mind not being properly cultured.

The fine arts are contrived to give pleasure to the eye and the ear, disregarding the inferior senses. A taste for these arts is a plant that grows naturally in many soils; but without culture, scarce to perfection in any soil. It is susceptible of much refinement, and is by proper care greatly improved. Thus the fine arts become a rational study, and may be cultivated to a high degree of refinement.

There are certain periods of time in which the spirit of perfection universally diffuses itself throughout all professions, proving that all arts are allied to each other. The taste of perfection is the same in whatever depends upon genius, but if cultivation be wanting, an infinity of talents lie buried. When true taste takes the lead, those tastes deriving mutual aid from each other display themselves in a remarkable manner. It is to be lamented that when perfection reaches its culminating point, it is the forerunner of the decline of the arts and sciences.

It has long been considered that a new style of architecture involves a new construction, and that the introduction of iron, terra-cotta, and other materials was calculated to accomplish the desideratum. Upon reflection, by following the dictates of Nature, and observing that in forming her works,—they being always in accordance with a principle of order, as well as a principle of special adaptation,—there can be no reason why many styles may be created. Nature does not indulge so much in numerous variations of construction, as she does in multiplying examples, with varied decorations. Take, for instance, the cat tribe, which includes a large number of animals very closely resembling each other in structure. The construction of the caterpillar served for a whole race, but the variety decorations and tintings of each butterfly or moth, produced in appearance a new style.

A regret is often made by architects and others professors that Nature has not provided for us a few examples of buildings for his imitation, forgetting, at the same time, that all the principles necessary for useful building are afforded by Nature. For example, take the drainage of a city, with its main sewer, and the numerous ramifications of its small drains; the principle requisite are beautifully exemplified in the arterial system of the human frame, proceeding from a single trunk termed the aorta, and ramifying in every direction through all the various tissues of the body, and giving off branches, dividing and subdividing to their ultimate ramifications; again, take a leaf with its midrib and its numerous veins.

In the "Library of Entertaining Knowledge," published some years ago, a volume was devoted to "Insect Architecture," in which we learn of the mason and carpenter wasps, bees, and the mining, lapidary, and upholsterer bees; coopering, tent-making, and stonemason caterpillars, and the mason and raft-building spiders. These all afford instructive lessons to the architect and builder. The principles involved are remarkable.

One of the greatest offences against taste is bombast, which is highly repulsive to persons of refined genius. Young writers

lively imagination should guard against nothing with more vigilance than bombast. He who feels any disposition to it would do well to exercise himself for a considerable time in the most simple mode of writing, in order to get rid of this unfortunate propensity. It is with taste in the fine arts, as with that which relates to the exterior behaviour,—he who has not had any intercourse with men of the more polished sort will find far more pleasure in a certain unrestrained vivacity and rudeness of manner than in the more refined behaviour of persons of liberal education.

A perfect taste can only be attained by creating a standard applicable to every species of excellence, and it is by no means hopeless to arrive at a fixed standard of taste, the more especially as the greatest artists, both of ancient and modern times, have always endeavoured to copy after a certain ideal of perfection. No critic can offer a judgment on architecture, painting, or sculpture, without first cultivating his natural taste; and, secondly, by studying in detail, and obtaining a profound knowledge of all the sciences, producing a philosophic taste.

A natural taste assists the architect in forming his works in accordance with a principle of special adaptation. The mouldings and details of the buildings of Assyria, Egypt, Greece, and the Middle Ages, require a cultivated or educated taste. To the painter and sculptor, nature affords a far greater assistance; the former has to portray Nature as she herself would, and the latter, with a sound knowledge of anatomy in repose and in action, is restrained only within the bounds of possibility.

Although a philosophical taste has a powerful influence over the minds of the people, still it must be allied to true religion, to secure a moral governance. In Greece during the reign of Pericles, the fine arts flourished and have left masterpieces, which have been the admiration of all subsequent ages and generations of civilised men, but Pericles himself set a bad moral example by separating from his wife and living with Aspasia, a dissolute woman, causing the Peloponnesian war, and ultimately the destruction of all the glory of Athens. Alcibiades affords another example; an Athenian of high rank, endowed with talents of the very highest order, and yet he committed grievous errors, through unruly passions and want of principle.

It has been repeatedly urged that just when a man has reached the temple of learning, after years of literary toil, observation, and thought, he has to depart this life lamenting its shortness, and complaining of the partiality of Nature in granting longevity to the crow, and to the stag, but not to man.

Finally, it has been wisely observed, that the whole universe may be regarded as an exhaustless stock of intellectual nutrition, and those productions of man which are the result of elaborate inquiry and profound investigation, in which all the powers of the mind have been most actively employed, may be regarded as a faint approximation of the Divine intellect.

"THE BATTLE OF ST. EGIDIO."

MR. PLANCHÉ read a paper at a recent meeting of the British Archæological Association, as already mentioned, on a picture in the National Gallery, Trafalgar-square (No. 385), described in the Catalogue of the Gallery as "The Battle of St. Egidio," by Paolo di Dono, called Uccello, of which he exhibited a copy, and contended that the incident represented in the picture was not that described in the catalogue. Mr. Planché also exhibited two interesting pictures, the property of an American gentleman, Mr. Charles Coleman, and attributed to the same painter, the subjects being the taking of Pisa by the Florentines, in 1406, and the Battle of Anghieri, between the Milanese and the Florentines, in 1440; also a print of another "Battle-piece," formerly in the Musée Campana, and now in the Louvre at Paris, said to have been painted by Uccello, and he pointed out to the Society certain peculiarities in the military costume which were not in accordance with the date of the death of Uccello, as variously reported. Mr. Planché concluded by saying, "I am no connoisseur. I do not pretend to pronounce an opinion on either the merits or the style of a painter; but I am deeply interested in the study of costume, and more anxious to learn than ambitious to teach. I have vainly endeavoured to reconcile the discrepancies which have struck me in the examination of these pictures [those belonging to Mr. Coleman], which, at all events, are undoubtedly genuine works of the fifteenth century, by whomsoever painted, and trust the Association will not consider that I have unnecessarily occupied its time in calling its attention to the archæological importance of the subject."

The discrepancy pointed out by Mr. Planché between the armour and helmets in the "Battle of St. Egidio," and the supposed date of Uccello's death, may depend to a certain extent on the uncertainty which exists as to that date. The date of his birth is usually given as 1396, but he himself in existing tax-papers, quoted by Messrs. Crowe and Cavalcaselle, says in one 1396, and in another 1402; so that if more than seventy-five when he died, as seems tolerably certain, we are brought far into the fifteenth century. The description in the National Gallery catalogue, which makes Malatesta a prisoner, certainly seems wrong. Crowe and Cavalcaselle say, with more plausibility, that Malatesta is, with his nephew, Galeazzo, issuing the order to advance, but even this fails to satisfy one when looking at the picture.

THE RESPONSIBILITY OF MASTERS TO WORKMEN FOR THE NEGLIGENCE OF FELLOW-WORKMEN.

IN an article in the *Builder* of February 17, on the question of the responsibility of masters for the acts of lent servants to workmen who were fellow-servants with the lent servant, we showed how the doctrine of the non-liability of a master for injuries done to one servant by another in his employ had been gradually expanded so as to take in even lent servants. We then promised to recur to that general question of master and servant. In the present article we propose to show very shortly what is the general law, not only of this country, but of Continental nations upon this subject, and how that of England has assumed its present aspect. This can only be done in a brief manner, for to go at length into the various decisions and dicta which may be found in the law reports would only be fitting for a purely legal publication. The first broad rule is, that a master is liable for the acts of his servants, and in the term "servants" workmen are, of course, included. To this, however, there is now a very important exception, and that is, that if the injured person is a fellow-servant (*collaborateur*) of the man who has inflicted the injuries, then that the master is exonerated from the consequences which would otherwise naturally follow, unless the injured man can prove that the master did not select his servant with reasonable care.

Now, the way in which this exception,—one which has the greatest possible interest for those engaged in mechanical and manual trades,—has grown up is singularly curious. Before the year 1837 no trace of it is to be found in English law books. But in that year the case of Priestley *v.* Fowler was decided by Lord Abinger (3 Meeson & Welsby, p. 6). That case, however, was one in which a servant sued his master because a van which he was driving broke down and broke his thigh, and it was decided that the master was not liable. It will be obvious that here there were no facts which touch upon fellow servants. But in the course of the judgment Lord Abinger let slip certain expressions about injuries inflicted on one servant by another and the consequences to servant and master, which, unfortunately, got fixed on by succeeding judges, and formed the exceedingly narrow basis for a very wide legal doctrine. For, in 1850, the doctrine of which we are now speaking was expressly declared to be the law (Hutchinson *v.* The York, Newcastle, and Berwick Railway, 5 Exchequer Reports, p. 343). There was here a sort of allusion made to Priestley *v.* Fowler, as though that case were an unimpeachable and a direct decision. The principle was thus laid down:—"The principle is that a servant when he engages to serve a master undertakes, as between him and his master, to run all the ordinary risks of the service, and this includes the risk of negligence on the part of the fellow servant whenever he is acting in discharge of his duty as servant of him who is the common master of both." Curiously enough, on the same day another decision affirmed this identical doctrine. But whilst the judges confidently lay down a principle, they really have no ground, except a few disjointed remarks of Lord Abinger's, for so doing. It was a principle which was extracted entirely from their inner consciousness, and for which no legal foundation whatever existed. Meanwhile, the Scotch Bench had been expressing strong disapproval of the doctrine, and deciding cases in an opposite direction,—a very able judge like Lord Cockburn criticising the decision in England very adversely. So that it became necessary for the House of Lords, as the Supreme Court of Appeal, to become umpire between the differing lawyers, and in 1858 they expressly decided that the English judges were right, in the line which they had taken. This decision was again followed as recently as the year 1868 (Wilson *v.* Merry, 1 Law Reports, House of Lords). The Law Lords, however, seemed to consider that there was a special tacit contract entered into by workmen to bear harmless the master for injuries done to them through the negligence of those working with them. But quite recently the curious anomaly has been presented of judges following the tenor of previous decisions, but without either agreeing with or understanding them. Thus, Sir Baliol Brett observed (Lovell *v.* Howell),—"I feel a difficulty in understanding or defining what is the precise principle upon which the immunity of the master rests." Some judges indeed have intimated that the doctrine is based on public convenience; others, that there is "a tacit agreement" between master and servant that the latter will bear all ordinary risks incident to his employment, among others possibly of injury from negligence of fellow servant. So that, as a matter of fact, a legal doctrine has gradually become fossilised, of which the beginning is a few loose sentences in a single judgment.

When we look abroad we find that some difficulty and doubt upon the question existed at one time in France. But in 1841 it was definitely decided by the Cour de Cassation (Reygasse *v.* Plazen, Dalloz Jurisprudence Général, 1841, i., p. 271), that a master was as much liable when a servant was injured by another servant as when the harm was done to an entire stranger. This doctrine has been followed in recent years, and remains the law in France. In Italy and Germany the same law exists, so that England and (with some exception in certain of the American States) the United States are the only countries in which an exception has been grafted on the general law. We have here only pointed out how comparatively recent has been the growth of this exception to the general rule of law, how small were its first beginnings, how different are the reasons upon which judgments have been based, how the Scotch bench have disagreed with their English brethren, how finally the principle was settled by the House of Lords, and how much at variance are the rules which govern this subject among Continental nations with those which are prevalent this side of the Channel. But another time we hope to examine the reasons upon which this exception rests, and the arguments for and against its continuance.

A SUGGESTION FOR THE THAMES EMBANKMENT.

JOHN MARTIN or Sir Frederick French, who forty or fifty years ago so energetically advocated the embankment of the Thames, could never have contemplated the possibility of their magnificent dreams when realised being adorned by the erection of Cleopatra's needle, but both the painter and the general did suggest that the projected quays should be utilised.

In Paris, the mile and a half of parapet stretching from the Quai d'Orsay to the Quai de la Tournelle, is the rendezvous of the bookstall-keepers, who, in numerous weather-beaten boxes, expose their literary wares to a knowledge-seeking public, which gathers round the hives, like bees, seeking pabulum from the most orthodox theology down to the questionable love-tale of the worst penny-a-liner.

Only a very small proportion of the visitors to Paris avail themselves of this means of passing their time: a few Englishmen, an equal number of Americans, some Germans, and the real working students and an occasional priest may be seen passing some of the happiest hours of their lives here. Of all the means of spending a little money, the book-hunter on the *quais* may be said to have hit upon the most felicitous.

In London we have only our Holywell-street and Brompton-road for those who can rarely indulge in a visit to Pickering's or to Booth's, though indeed every district of London has its

book-shops, out of which a treasure more or less valuable is certain to be dug. Here in Paris it is on the *quais*; at Brussels, it is in the Marché de la Madeleine; at Rome, in the Piazza Navona or on the bridge of Saint Angelo; at Florence, it is before the famous palace of the Uffizzi; at Naples, on the Chiaja; at Turin, in the rue du Pô; at Lyons, on the quai de l'Hôtel Dieu; at Stragsbourg, in the Foire aux Guenilles; and at Bordeaux, in the Fossés des Tanneurs. Each city has its market and its special number of frequenters.

Those who are versed in the mysteries of the "chase," as we may call it, and who know most of the hunting-grounds of Europe, assure one that Paris is the spot where most charm and most fruit are to be found. Here it is that the amateurs are sure to satiate their curiosity, their mania, their passion; and many a time, venturing out at midday, when the burning sun has been tempered by the green shade of the over-arching trees, the book-hunter is surprised by the setting sun before he has advanced many yards from where he started. Happy oblivion, in which all cares are forgotten, all troubles laid aside!

This is the case with the hunter in the old book-boxes, whose owner paces slowly up and down before his little store, looking up from time to time from his own particular favourite to replace with emphasis a book not purchased, but disturbed, and now stuttering out some few broken words of English as one bargains for some odd numbers of the *Edinburgh* or the *Quarterly*.

The bookstall-keeper, who in very rare instances is an embryo Bolin or Didcot, renews his slender stock by occasional purchases at the Hôtel Druot, or the room in the rue des Bons Enfants. Arrived at home, each volume is carefully examined and noted, for the race of unsophisticated booksellers has disappeared, "finds," or lucky "hauls," become each day more rare. The stories told of yore, legends, in fact, now, of the *César* of Montaigne, purchased for eighteen sous (or about eightpence) by Parison, and sold at his death for 1,500 francs (60*l.*) he doubts; he has heard M. Fontaine de Rerbecq boast of how he bought for six sous the charming and excessively rare *Patissier Français*, published by Elzevir in 1655, and now worth 2,000 francs (80*l.*); or again the Du Cerceau map of Paris (1572) bought by M. Gilbert for a trifle of half a franc, a copy of which was sold lately to the library of the City of Paris for three thousand francs (120*l.*); but he wishes, indeed, to ignore, if possible, these facts, humiliating to his corporation.

Summer and winter, winter and summer, each morning, as the clock on the Palais Mazarin strikes eight, the bookstall-keeper arrives, urging before him his little barrow containing a few boxes with their contents, which, when disposed on the parapet, are arranged in modest gradation from five centimes to two francs. Two francs the *ultima thule* of his treasures. Sometimes, however, he has a supplemental box in which books of a higher price are exposed; but these are not his favourites, as he relies more on the quicker returns on the smaller ventures.

But not without their faults are these good purveyors to the public pleasures, they have their enemies who spoil their temper, the principal of whom are the unemployed, the *flâneur* without money, the poor devil without a home, who, opening the first book that comes under his hand, deliberately proceeds to read it through from end to end. The story is famous of the needy reader who turned down the page of a book in order to continue it next day. Another set of enemies to the bookseller are those attracted by the pictures; or the boobies who, standing before a box, allow themselves to watch for hours the swift course of the river.

All this, with the ordinary traffic of business or pleasure gives a life, a "go" to the *quais*, that our embankment sadly wants, and if some enterprising book-owners obtained permission to plant their boxes on the parapet of the quay, we should soon have the now long dreary walk from Westminster to Blackfriars enlivened by all the tribe of hunters who at present avoid the thoroughfare as often as they can.

The flock of young law and medical students trooping down Templewards and King's Collegewards, or from St. Thomas's, or the literary members of the new St. Stephen's Club would, like the young law and medical students of the Quartier Latin, in Paris, suffice to keep up a whole line of book boxes, while those amateurs who wish for Aldi, Elzevirs, and *principes*, just as in Paris on the Quai Malaquais, can seek elsewhere their choice and rare copies.

If to this were added a line of *kiosques*, in which the journals and current literature were sold, we should have in our Embankment, with its broad pavements, its shady trees, its gardens, its obelisk, Westminster Abbey, the Opera House (if ever finished), the Nelson Monument, Northumberland Avenue, Waterloo Bridge, King's College, and, in the distance, looming up old St. Paul's, and past all rolling steadily old Thames, a group of sights and wonders, which few cities in the world could equal.

Then perhaps book-collectors might agree that "the Embankment" was the "happy hunting-ground"; for, thank Heaven, our bookstall keepers are still simple enough to allow an outsider occasionally to pick up a bright-back cheap, or even make, at rare intervals, a *trouvaille*.

Paris.

"L'AVENUE DU GRAND CORNEILLE."

IT is not long ago since we announced the approaching demolition of one of the old quarters of Paris for the purpose of piercing the new Avenue de l'Opéra. Now that the work is in full operation, the public take great interest in it, and the papers speak much of the future beauties of the new opening. But no more happy suggestion was surely ever made than that by M. Augustin Thierry (the nephew of the well-known author), who, in a warm letter to the *Gaulois* (characteristically enough termed by the *France* as *jolie*) proposed that the new thoroughfare should be named the "Avenue du grand Corneille." It will be easily understood how apt this title would be, running as the avenue does from the Opera House to the Théâtre Français, where still his works shine above all others, passing also as it does within a few feet of the spot hallowed for so many years by his presence. The idea was immediately taken up, and the Parisian press have unanimously welcomed it. We hope that the municipality will carry the idea out. There may be difficulties, legal and documentary, but we again hope that these the intelligent management which arranges so much that is useful and beautiful in this capital will get over, and that the new opening will be called the "Avenue du grand Corneille."

JULES JANIN'S SALE.

THE sale of Jules Janin's collection was not for the industrious hunter of the outdoor book-boxes exposed on the embankment of the Seine, whose owners, however, know pretty well how to value a rare edition, and perhaps may be found enriching their *al fresco* stock at the sale of "the tawdry man of genius," as Thackeray, thirty years ago, called Jules Janin.

It will be remembered that on the death of the well-known critic, his almost equally well-known widow, offered the library to the Institute, on condition that the collection, bearing the name of her husband, should be exposed in a separate room; the regulations of the Academy not allowing of this, the offer was declined, and before an understanding could be come to, Madame Janin died. Thus it is that the famous library of the critic, who for fifty years past, in his Monday *feuilletons* in the *Journal des Débats*, charmed and delighted the literary world, has come under the hammer of the auctioneer.

This sale was a great treat to a certain class of bibliophiles, but, let it be remembered, that it was not a matter of old books, precious by their age or rarity, though it is true there are some Elzevirs and others in the catalogue. What makes Jules Janin's library so valuable is rather the anecdotic details attached to each of the books, for the most part modern, which the owner loved so to handle.

Jules Janin was a passionate lover of those beautiful books, such as Motteroz, Claye, and Jouart print only a few copies of. His taste was known by the authors, who, to ensure their works being accepted, often, at great expense to themselves, sent the "prince of critics" a copy specially printed on large-sized China paper, beautifully bound, say by Capé.

Thus it happens, that most of the books which composed Jules Janin's collections are unique copies, adorned in many cases with original drawings, and in every case with some autograph note from the author, added to by the possessor. Jules Janin's library thus contained a copy of nearly every French work of note which had appeared during the half-century that his name was prominently before the public, and in looking over the valuable catalogue, which contains no fewer than 1,375 lots, and which gives interesting extracts from the dedications or autographs, either of the author or of Jules Janin, we find a number of well-known names.

There was a copy of Béranger's works, to which was added the whole series of prints which Janin had taken from the different editions published of the famous French poet; the copy otherwise is superb, it is printed on large-sized Dutch paper, and is bound by Capé. Béranger having heard that Janin possessed this treasure, requested to see it on one occasion. Janin hastened to send it him, and the poet, after having written the following lines on the first page, sent it back to its owner:—

"My poor daughters, return to him who has so generously sheltered you. See, in spite of your little merit, how splendidly he has dressed you, you who habitually go about in such poor attire. Ah! thank the good Janin, who, knowing that your old father had not the means to dress you out so richly, has taken on himself the expenses of your *toilette*, and in spite of so many people interested in your downfall, has the courage to adopt and defend you. Such generosity is rare to-day. Republican as I am accused of being, let my gratitude be assured to the king of critics.—BÉRANGER."

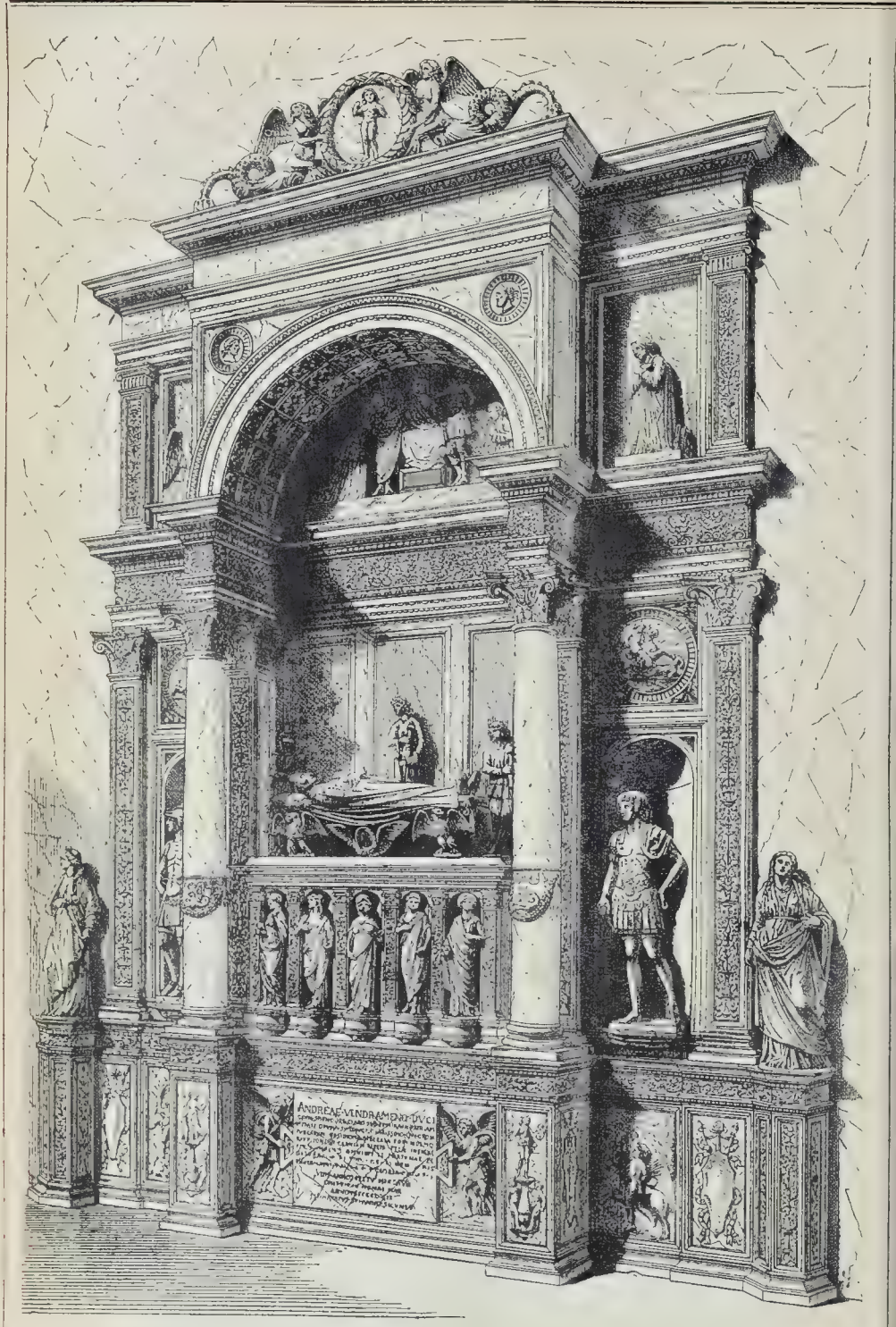
SANITARY STATE OF THE WAR OFFICE.

THE commission which has been appointed to inquire into the state of the War Office, consisting of Sir William Jenner, Dr. Muir, Dr. Seaton, and Mr. A. B. Mitford, have made a report to the Prime Minister, which was issued last week. The commissioners state that they have examined the whole building from basement to roof. They found on the several floors water-closets with no efficient means of ventilation. These have been condemned, and will be replaced by others to be built in the garden. Several lavatories are complained off as emitting bad smells, and the committee believe that noxious gases must from time to time escape from the pipes which open into the drains. The overflow pipes open into the soil pipes. Some of the cisterns supplying the water-closets have taps, and are available for drinking and domestic purposes. In one case such a cistern is habitually used. There is a special cistern for the domestic supply, and an order issued that the cistern only should be used, but the order has not been obeyed. They say,—"The ventilation of each room and passage should be at once taken in hand, every case being treated specially. We would, however, recommend, in every instance, that the ventilators introduced should be of such a nature as to be beyond the control of the occupants of the room, and so constructed as not to create a draught. To render the air of the rooms less foul we advise that rooms be set apart for luncheons, and that a special hour be fixed for the meal. The windows of the rooms should be freely opened by a porter during the absence of the occupants. It should be borne in mind that these suggestions, if carried out, will, in our opinion, only mitigate evils, not remove them."

THE MYCENÆ TREASURES.

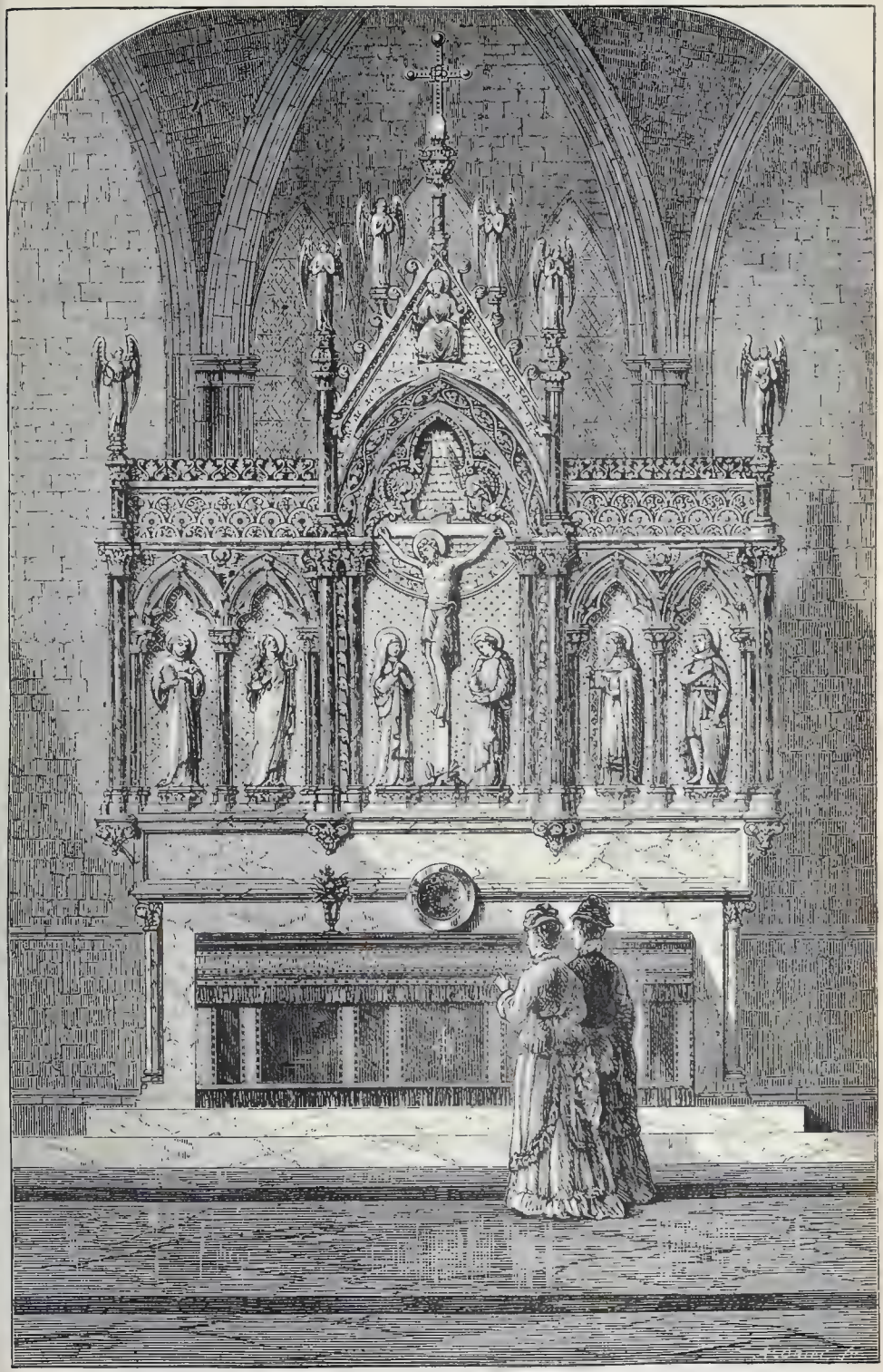
ON the 19th and 20th of February the articles forwarded by Dr. Schliemann to Athens were, to a very large extent, exhibited to the officers of Her Majesty's fleet now at the Piræus, and to several *savants* and archæologists then in Athens. Dr. Phené, F.S.A., sends us information of the great beauty of the golden ornaments. and the elaborate devices wrought upon them. Having made this inspection of the treasure trove, he proposes to visit Mycenæ, and the various parts of the Peloponnesus and Asia Minor, recently productive of archaic treasure.

The Norfolk and Norwich Hospital.—The efforts of the Prince of Wales and the Earl of Leicester to promote the movement to enlarge the Norfolk and Norwich Hospital have resulted in the determination of the governors of the institution to build a new hospital, in accordance with a generally expressed wish of the subscribers. This course was decided on at a meeting of the governors held on Saturday. It is estimated that the new hospital will cost 50,000*l.*, and 43,000*l.* have been already subscribed, including 13,000*l.* of Lord Leicester and the Prince's subscribing.



MONUMENT OF THE DOGE VENDRAMINI, VENICE.—Latter Part of Fifteenth Century.

[See p. 225, *ante*.



THE NEW REREDOS, SALISBURY CATHEDRAL.— Sir Gilbert Scott, R.A., Architect.

REREDOS, SALISBURY CATHEDRAL.

NOTICES of the recent works in Salisbury Cathedral have appeared on various occasions in our pages. In our present number we give a view of the new reredos. It is composed of Alabaster, with columns of coloured marble. The parapet has a jewel in the centre of each circle. The arch above the Saviour was suggested by the entrance-arch to the Chapter-house, Westminster. The whole has been executed by Messrs. Farmer & Brindley, from the design of Sir G. G. Scott.

THE DECORATION OF INTERIORS.*

EVERY thoughtful architect who has a building of whatever size or character under construction according to his own plans, and who is about to decide upon the decoration of the rooms and passages himself, rather than leave it to the mercy of the ignorant or unsympathetic plasterer or decorator, finds he must go upon one of two principles. He must either proceed to decorate the interior according to the most approved models in past ages of the special style to which his building is supposed to belong, or he must design a new decoration in the best possible conformity to the respective uses which the different portions of the interior are intended to serve. Of course, this may have been already settled before the elevation of the intended building was produced; therefore, if the building is desired to be a reproduction of something which has gone before, the interior decoration must carry out that desire; while, if the design is to a less or a greater extent invented, the interior ornament should harmonise with the original plan.

I know it will be considered by some architects as little less than heresy to assume that there are these two modes of procedure open to us in the decoration of rooms. The laws of construction, they say, are so inexorable, and the rules of art have been so fully laid down by the finest masters, and have been so perfected, that it is mere presumption to suppose that any young architect can go at once and invent a new style. This is, no doubt, to a large extent correct. Any man who despises the laws of art and of beauty which belong to the severally great and well-defined styles of architecture, may be certain only of this, that however great his industry or splendid his talents, he will never make a successful architect, or leave any noble work behind him. But, at the same time, any genuine student of any style of architecture, after studying the best examples of that style, and ascertaining the principles of art which governed it, will soon find when he comes to apply his knowledge in practical construction that he still has to make a choice of the kind I have mentioned. He discovers that the great Classic styles are in many respects inadequate to represent modern ideas and to satisfy present needs. For instance, the Greek temple, upon the model of which the Birmingham Town-hall was built, had part of the roofs open and had no side windows. The architect, therefore, although he turned at a faithful reproduction, was forced to call invention to his aid in order to render the building habitable and convenient for its purpose. The discovery and abundant supplies of glass and glass, the requirements of constitutional and municipal government, added knowledge respecting the laws of health requiring ventilation, light, and air; the expansive needs of advancing manufacture and commerce, the new aspect of religious thought and means of worship,—all these diverse causes, and many more, require that the architect who has any grasp of mind, and any true conception of his mission and his work, must have a capable and adaptive genius, which will enable him to employ the knowledge his studies have secured him, so as to design the building he is about to contrive in such a manner as that it may well serve its purpose, and be acceptable to those for whom it is to be erected. The architect, therefore, must do one of two things,—he must design and arrange his building either by means of new applications of old details of the style in which he works, acting in the old parts as best he may; or he must, in following the broad underlying principles of any great style, invent new plans and new arrangements in conformity with those principles and in agreement with the uses and needs of the intended edifice.

These statements are by no means new. Even Pope, the great satiric poet, in his "Address to the Earl of Burlington," says on this subject:—

> "You show us, Rome was glorious, not profuse,
> And pompous buildings once were things of use.
> Yet shall, my Lord, your just, your noble rules
> Fill half the land with imitating-fools,
> Who random drawings from your sheets shall take,
> And of one beauty many blunders make;
> Load some vain church with old theatric state,
> Turn arcs of triumph to a garden-gate;
> Reverse your ornaments, and hang them all
> On some patch'd dog-hole eked with ends of wall;
> Then clap four slices of pilaster on't,
> That, laced with bits of rustic, makes a front.
> Shall call the winds through long arcades to roar,
> Proud to catch cold at a Venetian door;
> Conscious they act a true Palladian part,
> And if they starve, they starve by rules of art."

The poet in this passage is in no way condemning the study of past styles of architecture, but the mere slavish copyism of the forms of past styles without having in any way caught the spirit in which the old masters worked, or without having followed in the same spirit to produce a building exactly fitted to the use for which it was built; and as it is clear that the spirit in which the architect plans and elevates the building is also the spirit in which the interior will be decorated, I feel I shall do well to mention the original conception as having a close relation to my subject; and I need not go far to prove that in the matter of interior decoration the previous remarks will hold good. Mr. Owen Jones, whose great work, the "Grammar of Ornament," is the best text-book on this subject, says that he feared his book would at first have a result exactly opposite to that he intended. He intended the work to be strictly a grammar,—that is, a book to teach the rules of ornament and decoration. These rules or principles he illustrated by numerous examples, but he feared that instead of producing new ornament and decoration in the spirit of the several styles, and following the rules given, many architects and designers would be satisfied with merely copying the examples in a slavish way and applying them wherever they might seem to come in, without regard to sentiment or propriety. We all know how sadly this has been carried out. Every wall-paper for years after that book appeared was, if it had any pretension to style, a copy of some one of the very numerous examples given in that book; and even yet the same tendency is only only too apparent. If you ask those who have that work, or who study it, you will generally find that they know the examples thoroughly, but that not one in ten has read and fully mastered the text, wherein the principles of the styles are explained.

I may, therefore, without further parley, return to the axiom with which I started,—that an architect must either proceed to decorate the interior of a building with copies of ornament, as well arranged as he is able, after the best example of his chosen style; or he must design new ornament according to the principles of his chosen style, and in conformity with the uses which the different parts of the interior are intended to serve. Now, with the first of these systems, I can have nothing to do, as it is merely a matter of study and memory. No power of design is required for this, and any man, with an orderly method and fair means for study, can do what is necessary on that mode. Certainly a few inconveniences may occasionally arise. For instance, the Greek votive wreath, usually placed on ancient tombs or altars, may re-appear in a cornice or in a border of a modern ball-room; but probably the conduct of the persons who resort thither is none the more sacred on that account. Again, the columns which, in ancient buildings, were outside supports, sometimes appear within modern revivals as interior ornament, or, otherwise, sham representatives of such; and not unfrequently, the symbols of the gods of Egypt, or the emblems of Assyrian theology, follow you up a staircase to an English public building. But these inconsistencies are inseparable from the first plan of decorating interiors which I have mentioned, and therefore I will pass on to the next.

Let us suppose that the architect, in thinking of decorating upon the second plan, begins with an ecclesiastical building. As the Classic temples were lighted only by the roof or the entrance-door, we will assume that he sets aside these styles as being in spirit unsuited to modern worship. Other reasons of climate might be given, but these would be chief as respects the interior decoration. Chaucer, speaking of the temple of Mars, in his noble tale of "Palemon and Arcite," says:—

> "The northern light in at the doore shone,
> For window in the wall ne was there none."

But then he proceeds to describe most graphically a series of powerful frescoes which could only have been seen very indistinctly even on a bright day. This mysterious gloom, however, may have been appropriate to the dim profanities of Mars idolatry.

The architect who is about to plan a modern church hears the modern cry, "More light, more light," and therefore elects to design his edifice upon the principles of Gothic art in its best periods. The columns, the roof, the windows, we will imagine settled as belonging to the original plan of the building, and the stained glass we will suppose so managed as to give within not the "dim religious light" which belongs to old and superstitious periods, but a sweet bloom, an illumined glow, which allows every worshipper to behold every act of worship and to join in it. We will leave the fittings and furniture, to commence with the floor. The tiled and mosaic pavement, which has always been a characteristic of best styles of art would surely enter here. But while the colours are bright, they should be always secondary or tertiary colours, the primaries being left for the windows, furniture, or more lofty positions. Again, the transitions of colour should never be too violent, as nothing is more offensive to the eye of true taste than the idea of unevenness which is given by tiles of strongly-opposing colours. This is too common an error made for the sake of effect. Then, again, it is a serious mistake to use upon tiles the heads of angels, saints, or other human beings, as no greater degradation of such subjects can be perpetrated than placing them in the floor, to tread upon them; and in reference to this I will take the liberty of expressing my surprise and regret at finding in the otherwise excellent tiling of the chancel of Worcester Cathedral that the outlines of kings, bishops, or saints, founders of the cathedral, appear in grey medallions. I have seen Scripture subjects similarly treated; and although great authorities have been cited for it, I cannot see any reason why because mistakes were made in taste, even by the great men of old, we should blindly imitate their mistakes as well as their greatness. Monumental brasses are in a different case, because the body of the deceased was supposed to be buried under the spot where the brass was placed to record his name and circumstance, and therefore the brass served the purposes of preventing persons walking over his remains, of perpetuating his memory, and inciting those pious persons who observed it to utter a prayer for his soul. I will therefore still venture to condemn tiles containing human figures as quite improper for paving. The old monks frequently placed effigies of the serpent or Satan on tiles, as being desirable to tread under their feet; likewise at times they placed their own enemies, or those of their church, in such unenviable positions. But possibly those freaks will hardly nowadays be imitated. Another fault in some tiled floors, I find, is that of placing texts of Scripture as borders. If we, as Christian worshippers, build churches to the author of the Bible, surely it is an act of gross inconsistency to place portions of His word in positions where we shall walk over them. Yet I saw even in the large entrance-hall of a wealthy ironmaster, one of Minton's finest tiled floors divided and bordered with passages from the Book of Proverbs. The ornaments of tiles should be chiefly geometric forms, systematic running ornaments, and arrangements of symbols derived from those humbler forms of vegetable life which carpet the earth's surface.

Coming to the walls of the church we are considering, we find a new spirit must animate its decoration. When in old times the light was dim, and the interest, the glory, and the worship all centred in the altar or communion,—then it did not much matter about the walls of the main body of the building. But now that a church must be lighted well throughout, now that gas affords an artificial light of power and brilliancy, the interior walls require decoration. I was glad to find this fact recognised in the beautiful new Roman Catholic Church of St. Walburge at Preston,—an edifice of the purest style, with one of the most perfect spires in the kingdom. The light through the exquisite lancet windows is abundant, and a pretty geometric ornamentation relieves the monotony of the otherwise dull inside surfaces of the walls. On going over it, I

* By Mr. J. W. Tonks. Read at the Birmingham Architectural Association.

remarked that more lofty symbols and figure-subjects were proper for the church walls, but it was explained to me that the poverty of the congregation had prevented their adopting them. The noblest and finest decoration for church interiors is undoubtedly the fresco. A superb specimen of this is to be seen in the new patented process of Mr. Gambier Parry, as shown in the frescoes of St. Andrew's Chapel, Gloucester Cathedral, executed by Mr. Parry himself. The figures are noble yet simple, and the ornament throughout symbolic. Yet even here I could not help observing one instance of a too slavish adherence to one of the faults of our forefathers. It is in the painting of imitation drapery or tapestry. The age of tapestry is gone; we never wish it to reappear, and the attempted imitation in colour of a manufactured article not pertaining to a human figure, or having any necessary reason for its presence, is a mistake in art.

The complete fresco picture is, however, not always obtainable from its necessary costliness. And as a specimen of a much cheaper, yet very beautiful, kind of church wall decoration, I would refer you to the interior of the chancel of the Collegiate Church of St. Peter at Wolverhampton. The modes of the process I have not time to describe, but the result is a series of outline illustrations of the parables of our Lord, finely drawn, the lines being of a deep chocolate tint, and the only numbers being an occasional nimbus in gold, the tinted blue of the sky, or a slight differencing of several kinds of drapery or foreground. The subjects are divided into panels by bands of coloured tiles, and each parable has a line of Scripture text to explain, or rather to lead the mind to consider the story, as depicted to the eye. One great advantage of this system is that, while the effect is full and rich, there is nothing in the decoration to interfere with the sense of flatness which a wall should convey to the mind. The small church at Newlands, near Malvern, may be objected to by some on account of the spirit of Ritualism which pervades it, but every genuine art decorator will be delighted with the interior of the wall divisions, all of a pure ornament, in simple chocolate outline, the large spaces in which all round the interior are being rapidly occupied with Scripture subjects, treated with a noble and severe simplicity which is most accordant with our highest conceptions of divine things.

I find this topic enlarges before me as I go further into it, and, fearing to exhaust your patience, I must hurry on. Leaving, therefore, the matter of church decoration with these few imperfect hints, I will now ask you to think upon the interior decoration of public buildings and of private dwellings. Burke, in his "Essay on the Sublime and Beautiful," says that a preponderance of gloom and shadow is the cause of beauty in large rooms. This may be the case if we look at immense interiors with the eyes of the ancients. The Egyptian, Assyrian, Greek, and Roman peoples were so born, educated, and shrouded in mystery, that gloom and shadow were beautiful to them, as being in sympathy with their natures and with their minds. And Edmund Burke was so imbued with classic taste, that, in spite of his powerful genius, he seemed unable to escape from its trammels. In more than one sense he,

> "Though born to the universe, narrow'd his mind,
> And to party gave up what was meant for mankind."

I feel sure that could he have escaped from the Classic party, he must have seen that to us inquisitive light-loving, and free-thinking, and more outspoken moderns, gloom and shadow in our public buildings are not beauties, but that they are faults, nuisances, and blots. The more light we can have in a great hall the more beautiful that hall will be if there is anything in it worth seeing; and any hall which depends for its beauty on gloom and shadow is utterly false to the spirit of the age. I would fain go to another great authority for definition, and it is but fair to the mighty genius of Edmund Burke to say that he did not go fully into the subject before us in his essay, but treated it, as it were, in passing. But Sir Archibald Alison, in his essay on "The Principles of Taste," lays down several principles which I believe likely to be of much service to architects in reference to the decorations of interiors. He first of all urges the importance of producing in a room of any size one pure and unmingled expression of beauty. That pure, unmingled expression should be the best artistic mode of conveying to the mind of every person entering it the sense of fitness to the use which the apartment is intended to serve. He further resolves this sense of beauty into two kinds, a positive and a negative. The negative sense of beauty he believes to be produced by the proportions of the room,—its length, breadth, and height. The positive sense of beauty is produced by the more or less close relation of the decoration, fittings, and furniture to the use the room has to serve. I am forced in some degree to refer to this negative sense of beauty because it is the foundation upon which a more positive beauty rests. If a large hall is too wide in proportion to its length it gives an unpleasing sense of insecurity arising from an involuntary impression that the weight of the roof is not adequately supported; so that unless there are assisting pillars introduced such a room would never convey a reposeful sense of beauty, however elaborately decorated. Again, the proportions of a council chamber, of a hall suitable for concerts and musical gatherings, of a place of public meeting, are all relatively different. The proportions of rooms all express their several distinct emotions. A long, wide room with a low flat roof, may look well and suitable for a museum or a range of offices, where the study of papers, books, or objects of moderate size is the chief concern,—but such a room will never look noble.

Again, a great public hall where the main purpose is that men in large numbers should meet impelled by one absorbing purpose, and to be swayed by one common impulse, or to be moved by the burning words of an eloquent orator, should be mighty in its proportions, lofty, and its decoration and architecture, so far simple, unbroken, and harmonious as to please, and yet in no way detract from the emotion of the hour, or carry the eye away from the central figure. This is why our Birmingham town-hall is so splendidly adapted for public meetings. The same reason, however, would show how thoroughly unadapted the great hall of St. George in Liverpool is to such a purpose, even if considerations of sound did not present a fatal bar. The deep recessed side arches, the pillars, and statues, all divert the attention and distract the mind. On the same principle a council chamber, where fifty or sixty members meet to discuss and deliberate, should not be too lofty in character or too stately in decoration. If it is, the result will be a perceptibly freezing effect upon those who rise to speak there.

If, then, we take for granted that the architect has secured for his interior that negative beauty, in character, form, and proportion which is yet so essential a foundation for its positive charms, we will now watch him as he proceeds to decorate it. Take the House of Lords, for example, with its tracery, statues, and gilding. All the principles of Gothic art are perfectly carried out, yet you feel you are rather in the lady chapel of some fine cathedral than in the hall of debate of the British senate. You feel, without knowing it, that the conception is erroneous, and, therefore, you do not wonder that, even as to the first requirement of a deliberative meeting-place, the conducting of sound, it is a failure. Its proportions are unsuitable, and the elaborate yet serious decoration tends to give a stiffness and severity to the debates there which must be a constant injury.

The House of Commons was a great failure at first, but it was so important that discussions there should be well heard that a false glass ceiling has been put in. By this means the most beautiful Gothic tracery and roof work have been hidden from view, but the result is a gain, not a loss. The proportions of the room are now appropriate; the sense of comfort pervades it; and the decoration, being less ponderous than that of the House of Lords, gives an air of dignity without pressing upon the mind that religious awe which strong projections and deep shadows in interiors seem to give.

Two large rooms I have mentioned before,—St. George's Hall, Liverpool, and the Birmingham Town-hall,—have just been newly decorated inside, and I think we may derive a few useful hints from the comparison. The Liverpool decoration is pretty and accidental. It is evidently executed by a respectable decorator, who thought of the individual parts rather than the general effect. He knew how to put the proper colours in juxtaposition without offending good commonplace ideas of taste. The marbles, real and imitation; the primary, secondary, and tertiary colours, all are neighbourly one to another, none too harsh or violent, and the result is a charming ambiguity of effect, which means nothing more than cleanliness and good paint. But when you go from this interior to that of the Birmingham town-hall, you are met by an exactly opposite impression. There may be glaring defects, if you will; but there is an audacity about it which proves the presence of an idea, which is far better than the barren and decent tameness of the previous example. Let us examine it. First, we note that the object of the decorator is to ascend from the floor to the ceiling by successive stages in purity of colour. The lower colours are chiefly tertiary; chocolate, citron, and olive, being compounds of the secondaries; the upper walls have a preponderance of secondary colours, greens and purples, with gold always to harmonise; the colours of the ceiling are chiefly primary, pure and delicate in tone. Then, as the decoration rises in tenderness of colour, it also rises in type. The lower wall-forms are simple diapers, elementary and geometric, with divisions and borders of simple repeated forms. But as we rise, we come to plant-forms of a higher order, treated with graceful conventionality. The result is, therefore, decisively grand. Of course it has its defects, as every bold effort is likely to have. The portraits may be in questionable taste, and the fine proportions of the hall may appear in some respects to be broken by the divisions of the wall decoration. But the latter fault would have been avoided had not the artist given way a little in that particular to that evil love of classical shade, of the beauty of darkness, to which Edmund Burke referred. Had the chocolate and other deep tones of the lower walls been in the same colours, but in much lighter tints, the most beautiful result would have been obtained, and the unity of the parts would have been complete. I wish one thing more. I long for the coming of that noble thinker who shall give to us motives of decoration for our public buildings which are symbolic as well as æsthetic. When our ornament begins to satisfy the mind as well as delight the eye, when all decoration gives a lesson and explains the use of the room it is designed to adorn, then we shall have that new age of architecture for which as yet we have looked in vain.

We will now go into rooms of less magnitude. I need not enlarge on the proportions of rooms in relation to their uses, as the rules before referred to will apply as well to dwelling-houses as to public buildings. But, unfortunately, when we come to decorate we must consider the ornament in relation to one special characteristic of modern life. Nineteenth-century life is a life of constant changes, and thus houses are constantly changing their possessors, while their possessors are constantly changing their furniture. In old times walls of dwelling-houses might be decorated with mural paintings; but now-a-days, if one owner indulged in any such luxurious fancy, his successor might push a huge piece of upholstery against it, and then the whole thing would be so absurd that the next step would be to paint it out. The only place then left for permanent decoration would be the ceiling; and the plan of painting on ceilings is one of the mistakes of former times, to my thinking. The unpleasant sensation arising from the effort to study elaborate figure-painting on a ceiling is quite enough to prevent such art-work being appreciated, even at its true merits, while the fatigue and injury to the artist are a genuine ground of objection. Ornament on the ceiling should either be geometric or floral, but figure subjects are certainly out of place.

We must conclude, then, that the finest imitative compositions, whether paintings or statuary, lie beyond the province of the decorator of the interiors of dwelling-houses, and form part of the furniture of rooms. The work of the decorator must therefore be in keeping with this idea. His ornament should be flat in treatment, so as to convey the idea of a wall; it should be a plane upon which lights and shadows may fall, and, therefore, should have no lights or shadows in it. There should be no effort at brilliant colouring. In the same way that the back-ground of a picture is usually subdued, all colours being less distinctly visible, so the wall decoration, intended to be the back-ground of a room, should be quiet and harmonious; never obtrusive. The tints must, of course, be varied indefinitely for various objects for which rooms are set apart; but I venture to assert that they should always be tints of light, not hues of shade. The drawing-room may be cool and pure, the dining-room may be warmer and richer, the bed-room may be sprightly and gay like morning flowers; but none should be sombre or dark. The heavy-toned dining-room papers, which are even now so fashionable with many people, are

ly suggestive of heavy surfeits and bad gestion. Dr. Dresser, in his book on namental design, gives two illustrations to ow the effect of ornament upon the emo- ons. They are intended to give the effect of ening. One is that of a neutralised ground, ith a star peeping in the midst of it, while ails are creeping up the plants forming the coration. The other is an intensification of e same notion; a coronet of stars against the me neutral ground, and a symmetrical render- g of a diabolical-looking night insect. This ay be good as far as it goes, but it only serves show how mistaken such vagaries would be, if pplied to wall decoration. If the walls of any edroom were ornamented in the manner above escribed, the effect would be unhappy by day, nd unendurable by night; the children would e too frightened to enter the room, and no ervous women could long inhabit it. In the edroom we want coolness and light. No sight s more calculated for enabling us to wake uietly and happily to the duties of the day, han a pretty and cheerful bedroom. And we must remember that the decoration of the hambers will not be observed most closely when ve retire to rest, jaded, and perhaps half asleep, ut when we open our eyes in the morning, and ake a first glance at the awakened world. So in the dining-room, the cheerful, yet not too arkly decorated walls, assist and do not detract from the brilliancy of the well-laid table.

Depth of tone in wall decoration should be avoided, for another reason. Darkness always contracts rooms, and the larger the amount of light reflected from the walls the larger the room appears. You may any time observe this by re-papering a room in a lighter tint. It grows larger instantly. Again; even on the score of health, the light and cheerful room has the advantage. To take a pointed case, I heard of a manufacturer who had his workrooms where a number of girls and women were employed, not decorated certainly, but tinted with a heavy yellow wash. The people employed were almost constantly suffering from severe headaches. He was advised by a physician whom he consulted, as these matters were, in the aggregate, a serious loss to him, to simply whitewash his walls. The result was surprising. The work was in every way better done, and the headaches became comparatively rare. Now, I would not argue from this that the interior decoration of manufactories should be simply whitewash, but it adds to the burden of my song, the moral of its story, which is, that in our interior decoration we want "more light."

We know that the tendency of modern house-building is to enlarge the windows, to diminish the boldness of cornices, to reduce projections of chimney-breasts or anything else which interferes with the full effect of an interior. This may go too far, until a house may be compared to a concert-hall "star,"—all shirt-front and effrontery,—but the movement in itself is a good one. It signifies a thorough revolt from some old architectural heresies, and the interior decoration should answer to and explain the movement. The first object should be to decorate the room in such a manner as to render it most suitable for the purpose for which it is intended. The manner being thought out, the means will not be wanting to an artistic mind. The symmetrical borders which divide the principal parts, the unobtrusive but interesting mosaic of the hall pavement, the delicate treatment of the cornice, and the pure tints of the ceiling will answer to his needs.

And as one matter leads to another, as we, in our desire for harmony, think the paint-brush will do away with anything out of keeping in wood or stone, let me enter a protest against defacing the doors and other woodwork. If we assume that a good wood is used in the inside fittings of our house, do let the genuine and often exquisite grain of the timber be seen. We have daubed and decorated our woodwork so much that the art of arranging fine wood-work symmetrically is likely to be lost among us. Yet when I was in Prague, several years since, I saw, in the Radschiner Palace, the oaken floor of the ball-room, one of the finest in Europe, where all the artist was shown in the charming mosaic of different-coloured oak, and laid as perfectly as if the floor were a sheet of glass. But we have Brussels carpets, some may say, and therefore are independent of that class of decoration. But what of our public halls?

The art of the wood-worker and wood-carver is one which has been too much neglected in interior decoration. I saw a happy effort to revive it in a lady's pretty boudoir, in the house of a wealthy ironmaster in North Staffordshire. It was called the "Oak Boudoir," and very properly so, for the floor, ceiling, walls, all were in oak. The floor was inlaid with oak of various colours, with simply a fur rug here and there for comfort to the feet. The walls were divided into panels by chaste ornament, and carved groups, illustrating the seasons, in the centres of the panels; the cornice was simply, yet skilfully carved, the ceiling in a paler oak, and very quiet. This lovely little casket of a room had an ample window, framing as sweet a picture of terrace, hanging gardens, lake and hill country in the distance, as one could well desire to see. I offer the result as a hint.

Having thus, in a discursive manner, wandered through many rooms, and having, I know, done but scant justice to so large a subject, I must now leave my bare suggestions to your practised judgment. I know how much easier it is to criticise than to perform; how much simpler it is to point out a line of direction than to walk in it; but it is in the belief that any suggestion, however humble, may still be a help to some member who may more fully see its bearings than he who gives it,—it is in the consciousness that we are on the eve of great changes in art and architecture, and that every idea thrown out may help, in its small way, to bring it about,—that these remarks have been made. The change of style and the fact that our present civilisation must soon have a style of its own, and must not much longer be content with pilfering details from the monuments of past ages, is now generally acknowledged; and if the architect and the decorative artist resolutely set themselves to the task, it must in due time be achieved. It will not be the work of one man or of one year, not perhaps even of one century; but it will be by an educated,—a thoughtful, perhaps,—and almost unconscious movement in accord with the spirit of the age. I venture to bring my small gift to your store, and can only say in conclusion that, if it should stimulate any fresh exertion in this direction, my expectation will be more than fulfilled.

SCENERY IN STONE.

A little cloud of artistic indignation was raised not long ago by Sir George Bowyer, who expressed a gratuitous conviction, in the *Times*, that the Victoria Tower ascended four hundred feet in the air merely to carry a flag-staff. Not that architects were indignant. They admitted the fact; and with easy logic explained how that gigantic edifice, of several useless stories and a central stair, "marked" the Royal Entrance to Parliament. But it is equally indisputable that most of the pretty scenic effects, which form the ornaments of many a new building in the very heart of London, served our mediæval ancestors some practical purpose. The uses of a tower have lapsed, both from the spread of invention and the division of common into individual usages. The Mussulman from the balcony of a minaret still calls the faithful to prayer; and, among Christian communities, a belfry was as necessary to each parish, or each village, as a watch is to each individual at the present moment. The chimes marked periods of labour and diverted the hours of relaxation. One bell sufficed to extinguish the lights of a hamlet; another assisted the parting soul in its passage to eternity. To the pilgrim and the wayfarer, a church-spire was a signal of comfort and encouragement, since it denoted a place of rest and refreshment. Over the gables of a church it signified a spiritual force acknowledged by all. From the summit of a tower, or a still loftier turret, the sentinel watched the approaches to a feudal castle or a fortified town; thence the vassals of a noble, or the citizens of a municipality, were warned of coming danger. From tower to tower, even at the beginning of this century, messages were sent over the hills of Languedoc and Auvergne. Along the trunk-road from Calcutta to Allahabad there may still be seen lofty brick shafts, from the top of which our great grandfathers communicated with each other. But now, in the midst of hundreds of miles of houses, of thousands of homes, a lofty tower emerges from a new edifice, principally to "break the skyline," as a feature of architectural composition or the apex of a group of buildings. So, hard by, there is rising, some 300 ft. heavenwards, a beacon of security to ourselves and to the stranger within our midst. It will mark, so runs the argument, the Palace of Justice. The friendless and forlorn, robbed of a patrimony, or deceived by that limited liability which offers 25 per cent. interest for cash, seeing afar off the sign of the Temple of Equity, will bend their steps towards it. But if the technical argument be worth anything, there must occur an awkward suspicion that, such a tower ought rather to be placed over the office of a convenient solicitor than over the courts themselves; for in a land of perfect equality before the law, neither poor nor rich can enter the judicial precincts except with a customary introduction. Or if this tower be intended to hold a clock and bell, is it forgotten that St. Dunstan's, St. Clement's, and St. Mary's are close at hand? In every neighbouring shop there is a timepiece; every ratepayer carries a watch. Or, perhaps it is a huge ventilator, through which the odour of parchment and the breath of litigious warfare will be carried to the upper air. But, surely that desirable result can be obtained with less complicated machinery, without causing all the surrounding chimneys to smoke, and obscuring the windows of opposite owners, too magnanimous to demand the pecuniary compensation, which, in the absence of all law upon the subject, they have a legal right to claim.

Nor are our clock-towers, as it is the fashion to build them, convenient or comfortable. That of Westminster is either too lofty or it is not tall enough; the tongue of Big Ben wags too loudly or it is not sufficiently sonorous. Those who, in the immediate neighbourhood, wish to see the dial are compelled to strain their necks, or to recede; and the limits of human vision often prevent what the open river and embankment would otherwise permit. If on the land side of the tower a good view of the clock is now obtained it is due to the accident that Palace-yard has not been inclosed with the buildings originally contemplated. Those who, at a distance, desire to hear the time are favoured only at certain seasons by the connivance of the wind or the lull of street tumult. Meanwhile the deliberations of the most august assembly in the empire are interrupted every fifteen minutes by a noisy vibration, the like of which were it attempted even once in Westminster Hall, by the grinder of a barrel-organ, would be received with amazement and instantly hushed.

The kind of reasoning that prescribes the addition of a tower to a modern building favours, both inside and outside of it, the compilation of superficial ornaments which, like the "false wit" of literature, are pedantic allusions to an exploded mythology or a primitive social system. In a rude state of society the human method of expression has so far assimilated to that of the brute, as to have depended upon signs and gestures rather than upon words. The symbolism of the early Christian faith, portrayed at a later period upon stone, wood, and glass, was largely based upon Pagan tradition. "Among the first Romans," says Gibbon, "the clenched fist was the symbol of a pledge or deposit; the right hand was the gift of faith and confidence; the indenture of covenants was a broken straw; weights and scales were introduced into every payment; and the heir who accepted a testament was sometimes obliged to snap his fingers, to cast away his garments, and to leap and dance with real or affected transport." One social custom of Antiquity took in the Middle Ages a spiritual form,—the relations of patron and client continued, but the client, if still a parasite, was a devout one, and the patron was a saint. Then devices and armorial bearings were absolutely necessary, both on the high road and in the town. The armed knight, with visor closed, could be recognised only by the marks upon his breast and shield. The common people knew the merchant's counter, not by a name over the shop-window or a numeral on the house-door, but by a sign projecting into the street;-and a crude representation of some object, or a roughly-hewn image, spoke to gentle and simple in a popular tongue. The revival of a like kind of symbolical ornament, at this time of general education, is the naïve endeavour of many well-meaning people. I can recall no parallel or precedent with which to compare it, except perhaps Swift's academician, who sought to economise speech and abolish language by carrying about with him diminutive models of everything usually mentioned in the intercourse of ordinary life.

Although the reversion to an old form of construction, or to an old fashion of ornament, may be attended in public buildings with nothing worse than the reproach of affectation, it becomes vastly different when the practice is

applied to private dwellings. There can be no doubt that a picturesque pencil could convert the house-fronts of Drury-lane or Bedfordbury into things of beauty, than which the Jews' Quarter at Frankfort, or the gables of Lisieux, would not be more quaint or delightful; and to judge from much that is passing around us, a certain section of a school, if it can only transform the streets into the appearance of "Chepe" or "Old Bourne," as scene-painters are now pleased to depict them, is not unwilling to sacrifice science to art in the economy of house-building. But a wise architect first determines the internal distribution of his work; and he does not think of superficial adornment until the nature of the construction, and the materials of which it is to be composed, are known. "Ornamental Architecture at Botany Bay"! cried Sydney Smith, "How it could enter into the head of any human being to think of pillars and pilasters when half the colony are wet through for want of any covering at all, I am utterly at a loss to conceive"! In like manner it may be urged that while the courts and alleys of St. Martin's-lane, the slums of Westminster and Soho, and a host of other plague spots, on and between the estates of great freeholders, remain in their actual condition, the common sense of London is derided with talk about the artistic value of "mellow" fronts and the æsthetic advantages of irregularity and confusion. A glance at a part of the population, even, in our immediate vicinity, suffices to show, on the one hand, aggravated debasement which shrinks from notice; on the other, "culture" which makes a great deal of noise. To aid the improvement of the town and the vast mass of its inhabitants, two schools are diligently at work: the teaching of one based upon the laws of science, that of the other upon the caprices of art. In a less learned and less artificial state of society, both in the best times of Antiquity and of the Middle Ages, these forces worked together; but that they are now arrayed against each other, and are daily becoming inimical to each other, it is difficult not to believe.

The cry, frequently reiterated, for the highest art at all times, and the purest respect for nature in all places, would, if granted, be attended with absolute refusal of many economical benefits which the science of engineering confers upon the country. To bridge the Tamar or the Menai Straits, to tunnel Dover Cliff, to span a valley in Derbyshire or Devon, is, with soft sensitive souls, who do not scruple, however, to pronounce their opinions in public, to deface the work of God. The sort of argument implied, if not employed, by them, in the matter of new thoroughfares, for instance, is broadly stated,—Because water in its flow round hillocks and over dales takes a winding course; because old highways and streets, from the claims of property as well as the fluctuations of soil, twist and turn about; therefore a new street or an artificial water-passage should follow the curve of beauty and grace, rather than a direct line from one locality to another. Although in prosaic minds cleanliness and godliness are allied, the school of the picturesque courts anything, even soot, which will take from a new building the damning evidence of its youth. A newly-painted window is said to be crude and garish until a coating of dirt has blended its many colours. A glazed or vitrified surface for the outside of a town-house, in fact anything that will wash, is denounced as inartistic. But much as it must undoubtedly shock poets and painters, the world is getting, year by year, to believe in the force of utility and to fear the results of sentiment. It is worse than idle to censure the ugliness of engineering innovations; for, like the "births of Time," they are necessarily "ill-shapen." When Southey, on this same subject, talked about the "unqualified deformity" of labourers' cottages, and of everything connected with manufactures, Macaulay answered,—"Here is wisdom . . . . . rose-bushes and poor-rates, instead of steam engines and independence! . . . . . Does Mr. Southey think that the body of the English peasantry live, or ever lived, in substantial ornamented cottages with box hedges, flower-gardens, bee-hives, and orchards?" The engineers, within the memory of living men, discovered the lost Greek track,—a track well worn in the Middle Ages,—and though they have not scrupulously kept to it, ugly railway stations, ugly viaducts, and utilitarian edifices of all kinds, may yet grow into a beautiful style of the twentieth century. But the votaries of scenic architecture lay by nothing for the future; they only provide the present with revivals of the past. Surely to construct the picturesque, or to buy it ready-made, is a little theatrical,—an attempt to forestall Nature and to out-run Time. At least it perplexes the thinking portion of the English people; the majority of whom, though doubtless weary of the stock compliment of their neighbours, are unwilling to repudiate the Socratic doctrine, by which they have achieved political and commercial success, to embrace a newer persuasion of sentiment.

WILLIAM H. WHITE.

GOLD AND SILVER IN KING SOLOMON'S TIME.

SIR,—Mr. Ewan Christian's note (p. 205) opens up a very interesting subject of inquiry as to the relative value of gold and silver in ancient times, on which a great deal might be said for which the *Builder* might not be disposed to find room. The more immediate question is as to the interpretation of a particular text (1 Kings x. 21). I suppose nine out of every ten persons would make no difficulty at all as to the meaning in our authorised version, and at once say that it was *silver* which was nothing accounted of in the days of King Solomon. When we refer to the Hebrew text, however, there is a certain amount of ambiguity which affords some slight ground for doubt. It stands thus:—

וְכֹל כְּלֵי בֵית יְהַב כְּנוֹר אֵין כָּסֶף לֹא נֶחְשָׁב בִּימֵי שְׁלֹמֹה

Vecol celei beith. . . . . záhábh ságur; ein coseph, lo nechsháhb bimei Shelomoh.

"And all vessels of the house (of the forest of Lebanon) *were* pure gold, none silver, *it* was not valued in the days of Solomon." The words *were* and *it* are not in the text. The verb *nechsháhb*, from the root *cháshabh*, to calculate, to account, is in the masculine form of the third person singular, of the past tense, in the Niphal or passive conjugation. This might have afforded some clue as to whether it was gold or silver that was so lightly esteemed; but, unfortunately, *záhábh*, gold, and *ceseph*, silver, are both masculine, so that the verb may apply to either.

The personal pronouns are usually omitted before the verb in Hebrew. If the verb applied to silver it is strange that the relative pronoun *asher*, so freely used in Hebrew for *which* and *that*, should not have been inserted. If we look again at the next verse, we see the reason for the light estimation of the precious metals. "For the king had at sea a navy of Tharshish with the navy of Hiram; once in three years came the navy of Tharshish, bringing gold, and silver, ivory, and apes and peacocks." This is the reason given for the plethora, and it applies to gold quite as much as to silver. I should rather be inclined to treat the verb *nechsháhb* as an impersonal expression, applying to both metals, really signifying "this was of no consequence in the days of Solomon."

The passage in the Septuagint runs as follows:—

"Καὶ πάντα τὰ σκεύη οἴκου χρίσιν συγκεκλεισμένα, οὐκ ἦν ἀργύριον, ὅτι οὐκ ἦν λογιζόμενον ἐν ταῖς ἡμέραις Σαλωμών."

The question here arises as to the meaning of λογιζόμενον. The ordinary meaning of λογιζομαι, is to count, to take into account, to consider. Liddell and Scott in the various illustrations they give, have none implying estimation or value.

The passage may be fairly translated,—"All the vessels of the house were overlaid with gold; they were not silver, for it was not reckoned in the days of Solomon."

The Vulgate version is as ambiguous as the Hebrew:—"*Universa supellex domus saltus Libani de auro purissimo; non erat argentum, nec alicujus pretii putabatur in diebus Salomonis.*"

Luther distinctly applies the depreciation to silver:—"Alle Gefasse im Hause vom Walde Libanon waren auch lauter Gold; denn des Silbers achtete man zu den Zeiten Salomos nichts."

Osterwald takes the same view:—"Toute la vaisselle de la maison du parc du Liban *était* d'or fin; il n'y *en* avait point d'argent; *l'argent* n'était point estimé pendant la vie de Salomon."

Diodati, in Italian, gives a corresponding translation.

The author of the article on *Keseph* (silver) in Kitto's Cyclopædia (Dr. Lindsay Alexander) seems to take the same view.

I have endeavoured to give a general solution to a somewhat ambiguous passage; with what success your readers must judge.

J. A. PICTON.

VALUE OF GOLD AND SILVER.

SIR,—It must be more instructive than gratifying to the authors of such articles as that on the "Art Lessons from Mycenæ" to find with how extremely small a share of either critical learning, or common sense, they are credited by some of your readers,—if it be proper to use the plural. To criticise the statement of a writer who must, at all events, have given some thought to his work, on the ground of the punctuation of one out of many translations and versions of an ancient book, which was written not only without stops, but without division of words, is certainly bold enough. Whether the sequence of colon and semicolon could, in any case, have the grammatical effect attributed to it by Mr. Ewan Christian, in your last number, I need not stop to inquire. In the present instance, such a perversion of the obvious meaning would be impossible to any one who had studied either the Vulgate, the Latin version of Jager, the Septuagint Greek version, or the original. Saint Jerome says,—"Sed et omnia vasa quibus potabat rex Salomon erant aurea: et universa supellex domus saltus Libani de auro purissimo: non erat argentum, nec alicujus pretii putabatur in diebus Salomonis." I need not put your printer to the trouble of setting up either the Greek or the Hebrew type; but add the words of the translation of the former by Jager, in the fine di-glott Paris edition of 1839, which closely follows the language of the Greek, and the sense of the Hebrew. "Et omnia vasa quæ a Salomon facta aurea, et luteres aurei, et omnia vasa domus sylvæ Libani auro conclusa. Non fuit argentum, quoniam non fuit reputatum in diebus Salomon." Apart from the plain grammatical sense of the words, it is contrary to common sense to imagine that the services of the sanctuary and of the palace were made of gold because gold was held in light esteem.

The question of the historic relation existing between gold and silver does not hinge on the misplacing of a colon, or the misunderstanding of a plain text. A considerable amount of information exists on the subject, as may be seen by reference to the article on "Value," in vol. iii. of Cassell's "Bible Educator," where the passage in question is cited.

TECTON.

THE HOUSEHOLD AT DIFFERENT ERAS.

SIR,—Since you were good enough to invite the co-operation of your readers in the technical inquiry which you introduced a week or so ago, with a description of the Grecian house, I shall be obliged if you will let me note a few instances of exaggeration, and almost laughable description, which are offered, under the guise of learned research, to the non-Classical public with the pretence of popularising the ancients. As you have intimated, Becker's "Charicles" is the best, and I think the first, book of the kind which treats satisfactorily of a question that, with all his diligence, however, the German scholar has not been able to settle. The translation might certainly have been better done; and, indeed, in the English version of "Gallus," antiquarian details are given in a style of heroics which no catering for public pence can excuse. Such sentences as "the deep blue of an Italian heaven,"—implying almost a hereafter of nationalities,—are counter-balanced by a reference to the Roman cooking apparatus in the following manner:—

"Near the familiar flame they took the common meal."

This, of course, is not Becker, but his translator,—the Rev. Frederick Metcalfe, M.A.; and, indeed, the former ought to have sympathetic rather than rough treatment from antiquaries, seeing that more than one bookmaker has used Becker's vast collection of facts with but rare acknowledgment, and sometimes even without mention of his name. The authors of a book called "The Life of the Greeks and Romans" have sinned in this way; and though I at least am not dissatisfied with them for putting many of his facts together in a readable form, I am quite perplexed with the serious announcement made by Messrs. Guhl and Koner that a real Grecian dwelling-house has been discovered in the island of Delos. One of their proofs that the said building is undoubtedly ancient consists in the fact that it resembles nothing which is

known, or is supposed, to have formed a house such as those, even, which Demosthenes condemned. A plan is given of this building at page 83 of their book, together with a view of the "beautiful vestibule" which Vitruvius says was not used by the Greeks, but which Messrs. Guhl and Koner declare "consists of two Ionic columns between two graceful antæ." Of course, being tickled, I followed your example and scaled their plan. I found that, by allowing 3 ft. clear (very little, all must admit) between the bases of the columns forming the central opening, I obtained an area of construction measuring 140 ft. by 70 ft. This entrance portico,—almost big enough to be the inner portico of a minor temple, such as that of Nemesis at Rhamnus,—is described as leading to a "narrow passage," which, by the bye, is as broad as the portico itself. This narrow passage leads into what Messrs. Guhl and Koner call an "*aula*," and this *aula* is 30 ft. long by 5 ft. wide. The authors, or, perhaps, the translator, ought to say what is meant by the term *aula*, especially as surprise is expressed that a place 5 ft. wide should be devoid of columns. Now, *αὐλη* means a court, hall, or peristyle.

Moreover, the authors of "The Life of the Greeks and Romans" have constructed a plan of the early Grecian house from the description given of it by Vitruvius. They suppose it to have been composed of one peristyle; and without counting the space allotted to the garden, they have managed to cover a superficies of 130 ft. by 90 ft. Their *thalamus* reaches the colossal dimensions of 30 ft. by 20 ft. Permit me to add that the Grecian house of Marini, who is one of the best commentators of Vitruvius, is down in black and white; and by allowing your width of 5 ft. for the entrance passage the whole building covers an area of about 140 ft. by 113 ft.

These dry figures aside, let me say a few words about the "Ancient Classics for English readers" which so many journals have eulogised. I admit that some, such as the essays on Cicero, Cæsar, Herodotus, Xenophon, and that on Horace by Mr. Theodore Martin, are useful as well as entertaining. But I protest emphatically against the "Aristophanes" of the Rev. Lucas Collins, M.A., and the "Æschylus" of Mr. Reginald S. Copleston, M.A.; and happily, though both are written in the same strain, they contradict each other. I have yet to learn that the comedies of Aristophanes were played in an amphitheatre; yet Mr. Collins solemnly assures us that "the masses who filled that vast amphitheatre formed a literary 'public' the like of which was never seen before or since." Then he goes on to explain that the "constant attendance" of the Athenians at the theatre was a cause of their intellectual pre-eminence; having previously told us that the great festivals of Bacchus, on which the theatrical entertainments took place, were held three (*sic*) times a year. He moreover adds that Aristophanes pandered to the tastes of this same "literary public" and "degraded his muse to the level of the streets." He might have said, had he known it, that in order to make this "literary public" appland the poets threw nuts and figs among the audience. But Mr. Copleston, though his essay on "Æschylus" was published two years before that on "Aristophanes" by Mr. Collins, shall be brought to the rescue of his chief. He does not talk about a vast amphitheatre—not he; he talks of a theatre, and in the rich, copious diction of an Oxford Fellow and Lecturer. Ye gods! support me lest I misquote:—"It was a point of national pride . . . . not to miss the two [*sic*] great dramatic festivals of the year. . . . . The theatre was open to the sky and to the fields, so that when a man looked away from the solemn, half-mysterious representation of the legendary glories of his country, his eye would fall on the city itself with its temples and its harbours, or on the rocky cliffs of Salamis and the islands of the Ægean." This, it will be admitted, was a comprehensive programme to embrace with a couple of eyes; but they were antique ones, and there was then no railway between the harbour of the Piræus and the city; nor did any steamers ply between that port and the Grecian Archipelago. Nevertheless, I doubt if even the eye of Socrates saw through a solid stone wall, and the bodies seated one over another of thousands of spectators. But to our collegiate mentors again:—"Religion to a Greek consisted in an intense love of all that is beautiful. . . . . Bacchus was not, as he is to us, a statue, or a picture, or a name, but a real merry boy with a crown of ivy-leaves and *a strange power of inspiring wild thoughts in the human breast.*" Then:—"All are tending, early in the day, to the great theatre of Bacchus under the Acropolis. . . . . The vast semicircle is filled already with men and women. . . . . The sun shines full in the faces of the expectant multitude. . . . . At length the curtain is raised, and the scene in which the action is laid is disclosed. . . . . All is executed with . . . . a knowledge of perspective such as even modern scene-painters hardly perhaps surpass. . . . . There is not much acting, ... rather a series of tableaux, majestic, colossal, statuesque."

Now, sir, this sort of thing, offered up as a prayer to the gods or an invocation to the Muses, would be exceedingly pretty, and deserve the applause of even sober-minded scholars; but thrust for twenty-six pence into the hands of Demus, even Demus after his purification by the School Board,—it is almost ten to one that the talented essayists will suffer. The sacred majesty of the people objects to being humbugged. Seriously, antiquity is quite grand enough to dispense with the kind of hyperbole which may suit the morning paper, but will not bear reading leisurely in a book. The city-Dionysia at Athens was, in Becker's words, a scene of unbridled merriment and drunkenness. Troops of the *demi-monde* were brought upon speculation from Corinth; and the dregs of the town assisted in the festival. It was the Greek carnival. No married women or their daughters attended the theatre. That building, after the Greeks had seen the tent of Xerxes, was covered by an awning. No one seated in the theatre of Bacchus could see even the tops of the trees in the island of Ægina; I doubt if he could see even the pediment of the Parthenon. The theatre was faced and almost environed by higgledy-piggledy streets and houses, not fields. I doubt if Demus in the time of Æschylus was much better than Demus in an Indian city, like Lucknow or Hyderabad, before the British domination; and since you have sought in Hindostan an illustration of your opinions about early dwellings, I venture to say that the modern Hindoo and the ancient Greek have many similar customs. But to continue, neither comedies nor tragedies were played in an amphitheatre, nor was there ever such a building on the slope of the Acropolis. The Greeks were not lovers of Nature, nor did they appreciate it; that sentiment was reserved for other and less developed races of men—those of Northern Europe. I think dramatic representations in Athens took place once annually, and lasted for several days; for the ancients did not live quickly, but they took their pleasures in a heap. Anyhow, if I am wrong, I shall be very glad to eat humble pie; but Mr. Lucas Collins must descend from the clouds in which Aristophanes left him, to talk—and some of his assistants would do well to take the hint—about the Greeks, in the language of men, not of gods.

A Student of Antiquity.

"A POSSIBLE CAUSE OF DANGER."

Sir,—As the *Builder* is an engineer as well as an architect, I am unwilling that his columns should be made the channel for opinions which are not based on the best engineering science. Allow me, therefore, to say a few words on Mr. Charles Hill's suggestion of danger. The earliest locomotives employed on the Liverpool and Manchester and London and Birmingham railways were driven by a pair of wheels on a cranked axle, the engines being four-wheeled. The introduction of six-wheeled engines, with the driving-wheels in the middle, without flanges, was an improvement on the four-wheeled type. Almost every possible form of combination of wheels has since been effected; and the last improvement, in the opinion of the locomotive engineer of one of our most important and best-worked lines, is the general use of six-wheeled engines, with all the wheels coupled, the diameters being 6 ft. for the lighter gradients and 5 ft. for the northern, and more severely inclined, portions of the line. The destructive action of the locomotive, whether on the permanent way or on its own structure, is greatly reduced by making the entire weight of the engine useful for giving adhesion to the rails.

With regard to the revolution of one wheel, after the engine had been subjected to violence enough to break the coupling-rods, out of exact accordance with another, nothing can be more easily accounted for. If it were the indication of such danger as your correspondent supposes, the keying of a pair of wheels on one axle would be much more objectionable. In going round curves there is a very considerable strain thrown on every axle in a train. The conical shape of the wheels was adopted in order to diminish this strain, by allowing each pair of wheels to find, as far as possible, the plane of minimum strain, by throwing the carriage nearer to the outer than to the inner part of the curve. If the wheels were not keyed on the same axle, the wheel on the inner rail of a curve would always revolve at a different velocity to the corresponding wheel on the outer rail. There is a definite and ascertainable loss of power attributable to the rigidity of a pair of wheels, and this loss of power has been purposely submitted to for the sake of additional safety obtained by the rigidity in question.

In the same way, if two wheels of exactly the same diameter, follow one another, a very slight deviation from the line of direction is enough, if the wheels are in any way conical, to make one gain or lose on the other. Any arrangement which made the one follow the other with mathematical precision would make the revolutions coincide. If one of these wheels were driven, as a means of propulsion, and the other simply ran, as bearing a portion of weight, any slip of the former on the rails, such as will always occur when the adhesion is in any way over-taxed, will throw the revolutions out of unison. But if the wheels are coupled, as is now increasingly the practice in the best engines, slip, with all its grinding and destructive effect, is in all probability absolutely prevented. When a pair of wheels gives the entire adhesion, it is easy to slip. If four wheels are coupled, slip is far less likely to occur. With six wheels coupled slip is almost entirely out of the question. There is a certain strain thrown on all the wheels of the engine at the same moment, by coupling,—a strain which, as far as possible, is equal throughout. By this means not only is the mechanical power of the engine better employed, by making it hold to the ground with the adhesion due to its entire weight, instead of to a part of it; but the vibrations and oscillations which are perceptible when a single pair of driving-wheels is employed are reduced to a minimum, and the engine is made at once more effective and more safe.

There is quite enough blindness shown with reference to the main cause of collision on railways, namely, the interference of two streams of traffic flowing at very different rates of speed, to render it important not to divert the attention of travellers and others, who are not mechanical men, from the subject, by representing mechanical improvements, which conduce greatly to punctuality, as well as, in other ways, to safety, as "possible sources of danger." Engineer.

Fires and Fire Insurance.—At a meeting of the Statistical Society on the 19th ult., Mr. Cornelius Walford read a paper on "Fires and Fire Insurance, considered in their National Aspects." He reviewed the various measures which had been taken, from the period of the Roman occupation of Great Britain down to the present time, in the matter of fire protection, and said those steps clearly showed that protection was merely a municipal duty, and had always been so regarded until fire insurance offices came upon the scene, in the year following the Great Fire of London (1666); since which period the municipal authorities had become more and more backward in their duty in this regard, and the fire offices from sheer necessity had come to the front and provided the protection of fire brigades, &c. Matters were now getting back into their proper shape. He traced the progress of fire insurance from its early indications in the Anglo-Saxon guilds right up to its present vast proportions, when the annual premiums in the United Kingdom reached from 10,000,000*l.* to 12,000,000*l.* He urged that all property destroyed by fire was a national loss, and demanded recognition as such by the Government. He said returns of all fires should be made annually to the Central Government, as they were in Russia; for such returns indicated more than appeared on their face,—they indicated alike political discontent or commercial depression. Such information was therefore conducive to good government. He went further and said there ought to be an official inquiry into every fire whereby life was endangered or property sacrified. In the absence of such inquiry, there was a sort of indirect encouragement to arson or incendiarism; and from this and other reasons combined the proportion of fires to the population appeared to be increasing.

THE RISING SCULPTORS AND CARVERS.

SIR, — The promoters of the Tufton-street Architectural Museum are certainly to be commended for the good intentions they have in view,—namely, the welfare of the art-worker and the better taste to be displayed in the detail of works which the architect may require to be introduced into his buildings. Allowing it to be a fact that the carver has vastly improved in his capacity as designer, it is only right that we should expect him to derive some benefit financially, which is seldom the case at present, where he is employed by a man of less knowledge than himself, whose only object is to make as large a profit as possible. If I am to certify my experience, I can verify the fact that many of these men are far more intelligent than their employers. If the promoters of the institution in question were to reverse their plan, by educating the masters first, I believe the result would be far more satisfactory, not only to architects themselves, but also to the art-workmen. At present the men who employ carvers to any extent no sooner become conscious of their position than they too often resort to that mode of life which must reduce art to the lowest grade.

To illustrate the amount of ignorance with regard to art among masters of this kind, I may be pardoned if I insert here a conversation which I had with one of them some years ago. I was discussing with my versatile friend the merits and demerits of a figure which was in clay; the group of Antique Boxers was placed close by, probably for reference; he turned to the group and pointed to that part of the leg which is covered by the muscle called the *Vastus externus;* "Let me see," he said, "what is the name of this muscle? In fact, I forget all my anatomy," as if he ever knew anything of that science! I purposely and erroneously gave the name of the *Gluteus maximus.* "Judas what? Maximus. Oh, yes." Turning round to the figures he began to talk about the "*scapula* of the leg," which he thought was not quite right. What the *scapula* of the leg is, or what he meant it for, I do not know.

I am sorry to say architects who stand in the highest position with regard to their profession, and even those who are members of the Royal Academy of Arts, prefer to patronise such men as this rather than give their figurework to those aspiring young students who are struggling for a modest existence. Instead of allowing their students to be drifted away by the tide of misfortune after they have completed their studies, and probably taken some of the highest honours in the school at Burlington House, would it not be well if that honourable body who choose to provide means for our art education were to make also some slight provision for our future success? Let me ask, Sir, what would it cost the President and members of the Royal Academy to solicit those architects who belong to their body to confer a boon upon those students, at least, who have been successful within their own institution? I am confident it need not cost them a penny, and I believe the plan would work well; it would be such as could not fail to ameliorate the present condition of architectural art alone, but the social position of our young sculptors, from whom as a body of men we are to expect a higher class of work than that which adorns our public and private buildings; and we may also expect that the Royal Academy in future may have to choose some of their members from among them. As an old student of the above institution, I can fully appreciate the benefits it bestows upon us. But whatever those benefits may be, they are only of short duration; our future welfare does not depend upon them, and the renown which some of us may have gained within the walls of the Royal Academy does not in any way extend to the art-patronising world in general. What, then, remains to be done,—when architects do not choose to give their work to those who are capable of appreciating their art, and are fully qualified for its execution, but will rather see these hard-worked students spend the best part of their life under the tyrannical rule of such men as talk about the "*scapula* of the leg"? As to the Architectural Museum, it is not very probable that after years of study in higher schools, and under the best possible masters the country can produce, I can appreciate the humble and one-sided mode of art training at the Architectural Museum. I have spoken to some of my fellow students with regard to my views, and they fully concur with my opinions, that if architects do not choose to patronise genuine art, but will rather uphold the manufacturing quack in preference to the true artist, they will, I fear, have to support themselves the institution they now seek aid for.

J. M. G.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE tenth annual general meeting of this Institution was held on the 27th ult., at the offices, 27, Farringdon-street, E.C., Mr. Edwin Lawrence (of the firm of Wm. Lawrence & Sons), president, in the chair. There were also present Mr. B. Colls, the retiring president; Messrs. Thomas Stirling, W. Hewett, H. T. Bayes (treasurer), E. Graystone, E. Brooks, A. R. Smith, &c. The report showed a total income for the past year of 261*l.* 8*s.* 4*d.*, being a slight decrease from that of the previous year, but happily counterbalanced by a corresponding decrease in the working expenses. One of the pensioners, Mrs. Eaton, having remarried, her name has been removed from the pension list, leaving eight pensioners, all widows, still on the funds.

During the year the orphan rules had been finally arranged and certified by the Registrar, and in accordance therewith a presentation for twenty-one years to the Orphan Working School had been purchased in the name of the trustees, and a child of one of the pensioners, Alice Grace Spencer, was proposed as a recipient of this benefit, and was afterwards duly elected.

The Chairman, in moving the adoption of the report, said he was very glad to be present at that meeting, as he felt he was associating with those who had worked hard to promote the welfare of the Institution. With regard to the orphan rules, he believed those concerned had had some difficulty with them, but it must not be lost sight of that Government officials had certain duties to perform, and it was only that which they felt they could accept (as in this instance) that could be agreed to. The Institution was only young at present, a period of ten years was not long to have been established, and they must be content to work gradually up, like a building, which was taken up by degrees from the ground, and he hoped that in the case of this society the foundations were strongly and firmly laid. With regard to the clerks themselves, many of whom he had the pleasure of meeting that night, he could only say the master builders were very largely dependent on the clerks. In the matter of estimating, for instance, how much they often had to rely on the help obtained from their services, and there was little doubt that the clerks took a great deal of interest in the work entrusted to them. He felt sure that it was only necessary for the Institution to become better known for its prosperity and usefulness to be much increased.

Mr. Stirling, in proposing a vote of thanks to the retiring officers, referred especially to Mr. Colls, the ex-president, saying the Institution was much indebted to him for the active interest he had taken in its detail work, feeling sure that his connexion with the Society was calculated to result in much good.

Mr. A. R. Smith seconded the resolution.

Mr. Colls, in replying, said that a vote of thanks was hardly his due; he felt he had done but very little. The foundations of the Institution, which the new president had referred to, were already laid, and he had only put, as it were, another brick into the building. He especially referred to Mr. Bayes, who had shown so much interest in the work of the Society, more particularly in the business relating to the orphan fund.

The following donations were announced:—

	Donation.	Annual Subs.
Mr. Edwin Lawrence, president ..	£10 10	....
Messrs. Ashby Bros.	5 5	....
Mr. C. W. Jackson	5 5	£1 1
Mr. W. Hewitt	5 5	2 2
Messrs. W. H. Miller & Sons	—	1 1

A vote of thanks to the Chairman closed the proceedings.

LIVERPOOL ENGINEERING SOCIETY.

ON the 28th of February, this Society held its thirty-third meeting at the Royal Institution, Colquitt-street, Mr. C. Graham Smith, president, in the chair. A paper was read on the "Sluices at the New North Dock Works Canada Basin," by G. A. Lyster, member. The author described the works in question, and their construction so far as completed; and then showed that their design and general arrangement are in accordance with the experience derived from the Birkenhead Low-water Basin and other sluicing arrangements throughout the Mersey Dock Estate. The subject is one of great importance to engineers, as the keeping of docks and harbours from silting up generally forms a large item in the annual maintenance account. An animated discussion followed, and the author was accorded a vote of thanks.

Public Buildings in the Metropolis.—In the House of Commons Mr. Bailie Cochrane has given notice that on an early day after Easter he will move for a Select Committee to inquire into the annual expenditure of public offices and buildings in the metropolis, with a view of seeing whether some plan cannot be hit upon by which it would be more economic and satisfactory.

PUBLIC WORKS AND BUILDINGS.

THE CIVIL SERVICE ESTIMATES.

IN Committee of Supply, on the 26th ult., on the proposal to vote 4,200*l.* for furniture for public offices, the Chancellor of the Exchequer, replying to Mr. James, who had questioned the propriety of expenditure in altering buildings which were practically condemned, said that these buildings in Downing-street were in the position of threatened men who were said to live long. He was told there were many people ready to take them on long leases, and he thought they were not likely soon to be destroyed. The vote was agreed to.

On 3,440*l.* for the Houses of Parliament, Mr. Adam remarked that full explanations ought to be given as to why there was such an increase in the expenses incurred in the ordinary maintenance and repair of the Houses, and as to the special works, the necessity for which was, according to the papers before the House, not apparent when the original estimates were framed.

Mr. Noel gave details of expenses incurred in maintenance and repair of the prison-room, the ladies' gallery, the division-bells, the Victoria Tower, the repair of the pinnacles of which, after the squall in January, cost 350*l.*, the Serjeant-at-Arms' house, and rooms for the members of the Government.

Sir G. Bowyer complained that, notwithstanding the newspaper paragraphs which appeared every February, announcing extensive embellishments and improvements in the Houses of Parliament, nothing was ever seen by members which would account for the expenditure, which he believed was greater than need be incurred.

Lord F. Cavendish could not see that these expenses were so urgent as to demand supplementary estimates. The repair of the prison-room, which had not been occupied since 1848, might well have been delayed.

The vote was agreed to, as was that for 3,524*l.* for the erection of new offices in Downing-street, in connexion with the Home and Colonial Offices.

Upon the vote of 1,490*l.* for the National Gallery, in reply to Mr. Goldsmid, Mr. G. Noel said that it was not the intention of the Government to enlarge the building; the most ample precautions were taken against fire. The vote was agreed to.

Upon the vote of 1,800*l.* for repairs to harbours, Sir C. Adderley regretted to state that the estimate of 1,200*l.* for Dover Harbour was only a temporary estimate. Sir John Hawkshaw had inspected the damage to the harbour, and had said it was utterly impossible to form an estimate of the ultimate cost of the repairs. The vote was agreed to.

Upon the vote of 40,975*l.* for the purchase of a site for the erection of a building and other purposes for the new courts of justice, Mr. G. Noel informed Mr. Adam that the works were progressing very favourably. He had been over them with Mr. Street, the architect, whose opinion of the progress was very favourable. One portion would be completed at the end of the year. After some discussion the vote was agreed to.

Upon the vote of 69,400*l.* for public office sites, Mr. Mundella called attention to the purchase by the Government of the offices at Canada-buildings, King-street, which he remarked were most inconvenient and ill-fitted for the purpose to which they were to be put. After further discussion the vote was carried, on a division, by 96 to 61.

On the estimate, 47,000*l.*, for the purchase of Winchester House, Sir W. Fraser hoped the Committee would consider before sanctioning the continuance of the War Office in such buildings as the present. He believed the foundations of that office to be the cause of sickness, misery, and in some cases death.

Mr. Noel said that when the report of the Committee was laid on the table, his hon. and gallant friend would see what was the sanitary state of the buildings. Even if a new War Office were erected, a considerable time must elapse before it could be occupied, and in the meantime by the proposed purchase of Winchester House a great saving would be effected by the concentration of some outlying departments.

Mr. Childers opposed the vote, and said that when Winchester House was put up to auction the highest bid was far below 47,000*l.* The offices must be extended either in the direction of Great George-street or Pall-mall, but the Government must make up their minds which

was to be, or they would land themselves in est extravagance. He would suggest the ppointment of a small commission to settle the atter.

Mr. Mundella said it would cost several ousands of pounds to fit up Winchester House, id it was a mistake therefore, to buy these ont-ing buildings instead of at once erecting a ew War Office.

Sir G. Balfour supported this view.

After some further discussion the vote was greed to.

ARTISANS' DWELLINGS COMPANY: RISKY TACTICS.

On Saturday, the tenth ordinary general eeting of the Artisans', Labourers', and General wellings Company was held at the West-inster Palace Hotel. Dr. Baxter Langley pre-ded. The revenue account showed that the ntals of the company's property had brought 19,853*l.*, and that there has been a profit of 130*l.* on land actually sold, and 1,680*l.* as terest on repayments. These taken with apitalised profits from ground-rents, &c., mount to 8,709*l.*, after certain deductions had een made. The directors recommend that a ividend of 6 per cent. per annum be declared, nd 2,451*l.* be carried to the reserve-fund.

Mr. Dudley Fortescue complained of not aving received a notice of the meeting, which as echoed by Mr. Evelyn Ashley, M.P., and Earl ortescue. Mr. Swindlehurst assured the gentle-nen that the fault must be in the Post-office.

A shareholder asked how the company could ay so high a dividend when they had so large n amount of unremunerative capital invested.

Mr. Greening explained that the company had large amount of property upon which would nortly be realised large profits. There were lso the ground-rents. The company had a right o draw upon such property, and as a matter of ood policy it was wise to keep the dividend at per cent. so that they might induce capitalists o come and help them to complete their under-akings.

Mr. J. Pearce said he had gone thoroughly nto the accounts, and could show that the arnings of the company did not warrant a ividend of 6 per cent.; he felt bound to tender is resignation as one of the auditors of the ompany.

Amendments suggesting 5 per cent. dividend, nd no dividend, were severally proposed and ejected. The report was then adopted, and 600*l.* ere voted to the directors.

MASTERS AND MEN.

Greenock.—In the action raised lately in the reenock Sheriff Court by Messrs. John Coghill Son, contractors, Smithston, against Michael toren, one of the American masons, praying his ordship to ordain the respondent to return to is work under a penalty of 50*l.*, Sheriff Fraser as just issued an interlocutor, in which he dis-nisses the appeal from the decision of Sheriff-ubstitute Smith, and finds no expense due to ither party, on the ground that there was lovenliness on the part of the New York agent n drawing up the terms of the advertisement, nd stupidity on the part of the respondent in igning a contract the contents of which he had ot previously made himself acquainted with. his decision will affect the contract relations xisting between Messrs. Coghill and the rest of he American workmen employed at the new oorhouse and Asylum at Smithston.

Durham.—The Durham joiners still adhere to heir determination to suffer no reduction in heir wages to be made. The employers, on their art, assert that the strike is now at an end, as any fresh hands have started in the town at the educed rates, and that the shops of all the nasters are fairly supplied with men.

Aberdeen.—The Aberdeen sawmillers have etitioned their employers for an advance of 3*s.* er week on their wages.

Bromsgrove.—The nailmakers of Bromsgrove re still on strike against the 10 per cent. reduc ion offered by the masters. A large majority f the men have already commenced to feel the ffects of the strike. The union has resolved t ake a grant of 10*s.* to each man who is a ful ember, and 5*s.* each to the branch members his will cost the union from 250*l.* to 300*l.*

Swansea.—Mr. Dyer, of Cardiff, district secre ary of the Operative Stone Masons' Society, has isited Swansea with the view of settling, if possible, the unfortunate misunderstanding between the masters and the men, which has now existed since the first day of the present year. Interviews were had, both with the employers and men, with the object of ascertaining the views of both parties, and virtually the differences seemed to have been on the point of settlement. The principal point at issue was with regard to the acceptance of a new code of rules which the masters wished to enforce, the men contending that the legal six months' notice for the adoption of these rules had not been given. The *Cambrian* understands Mr. Dyer was with the men upon this point, but he suggested to the men that the new rules were so obviously to their own interest, as well as to those of the employers, that they should be at once adopted. The chief point of the new rules is the adoption of the hour system of payment instead of the day, with certain hours in summer and winter. The price per hour has also been arranged, viz., 7½*d.*, which will give the men more wages both in summer and winter than previously. At a subsequent meeting of the men, however, a resolution was carried almost unanimously, to the effect that the men were determined to adhere to the old code of rules, agreed to between the employers and themselves, through their representatives, in May, 1874, which, it was contended by the men, must be conceded before the strike could be said to be at an end.

Hiring in the Lock Trade.—At a meeting of the Stafford Local Trades Council on the 20th ult., a deputation who had waited on Mr. Staveley Hill, Q.C., and M.P. for West Staffordshire, in reference to the loan-hiring system in the lock trade, reported that the hon. and learned gentleman, while pointing out the difficulty of interfering with the freedom of contract between employer and employed, thought that the law might be so amended as to prevent the employer deriving a profit from the false position in which men who so hired out their labour placed themselves. He would consult Mr. Cross, the Home Secretary, upon the suggestion of the deputation that there should be introduced into the Employers and Workmen's Act a clause rendering such contracts irrecoverable as labour contracts at the police-court, and leaving the master to his ordinary remedy for debt in the county court. The Council determined to seek the aid of the Parliamentary Committee of the District Council in favour of such an amendment.

THE POWERS OF COURT LEET AND COURT BARON.

SIR DIGBY CAYLEY *v.* COATES.

In this case (Malton County Court, before F. A. Bedwell, judge) Sir Digby Cayley, bart., is lord of the manor over the defendant's property, and a jury of a court leet had found a drain belonging to the defendant in a bad state, and a "presentment" being made to the court leet to that effect, the delinquent was fined 3*l.* 10*s.* The defendant not only refused to pay the fine or set the drain to rights, but defied the lord of the manor, and his antiquated court leet and court baron, to compel him, and hence the application to the county court judge to enforce the authority of the inferior court.

Very voluminous evidence was given as to the constitution, mode of procedure, and duties of the court leet, from which it seemed that, on "the viewing" day, the jury divided themselves into sections, examined all the drains, then held a conclave, then went into the cases, and made their "presentment," and amerced defaulters. Sir Digby Cayley, bart., had been lord of the manor since 1840, and up to 1873, there had been no question as to the liability of cleaning out the drain in question, which was done by the landlord and charged to the tenant.

The Judge alluded to the great utility of the court leet, and said it would be well if these courts raked out the drains in populous places. They were the oldest courts in the realm. He had satisfied himself that the court was properly constituted according to the custom of the country, that the defendant himself had sworn fealty to it, and that its actions had been perfectly valid. He should, therefore, uphold the order made, and give a verdict for the plaintiff for 3*l.* 10*s.* fine, and allow costs on the highest scale.

Trees in London Thoroughfares.—As a contrast to the determination of the Newington Vestry to plant trees in the two principal roads and also as to what has been a ready done in the Borough-road and other places, the Vestry of St. Marylebone has refused, by a majority of three to two, to accede to the prayer in a memorial of about twenty of the principal shopkeepers in the Edgware-road, to plant some opposite their houses, in a most eligible spot.

SURVEYORS' ACTIONS.

TILLMAN *v.* AYRE'S QUAY BOTTLE COMPANY.

The plaintiffs in this case, in the Nisi Prius Court (before Lord Justice Coleridge), were Messrs. John & Thomas Tillman, architects, Sunderland; and the defendants, the Ayre's Quay Bottle Company. Mr. Digby Seymour, Q.C., and Mr. McLyrmont, were for the plaintiffs; Mr. Herschell, Q.C., and Mr. Shield, for the defendants. The claim was for work done by the plaintiffs as architects. Mr. Digby Seymour, in stating the case, said that it was an action brought to recover from the defendants the sum of 122*l.* 2*s.* 1*d.* The original action was for 269*l.* 2*s.* 9*d.* 147*l.* had been paid into court.

Mr. John Tillman said that he was an architect, and had been in business about nineteen years. He was engaged by the defendants in October, 1874, to make a survey of the works near the Weymouth Bridge, for the purpose of an arbitration between them and the North-Eastern Railway Company. The first survey was a matter of great difficulty on account of the land, there being a descent of 90 ft. He had charged 30*l.* 18*s.* for that survey. He was next engaged to make a detailed survey, with plans and sections, of each building and dwelling-house at the works. He was told that this detailed survey was for a re-instatement. He took out the quantities and the prices were put in by Mr. Robert Hutchinson and others. These quantities were used by the defendants for the purpose of arbitration. He had charged 89*l.* for that work, which was on the lowest scale he had ever charged for quantities. It was at the rate of one per cent. on the total amount of the valuation, 8,900*l.* He was next employed to prepare a valuation of the bottle works and dwelling-houses connected with them. He charged 44*l.* 15*s.* upon his valuation, which was 21,762*l.* 12*s.* If he had charged at the scale adopted by the Northern Architects' Association, it would have been more, he believed between 55*l.* and 60*l.*

In reply to Mr. Shield, plaintiff said that if the works had been re-constructed, the quantities would have been of immense value.

His Lordship.—It might turn out that a great deal of the work was useless, but if it was ordered to be done it must be paid for.

In reply to Mr. Shield, plaintiff said that the quantities were ordered either by Mr. Longden or Mr. Scott.

His Lordship said that, assuming reinstatement was at one time intended, the two items of 37*l.* and 89*l.* might have been most material.

Mr. Herschell said, with regard to the charge of 44*l.*, Mr. Tillman said that was upon his own valuation at 21,000*l.*

His Lordship thought it was not reasonable to put a per centage upon the plaintiff's own valuation. (?)

Ultimately, without hearing further evidence, a verdict for the plaintiffs for 72*l.* 2*s.* 1*d.* was taken by consent.

DAMAGE TO GOODS IN TRANSIT.

THE VIGO BRICK AND TILE WORKS *v.* THE GREAT NORTHERN RAILWAY COMPANY.

This was an action brought in the Bloomsbury County Court, on the 14th ult., by the plaintiffs, carrying on business in Northampton as the Vigo Brick and Tile Works, against the Great Northern Railway Company, to recover the sum of 49*l.* for damage done in transit to a driving-wheel, which had been ordered from the firm of Messrs. Tuxford & Sons, engineers, of Boston, and broken in transit. Mr. Hensman, instructed by Messrs. Scriven & Terry, appeared as counsel for the plaintiffs; and Mr. Harmsworth as standing counsel for the company.

The plaintiffs' counsel stated that on the arrival of the wheel at Northampton it was found to be broken in two pieces; upon which they at once communicated with the makers, and gave notice to the railway company, to intimate the damage done, and telling them that they would be held responsible.

The evidence of Mr. Mill, one of the partners of the plaintiffs' firm, went to corroborate the statement of the plaintiffs' counsel.

Mr. Harmsworth said that the contract, if one existed, was not with the plaintiffs, but with Messrs. Turford, of Boston, and in this case plaintiffs would not be the right parties to sue, therefore the company did not consider themselves liable; and even if so, the goods were sent at the owners' risk, at a reduced rate, and the learned counsel proceeded to call witnesses on behalf of the company to prove that there was no contributory negligence on their part.

Much evidence was taken on both sides, and the case was adjourned until the 26th ult., when judgment was given for the defendants, with costs.

TREATMENT OF TENDERERS.

Sir,—Will you kindly give me your opinion of the following in your next issue:—

An architect advertises for tenders for the erection of a house for Mr. Jones; tenders to be sent to the architect's office (properly endorsed), not later than ten o'clock on February 14th, the result being,—Herbert, 1,983*l.*; Wright, Bros., 1,800*l.*; Johnson, Bros., 1,754*l.* 12*s.* 9*d.*; Harding, 1,698*l.* Harding's tender being the lowest was accepted at once by Mr. Jones and his architect, and the thing apparently decided; but on Monday, the 12th of February, the architect received a letter (not endorsed) from Brooks, for 1,490*l.* The architect, opening the tender in an ordinary letter, feels bound to submit it to Jones, who, ignoring his acceptance of Harding's tender, instructs the architect to write to Harding, informing him he had accepted Brooks's tender on the 16th of February. Now, sir, will you kindly say if Harding has any chance of recovering compensation.

ONE OF THE CONTRACTORS.

*** We believe that Harding could recover compensation.

THE BIRMINGHAM ARCHITECTURAL ASSOCIATION.

At the meeting held on Tuesday, February 20th, Mr. Yeoville Thomason, the president, in the chair, it was announced that the prizes offered by the Birmingham Architectural Society for the best measured drawings of "The Oaks," West Bromwich, had been awarded to the following:—

1st Prize, 5 guineas ..... Mr. Thomas Turner.
2nd Prize, 3 guineas ..... Mr. Samuel H. Jones.
3rd Prize, 1 guinea..... Mr. Matthew Gardner.

A vote of thanks was also passed to the president for allowing the members to visit the works at the new Municipal Buildings on the previous Saturday. A paper was then read by Mr. J. W. Tonks, on the "Decoration of Interiors," which we print under its own heading.

THE HUMAN FORM: ITS STRUCTURE IN RELATION TO ITS CONTOUR.

In the course of a lecture recently delivered on this subject by Professor Garrod, F.R.S., at the Royal Institution, some excellent drawings, made for the late Mr. Partridge, were exhibited, showing the positions into which the body has to be thrown to keep the line of the centre of gravity between the feet under different circumstances. In the well-known Greek statue of Mercury the whole weight of the body is on the toes of one foot, and while the head and shoulders are forward, one leg is back to maintain the balance. Professor Garrod alluded to the frequency with which artists err in the matter of the centre of gravity. He then passed on to the muscles of the body, and referred to the fact that up to 150 years ago people do not seem to have understood that the muscles which give motion to the bones are the flesh which is eaten. We even now do not understand the mechanism of the action of muscles. Every time they are in action there is a "using up," a "combustion" of material, and this has to be replaced. It is this that makes human labour so dear when compared with machine labour. Although in a steam-engine only one-third of the power of coal is utilised and the rest is wasted, yet food is so much dearer than coal that machine labour is much cheaper. Having explained the contractibility of muscle, and shown it as brought about by electricity, Professor Garrod went on to speak of the two sets of flexor and extensor muscles, which in action are opposed to each other. In seeking repose, those who regard the greatest amount of comfort attainable throw the body into gentle curves, which allow a relaxation of muscle. Physicians going round hospital wards at night notice nearly all the patients on the side and doubled up. The beauty of the contour of the human body is to a great extent caused by the muscles ending as tendons, thus from the thick part of a muscle to the thin tendon producing curves. This is markedly the case in the calf of the leg, and Professor Garrod humorously alluded to the pride with which a Belgravian footman regards the possession of a thick muscle there, which passes by graceful lines into tendon. The action of a large proportion of the muscles is on the principle of a lever of the first order; the muscles of the calf running to the foot act on the principle of a lever of the second order, while the arm affords an illustration of the third order. When a muscle is put into action it shortens, and in shortening thickens, as can readily be felt in the biceps. This fact of the thickening is important in art, as, by representing a thickened muscle, the idea of motion is given without there being any actual motion. A great fault with all artists who have studied anatomy is to overdo the expression of muscles. The Farnese Hercules, although very beautiful, is quite untrue to modern nature, and it is doubtful if such a set of muscles ever really existed. The Greeks knew nothing of the contraction of muscles in action, and in their statues there is represented only that which can be seen, Professor Garrod expressed his opinion that it was better for artists not to study anatomy or, if they do, to carefully observe and introduce in their work only what really does exist, than to put in what they know theoretically ought to be there.

Architects' Benevolent Society. — The annual general meeting of this Society will be held at 9, Conduit-street, on Wednesday, the 14th instant.

FAULTY FOUNDATIONS.

SINKING OF A GAS-HOLDER TANK.

In the latter part of the year 1875, operations were commenced at Middlesbrough for the erection of the largest gas-holder tank in the North of England, at a cost of somewhere about 30,000*l*. The site chosen was the Marshes, but in close proximity to several streets and extensive ironworks. It was decided to build a wall round the tank of concrete (gravel and cement), 6 ft. wide, and this wall has been carried up to a great height, and was considered to be proceeding all right, when all at once one side gave way, and nearly one-half of a street sank down into the trench that had been excavated for the tank. Fears are entertained for the cottages on the opposite side of the street, several having shown signs of giving way, and the street now presents an ugly appearance, the damage being estimated at 6,000*l*.

It is believed that the foundations are faulty, and doubts are expressed as to the proper construction of the wall. At the time the site for the construction of this immense tank was proposed, it was foretold in the Middlesbrough Town Council that some calamity might be expected; and it is a most fortunate circumstance that the tank was not completed on so treacherous a foundation.

POLE SCAFFOLD *versus* TIMBER-BUILT SCAFFOLD.

SIR,—For scaffolds of any height, I am satisfied poles, in point of safety are to be preferred. Scaffold-poles combine lightness with strength, and whether vertically, diagonally, or horizontally placed, no angles are exposed for the wind to grip. Such would not be the case with the structure described,—the square timbers presenting a tremendous advantage to a strong gale.

In the erection of a pole scaffold the materials are usually selected so that the heaviest and stoutest are used below, and the lighter ones towards the top: but a timber scaffold would be, I should think, what we call "top heavy."

Three years ago I built two octagonal shafts in London, both over 100 ft. in height. In both instances I rigged the scaffold up, quite independent of the work, of course, and 130 ft. above the ground-line,—basing it 14 ft. below the ground-line. In one case the cast-iron cap weighed 5 tons, and was hoisted with perfect safety. A close-boarded inclosure was afterwards made for the gilders to work in, and although during the progress of the works there were some terrific gales, insomuch that all the scaffold-boards had to be lashed to the ledgers to secure them, not a single accident occurred. In the other case, so firm, yet elastic, was the scaffold that the architect and other gentlemen ascended to the top at least three times a week. Of course it was braced, but not extraordinarily so, and provision was made that none of the standards could by any possibility sink or start aside.

A FOREMAN.

FLOATING BATHS.

SIR,—I have read the article in your issue of February 3rd, and also a letter on the same subject in a later impression. I should not trouble you, but I fear that both the author of the article and the writer of the letter are somewhat under a false impression as to what is likely to constitute a successful swimming-bath, viewed, at any rate, as it must be, as a commercial enterprise.

The water of most of the rivers in England, and I should think the Dee would form no exception, generally requires filtering to make it sufficiently attractive for that class who most largely practise swimming and bathing, and in a climate like that of England the water requires warming, except, perhaps, for a few days in the height of summer. The patronage awarded to the Charing-cross Floating Bath on the Thames is due to the fact that the water is thoroughly filtered and maintained at an even temperature of 70° during the whole time the bath is open to the public,—this heating being effected chiefly by the utilisation of the waste steam used to drive the filtering machinery; and I am convinced that any bath that lacks, at any rate, the qualification of warmth can only expect custom for four or five weeks at the most in each year; and although a bath may be considerably cheaper if built without a top or bottom, yet it is certain that to effect this economy the usefulness of the bath is most seriously curtailed, as I know from an extensive experience that with warmed water people will bathe far into the winter, whereas out-door bathing ceases at the first show of wet or wintry weather.

E. PERRETT,
Engineer to the Floating Swimming Bath Company.

"THE PULLEY OF THE FUTURE."

SIR,—There appearing in your issue of the 24th ult. a letter under this heading, we are constrained to ask you to allow us to say that on the 6th of September, 1876, we wrote to Mr. Meakin:—"It has come to our knowledge that you claim a patent-right in the manufacture of axle pulleys with an oil conduit to the bush. As a matter of courtesy, we tell you that we made such axle-pulleys years ago, and, of course cannot hesitate to do so as occasion may demand."

To be more circumstantial, we would add that so far back as 1861 we made such pulleys for an eminent London builder for use at a house at Stanmore.

HART, SON, PEARD, & Co.

SCHOOL BOARD SCHOOLS.

Gateshead.—The Sheriff-hill Board Schools, Gateshead, were opened on Tuesday, the 20th ult., by the Mayor of Gateshead. The buildings are designed to accommodate 450 children, in two divisions, viz.:—The mixed schoolroom for 300 boys and girls, and the infants' schoolrooms for 150 infants. The principal frontage is towards Church-street and the south, and is occupied by the mixed school with its class-rooms and children's cap-rooms and lavatories. The mixed schoolroom is 60 ft. by 33 ft., and opening from it are four class-rooms, two at each end, so arranged that the head master from his desk in the mixed school can command a view of the occupants of all the rooms. The class-rooms are separated by corridors 6 ft. wide, which form the entrances to the main schoolrooms for boys and girls respectively. On the south side of the corridors beyond the class-rooms are the children's cap-rooms and lavatories, and on the opposite side of the corridors are the master's and mistress's private rooms overlooking their respective play-grounds. In the rear of the mixed school is the infants' department, consisting of the main schoolroom, 30 ft. by 25 ft., with two class-rooms, each 16 ft. by 15 ft., and with mistresses' room, and children's cap-room and lavatories. The class-rooms are divided by a movable partition, so that the two rooms can be thrown into one if necessary. Latrines and covered play-sheds are provided for each school, the latter being so arranged as to screen the playgrounds from the north and north-west winds. The buildings are erected in red brick, with stone dressings, grey slate roofs, and ornamental red ridges and finials; and the treatment, both externally and internally, is extremely simple. The total cost will be somewhat over 5,000*l*. Messrs. Greason & Stockdale, of Gateshead, were the contractors; Mr. Edington was clerk of the works; and Mr. Thomas Oliver, of Newcastle-on-Tyne, the architect.

Manchester.—The memorial-stone of the new Board schools, which are already about half built, in Burgess-street, Harpurhey, has been laid by Miss Becker. The style adopted by the architects is Gothic, of a plain character. The external walls throughout are faced with picked common bricks, relieved by stone dressings, such as heads, sills, stock brick arches, blue brick bands, and moulded stock brick fascias and corbelling. A feature in the principal front is a large three-light stone mullioned window, with traceried head, and crowning this is the bell-cot. The basement story contains a kitchen and fuel stores. The ground-floor is arranged for the infants, and comprises a schoolroom, 58 ft. long by 30 ft. wide, and 15 ft. 3 in. clear height, and a class-room, 20 ft. by 20 ft., and 15 ft. high. This is accessible from the main room. The upper floor is appropriated to the girls. Two entrances are provided for each department; these are situated at either end of the main building. The staircases to the upper floors are spacious and well lighted. The internal finishings are to be of a plain but thoroughly substantial character, and suitable for school purposes. Lavatories will be provided on each floor, and also sinks, to which will be laid on hot and cold water, for cleaning purposes. The warming and ventilating of this school is being carried out by Messrs. Shillito & Shorland, by means

? their patent Manchester school grates and
ortical pipe ventilators, for the admission of
ld air into the various rooms without draught,
id extract arrangement for the vitiated air.
here will be two play-grounds, one for each
epartment, and also two sets of offices. The
hool is designed to accommodate 500 children,
z., 250 infants and 250 girls. The floor-space
ovided for each child will be 8½ square feet,
id the air-space, 130 cubic feet. The contract
r the building, including boundary-walling, but
clusive of furniture and fittings, is 3,520*l.*,
he works are being carried out by Mr. S.
arburton, builder, Harpurhey, under the super-
sion of the architects, Messrs. Royle & Bennett,
anchester.

Coupar-Angus.—New Board schools at Coupar-
ngus were opened on the 19th ult. The
uildings, which have been erected from plans
epared by Mr. M'Laren, architect, are one
ory in height, and contain separate depart-
ents for senior, junior, and infant classes. The
nior department consists of one large hall,
id the infant department of two large class-
oms, having a separate entrance from the
her departments. The building is surrounded
y an extensive playground, in which are placed
e necessary offices and play-sheds. The con-
actors were—Mr. Thomas Lawson, mason;
r. John Adam, joiner; Mr. James Laing,
umber; Mr. George Bannermann, blacksmith,
l of Coupar-Angus; and Mr. Craigie, slater,
airgowrie,

King's Norton.—New Board schools at King's
orton are about to be commenced. The build-
gs have been designed by Mr. W. Hale, of
rmingham, and will be arranged in three
epartments, all on the same level, with separate
trances to each from Mary-street. The front
this thoroughfare will be recessed. There
ll be large covered playgrounds beneath the
ok portions of the school, with archways on
ree sides opening into the general playgrounds.
e buildings will be erected in red bricks,
vered with tiles, the internal woodwork being
ained and varnished. Accommodation is
ovided for 825 children. Mr. W. H. Parton sub-
tted the lowest tender, which has been pro-
ionally accepted by the Board. Mr. Parton's
der amounts to 6,367*l.*

Cromdale.—The new public (or Board) school
Cromdale, near Elgin, was opened on the 13th
. The new schoolroom measures 33 ft. 6 in.
22 ft., and is seated for seventy, but extra
commodation is otherwise provided for by the
ants' schoolroom, with a gallery, which is con-
ected with the classroom. Adjoining the school-
om is the schoolhouse. The whole building
s cost about 1,100*l.* The contractors were,—
r the mason work, Messrs. John Grant &
n, Grantown; carpenter work, Mr. James
Gilivray, do.; slater work, Mr. J. Winchester,
; plasterer work, Mr. C. Stewart, do.;
mber work, Mr. John Hunter, Elgin and
antown; painter work, Mr. Jas. Brander,
gin; and Messrs. Macdongall & Co., Gran-
wn, supplied the fittings.

Inverness.—The new Merkinch school in Tel-
rd-road, erected by the Inverness School
ard, was opened on the 12th ult. The build-
g which fronts Telford-road, consists of a
ntre portion and two wings,—the former re-
ssed some 10 ft. and comprising the infant
partment, a large room 62 ft. by 21 ft., and
ted for 150; each wing comprising a school-
om 29 ft. by 20 ft., and a class-room 20 ft. by
ft., both 16 ft. high to the ceiling, while at
side of each wing is an entrance porch. The
al cost has been 2,680*l.*, including boundary
lls and outbuildings, school furniture, &c.
e architect is Mr. Lawrie, Inverness; the work
s been carried out by the following contrac-
s:—Messrs. Alexander, mason, 1,225*l.*; Peter
meron, carpenter, 799*l.* 10s.; Simon Mackenzie,
mber, 151*l.* 10s.; Allan Mackintosh, plasterer,
5*l.*; William Smith, founder, 171*l.*; and Donald
cdonald, painter, 73*l.*

The Fitzwilliam Museum, Cambridge. e syndicate have reported that in accordance h graces of the senate they have expended sum of 600*l.* in the purchase of certain cimens of ancient glass, and one of glazed thenware, from the Cesnola collection, ranging m an uncertain antiquity to the age of the conines. There still being a disposable ance in the hands of the syndicate, they ommend the purchase, at the price of 210*l.*, rare print of the "Death of the Virgin," by tin Schongauer.

SCHOOL BUILDING NEWS.

Bradford.—In December last a deputation of the governors of the Bradford Endowed School waited on the Charity Commissioners, in order to obtain their consent to the application of 7,000*l.* from the endowment to the enlargement of the school. The commissioners have sanctioned the scheme of the governors, and the necessary works will be commenced without delay. The plans include an enlargement of the hall, entirely new sets of rooms for science and art purposes, and twelve spacious class-rooms. The governors also propose to set apart some of the present rooms as a Board-room, masters' common room, and secretary's office. The building, when completed, will contain accommodation for 650 boys.

Johnshaven.—The School Board of Benholm, N.B., which includes the populous fishing village of Johnshaven, has just enlarged the Free Church School, situated on the Braeheads. Mr. Matthews, architect, Aberdeen, furnished plans of the enlargement. The contractors were:—Mr. John Rae, mason, Johnshaven; Mr. D. Anderson, wright, Johnshaven; Messrs. C. Middleton & Sons, plumbers, Montrose; Mr. Grant, plasterer, Montrose. Mr. Hercules Scott, of Brotherton, chairman of the School Board, in addition to the assessment to which he is liable, has voluntarily contributed over 250*l.* to the building fund.

Breedon-on-the-Hill.—The school at Breedon-on-the-Hill, Leicestershire, built by Mr. C. Abney-Hastings, by desire of the late Countess of Loudoun, has just been opened. It presents in front two massive gables, on each of which is an inscription on a sunk panel. The side gables bear the monogram and coronet of the countess. The school is calculated to accommodate 130 children, and is built from the designs of Mr. Joyce, of Stafford.

Birmingham.—New Sunday-schools in Waterylane, in connexion with the Palmer-street Congregational Chapel, have been opened. The building comprises a central hall, 50 ft. by 36 ft., with an average height of 26 ft. Out of two sides of this hall, in which a mixed school of twenty-four classes will be held, eight class-rooms open on the ground-floor. These are separated by movable glass screens. Over the ground-floor class-rooms are six others, which open out of a gallery running round three sides of the central hall. There is also a room in the detached building to accommodate 200 infants. The building has been erected by Mr. Walter Brooks, from the design of Mr. George Ingall, architect. About 700 persons can be accommodated in the building, the cost of which, including fittings, is 2,500*l.*

CHURCH-BUILDING NEWS.

Newabbey.—The new parish church of Newabbey was opened on the 28th ult. Visitors to the ruins of Sweetheart Abbey will remember that the old church was built under the east wall of the ancient pile. The church having become ill-adapted for public worship, the heritors of the parish resolved to build a new church which would at once meet the ecclesiastical requirements of the parish, and permit of the old church being entirely demolished. Mr. Oswald purchased the Kindar Mills and ground on which they stood, a short distance to the east of Newabbey village, and on the south side of the highway to Kirkbean, and gave the site for the new church. On the site acquired in this way the new edifice has been erected. It is in the form of a Latin cross. The nave measures 73 ft. by 25 ft. 6 in., and the transept arms measure each 17 ft. 9 in., and project 11 ft. 3 in. The walls rise to a height of 16 ft., and give support to an open-timber roof, the apex of which is 36 ft. from the floor. The pews furnish sittings for 400. The material of the walls is granite, the style adopted by the architect, Mr. James Barbour, of Dumfries, being Early English.

Cherington.—Cherington Church was re-opened on the 6th ult., after being restored. The masonry was done by Messrs. Pickering & Son, of Cherington. The painting and decoration were done by Mr. Pring, of Moreton-in-Marsh. The seats, pulpit, and communion-table were furnished by Messrs. Jones & Willis, of Birmingham, and the clock by Mr. Evans, of Handsworth. A memorial window, representing the Crucifixion and Ascension, has been placed in the chancel by the sons and daughters of Mr. W. Dickins.

Dormington.—The ancient and quaint little church of St. Peter, at Dormington, about six miles from Hereford, having undergone complete restoration, was re-opened on the 13th ult. The edifice, anterior to restoration, consisted of a thirteenth-century nave and a chancel of the fourteenth century. The east wall of the chancel had been rebuilt in the eighteenth century. The walls were covered internally with plaster, and externally with a thick coat of rough-cast. There was a south porch of timber-framing covered with rough-cast, and over the west end of the nave stood a timber belfry. On the inner face of the west wall, hidden by many coats of white-wash, were found remains of mural paintings. A large representation of Our Lord in Majesty, with an angel on each side, had been painted in red outlines, the painting covering the whole upper part of the wall. Groups, the subject of which are not yet satisfactorily identified, were on each side of the west window. In the work of restoration, funds for the work having been provided by the patroness, the Right Hon. Lady Emily Foley, the vicar (the Rev. Langton E. Brown), and the principal ratepayers of the parish, the chancel has been rebuilt. The architect has replaced all the old features, and added a large five-light east window. The nave walls have been strengthened by buttresses. A new belfry of wood, with an octagonal spire covered with lead, has been erected. The whole of the fittings have been made new, in oak and pitch pine. The walls have been cleaned and painted, and the roof timbers cleaned, opened out, and covered with boarding, felt, and Broseley tiles. A new south porch in carved oak, and also a vestry, have been added. The cost of the restoration has been nearly 1,500*l.* The architect was Mr. Blashill, of Old Jewry Chambers, London, and the builders were Messrs. Collins & Cullis, of Tewkesbury.

Basford.—The nave of the new church of St. Augustine, Basford, Notts, was consecrated on the 16th ult. by the Bishop of Lincoln. The building is situated in High church-street, Basford, and the works at present completed comprise a portion only, viz., the nave and porch, of the proposed church. The dimensions of the nave are,—length, 76 ft.; width, 30 ft.; height to the top of the walls, 30 ft.; to the collar-pieces of the roof, 40 ft.; to the ridge, 52 ft. When finished, the church will consist of nave and chancel, with north and south aisles to each, and a south porch in the western bay of the nave, and will form a block of buildings about 120 ft. long and 65 ft. wide. The walls are of Bulwell stone, lined with brick and plastered, and the roofs are covered with brindled Staffordshire tiles. The nave-arcades and the dressings of the windows and doors are of Ancaster stone. The seats in the nave are of deal, stained and varnished, and will accommodate 340 people. The old building now forms an aisle, and provides space for 130 children. Messrs. Pattinson & Sons, of Ruskington, near Sleaford, were the contractors for the main portion of the works. The gas-fittings were supplied by Mr. Danks, and the church is warmed by an apparatus supplied by Messrs. Jobson & Co., Derby. Messrs. Evans & Jolley, of Nottingham, are the architects. The cost of the entire proposed building is estimated at 4,000*l.*

Spexhall.—The restoration of Spexhall Church, Suffolk, has just been completed. The church had until lately been much neglected, and it was consequently in a deplorable condition. It being considered desirable to remedy this state of things, some of the parishioners took the matter thoroughly in hand, and the result was that a subscription list was opened and liberally responded to, and a large sum being speedily raised, the work of restoration was proceeded with, the principal works being an entirely new roof of pitch pine, and open benches of the same material. The chancel floor has been raised, and paved with Minton's tiles, and a new three-light window has been inserted in the east end. The old rood-loft stairs were discovered, and are now brought out to view. The old pulpit has given place to a new one of pitch pine, the panels of the old pulpit being worked in. The roof, which was formerly thatched, is now slated. Mr. J. K. Colling, of London, was the architect; Mr. Daniel Day, of Eye, did the woodwork; and Mr. Vine, the masonry. The church was re-opened on the 8th ult.

Heatherlie.—On the 21st ult. a new church was opened at Heatherlie, Selkirk. The new building, which is intended to serve the purpose of a chapel-of-ease to the parish church, has been built after a design by Messrs. Wardrop & Reid, architects, Edinburgh; but the spire, which

is intended to rise to the height of 130 ft., remains to be added. The style is Early Decorated Gothic; and in form it presents a nave terminating eastward in an apse, with broad north and south transepts, the length being 97 ft., and the breadth across the transepts 74 ft. Freestone of a light cream colour from Prudham quarries, near Hexham, has been used in the outer walls of the building; and among its most marked features are the great west window and the two large transept windows, all having stone mullions and rich tracery. Double and single lancet windows also light the area of the church, and the vestry and organ-chamber, which occupy the apse. All the windows are filled with tinted cathedral glass. The roof is steep in its pitch, and covered with green Westmoreland slates. The interior presents an open roof, the timbers being exposed almost to the ridge; in height the side walls are 20 ft., and from the floor to the centre of the ceiling the height is 44 ft. The church is heated with Perkins's hot-water pipes, fitted up by Mr. C. Ritchie, Edinburgh. The tradesmen employed have been Mr. William Deans, builder; Mr. William Nichol, painter; and Messrs. John Smith & Son, gasfitters, &c., all of Selkirk; and the work has been carried on under the superintendence of Mr. James Slater, clerk of works.

Cheadle.—It has been decided to proceed with the restoration of Cheadle parish church, and the plans of the architect, Mr. Medland Taylor, will be carried out by Mr. T. Wharam, of Hyde, whose tender the committee have accepted. It is expected that the work will be completed before the end of the present year.

DISSENTING CHURCH BUILDING NEWS.

Shepton Mallet.—The Congregational Chapel at Shepton Mallet was reopened on the 20th ult., after considerable restoration, there being nothing left of the original building with the exception of the walls and roof. The pews have given place to open sittings of pitch pine, and the two side aisles are laid with Minton's tiles. The gallery is on three of the sides, the front being open panels, filled in with light ironwork. A rostrum has been substituted for the old pulpit. The plans were drawn by Mr. Day, of Glastonbury; and the whole of the work carried out by Messrs. J. & S. Emery, of Shepton Mallet and Oakhill, and Mr. W. Cook, of Shepton Mallet, the latter being entrusted with the lighting arrangements.

Bromyard.—Extensive additions are about to be made to the Bromyard Wesleyan Chapel, in the shape of Sunday-school class-rooms, minister's vestry, &c. Mr. Pearson, architect, of Ross, has prepared plans for the works, which are estimated to cost 500*l*.

Huddersfield.—On the 13th ult. the Mayor of Huddersfield laid the corner-stone of a new chapel for the United Methodist Free Church at Moldgreen. The new building will be in the Italian style, will seat 700 people, and the cost of the whole of the work is estimated at 5,500*l*.

North Newington.—A small chapel for the Independents was opened at the village of North Newington, near Banbury, on the 11th ult. It was designed and built by Mr. Kingerlee, and is of brick with Bath stone dressings. The place will seat 120 people, and is fitted up with benches of stained deal. The cost has been 270*l*.

Windsor.—On the 21st ult. a new Wesleyan Chapel was opened at Windsor. The building, which is erected in the Gothic style, of the Early Decorated period, stands at the junction of Alma-road and New-road. The walls, which are built upon concrete foundations, are of Bargate stone, of a bluish colour, with white Bath stone for the doors, windows, and other dressings. The principal entrance front is towards New-road. Above the main gable, which is pierced with a five-light window, is a timber-framed spire, the top of which is about 100 ft. from the ground. The interior of the spire is fitted with the means of ventilating the whole of the chapel. The ground floor of the chapel occupies a space of 67 ft. by 44 ft., and contains sitting accommodation for 400 persons, besides a large area devoted to the Communion space and pulpit. Galleries on three sides of the chapel afford sitting accommodation for 250 more, making the total number of seats 650. At the back of the chapel are class-rooms, vestry, lavatories, &c., and above these rooms is a schoolroom 60 ft. by 28 ft. The chapel, schools, and class-rooms are heated by means of Grundy's hot-air apparatus, and the ventilation has been very carefully studied. The buildings have been erected by Mr. George Reavell, of Windsor, at a cost of 4,400*l*., from the designs and under the personal supervision of Messrs. Morris & Stallwood, architects, Reading.

THE LATE MR. ROBERT MATHESON, ARCHITECT.

THIS gentleman, who occupied the position of Surveyor for the Board of Works in Scotland, died on the morning of the 5th inst., at his residence in Edinburgh. He is the author of the designs for several public buildings in Scotland, and as such has left his mark on his native country. A list of the most important of these is annexed. Mr. Matheson is one of the rare examples of a civil servant of the Crown who has risen from the position of a junior clerk to that of head of a department. The deceased gentleman was a native of Tain, in the county of Ross, and was born in the year 1808. After completing his education in the North he came to Edinburgh and entered the service of the late Mr. Robert Reid, King's Architect for Scotland. Mr. Reid retired in 1840, when the office was put upon a new footing, and Mr. Nixon, from the Office of Works in London, was appointed his successor under the title of Clerk of Works for Scotland, and the services of Mr. Matheson were retained as one of the staff. Mr. Nixon died in 1848, and for some time the vacancy remained unfilled. After some delay Mr. Matheson was appointed to the office *ad interim*, and held it under that tenure for about a year. The satisfactory manner in which he performed the duties induced the Government to appoint him to the office permanently.

Mr. Matheson's *chef d'œuvre* is the General Post-office in Edinburgh, but this is not carried out as originally designed by him, having been considerably reduced in the matter of detail. Mr. Matheson was ever genial and affable in manner; his promotion made no difference in his intercourse with his fellow civil servants who were not visited with the like good fortune, and he carried the same feelings into his business relationships.

Besides his works as a public official, Mr. Matheson designed for himself the elevations of several streets and crescents which have been built upon the estate of West Coats, which he purchased about fifteen years ago, and which must have proved a very profitable investment.

Mr. Matheson was the architect of the following buildings:—The Botanical Museum and Palm House, Edinburgh; New Register House and Record-room, Edinburgh; General Post-Office, Edinburgh. He also carried out the design of Captain Fowke for the Museum of Science and Art in Edinburgh; improvements at Holyrood Palace, embracing new guard-house and park lodges, the laying out of the Palace gardens, and the formation of a carriage-drive through the park from St. Leonard's to Daddingston; the Post-office buildings at Aberdeen, Perth, Dundee, Paisley, and Glasgow; the "restoration" of Glasgow Cathedral; alterations and additions to the University buildings of Aberdeen and St. Andrew's; restoration of Linlithgow Church; and additions to General Prison at Perth.

VARIORUM.

Leisure Hour has some useful words on House-gardening:—"When balconies or leads over porticos are to be filled with flowering or other plants, they should be fitted with boxes to contain the plants. In many cases the boxes only serve to contain the pots in which greenhouse plants are grown, but in others they are filled with earth, in which mignonette and other annuals are sown. When the boxes are intended to be fixtures, and to stand out all the winter, they should always be made of slate. If the boxes are only to stand out during the summer they may be made of wood, and they should be made of the best yellow deal, and painted. The dimensions of boxes may vary according to circumstances, but it is best not to have them more than 3 ft. or 4 ft. in length, as, if longer, they are difficult to move. The depth of the boxes should never be less than 7 in., but it need not be more than 10 in. for boxes of the largest size. It is always best to have boxes for balconies, as when the pots are set without boxes on the leads, which soon become very hot from the sun, the roots of the plants are parched and withered up; and a similar effect takes place from the drying effect of the wind when the pots are set on the bars of an open balcony. This is one of the reasons why plants bought in the streets and set in a balcony so very seldom last long, and why the flower-buds so often drop off without expanding. The plants are grown in the nursery garden, in very small pots, to save room, and when they are removed from the pits in which they were kept in the nursery to the leads or bars of a balcony, it is almost impossible to keep them alive very long, unless they are kept in boxes, or, as a substitute, in double pots. Boxes, however, will always be found to be much the best. If boxes are not used, a circular wire stand of four tiers for plants will be found a good substitute, as the plants can be readily and tastefully arranged on each tier, and, moreover, can be most easily changed if they should begin to fade. In this case the best plan is to have ornamental pots to receive the common flower-pots. Care should be taken in all cases that the plants have a sufficient supply of water, and that the leaves are kept clean by syringing or by sponging."——"Picturesque Europe" gives us a note on Hever Castle:—"The old, grey house lies low, in a hollow, and small hills rise up gently all about it. The old moat still stretches sluggishly round the building, and is crossed by a drawbridge leading to a gateway in which a portcullis yet grins frowningly. Hever is a domestic fortress, and blends the sullen distrust of the castle with the secure serenity of the mansion. It is capable of defence, and yet is charming for residence. It is a characteristic specimen of the transition age of building to which it belongs: an age in which men had not wholly laid aside the long habit of distrust of an enemy, while they began to desire the conveniences of a home which should be more comfortable than a merely armed house. Hever is, in fact, a house in half-armour. Built in the time of Edward III.,—a reign in which many similar structures were erected all over the country,—Hever is a fine and quaint castellated mansion. Its original builders and owners were the Norman Hevers; but this family made but little mark in history, and died out without having so lived as to retain much place in record or in romance. Hever, like Haddon, is linked to romance, and endeared to the imagination, by the image of a fair woman. Unlike as they are in character and in fortunes, Anne Boleyn is yet, to Hever, almost that which Dorothy Vernon is to Haddon. The fair and ill-fated Anne is the dominant figure which always fills the mind's eye when we think of her dear old home. She was born in 1501 or 1507. Her mother was Elizabeth Howard, daughter of the Duke of Norfolk; and her father was Sir Thomas Boleyn, afterwards Earl of Wiltshire, who died, where his daughter had been born, in Hever. The Bullens were an old Norfolk family; and William Bullen, great-grandfather of Anne, a silk mercer, and Lord Mayor of London in 1459, bought Hever Castle. In the mansion, Anne of Cleves, another wife of Henry VIII., died in 1556. In the quadrangular courtyard, which casts sharply-defined shadows across the sunlight, and in other parts of the building, you will see those Tudor windows which mark occupancy and additions in that day."

Sir G. G. Scott in Defence.—The Rev. F. Pigou, vicar of Halifax, has received a letter from Sir Gilbert Scott, in which, referring to the rumour and comment of the *Athenæum*, on the supposed costliness and modernisation of the parish church, he says:—

"A sermon preached upon a spurious text is hardly worth commenting upon. The writer founds his remarks on the false statement which appeared somewhere, that I estimated the work at 40,000*l*., whereas I had at that time made *no estimate*, and the work proposed would come to only between one-half and one-third of that amount. He no doubt supposes, and not without a show of reason, that so enormous a sum could not be expended without danger, or a necessity, of interfering with the ancient character of the church; whereas you know, from what I have said to you, and will see from my report, that my object is the *very reverse*, being to conserve and bring out to greater advantage all that is old and valuable in the church, Chester Cathedral is thrown in my teeth, where the intense decay of the external stonework *necessitated* an extensive amount of renewal of the exterior, which much regretted, but where internally not a bit of old work has been tampered with, but a vast quantity brought out to view, and the deep colour of the old stone exposed to view by the removal of whitewash, without even the touch of the old mortar being disturbed. At Exeter, the whitewash has, it is true, been removed, and the old stone with its beautiful tones, brought to light, but not a bit of a little of old work disturbed. I am known as a devotee to Conservatism in the treatment of old buildings, and such is the perversity of man, that I believe it is *for that very reason* that I am falsely accused of the reverse.

Yours very faithfully, G. GILBERT SCOTT.

P.S.—The exterior of the church I do not propose to touch, except the replacement of lost parapets; it is generally in sound condition."

"ILLICIT COMMISSIONS."

—Among the later letters addressed to
ess on this subject, some have been cal-
d to create an impression that this
nte is indifferent to the suggestions which
been made respecting the necessity of
l legislation as a remedy for the evil com-
d of.

n requested to state that this impression
e unfounded, and that our Council would
support any effective measures which may
roposed either by the Government or by
endent members of Parliament, with the
f making the violation of trust by fiduciary
s a penal offence, so far as the relations
en architects and their clients are con-
d.

m directed to add that so far from there
any indisposition on the part of this
nte to promote so desirable an object, our
il have appointed a committee for the ex-
purpose of considering what steps can be
towards the attainment of that object.

CHARLES L. EASTLAKE,
Secretary, Royal Institute of British Architects.
March.

Miscellanea.

storic Memorials.—"An Architect"
s to the *Daily News*:—I shall be obliged
n if you will allow me to call attention to
I fear is one fruitful cause of the destruc-
of memorials of the generations passed
. An old church, containing it may be
s and slabs, is restored or rebuilt. What
be done with these monuments? The
r, being in all probability Italian, or more
rococo in design, are considered quite out
aracter with the primness of restored
evalism, and the latter are sorely in the
f fashionable encaustic tile pavings. With
considerations as these outweighing all
s of sentiment and propriety, we shall not
rprised to find that the despised monuments
n such cases, relegated to oblivion or de-
ion. Many a parish has its history written
reat extent on the tablets in its church—
nspeakably interesting are those to the
nt of history and to the herald and
logist; indeed, some churches obtain
t their sole claim to interest from their
ments. A notable instance of this is
ea Old Church, which possessed in addition
e artistic value in the picturesque and
t assemblage of the tombs of Dacre, More,
ey, Cheyney, and others less known to
What I would fain enforce upon those
are connected with church restoration is
-that even if re-arrangement be necessary,
onuments, as such, without regard to the
city or otherwise of the inscribed names,
uite apart from architectural considera-
of taste, should be religiously preserved
nitable position on the walls of the church,
hat all monumental slabs should be relaid
ch position that they be neither hidden
sight nor worn by direct traffic."

**w Method of Horseshoeing to Super-
"Roughing."**—A new horseshoe has been
ted by Mr. A. B. Fleming, of Hillwood,
orphine. The shoe is of the ordinary
, but has three holes punched in it,—one at
e and one at either side of the heel,—and
hese holes a set of keyed studs are inserted.
tuds are of cast steel, and pointed so as to
he horse a firm grip of the frozen ground
nt slipping. Presuming that the horse is
hed with Mr. Fleming's new shoes in the
ning of winter, and the holes filled up with
g of hard wood, or with a blunt stud if
ht desirable, when a frosty day occurs, the
n or coachman has simply to take out the
stud, or extract the wooden plug with a
e. The studs are then inserted in the
—the key of the spike fitting into a slit in
ole. A small wrench or pair of pliers is
nsed to give a half-turn to the stud, which
vented falling out by the key. Into a slit
angle of the stud corresponding with the
the keyhole of the shoe a small wedge of
is driven home to keep the stud firmly in
on. When frost disappears, or the stud is
down so as to be ineffective, the small
e of wood is taken out by a brogue, the
s turned round till its key is opposite the
the shoehole, and then it is easily with-
. Mr. Fleming has not patented his
ion.

Royal Institute of British Architects.—An extra special general meeting of members only will be held on Monday evening next, for the consideration of the Report of the Committee for the Improvement of the Institute, and of any motions which may be made on the subject. At the special general meeting held on Monday last, Mr. Henry Currey, vice-president, in the chair, it was unanimously resolved—"That it be humbly submitted for Her Majesty's gracious consideration that the Royal Gold Medal for the year 1877 be awarded to Charles Barry, Esq., F.S.A." The formal presentation of the Royal Gold Medal, and of the Institute prizes, will take place at the last general meeting of the session, Monday, 11th of June.

Rateable Value.—The Government Bill for the valuation of property states the limits of the rate of deductions to be made from the gross value in calculating the rateable value as follows:—Maximum rate 25 per cent., or one-fourth, in Class 1, comprising houses and buildings without land other than gardens, and where the gross value is under 20*l*. Where the gross value is larger the maximum rate for houses and buildings, without land other than gardens and pleasure-grounds valued therewith for the purposes of inhabited house-duty, is to be (Class 2) one-fifth where the gross value is under 40*l*., and (Class 3) one-sixth where the value is 40*l*. or upwards. In regard to buildings without land which are not liable to inhabited house-duty, the maximum rate of deductions is to be (Class 4) one-fifth where the gross value is 20*l*. and under 40*l*., and (Class 5) one-sixth where the gross value is 40*l*. or upwards. In Class 6, consisting of land with buildings not houses, the maximum rate is to be one-tenth; and in Class 7, consisting of land without buildings, one-twentieth. The maximum is one-third for Class 8,—namely, mills and manufactories, including blast and smelting furnaces and kilns. In Class 9, rateable hereditaments not included in any of the foregoing classes, the rate of deductions is to be determined in each case according to the circumstances and the general principles of law as amended by this Act; and in this class are to be included houses or buildings let out in separate tenements. The maximum rate of deductions in any class may be exceeded where it is insufficient to include extraordinary expenditure required to maintain banks, dykes, watercourses, or other works for the protection of land or buildings against water. Farms, exclusive of the houses thereon, may be inserted either as land with buildings under Class 6, or the land may be inserted under Class 7, and the buildings under Classes 1, 4, and 5.—*Times*.

"Taking the Chances."—In an article on "The Scope of Governmental Interference for the Prevention of Accidents," the "Journal of the Franklin Institute" says:—The chance that a fire should occur at all in any theatre, *any year*, is not, perhaps, 1 in 200 or 300, whence the chance *any day* is but 1 in 75,000 or 110,000; while the chance that a fire will occur when a performance is going on, is not over one-half these ratios, and 1 to 150,000 or 200,000 is, perhaps, a fair estimate of the risk of burning during the time of a performance on any given day. Even this great ratio is increased when the individual chance of escaping from the fire is taken into the account, so that the risk of life to any man, woman, or child, in any theatre, any night, is not 1 in 1,000,000. The risk of loss of property by owners each year is, as has been taken, 1 in 200 or 1 in 300, and the insurance is cheerfully paid, after which no feeling of risk remains with the owner. Even if the construction is admitted to be dangerous, the ratio of extra danger is met by an owner in enhanced premiums, at much less expense than the cost of alteration to remove danger, while the underwriter is happy in the increased profit which the rate of premium affords. These small risks are accepted by the entire community. When in the fulness of time, the disaster at Brooklyn, or elsewhere, occurs, the immediate shock will affect the pleasure-seeker, and attendance will fall away from places of amusement, a spasmodic official inquiry will be instituted, a number of moral communications be offered to the newspapers, and a few which are entirely impersonal, as regards any possible advertising patrons, will be published; but the seven days' wonder will pass away, and the old rule of "taking the chances" will be re-established with greater strength, as the next catastrophe *may* not be so dreadful as the last.

The Hastings Water Supply.—About a year ago much was being said by correspondents of the local papers as to the quality of the water supplied to Hastings and St. Leonards. The controversy found its way into our own columns and into those of the medical journals. In the localities affected, the subject was made very much a matter of party feeling, many of the inhabitants looking at it solely from what may be called the "lodging-house-keepers' point of view," refusing to hear a word said against the water-supply lest visitors should be frightened away or deterred from coming. Amongst those who were bold enough to say that the water-supply was not all that it should be, was the Rev. J. A. Hatchard, a clergyman owning property to the extent of 40,000*l*. in St. Leonards. For thus speaking his mind he seems to have incurred much obloquy. He was serenaded at his residence with what is known as "rough music," and for a time he was in bodily fear. The violence with which he was threatened was, he believes, incited by some remarks in the *Hastings Observer*, by a writer signing himself "Tristram Shandy," who stated that Mr. Hatchard had been heard to declare that "he would ruin the town, though it cost him 5,000*l*." For this and other statements of the kind Mr. Hatchard brought an action for libel against the newspaper mentioned, claiming damages to the amount of 1,000*l*. The case was heard last week at the Sussex Spring Assizes, before Mr. Justice Brett. Evidence was given with the view of supporting the statement made by the newspaper writer, but, as Mr. Justice Brett remarked in summing up, it was evident that if Mr. Hatchard ruined the town, he would ruin himself, having 40,000*l*. worth of property in it. The jury, without acting upon the Judge's suggestion that they should retire to a private room to read over and consider the article which was the subject of the alleged libel, found for the defendant.

The Late Mr. Samuel Lahee.—The furniture and effects of the late Mr. Lahee, at his residence, 17, Brompton-square, announced for sale on the 14th and 15th inst., by Messrs. F. Godwin & Basley, of Motcombe-street, include a small collection of works of art in the shape of pictures, prints, and bronzes, noticeable for their genuineness. Mr. Lahee, long and honourably known as an auctioneer and valuer, was one of a comparatively small band at that time who always sedulously maintained the dignity of his profession.

The Victoria Institute.—At a meeting at 10, Adelphi-terrace, on Monday evening last, a paper was read by Professor Birks, of Cambridge, on "The Bible and Modern Astronomy," in which he held that modern science ought not to be held up as contradicting the Bible; that there was evidence that the Book of Science and the Book of Revelation, when fully understood, would be found to harmonise; in the meantime all investigations constantly warned us that hasty conclusions of every kind were to be avoided by all parties.

The Sunday Society.—This society, established to obtain the opening of museums, art-galleries, libraries, and gardens, on Sundays, and of which the Very Rev. the Dean of Westminster has consented to become the president, will hold its Annual "Evening Party" at Willis's Rooms, on the 14th inst. The programme for the evening will commence with a meeting in the large hall, at half-past eight, when short addresses will be delivered by prominent supporters of the movement.

Treating Town Sewage.—A meeting of what is called the Sanitary Institute of Great Britain will hold a public meeting to consider the report recently issued by the committee appointed by the President of the Local Government Board upon the disposal of town sewage, at the Rooms of the Society of Arts, on Wednesday, March 14th. The Duke of Northumberland will preside.

Warming of Leyton Chapel.—The committee have decided to adopt the plans of Messrs. S. Chandler & Sons, of 104, Newington-causeway, for heating the above, the same firm being also employed to carry out the work.

The Plasterers' Company, according to the *City Press*, again offer prizes to be competed for by students in metropolitan and provincial schools of art in connexion with the Science and Art Department.

Hounslow Brigade Depot.—Messrs. Wm. Downs & Co., contractors, of Union-street, Southwark, have been entrusted with the completion of these works.

Glasgow Theatre.—Mr. J. T. Robinson has been instructed to prepare plans for the reconstruction of the present Theatre Royal, Glasgow, with Aquarium and a Bijou Theatre attached for rehearsals.

TENDERS

For the erection of Primitive Methodist Chapel and School, King's-cross. Mr. A. J. Rouse, architect:—

		Boards instead of Plastering.
Grimwood & Sons	£6,498 0	£45 0
Niblett	6,464 0	42 0
Lamble	6,370 0	70 0
Parker & Evans	5,860 0	43 0
Burman	5,500 0	28 0
Sawyer	5,453 0	43 0
Battley	5,420 0	35 0
Prebble & Co.	5,380 0	40 0
Webber	5,368 0	16 0
Ricketts	5,300 0	58 17
(No name)	5,169 0	50 0
Goodman	4,973 0	—
Warr	4,725 0	28 0
Beale	4,375 0	32 0
Hobern	4,300 0	45 0
Steed Bros.	4,259 0	13 0
Hocking*	3,905 0	30 0

*We are requested to say this was an error on the part of the builder: the amount should be 4,155*l.* and 30*l.*

For new schools at West Thurrock, Essex, for West Thurrock School Board. Mr. E. C. Allam, architect:—

Jeyes & Co.	£2,729 6 4
Staines & Son	2,438 0 0
Castle	2,345 0 0
Webb	2,247 0 0
Hamlin	2,170 5 0
Cutting (accepted)	2,116 15 0

For three mansions at Mandeville-place, James-street, for Mr. J. S. Hendry. Quantities by Mr. S. Thacker. Mr. J. Norton, architect:—

Braid & Co. (accepted)	£16,344 0 0

For the erection of Wesleyan Schools, Barrow-hill, St. John's Wood. Mr. Chas. Bell, architect. Quantities by Mr. Henry Lovegrove:—

Tarrant	£1,737 0 0
Tavenor	1,705 0 0
Scrivener & White	1,705 0 0
Densham	1,647 0 0
Burford	1,633 0 0
Bresley	1,609 0 0
Harkworth	1,604 0 0

For school buildings, St. Vincent's Home, Westbourne-green, for the Rev. Lord Archibald Douglas. Mr. John G. Hall, architect:—

Smith	£2,543 10 0
Orr & Co.	1,897 0 0
Thomas & Butland	1,669 0 0
Nightingale	1,655 0 0
Stimpson & Co.	1,635 0 0
Battley	1,570 0 0
Clarke & Bracey (accepted)	1,529 0 0

For the erection of schools, Walton-on-the-Hill, Epsom. Mr. F. J. Dibble, architect:—

Lynn & Dudley	£1,212 0 0
Colls & Sons	1,190 0 0
Putney	1,162 0 0
Heselgrave	890 0 0
Richbell	885 0 0
Batchelar (accepted)	837 0 0

For alterations and additions to a house, Bridge-street, Leatherhead, for Mr. Thos. Chitty. Mr. F. J. Dibble, architect:—

Elms	£597 0 0
Edson	570 0 0
Batchelar	455 0 0
Walker	439 0 0
Brown (accepted)	378 0 0

For the erection of tanning-shed and warehouses, at Rugeley, Staffordshire, for Messrs. Stokes & Co. Mr. Samuel Loxton, architect. Quantities by the architect:—

Nelson	£1,690 0 0
Gullimore	1,598 0 0
Morris	1,595 10 0
Buxton & Co.	1,589 19 1
Dawson & Bradney	1,469 0 0
Adkins	1,420 0 0
Rowley & Lynex	1,410 0 0
Robinson	1,400 0 0
Slater	1,370 15 0
T. & H. Brown	1,281 0 0

For brick sewers, for the Islington Vestry:—

Crockett	£545 0 0
Taylor	475 0 0
Rowley	455 0 0
Pizzey (accepted)	435 0 0

For the completion of eight nine-roomed houses, in the Elversdale-road, Highbury New Park. Messrs. Toy & Franks, architects:—

Jopling & Co.	£1,500 0 0
Mitchell	1,165 0 0
Steel Bros.	989 0 0
Winship	963 0 0
List	898 0 0
Glasspool	830 0 0
Carmody	800 0 0
Dales	725 0 0

For a block of school buildings, including fittings and erection of boundary walling, &c., at East-street, Littlehampton, for the Littlehampton School Board. Quantities supplied:—

Coles	£2,629 0 0
Hayter	2,525 0 0
Burkitt	2,478 0 0
Longley	2,380 0 0
Snewin*	2,077 0 0
Hide & Co.	2,055 0 0

*Accepted, subject to approval of Education Department.

For rebuilding the Queen's Head Tavern, Theobald's-road. Mr. Lewis H. Isaacs, architect. Quantities by Mr. L. C. Riddett:—

Patman & Fotheringham	£6,175 0 0
Kilby	5,857 0 0
Scrivener & White	5,785 0 0
Browne & Robinson	5,730 0 0
Macey	5,713 0 0
Brass	5,697 0 0
Nightingale (accepted)	5,393 0 0

For mission-hall and schools, Stewart's-lane, Battersea. Mr. W. H. Rawlings, architect. Messrs. Franklin & Andrewe, surveyors:—

McLachlan	£2,845 0 0
Downs	2,645 0 0
Brass	2,597 0 0
Lathey Bros.	2,590 0 0
Macey	2,534 0 0
Hill, Higgs, & Hill	2,384 0 0
Nightingale	2,373 0 0

For mission-hall, vestry, and offices, at Creek-street, Church-street, Deptford, for Rev. J. T. Wigner. Mr. E. Clark, architect. Mr. H. W. Sexton, surveyor:—

Gammon & Sons	£2,213 0 0
Cain	2,143 0 0
Macey	2,068 0 0
Allpress	2,000 0 0
Hill, Higgs, & Hill	1,982 0 0
Cocks	1,887 0 0
Green	1,877 0 0
Rider & Son	1,828 0 0

For excavations, embankments, with two bridges, culverts, &c. in formation of road, Widford, Hertfordshire. Mr. T. Wilson Grindle, engineer. Quantities supplied:—

Jeyes & Co.	£5,513 0 0
Hunt	3,995 0 0
Lawson	3,908 0 0
Hanson	3,175 0 0
Dowell	3,041 7 2
McKenzie	2,979 0 0
Stuart	2,958 1 3
Pound	2,832 0 0
Rowland	2,809 10 0
Wainwright	2,745 0 0
Green	2,595 0 0
Potter (accepted)	2,400 0 0

TO CORRESPONDENTS.

"Gold and Silver in Solomon's Time" (a number of letters, all on the Silver side, have been received. Mr. Hugh Stannus, amongst others, sends us the Hebrew text, with comments)

The Royal Gold Medal (several letters on this subject shall receive attention).

F. F.—Dr. L. M.—E. S. R.—J. R. & Son.—J. G. T.—I. U. L. C.—H. S. S.—W. S. B.—G. M.—H. S.—A Fellow.—T. W. G.—F. W.—J. P.—T. & F.—H. H. & H.—J. P.—S. & Co.—W. G. S.—T. W. (send such note as you wish inserted).—H. G. (next week).—G. S. P. (next week).—F. N. B. (next week).—T. C. E. (next week).

We are compelled to decline pointing out books and giving addresses.

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The Builder.

VOL. XXXV. No. 1780. SATURDAY, MARCH 17, 1877.

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Architectural Precautions against the Effect of Earthquake.

THE commencement of the present session of the Institution of Civil Engineers has been marked by a discussion on the subject of the light-houses recently erected in Japan, in pursuance of the treaties which opened the ports of that country to European commerce. The information brought before the Institution, both on the report of Mr. Brunton, C.E., and orally by several speakers, was of considerable value to persons interested in architecture, not only as relating to the special contrivances adopted for lighting the Japanese coasts, but still further, as raising the wider question of the most advisable course to be pursued, by the architect or by the engineer, for escaping from the disastrous effects of earthquake on the structures which he is called upon to erect.

It may be said, at the first glance, that the builders of Great Britain are happily exempted from the necessity of any practical study of the phenomena of earthquakes, or of the methods best suited to avoid their destructive effects. Such a narrow creed, however, is altogether unworthy of the present state of the art and science of architecture. Not only so, but it is calculated to place the student who should unfortunately adopt it at a very serious disadvantage as regards his contemporaries and possible competitors. Even in Great Britain, safety from earthquake can by no means be pronounced to be absolute. While certain districts of the earth, marked by the occurrence of numerous volcanic vents for the central fire, are the natural homes of earthquake, no portion of the earth's surface can be pointed out which does not bear marks of having been, at one period or another, subjected to physical convulsion. In our own country the geological period immediately following the deposit of the grit-stones which form the latest member of the coal measures appears to have been eminently distinguished by the number and violence of the shocks which have rent and shivered the rocks in every direction. In historic times we have numerous examples of the sudden re-awaking of a long-silent volcano, and of successive periods of seismatic rest and motion occurring in various localities. Four or five years ago a very sensible shock of earthquake was felt in many counties of England. It did, so far as we are aware, no actual damage. But it gave to those persons who have experienced the effects of earthquake in other parts of the world a very disagreeable hint as to what would have been the effect of the shock if but a little exaggerated. If such a shock of earthquake were to occur in London as the writer of these lines has experienced in Italy, an observer from Highgate-hill would see that part of the panorama which comprises the great province covered with buildings suddenly obscured by a cloud of dust. As that cloud subsided, he would look down on where London had been. St. Paul's Cathedral, owing not only to the science of Wren, but to his unusual regard to stability, might outlast the shock. We cannot name any other building that occurs to us as at all likely to do so. Such an event, no doubt, is improbable. So, it might have been said beforehand, was the Great Fire of 1666. Improbable in a high degree, we quite admit and believe it to be. But no one can say that it is impossible; or that it might not occur at any moment. A long-continued steadiness of the barometer at its maximum height is noted in Italy to be a precursor of earthquake. In England we are without any notion or idea of the existence of any premonitory signs.

But apart from a chance which ranks so low in the scale of probability that many a practical man may think that he can afford to despise it, there is a sound reason why this subject should form a part of the curriculum of the English architect. How is he to know that his services will be in demand in England alone? The world is a wide field, and there is no corner of it from which a demand for such professional aid as England can furnish may not at any moment come. Frequently such demands do arise. We are at this moment sending out a professor of architecture for the university of Yokohama. This gentleman will find himself confronted with the same capricious and terrible force which has alarmed—and very justly alarmed—Mr. Brunton. It is thus evident that it is not a mere matter of fanciful and impractical theory which is in question, but a grave point of practice on which it is of no small importance that all available information should be duly collected and arranged.

Mr. Brunton has not been able to discover that any definite record has been kept of the occurrence of earthquakes in Japan, nor could he obtain any data as to the localities most subject to these disturbances. It is, however, he says, well known that slight shocks are of frequent occurrence, and that during the present century fifteen shocks of a destructive character have been experienced. The palace of the Emperor at Kioto was destroyed by an earthquake in 1828, as were most of the temples with which that city abounded. In 1846, in the province of Shinano, on the west coast, the earth swallowed up eighteen houses, 5,000 dwellings being at the same time destroyed. The most recent destructive earthquake, in the year 1855, was chiefly felt at Yedo. The trembling of the earth continued for a month; eighty-seven shocks occurred; and about 120,000 lives were supposed to have been lost on the occasion.

The methods hitherto employed for ensuring, as far as practicable, safety for human life on the occurrence of serious earthquakes may be said to be three. Of these the first, indeed, can scarcely be called an architectural method, since it consists in the absence of anything worthy to be called an architectural structure. To the dweller in a tent, an earthquake has little more of terror, as far as the overthrow of his dwelling is concerned, than a tempest or violent storm of wind. And in many districts where earthquakes are frequent, where the exigencies of climate are less severe than in our northern latitudes, and where nature furnishes in the bamboo, and other species of grasses and of reeds, an abundant material for a sort of basket-work hut, there exist thousands of dwellings the overthrow of which would prove but a temporary inconvenience to their inhabitants. Fire, in fact, is a more formidable enemy to such bamboo camps than earthquake itself. It is true that fire is often, in such places, a consequence of earthquake. A more directly structural method has been adopted in other cases, with considerable advantage. It consists in the use of timber, so framed together as to be adequate to withstand a considerable amount of movement. When we consider the violent shocks to which a sea-going vessel is exposed in a storm, it becomes pretty evident that a structure like that adopted by the naval architect might be so adapted to the purposes of a dwelling-house as to give as much safety to the occupier, except in the case of the actual opening of the ground beneath his feet, as is experienced by the navigator of a well-found ship in a gale. We cannot cite any example of the fall carrying out of this principle; but the use of timber, more or less carefully framed, so as to obtain a certain degree of elasticity and tensile strength for the structure, is by no means uncommon.

The third method is that which was adopted by our great masters in the art of building, the Roman architects and engineers, and which is to this day pursued by their descendants and heirs, the architects of Italy. It consists in giving great weight and solidity to all structural works. Foundations are made deep and wide, and the lower portions of the walls of great houses are at least 9 ft. or 10 ft. thick. The whole process of building is carried on with an eye to the probable occurrence of earthquakes; and mansions are calculated to last for a century without any substantial repairs. The wisdom of this course we see written on the façade of some of the most important buildings in Italy, in a handwriting that admits of no mistake. Thus the Royal Palace of Caserta, a brick building, is seamed in more than one place by irregular vertical cracks, which somewhat mar the noble effect of the design. But these cracks are so many proofs that the architect of the palace was fitted for the discharge of his task. They are so many records of earthquakes, and denote the action of a force mighty enough to shake that massive building, and even to rend its walls from the top to the bottom, but yet inadequate to overthrow its compact and well-balanced structure. Mr. Abernethy, vice-president of the Institution of Civil Engineers, well

remarked, in the course of the discussion, that he was of opinion that weight and solidity, and not slightness of structure, were best adapted to meet shocks of earthquake. The example which he cited, however, was not happy. He referred to the great aqueduct from Cintra to Lisbon, which at one point is at least 250 ft. in height, and which lay within the zone of the great earthquake that destroyed many of the principal buildings of the city in 1755. This structure was, however, uninjured, and remains intact to the present day. We have not under hand any drawing of the noble aqueduct, nor are we aware whether one is accessible in this country. But from personal recollection, not only of its appearance as viewed from a distance, but of a careful observation of the structure, we should say that its chief characteristic was its extraordinary and fairy-like lightness. Not, indeed, that it is to that that it owes its safety. The traces—to this hour unobliterated—of the great earthquake of Lisbon are extraordinarily instructive. They show, in a manner elsewhere unparalleled, the effect of geological formation in transmitting or obstructing the shock of the earthquake wave. The city of Lisbon and its immediate vicinity cover the lines of junction of four geological formations. These are, the fossiliferous clays and marls known as the Almada beds; a thick stratum of sand; basalt; and limestone. The destructive effect of the earthquake was so limited by the differently transmitting qualities of these several strata, that a geological map might be made simply from noting the various degrees of demolition experienced by different parts of the city. The lines of demarcation run sharply athwart the streets, and one building remained uninjured within a few yards of another that was overthrown. Everything that stood on the Almada beds, it is said, was destroyed. The buildings on the basalt suffered next. Those on the sand, comprising the beautiful and elaborately decorated church of St. Geronimo (giving the name from memory) was but little injured, one or two of the pinnacles or crowns of the canopy work of the interior only having been thrown down. The buildings on the limestone, of which the Cintra aqueduct was the principal, were absolutely uninjured. Such, at least, was the account given to the writer on the spot; which was in perfect accordance with the distribution of the still unrepaired ruins, and with the intact state of the slender and lofty piers and arches of the viaduct.

The employment of iron, it is evident, promises to the architect a stability which he would vainly seek either from timber or from masonry. He can combine, by a proper use of iron, the tensile resistance of a timber framework with the massive solidity of a structure of masonry. Even light iron framework has been adopted with perfect success in Peru, where earthquakes are as frequent and as formidable as in any part of the world. At Pisco, a small town on the coast of Peru, exposed to the action of the sea with a heavy surf, there was erected, about twenty-five years ago, from the designs of Mr. Woods, a light wrought-iron pier, with screw piles, extending 2,400 ft. out into the sea. Six or more years ago a great earthquake occurred, by which the city of Arica was overwhelmed. A wave of the sea rushed into the town, carrying with it a gun-brig, which it left high and dry half a mile inshore. The movement of the pier was so severe that persons could not stand steadily on its platform during a shock; but the structure suffered no injury whatever from the violence undergone. Again, at Payta, also on the coast of Peru, the same engineer mentioned a building consisting of light iron framework, lined with wood, which had been in existence twenty-five or thirty years, after sustaining every shock that had occurred in that part of the country.

For the purpose of ensuring the stability of lighthouse apparatus, an expedient, differing from either of the above, has been adopted. Experience has not yet been obtained either in confirmation or in condemnation of the plan, and it will be very interesting to learn the result of its application. Messrs. Stevenson having been asked by the Board of Trade to give advice as to the establishment of a lighthouse system on the coast of Japan, were recommended by the Elder Brethren of the Trinity House, who also had been consulted on the subject by the Board of Trade, to introduce what was termed an "Aseismatic" arrangement for the protection of the holophotal reflectors, which were considered the safest apparatus that could be employed. (Ant seismatic would have been a more correct adjective to use.) The reflector-frame and machine rest on a table or platform, containing three cups or hollow spaces of bell metal, equally dividing the circumference of the platform, which may be compared to that of a railway turn-table. A lower platform, resting on beams framed to the foundation of the building, supports three corresponding cups, and spherical balls of bell metal are introduced between each pair of cups, so that free motion of the upper over the lower part of the apparatus is admitted within a limited range.

It proved, indeed, in the experience of Mr. Brunton, that however admirably the play thus given to the upper part of the apparatus may be calculated to preserve it from injury by the shock of an earthquake, such free motion occasions, at other times, inconvenient results. Thus, a person stepping on to one of the aseismatic tables, for the purpose of trimming or cleaning the lamps, causes the upper part to roll to such an extent that the lamps become deranged; and in the case of revolving lights, the regular motion of the clockwork machinery is destroyed. The consequence was that from a dislike to the unsteadiness of the apparatus the Japanese manager of the lighthouse secured the joint so as to prevent it from acting. With the apparatus in this condition, the only recorded shock of earthquake which has affected any of the lights occurred at Segami, which is lighted by twenty-one holophotal reflectors. This shock threw all the lamp-glasses out of their places, and disarranged the working of the machine, so that the opportunity of testing the efficacy of the apparatus under the circumstances for which it was designed was lost. As earthquakes do not usually give any definite forewarning of their approach, it is evident that any apparatus which is not in a constant state of readiness for action must be entirely unavailing when a shock actually occurs.

It is the opinion of Messrs. Stevenson, the engineers to the Commissioners of Northern Lights, that the tables may be rendered less sensitive, without being actually incapable of motion. To determine the proper degree of sensitiveness would be a matter of considerable difficulty; and that the more so as the exact proportion desirable must partly depend on the violence of the shock to be resisted. An earthquake has recently displaced the glass cylinders of the twenty-one reflector lamps at the Tsurugisaki lighthouse. These merely stood on their bases, and were not supported in any other way. This earthquake, though apparently less severe than some previously experienced, had a peculiar motion. It turned the upper six or seven courses of the stonework of one of the chimneys of the keeper's house,—a column of ashlar masonry about 2 ft. by 3 feet, and 10 ft. high,—half round, and left it in a position diagonal to the lower part, without other fracture or displacement. It is evident that the cup-and-ball arrangement would be entirely unfitted to meet a twisting motion of this nature, the effect of which would very probably be to throw the upper cups entirely off the balls, and thus to bring the two tables into close but irregular contact. But the fact is that the movement of the earthquake wave is not one of which the elements can be anticipated, any more than the time of occurrence. The sensation experienced during an earthquake shock is indescribable. The bravest persons, on their first experience of the terrific force, are struck with a profound awe, and frequently with over-mastering terror. It requires some experience of the phenomenon to be able in any way to analyse the sensations produced; and when this experience is attained, it will be found that they vary greatly on different occasions. Pendent bodies, such as a large chandelier in the midst of a lofty apartment, thus become temporary seismographs, or indicators both of the force and of the direction of the shock. If sufficient presence of mind be retained to mark the direction in which such a body swings some idea will be formed of the direction of the motion caused by the shock, which again is distinct from the direction in which the shock travels. Mr. Brunton quotes the evidence of Mr. Mallet, in his history of the Neapolitan earthquake of 1857, as to the twisting movement that then obtained. Certainly the oscillatory movement above remarked was most apparent during that very formidable earthquake. A solid terrace, provided with an iron balcony, rocked during the principal shock like a ship at sea, so that it was difficult to move across it in order to cling to the railing. Perhaps the best illustration of the variety of movement occasioned by the earthquake wave may be obtained by watching the undulations of a field of oats in a strong wind. Each panicle of the corn is limited to a certain area of movement, both vertical and horizontal, and constantly returns to its normal place. But within these limits every possible variation of undulatory play may be observed. So it is, we think there is no doubt, in earthquakes. There is a transmitted shock, more like that of the induction coil of the electro magnet than anything else, which is probably not of a physical but of an electric nature. But this is accompanied by a true physical movement of the surface of the earth, sometimes tremulous, such as that which is felt in the vicinity of a rapid and heavy railway train, sometimes twisting, as proved by the behaviour of buildings, sometimes more sensibly elevating and depressing, like that of a ship at sea; sometimes backward and forward, the effect of which is not unfrequently marked by the opening of chasms in the ground. These chasms usually re-close, but not always. In the case of rifts in walls they often open to a distance of inches, or even of feet, and then return to their former position, leaving only a thin crack. With all these phenomena on record, and well known to have occurred in various great earthquakes, it certainly seems to us that an aseismatic joint is a contrivance only likely to have been invented by persons who have had no actual experience of the most terrible phenomenon that imperils the works and the life of man, and that, not unfrequently, seems for the moment almost to deprive him of the use of reason.

In countries liable to earthquakes it is the *replica*, or return shock, which is the most dreaded. This may either arise from the fact that the first shock is unexpected, and awakens a terror which is augmented by the expectation of its return; or by the circumstance that the bond of buildings is often broken, or the balance shaken, by the first shock, and thus downfall naturally follows on a second disturbance. It is much to be doubted that the return shock is ordinarily the means of replacing any point in the position from which it is thrown by the first, although this may sometimes be the case. Experience would rather lead to the conclusion that the return shock is mainly an electric phenomenon, somewhat comparable to the transmission of the return electric current through a cable, and that the physical tremulous movement is nearly identical in the shock and in the *replica*. In the first and most formidable shock of the Neapolitan earthquakes of 1857 there was no appreciable *replica*, but a continuous motion, commencing quietly, attaining a very terrific intensity, and gradually decreasing. It is difficult to minute the duration of such a phenomenon, but it allowed time to exchange a few words intended to tranquilise an invalid, to walk across a large room, out on to a terrace, and then to cling for some little time to the balcony. This great shock only threw down a few stones in well-built Naples. In Calabria it was most destructive; and is said to have destroyed 30,000 persons.

The leading principle of the architecture of Japan appears to have been to construct the houses with a degree of elastic tensile strength, adequate to resist the oscillatory movement caused by earthquakes. The houses are constructed with a light wooden framework, without diagonal struts or ties of any kind. The roofs are heavy, and the uprights which support them are mortised into horizontal beams at the top and the bottom. They are designed to have a maximum of elasticity, and may be moved from the vertical to a considerable extent without destruction. Mr. Brunton questions the efficacy of this mode of structure in resisting severe earthquakes, but statistical data on the subject are desirable. Professor Palmieri, of Naples, probably the most experienced earthquake observer in the world, lays down the rule that although solidity and strength in a building do not afford perfect protection against earthquake, they yet render absolute overthrow almost impossible. Such an opinion is very fully supported by the phenomena that may be witnessed at Resina, Portici, and other places on the foot of Vesuvius after any of the earthquakes which, in that volcanic neighbourhood, are so frequent and so severe. The people fly from their rent houses, but return in a few days and solder up the cracks with masonry and cement. Overthrow is extremely rare in this vicinity, and the lava and ashes of the volcano have proved more destructive, since the date of the Christian

, than earthquake. In Basilicate, on the
er hand, this terrible phenomenon seems to
re its cradle, and absolute demolition is a
ll known occurrence. All the experience that
have been able to collect indicates the pro-
ety of the use of iron framework by way of
isting the shocks of earthquake. We cannot
l prepossessed in favour of such an expedient
the "asciamatic joint."

BILL TO PREVENT THE PAYMENT OF ILLICIT COMMISSIONS.

We have reason to believe that a Bill to be
itled "An Act to make the receiving of
ibes by Agents criminal," has been privately
awn; and before long it may engage the
ention of Parliament. Worked up from a
tch made by Sir Edmund Beckett in
letter to the *Times*, of January 3rd last,
purport is to render criminal what many
nest people now consider to be merely un-
ntlemanlike and venial; but which the
amble of the draft Bill describes as illegal
d dishonest. In fact, as a law newspaper
d, with some little *naïveté*, in its "Current
pics" of a few weeks ago, it is proposed to
ate a new crime. We hear that the classes
people to be operated upon are agents, clerks,
servants; and we believe that it is the inten-
n of certain well-meaning individuals to sub-
t to the House of Commons a proposal that if
y one of these receives, or tries to obtain, or
ers money or other valuable consideration,
ich may fairly be styled a bye-commission or
be, he shall be guilty of misdemeanour, and
fined; on a second conviction, he shall be
ble to imprisonment even with hard labour,
d in any case the amount of the bye-com-
ssion shall be refunded to the employer out
the fine to be paid by the agent, clerk, or
vant. The clauses reduced to the level of
er than a legal understanding are something
the following effect:—

Any agent who without the consent of his
ncipal receives money from another person in
pect of any dealing between the latter and
principal shall be guilty of a misdemeanour.
Any person who gives money to the agent of
other in respect of any dealing with the
ncipal shall be liable to pay the principal
ice the amount given to the agent as well as
costs of recovery in the County Court.
If either briber or bribee gives information of
bribe, the Court shall be bound to act upon it
d the evidence shall not be used against the
ormer.

The words "agent" and "principal or
ployer" are defined, and made to apply even
her Majesty's civil and military servants.

The subject of "Bye-Commissions or Bribes"
s so fully discussed in our number of January
h last, that little is left for us to say in regard
t. The general principle, or want of principle,
ereby such bribes are given and accepted is
old as history; and its condemnation, in our
n particular branch of the community, is as
as Vitruvius. The indignation recently
own by those architects who were decoyed
o print by certain anonymous letters, was
ed upon the natural feeling that it is unjust
visit a whole profession with the suspicion
ich the tagrag and bobtail do, so it is con-
antly affirmed, arouse. We repeat, for it is
lly no exaggeration, that one-half of the world
s not know how the other half lives; and it
almost equally certain that at least a part of
ociety" is utterly unconscious of much, with-
t using hard words, that goes on in its very
dst. In spite of softening and improving and
ultering," human nature retains its attributes;
d in our own time, in the face of special
islation,

> "Two or three visits and two or three bows,
> Two or three civil things, two or three vows,"

ll accomplish as much as it effected in the
ys of Swift, and probably in the time of
oon, or in even "merrie England" of the
ddle ages. It is neither desirable nor necessary
at everybody should know everything that
erybody else does, says, or thinks,—at least, not
ore than the newer newspapers feel it their
ty to impart to the public generally. We
mit, ourselves, a radical indisposition to stir
ddy water, even in the hope that some one
e will come forward to clarify it. That the
otice of paying and receiving commissions,
en *sub rosâ*, is habitual we are forced to
lieve, for how otherwise could many people in "the world," and holding high their heads, maintain the position they do? That it is the practice of architects and builders jointly engaged upon works of construction to demand and offer illicit payments we do not believe; at least, we are entirely ignorant of it. Yet it would be affectation and an injustice to our immediate colleagues to turn a deaf ear to the hints and innuendos of known contractors, even though just a taint of jealousy and impatience of those whose duty it is to control them, may help to point insinuation, or provoke the "would as I dared," which often does more harm than any direct charge or special accusation. That the practice existed among inferior men of business before the Institute of British Architects was founded, more than forty years ago, we know very well; but in those days the profession was composed of a different class of men to that which largely fills its ranks at the present time. That people who have not the means of knowing the *pros* and *cons.* of the question believe that it is still generally carried on is also unfortunately certain; and their excuse may be found in such a circular as the following, which is printed in excellent type, and upon cream-laid note-paper of a highly effective appearance. Thus:—

> Important to Architects and Surveyors.
>
> J. EICKÉ,
> BUILDER, DECORATOR, and AUCTIONEER,
> 29, TOWNSHEND ROAD,
> St. John's Wood, N.W.,
>
> Begs respectfully to state that he allows 10 per cent. discount for all work introduced to his Office for Buildings, Decorations, or Repairs, and half the Commission on Auction Sales and Levies for Rents.

All that we know about this enterprising, if not seductive, tradesman, with an un-English cognomen, is that his name is in the Post-office Directory, and that his circular is in our possession. We are told that other equally "important" offers are constantly made to architects, and the deduction is that they are sometimes accepted. Otherwise, it is urged, they would be resented, and the delinquent would be called to account. But the fact is, so many "important" announcements are now received through the post that printed circulars are usually consigned to the waste-paper basket without being looked at; and, if a few people do read them, and if they do feel indignation at the receipt of such circulars as the one we publish, the slightest knowledge of the world suffices to prevent them making an exhibition of it. One does not resent the injunction, "Thou shalt not steal," as a personal implication that one is capable of so doing. Nevertheless, in presence of the train of possibilities which such a circular carries to the minds of diffident individuals, it is impossible to think that a little practical legislation bearing upon the subject is either uncalled for or premature.

There is, however, a weak point of professional practice which Parliament cannot touch, even if it succeeded in understanding the advantages and disadvantages attending it. This weak point, by custom, carelessness, and an innate desire to leave things alone, can become, if it have not already become, a serious blot upon the good fame of practitioners; and very often from the laudable desire to believe that all men are what they ought to be, rather than what they are. Though no legal enactments suffice to make people virtuous, bodies of men can be made to feel the expediency of doing what is right in the eyes of the majority; and we see no reason why that majority, in the case of the architectural profession, should not be a virtuous one. The Royal Institute of British Architects is a chartered society; freed of cliquism, and above the suspicion of jobbery, it can impose rules upon its own members which outsiders and the public will ultimately appreciate. But to do this it must be more serious in its doings and aspirations than it is. Proposals for its improvement have been discussed this week, and these are couched in practical terms. As we have already explained more than once, every member of it makes a declaration,—morally takes an oath,—that he will abide by certain rules of practice, the negation of which affects not only his honour as a man, but, in aggravated cases, leads to his expulsion from the general body. To the declaration now made by members, it is proposed to add what might have been an important clause; and in order to explain to the public,—for whom we write even more than for the building fraternity,—the meaning of that clause, we must describe the ordinary procedure in dealings between an architect, as the agent of his employer, and the contractor of the building to be erected. A gentleman, say Mr. Brown, wants to have a house built; and, as he has neither time, inclination, nor capability of ordering the work and controlling the builder, he employs an architect to act as his adviser,—his agent. After consultation, plans are prepared and Brown approves them. The architect, having calculated the cost, explains that the new house can be completed for about 20,000*l.*; and Brown consents to pay that sum, and also a commission of 1,000*l.* to his architect,—that is, he consents to give the architect 5 per cent. upon the amount paid to the contractor for the completion of the building. Then to engage a contractor: it is the custom to invite a dozen or half a dozen of the trade to tender,—that is, to offer to execute the work for a certain sum, which they specify; and for which each will bind himself to complete it. But the competitors cannot ascertain the probable cost of the building from an examination of the plans and specification alone. They must have the measurements of the different parts of the house, and the quantities,—cubical, superficial, and linear,—of the different materials necessary to compose it, scientifically reduced to a bill or bills. This is a work of labour and consequent expense; and as only one of (say) twelve competing contractors can possibly be chosen (generally the one who offers the lowest tender), the eleven would incur a substantial loss if each were compelled to make his own bill of quantities. Therefore the twelve competitors meet by arrangement, and appoint some one to prepare this bill for the joint use of the twelve; and it is an understood thing that the contractor who is ultimately chosen will pay for it. Such a bill of quantities,—a work of calculation totally extraneous to the preparation of the design and the architectural compilation of the building,—is the special business of a class of people called "quantity surveyors," who are paid a commission of 2½ per cent. or less on the amount Brown will pay to the contractor for his house; and this commission is added to, or rather included in, the contractor's tender.*

Let us see how this system may be, we do not say is, abused; or how, even with the most straightforward and honourable intentions, it may be made prejudicial to the pecuniary interests of the architect's employer, Mr. Brown. No one ought to know better what materials, their nature and quantity, are to be used in the construction of a building than its architect and his assistants. He therefore thinks, and according to one view of the matter justly, either that he himself should prepare the bill of quantities, or that the quantity surveyor should be his own, not the contractor's, servant. But who pays the quantity surveyor? The contractor; and if the architect prepares the bill of quantities himself, the contractor must pay him. This may be seen to be inexpedient, therefore the architect, to keep his own hands free from the contractor's money, orders his clerk or assistant to prepare the bills of quantities. But if the contractor pays the clerk, who pays the contractor? Brown; and thus Brown's money follows a circuitous route through the contractor to the clerk, who is the assistant of Brown's agent,—the architect. Moreover, the architect, if he be composed of "flesh and blood," is hardly likely to allow his clerk to receive 500*l.* for reducing to a bill the quantities of a building, for the design and superintendence of which he himself is only paid 1,000*l.* It is, therefore, hinted that the architect must sometimes share with his assistant the sum of 500*l.*,—a course neither illegal, nor, if done openly, dishonest. The Royal Institute of British Architects proposes to get over the difficulty by adding to the present "declaration" made by members the following clause, viz., that "No 'quantities' shall be supplied by any member of the Institute for works executed under his own superintendence, without the concurrence of his client, and unless such 'quanti-

* Of course there are a host of complications which may intervene, such, for instance, as the employment of two "quantity surveyors," one to represent the architect and his employer, the other to represent the contractors. In that case the commission on the contractor's accepted tender is divided between them. Our object, however, is not to give varieties of practice, but to explain one phase of it, which is open to possible corruption and certain innuendo.

ties' are paid for by him." * The practical result, however, of such a course, is to raise apparently the ordinary commission of 5 per cent. to 7½ per cent.; and this is likely to be refused by many who would pay the sum under any other name to the contractor without hesitation. But really the preparation of the bills of quantities is the contractor's business, with which the professional man had better have nothing to do. His plans and detail drawings, as well as his specification, ought to suffice to explain and defend his meaning and intentions; and he ought not, under any pretence,—to use, or perhaps enlarge upon, the words of one who, but a few years ago, was a distinguished quantity surveyor, and who is now a member of Council of the Institute of Architects,—to receive from the person he is employed to control, payment for services, real or nominal, which also involve obligations towards such person utterly conflicting with his duties as an architect. At the same time the right, which Fellows of the Institute now enjoy, of preparing bills of quantities for buildings erected under their own superintendence, can be so interpreted as to permit a divison of profits between the quantity surveyor and the architect, which is much more reprehensible,—because it must be done secretly,—than the employment of the architect's clerk in the capacity of quantity surveyor is objectionable,—the latter course always, to some extent, being an open transaction. In fine, we repeat that the architect who prepares his own bills of quantities, or who employs an assistant, whether in or out of his office, to prepare them, lays himself open to suspicion,—often unfounded, we admit,—even though he does so with the concurrence of his employer, and is paid by the same.†

As we before said, no Bribery Bill will touch details of practice which, by the bye, are the exceptions and not the rule, and which are not opposed to the letter of good faith and rectitude. A Bill to make the taking of bribes by agents, clerks, and servants criminal must of course be confined within certain limits, and though we are told that the bribe is to be made to mean not only "money," but also "other valuable consideration," we presume the line will have to be drawn somewhere. Men cannot be prevented from helping one another; nor are the days of patronage over. What the modern clients do for their patrons—clients of the press, of the public offices, of the public companies, of diplomacy, of fashion, of finance,—are the sentimental crimes which can be tried only in an ethereal court. A star or a garter, place, the run of good society, a favourable notice in a money article, are often "valuable considerations,"—but who is to prove the fact? Will such things be unknown, when the malpractices of a few,—a very few,—agents are made public and punished? Nevertheless some such enactment as that suggested by Sir Edmund Beckett is necessary, if only as a recompense to the nation for the injury done to public morality by the working of the Limited Liability Act. In the appendix to a pamphlet on "Commissions," recently published,—the preface to which is very properly signed by Mr. John S. Storr, a partner in a well-known firm of auctioneers,—there is a letter written by "A London banker and public writer," from which we quote the following paragraph:—"Would that it were within the bounds of possibility to open the doors of certain charnel houses in and about Lombard-street! What has been the price paid and received there for the public loans, the railway enterprises, the grand hotels, the numberless mushroom limited liability companies that have been among the bubbles blown and burst in the last ten years? I know that in many of these cases huge commissions have been 'arranged,' divided, and subdivided, with eminent solicitors, engineers, contractors, architects, and promoters." At the same time, without limited liability we should not have obtained many of the grand enterprises which materially increase the general comfort and prosperity; but the Act has done almost as much, some say more, harm than good. The commercial reputation of the country, and the reputation of individuals far above the ranks of commerce, have been irretrievably impaired by the open temptations and secret emoluments which limited liability in associations holds out.

We are not, however, going to take up the hue and cry which has been raised. The almost tragic style in which the decadence of this country has been treated in letters and reviews upon the subject of "Commissions"; and the indignation, almost heroic, with which architects who made a fight for their good name were met by the larger number of those who never by any chance have, or will perhaps, come in contact with them, either professionally or in private, afforded amusement to the thinking fraction of the community, who knew what it all meant. The decline and fall of everything is a fertile theme of which the weakest intellects sometimes succeed in making capital. But the abyss of bribery to which some auctioneers appear to have access, offers slight attraction to less public characters. We suppose that the picture of it was painted, partly by anonymous artists, to exhibition pitch, and that after a time it will be possible to look at the work without being dazzled. We are not, however, sanguine of a millennium of commercial virtue; nor, unless we are greatly mistaken is Sir Edmund Beckett. But if he succeed in breaking only one of the necks of the monster which he and his friends have valorously attacked, he will have our hearty congratulations. We do not, of course, feel towards him as Byron ostensibly felt towards Jeffrey; but we do wish the "dear damned contemner" of those very architects whose artistic exploits he has long attempted to surpass, *toutes sortes de bonheur*,—and to the managers of his Bill every possible success.

Inhabited House Duty.—On the 13th inst. a very large deputation waited upon the Chancellor of the Exchequer at the Treasury, Whitehall, to press upon his consideration the necessity of a readjustment of the tax, so that certain anomalies which were felt to be unjust should cease to cause the tax to press upon the occupants of buildings which ought to be exempt. Mr. Alderman Lawrence said exceptions had been made in favour of houses occupied for purposes of trade, and the point they came to urge was that if any of the large buildings of the City let in offices a room was occupied by a solicitor, a civil engineer, or any professional gentleman, then the whole building was taxed, unless, indeed, the solicitor made out that he was also a scrivener, and the civil engineer, by ordering a screw, made out that he was a practical engineer. People should not be driven to these evasions. The Chancellor of the Exchequer said what seemed to have been the original intention of the Legislature was, that there should be certain taxes upon houses which were inhabited, but that premises not inhabited at all, but simply used for business purposes, were not to be taxed. He was satisfied what was desired would lead to a loss of revenue; but, at the same time, all he could say was that he should be glad to attend to the suggestions which had been made.

THE ANCIENT MONUMENTS BILL.

THE perseverance of Sir John Lubbock seems at last to have some chance of effecting its purpose in convincing a number of members of our worshipful Legislature that the preservation of any records affecting our knowledge or our investigation of the early history of this country is something else than a matter for joking; if, at least, we may venture to put the best and most hopeful interpretation on the majority of forty-eight for the second reading which he obtained last week. During the first and second attempts which the author of the Bill made to obtain a hearing for his scheme, he was met (if newspaper reporters are to be trusted) by the frequent laughter of his discreet audience; an exhibition which, as we took the liberty of saying at the time, was indicative of the presence of St. Stephen's of a good many of the class of persons technically termed "blockheads." There seems to be an amendment in this respect; at all events, we do not hear of absolute hilarity on the subject among honourable members; though, on the other hand, some of their remarks in the process of the discussion, if not witty in themselves, might very reasonably be the cause of wit in others. Lord F. Hervey's deliverance of his mind on the occasion deserves to remain on record as a remarkable instance of Parliamentary reasoning. His lordship's objections to the Bill seemed to be based on the ground, first that some one had mistaken some old cesspools at Oxford for a pre-historic relic; and secondly, that such relics as the Bill went to protect were those of a barbarous people, whom our more enlightened ancestors had overcome and driven from the island, and of whom therefore it was scarcely necessary or fitting to keep up any remembrance. Apart from his lordships remarkable views of early history, his opposition seems to have been suggested also by the idea that Sir John Lubbock (whose weak and fanciful sentimentalism is so marked a trait in his public character) had urged the Government to get up a factitious "enthusiasm" about things which were mere barbarous relics. If such buildings only as the cathedrals had been included, and nothing so mean and worthless as old stones and barrows, Lord F. Hervey would have condescended to give his adhesion to the Bill. As there is no knowing how large a following such sentiments may have among the class whom Mr. Matthew Arnold calls "the barbarians" of modern life, we may just point out, in the first place, that these strictly architectural monuments are not in danger,—at least, not in the sort of danger which this Bill provides against, seeing that most people with a particle of education are aware of their value, and wish to see them preserved; the only question at present being, in fact, whether some of them have not been preserved too much. But in the second place, the motive of Sir John Lubbock's Bill is not "enthusiasm" for barrows and inscribed stones as such; not a mania like that of Oldbuck. It is the perception, in which every man even tolerably well read in history shares, that all records of any date, which are the work of human hands, are valuable, and may (as the study of ancient history and ethnology progresses) become increasingly so, as a part of the few and uncertain, but de-ply interesting, clues which are left us as to the earlier history of our race. Numbers of such records have, doubtless, disappeared, either by intentional destruction or through neglect and the operation of time; it is of the more importance to hold tenaciously to the few that remain, remembering that every object of this kind, once removed or defaced, is gone for ever: it is the loss or the destruction of that which no human power can replace: and when we consider the importance and interest to the modern world, so keenly inquisitive about the past, of every record of this kind, it is perfectly idle to talk, as some more logical but equally wrong-headed opposers of the Bill did talk, about its interference with the rights of private property. It is no more an interference with private property than is every Bill brought forward for the smallest branch railway-line; and its object is one which, so far as it goes, is of more directly national interest than any railroad. Railroads are made for the convenience of districts, large or small; Sir John Lubbock's Bill is framed in the interests of all educated people in Great Britain, without distinction of locality. Educated people, in the sense in which we here use the word, are a numerical minority, it is true; it is for that very reason that the Bill is wanted, and this special

* This proposition of the "Improvement Committee" has been accepted; and indeed the whole scheme of reform has been approved with a few slight amendments. But, as was seen during the second debate on Tuesday last, the terms of the additional clause relating to "quantities" can be evaded with very little difficulty and no literal breach of faith. The public, however, has a remedy in its own hands: by employing only those architects who are willing to forego their present claim—not exercised by the superior half of the profession—to prepare bills of "quantities" for their own works.

† It may be useful to quote from "A Book on Building" what Sir Edmund Beckett, and doubtless many people who follow his views, think of the "Quantities" question. At pp. 31 to 37 will be found the following:—"Before we consider the tenders and the contract there is another intermediate element or document which in modern times has assumed great importance, though the employer generally knows nothing of it, nor is it any part of the contract legally, *and nothing but confusion arises from recognising it as such*, though it may sometimes be referred to for information; that is, the bill of quantities. . . . . Formerly contractors used to tender from such rough estimates as their own experience enabled them to make, ... but now, under the keenness of competition, they have every inch of section of mouldings measured from the plans: the contractor wants to know exactly how many bricks will be required, and an eighth of an inch thickness in a board is claimed as an extra if it has not been specified. . . . The usual practice is for the quantities to be taken either by the architect himself, if he is not above it, or one of his clerks acting independently, or by some still more independent measurer agreed upon by the builders who wish to contract; and one whose tender is accepted pays him, all of them, of course, having added the charge to their tenders" . . . . .; but "I advise employers not to let the quantities be taken by *any one who can be made out to be their agent*. . . . . In some cases quantities are given avowedly excessive, to enable the architect to make additions; which is wrong. . . . . The real causes of the proverbial excess of cost over estimates are, first, that the plans and specification seldom comprise all that they ought to do; and secondly, because alterations are required either to cure mistakes and omissions which become evident as the work goes on." To conclude our summarised quotation, Sir Edmund adds,—"It is evident that architects' clerks are not impenetrable, for the tenders even for private houses get somehow into the architectural newspapers, sometimes to the surprise of the architects themselves." We must be allowed to add that we do not understand the gist of this last remark, or see the force of the insinuation. We never by any chance receive these lists from the architect's clerk, and as to paying for them the idea is absurd.

manor-house differed only in degree from that of the king's palace, and in Westminster Hall we have a splendid example of an "aula regis," or royal hall. The hall was surrounded by a spacious enclosure, in which were the kitchens and other offices. On great occasions, as at coronations, the space was nearly filled by temporary erections, built to accommodate the overflowing number of the visitors. The hospitality of the time forbade that any should be sent away empty, even if there had been inns for them to go to, which was not the case. If the great hall were not sufficient, other smaller halls were erected around it, and kitchens built for their especial service. Westminster Hall had not, of course, its present appearance in those early days. It was first built by William Rufus, and must have been, even then, a building of great magnificence, as is shown by the remains of Norman architecture now built in the thickness of its massive walls. These remains were seen to advantage when the great archway leading to the Houses of Parliament was pierced in the southern end wall of the Hall. The great enclosures which surrounded the hall were necessary for defence, and visitors with their retinue, horses, and servants, had all to be provided for. This was no slight matter in days when a great nobleman would take in his train 150 to 200 horses, with the necessary attendants, besides an armed escort.

Although we now begin to find traces of a desire for more comfort than was sought in previous times, it was only by slow degrees that matters which we think essential were adequately attended to. Thus glass windows were for a long period rare, and costly; so that even in large houses the upper lights were often the only portions glazed, while the lower lights were closed with wooden shutters, after the ancient manner. The art of glass-making was not unknown to the Romans, as I pointed out to you when describing the houses at Pompeii. It never was lost in Italy, and was freely used there before it became common in this country. During the recent modern revival of taste in Italian art we have seen a revival of glass manufacture in its ancient seat of Murano, whence came the glass used in many of the chief buildings of Italian Mediæval days. In Britain the Romans may possibly have imported glass in small quantities, and used it in a very sparing way; but it is obviously unlikely that this could have been done on any large scale, considering the difficulties of transport and the nature of the material.

These circumstances will account for the scarcity of glass in this country in the thirteenth century. The French, and the inhabitants of the Low Countries, or Flemings, seem to have had greater skill than our ancestors in making glass, for it became a regular article of trade with those countries, as well as with Venice, the latter place being chiefly resorted to for drinking-cups, and vessels of an ornamental character. Window-glass came chiefly from the Flemings, with whom extensive commercial dealings had sprung up in connexion with the wool trade. The latter was a very important industry in this country, and our merchants sent wool to Flanders in large quantities, and took as part payment window-glass in exchange. Among the trades of the time we find occasional notice of that of the "glazier," but there is no mention of that of the glass-maker.

Such being the state of the market for this important item of the builders' materials, and the difficulty of procuring it, glass made its influence felt but slowly in domestic buildings. The churches, the royal palaces, and the great religious houses, had to be supplied, before the manor-houses of the gentry and less important buildings could have their share in the improvement. Wooden shutters were, therefore, still common, and cases exist where the stone mullion, which divides the opening into two lights, is pierced with holes, through which the bars were passed to secure the shutters at night. It may easily be supposed that such shutters did not close the windows very thoroughly, and that draughts of cold air abounded. Even the queen of Henry III. was not exempt, it would seem, from this inconvenience; for there is a record of an order from the king directing glass to be placed in the window of the queen's wardrobe in the Tower of London, instead of wood as then existing, "so that that chamber might not be so windy."

The walls of this period being usually thick, there was ample opportunity for placing shutters either within, in the thickness of the wall, or outside. Both methods were common. In the interior, as I have before pointed out in the case of earlier examples, the window-sill was commonly formed with a seat, sometimes a plain bench of stone, and at other times more elaborately arranged with returned ends and mouldings. This treatment of the sill is almost universal in dwelling-houses, and serves as a distinguishing mark between ecclesiastical and domestic work.

The ordinary type of window was the two-light form, common with the Normans, and divided, as in that case, by a column or shaft. The roofs were covered with stone, tiles, and slate, and still occasionally with thatch or shingles. Crest ornaments began to appear on ridges, and hip-knobs and finials were also seen. Stone gutters, sometimes covered with lead, carried the water to projecting spouts, which developed into the quaintly-carved gurgoyle.

In the interior of their houses, the thirteenth-century architects soon turned their attention to the fire-places. These, however, were far from universal, as the old custom still remained of having a hearth in the middle of the apartment, with openings in the roof over it for the passage of smoke. It must be remembered, in estimating the inconvenience of this practice, that the fuel used was wood, and not coal, with its black and blinding smoke. The arrangement of a central fire was general in kitchens, and was often used in halls and other large rooms. As, however, the convenience of a regular chimney became apparent, we find great attention paid to the design of the fire-places. These are often richly carved and ornamented, and the practice continued until the latest times of Gothic architecture. After the latter had become merged in the Renaissance, the grandeur of the chimney-pieces still increased, and some very handsome examples are found in the Elizabethan and Jacobean mansions of England, and also in France and Belgium.

There is something hospitable-looking in these great recesses, which gives a significance to the phrase of welcoming to the "hearth." In the architecture of the future, there may be a change, but the artist has little reason to wish for it. At the same time, we cannot shut our eyes to the fact that wasteful fireplaces cannot always be a feature in our domestic economy, more particularly in respect of the homes of the poor. It has been urged that our pleasure in seeing a fire in our rooms is chiefly due to the inefficient warming and ventilation of the latter. If a man feels warm, he does not think of a fire, or expect to see one. With November chills, we look at our cold grates, and wish to see a bright fire burning in them. We say it is cheerful-looking, and pleasant; but the very same object would be disgusting to us in the dog-days. We approach the fire, and gather round the hearth, because we are cold; and a chief reason of this is, that a large portion of the heat produced by the fire goes up the chimney, and the rest is so partially distributed, that one part of our rooms is as much too hot as others are too cold. Owing to the Englishman's affection for an open fire, and also to his conservative instincts in matters of habit, it is not probable that fireplaces will soon disappear from the homes of those who can afford to indulge their tastes; but as our coal supplies approach more nearly to exhaustion, and fuel becomes dearer and dearer, it may well happen that architects will be forced to turn their attention to the substitution of other arrangements for the open fireplaces, which have been handed down to us from our ancestors. There is no doubt, however, that in dispensing with them we shall lose a very striking and beautiful feature of architecture, and we can only hope that the change, if it come to pass, may be attended with compensations in the way of increased cleanliness, brightness, and comfort.

In continuing our architectural retrospect, it must be remembered that we have not yet arrived at a time when security against external danger could be relied on, and many details of the castellated architecture of the preceding century were still common. Such are the battlemented or crenellated walls of enclosures, and also parapets, and the external flights of steps by which the upper stories were often approached. Staircases, as we understand them, came into general use at a later period. The interior walls were commonly plastered and whitewashed. Sometimes a simple decoration might be added, and the custom of lining the walls with wainscoting arose, although this was very sparingly used at first, in consequence, doubtless, of its great expense.

Wooden floors were occasionally found, though not often on the ground story. The floor was more generally left with the earth pounded and rammed down, and covered with straw or rushes. Paving tiles of a plain character were used during the reign of Henry III., who was anxious to promote the progress of art, and encouraged foreigners to attend his court, and to introduce improvements from abroad, when practicable. The earthen floors, saturated with moisture, and receiving all the litter from the tables, must often have offended a fastidious taste, and royal orders exist, one of which directs that a room on the ground floor of Windsor Castle shall be "boarded like a ship," while another says that the "clerks of works" are to work day and night in order to wainscot another chamber "with boards radiated and coloured, so that nothing might be found reprehensible in that wainscot."

It was at this time that Italian priests were often to be found in England, in places of importance; and they must have brought with them the taste for coloured decoration, common in Italy. Polychromy, in consequence, became readily adopted in English work, and wainscots, walls, and ceilings were frequently painted, the subjects being chiefly allegorical, or taken from the sacred history, or the lives of the saints, and executed by the same artists whose works adorned the churches. Although the art may have been first introduced from abroad, there must have been plenty of skill among English decorators, or the fashion of polychromy could not have been so extensively followed as was the case. At St. Alban's, the Sacristan Walter, of Colchester, an Englishman, was an expert in such work, and is described in the chronicles of the period as "pictor et sculptor incomparabilis."

It was usual to paint the walls above the wainscoting, and it was not until a later time that the latter was carried up to the ceiling, as we see it in many Elizabethan houses. The wainscot being about 6 ft. in height, there was a good opportunity for the painter to decorate the wall above it, which was done sometimes by representations of curtains, and sometimes by more ambitious designs. Thus, we find King Henry ordering Walter de Burgh to build him a chapel at his manor of Cliff, and "to cause the chamber of our queen there to be wainscoted, and painted with a history." Another royal mandate directs the sheriff of Wiltshire "to wainscot the king's lower chamber, and paint it of a green colour, and put a border to it, and to cause the heads of kings and queens to be painted on the borders." He was also to paint on the walls of the king's upper chamber with the story of St. Margaret Virgin, and the four Evangelists; and to paint the wainscot of the same chamber of a green colour, spotted with gold, and to paint on it heads of men and women." The order concludes by saying that all these paintings are to be done "with good and exquisite colours."

These extracts (for which I am again indebted to Mr. Parker) will suffice to show the extent of the taste for polychromatic decoration, which had now come into use, and had spread from the churches to the domestic architecture of the day. They also enable us to appreciate the interest taken by King Henry in the architectural improvements then in progress. His orders are most precise, and extend to the smallest details: thus he tells the constable of the Tower of London, in one instance, that he is to have the walls of the queen's chamber, which is within his own chamber, washed and painted with flowers; he is also to cause the drain of the king's private chamber to be made in the fashion of a hollow column, as "our well-beloved servant, John of Ely, shall more fully tell thee."

The king is thus shown to us directing the building, decoration, and detailed arrangements of the royal palaces. He encouraged artists at his court, and carried out large works at Westminster, both in the abbey and the palace; he attended personally to the repairs and enlargements of the various Crown buildings throughout the country, and assisted in the improvement of the parish churches, these being undertaken by the clergy and the local authorities. We find his favourite style of decoration is that mentioned in one of the above quotations, viz., green, with gold stars, and this fashion has been ascribed to the taste of William the Florentine, an Italian artist, much employed by the king. This man was also an architect, and held the office of "master of the works," at the palace at Guildford.

The houses in towns were still low, seldom having more than two stories; but the king was anxious to increase their height and importance. He was struck with the effect of the achitecture of Paris, in this respect; for, after he had paid a visit to that city in 1254, we find it recorded that, "when the King of England had passed through the street which is named La Grève, and afterwards the street towards St. Germain Antin, and then the great bridge, he observed the beauty of the houses, which are built of gypsum, or plaster, in the city of Paris, and houses containing three chambers, and some even of four stories or more, from the windows of which stretched forth a countless multitude of people of both sexes."

As regards this comparison with Paris, it may, however, be remarked that, in many important particulars affecting the health and comfort of the people, London, in the thirteenth century, had some points of superiority over its rival, which remain, more or less, to the present day. Thus the streets were wider, the pavement better, drainage less imperfect, and the lowness of the houses more conducive to the general health, by allowing a free passage of light and air. As regards this last matter, I cannot but regard with anxiety the present tendency to increase the height of our buildings indefinitely, each wishing to take his own course, regardless of general architectural effect, and of these important sanitary questions of which I have spoken.

In England the attention given to these matters by King Henry illustrates the advancing civilisation of his time, and we find water was laid on at the Palace of Westminster by his order. A special favour was in this instance granted by the king to the architect, Edward Fitz Otho, for to him permission was given to have a pipe, the size of a quill, to convey the water from the conduit to his own dwelling-rooms. Towards the close of the century baths were introduced in some of the chief palaces, and conduits of pure water conveyed a benefit to the citizens which they do not unfortunately always enjoy in our own day.

The drainage of houses was, for a long time, of the simplest description; the water dropped from the eaves of the roof, and open channels carried off, more or less imperfectly, refuse of every description. Underground drainage was known to the Romans, as the splendid remains of the "cloaca maxima" at Rome abundantly testify; but in England it does not seem to have been practised before the thirteenth century. As hamlets grew into villages, villages into towns, and towns into cities, the inconvenience of primitive arrangements became manifest, and a more complete system of gutters, pipes, and drains came into prominence.

In the Royal Palace of Westminster, we find there was an open channel for drainage, down the middle of the hall itself. This becoming intolerable, and affecting the health of the courtiers, the king ordered its immediate removal, with other sanitary changes, and, to press the matter, named an early day for the completion of the works, declaring that they must be done, "even though it should be necessary to hire a thousand workmen a day" for them. An underground drain was provided, in consequence of the king's order, so as to communicate with the Thames, and in the order for payment we find 126*l.* 17*s.* 8½*d.* were expended on the work, which included the repair of the kitchen chimney. The new drain is termed a "conduit," and it is stated that the king ordered it to be made "on account of the stink of the dirty water which was carried through his halls, which was wont to affect the health of the people frequenting the same halls."

I have brought this particular instance before you, because it seems to show two things: first, the condition of such matters at the time; and, secondly, the reforming spirit which was arising, and which was fostered by the royal example. When kings' palaces had open drains in their very halls, you may easily picture to yourselves the condition of humbler dwellings; and, on the other hand, in the complaints which now began to be heard of these primitive contrivances, we discern the advent of that spirit of healthy grumbling, which heralds the approach of improvement. In the orders of Henry, and also of Edward I., there are frequent references to such matters, all of which prove that the attention of the most enlightened part of the community was becoming convinced that the time was come for an advance on the customs of their predecessors.

Let us now see what changes have been silently growing in the forms of architecture since the days of the Normans. The style of the thirteenth century is perhaps best known to most of you by the term Early English, as used by Rickman. Other names have been given to it, as, for instance, First Pointed, and the style has again been sub-divided into epochs; but it is not necessary for my present purpose to trouble you with their refinements, and it will suffice for us now to regard the style which we are considering under its old-fashioned title.

You will remember that we found the characteristics of Norman work to be solidity and simplicity, not without considerable richness of surface details. We now find greater lightness, both of effect and of materials used, more deeply cut mouldings, and more elaborate construction. The semicircular arch had given way to the pointed form. Both kinds were used in the same building, until ultimately the latter secured an exclusive predominance. The gain in freedom of construction from the introduction of this feature soon showed itself in the greater extent and beauty of the groinings and vaultings. The favourite shape of windows in domestic work remained, as hitherto, the two-light type, and the opening was frequently divided by a column as in Norman examples. This use of the column is of great antiquity, and is found in Byzantine works; it was commonly used by the architects of the thirteenth century, not only for the openings of windows, but also in the case of doorways, which were frequently divided by a single column, or by a cluster of shafts, as at Southwell Minster, and elsewhere. In the case of doorways used by large crowds, this arrangement of a central pier would not be without its convenience, if advantage were taken of it, to divide ingress from egress.

It was in the column, however, that the greatest change had taken place. Shafts of moderate size, clustered, and sometimes banded together, now supplied the place of the sturdy Norman pillars, and the traces of classical traditions disappeared from the capitals. Volutes and the square abacus were dispensed with, and a conventional foliage of singular beauty replaced the leaves which evidently recalled memories of the acanthus. The bases, on the other hand, while becoming more elaborate, are not without a resemblance to the Attic base of the Corinthian order. Both bases and capitals were deeply cut with hollows, and these were divided from the round mouldings by small fillets. The same characteristics marked the arches of the period, and powerful effects of light and shade were freely used.

The most widely-known detail of this period is that known as the dog-tooth ornament. It is one of great beauty, and is so well known that I need not describe it. We have already noticed the frequent use of zigzags by the Normans, and there can be little doubt that on them was founded the design of the dog-tooth. It is, in fact, only a double zigzag, carved into leaves. It is found in every detail of the time,—in arches, capitals, stringcourses, corbels, and the like; and in examining ancient buildings it is a good rough-and-ready test of the period of which we are now treating. In the greater churches more ambitious sculpture now came into use, of which the cathedrals of Lincoln and Wells are splendid examples, and in all the work of the thirteenth century there is evidence of beauty of design and skill of execution, which was not of long duration, and has marked out the period as the golden age of English Gothic architecture.

The windows were often combined in groups of two, three, or five lights. The arrangement of three as a triplet, with a longer light in the middle, is the ordinary form, of which we have good examples in London, at the Temple Church. Other fine groups, as that known as the five sisters at York, may also be noticed. Window tracery did not come into general use till a later period, although, as we see from the Southwell example, it must have have been well known. The windows were for the most part long openings, without mullions, and terminated in a single-pointed arch, sometimes cusped, which has given rise to the name of Lancet. The above are, I think, the principal points to which I need draw your attention before we consider the architectural differences between the domestic buildings of the thirteenth century and those of the Normans, discussed in my last lecture. The changes I have noticed are, of course, only the most obvious and salient points of difference, and you will readily notice in your study of examples, the many smaller matters of detail which accompanied the more important variations. The style was complete before the century had far advanced, and its later specimens indicate that a transition had already begun, and that new changes were imminent.

Among the examples of domestic architecture before alluded to, Aydon Castle, in Northumberland, is worth attention. It was not originally termed a castle, according to the semi-royal custom of the day; but it was intended primarily for a residence, and was called "Aydon Halle," thus following the usage which usually prevailed as regarded the manor-houses and residences of the gentry. At the same time, as the building is near to the Scottish frontier, and is situated in the debatable and unsettled Border land, we may naturally expect to find that capability of defence was not overlooked. It is placed, therefore, on an eminence, with no windows within easy reach, and with those which were necessary few and far between. Battlemented parapets surround the roofs, and provided shelter for the archers in case of need. The house stands in a considerable enclosure, which would serve as a defence to servants and cattle in case of a siege or sudden attack. The nature of the ground protected the enclosure on two sides, and on the others there were ditches at the foot of the enclosing walls.

There is nothing architecturally grand in this example, but it may interest us as a specimen of a fortified house of the Border country. It possesses great strength of construction, and the mangers in the stables, even, are of stone. It is noticeable that fireplaces are here freely used, and no doubt for this circumstance the climate, and the facilities for procuring fuel, may be answerable. These fireplaces are of simple, but good design, and in one instance there is a projecting shelf supported on brackets. In this case the fireplace and hearth are built in the thickness of the wall. In another instance, shafted jambs are built against the wall, and project into the room, while over all there is a covering hood, tapering upwards. The chimneys themselves are for the most part carried up singly, in plain solid-looking shafts.

The water is conveyed from the roof by stone gutters, behind the parapets, and there are stone projecting shoots, or gurgoyles, to take the water from the gutters outwards. The principal rooms for the family are on the first floor, and they are approached in the manner usual in castles, by a long flight of external steps, originally covered by a wooden roof, which has now disappeared. The windows to the chief rooms are of the ordinary two-light type, with a dividing column. Each light has a plain pointed arch, and the two openings are surmounted by a pointed arched dripstone, or label moulding. Holes in the masonry around the windows suggest the existence of iron bars, now removed. The window column, though more sturdy in its details than is usual in Early English work, is yet quite distinct in its character as compared with the Norman feature of the like kind, which we saw in the case of the Jew's House at Lincoln. You may compare with interest the greater decoration of the latter town residence with the simple but handsome strength of the castellated country mansion of Aydon.

Before quitting the latter, a word may be said about the doorways. The principal entrance at the top of the flight of steps before mentioned is finished with a pointed arch of simple character, with double-splayed jambs. As this entered into a story of considerable altitude, no question would arise as to the height of the arch, but it was otherwise in cases of more moderate dimensions. It is curious to notice how early our ancestors discovered this difficulty in the employment of the pointed arch, and you will observe in one of the doorways the use of a square lintel, with the upper part of the jamb curving inwards; a design which was capable of much greater development. The same square form was also used for window openings when required, and there is an example of this feature in the same building. The thirteenth-century architects knew that good architecture should be governed by common sense, and while clinging to the pointed arch with the utmost affection, they thus early recognised that there were limits to its reasonable application, and that there is a time and place for everything.

It must, of course, be remembered, in considering the examples of thirteenth-century domestic architecture, that from the nature of the case we are only dealing with houses of importance. The dwellings of the people at large,

having been chiefly of wood, have naturally disappeared. If the arrangements of the houses of the rich are to our minds far from luxurious, we may be sure that the poor had little comfort in their ruder dwellings.

We shall find that in the South of England, as well as the North, the houses of the gentry still partook of the nature of castles. Little Wenham Hall, in Suffolk, is a good example of this habit, and it is notable because the materials used are different from those employed at Aydon. Here we find brick walls, built of long narrow tile-bricks, of the Roman fashion. The bricks are mixed with stone for windows and dressings. In this part of the country, there was not the same necessity to provide for the possibility of a siege that existed in the Border land of the North. There was, therefore, no great extent of enclosure-walls, and the plan was in consequence more compact, although with strength enough to resist any isolated attack, whether by pirates, or migratory bands of robbers.

Most manor-houses of the time were built with regard to such possibilities. At Little Wenham Hall, the sterner features of Aydon are softened, and a greater amount of decoration is introduced. Some of the lancet windows have trefoiled heads, and tracery is found in the two-light windows. A turret, at the angle of the tower, contains a newel staircase, and there is a chapel in the tower with some good architectural details and carving.

Taken altogether, we find in this southern example a certain progress towards refinement, due probably to the more settled state of the country, and to the somewhat more genial climate. At the same time, the character of a fortified house is well maintained. A more domestic-looking relic of the time is to be found in the old Rectory House, at West Dean, in Sussex. As this is situated close to the church, it was, no doubt, erected for the use of the clergy, and hence it dispensed with those precautionary measures which were still thought necessary in the manor-houses of the laity. It is a plain and simple building, with a high-pitched roof, but with little or no architectural ornament. The massive square chimney is in the gable, and the roof is covered with slabs of stone, with dripping eaves. There is a good two-light window in the upper story, with a columnar mullion. Each light has a trefoil head, worked above the opening for the casement. The latter is finished square, with a stone lintel.

Although there is not much to interest us in this building, taken by itself, it may serve to show to a greater degree than the other examples what less pretending dwellings of the thirteenth-century were like. Even this house, it may be remarked, was of stone, but the features of its design are simple, and just such as might be expected to occur in the more common wooden structures of the period. In it we seem to have a residence of one who from his poverty feared no robber, and whom his sacred character protected from violence. He was, therefore, enabled to live in a house which was not a fortress, but which might pass for a cottage in our own day.

In parts of the country where water was easily attainable, we often find a moat surrounding the house, with a drawbridge to the principal entrance. The moat supplied the place of a protecting wall, and although it could scarcely have been of great use in the event of serious attack, it would probably suffice to keep off any wandering bands intent on plunder or ransom.

It need scarcely be pointed out that all houses of importance in the thirteenth century possessed their domestic chapel. The orders of Henry III. are full of minute directions about the "Queen's Chapel," in the various Royal residences, detailing what is to be done for their maintenance and decoration, and in some instances ordering the sheriff to supply a chalice, vestments, books, and other necessary ornaments. The custom of the palace was the same as that of the manor-house, in this as in other matters, and thus the chapel came to be considered as an almost necessary appendage to private houses of importance throughout the country.

There was not much furniture in the houses of our ancestors, at least in our acceptation of the term. That which was required was, for the most part, made on the spot by the carpenters and workmen of the estate. The windows had stone benches, and there was a dais for the king, or lord; of movable furniture there was little or none; massive fixed tables were common in the hall, and sometimes trestles were used, on which moveable tops were placed for meals. The tops often consisted of boards, roughly fitted to each other, and under these circumstances the phrase to "board," acquires a special significance. Forms and benches furnished the seats, and possibly served also as couches, the hall being still often used as a dormitory as well as a dining-room.

The king's seat, in important palaces, had usually some importance of design, being of stone or wood, with a canopy, and decorated with carving, painting, and gilding. Movable chairs were in occasional and rare use. Curtains may have covered the doors, and also ornamented the royal canopies, but they were not common until a later period. This was doubtless by reason of their cost, for they were evidently well known to the artists who carried out coloured decoration, one of whose favourite subjects was a painted curtain, with stiff folds.

With regard to beds, there is not much information. Bed-chambers existed, but the provision of them was scanty, even in great houses. Mattresses were, however, in ordinary use, and those of the king were covered with silk, velvet, and embroidery. The people generally appeared to have laid out their mattresses where convenient, instead of placing them in bedsteads, in the modern fashion. The love of linen which has distinguished careful English housewives, to the present time, became early apparent, and the large presses and cupboards were well filled. To "take up" one's "bed and walk" was, as we know, the custom of the East in Gospel times, and it is so still in Eastern countries, and to some extent in Russia.

The great houses were lighted with candles, and silver candlesticks appear in the inventories of royal goods and chattels. They were, as we know, one of the indispensable ornaments of the altar. Wooden bowls and trenchers sufficed for general use at table, and the meat was often brought to the hall, on the spit, fresh from the kitchen fire. Each guest carried his knife, and helped himself, as the spit was brought within reach. Forks, although known, were looked upon as luxuries or curiosities, and the meat was cut up by each person on his trencher-board, and eaten with bread. Spoons were used occasionally by the wealthy, and possibly forks also, but the latter were the less common of the two. There were often mats for the feet, when the floor was of earth or tiles.

These details of the mode of life in the thirteenth century relate to the habits of the rich, for even kings in those days were without comforts, which we now think indispensable for all classes. The mass of the people had to be contented with simpler arrangements, and rougher living.

This, however, was the time when our English Gothic architecture achieved its greatest perfection. Artistic feeling applied itself in after-times more vigorously to the private wants of men; but these were the days of palaces, abbeys, and churches,—of the glories of York, Lincoln, and Salisbury. If the days of such architectural triumphs seem to some of us to be gone for ever, we may, perhaps, feel some consolation in the thought that each age has its own special work. The world, as it grows older, takes more and more into account the necessities of its humblest members, and so, in our work of to-day, we may find much to interest and instruct us, though little to be absolutely copied, in the domestic architecture, habits, and ways of the thirteenth century.

City Temple.—Sixteen memorial windows have been executed in coloured glass for the clearstory of the City Temple, by Messrs. Phillips & Son, of Baker-street, from designs by Mr. Walter Hensman. Half of the number are filled, each with an emblematical figure of one of the eight Christian virtues,—Faith, Hope, Charity, Truth, Wisdom, Temperance, Chastity, Patience. They are depicted as winged figures, four being male and four female. The figures are seated, half on either side, occupying the second, fourth, fifth, and seventh windows. Each pictured grace is regarded as a memorial of some great name associated with the history of the Congregational church now worshipping in the City Temple,—Truth, for example, as commemorative of Thomas Goodwin, Cromwell's chaplain, its founder, or with the triumphs of the Reformation in general. Thus Cromwell himself is taken as the type of Temperance; Baxter, of Patience; Bunyan, of Charity; John Wesley, of Faith, and his brother Charles, of Hope; Milton, of Wisdom; Anne Askew, the Smithfield martyr, of Chastity. The other eight windows are for the present filled with floral ornamentation only.

SOME CIRCUMSTANCES WHICH INFLUENCED MEDIÆVAL ARCHITECTS IN THE ARRANGEMENT OF THEIR BUILDINGS.*

THE difficulties which present themselves to an architect when he is about to erect any building may, I think, be ranked in two classes,—firstly, those which will be brought about by practical considerations; and secondly, those which arise from artistic requirements.

In the former class may be ranked site, cost, materials to be used, arrangement, accommodation required to be provided; and in the latter class, selection of style, appropriateness to the locality chosen, proportion and enrichment. I do not, of course, intend, in this paper, to enter into the consideration of all these questions, but simply to describe some ancient buildings or groups of buildings which seem to me to illustrate in a remarkable manner the way in which your Mediæval predecessors either overcame some of these difficulties, or attempted to do so. If I have in the course of this paper to draw comparisons between their practices and some that are in vogue at the present day, I hope I may be pardoned if I sometimes express an opinion in favour of the "ancient ways," rather than the modern.

The first point upon which I wish to offer a few remarks is the way in which Mediæval architects treated the sites of their buildings. It seems to me they nearly always erected their buildings upon the ground just in the state in which they found it, and did not go to the trouble, and often unnecessary expense, of "levelling." One of the grandest examples of the way in which Mediæval architects treated a thoroughly unlevel site is the great Abbey of Mont St. Michel, in Normandy. Here all the buildings are made to fit into the irregularities of the great granite rock; each crag is made to form the foundation of some buttress or projecting turret, and each hollow forms a crypt. On the summit of the vast granite cone stands the magnificent apse of the abbey church, surrounded by a forest of pinnacles. So grand and striking is the whole mass, and so inseparably united are the buildings and the rock upon which they stand, that it is difficult to distinguish where the work of nature ends and that of man begins.

Another grand example of the same kind of treatment is the cathedral and surrounding buildings at Limburg-on-the-Lahn; here the size of the cathedral is very circumscribed, owing to the small space at the top of the rock upon which it stands, but in order to give dignity and grandeur to the whole group, the beautiful church is crowned by seven spires, the one capping the central lantern rising far above all the others. At a distance both Mont St. Michel and Limburg bear a striking resemblance to some great dolomite rock. In each case the peculiarities of the site are strongly accentuated and exaggerated by the buildings erected upon them, and both look far steeper rocks when crowned by their beautiful churches than they would without them. There are many other examples of the same striking treatment of hill-sites to be found all over Europe. In Germany, Dietkirch, near Limburg, is one of the most remarkable; Friesing, Naumberg, and Erfurth are scarcely less remarkable. In England, the castle and cathedral of Durham are splendid examples, and must have been still more so when the western towers of that cathedral were crowned with spires. In treating one of these grand hill-sites, the Mediæval men carefully avoided anything that would have the effect of marking the junction of the hill or rock with the building placed upon it. They very rarely used terraces, and when they did use them they reproduced or continued the vertical lines of the building below the terrace, so that, at a little distance, the terrace looked like a part of the building. Great care was taken that the building should appear to grow out of the hill, and not merely stand upon it, and in order to do this portions of the building were carried down the rock or hill or portions of the rock left running up into the building, which had the effect of broaching the two together in an inseparable union. Now I must say that it appears to me that this is a far more beautiful treatment than that usually practised in modern times. As a rule, if a building has to be erected upon a hill, the first thing that is done is to remove the greater portion of the hill so as to get a flat top to it. There is no longer any

* By Mr. H. W. Brewer. Read at the Architectural Association on the 9th inst.

question of the prophet going to the mountain or the mountain going to the prophet, but of the mountain getting out of the way to make room for the prophet. Another practice which is very common is that of surrounding a building erected upon a hill with a broad flat terrace, forming a strong line of demarcation between the two, which makes the building look as if it could be lifted off the hill bodily just as one lifts the cover off a soup-tureen. The modern castles of Callenberg and Hohenzollern have this defect in a painful degree, and I have often thought that a vast handle ought to be constructed over them, so that one might imagine some giant coming and lifting them off the beautiful hills which they disfigure, and transporting them to some flat level marsh, where they might really look rather ornamental.

The same practice of placing their buildings upon the site just as they found it, and of making the building suit the site and not the site suit the building, often led Mediæval builders to place their churches upon a lower level than the road from which they were to be entered. Examples of this are to be seen in the cathedrals of Chester and Norwich. When entering either of these cathedrals by the western door, one has to descend a flight of steps to the nave. The cathedral of Friesing, in Bavaria, presents a singular example of this, as the narthex and great western door are very nearly upon a level with the triforium. At Würzburg, in Bavaria, the church of St. Burkard is built upon a level site, but the chancel has to cross a street, and the west end of the nave goes over a stream. Now, instead of raising the whole floor of the church to one level, which would have cost much labour and a large sum of money, the nave is built upon the ground level, the choir raised upon a grand flight of steps, and the west end of the nave raised so as to form a deep gallery. The Rath-haus at Dettelbach, in Bavaria, has a road running through it lengthways, and a river crossing under it at right angles, so that the ground floor is cut up into four equal isolated portions. The way in which the entrance to the upper portion is effected, by means of a double external staircase uniting under a vaulted porch, with a chapel above it, is one of the most charming pieces of design I have ever seen, and shows how the Mediæval architects made beauties out of the very difficulties of the sites upon which their buildings were erected.

The next point which I have to notice is one which seems to me to lead to many difficulties, sometimes not unmixed with unpleasantness, and one upon which I find architects and their clients frequently have very different views. It is the *cost* of the building. A curious instance of the way in which architects and their clients differ upon this subject came to my notice a short time back. A talented young architect, whom I have the honour of knowing, was commissioned to design a large church in one of our Northern counties. He got out his drawings and his estimates, which came to 10,000*l*. The building, having to hold a very large congregation, was necessarily plain, and built of brick with stone dressings. He received a letter from his client, stating that he was delighted with the design, but he wished to have the building of ashlar, and thought that it ought to be done for 7,000*l*.! Now, although I do not suppose for a moment that Mediæval architects had quite such unreasonable clients to deal with, inasmuch as the disease, which I can only describe as "shoddy on the brain," was not common to the alarming extent which it has become in this nineteenth century, yet that the Mediæval architects did experience this difficulty is amply proved by the frequent examples which we meet with in old buildings, of the well-known process of "cutting down."

One of the most remarkable instances of this is to be seen in the nave of St. Alban's Abbey; and the whole question, so far as that magnificent church is concerned, has been most carefully examined and reported upon by Sir G. G. Scott. I will, however, say a few words upon two singular Continental examples of the same process. The first is to be seen at Bamberg Cathedral, the eastern towers of which are beautiful examples of German First Pointed work, greatly resembling those of Laon Cathedral, in France. Now round the first story of the octagonal portion of each of these towers a row of very richly-moulded bases is to be seen, showing that the architect intended to have arcaded this part of his work. This arcade work was evidently cut down, and the cardinal faces of the octagon simply pierced by a plain lancet window. The other example to which I alluded is to be seen in the interesting church of St. Jean du Doigt, in Brittany. When this church was commenced at the end of the fourteenth century or beginning of the fifteenth, it is evident that a much more extensive building was contemplated than that which exists. As far as I can make out, the proposed church would have consisted of a choir and aisles of five bays, and a nave and aisles. When, however, the choir and aisles had been constructed, and the piers of the chancel arch carried up about two-thirds of the way, together with the first bay of the projected nave, the pruning-knife was applied to the design, the proposed nave was abandoned, the bays of the choir were taken off to make a chancel, and the whole building roofed over at one continuous level. The piers of the chancel arch were, however, allowed to remain, although they support nothing. [Against the base of one of these piers is a curious ancient altar.] Now there is one fact noticeable in both of these examples of cheeseparing, and I have no doubt it will be seen in many others. It is that the Mediæval architects, when they had to cut a building down, never attempted to conceal the fact. There could have been no difficulty in cutting away the piers of the chancel arch at St. Jean du Doigt, and a few shillings would suffice to remove the bases at Bamberg,—both buildings would look better for the operation,—but no, the Mediæval builder evidently wished it to be seen that he was going to do a fine thing, but was prevented from carrying out his ideas by circumstances over which he had no control, so he left these fragments to indicate what had been his original intentions.

I shall not trouble you in this paper with any observations upon the materials used in building, or their arrangements for the purposes of accommodation, but I will confine myself to two of what I have described as the artistic difficulties in building: selection of style and appropriateness to the locality and surroundings. Now, I believe that nothing influenced Mediæval architects so greatly as the surroundings and the locality of their buildings. I feel sure that before erecting any building, they studied most scrupulously its fitness and suitability to the surrounding objects. I cannot for a moment believe that the charming way in which Mediæval buildings group together, and form such picturesque combinations with scenery, or with other buildings, are alone the results of a series of lucky accidents. Some people have supposed that the wonderful picturesqueness of ancient towns arises from their irregularity, and the fact of their streets being narrow and winding about, but to prove that this is not the case, I will point to the little town of Sultzfeld, in Bavaria, one of the most picturesque places I have seen. Now, this town is thoroughly rectangular in plan. It has two broad straight streets, meeting in the centre, and cutting it into four exactly equal parts. The very towers of its fortification are set out symmetrically. The Rath-haus is exactly in the middle of the town, with the church close to it. The only deviation from a perfectly rectangular treatment is one caused by the necessity of the site, and that is, the eastern wall of the town towards its north-eastern corner is bent out of the straight line, in order to avoid a large rock which rises at this point. All the lanes in this town are parallel with the walls, and at right angles to one another. The plan is very similar to that of Winchelsea. Now, this serves to show that irregularity of plan was not one of the necessary elements of picturesqueness. I believe that the wonderful beauty and picturesqueness arises from the way in which Mediæval men made their buildings suit to their surroundings, and in criticising or studying ancient buildings this should never be lost sight of. It is very common to hear it said that the proportions of Continental churches, especially those of Germany, are defective because they are far too lofty for their length, and are not sufficiently sub-divided, and I have read in a work upon architecture which enjoys some popularity, a comparison between Salisbury Cathedral and St. Stephen's, Vienna, in which the writer proves to his own satisfaction that Salisbury Cathedral is exquisite in proportion, while St. Stephen's is an ill-proportioned badly-designed building, and from this he goes on to argue that the English Mediæval architects were far greater men than the German. Now, I venture to think that a comparison between the conditions under which the two buildings were erected will prove that each building is admirably suited to its locality and surroundings, and how excellently each architect met the difficulties of the situation. The architect of Salisbury had to erect a church upon a perfectly level site, surrounded by a large disencumbered space, with nothing but trees to enter into competition with the building. He was able to make the church any length, breadth, or height he chose, and from the peculiarity of the situation the whole church could be seen at once. So the architect sub-divided every portion of it, doubled his transepts, and even put narrow aisles to his lady-chapel, because as the building had to be seen alone it was requisite that it should form a perfect picture, containing every element of scale, picturesqueness, and grouping within itself. How different were the conditions under which the Vienna architect laboured. Here there was a very confined space, surrounded by excessively lofty houses, and he saw at once that his only chance of gaining dignity for his building was to treat it as one huge mass, and carry it up a great height, so that at a distance it might tell out well over the surrounding objects, but as the detail could only be seen from very close quarters he trusted to the richness and intricacy of his detail to give size and proportion. I think he succeeded in doing what he attempted. Of course, he could not produce such a beautiful church as the architect of Salisbury, because the drawbacks under which he laboured were very great indeed, and to overcome them at all was a work of the greatest possible difficulty. The huge roof covering the whole church at St. Stephen's would be a defect in a church erected upon an open site, and so would the great unbroken height of the walls; but in the position occupied by that cathedral both are admirably suited to carry out the intention of its architect. It may be objected that I have taken it for granted that St. Stephen's was surrounded by lofty houses at the time it was built, and that there is no proof of this fact, as the present buildings surrounding the church only date from about the seventeenth century; but I can bring forward proofs that the houses erected in German towns during the thirteenth and fourteenth centuries were remarkably lofty. Ratisbon possesses many houses dating from the thirteenth and fourteenth centuries, and they are generally three or four stories in height; not unfrequently they are carried up so as to form great towers, pierced with large windows. Of course this rendered it absolutely necessary to have the cathedral lofty, and thus, although the cathedral of Ratisbon is only about 300 ft. long, it measures nearly 180 ft. to the ridge of the roof. Nuremberg, Landshut, Ingoldstadt, Augsburg, all possess very lofty ancient houses, and the churches are mostly arranged externally under one huge roof, rising often to the height of 150 ft. or 160 ft., and covering both nave and aisles in one vast span. Not unfrequently, as the houses grew in height round the German churches, they heightened the roof or replaced the series of roofs which covered the early churches by one of these enormous single-span roofs. This is the case at St. Leonard's, Frankfort, and St. Lambert's, at Munster. The rafters of the roof of the last-named church were 80 ft. long. Under the notion of "restoration" this vast roof is now being destroyed to be replaced by what is supposed to have been the original series of roofs. This same feeling of a desire to make the church appear above the surrounding houses led our English architects of the fourteenth and fifteenth centuries to add clearstories to the earlier churches; and in the churches of Norwich, Bury, Ipswich, and other places we find something rather resembling the simple arrangement and large treatment of the late churches in Germany. Though, as the English towns were never so crowded as the German during the Middle Ages, the houses were not so lofty; Mediæval town-houses in England are rarely more than two stories high. It is rather a remarkable thing that as the style gets later on the Continent the pitch of the roof gets sharper, whereas in England the pitch of the roof becomes depressed. This seems at first rather to contradict my theory; but I am inclined to think that the process of lowering the roof so frequently seen was generally done in cases where the church did not enter into competition with surrounding buildings. It was also frequently done to give a greater appearance of height to the tower. Necessity may also have had something to do with it, inasmuch as timber must have been much more plentiful in this country during the thirteenth and fourteenth centuries than during the fifteenth and sixteenth. I may just mention the fact, that the village

churches in Germany are in no way remarkable for loftiness; they are, on the contrary, very low buildings, and the abbey churches are as subdivided as the same class of buildings in England.

The same remarks also refer to the town-halls and other public buildings. Excellent examples of the way in which this class of buildings was treated are the rath-hauses of Dettelbach and Volkach, in Bavaria. As a proof that ancient buildings depend greatly upon their surroundings for their beauty, let any one who has not been in Paris for twenty years go there now, and see how terribly the old churches have suffered from the absurd modern fashion of "opening them out." St. Germain l'Auxerrois, St. Merri, St. Medard, St. Leu, and St. Gervais, looked charming when seen piecemeal from the narrow lanes which formerly surrounded them; but now, standing in great open squares, how bald and poor they look! The eye just rests upon those parts of the building which were not intended to be seen; whereas, some little angle or porch, upon which the architect had depended to give character to his work is overwhelmed by the bare walls which form so large a portion of the building.

The heavy horizontal lines which form such strongly-marked features in the west front of Notre Dame in Paris have been very severely criticised; but an exceedingly clever French artist, to whom I was once speaking upon this subject, said,—"You just make a drawing of the front with a number of steep gables and flèches rising against it, and you will soon be convinced that the man who designed the front of Notre Dame was a profound artist."

The practice of architecture in the Middle Ages naturally led men to consider how their buildings would look in execution, and to care very little how their works looked upon paper. Now do not let it be for a moment supposed I say this with the intention of casting blame upon modern architects; but I say without hesitation that we should have very much finer buildings if the client never saw any drawing of the building, and if it were possible for the architect or some assistant in whom he had confidence to watch the building as it went on, and, if necessary, to alter the design without reference to the drawings. Probably one great charm in ancient buildings is that they were not erected from drawings. Of course, the architect made drawings showing the general scheme; but by far the larger portion of the details was directed and explained by the architect, and done under his personal supervision.

I have seen two or three modern buildings which have been carried out in this way.* One is the Church of Holy Angels at Hoar-Cross, of which the architects are Messrs. Bodley & Garner, and I think that anybody who has seen these buildings must regret that this method is not more frequently adopted. I could give innumerable instances of buildings ruined by the client thinking that he understood the geometrical drawings, insisting upon their being altered to suit his views, and then, when it was too late, discovering his mistake; and this leads me to venture a few remarks upon the use and abuse of perspective drawings. Many people have spoken strongly against the use of perspective drawings, and would wish to see them abolished entirely. Of course, they have led to great abuses in some instances, but I cannot help thinking that, as long as clients will insist upon seeing drawings, perspectives are absolutely necessary, as I say without hesitation, that there is not one client in a thousand who understands a geometrical drawing. A great deal has been said with regard to perspective drawings of late. Some gentlemen have suggested that they should only be executed in pen and ink; others that they should be ruled in Indian ink or sepia; and others that they should be coloured in grey tints. Now it seems to me that none of these suggestions deal with the greatest evil which is common in architectural perspectives. The real evil is that so frequently perspective drawings do not represent buildings as they will really appear, and I think this arises chiefly from two causes. In the first place, architects often have perspectives of their buildings taken from points from which they can never possibly be seen; and, in the second place, they frequently ignore the surroundings, and thus we not unfrequently have a building represented as having a grand illimitable open space before it, with stately mansions on either side. Carriages of the nobility and gentry are seen dashing frantically up to its porches, whilst distinguished-looking ladies and gentlemen, reining in their proud steeds, politely bow to each other in the foreground. In one corner the haughty scion of some noble house, with an attenuated umbrella in his neatly-gloved hand, points out to some fashionably-attired fair one the beauties of some angle turret or oriel window; whereas, in point of fact, the building is to be erected in some narrow street surrounded with squalid houses. Perhaps the most distinguished equipage will be a butcher's cart, and instead of these aristocratic ladies and gentlemen, the old apple-woman at the corner and some itinerant pieman may discuss the merits of the design. I cannot help thinking that it is a mistake to have a perspective of this description. If the building is to stand in a narrow street, surrounded by a squalid neighbourhood, why not represent it so? If it is advanced that the building will not look well from an actual point of view, then I say the design is defective, because a building ought to look well from where it will generally be seen. I really believe that a perspective view, taken from some actual point of view, is of great value both to the architect and his client, because it will show the architect at once what are the most conspicuous features in his design, and what features may be dispensed with without injury to the general effect. To the client it will give a fair idea of the absolute appearance which a building will present,—a thing which he will never obtain from looking at the geometrical drawings. Whereas, if the drawing is taken from an imaginary point, it not only deludes the client, but, what is infinitely worse, deceives the architect himself. Of all imaginary perspectives, I think, however, the most dangerous are bird's-eye views, without they are treated in a thoroughly [conventional manner; and I hope I may be pardoned for quoting the words of a certain celebrated claimant for a baronetcy, who distinguished himself at a recent trial. When a drawing was shown him, he was asked, "Do you recognise that house?" He answered, "No, I don't." He was then interrogated, "Would it surprise you to hear that *that* (the drawing) is a bird's-eye view of your uncle's house at Upton?" His answer was, to my mind, a perfect argument against bird's-eye views: "Well, as I never see it from the eye of a bird, I cannot say!"

A gentleman, a friend of mine, was once in competition for a large building in Cambridgeshire, and he determined to send in a large bird's-eye view of his design. I think the answer he got from the committee, though not encouraging, was full of common sense. "The committee cannot understand the perspective sent in, as there is no tower or mountain in the neighbourhood from which such a view could be obtained."

I cannot help thinking that it would be better if architects, instead of having one large perspective of their buildings, would illustrate them, both for purposes of competition and for the benefit of their clients, by a number of small sketches, all showing how the building will actually appear from different points of view; and if I may give an opinion upon the subject, it seems to me that coloured drawings are better for the purpose than either pen-and-ink or sepia sketches, because, surely, an architect has to consider the local colouring of his building and of the materials of which it is composed, and this important portion of the design is entirely overlooked if no colour is to be used in perspectives. I fancy the rage for Indian ink and sepia drawings came in at a time when people thought it chaste and classical to exclude all colour from their buildings. To my mind, nothing is more dreary than a pen-and-ink drawing of a Queen Anne house. The building is not a grand, dignified specimen of architecture depending upon noble proportions and intense refinement of outline, but a cosy, warm, comfortable-looking habitation, depending almost entirely for its pleasant effect upon its red-brick dressings and the combinations of colour caused by the red of its bricks, the white of its sash-bars and the dark purplish grey of its glass windows. Now, how is this to be represented in pen and ink, or sepia? I believe that perspective drawings, showing a building as it will actually appear from certain given points of view, are not only useful, but, as architecture is at present practised, absolutely necessary. If we could return to the Mediæval practice of the architect living on the spot where his work is being carried out, directing it with his own hand, modifying and altering the design as it progresses to suit his own critical judgment, there would be no necessity for perspective drawings; but now, as a rule, a building has to be designed, both as to its general features and even its detail, before a brick is placed upon the ground; and if, as is too often the case, some feature which looked thoroughly well in elevation, looks shocking in perspective, there it must remain, or, if altered, in comes some nice little bill for "extras." Of course, building by contract is a terrible evil, as far as good art is concerned, because you cannot purchase art at so much a foot cube; but might not some of its evils be mitigated by a judicious use of perspective sketches? We shall certainly never have good architecture whilst the client is allowed to see geometrical drawings and to dictate alterations in them.

I now come to a question which has puzzled architects, artists, and critics for the last fifty years, and which is, if anything, further off being settled than ever,—it is the question of selection of style. In ancient times and in the middle ages this difficulty had no existence; so that neither the Mediæval architects, nor, in fact, the architecture of any age, can help us to a solution of this difficulty: very possibly it never will be settled; and the more practical question is not how to settle the point, but how is architecture to get on without its being settled? Well, I think we may, perhaps, find a hint in studying the history of one of the sister arts,—that of music. In ancient times all music was sung in unison, or, possibly in octaves, at any rate every one tried to sing the same note; and if it had been suggested that there was any possibility that an agreeable effect could be produced by a number of people singing different melodies, the person making the suggestion would have been regarded simply as a maniac. However, this has *really* come to pass, and few people would now be willing to give up harmonised music for that in unison. If Dr. Witt, a great German authority, is to be believed, the condition of music during the time which elapsed between the first introduction of harmony and its development into something like a system, must have caused many to think that that art was indeed in a hopeless state. However, in the time of Palestrina, and owing partly, no doubt, to his consummate genius, the art of vocal harmony reached a point of excellence, as near to perfection as that achieved by any art, except perhaps the sculpture of Greece in its most palmy days. Now, why should not some great man, some Palestrina, rise up and harmonise together all our different styles of architecture. "The hour has come," we only wait for the man. But even suppose this never takes place, there is no reason why a number of buildings erected in different styles should look incongruous. On the great canal at Bruges we find buildings of every imaginable date, and yet the very variety of style pleases us, and makes the scene more interesting. Again, how pleasing is the effect of the interiors of many Belgian churches, where we see Gothic windows, screens, and columns in juxtaposition with Renaissance altars, pulpits, and confessionals. What can be more charming than the interior of the great church at Lierre, or of St. Jaques at Antwerp? Whereas, what can be more unsatisfactory than the interior of the great church at Courtrai, which has been denuded of all its rich Renaissance furniture, and completely Gothicised? This seems to prove that difference of style does not cause want of harmony, if the surroundings be only properly considered, whereas uniformity of style alone will never produce it. If you sing in unison you must sing the exact note a quarter of a note too flat, and you obtain discord; whereas if you sing another note altogether you may produce harmony.

It is not because our buildings are erected in a number of different styles that the words "No connexion with next door" might be frequently written over them, but the fact that next door receives no consideration whatever at our hands.

Of course, it is easy enough for the critic to point out these evils, but very difficult indeed to suggest a remedy, or even a palliative. As, however, I am not a member of your profession, I may unhesitatingly say this: I am sure that if architecture is ever again to hold that high place amongst the arts which it did in olden times, it will be the work of architects. Your Palestrina will be amongst your own body, he will not be an "intelligent builder" or an honest bricklayer, or even a review writer. I think no more ridiculous suggestion ever emanated from

* Described and illustrated in *Builder*, pp. 12, 14, and 15, *ante*.

the brain of a madman than the absurd proposal that architecture should be reformed by building without the architect, and leaving the design to be made by the intelligent builder or the honest bricklayer; and to those literary gentlemen who have expounded this wonderful theory, I would simply say, "Very well: literature at the present day is in a decidedly unhealthy condition, therefore let us abolish the author and the editor, and leave our books and periodicals to be written by the intelligent compositor and the honest printer!"

I have said that it is not a mark of the intelligent builder to make a sacrifice for the sake of art, but I say, unhesitatingly, that this is frequently done by architects. It is a well-known fact that many men in the architectural profession throw up lucrative work rather than perpetrate what they consider a sin against art.

The fact is, we want, if possible, a great deal more of the architect. If it could be managed that the architect could visit his buildings more frequently, that there should be more personal supervision and less mere office-work, our architecture would greatly benefit by it. If a greater number of buildings could be erected without contract, by measure and value; if there could be more personal direction, more sketching and less geometrical drawing, more artistic work and less mechanical reproduction, things would soon improve.

If, however, our architecture is to be left to the mechanic, it is easy to see what will happen. By degrees it will have less and less art in it; it will rapidly become more and more vulgar in its pretentiousness, and more and more uninteresting in its monotony, till at last we shall come to realise the triumph of dulness so ably described by the poet,—

> "As one by one at dread Medea's strain,
> The sickening stars fade off the ethereal plain;
> As Argus eyes by Hermes' wand oppress'd,
> Closed one by one to everlasting rest;
> Thus at her felt approach and secret might
> Art utter art goes out, and all is night."

THE REVISED RULES OF THE INSTITUTE.

MEETINGS for the consideration of the revision of the bye-laws of the Royal Institute of British Architects, proposed by the Improvement Committee, have been held during the first three days of this week. The meetings are officially private, and we have always made it a rule to respect the wishes of the Council in regard to such meetings as they declare to be private, and we therefore abstain from report of or comment on the proceedings in detail. We may, however, state that the first of these meetings, on Monday night (when the president, Mr. Charles Barry, occupied the chair), was very well attended, not only by many influential members of the profession in Town, but also by a considerable number of country members, some of whom had come from some distance to take part in the proceedings.

We may just remind our readers that the committee upon whose report the proposed revision of bye-laws is based was constituted in order to consider and report upon resolutions passed at a special general meeting on February 7th, 1876, which meeting discussed the propositions of a previous committee, and ended by referring the whole subject to the Council for reconsideration. The Council called in the aid of several past vice-presidents, and, in combination with them, constituted a "Committee for the Improvement of the Institute," with Mr. Whichcord, a vice-president of the Institute, as its permanent chairman.

We shall not be travelling out of our record if we observe that the general tendency of the proposed new bye-laws is to render the Institute of Architects less metropolitan and more national; to render its professional status of ability and education higher and more definite; to adopt a system in regard to the election of council and officers which will almost ensure that the ablest and fittest men shall be retained longest in office, and shall pass by a natural gradation to the highest offices; to render the library more largely available for study; and ultimately to improve the premises, with the view to greater present comfort and future increase of members and attendance.

We may also add, in regard to the first-named point, the rendering of the Institute less metropolitan, that we believe the propositions of the committee in this respect will meet the approval all members, whether in town or country, when their object and principle are properly understood. We make this remark for the benefit of country members who were not at any of the meetings this week, as we think, from the remarks of some who were, that there has been a misunderstanding among those who have received the Institute circular as to the real intention and spirit of the new propositions in regard to this point: an idea that the interests of country members were to be neglected. The object really is, we believe, to do away altogether with the expression "country member," and the distinction which it implies; to recognise all able architects all over the country as of equal importance to the Institute and equally entitled to its privileges and responsibilities. We cannot but think that this is a step in the right direction, and feel sure that if those members residing out of London who may have felt some doubt as to the spirit and working of the proposed changes in regard to themselves, had heard the explanations given at the meeting of Monday evening, they would have felt their objections to be quite removed or answered.

As our readers are aware, we have, unfortunately, not been able always to adopt the views of the managers of the Institute; on the contrary, we have felt bound to express in plain terms an adverse opinion of its recent policy in some matters. When, therefore, we say that, having gone carefully through the proposed bye-laws, we are entirely in sympathy with them in the main, and approve thoroughly of the general spirit which pervades them, and believe that their adoption as a future basis of operations ought to prove really beneficial to the working of the Institute, our opinion may be taken for something more than the mere friendly expression of partisans. There are one or two points that are capable of improvement; one suggestion was rescinded by a vote of a majority at the meeting of Monday; but in the main the programme is admirably drawn up, and has obviously been the result of a great deal of serious thought and deliberation on the part of a committee which, as its president assured the meeting (and we accept his statement fully) "has had no one thought but for the good of the Institute." When the deliberations are at an end, and the result officially public, we may take an opportunity of drawing attention to the changes in detail, and so bring them under the notice of those who are not yet members, and who, when they recognise how much conscientious effort has been expended in making the central representative body of the Profession more fitted to be central and to be representative, will, we hope, see the propriety of giving their own cordial adhesion to an Institution which, if the new programme is adopted, will then be really constituted on the principle that "union is strength."

There was one incident of the meeting, on the 12th, however, which, so far from being private, is meant to be as public as possible. This was the reading of a letter from the Prince of Wales to the President, in which his Royal Highness, as President of the English Committee of the Art Section for the Paris Exhibition next year, exhorted the architects of this country to make an effort towards an adequate representation of English architecture in the Exhibition. Professor Donaldson, commenting upon the letter, observed that on the occasion of a previous great international Exhibition at Paris he had felt much disappointed to find how poorly English architectural talent was represented; and he hoped that the profession in this country would do their best to make a worthy display in the eyes of Europe. While supporting the learned Professor in this exhortation, we cannot help adding an expression of pleasure at finding him, after so many years of active life, still displaying the same warm and practical interest in the welfare of the Institute as when he took a leading part in the inauguration of its career.

Holy Trinity Church, Dartford, Kent.—Plans for the restoration and alteration of this edifice have been prepared by Mr. A. W. Blomfield, M.A., and the tender of Mr. J. G. Naylar, of Rochester, amounting to 2,424*l.*, has been accepted for carrying out the works, consisting of new roof to nave and south aisle; also rebuilding south aisle and new floors and seatings throughout. The works are to be commenced early in May, and finished in four months. The restoration of the north aisle will not at present be proceeded with, for want of funds.

PREMIATED BUILDINGS OF THE NEW "BOULEVARD CENTRALE" IN BRUSSELS.

THE question has been asked whether there exists, or whether there ever has existed, a Flemish Renaissance. This question can hardly be unconditionally answered, either in the affirmative or negative. In comparing specimens of German, French, Italian, and Belgian architecture, we perceive an unmistakable common character. Italy, the high school of the arts, and the cradle of the Renaissance, gave birth also at the same time to great changes in architecture and in the plastic arts. The principle of the antique, first again applied in Italy in Christian art, gave to architecture a new impulse, new life, and new, unanticipated beauties, many of which it owed to the technique of sculpture and painting. From this originated the common features mentioned. Certain buildings, for instance, at Nürnberg, remind us very forcibly of the architecture of the Grande Place of Brussels. In France, also, similar traits may be found everywhere. Of course, there are deviations; but those variations have hardly modified the style of the Renaissance, and they may all, with a few exceptions, be explained by the difference of the national character, by climatic conditions, and local customs and manners.

We should, notwithstanding, go too far if we were to accuse the Brussels Board of Works of an anachronism, because, six years ago, when it caused the river Senne, flowing through the lower part of the town, and spreading disease by its exhalations amongst the inhabitants, to be vaulted over (a gigantic undertaking, by the bye, costing millions of francs), and thus gained the site for the beautiful "Boulevard Centrale," with its branches, which connects the station of the railway *du Nord* with that of the railway *du Sud*, it offered a number of premiums for the most tasteful and successful façades in the style of the Flemish Renaissance. The first premium amounted to 800*l.*

The result obtained justifies the programme of the competition in question. If we take a walk along the forest of houses which have sprung out of the ground as if by magic, where palatial buildings, adorned with sculpture, attract the eye, it must be confessed that, Paris excepted, hardly any other Continental capital offers anything similar. Most of the buildings are erected partly of the yellowish-white French sandstone, which hardens on exposure to the air, partly of Belgian granite. The harmony of style attained, notwithstanding all variations, is surprising. The architects of Brussels have given a proof of their ability; some of them have even displayed power of invention. The buildings remind us of the shrewd saying of the late German art-critic Schnase, who affirmed that architecture has a Janus-like face; it is never entirely the present, but, on the contrary, future and past at the same time.

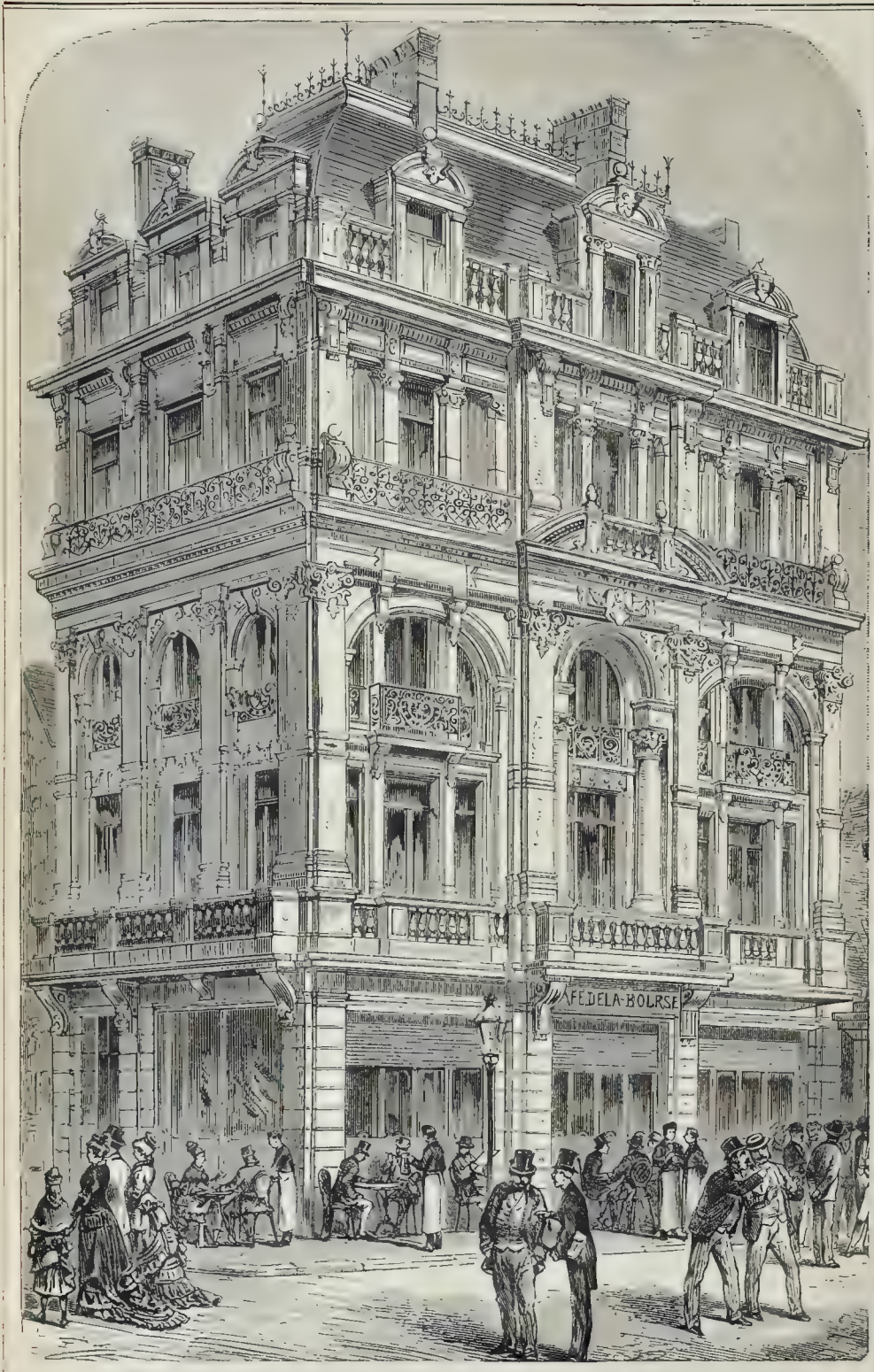
The engraving we give represents the Café de la Bourse, opposite the Exchange, and which received the second prize in the competition. On another occasion we will illustrate the "Banque de Belgique," to which the first prize was awarded.

MEASURED LANGUAGE.

IN a recent publication, Mr. Ruskin says,—"Your present system of education is to get a rascal of an architect to order a rascal of a clerk of the works to order a parcel of rascally bricklayers to build you a bestially stupid building in the middle of the town, poisoned with gas, and with an iron floor which will drop you all through it some frosty evening; wherein you will bring a puppet of a Cockney lecturer in a dress-coat and a white tie, to tell you smugly there is no God, and how many messes he can make of a lump of sugar. Much the better you are for all that when you get home again—aren't you?"

A correspondent, signing himself "R. A.," wishes to know whether he is "to infer from this, as Mr. Ruskin is understood to be a respectable man, that all architects, clerks of works, and bricklayers are rascals?"

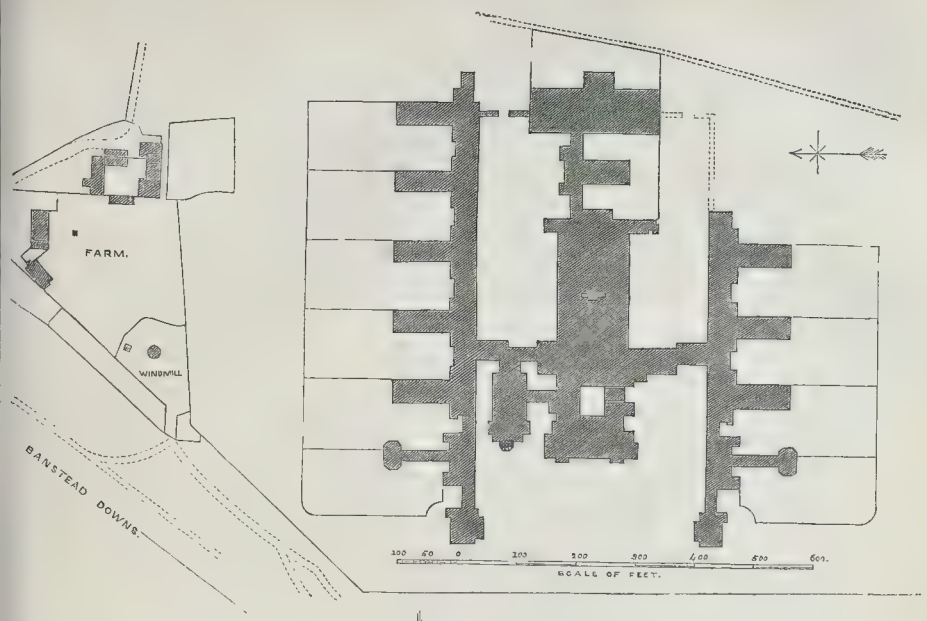
School of Art, Manchester.—A plot of land has been purchased in Manchester for the erection of a new School of Art in that city. Upwards of 13,000*l.* has been subscribed, the list of subscriptions being headed by Lord Derby with 500*l.*

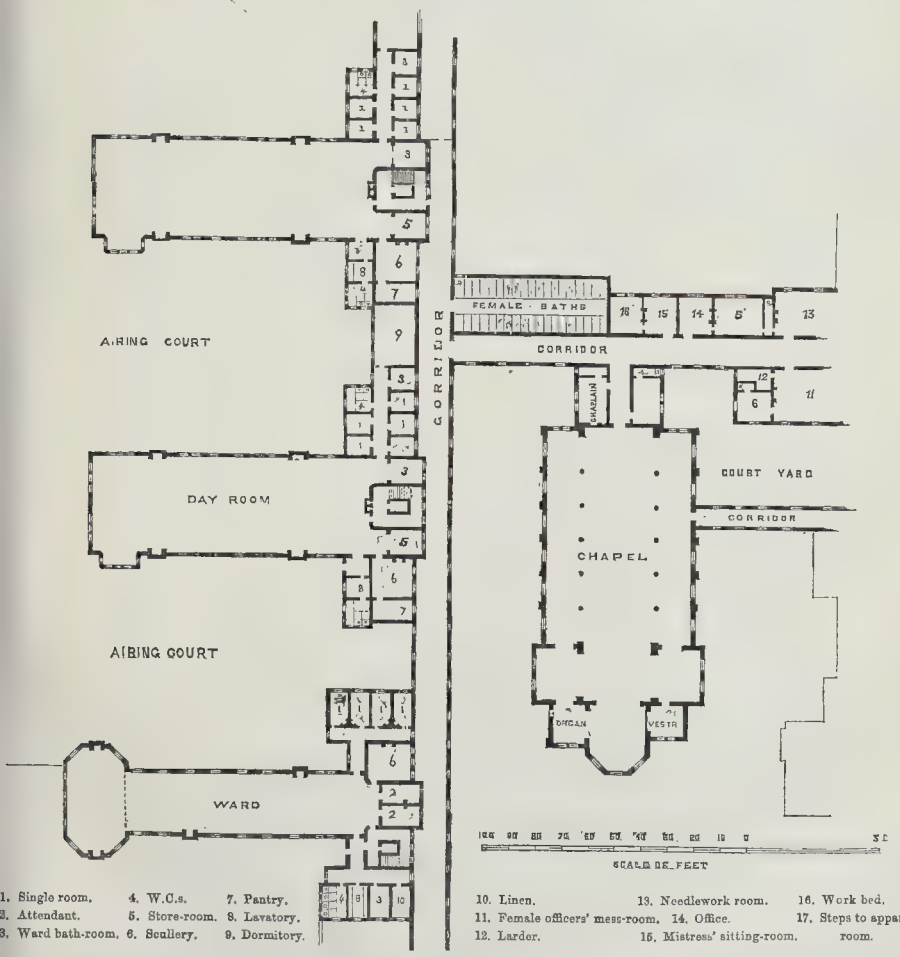


BUILDINGS OF THE NEW CENTRAL BOULEVARD, BRUSSELS: THE CAFÉ DE LA BOURSE.



THIRD MIDDLESEX COUNTY LUNATIC ASYLUM, BANSTEAD, SURREY.—Mr. J. T. Bunnett, Architect.





1. Single room.
2. Attendant.
3. Ward bath-room.
4. W.C.s.
5. Store-room.
6. Scullery.
7. Pantry.
8. Lavatory.
9. Dormitory.
10. Linen.
11. Female officers' mess-room.
12. Larder.
13. Needlework room.
14. Office.
15. Mistress' sitting-room.
16. Work bed.
17. Steps to apparatus room.

THIRD MIDDLESEX COUNTY LUNATIC ASYLUM, BANSTEAD.—*Block Plan, and enlarged Plan of a Portion.*

THIRD MIDDLESEX COUNTY LUNATIC ASYLUM, BANSTEAD.

The third pauper lunatic asylum for the county of Middlesex, which is now about to be opened for the reception of patients, has been erected at Banstead, in Surrey, on a site well known as "the hundred acres," situated near the summit of the Banstead-downs.

The buildings, which were commenced in the early part of the year 1873, will afford accommodation for 615 male and 1,081 female patients, and have been arranged with a view to future enlargement.

The magistrates having decided that this asylum should be occupied by patients who, though incurable, are not dangerous either to themselves or others, and who would be drafted to the new asylum from the older establishments at Hanwell and Colney Hatch, it has not been thought necessary to provide accommodation in single rooms to the same extent as would probably be required in an ordinary asylum.

The general arrangement of the buildings is in detached blocks, of which there are four on the male side, and seven on the female side, each containing, with certain minor divergencies:—On the ground-floor, a general day-room; and on the first and second floors (associated) dormitories for 144 beds, with twenty single rooms, and the necessary attendants' rooms, ward kitchen, stores, baths, and water-closets. These blocks are all connected with the administrative departments on the ground-floor by corridors for the most part 12 ft. wide, and so divided into compartments as to enable them at suitable times to be used in sections as adjuncts to the day-room space in the adjoining blocks. The two main longitudinal corridors terminate towards the front in the residences for the medical superintendents of the male and female sides respectively. The front administrative block, placed midway between the above houses, and having a westerly frontage, contains the Board-room, waiting-room, the steward's house, apartments for the assistant medical men, the matron, and such of the attendants as are not provided for in the patients' blocks; while in the rear of these are the general stores, the bakehouse, officers' mess-rooms, kitchen, scullery, workshops, and baths; a common recreation-room; and, lastly, the laundry.

A detached chapel is also provided capable of seating upwards of 850 persons.

All the buildings have open fireplaces, while all those portions occupied by the patients, together with the corridors, are warmed in addition with hot-water pipes.

On other parts of the estate, farm buildings, gas works, and residences for twelve married officers have been erected. A cemetery of two acres has also been inclosed, and a mortuary built.

The buildings have been erected from the drawings and under the superintendence of Mr. F. H. Pownall, the county surveyor, Mr. W. H. Culverhouse acting as clerk of the works. The contract for the main building amounting to 158,000*l.*, was obtained in competition by Mr. J. T. Chappell, of Little George-street, Westminster, in December, 1872. The water supply and the warming and ventilation works have been executed by Messrs. Easton & Anderson, from the designs of Mr. F. J. Bramwell, C.E. Mr. Stevens's bread-making machine has been fitted up for the use of the establishment.

FLORENCE AND MICHELANGELO.

A course of free lectures has been arranged for art students and others who may be desirous of receiving information concerning the various employments connected with art and design, which are intended to be given in the School of Art, Primrose-street, Bishopsgate-street, in connexion with the City and Spitalfields School of Art. The first of these was delivered on Thursday evening, the 8th of March, by Mr. Thomas Chatfeild Clarke, F.R.I.B.A., who took for his subject "Florence and Michelangelo." The chair was taken by the Rev. J. Rogers, the rector of Bishopsgate, and there was a large attendance of persons who apparently appreciated this method of promoting art culture.

Mr. Chatfeild Clarke said:—To the student of art in whatever branch, Florence must have a peculiar interest. It matters not whether in the field of painting, sculpture, architecture, or ironwork, she had a succession of men who have left their impress upon all time. To attempt any description of a city instinct with a genius for art in its common people at its best periods, and at the same time to hope that a feeling for art can become indigenous amongst us without understanding it, is attempting a hopeless task. To those who have not visited Florence, I may say how little spoilt it is as to its ancient associations, and how living it is now in memories of the past. A man must be strangely insensible to all that is highest in humanity who can visit the house where Michelangelo lived, and see his stick, his slippers, and other mementos, still preserved in the rooms he once dwelt and worked in, and not feel that if he could only draw into his mind some of the deep and strong conceptions of that master-mind, he can never have wholly lived in vain. When we consider the rude and contentious life of that city, we are apt to wonder how it is that the arts could grow and flourish as they did, and that her artists could conceive and execute works of lasting skill and monumental character, whilst the sword was scarcely ever in the scabbard, and the din of conflict was almost always resounding in their ears.

The group of buildings consisting of the Cathedral, the Baptistery, and Giotto's Tower each possess an interest of the deepest character, whilst they group admirably. The churches, too, of Santa Croce, Santa Lorenzo, Santa Maria Novella, and many others, were noble structures. The city, however, was noted for its palaces—those where its nobles dwelt. The distant view, also, of Florence looked down upon from the adjacent hills, with its beautiful dome of the cathedral rising high in the air, with its many spires and towers, cannot but charm you and make you understand the deep attachment that all Florentines have felt for their native place. Who cannot understand the longing that Dante, in exile, of noble heart yet stern nature, must have felt for his native city? He was of Florence's greatest sons, and she has done him all the honour that she can; for both inside the church and in the noble square opposite Santa Croce, the finest of tombs and statues of him have been erected. He died at the comparatively early age of 56, rendering, as Boccaccio says, his weary spirit to God. With regard to Giotto, one who added to the City of Florence much of its loveliness, he was born a peasant, and was discovered, while in the fields tending sheep, by Cimabue, who detected the latent talent in Giotto's rude drawings at the time. Giotto did not confine himself to one branch of art in his earlier education, but prepared for all, and was possessed of a power of conception and execution unsurpassed. A poet in the real sense of the term, and with a fame lasting through ages, he was approaching 60 when he designed and executed the Campanile at Florence, becoming the architect, the builder, and the sculptor. Who can look at its lovely outline and proportions, and its exquisite detail, without feeling that here was a master in very truth who had designed a work unique in the history of art, which we could neither take from nor add to, whilst it is enriched and covered more or less with beautiful groups? The delicacy of its outline and its perfect chasteness are preserved; and, coming to us after six centuries, it expresses to us the feeling for art in its freshness and perfection. Look at the beauty of its marble, and consider how little time has injured it. Giotto's Chapel at Padua cannot fail to impress any true observer with two qualities,—the perfect purity and elevation of design, and the delicacy of execution. Giotto designed, but it is not clear he executed, the new façade of the cathedral. Here, again, the building abounded not only in the richest marble, but in a delicacy of detail and chasteness of ornament peculiarly good. It has been justly remarked that, if Giotto had worked on social pictures, what records he might have left of the manners, customs, and lessons of the time! But we must accept his treatment of sacred subjects, and rejoice that so much remains to us. It may be truly said of him that steady industry, a union of common sense with the highest appreciation of beauty, a devout and poetic feeling of art, always nobly ideal and spiritual amid the defects of practical knowledge, were his leading characteristics, and this not without a homely, quaint, incisive wit and humorous insight, understanding his time, and content to dwell in it with moderation, spite the warlike tendencies, the bitter jealousies and hatreds that were dividing parties throughout the length and breadth of Italy. One thing is clear, that he, like other great men, maintained the dignity of a true artist.

To Arnolfo belongs the honour of designing the cathedral, about the end of the thirtee century. But apart from the ecclesiastical w of the cathedral and churches, the palaces Florence stand out with a character of t own, not without interest to the student. Lo severe, heavy in their Tuscan art, they con what they were evidently intended to be, fortresses to resist the sudden inroads of atta with a grandeur and strength, united to s window spaces, and that mostly on a high le With many a handsome hall and staircase ins and many a charming court, these buildi seem to frown rather upon the city str Here, at least, we may learn a practical les in art, the adaptability of the means to an e of the fitness of the work to its purpose, wh must ever be one of the highest triumphs art, united as these buildings are to simplic and grandeur. For 100 years or more cathedral was without its dome, and it remai for a new race of artists to complete Arnol design, but on an extended scale, in 14 Brunelleschi completed the work, and it sta to this day a lasting proof of his powers. Th is little doubt it assisted the inspiration Michelangelo for the design of St. Peter's, it is well worth the consideration of all of how far the outline excels the greatest cathed Even our own Wren, when designing St. Pau may have looked with admiration on the w of an earlier age. No account of Flore should omit some reference to Ghiberti, wh life-long work has run down through the C tinent as a memento of his great powers. those who have never been able to see original, the cast that used to exist in the courts of the Crystal Palace cannot fail to of the deepest interest. I cannot help regrett that those art courts were not kept up with th first beauty, care, and freshness; they were inva able to the young artist, and stamped at o the true usefulness of such a building. To th who carried them out, also—chiefly Digby Wy and the late Owen Jones—how much did we o them? These courts possessed casts of greatest treasures of art on the Contine copied with faithful care and living appreciati When you stand before the work of forty ye and look into the chaste modelling, the perf symmetry, the delicacy of feeling, the corre ness of beauty and execution, you may w accord to Ghiberti a high place in the art of Florence. With regard to another Floren artist, one could not travel far in Italy Florence without meeting with the work Donatello, whose life-like sculpture called fo from the lips of Michelangelo the word bidd the statue "march," as applied to his image St. George, at the Or San Michele. Luca d Robbia possesses interest for us; he had not force of Donatello, but for finish, roundn life-like freshness and expression, his *bas-rel* should be known and studied from the casts this country. The porcelain ware which be his name, and upon which he spent so m efforts as to colour, became most widely ap ciated, and orders flocked in from all parts Italy. To his ideas may justly be ascribed commencement of that lively class of work which there is no mean revival in our time. T our houses and public buildings may be ador in the same spirit of free and spirited tr ment must be the wish of every lover of With regard to the painters of Florence, Angelico stands alone in the beauty and spirit loveliness of his creations. The purest saintliest of mortals, he has left to all time record of his angel creations, and the yo artist can here find the highest realisation of divine on canvas. The martyrdom of the P of St. Mark influenced the painters of that and in the sadness of their interpretation religious history, they were inwardly dwel on the great sacrifice of a nature they de loved; and as the true inspiration alike of pa ing, poem, sculpture, or fresco must sp from the deeper thoughts and sympathies of artist's nature, so this great man's life and w may have enriched the art work of the wo and justified to us our great appreciation of man set back to the centuries, but clearly sp ing to the hearts of humanity.

As regards Michelangelo, his was a n nature, struggling among many discoura circumstances to realise the highest and grea within him. It is not difficult to see that early life of this man was favourable to culture. Taken into the house of the Medici constant friend of a man of culture, and rounded by the valuable treasures of art antiquity, such a mind grew quickly, an

ence then possessed, under Lorenzo, a school ct directed by his personal choice and will, eemed to favour the starting point of the life he young sculptor. This, however, was not st long. Troubles soon arose, and Lorenzo's h left him without a home. The chequered of the time no doubt accounts for his some- t unsettled career in his earlier years, and it is until his execution of the group "The rning Mary with her Dead Son in her Lap," we find his name recognised as in the first of sculptors. In the "David" which fol- d, Florence and the world of art recognised an truly, and it was such an occurrence as rise in the minds of the people to the of reckoning from the date of its erection, greatly did it move a city rich in art and ts. It is now removed to the Academy of to prevent the effects of weather in further ring it. It impresses us with a manly ngth and freshness, a joyful rendering of a pure an form, and cannot fail to infuse its spirit the beholder, as every work of true genius ld do. In 1505 Pope Julius II. summons helangelo to Rome to put him to work on a soleum or sepulchre which was to outvie y work of the kind ever before attempted. design is prepared, and the Pope asks the e. "100,000 crowns," is the reply. "Let double and proceed," says the Pope. The k was taken the greatest interest in, and the oses" is the first proof of the grandeur of work. Difficulties, however, arose as to ment, and meeting with no response, Michel- elo leaves Rome in high dudgeon. Messengers sent after him and threats used, and after a l of delay he returns. The Pope orders an estrian statue of himself, which Michelangelo, r several mishaps, produces successfully in ze, thereby further establishing his claim to universality in art which is at once our sur- e, and certainly beyond all precedent in our ieru days. He is afterwards commissioned to t the ceiling of the chapel of Sixtus IV. Almost y one knows the fatiguing position in which nd to paint this ceiling, almost unaided. Its ling characteristics are known to all; its er of conception only equalled by its power xecution, and the originality of much of its tment in a style at once new, make it cer- ly one of the artistic wonders of the world. n the accession of Leo X. to the papal chair, was commissioned to design a façade of San enzo, and here we have him entering on a r career as an architect, which he would y out alone or not at all, starting off Carrara to select the marble in 1517. after much outlay and time spent, and much ening disappointment, nothing was effected. er the death of Raffaelle in 1520, Michel- elo remained indisputably the master in his fession. Now soon was to follow the master- ce in sculpture that Michelangelo ever con- ved, the chapel with the tombs of Lorenzo Giuliano, which was added to the church. capitulation of Florence in 1530 found him to commence in sculpture what must be itted to be the greatest work of his life,— four figures at the feet of the tombs of the dici: Day, Night, Dawn, and Twilight. It is l that he worked at these figures with morbid te, and that he actually killed himself with rk. The place that Michelangelo had now n in the field of sculpture placed him in juxta- ition with the highest in any age, and of course nparisons were made with Greek art; but re was not any real ground of comparison ween them. From letters of the time we ow how he was now suffering; no longer in idle life, suffering in his head and in his mind, ermined to work through sorrow and sickness. to his fresco painting, "The Last Judgment" was a work pressed upon him by Pope Paul III. is work, colossal in its character, full of life l powerful but painful imagination, occupied, s said, from six to seven years of his life, and w remains, blackened and somewhat injured, a marvellous result of his powers. His last rk was "Christ lying Dead on His Mother's Lap, l Joseph of Arimathea by her Side," and en would he get up in the middle of the night, he could not sleep, to work at this last task. ne speeds on, and then the master feels the l approaching, and welcomes it thus:—

"For this I know, the greatest bliss on high
Belongs to him called earliest to die."

The sketch of "this perfect prodigy of ure,"—this sculptor, painter, architect, poet, l engineer,—must surely make one thing in to us, that he was a man of full round nature and of broad development. Why cannot we have such now among our artists, architects, sculptors, &c.? Why are we for ever to lament the little sphere each artist now selects? Why are we to feel the title of great so seldom true to more than a special faculty in and around us? Where shall we seek for the greatness that can design and execute, unaided and alone, the most different classes of design? In the grandeur of this man's solitary, earnest life we find the germs of true greatness. In the environment of the lives of those who would be great to-day must we seek for much of their failure; but the consideration of this subject will not be useless if it brings us to consider the unreality of that art which is mainly representative and not imaginative, and which rests, not on the instructions of a spiritual or fresh insight, but on the mannerisms of the models of a past age.

SOCIETY OF BRITISH ARTISTS.

The fifty-fourth annual exhibition of this Society is now open; the degree of improvement in the quality of the works exhibited, which we had noted during the last year or two, seems to be kept up, and is perhaps carried further this year. At all events, there are some very good works; partly, however, by contributors whom we have chiefly known hitherto in other quarters. Among these are several works of high merit by Mr. J. W. B. Knight, of which we may especially mention "A Lowering Sky at Eve—Bournemouth" (322), which is a work quite out of the common way in tone and treatment, and the small painting in the same room, "Harvesting Oats" (270). Mr. Wyllie, whom we have chiefly known for landscapes, nearly always admirable and full of artistic feeling, sends this year a figure-subject of some importance, an interior of a public-house, the "Good Intent," in a seafaring town (77). This is a large bare room, surrounded by groups of sailors and their friends, in various phases of good fellowship and conviviality; the execution seems at first glance somewhat blurred, but an examination more in detail shows that all the figures are sufficiently made out, and with much variety of character and truthfulness and ease of attitude and manner; notice particularly the sailor coming up to speak to the group of damsels on the right, and the man whose profile is seen relieved against the window on nearly the extreme left. This is a very clever work, and the author of it contributes also proofs that his cunning in handling landscape is not abated by his diversion to figure subjects. Mr. G. A. Storey sends a very pleasing study of a ladylike gentle-looking girl, "Patience" (313), seated on a stile, with a half-opened book before her; and Mr. Calderon a sketch of a girl under the title "Sybil" (65).

Mr. Ludovico's scene in the home of a puppet showman (47) is worth note, because in the expression of the girl's face, and the execution of the figure, we find something better than that mere book-illustration type of treatment which is all that this artist has usually achieved,—something more of tone and feeling. Mr. Woolmer's little work, "Imogen Sleeping" (64), is worth attention; it is a very clever and complete little painting in an original style. Mr. Haynes King's "Course of true Love never did run Smooth" (86) runs too smooth; it is simply well painted, but without character. There is humour and clever execution in Mr. Gadsby's painting of a little girl desperately busy over rolling paste for "Apple Pudding" (121); there is plenty of piggishness in Mr. Holmes's pigs in "A Scramble" (107); and intense cattishness in Mr. Coulder's cats enjoying "Luncheon for Two" (140); Mr. C. Cattermole's painting of two cavalier duellists "Disarmed" (142) by a girl who rushes between them, and clasps one by the wrist, while the other lowers his weapon, and bows in acknowledgment of her presence, is an admirable work, in tone, grouping, drawing, and expression of the figures. We should be disposed to call it the best painting in the rooms, and it would hold a high place anywhere. Mr. A. B. Donaldson's ambitious painting of "The Budding Staff brought to Tannhäuser" (198), disappoints us, as most of his figure subjects do, in spite of fine colour and excellent drawing: there is something unreal about it. This applies less to his picture of children taking "A Holiday in Kensington Gardens," which is natural and pleasing; and he sends, as usual, some small landscapes, full of power and poetry. Among other figure subjects we can only notice Glindoni's "An Admirer of Art" (213), Mr. Gibbs's study of "A Mulatto," a fine piece of colour (or tone) as well as drawing (274); Mr. Bridgman's clever, but odd, "Souvenir of Italy" (361); and Mr. Lucas's capital figure of a buff-jerkined soldier "On Guard" (364). Mr. J. D. Watson sends a rather large painting, called "A Christmas Greeting" (391), which we are rather sorry to see with his name to it. He really should not.

Among landscapes, Mr. A. F. Grace's "Harvest Moon" (32), and "A Breezy Day in June" (294), have more than ordinary merit and feeling. Two highly-finished landscapes by Mr. H. W. B. Davis please us very much in tone, but are fearfully hard. Mr. J. Peel's "Pont-y-Pant and the Lledr Valley" (377), is a fine landscape, remarkably solid and yet aërial in the hills in the middle distance. Mr. J. E. Grace's "Suffolk Village, Evening" (108), and Mr. Duncan's "Elm Trees near Windsor" (332), show much feeling in the treatment of simple subjects. There are some good things among the water-colours, especially some small studies, such as Mr. Morgan's little street views in Paris and Algiers (616, 626), Miss Fennell's "Transept of St. Mark's" (699), Mr. Fenollera's "Banderilla, Seville" (736), and Miss Fennell's "Door of Dante's Home at Florence," an excellent little study of a bit of building. The exhibition is certainly the best we have seen in these rooms for some time.

GREEK AND GOTHIC.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.

At the meeting of the Society on the 8th ult. Mr. Geo. Godwin in the chair, Mr. H. H. Statham gave a lecture on "The Principles of Architecture as Illustrated by the Greek and Gothic Styles." Commenting on the fact that architecture had not, like painting, any obvious basis of criticism grounded on comparison with nature, but referred only to abstract qualities, such as proportion, repetition, &c., he would endeavour to show that it reposed nevertheless upon principles which could be defined and illustrated; that there was, in short, a right and a wrong in architectural design. Architecture might be comprehensively defined as "building with expression," a definition which implied that there was something to express; and they must consider what this was. A building must in the first place express externally its plan and management, which was the practical basis of the whole; leading features in the design must correspond with leading points in the plan (illustrated by reference to one or two well-known buildings). Its design must, in the next place, express the construction; it must look strongest where it is required to be strongest, and must correspond in its expression with the direction of the lines of pressure in the construction. And the ornamental detail must be so applied as to emphasise those portions which, from their relation to the plan and construction; are really the most emphatic, and to assist in expressing their function. Decorative art pure and simple, and complete in itself, could be applied to a building at those points which were manifestly unconcerned in the structural statics (on Ruskin's principle, "wherever you can rest, there decorate"); but such adornments were rather something added to the architecture, which formed a framework for them, than a part of architectural expression. Lastly, the whole of the constructive and ornamental design must be suitable to the nature of the material employed.

The illustration of these principles in the Doric style was pointed out by the aid of drawings, and attention was then drawn to the Gothic style, as a most instructive contrast and at the same parallel to the Greek, as it employed a totally different principle of construction (the distinction between the statical conditions of the beamed and arched constructions being briefly explained), but, nevertheless, carried out all the principles of expression into the design in the same logical manner as the Greek style, though with such different results in form. The process of change from the column to the buttress, and the development of the Classic column into the Gothic pier, was touched upon, and the relation of each style to the material in which it was executed; the refinements of Greek architecture being essentially those of a style carried out in such a material as marble, which it would have been impossible to realise with the same completeness

in coarser material; this point being further illustrated by a comparison of some features of Greek and Gothic detail. The great object of studying such complete and logical styles as these two was not to imitate either of them, but to realise in what the abstract quality called "style" consisted, of which some illustrations were suggested, as well as some instances of the want of style in modern architecture, which put together incongruous materials or features upon no logical principle. Quoting from Viollet-le-Duc, to the effect that an author of the present day does not attempt mere imitation of the styles of past writers, since he is held in check by public criticism, but that there is no such safeguard of public criticism in regard to architecture,—"it presents the same aspect to the public as a book to those who cannot read: they may admire the binding and typography, but that is all,"—the lecturer urged that there could be no widespread improvement in modern architecture until there was a more general understanding of and a more general demand for it. What the architects wanted was, that the public would learn, adopting Viollet-le-Duc's simile, to read the book for themselves.

The lecture was illustrated by a small pamphlet of lithographed sketches handed to the audience, containing drawings of various portions of Greek and Gothic buildings, with the fronts of the Parthenon and Wells Cathedral, as representing respectively what might be termed the "Classic" and the "Romantic" elements in architecture.

IMPROVEMENT OF THE THAMES.

Of all the thoroughfares in London, the most important is that of our tidal river, which bears the traffic of the universe to our swollen population; and yet there is no other metropolitan causeway which has not a large amount of rates expended annually in paving, sweeping, cleansing, with other outlays for the convenience of passengers, and the accommodations of trade.

What the river requires is a well-regulated system of dredging, to remove the slime which defiles the exposed beds at low water; to *deepen the channel*, so as to allow a larger outflow of water throughout its whole width, but more especially on the east side of London Bridge, where at certain times of tide there is a full and strong current, which impede ordinary navigation; for years, since the foundation of the bridge, its massive piers would seem to have occasioned an obstruction and accumulation of silt and waste, and notwithstanding the erection of quay walls between Blackfriars and Fulham, on the north, and between Westminster Bridge and Lambeth Palace, on the south side, which ought in some degree strengthen the current, still the shallows, filth, and stercor seem to increase.

The allusions so often made on the subject of embankment by the writer (the last in the *Builder* of the 3rd March) would appear to have caused some attention to this subject, which has hitherto been unheeded by the Corporation (whom it most concerns), or indeed by any writer or engineer of ability,—at least, so far as publication goes.

Many years back the embankment of the Thames was projected and advised by writers and publicists. In the year 1756 John Gwynne (the direct ancestor of Mr. J. E. A. Gwynne, C.E.) published a quarto volume, with four maps of projected improvements extending from the Tower to Kensington, east and west; and from the New-road to the River, north and south; giving a most copious description of his designs for grand boulevards, squares, crescents, &c.; and even at that time recommending the *erection of Thames quay walls;* the junction of Hyde Park with Kensington Gardens, the construction of a new palace, at an elevated point eastward between the Round Pond and the Aba; together with a rectification of the outer boundaries, and the demolition of the old palace.

Considering the importance of a deepened riparian approach and of facilitated commercial requirements to the extensive wharfs which fill up the Thames' margin on the south, from Westminster to London Bridge, and on the north from the Temple to the Tower, the outlay for a permanent dredging-barge with a proper working crew, so as to keep up a deep and safe anchorage, ought not to stop for one month a work of such paramount importance. But the formation of new quay walls, together with the alluvial clearances before alluded to, for easy access to wharfs of inestimable value, cannot surely be delayed, if only the right measures are taken for the purpose of forming a coalition or even a company of interested capitalists to carry out so desirable and essential a project.

There is no great commercial city or town seated upon a tidal river without the protection of solid quay-walls—even Dublin and the comparatively small Liffey has quay-walls of granite, extending (on both sides) over two miles; and then, in addition, a solid pier and footway extending two miles to a lighthouse founded in the bay. However, nearly all the great commercial towns of England have their solid docks, quay-walls, or shipping harbours. How, then, can the corporation of London account for inexcusable somnolence? The line of wharfs is at present most irregular, the buildings and stores advancing and receding at intervals, leaving recesses of slime for boats and barges at low water, and forming a boundary of confusion where there ought to be an equable line of solid quay-wall, together with a depth of water sufficient to float or unload cargoes at all times of tide. This would increase the value of wharf property immensely, whilst it would enable proprietors to carry on an increased trade. At the same time the long open causeway of Bankside, between Blackfriars and Southwark bridges, might be widened and utilised by the addition of say 20 ft., to the present marginal thoroughfare, which is strewn over with casks, bales, timber, and merchandise, leaving but a very restricted accommodation for passengers and vehicles.

So extensive and varied are the works required to complete the objects here referred to, that private enterprise, or the good intentions of several great riparian owners, can accomplish little; it is to the Board of Works alone that the public can look for an effective embankment. The admirable completion of the embankment, and, indeed, the useful and efficient improvements carried out and now in progress, under supervision of the Board, have excited not only the admiration, but the gratitude of the whole community; therefore to that Board is deferred the consideration of the question,—what can be done to rectify the deformities, expurgate the squalor, and increase the commercial advantages of our noble tidal river? T. H. H.

THE NATIONAL GALLERY AND THE METROPOLITAN BOARD'S PROPOSED STREET IMPROVEMENTS.

The Metropolitan Board of Works' great scheme of projected street improvements now in Parliament has reached a stage (passed the second reading) which gives promise of its now being quietly passed through. One division of the scheme (section 6) proposes the formation of a commodious new street to continue Tottenham-court-road down to Charing-cross. The National Gallery building stretches rightangularly across the direct line that intervenes between the two street points here sought to connect. The Metropolitan Board's planned line, utilising for the immediate Charing-cross approach St. Martin's-place and the east side of Trafalgar-square, necessarily rounds the building by its eastern end, and as respects effect on the edifice is *nil*. In the general scheduling of the properties to be taken for the works, the protruding flight of steps of the St. Martin's Church portico was included. But the hitch in the Board's design, which now crops up by the declaration that these steps are never to be removed,—thus perpetuating a strait on the line, reducing the roadway at that part to some 25 ft. instead of the required 45 ft.,—is so damaging to the successful result of the intended improvement, that the Board would do well to stay its hand and try back, even at the sacrifice of a year's delay.

A ready way to the overcoming of this difficulty is conveniently at hand thus. By such a change in the line for the new street as would make the rounding of the National Gallery by its other end, skirting its western flank, and the approach to Charing-cross, *viâ* the west side of Trafalgar-square, and which at the same time would contribute the means to inestimable improvement in the position of that edifice, both immediate and deferred. For doing this, a practicable, and in all respects a favourable line presents itself to notice as follows. By a divergence of the present line at the point of its crossing Litchfield-street, and taking its course through the succession of sheds that lie between the two Prince's-rows; thence, by a cutting of 120 yards long, to Leicester-square, entering thereto at the north-east corner, and utilising its east side row and passing out by a cutting driven through the eastern end of its south side, and continuing straight on down to Trafalgar-square, a run of 200 yards, skirting in succession the gable of St. Martin's Baths and Washhouses, the barrack-yard, a stable-yard, and the western end of the National Gallery.

I will now endeavour to show that the divergence of the line for the new street here suggested gives the more favourable route, irrespective of National Gallery considerations, or that of the St. Martin's-place obstructions. The length of the Board's line, as it at present stands, is the length the line would be under the proposed alteration, is exactly equal, viz., 1,200 yards measuring down to the King Charles I. statue. But the gradients in the way are greatly in favour of the more western passage of the Gallery. Thus the principal of the fall to Charing-cross in the eastern passage occurs in St. Martin's-place and Trafalgar-square—a run of some [illegible] yards—and gives the gradient of 1 in 25; whereas, by reason of the "way on" which vehicles of all kinds ever acquire in descending a steep a hill, must always be, more or less a source of danger in the meeting of the traffic in the Strand. In the more western passage the fall to Charing-cross may be said to commence in Leicester-square, at Cranbourn-street, and run by a gradual incline, thrown over a run of [illegible] yards, and gives a gradient of only 1 in [illegible]. Point 2 is the local improvement that would be effected by the transmutation of the two courts Ryder's-court and Earl's-court — the "faded" "light of other days!" as also that miserable quarter, the two Prince's-rows, into a fine, open leading street. 3. By the more direct opening out of the shut-in parish of St. Ann's to the south and south-west parts. 4. By the direct connecting of Trafalgar-square and Leicester-square. 5. By the advantage to the work of the eventual finishing of the National Gallery, which the formation of a fine wide street along its western side will confer, would give the Metropolitan Board a better standing for the acquiring the concession of the long strip of Crown land required for the necessary widening of the new street at Hemming's-row and Orange-street. (Section 3 of the Great Scheme.

As respects effect on the National Gallery consequent on the possible adoption of the suggestions here put forth, may be noticed: By the new street skirting its western flank the edifice would be given position of isolation in part where, as now, it very wrongly adjoins on the houses of a very thickly-populated poor quarter,—a consideration of no slight importance viewed in connexion with the safe keeping of the nation's priceless treasures therein contained. 2. That when the Metropolitan Board's other intended new street comes to be made (section 6 of the Board's plans, the east and west line which is to skirt the north front, the finished National Gallery will, on each of its four sides be on a main leading thoroughfare, thus giving the edifice an enhanced dignity and importance worthy its distinction and its occupancy of the generally-acknowledged finest site in London.

FREDERICK CRANE,
Churchwarden of St. James's, Westminster.

A PROPOSED FREEMEN'S UNION.

In view of a recent vexatious strike on the part of masons, Messrs. Schofield & Co. are asking employers in the building trade to contribute towards the formation of a fund for a society or union having for its object to counteract the arbitrary action of the present trade unions which would detach many of the best and most skilled workmen from them, and that these strengthened by the accession of non-unionists would form a body of men equal in work, if not in number, to their rivals. They suggest:

1. That the proposed association should be called "The Independent or Freemen's Union."

2. That the employers should establish the fund, and the men contribute to its support by weekly payments, as they now do to the trade unions.

3. That the one fundamental rule laid down by the employers should be that every workman should be allowed to work when, how, and for as long as he liked.

4. That all rules as to internal management should be left to the workmen themselves.

They are prepared to assist by a donation the foundation of an institution similar in its objects to that now roughly sketched out.

DALS AND PRIZES—INSTITUTE OF ARCHITECTS.

Soane Medallion (with the sum of 50*l.* under the usual conditions of Continental has been awarded to the author of the for a free library and public institute, guished by the motto "Choose well; your is brief, and yet endless." (William Scott, at Woodstock-street, W.)

he same competition a Medal of Merit was ed to the author of the drawings submitted the motto "Ut migraturus habita." Ball, 46, Church-street, Bolton, Lanca-

the competition for Sir William Tite's of 30*l.* a certificate of Honourable Men- as been awarded to the author of the for an ambassador's residence in Lon- submitted under the motto "Fortuna tur." (Henry Tanner, 21, St. Paul's-Camden-square, N.W.)

Institute Silver Medal and 5*l.* 5s. were ed to the author of the measured draw- illustrating Lavenham Church, Suffolk, tted under the motto "Labor omnia " (W. Gilbee Scott, 8, King Edward- Hackney.)

the same competition a Certificate of rable Mention was awarded to the author e measured drawings illustrating Laon dral, submitted under the motto "Ameri- (William S. Fraser, 34, Gower-place, n-square.)

Institute Silver Medal was awarded to thor of the essay "On the Artistic treat- of Constructive Iron Work," submitted the motto "Iron Style." (Hugh Stannus, eorge-street, Portman-square.)

d a Medal of Merit to the author of the on "The Chronicles of Early English submitted under the motto "Romaneeque." . Bell, Chesterton-road, Cambridge.)

EMORIAL FOUNTAIN AT DULWICH TO DR. WEBSTER.

inhabitants of Dulwich have subscribed siderable sum towards a memorial to the r. Webster, one of the oldest inhabitants, ho for several years took an active interest tters connected with the locality. The me- l will take the form of an ornamental ng-fountain in grey and red polished e, which has been designed by Mr. Charles , the architect to the Dulwich College e, and which will be executed and carried nder his superintendence. The fountain is rected immediately in front of the entrance old college buildings and picture gallery, e junction of the Norwood and Crystal e roads. At the meeting of the Camber- vestry last week it was stated that the politan Drinking Fountain Association had ed to take the entire charge of the foun- nd its future maintenance, and to keep it ed with a constant service of water, on the ondition that the vestry should contribute m of 50*l.* towards the cost of laying on the , and the General Purposes Committee re- end the vestry to accept that condition and he required contribution of 50*l.*, which they e to be fair and reasonable. Some objection ffered to contributing the sum named, but ately the recommendation was then unani- y adopted. It is expected that the fountain e completed and inaugurated with some lity in the course of a few weeks.

CESTER GUILDHALL RESTORATION.

a meeting of the Worcester Town Council, e 6th inst., the Guildhall Restoration Com- e reported that they held a meeting on the ult., when Mr. Rowe laid before the meet- he plans and drawings prepared by Sir rt Scott and himself for carrying out the ration of the Guildhall and wings, and they examined, and some alterations were sug- d for the consideration of the architects. committee also reported that they held a ing on the 26th ult., when it was resolved imously,—

hat the Council be recommended to adopt the plans e enlargement and restoration of the Guildhall and laid before this meeting, and to have the fittings of as recommended by the architects; and that the ects be instructed to prepare the requisite specifica- and an approximate estimate of the cost, but to the proposed alteration of the Town Clerk's office, residence for the hall-keeper."

A statement of the accommodation available as shown by the plans was laid before the meeting, and the committee took into consideration the application for accommodation for the County Court offices, in the Guildhall buildings. It was resolved unanimously,—

"That until due consideration has been given to the requirements of the Corporation and their officers, this committee cannot recommend that offices should be provided for the County Court, but they recommend that if suitable accommodation should be found available, the officers of the County Court be afforded the opportunity of arranging for same."

The City Sheriff moved the adoption of the report. The Council would remember that on 28th of August, 1876, a report on the Guildhall from Sir Gilbert Scott was laid before the Council, and the city architect was instructed to prepare working plans. In compliance with the order of the Council plans had been prepared by Mr. Rowe, the city architect. The plans had been unanimously adopted by the committee, and he hoped the Council would pass them, so that after the great delay which had taken place some progress would be made towards the restoration of the Guildhall so that it shall answer all the requirements of the city as well as be an ornament and credit to the place. Mr. Rowe had sent him an approximate estimate of the work, in which he said that he had considered the extent of the works required in carrying out the restoration of the Guildhall, including the wings, and according to plans prepared by Sir Gilbert Scott and himself, and he estimated the cost of such works, excluding warming and fencing, at 9,100*l.* He (the Sheriff) had much pleasure in moving—

"That the plans for enlarging and restoring the Guildhall and wings be adopted, and that the fittings be of oak, and omitting the property known as the Town Clerk's office, which was intended as a residence for the hall-keeper."

The motion was ultimately carried with four dissentients.

THE BUILDING TRADE AND BRICKLAYERS.

A CASE of considerable importance to persons engaged in the building trade, and to bricklayers in particular, was tried at the Lambeth County Court last week. The amount claimed was nominal, but a principle of some consequence was involved. Mr. McQueen, a bricklayer, of Lower Norwood, sued Mr. G. Paul, a builder, of Gipsy-road, Norwood, for 9½d. in lieu of an hour's notice.

Mr. Washington, who appeared for the plaintiff, said that although the claim was only for 9½d., still the question was a very important one, and affected a great number of men throughout London. There had been no decision on the point which he (Mr. Washington) was bringing forward, and the case had been brought before his Honour because of the great experience that court afforded in building matters. There was no few than 11,000 bricklayers in the district, and the decision of his Honour would be regarded as laying down a principle as to whether for the future bricklayers were to be discharged at any moment, or to have, as joiners and other persons in the building trade had, an hour's notice. The difference made by the masters between bricklayers and joiners was that joiners were entitled to an hour more for the purpose of sharpening their tools. If that necessity existed as regarded joiners, he did not see why the same time should not be allowed to bricklayers, as they had various tools that required sharpening, such as scutches, chisels, and brick axes. In the present case the plaintiff had been in the defendant's employ for four months, defendant being a large builder at Norwood. He went to work as usual at the commencement of the week on the Monday. At twenty minutes past four o'clock in the afternoon the foreman asked him to put up his tools and leave, as there was no more work for him. Part of his tools were half a mile distant from the work, and plaintiff contended that under the circumstances he ought to have had an hour's notice or an hour's pay.

The plaintiff having been examined in support of his case, Mr. Washington, in answer to the judge, said he had no witness on plaintiff's behalf, as to the existence of a custom.

The Judge (Mr. Pitt Taylor), in giving his decision, said that he had had the claim for sharpening tools before him more than once, and on every occasion he had disallowed it. The claim, however, was not only on account of sharpening tools, but in respect of the time taken for packing them up and going to receive the money. In the absence of any evidence of a contract between the parties, the plaintiff was not entitled to one or two hours' notice. The men were paid by the hour, and if the contract was for the hour the master would pay by the hour, and no more. In the case before him there was no custom in the trade allowing to bricklayers an hour's notice, and there was no law. Plaintiff, therefore, could not substantiate his claim. If there had been a special bargain, to the effect that he should have an hour's notice, he, of course, could have recovery. There must be judgment for the defendant, with costs.

In reply to a question from Mr. Washington as to whether the plaintiff was not entitled to recover for the loss of time in picking up his tools and going to the office to receive his money, the Judge replied that it might as well be said that a man was entitled to be paid for picking up his coat.

ARCHITECTS' ACTIONS.

SHEWBROOKS *v.* CAULFIELD.

THIS case, heard in the Nisi Prius Court, Durham, before Mr. Justice Lopes and a jury, is one of more than passing interest to architects, and occupied the attention of the Court two days. The proceedings are too lengthy to attempt publishing them *in extenso*, but the following digest embraces the whole pith of the dispute.

The plaintiff is an architect carrying on his profession at Newcastle-on-Tyne, and defendant is the owner of a building estate and speculator in land,—a class of men who have of late reaped large fortunes in the North of England.

A long array of counsel and solicitors were retained on both sides, and the expenses must be very heavy.

The action was brought to recover 35*l.* 9s. for work done, and also 175*l.* for breach of contract. The defendant owned building land near Gateshead, and the estate plan, in the first instance, was prepared by Mr. Hilman. After this the defendant called upon the plaintiff and expressed a desire to retain him as architect for the estate in question. Under instructions Mr. Shewbrooks measured the frontage of the estate, and discovered that the first plan was incorrectly set out, and suggested to the owner that there might be other mistakes, and therefore it would be advisable to prepare a fresh plan altogether. After this an agreement was entered into between the parties, the defendant engaging to employ the plaintiff for all professional work in connexion with the Gateshead estate, and to pay him for preparing plans for houses according to the following rates:—Tenement houses or houses in flats, 10s. 6d. each; all corner houses, 1*l.* 11s. 6d.; for defendant's own house, 3*l.* 3s.; and 1*l.* 1s. for all other houses. It was further agreed, in the event of selling or letting any of the sites on the estate, the defendant would make it a condition with the purchaser or tenant that the plaintiff should prepare all plans and make all surveys in connexion therewith, at special rates to be agreed upon, and for total work done, 35*l.* 9s. was demanded.

The defendant eventually sold the estate to a Mr. Galloway, and refrained from stipulating with the purchaser that the plaintiff was to be employed as the architect, according to conditions entered into, and Mr. Galloway refused to retain the plaintiff, and who actioned the defendant for breach of that part of the contract.

Mr. Shewbrooks estimated that if he had been employed as architect for all the houses built on the estate he would have received 194*l.* 15s., and allowing that all the houses would not have been built for some few years, he reduced his claim to 175*l.*, making a total of 210*l.* 9s.

The defence set up was that defendant did recommend the plaintiff as architect to Galloway, but the latter refused his services, and the agreement was one that was not capable of being worked, and its loose construction ought not in equity to be stretched in favour of the architect. With reference to the first part of the claim a plan was prepared by the plaintiff for a house to be built for the defendant for his own occupation, and the back part of the house had, in order to allow the proper width of street required by the Corporation bye-laws, to be built narrower than the front portion, and the plaintiff had neglected to take those measures in his plan. The narrowing of the house at the back depreciated the value; and defendant made a counter claim against the plaintiff for damages arising from that depreciation.

The plaintiff denied this allegation. Witnesses were called, and the jury eventually found for the plaintiff, and assessed the damages at 15*l.* 9s.

QUESTION AS TO THE LEGALITY OF GATES TO CHANCEL SCREEN.

CHURCH OF THE ANNUNCIATION, CHISLEHURST.

IN the Commissary Court, on the 26th ult., Dr. Tristram, the Commissary-General of Canterbury, heard an application of some importance.

The vicar (the Rev. H. Russell) and churchwardens of the Church of the Annunciation, Chislehurst, applied for a faculty to erect a reredos and a screen, the latter with gates, in the church, now in the course of completion.

The proposed screen was the gift of a member of the congregation, not a parishioner, and the reredos was given by one of the churchwardens. The plans were produced by Mr. G. H. Brooks, proctor for the applicants, and were explained by the architect.

In the course of the discussion, the learned Commissary said there was no difficulty as to the faculty for the

reredos, but as to the screen with gates. The design had been before the Archbishop of Canterbury, who had not signed the plans, but had referred the matter to him as Consistorial Judge.

Mr. James Brooks, the architect, was sworn, and explained that the screen was to be placed at the chancel, at the top of which would appear a large cross. There was no sculpture, but mural paintings on the panels representing the Crucifixion of Our Lord.

Mr. Jeune, counsel in support of the application, addressed the Court, contending that the screen was not only legal, but was required to be placed in front of the chancel. Before the Reformation it was, with a crucifix or rood upon it, a necessary adjunct of the Church in England. After the Reformation the rood was removed, and the screen or partition remained. The learned counsel cited Wheatley's Common Prayer-Book, and the writings of Hooper, Calvin, and other writers, to establish the fact that when the rood was forbidden in churches the screen was retained. He traced its recognition from Edward VI. to the present Prayer-book, and from the disputes which had occurred submitted that the rubric in force not only permitted a screen, but showed that it was legal. No doubt they had fallen into disuse, but they were to be seen in numerous churches, where they had been placed a long time ago. It was necessary to provide a screen or gates to the chancel.

Dr. Tristram observed that if there was not room in the body of a church persons could go within the chancel. The seats within the chancel were at the disposal of the ordinary.

Mr. Jeune said that rails were provided near the altar or Communion-table, and there could be no objection as to gates, which would keep persons from approaching too near, and it was felt that there ought to be some distinction between the chancel and the body of the church. Referring to the St. Paul and St. Barnabas case, before Dr. Lushington, and afterwards before the Judicial Committee of the Privy Council, he said Dr. Lushington did not order the gates to be removed, and could not say they were illegal. Subsequently the Privy Council made no order on them, but declared that a cross as then placed was not an unlawful decoration. At the present time churches were often open all day for private prayers, and the gates would only be closed when there was no service, but open when any divine office was being performed. The screen was tracery work, and seen through by all persons. There were no symbolisms connected with it, but there were articles which required to be protected in the chancel when no service was being performed, and which might be removed.

Dr. Tristram said the general practice in the diocese of London since he had been Chancellor was to object to gates at the chancel.

Mr. Jeune urged that on the authority he had quoted, it would appear that the law required screens to be placed to divide the chancel from the body of the church, and he therefore asked the Court to grant the faculty, as the case was, he might say, *res judicata*.

The Commissary-General said it was a question of some importance, and he should take time to consider. He had no difficulty as to the faculty for a reredos, but he had some doubts as to the proposed screen with the gates.

THE PROPER POSITION FOR THE DECALOGUE.

THE Ven. Chancellor Espin presided at a sitting of the Chester Consistory Court, on the 1st inst., when

The Rev. R. Greenall and one of the wardens of the parish church of Stockton-heath, near Warrington, appeared, and put in enlarged plans of the reredos proposed to be placed in the church, and for which, along with other matters, at the last court they sought a faculty.

The Warden, in reply to the Chancellor, said the architect now proposed to place the Ten Commandments on the east wall of the south aisle, which was a very conspicuous place, and better suited for the purpose than the entrance to the chancel.

The Chancellor.—But you see I am bound by the canon.

The Warden.—We thought that would have complied with the canon?

The Chancellor.—I think not, strictly speaking. The advertisement with the canon specifies that the commandments must be put up on the east wall, over the holy table; but at the same time I do not wish to press that any more than I am bound to do. The commandments were placed there to catch the eye of the communicant as he came to the table, and to inspire him with their beauty and fitness to be put in the communion office. The suggestion of your architect will hardly have this effect, will it?

Mr. Greenall.—No: It would not. But they can go on either side of the Communion-table, over the Hallelua.

The Chancellor.—I think that a very good suggestion. That will do.

Mr. Greenall.—Then we may have our faculty?

The Chancellor.—Certainly.

The faculty was then decreed, on condition that the Ten Commandments are placed on the east wall, just over the reredos.

THE THAMES VALLEY FLOODS.

A REPORT by the Conservators of the Thames on the works in the upper districts of the river, and the floods in the Thames Valley, was issued on the 27th ult. It states that only four of these floods have occurred in fifty-six years, and adds:—

"The question, therefore, arises, are these unusual floods sufficiently frequent, and is the damage caused by them so great, as to make it advisable for the riparian landowners and occupiers, on whom the charge must necessarily fall, to incur a very large outlay with a view to prevent the extension, or to mitigate the effects of such floods? Various schemes for the prevention of extraordinary floods have been suggested, among them the construction of impounding reservoirs. Let it be assumed that, in order to receive only one such of rainfall over the 3,944 square miles forming the catchment basin of the Thames above Kew, six reservoirs were to be constructed along the course of the Thames westward of Teddington; if each reservoir were 15 ft. deep, it must be 3½ square miles in extent. Even supposing the necessary land could be procured, the cost of this and and the formation of the reservoirs would amount to at least a quarter of a million sterling for each reservoir. The alteration of the road bridges, which are so obstructive to the flow of the water, the deepening of the river, lowering of the weirs, and construction of tumbling bays, on a greater scale than has hitherto been practicable, would assist the escape of flood-waters; but these operations involve an expenditure beyond the means, and an interference with private rights beyond the legal powers, of the conservators. It is to be hoped that no amount of temporary inconvenience or damage will induce the Legislature hastily to authorise the construction of impounding reservoirs, or carrying out other schemes on a larger scale, which are certain to be extremely costly, and may not prove effectual remedies. The riparian landholders and occupiers should carefully consider whether the execution of the extensive works suggested by various persons may not entail a far heavier burden than any damage caused by these temporary and rarely recurring floods. If excessive floods are to be dealt with, a searching preliminary inquiry should be instituted, for it is manifest that large powers and ample funds, only to be obtained by an Act of Parliament, must be provided if all the low-lying lands in the Thames Valley are to be secured against every possible inundation.

SAXON STONE AT ST. MARY-LE-WIGFORD, LINCOLN.

THE following letter, addressed to the vicar of the above parish, has been published in the *Lincolnshire Chronicle*:—

You will perhaps recollect that some time ago I promised to try and find out the meaning of the inscription on St. Mary-le-Wigford Church, which has puzzled so many generations of antiquaries. Most persons who pass along the High-street will have noticed not only the remarkable tower, but also a square inscribed stone built into its western face, and surmounted by another of a triangular shape. The lower inscription, which is in Latin, is fairly easy to decipher, and appears to be the monument of a certain Sacer, son of Bruscus, a Senonian Gaul, and of his wife Carssouna, and son Quintus, who lived perhaps in the first century after Christ. (See *Corpus Inscr. Lat.*, vol. vii., No. 191.) This tombstone seems to have attracted the eye of the founder of the church, who built it into his tower, and left a record of his work in the five lines which he inserted in the vacant space at the upper part. It has, I believe, generally been concluded that the church was erected by Saxon builders soon after the Conquest. It is natural to suppose that the occupation of the upper town by a Norman castle and cathedral would dislodge a good many of the old inhabitants. However this may be, it is certain that the inscription is Anglo-Saxon or Early English, and that it records the foundation of the church. The interpretation of it has long been regarded as a great difficulty, and it was not till a year or two back that Professor Mullenhoff, a German scholar, hit upon the first step towards its explanation. He saw that it was to be read upwards, not downwards, and that the last words were *Criste to lofe and* (?) *Sancte Marie*, "to the praise of Christ and Saint Mary." I am now able to send you our own Professor Earle's interpretation of the first or lower lines, made from the copies given by Hübner, in his *Inscriptiones Britanniæ Christianæ*, No. 170. It must be considered at present as conjectural; but it is certainly much nearer the truth than any that has been given before, and a comparison of it with the original will probably bring out what is necessary for the final decipherment. His restoration is as follows, the uncertain letters being dotted. The runes represented by Ƿ (and) and Ƿ (w) are not very uncommon:

MARIE
OFETSCE
NCRISTETOL
NTFIOSGODI·
EADPIGMELETPIRCE·

That is to say, *Eadwig me let wircean & fios godsan Criste to lofe & Sancte Marie*. "Eadwig had me built and endowed to the praise of Christ and Saint Mary." There are, as you will see, some letters in this which do not agree with the ordinary readings of the stone, and Mr. Earle is in doubt between *Eadwig* and *Elfwig*. There is also a difficulty. Mr. Earle tells me, in the use of the genitive *fios* (cp. fee) after the verb *godian*, but the general sense seems to be very probably made out. Mr. Earle also makes an interesting suggestion as to the origin of the name *Wigford*. Does it perhaps contain the last syllable of the name of your founder, and was the place originally called *Eadwigford*? Some Lincoln antiquary may perhaps be able to answer this question, and even to throw some light on his history. It is certainly a subject for congratulation that we, who have such a unique monument in Lincoln, should be no longer in ignorance of its meaning.

JOHN WORDSWORTH.

DO OUR WORKMEN IMPROVE?

SIR,—We are generally supposed to be living in an age of progress, but I fear that the very reverse of the supposition is the actual fact in certain matters seriously affecting the building trade.

Where is the pushing, energetic, and intelligent artisan, who (as was the case some twenty-five years ago) emerges from the dead level of the "bench" or the "banker" to worthily fill the position of clerk of works?

I find it very difficult to get one who is at once trustworthy, sober, and technically competent; and I hear the same complaint on all sides from my professional brethren, and even from builders.

Are trade unions in any way responsible for this state of things?

I had occasion this week to advertise for a clerk of works to superintend a "plain straightforward job," and in response received thirty applications on the following day. Of these only two were such as I could in any conscientiously recommend to the consideration of my clients.

As there may be amongst your numerous readers some young man who feels that he is fitted for something better than paying "subscription to the society," and receiving the "regulation" wages, I enclose one of the applications received in response to my advertisement, so that he may have some idea of what sort of person he is likely to meet in competition if he aspires to the honourable position of clerk of works.

F.R.I.B.

SIR,—Seeing that you want a clerk of works And I am a simelar situation I bring my self before your notice Same In the first place I am a Joiner to trade and I am master of the trade I care not what branch it may have been an emprover in days past After I held the position of foreman in a larg firm and got two years sert but unfortunatly I lost it then I acted in the same for others of less importances and I beleive can get comandation if necery my age is 43 years and is perfect sober fuly understands plans is able to draw same take out quantietys for any Job understands measuring up to square and qube root or angels of any degree brick work slating or other work in the building trade you can think over this And I remean yours

WHAT IS LAW?

A QUESTION asked by many who follow the reports of the daily proceedings in certain places called law courts. Take a recent theatrical dispute for a late example, although there is not a sitting but would afford others. One side is supposed to have his rights by the decision he has given in his favour; the day following an opposite night on the one side, and an uneasy night on the other, the very opposite decision overthrowing the previous one. Surely one of the expounders of supposed law must be wrong; and those who may hereafter happen to seek his decision will not have much confidence in him. Law is a mean long purse, some may say it means individual opinion. Ought that to be so? Or is not law to be law, as understood by the world and not reversed at each step taken by the disagreeing parties? If it is mere opinion, should the country be put to such an enormous expense to keep up our so-called law courts and appertainments? Men are able to give their opinions without being especially and expensively trained and kept, and having costly building in which to sit in. Again, some may say it is custom. Then a third may say, "It is my custom,—consequently law,—to pick pockets." Then others may reply that it is custom,—consequently contradictory law,—to punish. It is high time that when contending parties fight to have their disagreements settled they may not feel that those who are able to produce the greatest number of sovereigns may gain the day, and sometimes as shown by contradictory decisions, what has never been considered not their rights. The remedy is in the hands of the law-makers.

FRAMED HOUSES OF WOOD.

SIR,—In Number 1,773 of the *Builder* I inserted a letter from a correspondent, initials "S. M. P.," in relation to a "wooden house from Norway," and asking for information from your readers as to the "result of time upon building constructed of wood," and "whence could one be obtained;" also, "what the plan (of wood alone) would be likely to exceed in building labourers' cottages, where it is desirable to keep the expense as low as reasonably possible."

In reply to these questions, I beg to inform the writer that portable framed houses of wood could be manufactured in Canada and imported into Great Britain at a very reasonable cost, and that as to their adaptability for labourers' cottages there cannot be a question of doubt. They wear well and last long, seldom require repair, and can be made very warm in winter, and are always free from damp. Nine-tenths of the suburban residences—and some of them exceedingly ornate and tastefully designed—in the United States and Canada are constructed of wood. A wood-framed house, faced with single rows of brick, is an exceedingly warm house in winter and cool in summer.

I have no doubt but that lumber could be obtained in Canada for such purposes at reasonable rates, and if an experiment were made on a small scale, it would probably

protection is considered necessary for ancient monuments, apart from such works of architecture as cathedrals. As Sir John Lubbock inferred in his reply, such buildings are usually more or less matters of interest and pride to those in their neighbourhood, and there is every probability of a natural wish to take care of them, without the application of any legally-compelling machinery. We will not undertake to say that some more strictly national supervision might not advisably be extended to our Mediæval monuments of architecture, and that restoring-architects and ecclesiastics might not with advantage be made more directly and practicably amenable to public opinion in regard to their proceedings; but it is obvious that a very much more complicated and costly legal machinery would be necessary to provide for such a principle. But the class of monuments which this Bill aims at protecting is precisely that of which the neighbouring inhabitants are often most ignorant of the value, which is really known to and estimated by learned archæologists in other parts of the country. It becomes, therefore, of the greatest importance to save these first, which are more easily dealt with; and the custody of our great architectural monuments, if it is to become a national care, can be more deliberately considered in some future legislation.

We may give just an outline of the purport and provisions of the Bill. In general terms it provides against "injuring" the class of monuments described; and in the definitions of the preamble "injure" or "injury" is defined as including "the destroying, removing, defacing, altering, covering up, building on, undermining, or in any manner permanently or temporarily damaging or endangering the safety or stability of a monument or any part thereof, or any marks thereon." This seems to comprehend every possible case. The Act is defined as applying "to the several monuments specified in the first schedule of this Act," and, in the next clause, "to any British, Celtic, Roman, or Saxon remains, or to any monument which is in the opinion of the Commissioners of the like kind as any of the monuments specified in the said first schedule, and which is not situate in any park, garden, or pleasure-ground." This sentence, of course, renders nugatory the objection which was made to the schedule, in the discussion, as not being full enough. It is true that the list might have been more exhaustive than we can think it is, but its real operation in connexion with the document is as defining the nature of the objects referred to, for which purpose it is amply sufficient. The Act is to be put in force by seven commissioners (named, with a provision for filling up the number as becomes necessary), to act under the style of "The National Monuments Commission." When they have applied the Act, by serving a notice in writing (according to an appended form in the second schedule) on the occupier of the land on which it stands, it will not be lawful for any one to "injure" the monument without the consent of the commissioners; but "a person who but for this Act might lawfully deal with the monument," and who wishes to "injure" it (the word, of course, being taken in the special legal sense as defined in the Act), can, on giving notice of his intention, and stating how he proposes to deal with it, place the commissioners under the obligation of either purchasing the monument, or gives a "power of restraint" which prevents his dealing with it according to the position the applicant occupies in respect to his legal title to the monument), within three months; and if they fail to take such steps within that time, such failure will be construed as a permission to the "person" to deal with the monument in accordance with his expressed intention. We should like to see it made a little clearer and more definite that this permission only extends to the actions which the owner or person qualified has previously proposed in writing. This is evidently what is meant, but it is hardly as clearly stated as it might be; and we could imagine that, in a case where the commissioners had given this negative sanction to "dealing with" a monument, it might be interpreted with undesirable latitude.

Provision is made for an appeal, on the part of any one who feels aggrieved at not being permitted to deal with the monument as he wishes, to a judge of one of the superior courts of law or equity in England and Ireland, or to a judge of the Court Session in Scotland. The Commissioners have the power to acquire such rights of way as may be necessary for the access of the public to the monument; and, moreover, the Act may be applied by the Commissioners to any monument of whatsoever kind, and wheresoever situate, if the following persons give their consent, viz.:—

"1. The owners or occupiers of the site of the monument; and,

2. Any person entitled to any beneficial interest in the site of the monument," or the guardian or trustee of such person.

The word "site" in regard to this clause is taken as including all land surrounded by any part of the monument, or "adjoining" it: which last provision is very vague, but appears to be defined further on by the statement that no ground shall be called part of the "site" which is more than fifty yards from any part of the monument. This should surely have gone with the clause in which "site" is first mentioned; and the construction of the document in regard to this and one or two other points seems a little clumsy, and will not improbably be modified in Committee. We would also suggest that the phrase, "any monument whatsoever," although we are very glad to see such a power of extension of the provisions of the Bill as it implies, requires further explanation or definition. As we read the language of the Bill, it seems that this may verbally be taken to include the cathedrals and churches, and old buildings generally; but that is probably not intended.

The penalties of infringing the conditions of the Bill are stated in a reference to previous Acts of 24th & 25th Vict. Provision is made for the investing the Commissioners with power to enter upon and inspect, at any time "between sunrise and sunset," any monument concerning which they have acquired a power of restraint or purchase, and to break down any door or enclosure preventing their access. All expenses incurred by the Commissioners to come from the Public Treasury. The Commissioners may at any time transfer the custody of any monument, or the powers they have acquired in respect to it, to any local authority of any borough or district near the locality of the monument, which local authority will then have all the power of the original Commissioners. This appears to us a very desirable provision, and might be exercised with direct reference to the enlightened interest in its antiquities which had been shown by any borough or locality; and thus a spirit of archæological conservatism would be encouraged. A very stringently-worded clause in the 18th section provides against the custody of the monument being removed out of the hands of the Commissioners, or refused to them, through any informality of any kind in the appointment of the Commissioners, through accidental vacancies in the Commission, or inaccuracy or informality in the description of the monument referred to, which in the opinion of the Court before whom the proceeding is in question is not material for the matter in reference to which it is questioned.

The same 18th clause provides that "the Act shall not be applied to any monument situate on land held in the right of the Duchy of Cornwall, except by consent of the Duke of Cornwall for the time being." The reason for this clause it is not in our province to criticise; but we should like to know the force and origin of the exception which is made, as previously quoted, in regard to any monument "situate in any park, garden, or pleasure-ground." We presume such a provision is a concession to those who would complain of the alleged tendency of the Bill to infringe private rights of property; but it is opposed to the principle of the rest of the Bill, which goes on the understanding that all these monuments are things of national value and interest; and we fear it would be very rash to conclude that a monument situate in a garden or pleasure-ground is necessarily more secure from "injury," in the sense of the Act, than one situated in a more public place.

Such is the main scope of Sir John Lubbock's Bill, which we shall hope to see pass into law, in no greatly modified form, within a short time.

What is an Architect?—A correspondent sends the following cutting from a newspaper:—"Cattle Market, Wisbech. Charles H. Blank, auctioneer, architect, and surveyor, will hold a sale for fat beast, sheep, and pigs, every Thursday, commencing at ten o'clock, and for store bullocks, sheep, pigs, and horses every Saturday, commencing at twelve o'clock.—Office, Wisbech."

PROFESSOR E. M. BARRY ON ARCHITECTURE.*

DOMESTIC ARCHITECTURE, THIRTEENTH CENTURY.

IN my last lecture I dealt with the question of the domestic architecture of the twelfth century, the style of which we may, for convenience, call Saxon and Norman. We saw that it was marked by great simplicity of general arrangement, although not without care for architectural effect, and that the latter might even lay some claim to magnificence, particularly towards the close of the century. I propose now to pass onwards to the succeeding epoch of Gothic architecture,—the golden age of the style, namely, the thirteenth century.

We shall not find the transition rapid or startling; the architectural glories of the thirteenth century grew naturally, and by degrees, from the preceding styles, and the old Norman work was of too solid a description to be easily destroyed. Moreover, the time at the commencement of the period was not favourable to the pursuit of the arts of peace. If, in the clash of arms, laws are silent, the same is also especially true in respect of the quiet progress of architecture. Without security, men will not do their best, and they can have little care for beauty in architecture when the first necessity is to procure safety for their lives and goods. Castles, therefore, and not houses, were the principal work of the unsettled times of King John. Not that ever many of these important works were undertaken *de novo*, but old fortifications were repaired and strengthened, and new defences were devised for existing structures.

It was by slow degrees that the great men of the day began to settle themselves in the country by building their manor-houses, and at first, even these were constructed so as to be capable of defence, in case of need. In the days of Henry III. and Edward I., architecture revived, and to the time of the former we ascribe that style of Pointed architecture, popularly known as Early English.

Before going into any detail respecting the forms of buildings which now came into use, we may perhaps dwell with advantage on some of the social characteristics of the country, at this time, for by such circumstances, domestic architecture is naturally influenced. The Norman conquerors had, in some measure, assimilated with the Saxons. Land, at first held by them in right of conquest, became gradually subdivided, and tenancies arose, with sufficient security of tenure, to encourage building.

Strict laws preserved indeed huge tracts of country, and hindered its settled development. An immense portion of the land was consequently covered with wood, and formed the sanctuary for criminals and lawless men of all descriptions, who lived by the plunder of travellers, and on the game which existed in abundance. Wolves and wild cattle were found in the forests, and other desolate tracts. Travelling from place to place was restricted and dangerous, and there were few who ventured to live apart from their fellow men unless they could command a following, strong enough to secure their houses from violence. Free and safe communication is one of the first signs of advancing civilisation, and we know that it has not yet been perfectly attained even in all modern European States. In the England of olden times, the roads passed through extensive forests, and none were without their history of wrong and robbery.

The Norman forest laws were of a very oppressive character, and many lives were sacrificed for what we should consider venial faults. The forests were strictly preserved for Royal use, and the day was not come when it was recognised that the people had their rights as well as the Crown. To interfere with the sport of the king was death, and the laws which preserved the forests for his use were most severe. It is a curious reflection that circumstances so change in the progress of time, that these laws [or the scanty remnants of them, which have subsisted until to-day] have lately been successfully involved in the interest of the people, against whom they were originally directed. In our more artificial state of society, the preservation of open spaces, particularly near to large towns, has become a public question of vast importance, and in recent proceedings in respect of Epping Forest, the old forest laws of the Normans have been turned to the advantage of those who desire its preservation, by the Corporation of

* Third lecture: delivered at the Royal Academy on Monday, March 12th.

the City of London, who have stood forward as defenders of public rights, in a manner very much to their honour.

Whatever value we now, however, ascribe to these forests, it is certain that, in early days, they were a serious danger to the people. Travelling was impeded, so that even the main roads near to London,—as, for example, that to St. Alban's,—were impassable in safety, without an armed escort. To meet this danger, orders were given to widen all main roads, and the bushes and woods were cut down and cleared away for 200 ft. on each side of the road. If any proprietor neglected to do this, and a murder or robbery occurred, such proprietor was to be considered responsible, even to the extent of felony.

The old Roman roads, as Watling-street, had determined the main lines of communication, and these passed, for the most part, through forests. To the clearance laws above referred to we owe the wide and ample roads in many parts of the country, with their grass sides and ample space, now too often disappearing under repeated encroachments. Agriculture is fast effacing these pleasing features. Hedges are grubbed up and palings advanced, corners are inclosed, and roads are narrowed, till they become mere passages between walls and fences. For all this, there may be economical reasons, but the lover of country beauty cannot but deplore the change. In the thirteenth century width of roads was a necessity, and we may think of this with regret, if it be indeed a necessity of the nineteenth century to narrow them.

The clergy were at the head of most of the improvements in former times. They not only held land to a great extent, through the great ecclesiastical corporations, but from the nature of their duties they were frequent travellers. To them the great fen countries in Lincolnshire, Cambridgeshire, &c., owe their first improvements. Their tenants enjoyed an immunity from the oppression and the caprice, which often pressed hardly on those who held land from individuals, and the ecclesiastical estates were consequently, as a rule, well managed and improving. Tolls were allowed to be levied for the repairs of roads, and also for the erection of walls of defence round the principal towns. A watch was kept on these walls, and a curfew bell generally rang about nine in the evening, after which time all good citizens were expected to be at home. Drinking-houses were closed at the same hour, and lodgers and strangers were obliged to give security for their good behaviour.

The Jews had obtained great wealth, and with it power and consideration, but they were, nevertheless, exposed to fierce hatreds. It was difficult for a fanatical and prejudiced population to understand that their riches were acquired by patient toil, self-denial, and ability. A simpler and more acceptable explanation was found by the ascription to them of sorceries and illicit arts. Their houses were, as has been already noticed in the case of the Jew's House at Lincoln, remarkable for importance, and we may suppose comfort; but this circumstance, doubtless, only added to the jealousy with which they were regarded. The Jews were nominally expelled from England by thirteenth-century bigotry, and carried for a time their riches and their talents to benefit other countries. The populations of our English towns were, at this time, small in number, and were sensibly reduced by the expulsion of the Jews. Certain families and localities became identified with particular industries. In this manner the Jews connected themselves with the goldsmith's art, the development of which was retarded by their banishment.

That which has been called the "organisation of labour" in modern times, was understood and practised in the Middle Ages, although not altogether in the spirit displayed by it in our own days. Each department of trade became a corporation or guild. Goldsmiths, carpenters, masons, smiths, and others, all had their separate societies and special rules. Apprentices were bound by the law, as well as the custom, of their craft. They were obliged to learn, and until they had proved their ability they could not work for themselves as regular tradesmen.

You are aware how the tradition of these things lingers among us still in the great City companies. The day for regulating trade in the improving spirit of the Middle Ages is gone, some of us may fear for ever, as we see the quaint excellences of the older work overborne by the fierce competition of the day, for multiplicity and cheapness. The companies, however, still stand out as landmarks. Some of them, at least, as the "Goldsmiths," have still connexion with the trade, and discharge certain public responsibilities, and I cannot but hope that a time may come when they may see their way to realise enlarged schemes of public usefulness, in reference to trades connected with art.

We need not trouble ourselves here with trade as far as *quantity* is concerned; that will always depend on the state of the world's markets, and our machinists are ever turning their attention to cheapness and incessant multiplication. What we do desiderate is *quality*. We wish to see art brought to bear, indeed, on common objects, made by hundreds and thousands; but in order that this may be done, there must be rewards for the patient workman, who will put his best work into all he does, and who will be proud of the quality, rather than the quantity, of the results. This is not the spirit which commands success in the close competition and higgling of the commercial market. It is one which needs the fostering care of intelligent and wise patrons, who are aware of the difficulties of the case, and are not to be led away by the capricious whims of fashion. To perform such honourable duties, the great livery companies of London appear to me to have special aptitudes. They have ample means, they have machinery which could easily be put into action, they have the steadiness and importance which are the results of their long-continued corporate existence. They are always ready in the cause of charity, and they have never been charged with forgetting the virtue of hospitality.

May we not appeal to them in the cause of art? Individual patrons, however willing, can do little, and must have but a fleeting influence; but I cannot conceive any object to which a portion of the great influence and resources of the City companies can be more usefully directed in the public interest than that of fostering the arts of their time, more particularly with reference to the special trades with which they are assumed to be connected, but from which they are too often divorced.

I believe great public advantages might be found to spring from a renewal of old ties. We live in times when the right of association has been definitely recognised, and when it is consequently spreading and gaining power from day to day, and it would, I think, be a clear gain to the community if we could point to trade companies, which, while upholding the dignity of commerce, would dwell upon the *duties*, as well as on the *privileges*, of labour, which would encourage art and reward excellence.

We know little of such influences now, and when we speak of trades and guilds which prescribe working rules, settle wages, and the like, we naturally think only of the modern Trade-union, by means of which the workmen gain in power by association for common objects. Scarcely a day passes that we are not called on to notice the action of these societies, and not always, it must be said, can we approve of them. No one now-a-days would contest the right of working men to form themselves into societies for the protection of their interests; but as these societies become matters of public importance, they must expect to be subjected to free criticism, and the people at large may ask the question, "Do they conduce to the public good"? All must sympathise with the honest efforts of a class to raise itself in the social scale, but we cannot believe that the right manner of seeking this laudable end is to damp the ardour of individuals; to discourage special skill; and to dream of an equality which has never existed, and can never be called into being.

The guilds of old were as careful of the interests of their men as the trade unions among ourselves can be; but the rare beauty and excellence of their work suffice to show the spirit of their rules. An apprentice had really to learn his trade, and to excel in it. He then advanced in its ranks, and ultimately became the master workman. In that capacity he dealt directly with his employer. There were no great contractors or middle-men. Huge and rapid undertakings were unknown. There was time and opportunity for the workman to take pride in his work. A rich man would take his gold to the goldsmith, who would fashion it for him, and have it guaranteed by the mark of his company. A monastery, or a great lord, who desired to build, would fell his timber and quarry his stone. He would then seek the master workman, who would find the labour and trade skill. Work was not so plentiful that his subordinates could lightly quarrel with him, and strikes, at least on a large scale, were not as yet a feature in the annals of industrial art.

It cannot be disguised that artists have much reason to look back at these things with wistful eyes. Our workmen pride themselves, and, I believe, on the whole, justly, on their skill and good sense; but we have, nevertheless, but too often to deplore the rough and careless manner of work which has become the ordinary custom of our time. The architect is the true friend of the workman, anxious for his well-being, glad to welcome his social rise, and without opposing interests. It is not his place, therefore, to utter smooth things, but to tell the truth, and in this spirit to point to the decadence of artist-like spirit and thorough execution in the common work of the day. It may be well that trade unions should busy themselves with the wages and privileges of their supporters, but the friends of our workmen would feel more hopeful if they heard more from those societies of the duties expected from them; if they found them the nurseries and loving mothers of genius; if they saw that the obligation was recognised that to earn justly a "*fair day's wage*" there should be a "*fair day's work*."

To return now to the question immediately before us. We shall find that timber was still largely used in private houses, stone being then, as now, a luxury of the wealthy. A wooden hut was for a long time the type of domestic buildings; and excepting where more solid materials were rendered necessary for safety in disturbed parts of the country, it was commonly employed for all the minor structures of the time. The great nobles, the archbishops, and abbots might, indeed, indulge a more costly taste, but lesser persons had to content themselves with wooden constructions. Brickwork was not yet common, and few early examples of it remain.

By degrees, the various materials were mixed in the construction of the same building, so that the upper part of the house would be of wood, and the lower part of stone. In such cases, the latter was contracted, as much as possible, from motives of economy, and the upper stories were projected over the substructure. It was easy to make the floor-beams longer than the rooms below them, so that their ends should project. Space was therefore gained in this way, and the lower part of the house was sheltered, and kept warm and dry. The same mode of building is followed in Switzerland and other mountainous countries at the present day, and you have doubtless often been pleased with the picturesque arrangement of outside stairs, balconies, and overhanging galleries, which such a method of building favours. We find it in some of the old inns in this country, and not long since Southwark could boast several good specimens of the class, now I fear gone, with other relics of a similar kind. An enormous number of such structures were swept away by the Great Fire of London.

The spaces between the wooden frame-work of the walls of timber houses were filled in with a plaster, of lime, sand, or mud, mixed with straw to ensure its keeping together. This was generally laid on laths, after the usual manner. Many wooden manor-houses built in this way are very picturesque, and some counties still abound with them. The roofs were of high pitch, and the chimney often took the form of a central shaft, or cluster of shafts, thus avoiding danger from fire to the wooden walls, and concentrating the heat where it was most wanted, namely, in the middle of the house. I cannot pass from the mention of this arrangement without noticing with regret a too common habit of designing chimneys in the external walls, a plan which often sacrifices the comfort of the inhabitants to an assumed necessity for picturesque design. In good houses, with thick walls, and where solidity and substantial construction have been more esteemed than cheapness, the architect may fairly employ a mode of design which he may think adds piquancy to his elevation, and often convenience to the plan; but, in other cases, external chimney-shafts are not to be commended, as I am sure many an occupant of a country parsonage, or villa, in the building of which economy has reigned supreme, has had occasion to discover.

In the manor-houses of the thirteenth century, the hall maintained the place which it had hitherto held. Here, the lord received his tenants and neighbours, here they feasted, here also, they often slept; and around the hall gradually arose the more complicated arrangements of later times. The mode of life in the

nded with sufficient success to warrant a her trial.

shall be happy to afford further information his subject if required.

F. N. BOXER, Architect,
Ed. Canadian Mechanics' Magazine.
Montreal.

IR,—My attention has been drawn to a letter ied "Charles Pinn," in your paper of the h of February last.

Iy house was landed at Exmouth, and I am aware that any other assertion in that letter orrect.

Iy publishing the letter in question, you point out as an exponent of a new idea that has ed.

beg to point out to you that there is nothing r in my building a house like other people, hough those other people may be Norwegians, edes, Swiss, Russian, or American. I have hotograph before me of a wooden church built he twelfth century, and yet in existence. I not originate the idea of building that church wood, or the wooden houses that have been lt for centuries by the nationalities I have ntioned. Your correspondent writes that the a has not been taken up in this country. I not a builder, and it is not my business to the idea adopted, and it is a matter of moment to me whether my example be fol- ed or not. If, however, facilities were rded, at a proper cost, of building similar ses, they would be built; and I say this itively, as I receive more letters than I can ly to asking me to get such houses built.

cannot see any failure in my action in the ter. I have lived in the house that your respondent condemns for five years nearly. m perfectly satisfied with it, and, as far as I concerned, it has been a success beyond my ectations. It may occur to you that there is reason why my house should be a failure, ause it is built in England and not in a foreign d.

Iy only reason for writing is to protest against ng written at as a person who has failed; l, having made this protest, I have not time further correspondence.

JOHN FULFORD VICARY.
North Tawton, Devon.

SUNDERLAND SCHOOL BOARD.

IR,—Here is a grand chance for some archi- 's pupil:—

The Sunderland School Board will give 10*l.* l 5*l.* for the second and third best plans for igning a school to cost 10,000*l.*, and into the gain they claim the first designs (if it be otly what they want) for 20*l.*, the same "to ome the absolute property of the Board. The ard do not bind themselves to employ the hor."

There's a chance; they will give 10*l.* more for king your brains if it be exactly what they at.

n 1873 they invited architects to compete for first school; and thirty-four innocent archi- ts, thinking they would be engaged, sent in ns. Two Fellows of the Institute got the ond and third premiums, and an auctioneer l brickmaker the first, who has been able to all their work until now, when it appears they in want of more help.

So in and win.

send the Editor my card, and I hope the npetitors will do the same.

STRAIGHT TIP.

OUR LORD CROWNED WITH THORNS" AT ST. PETER'S, EATON SQUARE.

IR,—The bartering of the heirloom of this rch for an income of less amount than a nday morning's collection is a notable incident. ur report of the churchwardens' application a faculty tells how the picture was removed m its original position as an altar-piece, pro- ly to make room for a more fashionable oration. Then it was stowed out of sight in gallery, except for a time when the Royal ademy accepted it for exhibition. Now Sir F. ant acquires it for 1,000*l.*, and by leave of the nistory Court the dividends arising therefrom l be applied in "ornamental decoration."

The writer has no acquaintance with the rch or the picture, but the above facts show t it is a valuable example of one of the last the Old Masters,—one who is remarkable for ious purpose and individual style. When it is added that this was a gift by the British Institution at the opening of the church more than fifty years ago, it seems impossible that any reredos, painted window, or other decoration whatsoever can possess any fitness or beauty that can be weighed in the balance with the claims of the subject, the artist, the donors, and the long local association of this despised treasure.

The process of denuding churches and crowding museums has had a long day, and the public collections are wearisomely redundant of pictures of the leading subjects of sacred art. Would it not be well rather to exhibit some of these on the naked walls of our churches and cathedrals, instead of taking from the latter even that which they still have? The decoration of St. Paul's Cathedral seems to have vanished as an unsolved question; but perhaps the "coldness" of the interior would be overcome by the same expedient we adopt in our dining-rooms of hanging upon the walls the very best paintings we can procure.

H. GUNDRY.

COST OF WATER TO BUILDERS.

SIR,—Permit me to call the attention of builders to the recent changes in the charges made by the water companies for supplying water to builders for the erection of new buildings.

The charge used to be 1s. per rod for brickwork and 1d. per yard cube for concrete, making a job of about 5,000*l.* cost for water 60s. to 70s. Now a change has suddenly been made, and a charge is made on the value of the building irrespective of the water it may require, at the following rates:—3*l.* 10s. for a house costing 1,200*l.*; and above that amount 5s. per cent.; and one company 6s. per cent.; making (say) a 5,000*l.* job cost for water as follows: up to 1,200*l.*, 3*l.* 10s.; 3,800*l.*, at 5s. per cent., 9*l.* 10s.; total, 13*l.*

Now, sir, irrespective of this charge being, as I think, enormous, it is not fairly adjusted; for a building with an elaborate stone front, or with a large amount of iron in its construction, requires very little water so far as the stone and ironwork are concerned; or, suppose the exterior was of polished marble and the interior fittings of Spanish mahogany, why should the public pay for this to the water companies? Surely the fairest way would be to pay for the water used; say a moderate price per 1,000 gallons.

This is a question that concerns the public more than the builder, for they must ultimately pay for it; so the sooner public attention is awakened in this matter the better.

A.

P.S.—I know of two large jobs where, in consequence of the high rate of the water company, the builders sank wells, and obtained an abundant supply for something less than a quarter of what the company's charges were.

The following is a list of charges:—

New River Company. Estimate of cost of building.		Southwark and Vauxhall Water Company. Estimate of cost of building.	
£100	10s. each.	£100	13s. each.
125	13s. ,,	125	15s. ,,
150	15s. ,,	150	18s. ,,
175	18s. ,,	175	21s. ,,
200	20s. ,,	200	25s. ,,
225	23s. ,,	225	30s. ,,
250	25s. ,,	275	32s. ,,
275	28s. ,,	300	34s. ,,
300	30s. ,,	325	36s. ,,
325	32s. ,,	350	39s. ,,
350	35s. ,,	375	42s. ,,
375	38s. ,,	400	44s. ,,
400	40s. ,,	450	46s. ,,
450	42s. ,,	500	56s. ,,
500	45s. ,,	600 to £700	63s. ,,
600 to £700	50s. ,,	800 to 900	84s. ,,
800 to 900	60s. ,,	1,000 to 1,200	105s. ,,
1,000 to 1,200	70s. ,,	Above 1,200 ...	6s. per cent. additional.
Above 1,200 ...	5s. per cent. additional.		

CAUTION.

THERE is a petty larceny rogue going about obtaining small donations from builders and old material purchasers by pretending to be a clerk in an architect's office able to introduce them to business. This is a mutual annoyance to the architect and the persons whom he sends. A notice in your widely-read paper will, it is hoped, put a stop to his trade. The writer has had for some weeks three or four letters daily, besides visits from disappointed inquirers. From some the rogue has levied 1s., from others as much as 2s. 6d., and, being a thirsty soul, when he could not obtain money, he has asked for the price of a glass of beer. I wish that some one would introduce him to the police and stop his practice.

R.

CEMENT AND IRON.

WILL any of your readers inform me of a cement that will not readily dry up and crack when exposed to the weather, and is sufficiently adhesive to stick to galvanised iron when placed in joints of sheets? I have tried white and red lead, but they always dry rapidly, and fall out of the joints.

C. P.

ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of this society was held on Wednesday afternoon last, in the rooms of the Royal Institute of British Architects, kindly lent for the occasion. In the unavoidable absence of the president, Mr. Sidney Smirke, R.A., the chair was taken by Mr. George J. J. Mair, F.S.A., treasurer.

The annual report, which was proposed for adoption by the chairman, stated that the hope expressed by the Council in their report for the previous year,—that a large increase would accrue to the Society's funds in the year then entered upon,—had hardly been realised. So sad appeared to be the prospects of the Society that the Council resolved upon issuing a special appeal, the result of which would be made known in the report for the current year. Without anticipating what might be said in that report, the Council had reason to be thankful for the way in which the appeal had been so far responded to. During the year 1876 the Council had received, in donations, 98*l.* 1s. 6d., and in annual subscriptions 220*l.* 5s., there being a small increase in the amount of the donations as compared with that of the previous year, but a decrease to the amount of six guineas in the subscription. The total income for the year, including these items, together with 63*l.* 18s. 9d. dividend on invested funds, and 78*l.* 1s. 10d. balance brought forward from last year, was 440*l.* 7s. 1d., whilst the total claims on the Society had been 408*l.* 9s. 8d., leaving a balance of 31*l.* 17s. 5d. in hand as compared with 78*l.* at the date of the previous report. Twenty-one applicants were relieved during the year, against twenty-six in 1875.

The report was adopted, together with the balance-sheet, and it was announced that the following members of the Council retired by effluxion of time, viz., Messrs. D. Brandon, J. H. Hakewill, Harry Oliver, John S. Phené, and D. Mocatta. In their stead Messrs. Chancellor, George Godwin, Isaacs, Scamell, and H. Saxon Snell were unanimously elected.

Messrs. J. S. Lee & T. E. Knightley were elected auditors for the ensuing year; Messrs. T. Usher, of Bedford, and — Thompson, of Newcastle, were elected corresponding members of the council: the president and other officers were re-elected; and votes of thanks were given to the president, council, and officers for their services; to the auditors for the past year (Messrs. Christopher Eales and E. C. Robins); and to the Royal Institute of British Architects for their kindness in granting the use of their rooms for all the meetings of the Society.

It was incidentally stated that in response to the special appeal which was recently made for funds, between 300*l.* and 400*l.* had been received, although the appeal had only been partially made and responded to as yet. This was generally regarded by the speakers who took part in the discussion as exceedingly satisfactory.

Mr. Robins suggested that application should be made to some of the seventy-eight City companies; many of them would, he was quite sure, help the Society.

Mr. Edwin Nash coincided, and said that he had succeeded in getting his company to give thirty guineas to the Architectural Museum.

Mr. Robins said the subject of the Architectural Museum came before a company of which he was a member, but it was not thought to be "particularly necessitous." This could scarcely be said of the Architects' Benevolent Society.

The meeting closed with the usual vote of thanks to the chairman.

"THE PULLEY OF THE FUTURE."

SIR,—My attention having been directed to a letter under the above heading, which appeared in your paper of the 24th ult., signed "Edmund Beckett," I feel myself called upon to reply briefly to the statement made by that gentleman.

I do not propose to go into details upon the question he has raised, as, in the first place, it would be an intrusion upon your valuable space, and, secondly, I prefer to hold in reserve such detail to adduce elsewhere, should I find it necessary to do so.

Sir Edmund Beckett has not only volunteered the statement that I am not the "true and first inventor" of the pulley in question, but he invites competitors in the same line to infringe the privilege which the law has exclusively accorded to me.

However, in answer to Sir Edmund's unqualified statement, I shall simply say that I *am* the true and first inventor, and, as a matter of courtesy only, I invite Sir Edmund Beckett, or any friend of his, to call at my house and read his own two letters of April 20th and 28th, 1874, and also a letter of Messrs. Longmire & Burge, of November 6th, 1874. The reading of these letters, I venture to think, would refresh the memory of Sir Edmund Beckett, and induce him, I hope, to withdraw the detrimental statement he has made regarding me as a tradesman, to say nothing of the imputation he has cast upon my character.

J. F. MEAKIN.

A Large Oak Tree.—A few days ago the Tyberton timber was sold. The sale was rendered specially interesting from its including the "Monarch Oak," said to be the largest tree in Herefordshire. The reason for cutting down this King of the Forest was because it has been three times struck by lightning within the last seven years, and though these repeated attacks have shattered a great part of its top, it still contains upwards of 1,000 cubic feet of timber; its girth is 66 ft.

SCHOOL OF ART NEEDLEWORK EXHIBITION.

The collection of Art Needlework just now arranged for exhibition in the rooms of the school at Kensington, presents so brilliant and attractive a *coup d'œil* that the eye of the critic who works not with the needle, and is a stranger to the mysteries of the craft, is at once taken captive, and his judgment for the moment subdued to indiscriminate admiration. When we reflect what sort of work ladies used to do twenty years ago, and look at the beautiful design and elaborate workmanship (or workwomanship) of many of the articles exhibited here, it seems perfectly ridiculous for pessimist critics to say that there has been no advance in art, that there is no real art in the present day, and so on. It is only when our judgment is a little sobered down by familiarity with the show that we note in a cooler and more critical mood one or two points in the character of the designs which are open to question. Such an exhibition as this may, no doubt, be taken as meant to show all the possibilities of needlework. One of these, however, is the possibility of attempting too much. For instance, as to figures. Take No. 1, panels for a cabinet, two figures called "Rose" and "Daffodil," designed by Mr. Walter Crane, of which the latter is much the best. Is it desirable to work figures with mouse-coloured flesh, and in which the anatomy of the body so far as it is seen (arms and hands, for instance), cannot be truly given? Mr. Crane's designs for large figures, "Salve" and "Vale," for Portière curtains, suggest to some extent a similar question. The figures are fully draped, and the action good, but the faces absolutely expressionless. We only know the idea they are meant to represent by the scrolls they hold up, and the symbol of the rising sun in one and the moon and stars in the other. This is an illustration of what some critics have truly said, that decorative art is bringing upon us the use of the figure as a mere accessory of decoration, without its higher human expression. It is worth while to note this,—to remember that needlework has its artistic limits. The representation of artificial objects which should be absolutely symmetrical, again, is not the best application of the art; see the "wall-hanging representing the elements," for instance, with the candelabrum of which the lines are all crooked and twisted. Needlework, we think, is not best employed in representing objects in which bi-fold symmetry is essential; on the contrary, it is particularly suited for a certain freedom and irregularity of design, a symmetry without complete symmetry, as we may say.

This is well illustrated in the very rich and fine curtain design at the end of the large room opposite the entrance, and in the furniture that stands under it, the sofa especially. Still more finely are the true qualities of needlework, and its proper relation to nature, shown in the magnificent piece of work (111), founded on the honeysuckle, designed by Mr. W. Morris. Here the suggestion of the natural flower as to form and colour is worked up into a design of remarkable richness, and of a character completely suited to the process and the material, and the management of the materials so as to produce the fine gradations of colour and shading is such as to involve almost what we might call an intellectual effort, in addition to the beauty and elaboration of workmanship. Another piece of work from the design of Mr. Morris (No. 31) strikes us as very admirable; it is a wall-hanging based partly on foliage of the acanthus type, worked in outline on "Bolton Sheeting"; it is difficult to believe, on only a close examination, that materials so comparatively coarse should have such a rich and even sumptuous effect when seen at the proper distance. Mr. Aitchison (to give due honour to the architects) is the designer of an admirable quilt, in which pomegranate and sunflower are employed, and of one or two other objects distinguished by excellent taste in colour and design.

Another question that suggests itself to us from the critic's point of view, is that ornament should be proportioned in richness and value to the position it is to occupy. A wall-hanging may rightly show any amount of elaboration; it is always before the eye. But to put a very beautiful and delicate ornament on the seat of a chair, for example, seems a mistake. A chair is meant to sit on; but in this case you are called on to admire the ornament so much that you are almost afraid or ashamed to sit upon it; and, at all events, the moment you put the article to its proper use you lose sight of the ornament. We make a suggestion, too, as to the use of the word "art" as a distinguishing epithet. We see in the rooms some very admirable specimens of furniture designed by Mr. Norman Shaw, and called "Art Furniture." Why not simply "Furniture"? All furniture properly made and designed would have the qualities which are meant to be implied in the term "Art Furniture," and all furniture ought to be properly made and designed; and the same criticism applies, not so strictly perhaps, but in great measure, to "Art Needlework." To use this distinctive appellation is to recognise the existence of furniture and needlework which are not artistic; which is exactly what we want to get rid of. We want it to be a *sine quâ non* that everything has its artistic principle and method, without which it is worth little.

SURVEYORSHIP ITEMS.

Wednesbury.—At a meeting of the Wednesbury Local Board on the 5th inst., the committee of the whole Board appointed to investigate the charge against the surveyor (Mr. Fereday) reported thereon. As we have already stated (p. 105, *ante*), the charge was made by a member of the Board (Mr. Stevenson), who alleged that the surveyor was interested in certain contracts in the neighbouring town of Coseley. The committee reported that, having heard the evidence of Mr. Stevenson's witnesses and the statement of Mr. Fereday himself, they had arrived at the conclusion that the surveyor was to a great extent open to blame. Nevertheless, taking into consideration his long services (between sixteen and seventeen years), they felt that a strong reprimand would meet the case; they felt that he had to a great extent committed himself, but they did not believe he had derived any profit, in a monetary sense, from his transaction with Harthill, the contractor concerned. A discussion extending over two hours took place. Ultimately it was resolved that the report be referred back to the committee for reconsideration, and be brought up again in eight weeks' time.

Richmond.—At a special meeting of the Richmond Select Vestry, on the 6th inst., the committee to whom the sixty applications for the appointment of surveyor were referred, presented a printed analysis of the applications, with a report stating that they had examined the letters and testimonials of the applicants, and considered the following to be the most eligible candidates, viz.:—Mr. Alfred Creer, of Halifax, salary required, 250*l.*; Mr. A. F. Goldsmith, of Brixton, salary required, 200*l.* for first two years; Mr. Samuel Mathers, of Surbiton, salary required, 250*l.*; Mr. F. S. Brunton, of Durham, salary required, 250*l.*; Mr. Charles F. Wike, of Leicester, salary required, 230*l.* to 250*l.*; and Mr. William J. Ellison, of Liverpool, salary required, 250*l.* After some discussion it was resolved to ask the whole of the selected candidates to attend a special meeting of the vestry. The *Richmond and Twickenham Times* commenting on the discussion, says:—"As to the salary of the future surveyor, Mr. Dermer spoke to the point when he said, if it were necessary, 'The Vestry ought not to shut up their pockets at 250*l.* if they found a suitable man.' A sound and thoroughly competent road-maker, at an annual salary of 300*l.*, would certainly prove a far better investment to the ratepayers than an indifferently efficient servant at 200*l.* per annum. Here indeed cheeseparing would be a terrible mistake." Local papers do not always write so sensibly on such points.

Books Received.

Pioneer Engineering. By Edward Dobson, Assoc. Inst. C.E. London: Crosby Lockwood & Co. 1877.

The key-note of Mr. Dobson's present work is, "There is nothing very attractive in the life of a pioneer engineer. The duty is generally very hard, the pay scanty, and the work quite unappreciated by the public. But there are few ways in which a man can spend his life more nobly, more usefully, and more happily, than in devoting his practical skill and scientific knowledge to the preparation of a new country for the healthy and prosperous settlement of thousands of his fellow-creatures. To those so engaged the author dedicates these pages, which embody the experience of a quarter of a century, with a hearty prayer for God's blessing on their work." And we think the author does well to impress on those engaged on pioneer work that their aim should be, not the construction of great works which will bring them professional credit and reputation, but the careful study of the features of the districts under their charge, so that, by the avoidance of all unnecessary works they may be instrumental in facilitating settlement, and on opening up the country out of current land revenue rather than by means of borrowed capital, the use of which, in countries like Australia and New Zealand, should be confined to the execution of reproductive works.

In three chapters the general work of surveying and levelling and setting out curves is set forth, being followed by instructions in the art of selecting the best lines for roads and railways and for town sites, and on the storage of water, on drainage, and on town sewage, with chapters on carpentry, masonry, tunnelling, and pile driving. It must have been much more easy to treat of those first subjects and of these last than of those which are intermediately placed, for in a new country people want to get to work and earn money, no matter how, and are impatient of advice in things the necessity of which is not at once apparent. Therefore, however necessary the engineer may know it to be that a town site should be drained, he is, after stating what should be done, forced to admit that "It is not easy to see how these desirable objects are to be carried out, if town-lands are sold without any conditions respecting levels or drainage; and it would be much better, in all cases of new townships, that the levels of the streets and of the public drains should be carefully defined previously to the sale of town lots. Very great advantage would, no doubt, arise if the streets in all new townships could be brought to their proper levels before the sale of the adjacent lots; the cost of these works being made the first charge upon the purchase-money;" and the experience of the author enables him to say that in most cases the improved value given to the land when the streets are formed and drained before beginning to build upon the land would be more than sufficient to recoup the outlay.

Mr. Dobson's well-known ability and long practical experience in the colonies, as well as at home, entitle "Pioneer Engineering" to the attention of not only intending emigrants, but of the Colonial Office.

Lessons on Electricity. By Dr. John Tyndall, F.R.S., London: Longmans, Green, & Co. 1876.

With some amplification we have here the substance of the Christmas Lessons on Electricity at the Royal Institution, almost every page of the little volume being illustrated by woodcuts of the apparatus used in the demonstrations of the Professor. The descriptions of the experiments are remarkably clear and concise.

The Theory and Action of the Steam Engine. By Henry Northcott. Cassell, Petter, & Galpin: London, Paris, and New York.

The steam-engines we at present make transmit to the machinery only about a tenth part of the energy given out by the coal consumed, and the author thinks it is not easy to account for the slight increase of efficiency attained since the time of Watt, but suggests that "it may have arisen to some extent from engineers not having kept steadily in view the functions actually fulfilled by the steam-engine in the transformation of energy;" and in this little treatise he traces the energy liberated by the combustion of fuel through its several phases, to indicate the sources of its present wasteful dissipation, and to show how such waste may be minimised.

The book is of a thoroughly practical character and although it does not deal with the steam engine as a machine, it is, what it professes to be, a useful treatise on its theory and action written for practical men. The author's conclusion as to the efficiency of a thoroughly good modern engine working steam of 100 lb. absolute pressure, or 85 lb. above the atmosphere (not 75, as is erroneously set down on page 59), expanded without liquefaction down to the back pressure, and condensing it, the efficiency of the furnace and boiler being 0·8; the heat due to the coal is approximately disposed of as follows:—Lost by imperfect combustion, radiation from furnace, and carried off by chimney gases, 20 per cent.; radiated from boiler, pipes, cylinder, &c., 2 per cent.; carried to condenser, and to waste in the exhausted steam, 63 per cent.; converted into indicated power 15 per cent. This, says the author, is equivalent to a consumption of little more than one pound of good coal per indicated horse power per hour.

Miscellanea.

The Twin Sanitary Door." — The ct of this invention is to isolate water-ts and apartments in hospitals, dwelling-es, and other buildings from other parts, as ds air, effluvia, and sound, by means of doors in conjunction with suitable mechan-in such a manner that they will close or simultaneously. When such doors are d, an automatic arrangement of mechanism ediately opens a valve and allows a free lation of air to pass by means of a suitable nel provided for that purpose, from the de of the building between the doors; or, he case of injections, effluvia, or germs of se being supposed to be present, the valve ployed for the admission of fumes, vapours, ases of a disinfecting nature, which are uced in the chamber in which substances ble of evolving such fumes, vapours, or s are placed. The doors thus employed are at a suitable distance from each other, and inlet valves are inserted in the upright gs or jambs, an outlet ventilator being d in the upper part, under the lintel, in to create the requisite current of air.

rmingham Engravers.—The Royal So- of Artists of Birmingham will include in spring exhibition specimens of the works e line-engravers who were born there. Few ns probably have any idea that Birming- has produced thirteen of the foremost avers of the present century, embracing the known names of John Pye, J. T. Willmore, A., A. Willmore, Thomas Jeavons, C. W. pe, W. and E. Radclyffe, J. B. Allen, el Fisher, Thomas Garner, R. and E. P. dard, and J. Goodyear. No fewer than 300 mens of their works have been brought to- by the Messrs. Graves, of Pall-mall, and bly arranged by Mr. Algernon Graves. t or nine of the most important works are avings issued by the Art Union of London, ding "The Smile" and "The Frown"; west in the Highlands"; "Italy"; mlet"; "Dutch Trawlers"; "The Death olson"; and others.

chibition of Arrangements for Heating Ventilation at Cassel, Germany.—This bition of heating and ventilating arrange-s and apparatus for dwellings, workshops, ls, churches, hospitals, public buildings, and n, will be held in the large halls of the gerie Palace, in the Carlsaue Park. It will de,—1. Central heating apparatus for entire ings. 2. Stoves only intended for the warm- f rooms or other spaces, and all arrange-s for ventilation, not forming component of central heating apparatus. 3. Stoves ded with arrangements for boiling, for al trade purposes; stoves for workmen's ings and cottages; and cooking-stoves, , or ranges of new and peculiar construc- This exhibition will open on the 1st of , and will close at the end of August, 1877. sh exhibitors can apply to Mr. B. D. rgill, engineer, Felsberg, Cassel.

icklayers' Technical Education Classes. ll-attended meeting was held at the Lecture- Greenwich, on Monday evening, in further- of this movement. Dr. Baxter Langley ied the chair, and in the course of his re- s alluded to the stir that was evidently on amongst the City guilds, who doubtless g heard of the establishment of these classes ht it was time that they should take some in the matter. Mr. F. E. Thicke, presi- f the classes, gave an account of the origin e movement, and after the Rev. H. Solly, ardner, Mr. Berry, Mr. Woodley, &c., had n, the names of forty-seven students to form l class were entered, and the 1s. entrance- as taken from each candidate.

esentation to Mr. James Edmeston.— dinner of the Gas and Water Committee of orporation of London, given a few days at the Guildhall Tavern, a gold watch was nted to Mr. Edmeston, bearing the follow- scription:—"Presented to James Edmes- Esq., F.R.I.B.A., by the Gas and Water mittee of the City of London, as a mark of m and regard for the efficiency with which charged the duties of Chairman, 1876."

e Office of Works.—According to the the Surveyorship in Scotland, vacant by ath of Mr. Matheson, has been conferred Mr. Robertson, Assistant Surveyor in n.

Royal Aquarium, Westminster. — We understand that Mr. John T. Carrington has been appointed "resident naturalist" to the Royal Aquarium Society, Westminster, in place of Mr. W. Saville Kent. Mr. Carrington has for the last year been studying Aquarium management with Mr. W. Alford Lloyd, at the Crystal Palace Aquarium.

Mayer Free Library, Bebington. — The success of the library having been great, the founder, Mr. Joseph Mayer, F.S.A., of Pennant House, Bebington, has presented to the hon. librarian, Mr. Miles Pilling Elsby, a silver goblet, as an acknowledgment of his services, on which is engraved a suitable inscription. The library was opened on the 1st of January, 1866.

River Weaver Navigation. — At the monthly meeting of the Weaver trustees, on the 5th inst., Mr. Lionel Bury Wells, of Pembroke, and formerly engineer in connexion with the construction of the Runcorn Bridge, was appointed engineer of the River Weaver Navigation, in the place of Mr. J. Watt Sandeman.

Fall of a Public-house.—On Monday evening a public-house suddenly fell down in Commercial-road, Portsea. An additional story was being erected, and just as the workmen had left off for the day the whole of the front wall fell into the street. No person was injured.

The Statue of Sir William Fairbairn has been completed by Mr. Geflowski, who obtained the commission in competition with other sculptors. The statue is 8 ft. high, representing Sir W. Fairbairn standing with papers in his hand as if delivering an address.

Cleopatra's Needle. — At the meeting of the Civil and Mechanical Engineers' Society on the 15th inst., a paper was read by Mr. John Dixon, on "The Means of Transport from Egypt and the Erection in London of Cleopatra's Needle."

Oundle.—The Urban Sanitary Authority have appointed Mr. H. Robinson, C.E., and Mr. J. C. Mellis, C.E., of 7, Westminster Chambers, to prepare a scheme for the sewerage and drainage of the town, to meet the requirements of the present sanitary laws.

Society of Lady Artists.—The exhibition for the current year is open at 48, Great Marlborough-street, and deserves a visit. It consists of 715 paintings and drawings selected from nearly 1,300 that were submitted. We will give a few particulars in our next.

Society of Arts.—On Wednesday evening, March 14th, a paper on "The Treatment of Town Refuse and Sewage," by Professor Ansted, F.R.S., was read.

Tercentenary of the Birth of Rubens. The tercentenary of the birth of Rubens occurs in August. Preparations are being made at Antwerp for the due celebration of the event.

TENDERS

For a residence in the Greetwell-grove, Lincoln, for Mr. Wm. Ashley. Messrs. Goddard & Son, architects. Quantities supplied:—

Barnes & Wright	£2,730	0	0
Martin & Sims	2,639	0	0
Otter & Elsey (accepted)	2,389	0	0

For a new Scotch kiln and taking down and rebuilding chimney-shaft, exclusive of all materials, for Messrs. Swan Brothers & Bourne, Patent Brick Works, Burton-road, Lincoln. Messrs. Goddard & Son, architects. Quantities supplied:—

Martin & Sims (accepted)	£366	0	0

For a new Temperance-hall, High-street, Lincoln. Mr. Wm. Watkins, architect. Quantities supplied:—

Brown	£1,140	0	0
Brooks	1,120	0	0
Taylor & Sons	1,100	0	0
Martin & Sims	999	0	0
Otter & Kent	983	0	0
Pearson	980	0	0
Close (accepted)	975	0	0
Chambers	854	0	0

For a villa residence, Temple-gardens, Lincoln, for Mrs. Rudgard. Messrs. Goddard & Son, architects. Quantities supplied:—

Otter & Elsey	£1,188	0	0
Barnes & Wright	1,185	0	0
Martin & Sims (accepted)	1,140	0	0

For the foundations and basement walls of the West End Synagogue, Petersburg-place, Bayswater. Messrs. N. S. Joseph & Pearson and Messrs. Audsley, joint architects:—

Newman & Mann	£1,365	0	0
Browne & Robinson	1,230	0	0
Adamson	1,050	0	0

For proposed alterations at the Jolly Farmers, 58, Cumberland-market, Regent's Park. Mr. James R. Furniss, architect:—

May	£342	0	0
Gould & Brand	341	0	0
Hyde	335	0	0
Somerville & Smith	329	0	0
King (accepted)	228	0	0

For erecting four pairs of villas with boundary walls, Camden Grove estate, for Mr. Daniel Cronin. Messrs. Spalding & Knight, architects. Quantities by Mr. G. Fleetwood:—

Colls & Son	£8,953	0	0
Gammon & Sons	8,181	0	0
Adamson & Sons	8,150	0	0
Nightingale	7,917	0	0
Thompson	7,775	0	0
Dove Brothers	7,749	0	0
Tarrant & Sons	7,632	0	0
Downs & Co.	7,570	0	0
Shepherd (accepted)	7,391	0	0

For erecting a village club, Roehampton. Messrs. Spalding & Knight, architects. Quantities by Mr. G. Fleetwood:—

Nye	£1,124	0	0
Adamson & Sons	975	0	0
Shepherd	950	0	0
Pain	948	0	0
Harvey	943	0	0
Aries	917	0	0
Sutton	875	0	0

For building a babies' classroom to All Saints' National Schools, Childs'-hill. Messrs. Spalding & Knight, architects. Quantities by Mr. G. Fleetwood:—

Batho	£288	15	0
Burford	240	0	0
Lovell	228	0	0
Colliver (accepted)	198	0	0

For iron pipes for the supply of water to Lyme Regis. Specifications and quantities by Mr. W. Langford:—

Bridle & Son	£308	0	0
Crokam	297	7	0
Boon	256	0	0
Rowse	243	12	0
Foxwell	229	10	0
Strickland (accepted)	195	0	0

For a warehouse for Rust's Mosaic Works, Albert Embankment. Mr. C. Young, architect:—

J. & T. Lister	£989	0	0
Grimwood & Sons	961	0	0

For erecting lodge and offices for the Manor Park Cemetery Company (Limited), Little Ilford, at the Western or Forest-gate entrance to the cemetery. Mr. Herbert J. Jones, architect. Quantities by the architect:—

Shapley	£1,010	0	0
Stamp & Bowtle	993	0	0
Webb	989	0	0
Winters	895	0	0
Warr (received too late)	873	0	0
Williams (accepted)	777	0	0

For wharfing at Mr. J. T. Morton's manufactory, Millwall, under the superintendence of Wm. Eve, architect:—

Sheffield	£360	0	0
Salt (accepted)	326	0	0

TO CORRESPONDENTS.

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We are compelled to decline pointing out books and giving addresses.

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GOOD FRIDAY.

"THE BUILDER," for the week ending MARCH 31st, will be published at ELEVEN a.m. on THURSDAY, 29th instant. Advertisements for insertion in that Number must therefore reach the Office before **THREE p.m.** *on WEDNESDAY, the 28th.*

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R. J. CHEESEWRIGHT, Clerk.
Town-hall, Croydon, March 7, 1877.

BOROUGH of WARWICK.—To SURVEYORS.—The Warwick Town Council are prepared to receive APPLICATIONS for the Office of SURVEYOR. Persons desirous of filling the Office, in accordance with the provisions of "The Public Health Act, 1875," and the Bye-laws of the Council, and devoting the whole of their time to the duties of the office, are requested to forward applications to me (superscribed "Surveyorship") on or before MONDAY, the 26th instant, stating age, residence and qualifications, accompanied by testimonials. None need apply who do not possess a thorough knowledge of Building, Road-making, Drainage, Water Service, and other Works in connexion with the improvement and general management of towns. Salary, 150*l.* and a house. Security will be required. No person over forty-five years of age need apply. Any further information may be had upon application to me. By order of the Town Council,
GUARTELL GREENWAY, Town Clerk.
Jury-street, Warwick, 5 th March, 1877.

ASSISTANCE WANTED, by an Architect.—None need apply unless thoroughly practical, as well as useful in designing Gothic villas.—Address, stating terms, X. Y. Z. care of Mr. Edwards, No. 1, Adelaide-place, London Bridge

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FOREMAN or MANAGER (Builder and Decorator).—WANTED, at the West End, a competent, steady, energetic Man, to Assist Principal, who takes an active part. Joiner by trade preferred. Address, stating terms, where and how long in last employ, No. 130, Office of "The Builder."

SHOP FOREMAN of JOINERS Wanted, where over fifty are employed.—Address, stating age, terms, and previous engagements, No. 127, Office of "The Builder."

SHOP FOREMAN of JOINERS Wanted. Must be energetic, sober, accustomed to machinery, able to read working drawings, and quick at setting out.—Address, G. care of Mr. Pilcher, Newsagent, 134 Grays-inn-road.

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TRAVELLER (Timber Trade).—Wanted an energetic Man.—Send full particulars, salary, &c. to S. M. at Mr. Drewett's, Stationer, High street, Borough, S.E.

TIMBER TRADE.—WANTED, an active intelligent, young MAN, who understands the nature of counting house work, and occasionally to call on Builders, &c., thoroughly knowledge of the business required, and unexceptionable references.—Address, stating age, wages, and previous occupation, W. & J. R. HUNTER, 57, Moorgate-street, E.C.

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CARPENTERS and JOINERS (several good) WANTED.—Apply to WILLIAM HAWKINS, Builder and Contractor, Brackley, Northamptonshire.

The Builder.

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Bronzes at South Kensington.

THE catalogue of European bronzes at the South Kensington Museum, which is just published,* adds another to a list of illustrated catalogues, whose number and bulk are getting rather alarming, and which, if they are carried out on the same scale for every department of the Museum, will almost require a separate library to themselves. To say truth, we do not quite understand the *raison d'être* of these large and expensive catalogues—for whom and for what purpose they are published. The introductory essays are generally very good, and convey a great deal of information very clearly, and these are published separately in a cheaper form. But of the catalogues, as far as we know, only these expensive forms exist; the necessity for a catalogue being probably supposed to be superseded by the full particulars in regard to each object given on the ticket attached to it. Indeed, the illustrated catalogues are often, to a great extent, only a reprint in a book of the descriptive tickets, though sometimes a good deal more is added in regard to some object of especial value or curiosity. Yet still we ask, *cui bono?* Here is a book containing a catalogue of one portion only of one class of objects in the Museum; a large, thick, expensive book, containing 250 pages of letter-press, on very thick paper, with very wide type, and making a handsome volume, no doubt, "very noble," but not of much use that we can see. For a mere book of reference, it is much more sumptuously got up than is at all necessary; for a catalogue to study along with the objects, it is far too bulky. The National Gallery catalogue contains more information in a shape that may be conveniently carried in the hand; and it would surely be to more practical purpose if the whole of at least of one section of the articles in the Museum,—the whole of the bronzes, for instance,—were described in a single volume half the size and weight of this, as might easily be done. There may be a demand for these large volumes beyond what we know of; but after having several of them before us, and perceiving that, if the system is fully carried out, there must be a good many more to come, and it being evident that a great deal of money must be getting spent over them, we are certainly rather moved to consider what practical purpose they are to serve.

This question has the more point, as it seems to us, on account of the defect which pervades the Museum, and which we have more than once called attention to, in regard to the arrangement, or rather the want of any systematic arrangement, of the objects in the building. This defect takes away at once one-half the use of a catalogue, which is either to give an explanation of an object which we have already seen, or to inform us what there is to see. Now, for this latter object the South Kensington catalogues are useless, simply because when you have found mention in the catalogue of an object you wish to see, there is not the slightest clue as to where to find it. The thing we want may be in any corner in any number of cases spread over a large floor space, or it may be hidden away in some quite separate position where it happens to come in ornamentally. The articles are elaborately numbered, and there is an index of consecutive numbers at the close of the catalogue, but the numbers have not the remotest connexion with the collocation of the articles *in situ*. We have before now spent a whole morning in endeavouring to find an object minutely described in one of the previous catalogues; and after going away unsuccessful, we stumbled upon it on another occasion in a position quite apart from everything else of its class. Suppose that a stranger to the Museum, reading the remarks about Ghiberti's gates in the introduction to the Bronzes Catalogue, and having heard that there is a copy of these in the Museum, turns to the catalogue to discover where they are. He will find no allusion to them, because they come into the "Reproductions" Catalogue; although, as their artistic connexion with the study of the subject is much more important than the mere fact that they are fac-similes and not originals, it would seem far more logical to add to the catalogue of original objects in each class that of the reproductions of works of the same class. If our stranger gets the "Reproductions" Catalogue, he will there find, probably, that there are reproductions of four specimens of bronze gates, of which Ghiberti's is one. If, after ascertaining this, he walks all over the courts, keeping his eyes about him, he will in time discover, if he is fortunate, that Ghiberti's gates are hidden in a sort of nook formed by other large objects, which project on either side of them in one of the courts. He may accidentally come upon another piece in a dark ante-room, corner-wise between this and the Persian gallery, and he may find the two others, German examples, behind some large models in the Architectural Court. If the Architectural Court were the proper place, in a classifying point of view, for these two specimens, it ought to be the place for the others also. These, however, are large objects easily seen; the search for anything small is far more hopeless. The different cases and wall spaces ought to be distinguished by some letter or combination of letters which could be added in brackets at the close of the description of an article in the catalogue, so that one could go up to it and find it with little difficulty; as it is, the catalogues are useless, except for this,—that if you see an object in the Museum which strikes you, and which you want to know more about, you may, if you have expended a goodly sum in filling a whole shelf of your bookcase with very large books, find in some one of them some further information. If, however, the converse process is attempted, and in turning over your library of catalogues you read of something you wish to see, you may nearly as well search for a lost needle in a haystack. This is a serious drawback to the usefulness of the Museum for purposes of systematic study and reference; and we cannot help suggesting that some of the money expended in these large and handsome, certainly, but not very useful, catalogues, would be much more practically laid out in realising a more orderly and intelligible classification in regard to position of the object described. At present the Museum is largely used by the public as a mere place of amusement, an agreeable and interesting lounge; but if it comes to be more generally used for purposes of study, the defect we have pointed out will be generally felt, and its removal probably insisted upon.

Apart from these considerations, the introduction by Mr. Fortnum is a really useful compendium of the history of bronze-founding and other methods of workmanship with this material. The principal methods that have been and are employed in the production of bronze designs are clearly explained, and this is a most important kind of information for those who even wish merely to understand the art without practising it; since a right comprehension of what the artist has done, and judgment as to the value of his work, can hardly be formed without knowing something of the nature of the processes employed, and the practical difficulties to be contended with. We regret, however, to meet again with that pretentiousness in the use of language which seems to pervade the atmosphere of South Kensington, and which we had occasion to refer to only a week or two since in noticing a course of lectures delivered there. Mr. Fortnum is not as fantastic in his language as Dr. Zerffi, but why are we to have such an expression as "toreutic art," which only means sculpture? Why is a bronze article to be described, in the language of Shakspeare's day, as "parcel gilt," instead of by the usual expression of ordinary modern language, "partly gilt"? There really seems to be a kind of determination to avoid all plain English as much as possible; to have a language (if it may not sometimes rather be called a jargon) peculiar to "the Department." There is pretence about all this; it repels sensible people, and serves no purpose except to make simple ideas seem mysterious and unintelligible.

* A Descriptive Catalogue of the Bronzes of European Origin in the South Kensington Museum. With an Introductory Notice by C. Drury E. Fortnum, F.S.A. London: Chapman & Hall.

Whilst recognising the full and interesting information which the Introduction gives in regard to the facts of bronze art and its history, we may suggest that something might have been said with advantage as to the artistic character which bronze work should present, as distinguished, for example, from marble sculpture. This hardly seems to be enough thought of. We cannot ourselves think that the reproductions in bronze of works which have been originally designed in marble, which are so common an ornament in those houses especially (too numerous) where art is looked upon as merely supplying a higher class of ornamental furniture, have any great interest or value. Those delicacies of contour and curve which delight us in marble, and which the eye so perfectly appreciates in that material, lose their effect in bronze, owing at once to the dark colour of the material, and the sharpness of the reflected light which it gives. There is about such works (however they may serve, and have served, in helping to popularise art) a mechanical and mere *objet de luxe* appearance which is alien to the best artistic sympathies and appreciations. And this drawback applies, we think, to a greater or less extent, to works which, though original, are designed and modelled in the same style as that employed for marble. We cannot help feeling that a style suitable to one material has been applied to another with which it has not the same affinity. There is a certain specialty imparted, it is true, when the bronze statue accomplishes the treatment of some attitude which would be unattainable with safety in such a more brittle material as marble: as, for instance, in the well-known bronze Mercury, a copy of which is in the Architectural Court of the Museum, and which would be impossible except in metal. There are, perhaps, two opposed characteristics of style either of which gives a marked and distinctive character to bronze work. Either we may aim at a largeness and massiveness of style,—broad surfaces with a few bold projections, which catch the light and emphasise the main lines of the design; or we may avail ourselves of the characteristics of the material to produce a busy brilliant effect of sharp edges and contrasting lights. An example of the first style of treatment is exhibited in the Italian bronze of St. Jerome, which forms the frontispiece to the catalogue before us. This, in its broad surfaces, massive and simple character, and heavy angular folds in the drapery, is completely and essentially a *metal* statue; it is completely satisfactory in style considered as a work in bronze, though if a fac-simile were executed in marble it might be called deficient in finish. Some of the early and rude German bronzes in the Museum, also partially illustrated in the catalogue, have the same kind of characteristics; they can be taken for nothing but bronze work. On the other hand, Algardi's "Innocent X." (p. 7 of the catalogue) exhibits a kind of treatment of the dress, in sharp broken angles giving reflected lights, which would produce its full effect in nothing so well as in bronze. If done in marble, the effect would be to a great extent thrown away, as the material would not express in the same manner the contrasted reflections of surfaces which are really very little different in their planes, but which, meeting at an angle, and not blended into one another, scatter reflections in all directions. The working of minute ornament on the surface, as shown in this, and more decidedly in the bust of Rudolph II. (page 29), is also quite in keeping with the material, provided it is kept subordinate to the main lines of the modelling. What we wish to express is, in short, that bronze casting is not capable of the refinements of marble sculpture, which are thrown away upon it; and that the designer in bronze should aim at either a broad, solid, *fused* effect, or that he should avail himself of the effect of reflected light from the dark metal to realise a metallic glitter, such as marble or other material will not produce. In either case his work will have, what all art-work should have, a style expressing the specialities of the material. We may observe, too, in regard to the first-named, or broad treatment, how much effect is obtained, and how suitably, in the treatment of drapery, for example, by a system of high relief raised very gradually and imperceptibly from the ground of the design, as if the lower part were molten into it, just a sharp edge or two being left to continue the lines to the eye. This kind of style is exhibited to some extent in the figures in the Hildesheim gates in the Architectural Court, and also in Ghiberti's *first* gates, which strike us as very superior in the adaptation of the material to his second ones, where he attempted too much, and took to picture-making in bronze,—a complete mistake in æsthetics, however the great beauty of the work may tempt us to overlook it in this case.

The severance of the catalogue of Oriental bronzes from the European ones, besides its obvious evil in multiplying books, takes away the opportunity for what might be very instructive, a consideration of the contrasts of style between Eastern and Western work of this class, especially in regard to the numerous and beautiful examples of Japanese bronze work in the Museum. Many of these examples are what Mr. Fortnum would, we suppose, call "Toreutic" work. They are not castings, that is to say, but hammered and incised, or engraved work, of great beauty of workmanship, and often exceedingly bad taste in design, a remark which may apply to some of the bronzes illustrated in the European catalogue also. Indeed, it is not a little singular to contrast the sentiments which issue from South Kensington, in regard to ornamental art, with some of the objects which are placed conspicuously there, presumably as models for admiration; which, at all events, are not in any way held up to reprobation in the catalogues. We spoke, the other day, of the exaggerated estimate of modern bad taste, in regard to such things as table utensils, made by a lecturer of the "Department." The exaggeration becomes still more striking when we notice that here, among these Japanese bronzes, are the most flagrant examples of the very bad taste which is stigmatised as peculiar to modern England; vessels of various kinds formed in the shape of birds and animals, with their backs taking off or hinged as lids: and among the objects figured in the European bronzes catalogue, nothing could probably be in worse taste, in regard to idea, than the German ewers (p. 114), or the lamp (4701, '59) on p. 7; nothing more *rococo* and unmeaning in design than the knocker (p. 158) or the key escutcheon (p. 171). All these may be, the German examples obviously are, excellent in workmanship, but in taste they are absolutely bad; yet not one word or hint of this is given to the inquiring student. It would almost seem as if the position assumed is that everything within the walls of the Museum is right, and everything outside wrong. It may be perfectly right, on historical grounds, to have specimens of every manner in which a material has been used in art; but an institution which aims so much at educational influence should certainly in that case teach the student to discriminate between what is true and what is false in taste, and not at all events select objects of the latter class for special illustration in a catalogue, in a manner which, without some modifying comment or criticism, amounts to a practical contradiction of its own teaching.

"Training Schools and Training Ships." Under this title Mr. Edmund E. Antrobus, F.S.A. (Staunton & Son), has issued another *brochure* urging the Government to support Captain Bedford Pim's present Bill. This, like the Bills of 1875 and 1876, is intended to establish county training schools and ships for the especial training of boys for the navy, the mercantile marine, and the army,—institutions, that is to say, for the reception of boys only who may be considered likely to prove efficient for one or other of these services. The schools to be similar to the County of Middlesex Industrial School at Feltham, which has, during the last five years, sent direct 414 boys into the Royal navy and the mercantile marine, and 234 into the army, independently of many other boys who, after leaving the institution, have adopted one or other of these services. By the proposed Bill a boy is to be received into a training school, or on board a training ship, only after due inquiry before magistrates in Petty Sessions as to his eligibility, qualifications, physique, and inclination, as would be done in an ordinary case of apprenticeship. Mr. Antrobus shows that the utter numerical insufficiency of the present training ships to supply the number of boys required for the mercantile marine, in addition to the number of apprentices, and the total absence of any school except the County of Middlesex Industrial School at Feltham and the Duke of York's at Chelsea, for the training of boys for the army, renders it imperative that the Government should support the Bill of the Member for Gravesend, or introduce some other measure of a comprehensive character for the consideration of the Legislature.

THE DIGNITY AND VALUE OF MANUAL LABOUR.

THE old world's ways of work were one thing, our modern and to-day's methods are quite another. The very earth itself is not more different, parcelled out as so much of it now is in cultivated plots of useful ground, to what it was when left of yore to Nature herself and to accident, than is the fine art in it of to-day, and the fine art as it was in the past, both in character and in method of production. We may pertinently ask for a few moments' attention to it, well worn as the ground of it would seem to be, after Mr. Gladstone's late talk about the "true dignity of manual labour," and the necessity there now is for attention to it, and to the mistakes made in reference thereto. Would that we had the power to afford to the great statesman additional texts for another "talk" about it. The subject-matter of it is not exhausted, that is certain; for the more it is looked into and analysed, the more vital and of greater import does it become.

It is difficult, indeed, to know well where to begin. Many things might be put first; but one has always struck us as of singular importance and weight. None will doubt the fact of the importance and vital necessity nowadays, and as things are, of *drawings* and representations on paper by other than the workmen. If there be, as we know there is, a "paradise of pens and ink," certain it is that there is a paradise of drawing-paper and drawing-apparatus. What could be done without "clerks," their apparatus, and surroundings? There must needs, without them, be an end of "business." What, again, would be done without plans on paper, and sections, and elevations, and drawings infinite of details? Their absence is simply inconceivable. But the time *was* when these things, and such as these, were simply impossible. It may, perhaps, be a little dangerous to go too far back in time for an illustration, but the proof it affords is too good to be missed note of. A huge simple pile of masonry, such as an Egyptian pyramid, had no *drawing* to guide the builders of it. One would almost as soon have thought of setting out one of the world's mountains, in plan and section, on dainty paper, as it. The builder of it, standing on the ground on which it was to grow up, must needs have gone to work forthwith, under the very eye, may be, of King Cheops himself, with but four wooden pegs and a long cord. The ponderous sepulchre, with its secret chambers, grew up under his personal direction, and guided by necessity, till the covering-slabs of marble were ready for the writer of the epitaph, who himself went to work, and wrote on it with iron chisel as on the paper page of a book. It was the work itself that was looked at, and the individuality and power of the producing artist was wholly centred on it. What a pity it is that these written coatings of the huge sepulchres of Egypt are gone! They were literally *written* upon; the artist-sculptor *wrote* on the stone page. Surely this was dignified labour, if ever there were such.

All well enough, many may say, as far as it goes, but pyramids are of the past, and quite exceptional performances; they cannot be repeated in the present, and do not afford a fair test to go by. Then take another kind of structure, from another country and people, quite as individualised as those of Egypt,—the Greek temple buildings. So much has been said and written about Greek architecture and Greek temples, that the subject would seem to be all but exhausted, and the secrets of it all found out; but it is not so. It is a singular fact, though but little practical note has been taken of it, that all the Greek temples are in idea of plan the same, but differently worked out, and differently "ornamented," if we may, in want of a better, use that term. That crowning effort of Greek temple building, the Parthenon itself, is in idea just what all the others were; and could we but see the great builder of it at his work, who designed it as if but turning over a new leaf of an old book thoroughly well worn and the contents of it known, we should be surprised, without doubt, at the simplicity of the process. A rough sort of man, Ictinus, its builder and setter out of the lines of it, was always on the ground, like a modern foreman. He must have been a "workman," that is at least certain. Had Mr. Gladstone,—who is such an adept in Greek matters and mysteries,—his mind's eye on this working man when he spoke of the "dignity of actual work"? No drawings on paper sent by another. It was labour and mind on the very spot itself that guided the work as it is, and was. How

ch instruction and interest there would be in daily account of the progress of these works, column by column found a resting-place, and the cornice got to be so far advanced as to ready for the roof; and then, all being ready, re came the time when the bare marble was ly fixed for the writer on it, not from paper wings, but out of the sculptor himself, and by own hand. That labour like that was "dig-ed" no one doubts, we may suppose, who l but look at the remains of it, as stored up museums and collections, where it has all been lefully kept in the precise state in which it found, and as left by the antique workman. is fortunate, indeed, that we have such exam-s of work so close at hand, so that all doubts dissipated at once on looking at them. We how they were executed, all but as vividly as ugh we had seen the great workmen them-ves at their work! Surely there was dignity uch work.

But it may be objected that this work in rough terial, dignified though it may be, can hardly ply to the present state of things. We have buildings on which a Phidias could well go to rk, and no opportunity for the hands and ins of an Ictinus. Temple building is of the t, and not to return. Let us therefore take more example, and that a more modest one, l one certainly more intelligible, and closer to dern doings, though a good way off still, it is be feared.

Take common house-building,—common all world over, and to all time. A modern row houses of any pretence in great London town, uld, indeed, it must be confessed, seem to d not a few dainty drawings to bring it actual existence; and there can be but little bt as to the distance and distinction between actual "labourers" on it and those who point the way for them. The house-building and amentation round and about huge London going on may be glanced at. The rough n of the Middle Ages, certainly, imaginative hey were, never dreamed of such. But they lt houses to live in too, and if we want to w what "picturesque" house-building ans,—why back to Middle Age time we must d go for it. In not a few out-of-the-way ts in London many specimens of such may be n yet, in spite of improvements. And well do h, rough as they are, bear the looking into, in them every here and there may be noted proofs of the "dignity" at that time of our, in the instances to be noted in them of *r thoughts*, as the work went on.

t would be impossible to exaggerate the im-tance and dignity, and useful value, of *ual* work, or to say where the value of it ses. We confine our thoughts, it is true, only rtistic work as to be seen in the builders' as it is in it more especially that the most nse and living interest in work, as work, is e found. It is quite true that all useful work vhen not excessive in amount, pleasant, and ainly honourable, if not dignified; but it is artistic *manual* work that mental labour ers at the same time the most largely, and s makes it the more especially dignified and ghtful. It matters but little in what material orkman may labour, or what style of art he y specially cultivate and make his own, or t even subordinate purpose his work may serve. We well remember, in the crypt of reat cathedral church, finding once on a time arge number of rusting-away and disused al coverings of old-fashioned oil lamps, used light the church on dark days in days gone and before gas was thought of, and cast-iron kets introduced all of one pattern. They e admirable specimens of dignified labour, t ingeniously designed and cleverly wrought of thin iron plates; no two of them alike. y were probably the work of one man, and o they evidenced how much may be done with y common material, and how much there is *manual* work, for these lamp-covers most ainly had no drawings made of them; they e solely of the interest taken in them by workman. Some few of them may yet t.

f the *artistic* value, then, of this great prin-e of the dignity of hand-work, as urged so fully by Mr. Gladstone, there can most surely no sort of doubt in the mind of any who will ly the matter, and look into it so far as to see hat it points, and how particularly useful it be made. What are really needed nowadays rt are men capable of both *hand* and *head* k, and who, as of old, will be proud to find in *actual materials* provided by Nature blank, though beautiful surfaces on which to write, or to put the mark of their names. We can at present imagine what this means, and would come to. *Ornamental* details, to use that general and wide term, are to be found everywhere, and all about us, in all materials, and of all sizes and degrees of costliness; but they are but glanced at generally as mere decoration and ornament, and then passed, perhaps, not to be further cared for. But were these details individualised, and, so to phrase it, each one of them "signed," then would they individually demand and would get attention, and, may be, study, from all who could feel interest in such matters at all. There is simply no limit to the ways in which such labour may be exercised, and no materials in which it may not find scope wherein to put forth its power. It is not in architecture and on buildings only that this is to be done, but in all and every object about us, from the coarsest and most cumbersome to the lightest and most delicate; from heavy furniture to light jewelry; from wrought iron plating to gold.

We may, indeed, wonder here for a moment not a little how it is that *manual* work has come to be considered as a something undignified, and as a something almost to be ashamed of, and to be if possible avoided, and to be thought of as if disjointed in some mysterious way or other from mental labour. To *indicate* for the manual worker, and to "superintend" him while at his work, no man is above; and the fact that in common occupations this can be effectively done, and this together in these days with the enormous increase of work to be done, and aided by machinery,—has without doubt led the world to suppose that the principle is of universal application, and can be carried to any length,—to art work, as to all other kinds and degrees. But this is most surely a fatal mistake, and but serves to show how much is due in this world to accident and the pressure of circumstances. It is *manual* labour, guided by *mental* labour, in the same individual, that makes real art-work possible and interesting, as we find it to be in the work of the past, however rude, or to whatever style of art it may belong, whether savage or civilised. It evidences always the individuality of the workman, and such work must always, in the very nature of things, be as "dignified" as hand-writing on paper! Might we not say, more so, for that consists of the perpetual repetition of the same forms, while handwriting in material must needs, in all artistic work, as perpetually vary? Of the dignity of manual work who can doubt who can see into the results of it? The working men have here a something to thank Mr. Gladstone for.

THE CLEVELAND DISTRICT.

Scrivenor's "History of the Iron Trade" ascribes to the manufacture of iron this peculiar recommendation, "that it had arisen and flourished most in those parts of the country which Nature seemed to have doomed to everlasting sterility." This statement may have been true at the time at which it was written, and since then there have been several additional testimonials to its truth in the various iron-making districts that have arisen. Not the least striking of these is the district of Cleveland, which in little more than a score of years has risen to take the foremost place in the districts producing iron; and in it the growth of that great industry has practically changed the whole face of the country. The result is that no part of England has seen so vast a change in two scores as has that part of the North Riding of Yorkshire in which the iron trade has been as a magician making a "city of the solitude." Prior to the uprisal of that great industry, Cleveland was largely an unknown country. No railway pierced it, the trade had fallen away from it, its coast knew no port, manufactures were on a miniature scale, the towns were few, and the trade limited; and infrequent villages, and still more sparse hamlets and farmsteads, broke only occasionally the monotony of its wide moors, barren hills, and pastoral dales. In it, or on its borders, the little towns of Yarm and Whitby were decaying in importance,—the fisheries and manufactures of the last, and the commercial importance of the first, falling off. The alum trade was dying out at Guisborough and along the coast, linen-weaving and similar textile industries were fading out of importance, and the progress of agricultural science was impeded by the difficulty of communication. South Stockton had no existence; Middlesbrough, which had its commencement nearly half a century ago, was, up to the commencement of the iron manufacture, a small town, in which the ancient art of the potter had been planted, but in which other manufactures had scarcely taken root. With these and one or two similar exceptions, Cleveland was given up to the agriculturist, by whom the vast farms were tilled in old-fashioned custom. The hills in one or two instances were mined for jet, but with the exception of this primitive quarrying, they served with the rolling moors as pasturage for sheep, and occasionally the heath was disturbed by the sportsman, whose feet trod unwittingly on El Dorado. The population was limited, the trade was small, the resources generally undeveloped, and the great mineral treasures were, in their real worth, unsuspected and untilised. Only about a third of the land was cultivated; what are now watering-places were aboriginal fishing-villages, and Cleveland thus kept on the even tenour of its way.

The growth of the iron trade was not, as it has been too often represented, the result of a mere accident; but it was, instead, the successful issue of a continuous search. The increasing demand for iron led to an inquiry after fresh fields of ironstone deposits. At last, after the completion of the line of railway from Pickering to Whitby, by which the seams of ironstone were laid bare, workings were commenced in the southern part of the district in a small way, and a continuous search was kept up for the main seam of the ironstone which was traced along the coast; and in 1853, some four or six miles from Middlesbrough, it was found at Eston by the late Mr. John Vaughan and Mr. Marley at the identical spot whence, years before, a quantity of the ironstone had been sent to distant blast-furnaces to be rejected. When this "commercial discovery" of the ironstone was made, immediate preparations to utilise it followed; and as it has been proved that the quantity is illimitable, these preparations have been extended, and the one mine at Eston has been followed until there are now two score in Cleveland, from which the output of ironstone has risen yearly, almost without a single check to the increase, until during the last year more than 6,000,000 tons of ironstone were sent out. From the first mines at Eston, which it was believed would yield 1,000 tons weekly, there has long been kept up an average output of not less than 500,000 tons yearly, and others of the Cleveland mines have acquired a productiveness to fully that extent. It was imagined for a time that some of the valleys would be found to be denuded, but it is found that the ironstone deposits are there also, and the area from which the vast output spoken of has been drawn has been almost yearly extended.

Naturally following in the wake of the development of the mining industry was that, first, of the crude iron trade and then of the finished iron manufacture. There were in the whole of the north of England iron districts, up to the date of the commercial discovery of the Cleveland ironstone, some thirty-six blast furnaces, none of which were in Cleveland proper,—most of them being on the banks of the Tyne and in the county of Northumberland, and the northern division of Durham. Following that discovery, blast furnaces were erected at Middlesbrough, at Eston, at Stockton, at Glaisdale in the south, and others have been added until there is now a range along the banks of the Tees from Stockton to the sea; until in Cleveland there are far on to a hundred, and until the number in the northern district has been raised from the thirty-six of which we have spoken to one hundred and sixty. By this increase, and by the enlargement of the dimensions and consequently in the capacity, the make of pig iron has been increased until it reached, last year, over 2,070,000 tons,—or close upon a third of the entire make of the whole of the United Kingdom. The secondary industry has grown as rapidly on the whole, though more unequally, and now, instead of the works for the manufacture of finished iron being of an extent represented by a productive power of some four hundred puddling furnaces, their capacity is now above five times that number. In these works, exclusive of the iron mines, it is within the mark to estimate the invested capital at over five millions sterling. And there has been a fully commensurate growth of subsidiary but still important branches of the iron trade,—the manufacture of tubes, wire, and other like industries; engineering establishments, shipbuilding yards, and similar works, until it may be stated that the northern boundary of Cleveland,—the river

Tees, is impinged on throughout its course there by Vulcan's workshops in every shape.

The result is seen first in the growth of towns: Middlesbrough has risen from a small manufacturing place of some 4,000 inhabitants to one of 50,000 people; South Stockton has known a growth, if not equal, still large; Guisbrough, the centre of the ironmining district, has emerged from a small village into a wealthy town, prospering by its surrounding iron mines; Lofthouse, which was a mere village, remote and slow, is acquiring the station, institutions, and appearance of a town; Saltburn, which twenty years ago was a hamlet, the few houses of which served as convenient centres for smugglers, is now transformed into a fashionable watering-place; and its neighbour, Redcar, is undergoing a similar transition on a more popular scale. And the whole of the mining district may be said to be studded with villages, either the enlarged hamlets of yore, or the newer-built embryo towns which have sprung up near the mouth of the pits, and in proximity to the works. Villages, such as Marske and Skelton,—known chiefly for their historical associations,—have become populous places now far advanced in the process which educes from the chrysalis state of hamlets into towns; decaying little spots such as Skinningrove have had their scores of people turned into hundreds, and the entire population of these mining districts has been many times multiplied. This replacement of barren moors by village-dotted fields; of heather-clad hills by others barer but tunnelled and almost honeycombed, in the search for iron ore; of winding, tortuous, and shallow streams, by broad, commercial streams; of a land then sacred to the carrier's cart and the less-frequent stage-coach, but now not only traversed by railways, but one which has become the chief source of income of one of the four great railways of England; and of one which was amongst the most sparsely-populated parts of the country, but now bids fair to become, so far as its eastern and northern portions are concerned, one of the most populous in the north. This change may be said to be one of the most extraordinary yet wrought by the uprisal of any industry within a period of little more than two dozen years. With the exception of the alum trade, which has died out, the older industries are yet carried on in what now seems their miniature mode; tanning and leather-dressing are still known at Guisborough and at Yarm, whilst paper-making preserves its old repute at the latter place; the jet miners are still counted by some fourscore in the southern spur of hills, and Staithes still preserves its repute as a fishing town. But these, with agriculture, are all dwarfed by the industry which is not only the greatest, but also the controlling, trade of Cleveland. It has built up its wealth, made some of its ironmasters millionaires, largely created the capital which is now invested in it, and given to what was a comparatively barren district the proud position of being the first iron-producing and iron-manufacturing district, so far as extent is concerned, in the world.

That position has been sorely tried by a period of trade depression of unusual length and severity, and by an apparent change in the material which railway companies prefer their rails made from. The result has been seen in a protracted period of financial testing, and there has been a consequent closing of a large number of works, more especially of those for the manufacture of iron rails, which have very much fallen in the estimation of railway companies. There is now a falling off in the demand for these, and that falling off is reflected in idle rolling-mills, in blast-furnaces no longer blowing, and in iron mines in which short time is now being worked, and it further shows itself in the diminished traffic receipts of the railways serving the district; but the quietude in trade and the stoppage of the development of mining enterprise allow time for much-needed perfection of sanitary arrangements, for the carrying out of a system of drainage of the mining districts, for extending to these a full and efficient water-supply, and for bringing them under the sway of local governing bodies, the latter of which has long been one of the most pressing needs of the district. Villages have grown up with little sanitary supervision, and the consequences of neglect in this respect, of over-crowding, and of a deficient supply of pure water, have been seen in a death-rate abnormally high, and one in which the deaths from the seven chief zymotic diseases have occupied far too prominent a place. In the town districts there has been much less to complain of on this score,—Middlesbrough, for instance, having spent large sums in the provision of efficient drainage, and more recently in the endeavour to obtain the control of, and to extend on a better principle, its water-supply, which has been hitherto drawn from the river Tees.

It is needless to point out the effect that this growth of appreciation of industrial resources has had on the constructive trades; it is sufficient to state that during recent years the growth was checked by the incapacity of builders to meet the demands for houses in the mining districts; and though this has been checked there is still known considerable activity in the constructive trades by reason of the efforts to overtake the needs of growing communities. And with the return of briskness to the great developing industry,—which is now looked forward to as an event whose distance cannot be great,—there will probably be known another bound forward in the trade of the north, and an addition thereto in industries not yet planted there, whilst these will find their due reflection in the increased prosperity of the districts in the upgrowth of new towns, and in the revival and extension of old villages.

PROFESSOR E. M. BARRY ON ARCHITECTURE.*

DOMESTIC ARCHITECTURE, FOURTEENTH CENTURY

MY last lecture brought down our review of English Domestic architecture to the close of the thirteenth century, a time when architecture in general was in a flourishing state in this country. Much of this prosperity was due to the personal influence of King Henry III., who did his best to induce foreign artists to settle in England, and who showed, by every means in his power, his anxiety for the advancement of art. To him succeeded the Edwards; and we will now briefly consider some of the architectural peculiarities of their time.

Referring to the older fashioned nomenclature of the periods of Gothic architecture, the period now under consideration is that which has been called the Decorated, and followed the Early English, which has already been discussed. It is not my wish to enter now into the many peculiarities of transitional work, and the numerous changes which gradually arose, causing each period to melt, so to speak, into its successor. I shall, however, attempt to point out some of the more obvious changes of detail, for the benefit of those students who have not investigated such questions as architects.

We are now approaching the more prosperous times of English history. Normans and Saxons had grown up together, and had intermarried with each other, and with the former inhabitants of the soil. Society was becoming gradually welded together, under the influence of a common faith and a powerful religious caste. Peace and prosperity are necessary for the construction of important works of architecture; without peace, there is no security to induce men to undertake difficult and lengthened operations; without prosperity there is a want of means to carry such works to a conclusion, as, unfortunately for architects, they cannot exercise their art without paymasters. The reign of the first Edward combined these requisites, though they were not as fully secured by his successors. Trade flourished, and wealth multiplied itself. London and the large towns gained in importance, and the communications with the Continent were increased and simplified; while some of the fairest portions of Northern France were among the happiest of the English king's dominions.

We have seen already that in England the arrangements of our domestic architecture were not very far advanced. In these things the French had the advantage, and the connexion between the two countries was not therefore without a considerable influence on the gradual enlargement of English ideas of civilisation and comfort. The manor-houses of the country gentry became more elaborate as new wants began to make themselves felt. The architectural details were multiplied, both in design and decoration. The hall asserted itself more and more as an architectural feature, and domestic offices were provided on a scale hitherto unthought of. Many of these changes were much assisted by French influence, as the great lords from France, who came to attend the English court, brought with them a numerous train of servants and dependents, accustomed to the handsome houses and good beds of their own land.

Until this period we have had to trace the advance of architecture, as regards public buildings, mainly in its ecclesiastical aspect. The bishops and monks were the chief patrons of architecture, and their comparative security and wealth had enabled them to indulge their tastes at a time when the rest of mankind had mainly to consider how to protect themselves from violence, cold, and hunger. The fourteenth century, however, is marked by progress in domestic, as well as in ecclesiastical buildings. Window-tracery, introduced in the preceding century, was heartily adopted, and pushed to a development. Numbers of lights were grouped together under a single arch, and the latter became filled with patterns of more or less intricacy. At first, such patterns were made up of circles, triangles, and the like, so that the style has been called Geometrical. In other cases, the whole space is occupied by irregular shapes growing out of each other, or from a parent stem, a peculiarity which is known as the flowing or Flamboyant style.

Many other changes arose, to which I shall have occasion to allude hereafter. They were all in the direction of greater freedom of design and ingenuity of construction. Among the more important houses of the time are the bishops' palaces. The bishop was not only an ecclesiastical, but also a secular prince, and his residence was accordingly on a large scale. Such remains as those at Wells, Norwich, and Lincoln, suffice to enable us to appreciate the state which was kept up by the bishops. Nor were the nobility behindhand. At Penshurst we find a structure of almost royal magnificence, partly, indeed, belonging to later times, but the most important portion of which, the hall, was erected in the Edwardian era.

It was at this period that English country houses multiplied, and domestic wants began to be carefully considered. It was otherwise in France, where the best examples of the architecture of the day must be looked for in towns. This has been accounted for by the more disturbed state of the country district of France, as compared with England, at the moment. France, moreover, from its geographical position, was more accessible to the influence which Rome and Italian civilisation brought to bear on art. England was a far off land,—an island separated from other countries by stormy seas, and not readily approached, either in peace or war. The difference in the architecture of the two countries was strongly marked; and in one, we may turn our attention chiefly to the towns, and in the other, to the country, in respect of our present inquiry.

Apart, however, altogether from questions of public affairs, the divergence of customs may, I think, be referred to a cause lying deeper in national tendencies. In England, these tendencies have always pointed to country life and its pursuits. In France, the great towns have been looked upon as the central rallying-point of society. The latter have, therefore, received the fostering care of governments and individuals, and have called upon art, and especially architecture, to lavish its resources for their adornment.

In England the case has been different. Many of our large towns have suddenly arisen, because coal and iron were found near to them, and they were needed, as centres of manufacturing industry. London, as the capital, might have been expected to have occupied a different position, and it has doubtless done so to some extent. But the taste for field sports and a country life, and the care of great estates, have always induced the English aristocracy to give the capital a smaller share of their affections than they accord to their stately provincial homes; and even now it is difficult to arouse in them any enthusiasm for metropolitan improvements. London, with natural advantages almost unrivalled, has, until lately, been the ugliest of modern capitals, and though much has been recently done for its improvement, there is still a grand field for the reformer.

In the fourteenth century town houses were still constructed, as a rule, of wood, and they have consequently perished by fire or decay. In the country, stone was more readily accessible, and great buildings were erected near to the stone quarries. Of course, there were many wooden buildings also in the country, and some of these remain to us; but the majority have passed

* Fourth lecture: delivered at the Royal Academy on Thursday, March 15th.

away, and we shall find our inquiries much restricted, in consequence, to buildings of masonry. These were built in a solid manner, with walls from 3 ft. to 4 ft. thick, with buttresses and turrets. The roofs were of high pitch, having substantial and ample timbers. They were occasionally covered with wooden shingles or thatch, but the more permanent protection of slate, stone, or tiles, was now ordinarily adopted.

As regards the general plan, we find the great hall still supreme. This feature had been handed down from generation to generation from the days of the Romans, whose Atrium, covered to suit the climate, had set the fashion to their successors. The successive improvements in architecture had added to the importance of the hall. At first, narrow; and when wide, divided by columns; it now became a spacious and lofty apartment, the whole height of the building, as at Penshurst. Wings were thrown out from it, for the accommodation of the family, and towers were added for protection, and also for grandeur of architectural effect. Minor offices and stables were grouped around it, and at the sides; and a gatehouse placed opposite, so that the whole group of buildings formed a quadrangle, of more or less regularity, in which the chapel was not forgotten.

Protection was afforded by enclosing walls and turrets, and in some instances by moats. At Penshurst the enclosure was large, to afford space for the retainers and guests of the owner, and there was a wall with a moat outside. At Ightham, at Hever Castle in Kent, at Helmingham in Suffolk, and in other places, the moat closely surrounds the house, washes its walls, and is spanned by bridges to the principal entrance.

A tower, attached to Mediæval houses, was a mark of rank, and this feature was sometimes built separate, and of greater strength than the rest of the building. The towers may have been used as places of refuge, or depositories for valuable goods and records, in case of sudden tumult. In the northern districts, towards Scotland, which were exposed to the frequent raids of turbulent neighbours, the towers were of greater importance, and even gave the name to the whole structure. The tower, which in the Border counties was called the Pele tower, was, in fact, the rallying point of the district in case of need, and the inhabitants could shut themselves up in it, for a time, until any pressing danger were past. In such places the idea of a tower gave a great feeling of security, and there are good examples of houses, built of several stories in height, forming a tower with flanking turrets, and protected by a moat at the foot of the walls. One of them is to be seen in the case of Dacre Castle, in Cumberland.

With certain varieties, due to local causes, the gentlemen's houses of this period followed a general custom in their arrangement. We find, as the usual type, the hall and enclosure, with kitchen and other offices in it, mostly built of wood; a cellar, or chamber, under the hall, and a solar, or bed-chamber, on an upper floor, for the family. Sometimes a dungeon is added, with a guard-room for soldiers, and further rooms, to a greater or less degree, in accordance with the importance of the owner of the building. In unsettled districts the ground-floor is massive, and little pierced with windows, and when the latter exist they are often mere loopholes. Stone staircases were introduced, with newels, and windows and fireplaces were common in all private rooms. External stairs, which formed the principal means of approach in the Norman castles, were not suited to the more Domestic style now becoming common, and were gradually laid aside in favour of internal staircases. The principal doorways, in cases where the house was surrounded by a moat, was approached by a drawbridge, and defended by a portcullis, much as we see at the present time in fortified towns abroad.

Protection from casual external violence was still a question of great importance, but the advance of civilisation was, by degrees, bringing into greater prominence the more settled and domestic influences of family life, and these soon acted powerfully on the architecture of the day. In towns, the houses did not need to be castles. The walls, ditches, gates, and battlements, surrounding each important city, enabled the citizens to erect their houses, and carry on their business, in a feeling of security. Their buildings were consequently made, as we have already seen, of more flimsy materials than the country houses of the gentry, and, as a consequence, our knowledge of them is less. In some of the old towns of France, however, we find very interesting remains of timber houses, and those which are still left in England, even if they were mostly erected at a later date, are obviously built after the ancient manner.

In most cases, there was a high-pitched gable to the street, with stories projecting, one over another. The gables were often ornamented with carved or traceried barge-boards. The chimneys in town houses were commonly built in inside walls, and terminated in cylindrical shafts. The windows were protected at night by external shutters, which were often hinged to the transom of the window, so as to admit of being pushed open from the bottom, and thus serving to protect the opening from sun or rain in the daytime. At the time we are considering, coal was largely introduced into our towns, and became the ordinary fuel of the citizens, although at first, much objected to by them on the score of the dirt and disfigurement of the buildings which it caused. With them, however, as with us, the advantages and convenience of coal outweighed these objections, and it soon became an important article of commerce, and of daily domestic use.

External painting was adopted as a means of preserving cleanliness, and the Flemish habit of decorating their houses with bright colours was partially used in England. It has been already noticed that in the time of Henry III. polychromy of an elaborate character was practised, and we may therefore conclude that the houses of the great, in the fourteenth century, were ornamented in a similar manner. Looking at the general character of the latter, we shall find that there had been a general advance in comfort and refinement, although in these matters our ancestors were still far in arrear of any notions of the present day. The rich were beginning to gain from the experience of others, but the poor were still much as before, with rude and simple accommodation in their dwellings.

The feasting in the hall was marked by a coarse profusion, and the apartment was frequently used as a dormitory, as well as a dining-hall. The fire was still in the middle of the room, and a louvre, in the roof over it, formed its chimney. The furniture consisted of the necessary tables and benches, and any addition to these was for the high table only, placed on its dais, of one or two steps. From the upper end of the hall the lord and his party could withdraw into his private chamber, or solar, which sometimes overlooked the hall, by means of a small window. A music gallery was occasionally found, generally placed over the entrance corridor.

We have fortunately so many Mediæval halls remaining in this country that we experience no difficulty in understanding these arrangements, most of which have continued unaltered to the present day, and as the custom of dining in hall was tenaciously upheld, there is little difference between buildings of various dates, excepting as to the actual details of their architecture. Thus, we have in London a fine example of a hall at the Middle Temple, which, though of later date, is consistent in its plan and general design with all that we know of the halls of the fourteenth century. At Oxford and Cambridge, also, there are numerous and striking specimens of this important portion of a mediæval house.

The roofs were usually of timber, cleverly constructed, and sometimes richly decorated with carving, and also painted and gilded. In some rare cases, stone arches were adopted instead of wooden trusses. This is the case at Mayfield, in Sussex, then a country seat of the Archbishop of Canterbury, and there is a similar feature at Ightham Moat, Kent, before referred to. An arch of solid timber was also a favourite expedient, and this sometimes sprang from columns, as at Nursted Court, Kent. In other examples the walls were connected with tie-beams, which prevented the arched principals from thrusting out the walls. At Nursted this object is ingeniously attained by the horizontal beams, which extend from the walls to the feet of the arched principals, upon the capital of the columns. We may see in this arrangement the germ of the idea which was afterwards to expand into the daring designs of hammer-beam trusses, as in the present roof of Westminster Hall.

At Mayfield the hall was large, and handsome in its architectural features, as befitted the palace of an archbishop, given to hospitality, according to the custom and traditions of his high office. The dimensions were about 70 ft. in length, and 40 ft. in width, and there were numerous rooms in connexion with the hall, which have now fallen into decay. The exterior shows strong buttresses, which were necessary to resist the thrust of the arches of the roof. These arches are of stone, springing from carved corbels, and are themselves handsomely moulded. They are, of course, pointed in form, as at the time of their erection, the semicircular arch was no longer used. There are no remains of the timber roof which connected the arches and covered in the hall. It was probably boarded internally, and enriched by coloured decoration.

The Mayfield Hall may serve to give some notion of the style of the great houses of the time. Its details, whether of windows, doorways, or other features, are all of considerable beauty, and serve to indicate the importance of the primates, Mayfield being one of their favourite residences. The whole property was seized by Henry VIII. at the time of the Reformation, since which period, it has been altogether alienated from the see of Canterbury.

We may notice in the halls of this period a change which has taken place in the windows, enlarging their usefulness, and increasing their architectural effect. Tracery having been by this time heartily adopted by the architects of the day, naturally found a place in domestic, as well as in church architecture. As the halls gained in height, the windows were naturally lengthened, and the plain lancet openings increased in size and height. The next step was, therefore, to divide them, not only vertically, but also horizontally. The two-light window remained as before, the ordinary type in domestic work; but the massive central jamb and column disappeared, and were replaced by a mullion of moderate dimensions of section. The height, which would otherwise have been inconvenient, was bisected by a transom, with tracery; and the form of window, thus created, became common in the architecture of the day. The inner jambs and mullions were decorated with attached columns and mouldings, in a variety of ways, and the general design, as described, was so commonly adhered to, that we expect to find it, almost as a matter of course, in the secular buildings of this period. It may be repeated here that in such cases, the inner cill, which, in modern language, is called the window back, was not sloped as we see it in our cathedrals and churches, but was worked flat, so as to serve for a seat.

Glazing was still expensive and rare, and it was often applied in movable casements, which appear to have been capable of removal, so that their places might be occupied by wooden shutters, when the lord and his family were absent. As stained glass was now in constant use in the churches, we may suppose that it was not unknown in other buildings, but it must have been sparingly used, and there is little to guide us on this subject. Shutters were still common, both for security and for keeping out the cold, the latter being, we may be sure, no unimportant consideration in lofty halls, such as Penshurst and Mayfield. The fire in the middle of the room was often the only effectual means of warming, and for this reason, doubtless, it continued to be placed in the centre of the greater halls, long after chimneys and hearths were constructed in the walls of the private apartments.

Greater comfort was sought by the introduction of wooden panelling on the side walls, and above the wood-work there was ample scope for the art of the painter, who was busy now, as we have seen was the case in the preceding century.

Wall painting, however, soon encountered a powerful rival in the introduction of tapestry. This was due probably, in the first place, to foreign influence, as may be inferred indeed from the name of Arras. At first of great cost, tapestry was used only for places of special importance, as for the hangings to the king's throne; or the back of the dais in the halls of the nobles. In churches, such hangings had long been familiar. After a time, as the demand increased, the tapestries required were made in this country, although importation from abroad still continued, particularly in the case of the rarer and more costly stuffs. London and Norwich were the chief seats in England of this manufacture, but it was also carried on in other towns. The tapestries were embroidered with numerous devices, with figures, and representations of animals, such as leopards, eagles, griffins, and the like. The material was usually worsted, although richer stuffs were adopted on great occasions, and silk and velvet were not uncommon, particularly in France.

One reason why tapestries became popular,

was that they could be easily removed. A great personage, when travelling in those days, took with him the greater part of his goods and furniture. Beds were, as a matter of course, carried in his train, and by taking with him the tapestries which covered the walls of the rooms, much was added to the comfort of the traveller at the various resting-places on the road. Froissart says that the houses of the period were "hung with tapestries, representing various scenes and histories, to the delight of all beholders." This must have applied, at least in England, chiefly to the private chambers and bedrooms.

The halls were more commonly wainscoted with panelling, which in later times extended frequently to the ceiling. Against this panelling the benches were placed, when not in use at table, and from this custom arose hereafter the common practice of constructing fixed benches against the walls, as a part of the dado or wainscot. The benches served as couches at night, in cases when the hall was still used as a dormitory, and the early habits of our ancestors favoured this arrangement. The dinner was early, being served before midday, and there was a supper about five o'clock. These two repasts were the principal meals of the day, and it is curious to note that they accord with the practice of our French neighbours, at the present time. The dinner was often an occasion for state and pageantry, and in such cases it was protracted until a late hour, and was accompanied by music, followed by revels, masking, and minstrelsy.

In important halls there is commonly a recess, or bay window, near to the high table, where the plate could be displayed. The skill of the Mediæval goldsmiths was great, and the principal noblemen delighted to possess rare and beautiful objects in the precious metals. These precious things they carried about with them from place to place, not caring, probably, by leaving them at home, to put too much temptation in the way of the roving bands, which still infested many of the districts, in which their country seats were situated.

Plate was for ornament chiefly, as only the very rich could use it habitually. Pewter and wooden platters and drinking-horns were the utensils commonly seen on the dining-tables. The great salt-cellar was, however, always a conspicuous object, and the position of a guest, in relation to it, determined his precedence, and the favour he enjoyed with the lord of the feast. Great ingenuity and variety were introduced into the design of this important item of the furniture of the table. The older forms were generally those of massive cups, but these were succeeded by more fantastic shapes of animals, buildings, and the like. Another peculiar vessel was the ship, which contained spices and sweetmeats, the form of which may have been intended to suggest the foreign origin of many of these delicacies. The design of these ships was followed in later days, by the makers of porcelain, and some of their works modelled on the old design have been highly esteemed by collectors in modern times.

The habits at Mediæval dining-tables were significant of good fellowship rather than refinement. The wassail bowl went round for general use, and the food was taken in the fingers, and cut with the knife which each man carried with him. Knives and forks only came gradually into use, as wealth increased, and they then made their way downwards from the tables of the great, to those of the merchant and middle class. The great ewers with rose-water, with which we are familiar at City banquets, are the successors of those which were made in early times, and some of them are of considerable antiquity. The custom was not without its advantages, and, indeed, necessity, considering the mode of eating which has been described.

In Eastern countries at the present time, the habits of the table are not unlike those of our Mediæval forefathers. Each guest dips his hand in the dish, and the ewer is handed round, although in the use of the latter there is one important difference, for while the European may wash his hands in the dish, the more scupulous Oriental will have water poured over him, and will not touch that which has been used, however slightly, by another person.

In the fourteenth century, to eat off the same board, and to drink out of the same cup, was considered a special honour conferred by the lord on his inferior. It shadowed forth the custom which still lingers amongst us, of the "loving cup," and of "taking wine" with each other, at table, the latter of which, as a sign of friendly hospitality, has only of late, and to the regret of many, come to be disused.

In some of the manuscripts of the period, we find interesting representations of the great dinners of the day. The lord on the dais, under his canopy, with his wife at his side, is surrounded by his guests, neighbours, and dependents. The high table, occupied on three sides only, is ornamented with costly plate. The chaplain is there to say grace, and ask a blessing on the feast. Minstrels and troubadours are ready to contribute their efforts to soothe, please, or excite, when called upon; and last, though not least, the fool or jester was at hand, with his jokes and wit, often, it may be feared of a questionable nature, to rouse the laughter and hearty mirth which we may suppose to have been characteristic of times which have handed down to us the name of our country, as "Merrye Englande."

The more private life of the nineteenth century does not favour these habits, but they are not altogether extinct at our public dinners, as, for example, the annual banquet of the Lord Mayor at the Guildhall, where many of the old customs are carefully maintained, having been handed down from generation to generation. One of them prescribes that the master of horse, or postillion, should always be at the right hand of the Lord Mayor, booted and spurred, with whip in hand, ready to conduct his master wherever State exigencies may require his presence.

The habit of dining together in a public manner was, as you are aware, common in the religious houses, and it naturally became the rule with other corporations, such as the great trade guilds, which were the foundation of our City Companies. It was likewise the fashion of the Court, and the great nobles therefore followed suite. It is a distinctive trait of Gothic, as opposed to Latin civilisation. We found, as you may remember, no traces of it in our examination of Pompeiian and Roman houses. In them, the dining-rooms or triclinia were small, and even in the later times of the falling Empire, the object of the Roman host was the fastidious and elegant enjoyment of the few, rather than a hospitality, extended to a numerous company, such as that which we have been describing.

It will readily be understood, from a consideration of the ordinary life of Mediæval times, why the hall was so important, architecturally, in our great houses, and we may have to notice, by and by, that the importance of the hall began to wane as the old system of hospitality came to be abandoned in favour of the more exclusive habits of modern days. The hall is now, as we know, an appendage only to the houses of the wealthy, and forms no longer a necessary and integral part of the structure.

In passing from the hall, to examine the other portions of the Domestic architecture of the fourteenth-century manor-house, mansion, or palace, we naturally come first to the chapel, which was seldom far from the hall, and often connected with it, by means of a passage or cloister. The architecture of the chapel was in accordance with the usual church-building designs of the time. The east window had usually three, and occasionally a greater number of lights, in contradistinction to the dual arrangement, typical of Domestic work. The altar was placed beneath the window. It was commonly of stone, and was sometimes formed of a projecting shelf of that material, and furnished with hangings. The usual arrangements of piscina, sedilia, and a receptacle for plate, are generally provided.

The lord's seat, or "pew," as it came afterwards to be called, is often on an upper floor, looking into the chapel from a higher level. Sometimes a screen divides the chapel into two parts, leaving the eastern space the whole height of the room, and dividing the western end into two heights, in which case the lower floor was used by the household, and the upper floor by the family. In important cases there existed an antechapel, over which the lord's pew was placed, and this arrangement lasted until a late period.

The chaplain was, we may be sure, an important person, responsible, to a great extent, for the manners and morals of the household. He was at hand to celebrate Mass, to hear confession, to say grace, and even to read at meals, while in domestic matters, he was ready to take the burden from his lord's shoulders, until he became, in after-times, the half-dependent, half-boon-companion, of whom Macaulay has drawn a not-too-flattering description.

The chapel was ordinarily a room in th house, though, sometimes, it occupied a wing, c tower, and more seldom was contained in a d tached building in the quadrangle or courtyar Attached to it, were priests' chambers for th use of the chaplain, whether resident or otherwis When there was no resident chaplain, the chapl was frequently served by a friar, from a neigh bouring monastery.

The parochial clergy looked with a certai jealousy on private chapels. They were at firs a necessity, from the state of the country, an the distance apart from the parish churche but as the latter came to be multiplied, th clergy attached to them not unnaturally wished t see the neighbours attend their own ministra tions, and when application was made to th monasteries for clerical service, the old an never-dying jealousy between the regular and th parochial clergy, was ever ready to break out.

In the case of Crook Hall, Durham, the licenc for the chapel still exists. It was issued by th bishop, and in order to maintain his power c control, it required renewal from year to yea Moreover, certain conditions were attached to th licence, and by them it was provided that th chapel was for private use only. The lord an his family were not to absent themselves fro their parish church, but must attend the same at least on the greater festivals, and on the day c dedication. All offerings were also to be mad at the parish church, none being allowed in th private chapel of the hall.

The room over the western end of the chapel was often connected with the principal chamber It had, usually, a fire-place, and could be shut o from the chapel by curtains, and in later times by casements, so that it might be used for pur poses unconnected with the chapel or with Divin service. It has been called the Oriel, or Oriole a name frequently mentioned in the records c the time, but as to the exact meaning of whic some doubt has existed.

As we now find numerous fireplaces in domesti architecture, the chimneys naturally became a important feature in external effect. No gres changes were introduced in the forms of the fire places themselves. They continued to be, as before corbelled out from the walls, with projectin hoods above them, more or less ornamentall treated. Such fireplaces are found in privat rooms, and in halls of moderate size. In th larger examples, the older fashion of a centre fire was still followed, as has already been said Externally, the greater frequency of chimney led the builders to tax their ingenuity as t their forms. The older shapes of square o cylindrical shafts became more varied and com plicated, and chimneys were grouped together carved, moulded, or otherwise ornamented Where they were carried up singly, they wer frequently made octagonal in plan, and wer finished in the upper part, with gablets, battle ments, and conical tops. In some cases, carving was freely introduced, and the chimney becam an important architectural detail, and continue to be so, until Elizabethan days.

At present chimneys are one of the architect' greatest difficulties in large towns, as from th way in which buildings of different heights ar crowded together, and from the general use o coal, the disposal of the smoke is often a problem not easy to solve, while its effect on our archi tecture is deplorable. Our ancestors appear t have been free from these troubles, and thei records do not, so far as I am aware, contain an mention of the profession of chimney doctors.

As fireplaces were now common, the chamber had an amount of comfort not previously attained and the bedrooms, in particular, were much im proved, both in structure and furniture. As t the latter, beds and canopies were provided, an even baths. In rare cases, carpets for the floo began to appear, and there was a great advanc in elegance and luxury. As a consequence probably, of these changes, iron bars and bolt were found necessary for the protection of doo and windows, and many of these articles ar very elaborate and beautiful; as, for example the foliated hinges, often covering the whol surface of the door, which it thus protected an ornamented at the same time. Complicated an well-designed locks and bolts were also added and in these things, and in grilles for windows the English workmen showed great talent an skill.

While the family rooms were gaining in im portance, the domestic offices naturally becam sharers in the current improvements. In the towe like houses, the offices were either included in th central building, or provided for in wooden shed

which could be abandoned on the approach of an enemy. In the more ordinary type of building, however, the kitchen, surrounded by its necessary adjuncts, was a separate structure, and formed one, or even two, sides of the quadrangle. The offices were necessarily extensive, for there were no purveyors to bring food to the door, and everything was provided from the estate. Corn had to be ground, and made into bread; meat to be killed, as well as cooked; and farmyards, stables, pigstyes, &c., had all to be arranged.

The famous abbot's kitchen at Glastonbury will give you an idea of the spaciousness, and even of the architectural magnificence, which the Mediæval kitchen could assume; and the abbot's kitchen at Durham is little inferior to it, and is of an earlier date. In the latter example, the fireplaces are placed round the walls of the interior, which is octangular on plan, and groined with stone. There is a central opening in the roof for ventilation. In large houses there were two or more kitchens, as there were also great and small halls, and in cases of exceptional magnificence of hospitality, the kitchens were supplemented by temporary structures, and even by cooking in the open air. In connexion with the kitchen were the buttery and pantry, generally near to the hall, as may be seen in examples at Oxford, Cambridge, and elsewhere.

The principal domestic arrangements having now been glanced at, it only remains to point out the changes which had arisen in the architecture of the period, some of which have been already indicated. These changes, as I have before explained, apply more or less to all buildings. The separation of domestic and church architecture is a modern device, and belongs to an unprogressive age in architecture. In Mediæval times no one doubted the excellence of the style of the day, and, as a consequence, there was no hesitation in applying it to all buildings, whatever their purpose. Let us see, therefore, what were the chief characteristics of the architecture of the fourteenth century.

Although it is convenient to retain the names which Rickman and others have adopted for the differing styles of Gothic in this country, we must admit that the title of Decorated is somewhat misleading. It may, perhaps, admit of some justification if we consider isolated details, but as regards architectural decoration, whether of the mass, or of the ornaments of a building, there was little to add to the perfection of many of the monuments of the preceding century, as you may see in the cases of Salisbury and Lincoln, to which I have before referred. Moreover, if surface decoration be considered, we find admirable examples in earlier times, in the richly-carved Norman doorways. In such cases, the execution is rude, and the architect relied for effect on the decorated aspect of the mass, with its concentric rings of enriched mouldings.

Closely allied with the Byzantine, and the Continental Romanesque schools, those elaborate doorways foreshadow the principles on which the architects of successive centuries worked, more especially in France, where the passion for deeply-recessed and highly-ornamented portals was always more strongly pronounced than in our own country. With us, such doorways were perhaps at their best in the fourteenth century. The jambs were ornamented with numerous shafts, having carved capitals, and well-moulded bases, while the mouldings above were beautifully carved, the sculpture being in many respects more imitative of nature, and natural objects, than it had been in Early English examples. There was, however, little of that direct imitation of such things, which some extol as the perfection of art, and desire to see in our works of to-day; for the Mediæval architects knew too well that architecture is a conventional art, to fall into such snares.

We have seen that in the thirteenth century the dogtooth ornament may serve as a distinguishing mark, and we now find a similar test detail in the ball-flower, used freely in what is called Decorated work. We find it in arches, cornices, corbels, and windows, either in its simplest form, or highly enriched, and with connecting stems, or bands of foliage. In the great examples of French doorways, the love of detail has perhaps somewhat overpowered that law of common sense to which architecture must bow, for when we approach one of them, as, for example, the western doorways of Rheims or Amiens cathedrals, it is found that the exceeding richness, which captivates at a distance, is to a great extent due to the introduction of niches, figures, and canopies following the curve of the arch, an arrangement apt to cause uncomfortable reflections, as to what may possibly happen to figures, placed in such a position of unstable equilibrium.

We have examples of this mode of decoration at home, but in most cases, with us, the niches and figures are on a smaller scale than in the French examples, and are suggestive rather of a moulding enriched, than of any constructional difficulty, or extravagance.

In tracing the variations of Mediæval styles, we do not expect to find any startling novelties; the workmen knew but one manner of working, and though a gradual change or improvement grew up, as it were, under their hands, they were not troubled by any outcry for a new style. It thus happens, that in Decorated work, the general forms of arches and doorways are little altered from those which were previously adopted, and it is chiefly in details that any change became felt. At first the dogtooth was used in connexion with the ballflower, afterwards it gave way to a carved flower or paters, of four leaves, based evidently on the old design. The mouldings became, at the same time, bolder in section and of larger size, while retaining much of the general character of the preceding style.

The columns, which, in small and unimportant works, are circular or octagonal on plan, continued in the cathedrals and great churches to be designed in clusters; but the shafts of such clustered columns were more essentially a part of the structure than had been formerly the case. Thus, in some fine examples, as at Exeter Cathedral, the effect of the pier with its clustered shafts is that of one massive column, enriched by vertical mouldings; while, in the choir at Westminster Abbey, on the other hand, we see separate shafts gathered around a large central column, which latter is obviously the support relied upon to sustain the superstructure.

There is little doubt, I think, that the fourteenth century manner is that which is most consonant with sound principles. However beautiful the clusters of separate columns may be, in themselves, there is an anomaly in dividing vertically, a pier which has to support a great weight, and there is a further constructional disadvantage in building such a pier of different materials, as marble and stone, which vary in their hardness, and power to support superincumbent weight.

In the piers which were in use in the Decorated period, this feeling would seem to have had its weight, as the cases of applied columns were rare, with exceptions, in the case of such details as wall arcades, and the shafts were, as a rule, an integral part of the structure, and worked out of the same stone as the mouldings. We miss also the free application of the single shaft, as seen, for example, in windows, such as those at the Temple Church, London, where the inner arches of the windows are carried on single shafts.

In the Decorated window, the shaft was reduced in importance, and became, as in the case of the piers, a part of the actual construction. Not that it disappeared, although many windows were designed without it. The shaft, with its capital and base, was too beautiful a detail to be readily laid aside, and we consequently find that it was abundantly employed in piers, mullions, jambs, and niches, subject, in most cases, to the modifications to which I have referred.

I have already noticed the development of windows and window tracery; but a few words of further reference to this subject may perhaps be useful. A powerful influence on this development was found in the improvement of the manufacture of glass, and the consequent introduction of coloured windows. How powerful this influence became we may see, by the examples of the great churches of France, the country which took the lead in the matter. Here, we find the windows growing in size and numbers, until solidity of construction appeared to be seriously jeopardised. Exaggerated clearstories became masses of painted glass, with scantity divisions of stone bars, and stability was provided for, not always satisfactorily, by the hidden expedients of buttresses, flying, and otherwise.

In England, our architects steered clear, for the most part, of this exaggeration, although we are not without examples of the application of the same ideas, as at Gloucester Cathedral in the great east window, which, however, belongs to a later date than that which we have now under review.

The Decorated windows were features of great importance in the architecture of the time. Beginning with the simple arches, trefoils, &c., inherited from the previous era, the window tracery became more elaborate, and gave opportunities for complicated design. This reached its climax in the flowing or Flamboyant style, which is probably the most ingenious manner of filling an arched window-opening that has ever been devised. This tracery has, however, the defect of appearing too clearly as constructed ornament, rather than ornamented construction, and there was ever a tendency to allow the fancy to run riot, and to set the dictates of good sense at defiance, by the adoption of forms remarkable rather for their quaintness and fantastic appearance, than for beauty of form and propriety of detail.

The well-known Jesse window at Dorchester, in Oxfordshire, is an illustration of my meaning in this respect. In it, the constructional requirements are sacrificed to an exuberance of detail, which being placed against the light, is in an unfavourable position, and one, moreover, which is unnecessary, on artistic grounds, because the same story might have been told better by sculpture, applied in other parts of the building. For examples of flowing tracery of a more self-restrained description, I may refer you to the east window at Carlisle, and the great west window of York Minster.

While admitting the ingenuity and often beauty of such designs, I, for one, cannot but regard with greater admiration the noble simplicity, and striking solidity of the lancet form, especially when enriched with the shafts and beautiful mouldings of Early English art. The recoil from the flowing lines of the great window-heads led directly to the introduction of the vertical lines, which marked the next period of so-called Perpendicular architecture.

I do not propose to trouble you, as I have said before, with all the minor details of differences between the styles, but I have, I hope, said enough to enable those of you who are not architects to distinguish between them. It only remains, therefore, to sum up the facts which we have ascertained to bear upon the domestic architecture of the fourteenth century.

We find, in the first place, a considerable advance in the requirements of social life, leading, as a direct consequence, to an increased development of architecture. Such development was found to consist, to a great extent, in the addition of extra features to the time-honoured types, a mode of proceeding in strict accordance with the genius of the English people.

Further, it has appeared that, in early times, as at the present day, the country was the natural home of the English gentleman, who delighted to expend his resources there, in the improvement of his estate, and the exercise of a bounteous hospitality; rather than to crowd into cities, and to vie in magnificence with his foreign contemporaries. We have further concluded that our architecture was controlled by circumstances of position, by the materials attainable, by the state of the country as regards security, and by other similar external considerations.

Subject to these limitations, the architecture was reasonable, beauty was realised, but not at the expense of convenience, as then understood; and any object sought to be attained was attempted in the simplest and most natural way. It is our task, gentlemen, both of honour and difficulty, to seek to apply similar principles to the architecture of to-day.

SOCIETY OF LADY ARTISTS.

It is rather difficult to reconcile the existence of a special exhibition of Lady Artists with some of the views that are freely circulated now as to the equal position and powers of women as compared with men. We hear it frequently urged that women only require the recognition and opportunity granted to the other sex to show themselves their equals in science and art. But an exhibition for the works of ladies alone can only be established for one of two reasons; either to prove the superiority of lady artists to others, or as an indication that they wish to be judged,—and only claim to be judged, by a different standard from that which is assumed in judging of the works of artists of the other sex, or of exhibitions in which lady exhibitors occupy common ground with the rest. The first assumption we can hardly suppose to be the fact, and we must therefore conclude the second to hold good, that the ladies wish to be judged by a standard of their own. That this is the feeling would be

naturally concluded from the fact that those ladies whose powers enable them to compete successfully on equal terms in the leading miscellaneous exhibitions do not for the most part think it worth while to send their best works here. Miss E. Thompson, who can almost command her position at the Academy, is represented in Great Marlborough-street by some little things which are assuredly not adequate to her repute; Miss Starr, also an Academy exhibitor of some power and with promise of more, sends a head which is very pleasing and shows much feeling, but is hardly what she would wish to be judged by. While admiring the head, by the way, we must protest against accepting it as in any way a representation of "Miranda," and suspect it has been painted as a study and then named,—a practice rather too common.

Looking at the exhibition from this special point of view, it is a very good one, and perhaps would surprise some who are not aware of the extent and variety of the talent which ladies are spending upon this branch of art. Madame Bisschoff's broad and finely felt work, "The First Kiss" (61), would be sure of an honourable place in any exhibition-room; it is not here exhibited, we think, for the first time. Her sister, Miss Louise Swift, contributes one or two works of exceptional merit and power in their kind; the painting of four dogs gazing, in various phases of excitement, "After a Lark" (270), in as remarkable for the spirit and truthfulness with which each animal is represented as for the carefully studied diversity of character and action in the group; and her terrier in "An Anxious Moment" (301) of excitement over the intended destruction of a dragon-fly is perhaps still better. Mrs. Ward's painting of an "Incident in the Childhood of the Old Pretender" (595), was previously exhibited at the Royal Academy, and is well known; her friends will not fail to notice that the artistic associations with the family name are likely to be carried on by two other ladies who exhibit here,—Miss Flora and Miss Eva Ward,—of whose two works, 281 and 301, respectively, the last-named, "A Frost at Last," pleases us most. Miss Hilda Montalba sends a charming combination of figures and landscape under the title "Early Spring" (261); which also we seem to have seen before, however. Mrs. Marrable is a very industrious and able contributor of a large number of drawings, of which "Ober Pontresina" (440) and "Lago Maggiore" (488) are much the best and broadest in style of her landscapes, some of which, although showing a practised and ready hand, seem a little too much coloured according to rule. Among the works which have most speciality of style and treatment are Miss Walker's "Interiors in the Roman Campagna" (232, 339, 345), in which the influence of French art is evident, but the artist has original power. "Castle on the Banks of a Stream" (238), by Miss Kirschner, and Miss Assenbaum's "Still Leben" (385), are works of some force and individuality, qualities to be noted, since force is rather what is wanting in the average character of the exhibition. It is to be seen, however, in Miss Chadband's small work "Tribulation in Time of War" (661), and in the drawings that bear the name of Miss Marian Croft, who is certainly one of the most original and gifted among the members; we especially notice "Old Cottage, Ringmer" (165) and "Old Eastbourne" (464). Miss Kate Greenaway's "Little Walnut Girl" (426) is an admirable and conscientiously truthful study of real life and character, quite free from the mere "prettiness" which is too often (may we be pardoned for saying it?) a besetting sin of lady artists. Among others we notice Miss Hine's "Schoolfellows" (98), Miss Marian Edwards's "Ellin's Farm, Rudgwick" (128), Mrs. Heath's "On the Derwent" (127), Miss Belford's "Wellock's Mill" and Miss Partridge's "Old Lowestoft" (138, 139), Miss Margaret Rayner's "Ancient Drinking-Fountain at Ludlow" (178), Miss Deakin's "Rough Weather in the Grouse Season" (193), Mrs. Alma Tadema's "Fountain in the Villa Borghese" (289), Miss Ellen Partridge's "Breton Peasant" (323, a life-size head), Miss Powell's "Columnar Granite" (407), and the Hon. Mrs. Lowther's "Oaks at Amphill Park," a fine broadly-treated water-colour study. Miss Eley's old violoncello-player "Tuning-up" (198) is very clever and thoroughly studied in regard both to expression and accessories; and Miss Westbrook's "Ethel" (439) is a very pretty study, with some distinctive quality of colour. Among the smaller and slighter works are many of true artistic feeling, enough to spend some time over.

THE WILLIAM SMITH COLLECTION AT SOUTH KENSINGTON.

THE collection of drawings liberally bequeathed by the late Mr. William Smith, F.S.A., to the South Kensington Museum, and now open to the public in one of the picture galleries there, is one of some historical as well as artistic interest. It includes, that is to say, specimens of a style and date in water-colour art which, though we may not now consider them of the highest artistic value, represent a phase of the art which was important in its day, and has a claim to representation in our national collections. Into this category come such drawings as those by Edridge, of which several are to be seen; the style would be called very weak and conventional now, but it is only by comparison with such work that we estimate the progress, in manipulation at all events, which has been made in modern water-colour. The specimens by Varley and Girtin are very valuable, as the Kensington Museum is not very rich in these at present; and there are some exceptionally good specimens of Prout. Another kind of historical interest attaches to some drawings which, in addition to artistic excellence, have the recommendation of being records of what has now passed away, especially in regard to the picturesque of architecture. Pyne's drawing of "Taking Down the Houses on Old London Bridge" is a very fine and effective work in itself, and shows vividly the old-fashioned picturesqueness of that dear, old, dangerous, inconvenient structure, one of our last and longest preserved links of connexion with the days of picturesque and romantic architecture, in that golden age when sanitary laws and regulations were not, and no practical considerations or prosaic limitations of Building Acts fettered the free taste of the architect in the indulgence of his fancies. Stanfield's small and exquisitely-toned and finished little drawing of Waterloo Bridge, or rather its junction with the shore as seen from the water, is another interesting reminiscence, now that what was then water is dry land, and serves to remind us how much more picturesque and suitable to the situation the archway and steep stone stairs appeared when they ascended direct from the water, than now when they ascend from a flagged footway. Heavy as the bridge is, in fact, this portion was well designed for its situation, and loses by the change. There are some other interesting architectural views, some looking truthful, some we should say manifestly the reverse, such as the drawing, by Mr. Warren, of the Rock Fort at the mouth of the Mersey (Cheshire side), which the artist must have invented himself, for it has not the slightest resemblance to the real structure. There is a very fine specimen of Cotman's "The Mouth of the Thames," with that dirty brown tone in the water which he used with such effect under an ultramarine sky, and which we should conjecture he derived from his Yarmouth studies of sea water over extensive shallows and sandbanks.

There is a collection of books also bequeathed by Mr. Smith to the Art Library, including Vasari's lives, and other works of recognised standing and value in art-literature.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting of this Institute on Monday evening last, the president, Mr. Charles Barry, in the chair, the following gentlemen were balloted for and duly elected, viz.:—As Fellows: Mr. E. H. Barnell, of Bedford-row; Mr. G. T. Hine, of Nottingham; Mr. G. T. Redmayne, of Manchester; and Mr. James Stevens, also of Manchester. As Associates: Mr. G. H. Bibby, of Manchester; and Mr. F. Wheeler, of Queen Victoria-street.

The President called attention to an autograph letter which had been received from H.R.H. the Prince of Wales, which was written to the Institute under the following circumstances. Sir Francis Grant, as President of the Royal Academy, had suggested to his Royal Highness that if he would write an autograph letter to the Academy inviting its members to become exhibitors at the Paris Exhibition of 1878, it would materially strengthen his (Sir Francis's) hands in the matter. The President of the Institute, feeling that the architects ought not to be behindhand any more than the painters, had asked the Prince to write a similar letter to the Institute, being assured that such a letter would very much stimulate the members to exert themselves, in view of the great personal interest which his Royal Highness was taking in reference to the Exhibition. The letter, which the President said would of course be preserved in the archives of the Institute, was as follows:—

"Marlborough House, Pall-mall, S.W.
7th March, 1877.

SIR,—As President of the Royal Commission for the Universal Exhibition to be held in Paris next year, I am anxious to take every measure to make such an Exhibition of Architectural Drawings as will do honour to the architects of the United Kingdom.

In furtherance of this object I beg you to have the goodness to bring under the notice of the members of the Institute of British Architects the importance which I attach to their co-operation in this matter.

I have requested Mr. P. Cunliffe Owen, the secretary of the Commission, to furnish you with any particulars you may require, and to him all applications for regulations and for information should be addressed.

I have the honour to be, Sir, your obedient Servant,
(Signed) ALBERT EDWARD,
President of the Royal Commission for the Paris Exhibition of 1878.

Charles Barry, Esq., F.S.A.,
President of the Royal Institute of British Architects."

The President announced that, with respect to the special meetings recently held for the purpose of considering the report of the Committee on the Improvement of the Institute, the report of the committee had been substantially adopted, together with the new bye-laws, which had now virtually become law. The Council had, however, had under consideration whether it would be advisable that the whole of the bye-laws should come into practical operation at once, even though legally they would do so. The Council had determined that the new bye-laws rendering it obligatory upon future candidates for membership to obtain four-fifths of the votes of Fellows present to ensure their election, &c., should come into operation hence-forth; but it was not deemed advisable that the new regulations with regard to sessional papers and discussions thereon* should take effect until the commencement of next session.

The President said he had no doubt the members would be glad to hear that the portrait of the late President (Sir Geo. Gilbert Scott, R.A.) had been undertaken by Mr. George Richmond, R.A., who, as an old personal friend of Sir Gilbert's, would doubtless make the work a labour of love.

The President also announced that the visit of members to the British Museum to see the remains brought over by Mr. Wood of the Temple of Diana at Ephesus (which visit was suggested by Mr. C. T. Newton during the discussion on Mr. Wood's paper recently read before the Institute) would take place in a few weeks' time. Due notice of the date fixed upon would be announced to the members by means of the "notice papers."

It was further announced by the President that the Council and a number of London members of the Institute, having taken into consideration the suggestions made in the report of the Improvement Committee as to the advisability of refitting or remodelling the rooms of the Institute, towards the cost of which scheme the increased subscription of country members might be partly applied, felt that it was incumbent on London members to contribute their share towards the same object. With this view a subscription list had been opened, and contributions to the amount of 250*l.* had already been promised. The Council were sanguine that the amount would be increased to at least 1,000*l.* before the list closed.

With respect to the Commission on Copyright now holding its sittings, the President announced that the Council, having addressed a letter to the Commissioners, suggesting that architects had some right to be heard on the question of copyright as affecting architectural designs, a reply was received, stating that the Commissioners would be glad to hear anything that architects had to say, whereupon the Council had deputed him (the president) to attend and give evidence. He had done so, to the best of his ability, and had made the strongest stand he could for the rights of architects. The evidence which he gave, together with the questions he was asked and the answers which he gave to them, were now in print; but, until the labours of the Commissioners were completed they were deemed to

* It has been decided that in future every paper read at the Institute shall be printed and circulated among the members generally before it is discussed. It is proposed to devote the first half of every ordinary general meeting to a discussion on the paper read at the previous meeting, and to let the rest of the time be occupied by the reading of the paper which is to be discussed at the next meeting. By this means it is thought that all delays in publication will be avoided, and that members will come prepared with definite opinions on the subject under consideration, and so enhance the value and importance of the discussions.

be private. At the same time, a printed copy was in the hands of the secretary of the Institute, and could be seen by those members who were particularly interested in the matter.

Among the donations to the library was a parcel of thirty-eight volumes given by Mr. Hardwick, this being his second donation of the kind. Many of the books included in the gift had long been wanted, and some of them were duplicate copies. Mr. Hansard, in reference to this matter, urged other members of the Institute to present duplicate copies of any architectural works they might possess, in order to form the nucleus of a lending-library.

Mr. T. H. Wyatt then read a short biographical sketch of the late Mr. T. Talbot Bury, V.P., whose career has been already mentioned in the *Builder* (p. 205, *ante*).

Mr. Dollman, who was called upon by the chairman, said he believed he was now, with the exception of Mr. Ferrey, the sole survivor of the five pupils of Pugin who had followed the architectural profession. As an old friend and fellow-pupil of the late Mr. Talbot Bury, he could only say how much he regretted the loss which his friends and the profession had sustained.

The Chairman said the best thanks of the meeting were due to Mr. Wyatt for the loving care with which he had endeavoured to place their deceased friend's merits before them. He (the chairman) felt it due to himself to say what a great loss the Institute had sustained by the death of Mr. Bury, who was elected vice-president only last year. Since he had been in office he had been of most essential service, especially as a member of the Committee on the Improvement of the Institute, in whose proceedings he took the most lively interest, and with whose report he most fully concurred. He could not but feel that Mr. Bury's devotion to his duty on that committee, necessitating his coming out in somewhat inclement weather while in ill-health, had hastened his end.

Mr. R. Herbert Carpenter then read a paper "On the Benedictine Abbey of St. Mary, Sherborne, with Notes on the Restoration of its Church," an abstract of which, together with the brief discussion which ensued, will be given in our next.

It was announced that the next ordinary general meeting would be held on Monday, the 9th of April, when a paper, entitled "Notes respecting some of the Condemned City Churches," prepared by a Sub-committee appointed by the "Committee for the Conservation of Monuments," will be read.

EXHIBITION OF THE ROYAL SCOTTISH ACADEMY.

It is the practice to preface the catalogue of the Exhibition with a quotation, *ardentia verba*. The quotation this year (of which the ubiquitous "Smith" is the author) is as follows:—

"We are struck with admiration almost amounting to awe, when we contemplate a grand painting, a fine statue or a noble building, and feel a pride in our species when we term them the noblest productions of human art. But such objects have a still more sanctifying effect if we suffer them to raise our thought to Him who made the artist."

What, then, is a truly great work of art? It is something more than a mere specimen of manipulative dexterity: it is the visible expression of inward emotions, the manifestation, in a material form, of the intellectual appreciation of the Beautiful. The work of the true artist is but a humble reflex of the creations of invisible power; in producing it he ascends from the effect to the cause. He uses the power he has acquired to give expression to his deepest thoughts and his most subtle imaginings. He imparts to physical beauty an intellectual beauty, which alone satisfies the intelligence. He interprets the spiritual light thrown upon inanimate nature with feelings of delight far removed from what would ensue from mere mechanical drudgery. The phenomena of nature are ever varied, and their effect upon man is the greater on that account. The feeling of uncertainty, the knowledge that something may occur showing objects —whether animate or inanimate—in a light never seen before, gives zest and interest to the labours of him who endeavours to arrest and retain, in a visible form, these fleeting and ever-varied expressions.

In an annual exhibition such as this, the majority of the contributions to which each year consists of the works of the same individuals, it would be unreasonable to expect that each and all should display unerringly the same ratio of intelligence and degree of progress. There are some who at first give promise of future excellence; their earlier works may have exhibited the awkwardly-expressed efforts after truth, the first endeavour to embody the awakening sensations produced by the wonders of Nature. But it frequently happens that in after-attempts, when striving to get rid of crudity of execution, the spirit is not evoked; the light is not the light of the sun, the shadows are not such as he casts; the men and women are soulless images; the product stale, flat, and unprofitable.

These remarks may be taken as an explanation of the circumstance that, from time to time we have ceased to take notice of the works of certain artists which continue to be conspicuous objects in these annual exhibitions. In looking over the paintings we simply endeavour, as briefly as possible, to state the impression produced in our minds by the best of them, and to give a faint idea of what the artist means to represent, avoiding censure, unless when effrontery appears manifest.

There is about the usual percentage of well-known pictures re-exhibited. Remarkable amongst these is our old friend, "Sir Isumbras at the Ford." It is but a few years ago since Mr. Millais introduced him to us, and yet it seems long ago, "the adolescent has now become adult."

As we enter the cottage of Mr. Fildes's "Widower," we feel the transition from the artificial to the real. The artist has here struck the proper key, and at once enlists our sympathies. Engrossed with this mournful theme, our attention is arrested by a glare of colour close by; what is it? "The avenging Army of the Scots crossing the Solway into England during a thunderstorm at sunset. The front rank of spearmen on the dexter side of the picture are supposed to be singing some patriotic melody to the accompaniment of the pipers in front, while the distant thunder makes a fine obligato." A very fine obligato, indeed, Mr. Sam Bough! Your "early legal training"* enables you to see where to draw the line. If the music of the bagpipes were as far off as the distant thunder the harmony would be more complete.

Mr. Chalmers appears to have abandoned *genre* and to have devoted himself to landscape and portraiture, and in both lines he labours after a high ideal; his works abound in delicate touches and subtle gradations of tints. "Early Snow" is charming and suggestive: a few airy touches indicate the last lingerings of colour in the foliage after the manner of Corot (of whose work an example is exhibited), and towards whose dreary mysteriousness this artist shows a marked predilection. Mr. Chalmers's portraiture resembles that of Phillips in some respects, but in others it is strongly opposed; for one thing it has not the firmness and decision of the deceased painter's manner, but then it is more obviously refined.

Mr. Macteggart works with great muscular energy, displaying a savage contempt for tea-tray trivialities. Sometimes too much so, perhaps. We have been unable, from any point of view, to apprehend his "Highland Burn,"—the landscape and the figures will not coalesce; but, at the proper distance, the conglomeration of sketches of colour in his "Bramble Gatherers" resolve themselves into masses of rich foliage; and "Nelly," when seen from afar, eclipses those surrounding her. Refinement is not incompatible with vigour, and a bias in that direction would elevate rather than depress the æsthetic proclivities of this able artist.

Mr. J. B. Macdonald keeps his nationality to the front; his scenes are always laid in his native glen, and present the Highlander in the heroic aspect. "Glencoe" represents a wife after the massacre finding her husband lying murdered,—

"With the gash upon his bosom,
And the frown upon his brow."

The drawing and grouping are well managed, but the colour is black, harsh, and entirely devoid of gradation of tint, in which respects this artist displays an inherent weakness.

The "Shylock and Jessica" of Mr. Robert Gavin has a look of reality about it. The figures are not studied from the hired models of the studio, but from the living reality of southern climes. Very piquante and graceful is the figure of Jessica, in her short robe of red and yellow, and the bright, warm sunshine seen through the half-opened door is rendered with good effect.

Mr. George Hay goes in for daintily-painted cabinet pictures of personages, in ancient costume, engaged generally in the pursuit of pleasure. The cavalier "Out for a Shot" stands on the *qui vive* in a snow-clad landscape, in a natural and easy position, and the whole work is carefully rendered and in good keeping.

In the subject from the "Legend of Montrose," "Annet Lyle playing the Harp to Angus M'Aulv," Mr. W. E. Lockhart has succeeded in giving to the figure of the brooding, distracted Highlander a look of reality. Both expression and attitude carry out the impression produced upon the reader of the legend by the character of the man. The same cannot, however, be said as to the figures of Annet Lyle and Monteith, who each play a part in the scene, and the background of tapestry is harshly rendered. Mr. Lockhart displays much power in the rendering of character in "The Parish Kirk," in which the varied expression and attitude of the worshippers is happily hit off, and the quaint ugliness of the interior is lighted up in a skilful manner.

Mr. Otto Leyde, although generally devoting himself to portrait-painting, indulges now and then in *genre*, and he has never been more effective than in "On Stryke," where an obstinate-looking carpenter sits brooding over a newspaper, and his careworn wife looks reproachfully at him as she is going to dispose of his tools from their deplenished habitation.

We do not quite realise the position sought to be delineated by Mr. J. R. Reid in his "Rustic Spelling Bee." The figures are few and scattered, and their relation to the centre figure, who presides, does not appear obvious. The chief merit of the picture lies in the vivid realisation of open-air effect, and the subtlety of light and shade amongst the early summer foliage which closes in the group.

The same effect, with greater distance, is given in a landscape by Mr. David Murray, "Forbidden Pasture," representing a flock of sheep which have strayed into a field of oats besprinkled with poppies; and he is equally successful in "Weed-brook," where meadows, water, pollards, and geese are aptly rendered. The name of this artist is new to us; if he is at the beginning of his career he promises to take a high rank as a landscape-painter.

Mr. W. B. Hole is a man of culture; his *rôle* ranges through Classical, Mediæval, and modern themes. His perceptive powers are in advance of the executive, but he never commits the error of confounding the poetic with the pictorial in his subjects. "A Wounded Enemy" represents the well-worn theme of a cavalier being tenderly administered to by a peasant woman in her hut, but in "His Lordship" we have a modern story plainly told of a delicate aristocratic stripling who varies the monotony of his existence by paying a visit in his bath-chair to the forge of the blacksmith upon the estate, who receives him with due courtesy.

We are pleased to see that Mr. John Smart is not degenerating into mannerism as he threatened to do, and finds that there are more phases of nature worth depicting than one. There is much freshness "Among the Yellow Corn." The hill clad with luscious mossy verdure, which forms the background, is beautifully painted, and the feeling of repose pervading the scene happily rendered.

Mr. T. Graham's "Sorrow in the Tent,"—two gipsy women bemourning a death which has occurred within their fragile dwelling,—is a fine piece of brush work, remarkable for the brilliancy and harmony of its colouring, but defective as to the sentiment intended to be conveyed. We prefer Mr. Graham's work when he makes the landscape his chief aim.

Our space is as short as our theme is long. We give way to the necessity of the position.

The Exhibition, as a whole, is indicative of progress. While nothing great has been produced, there is little that can be classed as coarse and vulgar, and much that is worthy of admiration.

* Vide his speech at the Academy dinner. Mr. Sam Bough proposed "The College of Justice," having, he remarked, been asked to do so out of regard to his early legal training. (Loud laughter.) He said the time had passed by for summary justice, and now no sane person had any doubt of the integrity and honour of those gentlemen who were our gracious Sovereign Lady's vice-gerents in the land. That our noble college would long maintain its high character was the prayer of every honest Scotchman; and if they had such as now adorned the bench, gentlemen alike renowned for their knowledge of the law and their love of art and literature, he believed that they need not doubt for the future and that it might proudly be said Scotland would be Scotland yet.

The New Stations at York and Middlesbrough. — The platforms, to the extent of 140,000 ft. super. are being paved 1 in. in thickness by Claridge's Patent Asphalte Company.

HALF-YEARLY REVIEW OF THE RAILWAY COMPANIES.

THE several railway companies have just concluded their meetings for the half-year ending with December last, and the proceedings of many of the leading companies disclose two marked features—the falling off of traffic, in several instances owing to depression of trade, and the enormous increase in the cost of railway construction.

At the meeting of the *London and North-Western Company* it was announced that there was a falling off of traffic within the half-year to the extent of 30,000*l*. This the chairman attributed partly to the depressed state of trade in the country, and to a certain extent owing to "the legitimate abstraction of a portion of our traffic by the Midland extension to Scotland and elsewhere." Adverting to expenditure on new works, the Chairman observed that they could not hope that the capital account could be closed. It was impossible. They were bound to provide for the wants of the community,—stations and the doubling of the line for carrying the traffic properly. During the two years when the prices of labour and material were extremely high, the directors of the company held their hands, and did as little as they could, and they had now got somewhat behind. They should have been thankful if their Liverpool Station had been ready a year ago, and it was not ready yet. But at present capital did not go as far as it did ten years ago, within 50 per cent. During the past half-year they had kept up the line, and not only so, but they had had to increase expenditure for many large works that would not come every year. They had had to put a new pair of gates to the Garston Docks, which had cost something like 8,000*l*. They had had to remove the wagon shops from Campden, and the horse sanatorium, and the shareholders would see a sum of about 65,000*l*. against 47,900*l*. or 48,000*l*. in the previous year. They had had to do a great deal more of extra work than they had ever done before. They had altogether about 1,400 miles laid with steel rails, and within a year or two the shareholders would not only feel the benefit of the lower price, but the better wear and tear of those rails. Adverting to the company's rolling stock, he said that during the half-year they added 25 new engines, and rebuilt 42 engines; whilst they had put new tubes into 90 engines. The average life of their whole stock of engines was 10½ years. He added that included amongst them was the "Cornwall" and the "Velocipede," two engines close upon thirty years old, which were running to-day, and were likely to run for many years to come. "There is no limit," said he, "to the life of an engine if you are satisfied with the type." During the half-year they had added 73 entirely new wagons, and rebuilt 760. Referring to the block system, he said that they had adopted the absolute block. They had about 55 miles only remaining of the permissive block, which they had had for many years. For a good number of years they had been adding the absolute block, and the interlocking system, long before it was thought of as a public matter, and they had at the present moment over 1,000 miles of railway worked upon the absolute block system. The cost was something like 200,000*l*. or 300,000*l*. a year more than under the old system; still they were bound to do everything that they could for the safety of the public. The report of Mr. Baker, the chief engineer, with respect to the works in progress on different parts of the company's system, detailed their present state. The Primrose-hill tunnel he reports to be all but finished. On the Seaton and Wansford branch, where a million cubic yards of excavation is required, nine bridges are in progress. The widening of the line between Longsight and Hardwick (Manchester) involves the construction of a viaduct containing fifty-seven piers and arches, and forty-four of these have already been built. The enlargement of the Lime-street Station at Liverpool is making rapid progress. The works at Holyhead for the enlargement of the inner harbour are also being vigorously carried out. Out of 492,000 cubic yards of excavation 190,000 cubic yards have already been removed, and of 800 lineal yards of quay wall 440 yards are finished. One of the heaviest portions of the new works which the company have in hand is the making of the Coed and Festiniog line in Wales, which contains a tunnel 3,872 yards in length, or upwards of two miles. Mr. Baker reports that the three shafts for the construction of this tunnel have already been sunk to their required average depth of 115 yards each.

Unlike the London and North Western Company, the half-year's traffic of the *Midland* shows an increase of 93,110*l*., the increase applying to passengers, and every description of merchandise, with the exception of minerals, on which there was a decrease. At the meeting the chairman observed that there could be no doubt whatever that the receipts from passenger traffic would have been considerably larger but for the general depression in the trade of the country. As it was, the addition to the passenger traffic was 67,961*l*. The company's total capital, including loans, now stands at 63,825,502*l*. During the half-year the expenditure on lines open for traffic was 796,000*l*. On the purchase of additional lands in various places 197,000*l*. had been expended, and of this large amount of land nearly one half the expenditure had been at Bradford, for the increasing traffic of that important town. About 90,000*l*. had also been paid during the half-year on account of the new locomotive and carriage shops at Derby. The chairman said the expenditure upon these shops had been very large indeed. When fitted with machinery the whole outlay would not be less than half a million sterling. They would be amongst the finest shops, if not the finest, of any in this kingdom. There had been expended 376,000*l*. on lines in course of construction; 245,000*l*. for additional working stock; and 335,000*l*. in payments to lines in which the company were partners, making a total outlay of capital in the half-year of 1,753,000*l*. The estimate of the further expenditure of capital account for the current half-year was 1,500,000*l*. The chairman did not think it possible to keep down the capital expenditure in the present half-year below that sum. Adverting to their Bills now before Parliament, he made the following important statement respecting the greatly increased cost of railway construction in this country within the last few years. "The Bills deposited for the ensuing session," he observed, "do not authorise any extension of the Midland system. The fact is, as I have said from this place repeatedly, the cost of all new railway works is now so seriously increased that it is impossible to construct railways at anything like the cost at which they were constructed ten years ago. A railway which cost 30,000*l*. a mile seven or eight years ago, would now certainly cost 50,000*l*. That being so, it is absolutely necessary, both for this company and for others, that a pause should take place in the construction of new railways; and I do not think that, for some time to come, any very great extent of new railways will be projected in this kingdom." In answer to a question as to the cost of the St. Pancras Hotel, the chairman said that as the hotel was now complete, the shareholders were entitled to know what it had cost. It was a large amount. The buildings had cost 304,355*l*.; the decorations and fittings, 49,000*l*.; and the furnishing, 84,000*l*.; the total cost being 438,000*l*. The hotel was carried on by the company itself, the profits, after paying the manager a commission on the net proceeds, going into the coffers of the company, and so far the result was satisfactory.

The *Great Northern Company's* report states that the net decrease in traffic receipts as compared with the corresponding half-year preceding amounts to 6,743*l*. The falling off is attributed partly to the closing of the Alexandra Palace, and partly to the opening of the Midland Company's new Scotch route. The capital expenditure during the half-year was 850,577*l*., of which 242,794*l*. were spent on lines open. The chairman stated that the greatest outlay had been upon the two additional tunnels near to King's-cross. They led into the narrow throat which conducted all the goods and passenger-traffic into King's-cross. The Copenhagen, or main tunnel, would be ready for opening in May. On lines in course of construction 372,895*l*. had been expended, and of that sum 283,000*l*. had been spent on the new Derbyshire lines. The chairman dwelt upon the large expenditure which had been incurred in the block and interlocking systems, amounting to nearly 300,000*l*. A few years ago the signalmen on the Great Northern system numbered 200, and now they number 800. With respect to further capital expenditure the estimate was 4,485,000*l*., of which 3,000,000*l*. would have to be expended on the new lines in Derbyshire, Leicestershire, and Yorkshire, which would give the company access to the three important towns of Leicester, Derby, and Burton-on-Trent. The present capital of the company was stated to stand at 27,334,125*l*.

The *North-Eastern Company's* report states that there was a decrease in the passenger traffic receipts as compared with the previous half-year, amounting to 39,038*l*., and also a decrease in merchandise traffic of 18,648*l*., both of which were attributed to trade depression. The company's present capital stood at 54,414,628*l*. During the half-year 961,137*l*. had been expended on lines open and on new lines in progress. With the new docks in formation at West Hartlepool, and the railways in connexion with them, the contractors were making satisfactory progress. In conjunction with the London and North-Western Company, the company were making an extensive enlargement at the joint station at Leeds.

At the meeting of the *South Eastern Company* the chairman, adverting to the accident at Folkestone and Dover, observed that on the 1st of January we had one of the most fearful storms in the Channel that perhaps ever was known. The company sustained damage at Dover to the extent of about 2,000*l*., and a similar amount at Folkestone, whilst the damage to the great Admiralty pier would have to be made good by the British taxpayer. Blocks of stone of twenty tons weight were positively shifted by the force and violence of the waves. The traffic receipts showed a falling off in the gross revenue of 5,000*l*.

The *Great Western* traffic returns show a decrease in passenger traffic as compared with the corresponding half-year of 1875, of 12,952*l*., but an increase in merchandise of 46,644*l*., and in minerals of 28,376*l*., giving a net increase of 62,068*l*. The engineer reports that the heading for the Severn tunnel has now been carried under the whole of the deep water of the shorts, passing in this portion through compact Pennant rock. The practicability of the works, he adds, having thus far been satisfactorily tested, instructions have been given for the preparation of the necessary plans, drawings, and specifications, with the view of tenders being obtained for the construction of the tunnel. The report adds that the Bristol Harbour and Railway, and the new goods and passenger station at Bristol, are fast approaching completion. The engineer states that the several works in progress have been very unfavourably affected by the severe weather and the recent floods. The shareholders at the meeting voted 241,950*l*. to be spent in station enlargements and improvements during the current six months.

It transpired at the meeting of the *Great Eastern Company* that the passenger receipts had increased by about 24,000*l*., whilst the number of passengers had increased by about one million. On the other hand, the expenditure for maintenance of way had diminished, but recent floods and other expenses which had been thrown upon them had increased the total amount. The Chairman stated that the capital expenditure for the half-year had been somewhat in excess of the estimated amount, which had arisen from the desire of the directors to complete those large improvements in the neighbourhood of Stratford. When completed, there would be four lines of rails—two for main line traffic, and two for Woolwich traffic, and the local traffic beyond. The estimates of capital expended for the current half-year had relation in great part to the conversion of the Bishopsgate-street Station for goods traffic, and to improvements in the harbour at Harwich. By the first process they would ultimately save 17,850*l*. in annual expenditure, besides securing a rental of 4,000*l*. a year for arches. By the Harwich improvements 7,500*l*. would be annually saved, and a revenue would be derived from the tonnage of vessels and traffic brought to the line.

At the meeting of the *London and Brighton Company* it was stated that "bad times" had prejudicially affected the revenue during the past half-year, and prevented many from travelling. Still they had been able to keep up their dividend. Specifications were now being prepared for the Tunbridge Wells and Eastbourne line, and the Chairman said he had no doubt the Brighton Company would complete the line within the time specified.

At the meeting of the *South-Western Company* it was stated that notwithstanding the stagnation in trade which had prevailed, there was a gross increase in the traffic for the half-year as compared with the corresponding period of 1875 of 49,616*l*. The report alluded to the activity with which the new works at Waterloo and Nine Elms were being prosecuted.

The report of the *London, Chatham, and Dover Company* attributed a great loss of traffic during

the past half-year to the failure in the hop and fruit crops in Kent. But notwithstanding these causes there was an increase of 8,028*l.* in their receipts during the half-year.

The report of the *Metropolitan Company* showed an increase in the traffic receipts of 9,939*l.* The report also stated with reference to the Aldgate extension recently opened, that Messrs. Lucas & Aird became entitled to a proportionate part of the bonus which the directors agreed they should be paid in the event of the works being completed and handed over to the company, ready for opening, before the 1st of December.——The chairman of the *Metropolitan District* stated at the meeting of that company that there was a slight increase in their traffic receipts, with which he was not satisfied. He found, however, that all metropolitan suburban lines had suffered partly from the general depression which had prevailed, and partly from the excessive wet weather. There had been eighty-five wet days during the half-year, and nearly every Sunday happened to be a wet day. The Richmond extension, from Hammersmith to Shaftesbury-road, was progressing satisfactorily, and was expected to be ready for opening this month (March).

The traffic receipts of the *North London Company* for the half-year amounted to 195,021*l.*, showing an increase of 6,838*l.* The chairman said that during the half-year the company had expended on capital account 36,815*l.* on the docks and the widening of the line. But they would yet require 145,000*l.* to carry out the works. This capital, however, was to receive six per cent. interest from the London and North-Western, the Great Western, and the Great Northern Companies, who required the accommodation which the company was about to provide.

At the meeting of the *East London Company* the chairman stated that there had never been any leakages from the Thames into the tunnel. The water which flooded the line some time back had leaked in from the Commercial Dock, but it was speedily stopped, and the tunnel was now as dry as ever. The chief discussion at the meeting turned upon the alleged unfair manner in which the London and Brighton Company is treating the East London as respects the development of its traffic.

The *Lancashire and Yorkshire Company's* proceedings showed that whilst during the past half-year there was a falling off in the receipts from passenger traffic, there was an increase from merchandise and minerals. The sum of 834,839*l.* had been spent during the half-year on existing lines and new works. Amongst other works which the company are constructing are the new docks at Fleetwood, which are almost completed, and are expected to be ready for opening early in summer.

EDINBURGH.

A CORRESPONDENCE has taken place between the Treasury and Sir Alexander Grant, the principal of the University, relative to a proposed grant of 80,000*l.*, which the Government have conditionally agreed to recommend to Parliament towards the extension of the buildings of the University.

The estimated cost of the proposed new buildings and alterations upon the existing premises is 261,500*l.* The amount subscribed by the public towards carrying out this scheme is 82,000*l.*, and my lords of the Treasury ask whether, in the event of a grant of 80,000*l.* being made by Parliament, the remainder of the funds will be forthcoming from other sources. In reply, the principal refers to a report of the architect, who suggests "a series of alternative courses," of which the most trenchant would involve stripping the building of every architectural feature. "The committee do not think it would be consistent with their duty to adopt this course. They feel that the proposed buildings would not be appropriate if they had not some academical, and therefore architectural, character;" and, after consideration, they have resolved to "adopt the third alternative suggested by the architect, and to reduce the scheme, for the present, to the erection and fitting up of the new scientific buildings required for the medical faculty, and to carrying out necessary improvements in the existing University buildings:—

"Thus, the hall and tower, although the former is much wanted for University meetings, and the latter forms an important feature in the architect's design, will be postponed as not being immediate necessities for the purposes of instruction, and will be left to form the object for a fresh subscription list or for testamentary liberality from time to time.

By this postponement a reduction of the estimates for site, building, and architect's fee will be effected to the amount of no less than 69,000*l.*, and at the same time this reduction will be effected 'without any sacrifice of the additional facilities for instruction which are necessary.'

The committee also propose to make a further saving of 5,000*l.* by postponing the proposed external improvement for the present University buildings.

In accordance, therefore, with the terms of your letter, we now come before their Lordships with a revised and reduced scheme, which confines itself to the erection of those scientific buildings for the University of Edinburgh the necessity of which was affirmed by the Duke of Devonshire's Commission, and to internal improvement of the present teaching accommodation of the University.

The original estimate amounted to 261,500*l.*, out of which a sum of 30,000*l.* to 40,000*l.* was due to the sudden and great rise in the cost of building in Scotland, which took place after the committee had commenced their proceedings. As shown above, we propose to strike off or postpone 74,000*l.* of that estimate, leaving a proposed expenditure of 187,500*l.*

To meet this we have subscriptions promised, and nearly all paid, to the amount of over 82,000*l.* This, with the addition of a Parliamentary grant of 80,000*l.*, would amount to 162,000*l.*, leaving 25,500*l.* to be still provided.

The committee are of opinion, and they authorise me to say this in their name, that under the encouragement which will be afforded by the gracious approval of Her Majesty's Government, and with the renewed interest in the scheme which will be caused by the commencement of the works, there is reason to expect that fresh subscriptions will be forthcoming, and that within four or five years the requisite additional sum of 25,500*l.* will be provided.

The committee pledge themselves to use their best endeavours to secure this result, and considering the favourable disposition already shown by the public, they think that there is no doubt of their ultimate success."

The liberality of the Edinburgh public as regards such matters is worthy of remark. The sum of 100,000*l.* required for a new infirmary had just been subscribed and a commencement to the buildings made when this new scheme was mooted, and a sum of 82,000*l.* was in a short time subscribed; and this, too, in a city not remarkable for the wealth of its inhabitants.

The suburbs of the city are extending rapidly towards the south and south-west, and the new buildings comprise a great variety of villas, both as regards style and accommodation, ranging in cost from 600*l.* to 6,000*l.* each. The total cost of these recent erections is estimated by the *Scotsman* at 1,358,544*l.* As a general rule, they are erected by speculators, and possess little or no architectural character; but at intervals the attention is arrested by an example (generally built for the proprietor) where the aim has been after something more than mere utility.

Plans and estimates have been received by the School Board for two new schools. One of these is to be erected upon a plot of about half an acre in extent in Cranston-street, one of the new streets embraced in the city improvement trust, in Canongate district. The buildings have been designed by Mr. Hamilton Beattie in the Scot-Flemish style, and take the form of the letter E. They have a frontage of 130 ft., a breadth of 54 ft., and a height of 90 ft. The ground-floor is converted into a covered playground, and above this are three stories lighted by mullioned windows. The gables are crowstepped, and the central one is finished by a belfry, below which is carved a representation of the insignia of the Board. Accommodation is provided for 810 pupils, being about 100 less than the Government regulation. The accessories are similar to those of the schools already erected.

The original plan showed two flanking towers, but these were objected to on the score of cost. The reduced building was estimated at 7,400*l.*, but the actual estimates are 600*l.* below that sum; and an effort has been made by Mr. Gowans, one of the members of the Board, to have the design carried out in its entirety, as the building will be seen from the North Bridge and the road to Portobello, in combination with other features in the picturesque quarter of the old town.

The other school is also designed by Mr. Beattie, and is to be erected at Dalry-road. Ground in that locality is not so valuable as within the city, and it has been resolved that this school shall differ from the others, and consist of only one story. Accommodation is provided for 700 pupils, at a cost of 6,000*l.* The elevations are plain in character.

Moray House, one of the finest historical mansions in the Canongate, was, some time after the "disruption," purchased by the Free Church and converted into a training college. There was a large terrace-garden facing the south, which is now used as a playground. Upon this ground is to be erected a new school, having a frontage of 110 feet by a breadth of 45 feet. Owing to the rapid fall of the ground, it is found necessary to erect a basement story, and this are to be utilised as a covered playground. Above this are to be placed two stories containing four rooms, each measuring 40 feet by 20 feet, with a height of 15 feet. Lavatories, cloak rooms, &c., are to be provided. Architectural effect is sought merely by the use of mouldings, and the treatment of the roof, which is to be varied by the introduction of gabled ventilators. The estimated cost of the building is 5,400*l.*

Dalry House, which until lately stood within its own grounds at the west end, is now hemmed in by streets of a third-rate order. It has been purchased by the Episcopal Church, and is to be re-arranged internally and added to, with the view of fitting it for a training college. Accommodation is to be provided for thirty students.

Mr. Robertson, of the Board of Works, London, is to be the successor of the late Mr. Matheson as Surveyor for Scotland.

THE NEW "BON MARCHÉ" BUILDINGS AT BRIXTON.

THE large and handsome new market building at Brixton, or the "Bon Marché," which the proprietor has named the premises, are fast approaching completion, and are intended to be opened on the 1st of April. They have been in course of erection for about eighteen months past, and when completed will have cost upwards of 70,000*l.*, exclusive of the land. The buildings have been erected and internally arranged on the principle of some similar establishments in Paris, and when opened they will form a novelty in market accommodation in the metropolis, embracing the sale of almost every imaginable article in food, furniture, and dress, under one management, the whole of the *employés* residing on the premises in a large block which has been specially erected for them, and which has a direct internal connexion with the main building. The site occupies an area of nearly an acre in extent, with its main frontage to Brixton-road, nearly opposite the Chatham and Dover station, and bounded on the south side by the railway, and on the north side by Shepherd's-lane.

Both the main frontages to the building,—the one facing Brixton-road, and the other Shepherd's-lane,—have some architectural pretensions, the latter being the most prominent of the two, in consequence of being surmounted by lofty Mansard roofs. The Brixton-road frontage is 125 ft. in length, and contains two lofty stories above the ground-floor, the height of the main body of the elevation being 50 ft. from the street line, whilst the central portion is carried several feet higher, and surmounted by a semi-circular arch enclosing a clock, with vases at each angle. Immediately underneath the arch is a panel in black slate, 4 ft. in depth, and about 12 ft. in length, on which is inscribed, in large gilt capitals, the French title selected for the building, "Bon Marché," and it may be added that there are similar inscriptions carved in stone over each of the entrances to the building, and likewise in coloured glass at the head of all the ground-floor windows, both in the Brixton-road and Shepherd's-lane frontages. There are two entrances from Brixton-road, each 11 ft. wide and 13 ft. high, with red polished granite pilasters on each side, and a shaft in similar material in the centre, the pilasters, as well as the central shaft, resting on a base of polished grey granite. The ground elevation also contains a range of six windows of similar dimensions, each window being filled in with plate glass in one sheet. The rest of this portion of the elevation consists of Portland stone piers, columns, and window-heads, having richly-sculptured keys containing fruit and floral devices. The upper portions of the frontage are in red brick with Portland stone dressings and ranges of eight lofty windows to each floor. At the foot of the second-floor windows there are two projecting balconies in stone resting upon a stone bed built into the wall, the projecting portion upon which the stone floor of the balcony rests being sculptured to represent a huge shell. The return elevation in Shepherd's-lane, to the extent of 70 ft. in depth, is uniform with the Brixton frontage, there being a third entrance at the angle of the two elevations. Beyond this the Shepherd's-lane frontage is carried to a still further depth of 40 ft., with Mansard roof 80 ft. in height from the ground line. Immediately under the Mansard roof is an immense tank, capable of containing 6,000 gallons of water, with hydrants attached, communicating with every part of the building in case of fire. At the rear of the main building, and directly

communicating with it, is what is called the domestic block before referred to, for those employed in the establishment. It covers an area of 9,000 superficial feet, and is five stories in height. It contains upwards of 100 apartments, and includes two large dining-rooms for males and females, together with dayrooms, the manager's apartments, male and female visitors' rooms, library, billiard, and other recreation rooms, and upwards of fifty bedrooms.

A portion of the north side of the ground-floor, as well as that part of the basement fronting Brixton-road, are set apart as shops or stores connected with varied trades, whilst the remaining part of the ground floor, 100 ft. by 65 ft., and the whole of the upper floors, each form one immense apartment, in which businesses, comprising departments of all kinds, will be transacted. A spacious staircase, 22 ft. square, with a central flight of stone steps, 6 ft. wide, and two similar flights on each side, leads to the upper floors. The building throughout is heated by hot-water pipes from an apparatus in the basement, which has been supplied by Messrs. Benham, of Wigmore-street.

Messrs. H. Parsons & Rawlings, of Lambeth, are the architects of the building, and Mr. Brass is the contractor. Mr. J. B. Halliday has superintended the erection of the structure as clerk and foreman of the works.

LANDING STAGE, BIRKENHEAD.

LIVERPOOL ENGINEERING SOCIETY.

ON Wednesday, the 14th inst., this Society held its thirty-fourth meeting at the Royal Institution, Colquitt-street, Mr. M. E. Yeatman, vice-president, in the chair. A paper, on the "Design and Construction of the South Reserve Landing Stage and Piers, at Birkenhead," was read by Mr. Graham Smith, A.I.C.E. This floating landing-stage, which has recently been constructed by the Dock Board, is situated in the Mersey, between the Morpeth and Alfred Dock entrances. It is 352 ft. long and 72 ft. wide, and has been designed partly as a substitute for that which existed in the low-water basin, previously to its conversion into a wet dock, and which was devoted to the use of the London and North-Western and the Great Western Railway companies, and to facilitate the coasting traffic coming to that portion of the estate. In sinking the piles forming the piers considerable difficulties were met with, as the sandbank was found to contain numerous large stones and fragments of rock, which had been artificially deposited from time to time, and gradually covered as the bank increased. These stones for a long time resisted all efforts to get the piles down, but ultimately they were sunk to the required depth by the water-jet system. The whole of the undertaking was carried out from the designs and under the supervision of Mr. Lyster, engineer-in-chief, Mr. Graham Smith acting under him in the capacity of "resident engineer." The contractors, Messrs. Emmerson & Murgatroyd, of Stockport, were represented by Mr. William Thomson. The subject was well brought before the meeting, and was illustrated by numerous wall plans and diagrams.

The Proposed Application of the Artisans' Dwellings Act to Sheffield.—A communication has been received from the Local Government Board in reference to the proposed application of the Artisans' Dwellings Act to Sheffield. About fifteen months ago a requisition was signed by several ratepayers in favour of the demolition of about a fourth part of the town. The proposal was forwarded to the Medical Officer of Health, who took certain proceedings which the Act renders necessary. These for the most part consist of personal inspection of the districts scheduled, an examination of all the houses therein, and the getting up of a mass of statistics as to dimensions of rooms, number of inmates, and so on. It appears that only one-third of the district has yet been gone through, and that at the present rate of progress it will take three or four years longer to complete the inquiry. The Health Committee lay some stress upon the fact that some of the most filthy and disreputable haunts of the town have been left out of this proposed scheme, and they consider that the memorialists have included districts where a change for the better is not so urgently called for.

THE SESSIONS HOUSE OF THE ESTATES OF THE RHINE PROVINCE.

DÜSSELDORF, which is, of all Rhenish cities, perhaps most favoured by nature by its public park-like grounds and small lakes lying in the centre of the town, has also outstripped already many of its neighbours by the many improvements which human hands may effect in beautifying a town. The visitor to the home of Rhenish art will see in the modern parts of the city all the requirements of recent times. Broad, well-paved streets and footpaths, necessary for a large and constantly-increasing traffic, have been laid out; tramways connect the different parts of the city; waterworks and conduits, as well as a well-planned system of drainage, contribute to give to it a clean and pleasant appearance. The metropolis of Rhenish art has, besides, shown by the establishment of horticultural and zoological gardens that it is earnestly endeavouring to follow the footsteps of its elder sister, Köln. Only in one respect has it remained behind its neighbour. Düsseldorf is yet greatly deficient in buildings of a monumental nature, which, of all others, give to a city a characteristic stamp. But great and satisfactory progress has been made in this direction within recent years. Amongst these new constructions, the City Theatre, designed by the architect Giese, of Dresden,* the new Academy of Arts, designed by the architect Riffart, and the Sessions House of the estates of the Rhine Province (of which we give an illustration in this number), are an earnest of the desire to excel also in this direction.

The Provincial Estates of Rhenish Prussia formerly held their sittings in the rooms of the northern wing of the old Academy of Arts, and after its destruction by fire, in the aula of the Realschule of the city; but the accommodation there has always been found insufficient, and the Estates resolved to erect a new building more appropriate to the purpose. It is now being erected, after the designs of the architect Julius Raschdorff, of Cologne, near the Kaiserteich. The foundation-stone was laid last May, and it is intended to complete the buildings within two years from that time, the estimated expense being 1,000,000 marks (50,000*l.*). The site has been generously presented by the city, and faces one of its most pleasant and most frequented promenades.

As regards the interior of the building, which is erected in the style of Italian Renaissance, it contains, besides the necessary offices for the provincial administration of the Rhine Province, and the sessions halls, to be beautifully decorated, of the Rhenish Provincial Estates, the residences of the Landes director of the Rhine Province, and of the higher officials of the provincial administration.

Should the new buildings be completed in the magnificent style proposed, this would indirectly advance the prosperity of Düsseldorf. By promoting the embellishment of the "Athens of the Rhine" it will still more be made the resort of *rentiers, littérateurs*, and art-loving well-to-do people generally.

* Illustrated in the *Builder*, vol. xxxiv., p. 168.

INFIRMARY FOR ST. GEORGE'S UNION, FULHAM-ROAD.

THIS building is erected for the accommodation of the whole of the sick poor of the St. George's, Hanover-square, Union, which includes twenty-one parishes and a population of 155,000. It is situated on the south side of the Fulham-road, upon the spot were formerly stood the residence of the Earls of Shaftesbury.

The foundation-stone of the building was laid on the 26th of July last, by Mr. Hugh Seymour, the chairman to the Board of Guardians.

The building is intended to accommodate 840 inmates, and is planned upon the pavilion system. It has seven blocks or pavilions, each four stories high, all connected on the ground-floor by a corridor running the entire length of the building. This corridor commences at the first pavilion flanking the road, on the ground-floor of which are the doctors' rooms, committee-rooms, &c., and a passage-way leading to the resident medical officer's house and the chapel.

This front pavilion is varied from the others by the addition of a large tower, containing a cistern for the supply of the hydraulic lifts attached to each pavilion. On the right hand of the tower are placed the entrances to the building; that on the left being the patients' entrance; that on the right the cartway entrance to the administrative offices, stores, &c.; as also to the residences of the officers, laundry, kitchen, and so on. The other pavilions are all similar, and each contains a fireproof staircase of vaulted brick surrounding the well of the hydraulic lift; and on each floor there is a large ward to accommodate twenty-eight patients, with a separation ward for four patients. There are nurses' rooms, sculleries, and offices attached to each ward.

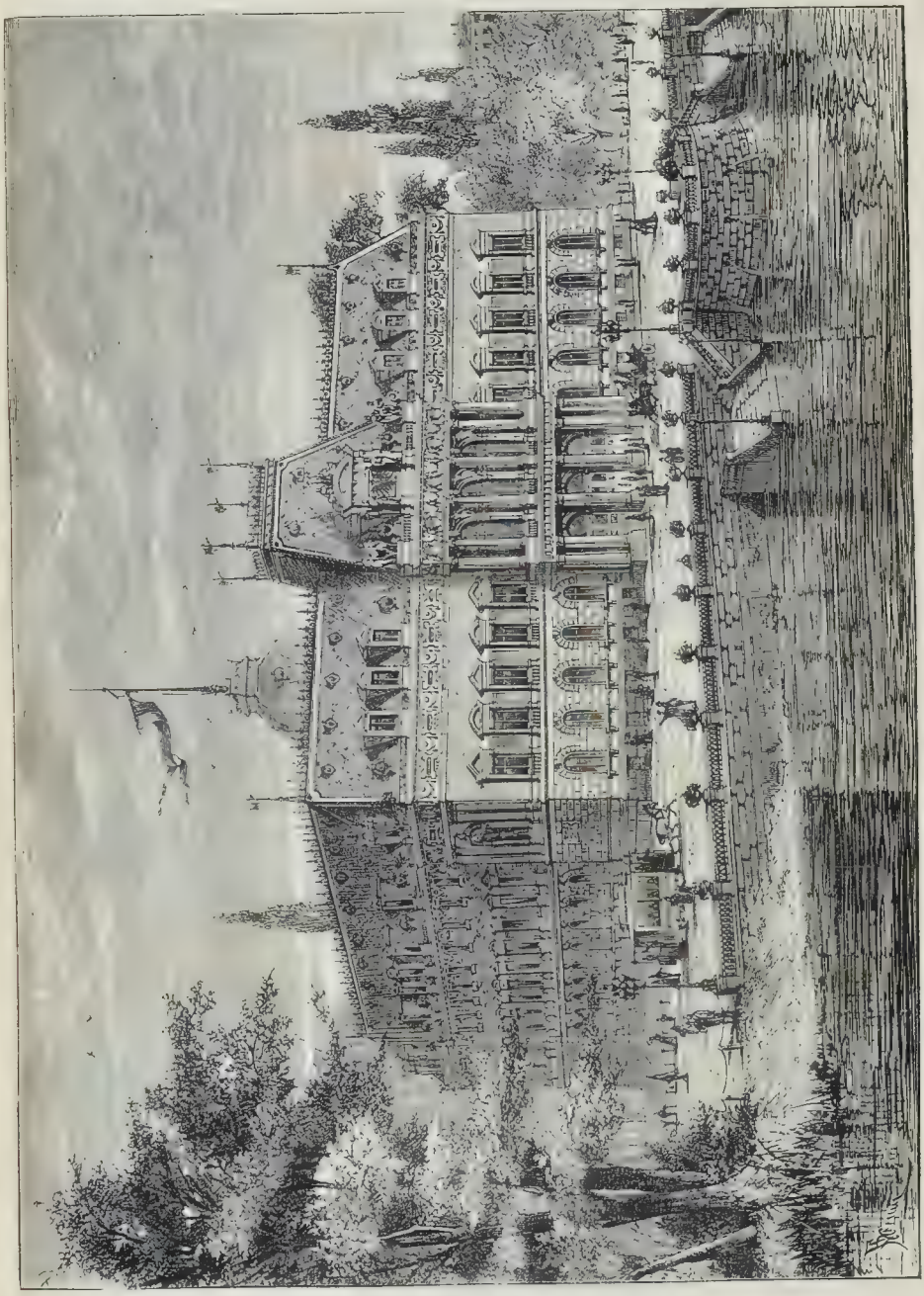
The chapel fronts the Fulham-road, and will accommodate 600. The house standing between the front pavilion and the chapel is the medical officer's residence.

The architect is Mr. H. Saxon Snell; and Messrs. Wall, Brothers, are the builders. Mr. Thompson is the clerk of works.

BARROW-IN-FURNESS COMPETITIONS.

A *faux pas* of the Barrow corporation, with regard to the architects' plans for the proposed new town-hall, and for the new workhouse, has ended in a mess that must cause that body to feel vexed with themselves, and that has inflicted, although unintentionally on their part, an injury upon Messrs. Paley & Austin, of Lancaster, architects. The steps that have led to this are definite enough. Barrow needs a new town-hall, and the union a new workhouse; the corporation has to provide the one, and the board of guardians the other. The corporation and the guardians, respectively, invited architects to send in plans for the town-hall, and for the workhouse. While the competition was in progress in the architects' offices, a junota of the corporation, well satisfied, presumably, with the professional skill and capabilities of Messrs. Paley & Austin, entered into what seems to have been an unauthorised compact with these gentlemen, the terms being, that they (Messrs. P. & A.) be chosen as architects for the town-hall without competition, and that they withdraw from the workhouse competition, which would be left open to local architects. The party who made this arrangement induced the council to ratify it by a resolution. The decision raised an outcry among the Barrow architects, and evoked a protest from the against their being precluded from competing for the town-hall. The council seem to have felt that they had made a mistake, and taken course that was condemned by the public. They retraced their steps, rescinded the resolution and again threw the Town-hall plans open competition. Another phase of the case shows further strong reasons why Messrs. Paley & Austin should say, "Save us from our friends." They had withdrawn their competing plans for the new workhouse, but not at the request, on the suggestion, of the board of guardians who properly hold that the town council possesses no power or right to dictate as to which architects may and which may not compete in the matter of plans for the new workhouse. Feeling that an injustice has been done to Messrs. Paley & Austin, an attempt was made at the last meeting of the board of guardians (a number of the guardians being on the town council also), to reinstate these gentlemen as competitors for the workhouse. A motion was proposed, seconded, and lost, to the effect that Messrs. Paley & Austin's plans be sent up, with instructions that they be considered before Mr. Thompson, the arbitrator, gives his award. The ground of opposition to this motion was chiefly that these gentlemen cannot now, after all that is publicly known of the affair, compete upon equal terms; and that their plans, if sent in now, may be distinguished or known, not by a motto, but by the name of the firm virtually written on the outer cover.

Enlargement of the Finchley Cemetery. — The Islington Vestry and the Burial Board have resolved upon making a considerable addition to the unconsecrated portion. At a meeting of the vestry held last week a communication from the Burial Board was read, suggesting that the vestry should consent to the purchase of fifty additional acres of land adjoining the present cemetery, and also that the Burial Board be permitted to borrow the sum of 10,000*l.* for the purpose. A further letter was also read from the clerk to the Burial Board to the effect that the Board proposed to purchase 107 acres from the Strawberry-vale estate, at an estimated cost of 20,000*l.*, and this was confirmed.



THE SESSIONS HOUSE OF THE ESTATES OF THE RHINE PROVINCE.—Herr Julius Raschdorff, Architect.



ST. GEORGE'S UNION INFIRMARY: FULHAM ROAD.—Mr. H. Saxon Snell, Architect.

THE FINSBURY STEAM JOINERY WORKS.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

ON Saturday afternoon last a large number of the members of the Architectural Association visited the well-known joinery works of Mr. W. H. Lascelles, Bunhill-row, E.C. The premises are very extensive, containing about 90,000 ft. super. of floor space, or upwards of two acres. Besides the house in Bunhill-row (the ground-floor of which is monopolised by the front entrance gateway to the works, with the counting-house on first-floor and foreman's residence above), the premises consist of a large factory consisting of basement, ground-floor, and four floors above, in addition to a large flat roof used for putting together framework, greenhouses, conservatories, huts, and large work of all kinds. The factory is a parallelogram in plan, and is lighted from the top by means of a long skylight running nearly the whole length of the building. Beneath this skylight is a continuous well-hole through each floor to the ground level, the various floors being supported on the sides next the well-hole by tiers of iron columns. The floors thus form what may be likened to broad flat galleries running entirely round the building. There are no windows in the side walls, the only means of lighting being the skylight and well-hole, and the windows at each end of the building. The basement is principally devoted to the storage of deal, wainscot, and mahogany, but also contains the boiler-house, which, with the engine-room on the ground-floor, consists of a fireproof structure. Two Cornish boilers, of 50-horse power nominal, supply steam to two 25-horse horizontal engines. The engines and boilers are so arranged that if one engine or one boiler is under repair, the other engine and boiler will do the work. The fire-boxes of the boilers are specially made of large area in order to burn up the wood refuse, consisting of shavings, chips, &c. This refuse is mixed with the coal in the stokehole, as much as three cartloads of this fuel being thrown in at one time. Arrangements are made by means of which the shavings and cuttings from the machines on the ground floor fall through to the basement, and are thence removed in barrows to the stokehole. In addition to this, there is a shaft communicating from the stokehole with each floor of the building, and down this shaft all the refuse from the upper floors is thrown. By utilising the refuse in this way a great saving is effected, for not only is less coal required, but the trouble and expense of carting away a large quantity of refuse is saved. The main shafting for driving the machinery runs in a kind of trough on the basement floor, and bands are carried up through the ground floor to actuate the machinery. By this means far less vibration is caused than would be the case were the shafting suspended from the underside of floors in the usual manner. The ground floor is partially devoted to the purposes of a deal store. On this floor are also various machines for sawing, shaping, and moulding wood, besides machines for sharpening and setting saws, &c. At one end of this floor is the engineer's shop, containing a large lathe and other appliances, enabling all the machinery in the building to be repaired and renewed in parts from time to time. There are also large "cleaning-up" benches on this floor. But the most notable and interesting feature of the ground floor is the drying-room or desiccating-chamber, just constructed upon the principle invented by Mr. Woods, of Massachusetts. This is the first drying-room of the kind which has been put up in England, and, so far as he has yet had experience of it, Mr. Lascelles says he has every reason to be satisfied with the results attained. The chamber is constructed to hold 5,000 standards of deal, but may be made larger or smaller. In this case it has on one side and at one end the ordinary party and external walls of the building, there being a window in the end wall. This window is, of course, kept closed. On the remaining end and side the chamber is enclosed by double wooden partitions, made as airtight as possible. Doors open through these partitions, to enable the timber to be removed in and out. When the chamber is charged with timber, and these doors closed, the chamber is practically airtight. Heat is applied by the utilisation of the waste steam from the engines, which is contained in an iron pipe, 5 in. or 6 in. in diameter, extending in the form of a serpentine gridiron over nearly the whole of the floor-area of the chamber. Above this the timber is placed, and the doors being shut the temperature is allowed to rise to from 130° to 150°, never exceeding the latter. The heat thus applied drives the moisture out of the wood; but how is this moisture got rid of? Mr. Lascelles said that in all desiccating chambers with which he was acquainted, the vapour was carried off by means of a shaft in one corner; but this shaft let in the cold air and retarded the process of drying. In the drying-chamber under notice, the vapour or moisture from the wood is got rid of in the following ingenious manner:—A water-pipe of about 2 in. in diameter, supplying cold water to the boilers, and always fully charged, enters the chamber at one end, and passes out at the other end, but between its points of entrance and exit it is greatly amplified by being connected with what may be called three large gridirons of iron piping, of about the same diameter as that of the supply-pipe. These gridirons are set up one at each end and one on one side of the chamber, with the bars vertical and a few inches from the walls. The cold water on its way to the boilers through the supply-pipe has to pass through the whole of this system of piping, consequently the "gridirons" are always fully charged. Each gridiron consists of about fifteen vertical tubes, besides horizontal ones at top and bottom. These pipes furnish a large area of constantly cold surface, and the vapour rising from the wood condenses on them and trickles down into a trough or gutter, whence it is drained away and reserved for the extraction of some peculiar acids which it contains. The timber remains in the chamber for about six weeks. Mr. Lascelles says the great advantage of the principle is that the wood dries from the centre outwards, the surface being the last to dry. It is not necessary that the temperature should be maintained uniformly the whole of the time the chamber is charged; and where the temperature varies in intensity, as in the case of works where the boiler-fires are extinguished at night and on Sundays, the only effect would be that any vapour that might be in the chamber when the temperature got low would fall down on to the wood, to be again dissipated when the temperature was increased. The principle here adopted is also used for drying clothes, and in preserving fruit for export. This portion of Mr. Lascelles's works excited much interest amongst the visitors. Mr. Lascelles's works contain another timber-drying chamber of the ordinary construction over the boilers. Commencing on the ground-floor, and ascending to the roof, there is, in the centre of the elongated well-hole, a lift worked by steam, and conveying timber to the workmen on the various floors. Around this lift there is arranged a central staircase. The first, second, third, and fourth floors are provided with benches to the number of forty or fifty on each floor, arranged end-on on each side of the well-hole, leaving a wide gangway nearest the wall on each side. The work done on the first floor comprises office furniture, desks, bank and shop fittings, window sashes and frames, doors, &c., most of this work being finished from the machines. On the second floor, staircases, railway work, brewers' work, &c., is to be found in progress. The third floor is devoted to "horticultural" work of all kinds, which is cleaned up from machines and fitted together; while the fourth floor is principally used for putting together and finishing off hard wood work of all kinds, and painting and glazing sashes and lights. About 200 men are employed on the works. Mr. Lascelles pointed out that all the glue used on the premises is Coignet's Medal Glue. This is a French product, and is made from fish. A great objection to English glue is that although it is supposed to be made entirely from clippings of English hides, clippings of hides from the River Plate and elsewhere are used. The foreign hides being salted for the journey, the salt contained in clippings from them remains in the glue, rendering it liable to be affected by changes of temperature. Moreover, with the French medal glue there is no offensive smell whatever. It is dearer than English glue, but it is much stronger, and therefore worth the extra cost. Among the specialities which attracted the notice of the visitors were Mr. Lascelles's patent dowelled flooring, and his "waved match-lining"; the latter is used on the walls and ceiling of Mr. Lascelles's counting-house, and produces a good effect, the cost being about 50s. per square. Mr. Lascelles also pointed out a simple contrivance for cutting bricks: this is simply an ordinary band-saw, with the exception that the "saw" consists of a piece of common hoop-iron bond. All the bricks used at Lowther Lodge, Kensington, and the new red brick house at Queen's-gate (both of which were built by Mr. Lascelles) were cut by this machine. The visitors also inspected a new pitch-pine staircase, which has been made by Mr. Lascelles from the designs of Mr. Waterhouse for a house at Sheffield-terrace, Kensington. Mr. Lascelles does a large trade in sashes for horticultural purposes, and he keeps in stock greenhouse lights, 6 ft. by 4 ft. and 3 ft. by 4 ft., ready glazed and primed, so that a greenhouse of any size can be quickly and cheaply erected. By the aid of machinery, he is enabled to sell these lights complete at 8d. per foot. His patent curved structures for horticultural purposes are well known, and his garden lights and boxes are both cheap and good. Mr. Lascelles makes school furniture and fittings to a large extent, having already supplied the London School Board with 18,000 dual desks and seats in pitch-pine. He has several specialities in the way of concrete construction, and for the development of this branch of his business he has just taken waterside premises at Stratford, covering an area of 6½ acres. Here he will be able to make 1,000 concrete floor slabs per day. These premises will also enable him to supply his patent concrete slab cottages with greater facility, and he has determined, contrary to previous intimation, to undertake the building of these cottages where desired. This concrete is made entirely of breeze or burnt ballast and Portland cement. Among other items of interest, and for which we have not space, Mr. Lascelles described the very simple means of bookkeeping which is adopted on the premises. Each workman has a book in which his work is entered from week to week. From these books of the men the work is posted into other books kept in the counting-house, the wood used for each piece of work being specified. By the system adopted it can at once be ascertained what each particular piece of work has cost, and account is taken of each kind of wood used, in a manner enabling it to be easily ascertained what the waste amounts to,—a very important item in a large joiners' shop. The work is all piecework, there being a definite tariff price for each job. His is, Mr. Lascelles believes, the oldest piecework house in the trade. It has been carried on for nearly forty years, and no strike or any other difficulty has occurred. This says a great deal for both master and men. Mr. Lascelles says he has never been out of a joiners' shop for more than a month at a time for thirty years, and all he knows of the doings of trade unionists is what he sees in the papers. He believes that far less injury is done to the building trade by unionists than by the discreditable way in which contracts are sometimes let. Men not worth a sixpence are asked to compete, against established and reputable firms, for jobs involving an outlay of 10,000*l.* This is a growing evil, and will only be met, in Mr. Lascelles's opinion, by all respectable firms resolving to do what he has determined upon, viz., never to compete for a job unless he knows against whom he is competing.

ECCLESIASTICAL DECORATION, WITH SPECIAL REFERENCE TO THE CHURCH OF ST. FRANCIS, ASSISI.*

MY purpose in bringing forward this subject is to endeavour, as briefly as possible, to exhibit the close relationship which exists between the sister arts of sculpture, architecture, and decorative art. I shall divide my observations into three sections: namely, the origin and development of art; its application in the Classic and Middle Ages; and, lastly, its place and purpose in modern decoration.

In the first place, with reference to the origin of art, we have the undoubted fact before us, that from very remote antiquity, sculpture, architecture, and painting have gone hand in hand in serving to embellish those places set apart by man for the exercise of his religious duties, under every system of creed. That this arises from a spontaneous desire to honour to the utmost an acknowledged, though unseen, divinity, is clearly avowed. And in attempting to carry out his ideas, we can easily perceive how the influence of surrounding circumstances affects the results of his labour and forms a controlling element in the realisation of his thought.

As it is impossible to determine, with any

* By Mr. Thomas Bonnar. Read at the meeting of the Edinburgh Architectural Association on the 14th inst.

degree of precision, the period at which the art of painting was first employed as a principle of decoration, we must remain satisfied with the fact that those wonderful people, the Egyptians, were not ignorant of its use and power, and that it was applied by them as an agent in the elaboration of their marvellous temples and tombs. From the majority of the fragmentary remains of those sacred edifices which were adorned with mural decoration, we obtain much valuable insight and information respecting the manners and customs of a race, and of an age, which but for the light derived from this source would have long since been lost in the gloom of successive centuries. And not only do we get glimpses of their various modes of life, but from their hieroglyphic writings we are made acquainted with many of their forms of thought, especially in connexion with religious doctrines; and these seem to have been the basis on which are founded much of the theories and rituals of our own day.

The works of this people convey an impression of great vigour of execution, notwithstanding the restrictions imposed on all matters relating to art and all other methods thought capable of transmitting the slightest gleam of information, or idea of liberty, except such as were sanctioned by the priesthood, who looked with a jealous eye on anything which they might suspect of having a tendency to weaken their power. These ministers, through their system of mystical ritual, apparently governed and restrained, within certain prescribed limits, the range of thought enjoyed by the nation. And not only so, but from this subtle influence, with which the life of the nation became imperceptibly impregnated, arose that uniformity of mind and action, by which it was so strikingly characterised, and which became so firmly established that it appeared to be even less capable of change than the adamantine marbles out of which their statues were formed. Had this people lived in a state of even comparative freedom, with the genius and culture with which they were so eminently endowed, it is difficult to conjecture to what a height of excellence they would have attained in everything which constitutes the true greatness of a country; but, alas! their fetters, although unseen, were too securely bound. The very silent power and grandeur exhibited by their statues seem to suggest, by their near approach to completeness, the thought, "But lift the veil with which restriction has clothed us, and you will then perceive the perfection of ideal human form!"

The colouring used by the Egyptians in their paintings was confined to what are technically called primary colours; namely, reds, blues, and yellows,—the two latter when in combination forming their green tint. The groundwork was usually composed either of white or yellow; the outline showing extreme hardness, owing to the circumstance of red or black being employed for this purpose. The work of forming the outlines of figures or subjects was first performed by the priest, and afterwards traced by the sculptor, thus accounting for the sharpness of the lines.

Having by the favour and divine power of the goddess Isis fixed the limits of the design, with the aid of the chisel, the artist proceeded to fill in the various tints in their appointed places.

I have now to call your attention to the remarkable state of preservation which those pictures and hieroglyphics maintain at the present day. This is all the more extraordinary when we consider that it is the earlier, and not the later, specimens which are undoubtedly in the finest state of preservation, and likewise exhibit the greatest degree of merit. That this is a circumstance wonderful in itself and worthy of our earnest reflection, is all the more evident when, as may be broadly stated, we are aware of the fact that they were produced at least 4,000 years ago. I may here observe that it is difficult to accept, as the only explanation for their perfect condition and freshness of colouring, the statement that this must be solely attributed to the dryness of the Egyptian climate; for I am impressed with the belief that those by whom these works were produced were in possession of a method of preparing and applying their colours which is for the present unknown to us. I have been assisted to arrive at this conclusion from the circumstance that in the British Museum, situated in the centre of London—whose climate is presumed to be fatal to all works of art exposed to its influences—the specimens of Egyptian workmanship exhibited there are evidently as fresh and uninjured by climatic agencies as they were when first deposited there many years ago. In connexion with this matter it is desirable to bear in remembrance that it is to this same atmosphere that we impute the serious injuries sustained by those works in fresco which have of late years been employed for the mural decoration of the Houses of Parliament. A number of these pictures are almost entirely obliterated, while many more are in a very bad condition; and to this unfortunate result, may in great measure be ascribed the death-blow which fresco has received as a system for the extension of higher art decoration in this country. And it is evident that this will remain an insurmountable obstacle until moist colours are obtained which shall have the property of withstanding the effects of our variable climate. I am inclined to think that this drawback lies in no small degree with the manufacturer. I would suggest, as a means of assisting to overcome this difficulty, that the art student should attentively and carefully study the chemical properties of the materials which he has now to work, and by so doing acquire an intimate knowledge of their composition. If fully instructed and informed in this important branch of his education, experience would lead him only to use those pigments which an intimate perception of their qualities under varying conditions would justify him in selecting and adopting, in circumstances requiring the retention of their original brilliancy and depth. This part of the art student's training has hitherto been almost entirely ignored in the public schools of this country; whereas, in those of the best periods of Italian and German art it was one of the essential studies of his scholastic career; and it is almost needless to mention in relation to this part of my subject such names as Michelangelo, Raffaelle, and Da Vinci, who, while masters of chemistry, were at the same time the greatest masters of their art. The works executed in fresco by the two first-named evince, by the splendid state of preservation in which they are seen at the present day, sufficient proof in confirmation of this statement.

I will now proceed to take up the second section of my subject, namely, the application of art in the Classic and Middle Ages. It may be accepted as conclusive that the Greeks, in their works of sculpture and architecture, display the source whence they derived their early impressions of art; and it is equally clear that this was derived from the Egyptian.

We have a striking illustration of the correctness of this theory if we take as an example that figure of ornamentation familiarly known by the name of honeysuckle, from its resemblance to our native woodbine, although in reality it is the "lotus" of Egypt. It also figures prominently in the ornamental art of the contemporary Etruscans, where in some instances the natural form of the leaves is actually delineated. But in the hands of the Greek artist it assumed, in varied and conventional forms, that beautiful perfection of architectural adaptation which distinguishes the "Periclean period."

We have only to recall to mind the character and genius of the Greeks to find this solution of their manifestly extraordinary progress in the development of art. Their highest ideal was man exalted and surrounded by a mystical existence, based on the glowing traditions in which the poets deified their heroes of antiquity, investing them with Divine attributes, and creating in them the gods of Olympus. Operated upon by this influence, their sympathetic genius called forth every latent power to aid in producing the loftiest and noblest embodiments of art and beauty, and at the same time enabled them to clothe their works with such a subtle charm, that even in this matter-of-fact age—ignoring the influences which inspired these masters—and actuated merely by the force of study and appreciation, we are transfixed as by a spell when in the presence of their sculptors, and more especially when standing under the shadow of their sublime architecture, which is recognised as the undisputed evidence of all that is true and beautiful.

With such perfection in the arts of sculpture and architecture, it is not assuming too much to suppose that the art of painting had also reached a high relative position; and, as for proficiency, the names of those masters which have descended to us may well be entitled to rank with the greatest of the exponents of art which the sixteenth century produced.

The Greeks displayed great diversity in the ornamentation of their temples and places of worship, adapting to this purpose the most rare and valuable materials, such as the precious metals, the richest marbles, and beautiful mosaics; and although these were lavishly employed, yet they were treated with singular skill and success in adorning and beautifying these magnificent buildings. We are informed by Pliny that the pencil of the decorative artist was also frequently called into use to ornament in low relief, and light and shade, those large surfaces which otherwise would have appeared monotonous from their extent, but by this treatment they were rendered serviceable, and combined with the other decorations in lending grace and beauty to the whole. This statement of Pliny's may be justly accepted in proof of the prevalence of decorative art as an important feature in the embellishment of Grecian temples. But were it necessary to produce additional testimony, I think it would be sufficiently conclusive to refer to the state of art as revealed to our wondering eyes in the cities of Herculaneum and Pompeii, where in traversing the now silent, but once busy streets, and observing the dwellings and public places at one time the homes and resorts of a gay and prosperous people, we discover in the works that everywhere meet our gaze abundant evidence of the true spirit of Grecian art, in which originality, vigorous treatment, and power of execution are all undeniably apparent; thus conclusively proving that decorative art was, down to the dawning of the Christian era, an acknowledged, and not only so, but likewise an indispensable requirement of the every-day social and religious life of a community who derived their origin from the shores of Greece. But considerable allowance must be made when we take into consideration the centuries which had elapsed from the time when, as a united nation, they achieved the zenith of fame and power under Pericles. To this interval, with all its varying changes, must be ascribed much of the crudeness and want of aërial effects displayed in many of their works, and this circumstance should be accepted as accounting for their decadence in an art in which they once attained to great perfection.

The art of fresco painting is generally spoken of as a process familiar to and employed by the Greeks in their decorative works; but if we examine those examples known to us, we shall fail to find any satisfactory traces to show that they were acquainted with this method. I referred to this fact in the paper I had the pleasure of reading last year,—"Notes of a Tour in Italy,"* —where I stated that, on inspecting the paintings in Pompeii, and also the higher productions of art in the Baths of Titus in Rome, I could not discern any vestiges of what is recognised as true fresco. There is little doubt but that the colouring, in many instances, had been applied while the plaster was in a moist condition, and this was all the more obvious when small portions, which had fallen from the walls, were closely scrutinised, as the plaster appeared to have absorbed the colours to an extent which could only have arisen from this cause; but in no instance do figures or ornamental detail present the appearance of having been executed in this manner; they seem rather to have been done in tempera, a medium which we are aware the ancients were conversant with, and subsequently coated over with wax. I had, fortunately, an excellent opportunity of witnessing the truth of this theory demonstrated, being present while some workmen were engaged in clearing the *débris* out of a house in Pompeii, and in the course of their labours part of a beautifully-painted wall was brought into view, in which the subject parts still retained a gloss, but the surroundings were quite lustreless. It is only reasonable to assume that, had the Greeks understood the process of painting in fresco, they would most assuredly have adopted it in preference to all other media for the embellishment of their magnificent temples; for they were a race eager and anxious to perpetuate the memories of their glorious achievements and noble works, and the enduring capabilities of fresco would not have been overlooked by a people who rendered their knowledge subservient to the cause of art, whether in sculpture, painting, or architecture, and who made it a law to carefully select for these purposes only those substances to which were attributed the quality of time-defying endurance. Fresco, as possessing this essential qualification to recommend its

* *Builder*, vol. xxxiv., pp. 382, 415.

adoption, would certainly have been used as the means of depicting, with the imaginative power and genius by which their works are so strikingly characterised, the stirring scenes and moving incidents of their time, from whence we might have learned much that has been irretrievably lost concerning one of the most extraordinary nations the world has ever seen.

In confirmation of the fact that either pictures painted on canvas or tapestries were employed to cover large surfaces, we are informed that in the Parthenon are still visible, in the parts where masonry is exposed, hook-holes, such as would be necessary for the purpose of fixing up the stretchers or wooden frames on which the canvasses were extended; and this, when stated in connexion with the well-known fact that Polygnotus decorated the Theseum, renders it highly probable that tempera was the medium used; for in the midst of the many and important discoveries of invaluable treasures which are being brought to light at the present time through the energy and perseverance of Dr. Schliemann (whose undaunted spirit of research deserves being richly rewarded), no specimen, however insignificant, has yet appeared to give credence to the fact of fresco having been practised. Taking these circumstances together, and looking at them in relation to this matter, it seems impossible to give an earlier date to the use of fresco than the beginning of the Christian era.

Although, from the absence of any records referring to it, there is very little data on which to found an opinion as to the precise period of the discovery and employment of fresco-painting, we can still fall back on those examples which, by exhibiting the most primitive treatment, enable us by analogy to arrive at the conclusion that it was first practised in the second century of the Christian era. There are several specimens dating from this period, taken from the Catacombs, and now preserved in the Palace of the Lateran, which give authority to this supposition.

Not only was Imperial Rome made resplendent with the treasures which fell into the hands of her victorious armies as the spoils of conquest; but the vanquished cities of Greece were also deprived of the services of those artists who had done so much to make them famous. These unfortunate men, prisoners, and in a strange country, and fallen as they had from an independent state, quickly became the slaves of the caprice of their conquerors. From the presence of so much talent in Rome, great results might have been expected to flow, but in consequence of the degraded position of these artists, their work very soon began to reflect the condition in which they existed. Although it is acknowledged that they had descended from the highest period of their art, still their works while they continued in a state of freedom manifested a superiority to anything which the native Romans could produce, and was, therefore, patronised by the munificence and grandeur of the Cæsars. Sympathising with Pagan thought, their works exhibited considerable power of expression, as well as intellectual beauty, which must at all times command admiration. Nevertheless, the elevating influences by which they were at first inspired gradually became feebler, and slowly but surely deadened, until their works betrayed that they were the labour of men engaged on an irksome task, void of interest, and only accomplished to serve the pleasure, and pander to the vitiated tastes of their Roman conquerors.

Under such melancholy aspects, with art in this servile position, and its social bases paralysed if not destroyed, no wonder that there should have been a rapid decadence. And to increase the impetus of its downward career, a spirit of incredulity and unbelief in the principles of the Pagan system began to arise and unsettle their minds. This acted as a fatal blow, for it was from the ancient mythology that the Greek artist, while striving to attain his highest ideal of the God-like and beautiful, had imbibed his grandest inspirations. Indeed, as already stated, it was the source from which his art had emanated, and had continued to be fostered; but now it was doomed to share a common fate.

The period had arrived when the Imperial City of the Cæsars,—in the height of its magnificence and power bearing the proud title of Mistress of the World,—was destined to experience with unsparing severity the heavy hand of retribution. The lot which they had so often dealt to others was now visited on themselves by the inroad of the barbarian hordes; who, in the exercise of their largely-developed faculty of destructiveness, ruthlessly demolished the beautiful and precious treasures of art which had contributed so much to extend the glory and renown of the Imperial city. This event was speedily followed by the general acceptance of the Christian faith, through the conversion of the Emperor Constantine, who established the seat of his empire in the city of Byzantium. These circumstances contributed in a great measure to extinguish that art sympathy which had at no time any deeper hold on the minds of the Romans than its reputation of being fashionable, and its utility as a medium for the display of wealth, grandeur, and dominion.

At the Byzantine Court, art in its Christian phase not only regained a state of freedom, but was also largely patronised and kindly fostered. The presence of the wealthy and great at this court doubtless tended to attract to its precincts the Greek artist and skilled artisan, for here they would find their skill and workmanship both appreciated and rewarded. It was in every sense a congenial field for the exercise of their ingenuity and labour, surrounded as they were by all that had been spared from destruction of the magnificence and splendour of plundered Rome, brought thither by Constantine. For we are informed that even in the lifetime of its founder the capital of the East was celebrated for its gorgeous and splendid accessories, and rendered it worthy of being the seat of the illustrious originator of the new empire.

While considering the many advantages accruing from the fact of having ready and convenient access to appropriate studies of the most successful results of the loftiest ideals of the Classic period, and the certainty of the existence of a steady demand for such works, it remains a matter for regret that there is an evident absence of desire on the part of the artists to seek inspiration from the examples of true genius with which they ought to have been familiar. Instead of that, their works suggest that they were possessed by a feeling of perfect indifference, amounting to spiritless apathy. This may perhaps be accounted for as arising from local influences, and the usages of semi-Oriental life, enfeebling the already weak vitality which governed their imagination and hands, under which circumstances art became but a system of reproductions, full of glaring defects and mannerisms; and pure Greek art, becoming adulterated with the debased ideas of the Oriental type, ceased to exhibit, save in apparently accidental effects, the spirit from which it received its origin. And the artist, degenerating from his proper position to that of a luxurious workman, could no longer understand or interpret the graces of Classic art, which became an exotic in the hands of those whose ancestors had been the founders and maturers of the perfection of idealistic beauty.

The evidences of the persistent struggles undergone by Christian art, in its attempts to free itself of the trammels with which its association with the peculiarities of the Byzantine period had bound it, are best illustrated in the examples of mosaicists' art existing in the churches of Rome and Venice, a specimen of which phase of Byzantine work is shown in the decoration of the triumphal arch of St. Maria Maggiore, in Rome. It is dated 432, and is an unmistakable proof of artistic power and talent. It strikes the observer with a feeling best described as one of solemn grandeur. But, again, nothing is more suggestive of the enervated, I might almost say stagnant, state of art, when we view the highest result from the last-mentioned example of the descendants of this school, as displayed in the mosaics of the chancel in the famous church of St. Ambrose, in Milan, dated four centuries later, namely 836. We are conscious of the fact that there is an utter absence of progressive movement distinctly visible, and in its place a decided falling off, both in drawing and expression.

It is not until 1112, the date of the mosaics in St. Clement's, Rome, that we witness the initiatory advancement towards the naturalistic. It possesses the charm of manifest freedom and release from the traditionary school, and succeeds in combining a prismatic harmony and chasteness of colouring with rich and varied ornamentation.

It is a matter of some difficulty to assign a cause for such tardy progress, even supposing every allowance is granted for the hindrance imposed by the contentions of sectarianism, the blighting influence of barbarian invasion, or the destructive effects of the furious iconoclasts; and this difficulty in no way diminishes when we pause to contrast it with the steady advance and development of art which sprang up immediately that the Italians acquired independence of action and began to exercise freedom of thought on being emancipated from the sway of Byzantine authority in the twelfth century; so that with this period we have indications of the dawn of a brighter day for art. The darkness in which it had been enshrouded during the long reign of Pagan supremacy was about to be dispelled.

This was eminently a religious age, and with an all-powerful church the princely Popes became at once the promoters and munificent patrons of art, and Rome again resumed her position as the centre of its life and activity. The choicest forms of the antique were in great demand, and were cherished as authoritative studies, and the name of artist was once more a title of honour. But their efforts in pursuit of this excellence were carried out in the genuine spirit, which did not wish to remain satisfied with mere reproduction, but sought rather to blend with all that was beautiful in ancient art, the characteristics which expressed the changed circumstances and requirements of the time.*

SOME CIRCUMSTANCES WHICH INFLUENCED THE ARRANGEMENT OF MEDIÆVAL BUILDINGS.

AT the close of Mr. Brewer's paper on this subject, read at the meeting of the Architectural Association, and printed in our last issue (p. 261),

The Chairman (Mr. Boyes) said Mr. Brewer's paper was particularly interesting, inasmuch as it enabled architects to see themselves as they were seen by a well-informed "outsider." A great deal had been heard of late as to the way in which the profession was regarded by learned barristers and others, but Mr. Brewer's criticisms were free from the errors made by other outsiders when they treated of professional matters. Mr. Brewer had undoubtedly touched upon some of what might be called the weak points of the profession. For instance, there were many architects who would not, even if they could, give up lucrative work on artistic considerations. He had very clearly demonstrated that the Mediæval builders made their buildings to suit their sites, instead of deforming the sites to suit the buildings. He had also described the mode in which the operation of reducing and "cutting down" a building in course of erection was effected by the Mediæval builders. On this point he (the chairman) did not think that the members would agree with Mr. Brewer in commending the Mediæval practice in this respect. A row of bases without columns superimposed would certainly not add to the æsthetic qualities of a building, however interesting they might be as showing what was the original intention of the architect. The process of "cutting down," in present-day practice, was generally productive of great improvement in architectural designs, as it necessitated the excision of redundant and often meretricious ornament. He (the Chairman) was afraid it was utterly Utopian to hope that clients would allow their architects to carry out buildings for them without their seeing the drawings, however satisfactory might be the issue in many cases. People liked to see what they were going to get for their money. Very often, no doubt, if clients could be persuaded to go out of the country while their buildings were being erected they would save the heavy costs which they now incurred for "extras." Mr. Brewer had very ably exposed the absurdity of saying that the hope of British architecture was in the British workman. Such a dictum was not worth wasting argument upon. It was what Mr. John T. Robinson would some years ago have characterised as an "exploded idee." At the same time, however, it would be matter of regret if architects neglected their opportunities of teaching the workmen employed on their buildings to distinguish between right and wrong in matters of taste and construction. There were many intelligent builders and honest workmen who would readily appreciate the architects' efforts in such a direction.

Mr. H. H. Statham said he had been very much interested in one particular point which Mr. Brewer had dwelt upon at the outset of his paper, because it was a subject upon which he (Mr.

* The remainder in our next.

Statham) had had the honour of addressing the Association three years ago.* He was very glad to find that a gentleman who had travelled so extensively as Mr. Brewer confirmed what he (Mr. Statham) had endeavoured to point out on the occasion referred to, viz., that the picturesqueness of many Mediæval buildings arose from the way in which they seemed to grow out of their sites, rendering it difficult to trace where nature ended and where the building began. He was, however, inclined to doubt whether that result was intentional in the conception of the design; it probably was due to the builders working without such complete drawings as were made in the present day, and to their adapting the building to the site as the work progressed. But the combination of architecture and landscape need not be confined to picturesque sites, as had been shown by Sir Charles Barry. As to the effect of the system of contracting for the erection of buildings, he (the speaker) knew of two cases in which houses were built in the manner deprecated by Mr. Brewer (by measure and value), and both had led to costly law-suits, owing chiefly to excess of expenditure, and the want of any previous understanding on that point. The public liked to know, within a little, what their building would cost. Mr. Brewer's remarks as to the money part of the question reminded him of a story told of Pugin, who was asked by an intending client to furnish designs for a chapel which was required to be very ornate, very large, and very cheap, because there were only 3,000*l.* to defray the cost. The client thought it would be better to dispense with a spire. Pugin's answer was,—"Say 30s. more and have a spire!"

Mr. Potter, in proposing a vote of thanks to Mr. Brewer for his paper, said he quite agreed with Mr. Brewer's views as to the advantages which would result both to architects and their clients by showing the latter as few drawings as possible. He was once concerned in the erection of a building for a client who was abroad the whole of the time the works were in progress. The consequence was that there was not a shilling to pay for "extras," and the client was much better satisfied than he would have been had he been on the spot to interfere with what was going forward. Clients were frequently great nuisances. They visited the works in progress when the architect was absent, and the builder or his foreman, only too ready to criticise the architect's proposals, often succeeded in biassing the minds of clients in favour of alterations or deviations from plan, the cost in the end being enormously increased by bills for "extras."

Mr. W. W. Robertson, in seconding the motion, said that while there was a great deal to be said in favour of architects submitting as few drawings as possible to their clients, there was much to be said against the aggravation of the evil referred to by architects submitting "alternative" designs. Surely the architect who was at the pains to prepare alternative designs had some opinion of his own as to which was the best? If so, he should only submit the one which he considered to be the best. When the client was left to choose from "alternative" designs, he invariably chose the worst.

The chairman having put the motion, it was carried with much applause.

Mr. Brewer, in the course of some remarks in reply, said that in regard to the way in which the Mediæval builders suited their buildings to their sites, he did not mean to suggest that they did not make use of certain "accidents" which happened in the course of the works. Nor did he mean it to be understood that they deliberately and in a "cold-blooded" way sat down to design a picturesque building. It should be recollected that "accidents" such as he referred to were of two kinds,—those which could be obviated and those which should be made use of. The Mediæval architects were exceedingly clever in seizing hold of any accident that happened and turning it to advantage. As to the method of building by measure and value being prolific of law-suits, he should have thought that would not be the case if the accounts were sent in pretty frequently. As to not showing drawings to clients, one of the most beautiful modern churches in this country had been erected without the client having seen any drawing save the ground-plan, and he was so satisfied with the result that he declared that if he had to build again he would pursue the same course.

* "Architecture and Landscape," *Builder*, vol. xxxii (1874), pp. 986, 1006.

SHAKSPEARE RECITALS.

ON Thursday in last week, Mr. & Mrs. C. J. Freake gave a number of their friends an opportunity, at Cromwell House, to hear Mr. Samuel Brandram recite Shakspeare. This gentleman, well known in society as an excellent amateur actor, has for some short time past adopted elocution as a profession, and displays powers of high order. On the occasion in question the selections included parts of "Henry V." and of "The Winter's Tale"; the chivalric bearing of the young king, the bullyings of *Pistol*, the humour and nationality of *Fluellen*, the whinings of the rogue *Autolycus*, being all presented with remarkable taste and skill. Mr. Brandram's power of memory is something prodigious. We have heard him repeat the whole of a play, from beginning to end, without referring to a single note, singing, too, most pleasantly, the snatches of song that intervened. Mr. Brandram stands quite alone, and will, we have no doubt, be warmly welcomed by a large public.

ON SHAKSPEARE'S CHAIR.

(Recently Sold at Sotheby's.)

ONLY a wooden chair! And yet no royal throne
Has o'er held sceptred monarchs whose imperial sway
Possess'd such mighty power o'er hearts and minds of men:
They mostly but the puppets of a pageant were
That the effacing hand of time has swept away;
But this man's wondrous power beyond the tomb lives on
And grows for evermore.

And in that chair
He traced those tender types of varied womanhood
That live graved on our hearts and in our memory:
Each chord, each diapason of the human heart
In turn was struck and answer'd by this master hand:
The statesman's eloquence, the jester's merry quip,
The deeper notes of sad despair and life-long agony;
And, rising high o'er all, love's pure and tender tones.
Then come the warrior's march—the warlike clash of arms;
The conqueror's shout! the ringing burst of victory;
Till, wonder-struck, one feels Time naught, as for all age
Our Shakspeare lives, and dimly through the mist of years
Fancy can see him seated there, serenely calm,
Swift penning the immortal verse that held,—that holds
A spell-bound world entranced,—his listening captive still.

SPECULATIONS IN LAND FOR BUILDING PURPOSES IN SCOTLAND.

IT is a moot question if even English speculators in building land, have met with the extraordinary success that has waited upon the "Scots."

Taking the city of Glasgow first, we find, in 1868, one property was bought for 22,000*l.*, and 11,000*l.* for improvements tottled the cost up to 33,000*l.* In 1874 it was sold to the Caledonian Railway Company for 85,000*l.*, and competent valuers considered it should have been sold for 100,000*l.* Another property, contiguous, bought for 14,500*l.*, sold three years afterwards for 35,000*l.* Another bought for 10,500*l.*, sold in two years for 15,000*l.* Another, costing 10,000*l.* in 1874, was afterwards sold at the prices of 13,000*l.* and 15,000*l.* respectively; a fourth offer of 16,000*l.* was refused, and recently it fetched about 60*l.* per square yard. One building, bought for 7,750*l.* was resold the same week for 10,000*l.* A house sold in 1840, for 800*l.*, was sold recently for 13,500*l.* Three houses that, in 1874, were offered for 14,000*l.*, sold at auction for 19,600*l.*, directly after the person refused to give the first sum. In 1869, a property fetched 5,550*l.*, was sold, in 1874, for 13,100*l.*; another property, offered at 15,000*l.*, and refused, fetched, eighteen months afterwards, 24,250*l.* A property in one street fetched, in 1867, 4,500*l.*, further costing in repairs up to 10,000*l.*, nine years afterwards sold for 20,000*l.* Another property in the same street was purchased at 2,100*l.*, and with alterations totting up to 4,500*l.*, sold in 1875 for 5,000*l.*, and the last purchaser has since refused 12,000*l.* for it. In 1872 a plot of ground was obtained for 4,500*l.*, and a corresponding piece on the opposite side of the street, occupied by buildings of little value, has since been sold for over 20,000*l.* In another street a property sold for 55,000*l.*; within three months after it fetched 66,000*l.*, and in the same street 105*l.* a square yard has been offered and refused.

In the outskirts of the city of Glasgow, overbuilding in some cases is, however, telling "the London tale," and speculators, when repairs come to be necessary, will be enormous losers. It may naturally be expected that rents have jumped up with the rise in the cost of land, the Scotch house-letting system being different from London custom, the landlords chiefly letting their houses out in apartments themselves, and not letting a house to one person alone. The following figures show the highest rents paid fifteen years ago, and the like apartments paying now. Houses of two apartments in 1862, letting at 9*l.* 15s. per annum, are now realising, in 1877, 13*l.* 10s.; three apartments, from 15*l.*, now 19*l.* 15s. up to 22*l.*; four apartments, 22*l.*, now 35*l.*; five apartments, 28*l.*, now 45*l.*;—the ratio of increase being maintained as we ascend, and house-rents are now in Glasgow higher than in any part of Scotland, though in Edinburgh rents are rising rapidly.

As to counting-houses and mercantile establishments, the rents fifteen years ago were at the rate of 1s. to 2s. 6d. per square foot of floor space, save in exceptional cases, which ought not to be taken into account; now the lowest is 1s. 6d., rising to 4s. 6d. per foot. Striking instances of land value have been cited, one acre and a half of ground selling at 700*l.* an acre now realising a profit of 7,500*l.* The same fortunate speculator bought thirty-three acres of ground outside the city, at 700*l.* per acre, or 2s. 11d. per yard, and re-sold it at 1,200*l.* per acre, or 5s. a yard, yielding a profit of about 17,000*l.* Since then, the second purchaser has been offered a profit of 40,000*l.*, but asks 80,000*l.* bonus, and is likely to get it. Forty-five acres that were offered eight years ago for 250*l.* an acre, have since been sold for 45,000*l.*, and last month 1,200*l.* an acre was asked for them. The Corporation of Glasgow have twenty acres, for which they paid 2s. a yard, and offers have been made of 19s. 6d. a yard for 10,000 yards, and 20s. a yard for the other 10,000 yards, and refused.

Ten years ago two speculators bought a big bit of ground at the rate of 350*l.* an acre. This afterwards fetched, in lump, 900*l.* an acre, and is being retailed at the rate of 2,830*l.* an acre. Another estate of seventy acres, bought for 17,000*l.*, is now being rapidly sold, slating up to 400,000*l.*, or for every pound of the first purchase-money the holder will have realised a clear gain of 22*l.* 10s. 7d., or an increase of the original amount of 2,253 per cent., and the estate is likely to realise a rental of 17,000*l.* per acre, being the whole first cost.

In the end tenants and occupiers have to bear this enormous increase in the value of land. What with the heavy ground-rents on leasehold property, increase of rates, taxes, workmen's wages, and rise in the price of building materials, in a few years' time rents will become unbearable in populous places.

THE RAILWAY PASSENGER DUTY.

SIR,—In your paper of the 3rd instant there was an article on the Railway Passenger Duty, which, though written with care and impartiality, appears to me to omit some important considerations, and also to contain some inaccuracies.

In considering whether the tax should be retained, you rely chiefly on the proportion of its amount to the value of railway property taken as a whole, but you do not consider how the burden is distributed among the different railways. Few will quarrel with your decision in favour of passenger traffic over goods traffic as a source of taxation, but when you levy any tax on gross receipts you are sure to commit injustice, because there is no fixed proportion between gross receipts and net profits.

Take the following as an instance:—

In 1874	Goods Traffic Receipts. £.	Passenger Receipts. £.	Passenger Duty. £.	Net Receipts. £.
Great Eastern	1,242,966	1,141,132	36,869	1,156,936
Great Northern	1,579,183	1,049,076	31,238	1,237,739

This appears pretty equal at first sight, but turn to page 6 in the Returns of the Board of Trade for 1874, which gives the rate of dividend paid, and you will find that, while the Great Northern pays to its ordinary shareholders a dividend varying from 6 to 7¾ per cent., the Great Eastern, though it pays every farthing due on guaranteed, preferential, and debenture stock, pays nothing at all to its ordinary shareholders, who thus hold nine millions of profitless capital. Turning to page 76, in hopes of discovering the reason of this, I find, with some surprise, that while the working expenditure of the Great Northern is 55 per cent. of the gross receipts, that of the Great Eastern is not more than 57. But, turning to page 56, I find that the mileage open on these two railways is:—

	Double or more.	Single.	Total.
Great Eastern	430 ...	422 ...	852
Great Northern ...	438 ...	148 ...	586

The Great Eastern appears to be punished for having done more than its competitor for the

public interest. So far as this is merely the result of over-zeal (of whatever kind), it cannot be helped; but it is not fair that the Government should come in and fine the shareholders by imposing an extra income-tax on those who have no income. At page 7 of the Returns for 1874, I find that the amount of capital in constructed lines on which no dividend was paid exceeded forty-eight millions. How much these railways paid for passenger duty is not stated, but I have made out a table of fifty-one railways, of whose capital 33,500,000*l.* were unproductive, yet these railways paid 93,073*l.* in rates, and 71,568*l.* in passenger duty. The rate of dividend allowed by law (7 and 8 Vic., cap. 85) on a railway is 10 per cent. This would give a dividend on this capital of 3,350,000*l.*, on which 71,568*l.* is a tax of 5d. in the pound. The income-tax is only 3d. in the pound, and leaves 237d. to the taxpayers. The passenger-duty, in the case of these unfortunate railways, leaves nothing behind. It is 5d. in the pound on the income which the shareholders are allowed to hope for, but not one farthing of which they receive. Taking some of your remarks *seriatim*:

1. I will not deny that the magnitude of the question may be overrated, but its smallness is a reason for settling it, because it diminishes the difficulty. A halfpenny extra in the income-tax would settle it for ever.

2. The total amount paid for passenger duty *is* stated in the Return, p. x., at 539,821*l.*, a sum differing very little from that you have calculated for it.

3. You say, "From this date, however, it must be remembered that the third-class traffic is, to a great extent, free"; and you afterwards calculated that "something like 100,000*l.* per annum is the outside that the companies could expect to save by the alteration of the existing law as far as it relates to third-class traffic."

This is an error, arising from the limitation of your date to the Board of Trade Returns for 1874. The decision of the Court of Exchequer, which upset so much of the exemption granted by the Board of Trade, took place on the 6th of July, 1874. Consequently, the year 1874 gives neither the old nor the new amount of the duty. If you take the Board of Trade Returns also for 1873 and 1875, you will find the following as the passenger duty for the years ending the 31st of December:—

1873.	1874.	1875.
£506,455.	£599,821.	£747,680.

The increase, therefore, is 241,225*l.*, about 48 per cent., and nearly all this on penny-a-mile fares. That such an increase should be suddenly inflicted on any class of persons by the blunder of the Treasury and the Board of Inland Revenue is, in itself, a strong argument against the tax. For it *was* a blunder to submit the case to a Court of Law. The Court could only decide what was the meaning of the words of the Act of 1844,—an Act passed in the infancy of railways. If the Treasury thought the tax too light, or rather if they thought the exemption was granted too easily, they should have come to some understanding with the railways, and asked Parliament for a new Act. It is this blunder, and the injustice it has entailed, that have caused the agitation against the duty to take a determined and practical shape.

But a comparison between the returns ending December twelvemonth and those ending last March show something more. The nineteenth report of the Board of Inland Revenue gives for the railway passenger duty ending March 31st:

1873.	1874.	1875.	1876.
507,079*l.*	514,715*l.*	629,727*l.*	736,369*l.*

It appears, therefore, that the duty has begun to decline. The injustice of the decision which the solicitor of Inland Revenue had invoked, is so palpable that he has reversed a part of it on his own authority. That decision consisted of two parts:—

1. No train is entitled to exemption that does not go from one end to the other of a trunk, branch, or junction line.

2. Such train must stop at every intermediate station.

The second part of the decision is enforced. Thus the morning train from Richmond, though it is full when it arrives at Camden, has to stop at every station between Camden and Broad-street, and a free fight takes place at these stations because only a very small number can get into the well-filled train which no one wishes to leave.

But Mr. Melvill evades the first part of the decision by what he calls the sectional system. He constitutes a number of intermediate stations into terminal stations, and all trains going from one of these to another, and stopping at every intermediate station to set down and take up passengers at 1d. a mile, get exemption on all fares which do not exceed that amount. A good railway manager is, therefore, now one who can not only arrange his trains so as to give the best accommodation to the public, but can manage to get leave to arrange them so as to pay the least amount of duty. In fact, he is a subordinate tax-gatherer, appointed by the taxpayer instead of by the Board of Inland Revenue. This system of making every manufacturer and every tradesman a supplementary tax-gatherer lasted for 150 years, but is now nearly out of date. Sir Robert Peel gave it its first blow when he abolished 750 Customs duties. It has been abolished as regards glass, bricks, soap, paper, and sugar, and as regards publications like your own. Surely it is time to allow the managers of railways to devote all their energies to their own arduous task, and not to make them sub-collectors of excise.

4. You say that "the railway companies have been invested by the Legislature of the United Kingdom with powers and privileges such as are altogether exceptional." Surely it is not an exceptional privilege that they are allowed to retain in perpetuity the land which they have bought, and the lines that they have made. If they are allowed to appoint their own police, this is a saving of expense to those rates to which nevertheless they contribute. They are under restrictions as to fares, such as are imposed on no other coach proprietors or carriers. If the ratepayer now contributes directly to the repair of the highways, he also enjoys the advantage of cheaper railway travelling which he would be very sorry to give up, and he no longer pays taxes on his horses or tolls on them when they go through the turnpikes. If a railway company tries unfair competition against a canal it is amenable to the law, as the railway commissioners have just shown in the case of the Kennet and Avon Canal Traders, and the Great Western. So far from the course of recent legislation having run in favour of railways as against carriages drawn by horse-power, the average dividend on railway capital is only 4½ per cent., while the London General Omnibus Company has recently announced a dividend of 12 per cent.

5. You say, comparing France with England, "The difference in imposts per mile alone, if taken at twenty-five years' purchase, is equal to a subvention of 12,500*l.* per mile in favour of the English lines." But the English lines have received no subvention from the State. The statement, therefore, only means that the French railway proprietors have paid a fine of 12,502*l.* for every mile of railway they have made, besides paying a fine equal to that which is levied on English railways.

Two things have to be shown in order to justify the railway-passenger duty. First, that the railways enjoy a monopoly which enables them to obtain more than the current rate of the profits of capital; and secondly, that it is wise and just to make the managers of a difficult and responsible business sub-collectors of taxes for the State from which they receive no salary.

The first and second class passengers, for the most part, pay income-tax. A halfpenny in the pound extra would relieve them of what they pay in duty, and give them an increase of accommodation from the railways.

The railway shareholders, even if they are not so rich as to be able to bear the extra taxation to which they are now subjected, would be glad to purchase exemption from it at so cheap a rate as ¼d. in the pound, levied only on their actual income. I believe that there is no tax which could be abolished with so little change in the incidence of taxation. If every father of a family living in a suburban district would calculate what he and his children pay in passenger-duty, and how much an extra ¼d. in his income-tax would cost him, I think he would scarcely object to pay the ¼d.

In the number of the *Builder* in which your article appears, I find in the lecture of Professor Barry the following paragraph:—

> "Progress in brick architecture in modern times was long hindered by an excise duty levied on bricks, which practically controlled their manufacture, and hindered improvement. The evil of such things lives after them; and though the duty has been abolished for many years, its depressing influences have remained until very recent times. Now there are evidences of a greater freedom in the use of bricks of various forms and designs."

The Excise has always blighted every trade, art, and profession that it has touched, and its evil influence in the shape of the railway passenger-duty cannot be measured by any calculation of the ratio between the amount of the duty and that of the capital invested in railways.

C. D. COLLET.

HYDE PARK—KENSINGTON BARRACKS.

THE noblest site in London's finest park is now vacant and unappropriated, and all the old buildings cleared away, save the officers' quarters, which are under process of demolition. Until opened out, the beauty and value of the position could not be appreciated by those who had hitherto passed the drive, under shadow of the old fabric which, with numerous windows, occupied by troopers, nude or in undress, dominated over the Fair-mile carriage promenade on one side, and over Kensington main route, which it darkened and restricted, on the other side; the whole marginal plot being about 1,420 ft. in length by 190 ft. in width, for half of its extent, being thence reduced in quadrature by an equable line to only 90 ft. at its western extremity. It should, however, be remembered that the old barrack advanced 20 ft. on the Knightsbridge-road, and also 20 ft. on the Park drive of the south frontage, thus forming the Straits of Knightsbridge.

There is no other portion of the park borders so open and valuable, commanding the drive, the Serpentine, and indeed the whole park and plantation to Bayswater-road, the special advantage of the latter being the continuous planted and shrubbed walks, which lend grace and dignity to the noble ranges of terraces and mansions that occupy its whole extent; but the quality and character of the terraces and mansions along the still more important Kensington boulevard establish it as the first in London.

Well, the opportunity now offers of making to the public a concession which never can recur again if the Guards' barracks should be reconstructed on the same spot. To the public the great value of Hyde Park is its extensive and unobstructed marginal drives, rides, and planted walks, and since the demolition of the old brick walls and the substitution of a continuous iron railing round the *enceinte*, a great solace has been afforded to the border houses of Park-lane and the Notting-hill and Kensington roads, whilst at the same time a sense of enlargement was conferred upon the park itself by removal of the obscene and unsightly bastion of decaying brickwork.

It is thus demonstated that open park borders and plantations are of inestimable value to the external roads, and that whilst the worth of buildings or sites is trebled or quadrupled by the opening, so their value would be incalculably diminished by the obtrusion of obstructive buildings.

If there were no other site to be had, suitable to the requirements of her Majesty's regiment of Guards, the repugnance to change position might be accepted; but there are several others much better in all respects, affording space for truly commodious buildings and drill-grounds, equally near to the palace, more open and airy, besides being removed from a crowded public thoroughfare and eight public-houses! For example, there is one site, an equally elevated position north of the Ranger's house, in a part of the park but little frequented; here at present there is an expropriation of nearly twenty acres, occupied by the Ranger's lodge, and, say, ten acres of enclosed land, a police barrack, a sergeant's guard barrack, an ordnance office with small enclosures, a lumber-yard containing timber and park waste, with donkeys, &c.; an engine-house, park-keeper's lodge, and various addenda; but there is ample space on high ground adjacent and northward for the utilisation of, say, ten acres more, to erect a substantial and convenient barrack for the whole regiment, if needed, and that without the least inconvenience to park wanderers or rangers, who rarely approach this retired centre; indeed, were it not that a footway leads between the police and sergeant's guard barracks to the Serpentine Bridge, all wayfarers would avoid this unattractive, if not disgusting, concentration of unsightly hovels and irregular squalid buildings, erected without regard to appearance or utilisation.

This position would be scarcely a quarter of a mile north from the late barracks, equally near to both Kensington and Buckingham palaces, and at the same time would give ample room

and field for the troops, with a far purer atmosphere; certainly the officers' mess-room could not command a view of the Ladies' Fair-mile, but an open of beautiful woodland scenery, with much more commodious quarters, might make some amends for the sylvan transition.

Should the central position herein cited be thought objectionable, there are two others within the range of Kensington-gardens, and nearer to the palace—one on the western outlying plot between High-street, Kensington, and the guard-house, nearly in front of the old palace; and the other on a plot of over six acres, between the palace grounds and Bayswater-road, both of which offer ample scope for the accommodation of the whole regiment. Both of these plots, although so near the palace, are in a state of neglected waste; one as a cattle pasture (fenced around), the other an area open to the public, various old buildings, stables, antiquated villas, two guard-houses, &c.; whilst in like manner the shrubbed lawn on the east front of the palace is now converted into a kitchen garden, with numerous hot-bed frames for the yield of early vegetation.

This old palace, a great part whereof was built by Sir Henry Finch before 1630, who was owner of the estate until 1690, when William III. bought it for construction of a royal palace, is composed of varied additions made during the reigns of George I. and George II., who with Queen Caroline made this their treasured home. It was also occupied for some time by George III., and lastly our gracious Queen Victoria was born there. Now, however, it is used only as a retirement and refuge for friends and relatives of royalty and for pensioners, and is in fact rapidly falling into decay; so that thorough repair, if not reconstruction, is urgently needed; unless removal of the old pile be determined on, together with reconstruction on a better and more central site than its present position upon the park wall at its western boundary. Whether a new palace suitable to the dignity of the Sovereign be constructed as suggested, no time should be lost as to Knightsbridge Barracks, since the advance of improvements in all parts of this great city renders more palpable the great blot and default caused by the re-erection of such a building on the most valuable part of our principal western thoroughfare. Should money be the object, Government could acquire an annual income of 3,000*l.* if not more for the plot. But when the advantages conferred upon the public are taken into consideration,—a widened thoroughfare,—a planted and shrubbed border of one quarter mile in extent,—surely the authorities cannot hesitate in completing our beautiful park by a concession of such small moment to the national exchequer; more especially when it is considered that millions of loyal subjects resident in London will in frequenting their improved ride and promenade duly appreciate the favour and feel grateful for the benefits conferred.

T. H. H.

A SURVEYOR'S CLAIM FOR "QUANTITIES."

HILL *v.* REYNOLDS.

THIS case was heard in the Brighton County Court on the 8th inst., before Mr. F. H. Lascelles, Deputy Judge. It was an action to recover the sum of 28*l.* 15s. for a surveyor's charges. Mr. Warner Sleigh appeared for the plaintiff, and Mr. F. Merrifield for defendant.

Mr. Warner Sleigh said his client was a surveyor, carrying on business in London, and he claimed for a bill of quantities for the erection of a shop and warehouse at 2½ per cent., and for a plan, in lithograph, which had been supplied to the defendant. The facts did not involve any dispute as to figures, but the point to be decided was whether the money was owing at all. In July, 1875, Mr. Hill received instructions from Mr. Broadbridge, who was the owner of the premises referred to in Western-road, telling him to advertise for tenders for the work. He accordingly invited tenders, and five were received, that of the defendant, who was a builder in Brighton, being among them. His estimate for the work was originally 1,594*l.*, which was based upon plans and quantities drawn up by Mr. Hill as a surveyor. The estimate was subsequently reduced to 1,150*l.* In August, 1875, Mr. Reynolds, the defendant, drew up a summary of the work, and sent it to Mr. Broadbridge, together with a letter which would convey the idea that the whole matter was settled on Mr. Hill's plans. Several letters passed between the plaintiff and defendant, but one was alleged to have been sent by the latter which Mr. Hill entirely denied ever having received. In this letter Mr. Hill was informed that the defendant would not pay for the surveyor's charges. Mr. Warner Sleigh then made allusion to the evidence he was about to call, and concluded by saying that his client considered that he was entitled to the customary fees from the defendant, as the builder, and had no claim whatever against Mr Broadbridge.

The plaintiff deposed that, in July, 1875, he advertised for tenders for building a warehouse in the Western-road, Brighton. The defendant tendered among others, and he (plaintiff) sent in his bill of charges to him, including 2½ per cent. for the quantities and 7*l.* for the copy of the plan of the work. He received a letter from defendant after that saying he had agreed with Mr. Broadbridge to undertake the building of his warehouse in Western-road for 1,150*l.* Before that letter was received he had several conversations with Mr. Broadbridge and the defendant about what the work was to cost. He sent in his account for 30*l.* as percentage and 7*l.* 7s. for a copy of the lithographed plan.

Mr. A. R. Farr, surveyor, of North-street, deposed that the custom of the trade was for a builder to pay a percentage to the surveyor for taking out the quantities.

Mr. Edward Broadbridge said in July Mr. Hill prepared the plans and specifications referred to by his direction. Ultimately, the defendant's contract was signed. He always understood that the defendant would have to pay Mr. Hill's charges. No agreement to the contrary was ever made. He had never been applied to for these charges, and it was never suggested that he was liable.

The defendant, sworn, said the contract put in contained mention in several places about the plans and specification, but all reference to the quantities was omitted. This was done at his particular request, for he represented to Mr. Broadbridge that if they were included it would involve endless trouble and confusion. The quantities of Mr. Hill were so utterly useless and incorrect that he could not use them. Mr Hill, during the whole time the work was going on, never said one word of his having a claim against him for preparing the bill of quantities. With regard to the plans claimed for, he never received the copy, as alleged. On the 8th of September he wrote to Mr. Hill, saying that his surveyor's charges would not be paid by him.

The judge, in giving his decision, said he was of opinion, in the first place, that the plaintiff had made out his right, in accordance with the custom of the trade, to charge the builder for the quantities, and unless it had been proved that he had waived that right, something was due to him. It was said for the defence that the quantities proposed by Mr. Hill were useless; but he could not follow them in this, because they were used for the purposes of tendering, and, therefore, plaintiff had a right to charge for them. He was of opinion that there had not been any recision of the quantities in the contract entered into, and had determined to find for the plaintiff upon that account. He could not, however, find for him on the other claim, so there would be a judgment for 21*l.* 8s., with costs.

A WORKMAN'S CLAIM FOR PERSONAL INJURIES.

GRAMSHAW *v.* HARDY.

IN this action (heard in the Uxbridge County Court on the 13th ult.), the plaintiff was a journeyman painter, and he sued Mr. Thomas Hardy, builder, Cowley, for the sum of 100*l.*, as compensation for injuries sustained by reason of the latter's neglect. The proceedings were originally instituted in the Common Pleas division of the High Court of Justice, but the matter had been remitted. Mr. R. Harris was counsel for the plaintiff, and Mr. E. Lloyd represented the defendant.

In his opening statement Mr. Harris said it appeared that in April last the defendant had a job at Watercroft House, Gerrard's Cross, and four ladders were taken there from his place for the purpose of being used by the painters and others engaged in the work. If a master found material for his workman, and took reasonable care that it was fit for use, and the workman, knowing it to be dangerous, used it and met with an accident, the master would not be liable; but, on the other hand, if the master did not use reasonable care in supplying proper materials, and the workman, without knowing the danger, consequently met with a mishap, the master would be liable. In this instance there were ladders of various sizes. Two were spliced together for the work of the plaintiff, and on the 20th of April he and another workman reared them against the front of the building for the purpose of getting at the work. Plaintiff went up the ladder, and after passing the spliced part, in fact, when he was near the top, the sides of the small ladder gave way from sheer rottenness, and he was precipitated to the ground, a distance of 28 ft. He sustained a compound fracture of the leg.

On the part of the defendant it was contended that the ladders were spliced together and soused without his sanction or knowledge, and that the plaintiff had been guilty of contributory negligence.

The judge summed up at considerable length, laying particular stress upon its being the duty of a workman to take all reasonable precaution.

The jury retired to consider their verdict, and returned into court in about an hour and notified that they could not agree.

The foreman said they agreed to a certain extent, but the matter turned upon the question as to how far the man did not use caution. His own mind was perfectly clear on the point, but he could not persuade the four other gentlemen to the same way of thinking.

The judge said the point was the difficulty in the case, and advised the jury to retire again. This they did, and they remained in consultation some considerable time longer, and at last arrived at a verdict for the plaintiff—damages 15*l.*

A CLAIM AND A SET-OFF.

JACKMAN *v.* LIVESEY.

THIS was a case heard in the Newport (I.W.) County Court on the 7th inst. The claim was for 19*l.* 12s. 7d., for work and labour done. Mr. Henry Ford appeared for the plaintiff, a builder at Ventnor, and Mr. T. H. Urry for the defendant, a civil engineer and surveyor, at the same place. Defendant pleaded a set-off of 23*l.* 7s. 1d.

Plaintiff deposed to being engaged by defendant to do certain carting at 1s. per hour, and his present claim was fair and reasonable. Several items in the set-off were objected to as exorbitant, especially a charge of 10*l.* 12s. 4d. for 196 blue Staffordshire window-cill blocks, being at the rate of 1s. 1d. each, when it was asserted by Mr. Ford, for the plaintiff, that they could be obtained wholesale for 1½d. each, or retail for 2d. or 2½d. On this point defendant stated that he bought the bricks eleven or twelve years ago, of the patentee, John Taylor, of London, and gave 1s. each for them.

Mr. Ford produced one of the blocks, or bricks, and denied that it was a patent article, there being no mark upon it to show that it was so protected. It was monstrous to assert that a brick of this kind was worth a shilling and a penny.

In the course of his evidence the plaintiff produced a book containing entries of the work done for the defendant, and he stated that it was made up day by day from an account given him by his carter; but the carter (Charles Colenutt) deposed that the book produced was not the one in which his master entered the accounts as given by him.

After hearing the several witnesses, the judge, referring to the Staffordshire bricks, stated that if the defendant bought them at a time when they were protected by a patent, that was no reason why he should now charge for them a price which was far in excess of their fair market value. He should allow only 3*l.* for the blue bricks, striking off that item alone, 7*l.* 12s. 4d. The plaintiff's claim would be allowed, 16s., and deducting in all 9*l.* 11s. 2d. from the defendant's set off, there would remain a balance of 8*l.* 5s. 5d. due to the plaintiff, and for that amount he gave judgment.

A CURIOUS CASE.

LACEY *v.* BRIDGMAN.

THIS was an action at the Surrey Assizes, on March 17 (before Mr. Justice Field and a common jury), to recover from the executor of a deceased gentleman named Bridgman, the brother of the defendant, a sum of 189*l.*, alleged by the plaintiff to have been lent to the deceased during his lifetime, and which had not been repaid.

Mr. Day, Q.C., and Mr. Reid, were for the plaintiff; and Mr. Willis, Q.C., and Mr. Davies for the defendant.

The facts of the case were of a very singular character. The plaintiff was a builder and surveyor; Bridgman followed the same occupations, and they appeared to have been on friendly terms until the death of the latter, which took place six months ago, when the present claim was brought against his brother, who was executor under his will. The case on the part of the plaintiff was, that during the years 1871 and 1872 he had lent the deceased various sums of money, amounting to nearly 200*l.*, and he produced cheques payable to the deceased, which had passed through his banker's, and he swore to the loans having been made. The claim was resisted by the executor on the ground that the deceased was a person in good circumstances, who was not likely to have required such a loan, and it was also contended that the plaintiff, being in pecuniary difficulties at the time, was not in a position to lend money to any one else. The fact of the supposed loans having been made in 1871, and no application having been made for repayment until several years afterwards, and not until the supposed borrower was dead, was also relied upon by the defendant as evidence that there was no foundation for the claim that was now set up; and Mr. Herrick, a sheriff's officer, was called to prove that he had a number of warrants against the plaintiff at the time of the supposed loans. The cheques produced on the part of the plaintiff were explained by the suggestion that the plaintiff had himself borrowed money of the deceased gentleman, and that he gave the cheques in payment of the money so lent, and that there was no ground for supposing that they related to money that he had advanced to the deceased.

The jury returned a verdict for the defendant.

A "FINE" ACCOUNT.

LOVEJOY *v.* MULKERN.

THE plaintiff (Chancery Division, March 17), an "advanced member" of the Birkbeck Building Society, in 1871, borrowed from the society, in the usual manner, 400*l.* on mortgate at 7½ per cent., and arrangements were made that he was to repay the money and interest by monthly instalments of 30 guineas; but such instalments not being paid, the society took possession, and the plaintiff brought an action for redemption of the mortgage and estate. The matter was referred to Chambers for taking the accounts, when the society brought in an account for 4,687*l.*, of which 2,939*l.* was for fines, which they claimed to be entitled to charge in conformity with Table 4 of the rules applicable to building societies. The case now came on upon an adjourned summons from Chambers.

Mr. Cookson, Q.C., for the plaintiff, submitted that the amount of fines was excessive, and that the society had no right to claim fines for more than six months.

Mr. Waller, Q.C., and Mr. Hemmings for the society, contended that they were justified, under their rules, in charging the amount which they had claimed.

The Master of the Rolls said the Act of William IV., under which this society was constituted, enabled building societies to impose fines, subject to this, that the fines and liabilities must be reasonable. In this case he was of opinion that the charges were unreasonable, and they had no power to impose any fines for non-payment of the instalments of the debt beyond the first six months. What they had done was remarkable. They had charged the plaintiff with fines at a progressive rate for the instalments. For instance, the twenty-third instalment was 30 guineas, and the fine was 32*l.* 4s., which was over 1,200*l.* per cent. per annum; but the charge in respect of the sixtieth instalment was 82*l.* 12s., or more than 3,600*l.* per cent. per annum. It was his lordship's duty to construe the rules with an anxious desire to put a reasonable construction upon them, and he was of opinion that, according to such reasonable construction, there was no provision for penalties after six months. He must decide that, according to the true construction of the rules, the

penalties ceased at the expiration of six months. The consequence was that only 21*l.* 14*s.* was payable by way of fines, and the matter must be remitted back to Chambers to take the account upon that footing. The society should be made aware that in future they could not be allowed to charge fines in addition to interest upon a mortgage.

PROGRESS OF THE TAY BRIDGE.

THE engineer's report as to the progress of the Tay Bridge, issued with the half-yearly report of the directors of the North British Railway, is interesting, in view of the recent accident.

The engineer reports that the whole of the eighty-five piers are placed in position. Seventy of these are completed, having the permanent girders placed thereon, with cross girders and timber platform laid for about 2,375 ft., and 3,074 ft. of handrailing erected. Of the remainder, five piers are completed to the full height of string-course, and the girders of the spans laid thereon. One pier has 2 ft. of brickwork built above brick block. Two large caissons are sunk to the requisite depth; one is one-third filled with concrete, the other is made ready to be filled. One of the 21-ft. caissons is thoroughly filled with piles, and ready to receive the concrete foundation; and the last of the 21-ft. caissons is placed in position in the bed of the river.

The weather since last report has been rather unfavourable for this work, severe gales of wind being very prevalent, in one of which a vexatious accident occurred:—

"When the workmen were in the act of raising a set of 245 ft. girders, to allow cross-box girders being placed on the top of the columns of piers for the main girders resting on, a gale suddenly sprang up, causing the suspended girders to vibrate considerably, and as darkness came on the workmen were obliged to leave the girders hanging on the raising apparatus; the wind, being gusty, kept the girders vibrating, and it would appear, from the position in which the fallen girders were found lying, they must have wrought themselves out of position and canted eastward, smashing in their fall the columns of the piers on which they were hanging. No damage was done to the built portion of the piers of which the cast-iron columns were so far broken, except a few stones of the string-courses that have been slightly disturbed by the fallen *débris* of the columns.

It is gratifying to be able to state that neither on the night of the accident, nor at any other time when severer gales prevailed than on that night, has the slightest damage accrued to any part of the bridge placed in a permanent position."

MASTERS AND MEN.

Durham.—At the usual weekly meeting of the joiners out on strike at Durham, held on the 8th inst., it was reported that several men had left the city, having obtained work elsewhere since last meeting. It was unanimously agreed to submit to no reduction in wages.

Dullutur.—On the 6th inst. the quarrymen working at Mr. Neilson's quarry came out on strike for an advance of ½d. per hour. The present rate is 7d. per hour, and they demand 7½d. Mr. Neilson is endeavouring to bring men from a distance to fill the places of those on strike.

Cowpar-Angus.—The master joiners in Cowpar-Angus have agreed to raise the men's wages ½d. per hour.

Glasgow.—The German Consul in Glasgow has been in communication with certain officials connected with the Associated Carpenters' and Joiners' Society, to obtain information regarding the position of that trade, with the view of laying it before the German Government. The Consul wished to know the present rate of wages, the result of the late strike, and several matters of a similar nature.——According to the *Scotsman* there is perhaps no trade where the restriction on the number of apprentices employed is more rigidly carried out than amongst the plasterers. For some time they seem to have been in a position to dictate terms to their employers on this subject, and the latter have had quietly to accept them. To a certain extent, the restriction has unquestionably tended to keep up the rate of wages, and for some years there have been no tradesmen better paid than the plasterers. At the present time, for instance, it is difficult to get workmen at 1*s.* an hour, and in many cases 1*s.* 2*d.* has to be paid. So far the men have had the best of it, but already the prohibitory clause with reference to apprentices is beginning to tell on the trade in another way. Plastering work has of late been such a serious item in the expense of building, that in a great many cases it is being dispensed with as far as practicable. For instance, at the present time several buildings in Glasgow, intended for shops and warehouses, instead of having the walls plastered, are being lined with wood,—a plan which doubtless has many objections, but which, if carried to any great extent, must undoubtedly affect seriously the future of the plastering trade. The plasterers, however, seem still determined to keep down the number of apprentices to the lowest possible ratio.

Aberdeen.—The Masters' Association have resolved to accede to the request of the house carpenters of Aberdeen for an advance of wages to the extent of ½d. per hour,—the present rate being 7d. per hour. They have, however, rejected *in toto* the bye-laws proposed by the men as inimical to the interests of trade.

Elgin.—The joiners in Elgin, about forty in number, have struck, in consequence of the masters refusing to accept new bye-laws.

Bromsgrove.—The strike of nailmakers against the proposed reduction in wages of 10 per cent. still continues. A great amount of destitution is prevalent in the district, especially among those who have families. The committee of the Nailers' Union are doing everything in their power to relieve those who are not members of the Union by collecting subscriptions.

London.—Messrs. Schofield & Co., of the Steam Saw-mills and Stone-works, Stewart's-lane, Wandsworth, have issued the following circular to firms in the building trade:—

"We take the liberty of enclosing the copy of a letter we have sent to some of the daily papers, as it will acquaint you with our motive for addressing you. It is needless for us to expatiate on the evils to the building trade arising out of the injudicious and vexatious action of the various unions of the workmen employed by it; in all probability you have had at some time or other personal experience in the matter. You are doubtless also aware of the fact that many of the respectable men who for some cause or other have been induced to join a union are dissatisfied with several of its rules, and object to the loss of wages imposed upon them by strikes and their consequences; at the same time they cannot afford to forego the pecuniary advantages to which their weekly contributions, extending in many cases over a number of years, entitle them. It has struck us, and it is on this point that we beg to solicit your opinion, that if the employers in the building trade were to contribute towards the formation of a fund for a society or union, having for object to counteract the arbitrary action of the present trades unions, we should detach many of the best and most skilled workmen from them, and that these, strengthened by the accession of non-unionists, would form a body of men equal in work, if not in number, to their rivals. We would suggest,—1. That the proposed association should be called the Independent or Freemen's Union. 2. That the employers should establish the fund, and the men contribute to its support by weekly payments, as they now do to the trades unions. 3. That the one fundamental rule laid down by the employers should be that every workman should be allowed to work when, how, and as long as he liked. 4. That all rules as to internal management should be left to the workmen themselves. The intelligent workman would easily perceive the advantage of contributing to an association whose funds would not be called upon to assist men on strike, but be entirely devoted to supporting him and his family in times of need. We do not pretend to lay before you a complete scheme or code of rules for carrying out this idea, but simply to solicit your valuable advice on the subject. In conclusion, we beg to say that we are prepared to assist by a donation the foundation fund of an institution similar in its objects to that now roughly sketched out."

In reference to this matter, Mr. John Chaddock, on behalf of the London Masons' Union Committee, denies the assertions of Messrs. Schofield & Co. that the Union had acted in a tyrannical and oppressive manner by striking at an inconvenient time, and he hopes Messrs. Schofield will not address a circular to the building trade with the view of forming an independent union, such a proceeding having previously resulted in total failure.

Stirling.—The joiners are agitating for an increase to their wages of 1d. per hour.

"Simon" Testimonial.—The committee formed for the purpose of presenting a testimonial to Mr. John Simon, C.B., late Medical Officer of Health to the Privy Council, in recognition of his eminent services in sanitary science, have learned his decided objection to receive any testimonial presented to him personally, and have accordingly arranged that a bust, in marble, of him shall be executed and presented to the Royal College of Surgeons, the Council of the College having unanimously agreed to accept such bust. The subscription is to be limited to the amount of One Guinea, and Mr. Alfred Haviland, at 1, Adam-street, Adelphi, is treasurer.

SURVEYORSHIP ITEMS.

Dundee.—Mr. James Callen, road surveyor, Maryfield, Dundee, died at his residence in Dundee, on the 6th inst., in his sixty-second year. About two months ago he resigned his office. In 1849 he came from Mid Calder to reside in Dundee, in order to carry on the work of surveyor of roads in the county, under Mr. M'Connell; and latterly, on Mr. M'Connell resigning, Mr. Callen was appointed surveyor for the whole county. This office, however, he had not long held when the road trustees of the county deemed it prudent to divide the county into districts, and to appoint a separate surveyor for each district. When this division was made Mr. Callen was appointed surveyor of the roads in the Dundee district.

Bury.—At a meeting of the general purposes committee of the Bury town council, on the 12th ult., Mr. Cartwright, surveyor to the Dukinfield Local Board, was elected as borough surveyor for Bury, at a salary of 350*l.* per year. There were originally seventy-two applications, but the candidates were reduced to four, from whom the final selection was made,—Mr. Cartwright; Mr. Hunter, borough surveyor, Preston; Mr. J. H. Nuttall, surveyor and architect, Bury; Mr. J. Sellers, assistant surveyor, Bury.

Bridport.—At a recent meeting of the Bridport Highway Board, Mr. Cox, the surveyor of highways, who has absconded, was declared dismissed from his situation. Although (according to the *Dorset County Chronicle*) there has been a most rigid examination of the accounts, nothing has been found to show Mr. Cox is indebted to the Board, but, on the contrary, so far as it goes there is a balance due to him. The accounts for 1877, however, show nothing, as he has made no entries. Mr. Cox had 250*l.* per annum from the Highway Board, 50*l.* from the Turnpike Commissioners, and 10*l.* from the Bridport Local Board. The new surveyor will have the turnpikes to survey without the extra salary.

"IMPROVEMENTS" AT HASTINGS.

A CORRESPONDENT of the *Hastings Independent* asks whether anything can be done to improve in some way the mode of laying out new streets in the borough. "Year after year," he says, "we permit our builders (in their crass ignorance) to destroy the beauty which they themselves would be the first to appreciate if we had a Ruskin to set it before them. Only the other day I saw an instance of the stupidity and want of foresight in permitting streets to be run up anywhere. The West Hill is being built upon, and if any person will walk along the street (Plynlimmon, I think) from the Castle towards Emmanuel Church, he will find that a new street has thrust a couple of houses right in the view, destroying the vista which could be opened up to the Mount Pleasant-road and perspective beyond." After giving further instances of the kind, the writer says,—"Go where you will, the same sad want of taste and foresight is apparent. . . . . Now, when a new Hastings is spreading on every hand, the people of the present day should not repeat the sins of their forefathers." The correspondent asks, in conclusion,—"Could not a small committee be formed of the Philosophical and Athenæum Institutions to co-operate with the Ratepayers' Association in drawing up some plan by which all future streets might be regulated? Perhaps one or two of the rising young architects of your town would give their services gratuitously?" If the Town Council shows itself indifferent to the preservation of the natural beauties of the town, the inhabitants (if they attach any importance to the matter) have the remedy in their own hands.

BLACK PUTTY.

SIR,—I have heard of a new mode of slating roofs, which is much more economical than the old system. I will explain:—Slates placed in straight lines, like greenhouse glazing, simply hanging over each other about 3 in., and every slate to be bedded on each side in black putty in wood rabetting. I should esteem it a great favour if I could obtain through the *Builder* instructions how to make a black putty of sufficient tenacity to be watertight for the above purpose. ANTI-PLUVIAL.

ANOTHER CAUTION.

SIR,—A man representing himself as our agent is obtaining small sums of money from builders under the pretence that he is able to place the erection of a warehouse in their hands. This person has no authority from us, and we wish to warn the trade against him. Your insertion of this letter in your next issue will oblige.

CROSSE & BLACKWELL.

SCHOOL BOARD SCHOOLS IN MANCHESTER.

Lloyd-street, City-road.—On the 24th ult. the memorial-stone of the new Board schools in Lloyd-street, City-road, was laid by Dr. John Watts. The schools, which are well on towards completion, contain accommodation for 500 boys and 500 girls. On the ground-floor there are two infants' schoolrooms, 50 ft. long by 30 ft. wide, with two class-rooms and teachers' room to each department. On the first floor the arrangement of the rooms is similar, and the apartments are approached by separate staircases, the girls entering from Hamer-street and the boys from Camden-street, while the entrance for the infants is in Lloyd-street, so that the departments are entirely isolated. Two large playgrounds are provided, approached by covered ways which connect them with the main building. The elevation of the building towards Lloyd-street has a frontage of 120 ft., and the ends of the main schoolroom project to the front boundary line. The portion of the building between the wings is set back about 4 ft., and in the centre is a clock tower, rising to a height of 100 ft. The style is Gothic, and the walls are faced with picked common bricks, the arches, chimneys, and eaves course being of stock bricks. The dressings are of stone and terra cotta. The rooms are all lofty, and ventilation is effected by the use of Messrs. Shillito & Shorland's "Manchester grates." The architect is Mr. Henry Lord, and the contractor Mr. James Herd. The total cost of land, building, and furnishing will be about 10,000*l.*

Abbott-street, Rochdale-road. — On the same day Mr. Anderton laid the memorial-stone of the new schools which are being erected in Abbott-street, Rochdale-road. The site on which these schools are being erected is bounded by Abbott-street, Slater-street, and Chapman-street on three side, and by cottage property on its fourth side. It contains about 1,134 square yards, and is nearly rectangular in shape. The buildings, which are being carried out from designs submitted in competition by Mr. William Dawes, are Gothic in style, and are being constructed of brick slightly ornamental in its treatment. In the centre of the roof a square wooden bell-cot rises 26 ft. above the ridge, and terminates in an ornamental iron vane. In the winter months the air will be warmed as it passes through flues carried from "Manchester grates" supplied by Messrs. Shillito & Shorland into the various rooms. Extraction flues in connexion with these grates provide for carrying off the foul air. These schools were designed originally to accommodate 800 children, but by an amended arrangement 644 children only will be provided for, although the building covers the same area as that intended for the 800 children. As now being carried out, there will be two infants' schoolrooms, each 25 ft. by 30 ft., with a class-room, 16 ft. by 17 ft. adjoining, on the ground floor; and on the first floor a boys' schoolroom, 45 ft. by 30 ft., and a girls' schoolroom of the same size. These rooms can be thrown into one by the opening of sliding doors provided between them. The ground-floor rooms will accommodate 204 infants, and the upper floor rooms 220 girls and 220 boys. The buildings are being erected by Mr. James Herd, builder, Hulme, under the superintendence of the architect. The total cost, including land, will be about 7,000*l.*

Armitage-street, Ardwick. — Mr. William Hughes on the same day laid the memorial-stone of the new schools in Armitage-street, Hyde-road, Ardwick. The site chosen for these schools has an area of 4,000 yards, with a frontage to Armitage-street of 100 yards. The building is in the Gothic style, and has a façade to Armitage-street of 65 yards. This front is broken up by a central projection and end wings, each gabled and finished with carved finials, with the addition of gablets to the upper-floor windows, and the bell-turret, which rises 30 ft. above the ridge. The walls externally are throughout faced with picked common bricks, with blue brick bands, stock-brick facias, and arches. The ground-floor and staircase windows are finished with stone jambs, mullions, and transomes, the heads of the latter and the large central windows on the upper floor being finished with plain traceried heads and moulded stone labels. The ground-floor is arranged for infants in two departments, each with its own entrance. These are placed in the centre of the building. Each department comprises convenient cloak-room. School-room, 56 ft. long by 30 ft. wide, and 15 ft. 3 in. clear height; and babies' room 20 ft. by 21 ft., and 15 ft. 3 in. clear height. This room is accessible both from the main room and entrance corridor. The upper floor is appropriated to the boys and girls, each department having its own entrance and staircase, and comprising a school-room 56 ft. long by 30 ft. wide and 18 ft. mean height; two class-rooms, one 21 ft. by 20 ft., the other 20 ft. by 18 ft., each 15 ft. clear height; a cloak-room 18 ft. 6 in. by 18 ft., and a teachers' room or storeroom. There are three large playgrounds—one for boys, one for infant boys, and one for girls and infant girls; in each of these is a shed, in order that the playgrounds may be used in wet weather. The building is designed to accommodate 1,040 children, viz.:—500 infants, 270 boys, and 270 girls. The floor space allotted to each child is nearly 9 square feet, and the air space 135 cubic feet. The contract for the building, including boundary walling, but exclusive of furniture and fittings, is 7,387*l.*, and all, inclusive with land, is about 13,000*l.* The works are being carried out by Mr. J. Herd, builder, of Hulme, under the supervision of the architects, Messrs. Royle & Bennett.

STATISTICS AS TO STREET PAVING IN BRADFORD.

THE question of street-paving is, in more than one respect, a vexed one in Bradford, owing partly (according to the *Bradford Observer*) to the slow progress made by the corporate officials during a period dating no further back than half a dozen years, and mainly to the rapid extension of the town for the past ten years. With the view of showing what work has actually been done by the Corporation during the past ten years, the *Observer* gives the following statistics, which are taken from the official reports. They refer to the streets, public and private, which the Corporation have been called upon to undertake and put into repair,—of course, charging the cost of work done in private streets to the owners:—

	Streets.	Number.	Cost.
1866...	Public ...	16 ..	£2,415 17 10
	Private ...	5 .	2,010 10 9
1867 ..	Public ...	20	3,230 10 4
	Private ...	8 .	2,889 10 5
1868	Public .	35 ..	8,184 12 2
	Private	19 ..	(No cost given.)
1869	Public ..	9 ...	7,738 13 11
	Private ...	6 ..	2,506 11 2
1870 ..	Public ...	— ..	11,394 4 4
	Private ..	51 ...	12,504 4 11
1871 .	Public ..	17 ...	14,321 19 4
	Private ...	20 ...	5,530 0 4
1872.	Public ..	— ..	15,473 3 0
	Private ..	30 ..	9,765 16 5
1873...	Public ..	— ...	25,832 4 11
	Private ...	43 ..	16,089 8 0
1874...	Public ...	– ...	21,374 3 3
	Private ...	62 ...	21,920 19 1
1875...	Public ...	— ...	20,778 13 1
	Private ...	41 ...	18,499 2 3
1876...	Public ...	— ...	22,418 17 8
	Private ...	49 ..	27,995 3 8

In the returns dating from 1870 the numbers of public streets are not given, but the best idea may be gained from a statement of the expenditure involved, which is appended. From the returns it will be seen that since 1870 the Corporation have done work for private owners in nearly 300 streets, against the small number of thirty-eight in the four preceding years. Last year the gross sum expended in paving, flagging, channelling, &c., public and private streets amounted to over 50,000*l.*, against 4,426*l.* in 1866. This is, of course, exclusive of special street improvements, public and private sewerage, &c.

St. Werburgh's Tower, Bristol. — The *Bristol Times and Mirror* says:—A new hitch has taken place in connexion with this "Never-is-but-always-to-be-settled" subject. It will be remembered that when the proposal was made to the Council to let the tower stand, on the money required being found, it was resolved to refer it to the Bishop and Archdeacon (without whose consent no definite course could be taken) to say on what conditions the wish of the memorialists would be complied with. On Tuesday, the 6th inst., at the meeting of the Streets Improvement Committee, the Bishop and Archdeacon's reply was received to the effect that they consented to the retention of the tower on condition that the Town Council held themselves responsible for any injury done to persons or property should the tower become insecure, or fall while the body of the church was being removed. The Town Clerk said he could not advise the Corporation to give any such guarantee, and a large majority of the committee accordingly determined to refuse it.

THE BRIBERY BILL.

SIR,—In your version of the Bill of Bribery of Agents, founded on my suggestions, there is an important omission of a "not." I wrote "the Court shall *not* be bound to act on the information of either party alone, without some confirmation," or something to that effect. I have no time to write more on the subject now, except that I was glad to see the R.I.B.A. had taken it up in the right way, and perceived that such legislation is becoming necessary to protect honest men. EDM. BECKETT.

INHABITED HOUSE DUTY.

SIR,—Now that this question has been once more brought before the notice of the Chancellor of the Exchequer by the influential deputation from London and Liverpool which waited upon him last week, I venture again to call attention to the injustice the owners of house property in the metropolis are subject to, in the hope that it may be redressed. A building, if any portion (however small) is occupied by a professional man, and the care-taker sleeps in the house (as stated by Mr. Alderman Lawrence), is subject to house duty. This necessitates either the dismissal of the care-taker or housekeeper,—causing great distress and loss of employment to a respectable and trustworthy class, and throws extra responsibility on the police, who have notice given them that the premises are left unoccupied,—or a landlord declines to let his rooms to professional men. In neither case will the revenue receive any benefit, whilst great injustice and inconvenience is occasioned. It must also be remembered that most of the occupiers, as well as the owners, have houses in which they dwell, and for which they pay Inhabited House Duty, and bear their fair share of taxation. It has always appeared to me that one of the effects of good government was to obtain the necessary amount of revenue from the people, with the least possible amount of pressure and annoyance. I know that at the last City election the Liberals lost numbers of votes from the oppressive surcharges for income-tax, for which the late Government had the credit, whilst probably they arose from some over-zealous minor official. It seems now that the same gentleman, or a kindred spirit, is moving in the House Duty question. A case has been brought before me at the present time in which the ingenious surveyor of taxes contends that premises, a portion of which is occupied by an auctioneer, are liable to house duty, he being a professional man, although the licence granted by the Inland Revenue Office (the same department) expressly recites "to exercise the trade or business of an auctioneer." The argument, I am informed, is that the auctioneer "exercises his trade" away from his office, and that when there his business becomes a profession. Can ingenuity go much further?

J. R. C.

COMMISSIONS.

SIR,—Clients are not quite so green as they seem to be considered by the N.W. gentleman who advertises that he gives 10 per cent. to architects; at least, our clients insist in such cases that we shall take such commissions and hand them over.

We can show you proofs that this is a fact, whether or not it might be considered by the N.W. gentleman as consistent with the honour which should exist between conveyancers.

X. Y. & Z.

BROWN PAPER.

SIR,—Having an eye for defects, and, as some would say, also a tongue for complaints, allow me to ask our paper manufacturers why it should be that on holding up to the light almost every sheet of brown paper, innumerable pin-holes may be seen in it? Can it be through the want of amalgamation of the ingredients, or the carelessness of the workmen? In each case the defect could be remedied. Should the manufacturers reply by saying that it is only the inferior kind of paper in which the holes are, then I would answer that in 999 cases out of 1,000 the inferior is used, consequently there cannot be much call for the superior. A medium between the two would be preferable, minus the holes. The difficulty to find a sound sheet to fasten behind the frames of prints and pictures as a prevention of dust and smoke penetrating, prompts me to make the above inquiry. Y.

ACCOMMODATION FOR TRAVELLERS.

At the present day much dissatisfaction exists with regard to the liquor question in this country. On all sides it is asked, what can be done to abate the nuisance arising from drink? My own experience is, that our magistracy have never sufficiently comprehended the laws made by our previous legislators for the travelling public.

Public-houses were built and licensed for the public benefit, and not for the public curse and disgrace such as they have gradually but surely been coming to. If a stranger visits London or any of our large manufacturing towns, on applying at an inn for a bed, it will usually be found that they do not let them; and yet it was for that purpose alone that they were instituted.

Our magistracy should be most jealous of the privileges, now amounting to a monopoly, granted to publicans; for were they to insist upon the law being carried out, and which laws have never yet been repealed by Parliament, viz., that they supply travellers with food and lodging, I am of opinion that it would be a beginning by paving the way to diminish drunkenness by this means. My business taking me about from place to place occasionally causes me to require to sleep at an inn. If my rest is disturbed by brawling men in the house, I should soon tell the landlord of it; and if the nuisance were repeated another night, I would not hesitate to complain to the local magistrate, who would soon compel the publican to keep his house in order.

The population of this country is steadily increasing, and, as a natural consequence in a commercial country, so will the amount of travelling increase in proportion; yet do I find less and less accommodation at inns in proportion to the wants of travellers, and, owing to publicans having been allowed to do as they please with strangers, commercial travellers have ceased to look to them as resting-places, and now have to put up at hotels that run omnibuses to and from the station for the purpose, and, as the expenses are paid by the employer, the traveller does not care what he is charged; thus the monopoly is in a few hands. But there is another section of travellers, equally respectable, whose means are not equal to justify them in going to these commercial hotels, as well as a large number of small capitalists obliged to employ travellers who would gladly see a possibility of the item of travelling expenses being reduced, and, until they choose to petition the magistracy to compel publicans to comply with the law, they need not hope for any redress from the present generation of brewers and magistrates. The only remedy that I can see to abate the nuisance is by creating fresh public-houses alongside those in existence, the landlords of which would undertake to house travellers. At the beginning of this century England enjoyed the reputation of having the greatest facilities for travelling and hospitality to strangers; now, although the amount of travelling has increased a thousand times more, hospitality to strangers has diminished: foreigners now point with exultation to their own countries as affording hospitality to travellers in comparison with what can be found in England.

May magistrates turn their attention to this, for it is this little oversight on their part that has caused publicans to become the most independent order of tradespeople in England, which need not be the case if the law is upheld.

J. B. Watts.

DO OUR WORKMEN RETROGRADE?

Sir,—I find from a letter in the *Builder* of the 17th inst., that "F.R.I.B.A." doubts whether English workmen are improving. I cannot, upon my own knowledge, say whether they be or be not; but I have ventured on several occasions to predict that, if the present injudicious advocacy of universal technical education, without discriminating those who do require it and those who do not, be persisted in, English workmanship will decline.

We are too apt, in the present day, to take it for granted that we can determine off hand the bearings of such questions as that of technical education, whereas questions of this nature require to be carefully pondered.

Our old weakness which leads us to admire anything which is foreign, is at the root of much of our misdirected energy in respect to technical education. France and Germany having established technical institutions, is to us a sufficient, a logical proof that we should also have them. But we forget that the *raison d'être* of such institutions on the Continent was this,—that when foreign nations resolved to enter into competition with English manufacturing industry, they had to raise workmen by a kind of forcing process; they had to endow State workshops. They knew that the workshops of England were her famous technical schools, and the establishment of technical institutions abroad was the only attempt that could be made to improvise what they did not naturally possess.

We are most ill-advisedly, as I firmly believe, endeavouring to substitute some other way of arriving at good workmanship than that which our famous workshops of old time afforded. Men who have technical education on the brain cannot discern the very important fact that most industries divide themselves into two distinct parts, which may be respectively entitled the gymnastics, and the learning, the science, of the industry. In most industries these are as separate and distinct branches of technical education, as gymnastics and learning are in our colleges and schools. And it is as possible for a man to be an excellent workman without any scientific knowledge, as it is for the greatest dunce to be the best gymnast in the school. Good workmanship depends on the perfect training of the hand and eye; good workmanship is a physical *tour de force*, is an exhibition of *leger-de-main*, entirely independent and apart from the possession of scientific knowledge. A hard-and-fast line can generally be drawn between the *leger-de-main* of the production of any manufacture, and the intelligent or scientific direction of that manufacture: so it is for the director or overseer of any manufacture that your "technical education" should be provided, and not for the workman, whose proper technical gymnasium is the workshop.

In the fine arts, the *leger-de-main* of the art must be combined with the power of intellectual directorship, or we may have, as we frequently do have, exquisite workmanship which is not fine art, and fine conception imperfectly carried out which is also not fine art. The executant and the thinker may exist as separately and as distinct as in manufacturing industry, but in the fine arts there is this difference, that there can never be perfect success unless the two are combined in one individual.

We should bear in mind, then, that we ought to observe the strictest caution before attempting to interfere with the thorough technical training, the technical gymnastics, of our best workshops. By no manner of means should we lead the craftsman to imagine that the obtaining of a smattering of science will be a substitute for the neglect of the *leger-de-main* of his craft, of the gymnastics of his special work,—for nicety of touch, dexterity of hand, and correctness of eye.

In conclusion, I would beg to state that I have seen much worse letters than that produced written by first-rate workmen. "F.R.I.B.A." appears to me to make the very common mistake of applying the test of knowledge where he should have applied that of skill.

W. C. T.

SASH-PULLEYS WITH OIL-HOLES.

Sir,—I have seen the letters which Mr. Meakin referred to from myself and Messrs. Longmire & Burge to him in 1874, and have told him that they do not the least alter my recollection of the facts, and only remind me of this, which I did not mention before, viz., that when he first brought me a pulley with cast-iron axle and no oil-holes, he made me understand that that pulley was a patent one of his own. I suggested the oil-holes, treating the pulley as his in other respects, and referred Mr. Longmire to him for them to use in my house. Mr. Longmire told me the pulley was not Mr. Meakin's at all by any patent, though he got from him one which had been made with the oil-holes I had suggested. Thereupon I told Mr. Longmire to get them made where he liked, and he did so. And, as I said before, after they were used throughout my house, Mr. Meakin thought fit to buy a patent for them, swearing that he was "the true and first inventor." I need not say that even if he had been the inventor, he was much too late. Besides which, it seems, he has another prior claimant to contend with in Mr. Hart, according to his letter in the *Builder* of March 12th.

Edm. Beckett.

Birmingham Sludge.—Sir: It has been stated that "at Birmingham it costs 750*l.* per annum to get rid of the sludge." As a ratepayer of Birmingham I wish this was the fact. At p. 35 of the "Sewage Disposal Report," the accounts show a cost of more than 12,000*l.* a year, exclusive of interest on works, &c. And the estimate of expenditure for the Saltley works for 1877 amounted to 22,000*l.* This is exclusive of the cost of dealing with the night-soil, which it was estimated would cost 48,000*l.* for the present year.—A Ratepayer of Birmingham.

Books Received.

Dynamics; or, Theoretical Mechanics. By J. T. Bottomley, M.A., F.R.S.E., F.C.S. London and Glasgow: William Collins, Sons, & Co. 1877.

Intended to form one of a series of elementary books for science classes, under the Science and Art Department. The author derives the word "dynamics" from the Greek word "dynamis," meaning force. The word "mechanics" has been used instead of the more appropriate word dynamics, for the science which treats of force. Dynamics is subdivided into statics and kinetics, the one treating of the balancing of forces, and the other of motion. It is the best treatise on the subject for its price—one shilling—that we know of.

Graphic Statics. By Karl von Ott. Translated by George Sydenham Clarke, Lieut. R.E. London and New York: E. & F. N. Spon. 1876.

It may be true, as it is here said to be, that in England this subject has not received the recognition it merits, and that applications of the graphic method in the solution of engineering problems have for the most part been viewed as mere artifices for effecting special purposes. It appears that the present work has, in Germany, gone through three editions, but our translator has thought it advisable to omit the first portion of Professor von Ott's own work, treating of graphic arithmetic, because it "has not been much used in practice." We admit the value of the present translation, notwithstanding the omission, but we demur to the definition of the form of roof-truss shown in fig. 29, as being "The English Roof Truss." We have many bad forms of roof-trusses, of which this is one, but we hope that both the author and the translator would admit that we have some good ones; and at least one good English roof-truss ought to have been figured in the book.

Bridges: an Elementary Treatise on their Construction and History. By Fleeming Jenkin, F.R.SS. L. & E., M.I.C.E. Reprinted from the Encyclopædia Britannica. Edinburgh: Adam & Charles Black. 1776 (1876).

When Professor Jenkin was asked to undertake the subject of which this article of the Encyclopædia treats, he thought he could arrange the matter so as to produce a short treatise which might serve as a text-book for one portion of a course of lectures delivered by him in the University of Edinburgh. The present treatise affords examples of the practical considerations by which engineers must be guided in designing bridges and other important structures, and also of the rough-and-ready methods by which experienced men sometimes arrive at a fair degree of knowledge of the probable weight, cost, and general character of a structure without entering into minute particulars or details of the design; and likewise some warnings to young engineers that even experienced men fall into errors of design in combining in the same structure materials which do not possess the same properties when strained by the same degree of force, and especially by the same degree of the force of heat.

In one particular—the abutment ends of cast-iron arched ribs—we consider the instruction as follows to be wrong, viz., "In future designs of ribbed arches it is to be hoped that the practice will be adopted of allowing the rib freedom to turn at the springing. This can be done by ending the rib in a curved bearing." That is not a new suggestion. It was made in the days of James Walker, or, say, of Walker and Burges, and if we had only the rib to consider it would be a good design, but when the spandrels and the roadway are also of cast iron they are more liable to fracture, by unequal loading, when the ends of the ribs are free to move than when they have a broad base, and are fixed; and a fracture is well saved at the expense of some extra metal in the ribs.

The Progress of Civil and Mechanical Engineering and Shipbuilding. Edited by William Smith, C.E., M. Inst. M.E.; John Noble, M.E.; and Thomas Smith, M.I.N.A. London: Longmans, Green, & Co. 1877. 1st Division. 4to. With Eleven Plates.

It may be said that about one-third of this division consists of practical information on shipbuilding; that another third consists of various dissertations on railways and on locomotive

engines; and the remainder of short treatises on various subjects. In their prefatory address the authors have a somewhat remarkable passage, as follows:—"Amongst other things that have not reflected any credit upon a branch of our naval architects and designers, past and present, is that coquetting with foreign Governments for employment, and receiving pay, either in meal or in malt, for serving them, under the rose perhaps, but serving them nevertheless; and whenever the opportunity occurs, being willing, nay pressingly urgent, to put themselves forward as the champions of the claims of foreigners (distinguished foreigners, of course), however ill founded, as the originators and designers of anything which has been discovered to possess any practical merit, against the true, well-considered, and honest claims of English, Scotch, and Irish designers or originators."

The authors have treated the progress of engineering and shipbuilding in a somewhat disjointed manner, and neither plates nor woodcuts are well executed (one plate, by the bye, shows the lines of some of the fast-sailing vessels, as the *America* and *Titania*, and of fishing-boats), but the information conveyed is of a practical nature, and the book appears throughout to be honestly written.

Metallic Mining and Collieries, by WARINGTON W. SMYTH, M.A., F.R.S.
Coal. By A. GALLETLY.
Building Stones. By Professor HULL, F.R.S.
Explosive Compounds. By MATTIEU WILLIAMS, F.R.A.S., F.C.S.

THESE form one of the volumes of the series of "British Manufacturing Industries," published by Mr. Stanford, of Charing-cross. Under the head of Metallic Mining, iron occupies the chief place, but there is, it appears, a gold mine in the lower Silurian slaty rock, between Dolgelly and Barmouth, in North Wales. Of silver the British mines yield 200,000*l*. worth in a year, chiefly obtained from the argentiferous galena, or "blue ore" of the lead mines.

Of lead we obtain about 1,250,000*l*. worth in a year.

The mines are (1) those of the limestone formations, generally poor in silver; (2) those of the slaty rocks, often rich in silver; (3) those in granite, variable as to silver, some very rich. A well-marked and productive area is that tract of mountain or carboniferous limestone which constitutes the great bulk of the moorlands in the north of England. In Derbyshire also large quantities of lead have been obtained from the mountain limestone, and in Flintshire and Denbighshire there is a long series of parallel veins which course across the mountain limestone into the millstone grit. Among the lead mines in the slaty rocks are included the great Laxey mines in the Isle of Man. In Shropshire, south of Shrewsbury, there is a series of east and west running veins, several of which are now yielding large amounts of lead ore, as at Snailbeach, Tankerville, and Roman Gravels.

In Cardiganshire, Montgomeryshire, Devon, and Cornwall again, we find lead amongst these slaty rocks.

Copper and tin lie chiefly in Cornwall and Devon, but there is a great falling off in the copper mining industry at present. The author has a very good chapter on the methods of working mines, and on dressing the ore.

Under the head "Coal" we are informed that there are three leading kinds,—(1) Anthracite, which is non-bituminous; (2) Cannel coal, highly bituminous; and (3) household coal, less bituminous. The advantageous working of coal-mines depends greatly upon the manner in which the shafts are sunk. In the days of George Stephenson they were from 7 ft. to 9 ft. in diameter, or rarely perhaps 12 ft.; but now it is usual, when sinking for an extensive coal area, to make the shafts 14 ft., 16 ft., or even 20 ft. in the clear. The other chief operations described by the author are the "tubbing" of the pits to keep the water back, the working of the coal, the underground conveyance, winding up, and ventilation of the workings.

Under the head of "Explosive Compounds" we have, besides gunpowder, picrate of potash, guncotton, Schultz's gunpowder, nitro-glycerine, dynamite, and lithofracteur.

The *fulminates* are explosive substances differing essentially in their chemical composition from those above named.

The author of this paper on explosive compounds is Mr. Mattieu Williams, who taught Orsini how to make the bombs which he used in Paris in 1858, and he now reveals a few facts which have not hitherto been made public. He was introduced to Orsini in 1857, who told him that the search for arms in Italy was so vigorous that ordinary weapons could not be imported or held by the Italian patriots, and that he had invented a new form of gas-burner which could be converted into a bomb by unscrewing the gas nipples and replacing them by gun nipples. This gas-head was to be filled with an explosive composition and used as a hand grenade to be thrown from house-tops and windows amongst the soldiery in the streets; but these gas-burner shells were too small for ordinary gunpowder to produce effective explosion, and Mr. Williams suggested the fulminate of mercury in lieu of powder, made some, and taught Orsini and Pieri how to make it themselves. He believes that Orsini at first really intended these bombs for the purpose named above, and that the idea of removing the French army of occupation from Rome by killing the Emperor in Paris and causing a revolution there was an afterthought, or a suggestion of Pieri, "a crafty, sinister man, likely to choose a crooked course of action"; but he describes Orsini as a highly-educated, refined, and courteous gentleman. It is, however, in this, as in every other like case, a prostitution of intellect to "suggest" improvements in, or in any way to help, the killing of people in the manner intended by the use of these infernal Orsini bombs.

But Mr. Mattieu Williams has not been alone in this kind of work; he may indeed have thought he was working in good company, seeing how some other gentlemen occupy their time in inventing means of killing by surprise. Surely such means of warfare are beyond the scope of mind of gentlemen, and tend, not towards a true civilisation, but to bring us back to a state of barbarism.

A Practical Treatise on Heat, for the Use of Engineers, Architects, &c. By THOMAS BOX. Second edition. London and New York. E. & F. N. Spon. 1876.

THIS is essentially a practical treatise, and will enable many more persons to study with useful effect the phenomena and action of heat than could have done so before. It must have been written with a determination to avoid display of mathematics, and rather to state the cases as plainly as possible for the benefit of all readers. The researches of the author have been far and wide, and in this second edition much new information has been given on evaporation, heating liquids and air, and on ventilation.

After the general principles and data of the subject follow chapters on combustion, steam-boilers, and the efflux of air; on chimneys, vapours, evaporation, distillation, drying, heating liquids, heating air, the transmission of heat and the laws of cooling; on ventilation, examples of buildings heated and ventilated, on wind and its effect on ventilation, &c.; to which are added the explosive forces of gases, evaporation at low pressures of air, and the absorption of gases by liquids. The book contains more than a hundred tables and fourteen plates.

The Timber Supply Question of the Dominion of Canada and of the United States of America. By JAMES LITTLE. Montreal: Lovell Printing and Publishing Company. 1876.

THE author accuses the Crown Timber Offices, of both Ontario and Quebec, of stripping the country of its white pine (our yellow pine) and throwing it on the market year after year without any reference whatever to the requirements of the trade, their sole object appearing to be to compete with each other which can raise the largest amount of revenue, and make the best exhibit in their budget speeches, and that consequently great and shameful waste of this material has ensued; and the States are following the same course. The lumber-men's axes are said to be, in the region near Otsego Lake, employed so that their ring may be heard from shanty to shanty and across the watershed, showing how near they have reached the end of their supplies.

The Industrial Classes, and Industrial Statistics. By G. PHILLIPS BEVAN, F.G.S., being one of a series of volumes of "British Manufacturing Industries." London: Edward Stanford. 1876.

THE sources from which this industrious author has in the main derived his information are the census tables of 1871, and the factory returns of the same year, but he has, in some cases, been able to add to these from private sources. Broadly stated, the information consists of the number of persons employed, the wages they earn, and what they produce, under the general heads of Mining, Metals, Ceramics, Glass, and Paper. The seats of the various industries in the country are shown upon two maps which accompany the volume. The book will interest many.

VARIORUM.

THE 60th edition of "Laxton's Builders' Price Book" has been published. A correspondent writes:—"I wish to call your attention to 'Laxton's carefully revised and corrected Builders' Price Book,' viz., 1874, page 333; five hours at 4½*d.* 6*l.* 1*s.* 10½*d.*; ditto, 1875, ditto, 1877, page 345. Such mistakes are serious, if we are to rely on a careful and corrected list." True enough, there is that error, but it is not very serious; it merely means that a 6, instead of a 0, has crept in under the £, and if there be nothing worse to be said against the book, we will still give it our recommendation.——A want of a portable copy of the Metropolitan Building Act has been felt, editions being out of print. This want is now supplied by a new issue of "Woolrych's Metropolitan Building Act," edited by Mr. Noel H. Paterson, Barrister-at-Law (Stevens & Son, Chancery-lane). The notes and cases referred to are valuable.——"May's British and Irish Press Guide" now includes, advantageously, a list of Continental journals. We condense from the last issue of the "Guide" some interesting particulars, giving an idea of the present position of the newspaper and periodical press of the United Kingdom. There are now issued 1,783 newspapers, thus distributed: Metropolis, 460; England, 946; Wales, 50; Scotland, 164; Ireland, 142; British Isles, 21. Among these are 87 morning and 42 evening journals, but the majority are published weekly, Friday claiming 363, and Saturday 675 examples. Of 114 monthly newspapers (principally trade organs), 100 appear in London. Only one newspaper, the *Observer*, appears on Sunday alone, the remaining journals recognised as Sunday papers (all published in the metropolis) issuing editions on preceding days also. The publishing prices range from one half-penny to two shillings per copy, there being 101 at the former, and four at the latter price. The penny newspapers number 914, far exceeding all others; the next highest being those at twopence,—263. There are 92 sixpenny and 20 shilling journals, and 14 are gratuitously distributed. The periodicals, magazines, &c., number 779 examples, of which 579 are published in London.

Completion of the North Malvern Reservoir.—The site of the reservoir is one fixed upon by the Board as far back as 1872, when they approved of plans prepared by the then local surveyor for a reservoir, which, however, from faulty design and other causes, after several mishaps, finally fell in on the night of Sunday, the 24th August, 1873, after a very heavy storm. Mr. Hawksley was then called in to report upon the reservoir and the cause of the accident, which he accordingly did, and at the request of the Board he made a careful examination with a view to seeing whether the structure could be repaired, but considering the special purposes for which the work was intended, he had to inform the Board that it would be absolutely necessary to take down and re-erect the entire building, and Mr. Hawksley was requested to prepare plans for the reconstruction of the reservoir of the largest size suitable to the site. This he accordingly did, and in November, 1875, a contract was entered into with Messrs. Wood & Sons, of Worcester, to carry out the work for the sum of 4,975*l.* This has been brought to a successful termination. The internal dimensions of the reservoir are 99 ft. by 85 ft., and 19 ft. to the top water-line, and it will contain nearly one million gallons of water. The side walls are formed into bays and carried to the height of about 15 ft., and over each bay a half-domical roof is constructed. There are five rows of piers of great strength, from which semi-circular arches spring, forming corridors or passages from one end of the reservoir to the other. The walls, piers, arches, and the half-domical roofs are arranged in alternate courses of black and red bricks which have a very good effect. Mr. Bishop was clerk of the works for the Local Board, and Mr. Bilborough, foreman for Messrs. Wood & Sons, the contractors.

COMPETITIONS.

Leys School, Cambridge.—In a limited competition, confined to three London and four provincial architects, for a dining-hall, chapel, and six lodging-houses in connexion with the "Leys School, Cambridge," the award has been given to Mr. Robert Curwen, jun., of Liverpool, the adjudicator being Mr. Alfred Waterhouse.

Sunderland New Museum and Library.—At a meeting of the Sunderland Town Council, on the 14th inst., the Museum and Library Committee presented a report recommending that the plans of Messrs J. and T. Tillman, marked "Alpha," be awarded the prize of fifty guineas; and that the committee be authorized to make arrangements with Messrs. Tillman for the carrying out of the works and to advertise for tenders. The report was adopted.

CHURCH-BUILDING NEWS.

Aberlour.—St. Margaret's Episcopal Church, Aberlour, was consecrated on the 8th ult. The cost of the church when completed will be between 5,000*l.* and 6,000*l.* The works at present finished will cost 2,500*l.* The church, which is in the Early Decorated style, with details of Early French character, is situated immediately to the east of the village of Charlestown. At present it is but partly finished. The original design contemplates the erection of a nave 60 ft. long and a chancel of 40 ft., with a massive tower and spire at the south-west corner of the nave, the organ-chamber and vestry being placed on the north side of the chancel. The portion of the building consecrated is 60 ft. long by 36 ft. wide, and consists of a nave of five bays with arrow aisles on either side. The arches of the nave of the church are supported on massive columns of red polished Peterhead granite, with freestone bases, capitals, and arches. Over these arches are clearstory windows in triplets. The walls of the building outside and inside are of warm, flesh-coloured granite, neatly pointed and relieved with white freestone finishings. The roof of the building is of red pine, and is divided by massive principal couples, resting on stone corbels placed on each pier of the nave, the whole being dressed and richly moulded. The buildings are from the designs of Mr. A. Ross, architect, Inverness. The contractors are Messrs. Reid & Paterson, masons, Inverness; Mr. Macbeth, carpenter, Elgin; Mr. Patillo, slater, Inverness; Mr. Thomson, plumber, Inverness; and Mr. Munro, plasterer, Aberlour. Mr. Wm. Alexander is clerk of works.

Sevenoaks.—On the 17th ult. a meeting was held in the vestry-room of the parish church, Sevenoaks, for the purpose of confirming the following resolution, passed at a meeting of the church restoration sub-committee:—"That the removal of the galleries and organ, and re-seating the church (a bed of concrete having been placed above the vaults), be carried out at once." The following resolution was passed:—"That the resolution of the committee for the consideration and carrying into effect the repairs and restoration of the church, passed at the meeting held on the 21st of October last, be confirmed, and that the sub-committee be authorised to proceed to carry out the alterations and repairs, or any portion of them, in accordance with the plans prepared by Mr. Christian for the purpose." The application for the faculty, which was read, set forth the whole of the work suggested by Mr. Christian, the architect, at a cost of about 7,000*l.*

Sibstone.—Sibstone Church, which has been remodelled from the designs by Mr. Alfred Ackerdike, has been reopened by the Bishop of Peterborough. The nave is a comparatively modern structure, the ceiling of plaster has been removed, exposing a good oak roof. The chancel has been refitted, and an organ gallery removed from the west end of the nave, the organ being placed in the chancel. The whole interior is being decorated from designs by the architect.

A Centenarian Brickmaker.—The *Darlington and Stockton Times* records that on the 5th inst. several gentlemen paid a visit to the brickworks of Mr. John Hutton, Hob Hill, Saltburn, for the purpose of witnessing a centenarian at work on his 102nd birthday. The man, whose name is James Norris, was born at Corsham, in Wiltshire. He managed to load and wheel a barrow with twenty-three unbaked bricks, the weight of which, without barrow, was 200 lb.

STAINED GLASS.

Campden.—A window to the memory of the late Vicar of Campden, the Rev. C. E. Kennaway, Canon of Gloucester, has been placed in the west end of the parish church. The subject of the window is Jacob's dream. The work has been executed by Messrs. Powell & Son. The cost has been about 300*l.*

Durham.—With the view of filling with painted glass the windows of the chapel of the Nine Altars, in Durham Cathedral, which still remain unpainted, a subscription list has been entered into. The Duke of Northumberland heads the list with 200*l.*

Cheltenham. — Another memorial window, making the fourth erected within the past twelve months, has just been placed in the chancel of the parish church. It has been erected in memory of the late Miss Baron, and the subjects chosen represent the feeding of the hungry, clothing the naked, relieving the poor, and comforting the afflicted. The window is by Wailes, of Newcastle.

Heptonstall.—A stained glass window has been inserted on the south side of St. Thomas's church, and adjoining that which was put in a few years ago by Mr. Foster, of Carr, in Erringden. The subject is "Christ in the Temple."

Newcastle-on-Tyne.—The memorial window to the late vicar of Newcastle (the Rev. Clement Moody, M.A.) has been fixed in St. Nicholas's Church. It forms the principal window in the south transept, and is executed in coloured figures on a white ground, exhibiting to some extent a reproduction of the fifteenth-century style. In the five lower compartments the subject is Christ weeping over Jerusalem, and the five upper compartments represent Christ's Sermon on the Mount. Tracery compartments contain the figures of the four greater prophets—Isaiah, Jeremiah, Ezekiel, and Daniel; and of the four lesser—Hosea, Joel, Amos, and Obadiah. About 500*l.* have been subscribed towards this memorial. The window has been executed by Messrs. Powell Brothers, of Leeds.

York.—A new stained-glass window, erected at the expense of Mr. W. B. Richardson, of York, solicitor, has just been placed in the Guildhall, in remembrance of his father, Mr. W. Richardson, who for a great many years was honourably associated with the York Corporation. The subject chosen by Mr. Richardson was King Charles I. declaring to the peers and privy councillors assembled at York that he required no obedience contrary to the known law of the land, the window being the twelfth in order, or the second light to the right on entering the Guildhall. Capronnier, of Brussels, was commissioned to produce the memorial. This painter has now three examples in the city of York, namely, the window under notice, the window at the opposite side of the hall—"The Barons of the North swearing to defend York against the Scots," and the east window at St. Clement's Church. Mr. Butler, of York, had the charge of putting in the window; and Mr. J. Keswick, of Micklegate, executed the necessary masonry-work. The window was designed by Mr. J. E. Doyle, of London, the author of the "Chronicles of England."

Miscellanea.

Exhibition of Sanitary Appliances at Manchester.—The Manchester and Salford Sanitary Association purpose establishing an Exhibition of Sanitary Appliances at Manchester during the visit of the British Medical Association in August next. It is to be hoped that everyone possessing a model of any new sanitary invention or improvement will offer to deposit it in the Exhibition. The exhibitions of this kind which have been organised in various places by the Social Science Association have done much good. We trust that the present proposed Exhibition will be equally successful. The committee hope to be able to secure a site adjoining Owens College. The secretary, Mr. Frederick Scott, 78, Cross-street, Manchester, will give any information that may be desired.

The Richmond Surveyorship.—At an adjourned special meeting of the Richmond Select Vestry on the 10th inst., the selected candidates for the surveyorship, named in our last (p. 276), attended. Mr. Brunton, engineer and surveyor to the city of Durham, was the successful candidate. He is to have a salary of 250*l.* per annum.

Japanese Porcelain.—A report upon the porcelain minerals from Japan, exhibited at the recent Centennial Exhibition, has, says the *Mining Journal*, been made by Dr. H. Wurtz, of Hoboken, assisted as to the microscopic observations and literature of the subject by Mr. A. A. Julien, of the Columbia College School of Mines, New York. In connexion with the resources of Japan, Professor Munroe, of the Tokio Kaisei-Gakko, remarks that the mineral wealth of Japan lies not, as was formerly supposed, in inexhaustible deposits of the precious metals, but chiefly in its abundant stores of coal and iron. Next in importance, perhaps, to coal and iron are the porcelain clays, which form the basis of a very considerable industry. Minerals used for pottery of all kinds are very abundant in Japan. This is the case in a most remarkable degree in the neighbourhood of Arita, in the province of Hizen, which is the centre of the porcelain manufacture. The raw material is always powdered by means of balancing pounders of peculiar construction. No machinery equivalent to the quartz or glaze mills of foreign countries is used, so that all that cannot be pounded sufficiently fine by the process mentioned (often 40 to 50 per cent.) is thrown aside as waste. Long experience, combined with the good quality of the raw material, enables the manufacturers to prepare a clay fit even for the production of very large pieces, such as vases from 6 ft. to 7 ft. in height. The throwing and shaping of the clay is done upon the common potter's wheel, by means of which the workmen of Arita turn out large dishes of 3 ft. diameter, as well as the so-called egg-shell porcelain, not thicker than paper. When the pieces have been sufficiently dried in the open air, they are shaped with sharp iron tools on the same lathe on which the first throwing has been done, and are then coated with a very pure white clay, so as to give the finished ware a better appearance, and to bring out with more intensity the fine blue colour of the cobalt painting.

The Mounds in Hyde Park.—In the House of Commons, on the 8th inst., Mr. Monk asked whether any estimate had been laid before the House of the expense of removing the mounds in Hyde Park, and whether the First Commissioner of Works would give an undertaking that no more public money would be expended in their removal until the House had had an opportunity of considering the matter? Mr. Noel replied that no vote had been proposed on the subject, and he was in great hopes that by judicious economy those mounds might be removed without the necessity of proposing a vote to the House. Mr. Monk gave notice that on the earliest opportunity he would move a resolution that it was undesirable that any further expenditure should be incurred with respect to those mounds.

Fifteen Hundred Years of Sleep.—"The mines of Laurium, which gave rise recently to lively diplomatic discussion, are generally known to be largely encumbered with scoriæ, proceeding from the working of the ancient Greeks, but still containing enough of silver to repay extraction by the improved modern methods. Professor Hendriech relates, according to *L'Union Medicale*, that under these scoriæ, for at least 1,500 years, has slept the seed of a poppy of the species Glaucium. After the refuse had been removed to the furnaces, from the whole space which they had covered have sprung up and flowered the pretty yellow corollas of this flower, which was unknown to modern science, but is described in Pliny and Dioscorides. The flower had disappeared for from fifteen to twenty centuries, and its reproduction at this interval is a fact parallel to the fertility of the famous mummy wheat."

The Building Trade in Carlisle.—According to the *Carlisle Journal*, it is many years since the building trade in that city, and the immediate neighbourhood, wore an aspect so flourishing as it does at this present time. "In whatever direction we turn, north or south, east or west, we find the builders busy, and in most cases they are building good dwelling-houses, none of which, as rents run nowadays, will the owners be inclined to let under 16*l.* a year. Any one who thinks himself acquainted with Carlisle, but who has not been in the south-east district,—we mean the district lying back from Botchergate between Union-street and St. John's Church,—for, say, a couple of years, would find himself surprised in no small degree by the number of new streets that have been run up there of late."

The Knightsbridge Barracks.—In reply to Mr. Baillie Cochrane, who asked the Secretary of State for War whether the Government would not reconsider the question of the site for the new barracks, the opportunity of improving Knightsbridge, and of making a suitable approach to Hyde Park-corner, Mr. Stanley said the contract for the erection of the whole of the buildings was entered into on the 20th of February, 1877, and the works have been already commenced. They are designed so as to occupy the ground, exclusive of the narrow strip which is to be given up for the improvement of the roadway, under agreement with the Metropolitan Board of Works. The scheme will not be reconsidered.

Drainage.—In the House of Lords, the Duke of Richmond and Gordon gave notice on this Friday he would move for a Select Committee to inquire into the operation of existing statutes in regard to the formation of and proceedings by the Commissioners of Sewers, Drainage, and River Navigation Boards; to consider by what means such bodies may be more conveniently and inexpensively constituted, their procedure improved, and their powers enlarged, so as to provide more efficiently for storage of water, the prevention of floods, and the discharge of other functions appertaining to Conservancy Boards.

Loans to Sanitary Authorities.—In the House of Commons, on the 9th inst., Mr. Solater-Booth, answering a question put by Mr. Whitbread, said that the last published returns, those for 1875, showed that the sanction of the Local Government Board had been given to loans amounting to 1,835,797*l.* to urban sanitary authorities. During the year 1876 sanction had been given to urban sanitary authorities for the borrowing of 2,506,459*l.*, showing an increase of 670,662*l.* In the case of the rural sanitary authorities, the amount by the last return was 137,808*l.*, and sanction was given during 1876 to 200,692*l.*, showing an increase of 62,884*l.*

Startforth.—The contracts for the erection of the Board school, or, more properly speaking, the Morritt Memorial School, for the united districts of Startforth and Boldron, near Barnard Castle, have been let to Mr. Borrowdale, of Darlington, builder, and Mr. T. Borrowdale, joiner, Barnard Castle. The outlay, which will be defrayed by a fund vested in the trustees under the will of the late Mrs. Morritt, widow of Mr. W. J. S. Morritt, of Rokeby Park, will exceed 2,000*l.*

The Natural History Museum.—In the House of Commons, on the 9th instant., Mr. Gerard Noel, in answer to Lord A. Russell, stated that the new building of the Museum of Natural History at South Kensington would be completed in the early part of next year, and it was hoped that by the autumn of next year the museum would be ready for the reception of the collections now in the British Museum.

The New Law Courts.—According to the *City Press*, the Government have decided to purchase the blocks of houses between Bell-yard and Chancery-lane, including the Old Cock Tavern, so far as the Law Fire Office, for the purposes of the New Law Courts, and to widen Fleet-street by 12 ft. Temple Bar is to be removed at once, and Messrs. Child & Co. will rebuild their banking establishment on an extensive scale.

Maidstone Drainage.—On Saturday last, March 17th, the first sod of the Maidstone drainage works was turned at the Medway outfall, below Allington Lock, by Mr. Lewis Angell, the engineer of the works. The first contract, for main sewers, is taken by Messrs. James Neave & Sons, and the estimated cost of the works is 30,000*l.*

TENDERS

For alterations and shop-fittings, 18, Edgware-road, for Messrs. H. Benjamin & Co. Mr. W. S. Witherington, architect:—

Colls	£1,139	0	0
Yardley & Sons	1,028	14	6
Hay & Sons	908	0	0
Tory	849	4	6

For paving west side of Latymer-road, Hammersmith, 4,840 superficial yards, laid with 3-in. concrete and ½-in. asphalte, exclusive of gateways, for the Fulham Board of Works:—

Val de Travers	£1,482	0	9
Stueble	1,123	5	0
Société des Françaises	1,097	0	0
Brunswick Rock Company*	1,000	0	0

* Accepted.

For a pair of villas at Snaresbrook, for Mr. Thomson. Mr. Waterson, architect. Quantities by Messrs. Whitmore & Kennard:—

Cullum	£1,960	0	0!
Charlton & Mansell	1,855	0	0
Wood	1,834	0	0
King & Brown	1,749	0	0
Harris & Wardrop	1,725	0	0
Webb	1,690	0	0
Newton	1,657	0	0
Jefferson	1,540	0	0
Warren	1,500	0	0
Cousins	900	0	0!

For Cinderford Waterworks. Messrs. Gotto & Beesley engineers:—

Contract No. 1.

For iron pipes:—

Laurie & Co. (accepted)	£3,001	0	0

Contract No. 2.

For construction of pumping establishment and reservoir, and laying water mains:—

Phillips & Co. (accepted)	£3,797	0	0

Contract No. 3.

For engines, boilers, and pumps:—

Watts & Co. (accepted)	£1,090	0	0

For four manufacturing premises, Whitecross-street, City. Messrs. Ford & Hesketh, architects:—

Kirk & Randall	£7,344	0	0
Downs & Co.	7,342	0	0
Brass	6,994	0	0
Shaw	6,962	0	0
Boyce	6,856	0	0
Kilby	6,747	0	0
Browne & Robinson	6,645	0	0
Lawrance	6,586	0	0
Mark	6,526	0	0
Peto Brothers	6,435	0	0
Newman & Mann	6,410	0	0
Crabb	6,115	0	0

For new house, on Beulah-hill, for Mrs. Heffer. Mr. R Adolphus Came, architect. Quantities by Mr. Thomas M. Deacon:—

Dove, Brothers	£3,345	0	0
Shaw	3,221	0	0
Yardley	3,198	0	0
Sewell & Son	3,157	0	0
Harper	3,057	0	0
Newman & Mann	3,022	0	0
Bayes, Brothers, & Allen	2,946	0	0
Bowyer & Son	2,929	0	0
Mason	2,702	0	0
Longley	2,698	0	0
Aitchison & Walker	2,682	0	0
Thomas	2,630	0	0

For new residence at Cliftonville, near Brighton. Mr. Thomas Elworthy, architect:—

Hide & Co.	£5,370	0	0
Spreadborough & Co.	5,196	0	0
Chambers	5,190	14	6
Wells	5,089	0	0
Patching & Webber	4,938	0	0
Oxley	4,900	10	0
Bratou	4,800	0	0
Allen	4,800	0	0
Longley	4,650	0	0
Hall	4,600	0	0
Smith	4,339	0	0

For schools, SS. Mary and Michael's, Commercial-road. Mr. John Young, jun., architect:—

Robbins	£1,970	0	0
Little	1,589	0	0
Bayes & Co.	1,580	0	0
Lawrance	1,575	0	0
Ennor	1,550	0	0

For presbytery, St. Boniface, Whitechapel. Mr. T. Young, jun., architect:—

Read & Son	£1,349	0	0
Morter	1,193	0	0
Conder	1,159	0	0
Newman & Mann	1,150	0	0
Ashby & Horner	1,076	0	0
Lawrance	1,035	0	0

For new Divinity and Literary Schools, Cambridge University. Mr. B. Champneys, architect. Quantities supplied:—

Smith	£14,430	0	0
Bell & Sons	14,018	0	0
Parnell	13,013	0	0
Dearde	12,413	0	0
Loveday (accepted)	11,977	0	0

For new offices, No. 3, Great Tower-street, for Mr. S. Harrison. Mr. John Young, jun., architect:—

Conder	£2,550	0	0

For new offices, No. 4, Great Tower-street, for Mr. T. C. Howell. Mr. T. Young, jun., architect:—

Conder	£2,344	0	0

For alterations, No. 24, Houndsditch, for Mr. Cantor. Mr. T. Young, jun., architect:—

Sparks	£475	0	0
Read	400	0	0
Ellis	350	0	0
Palmer	316	0	0
Roper	270	0	0

For alterations at the Bedford Arms, Seven Sisters-road, Holloway, for Mr. Miller. Mr. E. Brown, architect:—

Kiddell & Son	£942	0	0
Marr	898	0	0
Harris & Wardrop	897	0	0
Cole (accepted)	870	0	0

For new kitchen to Shoreditch Infirmary, for the guardians. Mr. J. W. Pegge, engineer:—

Niblet	£583	0	0
Waldram & Co.	528	0	0
Linfield	526	0	0
Syder	523	0	0
Buford	519	0	0
Smith	370	0	0
Parker & Evans*	320	0	0

* Accepted, subject to approved securities.

For new pumps to the deep well, Shoreditch Workhouse, for the guardians. Mr. J. W. Pegge, engineer:—

Field & Bray	£849	0	0
Grover & Co.	802	19	6
Evans, Keene, & Co.	733	8	0
Owens & Co.	750	0	0
Jackson	728	10	0
Tilling	685	0	0
St. Pancras Iron Co. (accepted)	478	0	0

For stone façade, Nos. 10 and 11, Mincing-lane, for M. C. Raper. Mr. T. Young, jun., architect:—

Ashby, Brothers	£3,426	0	0
Conder	3,067	0	0
Trollope	3,064	0	0
Hill, Higgs, & Hill	3,055	0	0
Brass	2,544	0	0
Smith & Co.	2,528	0	0
Ashby & Horner	2,420	0	0

For new buildings, Nos. 11 and 12, Idol-lane, for M. F. H. Mitchell. Mr. T. Young, jun., architect:—

Conder	£2,716	0	0

For alterations and additions to premises, No. 10, Acre-lane, Brixton, for Mr. Henry Vernham. Mr. James Harrison, architect. No quantities supplied:—

Green	£591	0	0
Dye	556	0	0

For Nos. 1 and 2, Bulmer-villas, Copleston-road, Peckham, for Mr. Gauntlett, of Clapham. Mr. S. F. Thomas, architect:—

Kent	£1,283	0	0
Young	1,215	0	0
Terry	1,035	0	0
Lupson (accepted)	1,010	0	0
Colebrooke	985	0	0
Young (withdrawn)	950	0	0

For villa residence, with approach, entrance-gateway, boundary fences, and outbuildings thereto, at Start's-hill, Orpington, Kent. Messrs. Hollingham & Son, architects. Quantities by Mr. David G. Reddall:—

Gould & Brand	£1,405	0	0
Haisman	1,349	19	0
Bromy	1,335	0	0
Stiff	1,331	0	0
Linfield	1,310	0	0
Niblett	1,249	0	0
Parker & Evans	1,238	0	0
Taylor & Son	1,097	11	0

For the erection of a house and shop, at 91, Hackney-road, for Mr. Tomkins. Mr. W. Mundy, architect:—

Nightingale	£643	0	0
Hearl & Son	635	0	0
Beal	623	10	0
Wire	622	0	0
Phillips & Bessiker	616	0	0
Thomason	598	10	0
Jarvis & Sons	598	0	0
Judd & Hawkings	585	0	0

For the erection of new cooperage and dwelling-house, Broad-street, Ratcliffe, for Messrs. Holt & Co. Mr. Dunoh, architect:—

Palmer	£2,285	0	0
Outhwaite	2,058	0	0
Curtis	1,950	0	0
Johnson	1,897	0	0
Judd & Hawkings	1,845	0	0

For alterations to the Lamb, No. 3, Colt-street, Bethnal-green, for Mr. J. Huxley. Mr. E. Brown, architect:—

Stamp & Bowtle	£1,025	0	0
Judd & Hawkings	995	0	0
Sheffield	973	0	0
Somerville & Smith	896	0	0

For the erection of two detached residences, at Croydon-hill, for Messrs. Webb, Brothers. Messrs. W. Waymouth & Son, architects. Quantities not supplied:—

Axford	£1,980	0	0
Hawkes	1,934	0	0
Sawyer	1,830	0	0
Prebble & Co.	1,750	0	0

For the erection of villa residence, at Ealing. Mr. J. Mayor, architect. Quantities by Mr. Broadbridge:—

Jopling	£1,650	0	0
Niblett	1,299	0	0
Madd	1,165	0	0
Nye	1,150	0	0
Robinson (accepted)	1,020	0	0

For alterations and additions to residence, at Dallington, Norfolk, for Mr. J. H. Pearson. Mr. Kelly, architect.

Turner & Sons	£843	18	0
Howard	702	12	0
Beeton	687	4	0

For residence, at Datchet, Bucks, for Miss Leathes. Mr. W. A. Boulnois, architect. Mr. Shoppee, surveyor.

Claridge	£4,814	0	0
Hollis	4,474	0	0
Newman & Mann	4,336	0	0
Holland & Hannen	4,230	0	0
Conder	4,200	0	0
Trollope & Sons	4,047	0	0
Macey	4,013	0	0
Messom	3,993	0	0
Shaw	3,930	0	0
Higgs & Hill	3,894	0	0
Braid & Co.	3,861	0	0

For new Boys' Industrial School building, at Hampstead, for the Field-lane Institution. Mr. F. W. Pomeroy, architect. Messrs. Williams & Gritten, architects:—

Colls & Sons	£11,320	0	0
Ashby & Horner	11,220	0	0
Wall, Brothers	11,115	0	0
Shaw	11,118	0	0
Smith & Co.	11,000	0	0
Holland & Hannen	10,987	0	0
Brass	10,974	0	0
Dove, Brothers	10,845	0	0
Macey	10,494	0	0
Conder	10,434	0	0
Browne & Robinson	10,410	0	0
Lawrence	10,070	0	0
Higgs & Hill	9,900	0	0

The Builder.

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Fifteenth-Century London.

THE history of London is particularly rich in records of the wise acts of the men of mark who have filled the public offices of the City. Many of the old Lord Mayors, whose names have come down to us, have been exceptionally endowed with strength of character and the capability of governing well; but there are others less known to fame whose actions are worthy to be recorded, and one of these was William Gregory, Mayor of London in the thirtieth year of Henry VI. (1451-52). He was the son of Roger Gregory, of Mildenhall, in Suffolk, but the date of his birth is unknown; it is believed however, to have been at the close of the fourteenth century. He served the office of Sheriff in 1436, and made his will in 1465, fourteen months before his death. At the latter period he was living in the parish of St. Mary Aldermary, where he directs that he should be buried, but, according to Stow, he was actually buried in the Church of St. Anne, Aldersgate. This will is a long production containing a very curious list of bequests. Money was left to the sick poor of the hospitals of St. Mary Spital without Bishopsgate, of St. Mary of Bethlehem, of Elsing Spital and of St. Thomas the Martyr, in Southwark. Also to the prisoners of Ludgate, Newgate, and the two Compters, of the King's Bench, Marshalsea, and Fleet, with the object of redeeming the debtors out of prison. Scholars were to be sent to school, and poor maidens and widows to be dowered. Gregory left money to the fraternity of Corpus Christi of Skinners, to which company he belonged, and to nearly all the conventual establishments in London, so that masses should be said for the good of his soul. One passage in the will is very singular as mentioning the female hermits that appear to have been located near the gates of the City. "Also I biqueth to the Recluse at Albalowes in London Wall 6s. 8d. Also to the Ankeresse without Bishopsgate 6s. 8d. Also to the Ankeresse without Temple Barre 6s. 8d.; and to the Ankeresse at Westmynstre 6s. 8d., to thentent that they and everyche of them pray specialy for my soule and all the soules above saide." The improvement of London was not forgotten, and money was therefore left for the reparation of London Bridge, for the "making, repairing, and amending of pore chirches and of feble waies and brigges," and for the "reparation of the fowlest wayes aboute London."

Gregory's name has hitherto been little known, but Mr. James Gairdner has lately set up a claim for him as the author of a chronicle of London, which exists in MS. in the British Museum.* The ground for this ascription is to be found in the following passage in the chronicle under the heading "Gregory Skinner, Mayor of London, Anno xxx."—"And that year came a legate from the Pope of Rome with great pardon, for that pardon was the greatest pardon that ever came to England from the Conquest unto this time of my year being Mayor of London." This seemed to be sufficient authority for Mr. Gairdner to call it Gregory's Chronicle, but afterwards it was discovered that Gregory died in January, 1466-67, a year or two before the chronicle comes to an end. "It is quite clear, therefore, that if William Gregory wrote the part relating to his own mayoralty, he could not have been the author of the whole chronicle or the writer of the MS." The question of authorship must therefore remain for the present doubtful, but Mr. Gairdner believes that the chronicle really was written by Gregory, but transcribed and continued by another hand. The portion which relates to the author's own time is full of interesting information, and we propose to take note of such of the bits as will help us to picture the state of London in the fifteenth century.

If the "good old times" ever had any real existence it was not during the period treated of in this chronicle, for then the times were troublous, and "risings" were constantly occurring, so that on nearly every page we read of heads being smitten off. The account of Jack Cade's rebellion is of great value because it contains a statement to the effect that after the Battle of Sevenoaks the captain that led the Kentish men to Blackheath was not the original captain, but one who went by the same name. He came with a great host to the White Hart in Southwark, where he took up his lodging. London was open to the insurgents, who entered the city carrying dismay wherever they went. The captain plundered the rich citizens and beheaded his enemies on all sides, and then retired into Southwark. The Londoners rose at last, and there was some fighting on the bridge, many a man being "slayne and caste into the Temys, harnys, body, and alle."

London Bridge was for many years made hideous with the heads of beheaded men. Jack Cade set up there the heads of those he executed, and soon afterwards his own found rest in the same place. The heads were sent up from all parts of the country, and at one time so many were stuck up upon the bridge that men spoke of the "harvest of heads."

On Lord Mayor's Day, 1425, when there existed a feud between the Duke of Gloucester and Henry Beaufort, Bishop of Winchester, a battle on the bridge was imminent. The duke charged the mayor and aldermen to keep good watch in the city, and the gates of the bridge were carefully secured. On the morrow, the bishop's men drew the chains at the Southwark end, and knights and esquires issued out of Winchester House in battle array. When the news was spread abroad all the shops in the City were closed in haste, and people came down to the gates of the bridge. Then the Archbishop of Canterbury and the Prince of Portugal treated between the opposed potentates, Gloucester and Winchester, and eight times they rode "by twyne the duke and the byschoppe that day." At last peace was restored, every man went to his home, and no harm was done to the City. A little more than twenty years after this incident these two over-powerful nobles died. The "goode Duke Umfray, sum tyme Duke of Gloucester, passyde owte of this wrecchyde and false trobely worlde" at Shrovetide, and at Easter the Cardinal Bishop of Winchester also died. The English hatred of foreigners, which has continually shown itself in history, broke out in a very dangerous form in 1468. In that year the Princess Margaret was married to Charles of Burgundy, and some of the English suite that accompanied her to Flanders misconducted themselves so that the hospitality of the court of Charles the Bold was in consequence considerably restricted. On the return of the gentlemen of the princess's suite to England, they determined to take their revenge upon the Flemings in Southwark, and made arrangements with some boatmen to take them over the river to Horselydown, and they then proposed to tear the unfortunate foreigners out of their beds and murder them. Fortunately, the plot was discovered in time, and the chief movers in the matter were sent to prison. This is one of the incidents related in Gregory's Chronicle, which was not known before its publication. About the year 1467 many of the London churches were robbed of the boxes containing the Sacrament, and it was supposed that a company of heretics had joined together for the purpose, but it was afterwards found that certain men had mistaken copper boxes for silver gilt, and stolen them for very need. A curious story is here told, which, if it be the genuine statement of the culprit himself, is, as Mr. Gairdner observes, a very remarkable instance of the effect of a burdened conscience on the imagination and the senses. One of the thieves,—a locksmith, who made the instruments with which the locks were picked,—having been at church on several occasions after his crime to hear mass, had been unable to see the host at its elevation; but, after his confession in Newgate, he saw it quite plainly.

In the year 1410, there was a burning in Smithfield, which is very vividly described in the Chronicle. John of Badby, a heretic who did not believe in the "Sacrament of the Altar," was bound to the stake, and Harry, Prince of Wales (afterwards Henry V.), counselled him to hold the right faith of Holy Church. The Chan-

* This chronicle forms the third tract in the valuable volume lately published by the Camden Society, and entitled "The Historical Collections of a Citizen of London in the Fifteenth Century. Edited by James Gairdner."

cellor of Oxford then informed him what that faith was, and the Prior of St. Bartholomew's brought the sacrament to him, attended by twelve torches, but he continued to affirm that it was only holy bread. Fire was then put under the poor man, and he cried for mercy. The prince at his commanded that the fire should be taken away, and asked the martyr if he would forsake his heresy, promising life and enough of goods while he lived, but the man continued true, and the prince ordered him to be burnt at once, "and so he was." In 1415, "certain persons called Lollers" were arrested at the sign of the Axe, in Bishopsgate Without, and were hanged upon gallows which were called the Lollards' Gallows. With such dismal incidents the chronicle is full, even when a paragraph begins well it is apt to end ill: thus when Henry V. made his journey into Normandy (1415), the mayor, the sheriffs, and the aldermen took their leave of the king at Blackheath, giving him and his their b'essing, and he cried out "Christ, save London." All seemed to be going well, but a plot to assassinate the king was discovered, and Sir Richard Camborowe, Earl of Cambridge, Sir Harry, Lord Scrope, and Sir Thomas Gray, with many more, were arrested, put in prison, and "done to death."

There is, however, a brighter side which we will now consider. In Henry IV.'s reign there was hurling in East Cheap "by the lorde Thomas and the lorde John, the kyngys sone, &c.," and when Henry VI. returned from France after being crowned at Paris he was received in London by the mayor and aldermen with the greatest splendour. At the end of London Bridge there was a tower with a giant within, and at the drawbridge was another tower, within which stood three "empresses" royally arrayed, named Nature, Grace, and Fortune. On the right of the "empresses" stood seven fair maidens clothed in white, who presented the king with the seven gifts of the Holy Ghost in the likeness of seven white doves; on the left were seven other fair maidens, who presented the king with seven gifts of worship. Then all the maidens sang a heavenly song, praising the king for his victory and safe return home. At the conduit of Cornhill was a tabernacle, in which sat a king surrounded by Mercy, Truth, and Cleanness. Before the king stood two judges and seven serjeants, representing judgment and righteousness. The procession rode at an easy pace to the Great Conduit, and there the pageant was so gorgeous that the chronicler says it was "like unto Paradise." The maidens, Mercy, Grace, and Pity, were seen drawing water and wines of joy and comfort, which ran for every man's health. Enoch and Eli, two old men, "like heavenly folk," saluted the king with words of grace and virtue. At the Cross in Cheap there was a royal castle of jasper green with the kings from the time of Edward the Confessor and Saint Louis in their coat armour. When the king arrived at St. Paul's, he was received by bishops with the dean and quire, and there he offered thanks to God. Then he rode to Westminster, and on the following day the mayor and aldermen brought him a hamper of silver and gilt, and 1,000*l.* in nobles.

In the year 1464 the mayor asserted his dignity and the honour of the City in a way that greatly pleased the chronicler. About Midsummer the Serjeants of the Coif gave a feast, to which Matthew Philip, the mayor of London, was invited. At dinner-time he came with his officers according to his degree, "for within London he is next unto the king," but on finding that the Earl of Worcester, by some blunder, was set before him, he went home again without meat or drink. When the officers of the feast found out the mistake they had made, they tried to remedy it by sending the mayor a present of "meat, bread, wine, and many divers subtleties." But when the messengers arrived they found quite as sumptuous a banquet actually laid upon the table, and the person who was to make the presentation felt ashamed of the task imposed upon him. He acquitted himself, however, gracefully, and was dismissed with thanks, "and a great reward withall." Thus says the chronicler, "the worship of the City was kept and not lost for him; and I trust that it never shall, by the grace of God."

There is a long and amusing account in this chronicle of the schism which began in 1465, between the friars and the priests. Sir Harry Parker, a white friar, opened the discussion by blaming the beneficed clergy, and affirming that Christ was a beggar, and had nothing but by way of alms. Dr. William Ive, master of Whittington College, answered the friar, by proving that although Christ was poor and kept no great treasure, yet he was no beggar. The friars were eager to defend their doctrine and set up Dr. Thomas Haldon to answer Dr. Ive. Dr. Storey, parson of All Hallows-the-More, at Paul's Cross, tried to pour oil on the troubled waters, but the friars set up bills on every church-door impugning what he said, and Dr. John Milverton, the prior, attacked the beneficed clergy more bitterly than his subordinates had done before. The laity now took up the dispute, and some refused their alms to the friars, and others discontinued their customary offerings to the clergy. The bishops entered into the fight, after which Parker was committed to prison, and Milverton was excommunicated. The whole matter was set before the Pope, and Dr. Ive drew up a full account of the controversy, the effect of which was that the Pope confirmed all that had been done by the clergy. The Provincial was found guilty in nine more points of heresy, and was locked up fast in the Castle of St. Angelo.

The Dr. William Ive referred to above appears to have been a man of mark, and the chronicler relates a curious passage in his earlier history, when he belonged to Wykeham's College at Winchester. He came to preach before the King (Henry VI.) at Coventry in 1458 at a time when every royal preacher had to show his sermon to a particular official before he delivered it, so that no objectionable passages might be allowed to pass. Ive showed his sermon as usual, but disobeyed the instruction to omit certain parts. He declared from the pulpit before the king that it was the official who had made the sermons previously preached before him and not the preachers themselves, whose purpose had been "all turned upside down." "The great reward that [Ive] had for his labour was the riding of 160 miles in and out, and all his friends full sorry for him."

One of the last entries in the chronicle relates to the Pope's bull against Sunday labour and the absurd fashion of wearing shoes with long pikes at the toes. At this time fairs were held on Sundays, and the dandy's awkward foot-gear was so constantly getting out of order that it was necessary for the shoemakers to be on the spot to set it right; yet here was the Pope forbidding any shoemaker from going to a fair on Sunday, on pain of excommunication. When the bull first arrived the king agreed that it should be put into execution, and he proclaimed from Paul's Cross, but soon there was a universal outcry against it, and fashion conquered the Pope. Some said they would wear long pikes whether he would or no, and others went so far as to affirm that the Pope's curse would not kill a fly, a remark that caused the chronicler to groan and write "God amend this." The Cordwainers, having a vested interest, succeeded in obtaining privy seals and protections from the king so that they might make long pikes with impunity. They also caused the men of their craft who laboured in the cause of the Pope "to be troubled and in great danger."

Such were the men and such was the London of the fifteenth century. It was a well protected city, securely walled, with roads outside the gates leading into the country, which at times were so quiet and rural that hermits took up their residence in localities now teeming with a crowded population. Inside the walls were handsome churches and monasteries, and picturesque houses; crosses and conduits stood in every open space. When the City was in holiday guise ready to receive the king or a new lord mayor, all was gaiety and splendour; but at other times gallows were to be seen in every direction, and heads grinned down upon the passers-by from the gates of London Bridge. Then all the inhabitants of the City formed a homogeneous whole, and the several members of this whole were ready to answer the calls made upon them at any moment. On notice from the mayor the citizens were at once under arms to do their duty; or when priests and friars were jangling, they were listeners ready to take sides. It is from such contemporary writings as we have been noticing that the true photograph of old London life can be obtained.

Birmingham School of Art.—At a meeting of the Committee of the Birmingham School of Art, on the 15th inst., Mr. Edward R. Taylor was elected to the office of head master. Mr Taylor has been the head master of the Lincoln School of Art since its formation in 1863.

THE HOUSEHOLD AT DIFFERENT ERAS.*

THE CÆSARS.

"How shall I admire! How laugh! How rejoice! How exalt! when I behold so many proud monarchs and fancied gods groaning in the lowest abyss of darkness; . . . . so many sage philosophers blushing in red-hot flames, with their deluded scholars; so many celebrated poets trembling before the tribunal, not of Minos, but of Christ."—*Tertullian* (about A.D. 198).

IN *Anno Domini*, as it is conventionally accepted, when the Emperor surnamed "Divine" was about sixty-two, Julius Cæsar had been dead nearly forty-four years, Cicero a little more than forty-two, Sallust some thirty-six, Varro perhaps twenty-seven, Virgil less than nineteen, and Horace about eight, years. Ovid was living, but in exile; Strabo had passed the prime of life. Pliny was not born until more than twenty years after; and at the further lapse of a generation Martial and Juvenal were still children. The great fire of Rome occurred A.D. 64, one year after parts of Pompeii and Herculaneum were injured or destroyed by an eruption of Vesuvius; Tacitus and Plutarch were young men when, A.D. 79, the two cities were buried under the ashes of the volcano; and Pliny the Younger was barely eighteen. Much that is known of the early Emperors is due to Suetonius, who, but a youth twenty years after the death of Nero, was a subject of Hadrian, who reigned twenty-one years and died A.D. 138. Suffice it that the century which, for fourteen years, enjoyed the "felicity" of Cæsar-Augustus witnessed, before its close, the "virtue" of Trajan.

In the present state of archæological science it might be supposed difficult, if not impossible, to misunderstand the general character of the Roman habitation, or to misapply with impunity even incomplete and exaggerated allusions to it by Roman authors. But though the world is eminently indebted to archæologists for the collection of much valuable information, there is hardly any new discovery made by them upon which the discoverer, his friends, and opponents, have not built a superstructure of hypotheses. Even staid historians of architecture forget their equanimity when they attempt to describe the "Palace of the Cæsars;" and "The Cæsars," we take it, are Augustus, Tiberius, Caligula, Claudius, and Nero. The "Plan des Fouilles du Palais des Césars," signed "P. Rosa," and dated February, 1870, shows the foundations of more than one large house, of some small houses, of several temples, of a combination of other and different kinds of buildings, together with the remnants of narrow streets. The best-defined remains,—the so-called "Domus Augustana,"—form a block of about 490 ft. by 280 ft., the centre of which is a peristyle measuring some 205 ft. by 190 ft.; and the *tablinum* and *triclinium* are each about 116 ft. by 100 ft. Close to it is a heterogeneous mass of irregular walls to which archæology has given the name of "Domus Tiberiana." The whole "palace," in Mr. Fergusson's words, is "a congeries of shapeless ruins," the superficial area of which he estimates "as a square platform measuring 1,500 ft. by 1,300 ft.;" but he adds, "owing to its deeply indented and irregular outline it hardly covers more ground than the Baths of Caracalla." Presuming, therefore, that these ruins are the foundations of buildings used by the emperors in the first century, it may be taken for certain that the imperial residence grew, as other similar residences have grown at later periods of history. The house of Augustus occupied only a very small portion of the Palatium, or, as it is termed in modern phrase, the Palatine Hill. There, in a street called the "Ox-heads," the emperor was born. After his death the site of his birthplace was covered by a temple dedicated to him, and still standing in the time of Suetonius. The early years of Augustus were passed in a house near the Roman Forum, just above the Ringmakers' Stairs,—stairs which were frequent in the steep and tortuous streets of Rome. He afterwards moved to the Palatium, where he resided in a small house belonging to Hortensius, "no way remarkable for either size or ornament, ... the rooms without anything of marble or fine paving." He continued to use the same bedchamber, both summer and winter, for many years; and to secure privacy he often shut himself up in a room at the top of his house. "Tiberius during the whole time of his government never erected any noble edifice." Caligula added to the imperial residence on the Palatium, and converted the Temple of Castor and Pollux into a kind of approach to his own house. He also built a bridge,

* See p. 176, *ante*: "Antiquity."

by which he joined the Palatium to the Capitolium, now the Capitoline Hill, where, in the court, he laid the foundations of a new house; and this bridge passed over the temple of Augustus to which we have just alluded. Nero, too, joined the imperial residence to the house and gardens of Mecænas, situated upon the Esquiline Hill, by a building, which at first was called "The Passage," but after it was burnt down and rebuilt, "The Golden House." This latter, according to Suetonius, "had triple porticos a mile* in length, and a lake, like a sea, surrounded with buildings, which had the appearance of a city." Moreover, in the entrance to this building there was a colossal statue of Nero himself, 120 ft. in height.

A few words as to the great fire. Tacitus says that it broke out in that part of the Circus which is contiguous to the Palatine and the Cœlian Hills. Nero, who was at Antium, did not return to the city until the fire had reached "The Passage"; and it is possible to assume from the description that the whole of the Imperial residence was devoured by the flames. But Suetonius says that, in the fire which occurred in the second year of the reign of Titus, "the buildings and library of Augustus on the Palatine were destroyed"; and that was about seventeen years after the great fire of Nero. Tacitus, continuing his story of the latter, says that four only of the fourteen regions in which Rome was divided remained entire; three were levelled with the ground; and, in the seven others, there were only here and there a few remnants of houses shattered and half consumed. Then Nero, *who died four years after the fire*, rebuilt Rome, as well as that "Golden House" which held his colossal statue,—that statue being twice the height, less 12 ft., of the loftiest house on the Paris boulevards measured from the pavement to the springing of the roof; and the actual height of the three arcaded stories of that vast Amphitheatre which the Vespasians are said to have planted in the very middle of Nero's lake.†

"'What is truth?' said jesting Pilate, and would not stay for an answer," are the opening words of Bacon's first essay, and no one who attempts to study early history from the ruins of buildings can read the ancient descriptions of those extant without putting mentally some such question as the Roman procurator asked of others. Mr. Parker is probably nearer the truth than he often attains in archæological surmise when he says that "the received history of Rome, as taught in all our schools, is founded almost entirely on conjecture." Dureau de la Malle said something similar in better language in his own more epigrammatic tongue:—"C'est que dans l'histoire de la puissance Romaine le merveilleux se trouve être le vrai, la langue des chiffres être plus poétique que celle des orateurs et des poëtes." Figures, as a rule, lose nothing in the hands of a multitude of transcribers, and for that reason should be suspected, even were it not known that the custom of recording numbers by hundreds and thousands is still practised among those nations which retain some of the vices, and mayhap some of the virtues, peculiar to antiquity. That column for which a certain Publius gave 116,240*l.*; the 360 marble columns which Scaurus brought to Rome for his wooden theatre, and the biggest of which, 40 ft. high, he placed in the court before his own house; the half-ruined freedman who left more than 4,000 slaves; the friends of Athenæus who possessed from 10,000 to 20,000 slaves; the 32,000*l.* which were expended upon chaplets to adorn the heads of guests at a supper to which Nero was invited: these, and a host of similar statistics, have been gravely turned over and defended by grave historians.‡ But a Roman fiction, the translation of [which is happily not often read, presents a likelier description of a large Roman house than has since been composed from the figures of history. Petronius Arbiter is thought by many scholars to have caricatured Nero in his creation of Trimalchio. At any rate, he has told what a pompous freedman,—a *nouveau riche*, ambitious and fluent,—considered a sufficiently extravagant residence for himself, living and dead. "By the favour of Mercury," cries Trimalchio, "I have built me a house. . . . It has four dining-rooms, twenty bedchambers, two marble porticos, a store-room in the upper story, a chamber in which I sleep myself, a sitting-room for this viper (pointing to Fortunata, his favourite), a capital porter's lodge, and accommodation for a hundred guests." Now Trimalchio had just before enjoined his friends to erect a monument for his ashes which should have a frontage of 100 ft., and a depth of 200 ft.,—the ordinary Roman tomb never exceeding 20 ft. square. Of course great doubts exist as to the period when this satire was written; and some attribute it to a much later time than the reign of Nero; though none have believed it to be antecedent to that emperor.

Cicero has told us that Cneius Octavius, the first of the name who was raised to the Consulship, built a house of noble and majestic appearance on the Palatium;* and that Scaurus demolished this house and annexed the ground to his own dwelling. Cicero said nothing about "a palace," as that term is now used. Mazois, however, to whom we owe the best of the many works on Pompeii and a remarkable Essay on Roman Habitations, wrote a fiction called the "Palais de Scaurus," in which he introduced Cicero's architect, Chrysippus. But there is nothing extant to hint at the possibility even of such a building as that invented by Mazois having occupied a part of the Palatine Hill in the days of Cicero. Mazois put together in imagination, courts, halls, and chambers, in number and dimensions equal to Gibbon's description of a Roman palace in the fifth century, and founded upon the statistics of the Theodosian age. Dézobry, who wrote "Rome au Siècle d'Auguste," in imitation of Barthelemi's justly celebrated "Voyages d'Anacharsis," is equally wild in his plans of a Roman private house. Both Mazois and Dézobry support their hypotheses regarding the archæology of one century by quotations from writers who discourse about another. The first quotes Martial and Juvenal to prove that his conception of Republican splendour and magnificence is exact; and the second founds his idea of Augustan Rome upon words written even centuries after.

Horace's metrical numbers may be deemed as trustworthy as the hyperbole of history. The poet, singing the recurring song of the good old times, contrasted the comparative luxury of his own day with the habits of the past; when, according to Conington's translation,—

> "No colonnade
> For private pleasance wooed the north
> With cool profusion of shade;
> None might the casual sod disdain
> To roof his home; a tower alone
> At public charge, a sacred fane,
> Were honour'd with the pomp of stone."

That house of Valerius Publicola, which, more than five hundred years before Christ, was pulled down in a single night, doubtless resembled the primitive habitations eulogised by the poet. These were made of reeds and hurdles, covered with clay; and they were roofed with turf, or thatched. The tables of the Roman laws, confirmed by the people about 450 B.C., contain references to streets and houses. The first law of the eighth table is: "Let the space of 2½ ft. of ground be always left between one house and another"; and the seventh law of the same table is: "Roads shall be 8 ft. wide where they run straight, and where they turn, 16 ft." According to Mr. Parker, the Via Appia is only three yards wide at its starting-point, and the Porta della Marina at Pompeii is of exactly the same dimensions. Horace's poetical lamentation over the vast buildings which, while he wrote, were taking whole acres from the plough, is echoed by Strabo. The latter, writing of the city under Augustus, says that, notwithstanding "its prodigious increase," there was "plenty of food, and also of wood and stone, for ceaseless building, rendered necessary by the falling down of houses, and on account of conflagrations, and of the sales which seem never to cease." Then he explains that each owner knocked down and rebuilt one part or another of a house* according to his individual taste, thereby causing all sorts of accidents; and that Augustus, to avert from the city damages of the kind, decreed that all new buildings erected along the public way should not exceed 70 ft. in height, —that is, a little higher than the front wall of the loftiest Parisian tenements. Though these figures may be, and doubtless are, exaggerated, it is certain that the houses were tall and big enough to make Horace exclaim against "Yon pile of buildings approaching near the lofty skies." But the noble edifice on the Palatine, as Mr. Forsyth qualifies it, which Cicero occupied,—and which was built by Livius Drusius, who was killed B.C. 91,—possessed no colonnade or peristyle. "Why," cries Horace, "should I set about a lofty edifice with columns that excite envy, and in the modern taste?" The peristyle was an importation from Greece. Even though Cicero built a part of a villa on the plan of the Athenian Academy, and though, in the time of Augustus, young men of birth and wealth were sent to Athens to complete their education, it is almost certain that the ordinary dwelling-house in the heart of Rome did not take the form it now presents at Pompeii,—a form repeated upon the Marble Plan,—before the great fire which destroyed two-thirds of the city in the reign of Nero.

Vitruvius says:—"The public laws forbid a greater thickness than one foot and a half to be given to walls that abut on a public way; and the other walls, to prevent loss of room, are not built thicker. Now brick walls, unless of the thickness of two or three bricks, at all events of at least one foot and a half, are not fit to carry more than one floor; so that from the great population of the city innumerable houses would be required. Since therefore the area it occupies would not, in such case, contain the number to be accommodated, it became absolutely necessary to gain in height that which could not be obtained on the plan. Thus, by means of stone piers, or walls of burnt bricks, or unsquared stones, which were tied together by the timbers of the several floors, they obtained in the upper story excellent *cœnacula*. The Roman people by thus multiplying the number of stories in their houses are commodiously lodged." He adds that "on account of the narrowness of the streets in Rome walls of brick are not allowed in the city." When, after the great fire, the city, according to Tacitus, was re-formed upon a regular plan, "the streets were made wide and long; the elevation of the houses was defined, with an open area before the doors, and porticos to secure and adorn the front. . . . The springs of water which had been before that time intercepted by individuals for their separate use were no longer suffered to be diverted from their channel. . . . It was also settled that the houses should no longer be contiguous with slight party walls to divide them, but every house was to stand detached and insulated by its own inclosure." Tacitus says that houses were then restricted in height, but he mentions no figures; and the "Satires of Juvenal," written not very many years after, show that the newly-built city, as far as its private habitations went, was not exactly a paradise of order and regularity. Juvenal was "in constant dread of fires, and the perpetual falling in of houses"; and although a certain part of a house was then built of stone or brick, the general mass of it was still wood and plaster.

The foundations and some of the walls of a house, built of *opus reticulatum*, and probably in the first century, were discovered a few years ago upon the Palatine. This house, adjoining the so-called "Domus Tiberiana," has been variously christened by archæologists as the house of Hortensius, which Augustus purchased and occupied; of Livia; of Germanicus; and it will probably receive other designations in the course of time and fresh discovery. The plan of it is shown in fig 1. It may be described as consisting of three parts; one part in which are the shops, S, S, each complete in itself; another part, consisting of rooms surrounding an *atrium*, *a a a a*, which is evidently the private portion; and a third devoted to apartments of ceremony, the *atrium* of which is marked A A A A. A narrow flight of steps leads from the private apartments down to the state *atrium*; and under the former is a basement story. The *tablinum*,

* A Roman mile was equal to 1,614 English yards.

† When any sceptic ventures to ask how such big buildings were executed in so short a time, the stock answer is, that the Romans could command unlimited labour. But the test of such a supposition lies in the amount of population. Rome, in the reign of Vespasian, A.D. 75, measured a little more than 13 Roman miles in circumference. Dureau de la Malle, after a lifetime of research, says that in the time of Augustus and Nero Rome, "sans les faubourgs," had a population of less than 270,000. Enthusiasts have put it at figures varying from 14 millions to 4 millions of people; but trustworthy authorities have not ventured to think the city ever contained more than 1,200,000 souls; and the Abbé Brottier has shown, from documents extant, that, even in A.D. 360, the population of Rome did not attain that number of inhabitants.

‡ As if in sympathy with ancient writers or their transcribers, Mr Forsyth, Q.C., M.P., in his "Life of Cicero," talks of Pompeii as "the city which has been disinterred after the lapse of twenty centuries."

* Cicero's words are, "quod præclaram ædificasset in palatio et plenam dignitatis domum," and then "adjunxit ædibus." English translators have used the word "palace" to denote "domum" and "ædibus." The Palatium, in the time of Cicero, contained seven streets, and in that of Augustus was the Palatine region. *Palatinus* means pertaining to the Palatium.

* These were the "insulæ": houses let by stories or *tabulata*, to which we shall refer in the second and concluding chapter of this section.

the *alæ*, the room T comprise in height both the lower stories of the private portions; and *x*, *y* are bath-rooms. Fresco paintings, said to be undoubtedly of the Augustan age, adorn the state rooms; and upon the walls of the room T are painted the obvious attributes of a Roman dining-room. In the part I, which we have shown as an *impluvium*, is a staircase, or the remains of one, which led to a wooden upper story; but it is impossible not to think that a staircase in such a position is an adjunct of which the earlier owners were innocent. The rooms B may be described as bed-chambers; or they were used for other purposes by the family; the rest are probably the *cellæ familiaricæ* to which Vitruvius often alludes. The state dining-room T, though of the proportions prescribed by the Roman architect, is remarkably small; and it could not have held more than two sets of divans or *triclinia*.

Our fig. 2 shows an actual residence at Pompeii; and we propose to describe it, not as a particular house, but as one typical of the dwellings in that city. The two shops S, S, were, or could be made a source of profit to the owner, who let them to tenants totally unconnected with the householder living at the back of them. His entrance is through the passage E; and A A A A is his *atrium*, or the public portion of his house. A narrow passage, about 3 ft. wide, is the ordinary means of communication between the *atrium* and the peristyle; for the *tablinum* was closed—at least, on the side of the *atrium*—with folding doors. The little room, or cell, which opens into the *tablinum* is the library. The rooms round the *atrium*, with the exception of the *ala*, are bed-chambers for guests, and under ordinary circumstances they were used by the men. The rooms round the peristyle P, and entered from under the porticos *p p p*, are the *triclinium* T (19 ft. by 18 ft. 6 in.)—which is unusually large compared to similar rooms at Pompeii—and three chambers B, B, B, 12 ft. in height, one of which, to the right of the *tablinum*, is the *thalamus*. The little nook C is the kitchen; and L is a latrine, or a sort of sink, under the stairs. A private postern, at *e*, leads into the side street. Next part of a column, attached to the wall, is a shrine A, dedicated, doubtless, to the Penates. In the centre of the *atrium* is a basin of water, sunk in the floor, called the *impluvium*; and on the side of it, next the entrance E, is a small altar for ordinary religious sacrifice. The *atrium* is covered with a roof over the parts A A A A, thereby leaving an opening to the sky almost as large as the *impluvium*, but so contrived as to permit the rain to drip from the eaves into the basin below. The peristyle is also open to the sky in the part P; the porticos *p p p* are covered with a flat terrace roof, to which access is obtained by the stairs over L; and whence rooms over B, B, B, are entered. There may have been rooms also over the *tablinum* and the room T; but sometimes the two latter rose above the terrace over the porticos *p p p*; and thus obtained additional light and air. The women's bed-chambers are above stairs; and the existence of two staircases favours the idea of a complete division in the upper story between the front and back parts of the house. The stairs approached from the *atrium*, however, led sometimes only to a terrace over the shops S, S, and the passage E. In a few houses there was a story in the roof over the rooms round the *atrium*, and used for stores, or occupied by the slaves. Some of the latter, particularly the *atriensis*, were stationed under or against the *atrium* stairs; opposite to which, in fig. 2, is a long recess, euphoniously called a Roman "cloak-room." In the external wall of the house, commonly styled that of the Tragic Poet, at a height of 6 ft. 6 in. from the street-pavement there are window-holes, 3 ft. high by 1 ft. 11 in. wide, which were closed with wooden shutters; and between the columns of the peristyle there was once a railing of either wood or metal. We beg leave to add that the "Pompeiian Court" at the Crystal Palace conveys a false notion of the proportions of those houses it presumably represents. With a depth of 100 ft. its exaggerated frontage is 75 ft.; and the shape of the façade, the central projection of which would occupy two-thirds of an ordinary street in Pompeii, deceives the majority of those who visit it. The *atrium*, some 50 ft. by 35 ft., turned, as far as its shape goes, the wrong way is out of scale with the rooms around it; and the *tablinum* is colossal.

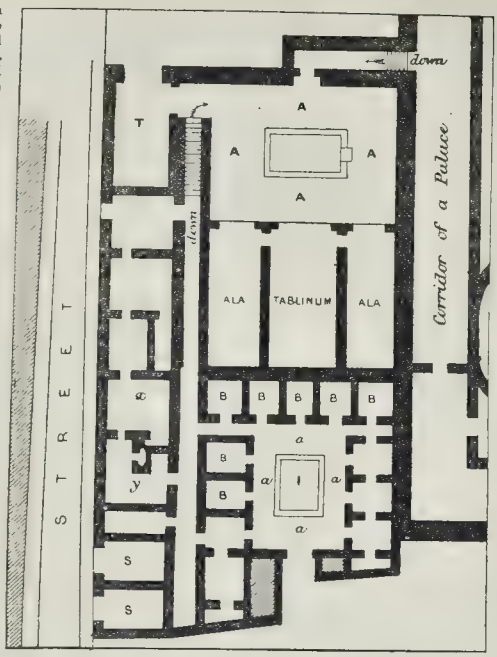


FIG. 1.

SCALE 32ND OF AN INCH TO A FOOT

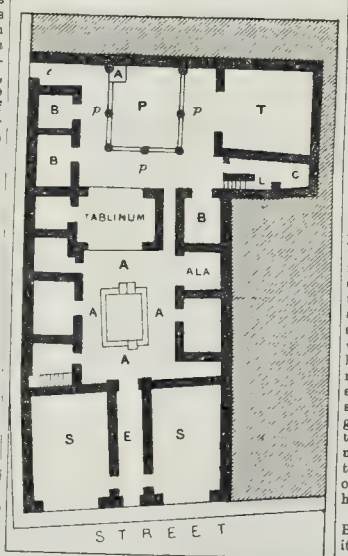


FIG. 2.

SCALE 32ND OF AN INCH TO A FOOT

Our fig. 3 is a fac-simile of a part of the Marble Plan of Rome (third century); and we have chosen this fragment because it combines a variety of things to which allusion has been made by ancient authors in their descriptions of the city. There is a long flight of steps broader than the street itself, but whether they lead up or down the hill it is impossible to say. There are the arcades which, after the fire of Nero, were constructed in front of the shops and houses lining the public way. Indications of stairs, some of them approached directly from the street and arcade, are at *a*, *b*, *c*, *d*, *e*, *f*, *g*, *h*. These led to the upper stories, each occupier, according to Niebuhr, being enabled by law to hold a story or flat in absolute ownership; and which he could alienate and transmit. There are also three houses, A, A, A, answering somewhat to the description given by Vitruvius of the Grecian house; and these distinctly show that after the great fire of Nero the principle upon which dwelling-houses were planned in Rome resembled that in vogue at Pompeii.

Becker,* in his attempted restoration of a large dwelling, expended some of his great learning upon arguments about the parts of a Roman house; and much valuable time was wasted in order to show that "cavum ædium" and "atrium" were two, and totally distinct, parts of the house; and that "ala" were very different things to what they are known to be. Varro says that "cavum ædium" is the name for that place of a certain size, covered with a roof and situated in the interior of the house, which is for everybody's use. According to him, it was also called "Tuscanicum," and also "atrium," from the name of a Tuscan people who introduced it. Vitruvius, or his transcriber, confounds the two names of "cavædium" and "atrium." He describes the *vestibulum*, the *cavædium*, the *peristylia*, as "common rooms" to be entered by all; and immediately after adds, "for a person of middling condition in life magnificent vestibules are not necessary, nor *tablina*, nor *atria*." Thus, to take his description literally, the different parts of fig. 2 might be:—A A A A the *cavædium*, E the *atrium*, and there would be no *ala*. Becker's plan is arranged in accordance with this idea. Mazois says that "cavædium" means only the open and uncovered centre of the "atrium"; and Schneider that only the covered part was called "atrium," and the uncovered part, "cavædium." But surely the Roman, when he talked of his house, as he inevitably did talk when he began to take pains with the plan and construction of it, spoke of his *atrium* as a feudal noble spoke of his hall; though the residence of the latter may have comprised cloisters, courtyards, and dependencies of all kinds. The *atrium* was the common place of assembly. Originally it was so much the house itself as to have held everything belonging to household affairs; the marriage-bed, the hearth and altar, the looms and the ancestral waxen marks. It may be suspected that, in the earlier *atria*, no basin of water occupied the centre. The house was lighted and ventilated by a central hole in the roof, through which smoke issued and light and air entered. The thoughtful arrangement of such a court as A A A A, in fig. 2, is the outcome of gradual refinement. As houses increased in size the hole in the roof got larger; the *atrium* ultimately assumed such dimensions as to be worthy the name of "cavum ædium," or "cavædium," or, as we presume to interpret the word, the hollow part of the house.

It would require too much space to reprint Becker's plan of a large Roman house. Although it is not drawn to any scale, it may be safely assumed that the superficial area of his building is about 210 ft. by 160 ft., without counting an *œcus* (saloon), which he has managed to project at the back of his conjectural building. His plan is really only devised for the purpose of showing the relative position of the *atrium*, the *alæ*, the *cavædium*, and the *vestibulum*. After having passed the last-named, which is outside the building, and is indeed a recess of the street itself, you enter a porch, 15 by ft. 12 ft., and arrive

* Becker's "Gallus." Fourth edition. Longmans. 1873.

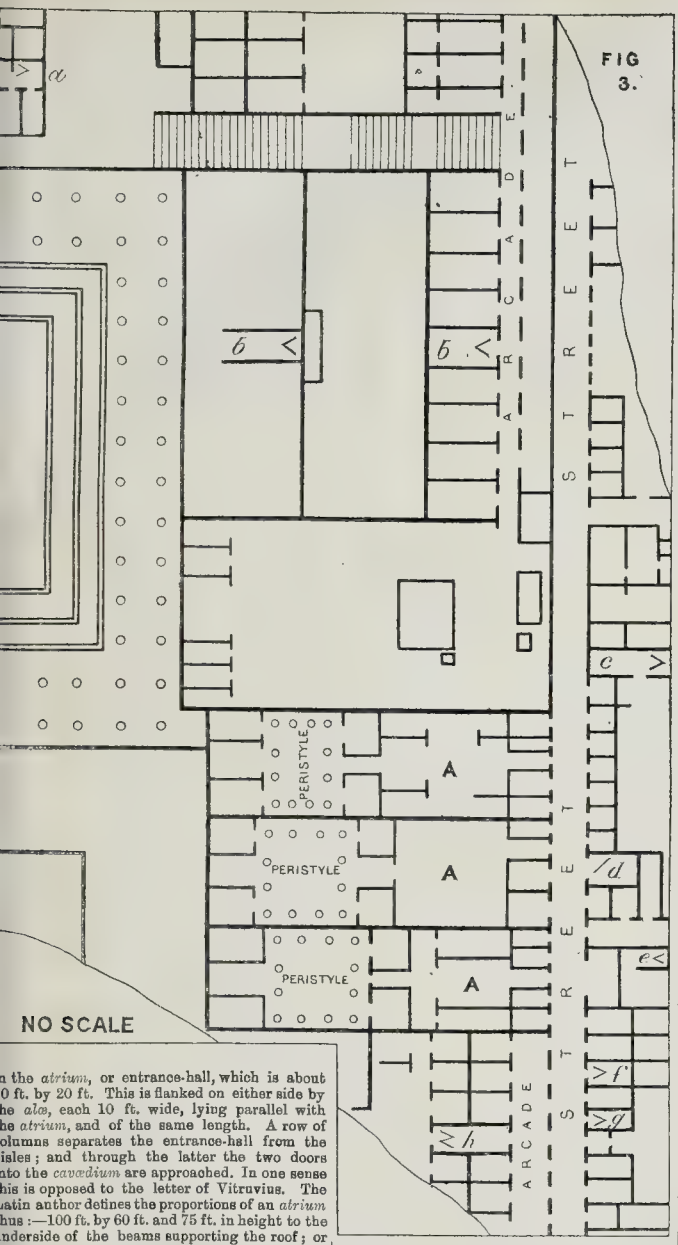


FIG 3.

n the *atrium*, or entrance-hall, which is about 0 ft. by 20 ft. This is flanked on either side by he *alæ*, each 10 ft. wide, lying parallel with he *atrium*, and of the same length. A row of olumns separates the entrance-hall from the isles; and through the latter the two doors nto the *cavædium* are approached. In one sense his is opposed to the letter of Vitruvius. The atin author defines the proportions of an *atrium* hus:—100 ft. by 60 ft. and 75 ft. in height to the nderside of the beams supporting the roof; or 0 ft. by 20 ft., and 22 ft. 6 in. in height. When he *atrium* is 30 ft. by 20 ft., the width of the *læ*, on either side of it, is 10 ft., and their height, ccording to the Roman architect, is to be equal o their width: thus the order of columns in Becker's plan would be only 10 ft. high from the loor to the bottom of the lintel. Yet Becker says, xultingly, "We now see why the breadth of the *læ* was fixed in proportion to the length of the *trium*: the edifice was similarly constructed o many of our churches, which are divided nto a large nave and two aisles." No doubt he aisles of a basilica were called "alæ," but either the houses of Pompeii nor of the Marble lan show any *alæ* or *atria*, like those invented y Becker; and his German editor, whose notes, n tiresome reiteration, are mixed up with the riginal text, admits the fact. In fig. 2, where will be seen the *atrium* is about 30 ft. by 20 ft., he *ala* is a third of the length; and in the House f Pansa, where the *atrium* is 50 ft. long, the *alæ*, n accordance with the rule of Vitruvius, are about fourth of the length. The long dispute concerning the different parts of a Roman house might be sustained with almost equal chance of inevitable contradiction, in the matter of "triclinium" and "cœus." Vitruvius devotes a chapter to the description of both, and another to the Grecian *œci*. He says the length of a *triclinium* is to be double its breadth; and, in fig 1, the room T, as we have already said, is so proportioned. But at Pompeii the *triclinium* is usually square. The summer *triclinium* in the house of Sallust is 13 ft. square, and is therefore entirely filled with the three divans (of masonry found *in situ*), and the small centre table. In the House of Panza the great *œcus* is about 34 ft. by 24 ft., with wide openings at each extremity; and through the door into the passage leading to the kitchen, the service could have been easily performed if the divans were placed as Vitruvius says they ought to be arranged. In this *œcus* there is space for two *triclinia*, that is to say, for two small circular tables, round each of which, on three sides, three divans were placed. Each divan held three persons; and therefore the Grecian *œcus* or the guests' *triclinium* in the House of Panza, one of the largest in Pompeii, could accommodate eighteen persons.

In "The Habitations of Man in all Ages," M. Viollet-le-Duc has given an imaginary plan of a villa on the Via Appia, not far from the city; and, as he distinctly says, its owner is a rich patrician in the reign of Augustus. Now, Mazois attempted to restore upon paper the ruins of a villa, certainly not anterior to Augustus, near Roma Vecchia, on the road to Frascati; and enough remained, besides the walls of two staircases, to show what the proportions of the *atrium*, peristyle, and some surrounding rooms, were. They are all eminently small. The staircases are not wider than those in the houses of Pompeii; and, in that city, the pseudo-urban villa, though it covers a large extent of land, is small in its details. The diameter of its pretty circular bedroom is about 16 ft.; and a part of the circle is engrossed by an alcove for the bed. Its Grecian *œcus* is about 32 ft. by 24 ft., and the *tablinum* is not much more than 16 ft. by 15 ft. At Herculaneum, a library, said, of course with the usual exaggeration, to have held more than a thousand rolls of MSS., is known to be just large enough for an ordinary man, standing in the middle of it, to touch the sides when his arms are extended. The Roman orator's remark that a house without books was like a body without a soul is probably at the bottom of the wild theories that have been vented concerning the Roman library. That shown in M. Viollet-le-Duc's villa is bigger than the *atrium* of our Pompeian house (fig. 2); and his bookcases are built in masonry against the sides of the walls. But it is almost certain that a framework of wood, placed in the centre of the room, held the MSS. whose gay bindings pleased the sight of Cicero,—and, for a hundred years after at least, the library was simply a receptacle for books, not a place in which to read them. The French author is as grandiose in his conception of a Roman villa in the time of Augustus as he is of a Grecian house in the time of Demosthenes. His vestibule is covered, and leads into a passage, on one side of which is the porter's lodge, 12 ft. by 12 ft.; and on the other is a "parloir" of equal size, within which those who are waiting to enter the *atrium* are to be accommodated. The latter is 37 ft. by 22 ft.; the opening in its roof is of the strange dimensions of 21 ft. by 6 ft.; and this small opening is surrounded by eight columns. From the *atrium* you enter immediately into the peristyle, or, as M. Viollet-le-Duc calls it, the grand "Impluvium"; and this courtyard, about 85 ft. by 55 ft., is surrounded by a colonnade. His *impluvium* itself is a fountain, the basin of which is about 10 ft. square. No *tablinum* is introduced, no *alæ* are shown; but a *salle de réunion*, round, vaulted, and some 23 ft. in diameter, is approached from the colonnade of the peristyle. Hardly a shred of trustworthy authority warrants such a distribution of rooms. The description and view he has published of the *triclinium* are opposed to evidence extant. He has shown three divans, intended for nine persons only, in a dining-room about 33 ft. by 33 ft., and each divan is about 13 ft. long by 6 ft. wide; yet he says from fifteen to eighteen guests are to be entertained upon them. In fine, M. Viollet-le-Duc's amusing inference that the bronze trellis-work, by which the upper portions of doorways were sometimes protected,—generally in temples and public buildings,—was filled with coloured glass, shows to what extent an author, who has made a name in the pursuit of Mediæval precedents, can trespass upon public credulity.

FRENCH AND FLEMISH EXHIBITION.

THERE is in the Annual Exhibition at Mr. Wallis's Gallery, which opened on Monday, a certain proportion of the sensational and vulgar art which has unfortunately of late been admitted into an exhibition which used to be remarkably free from those characteristics; but in the main this year's collection is a strong one, and contains some items of special interest. Among the pictures of the class we have reprobated are such as the large weak painting called "Le Premier Pas" by Vely (22), the "Excursion" of Raffaelli (143), "Alone in the Studio" by Palmaroli (177); the two latter of which are simply vulgar, and there are others coming more or less under the same category. These artists are comparatively new-comers in this gallery, and their works have done it little good. Madrazo's small painting, or rather sketch, of a group "On

the Sea Shore" (2), however, is redeemed from coming under this category by its exceeding artistic cleverness in the representation of the pose and style of the figures (the girl reclined on the sand especially) and the truthfulness of tone in shore and water; for the artist's other picture, "The Album" (55), no excuse can be made except by those who like coloured photographs, life-size. We commented on this artist's remarkable cleverness and original style when his works first appeared in the gallery; but there is no advance on what then appear to show great promise, and he seems deliberately and studiously to select the most odious types of men and women for representation. On the other hand, another painter, still young, and comparatively a new exhibitor here, has made a great step this year in his largest work, "An Auction Sale" (188). In this work, the painter, Herr Kauffmann, shows us the scene at a sale of the stock and furniture of some village householder, the buyers being grouped partly under a large shed, the roof of which throws a number of them into shadow, and partly in the open air, the groups in front being in full light. The picture is crowded with figures, every one of which has its own specialty of character, expression, and relation to what is going on,—in many instances too numerous and varied for description here; we have seldom seen a picture of this type which would better bear looking into and studying. The same artist has some smaller works, of which "The Blind Fiddler" (49), playing to a tavern audience of three boors, who look more blind and stupified than himself, is a most complete little work, though a very melancholy one. Of the other pictures of this stamp is a very able but not pleasant work by Knaus, "Auf Schlechtem Wege" (73), representing peasants gambling, the wife of one of them trying to get him away before he loses everything; there is much character in the four men, each of whom is a type in his way, and the representation of the thick neck and puffed red cheek of the old fellow nearest, and with his back to the spectator, is remarkably successful. Among the works of A. Spring, another young painter, a group of mother and children and an old priest, under the title "Good Advice" (37) is the best, and is very admirable in its broad yet careful handling and minute study of attitude and character; and a little painting close to this, "The Orphans" (38), by Sadès, representing three peasant children gazing on the sea, is a little bit of true pathos, rather in the manner of Israels. This latter artist is represented by a work less serious in tone than is usual with him, a set of children sailing boats on a pond on the seashore (57); it is remarkably full of light and air.

Jules Breton has a painting about which there is likely to be some controversy in regard to its tone of colour, "The End of the Day" (170), a scene in the fields, just before twilight comes on. A group of peasant women and girls are resting after their labours. One strong lass, a very characteristic figure, lies at full length on the grass, looking up at the others. The tones of the landscape are peculiar, and have a very different effect under different lights and at different times of the day; but we believe the effect is the result of true observation, and conveys, with considerable subtlety and delicacy, the uncertain tones of evening light. The artist's follower, Billet, exhibits two single figures, apparently painted from the same model, "Resting on the Way" (36) and "Weary Waiting" (107); the latter a peasant-girl seated on a boulder in the foreground of a waste rocky shore, leaning on an empty basket, shows the most of sentiment and feeling, though not so effective in colour as the other. Then there is a remarkable little painting by the late J. F. Millet, "L'Amour Vainqueur" (160), in which his peculiar feeling for peasant life is half-translated, as it were, into a classic form: a half-nude girl, completely realistic in type, is drawn and hustled by a set of little naked boys, some of whom tug at the drapery which half-covers her form; the boys are realistic, too, in type, yet the whole is removed from actual realism by the dim half-lights in which the figures are placed, and the broad and grand manner of the drawing. It is a most curious instance of the unison of two opposite types of art in the same painting.

Leroux's large painting of the "Burial of Themistocles" does not interest us; it is flat and tame in colour, and unreal in effect. The artist, we may observe, has made his monumental columns in the distance so out of the perpendicular as to be painful to the eye. How different is the interest attaching to Neuville's "Outside Paris, December, 1870" (56). This represents a set of unfortunate half-frozen soldiers, cowered in a trench, trying to slumber in various uncomfortable attitudes, with the help of a rather rudimentary fire. Over the bank above their heads nothing is seen but a flat expanse of blind snow-covered country. There is a great variety and reality in the attitudes and character of the figures, which are admirably drawn, and one cannot but observe how much the moral tone and feeling of these war-pictures of Neuville's reminds one of the Erckmann-Chatrian stories, showing, like them, the realistic and uncomfortable side of war with such uncompromising truth. The names of Meissonier and Gerôme are appended to two works, not among the best of their productions (68 and 87), though it is a remarkable tribute to the powers of both that we should be compelled to regard as relatively second-rate paintings which would certainly be reckoned among the most remarkable in the room, were we not accustomed to a still higher standard from the painters. Gerôme's small picture is one of those paintings of "Eastern Women," veiled in half-transparent drapery, with the style of which we are so familiar. In this case, however, the countenance of the pretty damsel has a curiously European look under her veil. Of Lazerge's Eastern pictures we do not think very much; they are well-executed works of a conventional type. Among the less familiar names that are represented, we find that of Aggrassot appended to a brilliant and carefully-finished small painting of a "Fête Day in Granada" (35), the courtyard of a house (an inn probably), where two figures are dancing, and others looking on, under very strong sunlight, the effect of which is very delicately and truthfully represented, and the figures are carefully individualised in character. The relentless portrayer of the priesthood, Chevilliard, is in force this year, as to quality, if not quantity, in his two works, of which "C'est trop fort" (43) is, however, not quite so clear in point as the artist generally is; but the other, "Une Fiche de Consolation" (69) is delightful: one reverend player seated at a card-table is raving over a bad hand or a lost game, while his triumphant adversary pours him out another glass of sherry to keep up his spirits; and the third, with both hands in his clerical waistband, looks on in undisguised amusement. The last touch of satire is given by the minute, but sufficient, indication of the engraving of Da Vinci's "Last Supper," over the chimneypiece,—a bit of humour reminding one of Hogarth. There is an excellent specimen, too, of the class of paintings that used to be more numerous here, the realistic representation of the typical French lady, and her costumes and surroundings, in the "Ennuyée" (65) of Duez. Prosaic as this is, it is wonderfully clever in its way; a rather nice-looking red-haired girl stands in the window with her back to the light, and facing the spectator, the face in shadow very well given; the whole of the details—the dress, carpet, balcony-railing, the view through the window—are given with perfect truth, and a refinement of realism is obtained in the manner in which one half of the landscape is painted as seen through the open casement, and the other half through the glass; as an optical illusion it is almost perfection, though the end may not be worth the means. Another piece of admirably clever work is to be noted in Beyle's "Déjeûner" (185), especially the drawing of the silk-stockinged leg of the dandy, which is rested on a chair before him. We were nearly forgetting one of the best pieces of humour, as well as painting, in the room, Vibert's "Probationary Sermon" (8), where, in a richly-furnished room, a monk is going through a test sermon before a higher ecclesiastic, who looks on with grave criticism as the preacher goes somewhat vulgarly through all the action of earnest appeal to an imaginary congregation; the satire of this is more cutting even than Chevilliard's, because more serious.

Some sketches of Fortuny, lent by the artist's widow, have an interest, and have brilliant points, though in a style we by no means admire. In landscape, the exhibition is not strong; the names of Dupré, Daubigny, and Corot are there, but not their genius; one or two landscapes by Gabriel are among the best, and there is one snow-piece by Munthe, "Winter in Holland" (60), in which the artist has really surpassed himself in this way; it is seldom one sees a work combining so much poetic feeling with such absolutely real effect.

PROFESSOR E. M. BARRY ON ARCHITECTURE.*

FIFTEENTH CENTURY.—OLD LONDON.

HAVING now traced the gradual advance of English domestic architecture through the Saxon and Norman, the Early English, and the Decorated varieties, we are approaching a less typical period. The remains of the fifteenth or succeeding centuries are not indeed wanting in high interest, and often great magnificence, but they do not speak to us in quite the same manner of increasing civilisation, and its consequent social changes. The great mansions of the country gentry were still palaces, and only became more domestic in their details, differing in degree rather than in kind, from those which preceded them.

The Decorated has been termed the only complete style of English Mediæval architecture, but that which is termed the Perpendicular is perhaps more English than any other. It possesses great advantages for domestic work, which have perhaps not been always sufficiently appreciated by modern revivalists. The pointed arch was exquisite in proportion and beauty, for the simple requirements of ecclesiastical design, but as the domestic wants of the day increased, a more plastic method of building became a necessity, and this was found in the flat-arched style, which we call Perpendicular or Tudor. There are many examples of the application of this development in house-building; and Crosby Hall, in the City, is a good specimen, easily accessible to you, of a merchant's town residence. Many farm-houses, in various parts of the country, still contain remains, more or less perfect, of the style, although the number of them is daily being lessened.

After the dissolution of the religious houses, and the appropriation of their property, the splendid palaces of abbots and bishops became manor-houses, or private gentlemen's residences; and these have, in numerous cases, degenerated into farm-houses. In them, the appearance of fortification was still often kept up, but evidently more from association, or perhaps for ornament, than for use or from necessity. The parapets were battlemented, but the windows were enlarged, the entrance was in the lower floor, and height was attained by the erection of several stories.

The architectural features followed generally the changes which were beginning to show themselves in the cathedrals and churches, but there is now a distinct difference perceivable between domestic and ecclesiastical buildings, inasmuch as the arch was frequently laid aside in the former class, and a more horizontal treatment adopted. Not that the Perpendicular had ceased to be still an arched style; but in house-building, windows and panelling reduced the arch to a comparatively secondary position, by the prominence given to the horizontal features of the design, particularly in the later, or Tudor, phase of the style.

In the work of the Perpendicular period generally, the arches and the windows are the most characteristic details, or at least those which will strike first the ordinary observer. The pointed arch had given way to the depressed, or four-centred form, which is known among us as the Tudor arch. Introduced gradually, this feature became at last almost universally used. In doorways it was framed in, as it were, by the label or dripstone, which had become an enlarged and more important feature than before. Hitherto the label followed the curve of the arch, and served as a protection to it. It now frequently formed a square head over the arch, with spandrels filled with tracery or carving. The ogee form also, which was sparingly used in the preceding style, became a favourite feature, and was used freely, with crockets and finials, often richly carved. The arches, in fact, now assumed a greater variety of form than at any previous period.

The windows were large, with numerous lights, and, as a rule, when of considerable height, divided by horizontal transoms. The heads were filled with tracery, as before, but the character of the latter was altered. The circles, quatrefoils, and the like, as well as the more flowing patterns, had disappeared, and perpendicular lines prevailed. In some instances these ran from the cill to the arch, the curves of which were generally reproduced in the minor divisions of the tracery, and in all cases the windows exhibited the prevalence of vertical lines. Another peculiarity of the time was the plentiful

* Fifth Lecture; delivered at the Royal Academy on Monday, March 19th.

use of panelling. The surfaces of the walls and buttresses were profusely decorated in this manner. The panels followed the same general design as the windows, and many of them in consequence appear like windows blocked up. They were often subdivided, again and again, till they became crowded, and very elaborate, as you may see at Henry VII.'s Chapel at Westminster.

The mouldings are few and shallow, very different from the varied, deeply-cut, and richly-ornamented clusters of previous styles; and the carving is of a less varied and interesting character. The rose of the Tudors is frequently introduced, as well as the portcullis of Henry VII., and the oak and strawberry leaves became favourite ornaments, carved in a mixed spirit of natural and conventional treatment. Pinnacles and turrets were common, and the latter assumed the ogee form of roof which we see at King's College Chapel, Cambridge, and at Henry VII.'s Chapel at Westminster. Towers were built of great magnificence, as at St. Mary's, Taunton, and roofs became lower of pitch, and surrounded by parapets, battlemented, panelled, or both.

Roofs were constructed of wood, often richly carved and ornamented with bosses, and the peculiar system of vaulting known as fan-groining was used in important structures, as for example, in the two chapels I have just mentioned, and at St. George's, Windsor. This method of design is distinctively English, and has special beauties, although I think it cannot be said to rival the earlier vaults for purity and severity of style.

The Perpendicular style, in fact, was losing these qualities in all its details, which were conceived in a spirit rather of freedom and exuberance than in that of dignity and lofty elevation. In its application to domestic work it was more successful than in other cases. Here freedom stood it in good stead, and gave to it a susceptibility for decoration which fitted it for any amount of magnificence that might be desired. At the same time the simplicity of the mouldings reduced necessary outlay. Thus, there was found no difficulty in applying Tudor forms to every variety of building, from the castle or palace to the farm-house. The castle, indeed, in the stricter application of the word, was becoming an anachronism, and castellated peculiarities inconvenient. Old customs and precedents, however, still dictated the plans of buildings and the distribution of their adjuncts. The fortifications were abandoned, or became mere architectural ornaments; the walls of enclosure, within which might be gathered hosts of retainers, soldiers, or tenants, were no longer necessary. These outer boundaries, therefore, ceased to be built or maintained; but the inner buildings were still erected as before, with the hall as a central feature, around which the other apartments were grouped.

Changes arose in this arrangement, as time went on, until the hall lost its importance and became merged in the general mass of the building, as in many existing Elizabethan and Jacobean examples. Until now, the hall was the chief part of the whole building, to which it gave its name, and it was the result of feudal customs which were in course of gradual modification. The great landowner lived here in state, with his dependents gathered around him, all of whom lived at his expense, and looked to his table for their support. After the feast, when the lord and his family withdrew to the solar, or private withdrawing room, the hall gave shelter to his vassals, by night, as by day. They were not in a position to be exacting, having few rights which they could enforce against their lord, and being wholly dependent on his pleasure. The hall was at once the symbol of his state, and of their subjection.

We may thus understand that the decline in the importance of the hall marked an important epoch in English social life. It was indeed no less than the gradual enfranchisement of whole classes. Even the labourers began to live in houses of their own, or at least as tenants of their lord; and there arose also that great middle class, which has done so much for England, by standing between the Crown and aristocracy on the one hand, and the people on the other; and has thus powerfully influenced our history to the present day. These changes in society soon affected architecture. When there were no longer large numbers of dependents living in the hall, the size and importance of the latter might naturally be diminished, and instead of being almost the house itself, it shrank into a part of the whole, as an accessory, more or less distinct according to circumstances.

Meanwhile, the other rooms of the manor-house gained in importance. More refined manners demanded consideration. The hall could no longer be allowed to be used for sleeping in at night, and private bedrooms and dormitories were constructed in the larger houses or "halls." A common dormitory had long been a familiar arrangement in monastic buildings, and the beds in it were often divided by curtains or boarded partitions. Similar rooms were now placed in the upper stories for the use of servants or guests. Private bedrooms were at the same time multiplied, until they became as important as any other parts of the structure. In later times, indeed, they were decorated with much splendour, and we find to this day some of the most elaborate plaster ceilings of Elizabethan design in the bedrooms of the great houses of that period. Beds with drapery became customary, though they were still often made up on the floor, and placed two or three in a room. They were taken about from place to place, and it was incumbent on a servant to find his own bed.

Formerly, the servants in the castle of a great landlord included mechanics of all trades required for the building or maintenance of the structure. There were hosts of armourers, carpenters, masons, smiths, &c., as well as butchers, bakers, and the like. This circumstance will explain the necessity for the numerous buildings which clustered around the castle, and were protected by its enclosing walls. The custom lingered, but gave way before the increasing importance of the industrial arts, and the rise of the guilds and companies of traders to which I have before referred.

The increase of commerce not only led directly to wealth and national prosperity, but it indirectly softened the manners of a rough and hardy people, by acquainting them with the ways and experience of foreign countries. The trading classes were daily gaining in power, both social and political, and not only France and the low countries, but even India and the East, began to pour their treasures into London and the larger towns, which accordingly began to assume a corresponding importance. It was, doubtless, a distinct advance for the peasant to obtain a roof of his own, although of the humblest nature. Like most of the minor buildings of the time, his house was constructed of wood, with a thatched roof, and too often a single room served for all purposes. Many of the timber houses which we still find in Kent and other counties, were obviously intended for the use of persons above the rank of a labourer, such as yeomen or small farmers.

As roads were still bad, and communication difficult, there was little inducement for the workmen to go far for materials, and both in the country and in the towns, wood was still commonly used for house-building. Our ancestors were famous for their carpentry, and their fine church-roofs are unrivalled. In house-building, they showed the same skill, combined with much taste for the picturesque. The walls were formed of timbers, and the spaces between them were commonly filled in with plaster, which contrasted agreeably with the colour of the wood. In some counties, as Lancashire and Cheshire, these old timber buildings still abound, and are usually called "Halls," a relic of the old fashion. In these cases, the wood has usually been painted black, and the contrast with the white plaster is, I think, rather startling than pleasant.

In town houses, the wood-work was often richly carved, and some of the projecting corbels and roofs are of great beauty. Supports or "spurs" abound at the sides of doorways, and helped to sustain the upper stories, which, according to the fashion of the time, projected beyond the line of the wall below. The ground-story was often of brick or stone, while the upper parts of the house were made of timber and plaster. We may judge of the beauty to which such architecture might attain by the remains of timber-work which exist at Bury St. Edmund's, York, Chester, Coventry, Shrewsbury, and elsewhere, and we may be sure that London, with its rapidly increasing trade and wealth, was in no way inferior to such cities. It is, therefore, a grave artistic misfortune for us that the Great Fire of London should have destroyed almost every vestige of Mediæval domestic woodwork in the capital.

From the upper part of each house projected the sign, which served the purpose of the modern plate-glass window and the name in gilt letters. There was no great display in shop-windows in those days. The stock exposed for view was not large, and shopping was carried on under difficulties, as may be seen in the caricature before you of shopping in St. Paul's Churchyard. The openings were of moderate size, usually closed with shutters, and sometimes, as in Cheapside, the shops were little better than sheds, one story high, built against the main walls of the house, to which they were attached. The sign was, therefore, of importance, and some of them linger, as we know, to the present day, such as the barber's pole and basin; the pawnbroker's three balls; and the bush for an inn where wine may be had. When the latter is good, however, the old saw declares that it "needs no bush," for as its virtues cannot be hidden, they require no proclamation.

The signs must have had their inconveniences in the narrow streets, to which, however, they added a quaint picturesqueness of effect, in keeping with the architecture of the day. If they were a source of possible danger, from their tendency to fall on the heads of wayfarers, they were not likely, at any rate, to cause such serious accidents as the telegraph wires, which have lately been permitted by supine authorities to span our busiest thoroughfares, and to add new dangers to the streets.

A taste for the picturesque has always marked the works of English Mediæval designers, and has distinguished their work from the more stately and regular manner which found favour in France. The difference is doubtless connected with the varying taste of the two nations to which I have before referred,—the one loving the town, and the other delighting to make their homes in the country.

We have now arrived at a period of English history when our domestic Mediæval architecture had advanced to its highest perfection. The plans and arrangement of the houses had been enlarged and complicated to meet the advancing requirements of civilisation. At the same time, the changes had been gradual, and old fashions still prevailed and affected architectural forms. The country was still the home of the great lords of the soil; but palaces, both episcopal and lay, were arising in the large towns.

The chapel was still an essential part of a gentleman's house, although the eventual disuse of it might be foreseen, from the restrictions which were laid upon the services celebrated within it. Castles, with their battlemented towers and lofty gatehouses, yet remained, and were even built or added to; but they were the signs of a state of society now rapidly passing away.

The time was ripe for change, and it was soon to come, introducing new ideas into the religious and social life of the day, and consequently affecting architecture in the highest degree. One of the most frequent signs of the times was the rise in importance of the great towns, closely connected as this was with the elevation of classes at which I have already glanced.

Having hitherto drawn most of my illustrations from the country, I now propose to give some consideration to town houses, and particularly to those of Old London. The changes in the great country-houses which were introduced after the disuse of Gothic architecture, and which constitute what may be roughly termed "Elizabethan," possess great interest and importance; but I pass these over for the moment, as I may possibly take another opportunity of speaking about them.

During the reign of Edward I., a remarkable series of towns were founded by the king,—not only in England, but also in his French possessions. The latter became known as the "English towns," and were termed "Bastides," in the French dialect of the district. They are remarkable for a regularity of disposition which we are little apt to associate with Mediæval work. The streets are straight and regular; they cross each other at right angles; and the buildings are planned in regular blocks. The general aspect of the plan resembles, very nearly, the arrangement adopted in the modern cities of the United States. Although these towns are called in France the "English towns," it is possible that this title was given to them in compliment to the English king who founded them, and that the original conception may be due to France.

However this may be, they were carried out by English instigation and by English agency; for there is a letter extant from King Edward, while abroad, in which he desires that four proper persons are to be sent out at once from England to carry out his wishes. The letter was written at Bordeaux, and was addressed to London. In it the king especially declares that the per-

sons sent are to be "the most clever and able, and those who best know how to divide, order, and arrange a new town, in the manner that will be most beneficial for us, and for the merchants, and who shall be ready and willing to go for that purpose, wherever we may send them."

The plan of Montpazier, in the province of Aquitaine, is one of the most regular of the "English towns" abroad, and in England, Winchelsea was founded at the same time, and with similar objects. The market-place was in a central position, with arcades or cloisters round it. Near it was the church, with an open space for processions. The whole was surrounded by walls, with the usual gateways and towers.

The king showed great favour to these places, which became also known as "Free Towns." The inhabitants were released from all allegiance to the neighbouring lords, and held their property direct from the Crown. Trade being made free, they were enabled to carry on an extensive commerce, and as they became rich and powerful, they constituted a check upon the power of the bishops and nobles, and laid the foundations of municipal freedom. As their liberties excited jealousy, it was prudent that means of defence should be provided; hence the necessity of walls and ramparts. In times of danger, the most valuable property was placed in the church, and in some French towns the church was consequently fortified, as at Etampes and Dol, in Brittany, and also in the South.

The towns were founded by the king as a counterpoise to the power of his great feudal vassals, and they furnish a remarkable proof of the far-sighted wisdom of his policy. Strict orders were given that no one should be allowed to build a castle or fortress in the district attached to each town, in order that their independence might be preserved. Fostered by royal care, and thus favoured by privileges, the new cities grew and prospered, and became known as new or free towns, or in French, *ville neuf*, and *ville franche*. In England the buildings do not appear to have been quite so regular in their plans as in the French examples. At Winchelsea and Hull, both of which places were founded by King Edward, the sites presented peculiarities which doubtless account for such variance. There is, nevertheless, sufficient regularity in the distribution of the streets and blocks of houses to indicate the model on which they are based.

Hull was personally founded by the king, who saw the importance of its position, both as regards the possibility of invasion from abroad, and the commerce for which it was fitted. The land belonged to the church, but an exchange was effected, and the king lost no time in urging on the building of the town, to which he gave the name of King's Town, or Kingston, as it is still called. It has been more fortunate in after times than the sister town of Winchelsea.

The latter was placed on a new site, after repeated encroachments by the sea had almost destroyed the previous village or hamlet. The king or his advisers had formed large ideas of the ultimate importance of Winchelsea; but these were destined to disappointment, and the work was never finished. There is a fine church, partially completed, with a series of tombs, which indicate the fallen fortunes of the city. Within the first twenty years it was twice taken and pillaged; once by the French, and secondly by Spaniards, and from these calamities it never recovered. The walls, if built, have disappeared; but three gates remain, with segmental arches, and plain details. Some remains of the original houses may still be traced, and also parts of the vaulted cellars which formed their substructure. This mode of building was common at the time, but it has been thought that the vaults at Winchelsea were specially designed as depots for wine, as the French wine trade was even then considerable, and the position of Winchelsea was convenient for its prosecution.

The establishment of towns, and the privileges granted to the citizens, had a great influence upon the various trades carried on by the latter, and certain places became the head-quarters of particular industries. Thus the woollen trade flourished at Northampton, while Norwich was famous for worsted, Totnes for its clothing, and Beverley and Lincoln for their dyes, "Lincoln green" having a traditional fame. As the various trades prospered, the traders naturally associated, and made rules for their common guidance. From such circumstances arose the guilds, and among the first of these societies in England appear to have been the Weavers', the Goldsmiths', the Fullers', and the Tanners' guilds. The members agreed to contribute to a general purse for common objects, and hence the derivation of "guild" from the Saxon word "gildan," to pay, or contribute.

The guilds were not, however, confined to trading societies; some were political, and became incorporated, by royal permission, for the local government of their towns, while others formed religious confraternities, devoted to purposes of charity, and mutual help. The trade societies are those which are now best known to us, as they still exist, although under different conditions from those which dictated their establishment.

The houses which were erected by the guilds, for the purposes of their societies, were among the chief architectural ornaments of Mediæval towns. Few, if any, remain in their original condition in England, although there are splendid examples abroad, as the Cloth Hall at Ypres.

The Guildhall in London is well known to you, and may serve to give some idea of the scale of such buildings, although its architecture has been too seriously interfered with to allow us to regard it as a perfect example. The Guildhall was the great common hall of the citizens, used, very much as it is now, for public purposes, under the authority of the Lord Mayor; each trade, or guild, having its own separate hall and premises, like the various City companies,—their descendants,—at the present time.

In less important towns than London, the Guildhall of the ruling trade served also as the town-hall, or hôtel de ville, for the general public business of the citizens. In such cases, a tower, with a belfry, was usually an adjunct. The liberty to erect such a tower was one of the privileges of the chartered towns, and was prized by the citizens, as the outward sign of their independence.

The towers and belfries in the towns of Belgium are among the finest structures of this kind, and their chimes have always been famous. It is recorded of Laon, in France, that the king, Philip VI., wishing to mark his displeasure with the citizens, ordered their bells to be sold, and directed that the tower should no longer be called the belfry.

Near to the town-hall was the market cross, a common and interesting object in English towns of any magnitude. They have been in many cases retained, and even restored; as, for instance, at Chichester, where there is a fine example, with a space around it for a butter-market. Some of these crosses served also as conduits, and at Lincoln there are remains of a reservoir, such as might supply a fountain, a feature unusual in this country, though well known abroad. In such towns the cross was placed at the point of intersection of the four pricipal streets.

The outer ends of the main streets were closed by gates, consisting usually of an archway, with flanking turrets. As the towns expanded, these gates were removed as obstructions, but their names often remain, as in London, where we are familiar with Aldgate, Bishopsgate, Ludgate, Billingsgate, &c. The last landmark of this kind in London, Temple Bar, is already doomed, and I have therefore placed before you a view of it as it now exists, and also as it was before the Fire.

The streets leading from the principal gates were usually of good width, although the cross-lanes and alleys were narrow, and further contracted by the overhanging of the houses. The latter were now frequently ornamented, not only by carving on the wooden framework, but also by enriched plaster between the uprights, a mode of decoration more common, however, in Germany and France than in England.

With these general ideas of the usual arrangement of Mediæval cities, let us now direct our attention to London, and consider, as far as our imperfect information enables us to do so, what was its appearance previously to the Great Fire of A.D. 1666, which robbed it of so much of its historical interest.

We do not know when London was first founded, but there is little doubt that even when the Romans left Britain it was a place of importance, and it was called Lundinium by Tacitus and others. This name has been considered by some antiquaries to have arisen from a mixture of Roman and Celtic titles. A Temple of Diana is believed to have stood on the site of St. Paul's, and Luna was one of the names of the goddess. The termination of the name has been traced to "don," or "din," which, in Celtic, means a wood or hill, or fortified town. Although these conclusions are, however, at best doubtful, it is certain that London became, in early times, a place of great importance, and increased rapidly in wealth and population.

The position of London on the Thames marked it out as a natural centre of commerce; and the situation, with reference to the Continent, was convenient, in days when our kings had important possessions abroad. London was a walled town, and the walls were first built in Roman times, as is proved by the remains which still exist, and are brought to light from time to time, as clearances and demolitions are effected. The course of the walls may be roughly traced by the names of the gates. Thus, if we start on a tour round the City, from the Tower, then as now a fortress, we come to Aldgate, thence to Bishopsgate, Cripplegate, Aldersgate, Newgate, Ludgate, and so to the Thames, where there was another fort. This fort was probably connected with the Tower by another riverside wall, built parallel with the Thames, and stretching east and west. The names of Dowgate and Belins-gate, or Bilingsgate, indicate the course of this wall.

Besides the walls, the Romans must have executed other important works in London, as is proved by the interesting tesselated pavements, and other remains, which are still from time to time discovered. In the stormy times which followed the decline of Roman power, London experienced many vicissitudes, and suffered much violence, under Danes, Saxons, and Normans.

Gradually emerging from such misfortunes, we find it acquiring stability, as early as the twelfth century, for in the reign of Henry II., it is thus described by Fitz Stephen, a monk in the house of Thomas à Becket. He says that "amongst the noble and famous cities of the world, this of London, the capital of the Kingdom of England, is one of the most renowned, on account of its wealth, its extensive trade and commerce, its grandeur, and magnificence. It is happy in the wholesomeness of its climate, in the profession of the Christian religion, the strength of its fortresses, the nature of its situation, the honour of its citizens, the chastity of its matrons, and even in the sports and pastimes there used, and the number of illustrious persons that inhabit it." After referring to the royal palaces, he tells us of the gardens of the citizens, well furnished with trees. On the north, he says, are "cornfields, pastures, and delightful meadows, intermingled with pleasant streams, in which stands many a mill, whose clack is so grateful to the ear. Beyond, an immense forest extends itself. . . . This city," he adds, "is on the whole most charming, at least when it has the happiness of being well governed." He goes on to speak of a famous cook-shop on the river, where fish of all kinds could be had, besides other dainty viands, and describes Smithfield as a horse exchange and market. He then speaks of the pleasure resorts of the citizens, for horse-racing, archery, tilting, mystery plays, boar hunting, and the like, with skating and sliding on the ice.

The worthy monk had not left all his human sympathies behind him on entering the cloister, and he presents us with a view of old London in the twelfth century, possessing many of the advantages and elements of natural wealth, by which succeeding ages have abundantly profited. His account is the more interesting, because we have no thoroughly trustworthy maps or views of an early date, or indeed until the sixteenth century. I am fortunate, however, in being able to place before you an interesting series of engravings of maps and views of old London from the valuable collection of Mr. Crace, to whom my best thanks are due for his kindness.

After the sixteenth century, such representations abounded, and from them we may form a tolerably clear idea of the appearance of London under the Tudor and Stuart sovereigns. The peculiarities of its position, and the antiquity of its foundation, account, doubtless, for the irregularity of the lines of the great thoroughfares, and you will readily trace these in our existing streets of Bishopsgate and Aldersgate, from north to south; and Holborn and the Strand, from east to west.

London is not all changed. The churches of St. Paul and Westminster Abbey are still the great landmarks; London Bridge is still pre-eminent in traffic; the Tower is still the fort of London; and Westminster remains a Palace, although occupied by the Legislature instead of by the Sovereign. In the arrangements of modern London, we are still con-

trolled by ancient customs, and the lines of the great thoroughfares are, to a great extent, the same as in olden days.

Thus it happens that although Mediæval London was almost wholly destroyed by the Great Fire, an amount of historical interest clings to it, more than to many other cities; and certainly to a far greater extent than would have been the case had the grand schemes of Sir Christopher Wren for a new London been carried into effect. This remark applies, of course, chiefly to the older and central parts of the City, which were built upon and settled when St. Giles's was a village "in the Fields," and Lincoln's-inn was almost in the country.

The great monasteries of Grey Friars, Black Friars, and Carthusians had been dissolved; the former had become Christ's Hospital, and the latter the Charterhouse, founded by Sir Thomas Sutton, whose good deed was thus commemorated by a Poor Scholar:—

> "Blessed be the memory,
> Of good old Thomas Sutton,
> Who gave us lodging, learning,
> And who gave us beef and mutton."

Such foundations speak well for the public spirit of the age, as well as for the strong religious feeling which is evidenced by Sir Thomas Sutton's own prayer,—"Lord, Thou hast given me a large and liberal estate, give me also an heart to make use thereof."

The great commercial street of old London was Chepe, now Cheapside,—Chepe being a market by Saxon derivation. The houses here were of the type I have before described, as characteristic of the time, with gables towards the street. I may call your attention to various examples of old houses in the engravings before you, such as the ancient timber houses in the Strand, some houses in Chancery-lane, Sir Paul Pindar's house, and others shown in the general views.

Most of the houses included shops, which were commonly external structures with lean-to roofs against the front walls. "Chepe" was the great centre of business, with the best shops of goldsmiths, mercers, and others. One of the famous Eleanor crosses was erected in it, opposite to Wood-street, and two conduits supplied water for drinking and for domestic use. The eastern, or great conduit, was near to the Poultry, which was used as a market; and the small conduit stood at the western end, towards St. Paul's. The corn-market was held in Cornhill. The Standard was placed close to Bow Church. It had four spouts of water running different ways.

The Exchange was at the eastern extremity of "Chepe," as it is now, and at the west end was St. Paul's, with numerous ecclesiastical buildings clustered around it, and the famous Paul's Cross, from the pulpit of which Church dignitaries preached many varying doctrines, as the teaching of the Papal or the Reformed Churches came by turns into prominence and power. As assemblages here seemed likely to trouble the public peace in the post-Reformation days, when theological strife was only too apt to give rise to violence, the cross was pulled down by order of Parliament, in 1643. It was then a covered and partly enclosed pulpit, with a staircase leading to it, and a domical roof surmounted by a cross. In early times, penances were performed here, as in the case of Jane Shore.

Old St. Paul's was entirely destroyed by the fire, not before the western end had been modernised by Inigo Jones, who built here his famous Corinthian portico, looking down on Ludgate. The old church must have been magnificent, with a length of 700 ft., and the central spire upwards of 500 ft. in height.

The spire had fallen before 1666, but I have placed before you some views of St. Paul's, both as it existed at the time of its destruction, and also as it has been supposed to have appeared in all its original Mediæval glory.

There seems to have existed, from the earliest times, some sort of rendezvous for merchants and traders, where the Royal Exchange now stands. At first, these personages only met at street corners, or under the arcades, which were not uncommon in Mediæval towns, and it was not until the sixteenth century that Sir Thomas Gresham erected a regular guild for the London merchants, thus giving another example of the public spirit of which I have before spoken. The work erected by Sir Thomas Gresham consisted of an open central area, with arcades around, and rooms over the same, with shops at the sides, and this was the arrangement adopted in most buildings of a similar nature abroad.

There is a description of the Exchange on an old print, which thus proceeds, "The Royal Exchange was erected in 1566, at the sole charge of Sir Thomas Gresham, knight, and was burnt down 100 years after, in 1666. After the fire it was rebuilt, most part with stone, with such curious architecture that it surpasses all other changes or burses. The whole fabric cost about 5,000*l.*, one half paid by the Chamber of London, and the other by the Company of Mercers. There are 160 shops above, let at 20*l.* rent each, and 30*l.* fine, and several shops below, on every side, and large vaults underneath, which yield considerable rents. The ground whereon it is built, being but 171 foot from north to south, and 203 foot from east to west, is very little more than three-quarters of an acre, and, when all let, produces 4,000*l.* yearly rent." [What is that three-quarters of an acre worth now? and what rent would it produce?]

The building was styled the "Byrsa Lundinensis, vulgo, Royall Exchange of London." It followed the main lines of Sir Thos. Gresham's work, and had an entrance under a central tower, with side arcade.

Proceeding eastward from the Exchange, and crossing the busy throng of persons proceeding southwards to London Bridge, we come to the Tower, with surrounding walls and moats. The Tower is a good illustration of what has been previously said, as to the gradual changes of an Englishman's house from a castle to a dwelling. At once "a fortress, a palace, and a prison," it has played an important part in most of the crises of English history, and many a proud noble has entered the Tower by Traitor's Gate, only to leave it for the scaffold on Tower-hill. It is, perhaps, the most interesting relic of Old London, and has been preserved, and partially restored, in recent times, with judgment and skill. The Tower was evidently a place of great strength, before the use and improvement of artillery, and occupied almost the position of a tête du pont with reference to London Bridge, the only bridge of Old London.

Old London Bridge had an importance from this circumstance, beyond that of its modern successor. It was lined with shops, after the custom of the time,—a custom which is still exemplified, as some of you are aware, at the Ponte Vecchio at Florence. In London, the bridge was defended on the Southwark side by a turretted gateway, the upper part of which displayed the heads of those who had died by public execution,—a ghastly introduction to the City, which was transferred to Temple Bar in the reign of Charles II. The houses on the bridge had been much altered and disfigured before their final demolition; but some of the older engravings show that the earlier structures were not devoid of architectural pretensions. They were not at first arranged like a street, as at the Rialto at Venice, but were gathered together, so as to form square masses, entirely isolated, with inner quadrangles, and a passage through the centre of the latter. The quadrangles were lined with shops.

At the City end of the bridge, the first London Waterworks were constructed with wheels and pumps in 1582. Until this primitive machinery was erected, conduits, and public pumps, and cisterns were the only sources of supply available by the citizens. The narrowness of the arches of the bridge, and the obstructions of its heavy piers, increased the current in the tideway to such an extent that to "shoot the bridge" was a recognised peril, so that numerous accidents happened, and many suicides were there committed. There was a chapel near the centre of the bridge, of which I am able to show you an illustration. It projected eastwards, and was dedicated to St. Thomas. The remains of it were uncovered when the present London Bridge was built, and a very beautiful series of drawings were made of both Old and New London Bridge by my distinguished friend, Mr. E. W. Cooke, R.A. There was a destructive fire on Old London Bridge in 1758.

New London Bridge was commenced in 1824, and was opened to the public in 1831 by King William IV. and Queen Adelaide. It is already so far antiquated that it is pronounced insufficient for the traffic, and various schemes have been suggested in order to increase the width of the roadway. As it stands, it is a fine specimen of engineering art, erected at a time before engineers came to think that they might disfigure our towns to any extent, provided their ugly roofs and misshapen girders stand, and their shareholders make profits. Bridge building in early days was regarded as a work of piety, and was carried on by confraternities, called Brethren of the Bridge. Hence the frequency of chapels on bridges, of which many records exist.

From London Bridge to Westminster the river, as yet little polluted, was lined with important buildings, the residences of the nobility. Here were Winchester House, the palace of the Bishop of that see, with St. Saviour's Church, all on the Surrey side. Hard by, were the Globe Theatre and the gardens for bull and bear baiting.

Immediately opposite stood Fishmongers' Hall, and after passing Dowgate and other wharfs, and the sanctuary at Whitefriars, we come upon the Temple Gardens and buildings standing on the verge of the district saved from the Great Fire. The Templars' magnificent church, so well known to most of us, is one of our finest reminiscences of Old London.

After the Temple the present names of the streets serve to recall to us the history of the past. Thus, where Essex-street now is stood the palace of the famous Earl of Essex, the favourite and victim of Queen Elizabeth. Arundel House was near, and old Somerset House, built for the Protector Somerset by John of Padua. Closely adjoining was the Savoy Palace, of which the chapel still exists, and maintains the rank of a royal chapel.

We then find Worcester House, where Beaufort-buildings now are; and Salisbury House, on the site of the present Cecil-street; Durham House, the residence of the Bishop of that see; and York House, belonging to the Archbishop, next follow. You may mark the site of the latter by the water-gate of Inigo Jones, which now stands, deserted and forlorn, on dry land, cut off from the river by the embankment.

Northumberland House, with a fine garden, was the last great house before reaching Whitehall and Westminster. It was on the site of an ancient abbey. Every trace of it has now, as you are aware, been removed, and the old position can only be recalled approximately, for the future, by the name of Northumberland Avenue, given by the Metropolitan Board of Works, to their new street connecting Charing Cross with the Embankment. It is impossible to regard the sweeping away of old landmarks without regret, but in the case of Northumberland House the old buildings had long since been destroyed, and there was nothing in their comparatively modern successor of sufficient artistic value to prevail against the urgent necessity for improving the main communications of London.

Where the statue of King Charles is now placed, the cross of Charing once stood. It is supposed to have been octagonal in plan, with of eight statues in niches. No precise drawings it exist, but the restoration of the cross in front of the South-Eastern Railway Station was based, as far as possible, on the scanty data of archæologists. Another Eleanor Cross was situated in Cheapside, but it seems to have been destroyed or removed. It was succeeded by Cheapside Cross, which was pulled down, in Puritan days, under an order of Parliament, by Robert Harlow, with a troop of horse and two companies of foot soldiers. We may judge from the force employed that the work was not popular with the citizens, although it is recorded that "at the fall of the top cross, drums beat, trumpets blew, and multitudes of caps were thrown into the air, and a great shout of people with joy."

Returning from Cheapside to the river, I must not omit to notice Baynard's Castle, which stood close to the great monastery and church of Black Friars, and between the latter and Queenhithe. Baynard's Castle was a relic of Norman architecture,—a rectangular mass with flanking turrets. It had royal reminiscences, and Richard III. was crowned there. The English kings were well supplied with palaces, for without reckoning the Tower and Baynard's Castle we find the Savoy, Whitehall, and Westminster, within a short distance of each other. Near to the Savoy was the palace of Lord Burleigh, afterwards called Exeter House, and ultimately converted into a bazaar and menagerie, under the name of Exeter Change.

Whitehall was not originally a royal palace. Under the title of York House it had long been the London residence of the archbishops of the Northern province, and so remained until the fall of Cardinal Wolsey, when it was seized by his royal master. The name was then changed to White Hall, a title supposed to have been suggested by the whiteness of some stone buildings then in progress. It was intended to connect Whitehall with Westminster, and to give to the whole range of buildings the title of the "King's Palace at Westminster."

Westminster had been a royal residence from Norman, and even Saxon, times, and the walls of Westminster Hall are full, as I mentioned before, of remains of Norman arcades, which have been since filled up.

At right angles to the hall was St. Stephen's Chapel, one of the most beautiful structures of the thirteenth and fourteenth centuries. It was the Chapel Royal of the palace, and was well worthy of its name. Unfortunately it is now lost to us, having been destroyed by the fire which consumed the old Houses of Parliament in 1834. It had large four-light windows of beautiful tracery, divided internally by niches, and there was a wooden roof. The crypt below the chapel not having been wholly destroyed, has been restored. It is unusually lofty for a crypt, and had been used originally for a chapel. When it was decided to rebuild the Palace of Westminster, there was an intention to restore this building to its original use as the chapel of the palace. Unfortunately this idea has never been carried into effect, and Westminster is without the Chapel Royal, which has always been considered a necessary adjunct to a royal palace.

The precincts of Westminster were entered from Whitehall by an archway, the design of which has always been attributed to Holbein. It was a curious structure, as you will perceive from the view before you, with turrets flanking a centre gateway, the whole being covered with colour in the form of tiles and earthenware, after a fashion which has in some degree come again into favour in our own times. We have, unfortunately, no remains existing of the old palace at Westminster, as the fire swept away all traces of it. Fortunately the Abbey is still our inheritance, and presents much the same appearance as of old, if we deduct the towers of Sir C. Wren, and add a heterogeneous assemblage of sculpture, much of it indifferent, and nearly all of it unsuitable to a great Mediæval church.

In New Palace-yard, the wool-market was held. There was here a conduit, from which ran wine on great occasions, such as coronations. Near the angle of the yard stood the clock-tower, not far from its present graceful successor. The clock possessed a great bell, which we will hope was not cracked, as is the case with unfortunate Big Ben.

The buildings I have mentioned, being all of importance, were, for the most part, solidly constructed; but we must not forget that the ordinary houses of the citizens are still built of wood; while wooden projections, such as pent-roofs and balconies, abounded. Stories projected one beyond another, until in narrow streets they almost touched. Picturesque they might be; but, alas, how dangerous! and how sadly was their danger proved! Close contact led easily to infection, the danger of which was aggravated by the absence of fresh air and ventilation.

The Great Plague in 1665 plunged the city into mourning. It is scarcely an exaggeration to say, in Scripture language, "There was not a house where there was not one dead," for it has been reckoned that one in four of the population was carried off by the disease, and 70,000 persons died.

Hardly had the plague ceased, when the Great Fire swept away almost the whole of Mediæval London. So extensive a destruction could hardly have been possible, except under the conditions of domestic architecture which I have attempted to describe to you.

Evelyn records in his diary that it commenced at ten o'clock at night, on the 2nd of September, 1666, and continued for three days. Speaking of the helplessness of the people, he says,—"The conflagration was so universal, and the people so astonished, that from the beginning, I know not by what despondency or fate, they hardly stirred to quench it, so that there was nothing heard or seen but crying out and lamentation, running about like distracted creatures."

The Thames was covered with boats, conveying to places of safety families and such of their goods as they could hastily save. The flames became so widely spread that none could approach for the heat, and the glare was seen for fifty miles. Evelyn returned to his country house, having, as he thought, seen the last of London. He writes in his diary,—"I returned with a sad heart to my house, blessing and adoring the mercy of God to me and mine, who, in the midst of all this ruin, were like Lot in my little Zoar, safe and sound."

Well might he suppose that the calamity was irretrievable. Five-sixths of the City lay in ashes, and the flames had extended over a space of a mile and a half in length, and half a mile in breadth. As Evelyn wrote,—"London was, but is no more."

This was in 1666; what would he have said if he could have been told that 200 years afterwards London could be described, in the language of a recent writer in one of our periodical reviews, as covering *an area of* 78,000 *acres*, with a jurisdiction over 576 *square miles*, with *four millions* of inhabitants, increasing at the rate of 75,000 *a year?*

Such is London now.

THE ROMAN BATHS.*

IT has been the custom to class under the title of "Pagan" architecture all styles previous to the fall of the Roman Empire, and to assume that the principles, moral or religious, under which the Egyptian, Assyrian, Greek, or Roman styles were founded were the same; and that, being Pagan, they were scarcely fit for our study, and certainly not for our use. A little consideration, however, will show that, although the formation of a style may owe its chief development to the impulse of religious feelings, the decoration only as such is the exponent of these, and the construction depends almost entirely on scientific knowledge. It is true that in some measure the finest examples of buildings of bygone styles have been erected for religious purposes, and at the present day it is difficult to decide whether the temples of Thebes, in Egypt, for instance, are to be regarded strictly as temples, or whether they may not be the palaces of the king, who was in Egypt the spiritual as well as the temporal governor. Be this as it may, as architects we have first to deal with the æsthetic and the constructional form of these buildings, and we may therefore dispense with the religious element altogether, and consider only whether for our purposes and uses, and in our climate, there are not principles of plan, of form, and of construction in Roman buildings, and especially in the *Thermæ*, which are worthy of the most careful study.

I have lately had occasion to visit a large number of Sir Christopher Wren's churches in the City, the plans of which, and the forms of their vaults and ceilings, are based on a true knowledge of Roman architecture; and although in their decoration I should like to see a total change of principle, I am bound to confess that for the purposes for which they were designed, their plans were better adapted in their way than many more modern erections, whilst the form of their vaults (though constructed in plaster), is of wonderful variety and æsthetic excellence. The study of true Roman architecture has generally been discountenanced, in consequence of an attempt to read its principles through Greek spectacles. We are willing, even the most bigoted Goths among us, to accord the palm of excellence in architecture to the Greeks, but Roman architecture has been generally condemned by the advocates of pure style. This is, I think, a mistake, for although that exquisite refinement and beauty of form and detail which we all admire in Greek work is not found in Roman, there are other qualities which render its careful study even more useful to us. The arch, the vault, and the dome (whether due to the Etruscans as inventors or not) are first worked out by the Romans in all their grandeur and magnificence; and many of the principles supposed to have been invented in the Middle Ages will be found in Roman work at the beginning of our era. The intersecting vault, with the concentration of its thrust at certain points; the rib, and the carrying of the springer well within the walls on a column or shaft, so as to bring the thrust of a vault within the walls; the reduction to a minimum of the thickness of walls between piers, the piercing them with large windows, and the filling-in of these windows with pierced marble slabs forming a kind of plate tracery, are all inventions designed and carried out in Roman architecture.

What is therefore most necessary to do if we wish rightly to appreciate Roman architecture is to discard for a moment the decorative forms which have been applied to it, to ask ourselves whether the buildings serve the purpose for which they were designed, and in the best way; whether the principles of construction the Roman architects employed were sound; and whether, apart from detail, there is not in the general design of their work a grandeur and magnificence unsurpassed by that of any other nation or period. In attempting to draw a parallel between Greek and Roman architecture, it must be remembered that the results were arrived at in a different way; the materials employed were not similar, they were used in a different way by people of great dissimilarity in their character. In the trabeated architecture of the Greeks stability was obtained by a due observance of the laws of weight. The adhesion of materials was not necessary, and mortar was not required or used; the stone used was of large size, involving great expenditure of time in its quarrying, in its transport, and in its putting together. It was also an external architecture, and the spaces covered over were not of any great span. In Roman arcuated construction, however, the span of their vaults exceeds that of the largest cathedrals; the materials employed were of small size, as tiles, rubble masonry, and concrete; it was absolutely necessary that the mortar should be of such a nature that when consolidated the masses should be perfectly homogeneous; and last, and not least, a new principle of stability had to be considered, involving far greater risks and responsibility, viz., the resistance of thrust of an arch or vault. If you will bear these facts in mind you will, I think, agree with me that the two styles must be judged on their own respective merits, and that it is unwise to carp at the artistic shortcomings of a nation which has done so much to advance the scientific development of architecture, and who, in their roads, bridges, and public buildings, were the pioneers of the civilisation of the present day.

Coming now to the immediate subject of my paper, I do not purpose to enter into an archæological inquiry on the precise destination of the several parts of the Roman baths. It will be sufficient for me to point out that a number of rooms of different sizes and heights had to be grouped together for particular purposes; to draw your attention to the skilful and artistic way in which this was done, and how various are the combinations in the examples I am able to lay before you. I wish to point out how the masses of masonry are grouped together in the positions required for the resistance of thrust, and how every available space is turned to account. It is true that these masses occupy more space in proportion to voids than in the Mediæval or modern erections, but it is equally true that when left alone only to the elements of the weather they have resisted destruction to the present day. The great hall of the Baths of Diocletian at Rome now serves as the church of St. Angelo, and those of Caracalla and the Temple of Maxentius, by the masses of them which remain, still bear witness to what might have been their condition if they had not been wantonly destroyed by the hands of man. The Baths were institutions of such great importance among the Romans that under the Roman emperors there were no fewer than 800 of them in Rome itself. The most important of these, the *Thermæ*, as distinguished from the ordinary baths, were erected by the emperors as much as a sign of their wealth and power as from a desire to find favour with the people by gratifying their sense of luxury and magnificence. Palladio's work contains plans of many of them, and as in his period their remains were much more extensive than at the present day, his plans may be taken as fair representations of the original designs. They are not by any means isolated examples of Roman architecture.

The baths of the Romans (or at least the *Thermæ*) are quite a different class from those built in Greece or now existing in Pompeii. The latter corresponded more or less to what is known as the Turkish bath here in London, and were erected simply for the purpose of bathing. The Roman baths of Caracalla, Diocletian, and others, would seem to have taken the place of our clubs, reading libraries, gymnasiums, and museums. Although in the early days of the empire permission was not given to enter till two o'clock in the afternoon, later on they were open at all times, and they became the resort for that opulent class of people who preferred to live on the spoils of those they had conquered rather than on the gains of their own labours. In addition to the opportunities offered in the great halls for bathing in the *frigidarium*, *tepidarium*, and *calidarium* (the cold, tepid, and hot baths), the immense enclosures contained large open spaces for gymnastic and athletic performances; the side porticos and halls became resorts for those who wished to hear poems or declamations by the poets and writers of the age, taking therefore the place of the reading and lecture

* Substance of a paper read by Mr. R. Phené Spiers, on the 23rd inst., before the Architectural Association.

rooms of our day. This will enable you to understand the nature of the problem which was set before the Roman architects,—to combine a series of halls and rooms of different sizes and heights, so that all should be in easy communication one with another, whilst receiving that light, and in some cases that warmth, which was necessary for the purposes of the building. It would seem also, from the fact of the discovery of the Hercules and other celebrated statues on the sites of these baths, that these halls were to some extent museums, not as we understand them in the present day, collections of artistic objects all huddled together in small rooms, but placed decoratively to complete the furnishing of the building, if I might so term it. How far the Roman architect succeeded in solving the problem, I have now to lay before you, and although it is scarcely likely that buildings of a similar class will ever be required again, there are grand features of disposition in their plans which every student ought to make himself acquainted with, in order to extend the scope of his mind and facilitate his dealing with similar groupings where occasionally required in the distribution of rooms and halls in town-halls, exchanges, libraries, and other public buildings. I may here remind you that the plan of St. George's Hall, Liverpool, one of the most celebrated buildings of this century, designed by the late Mr. Elmes, was based on the principles laid down in the central hall of the Baths of Diocletian. I shall also have to direct your attention to another and perhaps the chief element in these baths, and that is the means by which these grand halls were vaulted over. It is perhaps scarcely necessary to remind you that the leading problem which has led to the development of all true styles has been in the covering-in of their monumental buildings. The position of walls and columns in the trabeated styles of Egypt and Greece gave rise to the several proportions of those features, the relation of their thicknesses in the case of walls, and diameter in the case of columns, all these being based upon the strength required to support crushing weight. The long parallel walls of Assyrian and Sassanian temples were dictated by the necessity of supporting a continuous vault, and the position and size of the piers, columns, and other supports of Roman architecture were fixed by the respective weights of their groined vaults to resist the thrust spread over or concentrated on the several points of support.

In later times the pointed rib and intermediate web, and the working out of these features, gave that immense impetus to the development of Gothic architecture which we find in the work of the Middle Ages, and although the principles of design of the Roman and Pointed styles vary in many other points, still it will be found that the chief difference lies more in the invention of the rib as an *accentuated* feature than to any predilection for a pointed over a circular-headed opening. As the wagon-headed, or barrel-vault, with its intersections and groins, and the dome and its pendentives form the chief and leading principles of Roman architecture, so the accentuated rib, with its secondary filling-in, the web, constitutes that of Gothic architecture, and, if I can get you rightly to understand this, you will then see the important position which a proper knowledge of the Roman and Gothic principles of vaulting should take in your studies. It was for this reason that I ventured some time ago to take exception to some remarks made by Mr. Sharpe,* in which he described the dome of Sta. Sophia at Constantinople as a Mediæval dome, and I shall take the opportunity of returning to this subject later on.

The Baths of Caracalla were situated on the Aventine Hill, on an elevated platform, part of which was artificial. They covered an area of 65,288 square yards, including the gardens, exercise grounds, and porticos with which the main block of the *Thermæ* is surrounded. The principal front overlooked the Appian Way, and consisted of two floors of private baths each preceded by a small room for undressing in, and entered from a corridor which ran along the whole front, and constituted the principal feature in the design. At regular intervals in this front were four staircases which led to the main platform on which the *Thermæ* were placed. The platform was surrounded by halls and porticos, and on the further side from the entrance were placed reservoirs of water supplied by one of the great aqueducts which cross the Campagna. In front of these reservoirs was a grand stand (if one may so term it), of stone steps, from which the people witnessed the gymnastic exercises which took place in the open space behind the *Thermæ*. The rest of the grounds were laid out with promenades planted with trees and decorated with marble statues, fountains, and seats. The central or main block, probably the only portion which was erected by Caracalla, A.D. 211-217 (the outer porticos and accessorial buildings having been executed by his successors Heliogabalus and Alexander Severus, A.D. 218-235), was entered by several doors on the north-east and west sides, and through open porticos on the south, all the halls and courts forming part of the *frigidarium* or cold baths being on the north side, those appertaining to the *calidarium* or hot baths being on the south, and the *tepidarium* or tepid baths between the two. On the east and west sides of the block are large open courts with peristyles round, and various halls, which served as lecture-rooms where recitations and readings were given by the poets, philosophers, and historians of the age. The whole block measured 720 ft. by 375 ft., and is said to have contained no fewer than 1,600 marble chairs for the bathers. The principal entrance to the baths was on the right and left of the *frigidarium*, and the vestibules on either side have smaller rooms for undressing in, for anointing with oil, and other processes. The *frigidarium* is a large swimming-bath open to the sky; beyond lies the largest and most important hall of the building, viz., the *tepidarium*; here the baths are placed on either side of the hall in huge niches situated between the buttresses of this great hall. From the centre of the *tepidarium* a spacious corridor with baths on each side led to the *calidarium*, which is furnished with seats all round and a circular bath in the centre. Thence the bathers passed to smaller halls with tepid and other baths, the offices or service rooms for all these baths being in close proximity. The halls on the east and west sides of the main block and surrounding the peristyles were destined for the use of the *literati* of the age, whose works were chiefly made known to the public by recitations. Here also may have been placed the libraries for papyri rolls and MSS. The central block, I have remarked, was surrounded by promenades, gardens, and exercise grounds. Outside these, and forming the enclosures, were other halls, which were set apart for gymnastic exercises under cover; and on the north side of the area on either side of what I have called the "grand stand" were rooms with baths, &c., destined for the use of those who took part in the gymnastic exercises in the arena. Such was the destination, so far as we are enabled to determine, of the several parts of the *Thermæ*. In all the other imperial establishments the arrangements were similar; in some, such as those of Titus and Diocletian, the *calidarium* is a barrel-vaulted hall, but more enclosed than the *tepidarium*, though still placed on the south side so as to derive a portion of its warmth from the hot rays of an Italian sun.

I now come to the elevations and sections of the building, and here I have to draw a distinction between architectural lines given by the construction and their decoration. Blouët and others inform us that the walls were lined with marble slabs, with detached marble columns up to the springing of the arches, and above that the walls and vaults were decorated with paintings on stucco-grounds, or with panels in stucco inlaid with mosaics, the floors being paved with mosaics similar to those of which we have now some examples in the British Museum. The distinction I wish to draw is this: the construction of the walls, the forms of the vaults and their penetrations, the niches and openings, are Roman; the decoration is in a certain sense Greek, was probably executed by Greek artists, and was suggested by the orders and other features of Greek architecture. It is to the former more particularly that I desire to draw your attention. Splendid materials, magnificence and richness, and fine proportions suggested by the simpler forms of the Roman structure, go far to overcome one's dislike to the *appliqué* character of the decoration; all that, however, may be stripped off in your imagination as it is now in the actual ruins. The splendid shell of true Roman architecture still remains for your study and admiration. I propose, therefore, to treat only of the construction and architectural disposition of this shell; its decoration is a question of detail.

The first feature to which I have to direct your attention is the intersected barrel-vault of the great central hall or *tepidarium*. In the smaller examples of this feature it is probable that a continuous centering was formed, which was shifted on as the work proceeded. In the great halls, however (80 ft. in span), the cost of centering would have been considerable, and it would scarcely have been safe, however excellent the consistence of the mortar, to have trusted to such large masses of concrete without any other bond. The researches of MM. Blouët, Choisy, and Viollet-le-Duc have shown us that in the interior of these huge masses was a skeleton or framework of ribs and longitudinal ties, the spaces between being filled in afterwards with concrete. In the "Dictionnaire Raisonné" M. Viollet-le-Duc gives a diagram showing how these ribs and the filling-in were formed. Wooden centres were placed at certain distances apart and boarded over; on these were laid a shell of flat bricks or tiles measuring about 20 in. square, which formed the under-surface of the vault; then ribs of the same tiles on edge were formed over the centering, with longitudinal ties at intervals from rib to rib and built in with them. It remained only to fill in the intervals with concrete formed of mortar, pumice stone, tufa, and other light materials, which rested on the tile shell and kept it from buckling or twisting. When the vault was sufficiently consolidated the centering could be shifted on and made use of again. This was the simplest form of vault; in the *tepidarium*, however, the barrel-vault is intersected by three other barrel-vaults, concentrating the thrust on eight piers, and the groin or line of intersection became a very important constructional feature, —so much so, that a special centering had to be formed. The principles of formation, however, were the same, except that under each rib a small triangular space had to be filled in with concrete on the tile shell before the rib was built; and to tie them in and give the form, certain tiles had to be cut to shape. When the diameter of the intersecting vault was much less than that of the main vault, much difficulty must have been experienced in the formation of the centering, because of the double curvature of the rib, and the invention of the Gothic rib accentuating and prescribing the form of the web between was one of those grand and happy discoveries which, as I have before observed, gave the great impetus to the development of Gothic architecture. It must not, however, be forgotte that to it was sacrificed what will always constitute the great beauty of the Roman vaults, viz., the subserviency of the *means* of construction to the end of simplicity and grandeur of form.

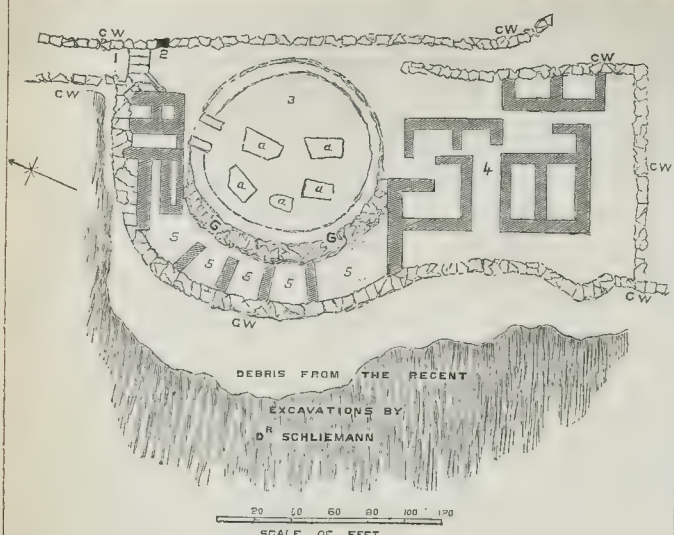
The Romans considered simplicity of form as the leading requirement, whether in barrel-vaulted, segmental-vaulted, or domical structures. The continuous web of a barrel-vault intersected by similarly-shaped vaults, and the spherical form of the dome, were forms familiar to them in nature, in caves and in the firmament,—which to them, though not tangible, was of actual existence; the accentuated lines of a quadrilateral vault, with its four independent ribs of no definite form, would have appeared strange to them and malformed had they seen it. I do not wish to depreciate the development of Gothic architecture, and no one admires more than I do the majestic nave of Amiens, or the choir of Beauvais; but I do contend that in the great central halls of the Romans we have elementary forms which, when decorated with appropriate ornament, are far grander and simpler than any ribbed vault can be. The finest halls which have ever been erected by the hand of man are found in the Baths of Diocletian and Caracalla, the Temple of Maxentius, and the Pantheon,—all in Rome,—and the Church of Sta. Sophia at Constantinople, perfect in their forms and in their proportions.*

Fall of a Spire in Glasgow.—On the 14th inst. a serious disaster happened to the Established Church in course of erection at Kelvinside-avenue, a little to the north-west of the city. At the north-east corner of the building there is a tower 90 ft. in height, and a spire which is to be carried up to a further height of 60 ft., is being built. Towards noon the workmen were compelled by the violence of the wind to cease operations. The scaffolding at length fell, bringing with it about 9 ft. of the steeple. No one was injured.

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* "Byzantine Architecture and the Architecture of La Charente."—*Vide Builder*, vol. xxxiv. (1876), p. 632.

* Remainder in our next.



Plan of five Tombs in the Circular Enclosure, and Foundations of Agamemnon's Palace.

1. The Lions' Gate.
2. Guard Chamber.
3. Double circular arrangement of Slabs.
4. Foundations of Palace.

5, 5, 5. Cross-walls between outside Wall.
G, G. Cyclopean Dome enclosing the Five Tombs.
a, a, a. The Five Tombs.
CW. Old Cyclopean Walls of Citadel.

THE EXCAVATIONS AT MYCENÆ.

IN a letter dated from "The Treasury of Atreus, Mykenæ," Dr. Phené sends us the accompanying plan of the recent excavations by Dr. Schliemann of Agamemnon's Palace, on the lower citadel. Dr. Schliemann, he says, gave him every assistance. Dr. Phené reports the labour to have been immense, as the vast heap of *débris* beneath the walls, shown in the plan, attests. The circular enclosure, with an opening to the north, is the space in which the five tombs were discovered, with the numerous articles of treasure overlying the buried and cremated persons. The part marked 6, 6, is described as a domed Cyclopean wall (?), enclosing the space occupied by the tombs, where the rock was deficient. The place appears to have been, as Dr. Schliemann properly describes it, a palatial residence rather than an acropolis, as Sophocles designates it *Δωμα*, and Aristotle implies that it was used as a residence because the lower part of the Argolic plain was marshy, and, consequently, unhealthy. The city was spread around on the adjoining slopes, remains of it still existing. The part figured 1 is the well-known "Gate of the Lions."

The excavation of the domed chamber, popularly described as Clytemnestra's, was superintended by Mrs. Schliemann, and the quantity of *débris* there also attests an immense amount of labour in the cause of science.

At a crowded meeting of the Society of Antiquaries, Burlington House, on the 22nd inst., Mr. Frederick W. Ouvry, president, in the chair,

Dr. Schliemann read a deeply-interesting paper descriptive of his recent discoveries at Mycenæ, the walls and tables being covered with illustrative photographs. After stating his reasons for having always understood Pausanias in the sense that the five tombs were in the Acropolis, citing for the fact that such was his opinion in 1869, his work, "Ithaque, le Péloponnèse, et Troie" (p. 97), Dr. Schliemann said that on the strength of it he, three years ago, sank thirty-four shafts in different parts of the Acropolis to probe the ground, and find the spots where he would have to excavate for the tombs. In twenty-eight he found nothing, but the other six, which he sank in the first western and south-western terrace, gave encouraging results, and particularly those two which he had dug within 100 yards south of the Lions' Gate. For not only did he there strike two Cyclopean house-walls, but he found also there a number of female idols and small cows in terra cotta. He, therefore, began extensive diggings here, but met with serious hindrances, and only at the end of last July did he find it possible to carry out his plans, when he gradually increased the number of his workmen to 125, which for four months had been the average. He ordered the workmen near the Lions' Gate to open a passage into the Acropolis, which, when the citadel was taken, had been blocked up by the huge stones hurled by the Mycenæans at the besiegers and by the ruins of houses which had been washed down from the top of the Acropolis, producing a heap of *débris* much higher than the gate itself. A much larger gang dug 40 ft. from the gate a trench 113 ft. square. A third party of workmen dug a trench on the south side of the Treasury in the lower city near the Lions' Gate, in search of the entrance. This Treasury, like that of Atreus, was to turn out subterranean. But either by accident, as some of the inhabitants of the Argolid say, or by the sacrilegious hands of Vely Pasha, son of the notorious Ali Pasha, who is said by others to have tried to force an entrance this way, the upper part of the dome-like vault has been destroyed, and the stones had fallen into the interior building, which had by degrees been almost filled with the rubbish. The examination of this Treasury, under Mrs. Schliemann, had been one of the most difficult they had ever made, partly from the nature of the terrain, and partly from the obstructiveness of the delegate of the Greek Government, under whose Argus-eye all the excavations were conducted. Hence they succeeded only in clearing out the passage of the entrance to the central part of this Treasury. The door has the enormous height of 18 ft. 5 in., and is 8 ft. 4 in. broad. On the threshold, which consists of a hard breccia, and which is 2 ft. 5 in. broad, was found a very thin round plate of gold. In the entrance also was one of the 4 ft. 3 in. high long-fluted semi-columns of calcareous stone; one of a pair which once stood to the right and left of the entrance. There was also a large fragment of a frieze of blue marble with an ornamentation of circles and rows of wedged-like signs in form of fish-spines; further, an almost entire frieze of white marble, with an ornamentation of beautiful spirals. Nothing further was found in this Treasury, which was evidently empty when the upper walls fell in. There were here no signs of the walls having been lined with brazen plates; it is, besides, less sumptuous, and seems older than the Treasury of Atreus. In the Acropolis Dr. Schliemann had entirely cleared the famous Lions' Gate, which he went on to describe, discussing also the old question of the symbolism of the lions surmounting the gateway, and of the altar surmounted by a column, on either side of which rest the fore paws of one of the two lions. One theory was that the column related to the solar worship of the Persians; another, that the altar is a fire altar, guarded by the lions; a third, that we have here a representation of Apollo Agyieus. Dr. Schliemann himself was of this last opinion, which, he thought, was borne out by the Phrygian descent of the Pelopidæ. The lion-cult of the Phrygians was well known. Besides, among the jewels found in the tombs, of which he was to speak afterwards, and especially in the first tomb, this religious lion symbolism reappeared. On two of the *repoussé* gold plates there found was seen a lion sacrificing a stag to Hera *βοῶπις*, who was represented by a large cow's head, with open jaws, just in the act of devouring the sacrifice. On entering the Lions' Gate were seemingly the ancient dwellings of the door-keepers, of whom some account was given. Further on, as at Troy, was quadrangular Cyclopean masonry, marking the site of a second gate of wood. Still further on were two small Cyclopean water-conduits; to the right of the entrance-passage were two Cyclopean cisterns. A little further on came to light that large double parallel circle of closely-jointed, slanting slabs, which had become so famous during the last three months. Only about one-half of it rests on the rock, the other half rests on a 12 ft. high Cyclopean wall, which has been expressly built to support it in the lower part of the Acropolis. The double circle had been originally covered with cross slabs, of which six are still *in situ*. Inside the double slabs was, first, a layer of stones, for the purpose of holding the slabs in their position. The remaining space was filled up with pure earth mixed with long, thin cockles, in the places where the original covering remains in its position, or with *débris* of houses mixed with countless fragments of archaic pottery wherever the covering was missing. This circumstance could leave no doubt that the cross slabs were removed long before the capture of Mycenæ by the Argives (B.C. 468). The entrance to the double circle was from the north side. In the western half of the circle Dr. Schliemann discovered three rows of tomb stelæ, nine in all, made of calcareous stone. All stood upright; four only which faced the west had sculptures in relief. One stela, precisely that beneath which was found the body with the golden plates representing the lion sacrificing the stag to Hera *βοῶπις*, represents a hunting scene. The two next sculptured sepulchral slabs represent each a battle scene. Details of these scenes were given, as well as of those presented by the other sculptured tombs, of which Dr. Schliemann's letters have already given some account. The Mycenæ slabs, he said, were unique of their kind. The manner in which they fill up the spaces not covered by men and animals with a variety of beautiful spiral ornaments reminds us of the principles of the painting on the so-called Orientalising vases. But in the Mycenæan sculptures nowhere do we see a representation of plants, so characteristic of ancient Greek ornamentation of this class. The whole is rather linear ornamentation, representing the forms of the bas-relief. Hereby we have an interesting reference to the epoch in Greek art preceding the time when that art was determined by Oriental influences, an epoch which may approximately be said to reach far back into the Second Millennium (B.C). Dr. Schliemann knew of no example in history of an acropolis having served as a burial-place save the small building of the Caryatides in the Athenian Acropolis, the traditional sepulchre of Cecrops, first king of Athens. But we now knew with certainty that Cecrops is nothing else than Kacyapa, the sun-god, so that the story of Cecrops having been buried in the Acropolis is a pure myth. But here in the Acropolis of Mycenæ the tombs are no myth, but a reality. The paper then discussed the question,—who were these great personages entombed here, and what were the services rendered by them to Mycenæ which deserved such splendid funereal honours. It was argued at length that the inhabitants of these tombs could be none other than the very persons spoken of in the extract



BUILDINGS ON THE CENTRAL BOULEVARD OF BRUSSELS: THE "BANQUE DE BELGIQUE."—M. Beyart, Architect.



THE MORGAN HOSPITAL, DUNDEE.—Messrs. Peddie & Kinnear, Architects.

Dr. Schliemann had cited at the outset from Pausanias, in spite of the certainty that the traveller of the Antonine age could never have seen the tombs, which were then covered by a 10 ft. thick layer of prehistoric rubbish. No ancient writer mentioned that Mycenæ was rebuilt after B.C. 468, and Strabo even said that the site had remained uninhabited ever since its capture; but facts proved that the city had been rebuilt about B.C. 400, and again about B.C. 200. Dr. Schliemann then proceeded to state the details already published in the *Times* from his pen of what he had found below the ruins of the Hellenic city.

Some excellent addresses were afterwards made, notably by Lord Houghton and Mr. W. E. Gladstone. Mr. John Evans, Mr. C. K. Watson (secretary), Professor Sidney Colvin, and Mr. Watkiss Lloyd were amongst the speakers.

THE "BANQUE DE BELGIQUE," BRUSSELS.

THE CENTRAL BOULEVARD.

In a recent number we gave some particulars of the new *Boulevard Centrale* in Brussels, and of the premiums which were offered by the Board of Works there for the best façades in the style of the Flemish Renaissance.* On that occasion we illustrated the elevation to which the second premium had been awarded, and we now give, according to promise, a view of the *Banque de Belgique*, which received the first premium. The façade is symmetrical, of good proportions, and exhibits considerable elegance. Its architect is M. Beyart, who has supervised the execution of his design in its smallest details. The building belongs, as already mentioned, to the Banque de Belgique, the same institution which by the great robbery of T'Kint de Roodenbeke (at present still awaiting his trial), and other manipulations and speculations which have yet to be submitted to judicial investigation, has been brought to a point when a liquidation seems hardly avoidable. *Sic transit gloria mundi!* The façade alone has cost more than 3,200*l.*

MORGAN HOSPITAL, DUNDEE.

Dundee has reason to thank the persistence of one or two of its citizens for the possession of what ought to be a very valuable educational institution—the Morgan Hospital. The circumstances attending its establishment are curious, and involve considerations of some importance. Mr. John Morgan, whose name it bears, died in Edinburgh on the 25th of August, 1850. On the death of his sister, on the 15th of January, 1848, certain writings were found in her repositories executed by her brother containing some personal bequests of small amount, and declaring it to be his wish that the bulk of his fortune should be employed to establish in Dundee, the place of his nativity, an institution for the education of boys on the model of Heriot's Hospital in Edinburgh. Previously to the death of his sister, Mr. Morgan had fallen into a state of mental imbecility, and a *curator bonis* was appointed by the Court of Session to take the management of his affairs. The writings alluded to passed into the hands of the curator. Having learned their import, the magistrates and town council of Dundee were naturally desirous of ascertaining their validity as testamentary deeds. It was known that Mr. Morgan had left a large fortune. Various parties came forward claiming to be "nearest of kin" to the deceased, and it soon became evident that their conflicting claims would not be settled without the intervention of judicial authority. In the first instance, he had determined to be the founder of a family. His fortune was to accumulate till it reached the sum of one million sterling, and then it was to be invested in the purchase of lands in the counties of Forfar or the Lothians. The estates were to be strictly entailed. The heir on possession was to assume the name of John Morgan, and Mr. Morgan actually selected a gentleman of his acquaintance on whose descendants this golden shower was destined to alight. This will, however, was most carefully obliterated by Mr. Morgan, so much so that it is difficult to decipher its contents, and by a writing subjoined to it he speedily annuls all its provisions. By this writing, dated the 10th of October, 1842, he declared his "wish to establish in the town of Dundee and shire of Forfar an hospital, strictly in size, the management of the interior of said hospital in every way as Heriot's Hospital in Edinburgh is conducted." On reflection, he got to think that his fortune, which had been impaired by losses through the failure of his agents in London and Calcutta, would be inadequate to the building and support of an institution projected on so large a scale as Heriot's Hospital in Edinburgh, and by a subsequent writing, dated October 20th, 1842, he restricts the hospital to such a size as shall accommodate only "100 boys in place of 180 boys." These two last writings, which are much altered and obliterated, formed the groundwork of litigation which subsisted for some years, and ended in their being declared by a judgment of the House of Lords to constitute a good and valid bequest of the fortune of John Morgan, or so much thereof as should be sufficient for the purpose of building and endowing a hospital for the education and maintenance of 100 boys in the town of Dundee. The litigation was long and disheartening, decisions for and against being alternately given. Meetings were held, money was subscribed, the case was carried on, and ultimately, as we have already said, the efforts of the town were successful. Mr. Morgan was upwards of eighty years of age when he altered his original writing, and struck out all that related to Heriot's Hospital. In doing this he also ran his pen through the two words, "an hospital," which referred to his intended establishment in Dundee, and not to Heriot's, as he evidently supposed. It was manifestly nothing more than a clerical error,—a slip of the pen. There are two well-established principles of law in the matter of testaments of personal property. The first is that where a party leaves a number of documents, all of a testamentary character, they must not be taken simply and separately, but must be all laid together; and, viewed as a whole, the light arising from one to be reflected upon the rest, and anything doubtful in one to be supplied by what is clear in the others, so that from a consideration of the whole the will or testamentary purpose of the party may be discovered and ascertained. The second principle is that in testamentary writings—at least in holograph testaments—the mind and intention of the testator is everything, the manner and form are nothing if only the real intention appear. On the strength of these two principles the advisers of the town rested, and the result showed they were right in their expectations. After the decision had been obtained, an estimate was made of the sum necessary for the maintenance of the establishment when in full work, and for erection of the building, and the sum of 73,500*l.* was invested for these purposes.

The expenditure was thus estimated:—

1. Feu duty per annum being for three acres instead of two as formerly proposed ...	£60	0	0
2. Head Master	200	0	0
3. Second Master, instead of 100*l.* formerly proposed	90	0	0
4. Third Master, instead of 80*l.* formerly proposed	70	0	0
5. Occasional tuition	50	0	0
6. Matron, instead of 50*l.* formerly proposed	45	0	0
7. Physician	25	0	0
8. Treasurer and Clerk	60	0	0
9. Auditor	10	10	0
10. Servants	94	0	0
11. Janitor and Gardener	40	0	0
12. Housekeeping, instead of 840*l.* formerly proposed	800	0	0
13. Clothing, instead of 400*l.* formerly proposed	383	15	0
14. Books and Stationery, instead of 50*l.* formerly proposed	40	0	0
15. Fire and light	90	0	0
16. Repairs	40	0	0
17. Taxes	30	0	0
18. Fire Insurance	14	8	8
19. Church seats	12	10	0
20. Extra expenses, such as duplicand of feu duty, travelling charges of visitors and inspector, printing and advertising, sick-bed and funeral expenses of boys, retiring allowances for masters, and general incidents	112	0	0
	4,267	3	0
Assuming that interest is to be at 3½ per cent. the capital sum required in order to produce the above annual income of 2,267*l.* 3*s.*	64,775	14	3
Add to which the estimated cost of buildings and furniture £13,503 0 0			
And the additional cost in enclosing walls and laying out ground occasioned by three acres being taken instead of two..... 150 0 0			
	13,653	0	0
Total sum required	£78,428	14	3

The difference between this and the sum invested, was met by the circumstance that the full expenditure was not required for four years.

After the appointment of trustees and governors, measures were taken for the construction of the hospital. A site was acquired on the estate of Craigie, lying to the north-east of the town, and a design, prepared by Messrs. Peddie & Kinnear, architects, Edinburgh, was approved of and adopted by the governors. The foundation-stone was laid, with Masonic honours, on the 30th of July, 1863. Unexpected causes of delay retarded the progress and completion of the work, but it went on gradually (forty boys being at first received), and is now completed. We give a view of the building. The site is nearly triangular, and forms a sort of gusset between the Forgar-road going north, and the old Arbroath-road, breaking off to the north-east. The gateway is at the junction of the two roads, and the enclosure walls extend about 250 yards along each road, the divergent lines being united by a wall of about 150 yards, forming the top of the inverted triangle. The ground enclosed measures about five acres. It slopes upwards from the entrance-gate, and the hospital is built on the upper and broader portion of the grounds. The design presents a building quadrangular in form, 200 ft. in breadth, 120 ft. in depth, with an open court inside. The style of the building may be called Flemish-Gothic, and it is two stories in height, with a centre tower rising to the height of 120 ft., and projecting a few feet from the façade. On the ground-floor it contains the main doorway, which is formed in a richly-moulded archway, surmounted by a crocketed label. Over the doorway, in the second story, is a three-light window, headed with cinquefoil tracery, and opening into a projecting balcony. On reaching the height of the ridge of the building, the intervening space being filled in with a clock, the tower is corbelled out at the angles into circular turrets, each capped with a steep slated roof. Connecting the turrets are carved balconies, also corbelled out from the main walls of the tower. From this point rises a steep roof, formed in two stages, and which exhibits in front a carved group of windows, surmounted by an ornamental gablet. The tower terminates in double pinnacles, united by an ornamental crest.

On each side of the tower the design exhibits bay windows in the second story, surmounted by steep crow-step gables. Extending on either side is a range of two-light windows in both stories, the upper being finished by gablets flanked, and terminated by pinnacles. At the angles of the front the building throws out slightly projecting wings, with a triple square-headed window in the lower story, and with two traceried windows in the upper story, separated in a projecting ornamental chimney-shaft, which terminates in a crow-step gable. The gables of both wings are flanked by buttresses surmounted by shafts, terminating in carved pinnacles. The roof is of high pitch, and is finished by an elaborate iron cresting. The groups of tall chimney-stalks, rising at intervals from the roof, form an effective and characteristic feature of the design. The east elevation is of the same general character as the front, and is broken in the centre by two projecting gables, to the north of which is a section of the building, containing the dining-hall on the ground-floor, and the chapel in the upper floor. The chapel is marked by pointed and traceried windows, and from the roof springs a bell-tower, rising 32 ft. above the ridge of the roof. In the west elevation the leading feature is the staircase tower, which rises to the height of 80 ft. To the north of this tower is the head master's residence, which, in somewhat plainer style, preserves the general features of the building. The open court, which lights the buildings from the interior, is about 130 ft. by 50 ft. With regard to the internal arrangements of the building we may state generally that, in entering by the main doorway we find on the left the board-room, the library clerk's room, and matron's apartments; and on the right the master's and matron's dining-rooms, and a series of large class-rooms extending towards the dining-hall. In the upper floor are five dormitories, with an infirmary in the west wing, as also lavatories and bath-room.

According to the scheme for the erection and endowment of the hospital, the funds are vested in the following persons, viz.:—The Provost of Dundee, the Sheriff of Forfarshire, one of the Sheriff Substitutes of Forfarshire to be named by the Sheriff, the Dean of Guild of Dundee, and the Convenor of the nine incorporated Trades of Dundee,—all for the time being as trustees for the establishment, endowment, and maintenance in all time coming of a hospital in Dundee for

* See pp. 264, 265.

the education, lodging, boarding, and clothing 100 boys, the sons of tradesmen, mechanics, and persons of the working-class generally whose parents stand in need of assistance to educate their families or who are orphans in need of such assistance. The governors who have the management of the hospital are twenty in number. No boy is admitted into the hospital until he has attained the age of seven years nor after he has attained the age of nine years, and no boy is permitted to continue in the hospital after he has attained the age of fourteen years complete. In order to the admission of any boy it must be shown that either the father or mother of the boy is (or, if dead, was) an inhabitant of, and born and educated in, one or other of the towns of Dundee, Forfar, Arbroath, or Montrose; but the sons of persons inhabitants of and born and educated in Dundee have the preference. There is this valuable stipulation, that every boy beyond the age of nine years shall attend for a certain number of hours during each week a class for instruction in one or other of the trades of a tailor, shoemaker, or carpenter, or such other branch of industrial employment as the governors shall direct, and the governors are to appoint suitable instructors in every such trade or employment, and it is competent to the governors on occasion of any boy leaving the hospital, to permit such boy, as a reward for good conduct, to receive the whole or any part of the profits of his work during the preceding year. The scheme stipulates that the head-master shall receive an annual salary of not less than 200*l.*, besides the use of a free house attached to the hospital, with coals, gas, and water. The hospital is to be inspected once at least in every year by an educational inspector of known experience, character, and ability, who is to test the efficiency of the teaching and progress of the boys.

It is to be hoped the time will not come when the masters, the matron, and the treasurer, are more cared for than the scholars, and the testator's gift perverted to the maintenance of a few friends of the governors for the time being. Such things have been and are.

THE PRESENT STATE OF INDUSTRIAL ART.

CITY AND SPITALFIELDS SCHOOL OF ART.

MR. CHARLES L. EASTLAKE on the 22nd inst. delivered the last of a series of four lectures* in connexion with the City and Spitalfields School of Art. The large hall in Skinner-street, Bishopsgate, was not, unfortunately, one-twentieth part full, doubtless owing to the very inclement weather which prevailed at the time. The lecturer premised that he adopted the term "industrial art" as one which modern custom had recognised, and which was commonly accepted in the present day, rather than because it was appropriate or satisfactory. We had been in the habit, for two or three generations past, of dividing art into several sections, and of giving them grand names, such as "high art," "Fine art," "pictorial art," "fictile art," "ceramic art," "industrial art," and what not. Of these, some had been foolishly overrated on sentimental grounds, and others had been as foolishly underrated on ignorant grounds. Curiously enough, all these fine names were invented or adopted during a period when taste in art had sunk in this country to the lowest standard which it ever reached since civilisation began,—*i.e.*, in the early part of the present century. During that period the arts of manufacture sank lower and lower in character of design, and, as a matter of consequence, in quality of execution,—for, speaking generally, the worst taste in manufacture was generally found in articles of flimsy workmanship, and the best taste in those of sound, honest handicraft. The cause of the decadence of what, for the sake of convenience, might be called the "industrial art" was due to the fact that the connoisseurs of our grandfathers' time failed to encourage excellence in contemporary work; they were content to hoard up examples of a bygone age for the mere sake of their rarity, or for their market value. A genuine love of art, whether in a nation or as an individual characteristic, should represent something more than the wealth of a museum or the pride of a collector. It should reach and invest with interest the home of every householder throughout the land. Lord Macaulay had made scornful allusion to that absurd phrase, "the dignity of history," and pointed out that a history which did not include some notice of the domestic life of our ancestors would be no history at all. There was an equally absurd phrase of recent origin, and which was equally open to ridicule, viz., "the dignity of art." That expression, as commonly understood, meant that art was a luxury only to be enjoyed by the wealthy and highly cultivated; that it was the special property of the collector or the *savant*; and that those who could not afford to buy expensive pictures and rare specimens of bric-à-brac must be content with ugly houses and commonplace furniture. It was to be hoped that this melancholy and selfish creed was dying out in this country, but while a vestige of it remained there would be little chance of real improvement in national taste. It was precisely because art had been looked upon in this light, and talked of as something beyond the reach and appreciation of the people, that the people had grown indifferent to it, and had come to regard it as a thing of the past. It was, of course, difficult for us in these days to ascertain how far the working classes of any nation in bygone times had enjoyed the highest and most refined achievements of art; but one thing was certain, that down to the end of the seventeenth century the difference between what we now called "high art" and the ordinary arts of manufacture was only a difference of degree and quality, not one of style. How the line came to be drawn between "high art" in some quarters and no art at all in others was a very complex question; but among the causes which had led to this result were the progress of education and the rapid increase of wealth which had taken place within the last century. This might sound rather startling, but there was really no cause for alarm, for the social progress of a nation was of infinitely more importance than the improvement of public taste; and if one had interfered with the other for a while it only remained for the present generation to devise some means by which these two objects could be attained at one and the same time. In former days, the habits of the working classes were far simpler and more domesticated than they were at the present day. Men who in country towns and villages plied their trades as joiners, weavers, blacksmiths, or what not, were content to work as their fathers and grandfathers did before them, and generally brought up one or more of their sons to the same business. In this way the traditions of their craft, whether in regard to design, technical knowledge of material, or method of work, were preserved, and as all these improved with experience, it might be supposed that the result was most beneficial to every branch of industrial art. But, by and by, many changes came about. Railroads were laid down, schools were set up, cheap newspapers were circulated. Some of these honest folks began to get ambitious. They travelled, they read the papers, they sent their boys to school. All this cost money, and the consequence was they were obliged to do more work in the same time. Of course the work was hurried and not so well done. The sons of these men, being better educated than their fathers, began to grow conceited, and looked down upon their fathers' work. Sometimes they went off to "better themselves," and were replaced by journeymen, who, being paid by the day, and having no interest in the business, naturally thought more of their wages than of their work, and moved from place to place whenever they saw a prospect of higher pay, leaving the work to fresh and inexperienced hands. Nor was this all. As work went on increasing for the sake of wage, population went on increasing too, and, unfortunately, at a far greater rate than money. Provisions, clothes, and many of the essentials of life became dearer. More work became necessary to pay for them, and at length masters themselves began to consider how they could execute the same amount of work with less trouble, or a greater amount of work at a cheaper rate. The result of all this was to substitute an inferior class of handicraft and material. Cast iron took the place of wrought. In joinery, mouldings, instead of being worked in the solid, were run out by machinery and planted on. Common druggets were printed in imitation of woven carpets. Brickwork was "scamped" and plastered over with stucco or cement, in imitation of stone; deal was grained in imitation of oak or marble; crockery, which had been formerly painted by hand, was decorated with printed patterns. Much of this work and many of these articles being, of course, cheaper than what had formerly been produced, suited the pockets of pretentious people, who liked to make a show at a small cost, and the consequence was a gradual increase of demand for what the lecturer ventured to call "cheap and nasty" work, and a neglect of those honest trades which were once the pride of the British workman. The traditions of some few, indeed, had survived probably because no shams could possibly be practised in them without at once rendering the article produced useless for its purpose. The lecturer knew no specimen of native manufacture more satisfactory in construction nor more picturesque in appearance, than a rustic cart. It was always solidly made of stout timber and well-hammered iron. Such little graces of decoration as its purpose admitted, in the way of turned woodwork, chamfered edges, or applied colour, were simple and unaffected. It served its object well and honestly, and had filled the page of many an artist's sketch-book; and yet the maker of the cart may perhaps have never learned to read or write, and knew no more of industrial art than he did of the differential calculus. That was the kind of work which we should try and revive in this country; that was the kind of work which no school of design could improve. It was a fallacy to suppose that the progress of good taste in manufacture must necessarily go hand in hand with what used to be called "the march of intellect." The very fact that we had learnt so much, that we had brought before us so constantly at International Exhibitions and by means of published works, specimens of the art of other nations, puzzled the designer as to choice of style, and made him borrow a hint from this and a trick from that school of taste. Conditions of form and schemes of colour which properly belonged to one branch of manufacture were too often imported into another, and we might congratulate ourselves if the result were not a hopeless jumble of ill-assorted materials, misapplied ornament, and inappropriate construction. How could we escape from these difficulties? It was easy to say, "Go to the South Kensington Museum and study the best examples of ancient art," but the lecturer could not fancy a more bewildering task for the student,—he was speaking of beginners, of course,—than to wander through that palace of countless treasures (including specimens, good, bad, and indifferent, of every age and nation) in the hope of improving his taste. True, he might join the schools and study types of ornament, but the study of ornament in the abstract, and without an adequate knowledge of the mode in which that ornament should be applied, might teach him to draw indeed, but would never teach him to design. The lecturer would rather say: Make up your mind to study one branch of manufacture at one time, and ascertain, as you may easily do, the best period and most notable country for that manufacture. Choose the simplest objects first, and draw them (he assumed that the student had learnt to draw) geometrically, giving an accurate profile of every vase or casket, mapping out the ornament on its surface, and making memoranda of any colour decoration. In furniture and metal-work examine carefully the construction of the objects, and plan it where possible, showing every joint and rivet. Make full-sized sections of the mouldings, and figure every dimension on the spot. In stained glass note the disposition of the lead-lines, and in woven fabrics the direction of the threads, with as much care as you bestow on the figures or patterns themselves. Studies such as these will be of more value for future reference, and of far more help towards mastering the proportions of design and technical details of manufacture, than any perspective sketches, however elaborate. In selecting objects of ancient manufacture for this purpose, Mr. Eastlake recommended students to choose those which in some form or other are still serviceable under the conditions of modern life, and which a shopkeeper would find saleable if reproduced for modern households. There were hundreds of such articles now exhibited in our museums, and it had always been a matter of astonishment to the lecturer that manufacturers, who at a trifling cost might provide themselves with models or drawings of these objects for imitation, preferred to bring out year after year what they called "novelties," and which, while de-

* Of the lecture given by Mr. T. Chatfeild Clarke on "Florence and Michelangelo," we gave a report a fortnight ago (p. 270). This, however, was not the first lecture of the series, as stated, but the second, the first one having been on "An Art Student's Prospects," delivered by Mr. N. H. J. Westlake, F.S.A., on the 1st inst. The third lecture was given by Mr. G. Aitchison, B.A., on "Ornament and Colour."

rting widely from the ordinary types of form cognised by custom, were far from realising e grace of ancient art. In cabinet-work, how-er, there had been a marked improvement of te years. The coarse carving and lumpy achine-made ornament which disgraced our rniture some twenty or thirty years ago were ing gradually replaced by delicate mouldings d graceful inlay. In curtain-stuffs and printed ods there had been a still greater advance as quality of design, and this in regard not only the form of pattern, but to the scheme of lour adopted. In textile fabrics, paper-hang-gs, and the surface-patterns of pottery and ina, a great change had taken place within the st few years, viz., the substitution of natural rms of ornament, chiefly borrowed from vege-ble life, for the geometrical patterns and apers which were once in vogue. This change as no doubt due to a reaction in architectural aste from Mediæval types to those which pre-ailed during the seventeenth and eighteenth enturies. The change was gradually affecting he character of design in all branches of indus-rial art, and would necessitate more than ever n the part of designers a study of natural forms n plants, animal life, and, indeed, of the human gure itself. Among other branches of indus-rial art, there were three which deserved special mention, viz., stained glass, ornamental netal-work, and the manufacture of pottery and porcelain, each of which had within the present generation been marked by extraordinary im-provement, either in design or manufacture, hough not to an equal extent in both. In con-cluding his lecture (of which the foregoing is ut an abstract) Mr. Eastlake recorded his con-viction that the time had arrived when the public of this country were becoming sincerely nterested in the progress of "household taste," nd that it would rest with designers educated in our schools of art to determine by their efforts he direction which that taste should take, and he success by which its development might be attended.

On the motion of the Rev. W. Rogers, the thanks of the meeting were given to Mr. East-lake for his lecture.

THE USE OF MACHINERY IN ITS RELATION TO ARTISTIC PRODUCTIONS.

In presiding, on the 21st inst., at the annual *conversazione* of the Sheffield School of Art, Mr. William Bragge, F.S.A., took for the subject of his discourse "The Use of Machinery in its Relation to Artistic Productions."

Mr. Bragge said, at the end of last year Mr. Poynter, the president of the art section of the Social Science Congress, held at Liverpool, in his address to the Congress, objected to the "Castellani" collection of Italian jewelry being sent to Birmingham on loan, because cheap and inferior copies would there be made mechani-cally, and in this objection Mr. Poynter em-bodied and expressed a very common idea,—that mechanical work cannot be artistic work. How far this is true I shall endeavour briefly to show, and I may at once state that I shall claim for all mechanical appliances the right and privilege of assisting in our art manufactures. I am pre-pared at once to admit that the enormous in-dustrial progress of this country during the present century has really done very little for art. Our manufacturers have, almost to the present time, given their whole attention to economy and rapidity of production, and the public taste has not been elevated by the style of the articles produced. But allowing that in the past, and even at the present time, the taste and skill of the artist have been lost,—sacrificed to the ingenuity and contrivances of the me-chanican,—we surely need not conclude that art cannot become an ordinary adjunct to mechanical reproduction. We know well that in many manufactures carried on by us to-day our best models in design, as well as in material, are those bequeathed to us by workers who lived centuries ago, whose mechanical appliances were of the simplest and rudest character; and it is with some sense of humiliation that we are bound to confess ourselves unable to equal not merely the works of three or four centuries ago of European civilisation, but even of those of the present day, produced by nations which we are conceited enough to call savage. Let us take a few examples of the arts and manufactures of old time and compare them with those of the present day. Have we improved in the art of printing since its invention, 400 years ago? or in the art of paper-making of 600 years ago? In quality, certainly not; but we are bound to remember that to-day an ordinary edition of a newspaper is printed on both sides in quality sufficient to cover an acre, in the same or less time than Caxton or Gattenberg required for the production of a single sheet. We produce paper now in continuous rolls of many hundreds of yards in length, and with a rapidity commen-surate with the voracious requirements of the steam printing-press; but no paper now in general use (excepting bank-note paper) equals in quality that upon which our early books are printed. Most of the books printed of late are, I think, likely to be entirely lost within a century, simply from the natural decay of the (so-called) paper upon which they are printed. But we can buy a newspaper for a penny or a book for a shilling, which in Caxton's time would have cost fifty or a hundred times as much. We can and do engrave dies and coin money for all the world, but we cannot produce anything com-parable with the exquisite coins of ancient Greece. We can imitate in a feeble way the cameos and intaglios of the stone engravers of ancient Rome; but this is an art almost un-practised amongst us, and so far as we are con-cerned artistically, it is practically lost. In ornamental enamel we must go to China and Japan for our models, as Messrs. Elkington have wisely done, and then find out by painful ex-perience how best to copy the humbler objects, before daring to imitate the more important. Our English enamelling of to-day is confined pretty closely to the decoration of mayors' chains, Masonic emblems, and the lining of iron pots and pans. The art of lacemaking, or orna-mental needlework,—in Mediæval times one of the most general occupations of women of every rank above the lowest,—is now almost entirely lost, and we must go to our museums to see the charming examples of taste in design and per-fection in work which still remain for us to admire. The hand-made lace will bear micro-scopic examination, consumed much time and patience in its production, and was con-sequently very costly. Now-a-days one can buy in Nottingham embroidered curtains enough to furnish a house for less money than a collar of ancient point lace would cost. I might indefinitely prolong this list, and point out to you the comparatively lost arts of damasquining, or inlaying iron and steel with the precious metals; of the special forging of sword-blades in Damascus and Toledo to produce the twist in the fibre, so to speak, of the metal; of the remarkable skill in perforating steel and brass as a decoration of useful objects practised in Persia; of the marvels of design, colour, and glaze of early Italian pottery or majolica; of the exquisite glass and mosaics of Venice; the gold and silver smiths' work of Italy; the shawls of Cashmere and textile fabrics generally of India; but further instances are not needed, and you will, I think, agree with that which is a commonly accepted opinion, that in all these, and in many other artistic, manufactures, we, the English, are now utterly unable to compete. I have not made in the foregoing remarks any reference to painting and sculpture, because these arts stand outside of the reach of mechanical appliances, and therefore the painter and sculptor of to-day are in this respect in the same position as were Apelles and Phidias, Titian and Michelangelo; and now we may proceed to consider what is the real or supposed antagonism between art as developed in individual workmanship, and as accompanied, or assisted, by mechanical appliances. If we fairly compare the art of, say, the goldsmith or silversmith of three centuries ago with the art of to-day, we find that the workman then lived and worked under influences and incitements which have long ceased to exist. The Mediæval workman thought and cared only for the single object upon which he was employed. He threw his whole soul, his whole inventive faculty, his whole technical skill, into his darling work, and he knew that no meaner hand could rob him of the fruits of his patient labour and skill. He was not hurried with his work. He had no anxieties as to cost. His master, if he had one, was not perpetually crying out for the economies of labour and of material, no esti-mates had been given which could not be exceeded, and no arbitrary percentage of profit had been beforehand fixed. Is it extraor-dinary that under such favourable conditions the workman should produce his best? Cer-tainly not, and we ought to be profoundly thankful that the results of such a state of things have been preserved to us for our special instruction. How does the working gold or silver smith of to-day stand in relation to his work as compared with his predecessor of three centuries ago? Truly in a miserable plight! Instead of being himself the creator of the design he has to carry out, it has probably been prepared for him in an office where the commercial economy of manufacture is more considered than the principles of art, where facility of production is held to be more im-portant than elegance of form, and where the demands of the Demon of Fashion override the desires of good taste. All the patient labour of hammer and chisel, slowly and surely giving expression to the taste of the individual, are dispensed with now, and are replaced by a few blows of the stamping-machine! This stamp-ing-machine or press has taken the place of hand labour, and being only a machine, it is perfectly indifferent whether the work it is called upon to do is in good or in bad taste. It is as willing to work for the demon of ugliness as for the spirits of beauty, and the work which it produces is simply a reflex of the mind, and taste, and quality of its employer. It is unfair to charge the mechanical appliances of manu-facture with having caused a degradation of taste. The degraded taste existed when machines were first employed, and, unfortunately the pro-cess of refining and improving the artistic feel-ing of the public has been hindered by the cheap and ugly mechanical productions. If the modeller will only produce moulds worthy of admiration, the stamping-press is at his com-mand to bring under the daily notice of every one the forms of beauty which he has himself designed. We cannot, if we would, go back to Mediæval habits of thought or modes of work, and those who to-day would abolish all me-chanism in art-manufacture would injure instead of helping their cause. The patience and skill of the modeller and chaser who wishes to devote months or years to the production of a master-piece can still be given. He re-mains free to use his time and talents as he thinks best, and happily there is yet a demand for works of a high class in the pro-duction of which such men may be congenially employed. In this wealthy and art-loving country there is abundant occupation for the most skilful artists. Nothing that is really good fails to find a ready purchaser, and talent has to-day as fair a field before it as it ever had in days gone by. The gifts of corporate or public bodies to men who deserve honour,—the produc-tion of prizes for excellence in exhibitions, for racing, or boating, or yachting; the demand of the wealthy for specialities, designed for them-selves, ensure for the conscientious workman full scope for his talents. And I am sorry to be compelled to think that this special work is more than enough to occupy all the competent work-men who can be found. In the production of such works machinery and mechanical repro-duction have no part, they stand as individual works, each wrought out by a master mind, to fulfil a single purpose, and to satisfy a personal want. But can the requirements of the million be dealt with in this aristocratic manner? Certainly not. For their wants every element of economy must be utilised, the means of pro-duction must be assisted by all the resources of mechanical science. The absolute perfection of detail must of necessity be given up, but there is absolutely no reason why a high standard of excellence should not be preserved. Our jewelry, our gas-fittings, our table services, whether of silver, silver-plate, or other metals; our trays, coal-scuttles, fenders, and grates, and everything else which forms a part of our domestic surrounding, may as cheaply be made elegant as ugly. The use of machinery has only to be wisely and thoughtfully adapted, governed by artistic principles, and its result will be to give to the world in its cheapest form the useful and the beautiful. To the working out of this desirable end, I commend you, the students of the Sheffield School of Art.

The New Divinity School, Cambridge.—The syndicate have recommended that the tender of Mr. Loveday, of Kibworth, Leicestershire, who has executed several building works in Cambridge and the neighbourhood, be accepted. The tender was the lowest of five sent in, and amounts, for the whole of the works, in accordance with the plans and drawings of Mr. Champneys, the selected architect, to 11,977*l.*

THE TRANSPORT OF "CLEOPATRA'S NEEDLE."

At a meeting of the Civil and Mechanical Engineers' Society, held on the 15th inst., in the hall of the Institution of Surveyors, Great George-street (by permission of the Council), Mr. R. M. Bancroft, president, in the chair, an interesting lecture on "The Means of Transport from Egypt, and the Erection in London, of Cleopatra's Needle," was given by Mr. John Dixon, C.E., who has undertaken to bring the obelisk to England.

Mr. Dixon commenced by observing that the obelisk known as "Cleopatra's Needle" was of great historical interest, because it had sculptured upon it the history of the man who quarried it from the old quarries of Syene (the modern Assouan), and the reason why he quarried it. There were few monuments extant, so far as we knew, which could, like this, date back 3,400 years. In addition to its historical interest, however, the obelisk in question was of interest to engineers, in consideration of the means which were resorted to in order to quarry and transport in safety such huge monoliths. Cleopatra's Needle was not alone among obelisks, and possessed no peculiar features. In point of size, it stood only about eighth or ninth on the list of obelisks with which we were acquainted. The largest of which we knew was the Lateran Obelisk in Rome, which was brought by the Romans, with about twenty smaller ones, from Egypt, as the most curious objects they could lay hold of to decorate their imperial city. The Lateran Obelisk had a height of something like 90 ft., and was 10 ft. 6 in. square at the base, whereas Cleopatra's Needle was only 69 ft. 3 in. high, with a base of 7 ft. square. Ten years ago, when the lecturer was in Egypt, his attention was especially directed to this obelisk, which he saw lying in the sand on the shore at Alexandria. He dug around it and under it for the purpose of examining it, and it appeared to be little the worse for wear except that two of its sides were somewhat weatherworn, and did not retain the polish which still existed on the other two sides. Nevertheless, the hieroglyphic inscriptions were quite distinct enough to be read by the learned in those matters, and it therefore retained its history as clearly as on the day when it was set up by Thothmes III., *circa* 1400 B.C. Egypt in those days was the leading country of the world, not only in arts and commerce, but in learning and science, and to her great university of Heliopolis came Strabo, Pliny, Herodotus, and others. Thothmes went to the old quarries of Syene for the material of his obelisks. From these quarries for generations before him the Egyptians had been accustomed to sculpture those great blocks of granite which even to this day were our wonder and admiration. The granite of Syene was micaceous and somewhat coarse in texture and pinkish in colour, and in the quarries to the present day there existed an obelisk, half cut out, much larger than any other we knew of. That obelisk, if it had ever been completely quarried and set up, would have been 96 ft. high and about 11 ft. square at the base. The proportion of height of these obelisks to the square of base was generally about 10 to 1, or, in other words, the height was about ten times the square of the base. The hieroglyphics on "Cleopatra's Needle" were from 2 ft. to 3 ft. long, cut 2 in. deep and 3 in. or 4 in. broad, so that they could be read from a distance of fifty or sixty yards. The inscription, besides recording the virtues and power of Thothmes, recorded that the obelisk when set up was tipped with gold. This feature was of course gone, but there was a slight ledge round the point at the top which was no doubt made to receive a gold tip, or one of bronze gilt. On the top of the obelisk of Luxor at Paris, which the French brought from Egypt, there was a similar ledge or groove. The inscription on Cleopatra's Needle did not say in what city that obelisk was set up. Some accounts had it that it was first erected at Thebes, and was afterwards removed by Ramesis to Memphis. Be that as it might, it was ultimately removed to the ancient city of Heliopolis. The site of that city, once the Oxford and Cambridge of the world, and at that time, it may be presumed, covered with magnificent buildings, now presented one of the most astounding spectacles which could be witnessed. Nothing remained but a green plain, in the centre of which was a solitary obelisk, opposite to which once stood the stone now known as "Cleopatra's Needle." The latter was subsequently removed to Alexandria. How it came to be thrown down in its present position nobody knew. It had been conjectured that an earthquake was the cause of its overthrow, but it was much more likely, Mr. Dixon thought, that it was thrown down to get at the bronze tortoises on which it was believed all these obelisks were placed. In 1798 the French conquered Egypt, and they laid their hands on everything that was valuable or invaluable in the country. They carried off an enormous quantity of Egyptian remains, and they proposed to carry off the Rosetta stone (now in the British Museum), Cleopatra's Needle, and other antiquities. Before they could do so, however, they were driven out of Egypt by the English, and at the conclusion of that brilliant campaign, in which Sir Ralph Abercrombie fell, a great effort was made to secure Cleopatra's Needle, which would when erected in London, form a fitting monument of one of the most brilliant campaigns in which English arms had ever been engaged. The army subscribed four or five days' pay, and, assisted by the navy, took steps to remove the obelisk. They had hardly commenced, however, ere the red-tape and pipeclay of those days sent forth an order to desist in the attempt, as such work would be destructive of discipline and of the accoutrements of the men. So the obelisk remained where it was. When Mehemet Ali assumed the reins of power, he, wishing to please George III., presented the Rosetta stone and many of the principal objects in the Egyptian Court of the British Museum, together with Cleopatra's Needle, to the English nation. The British Government, however, had always declined meddling with this obelisk, although repeatedly urged to bring it over. The expense involved was made the great obstacle, although even so utilitarian a man as Joseph Hume proposed to spend the national money in bringing over the obelisk, and contended that the money would be well spent for such an object. The cost of bringing over the obelisk has been estimated in years gone by at 100,000l., but Mr. Dixon said he was confident that the cost would not exceed one-eighth or one-tenth of that sum. Eventually the British Government had renounced the gift. Recently, as was well known, Dr. Erasmus Wilson, F.R.S., had munificently come forward and had offered to find the money if Mr. Dixon would undertake the engineering details involved in the transport of the obelisk to England. That offer had been accepted. The Khedive, on being spoken to on the subject by Mr. Fowler, his Highness's chief engineer, and who was now in Egypt, said he should be pleased to see the obelisk removed to England if the Government would accept it on behalf of the nation. This the Government had consented to do, and it had again been presented to England through our Consul-General in Egypt. Nothing now remained, therefore, but to remove the obelisk to England. The stone was at present lying embedded in the sand on the shore of Canopus Bay, to the east of Alexandria. It was parallel to, and not far from the water-line, which washed the foot of a quay-wall backed up by the sand in which the obelisk was buried. The water was very shallow for a considerable distance out, and its bed was of rock covered with a fine sand, so that to dredge or excavate a channel for a vessel to come alongside the quay-wall and take the obelisk on board would involve an outlay of 50,000l. or more. It would also be impossible to make a mole on which to convey the obelisk out to a vessel lying in deep water, simply because there was no material available, and even were there material, the length of mole required would necessitate an outlay of at least 30,000l. Neither of these plans was available. What was proposed to be done was simply to excavate about the obelisk, and to build around it a huge iron cylinder or boiler, so to speak, 95 ft. long and 15 ft. in diameter. In the first instance there would be constructed around the obelisk, 10 ft. apart, about seven diaphragms, discs, or collars, so to call them, circular on plan, and with square apertures in the centre through which the obelisk passed and would be held in position by wedges and other appliances so disposed and arranged as to prevent any excess of strain being brought to bear on the monolith under any circumstances, whether the cylinder containing it were held up in the centre on the crest of a wave or at each end by two waves without any support in the centre. To these diaphragms or collars would be built longitudinal girders and framing, which would in their turn carry concentric ribs of iron to receive the external skin of plate iron. The obelisk will be disp as nearly as possible in the centre of cylinder, which will have both its ends pinc up, so to speak, in wedge-form, to serve as and stern. On the side of the cylinder w is intended to remain uppermost manholes be left for taking in ballast. The weight of obelisk is about 183 tons. The cylinder, w completed, will be rolled out in the shal water until it floats, being previously cove with a stout jacketing of timber-work, in o to prevent the possibility of its being dama by any sharp pieces of rock which it may over. When the cylinder is in deep wate will be towed into the Khedive's dry dock Alexandria, where the wooden jacketing will stripped off; one of the wedge-shaped ends be provided with a rudder, and the cylinder be fitted with two bilge-keels and a small p form or deck, thus becoming a cylinder ship, will be named the *Cleopatra*. Ballast will taken on board to give the whole grea stability, which would have been secured, if obelisk could have been taken on board ordinary vessel, by placing the load nea to the bottom than in the present c where, in order to facilitate the rolling the cylinder, the obelisk is to be placed the centre. All being ready and the weath favourable, the cylinder and its contents wo be towed to England. Mr. Dixon went i details to show the stability of the vessel, as which every care had been taken, seeing th not only was the safety of the obelisk involv but the credit of English engineering was stake. The plans of the vessel had been a proved by Mr. Froude and other authorities the subject of naval architecture. Havi reached the Thames it would be towed to th part of the Embankment wall nearest to the si which might be selected, and at high tide wou be floated on to a staging or gridiron of timb constructed to receive it. When the tide r ceded the cylinder would be left high and dr and would then be raised by hydraulic powe until the level of the embankment was reache The keels, deck, and other excrescences havin been removed, and the ballast taken out, th cylinder would be rolled across the Embankmen to the site the obelisk was intended to occup where the cylinder would be broken up an removed to the scrap-heap. Then came th question of raising the obelisk into an uprigh position on its pedestal. The Romans, and, late the French, had pulled their obelisks up b ropes, but that plan necessitated a large numbe of capstans and other appliances. Mr. Dixon pro posed to raise Cleopatra's needle in the followin manner: Having brought the centre of th obelisk over the exact site it was to stand upon he should put round the central 4 ft. or 5 ft an iron jacket, or, more properly speaking, a pai of iron stays capable of being so tightly laced o screwed up as to prevent the stone from slipping On the centres of two of its sides this jacke would have projecting trunnions capable of bear ing the whole weight of the obelisk. The obelisk would then be gradually raised by hydraulic power, applied at each end alternately, and as it was raised a scaffold or staging of baulks of timber would be gradually built under it, the obelisk still lying in a horizontal position. When the timber staging had reached the required height, two iron girders would be placed parallel with the obelisk. Upon these girders would rest the trunnions before referred to, and the girders, resting upon the end portions of the timber staging, would allow of the central portion of the staging being removed, so that the obelisk would swing nicely balanced on the trunnions, the bottom of the obelisk just clearing the stone on which it was to rest, and from that position could be easily lowered into its place by the lowering of the girders to a slight extent. One advantage of this plan was that on a bright moonlight night the stone could be experimentally lowered on to its pedestal to ascertain whether everything was right, and could then be pulled up again ready for the public ceremony. The lecture, which was illustrated by large plans on the walls, and by a model of the proposed cylinder-ship, attracted an unusually large audience, and an interesting discussion ensued.

Casting.—A large equestrian statue of Lord Canning, a memorial of his Governor-Generalship of India, was cast on Saturday, the 24th inst., by Messrs. Masefield & Co., at their works, Manor-street, Chelsea.

DRAWING IN ELEMENTARY SCHOOLS.

ON the 12th inst. a periodical competition in drawing was conducted in the elementary schools throughout the country that are aided and inspected under the Minutes of the Committee of Council on Education. The object of having the examination in drawing, which then took place, simultaneous throughout the country, is obvious, —prevention of "coaching," or communication of the subjects of the exercises.

By a Minute of the Committee of Council of the 9th of January, 1865, the examination in drawing in elementary day-schools is conducted by the managers of such schools. In Board schools,—those of the London School Board, at least,—the teaching of drawing is obligatory; in some other schools, receiving Government grant, the teaching of drawing is optional on the part of the managers. The following particulars refer to a London Board school, and would apply, for the greater part, it is believed, to many others.

The direction of the teaching of drawing in elementary schools is solely in the hands of the Science and Art Department of the Committee of Council on Education, South Kensington, which also directs the examination in May of such pupil teachers as have attended schools of art or art classes, and desire to present themselves for examination. The Department supplies the schools with suitable progressive lessons for the course of instruction in drawing throughout the year, and the test exercise papers for the annual examination held in March. In London Board School drawing examinations, the managers are usually deputies, persons who are considered "responsible and competent," who a few weeks before the examination are requested to accept the duty. If they do so, their names, &c., are transmitted to the clerk of the Board, and certified by him, if he think proper; the names are next forwarded to the Department and approved, if they, in their turn, think proper. Prior to the examination arrangements are made for a supply of the requisite number of examination papers. The managers have notice to attend at 9.45 on the morning of the examination. They then receive a sealed bag containing the necessary papers; the boys, or girls, as the case may be, are arranged in their places; the seal is broken, the papers are distributed, and the work commences. In the ordinary school-course the scholars are taught in groups ranging to six standards; in drawing there are but two grades. Only a portion of the pupil teachers, and a comparatively small number of the boys in the fifth and sixth standards, reach the second grade in drawing. The examination papers distributed to the scholars of the first grade consist of floral and classical subjects, such as winged bases, centre-pieces, the lyre, and a variety of artistically-arranged and connected curved lines, not easily described. The second set of papers distributed to scholars of the first grade were in practical geometry,—lessons embracing certain combinations of six elementary geometrical figures, — the line, the plane the circle, the cylinder, the cone, and the sphere. The third paper supplied to the scholars of the first grade is a *tabula rasa*, excepting the instructions printed on the top and on the back; it is for drawings from objects or models. The free-hand candidates of the first grade were allowed forty minutes to make their drawing; whereas their seniors of the second grade who chose free-hand drawing were allowed an hour and a half for a subject little, if it all, more difficult. In the free-hand exercises the drawings have to be in some cases a little larger, and in others rather smaller, than the drawing copied. The first-grade boys belonged to the first four standards, a majority of them to standard 1, and were from eight to ten years of age. Only six of the second grade went in for free-hand drawing, and two of these were pupil teachers. Two pupil teachers executed very good drawings from objects,—a table, and on it a box, a bowl, and a bottle, lying at an angle, with the neck resting upon the top of the box. The combination of lines, angles, curves, and the varieties of light and shade were embarrassing, but the difficulties were cleverly dealt with. Another pupil-teacher had a good perspective drawing, for which an hour and a half was allowed. The drawings from objects had to be finished, or left unfinished, on the expiry of an hour. When the time had run out for the completion of the last papers, it was the duty of the managers to collect and carefully count the whole, replace them in the bag with such papers as had not been used, to seal and at once post the bag to the Science and Art Department, South Kensington, inclosing with the papers their certificate that the exercises had been worked in their presence "without any assistance from books or notes, from each other, or from any other person." The certificate contains other particulars, including the statement of the number of individual candidates, distinguishing between first and second grades, and separating pupil teachers or paid monitors from scholars. The certificate is signed by the whole of the so-called managers, of whom there should be as many as will provide two for each separate room, in which the so-called examination takes place. "Managers" and "Examination" are misnomers, the examination is really at South Kensington, whither the papers are sent, and the managers are put there merely to "watch the case" and keep order. The rules for conducting the proceedings are, on some points, very stringent, but not unduly so. In freehand and model drawing no ruling, measuring, tracing, or other mechanical means of execution is permitted. The geometrical papers are of three kinds, so sorted and given out that the scholars sitting next to each other have different exercises and problems. The teacher of drawing is strictly prohibited from entering the room after the examination papers are opened, on pain of the examination being declared null.

The payments made by the Science and Art Department for drawing are,—1s. for every scholar who gives satisfactory evidence of having been taught drawing; 1s. 6d. for every exercise of the first grade in which a scholar shows proficiency; 2s. 6d. for every exercise of the first grade in which a scholar excels; 5s. for every exercise of the second grade in which a scholar is successful; 10s. for every exercise of the second grade satisfactorily worked by a pupil teacher who has been taught drawing in the school; and 1*l.* towards the expenses of the annual examination, provided that at least twenty scholars give satisfactory evidence of having been taught drawing in the school. Prizes are awarded to every scholar of the first grade whose drawings reach the standard of excellence, and to every pupil teacher of the second grade who excels in second-grade drawing. Aid is given towards instruction in drawing in elementary schools in various other ways by the Department. To be eligible to aid it is a *sine quâ non* that the school payments in respect of ordinary instruction must not exceed 9d. a week.

The highest prizes, of which few are awarded in Board schools, consist of valuable books in geometry, perspective, ornaments, and outlines, projection of shadows, botany, drawing for machinists, &c. The prizes that are awarded, almost entirely to scholars of the first grade, consist of drawing board and T square, compasses and angles, boxes of water-colours, &c.

In the boys' school to which these notes refer, fourteen prizes were last year awarded to scholars of the first grade for excellence; thirty-five had certificates for proficiency; and 160 passed. In the second grade, there were only two passes. This gives 211 papers in all that were passed by the examiners, the number being exclusive, of course, of rejected papers. For the girls' school, held in the same building, the number of papers given out was about half the above number.

A doubt, or something more than a doubt, has been expressed in some quarters as to the thoroughness and impartiality of these examinations, and as to their moral influence upon masters and scholars. It is by some persons considered a physical and moral impossibility that the enormous number of papers sent in towards the middle of March can be dealt with, otherwise than perfunctorily, in two months. It is true that a great many papers may be disposed of at a glance, but a vast number must require scrutiny more or less. It is impossible to estimate, with any approach to accuracy, the gross aggregate of the papers sent in from the whole of the elementary schools throughout the country in which drawing is taught under the auspices of the Department, but the number must be very great indeed. The Board schools in London furnish only a small fraction of the whole number, yet the fraction gives a very large figure. The Board had under its charge, on the 31st of December last, 177 boys' schools, 158 girls' schools, 165 infant schools, and 30 mixed schools. Little or no drawing is taught in the mixed schools for infants and girls; no instruction in drawing is given in infant schools, or to the scholars of Standard 1, in the girls' schools, but it is expected that all the boys in Board schools are instructed in drawing. An average of 200 drawing exercise papers from Board schools for boys, and of 100 from girls' schools, gives an aggregate of 51,200 papers for London Board schools alone. To the difficulty of accomplishing the Herculean task of dealing thoroughly with the papers, some schoolmasters have attributed the fact that the returns from the Department have, to their chagrin, placed the veriest tyros in the school to the front, and left the best boys nowhere. If this be so, it needs not be said that it must exercise a very discouraging effect upon the teacher, and have a demoralising effect upon the scholars, who are sharp in detecting the relative merits of their fellows.

The value and importance of drawing as a branch of instruction in elementary schools there will be none to dispute. There is scarcely any craft to which the boys may apply themselves in after-life in which ability to draw and to acquire sound knowledge of the principles of mechanical and constructive science will not stand them in good stead. Even in the every-day affairs of life, ability to draw is of great utility. It is a supplementary mode of expression more expressive in many cases than the powers of speech. Cases are of constant daily occurrence in which persons able to use a pencil will convey more clearly, in a few seconds, and by a few strokes, information that could only be given otherwise by a long and perhaps turbid communication in words or writing.

Whatever the accusations may be as to School Boards and school managers introducing superfluities into the elementary school course, no one who knows anything of the subject will include instruction in drawing in the category.

THE NATIONAL MONUMENTS OF IRELAND.

MR. THOMAS N. DEANE, R.H.A., Superintendent of the National Monuments of Ireland, has sent a letter to a Dublin paper (the *Daily Express*), giving information as to what steps have been adopted to preserve those structures designated "National Monuments." These consist of a certain selection of churches, round towers, crosses, &c., which have been transferred to the care of the Board of Public Works. Mr. Deane writes:—

"An erroneous impression has got into the minds of some people that unnecessary restorations have been effected, and that ruins will be made sham antiquities. This, if true, would be a fatal error, entirely at variance with the wish of the authorities, and show want of ordinary judgment on my part as superintending architect. To combat this opinion is one of the main reasons of my addressing you. In this letter I shall confine my remarks to the churches at Glendalough, as being well known and frequently visited, and in describing the works on each shall adopt the usual names by which they are called, and avoid as much as possible critical explanations, which sometimes draw down severe comments from architects and archæologists, which partake of an acrimony foreign to the questions at issue. In fact, I wish to be an architectural 'badger difficult to draw' on any point.

The ruins at Glendalough consist of the following:—Trinity Church, the Cathedral, the Round Tower, the Priest's House, St. Kevin's Kitchen, Reefert Church, Our Lady's Church, St. Kevin's Oratory, and St. Saviour's Priory. These have for years excited the interest of the archæologist, and to some extent the veneration of the public. Ledwich, Colonel Conyngham, Bigari Beranger, Stephens, Lord Dunraven, but especially Petrie, have drawn and investigated the buildings. The work of the last named is a complete handbook to the churches, and for those who wish to go deeper into their history I can only refer them to the valuable work of this great artist and archæologist. With regard to the question of restoration, I may mention that with the exception of a few ring stones to complete the missing ones at St. Saviour's Priory, and which, being uncarved, are plainly distinguishable from the old, no new cut stone has been used, and no walls have been rebuilt or added to where such addition or rebuilding could possibly be avoided. No speculative attempts have been made to reproduce anything that had the slightest shadow of uncertainty.

Trinity Church.—This is the first church the visitor meets with, on the left, as he enters the valley of Glendalough. It was, like many

others, overgrown with trees and ivy, its interior a mass of rubbish, the roots of ash forcing asunder its walls, no protecting fence, the whole subjected to neglect, and the structure on the verge of ruin. The first thing done was to clear the interior of rubbish, carefully selecting all stones of an architectural character. Amongst these were found the arch stones and jambs of the south doorway, the complete stonework of the windows in the western end, one window of the chancel on the south side. All these have been re-erected in their proper places, the northern quoin has been rebuilt, the gable denuded of destructive ivy, and the stones secured, cement concrete put into the interstices of the wall, the latter being carefully pointed, the cement kept back from the face, so as to maintain the ancient character of the masonry; a proper surrounding fence with gate and stile to prevent the inroads of cattle.

The Cathedral.—This is the most important as to size of the buildings of the valley, exhibiting three distinct periods of architectural detail. Piles of stones obstructed the inspection of the visitor, graves in the wildest confusion were on all sides. On excavating the rubbish near the north doorway, the jambs and bases of fine detail and of Caen stone were uncovered. The rubbish at the eastern end supplied nearly all the cut stone work of the interior of the eastern window. Beneath the site of the chancel arch were found sufficient of the arch stones to enable a large portion to be reset. One window of the chancel was discovered on the south side. The side windows of the nave were opened. The ground to the exterior has been levelled as far as consistent with respect for graves. The interior of the church is laid with sods and the walls pointed and grouted with cement concrete. The accumulated rubbish has been found rich in many things of interest, amongst others a stone cross, beautifully carved, which, being broken into three pieces, has been repaired and re-erected.

The Tower.—Such was the dilapidated condition of this structure that the birds were able to fly through the gaps in the stone work from the top to more than half way down to the ground. The interior of the tower and surrounding rubbish was carefully examined, and produced nearly all the stones of the conical top, which has been rebuilt, the apex stone being found in the cathedral. Tons of stone and cement have been filled into the gaping sides, and the structure is now safe for ages.

The Priest's House.—This curious little building, which, in 1779, drew the peculiar attention of Beranger, owing to its exquisite detail and peculiar pedimented doorway, was nearly level with the ground when the works came under my charge. On careful examination of the surrounding *débris* every stone was discovered, which enabled me to place it in exactly the same condition as it was in 1779. The carved tympanum, saved from destruction by Sir William Wilde, was returned, with praiseworthy liberality, by his representatives, and set in its original position.

St. Kevin's Kitchen.—Little has been done here farther than resetting the loose stones of the tower cap, pointing the stone roof, and removing a mass of vegetation from the roof of the sacristy. This building will form the receptacle for the various crosses, inscribed stones, &c., which have come to light in scattered positions. The surrounding fences have been repaired, and the adjacent ground laid down in grass.

Our Lady's Church.—Similar operations have been effected here as in other churches; but the *débris* of masonry has been less rich here than elsewhere in sculptured stones and other objects of interest. A few coins and two keys have been discovered

Reefert Church.—The tomb of the kings, westward of the others, and near the lake shore, is peculiarly interesting from an archæological point of view. (See Petrie.) A mass of ruin entirely filled up the interior of the building. On its examination the stonework of the east window, the entire of the chancel arch, two of the windows of the south wall of the nave, were discovered. These lay as they fell, and it is proposed to re-erect them. To the south of the western entrance a beautiful inscribed stone has been found. In addition to this stone now discovered at Reefert Church, Dr. Petrie has drawn another which lay in the same mortuary chapel, and which is said to have been entirely destroyed by tourists, who, deeming it the tomb of some unknown King O'Toole, have from time to time broken off bits of the monument to carry away as curiosities. It was a truly historic monument, as it was inscribed to the memory of Corpre, son of Cathal, an anchorite of Glendalough, whose death in the year 1013 is recorded by the Irish annalists. Four other inscribed stones have also been illustrated by Petrie, a portion of one of which is still preserved. It was one of the finest sepulchral slabs ever found in Ireland, carved with a beautifully-designed cross, and inscribed to the memory of two ecclesiastics interred in the cathedral—Diarmid and MacCois, the former having been an anchorite of Glendalough, whose death in 955 is recorded in the 'Annals of the Four Masters.'

St. Saviour's Priory stands in an isolated position, considerably eastward of all the other churches; such parts as remain present more careful design than any of the others. If possible it was in a more ruinous condition,—a heap of stones, tangled brushwood, and large trees; amongst these stood the jambs of the chancel arch, carved capitals, bases, and a few arch-stones were to be seen. Careful examination brought to light the entire number of the ring stones, with the exception of four, the stonework of the double eastern window, the doorways and windows of the south side, three windows on the north and east, besides numbers of wrought stones, whose positions were doubtful. All these, with the exception of the latter, have been reset in their places. The detail of the eastern window is unique and very beautiful, and the whole forms a relic of careful architectural detail hardly to be surpassed.

This being a popular description of the ruins, I have avoided dates, vexed questions, and other matter calculated to provoke discussion, and am only anxious to draw the public mind to a real interest in the relics of the past, in the hope that a work commenced in a limited manner, as to the number of selected buildings, may be extended, and that our Irish ruins may have fair consideration, and be snatched from the destruction which inevitably awaits them if they are left as they are at present."

THE LATE MR. JOHN YOUNG, ARCHITECT.

WE hear with regret of the death of Mr. John Young, which took place on the 23rd inst. at his residence, St. Mary's Lodge, Stoke Newington, in the eightieth year of his age.

Although he was not a member of the Institute of British Architects, he was well known as an architect of ability and extensive practice. He was district surveyor of the Eastern Division of the City of London for a period of twenty-five years, having been appointed to it by the Court of Aldermen prior to the formation of the Metropolitan Board of Works.

Coming to London in his twenty-third year, Mr. Young was first engaged as assistant to Mr. Porden, the architect to the Marquis of Westminster; then he assisted Mr. Decimus Burton, and prepared the drawings, under his direction, for the Colosseum in the Regent's Park, and personally superintended the construction of the framing of the dome. Afterwards he was engaged by the late Mr. Thomas Cubitt for the houses on the Eaton-square and Pimlico estates; and then was in practice in Clarges-street, Piccadilly, for a few years.

At the time of his marriage, he became the principal assistant to Mr. William Montague, the architect (or as the title then ran) the Clerk of the City's Works, at the Guildhall, London, where he remained until Mr. Montague's decease. He was appointed by the Corporation of London as *locum tenens* during the vacancy, and being a candidate for the appointment, was unsuccessful in a court of over 200 members by nineteen votes only, the choice falling on the late Mr. J. B. Bunning.

From that time he practised at 35, King-street, Cheapside, and was held in esteem by his professional brethren for his loyalty, good judgment, and sound sense. Among his works may be mentioned the Religious Tract Society's premises, Paternoster-row; the Ebbw Vale Company's offices, Dowgate; the Cancer Hospital in the Brompton-road; Broad-street Ward Schools; Cripplegate Schools; Tower-hill (Roman Catholic) Schools; Hackney Roman Catholic Schools; the former Guildhall Library; residences at Roehampton; mansions for several country estates, the latest being that of Sir James Duke, bart., Laughton-park, Sussex; restorations of churches in Suffolk, his native county; and many buildings in the city of London.

As a surveyor he was well known in compensation cases of an earlier period than the present; having had, during the formation of Cannon street, as many as 320 cases for settlement at one time.

PHYSICAL GEOGRAPHY.

A PAPER was read last week by Mr. Alfred Haviland, M.R.C.S., Medical Officer of Health for the Northampton combined districts, at the Social Science Association, London, on "Physical Geography in Relation to Sanitary Science," — Dr. Richardson, F.R.S., in the chair. The paper embraced an interesting account of the form and structure of the earth, and the nature of its surface, aided by diagrams and drawings of its features and prominent characteristics. The valley system, in relation to disease, was much commented upon, showing their varied character, as some were sheltered from prevailing winds, while others were exposed and subject to atmospheric influences which resulted in disease. He showed that where heart disease was most fatal, the greater amount of rheumatism existed, and pointed out how the physical features of a valley conduced to bring about a state of atmosphere which was popularly supposed to cause rheumatism. The form and structure of the earth, as well as its superficial and meteorological character should be studied in relation to sanitary science, and sanitary authorities and others should be able to judge for themselves of what localities to avoid when erecting dwelling-houses, hospitals, schools, or other institutions. The maps and diagrams were important to medical practitioners and others as showing at a glance the seat of certain prevailing diseases; and the paper strongly urged the necessity of a more extended knowledge of physical geography and the study of sanitary science connected with it. A discussion ensued, in which Mr. Walford, F.S.S., Mr. Latham, C.E., Mr. G. J. Symons, Dr. John Simon, F.R.S., the chairman, and others took part.

EDINBURGH UNIVERSITY COMPETITION.

SIR,—I beg to call your attention to one of the most glaringly dishonest competitions that has ever been placed before the public.

You will see in the papers herewith sent the letter of a subscriber, setting forth, in plain terms, what the committee for the new University buildings, Edinburgh, have been doing the last eighteen months, where they propose to expend 261,500*l.* in the purchase of a site and the erection of the new buildings; whereas, in their instructions to the parties competing, they restricted the cost of the buildings to 70,000*l.*, the site having been previously secured at a cost of 36,000*l.*: thus giving the architect selected a sum of 225,000*l.* to execute the work that they insisted upon the others doing for 70,000*l.*

AN OLD SUBSCRIBER.

*** The course which this competition has taken is beyond our comprehension. Somebody will perhaps explain. The selected architect is Mr. R. Anderson.

THE OWNERSHIP OF LAND.

IN Miss Martineau's "Autobiography," recently published, occurs the following paragraph,—

"I now expect, as I have anticipated for many years, a war in Europe which may even outlast the century, with occasional lulls; and I suppose the result must be, after a dreary chaotic interval, a discarding of the existing worn-out methods of government, and probably the establishment of society under a wholly new idea. Of course, none but a prophet could be expected to declare what the new idea will be. It would be rational, but it is not necessary here, to foretell what it would not be or include. But all that I feel called on to say now, when I am not writing a political essay, is that the leading feature of any such radical change must be a deep modification of the institution of Property, certainly in regard to land, and probably in regard to much else. Before any effectual social renovation can take place, men must efface the abuse which has grown up out of the transition from the feudal to the more modern state, the abuse of land being held as absolute property, whereas in feudal times land was in a manner held in trust, inasmuch as every land-holder was charged with the subsistence of all who lived within his bounds. The old practice of Man holding Man as property is nearly exploded among civilised nations; and the analogous barbarism of Man holding the surface of the globe as property cannot long survive. The idea of this being a barbarism is now fairly formed, admitted, and established among some of the best minds of the time, and the result is, as in all such cases, ultimately secured."

Existing modes of procedure, which have the further effect of handing over to the owners of land an immense proportion of the savings and accumulations of the rest of the community in the shape of all the houses and buildings put upon it, will go far, it may be feared, to hasten the possible catastrophe.

A PLEA FOR THE FARM LABOURER.

Few persons have spent much time in farming districts without noticing the happy simplicity plainly marked in the features of the husbandmen. Although too often badly housed, underpaid, and uncared for, they generally preserve their primitive simplicity. Whilst others start into action, and ardently rouse themselves to resent any fancied wrongs, farm labourers patiently bear the yoke, and when driven at length to make a stand and demand to be treated as their fellow-men are, they display less fierceness and heartburning than those congregated in towns are wont to display.

The endurance of the farm labourers has been most creditable to them. When others would have shaken the "pillars of the State," and have essayed to right their wrongs, they have presented a spectacle of heroic fortitude and long-suffering not to be equalled by any other set of men, and never to be witnessed beyond our Isles; nor does this non-resistance arise from apathy or ignorance. Who knows better than they know what privations they have undergone, and how hardly they have laboured?

But how few there are who have manifested any real concern about them,—their homes and their comfort!

They have not failed to notice this, and know well that their struggle for improvement of their condition would be fruitless so long as the body of the people were indifferent to their cause. They knew of what little avail it would be for them,—poor and unlettered,—to struggle with affluence and education. So, calmly they invoke the aid of Providence, and patiently await the answer to their prayers.

It is not cowardice that has restrained them from rising for self-protection. The army of England is mainly supplied by the back-bone of the farm labourers. That back-bone has never been broken, and even when reduced to the thin red line, defied the prowess, arrested the progress, and hastened the decline of the modern Alexander. The men who bear the brunt of both wind and weather, rise with the dawn, and endure the hardest labour, are not to be termed "cowards." They often speak their minds forcibly, yet malice seldom lurks behind.

It is not, however, my wish or intention to represent them as being paragons of perfection. They have their faults, and who, indeed, has not his faults? Their faults are mostly owing to their position, which in many respects is not altogether an enviable one. The houses in which they spend their few hours of leisure have been so often noticed in these pages as to need no elaborate description. Suffice it to say that dogs have substantial kennels, horses commodious stables, but labourers have been less studied than these noble animals. In their homes there is much untidiness, but how can it well be otherwise? Cottages are not mansions with abundance of room, but rather close, poking little places in which it is well nigh impossible to dispose of a family. And labourers have families. Many years have elapsed since our great dramatist made his fool philosophise, "So beggars marry many," yet the force of that philosophy has not been weakened by time. How they live few can tell, but still the fact remains. The rooms are small and few in number; the sanitary arrangements are most deplorable. It is not, therefore, reasonable to expect that these poor labourers will manifest much anxiety to make their homes attractive. Those poor old dingy, weather-beaten homes of theirs, how can they be made attractive? Tottering to their downfall, what good is it to patch them?

Now, it is indisputable that no class of men is more hardly worked than are these farm labourers, and it is very much to be doubted if any class of men be less cared for.

The mechanic has always had his friends, and has always been supported, but these farm labourers have for the most part been left to gain their own ends. The more honour to them for the temperate manner in which they have endeavoured to do so. Yet, even at the present moment, how vastly inferior is their position to that of a labourer in the building trade, or that of an iron-worker.

Taking the case of the labourer in the building trade, his labour does not nearly partake of the moiling, wearisome character of that of the farm-labourer, yet he receives a far better wage and does not work nearly so long.

Taking the case of the iron-worker as being somewhat analogous to that of the farm-labourer, since in many instances a dwelling is provided for him by his employer, it will be found that these houses contain every convenience, have been substantially built, and although smoke has somewhat blackened the exteriors, they are greatly to be preferred to the olden type of cottages. The wages received by the iron-worker would take away the breath of the farm-labourer; and yet, notwithstanding these benefits, the houses are quite as dirty and untidy, if not more so, than are the cottages.

The high wages these men receive have only tended to render them more besotted and more profitable customers to the Bonifaces they enrich. It is a mournful sight of a Monday morning to see them going to their work as dirty as when they left it on the preceding Saturday afternoon. With all the money they receive, exceeding even the salaries received by men of culture and high attainments, their children may be seen with bare feet and scanty clothing. The dog may have a jacket; the children may not have boots.

Allowing that the farm-labourers are faulty in many respects, I maintain that they are, nevertheless, in every way superior to the more favoured class of whom I am now writing. About their homes one is seldom shocked by the sounds of blasphemy.

Contrasting the position of a dejected farm-labourer with that of an iron-worker, it is indeed high time that the cause of the former were championed and his rights enforced. Why, when all are pushing forward, should he lag dolefully behind? Has he not a more substantial claim to urge than any others have? It is very much to be hoped that his claims for an improved dwelling and for increased wages will be heartily supported by a generous people, and that not for political claptrap, but from genuine sympathy.

Thomas Bales.

"DO OUR WORKMEN IMPROVE?"

Sir,—I was rather surprised to read the letter of your correspondent, "F.R.I.B.A.," in your pages, and I should be glad if you would kindly allow me to make one or two remarks with regard to it.

I have been a clerk of works for many years, and in the course of my business have visited nearly all the large towns in England, and the conclusion to which I have arrived is that where wages are moderately high there has been no difficulty whatever in finding first-class workmen; and I have also come to the conclusion that there is no difficulty in finding first-class men as clerks of works or builders' foremen, if you will pay them.

Your correspondent has had forty applications for an appointment as clerk of works, and only two worth consideration. To find a cause for this he looks to the effects of trade unions. Well, it may be so, but in this sense only, that trade unions have made the conditions of labour in the building trades so much better than they were twenty years ago, that it is difficult to induce men to leave the ranks for a position which offers them a very few more shillings a week, with a great amount of responsibility, of study, anxiety, and irritation. I have known parties offer to first-class men, who could lay down the most difficult problems in any and every branch of the trade, and write reports that were worth looking at, a paltry 2*l.* per week,—men, sir, of real command and ability; and is it likely that you will induce men to study the whole evenings of their lives, and pay their fees to the Mechanics' and Technical Institutions of the country, for the wages they can get as masons, carpenters, or bricklayers in London, Manchester, or almost any of the large Northern towns?

I am rather of opinion that if your correspondent had put his name to his advertisement, and had offered a reasonable wage, he would have had more than two applications that would have been worth consideration. (I do not say that he did not do so; but if so, it is certainly a solitary instance.)

I notice this week that a certain Local Board has appointed an assistant *engineer* and *surveyor* at a salary of 70*l.* per annum (27*s.* per week), and an inspector of nuisances at 60*l.* per annum, or 23*s.* per week. Do people expect to get able men for these salaries?

The letter that your correspondent forwarded you for publication, as an instance of what replies he received to his advertisement, is certainly enough to make any man of ability get red in the face; but it is the outcome of the competitive system of advertising. For instance, you advertise for a clerk of works, and ask that all applicants must state their terms; the consequence is that men like those to whom your correspondent refers go in for the job at any price.

Clerk of Works.

*** The above will serve to represent four other letters from clerks of works.

CARDIFF.

Last week a skating-rink and winter garden were opened in Cardiff. The entire length is 249 ft., the breadth 43 ft., with a skating area of 6,500 ft. The main entrance to the rink is in the centre of a large block of buildings, comprising shops on the ground-floor, the first-floor being used as living-rooms; on the second-floor there are workmen's dwellings. In cases of emergency, there is from the rink a communication from the staircases used by those living in the workmen's dwellings. The rink looks gay and cheerful. The roof is lightly constructed of timber, and glazed with Hartley's rolled plate glass over the entire surface of the rink and garden. Mr. Cutlan, of Cardiff, was the architect; Messrs. D. C. Jones & Co., of Gloucester, were the builders; and Mr. C. Robson was foreman of works. The cost of the building has been about 16,000*l.*

A NEW WATER SUPPLY FOR WIMBLEDON.

The Wimbledon Local Board appear to be desirous of strictly carrying out local self-government in all matters which essentially concern the interests of the parish. They have just completed the engineering and other works in connexion with a new sewage farm for irrigation purposes, and are now engaged in the construction of a new cemetery immediately adjoining. In addition to these works, they are likewise taking steps to obtain a separate and distinct water supply, independent of one of the Metropolitan Water Companies, by which the parish is at present supplied. They are negotiating with an engineer who has laid certain plans before them, and as a preliminary proceeding they have just issued the following interrogatory communication to the ratepayers within the parish:—"The Wimbledon Local Board being anxious to obtain a constant supply of pure water, and at a cheap rate, for the use of the parish, have obtained from a civil engineer of large experience, a scheme for carrying out the same, which has met with the approval of the Board. To assist them in completing their calculations, the Board request you to make a return, on the form appended, of the amount paid by you to the Water Company for the past year."

THE NEW DRINKING-FOUNTAIN AND CATTLE-TROUGH AT THE BOROUGH MARKET.

Mr. Bevan, of the firm of Barclay, Perkins, & Co., has presented a drinking-fountain and cattle-trough to the Borough Market trustees. The fountain, which was designed by Messrs. Jarvis, architects, was formally opened last week, in the presence of a large body of spectators, by the donor, Mr. Bevan, who in inaugurating the structure, observed that he considered the fountain, and more especially the trough for the cattle, was much required, and he hoped they would be generally used. The trough, as well as the base of the fountain, is of stone, upon which rests a polished granite column, supporting the fountain, surmounted by a terminal spire. The structure has been placed in the market, opposite St. Saviour's Church. Mr. J. W. Seale, of the Apollo Works, Walworth, has carried out the whole of the works. Mr. Boulden, in receiving the fountain on behalf of the trustees, said it would prove invaluable to the horses which came to the market in such large numbers.

"**Examples of Theatrical Decoration**" is the title of the last-issued trade-book of the Papier Mâché Company (Wellington-street), and serves to show what they have done and are prepared to do in that way. Papier Mâché is a very available material for decorations of a certain kind, and if the shapes which it takes are not always those which give delight to people of cultivated taste, it is the fault of those who make the designs.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

The eighth meeting of the session was held last week, the Rev. S. Mayhew in the chair. Further inspection was announced of the large Roman column found some years ago near the East Gate, Gloucester, and most probably the remains of a Roman temple of considerable dimensions. Mr. Prigg reported the discovery of a Roman villa at Icklington with a hypocaust, found in ploughing a field, a portion of the site of the Roman station. Mr. Baily exhibited a misericord of the sixteenth century, having a deep ribbed blade, found on the site of old St. Thomas's Hospital. The chairman described several objects of pottery, including a white earthenware cup of the sixteenth century, in the form of a Roman poculum, and two very fine plaques from the Roman factory of Worcester. Mr. Syer Cuming read the first paper of the evening, and in it he traced the history of domestic needles and their cases from the earliest times. He quoted the first mention of them by our common ancestor Eve, and also some verses of ancient date embodying the still more ancient tradition that the rose had no thorn before the fall. Some curious needles used by foreign and aboriginal tribes were shown, and which were formed of a species of thorn. Chinese needles are as early as those of Egypt. Employed in Europe from the earliest date, the lecturer exhibited a large collection of needles of pre-historic date found in London and elsewhere, some at a great depth beneath the soil, and stated that the word meant literally "pointed wood,"—although some of those met with are of iron, bronze, and bone. Examples of the Saxon "Naedil" were shown, and the custom of giving a needle and thread by the bursar of New College to each student on the 1st of January was alluded to. Needles were made in England in 1545; before then they were mostly of foreign manufacture. Mr. Brent exhibited a large collection of ancient needles, and the chairman many others of the Stone period. The second paper was by Mr. Loftus Brook, F.S.A., on an ancient crypt recently demolished at Aldgate. It was at the corner of Jewry-street, and was found prior to the removal of the old houses above it. It was vaulted throughout, and was of the middle of the fourteenth century. The City authorities gave many facilities for its investigation, and carefully executed plans have been made for the Association as a record of the building, which will be published in the *Journal*. An interesting discussion followed, in which Mr. Robinson reported the discovery of an arch of the old Priory of Holy Trinity, Aldgate. Mr. Geo. Wright, F.S.A., reported from Mr. Reynolds, of Bristol, the discovery at Old Cleeve Abbey of the foundations of what was thought to be the old refectory running north and south, beneath the existing and later building, which is east and west.

SANITARY CONDITION OF THE WAR OFFICE.

Sir,—Taking the report on the sanitary condition of the War Office as a text, the *Times* this week reads the architectural profession an unusually sharp lecture on its deficiencies in sanitary matters and ignorance of modern appliances for this purpose.

It is difficult to comprehend the conclusions either of the report or the lecture. In both, the windows are apparently regarded as the only direct mode of ventilating a room, and the crowning sin which has been committed in this case consists in the windows of certain rooms in the War Office having been placed so low in the walls that there must, as it is alleged, be a well of foul air stationary between the heads of the window-openings and the ceiling. If the windows are to be considered as the proper outlets for foul air, then not only must a large proportion of our public rooms throughout the kingdom be regarded as uninhabitable, but, in such a climate as ours, where windows require to be kept closed, every living-room, during the greater part of the year, must be held to be a well of foul air from floor to ceiling. It is obvious, then, that the ventilation of a room must be made independent either of the windows or their position, and it is singular that the question of their position should have been made a point of special importance in the report, or referred to with such emphasis in the *Times*. The chimney is the natural and most powerful foul-air extractor in every room. A ventilator, therefore, connected with a properly-constructed chimney near the ceiling line, would render the existence of a well of foul air in the position described an impossibility.

The condition of the War Office is in the report further considered hopeless because some of the passages are narrow, undifferently ventilated, the air contaminated by closets situated in these passages, and foul air is thus supplied to the rooms adjoining. In this and probably most cases, it is preferable to make each room independent of any other portion of the building by providing a fresh-air inlet direct from the external air. Neither the condition nor the narrowness of the passages would thus have any bearing on the ventilation of the rooms. As to the closets, if sewer-gas is properly cut off, and drains efficiently ventilated, in no case an insurmountable difficulty, the closets ought to be innocuous; where this simple precaution is overlooked closets can become dangerous and objectionable whether situated in narrow or in wide passages. Where it is effectually provided for, the position of the closet becomes a matter of minor importance. By a simple contrivance a closet may be made an upcast, and thus converted into a purifier rather than a contaminator of a passage.

In the case of the War Office, there have been undeniable omissions; but clearly there are motes in other than the architectural eye. K.

THE LATE MR. GEORGE ALLEN.

Sir,—I regret to notice the death of Mr. George Allen, aged seventy-eight years, at Lowestoft, of the firm of Allen & Craig, net-makers there,—a gentleman well known in London, in the building trade, forty years ago, having been principal foreman at the New Houses of Parliament for some years. He afterwards left there to conduct the works at Somerleyton Hall, near Lowestoft, then building for Sir S. M. Peto, bart.; after which, to a great extent, he retired from business, taking only occasional jobs as suited him.

As showing the style of the man, for a building he had in hand in Norwich he asked his masons if they could fix the work. The answer was "no." "Then," he replied, "I will fix the work myself, and have you for my labourers." What can our striking men think of this? I may state here that the last new pier built in Yarmouth was carried out by him. A violent storm came on before the work was completed, and drove a vessel right through it. Some years ago, to show that he was equally alive to the beauties of other trades besides his own, he published a section of the Westminster Hall roof.

As a foreman, he would never find fault with any of his men if not deserved; as a gentleman, I willingly bear testimony to his straightforwardness and uprightness; and as a Mason I am proud to acknowledge him. A Mason.

Books Received.

A Handbook to the Practice of Pottery Painting. By John C. L. Sparkes. Lechertier, Barbe, & Co.

This is a most practical and useful little book, without a superfluous word in it. The author, who has, as most of our readers know, been for a good while the director of the excellent Lambeth School of Art, and is now head master of the Art Training School at South Kensington, has a thorough acquaintance with the processes of pottery-making, as well as with the principles and practice of the artistic decoration of pottery; and though the book, which only extends to fifty pages, is not, of course, intended to give instruction in the manufacturing of pottery, sufficient is told us of the processes to give the designer a correct idea of the basis upon which he has to work. A schedule of the colours required in pottery-painting is given, a description of the materials required and of the process of working, and hints as to the special points which must be attended to in order to render the design effective and suitable for the position and the material in which it is produced.

This small and inexpensive book seems to contain, in fact, all the information necessary to start the student of pottery-painting on his path, in which, of course, as in other arts, experience and practice are the real and ultimate teachers; but in this, as in other arts also, it is a saving of many steps to be sure of starting the first one right. We cannot but commend this handbook to the attention of ladies, especially those who might find the knowledge of an art so agreeable, and so suitable to feminine taste and manipulation, a very valuable source of addition to their income and consequent independence. There is much attention being given now to the subject of employments and professions for women; and here is one which is in the highest degree suitable to those of them who have any artistic taste and ability; one which some of them are already carrying on with great artistic skill and we hope pecuniary advantage; but the taste for art of this kind is so much on the increase now, that we fancy there must be considerable space for new-comers in the field. One or two reasons for the peculiar interest which is felt in pottery are very pleasantly expressed by the author in his concluding pages. He reminds us that "Pottery owes nothing of its beauty or serviceableness to its material,—for that is but the dust beneath our feet,—and everything to the hand that fashion it and to the mind that directs the hand; so it that it comes to have so purely human an interest; it is a bit of man's work, with no adventitious aid whatever. If the form is beautiful or quaint, or ugly, or commonplace, it is the the plastic clay has followed and exactly reproduced the conception in the maker's mind; it is formless, without coherence, and all but colourless; it takes the form, the consistency, and the colour that are ideal with the man who transforms the grey earth into a piece of pottery; and when he has done this his handiwork last for ever. . . . . The most frail of man's productions is yet the most permanent. The glorious tints on the majolica ware are still as bright as when they were drawn from the kiln, while the pictures of Raffaelle and Lionardo, painted in the same generation, are already fading. We have perfect specimens of Greek pottery that cannot be of a later date than a thousand years before the Christian era. Glazed mural tiles have been discovered among the ruins of Babylonian palaces, still bright enough to decorate a king's chamber; and in the catacombs of Egypt are found glazed figures of Ra, the sun-god; of Anubis; and of the sacred Scarabæus, as pure and brilliant in colour as the latest productions of Deck or Minton. While this permanence and the peculiar plasticity of its material make the study of ancient pottery indispensable to the archæologist, and interesting to every intelligent person, its potentiality for extreme beauty of form and colour recommends it to all who possess any degree of æsthetic appreciation."

Les Travaux Publics de la France. J. Rothschild, Paris.

This is a specimen number of the text and illustrations of what will be, if completed on the scale indicated, a highly important and interesting publication. It is intended as a full account and illustration, with the aid of woodcuts in the type, and beautiful full-page photographs, of the great engineering works carried out under the orders of the Minister of Public Works in France, including bridges, roads, railways, the manipulation of rivers and canals and aqueducts, seaports, lighthouses, and beacons. The book is published under the supervision of M. Léonce Reynaud, Inspector-General of Roads and Bridges, and its ambitious object may be best described in the words used in the prospectus:—"We talk freely of the immense public works executed by the Romans, and admire their grandeur even in ruins; but people do not think of asking whether after all we have not done greater and better things in but a short period of time, and if the long aqueducts of the Campagna of Rome and that of the Pont du Gard have not been surpassed by works executed in the present day." The publication before us is designed, in fact, to indicate the claim of modern France to be considered the successor of ancient Rome in the matter of great engineering works for the public benefit. The *point de départ* of the work has been the collection of photographs sent to the Vienna Exhibition in 1873 by the Minister of Public Works, and which appears to have caused more surprise to French spectators than to foreigners; the French outside the engineering world not having by any means realised what was being done in their own country.

A considerable collection of photographs and models of French engineering work was exhibited, as our readers may remember, in one of the recent International Exhibitions at Kensington, subsequently to the Vienna Exhibition, and forming, we conclude, part of the illustrations originally sent to Vienna. We commented on the collection at the time at some length. The specimen before us of the new work which is to bring this information on French engineering structures in a fuller and more permanent form before the world, is a large folio publication, with the letter-press in large type on a handsome wide-margined page, and accompanied by several admirable photographs, representing two or three bridges and viaducts, the entrance to Havre harbour, and the aqueduct, stretching for miles over the country, by which the waters of the Vanne are conveyed to Paris. This system of the Vanne was one of those which were fully illustrated by models and drawings in the English Exhibition before referred to. There is also a view of the lighthouse at Douvres, and an interesting diagram showing the system by which, in the Straits of Bonifacio, between Corsica and Sardinia, a shallow portion of the channel is defined by a coloured section of rays from two light-

houses crossing each other, the red rays, as shown on the diagram, covering in each direction the dangerous ground, with a sufficient margin to afford ample warning. One of the lighthouses, on Lavezzi Island, by a section of green rays on the opposite side, covers in the same manner another part of the channel which is too thickly sown with islets to be safe for navigation at night. The view of the lighthouse before mentioned seems to indicate that French engineers are not always any happier than their English brethren in the matter of the external expression and design of their structures; the returned curve above what may be called the plinth has a very bad effect, and gives quite a false impression of the scale, which we should imagine to be only half what it is but for the two figures standing by the entrance. In the main, however, we are inclined to say that French engineers' designs are better than English; there is certainly evidence of more deliberate intention to do the best in this way. As to the practical side of the matter, there can be no question, we apprehend, that the standing of French engineering is at least as high as that of any other country in the world, and perhaps higher. The work of which a specimen is before us is one to which we should very much like to see a parallel publication in England, giving the same care and liberal expenditure to the illustration of English engineering works. How far the French excel us in their spirit and enterprise in publications of this class we have remarked too often to think it necessary to bestow words on the subject again. It is only fair, however, to mention that the French Government aid the publisher in this case with a large subscription: which, again, is a hint for our own Government.

We may add that the engineers specially connected with this publication, and with the works to be illustrated in it, are M. Felix Lucas, of the Department of Roads and Bridges; M. H. de Lagrené (Rivers and Canals); M. Ed. Collignon (Railways); M. Voisin-Bey (Seaports); and M. E. Allard (Lighthouses and Beacons). We wish the new publication success. English engineers ought to take some interest in it.

Brick Ornament and its Application. Part I. 2, Finsbury Pavement.

ALTHOUGH this is nothing more than the trade book, pure and simple, of Mr. James Brown, of Braintree and Chelmsford, it will be found of real value by all who desire to use in their architecture moulded and enriched bricks. The specimens given, including even complete gables, are very good, and a price list accompanies them. The work has been prepared for publication by Mr. George Sherrin, to whom we offer our compliments.

STAGE SCENERY.

As you, Mr. Editor, have been, in your time, a great promoter of improvement in scenery upon the stage, I hope you will allow me to mention one point in respect of scenery that requires some reform. The position of doors and windows is often very ridiculous, they being placed in most contradictory and impracticable situations. Take, for example, the scene of Pip's chambers in "Great Expectations," now performing at the Royal Aquarium (the acting deserving a better audience than the one of which I formed a unit). The window supposed to light the room from the street is close to the door, on the same plane, and the characters are actually shown out and to the room through the doorway on the stairs, to pass behind the window, which in fact must be impossible. A little thought was wanted on some one's part. In nine cases out of ten will be found in scenes some error as to position of doors, windows, and fireplaces. Why not exclude (unless really wanted for the action of the piece) all windows, which may easily be supposed to be placed in the side of the room between the audience and the stage?

Y.

New Market Room, East Grinstead.—Mr. Absolom, of East Grinstead, has just erected commodious market-room at the rear of the Crown Hotel. Mr. Burstow, of Horsham, was engaged to furnish the plans, and Mr. Godley, of East Grinstead, was entrusted with the building. The room is 54 ft. long by 24 ft. wide, with a height of 13 ft. Over it is a new billiard-room, 33 ft. by 22 ft., with space for two tables.

"THE FINSBURY STEAM JOINERY WORKS."

SIR,—Will you allow me to correct an error which has crept into your otherwise generally accurate description of the above works? My drying-room will contain 5,000 deals as per Petersburg standard, and not "5,000 standards of deal."

W. H. LASCELLES.

Miscellanea.

"Vital Air."—Dr. B. W. Richardson, F.R.S., delivered a lecture the other evening, at the Society of Arts, on "Vital Air," the name which Priestley gave to his discovery of oxygen. After describing the phenomena connected with breathing, Dr. Richardson performed an experiment of his own to show the effect of oxygen upon the blood. Following his account of the regular action of the animal economy with regard to "vital air" by other instances of irregular action, Dr. Richardson gave an account of those experiments of Brodie and Broughton by which they found that life-giving oxygen might become a narcotic poison. Attracted at the commencement of his career to these experiments, Dr. Richardson himself found that if the oxygen were continually renewed, the poisonous effect was not revealed. It was only when the same oxygen was breathed over and over again,—say three times,—that the animals placed in it died. But if you subjected this deteriorated gas to an electric discharge, it became again exhilarating and capable of supporting the slow combustion which is animal life. What the precise charge was, whether the electric sparks killed something added to oxygen by animals, and which hitherto had escaped all tests, or whether the sparks produced an allotropic change, he did not know, but the fact was undoubted.

The Opera House on the Embankment.—Lord Ernest Bruce, in the House of Commons, asked Sir J. M'Garel Hogg, member for Truro, and chairman of the Metropolitan Board of Works, what was proposed to be done with the proposed New Opera House on the Victoria Embankment, the works having been now long stopped in consequence of want of funds, it being also understood that the company intending to open that theatre had come to terms with the proprietor of Her Majesty's Theatre in the Haymarket; and inquired if he could give any information as to when it might be thought proper to remove the present remarkable building on the Embankment exactly opposite the windows of her Majesty's Office of Works. Sir J. Hogg said, "The time for roofing in the Opera House having expired, the Metropolitan Board of Works are now considering the course which they should adopt under the agreement. The Board have no knowledge of any terms which may have been arranged between Her Majesty's Theatre and the promoters of the New Opera House. With regard to the second part of the question, I can only say that I know of no building of the character described by the noble lord on land belonging to the Metropolitan Board."

Combined Shelters for Horses and Men, and Cabmen's Suppers. — On Wednesday evening about 200 persons, including cabmen and tramway men and their wives, were entertained at a supper (now given biennially), in the Friends' Meeting House, Leeds. After the repast, the company were shown some dissolving views; then a meeting was held, when addresses suitable to cabmen were given by various gentlemen. Mr. Harvey referred to the Sunday work of cabmen, and the secretary of the Leeds Cabmen's Shelters urged the resuming of the annual supper to the cabmen, and advocated the extension of the movement for introducing cabmen's shelters, of which there were now three in Leeds, and alluded to the design by Mr. S. O. Bailey, of Bradford, for a cab-stand to shelter men and horses, remarking that he did not see at present how the combined scheme could be successful, but admitting its importance and necessity. The remainder of the cabmen, &c., were to be similarly entertained on Thursday evening.

Accident to a London Architect. — The *Sussex Daily News* reports an accident at Pulborough to Mr. Good, architect, who has a country house in the parish. One evening recently, his trap came in contact with a large stone embedded in the side of the road, and overturned. Mr. Good and his groom were thrown out, but the latter escaped unhurt. Mr. Good, however, received somewhat serious injuries, we are very sorry to hear.

Goldsmiths' Prizes.—The Goldsmiths' Company have offered the following prizes, viz.:—50*l.* for the best design for some article in gold or silver, which, when manufactured, shall exceed thirty ounces in weight; 50*l.* for the best model for some such article as aforesaid; 25*l.* for the best execution and workmanship of some such article as aforesaid. Three prizes of 25*l.* each for (1st) the best design; (2nd), the best model; and (3rd), the best execution and workmanship of some article in gold or silver, which, when manufactured, shall be less than thirty ounces in weight; 25*l.* each for the best specimens of (1st) chasing or *repoussé* work, and (2nd) engraving. The prizes will be awarded in the month of December next. The Company have also resolved that a Travelling Scholarship of 100*l.* per annum may be awarded by the Wardens to a student who has shown exceptional talent, and who shall have obtained a prize for design for three successive years, in order to enable him to study art in the precious metals on the Continent of Europe. Well done, Goldsmiths' Company!

Shoreham Church.—A stained-glass memorial window has just been put in the long lancet opening of the north transept, manufactured by Cox & Sons, of London. It is of light and golden tints, with the lily and fleur-de-lys pattern worked over the centre quarries, and having a double border formed of the names of departed children (forty in number), in silver glaze, the base border having the words, "In Memoriam, Infantium Dormentium in Jesu." This window has been subscribed for by the parents. Mr. Edwards, the donor of the funds for the extensive restoration works just completed, is about to fill in the large west window with stained figured glass. A new roof is now being put on over the south aisle by Mr. Bruton, under the direction of Mr. Loader, architect.

Northumberland Avenue.—In the House of Commons Sir J. M'Garel-Hogg informed Sir T. Chambers that the Metropolitan Board of Works had received tenders for one-fifth of the building ground in Northumberland Avenue. Only one plot, however, had been as yet disposed of, and the elevation of the buildings to be erected upon that had been submitted to the Royal Institute of British Architects, and had been returned with suggestions. The Metropolitan Board was most anxious that the Avenue should be, in an architectural point of view, worthy of its situation and of the metropolis. Our supposition that the mode adopted for obtaining tenders for the land here was a bad one, has, we fear, proved too correct.

A Forthcoming Sale.—It will be seen by an advertisement which appears in our issue this week, that an interesting sale of furniture, tapestry, &c., is to take place at the King's Arms Royal Hotel, Lancaster, on the 11th and 12th of April, Mr. John Burton being the auctioneer. The "King's Arms" is the good old inn made famous by Charles Dickens in his "Lazy Tour of Two Idle Apprentices," and its collection of antiquities and curiosities is being dispersed in consequence of the retirement of the proprietor, Mr. Joseph Sly.

Royal Italian Opera, Covent-garden.—Mr. Gye has announced that the opera season of 1877 will commence next Tuesday, April 3rd, and gives a very strong list of *artistes*. During the season, in addition to the operas of his extensive *répertoire*, it is the intention to produce three, at least, of the following works:—"Les Vêpres Siciliennes" (Verdi); "Santa Chiara" (The Duke of Saxe-Coburg Gotha); "Nero" (Anton Rubinstein); "La Vispe Comare di Windsor" (Nicolai); and Wagner's "Il Vascello Fantasma."

The Brixton New Market.—In our descriptive notice, last week, of the new public market at Brixton, the opening of which we learn has been deferred for a fortnight, we omitted to state that the whole of the safes in the basement of the building have been supplied by the Milner's Safe Manufacturing Company, of Liverpool and London.

TENDERS

For alterations to the Balmoral Castle, Rutland-street, Pimlico, for Messrs. Rogers & Lipson. M. J. G. Needham, architect:—

Eaton	£610	0	0
Anley	590	0	0
Judd & Hawkings	494	0	0
Pringle (accepted)	488	0	0

Gasfittings.

Messrs. Christian & Sons.

For two houses at Towcester, Northamptonshire. Mr. T. Heygate Vernon, architect:—

Cosford	£1,278	0	0
Wheeler	1,140	0	0
Williams (accepted)	1,047	0	0

For repairs of No. 2, Tavistock-street, Tottenham-court-road, for Mr. Bromley. Mr. J. R. Furniss, architect:—

Saunders	£325	0	0
Bush	310	15	0
Gould & Brand	179	0	0
King	171	10	0

For erecting new school-room to the Mayfield-terrace Wesleyan Schools, Dalston. Mr. J. B. Walton, architect:—

Jarvis & Sons, accepted.

For alterations and additions to Plumstead Brewery, for Messrs. Mitchell & Beasley. Mr. G. Scamell, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Johnson	£3,300	0	0
Kirk	3,083	0	0
Brown	3,000	0	0
Grimwood (accepted)	2,693	0	0

For Portland stone in new offices, St. Mary Axe, City. Mr. J. H. Huxtable, architect:—

Schofield & Co. (accepted)	£1,036	0	0

For alterations to the old brewery premises of the Lichfield Brewery Company. Mr. G. Scamell, architect. Quantities by Messrs. Curtis & Son:—

Lovatt	£1,550	0	0
Dakin	1,383	0	0
Thorneloe	1,312	0	0
Woolley (accepted)	1,244	0	0

Accepted for the erection of a malting, at Thornton-le-Moor Brewery, near Northallerton, for Messrs. Baxter. Mr. G. Scamell, architect:—

Fawell (bricklayer, &c.)	£1,236	0	0
Fawell (joiner)	659	0	0
Teesdale, Bros. (ironfounders)	295	10	0
Pattison (slater)	168	6	0
Johnson (plumber, &c.)	39	17	0

For the erection of a melting, at Burton-on-Trent, for Mr. J. Eadie, exclusive of ironwork. Mr. G. Scamell, architect. Quantities by Messrs. Curtis & Son:—

Dakin	£9,741	0	0
Lovatt	9,000	0	0
Mason	8,320	0	0
Bowler & Beck	8,187	0	0
Low & Son	8,021	0	0
Maddox (accepted)	7,980	0	0

Ironwork.

Messrs. Thornewill & Warham.

Accepted for new Wesleyan Chapel at Hadfield, Derbyshire. Mr. W. Ranger, architect:—

Gill (excavator, mason, and bricklayer)	£1,420	0	0
Shaw (carpenter and joiner)	1,385	0	0
Beard (slater and plasterer)	342	0	0
Dawson (painter and decorator)	199	0	0

For new Primitive Methodist Chapel, Bognor, Sussex. Mr. W. Ranger, architect:—

Bushby	£525	0	0
Snewin	484	0	0

For the erection of St. James's English Presbyterian Church, with vestry and sessions-house, &c. Mr. T. Arnold, architect. Quantities by Messrs. R. L. Curtis & Sons:—

	Church.	Vestry, &c.
Merritt & Ashby	£4,997	£496
Browne & Robinson	4,629	454
Williams & Sons	4,570	460
Dove, Brothers	4,475	450
Harris & Wardrop	4,139	435
Burford	4,107	446
Manley & Rogers	4,093	437
Newman & Mann	4,016	416

Fulham Board of Works.—The tender of the Brunswick Rock Asphalte Company for the Latymer-road was accepted.

Shoreditch Workhouse.—In our list of tenders last week the name of "Syder" appeared as one of those who submitted tenders for the new kitchen. For "Syder" read "J. Rider Hunt."

TO CORRESPONDENTS.

R. C. S.—Only a Mason.—M. Z.—G. A.—R. A.—M.—Clerk of Works.—E. H.—T. C. N.—W. L.—H. C. B.—J. E.—J. K. M.—J. R.—J. P. (next week)—Bronzes (next week)—J. F. (Gully)

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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VOL. XXXV. No. 1783. SATURDAY, APRIL 7, 1877.

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The Mechanical Cause of the Morpeth Calamity.

MUCH light would be thrown on such occurrences as the Morpeth calamity if the scientific men who endeavour to elucidate the question would take the trouble of giving the positive mechanical data that bear on the case. It should be remembered that every railway casualty, rightly regarded, furnishes, or ought to furnish, a new experimental datum. We have been now engaged for fifty years in bringing to its present state of perfection a system of locomotion any anticipation of which, half a century ago, would have been regarded as the wildest dream. When George Stephenson said that it would be "verra ankard for the coo," if an engine running at the rate of twenty miles an hour were to come in contact with the animal, he only gave a quiet go-by to the ridicule with which the examining counsel was disposed to treat the prediction of the speed which might be attained by the locomotive. Mr. Stephenson was not so wild as his opponents implied, because about that time the speed of sixteen miles per hour was attained and kept up by a fast coach for several stages on the Shrewsbury road. Still the anticipation of being able to beat the best-horsed coaches by twenty-five per cent. was a bold one; and that the more so because the life had not at that time been breathed into the locomotive. It was not until after the great trial between the "Rocket" and the "Novelty," in 1829, that the blast was turned into the chimney of the former engine, and the true source of the velocity which it was possible to attain was thus accidentally discovered. Since that time the profession of the civil engineer has been engaged in a vast series of experiments with regard to steam locomotion. Every new line constructed and worked has added valuable data for the construction of a complete theory of locomotion. Financial, as well as mechanical statistics have been collected to a certain extent, more especially abroad, as the directors of the English railways have opposed, by every means in their power, the publication of any items of information that might throw light on the subject of the normal cost of each particular class of traffic. Among the sources of information which are most costly,—we speak now only as mechanics, and without reference to the incalculable cost of human suffering and death,—are those which are generally spoken of as "train accidents." Of these, in the six years 1870 to 1875 inclusive, there has occurred the number of 1,127. The money cost of these casualties it is not easy to estimate. The personal suffering they have involved may be inferred from the fact that they have occasioned 241 deaths, and injuries to 6,880 passengers, exclusive of any returns as to servants of the railway companies. The "train accidents" in 1875 were 164. If from each of these we fail to obtain some definite information, learn some new precaution, or avoid some latent cause of danger, we are guilty of a waste of the most costly sources of positive scientific knowledge. Our railway system will never be what it ought to be,—either financially or mechanically,—until the light of scientific truth is so thrown on every detail that ignorant maladministration shall be impossible.

Certain facts of cardinal importance with reference to the Morpeth calamity dropped from several witnesses in the course of the inquest, which no one attempted to connect, so as to show their great importance and their bearing on the object sought. That object, from an engineering point of view, was to ascertain the cause which led, in this particular instance, to the break-down of that important dynamical couple, of which the permanent way of the North-Eastern Railway formed one element and the Flying Scotchman train the other. The inquiry elucidated the fact that the fault, if any, which occurred in the moving element of this dynamical couple must be sought in the locomotive itself, and not in any of the various carriages composing the train. The consideration of these latter vehicles, therefore, may be eliminated from the problem before us. What we have to investigate, then, is the condition of the permanent way on the one hand and of the locomotive on the other.

Thus far we may be accused of only putting into formal (or non-mechanical persons may even say pedantic) language what everyone knows to be the case. There is, however, a distinct object to be attained by such definite statements. It shortens the road before us, and the point to which it directly leads is one which we think it would have been well for the professional men who gave evidence before the jury more distinctly to bring forward. That is, that it is necessary not only to know the exact condition of each element of the couple, but the proper construction of each element (supposing it to be in perfect order) for use at the velocity employed.

The facts as to this are the following:—First, the accident occurred on a curve; and it is well known that there is a mechanical tendency in a locomotive to run at a tangent to any curve over which it may be driven,—a tendency which increases in proportion, not to the velocity, but to the square of the velocity. Secondly, the curve was of the small radius of 17½ chains, or 1,155 ft., while the deviating force of the locomotive increases directly as the length of the radius of the curve diminishes, being as the square of the velocity divided by the radius of the curve. Thirdly, it is the custom of engineers to counteract to a certain extent the centrifugal or deviating force by raising the outer rail of a curve, so as to tilt the engine inwards, and thus to cause the force of gravitation to act, to a certain ascertainable extent, in counterpoise of the deviating force. This compensating force, however, is irrespective of velocity. The deviating force directly depends on velocity. It is in exact accordance with the mechanical principles involved in the problem that where a "cant" (or elevation of the outer rail) of 1½ in. is required for a speed of twenty miles an hour, the "cant" ought to be increased to 3 in. for a speed of thirty miles an hour. This was mentioned by Mr. Laws.

We have, then, these elements,—the weight of the engine, which Mr. Haswell, the assistant locomotive engineer, states at 47 tons 16 cwt.; and the radius of the curve, which Mr. Alfred Harrison, engineer of the northern division of the line, states at 17½ chains. The gradient does not so materially influence the case, as it is only 1 in 286, rising towards Newcastle. We have also the evidence of the inspector of permanent way at Morpeth, James Batley, that the "cant" at the spot where the engine left the rails was from 1¾ in. to 1¾ in. This agrees with Mr. Laws's dimension of 1½ in. The great point as to which the evidence fails is as to the speed at which the engine was going when it left the line.

The conductor of the train says that it was from twenty to thirty miles an hour, but that he "only judged as best he could." It is plain that the train was late, and also that it was running at an extra rate of speed. It was twenty-four minutes late at Berwick, and only twenty-two or from twenty-two to twenty-three minutes late at Morpeth. "Perhaps two or three minutes," says the conductor, had been made up between Berwick and Newcastle.

It is thus evident that a high velocity was kept up over a portion of the line constructed, according to Mr. Laws, for a velocity not exceeding twenty miles per hour. "The ordinary rate of the train from Berwick, without shutting off steam, is from thirty to forty miles an hour," says the conductor, "perhaps a little more." On the occasion in question we see that the train was gaining on the ordinary speed. Thus we have reason to believe that Morpeth was reached at a speed of more than forty miles an hour—how much more is not apparent, although if the time-bills gave distance as well as times, this might be, at least approximately, ascertained. Steam was cut off on reaching Morpeth. But no whistle was sounded. No breaks—as far as the evidence goes—were applied. The only causes of retardation were thus the running friction and ordinary resistance of the train, and the slight check opposed by the rising gradient of 1 in 286. The retardation thus caused, unless the steam was cut off at a considerable distance before reaching Morpeth, must have been but

slight. But it is precisely here that the shoe pinches. There does not seem to have been any wish on the part of any witness to withhold information. There was great difficulty, owing to the hour, and other circumstances, in elucidating the facts. But if there had been present in the minds of those who conducted the investigation, a strong conviction of the primary importance of this question of velocity in the matter, it is pretty certain that we should have got a little nearer the mark than we can at present do.

There is thus no certitude that the speed was less than forty miles per hour when the fatal spot was reached. There is a high probability that it was more than thirty. Now, if we take the ordinary formula for the computation of centrifugal force, and apply it to the given curvature, and to the given weight of the engine, we shall see at once how vital a question is that of the actual speed. The centrifugal force, or tendency to leave the curve, due to an engine of the specified weight, is equal, at twenty miles an hour, to 1·02 tons; at thirty miles an hour, to 2·39 tons; and at forty miles an hour, to 4·38 tons. The counteracting tendency of the cant was equal to 1·09 tons. This tallies exactly with the allowance made by Mr. Laws, and with the adoption of a maximum velocity of twenty miles per hour.

There is more difficulty in stating what degree of lateral force is sufficient to make the flange of the wheel rise to the surface of the rail. As matter of pressure alone it is of course easy to compute the proportion between lateral pressure and tendency to rise. But the question is complicated by the friction of the wheels when borne hard against the rail. How much of the lateral force would go to produce heat, and how much to lift the engine, it is impossible to say without being in possession of accurate sections of the surfaces brought into contact. Apart from this important qualification, a lateral pressure of 55 lb. would be enough to make the wheel of an engine of the weight given rise ¼ in. per revolution, and thus mount the rail in about eight revolutions, or 176 ft. of line. We may approximate this important part of the case in another way. We have seen that cants of 1½ in. and of 3 in. respectively, counterbalance the deviating tendency for speeds of twenty and thirty miles an hour. If we suppose the outer rail to be raised 1 in. more than was the case at Morpeth, that is to say, to the height of 2½ in. above the inner rail, we shall obtain the cant proper (on the given curve) to a velocity of 26¾ miles per hour. Conversely we may infer that beyond that velocity the only power which would have retained the engine on the line would be that friction which we have not the means of calculating,—the resisting power of which, moreover, would vary every second, according to the oscillatory motion of the engine, the curvature of the top table of the rail, and and other minute mechanical details. It follows that 26½ miles per hour would be a velocity at which the safety of a train over the curve would begin to be in peril; and that with any excess of this velocity the peril would increase, until there came a limit, which the above indications render probable to be considerably below 40 miles an hour,—at which the engine must unquestionably mount and leave the rail. That limit, we think there is thus every reason to believe, was overpassed on the occasion in question.

We offer the above calculations, not only by way of explaining the mechanical cause of the catastrophe on the 25th ult., but as indicating a general cause of danger to railway trains, which can only be obviated by giving the control of the whole arrangements of a railway to a sole person, and that person a competently-educated engineer. Without making any remarks that are in any way invidious, or calculated to throw blame on any person or set of men, we think there is great reason to doubt how far that is the rule with our railway companies. On the occasion discussed, one engineer gave evidence as to the locomotion, and another as to the permanent way, and we think it may fairly be conceded that both engines and road were in unexceptionable condition. But who was responsible for putting the two halves of the machine together? Who fixed the speed? It is hardly possible that any one but a thoroughly-educated mechanic would be aware of the extreme delicacy of a question of this kind. Few other men would realise the fact that a train might run at thirty miles an hour round a curve of one radius, and would infallibly leave the rails if driven at the same speed round a curve of another radius. Thus it is essentially necessary that the person who fixes the speed should be aware of the mechanical state, both constructively and as matter of maintenance, of every portion of the line. It would be necessary for some one possessed of all this knowledge, both theoretical and practical, to have a supervision, not only of the speeds according to the time-tables over any portion of the line, but also of the maximum speed which, under any circumstances, the driver of a late train should be allowed to make up. In a word, a perfect comprehension and control of the entire system, comprising way, engines, and maximum speed, ought to be in one breast—that of a thoroughly educated engineer. And if this fails to be the case, the public have no defence whatever from what may be properly called the natural mechanical results of disproportioned speed. The question is not one of reducing the velocity of the trains. One velocity (within certain limits) is as safe as another, provided all the arrangements are made to provide for that velocity. The danger is—not so much of the neglect of the maintenance of a line, as of the use, under circumstances of pressure, of a rate of velocity which was not contemplated by the engineer who laid the permanent way.

We earnestly hope that the above considerations may receive due attention. The class of accidents occurring from the engine leaving the rails is one which strikes at the very root of the reliability of the railway system. We have had repeated cases of this kind of casualty. In each, so far as our memory serves, the attention of juries and witnesses has been mainly turned to the state of repair of the line, or to any cause of disturbance, such as a fracture in the engine, a bolt or a stone on the rails, or what may be called a casual cause of mischief. We are not aware that the relation of velocity to curvature has ever been brought forward with that distinct emphasis that the nature of the subject demands; and we think that it cannot be denied that the attribution of this cause of danger of its due importance would entirely remove one great cause of a very fatal kind of casualties,—a cause which, in many cases, might result from the simple origin of a division of responsibility, and of the entrusting of whatever general control existed to a man who was not both a scientific and a practical mechanic.

This detailed inquiry into one case of a very important problem has the more importance from the fact that public attention is just now unusually active on the subject of railway casualties. Particularly does our view concern the directors of lines on which safety is questionable. We can readily suppose that many upright and honourable men have been lately shocked at the suggestion that the prevention of accidents has been regarded by railway managers as a question rather of pounds, shillings, and pence than of the highest moral obligation. We do not, in all candour, believe that there is a railway manager, or a railway board in the kingdom, that would decline to adopt precautions known to be indispensable to safety, on the ground of cost. It is true that the rate of compensation for personal injury on our great lines is only from two-thirds to three-quarters of one per cent. on the average of the gross revenues, although in two cases it has been to almost two per cent. In one it is as low as ·02 per cent. We cannot think that this has been regarded as a reason for omitting precautions; although a low compensation rate may in itself be taken as an argument of a high state of safety. But we think it is far more likely that casualties are to be traced either to divided control,—or to the placing control in the hands of men who, though admirable men of business, adroit financiers, men whose knowledge of the resources of a district, and of the best mode of developing them, may rise to the level of statesmanship, are yet not mechanics, either born or bred. Under the whole question of the financial success of a railway lies the mechanical question. The railway system is, first and foremost, a mechanical operation. It is one that deals with great weights driven at high velocities, and in which the slightest miscalculation is attended by extreme peril to human life. The general arrangement and comprehensive supervision of such a system can never be safely entrusted to any but a mechanical man. The attention, or the knowledge, of any other class of persons may,—and probably often does, fail at the very point of need. We are strongly disposed to believe that the responsibility, in face of the public, as well as in face of the shareholders, of an engineer who should control works, plant, and lines of trains, would be a better safeguard than any which has been yet suggested. From such an officer too,—if he were required as a necessary and integral part of the system of management, the shareholders would expect, and would be likely to receive, information which they do not now possess, which they cannot attain, and which it is of the utmost importance to their proprietary interests to have. Neither the returns of the Board of Trade, the reports of Captain Tyler, nor the half-yearly reports of the various companies, furnish an answer to the question,—How much does it cost to convey a passenger, or a ton of goods, for a mile on the line? We get, it is true, an average cost, and an average income, per train mile. But there is no definition, in any case, of what a train mile means. Whether it includes an engine, tender, break van and couple of carriages or two locomotives and 90 or 100 wagons,—we have no means whatever of judging. It is clear that if, in a matter of such vital importance to the financial outcome of a railway, the shareholders are content to remain in ignorance of the very alphabet of their profit and loss account, it is small wonder that we find that many of these delicate mechanical provisions and precautions which make the whole difference between safety and danger, between life and death, are but too likely to be overlooked. The fact that we have 160 "train accidents" in a year proves indeed, that such precautions are overlooked. We have the credit of being an eminently practical people; as such we are apt to turn with some scorn from anything intended by the word "theory." But theory may mean one of two very different things. It may mean something not very different from fancy, or it may mean the most sober, careful, and luminous outcome of all known facts; an outcome which serves to classify and to explain the facts themselves. This, we repeat, is yet wanting in our English railways. On the railways of France, of Italy, of America, of New South Wales, and of India questions both mechanical and financial can be definitively answered which are altogether unsolved with reference to the railways of the United Kingdom. Not only are they unsolved, but the data for their solution are carefully withheld. We believe that there is a close and intimate connexion between the mechanical and the financial requirements of the railway system. We hold that neither one nor the other can be left subject to "rule of thumb" without danger, loss, and detriment. A thorough and perfect knowledge of the great problem of railway working and management is a result at which, after fifty years of practice, we have as yet failed to arrive. No passenger and no shareholder will be as safe as he ought to be until this reproach is lifted from our shoulders.

THE REVISED CODE OF THE INSTITUTE OF ARCHITECTS.

The alterations in the rules of the Institute of British Architects, proposed by the Improvements Committee, having now received the definite sanction of the general body (with a few not very important modifications) we may consider them as open to public comment, and proceed to make a few remarks on the scope and spirit of the alterations, not so much in the way of criticism, since, as before observed, we entirely concur in them in the main, as with the view of bringing under the notice of those of our professional readers who are not at present members of the Institute, the efforts which have been made to provide for the adequate and suitable representation of the interests of the profession in town and country alike, and to afford at least the machinery for a more thoroughly national and representative Society of Architects.

A leading object, in the first instance, has been the complete elimination from the Institute of the representation of trade interests for the future. This was already the case in regard to strictly professional members, whether in the class of Fellows or Associates; the interest or participation in any trade, or the acceptance of any pecuniary consideration or emolument from tradesmen engaged on any work under his superintendence, being, by the original Bye-laws, a sufficient reason for the expulsion of any Fellow or Associate. That the first-named of these conditions has not infrequently been evaded or ignored is, we fear, the fact; but it has not, as far as we know, ever been condoned when formally brought before the notice of the Institute; and we can testify to the strong feeling exhibited

and expressed on this head by leading members of the Institute on not a few occasions. But the regulations under which non-professional persons were elected as Honorary Fellows and Contributing Visitors left no restriction as to connexion with trade interests; and although the distinction of honorary membership has always been conferred with due regard to high attainments in architecture and the higher walks of study connected with it, the rule electing Contributing Visitors has allowed opportunity for the singular spectacle (as we remember on more than one occasion when practical questions were under discussion) of an eloquent and impassioned address to a meeting in recommendation of some particular method or material upon the use of which the speaker's own business success depended. Any chance of future elections leaving liberty for this is done away with. The clumsily-named class of "Contributing Visitors" is eliminated from the books, and their place is supplied by dividing the Associates into two classes,—"Associates" pure and simple, who shall be, as before, persons "engaged in the study and practice of civil architecture," but not having been in business on their own account for as much as seven years, and "Honorary Associates" who shall be engaged in the study, but not the practice, of civil architecture, and correspond to the Contributing Visitor, but with the reservation that they shall be "unconnected with any branch of building as a trade or business,"—a limitation which is also now extended in the letter, as it was formerly in the spirit, to the class of Honorary members. Whatever may be said, therefore, by "London Parsons," or persons so signing themselves, who air their spite against architects in letters to the newspapers, about the corrupt practice of the profession, these candid people must, at least, be compelled to recognise the fact that the representative body of the profession has set its face against any malpractices with all the stringency that words and bye-laws can possibly ensure.

This is one step towards rendering more unassailable the *status* of the Institute, and another is to be found in the new arrangement for the election of the council and the higher officers of the society. This scheme, which has been suggested by that which is reported to have worked admirably in the Institution of Civil Engineers, provides that in nominating a list of members eligible for election to the council, a margin, in regard to numbers, shall be left (thus getting rid of the usual almost routine election of a "House List"); that from the council the vice-presidents shall be chosen in the order of their seniority to office; and from them, on the same principle, the president shall be chosen. There is a provision for the chance of a *nolo episcopari* on the part of any vice-president; but, apart from that, this arrangement ensures that the men regarded by the general body of Fellows as more efficient shall always be at the head of the official corps. Another decision, which we wish to class with this, though it is referred to in another section of the committee's report, is that after May, 1882 (originally 1880, but altered in discussion to the later date) all candidates for election as Associates shall pass an examination as a test of their professional training and capacity. This, which we regard as perhaps the most important step in advance taken by the Institute during many years, would, in conjunction with the scheme of election of council and officers above referred to, render membership of the Institute, and election to its higher offices, a really practical voucher for professional proficiency and distinction. It ought, if its value be properly recognised, both to raise the importance of the Institute very materially, and to do efficiently and widely what the scheme of the Voluntary Examination has only been able to accomplish in an exceedingly partial and tentative manner.

These are the most important of the new provisions which are aimed at raising and securing the professional status of the Institute of Architects. The next class of alterations refers to the means of making it more distinctly national in character. This includes what may seem a sweeping reform, since it is nothing less than doing away with all distinction, except in regard to one or two minor details, between members practising in London and those practising in the country. The subscriptions are all equalised, and all special conditions about the representation of country architects in the council, &c., are withdrawn. The object of this was, we believe, misunderstood by some of the existing country members, who thought they were to be left out in the cold; and some came up to the special meetings on purpose to protest. In most cases, however, the result was that,—

"Those who came to scoff remained to pray,"

or to praise, at all events. The object of the whole legislation on the subject is that there should be no invidious distinction whatever between members in London and members out of it,—the Institute is to be emphatically not one of *London* architects, but of *British* architects; and the provision for the presence of a certain number of "country members" on the Council is withdrawn, simply because on the new system all the members of the Council may be country members, and any country member may be on the council, if it suits him to stand, and he has attained sufficient distinction in the profession to be chosen.* One or two modifications of the previous rules are made to facilitate the election of those living at a distance from London; for instance, in such a case the demand for the recommendation of three Fellows from "personal knowledge," which might be a difficulty for an architect practising in a provincial town, may be set aside so far as that such a recommendation from one Fellow may suffice, coupled with the recommendation of the president and three professional members of any local Society of which the candidate may be a member. But the recommendation for membership in any case is to be far less of a mere form than it sometimes has been under the old regulations. The nomination paper must be accompanied by a separate written statement by the applicant as to his professional education (in the case of Associates), and as to his professional education and works (in the case of Fellows), and by another written statement by one of the three Fellows who have signed the nomination paper, giving particulars of his acquaintance with the candidate and his works. All this tends to show that there is a determination that qualification for membership of the Institute shall really mean a good deal in future. Perhaps we may be allowed to hint that these conditions will be hardly consistent with the continuance of a practice which we believe has more or less been carried on (whether with the direct sanction of the Council or not) of writing to architects not already members and suggesting to them to enrol themselves; a mode of procedure which seems to us to be little consistent with a due regard to the dignity of the Institute, and which would, at all events, be totally inconsistent with a reform the best feature about which is that it aims at rendering qualification for membership a real and *bonâ fide* testimony to professional capacity and *status*.

In connexion with the subject of professional status we may observe also that the new rules draw a distinction in regard to one point which it is believed has been misunderstood, and has deterred some provincial architects from joining the Institute ranks, under the idea that they were required to bind themselves not to furnish quantities for their own work. A certain degree of verbal confusion on this point has been removed, and the wording of the new bye-laws makes it clear that any architect is at liberty to supply quantities for his own work, only on the understanding that they are paid for by the client direct and not by the contractor. The principle enforced is simply that the architect is not to make himself in any sense the servant of the contractor, which is a wrong position for him, either in the interests of himself or of the clients whose representative he is. For ourselves, we object entirely to the practice in question, as one eminently calculated to place the architect in a false position; but we understand there are supposed to be difficulties in doing away with it entirely in provincial practice.

The question of the relation of the Institute to kindred societies is not made the direct subject of any legislation, and hardly could be; but it is treated of in the Report of the Improvement Committee, whose suggestions, with one or two modifications, have been adopted as a basis of future action. The suggestions of the Committee went to the effect that the Institute should keep up a systematic interest in the proceedings of provincial societies, and a correspondence with them; suggesting as a means to this end that a list of the leading Architectural Societies of the kingdom, and the names and addresses of their presidents, secretaries, and professional members, should be kept duly filled up, and that copies of the sessional papers, and particulars of the architectural examination, and the various prizes of the Institute, should be from time to time officially forwarded to such Societies, together with "such other information as to the proceedings of the Institute as may tend to bring the corporate representatives of the profession throughout the kingdom into useful co-operation." This, it was suggested, would be a better principle than that of attempting any official union between local societies and the Institute; the object being rather that all architects of standing in the provinces should be members of the central and national Society, the local societies preserving their independent action. This, we think, is certainly the better principle, as the local societies will always have local affairs of interest to look after which would be more or less beyond the proper scope of a central body. Nor is there to be any more talk at present of amalgamation of the Institute and the Architectural Association; which also is a wise decision. The Association was established with different objects, and is doing its own special work very ably; and it is much better that it should keep its special character.

Other changes in matters of detail have been made with the view of increasing the utility of the Institute in the promotion of the study of subjects connected with architecture. The most important of these is the proposition, which will require a little special arrangement for carrying it out, to keep the library open every day from 10 a.m. to 9 p.m., instead of opening it on three evenings only of the week; and that duplicates of the standard works most referred to should be provided and lent under certain conditions for home study. This would be a very useful provision for younger members especially, and the more constant opening of the library would save a good deal of inconvenience. From whatever cause, it is certain that the library of the Institute, considering what an admirable one it is, is of less practical use at present than one would suppose it might be. Then there is an important change in the regulation of the ordinary meetings, which provides that the paper of the evening shall close the proceedings, and the discussion upon it shall take place at the following meeting, before the paper for that evening is read. The object of this, of course, is that members wishing to comment upon the facts or views advanced in the paper should have time to consider the subject, and mature what they have to say, instead of getting up and talking on the spur of the moment, and that the discussion should thus be of more practical value. This is meant very well, and may work well; but it is a point we feel a little doubtful about. At all events, in that case, a tight hand will have to be kept over the discussions, lest they should encroach unduly on the time the reader of a paper has a right to expect; as it is, the paper of the evening is often forced to too late in the evening, through the extension of preliminary business. On the other hand, it is desirable, no doubt, that the discussion of professional subjects should not degenerate into mere complimentary talk, of which there is often a good deal too much at Conduit-street. And whilst on the subject, we cannot help observing that there is a very general feeling among the majority of those who attend the ordinary meetings that so-called discussion runs far too much in a groove, being, in fact, placed practically in the hands of a few members who are constantly called on from the chair in rotation,—a practice which prevails at the Institute to a degree which we seldom see at any other meetings of this kind. The consequence, of course, is, that a member often speaks merely out of politeness, because he is called on; and that those who are not so invited, and who may have something really to the point to say, are unwilling to do so unasked. We have heard sufficient remark and complaint in regard to this feature of the Institute meetings to feel justified in calling attention to it. At the same time, if there are no volunteers, the chairman must do his best to press good hands.

Several schemes, of various extent, have also been proposed, in regard to enlarging and improving the premises of the Institute, and to some extent this is, we believe, to be done at once; a resolution which those who know the room in which the architects hold their meetings will not be slow to appreciate. Seat arrangement, ventilation, and decoration, are all capable

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* We would suggest that in connexion with this laudable endeavour to give a more national character to the proceedings of the Institute, it would be worth while to reconsider an idea that has been before brought forward, of holding Conference meetings in the leading provincial towns, on the principle so successfully adopted by the British Association.

of much improvement, even without acquiring an extension of the premises; and we would suggest that the means for exhibiting diagrams should be considered. The process of hanging drawings all on one side of the room, instead of fronting the audience, seems most primitive; certainly the result is, that only a few fortunately situated persons can really see a number of diagrams so as to follow any reference to them with ease or comfort. One of the more extensive improvement schemes suggested involves the acquiring of the ground-floor, and providing there a members' club and reading-room. This would be particularly useful to provincial members when on a visit; but, of course, such large schemes as these presuppose a sufficient increase of income. Under this head the report offers a pretty encouraging prospect, which we see no reason to think is exaggerated. The income of the Institute has been increasing very rapidly of late years; but then its expenditure has increased also through new undertakings, such as the Conferences, &c. The scheme of erecting an entirely new building of such a character as to be a worthy home for the representative body of the architectural profession has been once or twice mooted in our columns. No reference is made to such an idea in the report of the committee; it would, of course, involve an expenditure only to be met either by a greatly increased income, or by special subscription.

Everything that is needed might be done, however, if the Institute, under its new regulations, meets with the recognition and support from the profession at large, which we desire to see, and which we believe would be advantageous to all concerned. The Architectural Union Company would, we have no doubt, enlarge their capital if necessary, and do all that could be done for the Institute on their side, if a corresponding rent were assured. It is with the view of obtaining support from those of our professional readers who are not now connected with it that we have drawn attention to the subject. We repeat what we have before said, that we are not occupying the position of blind advocates of the Institute as now existing, or of those particular members of the profession in London who have drawn up new rules and improvement schemes. We speak on the widest ground, as the advocates of the whole profession; believing that a greater and more general union of English architects, with the object of aiding the progress of the art and science of architecture, and raising the social and moral *status* of the profession to the highest point, must be a benefit to all concerned. We point out that a very able and honest effort has been made, at the expense of much time and thought, to provide a machinery by which this high object may be realised. Those who have framed this machinery have done their part. It now rests with the profession at large to effect the realisation of this object, by combining to render the central society in fact, as well as in name, the Institute of "British Architects."

ARCHITECTURAL PRACTICE AMONG THE GREEKS.

The Eastern Question is at the present time such a burning subject that caution is required in mooting it in too close proximity even to matter so happily uninflammable as the neutral columns of an architectural journal; otherwise occasions are not lacking when reflections might be indulged in naturally enough even here, as to the benefits with which Greece has overpaid the tardy and chary, and, at last, the begrudged and unintentional assistance which Western Europe gave to her emancipation. No doubt the enthusiasm of the more sympathetic has had its disappointments, but that is no more than enthusiasm and sober-minded confidence in justice also, must be prepared for: the blood of the martyrs was the seed of the Church, and free constitutions spring up at last, but not ever immediately, upon ground well sodden with that of patriots; and truth and honesty, intelligence and culture, peace and prosperity, are not to be despaired of because the first consequences of a revolution that humanity has been groaning for seem but groans again. Modern Greece, with all its shortcomings, is a vast gain to humanity, as all know who are familiar, as some of us are, with what was told—as more with what was written—by the travellers who knew it in slavery; how valuable and welcome an ally of science and art combined it is gradually becoming is being proved by the illustrations of history, architecture, and sculpture that are now recovered and recoverable at Olympia and Mycenæ. Under all its disadvantages as capital of a too restricted territory, Athens is a centre of no inconsiderable group of native men of learning, as of institutions of culture and museums constantly enriched. In this group the pride of descent, for ever stimulated by local associations, is burning, not without effect, in the brightest form of an ambition to imitate—to emulate ancient intellectual glories, and as a noble beginning, within their reach, to do their duty towards the remains of which they are at once heirs and trustees in the interest of all progressive civilisation.

A bi-monthly periodical,—the *Athenaion*,—printed at No. 2, Street of the Muses, is a not unfrequent recipient, among miscellaneous essays and dissertations, of notices of antiquities as they come to light, and among these, of inscriptions. As modern Greek is written by men of education, it presents very few difficulties to those who are moderately familiar with even the easier ancient authors; after a few corrupt or intrusive particles have been recognised, and a few substitutions for some inflections noted, it may be read currently, the majority of unclassical words being for the most part transfers from Latin, or occasionally Teutonic, dialects. The number of the *Athenaion* which is before us contains an article, recommended by the welcome signature of M. Stephanos Coumanoudes, with the copy of an inscription of nearly 200 lines, which vies in interest with those relating to the Erechtheum at Athens. It comes from Lebadea, in Bœotia, where an Athenian gentleman caught sight of it built into the wall of a blacksmith's smithy; he gave notice to the Archæological Society at Athens, who immediately took measures to secure the stone, and the inscription is now published, from copies as careful and complete as circumstances allowed, and collated with a paper rubbing. It is nothing less than an architectural contract and specification of works of repair and construction about a temple at Lebadea, of which we have other notice, and of which, indeed, ruins still remain to the south of the modern town. Pausanias, who went through Bœotia about A.D. 174, visited this city, which he describes as on a par with any other in Greece, however prosperous in respect of its monumental adornments. The temple of Zeus Basileus,—of Jove the king,—was, however, then unfinished, either on account of the too large scale on which it was planned, or interruptions by incessant war,—and unfinished it doubtless remained till the time came for it to be demolished.

The inscription was certainly extended to three stones, as that which is preserved betrays continuation both at beginning and end; only the second half of what we possess deals with the work upon the temple,—the half which is doubtless the most interesting, but withal the most difficult; and further study is required before it can be satisfactorily meddled with. Even in the first part, which shall now be treated of alone, there is much which seems to demand, as the Athenian editor observes, something approaching to divination to interpret it. We are not only troubled by certain doubtful readings, and beset by words which are unknown to the lexicons, but even when translation seems tolerably authentic, the reference of the work, as specified, to what we know of such work as completed, is often a mystery indeed. This first part of the lapidary document, where difficulties enough crop up, but still more sparsely than in the second, refers to work to be done upon certain *stelæ* within the precincts of the temple, which seem to represent tall blocks, or superposed blocks, set upon bases, and surmounted by cornices or cap-stones, and bearing inscriptions. They might be taken for ancient funereal *stelæ*, such as are preserved in abundance in Greece, which consist of thick slabs crowned by a fleuron or conventionally floreated ornament, but that no hint occurs to point in this direction, and the letters inscribed seem to have counted up to thousands.

The parties to the engagement are the *Naopoioi*, the temple-makers, in fact, the official building committee, and the architect on the one hand, and on the other the contractor for the works (*ergones*) and his sureties, and possibly, as additional works may be required, a secondary contractor, literally, a "purchaser-in-continuation,"—a new word, and sureties on his behalf. In the second half we have an under-architect, or clerk of the works.

The commencement, as we have said, is lost, as well as three half lines at the beginning of what remains,—the fragments of these intimate a question of 5 per cent., and apparently a set-off (but here comes in an unknown word) and certain penalties; the next complete lines speak plainly enough,—the committee, or, let us call them, the controllers, shall exact the whole sum in question, whatever that might be, from the contractor and his securities, and if they cannot effect this shall sell them up. It is not easy to bring what follows immediately into a harmony of technical and grammatical construction; it seems to be agreed that bronze, the steles, and their cornices are to be provided for the contractor,—he may use what stone he finds for levelling the ground,—he will himself provide coarse or porous stone for the sub-basements or lower courses of the bases, and be paid 5 drachmas for every one he supplies; for cutting and *encausis* of the inscriptions he will be paid at the rate of a stater and three obols or about a guinea, for a thousand letters. This confirms what we know from other sources of the custom of the Greeks to add colour to engraved inscriptions. After receiving a payment in advance, the contractor shall proceed to work within ten days, employing not less than five duly efficient workmen, and if he fails to adhere to the written agreement in any respect, or is convicted of bad workmanship in any point, he shall be fined by the controllers, according to what appears the extent of his fault in varying from the agreement. And if any other of the associates in the work is detected in bad workmanship he shall be expelled from the work, and no longer be an associate; and if he is contumacious he also shall be punished along with the contractor. "And if in the course of the work it should prove desirable to do less or more in any degree than what has been written down, he shall act as we give order, and neither the original sureties nor the contractor shall be released from the contract until the new purchaser of the secondary contract has provided responsible sureties, and in respect of what had been done previously the original sureties shall continue such until the work is finally passed as approved." It is then provided that the contractor shall avoid damaging any of the existing works within the sacred precinct, and in case of such damage he shall make it good at his own expense and within whatever time the controllers determine; and if the "contractor of the setting," who does not appear to be a different man, shall ruin a sound stone in the course of working it, he shall provide another approved stone at his own expense, and not obstruct the progress of the work, and shall remove the spoilt stone from the sacred precinct within five days, failing which the stone shall be sacred,—that is, forfeit. And if he does not make substitution for, or remedy damage, the controllers shall estimate it, and the contractor shall pay what it amounts to and half as much over. But if any stone is wasted in consequence of natural defect the contractor of the setting shall not be answerable in respect of that.

Any difference which may arise on the part of the contractors respecting the terms of the agreement shall be decided by the controllers on oath, in view of the works, and the decision of a majority of them shall be final.

If the controllers in their delivery of the stones cause hindrance to the contractor, they shall make allowance for the time lost by such hindrance.

The contractor having appointed sureties according to the law, shall receive the first instalment of the full amount of his contract respecting all the stelæ and the cornices surmounting them, minus one-tenth of the total; and when he exhibits them all wrought and true every way, and completed according to the agreement, and run with lead to the satisfaction of the controllers and the architect, he shall receive the second instalment in respect of the letters of the inscription by valuation reckoned according to the number taken from the copy, minus a tenth again.

And when he has finished the entire work, and it has been passed as approved, he shall be paid the outstanding tenth, and the value of whatever coarse or porous stones he has fixed; and whatever letters he may engrave after receipt of the instalment he shall be paid for these also when he receives the tenth, after deduction of anything that may be chargeable to him in respect of forfeits.

If anything extra is required to be done for the advantage of the work, he shall execute it on like terms, and receive what accrues to him on delivering it to satisfaction.

If the site proves soft when it comes to be-

cleared, he shall complete a foundation with as many coarse stones as there may be need for, and shall receive what is due to him for this in addition along with the tenth.

He shall also fix upon the stelæ, the existing eleven cornices (or coping-stones) after he has first dressed the stelæ with such extension as we prescribe beyond the given circuit (?). He shall extract as many of the clamps at present in the stelæ as project and interfere with his operation of dressing, and drilling them deeper shall fit them and run them about with lead satisfactorily; and he shall also put clamps into these pins or bolts, and run them about with lead, and work all precisely as has been written respecting those above.

The language of this paragraph, assuming the readings to be correct, is distinct enough, but it seems to be at odds with any consistent meaning: this is one of the difficulties that diversify the employment of an interpreter; on the whole, it is perhaps more provoking than the cases where there can be no doubt as to the meaning that must have been in the intention of the writer, though his words can scarcely be tortured into covering it. The ensuing sentence brings us into still a third form of difficulty worse than either of the specified; cornices or coping-stones of 6 ft. and 5 ft. square (?) or matching some others, are apparently to be contracted for, but four others of 3 ft., to go two and two to a cornice, are to be provided.

The contractor will receive an instalment in respect of these cornices, and when he exhibits the stelæ wrought and set up erect, and run with lead, and the cornices which are fixed upon them clamped at the head (?), he will receive an instalment in respect of these also, minus the tenth, as written in instances above. And when he has fixed the cornices and exhibited them in position, leaded, complete, clamped at the head, corresponding satisfactorily with each other, he shall then cleanse the stelæ with soda, and deliver the letters (of the inscriptions) clean, and go on cleaning them as long as we require.

As regards any other matters which are not written down in the agreement, be these in accordance with the "Catoptic and Naopoiic law."

The law referred to here is doubtless a municipal Building Act, regulating the duties and responsibilities of district or other surveyors,—for *catoptes* is a surveyor or overseer,—and also the general regulations to be observed in dealing with temple architecture especially as under the surveillance of the Board of Naopoioi, who are so prominent in the inscription; it is with no little regret that the primary suggestion must be surrendered by those who not unnaturally seized on the new word "catoptio" as a hint of even the legal sanction, and, indeed, enforcement of observance of those optical refinements which gave the last grace to the temple architecture of the Greeks. There is, however, no room for even discussion upon the subject.

M. Coumanoudes justly refers to an inscription from Tegea, with a law respecting contracts as a general equivalent of that referred to here. It is, therefore, scarcely worth noticing that optical considerations of special delicacy, and such as had proper reference to the construction of such buildings as temples, could have no application to work of the nature of that to which the proviso is appended.

The second half of the inscription, however, which directly concerns the Temple of Zeus Basileus, is not wanting in stipulations which go far to explain how it was that such extreme accuracy of workmanship was secured by the Greeks, as we marvel at in more instances besides the Parthenon. This portion of the inscription, however, must wait awhile for its turn of illustration. To elucidate it thoroughly will try more than even tolerably strong Greek teeth. It may be hoped that some of the difficulties will vanish with a revised text, as both the copies and the paper impression were taken when the letters had not been cleaned of hard accretions so far as may yet be possible. Even from what appears at present there promises to be no slight difficulty in matching the prescribed treatment of certain stones with what we can identify in the architectural members which seem certainly in question. The editor declines to offer any suggestions of his own. "Whoever," he says, "shall succeed in a full interpretation, in his favour I cheerfully forego any priority of thoughts of my own, and the honour that may pertain to them."

Perhaps it may be possible to overcome the first impressions of desperateness by a few more re-readings, and to pick out some details of ancient practice which may be of interest, while we decline perforce the ambition of attempting the full interpretation which is desirable. Should this prove to be the case, we may return to the Lebadean contract and specification.

THE ANCIENT MONUMENTS BILL.

We have already commented on the arguments used on the occasion of the second reading of Sir John Lubbock's Bill, when it was eventually referred to a Select Committee, but in view of the importance of the measure must return to the subject.

We do not for one moment admit the truth of Lord F. Hervey's statement, that when there is anything worth preserving people preserve it. When Sir J. Lubbock's previous Bill was before the House,—differing little from the present one,—the site of Avebury, one of the most interesting of the Druidical remains in this country, was actually sold for building purposes, and that national monument would have been a thing of the past if Sir J. Lubbock had not stepped in and purchased it. We think our monuments ought not to be left to such a chance. Lord F. Hervey went on to utter sentiments which, we trust, are not shared by many others. He did not understand why it was that people should be called upon to exhibit enthusiasm for the monuments of that barbarous and uncivilised race whom our fathers took the trouble to expel from the country. He objected to preserving the relics of the ancient Britons, which were destitute of all art and of everything there was noble, or that entitled them to preservation. To this we answer that he is not called upon to exhibit the enthusiasm of an archæologist for these remains, but we shall say it is the duty of every Englishman to assist in the preservation of remains which throw light upon any portion of the national history.

Mr. Leighton thought that the best way of preserving old monuments was to leave them to the care of the archæological societies, who could purchase and conserve them. The income of the various societies of that character is very limited, and generally absorbed by the issue of their "Transactions," and other necessary expenses. In exceptional instances they might induce persons to subscribe towards the purchase of some particular monument; but their own funds, and those they might collect, would be totally inadequate to the systematic purchase of those remains. Many of these societies do much good in supporting local museums, which, in a minor way, preserve interesting relics of the past.

Some members objected that the Bill would give the members of the Commission too much power in the purchase of land on which these remains are situated, but it is sufficient to say that the wholesale purchase of sites is not contemplated. The Commissioners will only purchase when the owner of the site determines to destroy the object, or by his continued neglect places it in peril. The interesting Cæsar's Camp at Wimbledon was most wantonly destroyed by the owner, a member of the House of Commons. He had been remonstrated with in vain, and we believe between 5,000*l.* and 6,000*l.* had been collected to save it. This valuable object would have been saved if some such measure as Sir J. Lubbock now proposes had been in existence.

Touching pictures were drawn by some of the evil this Bill would work in case railways or sanitary improvements were to be carried on over the sites of these monuments. It may well be answered that these cases would be very rare, and as the Commissioners would be carefully selected, they might be entrusted to act judiciously. A good deal was said in the debate as to why Mediæval monuments were not mentioned in the schedule, but we think if must be conceded that these are just the objects to be entrusted to the good feeling of people, but that it is just those memorials which do not appeal to the taste and enthusiasm of the majority which need to be placed under the fostering care of the Commission.

Monuments of the character dealt with by the Bill are disappearing with great rapidity. We can understand the destruction of large portions of the great Roman wall in the first half of the eighteenth century to mend the public roads. Here and there an enthusiastic antiquary, like Dr. Stukeley, might protest against this Vandalism; but archæology, as a science, was almost unknown at that period. In the time of Charles II. there were sixty-three stones at Avebury, in Stukeley's time twenty-nine, and now about seventeen. Eight years ago the "Great Tolmen," one of the most interesting antiquities of its kind in Cornwall, was destroyed for the sake of the granite on which it stood. No remonstrances could prevent a farmer in the succeeding year from ploughing away part of the celebrated Dorchester Camp near Oxford.

In more distant places the destruction has been very great. In some cases we are aware that the supposed magical qualities of the object have saved it from destruction. We allude to cases like the holed-stones of Cornwall, which are crawled through by rheumatic and other patients! A feeling of this character has been the destruction of the carvings at the base of the great cross at Clonmacnoise, for the peasantry are continually stretching their arms round it. It is probable that no country has suffered by the destruction of monuments like Ireland. Dr. Stokes, in his "Life of Petrie," says,—"The number of ancient remains that even during the last century have been wantonly destroyed is so great that their enumeration would be tedious." Sir John Lubbock states that an Ogham stone had been destroyed at Clonmacnoise, interesting as being one of only three cases in Ireland where the inscription in Ogham was accompanied by one in Roman characters. The Palace of Emania, near Armagh, has been destroyed, the owner saying, when remonstrated with,—"Ireland has no history." The great Rath, or Pagan Fort of Kilbannon, built on the conversion of the native chief by St. Patrick, has disappeared. The same fate will soon attend the ruins on Holy Island, in Loch Deary, erected by King Brian Boru. In seventy years, more than forty of the round towers of Ireland have been destroyed. The early Christian inscriptions at Innes Murray were perfect about forty years ago; they are now all gone but one.

The round tower of Dungiven was destroyed because treasure was believed to be concealed in its foundation, and that of Drumcliff because the materials were required for a new bridge! Thirty years ago the proprietor of the remains of the church and round tower on Ireland's Eye caused them to be taken down because he feared they might fall on his cows. An archæologist went recently to see the Long Stone, a monolith described by Rudden in his "History of Gloucestershire." A farm labourer told him that he was too late, as the stone had been blown up and taken away because it interfered with farming operations. Sir J. Lubbock stated that there was only one case in which we had the actual expression of Shakspeare's own sentiments, and that it was one bearing directly on the object of the Bill. There was in his day a question of enclosing some land near Wilcombe, on part of which there was an old camp, known as the Dingles, commanding a ford over the river near Stratford-on-Avon. An agent named Greene (a cousin of the great dramatist) was sent by the corporation to "watch the case." Under date September 1, 1615, Greene writes in his diary that Shakspeare had said that he could not "beare the enclosing of Welcombe."

The instances of destruction,—and they might be largely multiplied,—show incontestably that some measure for the protection of our national antiquities was needed; whether Sir John Lubbock's Bill is everything to be desired, is another question. As we have before remarked, the Bill has been referred to a Select Committee, and its clauses will be curtailed or extended, as will appear best for the public weal. We trust members will remember the words of the late Prince Consort,—"Everything is valuable which marks the taste, good or bad, of any period of our history."

Eight years ago we listened in the Town-hall of St. Alban's to an eloquent address by Lord Lytton to the members of the British Archæological Association. He was careful to point out that in proportion as we cherished the memories of our ancestors, and revered the heirlooms they had left us, we felt that patriotism was no idle name, but the mainspring of every policy which made statesmen wise, and the borders of a State secure. He quoted the well-known passage of Gibbon, which gives such a mournful picture of Roman corruption and decrepitude, just before the final extinction of the Western Empire, and the accession of a barbarous king to the throne of the Cæsars; the historian observing that the monuments of consular or Imperial greatness

were no longer esteemed but as an inexhaustible mine of material, cheaper and more convenient than the distant quarry. For the information of Lord F. Hervey, we may mention that his lordship especially pointed out that the ancient Britons were not the ignorant barbarians some have called them, for their skill in agriculture was considerable, and they had in familiar use implements and machinery, such as carriages, the water-mill, windmill, &c.

Up to this time we have been very unfortunate in our attempts to put a stop to the wholesale destruction which has been for years going on among our national memorials. Look at the fate of the Sepulchral Monuments' Report, designed chiefly to prevent more havoc in churches under the zeal for "restoration." In February, 1869, the First Commissioner of Works (Mr. Layard) requested the Council of the Society of Antiquaries "to furnish him with a list of such regal and historical tombs or monuments existing in cathedrals, churches, and other public places and buildings as in their opinion it would be desirable to place under the protection and supervision of the Government, with a view to their proper custody and preservation." The Council assented, and the committee appointed by it decided that the inquiry should be limited to monuments of persons who died not later than the year 1760. Reports by local secretaries and others were furnished, and a selection of 79 regal and 531 historical monuments was made. The report was ready on March 18, 1872; but Mr. Ayrton had succeeded Mr. Layard as First Commissioner of Works, and he informed the Society that the Government had no intention either of introducing a Bill, or of laying before Parliament the report which the Society had prepared.

Though the labour had been practically in vain, the report showed the necessity for some measure of the kind. It stated, "A church which to-day seems liable to molestation, may to-morrow, at the suggestion of an ambitious architect, an ignorant committee, or a speculator in glazed tiles, be turned inside out,—chantry chapels destroyed, and tombs needlessly removed from the honoured graves which they once marked,—the modest slabs which recorded the burial of persons of historical importance allowed to be broken and carried away; or even, as in the cases frequently reported to the Society of Antiquaries, the floor of a country church with all the inscribed flagstones may be permanently concealed by a new encaustic pavement." The latter was actually done at Low Leyton, in Essex, effectually concealing the tomb of John Strype, the antiquary. During the progress of the so-called "restoration" at St. Mary's, Lambeth, the marble slab forming the sole sepulchral monument of Archbishop Bancroft was broken, and either covered up or destroyed. We should say that during the last 200 years at least some thousand brasses have disappeared from our churches, many of them very recently.

An amusing story is told of the grandfather of the Marquis of Downshire, who, being informed that Con O'Neil's castle at Castlereagh was dilapidated, wrote to his steward, ordering a wall to be built round the castle field. The steward set about building it at once, *using for the purpose almost every stone of the old castle which the marquis desired to protect.*

In England, thirty-five years ago, archæology was hardly studied as much as it had been under the Gales, Thomas Hearne, and Stukeley. France was far ahead of us in this respect, and soon took active measures for preserving and publishing its written records of history, and also to prevent the further destruction of its historical monuments and antiquities. As early as 1830, money was annually voted for these purposes, and the general interest in them kept up by such publications as M. de Caumont's *Cours d'Antiquités Monumentales*, and his *Bulletin Archæologique*. At his suggestion, we believe, a Société pour la Conservation des Monuments was founded, and saved many minor memorials by timely grants of small sums. Without these aids the great castle of Pierrefonds and Chambord, the ancient episcopal palace at Avignon, the Roman Amphitheatre at Arles, would have perished like the château of Jehan de Joinville. The Government of Napoleon III. allowed the Inspector of Historical Monuments to spend a million of francs annually upon these memorials, and he was assisted by an ample staff in the performance of his duties.

Germany has an inspector of monuments; Italy has done good work in the same direction; but Denmark has set an example to more important nations. It has long been the practice there to purchase tumuli and megalithic remains by the Government, and thus her primæval remains have been admirably preserved. She has long had a sensible law of treasure-trove, and her museums are enriched accordingly, while, up to 1862, by the insanity of ours, thousands of interesting objects find their way into the melting-pot. Holland should also be mentioned as a country which had conserved its national antiquities. According to Mr. A. W. Franks, there are in Drenthe, one of the least wealthy provinces of Holland, fifty-four megalithic monuments formed of huge boulders, and resembling our cromlechs. They are locally known as *Hunnebedden*, or Hunbeds. In 1868 the attention of the State of Drenthe and of the Dutch Government was called to the destruction of these remains in a pamphlet published by Mr. O. Gratama. Funds were at once placed at the disposal of the governor of Drenthe, and he was able to secure from further destruction forty-one of these memorials. The custom in Holland is to purchase a quadrangular plot of ground, leaving room to walk round the cromlech. The corners are marked by posts, and a narrow roadway is secured leading to the nearest highway. In the case referred to, the care of the remains was confided to a commission at Assen, the capital of Drenthe, and their preservation was recommended to the burgomasters of the communes in which they are situate.

It has never been sufficiently impressed upon people that objects of antiquity lose half their interest, at least, when removed from the locality in which they have been found. We do not mean that it has been the practice to remove cromlechs from their sites unless for destruction. Of course, we allude to the minor, but extremely interesting, memorials of past ages. When a coin, jewel, vase of pottery, or other object, is sent off to the British Museum, to appear, with hundreds of others, on shelf or drawer,—if it has the luck to be exhibited at all,—the principle of association, which lends so much charm to archæological research, has been lost. It should be placed in the nearest local museum, *properly labelled*,—how many antiquities have lost their value for neglect of this simple rule,—and the multiplication of such objects will supply materials for the history of a district.

But it is unfortunately the case that these local museums have not received the attention they deserve. One would think that people would be glad to provide some place in which to store such objects for reference; but from a pretty extensive acquaintance with the local museums of England, we can say that the apathy of people respecting their local history, as exhibited by "finds" in the neighbourhood, is absolutely astonishing. As a rule, the people in a town or village are almost the last to take the trouble to secure such antiquities, and allow collectors from a distance to enrich their collections, unless they are roused by a sense of shame, produced by pressure from without.

We trust something may soon be done to encourage the museums which have been founded, and to establish others in localities where they are needed. It is by the accumulation of details that history is written and archæology elucidated, and it would be almost impossible to overestimate the importance of a series of firmly-established local museums throughout England for the preservation of minor local objects of antiquity, affording, as they would, abundant materials of every period of our history. We are perfectly well aware that there are still in some towns museums which are a credit to their founders and custodians, but the condition of the majority induces us to think that help should be afforded them, either by Government or by a well-organised society which could encourage them by small grants or stimulate local interest in their favour.

One reason for the state of decay in which some of these institutions are, is, that they have been expected to support themselves. In all cases where possible, they should be established under the fostering wing of the local archæological society if one exists; if not, in connexion with some kindred society. Nothing should be charged for admission. If local magnates would only consider what a means of elevation is provided for the masses by a well-appointed museum, they would be more eager to establish them. It is an error to suppose that they are not popular. The Museum in Colchester Castle, chiefly supported by the Essex Archæological Society, had 10,155 visitors during 1870; five years after the number had risen to 15,795. This museum, one of the best in England, is free.

PROFESSOR E. M. BARRY ON ARCHITECTURE.*

TOWN ARCHITECTURE AND MODERN PROBLEMS.

We have traced, on former occasions, the various stages of development in the domestic architecture of this country, and have glanced rapidly at the changes which gradually transformed the hall of the Saxon Thane into the Mediæval manor-house of the fifteenth century. From that period, the differences which ensued were differences of degree rather than of kind, and we find in the Elizabethan and Jacobean mansions arrangements which are, more or less, in accordance with the requirements of our own day. I may return hereafter to this part of my subject, but for the present I pass it by, in order to consider some matters of more general interest, affecting the transition from Mediævalism to modern life, and the problems with which the architect is consequently brought face to face, in the application of his art.

In London, as we have seen, old things have almost entirely passed away, and we have to deal with new conditions. The Great Fire destroyed the picturesque, but inconvenient, dwellings of Old London, and gave an opportunity for improvement, such as has seldom occurred in the history of a great city. We, in this generation, are not, happily, likely to have a similar chance; but great changes are nevertheless taking place amongst us, and we may usefully consider our principles of action in the architectural treatment of great cities, as well as the important laws which should govern such action, by subordinating our arrangements to the ascertained truths of economical and sanitary science.

We often hear laments on the extinction of good taste. All, we are told, is common and vulgar, and we are daily plunging into lower depths of artistic bathos. Railways and kindred inventions, which have done so much to increase the power of man over matter, are complained of as the executioners of art; and, in the opinion of some, all that we have to do is to seclude ourselves from such base associations, and draw gracefully around us the garment of refined exclusiveness, before we bid a final farewell to a vulgar and pushing world.

This spirit is not uncommon: it finds vent sometimes in laments over all that has made our country great among the nations of the world, sometimes in pensive regrets over the colour of a fabric or the pattern of a coal-scuttle. It may, however, be doubted how far such despondency is to be justified by facts; and, still more, how far it is likely to be profitable for improvement in art. We may start by agreeing that ugliness is common enough, without conceding that it must so increase as ultimately to overwhelm us.

Good taste, if not common among ourselves, has ever been the heritage of the few. Is there less of it at the present time? or is it the fact that the many have come more to the front, and that their requirements have thus acquired a special prominence? We are not able to assume that, even among the Greeks, good taste was common. The buildings which are left to us are precisely those on which we should expect to find that every resource of art had been lavished. Of daily life in ancient Greece we know little, and we cannot assume that it differed greatly from what our own would be under similar circumstances. Different times and circumstances lead to different manners, and the problems we have to solve, in this anxious and brain-busy nineteenth century differ, as greatly from those which presented themselves in the morning of the world's history, as do the grave pursuits of a modern philosopher from the happy and graceful gambols of a child amongst her flowers.

Modern civilisation may sometimes seem to repress individuality, and its progress to resemble the march of an army, treading steadily, with a common step. But this is not the whole truth. If it be true that it is rarely given to one mind to strike out novelty of a startling nature, and conquer by the flash of genius, it may be remembered that our army of progress resembles a column which never retreats, and in which each backward rank treads in turn in the footsteps of the more progressive pioneers.

I may here quote an opinion on this point, of a great man, not long passed away from among us, as far as his bodily presence is concerned, but whose name will never be forgotten wherever the English language is spoken,—I mean Lord Macaulay,—the history of whose life has lately

* Sixth lecture: delivered at the Royal Academy on Thursday, March 22nd.

been brought before us, with rare felicity, so as to cause us to add to our previous admiration of the historian and statesman a warmer feeling towards the man.

Lord Macaulay asks, "What is meant by the complaint that there is no individuality now? Genius takes its course, as it always did. Bolder invention was never known in science than in our time. The steamship, the steam-carriage, the electric telegraph, the gaslights, the new military engines, are instances." All these things "indicate rather a restless impatience of the beaten paths, than a stupid determination to plod on in those paths. So great is the taste for oddity, that some who have no recommendation but oddity, hold a high place in vulgar estimation."

Now, if it be true that we have fallen on an age of great scientific progress, it will not do for the architect to ignore hard facts, and to be for ever yearning for an impossible resuscitation of the past. In the imitative art of painting, the artist may ignore the present if he will; he may people his canvasses with gods and goddesses; he may breathe the air of Arcadia or Elysium, and only return occasionally to the base sublunary ideas of modern life, when he needs to find a patron, or to examine his banker's book. To an architect, such pure abstractions are impossible. He must be of his own time, and has no claim to existence unless he ministers to its requirements. Men do not build in order to look at their work, but to use it. Happy is he who can combine beauty and grace with perfect fitness, for he is the true architect, and in him art and science have met together.

Students of art who intend to become practical architects should bear this well in mind, and should not allow themselves to be unduly discouraged by the gloomy prophecies of failure, in which too many indulge with a facility which they almost appear to think stamps them at once as authorities. The past is ransacked, and its styles of architecture are paraded before us. What, we are asked, is your style? Why do you not give us something new? The question to some extent answers itself. Men worked on formerly in ignorance of the progress of others. Now, originality is hindered by the affluence of knowledge. The results of long and painful experience are secured with one grasp, and our historical knowledge is the main hindrance to possessing a style of our own.

Originality in architecture is not only limited by such considerations as I have endeavoured to explain in a previous lecture, but it is also now, as it has ever been, the divine attribute of genius. Architecture, as an "art of utility," cannot depend on the rare and uncertain appearance of original genius, however gladly she will ever welcome its advent. She has to take note of the accumulated knowledge of centuries, to strive after beauty while insisting on utility, and to guide her proceedings always with common sense. Unfortunately for architecture it is an art which cannot be indulged in without a more or less considerable expenditure, and with the increasing price of modern labour, it must, in the highest forms, be out of reach of the multitude. And bear in mind that the great principle of modern social progress is care for the multitude; and their interests are now rightly placed everywhere in the foreground. There may be, and no doubt will be, as fine works of architecture hereafter, as have ever existed in the past, but they may be obscured by the vast numbers of lesser things which are brought into existence to supply the wants of the masses.

We often lament, and, unfortunately, with good cause, that whereas the workman of old took a pride in his work, and showed an individuality in it, we look too often in vain for the evidence of such principles in modern work. Some ascribe this result to the introduction of machinery, but this is probably to confuse cause with effect. It is the *demand for labour* which has raised its value, and has brought upon us the necessity for economising it, as far as possible, by machinery and labour-saving inventions. The world has obeyed the Divine command to increase and multiply, and the question has thus been raised,—Is half the population to be without shelter, in order that labour may be lavished on the remainder? Modern civilisation gives a clear answer to this question, and the architect, as the servant of the latter, must strive to bring his art within the scope of her behests.

We have seen that in Mediæval times, the hewers of wood and the drawers of water were housed in the roughest manner, and this was also the case with the common people and the slaves in Rome and Greece. We have too much reason to be dissatisfied ourselves on this point, but much is now doing to remove the reproach, and there is consolation in the thought that when evils are admitted by the public voice, their cure or mitigation, in this country, is seldom far distant. When this has been done; when our people have become well lodged; when education has begun to gather in its fruits of temperance, self-respect, and culture; I cannot but hope that art will have something to show for its share in the good work, and something to contribute to its further progress. If for us architects the days of castle building be over, we may find a work, less showy perhaps, but as really noble in educating the taste of an emancipated people.

Let us now consider, for a few moments, the peculiar requirements of modern cities, as they present themselves to the architect.

Any large assemblage of people in one place must, of course, give rise to difficulties as regards the provision of healthy dwellings. A cottage, standing in its own grounds, may long be deficient in many things, without causing more than a passing inconvenience. Soon other cottages are erected near it; these press one upon the other, till waste spaces are covered and houses touch. The ditches are defiled, springs are polluted, verdure is banished, and the air is thick with smoke. The former country hamlet is now the centre of a great town, the only home of its poor, and only too often the hotbed of crime and vice. What can architecture do in such a case, but wait and plead, until the public sense of responsibility is roused to insist on the necessity of wholesome habitations for all classes? The architect may then point out the advantages that may accrue to the entire community by making arrangements which, while removing reproach, may add interest, convenience, and beauty, to our cities.

But it is with other classes of buildings than the houses of the poor that we have to deal. While these need not be ugly, they cannot, of course, add much to the architectural ornaments of a great town. Such ornaments must be looked for in the public buildings, the banks, mercantile offices, and the dwellings of the wealthier inhabitants. On all public improvements it has long been admitted that the public has a right to speak. But though the principle has been admitted, the application of it has hitherto been far from complete; and even in utilitarian matters, it is to be feared that some terrible catastrophe may one day startle the public mind by the revelation of deficiencies in our legislation, as applied to the buildings in large towns.

Take, for example, the case of theatres, and other places of public assembly. It was but lately that hundreds of victims perished miserably at the Brooklyn Theatre, New York; and there are theatres in London which I never enter without anxiety, or quit without a feeling of relief. We have no public officer who can insist on the sufficiency of entrances and exits, proper width of passages, isolation from adjoining houses, and such matters. Stairs in new buildings must indeed be of incombustible materials; but they are too often narrow, ill-constructed, badly planned, and inconvenient, and the public has no choice but to submit. The evil is not only great but growing, for, in these respects, it is often our newest structures which are the greatest offenders.

Of course, when anything is wrong, people are apt to cry out on the architect, as if he were responsible, but this is not right. Wherever rents are high, as in London, land is dear, and the temptation to a lessee to recoup himself in every legal way, is irresistible. A difference of a yard in the width of a passage may give an extra row of seats, worth hundreds a year to the manager; and he knows that the public, ever thoughtless, when its amusement is concerned, will rush to a theatre, heedless of its hidden perils. I have mentioned theatres, not because they are the only buildings for which public control is needed, but because they are among the most obvious specimens of the class, which includes concert and lecture-rooms, churches, and all places where the public assembles in large numbers.

We have suffered, as to these matters, in London, for our vastness, which has always hindered the establishment of a central municipal authority, charged with an effectual control of architectural questions; and as there is a daily-increasing reluctance, on the part of the Imperial Government, to deal with metropolitan questions, Londoners are constantly falling between two stools, and have less power over their affairs than is possessed by the inhabitants of other English towns of far less importance. The Metropolitan Board of Works, although a modern creation, has shown itself alive to such responsibilities as the jealousies of public policy have allowed to be placed upon it, but it has suffered repeated checks from such causes. A well-meant attempt was made by this body, some time back, to obtain from Parliament such powers of supervision over theatres and public buildings as I have alluded to; to be used by the Board only in the interest of the public. Unfortunately, the application was refused; but it is quite clear to me, that the question must be faced, and that soon, as one of serious importance.

In the meantime, architects are not only bound to try to arouse the public interest in these matters, but their own responsibilities are intimately concerned in their satisfactory solution. Their profession is one of the most anxious, and I may add, thankless, in existence. If there is anything wrong in our houses, it is always the architect who is accused, and no one thinks, or cares to inquire, how far he has been controlled or overruled. Indeed, he is made answerable in thousands of cases, as to which no architect, worthy of the name, has ever been engaged, and in some of our most important works, public bodies appear to wish to deliberately ostracise the best men, by insisting on the lottery of competition.

Now, I yield to none in affirming that an architect must bear all fair responsibility; but if it be made clear that our public regulations are insufficient to secure good building, and even to provide for the safety of the public, it is evident that in this free country, in which the popular voice is all powerful, the real responsibility must rest with the public itself.

Architects are constantly publicly instructed, with emphasis, by self-constituted advisers, as to evils in our buildings, some of which are imaginary, while of others they are well aware, and remedies are presented with all the confidence natural to irresponsible critics. But it is forgotten that such remedies would frequently bring inconveniences of their own, and that they are generally costly, and would, therefore, raise rents. Houses in London are, moreover, mostly built on land which is leased for a term of years, which, I am sorry to notice, is becoming more and more restricted in some recent leases. Doctrines of tenant rights have not reached the metropolis; but it is idle, in my opinion, to hope for substantial improvement in our domestic architecture as long as men are called upon to build for the ultimate advantage of others. It is scarcely too much to say that in solidity of construction, and in provisions for safety in our places of public resort, we are behind most, if not all, of our European contemporaries. These are matters which are most important to the architect; for, without good and solid construction, architecture is a sham.

We know how careful the Romans were as to the corridors and exits of their theatres; and their work will remain, as a guide to future ages, after many of the flimsy structures of to-day have totally vanished. If the architect be, as I have said, greatly interested in these questions, they are to the public of vital moment, and it is for the public to deal with them through its chosen representatives. It is useless for an architect to provide exits in his plans, which are afterwards built up and disused because each doorway is a source of expense to the management, and there is no encouragement to design good houses as long as people prefer low rents to healthy homes.

In country places, where buildings are, perhaps, placed in spacious parks, isolated from all contact with others, it may, doubtless, be contended that any regulations in the interest of the public are uncalled for, and would be an unnecessary interference with individual liberty; but in towns the case is different. Here a man cannot live only for himself; he must so enjoy his own rights as not to injure his neighbour's. The principle of building regulations has long been conceded, and it only remains to determine their extent and application. Such regulations are, indeed, essential to the well-being of the community in modern cities.

Another important point in our civic architecture is the selection of materials, as bearing on both the artistic and the utilitarian side of our art. We have most of us admired the timber houses, so much in favour with Mediæval archi-

tects, and some are doubtless found to regret their disuse, and to declaim against any prohibition of such a manner of construction in our modern towns.

A careful study of old timber-houses will show us that their beauty depends on the sensible application of true principles of construction and decoration, designed with a careful recognition of the essential characteristics of the material employed. The forms of all corbels, windows, and roofs are such as are suitable for wooden construction, and for no other. But we do not find that wood was chosen by our ancestors, except from necessity. It was at hand in the great forests and woods of a sparsely populated country; it could be worked with simple tools, and quickly erected. Carriage was easy for it, as compared with more solid and weighty materials: it presented, in fact, the cheapest and easiest method of housebuilding; it was consequently generally employed, and the old builders brought to bear upon its construction all their skill, as well as their knowledge of art, for its ornamentation.

The crowding of hundreds and thousands of houses into cities, such as London, could not be foreseen; but I have shown, in one of my former lectures, how soon the civic authorities became aware of the danger of wooden buildings, and have described the simple remedies which they prescribed.

In modern architecture, wood bears a more subordinate place, and in so treating it we do but follow the same principles of common sense which guided our forefathers. They built chiefly in wood, because they had practically no choice but to do so. We have materials of all kinds brought to our doors, and if we attempted to employ wooden construction, as they did, the material would soon reach a famine price, and ultimately fail us. Thus, while we may not copy their practice, we may well be guided by similar principles, and may study, in a similar spirit, the qualities of the materials we employ, with a view to that rational application of ornament, which has ever distinguished good art from bad.

Having already spoken to you on the question of materials, and their effects on originality of architectural design, I will not dwell again upon that part of the subject. As, however, I have referred to danger from fire, I may, perhaps, be allowed to say a word as to the use of incombustible materials in our dwellings and public edifices. We do not need to be reminded how terrible an enemy fire is to architecture, and to human life. We know what it has done in former times to London, and the misfortunes of Chicago and Boston are recent. Hardly one of our theatres has escaped, and few even of our cathedrals have not been injured or threatened. It is, therefore, unnecessary to say that architects are bound to study this question, which is far from simple. Where a great body of fire exists, as in a warehouse stored with inflammable substances, such materials for supporting fire bear so large a proportion to the constructional portions of the building, that the latter are simply overwhelmed, and wood, stone, iron, marble, and brick, are involved in one common ruin. This has led some persons to think that a fireproof building is impossible, and, perhaps, in the strictest sense, it is. Not so, however, practically, in the vast majority of cases, with which architects have to deal. Because iron and stone have yielded, when exposed to intense heat, it does not follow that they may not be employed with advantage when all the circumstances of each case have been fully considered, and I cannot subscribe to the doctrine, than in public buildings, it is better that the stairs should be made of wood, which will burn, rather than of stone, which will not.

There is and should be no difficulty, at any rate, in so constructing our domestic architecture, that the existence in our houses of any large body of flame sufficient to cause danger to materials not in themselves capable of ignition, should be a physical impossibility. Unfortunately, this is seldom or never done, from causes to which I have already adverted. Houses are built to last for a term of ninety-nine, or even eighty years, and their builders prefer to pay premiums to fire offices rather than to invest additional capital in their buildings, so as to render them permanently safe from danger by fire.

The application of incombustible materials to ordinary buildings is still in a backward state in England, more so by far than it is in France, for example; and with reference to theatres, it has scarcely been seriously attempted. In these buildings the stage and its appurtenances must probably be always, more or less, inflammable, although chemistry may help us in this respect; but, as regards the auditorium, no difficulty exists which is not to be surmounted by any skilful architect, and a dangerous fire in this portion of the building ought to be an impossibility.

It is, indeed, even now panic, rather than actual fire, that constitutes the most terrible danger, in case of accident; and if the audience were conscious that the construction was, as it should be, if they saw wide corridors and ample staircases, *of materials which will not burn*, we should never again have to deplore such a calamity as the American catastrophe, already adverted to.

With the theatres, as many are now, it is quite right for the Lord Chamberlain to regulate the number of chairs, and to insist, whenever he can, on any precautions against the spread of fire which his experience may suggest; but the evil is hardly touched by such palliatives. We require regulations as to plan and construction at the outset. It is not enough to seek to improve our dangerous structures; but the construction of similar buildings should be made illegal. I leave this subject, as I began, by saying that the matter is one, not only or chiefly of architectural importance, but of public interest, to be dealt with by our rulers, as soon as they have come to be in earnest on such questions.

Passing from the class of considerations which determine the choice of materials, on constructional and utilitarian grounds, we may briefly allude to that of colour, more especially as applied externally. And here we confront the great enemy of architecture in our large English towns: I mean smoke, and its attendant evils, which destroys many of our materials, and injures the effect of all of them; which often renders abortive the best studied designs of chiaroscuro, and too often reduces our buildings to a dull monotony of depressing dirtiness.

And this is not all, for dirt, more than climate, affects our designs, and we cannot indulge with any freedom in the balconies, loggias, and recesses, common under more favourable conditions. Is it too much to hope that science may some day come to our aid, and deal with private chimneys in the same way as it has done with the greater offenders belonging to manufactories, steamers, and public establishments?

It was, I believe, to the energy of Lord Palmerston, relegated, for a time, to the supposed uncongenial duties of the Home Office, that the latter vast improvement of the smoke question was due; and if so, it may serve as an illustration of the old truth, always recognised by really great men, that "whatever is worth doing, is worth doing well."

But whatever improvements science may have in store for us in the future, we must deal as well as we can with the existing state of things, and if we are able to introduce the joys of colour into our streets, we may well be glad to do so. It is very difficult, however, to effect this satisfactorily. Effects of colour, if they appear to spring naturally, and without effort, from the materials employed, will be satisfactory, always supposing that such materials are appropriate to the purpose for which they are used, and in harmony with the main lines of the architecture. Otherwise, external colour is too often vulgar and offensive, and seems to serve no further purpose than to display an affectation and straining after illegitimate effect, which is fatal to repose, and to all principles of true art.

The first æsthetic necessity of architecture is that of apparent solidity and permanence; we must not, therefore, in our climate, indulge in the external use of coloured marbles, which only serve to indicate incipient decay. Glazed tiles and pottery have not as yet been very successfully employed on any large scale, and the necessary smallness of their parts will always render them more suitable for mere prettiness, than for dignity of treatment, such as we look for in important buildings. Polished granite is free from this difficulty, and if its costliness could be got over, might serve us admirably in our smoky and dirty streets. The use of such a material would necessarily modify our architecture, and compel greater simplicity in details and mouldings, which would be far from an unmixed evil.

The application of colour, internally, has been practised in all ages. In the majority of cases of domestic architecture, it is less a question for the architect than for the individual taste of the owner. In public buildings, however, it is unquestionable that coloured decoration is one of the most powerful aids to effect at the disposal of the architect.

We all remember recent discussions as to the decoration of St. Paul's, and cannot doubt that Wren would not be contented if he could see his *chef-d'œuvre* in its present unfinished condition. No progress appears to have been made in this matter, though we were lately told by a member of the committee that no less than 40,000*l.* had been collected for purposes as yet unfulfilled. I am not going to plunge with you into the mazes of this thorny question; but it is, I think, impossible to compare the state of St. Peter's, at Rome, with our own St. Paul's, and then to rest contented with a do-nothing policy in respect to the latter. Some critics have affected to speak contemptuously of St. Paul's, so that it might seem that it is of little consequence whether anything be done or left undone. I may, perhaps, be allowed to remind such persons that it is not very long ago that the word "Gothic" was only used contemptuously, so that Horace Walpole, who speaks of his head as being "filled with Gothic story," nevertheless complains that no one agrees with him, and laments that "the general disuse of Gothic architecture, and the decay and alterations so frequently made in churches, give prints a chance of being *the sole preservatives of that style*." Fashions change, and we, in these later days, have become so accustomed to hear the rival word, "Renaissance," applied as a term of reproach, that it is necessary to remember that great reputations, whether of men or of buildings, are, for the most part, based upon solid claims.

I have before quoted the views of Lord Macaulay on the question of originality, and you may, perhaps, feel as interested as I was on learning the effect produced on him by the first sight of St. Peter's at Rome. He had, of course, read and heard a great deal about it previously, and was prepared for much—a state of mind often the prelude of disappointment. He writes in his diary of 1838:—"Walked straight from the hotel door to St. Peter's. I was so much excited by the expectation of what I was to see, that I could notice nothing else. I was quite nervous. The colonnade in front is very well—very, very noble—yet it disappointed me, and would have done so had it been the portico of Paradise. In I went, and I was, for a moment, fairly stunned by the magnificence and harmony of the interior. I never in my life saw, and never, I suppose, shall again see, anything so astonishingly beautiful. I really could have cried with pleasure. I rambled about for half an hour or more, paying little or no attention to details, but enjoying the effect of the sublime whole."

Such was Macaulay's first judgment on St. Peter's, a judgment which subsequent visits only confirmed. I notice his opinion, not as coming from one who had made art his special study, still less as the verdict of a professional art critic who is almost bound to prove the necessity of his existence, as well as his superiority, by finding fault. Macaulay was neither of these, but he brought to the question an unprejudiced and widely-cultured mind, which gives weight to his opinions, and which may, perhaps, help some of us to rise superior to the narrowness too often engendered by fashion in art. Referring to the coloured decoration, and particularly to the mosaics which abound in St. Peter's, he says, after another visit:—"The best portraits of the great men of England, reproduced in the same material, beginning with Holbein's Wolsey, and More, and coming down to Lawrence's Wellington and Canning, would be worthy decorations to the new Houses of Parliament. I should like to see also the walls of St. Paul's incrusted with porphyry and verd-antique, and the ceiling and dome glittering with mosaics and gold."

There was a time when any suggestions for the artistic adornment of the Palace of the Legislature fell on sympathetic ears, and the care of such matters was entrusted to a Royal Commission, on which the Consort of the sovereign deigned to serve, and of which his was the moving spirit. Now, this is one of the many things which serve to remind us of the irreparable nature of the public loss, and the evidences of the arrested schemes of artistic decoration are eloquent of the Prince, who gave up his blameless life all too soon for the public good. Macaulay's suggestion stands, however, and a day may yet come for its consideration. He went again and again to St. Peter's, and at last writes: "To St. Peter's for the last time, and rambled about it quite sadly. I could not have believed that it would have pained me so much

to part from stone and mortar." With this quotation, I will leave the consideration of the effects of colour on internal architecture, as a question which, as I have already said, has been generally decided in the affirmative.

When we have settled the arrangement of our towns, and decided on appropriate materials, we have yet to consider the probable future of our domestic architecture, and we shall find here much to occupy our attention. With regard to the houses of the rich, there has certainly arisen improvement, as far as external effect is concerned, though their internal finishings lack, too often, both the solidity and refinement of their predecessors, of so recent a time even as that, for example, of the Brothers Adams. But there is no doubt that there is a disposition to improve; and without entering into details of design, on which much difference of opinion will always exist, we may all rejoice to see stucco making way for stone, and even for granite.

It is natural, under the circumstances which I have attempted to describe, that there should be great differences of opinion on matters of taste. Taste is, too often, a mere matter of fashion, and however unreasonable a fashion may be, no arguments, and no ridicule, will affect it for a time. Afterwards there comes, indeed, the inevitable recoil, and then the sober conclusions of good sense resume their sway. So it is with architecture: we have had no lack of eloquent denunciation of the works of Michelangelo, of Wren, of Inigo Jones, and other illustrious artists, disposed of under the title of the "pestilent" Renaissance. On the other hand, we heard but recently a war-cry of defiance from a well-known member of Parliament, belonging to the present Government, declaring that if there be anything to complain of in the present position of our architecture, it is the direct result of the great "Gothic revival" of our time.

Without necessarily casting in our lot with extreme theorists, we may, I think, fairly note with satisfaction the increase of interest in architectural questions, and the spirit of improvement, particularly in our large towns, which is generally apparent. It seems, indeed, incredible that any critics who have eyes to see the changes that are going on around us, and who remember the days when streets like Gower-street were possible, should do their best to dishearten improvers by their pessimist declarations.

It appears to be a palpable ignoring of obvious facts to deny that our public and commercial buildings, and the houses of the wealthy, are now designed with a care and attention to architectural beauty, which is a healthy sign of progress.

To the great and difficult problem of providing houses for the necessitous population, I have alluded in a former lecture. It is a question surrounded with perplexities, not the least of which will be to secure the application of the improved dwellings, when built, to the purpose for which they have been erected, so that they may be used by the class for which they are intended. Under our present circumstances, it is not for the artisans, but rather for a class just above them in the social scale, that our sympathies are chiefly due. Our artisans have had years of high wages and increasing prosperity, and have prospered accordingly, while our clerks and lower middle class, particularly those with fixed incomes, have had to encounter, as best they might, the effects of rising markets and practically diminished resources. Now that the provision of healthy houses for the poor is beginning to be recognised as a public obligation, I am not without hope that the principle of co-operation, not in any eleemosynary sense, may be applied to the houses of the middle class.

It is this principle, which, in our clubs, gives to the member who enjoys a mere pittance of income, the comforts and luxuries which only the possessor of thousands can command in his own house. It is the same principle which enables the poor man to travel as safely and rapidly as the millionaire; it is the principle which has brought to the houses of all of us comforts for which kings and princes have formerly sighed in vain. But it has as yet been very partially applied among us to dwellings.

It is true, we have a few expensive "mansions," where we may live in "flats"; but there is so strong a feeling amongst English people in favour of having a house of their own, and the requirements of family life, *in health and disease* are so various with us, that it is doubtful whether the flat system be capable of very extensive development in this country. None the less is it evident that the separate house system is, of necessity, wasteful and expensive. Might it not, therefore, be possible to remedy these evils and yet retain the separate house principle?—to establish economy of service on the principle of co-operation, while retaining the substantial advantages of the habits of life, to which we are accustomed, and to depart from which would be distasteful to most Englishmen? If we are to seek the advantages of living, to a certain extent, in common, must we lose the privacy we so much value? and is it necessary that we should take up our abode in barracks, piled up perhaps to a tenth or twelfth story?

It has often struck me, that in laying out our towns, provision might be made for correcting some of the objections I have referred to. Take the case of squares, for example. Here we have rows of houses surrounding a piece of land, which is planted and turfed, and is of considerable value. Why should it be wasted? Without withdrawing it from the nursemaids and children, who now principally use it, not very freely, might it not be possible, so to utilise the subsoil, as to provide for the houses around the square most, if not all, of the advantages which the flat system proposes to give?

I have placed before you an illustration of my meaning in a plan for such a square as I have hinted at. In this sketch the principle only is embodied, as the details will admit of much variation.

I have supposed a square of about seventy houses, inhabited by middle-class families. Each house would be complete, as at present, in respect of the sitting and bed-rooms. The kitchen and offices, common to all, are placed beneath the garden in the square, which, with the exception of small space in the centre, of about 25 ft. long and 10 ft. wide, would be turfed or planted in the usual way. The kitchen is in the open central space. It is covered with a skylight, and has abundant provision for ventilation. It would be invisible from the houses, as it would be surrounded by a glazed conservatory or greenhouse.

With the exception of the small space occupied by the kitchen skylight and the surrounding conservatory, the square would be turfed and planted as at present, with openings in it occasionally, to light the offices below. The offices would only occupy a small portion of the subsoil, and above them there would be sufficient thickness of earth to support vegetation. An instance of this arrangement exists in the gardens of Parliament-square, Westminster, close to the Houses of Parliament, under which the Metropolitan District Railway now passes. These gardens are, as regards flowers, among the most brilliant in London during the proper season.

The square would not have equal sides, but would be oblong in form, and the houses at the narrow ends of it would be built in the garden, with which they would communicate by means of terraces. By an arrangement of the levels, such terraces might be raised sufficiently to allow of the construction beneath them of rooms, built above ground, and with windows. These would serve as living rooms for such of the servants of the establishment as might be required to live on the spot.

In the conservatory, the waste heat from the kitchen would be utilised, plants and flowers would be kept alive in it, and it might also serve as a winter-garden, for exercise and recreation. The kitchen is surrounded by the other offices, radiating from the centre, and passages lead outwards in four directions to the four sides of the square. These passages pass under the roads, and establish a mode of optional communication with the basement of each house. Such communication might take place by means of a door, to be locked at night, like any other outer door, or there might be a window, with a turnstile through which food could be delivered. There would be a call-bell and speaking-tube from each house to the office of the controller, or officer in charge, of the kitchen establishment.

Beneath the underground passages there would be subways, in which all drains and pipes would be placed, in such a manner as to render access to them easy in case of need. Any required service of steam, hot and cold water, gas, or hydraulic power, would be supplied to the houses from the central establishment, much more directly and economically than by separate arrangements. Each residence might in this way possess a lift without needing special or expensive machinery. Cooking would probably be carried on chiefly with gas, and the products of combustion from all stoves and fireplaces in the offices, would be carried off by shafts, built as turrets at the corners of the houses at the small ends of the square, and so constructed as to consume them. These turrets would also form the boiler flues, and would be available for ventilation and for water-supply. In connexion with the latter, swimming and other baths could be provided for the two sexes, and thus promote health and useful exercise with the rising generation.

It would be the duty of the controller to receive and execute all orders, and to exercise over the whole establishment the same vigilance and economy which rule our clubs. All expenses would be booked and charged to the proper person, the bills to be paid weekly, and the cost of the establishment to be defrayed by a subscription or rate levied on the houses, as is now done for the maintenance of the square gardens, and managed by a committee of residents.

Such are the heads of a scheme which, if there is anything in it, may perhaps be worthy of discussion, and may some day be worked out in detail. It does not, of course, address itself to those who maintain large establishments and think little of economy. It does not profess to secure all the advantages of complete separation. But it is an attempt towards middle-class co-operation in defraying the great and increasing cost of living, and of building operations, in our large towns. It suggests an effort towards combining privacy and comfort, with the economical and other advantages of co-operation, to a greater extent than appears possible in huge tower-like buildings, laid out in flats, approached by a common staircase. The danger from fire in these great blocks is a contingency not to be thought of without a shudder, while the height is extravagant, and the inmates, particularly the young, the old, and the infirm, are dependent on mechanical contrivances, which may fail them in their hour of need.

In the construction of the houses round the square, there would be much saving of cost, and, consequently, of rent; for there would be no need of separate kitchens, sculleries, &c., with their wasteful fireplaces, in each house. All that would be wanted would be a small reception kitchen, in which food could be kept hot, and where any simple cooking could be carried on. It would not, therefore, be necessary to extend the houses as far backwards as is now done to provide space for the kitchens, so that less ground would be occupied, and there would, consequently, be a saving in ground-rent, as well as in the cost of building. The coal bill would, of course, be lessened, and each house might be warmed, inexpensively, by pipes from the central establishment. The necessary domestic service would be reduced to a minimum, and a small staff of cooks would suffice, where now one to each house is required. Moreover, a better style of *cuisine* would be brought within the reach of those who, in spite of having to give increased wages, find themselves daily more helpless in this respect, so that efficiency and economy would be alike promoted.

It must be evident that our present system of separate living is extravagant, and that it would be easy for one establishment to supply the wants of a large number of separate families. If we assume the existence of seventy houses in our square, with an average number of six inmates to each house, the total of 420 persons is no more than our hotel and club managers are accustomed to cater for daily as a matter of course; and in such places the trouble and expense of providing must be much more than in the case we are considering, of a collection of quiet middle-class households.

It is not, of course, to be contended that there will not be drawbacks in all plans of co-operative living, but the problem seems to me to deserve consideration, and it is one which will, I think, press more and more to the front, under the social exigencies of our time. It is desirable, therefore, for architects to recognise the needs of their contemporaries, so as to be ready for any calls that may be made upon their ingenuity and taste. They may find their recompense in bringing their art to bear upon objects which seem at first unpromising, and they may rely upon it that no measure will be so effectual in forming and bringing out a taste for art among the people as that of improving their domestic architecture. Without such taste among the public, isolated efforts will be of little avail, for it is useless to place good things before a tribunal which does not know how to refuse the evil and choose the good.

Nor need we doubt that the real requirements

of our countrymen are capable of being reconciled with the principles of art. Without going so far as some writers, who maintain that whatever is useful is beautiful, we may admit that architecture will never please if it be not consistent with truth and reason. To press this conclusion too far, as is done by those to whom I have alluded, would force us to condone the ugly structures with which our engineers have been, most improperly, permitted to disfigure our towns,—a conclusion which no one in this place, at any rate, can accept.

In this matter, as in those of municipal regulations, and the construction of theatres and public buildings, it is not right to condemn the agent when we should fix the responsibility on the principal. Our engineers have shown themselves masters of the science of construction, and if we now awake to complain of deformities, the fault rests not on the engineers, but on the public, who, by their representatives in Parliament, daily allow bills to pass which hand over our towns and country valleys to the tender mercies of a company, intent only on dividends. If the engineers do their duty to their employers by making their constructions as cheap, and often as ugly as possible, the public has no right to complain of the consequences of its own act, although we, as artists, must deplore the absence of such a general and cultivated taste among our rulers as would render it impossible to disfigure the land by Act of Parliament.

We cannot admit that art and beauty are to be thrust aside by a spirit of strict utilitarianism, such as that which contends, for example, that we must not call our ironclad navy ugly because "the beauty of a thing consists in its complete adaptation to the ultimate purpose in view." This defence was made, not long ago, by a distinguished naval architect, in reference to our later ironclads, than which nothing uglier has ever been contrived to float or to sink. I fear that our experience is too recent to allow us at present to admit the claim of their complete adaptation to their purpose of being perfect ships of war, and though we may sympathise with the naturally one-sided views of parental partiality, some of us may find it impossible to forget a picture we have seen within these walls, in which a distinguished artist found his best success, in delineating a recent ironclad, by concealing her details, and hiding her form, as much as he dared, by smoke and flags.

These are resources which unfortunately are not open to the architect, and we must therefore scrutinise closely any claims which render such palliatives necessary. If we are to accept the claim of usefulness, in all its fulness, it has been well pointed out that we may be expected to apply it to music, so as to call the shriek of the railway whistle beautiful, because it is well adapted to its purpose of being distinctly heard at a distance.

We know, however, as architects that, although we are bound to consider utility, utility alone is not art. The one addresses itself to the wants of our lower nature; the other appeals to the mind,—to that diviner part of us which enables us to claim the highest and noblest attributes of humanity, created in the likeness, however marred and partial, of the Most High.

We are not to be told that science is all-in-all, and imagination nothing. Material interests may powerfully affect the course of nations; but the higher feelings of conscience, sensitive to the principles of truth and justice, will ever make themselves heard in public affairs. So it is with architecture. We dare not make it a trade, but will ever claim for it the full position of a fine art. True, it must justify itself by common sense and by a proper adaptation of means to the end in view; but it must do more than this, for it must delight the mind and satisfy the yearnings of a cultured imagination.

It is reasonable and right that we should do justice to the scientific spirit of the age, which has given us the marvels of the steam-engine and the electric telegraph; but we cannot forget that man is not altered by these discoveries. His powers over nature are enlarged, his cravings for knowledge are more easily satisfied, but he is nevertheless the same.

Can he solve the great mysteries of life and death any better than when the world had just been born; or can he look forward into the future with more confidence than his forefathers of thousands of years ago? No, indeed! however much the mechanical side of our nature may have acquired, the imaginative and emotional cravings are the same as they have ever been, and among these is the love of beauty in art. What was beautiful thousands of years ago is beautiful now, and the perfection of the human form divine was first displayed by the first man.

We need not, I hope and believe, despond as to the future before us, in which mechanical ingenuity threatens, according to some, to thrust out beauty. Men will never be satisfied with stones instead of bread, and will ever appeal to art to satisfy the higher aspirations of the soul.

Architects must rise to their mission of ennobling common things, remembering that, if utility claims to be a power in their work, a refined love of beauty must be the governing principle. We cannot call that architecture which neglects the latter. It may be building or engineering, it may give us useful structures and powerful ships; but it is not architecture. We may value it as serving our wants, and possibly as promising a better future; but we refuse to it the name of art.

There is a passage in the thirteenth discourse of Sir Joshua Reynolds which refers to this subject so felicitously that I cannot do better than quote his words. After speaking of architecture, and pointing out that it does not come under the same rules as the imitative arts, he says,—"There is in architecture, as in painting, an inferior branch of art, in which the imagination appears to have no concern." Architecture "does not, however, acquire the name of a polite and liberal art from its usefulness, or administering to our wants or necessities; but from some higher principle. We are sure that in the hands of a man of genius it is capable of inspiring sentiment, and of filling the mind with great and sublime ideas."

The interest of architecture is indissolubly connected with those of its sister arts, which appeal more directly to the masses. To our painter brethren we look, more particularly in the first instance, to endow the masses with a sense of beauty. The surroundings of their daily toil are too often mean and ugly; but our picture galleries should be to them and to us havens of rest and a paradise of beauty. Here we may forget, for a while, the troubles of life, the anxieties,—well for us, if we should not say the greed,—of money-making, with its debasing associations. Here we rise into a purer atmosphere, as we contemplate the creations of genius, which have brought to thousands messages of peace, because they are based on the hopes and the affections of human nature, always and everywhere the same.

The great painter touches a chord in man's heart, which will never fail to vibrate when properly approached. The love of beautiful things may be deadened by the commonplace ugliness of the workshop or the factory; but it is a suspended animation; it is not dead, but sleepeth.

I have said that we look to the painter to pave the way for the enjoyment of architecture, for, in the case of the latter, the appeal must always be to a cultured intelligence, apart, that is, from an admiration of mere bigness, such as would class the pyramids among the architectural triumphs of the world. But we also appeal to the painter, as well as to the sculptor, to work hand-in-hand with the architect. This co-operation is, unfortunately, but too rare, from a combination of causes, into which I cannot enter at the end of my lecture, but without it we cannot hope for perfection, and for nothing less must we strive.

And now, in conclusion, let us believe that there is a place in this nineteenth century for art, and especially for architecture. We must not be impatient if each succeeding age develops new characteristics, nor must we quarrel with the stream of progress if it make to itself new channels, leaving wastes and shallows where once swept a deep and silent flood.

Rather let us be confident that we are not placed, in this our own time, to repine at our lot, and indulge in complaints that others have been better off than ourselves. Let us further be sure, that as long as the love of beauty is implanted in the human mind, it is treachery to art to declare the latter incompetent to deal with the problems of its day.

To us, as architects, such reflections are, perhaps, especially needed. We see around us, on the one side, the calm majesty of the great masterpieces of our art, which have received the admiration of ages, and are venerable, if only from the hallowing influences of time; while, on the other hand, we are jostled out of our places by the bustling energies of builders, surveyors, and engineers, careful about the immediate present, heedless of the past, and thinking little of the artistic future.

We are assailed by a multitude of teachers differing the one from the other, and agreeing only in the confidence with which each believes in himself.

Architecture is, in a sense, on its trial, and if it is to take the high place which alone it can fitly accept, it must satisfy the wants of men. It may not be for us to rear structures vying with the stately cathedral of old, expressing, in its solemn beauty, the hopes and fears of generations passed away, and speaking to us, as nothing else can speak, of the vanity of earthly grandeur. It may not be for us to crown the hills with castle-palaces, the symbols of oppression and wrong,—the stronghold of the powerful the prison of the weak. It may be that the age of lavish architectural display is past; but are we to conclude that there is nothing left?

May not architects yet find success in bringing art to bear on the tastes and habits of millions and so obtain consolation for the absence of the more selfish isolation of the past? Walking hand-in-hand with science; welcoming art wherever it may be found; striving to give Englishmen healthier and happier homes;—surely these are not light or unworthy objects?

If the conventional or utility-seeking quality of Architecture be sometimes urged against her title of a fine art, she may, perchance, find in it her most complete justification; for hers is not a mission of trifling, or mere pleasure, but rather one of deep and earnest sympathy with the wants, as well as with the artistic feelings, of all classes of men.

THREE PICTURE EXHIBITIONS AT PARIS.

At no period until now, have works of art received so much well-considered attention, or attracted more eager purchasers; at the same time, it is only at present that the fear has sprung up that the greatest treasures of art, both old and modern, are getting more and more rare, the more security and confidence is felt in the prosperity of the world. As yet, however, but comparatively few *chefs-d'œuvre* of art have been absorbed by distant collectors, and for many a year yet the caprices of taste, and the inevitable changes in our affairs, will supply a sufficiently abundant crop of art treasures for the fortunate lovers of the beautiful to indulge in.

At this season of the year, when the French artists, like our own, are putting their last graceful touches to their pictures for the Salon or the Royal Academy, when the artists' benevolent societies in London are looking up their stewards for their annual dinners, here in Paris they are doing their best to increase their funds for indigent artists. With this view, the members of the Académie des Beaux Arts have lent their large room for the exhibition of about 150 of Eugène Fromentin's works,—an exhibition which is far less attractive artistically than that which we described a few weeks since at the sale of the distinguished Orientalist's pictures.

Might not our artists' benevolent societies arrange similar exhibitions, say, for a week or more, before the dinner at Willis's Rooms, obtaining each year, by loan, the works of some modern artist, and making a charge during the week for admission, by which means, without doubt, a considerable addition to the fund would be announced by the secretary at the dinner?

In no way are we so well able to form a correct opinion of the merits of an artist's work as when we see together a number of his productions, and by such exhibitions as take place here in Paris, and which we propose for London, we should in a very short time became familiar with many choice works which are now almost lost on the walls of private collectors.

On a much larger and wider scale than the Burlington Club the two well-known artistic and literary Parisian clubs, the *Cercle* of the Place Vendôme and the *Cercle* in the Rue St. Arnaud, have lately been exhibiting to their friends some exceedingly interesting modern pictures.

It is a little difficult to criticise with perfect freedom collections placed before us by hosts who would decidedly consider it somewhat rude that we should say exactly all that we think. They have done their best to entertain and instruct us, and they have done so well, and placed before us so much to admire, that very little good would come by pointing out the failures.

At the exhibition of the Place Vendôme, M. Meissonier exhibits two of his marvellously-painted panels,—one representing "Moreau and the Chief of his Staff in Reconnaissance before the Battle of Hohenlinden." Unlike most of Meissonier's pictures, the figures in this design are made subservient to the landscape, which represents the country covered with snow,—

"On Linden, when the sun was low,
All bloodless lay the untrodden snow."

And never before has snow been more successfully painted, the low tone of the ground being beautifully contrasted with the colour of the white horse relieving dark against the comparatively whiter snow; the landscape in the middle ground is as perfect as in Gerôme's famous snow scene in the Bois de Boulogne.

Meissonier's second picture, another military subject, is less attractive, and the critics complain that it is somewhat metallic in its treatment,—a fault surely natural enough, when all the figures are covered with military accoutrements, and are represented under a midday sun in the open air. It is certainly, on the whole, less satisfactory than the Hohenlinden scene, but like all the work of the great master, it leaves one in wonder how the hand can so unfalteringly obey the dictates of so learned a mind.

Gerôme's small picture of the "Turkish Woman at the Bath" looks like the work of a patient pupil of the great painter; we like better his small portrait of M. Garnier, the architect of the New Opera House.

M. Alfred de Neuville, the painter of the striking incident of the last days of the campaign of 1870, the "Last Cartridge" exhibits here an excessively interesting and rare episode of the same war, in which he has put together some twenty or thirty Prussian soldiers as prisoners in the hands of the French; the details of the picture appear so exact that, if it were possible, one would imagine that the whole scene had been photographed and reproduced by the hand of a Regnault or a Fortuny.

Robert Fleury's portrait of Madame R. F. is one of those delightful efforts of skill that men of strong affections only rarely in their lives execute.

M. de Nittis's two pictures of "Trafalgar Square" and the "National Gallery" are, to us, familiar subjects. It is somewhat singular that Tissot was supposed to have failed in his view of Trafalgar-square, but Tissot's incident of the National Gallery steps was very much more English and London-like than any portion of M. de Nittis's larger productions. They are not well thought of here; in fact, they are singularly bad.

There are the usual number of cleanly-painted and faultlessly-drawn French domestic scenes, and some charming small landscapes, rather replicas of Diaz and Jacques than actual studies from nature.

At the club in the Rue St. Arnaud, Pasini exhibits two Oriental subjects, "Cavaliers at the Door of a Mosque," and the "Estafette." The painter has rarely been more happily inspired, and some parts of his pictures are painted with a solidity and beauty which exceeds anything that he has yet achieved; especially will be remarked the upper part of a doorway in enamelled tiles, which are modelled with rare felicity, or rather with incomparable skill.

Gonzalez's "Walk on the Terrace" is an amusing work of the painter who "Fortunyises" better than any other of that numerous happy school.

Roybet sends two pictures, cavaliers of the sixteenth and seventeenth centuries, painted very much better and very much more like the cavaliers of that day, than they would have been painted by the artists of the period.

A picture of a *bric-à-brac* dealer by M. Mathey, representing him carefully examining a chiselled vase, is wonderful for its sober and truthful realism, the whole picture appearing to have been produced by the rapid work of an hour or two, although it is very much more probable that it is the laboured result of many, many days, and is certainly the work of an elaborate artist.

Most of the pictures exhibited at these two clubs will probably be again seen at the forthcoming *Salon*. The habit in Paris of exposing some of the paintings previously to the annual exhibition, is certainly preferable to our London very questionable system of inviting all sorts of people to the artists' studios a few days before the pictures "go in" to the Royal Academy.

Paris.

ORNAMENT AND COLOUR.*

It would be impossible within the limits of a lecture to give an adequate description of ornament and colour, and it is doubtful if, with our present knowledge, any thoroughly exhaustive treatise could be written. Civilised nations have perished, as well as the stems from which they sprung, without leaving any trace behind them. Tyre and Sidon, Troy and Jerusalem, Jericho and Carthage have gone, and scarcely a fragment remains. Within the present generation the sculptured records of the triumphs of Sennacherib and Tiglath-Pileser have been exposed to our gaze. We are now exploring the ruins of that fountain of our faith, Jerusalem, and have just unearthed the glories of the Temple of Diana of the Ephesians, and the tomb of Mausolus.† Our loss is perhaps equal in the utter perishing, without record and in the times of remote antiquity, of those tribes who had made some progress in civilisation, and from whose records we might possibly learn some of the beginnings of that ornament that still persists amongst us.

As psychology advances, one branch of the subject will doubtless be devoted to the effects produced on man by the contemplation of the beautiful in form and the beautiful in colour. How this contemplation aids in civilising him, what particular forms of beauty most strongly appeal to him in his various stages of development, what beautiful things have first stimulated his imitation, and what his invention? Why the different types of ornament have been persistent? Whether through their supposed taliamanic virtues? through their being favoured by his gods, being emblems of his religion, or through their artistic capabilities? At present this branch of the object has been overlooked, and we make theories that are probably at variance with the truth. Where the imitation of natural forms is self-evident we cannot well go wrong, but where we are unacquainted with the type our conjectures must be vague.

The origin or type of the Runic or Keltic knots is still a subject of conjecture, and our curiosity is excited by the strange caprice of the designers of those Norman scrolls, in which a whole series of animals are threaded like the flock of geese on Baron Munchausen's fishing-line. All we can say is, that we share with the lower animals the love and appreciation of the beautiful, but that man alone can reproduce the objects of his admiration. In that primitive condition in which he dwelt in caves and used rude flint instruments, we find the bones and teeth of the animals he fed on carved with the representation of them in their living state.

Laying aside all thoughts of the why and wherefore, we may perhaps with advantage describe some of the main varieties of ornament, and try and fathom some of the principles on which the ornament of the more advanced nations has been designed and coloured.

The fountain-head of all ornament is nature. In the highest form of ornament (the representation of man and animals) we have but nature to copy; but this copying is not the servile reproduction of the individual, but the imaginative construction of the highest type from single specimens. In the composition of the single figure or the group, we are still only following the rules of nature. We are exercising our observation and judgment in selecting those attitudes which exhibit the highest grace, or those groupings in which there are found the greatest subtlety of line and the best disposition of light and shade.

Amongst all nations, from the savage upwards, there seems to be a desire to use man as the principal form for decoration, and next to him the most noticeable animals. It is easy to understand this desire, for "the only study of mankind is man." In the unlearned, at least, the eye is quicker to comprehend than the ear, and we get perhaps a more perfect, and certainly a more agreeable, notion of man's occupation and of his achievements by portraiture than by description. When the forces of nature come to be represented in the human form, the portrayal of man serves at once for instruction in his religion and for an object of worship. The believers of the two admitted monotheistic religions, the Jew and the Moslem,‡ have alone eschewed the representation of man and animals in the buildings and utensils devoted to religion. Both people were once idolators, and both were surrounded by idolatrous nations; but the Moslems are the only people who have left any large quantity of ornament behind them.

Of Jewish ornament we have none that I know of, except what is carved on the arch of Titus. The Moslems* have kept clearer of the representation of living things in their mosques than the Jews in their temples. The curtains of the tabernacle are described as woven with cherubim of cunning work, and the mercy-seat was adorned with cherubim of beaten gold. In the 25th chapter of Exodus we read "the cherubim spread out their wings on high, and covered with their wings over the mercy-seat." The golden mice of the Philistines were kept with the ark, and Hiram, the widow's son, made oxen of brass to support Solomon's brazen laver, and wrought lions, oxen, and cherubim on its borders.

It is true that some of the Moslems did adorn their walls, their garments, and their utensils with men, birds, beasts, and fishes; if I remember rightly, the Sheik at Cairo had hunting pieces in his saloon, and there are figure-pieces in the Alhambra, and figures and animals on the tile panels at Damascus, but we find that the stricter Moslems of a later date cut the throats of these depicted animals and destroyed the faces of the human beings. I am inclined to think that the portrayal of men and animals was a corruption introduced by the Persian Magians or fire-worshippers.

In Lane's translation of the "Arabian Nights," viz., in the story Noor-ed-deen and his son, and Shems-ed-deen and his daughter, this daughter is described "as decked with garments such as were worn by the ancient monarchs of Persia. Amongst them was a loose gown embroidered with red gold, presenting the forms of wild beasts and birds."

It is only amongst savages who cannot draw, and the adherents of Islam, that ornament is more than a border to figure subjects, or a filling between them. The main decoration of the Egyptian, the Assyrian, the Greek, the Roman, the Goth, and the Chinese, consists of figure pieces.

In treating of ornament in the modern acceptation of the term, viz., patterns either of arbitrary marks, or floral forms, in which living things are only subsidiary, we find that it consists of three sorts,—Mechanical, Natural, and Artificial, and the mechanical and natural are not unfrequently combined.

The Mechanical consists of straight, curved, or wavy lines, dots, circles, rings, stars, chequers, and geometrical figures of more or less complexity; the Natural, of a conventional representation of the bark of trees, scales and shells, the marking of insects, reptiles, birds, beasts, and flowers, of flowers themselves, of fruit, of leaves, of the foliage of plants and trees, of waves and the forms of water, of clouds, of fire, of rocks and mountains. The Artificial, of conventional representation of man's own works,—as of plaited, woven, and netted work, of cordage, of ribbons, laces, jewels, and standards, of pottery, of medals, of arms and armour, of tools and implements, of ships and boats, of carts and carriages, of houses and buildings, of tablets, masks, writing, and the like.

The love of beauty, the desire for adornment, and the gratification of vanity, combine in inducing man to invent when his immediate wants have been provided for; many savage tribes have had their taste so cultivated by a constant companionship with nature that their works are ornamented with a faultlessness that may vie with nature herself. The French poet, Theophile Gantier, remarked that if we found the mats, basket work, and pottery of any people possessing elegance of form, perfection of workmanship, and harmony of colour, we might safely say that these people were savages, and probably cannibals; but if these things were ugly in shape, coarse in manufacture, harsh, glaring, and discordant in colour, we might be sure they were the productions of a highly civilised race. There is, however, one certain test of ornament having been produced by a highly-civilised people, and that is, when the forms are of high type, great purity, and exquisite drawing.

Taking as the earliest specimens of ornament, that of savage tribes, we find the principles that

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† There are, it is true, some remnants of Carthage in the shape of mosaic pavements, but these scarcely differ from Roman work, and there are some remains of Sidon in the shape of glass bottles.

‡ All Christians call their religion monotheistic, but this is not allowed by Jews and Mahomedans. See Wallace's "Russia," and the "Koran," cap. 5, and *passim*.

* There are in certain ornaments of the mosques of late date animal forms introduced. In the mosque of Qaouam-el-dyn, of the eighteenth century, there are birds and human hands.

we can extract from the ornament to be the cutting up spaces into well-proportioned divisions, filling in the narrow spaces with zigzags, dots, stars, triangles, and the like, and filling the main spaces with irregular lines, dots, or markings, so as to get the effect of a uniform tint, and arranging on this ground spots, rectangular or other figures, symmetrically arranged; for we must recollect that these savages have constantly before them the bark of trees, the ribs of leaves, the spots on insects, reptiles, and flowers, and doubtless some of their first ornaments were the cast feathers of birds. The spiral is also one of the forms into which savage ornament is thrown.

Is this a direct copy from nature or from art? The fern on which some savages are said to subsist has a spiral bud, and so have certain other plants; there is the spiral of the eddy, of the serpent, of curls, of sheils, besides the spiral of any substance that is rolled. On the ends of the war axes of some of the South Sea Islanders there is a rude representation of a human head, with two unmistakable eyes, whose whites are of mother-o'-pearl; if we knew that these savages or their enemies had curly beards or heads, we should pronounce the spirals to be a rude imitation of them, for it is not quite clear which way upwards they are to be seen; but in the tattooing of the heads of the New Zealanders we find almost similar spirals, and we know that this tattooing was in imitation of the bars of the mackerel.

As plaiting, twisting, netting, and the most rudimentary weaving came to be practised, the ornamental forms given to them must conform to the exigencies of the manufacture, and other ornament made by staining, scratching, or carving, either rudely imitate the manufacture, or the woven ornaments are reproduced in their woven forms. In spite of the ingenious theories that have been started as to the origin of the Grecian fret—for instance, that it was an imitation of the crystallisation of a metal in the form of the normal of a spiral, or from cutting notches out of the bamboo, and bending it at right angles—I believe it was either one of the natural ways of ornamenting woven work, or the nearest approach to the wave to be got by straight lines. The next form we get is the undulating line, the meander of the Greeks, which may have been suggested by undulation of water, by the movement of the serpent or the earthworm, but when once this has been got we have almost all the main guiding form of ornament—the straight line, the wavy line, parallel lines, zigzag lines, the square, the parallelogram, the triangle, the circle, the spiral, and the meander.

The savage had, too, seized the principle of symmetry and balance, and the wings of the butterfly or the wing-cases of the beetle were enough to teach him these, but however he learned them he practised them. I use the word balance in opposition to symmetry. For instance, in beetles' wing-cases and butterflies' wings the two opposite wings are symmetrical, not only in shape but in ornamentation; while the ornamentation of each wing is most frequently unsymmetrical, the spots or markings being irregularly placed, but leaving the eye perfectly satisfied. This is effected, where there is merely a difference in tone, by an equality of spacing, the smaller and larger spots being in the same proportion to the several spaces. Sometimes it is effected by variety and intensity of colour; but the secrets of success in nature are not easy to be solved. That which seems but a simple expedient is got by the combined influences of form, colour, shade, and texture, mostly too subtle for analysis. To go right, we must either, like the savage, have our eye saturated with the beauties of nature, and so go right by instinct, or, by loving and persistent study, worm out some of the simpler principles. As far as I know, the savage possessed all the main forms; subsequent people have only modified or combined them. There was, however, one method of variety which, I believe, was first discovered by the Moslem, but which is found in every tree or in every bush that is overgrown with creepers, viz., the superposition of one pattern over a similar or a different one beneath.

Each nation appears to have had a special preference for some kinds of trees, plants, or flowers; the Egyptian loved and probably adored the palm-tree, the lotus, and the papyrus; he used them as ornament in patterns, in borders, and singly or in bunches for his columns; the Greek loved the honeysuckle much and the acanthus a little, and did not altogether despise the vine, the ivy, the laurel, the olive, and the convolvulus; the Jew loved the pomegranate and the almond; the Assyrian, the pine-apple and the lotus; the Greco-Roman, the acanthus; the Arab, some plant or flower with curling leaves; the Indian, the mango; the Chinese, the peony; the Western mediævals, in the thirteenth century, some sort of conventional plant, with thin deeply-channeled stalks and leaves foliated into four or five divisions, with the end of each leaf raised into a blob as if it had been beaten up from behind with a round-headed hammer, and subsequently every kind of plant, leaf, or flower but in the best times the bursting bud or half-opened leaf was preferred. The Renaissance artists took both the acanthus of the Greco-Roman, and the fanciful and capricious decorations found in some of the Roman baths, and covered everything with ornaments, in which the acanthus carried or filled in the spaces between vases, cornucopias, animals, chimeras, cupids, medals, and candelabra. You must not suppose, by my naming one or two plants or flowers, that these nations loved these only, but merely that there is a preponderance of them in their works, for I believe that at least the Persians, the Indians, the Chinese, and the Japanese used most of the flowers and plants they had about them.*

THE RESPONSIBILITY OF MASTERS TO WORKMEN FOR THE NEGLIGENCE OF FELLOW-WORKMEN.

IN the first article upon the above subject we showed how the present state of the law had gradually been produced, and how that of England differs from that of Continental nations. It is necessary, before a final opinion upon the question can be given, to examine for a moment the legal reasoning upon which the English Bench has hitherto acted. It is undoubtedly good and well-settled law that the act of the servant must be considered, when done in the course of his duty, as the act of the master,—that is a principle of too universal application to admit now either of doubt or of change. It is, no doubt, one which from time to time does press with some harshness on various members of the community, especially when, as is so often the case, shareholders are mulcted in heavy damages for the acts of servants of whose doings they are utterly and completely ignorant. But, on the whole, it is for the general interests of society that this rule should prevail. Why, then, should the exception in the case of masters and fellow servants exist? We will examine the reasons, as shortly put in Hutchinson *v.* The York, Newcastle, and Berwick Railway Company (5 Exchequer Rep., 343), which contains, to all intents and purposes, the law as it has been applied to subsequent circumstances. The injured man, say the judges, must be supposed to have contracted on the terms that as between himself and his master he would run the risk "of injury from the negligence of a fellow servant." We meet at the very outset with a radically weak point. "It must be supposed," say the judges, that such an implied contract is in existence. We see no reason why such a supposition at all should be entertained; it is, as a matter of fact, a purely gratuitous assumption. If A, a master, and B, a servant, do contract on these terms, well and good; the law has nothing to do with the reasons why two persons enter into a contract so long as it is legal. But, in truth, we have no such direct agreement; workmen do not contract with their employers on any such tacit terms; they receive no higher wages as an insurance against any risk or peril they may run from the acts of fellow workmen, nor do employers seek to obtain labour at a lower rate by saying they will hold themselves liable in such cases. Both parties well know how the law now stands. Each one contracts to serve and to pay without this fact having any influence whatever on their agreement. In no single one of the several cases in which the prevailing doctrine of the supposed reasons for it have been upheld has it been proved that any contract such as the judges presume to underlie it exists at all. In some trades certain, at times singular, customs are to be found, and then the law has held that such customs form an implied part of the contract. But no such custom is allowed to be presumed unless it is first clearly proved to exist. Here, on the contrary, a supposed customary term is imported into agreements without any such custom being proved or indeed existing at all. The fallacy of the reasoning in the cases which are now law in this country is well shown by extracting the chain of argument in the above case. "Put the case of a master employing A and B, two of his servants, to drive his cattle to market; it is admitted that if by the unskilfulness of A a stranger is injured, the master is liable." That is a sufficiently sound proposition. "Not so; if A by his unskilfulness hurts himself he cannot treat it as the want of skill of his master." That, again, is equally clear and sensible. "Suppose that, by the unskilfulness of A, B, the other servant, is injured whilst they are jointly engaged in the same service, then we think B has no claim against the master. The party injured knows that the negligence is that of his fellow-servant, not of his master." Clearly this is not a logical conclusion, for B knows nothing of the conclusion to be drawn from the act of his companion, so far, at least, as to detract from the master's responsibility; and if the master is responsibile for injury done by A to a stranger, it absolutely and necessarily follows that logically and legally he should be responsible if B is injured. As we all know, one partner cannot sue another, because they possess for business purposes a common existence; but fellow-servants and masters have no such community of interests. Even such a distinguished lawyer as Lord Cairns can find no better reason, if reason it can be called, for this ruling principle than this,—that when the master has engaged competent workmen he has done all that he is bound to do; and "if persons so selected are guilty of negligence, that is not the negligence of the masters." We may certainly ask, what is there to prevent the same doctrine being applied, in the case of strangers, where the master has selected proper servants? So much for the legal reasoning of the English judges upon which the doctrine has been built; it may be of interest to supplement our criticisms by the words of an eminent Scotch judge in a case of this kind, when he alludes to the English rule, "I think the justice of the thing is exactly in the opposite direction; I have rarely come across any principle which seems less reconcilable with general legal reason." The hints which have fallen from the bench as to public convenience belong to the general question, Should the rule any longer prevail? a part of the subject with which we shall conclude in another article.

* The remainder in our next.

NEW ACADEMY OF ARTS, DÜSSELDORF.

THE Academy of Düsseldorf, which has some claim to European celebrity, owes its origin to the Düsseldorf Picture Gallery, founded by the Elector Johann Wilhelm of the Palatinate (born 1658). He added to the valuable collection of paintings left him by his ancestors a very considerable number of the best works of almost all schools. In 1767 an Academy of Arts was founded, and most liberally endowed by the Elector Karl Theodor, who acquired a collection of sixty-five paintings and twenty-three sketches on canvas and paper gathered by Herr Krahe, and combined this collection, as well as the already existing Picture Gallery, with a school of arts for the education of young artists. Lambert Krahe, formerly Professor of the Academy of St. Luke at Rome and of the Academy of Florence, and a celebrated painter, was appointed director of the new Academy. The same Elector also established, in 1777, the Cabinet of Antiques connected with the Gallery. Among the artists who were pupils of the Academy, and who have made their mark in the history of art, may be mentioned: A. Langer, father and son; Hess, Cornelius, K. F. Lessing, Julius Hübner, Th. Hildebrandt, C. Sohn, H. Mücke, Chr. Köhler, &c.

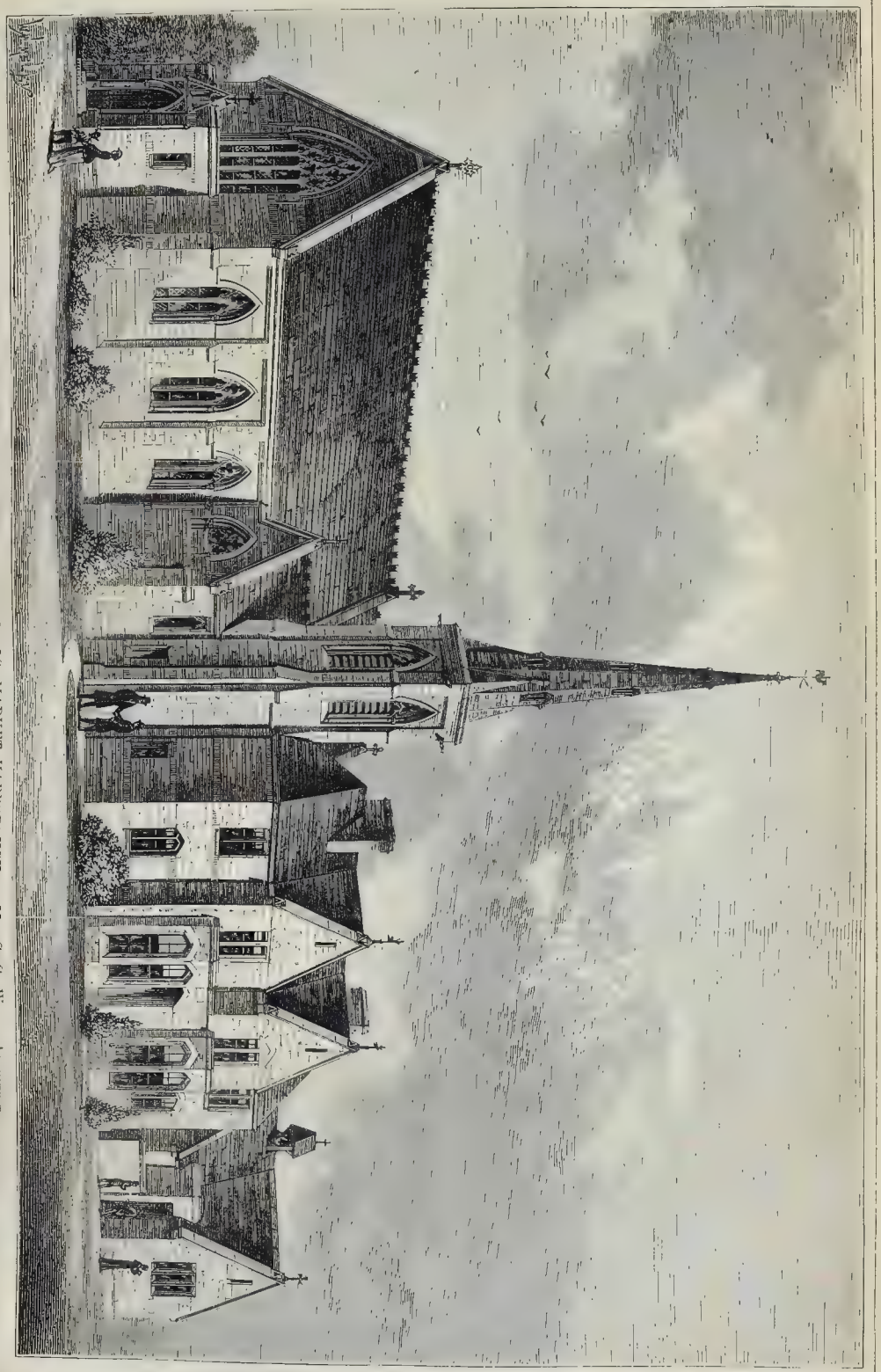
It would lead us too far were we to name all those eminent men who came from many lands to study at the Düsseldorf Academy, or to enumerate all their masterpieces. We need only record the fact that this home of the arts fell a victim to a conflagration which broke out in the night of March 20, 1872, destroying a part of the old castle, leaving only its bare walls. In consequence of this disaster, after protracted negotiations, a site at the harbour of safety on the Rhine was acquired, and an imposing new building (represented by our illustration) was projected, which is to contain lecture halls and galleries for receiving the collections of the Academy of Arts. The building is to contain eight larger studios for the professors of historical, ecclesiastical, genre, landscape, and portrait painting, the gallery of antiques, the painting class, and that of sculpture, the latter



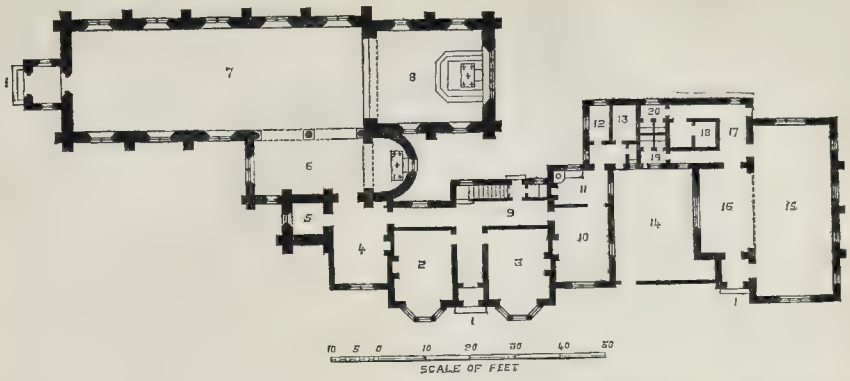
NEW ACADEMY OF ARTS, DÜSSELDORF.—Herr Hermann Riffart Architect.



THE DUTCH TRADING ESTABLISHMENT AT PORT SAÏD.—Heer Brouwer, Architect.



NEW (R.C.) CHURCH, PRESBYTERY, AND SCHOOLS, MARKET HARBOROUGH.—Mr. C. G. Weaw, Architect.



1. Entrance.
2. Parlour.
3. Dining-room. } Presbytery.
4. Sacristy.
5. Tower.
6. Lady Chapel.
7. Church.
8. Chancel.
9. Corridor.
10. Kitchen.
11. Scullery.
12. Larder.
13. Coals.
14. Yard.
15. School-room.
16. Class-room.
17. Lobby.
18. Heating Places.
19. Girls' W.C.
20. Boys' W.C.

NEW BUILDINGS, MARKET HARBOROUGH.—*Plan.*

with clay and plaster-rooms; also studios for the teachers of engraving on copper, an elementary class, and rooms for assistant-teachers. Of studios for teachers, the following have been provided:—Four each for historical, ecclesiastical, and genre painting, five for landscape painting, one each for animal painting and a painting class, four for the students of sculpture, two for the engraving class, a large antique room, and the elementary class. The school of architecture consists of a room for its professors, with library and a lecture-hall, as well as a gallery for placing plaster casts. There are also rooms for the history of art, with room for teacher, and rooms for drawing and anatomy. For general business purposes, a conference-hall with office, a large *aula*, serving also as picture gallery, rooms for two housekeepers and servant, have been provided. Rooms have also been secured for the collection of engravings on copper, with a room for the conservator, the Ramboux collection (copies of Italian *chefs-d'œuvre*), and large galleries for the collection of plaster casts.

The new Academy buildings face towards the north, with a free view of the harbour of safety, the castle gardens, and the Rhine, and has a length of 518 ft. The principal entrance is at the east front, reached by a carriage approach from the town. The buildings are in the Renaissance style, their principal front being for the most part faced with freestone. As a horizontal termination of the windows was prescribed for the studios, it was very difficult, considering the many square-headed windows of equal size, to obtain a happy effect; but the architect has successfully overcome this difficulty by powerful divisions by freestone and pillar. The centre projections especially jut strongly forward, and are to receive in the eight niches of the second floor portrait statues of eminent artists. The balustrade is to receive statues at the corners; and over the centre parts of the building are acroteria. The principal entrance at the east is adorned with two Ionic columns with caryatides over them, supporting the entablature. A frieze with the names of eminent artists runs round the principal fronts under the windows of the first-floor. The coloured ornamental decoration of the panels between the windows in the first and second stories forms an especially rich feature, which gives expression to the character of the Academy, the decoration being grey upon grey in a darkish red brown ground between the windows of the first floor, and coloured upon a golden yellowish ground in the second story. Outside painting soon deteriorating under the influence of the atmosphere, the coloured patterns are burnt into the terra-cotta, and the experiments made to this effect promise a favourable result.

The building is being executed after the plans and under the superintendence of the architect, Hermann Riffart, and will be a handsome addition to Düsseldorf. The young architect, who was born in 1840, has already made a name for himself by his numerous creations, having gained experience by the study of the works of the East, of Italy, and France. He has obtained numerous prizes in different competitions, also the first prize for the projected new Hall of Arts of Düsseldorf,—a worthy companion to the new Academy of Arts.

NEW (R.C.) CHURCH AND SCHOOLS, MARKET HARBOROUGH.

THE accompanying engravings show the ground plan and view of the new (R.C.) Church, Presbytery, and Schools in course of erection at Market Harborough, Leicestershire. The peculiar shape of the site has necessarily influenced the plan, but the result has been a picturesque and conveniently-arranged group of buildings. The walls are faced with the excellent red bricks of the locality, with Bath stone dressings. The church has an open timber roof of handsome design. The presbytery is provided on the first floor with five bedrooms and two dressing-rooms, and with cellars on a basement floor; and the school is divided from the class-room by revolving shutters, so that the latter can be used as a stage for exhibitions, penny readings, and so on, the schoolroom being for the audience. The church and schools are heated by hot water. Mr. C. G. Wray, of London, is the architect; and Messrs. Halliday & Cave, of Oakham, are the contractors for the works.

THE DUTCH TRADING ESTABLISHMENT AT PORT SAÏD.

THE Dutch Trading Establishment at Port Saïd, founded through the liberality of his Royal Highness Prince Henry of the Netherlands, has for its aim the advancement of the commercial relations between Egypt and Holland and her colonies. The Prince was present at the formal ceremonies attending of the opening of the Suez Canal, when he at once perceived the importance of Port Saïd for the Dutch trade, and that it would become the emporium of the ports of the Mediterranean, if not immediately after the opening of the canal, at any rate at no very distant date. Moreover, should Port Saïd ever be connected by a sweet-water canal or a railway directly with Middle Egypt, it will have a large share in the export of Egyptian produce. In that case also, should Dutch manufactures be brought to Port Saïd, they would find their way there, and thus a large field would be opened up where they could profitably be introduced. We need not be surprised, therefore, that the Prince was very desirous that, whenever that time arrived, Holland should be in a position to compete in the new trading movement sure to arise.

To do this successfully, the Prince saw that the Dutch must have warehouses there in which to store their goods; that they must have wharfs, enabling them to load and unload vessels at the lowest charges; they must have a staff of reliable persons charged with the administration and supervision of those wharfs and warehouses. But the Prince had also the interests of Dutch shipping at heart. Port Saïd is the place where ships in passing the canal, whether outward or homeward bound, take in coals and water, and consequently no greater service could be rendered to that shipping than to give it an opportunity of supplying its wants. It was consequently necessary to build coal wharfs, to procure rails and trucks for a railway, lighters, and steam-tugs, as well as to construct a large reservoir with pumping machinery to supply ships with water as well as coals.

Passengers on board Dutch ships, and other travellers visiting Port Saïd, were not forgotten. To remain on board ship while coaling is going on is very unpleasant; to many a short stay on shore would be most desirable, and an hotel in the Dutch-Indian style had consequently to be established, where travellers, if only for a short time, may find a change from the life on board ship, and an opportunity to spend their spare time pleasantly.

The important charge of superintending the vast undertaking was entrusted by the Prince to Heer D. J. Brouwer, who, on July 14, 1873, started for Port Saïd, as the representative of Holland, to take possession of the ground (comprising an area of a little over two acres) which had been meanwhile purchased, to draw up the necessary plans for the different buildings, &c., and to concert the necessary measures, so that, after the approbation of the plans by the noble founder, active operations might speedily be commenced. Heer A. T. L. Rouwenhorst Mulder, civil engineer, who had been appointed by his Royal Highness to co-operate with Heer Brouwer in carrying out the works, arrived at Port Saïd on August 23, 1873, after paying a short visit, at the request of the Prince, to the docks of Marseilles.

As early as the month of December, 1873, the finished plans were presented to the Prince, and received his approval on February 15, 1874. The tenders invited for the execution of the works, and opened on February 20, did not give any favourable results. The different contractors competing, well aware of the great difficulties connected with the execution of works of such magnitude, at a place, too, where all the building and other materials had to be brought from elsewhere, and perhaps afraid of the strict conditions to which they had to submit under the contract, exceeded in their tenders by far the estimated cost, and the matter had therefore again to be submitted to the Prince. The latter, however, wisely resolved to spare no expense in making the establishment answer in all respects to the importance of such an undertaking, and authorised Heer Brouwer to exceed the estimate and give the contract to Heeren. A. Meillon & Co.

Consequently, on June 20, 1874, the works were commenced. A little over two years later, on September 1, 1876, they were all but com-

pleted, so that on that date the establishment could be thrown open, while on December 1st following, after the arrival of the requisite staff, the "Hotel der Nederlanden" was also opened.

The works were executed mostly by Italian and Dalmatian workmen, amongst whom were a few Frenchmen and Greeks, as also Arabian masons and labourers. It is greatly to the credit of the contractors that the works were carried on and completed in an exemplary manner. The greatest order reigned at all times, no irregularities took place, both Europeans and Arabs working uninterruptedly and cheerfully, even during the greatest heat, from early morning till night.

The extent of the works may be gathered from the following data. The quantity of earth removed was 529,750 cubic ft.; the amount of concrete used 24,722 cubic ft.; the brickwork and masonry, 211,900 cubic ft.; while about 16 tons of ironwork have been used in the construction.

The Dutch trading establishment at Port Saïd covers, as has already been stated, an area of over 2 acres, and is situated at the angle of the Ismael and Cherif Basins. Double wharfage has thus been supplied. But besides this exceptionally favourable position, jetties have been constructed in both basins, where ships of a draught of 23 ft. may be moored. Goods may be loaded from or discharged direct on to the wharf, a double line of rails connecting the jetties with the warehouses, so that the goods remain only a very short time in the open air. Each jetty consists of a heavy wooden platform, having the form of the letter T, and supported on iron screw-piles, of which those in the outer row have a length of 40 ft. The placing of the piles required much care, in consequence of the sloping nature of the bottom. The water-supply pipes are run out on to the jetties, so that in case of a ship taking in water hose are screwed on to the ends of the pipes, and the water sent by centrifugal pumps direct on board. Removable cranes are also placed on the jetties.

The front of the principal building, round which runs a broad verandah, broken only at the entrance, faces the Ismael Basin. Standing before the principal entrance, with the back to the jetty in the basin, one has the hotel and the space to be used as a bazaar (in the event of the extension of trade at Port Saïd) on the right hand, the offices and the residence of the director on the left.

The building is 238 ft. long and 69 ft. broad, and rests on a foundation of concrete. In order to obtain a firm subsoil, the layer of clay which formed the bed of Lake Menzaleh until the present bottom of the basin was thrown upon it, was excavated to a depth of 7 ft. 3 in. The outer walls are 2 ft. thick, decreasing to 1 ft. 8 in., and the inner ones 1 ft. 8 in., decreasing to 1 ft. 4 in. This thickness was adopted in order to make use of the rough-hewn stone from Cyprus and Alexandria, and, on the other hand, because the great heat during summer at Port Saïd makes thinner walls undesirable. The mortar used consisted of well-washed sharp sand and hydraulic lime imported from France.

The first story of the principal building is 5 ft. above the ground. In consequence of the ground within the building having been excavated to a depth of 3 ft., a cellar-space extending under the whole first-floor, nearly 7 ft. high and of an area of about 11,000 square feet, has been obtained. The floor of the cellar, consisting of concrete with a layer of hydraulic cement, lies 1 ft. above high-water mark, so that the goods may be safely stored in the cellars even at the highest water-level. By openings left in the interior walls of the building, the cellars communicate with each other. The four entrances to the cellars are on a slope, facilitating very much the movements of goods, especially heavy wine-barrels.

The second story of the principal building, like the first surrounded by a verandah, contains the bedrooms and the drawing-rooms of the hotel, which extend to the residence of the director. Above the entrance is a third story of the hotel, containing four bedrooms, with a splendid view.

On entering the vestibule of the hotel, there is on the right the dining-room, which accommodates 100 persons, while to the left are the reading, billiard, and smoking-rooms, where the principal journals may be found. The furniture of these rooms is plain, but comfortable; airy cane chairs, marble-tables and floors. The rooms are well ventilated; they are also provided with fireplaces, a luxury unknown in that country, but very welcome during the cold season. A refreshment-bar, well stocked with all the nicetties which the different nationalities that meet here are in the habit of consuming, and all of the best quality, invites the stranger to become acquainted with Dutch proficiency in that department.

A little further back in the hall are stone stairs, leading to the second story of the hotel. On ascending them a broad lobby is reached, running through the whole length of the hotel, separating the front and back rooms, and forming an excellent means of ventilating the whole building, the large balconies, as well as skylights, providing a continual supply of fresh air.

Each room has a large verandah. The furniture of the rooms is such as is found in all first-class hotels. The number of rooms is twenty-four, including six larger ones, of which one is a drawing-room, in which smoking is not permitted, and which contains a piano. Everything—doors, sunblinds, furniture, &c.—has been made in, and, with a thousand other objects, imported from Holland. Even the timber of the beams had to be brought from abroad, being derived partly from Trieste and partly from Alexandria.

PRIVATE BILL LEGISLATION.

During the last few weeks the committees of both Houses of Parliament have been busily engaged in the investigation of the several private Bills in respect of proposed new works, and already some decisions of importance affecting several of the projects have been arrived at. Amongst the Bills disposed of is that of the London and Brighton Company, which seeks, amongst other things, powers to appropriate twelve acres of Mitcham Common for the construction of a new branch railway. The proposal was opposed before the Committee, on the ground that it involved the partial appropriation of an open space, and one of those Metropolitan commons which belong to the public for recreation purposes. The evidence given before the Committee on behalf of the Company was to the effect that, if they were allowed to make the railway over the common as proposed, the Wimbledon and Croydon line would be much relieved, and the public benefited. Mr. Bidder, Q.C., who appeared for the opponents of the Bill, asked the Committee, on public grounds, to put a stop to what he designated as "these railway invasions of the open spaces of the Metropolis," which had been too long treated as no man's land, to which anyone had a right. The Committee, after deliberating a few minutes, refused their sanction to this part of the Bill. Mitcham Common is therefore, for the present at least, saved. The next part of the Bill proceeded with was the application of the Company to obtain possession of the New Cross station of the East London Company for siding purposes. It was urged on behalf of the London and Brighton Company that inasmuch as the trains of the East London Company now ran into the Brighton Company's New Cross station, the former Company had no further use for their New Cross terminus; but the East London Company strongly opposed the application, alleging that in consequence of the Brighton Company having failed to carry out traffic agreements, they (the East London Company) might require the station in connexion with new and extended lines beyond New Cross. Sir John Hawkshaw, the engineer of the East London line, having given evidence against the Brighton Company's application receiving parliamentary sanction, the Committee rejected it, and the East London retain their New Cross station.

The Bill of the Brighton Aquarium Company is also amongst those which have been disposed of by the committees. The Company applied for powers to raise the flat roof of the Aquarium buildings for the purposes of ventilation, by means of domes with ventilating fans. The Bill was opposed by the Corporation of London-super-Mare, their allegation being that the raising of the roof high above the level of the roadway might be an unsightly object, and obstruct the sea view from the adjoining houses. On this objection being raised the Committee ruled that it was not expedient to proceed with the Bill, and it was withdrawn.

The Bill jointly promoted by the Alexandra Palace Company and the Muswell Hill Estate Company, is expected to come before the Committee, next week. The Bill seeks powers for building on the Muswell Hill Estate. The preamble states that the Alexandra Palace is built, and the Palace grounds laid out, as a place of public resort and recreation, but that the receipts have been found inadequate to the maintenance of the Palace and grounds on so large a scale; and that it would tend to the future success of the undertaking if a considerable part of the grounds now set apart for public resort and recreation were discharged from the condition contained in the 25th section of the Act of 1866, under which it is provided that the Palace and grounds "shall be continued as a place of public resort and recreation for ever." The first clause of the Bill authorises the sale of certain portions of the land for building purposes, and another clause empowers the Palace Company and the Estate Company to enter into agreements for keeping open the Palace and the remainder of the grounds.

The Board of Trade has just issued their report upon all the railway, canal, tramway, gas, and water Bills for the session, from which it appears that the number of Bills which relate to railways and canals amounts to 116. The number of Bills promoted by existing companies is 91, for the construction of 221 miles of railway, the proposed capital for which is 19,807,750*l*. The number of these Bills in respect of English lines is 68; Scottish, 12; and Irish, 11. The number of Bills promoted by new companies, 25, for the construction of 258 miles of railway, at an outlay of 5,508,600*l*. The English Bills are 21 in number, Scottish, 1, and Irish, 3. The total length of these new lines proposed by existing and new companies being 479 miles, and the aggregate proposed capital, 25,316,350*l*. The number of Bills which relate to tramways is 16, for the construction of 51 miles, at a proposed outlay of 752,600*l*. The number of Bills in respect of proposed English tramways is 11; Scottish, 2; and Irish, 3. The number of Bills which relate to the supply of gas is 43, for the construction of new works, at a proposed outlay of 2,815,100*l*. Of the entire number of these Bills, 35 are in respect of works in England, 2 in Scotland, and 6 in Ireland. The Bills in respect of water-supply are 21 in number, and the proposed expenditure 2,960,000*l*. The English Bills are 18 in number, and the Scottish 3. The aggregate number of railway, canal, tramway, gas, and water Bills is 196, and the proposed expenditure 31,854,050*l*. In addition to the foregoing, the number of applications made to the Board of Trade for provisional orders relating to tramways and the supply of gas and water amounts to 28, all of which are for undertakings in England, at a proposed aggregate outlay of 404,882*l*. The largest amount of capital proposed to be raised under the Bills by existing railway companies is by the Great Northern Company, which proposes to raise 5,199,600*l*., for the construction of about 75 miles of additional railway and other works.

JOINTS IN WOODWORK.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

At a meeting of this Society held on the 1st ult., Mr. R. M. Bancroft, president, in the chair, a paper on "Joints in Woodwork" was read by Mr. Henry Adams, A.I.C.E. and M.Inst.M.E., Lecturer on Engineering at the City of London College. The following is the substance of the paper:—

This subject is seldom treated in a sufficiently systematic manner in the text-books used by the junior members of the profession, especially as among engineers iron is looked upon as the staple material of construction, the properties and economical uses of which receive in consequence an almost exclusive share of their attention. Although wood is used much less than formerly in permanent structures, it is still of sufficient importance to warrant a careful study of its nature, properties, and uses.

All trees are divided by botanists into three classes,—*exogens*, or outward-growers; *endogens*, or inward-growers; and *acrogens*, or summit-growers, according to the relative position in which the new material for increasing the substance of the tree is added, viz., whether towards the outside, the inside, or the top. Typical trees of each class would be the oak, the palm, and the tree-fern. We have to deal with the exogenous class only, as that furnishes the timber in general use for construction, the term "timber" including all varieties of wood which, when felled and seasoned, are suitable for building purposes.

If the stem of an exogenous tree be cut across, it will be found to exhibit a number of

nearly concentric rings, more or less distinct, and, in certain cases, radial lines intersecting them. These rings represent the annual growth of the tree, which takes place just under the bark. Each ring consists of bundles of woody fibre, or vascular tissue, in the form of long, tapering tubes, interlaced and breaking joint with each other, having a small portion of cellular tissue at intervals. Towards the outer edge of each ring the woody fibre is harder, more compact, and of a darker colour than the remaining portion. The radial lines consist of thin hard vertical plates, formed entirely of cellular tissue, known to botanists as "medullary rays" and to carpenters as "silver grain." As the tree advances in age the rings and rays become more irregular, the growth being more vigorous on the sunny side, causing distortion. It must be borne in mind that the strength of wood "along the grain" depends on the tenacity of the walls of the fibres and cells; while the strength "across the grain" depends on the adhesion of the sides of the tubes and cells to each other.

Tredgold proposed a classification of timber according to its mechanical structure. This, as modified by Professor Rankine, is given in the following table:—

Class I. Pine-wood (coniferous trees):—Pine, fir, larch, cowrie (New Zealand pine), yew, cedar, &c.

Class II. Leaf-wood (non-coniferous trees):—Division I., with distinct large medullary rays; Sub-division I., annual rings distinct:—Oak; Sub-division II., annual rings indistinct:—Beech, alder, plane, sycamore, &c.

Division II., no distinct large medullary rays:—Sub-division I., annual rings distinct,—chestnut, ash, elm, &c. Sub-division II., annual rings indistinct,—mahogany, teak, walnut, box, &c.

Having glanced at the microscopical structure of the wood, we shall be in a position to understand the process of seasoning and the shrinking incidental to that operation. While wood is in a growing state there is a constant passage of sap or nutritive fluid, which keeps the whole of the interior of the tree moist and the fibres distended; but more especially towards the outside. When the tree is cut down and exposed to the air the moisture gradually evaporates, causing the fibres to shrink according to certain laws; this is the natural process of seasoning. There are various methods of seasoning timber artificially; in each case the object in view is to expedite the process of evaporation. The shrinkage in length is very slight, and need not therefore be considered, but the shrinkage transversely is so great that it is necessary to look closely into the nature of it, as the question of jointing is affected considerably thereby. The behaviour of timber in shrinking was demonstrated by Dr. Anderson in one of the Cantor lectures at the Society of Arts, of which the author of this paper has availed himself to some extent.

As the moisture evaporates, the bundles of woody fibres shrink and draw closer together, but this contraction cannot take place radially without crushing or tearing the hard plates forming the medullary rays, which are unaffected in size by the seasoning. These plates are generally sufficiently strong to resist the crushing action, and the contraction is therefore compelled to take place in the opposite direction, *i.e.*, circumferentially, the strain finding relief by splitting the timber in radial lines, allowing the medullary rays in each partially severed portion to approach each other in the same direction as the ribs of a lady's fan when closing. The illustration of a closing fan affords the best example of the principle of shrinking during seasoning, every portion of the wood practically retaining its original distance from the centre. If the tree were sawn down the middle, the cut surfaces, although flat at first, would in time become rounded, the outer portion shrinking more than that nearer the heart, on account of the greater mass of woody fibre it contains and the larger amount of moisture. If cut into quarters each portion would present a similar result.

If we assume the tree to be cut into planks, then, after allowing due time for seasoning, it will be found that the planks have altered their shape. Taking the centre plank first, it will be observed that the thickness at the middle remains unaltered, at the edge it is reduced, and both sides are rounded, while the width remains unaltered. The planks on each side of this are rounded on the heart side, hollow on the other, retain their middle thickness, but are reduced in proportion to their distance from the centre of the tree; or, in other words, the more nearly the annual rings are parallel to the sides of the planks the greater will be the reduction in width. These remarks apply more especially to oak, beech, and the stronger home firs. In the softer woods the medullary rays are more yielding, and this slightly modifies the result, but the same principles must be borne in mind if we wish to avoid the evils of shrinking which may occur from negligence in this respect. The peculiar direction which "shakes," or natural fractures, sometimes take is due to the unequal adhesion of the woody fibres, the weakest part yielding first. In a "cup-shake," which is the separation of a portion of two annual rings, the medullary rays are deficient in cohesion. So far we have considered the shrinking only as regards the cross section of various pieces. Turning now to the effect produced when we look at the timber in the other direction, if we take a piece of timber with the end cut off square, as this shrinks the end still remains square, the width alone being affected. If, however, the end be bevelled we shall find that in shrinking it assumes a more acute angle, and this should be remembered in framing roofs, arranging the joists for struts, &c., especially by the carpenters who have to do the actual work of fitting the parts.

We may now leave the question of shrinkage and proceed to a consideration of the more immediate object of the paper. In the following table an attempt has been made to classify timber under the different terms by which it is known according to its size and other accidental characteristics. This is only a rough approximation, as no definite rule can be laid down, but it may be of some assistance to those who have occasionally to deal with workmen using the terms.

Classification of Timber according to Size (approximate).

	In.	In.	In.	In.
Balk	12 by	12	to 18 by	18
Whole timber	9 ,,	9	,, 15 ,,	15
Half timber	9 ,,	4½	,, 18 ,,	9
Scantling	6 ,,	4	,, 12 ,,	12
Quartering	2 ,,	2	,, 6 ,,	6
Planks	11 to 18 by		3 to	6
Deals	9 by	2 to	4½	
Battens	4½ to 7 by		½ ,,	3
Strips and laths	2 ,,	4½	,, ½ ,,	1½

Pieces larger than planks are generally called timber, but when sawn all round are called scantling, and when sawn to equal dimensions each way are called die-square. The dimensions (width and thickness) of parts in a framing are sometimes called the scantlings of the pieces. The term "deal" is also used to distinguish wood in the state ready for the joiner from "timber," which is wood prepared for the use of the carpenter. A "log" or "stick" is a rough whole timber unsawn.

The use of wood may be discussed under the two heads of carpentry and joinery. The former consists principally of the use of large timbers, either rough, adzed, or sawn; and the latter of smaller pieces, always sawn, and with the exposed surfaces planed. The carpenters' work is chiefly out-door; it embraces such objects as building timber bridges and gantries, framing roofs and floors, constructing centreing, and other heavy or rough work. The joiners' work is mostly indoors; it includes laying flooring, making and fixing doors, window sashes, frames, linings, partitions, and internal fittings generally. In all cases the proper connexion of the parts is an essential element, and in designing or executing joints and fastenings in woodwork, the following principles laid down by Professor Rankine should be adhered to, viz.:—

1st. To cut the joints and arrange the fastenings so as to weaken the pieces of timber that they connect as little as possible.

2nd. To place each abutting surface in a joint as nearly as possible perpendicular to the pressure which it has to transmit.

3rd. To proportion the area of each surface to the pressure which it has to bear, so that the timber may be safe against injury under the heaviest load which occurs in practice, and to form and fit every pair of such surfaces accurately in order to distribute the stress uniformly.

4th. To proportion the fastenings so that they may be of equal strength with the pieces which they connect.

5th. To place the fastenings in each piece of timber so that there may be sufficient resistance to the giving way of the joint by the fastenings shearing or crushing their way through the timber.

To these may be added a sixth principle not less important than the foregoing, viz., to select the simplest forms of joints, and to obtain the smallest possible number of abutments. The reason for this is that the more complicated the joint, or the greater the number of bearing surfaces, the less probability there will be of getting a sound and cheaply-made connexion. To ensure a fair and equal bearing in a joint which is not quite true, it is usual after the pieces are put together to run a saw-cut between each bearing surface or abutment; the kerf or width of cut being equal in each case the bearing is then rendered true; this is often done, for instance, with the shoulders of a tenon or the butting ends of a scarf, when careless workmanship has rendered it necessary. When the visible junction of two pieces is required to be as close as possible, and no great strain has to be met at the joint, it is usual to slightly undercut the parts and give clearance on the inside. In pattern-making the fillets which are placed at the internal angle of two meeting surfaces are made obtuse-angled on the back, in order that when bradded into place the sharp edges may lie close. The prints used by pattern-makers for indicating the position of round-cored holes are also undercut by being turned slightly hollow on the bottom. This principle is adopted in nearly all cases where a close joint is a desideratum. Clearance must also be left in joints of framing when a settlement is likely to take place, in order that after the settlement the abutting surfaces may take a fair bearing to resist the strain.

The various strains that can come upon any member of a structure are:—*Tension*, stretching or pulling; *compression*, crushing or pushing; *transverse strain*, cross strain or bending; *torsion*, twisting or wrenching; and *shearing*, cutting; but in woodwork, when the latter force acts along the grain, it is generally called *detrusion*, the term shearing being limited to the action across the grain. The first three varieties are the strains which usually come upon ties, struts, and beams respectively. The transverse strain, it must be observed, is resolvable into tension and compression, the former occurring on the convex side of a loaded beam, and the latter on the concave side, the two being separated by the neutral axis or line of no strain. The shearing strain occurs principally in beams, and is greatest at the point of support, the tendency being to cut the timber through at right angles to the grain; but in nearly all cases if the timber is strong enough to resist the transverse strain, it is amply strong for any possible shearing strain which can occur.

Keys and other fastenings are especially subject to shearing strain, and it will be shown in that portion of our subject that there are certain precautions to be adopted to obtain the best results.

The following tables will serve as an introduction to the remaining portion of the paper:—

Classification of Joints in Carpentry.

Joints for lengthening ties, struts, and beams:—Lapping, fishing, scarfing, tabling, building up.

Bearing-joints for beams:—Halving, notching, cogging, dovetailing, tusk-tenoning, housing, chase-mortising.

Joints for posts and beams:—Tenon, joggle, bridle, housing.

Joints for struts with ties and posts:—Oblique tenon, bridle, toe-joint.

Miscellaneous:—Butting, mitreing, rebating.

Classification of Fastenings in Carpentry.

Wedges; keys.

Pins:—Wood pins, nails, spikes, trenails, screws, bolts.

Straps; sockets.

And for joinery must be added glue.

We will consider these joints in the order given above. One of the first requirements in the use of timber for engineering purposes is the connexion of two or more beams to obtain a greater length. One method of doing this is by lapping, the two pieces being held together by straps, and prevented from sliding by the insertion of keys. A similar joint may be made by using through-bolts instead of straps, and wrought-iron plates instead of oak keys. This makes a neater joint than the former, but they are both unsightly, and whenever adopted the beams should be arranged in three or five pieces in order that the supports at each end may be level, and the beams horizontal. This joint is more suitable for a cross strain than for tension or compression. The common form of fished beam is adapted for compression; if required to resist tensile strain keys should be inserted in the top and bottom joints between the bolts.

Tabling consists in bedding portions of one beam into the other longitudinally. Occasionally the fishing pieces are tabled at the ends into the beams to resist the tendency to slip under strains, but this office is better performed by keys, and in practice tabling is not much used. The distinction between fished beams and scarfed beams is that in the former the original length is not reduced, the pieces being butted against each other, while in the latter the beams themselves are cut in a special manner, and lapped partly over each other; in both cases additional pieces of wood or iron are attached to strengthen the joint. A form of scarf adapted to short posts has the scarf cut square and parallel to the sides, so that the full sectional area is utilised for

resisting the compressive strain. When the post is longer, and liable to a bending strain, the scarf should be inclined, to allow of greater thickness being retained at the shoulder of each piece, the shoulder being kept square. In this joint a considerable strain may be thrown on the bolts from the sliding tendency of the scarf, if the shoulders should happen to be badly fitted, as any slipping would virtually increase the thickness of the timber where the bolts pass through. The width of each shoulder should be not less than one-fourth the total thickness. Joints in posts are mostly required when it is desired to lengthen piles already driven, to support a superstructure in the manner of columns. Another form of scarf for a post put together without bolts has the parts tabled and tongued, and held together by wedges. This is not a satisfactory joint, and is, moreover, expensive because of its requiring extra care in fitting, but it may be a suitable joint in some special cases in which all the sides are required to be flush. In the common form of scarf, in a tie-beam, the ends of the scarf are bird-mouthed, and the joint is tightened up by wedges driven from opposite sides. It is further secured by the wrought-iron plates on the top and bottom, which are attached to the timber by bolts and nuts. In all these joints the friction between the surfaces due to the bolts being tightly secured up plays an important part in the strength of the joint, and as all timber is liable to shrink, it is necessary to examine the bolts occasionally, and to keep them well tightened up. Sometimes the scarf is made vertically instead of horizontally, and when this is done a slight modification is made in the position of the projecting tongue. The only other scarfs to which attention need be called are those in which the compression side is made with a square abutment. These are very strong forms, and at the same time easily made. Many other forms have been designed, and old books on carpentry teem with scarfs of every conceivable pattern, but in this as in many other cases the simplest thing is the best, as the whole value depends upon the accuracy of the workmanship, and this is rendered excessively difficult with a multiplicity of parts or abutments.

In building up beams to obtain increased strength, the most usual method is to lay two together sideways for short spans, as in the lintels over doors and windows, or to cut one down the middle and reverse the halves, inserting a wrought-iron plate between, as in the fitch-girders. The reversal of the halves gives no additional strength, as many workmen suppose, but it enables one to see if the timber is sound throughout at the heart, and it also allows the pieces to season better. A beam uncut may be partially decayed in the centre, and hence the advantage of cutting and reversing, even if no fitch-plate is to be inserted, defective pieces being then discarded. When very long and strong beams are required, a simple method is to bolt several together, so as to break joint with each other, taking care that on the tension side the middle of one piece comes in the centre of the span with the two nearest joints equidistant. It is not necessary in a built beam to carry the full depth as far as the supports. The strain is, of course, greatest in the centre; and, provided there is sufficient depth given at that point, the beam may be reduced towards the ends, allowance being made for the loss of strength at the joints on the tension side. A single piece of timber secured to the underside of a beam at the centre is a simple and effective mode of increasing its strength. The straps are bedded into the sides of the beams: they thus form keys to prevent the pieces from slipping on each other. This weakens the timber much less than cutting out of the top or bottom, as the strength of a beam varies only in direct proportion to the breadth, but as the square of the depth. The addition of a second piece of timber in the middle is a method frequently adopted for strengthening shear-legs and derrick-poles temporarily for lifting heavy weights.

We now come to the consideration of bearing-joints for beams, the term "beam" being taken to include all pieces which carry or receive a load across the grain. The simplest of these is the halving-joint, where two pieces of cross bracing are halved together, or where the ends of two wall-plates meet each other. When the joint occurs in the length of a beam, it is generally called a scarf. In each of these examples, half the thickness of each piece is cut away so as to make the joint flush top and bottom. Sometimes the outer end of the upper piece is made thicker, forming a bevelled joint, and acting as a dovetail when loaded on top. When one beam crosses another at right angles, and is cut on the lower side to fit upon it, the joint is known as single notching; when both are cut, it is known as double notching. These forms occur in the bridging and ceiling joists of double and double-framed flooring. When a cog or solid projecting portion is left in the lower piece at the middle of the joint, it is known as cogging, cocking, or caulking. Dovetailing is not much used in carpentry or house joinery, owing to the shrinkage of the wood loosening the joint. A wedge is sometimes inserted on the straight side to enable the joint to be tightened up, as the wood shrinks. Tredgold proposed the form known as the "Tredgold notch," but this is never seen in practice. Tusk-tenoning is the method adopted for obtaining a bearing for one beam meeting another at right angles at the same level. This occurs round fireplaces, hoistways, and other openings through floors. The advantage of this form is that a good bearing is obtained without weakening the beam to any very great extent, as the principal portion of the material removed is taken from the neutral axis, leaving the remainder disposed somewhat after the form of a flanged girder. When a cross piece of timber has to be framed in between two beams already fixed, a tenon or chase-mortise is one of the methods adopted. If the space is very confined, the same kind of mortise is made in both beams, but in opposite directions. The cross piece is then held obliquely, and slid into place. Occasionally it is necessary to make the chase-mortise vertical, but this is not to be recommended, as the beam is more weakened by so doing. In some cases a square fillet is nailed on to take the weight of the joists, without cutting into the beam. While speaking of floors, the process of firring-up may be mentioned. This consists of laying thin pieces or strips of wood on the top of the joists or any surfaces to bring them up to a level. Firring-pieces are also sometimes nailed underneath the large beams in framed floors, so that the underside may be level with the bottom of the ceiling-joists, to give a bearing for the laths, and at the same time allow sufficient space for the plaster to form a key. Housing consists of letting one piece of wood bodily into another for a short distance, or as it were a tenon the full size of the stuff. The treads and risers of staircases are housed into the strings, and held by wedges. Housing is likewise adopted for fixing rails to posts. The most common joint, however, between posts and beams is the tenon and mortise joint, either wedged or fixed by a pin. The friction of the wedges when tightly driven, aided by the adhesion of the glue or white lead with which they are coated, forms in effect a solid dovetail, and the fibres, being compressed, do not yield further by the shrinking of the wood. When it is desired to tenon a beam into a post without allowing the tenon to show through, or where a mortise has to be made in an existing post fixed against a wall, the dovetail tenon is sometimes adopted, a wedge being driven in on the straight side to draw the tenon home and keep it in place. In joining small pieces the foxtail tenon has the same advantage as the dovetail tenon, of not showing through, but it is more difficult to fix. The outer wedges are made the longest; and in driving the tenon home these come into action, first splitting away the sides and filling up the dovetailed mortise, at the same time compressing the fibres of the tenon. This joint requires no glue, as it cannot draw out. Should it work loose at any time, the only way to tighten it up would be to insert a very thin wedge in one end of the mortise. Short tenons, assisted by strap bolts, are commonly adopted in connecting large timbers. The post is cut to form a shoulder, so that the beam takes a bearing for its full width, the tenon preventing any side movement. When a post rests on a beam or cill-piece, its movement is prevented by a "joggle," or stub-tenon. But too much reliance should not be placed on this tenon, owing to the impossibility of seeing, after the pieces are fixed, whether it has been properly fitted. It is also particularly liable to decay, from moisture settling in the joint. For temporary purposes posts are commonly secured to heads and cills by dog-irons or "dogs"; the pieces in this case simply butt against each other, the object being to avoid cutting the timber, and so depreciating its value, and also for economy of labour. The double tenon is used in framing wide pieces, and the haunched tenon when the edge of the piece on which the tenon is formed is required to be flush with the end of the piece containing the mortise. Tredgold recommended a bridle joint with a circular abutment, but this is not a correct form, as the post is then equivalent to a column with rounded ends, which, it is well known, is unable in that form to bear so great a load before it commences to yield. A strut meeting a tie, as in the case of the foot of a principal rafter in a roof truss, is generally tenoned into the tie by an oblique tenon, and the joint is further strengthened by a toe on the rafter bearing against a shoulder in the tie. Tredgold strongly advised this joint being made with a bridle instead of a tenon, on account of the butting surfaces being fully open to view. A strut meeting a post, or a strut meeting the principal rafter of a roof-truss, is usually connected by a simple toe joint. The shoulder should be cut square with the piece containing it, or it should bisect the angle formed between the two pieces. It is sometimes made square with the strut; but this is incorrect, as there would, in some cases, be a possibility of the piece slipping out. In ledged and braced doors or gates, this joint is used, the pieces being so arranged as to form triangles and so prevent the liability to sag or drop, which is so difficult to guard against in square-framed work without struts or braces. When a structure is triangulated its shape remains constant so long as the fastenings are not torn away, because, with a given length of sides a triangle can assume only one position; but this is not the case with four-sided framing, as the sides, while remaining constant in length, may vary in position. Among the miscellaneous joints in carpentry not previously mentioned, the most common are the butt joint, where the pieces meet each other with square ends or sides, the mitre-joint, where the pieces butt against each other with bevelled ends, bisecting the angle between them as in the case of struts mitred to a corbel-piece supporting the beam of a gantry, and the rabetted or "rebated" joint, which is a kind of narrow halving, either transverse or longitudinal. To these must be added, in joinery, the grooved and tongued joint, the matched and beaded joint, the dowelled joint, the dovetailed joint, and other modifications of these to suit special purposes. "Flooring laid folding" is a method of obtaining close joints without the use of a cramp. It consists of nailing down two boards, and leaving a space between them rather less than the width of, say, five boards. These boards are then put in place, and the two projecting edges are forced down by laying a plank across them, and standing on it. This may generally be detected in old floors, by observing that several heading joints come in one line, instead of breaking joint with each other. It is worthy of notice that the tongue or slip feather, which in good work is formed generally of hard wood, is made up of short pieces, cut diagonally across the grain of the plank, in order that any movement of the joints may not split the tongue, which would inevitably occur if it were cut longitudinally from the plank.

With regard to fastenings, wedges should be split or torn from the log so that the grain may be continuous, or, if sawn out, a straight-grained piece should be selected. Sufficient taper should be put on to give enough compression to the joint, but too much taper would allow the possibility of the wedge working loose. For outside work wedges should be painted over with white-lead before being driven, this not being affected by moisture as glue would be. In scarf-joints the chief use of wedges is to draw the parts together before the bolt-holes are bored. Keys are nearly parallel strips of hard wood or metal; they are usually made with a slight draft to enable them to fit tightly. If the key is cut lengthways of the grain, a piece with curled or twisted grain should be selected, but if this cannot be done the key should be cut crossways of the log from which it is taken and inserted in the joint with the grain at right angles to the direction of the strain, so that the shearing stress to which the key is subject may act upon it across the fibres. In timber bridges and other large structures cast-iron keys are frequently used, as there is with them an absence of all difficulty from shrinkage. Wood pins should be selected in the same way as wedges from straight-grained hard wood. Square pins are more efficient than round pins, but are not often used on account of the difficulty of forming square holes for their reception. Tenons are frequently secured in mortises by pins, the pins being driven in such a manner as to draw the tenon tightly into the mortise up to its shoulders and afterwards

to hold it there. This is done by boring the hole first through the cheeks of the mortise, then inserting the tenon, marking off the position of the hole, removing the tenon, and boring the pin-hole in it rather nearer the shoulders than the mark, so that when the pin is driven it will draw the tenon as above described. The dowelled floor gives another example of the use of pins.

Nails and their uses are too well known to need description; it may, however, be well to call attention to the two kinds of cut and wrought nails, the former being sheared or stamped out of plates, and the latter forged out of rods. The cut nails are cheaper, but are rather brittle; they are useful in many kinds of work, as they may be driven without previously boring holes to receive them, being rather blunt-pointed and having two parallel sides which are placed in the direction of the grain of the wood. The wrought nails do not easily break, and are used where it is desired to clench them on the back to draw and hold the wood together. The following table gives the result of some experiments on the adhesion of nails and screws:—

Adhesion of Nails (Experiments by Mr. Bevan).

Description of Nails used.	No. to the lb. avoir.	Inches long.	Inches forced into wood.	lb. pressure to force in Christiana deal.	lb. pressure to extract from dry Christiana deal.
Fine sprigs	4560	0·44	·40	—	22
,, ,, ...	3200	0·53	·44	—	37
Threepenny brads	618	1·25	·50	—	68
Cast-iron nails	380	1·00	·50	—	72
Sixpenny nails.....	73	2·50	·25	24	—
,, ,, ...	,,	,,	·50	78	—
,, ,, ...	,,	,,	1·00	235	187†
,, ,, ...	,,	,,	,,	end grain =	87‡
,, ,, ...	,,	,,	1·50	400*	327
,, ,, ...	,,	,,	2·00	610	530
,, ,, ...	,,	,,	,,	end grain =	257
Fivepenny nails ...	139	2·00	1·50	—	320

Summary.	Across grain.	With grain.
Adhesion of nails in deal	2 to	1
,, ,, elm	4 to	3

Entrance to extraction is as 6 to 5.
Common screw ·2 in. diameter = 3 times the adhesive force of a sixpenny nail.

Spikes are nearly of the same form as nails, but much larger, and are mostly used for heavy timber work. Trenails are hard wood pins used in the same way as nails. In particular work with some woods, such as oak, they are used to prevent the staining of the wood, which would occur if nails were used and any moisture afterwards reached them. Compressed trenails are largely used for fixing railway chairs to sleepers, as they swell on exposure to moisture and then hold more firmly. Screws are used in situations where the parts may afterwards require to be disconnected. They are more useful than nails, as they not only connect the parts, but draw them closer together, and are more secure. For joiners' work the screws usually have countersunk heads. Where it is desired to conceal them, they are let well into the wood, and the holes plugged with dowels of the same kind of wood, with the grain in the same direction. For carpenters' work the screws are larger, and have often square heads. These are known as coach-screws. The bolts, nuts, and washers used in carpentry may be of the proportions given in the following table:—

Thickness of nut	= 1 diam. of bolt.
Ditto head.....	= ⅔ ditto
Diameter of head or nut over sides	= 1½ ditto
Side of square washer for fir.....	= 3½ ditto
Ditto ditto oak	= 2½ ditto
Thickness of washer.....	= ¼ ditto

The square nuts used by carpenters are much too thin, unless they are equal in thickness to the diameter of the bolt. The full advantage of that diameter cannot be obtained, the strength of any connexion being measured by its weakest part. A large square washer is generally put under the nut to prevent it from sinking into the wood and tearing the fibres while being screwed up, but it is also necessary to put a similar washer under the head to prevent it sinking into the wood. This is, however, often improperly omitted. Straps are bands of wrought iron placed over a joint to strengthen it and tie the parts together. When the strap is carried round one piece, and both ends secured to a piece joining it at right angles, as in a king-post and tie-beam, it is known as a stirrup, and is tightened by means of a cottar and gib keys. When straps connect more than two pieces of timber together, they are made with a branch leading in the direction of each piece, but they are usually not strong enough at the point of junction, and might often be made shorter than they are without impairing their efficiency; sockets are generally of cast iron, and may be described as hollow boxes formed to receive the ends of timber framing.

The author has confined himself principally to those joints which are used in general construction; many others might have been mentioned, but not being required in ordinary practice they have been omitted, to avoid extending the paper to an undue length. He cannot conclude without acknowledging the assistance he has derived from the works of Tredgold, Rankine, and others, which contain valuable tables and information relating to the subject under consideration. His thanks are also due to the council of the City of London College for the loan of a set of fifty models of joints. Other joints were illustrated by a few larger models, and one of these, a quadruple dovetail, may be referred to as a curiosity of jointing.

* Or 4 blows by weight of 6·275 lb. falling freely through 1 foot.
† These nails required a pressure of 327 lb. to extract them from dry elm; 507 lb. from dry oak; 607 lb. from dry beech; and 312 lb. from green sycamore.
‡ These required a pressure of 257 lb. to extract them from dry elm.

ECCLESIASTICAL DECORATION, WITH SPECIAL REFERENCE TO THE CHURCH OF ST. FRANCIS, ASSISI.*

During the residence of the imperial court in the city of Byzantium, Rome had been left unprotected from the ravages of time, and defenceless from the still greater and more disastrous assaults of its barbarian invaders; but when it became again the heart of a mighty religious system, animated by the spirit of renewed energy, then those fragments of marble with which the city was strewed, and which had no doubt constituted parts of beautiful statues and graceful columns, became the means of reviving a special feature which was applied to the embellishment of church interiors,—I refer to the adaptation of marble mosaics for floors, a singularly effective treatment, and one that falls into such complete unison with the grandeur of the architectural accessories, particularly when in relation to marble pillars.

It was also extensively employed for the production of coloured or variegated decorative effects, executed in every conceivable manner, and rendered highly serviceable in relieving and enlivening large monotonous surfaces, while it came in with charming effect in the decoration of pulpits and altars.

This art reached its highest point of development in the Alexandrine age, although differing somewhat in design and in the nature of the materials used from what I have just referred to, which was generally worked with pieces of marble cut into geometrical shapes and polished before being laid down. The ancients used cubes of coloured glass, vitrified but opaque, and also clay which was hardened, coated with various oxides of metals, and subsequently polished after the cement by which they were fixed was thoroughly hardened. Precious stones were also frequently employed when certain effects were desired, as well as for the purpose of enhancing the value of the subject.

Mural painting appears not only to have revived, but it seems likewise to have kept pace with the art enthusiasm of the period, and as the times, glowing with religious ardour, demanded as subjects representations illustrative of the devout lives and pious works of those who had become conspicuous by special acts, or identified themselves with those schemes which were best calculated to extend the dominion of the Church. And in addition to these motives, there was also the embodiment of the loftiest sentiments, in Scriptural compositions, taken from Old and New Testament narratives, which called into practice the greatest artistic skill and talent.

Foremost amongst many eminent names, there is none which occupies a higher place in the active religious life of the thirteenth century than that of St. Francis of Assisi. He was richly endowed with all the qualifications which renders a man distinguished and powerful, particularly when under the influence of a strong enthusiasm. And not only did he possess these, but he also enjoyed the rarer and more subtle gift of drawing his fellow-men to him, and imbuing them with his peculiar sentiments and convictions. Indeed, so strong was the veneration in which he was held, even in his lifetime, that numerous miracles are ascribed to him, which were not merely acknowledged, but were also ratified by the authority of the Church, who conferred its highest honour on his name. And so great was the sanctity in which he lived, that the close of his earthly career, so far from diminishing it, rather tended to increase it, and it still survives, and with the memory of his good works it is held in the highest estimation, as that of one of the most revered and cherished names inscribed on the long roll of the saintly calendar.

At his death there was erected over his tomb the magnificent monumental church which, bearing his name, was dedicated to his memory, and, in order to maintain that interest in the story of his life and work which the Church knew was so essential to keep alive, not only the recollection of the individual, but also to answer the double purpose of inspiring others with kindred aspirations to contribute towards its power and advancement. Mere historical narrative was deemed insufficient in that age of ignorance and superstition to attain this end. They relied with more confidence in the power of the artist to convey the ideas they wished to impress on the minds of the people. They were well aware that, when depicted by the hands of an artist whose pencil partook of the enthusiasm of which I have spoken, the most notable incidents of the saint's career, emblazoned in imperishable pictorial characters on his cathedral tomb, would tell, for all time, to all nations and tongues, his story, with a clearness and energy which no written or spoken language could so strikingly express. It is to this remarkable building that I now wish to direct your special attention, as it is acknowledged to be one of the finest examples we have illustrative of the true employment of colour. It has been truthfully referred to as the rallying ground of the greatest masters in art for upwards of two centuries. Indeed, the whole work seems to have been performed in the highest spirit of devotional art, as each of the masters appears to have been irresistibly attracted hither, and to have vied with his predecessors, in endowing his work with the very loftiest religious sentiment, in pious tribute to the memory of the saint whose deeds he depicted in the most vivid and admirable manner which his imagination could suggest.

The lower church was built two years after the death of St. Francis, namely, in 1232, and twenty-one years later the upper church was begun, the style of architecture being Gothic. The approach to the lower church is by a cloistered quadrangle, and the entrance is adorned by a beautiful Gothic porch, in the centre of the arch of which is placed a fine portrait of St. Francis, wrought in mosaic. On wending our way through the vestibule, we become insensibly impressed by a feeling of solemnity and grandeur, due to the exquisite effect of the harmonious combination of richly-luminous colouring, which, in itself, independent of detail, produces a most lasting sentiment, while it furnishes a most convincing example of the accurate application of colour in relation to church architecture, whether in mural decoration, mosaics, or stained glass. As the religious is the highest form of emotional power which acts on the understanding of man, it reasonably claims the greatest amount of veneration, and in the endeavour to portray, with any degree of success, its action, the mind or intellectual faculty must be reached by a more subtle medium than it would be necessary to employ were it the eye alone which it was sought to charm and satisfy, and therefore all that is pure and harmonious in form and colour must, in order to attain the desired result, demand a severe and scrutinising study before that perfect unison and accordance is obtained which, acting on the external perceptions, gradually creates an inward sympathy, from whence arises exaltation of thought, and concentration and intensity of devout and religious sensibilities. For it is evident that where marked absence of unity exists, or where prominence is given to any individual point, a sensation of discord is conveyed to the mind, rendering it incapable of enjoying that full sense of repose which is inseparable from the ideal of perfection to which all sacred teaching points. But the feeling of perfect harmony is fully realised on entering the hallowed atmosphere which pervades the cathedral of Assisi. Here, in combination with the richest marbles, from which the tomb of the saint is formed, and within the shadowed vaulting over the high altar, are the grand frescoes from the hand of Giotto,

* By Mr. Thomas Bonnar. See p. 295, *ante*.

representing the fundamental rules of the order of St. Francis, namely "Poverty, Charity, and Obedience," and the triumph of the saint, while all around, and glowing with a charming unity of colour, are depicted on the arches and wall surfaces forming the different chapels subjects in which the saints are portrayed as contemplating, with sadness of expression, the scene of their past labours, and these pictures are again encircled by a beatiful framework of coloured detail, following the architectural lines. And although the realistic does not appear to have been studied or known by these painters, there is nevertheless discernible a graceful and meditative expression in singular conformity with the conventionalisms they exhibit in the flat traceries of the draperies, and the absence of perspective.

These works, notwithstanding that they are the productions of different artists, seem to have been animated with a spirit which enabled them to secure a harmony of feeling throughout. Indeed, they are the masterpieces of men who could only have been inspired by the highest religious feelings before they could have succeeded so well in the noble task they so worthily accomplished.

As I have already observed, the knowledge of modelling, or giving relief to the figure, is but faintly indicated in these frescoes; however, a century later, in the works of the youthful Masaccio, executed in the Chapel Brancacci, Florence, there may be discerned evidence of this secret having been discovered and successfully mastered. To this artist and his pupil, Filippo Lippi, may be ascribed an honour similar to that which is so gratefully accorded to their predecessor Giotto, as from the latter, art reassumed a power and dignity which had long lain dormant; while from the former, a century later, it received an impetus which elevated it high above any eminence it had ever before reached, and sent it onward ever increasing in honour and beauty, until it achieved the culminating glory of its existence at the hands of Michelangelo and Raffaelle in the sixteenth century.

It is to these sources that I seek to direct the attention of the architect and decorative artist, as they form the basis of all that is true and harmonious in ecclesiastical embellishment. The details forming the framework composed of the graceful combinations following the architectural lines were all equally considered worthy of employing the careful study of the great masters, and they did not look upon it as beneath their notice to conceive and group in appropriate clusters the different parts which were intended to inclose the most growing conceptions of artistic genius.

Let us, then, study these matters in the spirit by which those men were animated. But at the same time, it is not at all essential that we should follow them in any slavish manner, but rather take the benefit of their teaching in its highest relative capacity, confiding in the potency of the system indicated, when applied with the resources that lie ready to our hands, to develop a method in which all that is justly esteemed as the good and beautiful of the past should be rendered subservient to our aim; while by consistently endeavouring,—though it may be only with a degree of success,—to stamp it with the impress of individuality, we shall only be attempting to realise that end which has been the object of every age and people conspicuous for a sense of progress or originality to accomplish.

And surely it would be unlike ourselves, when we contemplate our triumphs in the various walks of literature and science, were we, in this instance, to confine ourselves by the limitations of what is termed established precedent; for it is a well-known fact that any reproduction in a merely literal form can never have the effect of the original, as it can neither embody the life nor spirit which existed in the primary design. But rather let us, like the originators of the charmingly artistic combinations of which I have spoken, seek in nature our models of forms and tints, and not degrade ourselves to the condition of mechanical imitators.

We are conscious that, with careful study and observation, all the kindred circumstances of suitability, play, and adaptation are to be found in endless variety; and it was from this never-failing medium that the old masters drew their inspirations, and using them in strict accordance to situation and requirement, obtained results so indelibly imprinted on their works that, notwithstanding the centuries which have passed over them, we are enabled to view them in their vigour and gracefulness, and to admire the truly wonderful freshness they continue to retain.

I have now come to the third and last division of my subject, namely, the place and purpose of art in modern decoration. And although I consider this the most important point of my paper, seeing that I have already, I fear, detained you too long, I shall refrain from entering so largely into its merits as I would like to do.

It may, by way of apology, be said that the times in which we live are not so favourable for the expression of thought and ideal, and that in this respect we are placed at a disadvantage, comparatively, with our predecessors. But have we not, in compensation for this, the powerful stimulus of increased and advancing knowledge; with facilities for exercising observation enlarged by experience of the past, with the assistance of improved practical science at our command to render the exposition of decorative art simpler and more efficient in our hands?

Looking abroad on the natural landscape, we discover it composed of broken forms and undulating lines, tinted in all the variety of colour, gradating in degree according to distance; and at no time shall we find any very extensive area under a uniform tint. The effects of light and shade are incessantly at play. The seasons as they change bring their varied hues, the brightest of colours peeping out here and there, but always in minute quantities,—merely sufficient to enhance the value of the surrounding harmony. It is from this aspect that we are enabled, without doubt, to form a fundamental basis of the true arrangement of colour.

Then, take the individual parts of the landscape, and on examination each will be found to exhibit the greatest of contrast to the other, indeed all the colours of the chromatic scale are clearly perceptible to the artistic eye; but all are controlled by that subtle quality of light called atmosphere, by which the degrees of tints are permitted to exercise a subjective influence, and they, again, are invisibly united by the tertiary or middle tint, all combining to produce the effect of a harmonious whole, capable not only of satisfying the eye, but possessing that enduring charm which renders the sense of beauty in nature ever fresh and delightful. And it is necessary for the vitality of art that this special quality should be present in all its phases. Practically, this idea can readily be carried out in the structural employment of colour in ornamentation where conventional forms fall to be treated in harmonious relation to the architectural surroundings. Naturally the dark and richer tints ought to form the base, as in landscape we have presented to us in the foreground richness of colour and minuteness of detail.

The intermediate spaces intervening betwixt base and roof should be glowing in tertiary tones, interspersed with suitable forms in colours taken out of the prevailing tints of the base. And this space might at the same time be varied as suggested by the architectural detail, always as it recedes upwards becoming lighter and less pronounced, similar to the middle distance in nature, where all the tints are soft and pearly, leading the eye as it ascends to the dimly-defined outlines of the hills where they meet and seem to mingle with the blue-vaulted sky.

I have endeavoured to show that nature is the school in which to acquire a knowledge of the true basis of this study, and with the hallowing influence which it exercises on all who love its Divine teaching, it must surely endue the artist with a desire to blend in spiritualised harmony his thoughts, when engaged in efforts to embellish those magnificent sanctuaries raised by the genius of man, and dedicated to the service of the Creator of the universe.

While in pursuit of his art, the church decorator has, of course, to contend with the greatest diversity of opinion and variety of taste which exists in the minds of the different parties interested, and, as may be easily understood, any amount of art-culture is powerless to move the natures of many men who, in other respects, hold the reputation of great intelligence and skilfulness. So that, with such obstacles to be overcome, an essential element of success on the part of the designer is his capability of reconciling, in the best possible manner, the differences of individual taste, and guiding their divergent opinions into a straight and even channel. That this course is not without its dangers is very evident, for there is the taste which only can be satisfied by showiness and glitter, and then the directly opposite one, which looks with abhorrence on everything except that in which severity of treatment prevails. Now it must be admitted that the task of combining successfully such inconsistent ideas cannot be an easy one, as to the cultured mind the first, by its obtrusiveness, creates a sense of discord and barshness, while the second, by its extreme tameness, suggests a feeling of poverty and want of completeness.

I would, therefore, argue from these points that if decorative art is to be rendered trustworthy, and allowed its proper place and sphere it ought to have its full degree of prominence assigned to it, always keeping in view the circumstances by which its employment should be governed; and with these continually before him the decorator has little room to fall into error. Indeed, I may be allowed to affirm that all liability to blunder would be entirely obviated by a more wide-spread knowledge of the necessity of adhering strictly to those fundamental principles of design which I have already alluded to.

As tameness is the most prevalent fault in our colouring of church interiors, I may be allowed a few words on this part of the question. Certainly there must be some allowances made when we look to the causes from which this defect has arisen. In most instances it may be traced to the fact that the study and practice of decorative art in this country have, until within the last few years, been almost entirely ignored by those on whose patronage it mainly relied. Consequently a sense of timidity is observable in the little that has been attempted, and this has not been lessened by the influence of the idea of utter barrenness in this respect which the church has hitherto thought expedient to adopt. This sentiment has, however, to a very great extent succumbed to the advancement of enlightened and growing taste, and happily we shall soon be able to look back on it as a thing of the past.

Architectural beauty of design is now held to be an essential qualification, even to those who we may reasonably suppose were in the habit of viewing these matters from the very strictest standpoint. And the result of this is, the interiors, architecturally as well as in a decorative sense, receive greater attention. But owing to the scarcity of studies and examples to serve as guides to the general public, it has necessarily devolved on the architect and decorator to supply the deficiency. Unfortunately, the growth and development of this art in public estimation has been somewhat retarded, in consequence of the majority of the attempts at its employment having hitherto ended (with but few exceptions) in miserable failure. Much mischief has thereby ensued, for in this, like all other novelties, success was indispensable before public confidence could be gained. Had this branch of decorative art been competently wrought out and directed into a healthy channel,—when the opportunity arrived,—it might have grown in public favour, and become a necessity in all points, equal to that which the outward architectural embellishment demands. Instead of this the debased productions of the modern ecclesiastical decorator, coming into competition with, and subjected to the scrutiny of, the advanced state of art-knowledge now prevailing, predisposed, naturally, a repellant sentiment which, in turn, gave rise to an uneasy sense of the necessity of caution on the part of many who otherwise might have been inclined to aid and welcome its introduction, but who, from witnessing the evident failures which have been made, prefer the fresh and unadorned atmosphere of whitewash to enduring the misery of submitting—even for a brief period—to the dismally depressing influence of feeble, sickly colour, and restless discordant forms.

It is melancholy to contemplate (when we bear in mind the advance which has been made in everything else) the meaningless, vague, and undefined efforts of these servile imitators who both weary and vex us with their reproductions of bewildering objects and begrimed tints, the originals of which, doubtless, in their pristine beauty, were glowing with richness of colour when first they adorned the ceilings and walls of Mediæval churches. The decorative forms conveyed a symbolical meaning, which to us has almost become a dead letter, as far as intelligibility is concerned.

Examples of this false and incongruous treatment are not difficult to find, for we have in many of the churches recently constructed—particularly in the south and west—numerous instances in which the decorator has reproduced in their most repulsive manner all the crudities and defects of the most debased Middle-Age period; and, what is more to be deplored, these

re frequently wrought in the permanent method f costly mosaic. Blinded by their own conceit, nd that of those who are weak enough to give redence to them, this is ostentatiously announced as the representative art of the nineenth century; although I think it would be etter described as the "Mediæval Mania," as is founded on a frail and crazy base, created nd fostered by that most popular and powerful f tyrants, Fashion, whose transitory allurements, is to be regretted, exercise so great an influnce on its votaries in religious, as well as in ecular, matters.

But with true art the case is widely different. t is acknowledged as a genuine medium of ympathetic expression, and far from falling ack to the worst period for precedents, prefers o cull and engraft all that is chaste and beautiful, with discriminating care and judgment, and rged forward by the living spirit of progress which animates it, pushes onwards and upwards owards perfection. To the artist and student t forms a delightful and instructive study, and t has always been to the historian a source rom whence could be drawn undoubted and uthentic information respecting the state of ivilisation, and the intellectual and material ife and prosperity of a nation.

Surely, in the reproduction of these Byzanineseque subjects,—executed as they are in the nduring medium of mosaic,—a very grave mistake has been committed; for it is almost impossible to look upon them in any other light than the vident purpose which they seem intended to exress, namely, a desire to transmit a deliberate falsehood to future generations. Is it not sad to reflect on this? Just conceive us, in the midst of our religious and literary life and progress, being prevailed upon to have recourse to a period of art which we would with justifiable scorn and indignation repudiate were we asked to accept it as our guide in science, literature, or mechanics.

That the work of the Mediæval painter expresses a sincerity and singleness of thought cannot be gainsaid, and I have already borne testimony to the fact in a previous part of this paper. And we, if impelled by a like sentiment, may find in it a field from which to glean rich treasures of the ideal and beautiful, and for this purpose it will continue an excellent medium of assistance in the cultivation of modern taste. But in this manner only can it be of service in educating the public mind.

There are opportunities continually occurring, in which the variety and beauty of architectural design affords ample scope for the artistic display of originality in colour and effect, and these ought to be carefully studied by the decorator. In many churches (especially in those where a certain richness of symbolism and ritual are observed) there are portions, such as the apse or chancel, which, being, as it were, separated from the main or better lighted part of the building, always appear to the eye as if under a veiled aspect, and from the circumstance of the altar, composed of the richest materials, sparkling with gold, being placed there, it is obvious that there exists a necessity for a highly artistic mode of treatment, in which a considerable amount of colour might be introduced with great effect, forming a brilliant background, uniting the various accessories, and combining the whole, realising a unity of purpose which, while it was pleasing to all, contributed to the embellishment of the sanctuary dedicated to the highest purposes of religion.

Our national churches, whether Presbyterian or Episcopal, could, without difficulty, be brought into the same category of ecclesiastical decoration,—the application of rich colouring being modified according to the suitability of the architectural arrangements.

We know from experience, that certain causes which I have already hinted at have tended to introduce and maintain sparseness and tameness of colouring in the ornamentation of our Presbyterian places of worship. And it is in this view of the circumstances that the architect might be instrumental in giving confidence to those desirous of adopting something in the way of internal adornment, but who with the fear of censorious grumblers before them, hesitate to take any steps on their individual responsibility. As a simple way of solving this difficulty, and at the same time preventing failure or incongruity on the part of the decorator, I would suggest that the architect should devise suitable sketches, in conformity with the architectural, or any special features of the building,—to be submitted, and from these it would be an easy matter to make a satisfactory selection: providing of course, that competent persons are encouraged to offer their designs. And such a system conscientiously carried out would, I am confident, ensure commendation from all parties, and be the means of conferring credit on those who had the performance of the various duties.

From my own observation, I am fully convinced that public opinion in matters of taste is gradually beginning to appreciate the importance of this subject; and the interest shown by this Association, in this and kindred matters, is calculated to arouse, and direct public attention to the full significance of its purpose, and by so doing, aid in no small measure in the attainment of the end in view.

THE ROMAN BATHS.*

Whilst speaking on this question of the principle of the formation of the Roman or Classic vault, as distinguished from that of the Mediæval builders, may I be allowed to refer for a moment to my reason for claiming the pendentive and dome of Sta. Sophia as Classic in principle? Intersect a half-sphere by two semi-cylinders running at right angles to one another; the intersection will give four semicircles touching one another at their lower ends. With a horizontal plane touching the top of semicircles cut off the upper part of the dome; there will remain four spherical triangles, which are called pendentives, each constituting an original part the dome. They are contained between the plane above spoken of and the semicircular arches obtained by the intersection with the two cylinders. These semicircular arches may be looked upon as the groins of two intersecting geometrical forms, viz., the sphere and cylinder, just as the intersection of two semi-cylinders forms a groin; that is to say, the form of the groin is dictated and fixed by the natural intersection of the two geometrical forms. And now, as a contrast, let us take the pendentives and dome of St. Front at Perigueux, which is the starting-point of Mediæval domes. Here, instead of circular there are pointed arches, which are not intersections of any known geometrical form; further than that, the pendentives are built on these arches, and are not portions of a sphere; in other words, they are webs, and are built on the pointed arches, which in this case are ribs, both of which are Gothic inventions. Then it has been suggested that the upper portion of the dome of Sta. Sophia being raised constitutes its Mediæval character, but its form is not changed; it is still a dome, although it is stilted. If I wanted an additional proof, I have only to refer to the Temple of Minerva Medica at Rome, built in the third century of our era. It is a decagonal building, and its dome has been intersected by ten planes; but the original domical form is still found in each of the pendentives which carry the superstructure; and, singular to say, even at this period,—and, probably, no one will venture to claim this building as Mediæval,—the upper portions of the dome has been stilted as in Sta. Sophia. With the revival of Classic architecture the Renaissance architects of Italy, and subsequently those of France and England, returned to the dome as their natural birthright, and in the dome of St. Peter's at Rome, the Pantheon at Paris, and St. Paul's in London, not to mention numerous other examples, we find the principle of the dome and pendentives as worked out at Constantinople. The Renaissance and rococo ornament with which they are decorated is out of keeping with the finer mosaic decoration of Sta. Sophia, but in the principle of the formation of their pendentives these domes are built on the elementary form of the Byzantine example. And now, with apologies for my digression, let me return to my subject.

There are three varieties in the form of the barrel vault, such as when constructed over a circular corridor, or rising round a staircase, or, as is found in many of the small rooms, segmental only. The Romans, however, did not always discard the apparent rib. In the Piscina Mirabilis, near Naples, a water reservoir, the roof is carried by a series of square piers supporting ribs, on which are formed intersecting groined vaults; and in the Baths of Diana, at Nismes, the circular barrel vault of the only remaining hall is carried, or rather strengthened, I would say, by a series of ribs, the construction of which and their breaking joint with the vault, is curious. It would seem that here a very heavy weight (the reservoir being over it) had to be carried, which suggested the employment of these ribs as an additional precaution.

I now come to the second great feature of Roman architecture, the dome; and as the dome of the *calidarium* of Caracalla's Baths has almost disappeared, I propose to accept the Pantheon as its model, and to describe that. The latter is, of course, very much larger, but the principles involved in its construction were, as far as one can judge from the remains of the former, the same. The dome of the Pantheon is 141 ft. in diameter, being the largest circular vaulted building in the world. As M. Viollet-le-Duc points out, to have constructed the vault in solid masonry, with continuous centering, would have been an impossibility; the explanation which he gives in his "Dictionnaire Raisonné" has so much correctness of reasoning that I have no hesitation in accepting it. The principle is somewhat the same as that which obtains in the barrel vault, with one exception, however, that the ribs are apparent,—whether they were intended to remain so is not known, for history records that the whole of the dome was covered internally with bronze plates; these were removed by Pope Urban VIII. to use up in the baldacchino of St. Peter's, and for the founding of cannon for the St. Angelo fortress. Although the ribs are apparent, the consecutiveness of the form of the dome is preserved by the ribs and the intermediate ties which divide the whole into square or slightly oblong coffers; these in principle resemble those of the ceilings of the peristyles of Greek temples. There are twenty-eight ribs of brick, which abut at the top against a circular ring of 24 ft. in diameter. The ties between these ribs are flat arches dividing the whole, as I have said, into coffers; the vertical distance of these cross-ribs varies according to the distance between the vertical ribs at the respective heights. Now, instead of filling in these coffers flush with the under-surface with concrete, in order to lighten the vault *scientifically* (whatever the æsthetic idea may have been), four wooden dummies, decreasing in size and depth, were placed one above the other, and the concrete was filled in on these, which, when removed from beneath, left four receding coffers. The shape and position of these coffers leaves no doubt on my mind that the internal construction was from the first intended to have been exposed; for, in order that the edges of the receding coffers should be seen, and to correct the optical delusion when looking at them from below, not only are the lower borders round each coffer deeper than the upper ones, but the soffits of the upper edges are cut into and form acute angles with the edges or borders, whilst the cills rise and form obtuse angles with the borders. This trouble would not have been taken if they were intended to be hidden. This is, however, not all the construction of the vault; the thickness of these ribs already described (about 2 ft.) would have formed too thin a shell to resist the force of the wind and weather which might have been exerted on it. It was necessary, consequently, to form an outer shell, and a new system of construction was devised, which should not only protect the lower shell, but be self-supporting. The ribs and filling-in already constructed formed a permanent centering, so that provided the new shell were built up in equal heights round and in consistence with the principle of formation of a dome, each covering would support itself. The outer shell commenced about one-third above the springing of the inner shell, with sixteen large and sixteen small arches in brick, the *points d'appui* of which came in between those of the inner ribs; above these, and resting on the centres of the large arches, were sixteen other arches; and above them another row, and then, in the interval between the crown of these and the central ring were smaller ribs. The interspaces of these were filled in with concrete, cemented over; and at some later period, which I am not able to tell you, the whole was covered with lead. The discovery of this outer shell was made known to Piranesi, when called upon to restore the lead roof; but curiously enough, he does not seem to have understood the construction of the inner shell, which he regarded only as a decoration, and it remained for the wonderful reasoning faculties of M. Viollet-le-Duc to point out the true meaning and construction of the latter. I consider that the present knowledge we have of the construction of this great dome

* By Mr. R. Phené Spiers. See p. 316, *ante*.

just described should raise the Romans in your estimation as the greatest scientific architects the world has seen.

The vaults of the smaller halls and the semicircular domes being comparatively small in span, do not require any special description; the brick ribs are here employed also, in some cases forming intermediates, and stopping short one-third up the vault, as if their sole object were to keep the vault rigid, the spaces between being filled in with concrete, as before described.

It now remains to say a few words about the buttresses and abutments to resist the thrust, which in the case of the *tepidarium* and *calidarium* must have been very great. The abutments of the former measure 22 ft. 6 in. by 14 ft. and 96 ft. high; they are carried up straight above the roof or terminated with a cornice, on which may have been placed a group of figures. As a rule the Romans looked upon the buttress as a feature to be hidden or disguised. The former is done in the *calidarium* and the Pantheon, where the walls are of immense thickness. In both of these examples, as generally in all Roman works, niches, staircases, and passages are taken in the thickness of the wall, so as to reduce the amount of material employed, and to obtain additional space. Generally these niches and recesses were formed between the lines of thrust of the hidden ribs, though in the Pantheon, the distance of the ribs apart being small compared with the diameter of the building, they seem to have looked upon the vault as an homogeneous mass with a continuous thrust round the walls.

Whenever the Romans required a buttress they invariably disguised it by making it a column, and had they contented themselves with putting a corbel or bracket on the top, the expedient might have been satisfactory (except that, strictly speaking, a column is a constructive feature, intended to carry perpendicular weight and not slanting thrust). The column, however, in the Roman architect's mind was scarcely complete without its entablature, and therefore they added this, destroying in one sense the real object they had in view. There would be, however, three arguments in its favour: First, it might serve as pinnacles do to a Gothic buttress,—add to the vertical weight, always of importance in the resistance of a thrust. Secondly, if we look upon the semi or three-quarter detached column as simply the thickness of the wall at certain intervals, the expedient employed would be correct, and in this they would be copying the Greeks, who used detached columns with vases or statues on the top to strengthen and decorate long and lofty walls; and, thirdly, when the orders were not superimposed, the cornice would become the natural termination of the building. The Romans, however, did not always thus strictly reason, or they would not, as in the Coliseum, have placed superimposed orders, each with the entablature complete. In the *frigidarium* of the baths, you will notice, also, that the columns employed for the decoration, and perhaps strengthening, of the enclosing walls, have a slice of entablature of their own which is not carried across from column to column; and in the *tepidarium* the same feature is placed above the column, though here it serves a more definite purpose, because the base of the springer of the vault is larger than the frieze of the column. In Byzantine architecture they reduced the whole of the entablature thus shown to a spreading abacus, which gave them the broader base for their arches and vault springings, without employing features designed for a different purpose. There are many instances in Roman work, and we find it in two or three cases in these baths, of the advantages of bringing forward the springing of the vault well within the walls,—a scientific principle thoroughly worked out in Mediæval buildings. In the baths of Diana, at Nismes, already referred to, the vault is carried on a cornice and row of detached columns within the halls.

In conclusion, I cannot but feel that there are many points on which I have not been able to touch. The subject of Roman architecture alone is too vast to allow of my taking up more at a time than a small section, and I am glad to see that my friend Mr. Hilton Nash has acceded to my request to deliver a paper before you on the Coliseum at Rome. Owing to their magnificent construction, the remains of Roman architecture have stood so well the test of centuries of destruction by the hand of man and by weather that their number is legion, and it is far easier to restore in our imagination the precise forms and destination of every kind of Roman building after a lapse of from sixteen to eighteen centuries, than to reproduce the plans of our abbeys and monastic buildings, which six or eight centuries in many cases have quite swept away. What I more particularly have wished to impress on the mind of the student is this: that the study of architectural design is long and serious; that it is based upon definite principles which can only be acquired by a diligent examination of the works of bygone ages; that although it is always an advantage in such examination to compare them with the best modern works, no greater mistake can be made than to copy or attempt to copy the latter alone. Quaint mouldings, the egg-and-tongue ornament, dados round rooms, twisted and contorted gable-ends, do not constitute a style. The men who in the present day are the leaders of the so-called "Queen Anne" style were first brought up in the rigidity of the Classic orders; subsequently their student days were passed in the examination and admeasurement of the Mediæval buildings of Europe; and if, in discontent at the shortcomings of the Classic reproduction of the beginning of this century, or the Gothic revival of the last thirty years, they have turned to the debased forms of the Jacobean or Queen Anne periods, they have at least the knowledge of design which a sound architectural education has given them. If you wish to carry out the development they have commenced, or to surpass them in power of design, you must pass through the same course as they have. It is difficult to say where the tide of fashion may lead us; but I cannot but think that the superior art education which is now being received by all classes throughout the country will ultimately tend to the demand for a purer style of design, and if so, it is most important that you should in your studies prepare yourselves to meet the requirements in art which a more cultivated public will expect from those specially trained.

PREPARATIONS FOR THE NEW BOW-STREET POLICE-COURTS AND STATION.

The new buildings which the Government are about to erect in Bow-street, immediately opposite Covent Garden Theatre, for the future Bow-street Police Station, and courts in connexion therewith, will shortly be commenced, the whole of the occupiers of the property which has been purchased for the purpose having now given up possession. The last of the properties surrendered was the Opera Hotel and Tavern, the effects of which were sold last week, and the work of demolition and clearing the site will be entered upon in a few days. The new buildings and premises in connexion with them will cover an area of nearly an acre in extent, and in addition to the Opera Hotel and several other business premises having their frontage to Bow-street, which have been purchased, upwards of twenty houses and shops in Broad-court, Duke's-court, and Cross-court, have been acquired, the outlay, it is stated, for the property and compensation being more than 100,000*l*. Included in the property purchased are the premises of Messrs. Howard, builders and contractors; the works and warehouses of Messrs. May, the well-known costumiers; together with the business establishments of several other leading manufacturers and dealers. All the houses on the south side of Broad-court, from Bow-street to Cross-street, have been taken, as well as several on the south side of Duke's-court, and all the houses on the west side of Cross-court. The Bow-street frontage of the new buildings will be upwards of 180 ft. in length, being about equal in length to those of Covent Garden Theatre and the Floral Hall, immediately opposite. The south side of Broad-court will form the northern boundary of the block, which will extend eastward from Bow-street to a depth of about 150 ft., the west side of Cross-court forming the rear boundary of the buildings.

Under one roof the new buildings will contain the courts for carrying on the magisterial business. These, we believe, will be about three in number, and so designed, both as to their capacity and general arrangements, as to meet the convenience of magistrates, professional gentlemen, and the public. In immediate connexion with them will be the magistrates' private rooms, magistrates clerks' rooms, witnesses' rooms, and other apartments. The police-station proper will likewise occupy a considerable portion of the area, containing the various offices, apartments for the superintendents, other superior officers, and private members of the force, together with prisoners' cells. Architecturally we understand that the Bow-street elevation of the structure is to be of a rather ornamental character, so as to harmonise to some extent with the opera house opposite.

LIVERPOOL ENGINEERING SOCIETY.

At a meeting of this Society, on the 28th ult., Mr. Hugh Blackburn, Stud. Inst.C.E., read a paper on "The Drainage of Towns." The author did not attempt to deal with the difficult problem of the disposal of sewage from inland towns, but confined himself to the question of the form and mode of constructing underground conduits or sewers. After pointing out the considerations affecting the capacity that a sewer should have, he next dealt with the form and rate of inclination that should be given so as to insure the sewers being as nearly as possible self-cleansing. It was then shown how branch sewers and house-drains should be connected one with the other, and with the main sewer. The proper ventilation of sewers, so as to prevent foul gases entering houses, was gone into in a clear and practical way, drains passing under houses being strongly condemned.

THE QUAKERS' "BUNHILL FIELDS" BURIAL GROUND.

Mr. William Tallack, the secretary of the Howard Association, writes to one of the journals of the Society of Friends, of which he is a member, an interesting description of the disinterments, just completed, in an ancient City burial-ground of that religious denomination. In course of it he says,—The burial-ground consists of three main divisions. One of these is sold to the London School Board, with an understanding that the remains underneath are not to be disturbed. The second, which contains the dust of George Fox, Stephen Crisp, Alexander Parker, and other worthies, and also some of the most recent interments, will not be at all disturbed. It is only the third large portion (likely to be sold to an Industrial Dwellings Company) which has been cleared of its remains, including those of Edward Barrough, Richard Hubberthorne, and some thousands of other Friends, chiefly, though not exclusively, of long past generations; also the remains of many persons, not Friends, buried there at the time of the plague. All that remains of the bodies of these honoured members of the Society has been carefully collected into large wooden boxes, and decently re-interred in the other portion of the grounds near George Fox's grave. (The precise position of the latter, long uncertain, has recently been ascertained from an old memorandum or measurement, and is accurately indicated for future visitors to the spot). The whole subject of the removals (rendered necessary by various circumstances) has been most carefully deliberated upon by the society, and carried out with the utmost respect to the memory of the dead, and at an expense of nearly 600*l*. In all Bunhill-fields 15,000 Friends (or upwards) are known to be interred; so that the remains now removed represent more than double the ordinary attendance of the great annual meeting of Friends in London. In very few instances amongst these thousands has anything like a perfect skeleton been found. In almost every instance the only remains consist, at most, of a few loose larger bones, as of the thigh and pelvis. Even the skulls are to a large extent decayed or gone to fragments. The coffins have, in general, quite disappeared, or are represented only by a brown admixture with the soil.

The Friends' "Bunhill-fields" is situated in Coleman-street, Bunhill-row, a hundred yards west of the larger public Bunhill-fields where John Bunyan and Dr. Watts are interred.

ARCHITECTS' AND CONTRACTORS' LIABILITIES.

Sir,—I wish to know what are the limits of the liability or responsibility of an architect and of a contractor for a work carried out by the latter, but after the designs and under the general superintendence of the former, and what objections, if any, might be made to a law running as follows:—

"If a building or any other considerable piece of masonry, undertaken by task-work shall, in the course of *fifteen years* from the day on which the construction of the same was completed, perish wholly or in part, or shall evidently be in danger of falling to ruin, owing to defects in the construction, or even owing to defects in the ground, the responsibility shall lie with the architect and the contractor."

Z.

SURVEYORSHIP ITEMS.

Bethnal-green.—The death is announced of r. William Mundy, surveyor of the parish of ethnal-green. Although only forty-four years d, Mr. Mundy had gone through a large mount of hard work. He became surveyor to he Vestry in 1866, and previously held office nder the Whitechapel Board of Works.

Londonderry.—According to the Dublin *Freeman's Journal*, the Londonderry county surveyor (Mr. Adair) is placed in a very awkward osition. We read that "the proceedings at the ate Londonderry Assizes opened by the reading f the county surveyor's report, in which that fficer detailed a most unfortunate state of affairs xisting in the county for a long time past. Besides having to work several existing contracts imself, no contractor could be got for eighty-hree contracts. In fact, the state of the county s very bad indeed. Large prices have been pproved at Sessions, and advertised, but contractors will not take the works; and the unonstitutional and wasteful system has to be esorted to of presenting these works to the very officer whose office was instituted to be a vatch upon others, thus leaving no one to report pon him. When his report was read, a very espectable cesspayer addressed the Grand Jury, nd on behalf of the cesspayers asked the Grand ury to take the exceptional state of the county nto consideration; but, will it be believed ? the Grand Jury ignored the application, and the whole matter was hushed up, and nothing was done. Not a hand was stirred, nor a voice raised o stop the abuses complained of. The county surveyor also in this report, which displayed a most melancholy condition of affairs in his department, deplores his inability to get the existing vacancies among his assistants filled."

AMALGAMATED SOCIETY OF CARPENTERS AND JOINERS.

The seventeenth annual report of the Amalgamated Society of Carpenters and Joiners has just been issued. From the introductory statement of the general secretary, Mr. J. D. Prior, it appears that, during a season of general commercial depression, the building trades have been actively employed; and although the society has paid during the year 18,219*l.* 16s. 10½d. in benefits to its members, it has added to the accumulated capital the sum of 14,809*l.* 13s. 2d. Thirty-one new branches have been opened during the year 1876,—twenty-five in England, three in Wales, one in Scotland, and two in Ireland. The number of members shows an increase of 1,121, making a total at the end of the year of 16,038. The income has amounted to 39,848*l.* 1s. 8d., and the expenditure to 25,038*l.* 8s. 6d., and at the end of the year there was a cash balance of 70,109*l.* 13s. 10d. An estimate of the value of the buildings and other property belonging to the society shows that the total amount of the assets is 74,762*l.* 15s. 11d., or 4*l.* 13s. 2¾d. per member.

MASTERS AND MEN.

Kirkwall.—The joiners of Kirkwall have sent in an application for a rise of 1d. per hour in wages.

Perth.—The plasterers of Perth have resolved to memorialise their employers for an advance of 1d. per hour, to take effect on April 23rd. The present wage is 8d. per hour. The joiners have also appointed a deputation to wait upon their employers, to request that the wages be advanced ½d. per hour, the present rate being 7½d. per hour.

Glasgow.—On the 19th ult., the polishers in the marble works in Glasgow came out on strike on a question of hours. The polishers, who work fifty-seven hours per week, asked to be put on the same position as the cutters, whose hours are fifty-one per week. The masters refused to accede to the demand.

Aberdeen.—The operative masons held a meeting on the 22nd ult., at which various grievances were considered, but the only definite resolution come to was that the operatives take immediate steps for the purpose of having the system of sub-contracting abolished. There is some talk of a proposed advance of wages in this trade. The plumbers in the city are also agitating for a rise.

Edinburgh.—A meeting of the operative painters was held on the 22nd ult., in connexion with the agitation now going on in the trade for a rise of 1d. per hour on the present rate of wages. At the outset it was moved that, before proceeding to extremities, an offer should be made to the masters to submit the matter to arbitration, and this meeting with a pretty general support, a deputation of three was despatched to wait on the secretary of the Masters' Association, and lay this proposal before him. The deputation having returned, reported that the secretary of the Masters' Association could give no definite answer to the proposal of the men, but that he would convene the masters at once, and give their reply on an early date. It was carried on a division, by a large majority, that the men take no further action in regard to the proposed arbitration, and that in the event of no answer or an unfavourable answer being received, that, as originally agreed on, the notices be given in on the 31st ult. A subsequent meeting of the men to the number of over 500, was held on the 29th ult., in St. Mary-street Hall, to hear the answer of the employers to the demand for an addition of 1d. per hour to the present rate of wages, and the offer of arbitration on the subject. The employers having refused arbitration or conference, it was resolved to remit to the Investigation Committee,—consisting of one from Manchester, one from Glasgow, one from Leith, one from Edinburgh,—to consider the whole matter.

Bangor.—The men employed at the building yards at Bangor struck work on the 21st ult., owing to the masters refusing the Saturday half-holiday.

Liverpool.—Another dispute is stated to have arisen between the master-builders of Liverpool and the various classes of workmen, which, unless amicably arranged, may lead to another strike. Many of the large builders are also contractors, and that they form a body somewhat distinct from the class of builders (chiefly Welsh) employed in the erection of cottage property in and around Liverpool. These last-mentioned tradesmen have never as a body identified themselves with the Master-Builders' Association, because they thought their interests were not identical. They are now compelled, by force of circumstances, to take a stand against the demands which have been made upon them by the various classes of persons engaged in the building trade. A notice has been served upon the master-builders of Liverpool by the working joiners, demanding an increase in their wages from the early part of June, equivalent to about 4*s.* per week, and the Welsh builders have received from joiners, bricklayers, and plasterers a somewhat similar demand, to take place early in May. A most determined stand against this increase which is regarded as excessive has been made by all the masters; and apprehensions are entertained that unless some amicable arrangements can be effected there will be a general strike in the building trades in Liverpool, and many thousand persons will be thrown out of employment. The Welsh builders have resolved to form an association of their own, and in the most determined manner to resist the claims of the men. The master-builders of Liverpool have also taken steps in reference to the claims made upon them.—The operative plasterers of the town have intimated to the masters that on the 1st of May they will demand a reduction in the hours of labour and an increase of wages. Instead of ten hours, as at present, they request that the day's work should consist of nine hours, with the addition of 1d. per hour on the present pay. This will have the effect of reducing the labour time of the week by five hours and a half, with an increase of 5½d.

Portland. — The masons and carpenters of Portland have given notice to their employers that from the end of March they will require an advance of 6d. per day in their wages.

Arbroath.—The joiners of Arbroath held a meeting on the 27th ult., when they agreed to request an advance of pay from 6½d. to 7d. per hour. A short time ago the slaters got an advance of wages unasked, but they as a trade have been very busy for a long time past.

Dumfries.—The plasterers of Dumfries have received an advance of 1d. per hour. Their wages are now 9d. an hour, or 38s. 3d. a week.

Wigan.—Mr. Clarke Aspinall, of Liverpool, who was appointed arbitrator between the Wigan painters and their men as to the proposed reduction of ½d. per hour in wages, has made his award. He determines that the operatives shall continue to receive 8d. per hour, and recommends that his award shall continue in operation during the current year. The strike has lasted eight weeks.

Bolton.—The Bolton stonemasons having sought an advance of 11 per cent. on the present wages, the master-builders have met, and passed a resolution in which they said they deemed the proposal unreasonable, as the present state of the trade is worse than it has been for six or seven years. They allege that the action of the operative masons is causing trade to be much worse than it would be, and they have come to the determination not to accede to the demands.

Croydon.—In accordance with a resolution passed at a numerously-attended meeting of the house-painters of Croydon a few days since, all those men who are employed in shops, and are not in receipt of 7½d. per hour, have resolved to apply for an increase to that amount.

Ludlow.—The Dhue Stone sett squarers, who were on strike at the granite works in the Clee Hills, have nearly all left the district for northern and other counties, and the various companies have not replaced them by putting on fresh hands. The various works remain at a stand-still. The quarrymen and labourers are still upon strike. Local men are prepared to enter upon the stone "squaring," and express their confidence in being able to turn out the granite blocks in as masterly a manner as the "experts" who have gone away.

Stratford-on-Avon.—The bricklayers at Stratford-on-Avon, now receiving 33*s.* a week, demand an increase of ½d. an hour, which the masters refuse to concede. A strike is expected.

London.—A large meeting of master-builders has been held at the Westminster Palace Hotel, to consider the impending disputes in the building trade. The proceedings were private, but it transpired that there was a general determination to resist the demands of the men. Several resolutions were passed for the purpose of organising a committee and seeking support, and the meeting was adjourned till after Easter.

A TEMPTING OFFER.

A copy of the *Newcastle Daily Chronicle* for the 19th ult. has been forwarded to us, with the view of directing our attention to the following barefaced invitation:—

TO ARCHITECTS.—The Heworth School Board invite Architects to send in PENCIL DRAWINGS, showing Front Elevation and Ground Floor of Infant School, to accommodate 120 children, intended to be built at Wardley. The Drawings must be sent to the Clerk of the Board not later than Thursday, the 5th of April, 1877. A plan of the ground may be seen, and the levels obtained, at the Wardley Colliery Office, Wardley. *No guarantee is given that any Architect will be employed in the building of the school.*—By order, George Bolam, Clerk to the Board.—25, Swinburne-street, Gateshead.

The italics do not appear in the original. It is to be hoped, for the credit of the architectural profession, and all connected therewith, that not a single design has been sent in in response to this very tempting offer.

CASE UNDER THE METROPOLITAN BUILDING ACT.

On the 23rd ult. a builder was summoned to the Clerkenwell Police Court by Mr. Rowland Plumbe, district surveyor of South Islington, for not providing to a dwelling-house and shop, just rebuilt in the Essex-road, Islington, in the rear or on the side thereof, an open space, exclusively belonging thereto, of the extent at least of 100 square feet.

The builder asked for time to enable the owner to purchase ground to get the required space.

The magistrate, after hearing the facts, made an order requiring the builder to comply with the district surveyor's notice within twenty-one days.

THE RIGHT TO MAKE PUBLIC STREETS.

AIREY *v.* THE CORPORATION OF BOLTON.

This was a case tried at the Manchester Spring Assizes, before Mr. Justice Manisty.

Mrs. Elizabeth Bennett Airey, the plaintiff, is a widow, residing at Preston, and the owner of some cottage property in the borough of Bolton. The action was brought to recover damages from the defendants for trespass, and that the plaintiff might obtain an assertion of her rights in respect of certain acts done by the Corporation of Bolton on the plaintiff's property in that town. The plaintiff had ten cottages facing a street called Gregson-field, and at the back of this block there was a considerable slice of land also belonging to the plaintiff, which was said to have been planted as a garden and fenced in, and across which the Corporation made a street, and this was the trespass complained of. The defendants justified the act under the 69th section of the Public Health Act, 1848, which provided that if an owner of property failed to make a street to the satisfaction of the Local Board of Health,

the Board might execute it themselves and charge the owners with the cost. The usual notices were served upon the plaintiff to sewer, pave, flag, and channel the street called Back Gregson Field, but as the plaintiff did not comply with the notice, the Corporation, in her default, did the work, assuming that the land was a street. The whole question in dispute was whether the land was a street within the meaning of the Act.

His Lordship gave judgment for the plaintiff, with a verdict for 10 guineas. He said it seemed ludicrous to him to call the piece of land belonging to the plaintiff a "street" within the meaning of the statute; and how the corporation could have got such an idea into their minds he could not conceive. If Back Gregson's Field was in such a condition as to be a nuisance, the corporation had ample powers to deal with it; and if they wanted the land for the purposes of street improvement, then they must pay for it.

LIGHT AND AIR.

HARROW *v.* AGNEW.

THIS was an application, before Vice-Chancellor Sir Charles Hall, for an injunction to restrain Messrs. Agnew & Sons from continuing the buildings behind and to the west of New Bond-street, which they are now erecting for the purposes of their new picture gallery. The motion was made on behalf of Mr. Harrow, a portmanteau maker, who is the owner of premises in Albemarle-street, at the back of the proposed gallery, and who claimed that the light and air to the back windows of his house would be interfered with, and that the defendants might not be allowed to interfere with such light and air to any greater extent than was done by the buildings which previously stood on that ground.

The defendants made several offers to submit the question in dispute to arbitration, but Mr. Harrow declined to accept these offers, and held to his rights to have such light as he formerly had. Messrs. Agnew, on the other hand, expressed their determination to carry out their buildings according to their original plans, although their doing so might slightly diminish the plaintiff's light, and might leave an angle of less than 45 degrees between the roof of such buildings and the sill of the window of the room on the second floor, about which the chief complaint of diminution of light was made. Their contention was, that such diminution of light was really inappreciable, and that the Court would not grant the injunction asked for unless some substantial damage was shown. Evidence, as usual in these cases, of experienced and professional gentlemen was produced on both sides.

The Vice-Chancellor considered that the evidence which had been given was sufficient to prove, perhaps, that some injury to the plaintiff had already been done; and certainly that such an interference was contemplated as would entitle him to an injunction. He therefore granted an injunction to restrain the defendants, their contractors, and agents, from raising the walls of the proposed buildings to a greater height than they had been raised on the 3rd inst., so as to interfere with the access of light to the plaintiff's buildings to a greater extent than such access was interfered with by the buildings which stood upon the ground previously to the 1st of August last.

LABOUR AND CAPITAL.—A PAVIORS' STRIKE.

COLLINS *v.* GRIFFITHS.

THIS was an action heard in the Whitechapel County Court on the 1st ult., before Sir Walter Riddle.

The plaintiff was a labourer lately in the employ of the defendant, a stone merchant, of Kingsland-road, and sought to recover the sum of 1*l.* 10*s.* alleged to be due from his employer, being 1*l.* retained by the defendant during a period of two months, and 10*s.* in lieu of two days' notice. It appeared from the evidence that the plaintiff was discharged by defendant for drinking and fighting upon his work. Plaintiff said the 20*s.* was for 4*d.* per hour detained by defendant, but he admitted his full week's work would be only 56½ hours, and from wet and other causes, it was sometimes considerably less. The 10*s.* was for two days which he said he required as notice. It was said on the other side that the defendant had instituted a system of allowing men who were put upon the good conduct list a gratuity of 2*s.* 6*d.* per week, payable monthly, providing they were well conducted and properly attended to their work, which it was left to the discretion of the defendant to determine. This system had been in practice for some time past. Upon the commencement of this action the defendant immediately gave notice to the whole of the men so employed that he should discontinue the gratuity until the decision of the Court was given upon the summons.

Verdict was given for defendant with costs.

According to the *Hackney Express*, the defendant has not availed himself of the benefit of the above decision, but has since paid the gratuities to all the men to whom the promises given applied, amounting to a total sum of 30*l.* But the matter did not end there. The gratuities were paid on the following Tuesday, after which the men attended a meeting of their committee, and resolved that they would not continue their work at a less rate than 10*d.* per hour, or 7*s.* 6*d.* per day, and this for unskilled labour. Mr. Griffiths resented this demand, and on his refusal the whole of the paviors engaged on the paving of Pearson-street, Kingsland-road, struck work. The contractor laid the matter before the Paving Committee of the Shoreditch Vestry, and the committee unanimously agreed to extend the time for the completion of the works to any extent which might be found necessary.

METROPOLITAN IMPROVEMENTS.

SIR,—I have every reason to believe, and you may like to hear, that the Metropolitan Bill for new streets has been really altered; that the new line of route from Chandos to Coventry street is *viâ* Green-street, Leicester-square, Spur-street, and the bottom of Princes-street. Mr. Edward Barry opposed, on the part of the National Gallery, the lopping off of their land.

The Duke of Bedford has commissioned Mr. H. Clutton to prepare designs for a new piazza for Covent-garden; and his Grace is busy himself over the scheme. I believe leases fall in at the close of this year. The suggested alteration in the direction of Bedfordbury has also been discussed, I hear. A TENANT.

KENSINGTON VESTRY-HALL COMPETITION.

AT the fortnightly meeting of the Kensington Vestry on Wednesday night last, Mr. Churchwarden Pearson in the chair, the question of receiving the designs from architects who had been invited to tender was considered. A report of the Law, Parliamentary, and Special Purposes Committee was read, from which it appeared they had received sixty designs. As they could not be conveniently exhibited in the Vestry-hall, the committee recommended that they should be placed in the old National Schools which had been purchased as a site for the new building. A discussion took place as to the appointment of a sub-committee to select three designs out of the number for the consideration of the Vestry.

Mr. Bridgwater moved that the plans be first hung up for general inspection.

Mr. Gibbons seconded the proposition, and said they could not be too careful to avoid a suspicion of jobbery. It seemed to him that the ratepayers ought to have an opportunity of judging.

Mr. Liggins replied that the Vestry had already appointed a committee to carry out that very thing.

Ultimately it was resolved to adopt the report, on the understanding that the joint committee would appoint the sub-committee. The Vestry also appointed three gentlemen to act with the Committee in the selection of the plans.

SIR,—I find some of the competitors for the proposed Vestry-hall at Kensington are sending reduced lithographed plans to the vestrymen of their designs. This I consider most unfair. As a competitor, I think the rules of the competition should be fairly kept, *and the race run as between the papers, without any lodging about.* The merits of the building should be determined from such plans as were requested, and as submitted to the open vestry, not say privately distributed among and to the vestrymen.

G. GORDON STANHAM.

*** The practice is now so general that no competitor can be blamed if he think fit to follow it. Having thrown away a certain number of pounds in the wasteful gambling called A Competition, there is nothing to prevent him, under present arrangements, from throwing away a certain number of shillings in addition to strengthen his chance by bringing his proposition quietly under the eyes of his judges.

AMERICAN SLATES.

SIR,—Some time ago you gave some prominence to the fact of the arrival of roofing slates from America, and I hope you will allow me, through your columns, to give your readers the benefit of my experience, which is, that some at any rate of these slates are being sold as Welsh slates, to which they are very inferior, and only suited for jerry work. What I wish to do is to warn buyers of slates of this, and to advise their obtaining a guarantee that the slates they buy are of the quality specified.

A BITER BIT.

Books Received.

Half-Hours among English Antiquities. By LLEWELLYN JEWITT, F.S.A., &c. Illustrated with 300 engravings. Hardwicke & Bogue.

THIS small book devotes each separate chapter to giving the outlines of some separate branch of English archæology; of course, in a very general manner, but with sufficient information to start the reader in regard to the subjects treated of; to suggest to him the outlines of what is known, and some ideas as to what is to be known; and in what direction the further study of the subject should lead him. The first chapter, for example, is entitled "Among Barrows," and gives sections of typical forms of English barrows; the second is, "Stone Circles, Cromlechs, &c."; the third, "Among Implements of Flint and Stone," with numerous illustrations of arrow-heads and similar objects; then we have a chapter on bronze implements; one "Among Roman Roads, Towns, and Villas;" and so on through various other subjects. The information is, of course, confined to generalities, but the author's name is a pretty good authority that it is correct as far as it goes; and even a general knowledge of the nature of these various species of relics of antiquity is of much use from an educational point of view, and is all that many people, even with the will to learn, can ever have time to acquire. Mr. Jewitt observes in his preface that he has endeavoured so to treat the various subjects as to popularise them and to avoid being "dry" (the proverbial failing of antiquaries, in common opinion), and at the same time to make the volume something of a text-book or memorandum to those of more matured study. In avoiding the "dry" quality he has succeeded, and the numerous illustrations in themselves render the book valuable and interesting to both the classes of readers referred to.

VARIORUM.

Night and Day is the title of a monthly "Record of Christian Missions and Practical Philanthropy," edited by Dr. Barnardo, and which will at any rate serve to make wider known the various operations going on at the East-end under his guidance. If the publication exhibited a little less of what Mr. Gladstone, the other day, called, with happy bravery, "the slang" of religion, it would certainly please us better. No. 3 contains a view of the Lord Chancellor Ward, in the Infirmary for Children at Stepney Causeway. It is to be hoped that this ward has some arrangements for ventilation which are not obvious in the print. It is a long apartment, with a number of beds against a dead wall on each side, with windows in the end wall only. The aspect is alarming, as may be supposed.——It may be useful to mention that Mr. John Honeyman's paper on "Trade Unionism: the Blight of British Industries and Commerce" has been published as a pamphlet by Hamilton, Adams, & Co., London.——The April Number of the *Popular Science Review* is a very good one. This periodical is now edited by Mr. W. S. Dallas, Assistant-Secretary of the Geological Society. In addition to articles which are of abiding interest, the *Popular Science Review* contains a complete record of progress in every department of science, including astronomy, botany, chemistry, ethnology, geography, geology, mechanics, metallurgy, microscopy, photography, physics, zoology, sciences applied to the arts, manufactures, and agriculture.——*Die Eisenbahn* (of the 23rd of March: Zurich) contains a plan and particulars of the new abattoirs constructed for the city of Geneva. Mr. Blanchot, of that city, was the engineer.——"Picturesque Europe" maintains well its character. Illustrating some of the old houses at Bristol, the writer says,—"Temple-street presents us with a specimen of civic domestic architecture, and is very little changed from the aspect which it wore when Queen Elizabeth saw it. The Flemish cloth-weavers, who were brought to England by Edward III., resided in this Temple-street, which still gives the impression of busy burgher life from day to day. 'Base mechanicals' would be the term applied by the conceited and empty-headed scoffers and swash-bucklers of Shakspeare's day to the Flemish weavers; but the handicraftsmen throve until the changes of time transferred the cloth manufacture from the West to the North of England. It is observable that, whenever sound and healthy national life produces good and picturesque architecture, the houses of all classes, of peasant as of peer, are beautiful. The castle and the mansion of the noble, the cottage of the peasant, the grange of the Franklin, the house of the burgher, were alike—while architecture was yet a living art,—convenient, suitable, and lovely. Honour to the great old poet builders! Let us now, remaining in the Capital of the West, stroll out with our artist by moonlight. Clouds are behind and around the waning moon, but her light shines, in the mystery of *chiaro-scuro*, upon a block of most quaintly decorated and singularly picturesque old gabled houses, on which we can gaze with delight, as we linger in the 'mirk o' night.' The building is St. Peter's Hospital. Seeing the olden pile in the gloom and mystery of night, we will pierce into no details we will be contented with the old houses as a picture and a charm."

Miscellanea.

Bill to Amend Metropolitan Building Act.—At the meeting of the Metropolitan Board of Works, on the 23rd ult., the Building Act Committee submitted the draft of a Bill to amend the Metropolis Management Act, 1855, the Metropolitan Building Act, 1855, and the Acts amending the same respectively, with respect to houses and buildings, and recommended that the Bill be approved by the Board. Mr. Selway explained that one of the objects of the Bill was to prevent the formation of roads for carriage traffic of less than 40 ft. A clause would be inserted that no house be erected in a road for carriage traffic at a less distance than 20 ft. from the centre, or 10 ft. if not intended for carriage traffic. Another point was to prevent houses from being constructed on rubbish. Some builders were in the habit of digging out gravel and filling up the foundations with rubbish of the most objectionable description, and then erecting the houses upon it. Bye-laws under the Bill would be framed under which houses could not be erected on foundations not approved by the district surveyor. Instances had occurred of houses falling down, it was supposed, from the use of improper materials. Clauses would be inserted in the Bill giving the Board power to regulate the use of materials. He asked the Board to approve the principle of the Bill, and that it be referred to the Works Committee to seek an interview with the Home Secretary to introduce the Bill as a public one. The motion was put and agreed to. The Bill, we are bound to add, has taken the architectural and building world by surprise.

Stone Dressing by Machinery.—We are glad to note that the stone-dressing machinery of Messrs. Allan Ransome & Co. (which we described at some length a few months since) is meeting with continued favour. A great advance has been made by Messrs. Brunton's machine, of which Messrs. Allan Ransome & Co. are the makers. It is the structure of the tool and its mode of action which constitute the peculiarity of this machine. In this lies the secret of the success with which it dresses the hardest granites and the most wearing grits. The machine consists of a bed-plate with standards carrying the dressing apparatus. The stone to be dressed is fixed to a travelling table, which is mechanically moved backwards and forwards under a set of revolving cutters. These latter consist of three circular discs of steel projecting from the under side of a chuck in which they are carried. Each cutter has a rotary motion of its own, and the chuck also revolves with them. The cutters revolve very rapidly over the face of the stone, and clear off the rough surface with astonishing rapidity, the wear and tear of the cutters being remarkably small. It is capable of dressing blocks of Aberdeen granite at the rate of 1¼ ft. super. per minute. Ordinary limestones are of course dressed at a much more rapid rate. Several of these machines, specially suited for granite, are being made by Messrs. Ransome for use in the Aberdeen district.

Bedfordbury: The Plague-Spot of St. Martin's.—Mr. D. Cubitt Nicholls sat as Commissioner at the Vestry-hall, St. Martin's-in-the-Fields, on the 17th ult., to hear and consider the report of the medical officer of health for the district of St. Martin's as to the demolition of property in Bedfordbury and the adjacent courts and alleys, and to receive the objections of the holders as to its destruction. Mr. Grantham, Q.C., cited the report of the medical officer of health, who described Bedfordbury as the plague-spot of St. Martin's. Mr. Skegg, the medical officer, gave evidence as to the general insanitary nature of the district. Sir Joseph Bazalgette said that the Board by their present scheme contemplated demolishing houses covering an area of an acre. On this ground in fifty-seven houses lived nearly 800 people, giving an average of 2·19 per room, many of the rooms being so small that the bed occupied half the space. The whole family here lived, ate, slept, and worked.

Value of Land.—A plot of freehold building land (part of the site of the late church of St. Michael, Queenhithe), having frontages to Upper Thames-street and Little Trinity-lane, and containing an area of about 2,690 square feet, was offered for sale by tender by Messrs. Fuller, Horsey, Son, & Co., on the 22nd ult., and has since been sold for the sum of 10,770*l.*, being at the rate of a fraction over 4*l.* per square foot.

The Liverpool Water Supply and the Borough Engineer.—The special committee appointed by the Liverpool Town Council to inquire into the charges made by Mr. Alderman Bennett against Mr. Deacon, the borough engineer, held their final meeting on the 28th ult., and approved of a report which was to be presented to the Council on Wednesday last. The alderman charged Mr. Deacon with copying the plans and specifications of Messrs. Mather & Platt for the boring-work at Bootle. We append the conclusions at which the committee have arrived:—

1. That there is a similarity in the general designs of Messrs. Mather & Platt and the water engineer, as far as the principle of raising from a deep borehole is concerned; but there are differences in details which sufficiently prove that the water engineer did not avail himself of Messrs. Mather & Platt's specification or plans.

2. That the similarity before mentioned was inevitable, having regard to the directions to which the water engineer was required to work by the committee.

3. That the evidence before the committee does not bear out Messrs. Mather & Platt's contention that certain details in their plans and specifications which they complain of the engineer having adopted, were exclusively used by them, and were not used by other engineers for similar purposes.

4. That the committee are of opinion that the water engineer is exonerated from any charge of piracy or improperly using the plans and specifications of Messrs Mather & Platt.

The Walker Art Gallery, Liverpool.—The statuary which is being executed in Rome by Mr. Warrington Wood for the Walker Art Gallery has been finished. The Library Committee will now make arrangements for the speedy opening of the Art Gallery; but it is impossible as yet to fix a date for the ceremony, as that depends a good deal on the success of the negotiations to get a member of the Royal family to open the building. It is intended to ask the Prince of Wales to open the gallery, and very confident hopes are entertained that his Royal Highness will accede to the request. There was some expectation that her Majesty would visit Manchester during the summer for the purpose of opening the new Town-hall there, and that the royal visit might be extended to Liverpool; but the Queen will not go to Lancashire.

Dr. Schliemann has arranged to attend a meeting of the British Archæological Association on Wednesday evening, the 11th inst., to receive the diploma of membership; for which purpose the Council of the Institute of Architects have granted the use of their rooms in Conduit-street. Lord Houghton will preside, and several gentlemen will speak on the occasion. It is understood that Dr. Schliemann will read a paper "On Troy and its Analogy to Mycenæ." The Council of the British Archæological Association, with very proper consideration, have delayed their meeting in order that it might not in any way interfere with the reception of the Dr. by the Society of Antiquaries.

Royal Horticultural Society.—The fortnightly show of the Royal Horticultural Society, held on Wednesday last, in the Conservatory under the Albert Hall, was a very choice exhibition. At the meeting held before the show eighty-five of the new order of members, who pay one guinea annually, were elected, in addition to twenty-five new Fellows, so that a rift seems opening in the black financial prospects of the Society. The flower-show was attended by a very large number of visitors, in spite of the pouring rain, which, though it did not penetrate the warm and pleasant conservatory, came into some of the corridors, and bestowed on the evergreens with which they were decorated more than their daily allowance of water.

Cleeve Abbey—Another interesting discovery is reported to have been made at Cleeve Abbey. Some time ago it was ascertained that on the south side of the present refectory there were old foundations of what was supposed to have been a former refectory. On the 27th ult. some men were put to work to remove the earth between these foundations, and at a depth of a little over 2 ft., a tesselated pavement was found. It is 40 ft. long and 14 ft. broad. The tiles are of heraldic design, seven or eight various kinds, and some are as large as 8 in. square. The pavement is nearly perfect.

German Artisans and the Paris Exhibition.—A telegram from Berlin says that a petition has been presented to the Reichstag by the artisans employed in the manufacture of objects of art and in art industry, praying for reconsideration of the French invitation to the Paris Exhibition, and in a sense favourable to German participation.

Manchester Royal Infirmary.—The committee appointed by the Board on the 19th of February to prepare a code of instructions to architects with a view of obtaining professional opinions as to the best means of remedying the constructive defects of the Infirmary, and providing for its enlargement, brought up their amended report. The committee recommended that Messrs. Mills & Murgatroyd, Messrs. Pennington & Bridgen, and Mr. Thomas Worthington should be requested to undertake the work, and that a fee of 100 guineas should be paid to each of these firms. This was ultimately agreed on by the Board.

City Guilds Industrial University.—In carrying out this scheme, it is proposed to erect a building as the central hall of the University, on a plot of ground between the Temple and Blackfriars, on the Thames Embankment, consisting of a large amphitheatre or lecture-room, a council-room, with library, a museum of trade examples, and a room for models. It is held that to begin the movement on a scale commensurate with the necessities of the times, and the wealth and intelligence of the associated livery companies, not less than 10,000*l.* per annum should be guaranteed over and above the provision for a building fund.

Health and Sewage of Towns.—The Sewage Conference of the Society of Arts is fixed to be held on the 3rd and 4th of May next, under the presidency of the Right Hon. James Stansfeld, M.P., late president of the Local Government Board, and a large gathering of representatives from the principal cities and towns of the United Kingdom is expected to attend. Papers on proved results of systems adopted in various localities are already promised for reading and discussion, and an exhibition of sanitary appliances will be got together for inspection.

Bristol and Gloucestershire Archæological Society.—A general meeting will be held in Cheltenham on the 19th inst. Amongst the business to be done the following papers will be read:—"Dr. Hübner, on the Discovery of the Walls of Gloucester, and Remarks on the Military Occupation of the City in the Roman Period," by Mr. John Bellows; "The Parish Church of Cheltenham," by Mr. Daniel J. Humphris; and "The Roman Camp at Haresfield, near Gloucester," by J. D. T. Niblett.

Billingsgate.—Messrs. Chas. S. Kelsey & Son have just completed the sculpture of the central portion of the new fish market, Billingsgate, for Mr. Horace Jones, the City architect. The works consist of a statue of Britannia, 10 ft. high, on the apex of pediment; two groups of entwined dolphins, and the tympanum, 30 ft. by 6 ft., filled in with the City arms in high relief. The whole is very bold and effective.

Royal Society.—The number of candidates for the F.R.S. this year is fifty-seven (nearly four times as many as can be elected), each of whom, nevertheless, is able to give a very fair account of himself.

Tall Students.—A Wisconsin paper says, "Its Board of Education has resolved to erect a building large enough to accommodate 500 students three stories high."

Honours to an Antiquary.—The *Oxford University Herald* states that the honorary degree of Master of Arts has been conferred upon Mr. James Parker, son of Mr. J. H. Parker, C.B.

The Mosaic Code of Sanitation.—An interesting lecture on this subject has been delivered before the Jewish Working Men's Club and Institute, by Mr. Ernest Hart.

TENDERS

For building a house at Forest-gate for Mrs. Greig. Mr. J. Wesley, architect:—

Curtis	£1,161	0	0
Johnson	1,038	0	0
Salt	1,016	0	0
Palmer	995	0	0
North	985	0	0
Judd & Hawkings	914	0	0
Tillett	895	0	0

For alterations to the Eastern Hall and Tavern and two shops adjoining, East India-road, for Mr. J. G. Paterson. Mr. J. Harris, architect:—

Sheffield	£3,993	0	0
Wood	3,620	0	0
Palmer	3,589	0	0
Perry	3,575	0	0
Bangs & Co.	3,483	0	0
Forrest	3,451	0	0
Murter	3,395	0	0
Johnson	3,237	0	0
Hearle & Son	3,185	0	0
Judd & Hawkings	2,849	0	0

For the erection of schools, covered playgrounds, and caretaker's house, to accommodate 750 children, for the Heworth School Board, Durham. Mr. Thomas Oliver, architect:—

Greason & Stockdale	£6,884 6 0
Mitcheson	6,450 0 0
Rennison & Simpson	6,250 0 0
N. & R. Reed	6,180 0 0
Oake	6,075 0 0
Elliott	5,990 0 0
Middlemiss, Bros.	5,988 17 9
White & Sproat	5,970 0 0
Wilkinson & Son	5,800 0 0

For building two shops and three shops at Norwood. Messrs. Power & Wheeler, architects. Quantities by Mr. Barnett:—

	Two Shops.	Three Shops.
Bowyer & Co.	£2,300	£3,400
Merritt & Ashby	2,310	2,330
Shaw	2,223	2,804
Jenkins	2,078	2,840
Brass	2,27	2,613
Sewell	2,187	2,590
Newman & Mann	2,175	2,562
Dove, Brothers	2,115	2,596
Smale	2,160	2,538
Allen & Co.	2,120	2,535
Bracher	2,078	2,490
Thomas	1,950	2,450
Aitchison & Walker	1,985	2,396
Ward & Son	1,600	2,100

For the erection of bakery buildings, stables, &c., in Monk-street, Derby, for the Derby Co-operative Provident Society (Limited):—

Bridgart (accepted)	£3,092 0 0

For alterations for Mr. Emery, linendraper, Commercial-road East, London. Mr. Cotton, architect. No quantities —

Somes	£1,090 0 0
Abraham	1,047 0 0
Wood	1,025 0 0
Hearle	985 0 0
Johnson	797 0 0
Johnstone	758 0 0
Palmer	749 0 0

For two cottages to be erected in the Canterbury-road, Folkestone, for Mr. Sharp. Mr. Burgess J. Reeve, architect:—

	16-ft. 10 in. Frontage.	15-ft. Frontage.
Webster	£490	£470
Butler	475	430
Hall	380	370
Reason	335	340
Payne	—	360

For repairing and decorative work to house for Mr. Joseph Welch, Banstead, Surrey. Mr. R. M. Shaw, architect:—

Pitman & Cuthbertson	£789 0 0
Simpson & Son (accepted)	738 0 0

For the erection of schools, &c., at Clowne, Derbyshire, for the Clowne School Board. Messrs. Rollinson & Son, architects:—

Marriott	£3,150 0 0
Hodson & Facon	2,665 0 0
Fidler	2,620 0 0
Fidler, Bros.	2,600 0 0
T. Tutin	2,559 0 0
Barber	2,553 0 0
Broomhead	2,550 0 0
S. Tutin	2,270 0 0
Lister	2,253 0 0
Hibbard (accepted)	2,106 0 0

For the erection of schools, teacher's residence, fence walls, and conveniences, together with road formation, at South Normanton, Derbyshire, for the South Normanton U.D. School Board. Messrs. Rollinson & Son, architects:—

Hays	£3,293 0 0
Broomhead	3,116 0 0
Andrews	3,038 0 0
Tutin	3,026 0 0
Hudson & Facon	3,052 0 0
Page & Bird	2,896 0 0
Winn	2,872 0 0
Greenwood	2,774 0 0
Weston (accepted)	2,738 0 0
Green	2,662 0 0
Roe	2,557 0 0
Monks & Richer	2,304 0 0

For alterations to the "Widow's Son," Bromley. Mr. J. Harris, architect:—

Judd & Hawkings	£783 0 0
Forrest	698 0 0
Cole	675 0 0
Walker	631 16 0

For a pair of semi-detached cottages at Snaith, Yorkshire, for Mr. Hugh Jennings. Mr. William Watson, architect:—

Hinsley	£700 0 0
Bland	695 0 0
Fairbairn	690 0 0
Widdop (accepted)	565 0 0

For schools at Eastmoor, for 650 children, for the Wakefield School Board. Mr. William Watson, architect:—

Ives & Sons	£5,712 0 0
Young	4,996 0 0
Gibson	4,798 0 0
Webster (accepted)	3,841 15 0

For enlarging the business premises of Messrs. E. Peniston & Co., Doncaster. Mr. William Watson, architect:—

Athron	£3,600 0 0
Anelay	3,307 0 0
Johnson	3,223 0 0
Arnold*	3,205 0 0

* Accepted, subject to amendment.

Accepted for a pair of semi-detached residences on the St. John's Estate, Wakefield, for Mr. Wm. Wadsworth. Mr. William Watson, architect:—

Brick and Stone.

Fawcett	£959 19 6

Slating.

Pycock & Son	69 0 0

Plastering.

Eastwood	105 10 0

Woodwork.

Gibson	462 0 0

Plumbing, Glazing, and Ironwork.

Nelson	159 15 0

Painting.

Naylor	27 0 0

For alterations at No. 11, Lowndes-terrace, for Messrs. Harvey, Nicholls, & Co. Mr. Alfred Williams, architect:—

Thorne	£1,730 0 0
Sprake	1,497 0 0
Grimwood & Sons	1,441 0 0
Benstead & Sons	1,430 0 0
Stimpson & Co.	1,380 0 0

For the erection of a new cast-iron tank and foundation walls at the Braintree Waterworks, for the Local Board. Mr. Geo. Scamell, engineer:

Cast-iron Tank.

Bells & Lightfoot (accepted)	£565 0 0

Foundation Walls.

Letch (accepted)	237 10 0

For two warehouses, Little Britain. Messrs. N. S. Joseph & Pearson and Mr. G. E. Alce, joint architects. Mr. T. Thornton Green, surveyor:—

Merritt & Ashby	£6,420 0 0
Browne & Robinson	6,300 0 0
Thompson	6,270 0 0
Rider & Son	6,138 0 0
Brass	5,846 0 0
Bangs & Co.	5,747 0 0
Nightingale	5,650 0 0
Bayes, Bros., & Allen	5,600 0 0
Scrivener & White	5,579 0 0
Newman & Mann	5,590 0 0
Langmead & Way	5,295 0 0
Sabey & Son	5,090 0 0

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Tewkesbury Abbey.

ONE effect of the more public appeal for funds in aid of the restoration of Tewkesbury Abbey Church, which has recently been made by the promoters of that restoration, will perhaps be to draw more of the attention of English architects to a monument of our early architecture, which in grandeur is second to few: in interest, second to none in the kingdom; but which has not received attention or admiration at all commensurate with its merits. This comparative neglect may probably be traced to the same cause which has operated in one or two other similar cases; the fact of the locality lying out of the frequented line of railway traffic, and the town in connexion with it being one of those quiet, old-fashioned places to which no crowds are ordinarily drawn in pursuit of business or pleasure. In glancing at reports of meetings on the subject of the restoration of the church, we have, nevertheless, been surprised to see acknowledgment of very slight acquaintance with the building, or none at all, on the part of architects and amateurs who are noted for their enthusiasm on the subject of Mediæval remains. No one, we are convinced, who knows what there is to be seen at Tewkesbury will fail to see it for himself at the earliest opportunity, and to be glad of any special interest in connexion with the subject which led him to visit the church and study its beauties and peculiarities on the spot.

Our object in the present remarks is architectural rather than archæological, but we may just recapitulate here the heads of the history of the church, which is better known than that of some other similar monuments, and is to be found pretty fully given in several published works.* The place was a monastic foundation before the existence of any portion of the present structure, being then a dependency of the Abbey of Cranbourn. It is said to have been in 1084 that Geraldus, the then abbot of Cranbourn, determined to take up his residence at Tewkesbury, and to replace the existing buildings, then in a ruinous state, and doubtless of a very primitive and simple character, with an erection of greater magnitude and stability. What he might have made of the matter by his own efforts we know not, but shortly after his scheme had been taken in hand, a grant of property in the neighbourhood was made by William Rufus to Robert Fitzhamon, a nobleman formerly of Astremeville, in Normandy, who appears to have given his hearty patronage and assistance to the work, and whose name has been associated with the history of the Abbey ever since. What we see may, in fact, be called, for the most part, Fitzhamon's building; and this origin of the splendour of Tewkesbury Abbey is an interesting comment on the remark of M. Viollet-le-Duc, as the result of his study of Early Mediæval architecture in France, that the prosperity and grandeur of the architecture went hand in hand with the influence of the regal power. But that the king delighted to honour Robert Fitzhamon, and honoured him by this particular grant of land, we might have no adequate cause for devoting a considerable space to Tewkesbury Abbey Church.

The building erected under this lay assistance and patronage was partially habitable by 1102, and ready for consecration in 1123. Its integrity of style as a Norman church was first materially interfered with about 1237, when it is recorded that Prior Sipton rebuilt "the chapel of St. Nicholas." What part of the building was thus called is not known certainly, but what was done about this date was the building of a square chapel in the lancet style on the east side of the north transept, in place of the apsidal chapel which stood there, as in so many Norman churches, and the counterpart of which in the south transept is still in good preservation: and in addition to this there was built at almost if not precisely the same date, a smaller square chapel northward of the last-named (in existence, but much dilapidated) and a longer apartment opening into this, and running across the face of the north transept. This latter is now entirely removed, and only the large finely-moulded Early English arch which was cut through the Norman wall to give access to it, now remains. The monastic buildings, we may observe, are said to have been burnt in 1178, and marks of fire are traceable on the church; but as all the monastic buildings have disappeared except the gateway, which, as it now exists, is almost entirely a late Gothic construction, this part of the subject hardly concerns us here. The next and most important alteration, upon which the special character of the eastern portion depends, was made about 1340-50, probably, and consisted in the rebuilding of the choir arcade upon the old cylindrical Norman piers, and the addition of a series of chapels round the ambulatory in the chevet form so common in France, but scarcely known in this country, except at Westminster. Of the peculiarities of this part of the building we will speak in detail presently; it may be observed that this important alteration is attributed to the munificence of the family of De Spenser, who were leading people in the neighbourhood from about 1320 to the early part of the following century, the last of the family who concerned himself in the church being apparently Sir Guy de Brien, who married the widow of Hugh de Spenser. It may not be fanciful to attribute to some peculiarly foreign sympathies and ties of this family who retained so much French in their names, the fact of the exceptional and un-English character which has been given to this part of the church. It was under the influence of the same family, probably, that the nave and transepts received, somewhat later, the elaborate vaulted ceilings which now contrast so singularly with the stern and massive architecture of the substructure; the crossing, which was originally open up to a high point in the tower, was vaulted at the same time and on the same level as the rest. In 1660 the tower (originally surmounted with a timber spire, which fell at a comparatively early date) received its present weak and ineffective turrets and battlemented parapet. In 1686 the present large west window was inserted; the date is recorded on a shield affixed to one of the mullions; for so late a period the window is better than might have been expected, and, in fact, in one or two details seems to reproduce work of an earlier style. The last important change was in 1720, when the high-pitched roofs of the nave and transepts were removed and replaced with low ones, concealed by bad parapet walling of semi-Classic style, erected on the old gutter-table.

Approaching the church by the principal entrance to its precinct, by the gateway opposite the north porch, the only feature that is very striking is the tower, which, with the exception of the unlucky pinnacles and parapet, is a piece of pure rather late Norman work (there is a perceptible distinction of style between it and the substructure), very impressive in its simple and broad treatment. It rather loses by the removal of the high roofs, the weather-moulds of which disfigure the faces of the tower, while the removal of the roof obliterates the motive for the distinction between the absolutely plain masonry of the lower part and the rather ornate work above, besides destroying the pyramidal effect which the whole would have had originally. The decorative treatment consists in two tiers of arched windows and wall arches, ranging together, and in which the zigzag decoration is freely used, and a small tier of moulded interlaced arches which intervenes between these, forming a broad decorative band round the tower. The ornamental treatment is, however, completely subordinate to that appearance of massive squareness and solidity so characteristic of Norman towers. Looking at the body of the church on this side, we see nothing in its present state of much interest. There is a good Norman porch, presenting no special feature, with a later addition over it. We see that late Decorated windows of somewhat meagre design have been inserted in the aisle walls, and still later and more meagre ones in the clear-story. Originally, the clearstory has had a wall arcade all along it, with no doubt small narrow windows at intervals; a considerable part of this is left, but a good many of the caps and shafts are renewals, and the design has been altered by cutting away two or three shafts at intervals, and throwing an awkwardly-shaped low segmental wall-arch across the space, within which the late windows have been pierced. The arcading in its original form is seen on the east wall of the south transept, while on the south side of the nave it is gone altogether. On the aisle walls on the north side, too, much of the masonry is evidently not in its original state externally, and between the third and fourth windows (from the crossing) a

* A useful and compact little book on Tewkesbury Abbey, is that by the Rev. John H. Blunt, founded on Mediæval chronicles, of which the originals are in the British Museum and elsewhere, and which is full and trustworthy, without being tedious.

flying buttress has been built in the fourteenth century, to counteract some settlement. On the west and north walls of the transept, however, we see much of the unmistakable Norman masonry, with its thin black shadows in the joints, and its remarkably massive and enduring appearance,—an appearance partially deceptive in this case, as it is probably the movement outward of this wall from settlement which has necessitated the removal of the Early English building before mentioned, and has pushed the still-existing chapel of the same date, at the north-east angle of the transept, far out of the perpendicular, one portion of its walls being actually shored up at present, while a Mediæval flying-buttress has been built at one of the angles, about the same time as that against the aisle wall just mentioned, to try to prop the chapel-building up. But we are intruding on the vicarage-grounds now, which adjoin the east end and south side of the church, and will return westwards, remarking by the way the fine Early English archway (before mentioned) in the transept wall, which formerly gave access to the chapel that has been removed, and which is now partially built up, but so as to leave exposed externally the arch mouldings and the deeply-recessed jambs, with four shafts and capitals on each side, of which six capitals and two of the shafts remain in partial preservation. Going down to the west end, and turning to look at it, we come upon quite a *coup de théâtre*. Nothing on the flank of the building suggests the existence externally of any feature so striking and unusual as what we see here, the effect of which must take by surprise even those who know from engravings what is the nature of the design. The whole centre of the front is filled up by an immense deeply-recessed arch, the jambs formed by six great shafts carrying an arch of six corresponding orders, six arches recessed one within another with a slight moulding on the outer face, and a big "roll" on the angle of each; the soffits plain. In all ancient English architecture there is perhaps hardly an incident more striking, more distinctly deserving to be called a stroke of genius, than this west front, the leading motive of which immediately recalls Peterborough; and though of course not on quite so large a scale, it has the advantage of being in finer preservation, not to say of a bolder and grander treatment in detail. The state of preservation of this part of the work, obviously untouched, is wonderful; the lines of the shafts and arches are for the most part as straight and clean, the thinly-shadowed joints as regular and even, as if it had stood but for fifty years; and the tones of the slightly lichened stone would be delightful to a painter, and not less so the continually varying play of light and shadow in the deeply-recessed arch, as the sunlight comes and goes and the shadows shift their position. What was the original filling in of the arch is not very apparent; the original Norman wall within it has been laid bare by the removal of some of the late masonry at one side of the west door; probably it was a plain wall with Norman windows in it. There seems no reason for supposing any special motive in the building of the great arch other than a pure desire for a grand effect. The centre is now filled, as we mentioned, by a large very late window and door, which look very trumpery amid their surroundings, but cannot spoil the effect of the whole. The finish of the front is unusual and remarkable; an examination of the substructure internally shows plainly that towers were intended, but they have never been carried out, and the front, ornamented with arcades on the portion adjoining the haunches of the great arch, finishes with the two turrets of most peculiar and unusual design, which serve to complete the unique character of this front. They terminate in a circular centre turret with a stone conical top, and four smaller conical pinnacles at the angles.* The last time we looked at the front a jackdaw sat on the apex of each centre cone, as symmetrically as if placed there for ornament.

Entering the nave by the north door, we find before us one of those arcades built upon the tolerably tall, thick, cylindrical columns which formed the first inspiration of the Norman builders in some of their greatest works, as in the nave of Gloucester: the system which was commenced at Romsey and abandoned, after a couple of bays had been built, in favour of the more advanced system of grouped piers which formed the transition to the true Gothic pier. At Tewkesbury, however, the piers are of unusual height, especially as compared with the triforium, which is divided off by no kind of horizontal string, but marked merely by small couplets of openings, with a short thick column between them, over the haunches of the main arches. The nave contains eight bays, the westernmost bay narrower than the others. The total length, however, is practically nearly the same as if another bay were added, the additional length being made up by the masses of solid wall at the back of the western responds, intended as the substructure for western towers, which as before observed, were never carried out on the scale at first contemplated. The original intention in regard to the plan of the west end it is not easy to understand, in its present much altered state. The faces of the piers behind the responds were not originally unbroken up to the present west wall; there was a broad flat projection or buttress on the inner side of each, towards the centre aisle, which has been cut away a little below the springing of the fourteenth-century vault, at the same time as the vault was made, and is now stopped in each case by a corbel, richly carved with figures and foliage, the latter in a very fine bold style of work. At the same time a pointed arch, with splayed edges, was carried across the west end, starting from the upper part of this same projection, and forming the termination westward of the new vault. Between this arch and the present west window (which is much later) two moulded ribs spring from corbels of different design, parallel with and following the line of the pointed arch, and evidently referring to some intermediate phase in the architectural treatment of this part of the building, between the Norman work and the seventeenth-century window. Coming back to the nave, we may conclude that there was originally a wooden ceiling, probably with roof-shafts, on corbels above the capitals of the main arcade; one such wall-shaft, semi-cylindrical and carried down to the ground, remains, adjoining each western respond; and in the aisles there is a similar shaft opposite each pier, and some of the corbels carrying the intermediate roof timbers of the aisles remain. Now, the nave is entirely vaulted with a late fourteenth-century vault, seen in our view*; that in the centre of considerable elaboration of design, the larger bosses carved with figure subjects, the smaller with foliage, and mostly in very good preservation, though at present whitewashed over. A feature in the design is the existence of a longitudinal rib parallel to the ridge rib on each side, in the upper portion of the vault. The aisle vaults are roofed with a simple quadripartite vault with ridge ribs, with the transverse ridge level on the side next the arcade and falling on the outside to the crown of a low segmental wall-rib, somewhat below the level of the main arcade. Originally, no doubt, the centre aisle would have had a clearstory of small Norman windows; it now shows from the interior the wider late Gothic windows inserted; which, however, can only be seen on looking up from a position nearly under them, as the vault cuts across the widely-splayed opening in a singular manner, the wall-rib of the vault ending in the air, as one may say, in the centre of the window-space. The effect is, of course, very clumsy, but so characteristic of Mediæval independence of method in working that one cannot wish to lose it. The vault springs from corbel-heads, of its own date, inserted immediately over the capitals of the main piers. The short pillars in the triforium couplets have ornamented capitals, showing here and there those tentative beginnings of foliage ornament which mark the Norman style when commencing its transitional stage; but, except these, and a incised ornament round the abaci of the principa capitals, the Norman portion of the work sternly plain, and depends for its effect only o mass and proportion and a few simple mould ings. The main arches are once recessed, an the outer order has a simple roll moulding. W may mention, while in the nave, the small font retaining the Early English water-holding basc mould, in conjunction with details of a characte usually assigned to a later date; and the stall which at present stand in the nave, and are goo work, but not of any exceptional interest. A this time we are in the part of the buildin which is still untouched by restoration, an veiled under the whitewash of the churchwarde era: we will now pass round the temporar screen fixed at the second pier from the crossing and see how matters look on the other side, an how the interior of the remarkably-planned choi comes out under the hands of the restorer; bu must defer what we have to say till our nex issue.

* In a paper read before the British Archæologica Association at Tewkesbury, by Mr. T. Blashill (August 20, 1875), and which contains some rather rash statements, it is asserted that these turrets, "including the highest window openings, are evidently a modern imitation of twelfth-century work." We deny that they are "evidently" any such thing. The upper windows have certainly been repaired, and one of them is filled in with an imitation Norman pillar or baluster, and the turrets are capped with apparently Gothic finials, possibly put on at the same time. But there is no perceptible evidence, from below at least (and we examined them carefully in a strong sunlight), of any distinction between the character or date of the masonry in the main portion of these curious and unusual turrets, and that of the undisputed Norman work below them. Sir G. Scott, who makes special reference to their peculiar character in his original report on the Abbey, does not, we observe, throw the slightest doubt on their authenticity as genuine work, and if Mr. Blashill calls these imitations of twelfth-century work, can he tell us from what they are imitated? As far as we know, they are unique in England; but they have a very strong dash of early French character about them, and suggest, like other incidents in the building, the foreign taste which seems so much to have influenced it, both in its earlier and later periods.

* See p. 375.

DRAWINGS FROM EGYPT AT THE BRITISH MUSEUM.

A REMARKABLE collection of drawings an sketches illustrative of Egyptian Architectur has recently been added to the MS. departmen of the British Museum. This consists of th drawings made during an expedition organise about fifty years ago (1826–33) by Mr. Rober Hay, who was accompanied and assisted by Mr. J Bonomi, Mr. F. Arundale, Mr. Charles Lave Mr. Catherwood, &c., to explore and illustrat Egyptian remains. For some reason the result of this expedition, which would have anticipate much that was since done by Lepsius and other were never published; and the accumulate sketches and drawings now fill nearly fift volumes of the MSS. library of the Museum Although much that is contained in them is no familiar to us, the drawings are of the highes interest, as the first systematic illustrations o Egyptian architecture on a large scale, and ar many of them of such remarkable excellence a specimens of architectural illustrative drawin as to be well worth inspection on that accoun alone. With the finished drawings are bound u also, in many cases, the original measure sketches from which they were made, an numerous sheets of pencil notes and memorands some of them now faint and difficult to decipher

Among a portion of the volumes which w have examined may be mentioned the volum of water-colour sketches by Arundale (29,846), which are, however, more picturesque tha strictly architectural: an interesting attemp is made in one sketch to restore the effect o the portico of one of the Dendera temples, a it may have appeared when all the varied colour on the columns and ceiling were fresh, and whe the floor was crowded with figures whose costume carried out the same polychromatic effect, whil the blue sky seen between the columns at th side formed the background of the *ensemble* To the architect, however, some other volume will be found still more interesting than this The Beni-Hassan remains are very fully illustrate (29,813) in pencil outline drawings, and coloure drawings of the hieroglyphics and wall-paintings and perhaps no illustration could more strikingly convey to the eye the strong affinity betwee these remains and Greek Doric architecture tha one of the large perspective drawings of a interior, showing the rows of fluted columns without ovolo or necking, yet otherwise so much reminding us of the effect of a Doric temple Other affinities of style are suggested by thi volume; the hunting-scenes *en silhouette* on th walls, with the animals and men careering ove the irregularities of a heavy country shown "i section," as we should say if it were a modern drawing, curiously resemble mediæval decora tive painting in spirit and in some points o execution; and, on the other hand, a drawin occurs of a piece of a sculptured figure havin a most striking resemblance to that portion of a antique figure found by Mr. Wood on the site o the Ephesus temple, and now in the Elgin room in juxtaposition to the other Ephesus relics The resemblance is so strong that we migh suppose the two figures came from the same place. This is only one of many indications which seem to multiply upon us as investigation

* We give the numbers in the MSS. catalogue, of thos volumes referred to, for the convenience of any reader who may wish to examine them.

s carried on, of the existence of an antique art ery widely spread and very homogeneous in its tyle and spirit, which has been the common asis of later Egyptian, Greek, and much of Western Asiatic art, from which the later forms ve are more familiar with have developed each n its own manner.

Drawings of Thebes and its remains are ound in volumes 29,816–17, in which (in the former olume especially) is to be noted the admirable nd careful style of pencil-sketching employed n the views of the temples, which are in outline, with the jointings of the masonry most carefully marked, and lightly and carefully shaded with a pencil tint over the sides that are in hadow, just sufficiently to give effect, without n any way interfering with the purpose of the rawing in regard to complete accuracy. Pencil rawing is rather at a discount with architects n the present day, and we seldom see such careful and delicate use of the pencil as in these rawings. There is no signature or apology for ne, as far as we observed, to most of the drawngs; those which we have referred we take to e those of Catherwood, unless they are by the rench draughtsman whose name, E. Thedenat, s seen round the neck of a column in a view in ne of these volumes; but this seems different n style from most of the others. We may oberve, also, that hardly any of the places are amed, or the drawings titled, except by an ccasional scribble on the back or on the margin. hey are numbered, but no list to which the umber may be referred appears in most cases, hough the places and objects, where not nown, may to some extent be identified by reference to the written notes which are bound p in most of the volumes. It would be a useful ask if some one well acquainted with the subect in detail,—Mr. Bonomi, for example,—would upply titles to the principal sets of drawings.

When we turn to the large set of drawings reresenting Karnac (29,825–26, the latter espeially), we are still more struck with the admirable ay in which simple pencil outline has been used or purposes of illustration. The filling in of the umerous details of ornament, hieroglyphic, &c., ives even to the unshaded drawings an appearnce of fulness and completeness of effect, but n many instances this is produced simply by ery careful pencil outline, in which no problem f perspective in the representation can be lossed or slurred over; and some of these rawings, such as 93, 94, 96, in vol. 29,826, are the erfection of clear, firm, intelligible architectural ketching. Further on we come to small geometrical sections and measured drawings, also n hard, light pencil, and beautifully neat. A ery interesting volume is that illustrating the ock-cut tomb of Rekhmara (29,817), with its laborate painted decorations, representing all inds of scenes in real life—hunting, cooking, and acrificial operations, reproduced and coloured vith minute care. Vol. 29,830 consists of mostly he same kind of small and neatly-executed geometrical drawings (these are by Arundale) of he small temple at Medinet-Abou; which, as very one knows, looks remarkably Greek in eeling, with its symmetrically-disposed façades n which every stone and line is drawn with minute care. By the same laborious and accomplished draughtsman is a highly interesting small volume (29,855) comprising a classification of the forms of capital of the architecture of the Ptolemaic period. A number of these are shown in geometrical drawing, pencil outlines on a smooth foolscap paper, with plans and sections of the capitals, showing their profiles and the dispositions of the leaves, &c. They are classified in a catalogue according to the orders of vegetation on which they are founded, and the combinations in which various flowers and leaves are employed. This book should be studied, if only to realise how much more variety of detail there is in these capitals than is, we believe, generally supposed; and how logically and consistently the details of flowers and leaves are grouped and conventionalised. There is one curious exception to this, in the use of the datefruit, which is always treated quite naturalistically. In drawing 18, for instance (from Esneh), we have the conventional triangular leaf, ribbed with parallel lines, so familiar in Egyptian ornament, alternated with bunches of dates represented with the same natural irregularity that we should find in a late Gothic capital. In drawing 19 (also from Esneh), the upper portion of the capital shows a feature exceedingly like the angle volute of a Classic capital, recurring at regular intervals round the bell. Some of these capitals are splendid specimens of severe yet graceful architectural ornament, strictly founded on nature. In regard to the plan of the capitals, the ninefold division of the circle in some of them is a point to be noted. This volume is one which it would be well worth while to publish as a specialty in the illustration of architectural ornament.

Volumes 29835-56, illustrating Philæ and Kalabschi, again afford splendid specimens of pencil drawing, many of them in the shape of elaborate birds-eye views, giving the temples and ruins in conjunction with the character of the landscape. Volume 29,845 contains the series of drawings in sepia or in colour (chiefly the former) by Laver; these are more picturesque and less purely architectural than the others we have been mentioning. Among the most interesting sheets are those which give good-sized drawings of a number of various forms of capital, carefully shaded so as to give the effect of the modelling of the surface and the play of light upon them in a very complete manner. Among the most remarkable drawings, we may mention No. 53, a coloured drawing of the interior of a hall (no title) partially fitted up over part of the floor, flanked on either side by rows of giant figures or Telamones (to adopt an expression from Greek architecture) supporting the cornice. These figures, clad in the drawers or cloth of ribbed stuff so familiar to us in Egyptian statuary, are coloured, apparently (from internal evidence) on the spot, and what strikes one forcibly is the remarkably realistic effect of the drapery and ornaments on these colossal figures; the colour and texture of the stuff, and the manner in which it follows the contours of the limbs being indicated apparently with no aim at conventionalism at all, but rather with the intention of securing as real and life-like an effect as possible. The conclusion this leads us to is different from that usually drawn from the style and manner of Egyptian sculpture; and suggests that, if we had this sculpture always with its original colouring, we should conclude that the conventionalism of this art in Egypt was rather the result of imperfect execution in a very stubborn material, than of any set æsthetic purpose; and that the real object was to represent life as fully as the material and sculptor's ability allowed.

A volume, labelled "Modern Sketches" (29,849), which we turned over, presents nothing of much interest; the artist or artists seem to have been a little bent on extracting from modern Egyptian life some echo of the forms peculiar to the ancient representations; and there are one or two humorous representations of modern events, such as the bargaining of a naval officer with an Egyptian for some curiosity, in which the figures are represented in the manner and action of the ancient mural sculptures. In regard to the ancient work, however, the volumes we have mentioned form only a portion of the collection; what more there may be of equal interest we had not time to examine, but the collection, judging by what we have seen, is well worth examination, as a whole, by all who are interested either in Egyptian architecture, or in architectural drawing for its own sake.

TROY AND MYCENÆ.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

A special meeting of this Association was held on Wednesday evening last, in the rooms of the Royal Institute of British Architects (kindly lent for the occasion). Lord Houghton presided, and the meeting-room was crowded to its utmost capacity by ladies and gentlemen desirous to hear Dr. Schliemann, the explorer of Troy and Mycenæ, give some account of his researches.

Lord Houghton, in opening the proceedings, said that the three great archæological societies of this country, viz., the Royal Society of Antiquaries, the Archæological Association, and the Archæological Institute, naturally devoted the greater part of their investigations to matters more immediately connected with the history and antiquities of this country, Mediæval and Roman. Nevertheless, this fact did not separate them from those great sources of art life and thought which now formed, and he hoped would long continue to form, the basis of the education of the youth of this country: viz., the antiquities of Greece and Rome. With reference to Greek antiquities, Dr. Schliemann had revealed to us by his excavations within the last few years more than had been done by centuries of investigation. It was a great thing to find in an excavator not only a man who could dig in the ground and discover wonderful things, but one who could recognise the things he found, and connect them with history.

Dr. Schliemann, who was received with much enthusiasm, then read an elaborate paper, "On Troy and its Analogy to Mycenæ," in the course of which he said he visited the plain of Troy for the first time in 1868, and though he went without preconceived ideas, he first went to Bunarbashi. He found the site altogether in opposition to all indications of the "Iliad," and particularly as to its distance from the Hellespont, which exceeds nine miles, whilst, according to the "Iliad," it was very short, and could not have exceeded three miles. He engaged a number of workmen, and explored the whole extent of the heights, but found everywhere the purest virgin soil, except on the site of the little city of Gergis, at the extremity of those heights, where Mr. J. von Hahn, the Austrian consul at Syra, had previously made an excavation. Here the average accumulation of the rubbish was only from 1 ft. to 1 ft. 6 in. deep, and solely mixed with fragments of Grecian pottery, to which archæology could not possibly allow a remoter antiquity than the second, third, or fourth century before Christ; and therefore the city itself could not possibly claim a greater age, because fragments of pottery were far more indestructible than any city or fortress wall. We could destroy the hugest citadel walls, but we could never clear the site they surrounded from the potsherds, and in these latter we must necessarily always find the two termini for the chronology of the walls, which could neither be older than the oldest potsherds nor more modern than the most modern of them. The insignificant city walls which Consul von Hahn and the lecturer had brought to light had been altogether erroneously called "Cyclopean"; they consisted of oblique retaining walls of polygons, or walls of regular courses of well-cut square blocks, which could not claim that denomination. There could be no reasonable doubt that walls of huge blocks were, without any historical foundations, called, after the mythic giants' race, "Cyclopean," and as the word had come into general use we could not avoid employing it; but it must be distinctly understood that not every wall built of stones without any binding material could be called "Cyclopean," and that under that denomination were only comprised, (1) the walls of large unwrought blocks joined by smaller ones; (2) the walls composed of large polygonal stones well fitted together, but certainly not the retaining walls; and (3) the very ancient walls, such as we saw in the Lions' Gate in Mycenæ, where immense rudely-wrought quadrangular blocks were roughly put together in horizontal layers, but the joints not being quite straight, there remain small interstices between the stones. House or fortress walls of well-wrought quadrangular slabs, which were closely joined without mortar, could never be called "Cyclopean," and thus even the large subterranean treasuries at Mycenæ and Orchomenos could in no way deserve this denomination. As there was no other site which could in any way be brought into harmony with the indications of the "Iliad," Dr. Schliemann went to the site of the Greek Ilium, and recognised there with astonishment that about one-half of Mount Hissarlik consisted of artificial soil produced in the course of ages by the accumulation of successive household remains. Having obtained the necessary firman, Mrs. Schliemann and the lecturer went to work there in 1871 on a vast scale. As we were wont to paint in our imagination an image of every unknown object which was of capital interest to us, so Dr. Schliemann had long previously made in his mind the picture of Troy, and his veneration for Homer made him paint it on a gigantic scale. He thought that it extended far beyond the city walls of Lysimachus, but his illusions were destroyed by the results of twenty shafts which he had dug on the site of the lower city, because all of them, and even the six shafts which he had sunk close to Hissarlik, produced only fragments of wheel-made Grecian pottery and Hellenic house-walls, none of which could claim a higher antiquity than the sixth or seventh century before Christ. On the site of Hissarlik, on the contrary, he found Hellenic masonry and fragments of wheel-made Grecian pottery only to an average depth of 6 ft. 6 in. Immediately below these he collected seventy hand-made vases and a great many whorls of black or brown terra-cotta, so perfectly unlike the Hellenic, as well as all the prehistoric pottery which he found in digging deeper, that he could not but attribute

them to a people who sojourned on the spot only for a short time. There were found no other remains which could be attributed to the people who made these vases, immediately below which Dr. Schliemann found a stratum of ashes and rubbish, about 6 ft. thick, evidently derived from wooden houses, because stones were seldom met with. It was intermixed with masses of hand-made prehistoric vases, and very numerous whorls, with incised ornamentation. Below this stratum of ruins he found a whole prehistoric city, whose 8-ft. to 10-ft. high fragments of house-walls, composed of small stones joined with earth, he could have cleared out like Pompeii. In this city he found much more and much better hand-made pottery than in the preceding one, and thousands of terra-cotta whorls, most of them with a beautiful incised ornamentation. Remnants of a circuit-wall belonging to this city he had noticed only on the west side. Below this city, and at an average depth of from 23 ft. to 30 ft., he found the calcined remains of an apparently much wealthier city, which had evidently been suddenly destroyed by a tremendous conflagration. This city was enclosed by large circuit walls of larger and smaller stones, in which the lecturer brought to light an immense tower and a double gate directed to the south-west. Just on the north-east side of this gate were the ruins of a vast mansion of smaller stones joined together with earth, which must have belonged to the chief or king, for it was the largest building in the town; besides, the other houses consisted of unburned bricks. There must have existed on the circuit-walls and on the tower, as well as on the gate, immense wooden fortifications; and all the houses of the city must have had upper stories of wood, for otherwise the masses of wood-ashes could not be explained. This city had evidently been suddenly stormed and destroyed by the enemy. Tiryns and Mycenæ were also captured by enemies, but the capture there was neither sudden, nor were those cities destroyed by it, because an entire vase was there a very rare occurrence, and one could search there for weeks without finding two fragments which would fit together. Some similarity certainly existed between the various types of the Hissarlik terra-cotta vases of the three pre-historic cities mentioned, for nearly all of them were either tripods or had convex bottoms; besides, nearly all of them had on either side a tubular hole, and in the same direction a hole in the rim and in the lid for being shut and suspended by a string. Certainly, however, there were also new types in each city, and it deserved particular attention that the vases in the lower city were more artistic, and far better made than those in the succeeding city. Furthermore, identical in the three pre-historic cities were the whorls and balls of terra cotta, with their wonderful incised ornamentation; but those of the lowest of the three could easily be distinguished by the colour of the clay, and, as a general thing, also by the superior skill in the incisions. All the incisions had originally been filled with white clay so as to strike the sight. In the second and third cities were found sixteen short Greek inscriptions in very ancient Cypriote characters, and it was, therefore, certain that the Trojans spoke Greek. Below the third city were the 16 ft. to 20 ft. deep ruins of a still more ancient, but still smaller city, because it was limited to the original size of the rock, which, having increased by the ruins and rubbish both in width and height, each of the subsequent cities was larger than its predecessor. The pottery of this lowest city was beautiful, but altogether different from that in the three upper cities, and the finest was only found on and near the virgin soil. Characteristic were here the hand-made large deep plates of lustrous black or brown colour, whose interior was covered with an incised ornamentation filled with white clay, and with two long beautifully-shaped tubular rings in the rims for suspension with a string; but by far the larger part of the vases was monochromatic lustrous black or brown, and had no incisions. There was a very great similarity between the hand-made monochromatic pottery of this most ancient Trojan city, and that found in the five royal Mycenian sepulchres, and one involuntarily thought of the common origin of the royal houses of Mycenæ and Troy; for Pelops, the father of Atreus, the grandfather of the king of men, Agamemnon, was the son of the Phrygian king Tantalus, whilst Ilium was, according to the tradition, built by Ilus, who came from Phrygia. Identical with the Homeric Troy, which was captured by the Greek army, must be the city second in succession from the virgin soil, because here we found the great tower, the huge walls, whose construction Homer attributed to Neptune and Apollo; and here we farther found the most evident proofs of great wealth, and a sudden destruction by the hand of the enemy. The extent of Troy, as encompassed by its walls, was but very small, and it could not possibly have contained more than four or five thousand inhabitants; but, small as it was, it was still larger than the city of Athens under the kings, which was confined to the Acropolis until Theseus added twelve surrounding boroughs to it. The Acropolis was then only two-thirds as large as now, it having only been enlarged by Cimon about 464 B.C. The lecturer maintained that the royal city of Mycenæ was originally confined to its very small Acropolis, because only part of the lower city had a circuit wall; by far the larger part of the lower town was merely a suburb. Besides, there were evident signs that the lower city wall was built centuries posterior to the time of Agamemnon, and thus in a remote antiquity the whole of the lower city of Mycenæ must have been a straggling suburb. The same must have been the case with Athens, and as the Right Hon. W. E. Gladstone had suggested in his celebrated work, "Homeric Synchronism," the same must have been the case with Troy. The question whether Homer ever visited Troy was difficult to answer. Mr. Gladstone had proved that Homer was an Achaian, and this was also proved by the lecturer's excavations at Mycenæ, because he found there thousands of masterpieces of art such as Homer described, and the poet evidently passed his whole life in a civilisation like the Mycenian. On the other hand, the mode of burial which Dr. Schliemann found in the royal tombs in Mycenæ was perfectly unknown to Homer, who only knew of the burning of the bodies in the funeral pyres and the deposition of the ashes in funeral urns, of which the lecturer found many hundreds in the depths of Troy, but not a single one in Mycenæ, where the bodies were burnt on pyres prepared on the bottom of enormously large and deep tombs. The primitive state of civilisation which the antiquities of Troy denoted was of course no proof that they were more ancient than the masterpieces of art of Mycenæ, because in the heroic age nobody travelled except on warlike or piratical expeditions. Thus there might have been a very high civilisation at Mycenæ, while at the very same time the arts were only in their first dawn at Troy; and writing with Cypriote characters might have been in use in Troy more than a thousand years before any alphabet was known in Greece. There could consequently not be the slightest objection to admit that the tradition which assigned the tombs of Mycenæ to Agamemnon and his companions, who on their return from Ilium were treacherously murdered by Clytemnestra or her paramour Ægisthus, may be perfectly correct and trustworthy.

In the discussion which followed,

Mr. Gennadius, the Greek *Chargé d'Affaires*, in response to a call from the chair, gave some interesting particulars of the work which is being done by local archæological societies in Greece for the exploration and conservation of the monuments of antiquity. Although these societies were greatly hampered for want of funds, they had done much useful, though unostentatious work, as would be seen by a comparison of the views of monuments given in such books as that of Stuart, with photographs of the monuments as they now appeared. The mounds of rubbish and the hovels, or not much more pretentious buildings, which obscured them, had been removed. True they had not yet set up the fallen pillars of the Parthenon, but this was not a solitary instance of antiquities being kept in wooden sheds until better means could be obtained of preserving them. It was no longer possible, however, for any remains of antiquity to be wantonly destroyed or mutilated. The local museums of Greece were becoming filled with small fragments and objects found from time to time, and the local museum authorities were so jealous of retaining objects of antiquity found in their respective districts for their own museums, that it was exceedingly difficult to obtain such objects for the museums at Athens.

Professor Donaldson, in moving a vote of thanks to Dr. Schliemann for his paper, said he had been charmed with the discretion Dr. Schliemann had displayed in dealing with the subject.

Dr. Birch, Keeper of Oriental Antiquities in the British Museum, seconded the motion, and said Dr. Schliemann had undoubtedly made one of the most important discoveries of the age and he would stand as one of the most distinguished excavators of the remains of ancient art and as one who had thrown a new light upon antiquity. Dr. Schliemann's discoveries at Troy had shown them what Troy actually was, and had enabled them to determine that there had existed an ancient city where illustrious deeds had been performed by Trojans and Greeks. Afterwards doubtless, the poetic imagination of Homer had somewhat exaggerated those deeds, and his version had been accepted by his contemporaries as the true one. The discoveries at Mycenæ were perhaps more interesting, but it was difficult to discuss them fully until Dr. Schliemann's book had appeared. The whole world would be indebted to Dr. Schliemann for his discoveries. Nowhere were his efforts more appreciated than in this country, where there existed a deep love and feeling for Greek art, which had been imbued by the classical knowledge imparted to all who received what was called a liberal education. He suggested that if possible Dr. Schliemann should, with the consent of the Greek Government, allow a portion of the products to be sent over for inspection and examination.

Mr. Godwin moved that this "Association tenders its hearty congratulations to Dr. Schliemann upon his discoveries at Mycenæ, and it hopes that results of equal importance may reward his labours upon the plains of Troy." He said that Dr. Schliemann's remarkable discoveries were the outcome of a life of effort and self-culture. Dr. Schliemann's autobiography was one of the most valuable books which could be placed in the hands of any young man or woman. He taught himself language after language, and fought down all the obstacles which beset him, and having realised a fortune commercially, he set himself to perform what seemed to be the work of his life,—the discovery of the lost Troy. His discoveries at Mycenæ would be of immense value in many ways. Those who had studied the subject most had always felt a difficulty in understanding how it was, by what steps, Greece obtained its sublime perfection in sculpture. In the discoveries at Mycenæ we had evidence of the existence, centuries before the time of Phidias, of a school of artists and workers in metal of very great ability, equal to portraiture. Now Phidias, as an outcome of these workers in gold, was not so difficult to understand as Phidias standing alone, as he had heretofore been seen. It would be a very bright page in the transactions of the British Archæological Association which recorded their admiration of Dr. Schliemann's labours.

Mr. Thomas Morgen seconded the resolution, which was carried by acclamation.

Mr. Loftus Brock read a letter from Mrs. Gladstone stating that although Mr. Gladstone had made every arrangement to be present, he had been obliged, greatly to his disappointment, to go to bed on account of illness.

Lord Houghton then formally presented the Association's diploma of hon. membership to Dr. Schliemann, remarking that the Association was thus conferring honour upon itself rather than upon Dr. Schliemann.

Dr. Schliemann having acknowledged the gift,

Professor Donaldson, in a few well-turned sentences, paid a graceful tribute to Mrs. Schliemann, and proposed a resolution expressing appreciation of her services in connexion with the explorations undertaken by her husband.

On the motion of the Earl of Effingham, seconded by Mr. J. R. Planché, Somerset Herald, a vote of thanks was given to the president and council of the Institute of Architects for allowing the Association the use of its rooms.

Mr. Charles Barry, in reply, said that archæologists, to be worthy of the name, ought to know something of architecture, while architects who were worthy of the name could not fail to take great interest in the labours of archæologists.

Mr. J. A. Roebuck, M.P., moved a vote of thanks to Lord Houghton for presiding.

On the motion of Professor Donaldson, seconded by Mr. Ouvry, president of the Society of Antiquaries, a vote of thanks was given to the Greek *Chargé d'Affaires* for his kindness in attending, the mover suggesting that perhaps Mr. Gennadius would represent to his Government the importance of affording facilities for archæological exploration.

Mr. Gennadius, in reply, said he would convey the sentiments of the meeting to his Government, although in Greece such excavations were permitted and encouraged, subject to certain necessary restrictions.

FRESH INQUIRIES BEARING ON THE HEALTH QUESTION.

It took us some years to bring public opinion to the right track in respect of sanitary reform, educate inquirers, and to point out the direction in which improvement could be made. It was done at no small cost of money, health, and me,—but it was done. The matter now moves itself, but how slowly! We are to have nother Parliamentary inquiry, by Royal Commission, into what is, in fact, a branch of the reat sanitary question. It is almost disheartening to find how little has been done, and how great a cost, in this matter, since 1872, hen the country at once responded "ay" to the uestion, "Shall we set about preventing preventible mischief in the right way?" After ve years of legislation and administration, the ountry hears that the offices of important epartments of the public service are unsafe for uman occupation. The various local authorities rrounding the metropolis have discovered that one of them can act alone, and that no concerted ction will suit all parties. And when an unsual, though not unprecedented, rainfall puts ur river valleys under water, instead of setting work to remedy the evil, we are to have a resh inquiry into the powers of our various bodies f River Conservancy! In each of these ifferent departments of the same great subject there are displayed the same ignorance, resolution, and helplessness. It is a state of hings for which we are paying very dear. The ater supplied in New-street, it is now said, ommunicated the typhoid poison to Dr. Mackaye, an officer whose death may be termed ith perfect justice a national loss. No ss is it an irreparable grief to a large ircle of surrounding friends,—to all who knew he kindly large heart and conscientious industry f the man. The health of the Navy owes much o the labours of Dr. Mackaye, as the blue books rawn up year by year by his hands remain to estify. The English navy has been growing ince the time of King Alfred. It is the sheetnchor of the national safety, and the favourite ublic service. Is it not incredible that it was eft to a medical officer of our time to be the irst man to urge the propriety of teaching very sailor to swim? In the prime of his sefulness this man has been just extinguished by handing him a glass of the poison upplied in the name of potable water in the eart of our metropolis, and in an office of our dministration. It is a melancholy reflection. It is another instance of the folly of attempting o do technical work by unprofessional hands. When the idea first got hold of the public nind that typhoid fever and other scourges of the time were preventible, a double problem was presented for solution. The first part of it was purely medical, or rather chemical and physiological. It was necessary to discover the conditions of danger. The second part, which was the sequel and counterpart of the first, was mechanical. It was the question how to remove these conditions; and as the first inquiry demanded, and, to a great extent, received, the systematic and organised attention of the medical profession, so did the second demand what it has altogether failed to receive—the systematic and organised study of the engineering profession. The first part of the problem presented, it may be, the most serious difficulty. To detect an invisible, lurking, deadly foe, to trace the evil to its source, and thus to indicate where the remedy was to be applied, was a far more recondite task than was that of providing the remedy. But there was this difference in the two parts of the problem. The first could be, and was, investigated by the separate and private study of hundreds of inquirers. Every physician, in the course of his practice, had the subject forced upon his thoughts. He might wish to compare his experience with that of his brethren, and no doubt much light was obtained by such mutual reference. But the primary facts were special and individual. They were collected one by one; and the experience thus attained had a natural tendency to coalesce—to build itself up into a true and useful theory.

With regard to the second part of the problem, the mechanical measures proper to be taken to remove the sources of danger, the process requisite is exactly reversed. In the former case we ascended from detail to principle; in the latter case we have to descend from principle to detail. We had a physical problem to settle. The first thing was to lay down the conditions of that problem. These conditions are none other than certain physical facts. It is requisite in the first case to collect these facts. It is not by a reference to private note-books that this is to be done. The inquiry is of a broader nature, and can only be inaugurated by proper public authority. The doctor has traced the cause of danger to Mr. A.'s drain, or Mr. B.'s well. But it is of no use to ask the engineer to attend to the state of Mr. A.'s drain, or Mr. B.'s well, except as forming individual instances of the wells and the drains of the district. Nor can this be done without knowing all that intervenes between, on the one hand, the water-collecting slopes of the district, and on the other hand, the outfall of the entire water collected on them into the sea. The doctor, or the surveyor, points out, say, that the drain complained of is in a bed of gravel. It tells the engineer absolutely nothing to inform him that the bed of gravel underlies all Mr. A.'s premises. The information needed is far wider. It is necessary to know the entire area, depth, surface level, and other particulars of the gravel in question. Is it a pothole in the clay? Such is the case with some very favourite, and also very fatal, spots with which we are acquainted. Is it a large sheet of pervious material watered and cleansed by every shower? Is it the part of a large subterranean reservoir, containing water that rises and falls with the rainfall? To show what we have to do with the one drain, or the one well, we must know all about the local geological formation in which it is situated; we must know the relation of that formation to those below or around it; we must know climatological conditions, hypsometrical conditions, agricultural conditions; in fact, we must be in possession of so many elements of a physical nature that they can only be ascertained by an exhaustive and complete survey; and can only be grasped by the mind when they are represented by the graphic methods familiar to the surveyor.

As we see that to set the one little drain in order we must make an extended survey of a district, so does it follow that to complete our survey of any locality we must extend our observation so as to comprehend all those neighbouring localities which may affect the physical condition of the neighbourhood under investigation. That is to say, an efficient treatment of the simplest case of preventive sanitary engineering must be based on a thorough and competent survey of the entire water-shed district of which it forms a part. Here, then, we come in contact with a group of elements which, though distinct, are mutually related. As we ascend towards the upper limits of the districts sketched out by Nature herself, questions of amount of rainfall, of percolation of soil, of formation of torrents, of surface or subdrainage, require investigation. As we look in the other direction we have to inquire into the condition of river-banks and channels,—the existence of weirs, mills, and other obstacles to the free outfall of water,—the habit of so flooding land as to encourage ague rather than good meadow hay,—the vested rights of water-owners and riverain proprietors. In a word, we find that in order to deal at once simply, efficiently, and properly with the small item of house protection with which, on the report of the physician, the engineer's duty was supposed to start, we must have that hydrographic survey of the district without which all pottering with individual works will be done in the dark, and very probably will involve useless cost.

The public sense of insecurity which stimulated the then existing Government to bring into Parliament the abortive measure of 1872 had been awakened by the attacks of typhoid fever, fatal in many cases—happily only almost fatal in the most illustrious instance—which had been experienced by many well-known and highly-regarded individuals. Such a case as that to which we referred at the commencement of these remarks is but too well fitted to reawaken general alarm. But the trouble which has actually led to the appointment of the Duke of Richmond's committee is of another kind. It is, indeed, intimately connected with the public health, although it may be thought only very indirectly to be concerned with the spread or the aggravation of the chief zymotic diseases. It has been the unusual extent and persistence of the floods of our river valleys, especially of the valley of the Thames, which has spurred Parliament to the conclusion,—"Really some one ought to inquire if anything can be done to improve the state of things." This primary A, B, C inquiry is the object of the Special Committee. To us Englishmen, accustomed to the hap-hazard manner in which our national good sense, after much loss of time, waste of money, and inconvenience of all sorts, usually brings us pretty right in the end, the commencement of such an inquiry in the present year may seem to be natural, useful, and timely. But to any one who regards the matter in the abstract, who will put himself for a moment in the position of an historian or a chronicler, or of the subject of a state in which the Governments consider that attention to the communications and the watercourses of the country is a part of its bounden duty, the question arises,—What have we been doing for the last five years? The collection of those physical statistics which must form the basis of any intelligent sanitary works in any part of the kingdom was, as we pointed out with great precision in 1872, and on many subsequent occasions, the first requisite. Whatever was thus done, and well done, should have been done once and for all. The preparation of what we then called the sanitary survey of the country, but which may be called with perhaps more propriety the hydrographical survey of the country, was an absolute and essential preliminary to any intelligent treatment of the great sanitary problem. At the same time, it would afford the data for resolving problems of a like nature and of hardly less importance. The case of floods is one of these. In some cases the flooding of a vicinity is a direct encouragement of the worst zymotic diseases. In not a few places in the past winter we have had accounts of dwelling-houses being flooded with diluted sewage. In other cases it has been the more insidious attacks of phthisis, of ague, of rheumatic and neuralgic afflictions that have been encouraged by the permanent dampness inflicted on houses and on adjacent land. Even when disease has not been positively detected, inconvenience, cost, loss and damage to property and furniture, and interruption to business, have been very great. Had the natural and proper steps been taken, and thoroughly carried out, in 1872 (as we then proposed), this recent damage would have been impossible. Had the necessary survey been even commenced, however leisurely and in detail it had been pursued, we should not have found ourselves now asking for a committee. A thorough hydrographic study of the Thames Valley might readily be completed in a twelvemonth by an engineer provided with a very moderate staff, if only he had due authority to avail himself of all the information which has been already collected, but which is of no use at present, owing to the scattered condition in which it exists. Thus for the basis of the whole, and the most expensive part of the affair, namely, the topographical survey, it would be unnecessary to go to any expense whatever. The information at the command of the officers of the Ordnance Survey would supply all this detail; and the 6-in. and 1-in. maps would serve as the basis of the new work. In the same way the second requisite, the preparation of an accurate profile of the river and its affluents, would be facilitated and verified by the use of the Ordnance bench marks—of which the broad arrows are to be found on almost every milestone. With this preliminary, and most costly, part of the work done, the preparation of profiles and cross sections would be easy. We require a profile of the banks of the Thames from the sea to the water-shed, showing the bottom of the river, the cross sections of the channel, those of the natural valley bottom until it gradually has risen above the range of the flood,—the water level at the lowest summer drought, at the ordinary winter flow, at the highest ordinary and extraordinary floods. To this should be added particulars of bridges, weirs, mills, or any other obstruction to the course of the stream, of culverts and other works for drainage entering or crossing the river, and of the area and distribution, as well as levels, of any irrigated lands. Of course, this survey must comprise, not the main stream of the Thames alone, but the courses of the Kennet, the Thame, the Isis, and other affluents which form the main stream, or such as those of the Wey, the Mole, the Wandle, and other rivers which bring down large contributions to the Thames, especially in time of rain.

It would be a necessary part of the survey to mark the districts under the conservancy of any legal authorities, while a note would indicate the powers and ordinary action of those authorities. This incidental bit of information, which would form a natural part of the plan, appears to be the main object suggested for the inquiry of the Select Committee. This reflection may suffice to show how enormous is the wast-

time and cost occasioned by our failing to begin our business at the only true beginning. By the Thames Navigation Act, 1866, the Conservancy of the Thames and Isis from Staines to Cricklade is vested in the conservators of the river. It is the duty of the conservators "by all lawful and proper means to preserve and maintain at all times, as far as may be, the flow and purity of the water of the Thames and its tributaries down to the western boundary of the metropolis." That is to say, a body of persons is to have the responsibility of maintaining the channel of the metropolitan river just to the spot where the consequences of any error, neglect, or misconstruction become most serious and inconvenient. The very fundamental idea of a water-course conservancy has been misconceived by the framers of such an Act of Parliament. And how are the conservators to know anything of the flow of the Thames? or the means of providing for its maintenance? No one, up to this hour, can tell what either the minimum, the maximum, or the flood volumes of that river actually are. We could print a good many reports and estimates on this subject,—some of them by very able men. But the only result of putting the figures side by side would be to show that exhaustive information as yet has to be collected. Thus it is clear that in order to enable the existing, or any future, conservators of the Thames to exert any efficient and useful action, a certain preliminary description, a graphic and technical description,—that is to say, hydrographic plan and sections of the river and its channel,—are a first requisite. Precisely the same requisite is needed by those numerous local sanitary authorities who, having last year failed in their proposed fusion, or harmonious accord, under the advice of the Engineering Inspector of the Local Government Board, are understood to be now again attempting to take up the ravelled threads of the mesh, and to arrive at a new accord. Not one of these local authorities, or their professional advisers, if they have any, can have even the vaguest idea of the main facts which must control their operations, without access to such a survey of the River Valley as we describe. No officer of the Government, whether civil or military in his education, can suggest any sound and useful measure that will combine the greatest public service at the least cost, without having under his eye such a survey. No one can suggest any measure that can be regarded as well considered, with reference to the escape of flood water, the care to be given to every part of the banks of the river, the need for removing weirs or mills, or any important measure for the improvement of the channel, in the absence of such a survey. For navigation, for prevention of floods, for irrigation, for land drainage, for abstraction of water for domestic use, the same primary requisite is a *sine quâ non*. With such a survey of the Thames completed as the Italian Government have made and carefully published in the case of the valley of the Po, all the numerous and important questions which press for solution under each of the above heads will, to a great extent, solve themselves. The mystery of the engineer is the mystery of common sense. When physical facts are fully and thoroughly known, there can be but little controversy among experts how to deal with them. Nature herself suggests what we should do in order to aid and minister to her operations, if only we will listen to her voice. Difference of opinion in such matters simply means ignorance of detail. So long as one man puts a maximum or a minimum volume 50 per cent. above the estimate of some one else, the two will suggest very different works for execution. But if both engineers be furnished with the same data, and if these data be accurate and exhaustive, very little room will exist for difference of opinion as to what is to be done. In the case of the Po, the result of completion of the hydrographic survey of the river and its affluents has been such a perfect knowledge of what is required for the protection of the riparian property that the proper works have been divided into categories, and distributed according to their urgency,—so that year by year a definite portion of them will be completed, until the whole system is perfect. Seven eminent men have been specially engaged on this survey, and their recommendations are unanimous, because their information is complete.

In the case of the Tiber, on the other hand, such unanimity is far from being attained. Very different plans have been proposed to the ministry. As many as nineteen, if we rightly remember, have been submitted to a special acc-

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professional commission to discuss; and the report of the commission has not been altogether unanimous. Why this difference? Chiefly and solely because in the case of the Tiber there has not been collected that full information that has been gathered and systematised in the case of the Po. The quantity of the maximum flood that comes down the Tiber is as yet as open a question as is the quantity of the ordinary and extraordinary flow of the Thames. The rainfall of the Tiber watershed is as unknown as is that of the Thames watershed, or as that would be without the exertions of Mr. Symonds. For that very sufficient reason different engineers, forming different estimates of the volume of water with which they had to deal, have proposed different schemes. Another source of doubt is of the same nature. A partial diversion of the Tiber has been proposed, either by way of overflow, from just without the city-walls, or by way of diverting the course of some of the affluents of the river. This diversion, or either of them, would require, there is no doubt, a considerable excavation. In order to form a sound opinion on the feasibility of such an excavation, it is, of course, necessary to have a section of the ground. This does not seem to exist. But a section, in this case, is not enough. It is stated very positively that the cutting requisite would pass through a soil of so loose and crumbling a nature as to be entirely unsuitable for the bed of a river or canal. This is, of course, a question of fact. As such, it can only be ascertained by experiment. A series of borings would probably settle the question. Thus two points of physical information are defective in the knowledge possessed by the Italian ministry of public works as to the valley of the Tiber. The volume of flood is unknown, although the heights attained in various inundations from before the Christian era are carefully recorded, and the physical possibility or impossibility of the formation of an overflow-channel is in dispute. In fact, as yet the elements have not been collected for stating the problem. Its solution, therefore, is matter of opinion,—that is to say, of guess.

In the far more important case of the Po the facts have been ascertained, and therefore the distinguished experts who have studied the case have no hesitation or difference of opinion as to the course to be adopted.

It is just the same with us. The sanitary problem has witnessed, in the present year, the first attempt—the first serious attempt—at its rational solution. The publication by the Local Government Board of the financial outcome of different methods adopted in different localities for the disposal of the sewage, must be regarded as the first effort on the part of the Administration to afford any general information which may be of service to the whole country. Still it is evident that this information, even if it be kept up and carried out to the full, is comparatively useless without the light thrown on the circumstances of each particular case by means of a hydrographic survey. Without that first requisite we get but scraps of information. Whether, then, we regard the protection of the public from preventible disease; the preservation of the metropolis and the metropolitan district from floods and damp; the economy of public money as expended by the various local authorities; the conservancy of the Thames as a navigable river, as an outfall, or as a source of water-supply; or whether we look at the example of the nation most experienced and most familiar with great hydraulic works—we come to the same result. The hydrographic survey of the rivers and watershed basins of England is the first requisite for public health, public safety, and public economy. If this fact be brought out by the Duke of Richmond's Committee, the Members will do good service to the country.

Spinoza.—A competition has been opened at the Hague for a statue of Spinoza in bronze on a stone pedestal. Artists of all countries are invited to compete. Models in plaster, one mètre high, and representing Spinoza in seventeenth-century costume, should reach Mr. Van Ophoven there by the 1st of October, and should be accompanied by a sealed envelope containing the name and address of the sculptor, and identified by a motto repeated upon envelope and model. The author of the model selected will be invited to make a plaster copy of it on a large scale, and if this also is approved he will receive a premium of 2,000 florins. The second in competition will receive 250 florins.

CENTRAL LONDON: PROFIT OR LOSS IN HOUSEBUILDING?

At the risk of tumbling into the goody-goody strain of reflection which, at seasons of holiday depression, is peculiarly affected by the chief directors of English opinion, we have arrived at the profound conviction that a vast number of individuals throw away, irretrievably and continually, a great deal of money. A long contemplation of the expanding circumference of London would, it might fairly be supposed, lead us to believe that a really good building-investment is a certain source of gain. Perhaps it is, away from the centre; but in the crowded parts of the metropolis, it appears difficult to make a brand-new house return the profits that were easily obtained from the old one it has replaced. There, housebuilding pays a few, weakens many, ruins some. The noble lords and others who own for ever and ever good metropolitan soil, and who may reasonably be made answerable for plenty of defects in the bad houses erected upon it, are not, however, always placed in an enviable position. As we have studiously repeated for a good many years, the history of an ordinary London house is a succession of sorrows and disasters, shared by many interested in it, but whose interests are usually of an opposite and a conflicting nature. In too many instances none of the speculators come out of the complicated undertaking with proceeds enough to warrant a dream of future riches. In spite of a large number of successful speculating builders,—in spite of a few who have made fortunes,—the prizes in the lottery of house property are certainly not so numerous as the enormous area of newer London would lead people to suppose. It would not pain us, we confess, to hear of some of the minor men who have helped to "run up" streets, squares, crescents, and terraces, retiring gracefully from suburban conquest to solicit the popular suffrage,—and then lucidly, if not fully, explaining to the Lower House the patent imperfection of our land and building laws.

Nor do private individuals, who know little or nothing about the ways of building speculation, but who employ wisely enough architects and *bonâ fide* contractors, seem often desirous of showing, either by deed or speech, that money spent in erecting houses, to sell or let, is either a profitable speculation or a good investment. You may perhaps get five per cent. interest for your money sunk,—that is if you are lucky enough to obtain tenants; and, for seventy or eighty years, your investment may, provided you are lucky, return that rate of interest. But then the anxiety, the risk, the trouble! You can obtain, without any of these concomitant evils, a little more than three per cent. as inevitably certain as quarter day, for ever. Ah! but who builds except in the sure hope of realising at least ten per cent. interest?—a hope sometimes honoured, we admit, but very rarely; and only on condition that the investor has understood the neighbourhood in which his house is placed, the sort of people to accommodate, and the accommodation to offer them. Then,—and, even then, there are exceptions,—housebuilding in Central London becomes a profitable undertaking.

This question, always interesting to a few, is likely soon to become of the utmost importance to many. Never before, since the Great Fire of London, were so many schemes of alteration in the very heart of town as near actual accomplishment as at the present moment. We have waited long, if not patiently, and there is really a likelihood of our seeing during the next few years great changes, if not great improvements. In a recent article* we described the proposals of the Metropolitan Board of Works, which are now being discussed by a committee of the House of Commons; and we have reason to believe that our criticism of the suggested street from St. Martin's-place to Coventry-street has been received in the spirit with which it was made,—in fact, that the Bill before Parliament has been amended in order to allow the new thoroughfare to pass, in an easier line than was contemplated, through Leicester-square. But the piercing of new, and the widening of old, streets by the Metropolitan Board are not all the good things that are promised to Londoners. The erection of the New Law Courts and the removal of Temple Bar are to be accompanied very soon by the widening, in the immediate vicinity, of the Strand and Fleet-street; and the purchase by the Crown of houses in Bell-yard is, we believe, an accom-

* See p. 206, *ante*; and for plan at p. 208.

plished fact. Further west, the decrepit tenements which hold one another together in the narrow streets on the Duke of Norfolk's estate, are already marked out for destruction. The wretched lodging-houses, nests of harpies known too well to country cousins, upon land belonging to the Marquis of Salisbury,—miserable bye-streets out of the Strand, and leading nowhere,—are also to give place to tenements more suited to modern ways of life and present requirements. The Duke of Bedford, with praiseworthy zeal, has personally interested himself in a project for rebuilding the entire square of Covent Garden, once in his ancestors' time a haunt of the worst fame in London; and we believe that a well-known architect is engaged upon the designs. Great Wild-street, and parts of Drury-lane, Bedfordbury, parts of the St. Martin's-lane slums, and other equally unhealthy wynds, are to be replaced by new buildings specially planned for the accommodation of a humble class of tenants, under the terms of the Artisans' Dwellings Act,—so long and tedious in its preliminary phase of working, so apparently innocent of anything like method in its contemplated transformations. In fine, the deliberate bisecting of Soho must inevitably provoke the reconstruction of a large number of houses, not only on both sides of the new streets, but also in the cross streets running through and into them.

"But," says the cautious capitalist, "who will build these houses of which you dilate with such satisfaction? Don't you know that new streets never pay—that shopkeepers and 'upper-part-of-the-house' tenants avoid them? Look at New Oxford-street, at Garrick-street;* look at Northumberland-avenue, where, with all the acuteness of metropolitan representation combined, only a fifth part of the land is in a fair way of being let; look, lastly, at the numberless houses around so valuable and busy a neighbourhood as Covent-garden, in which floors, rooms, even entire tenements and shops, are to let; and which have remained to let for months, quarters, and even years." All this is perfectly true; and the good people who have spent money over the houses in question have thrown a great deal of it away. The fact is deplorable; and the failure to attract tenants deplorably patent and true. And why? Because the Londoner, wedded to the conceit of a sham castle, builds, in the time of underground railways and Hansom cabs, of clubs and co-operative exertion, and of extended scientific knowledge—within a metropolis of four millions,—precisely the same kind of house as that which was fitted for a period of stage-coaches and sedan chairs, of taverns and petty tradesmen, and of the slightest artistic and scientific appreciation, among a population of half a million. He not only ignores the fact that the centre of a capital city is the focus of business,—of public and official life,—and the circumference that of home,—of private and familiar existence: he does not act upon the certain knowledge that the heart of town is inhabited principally by the extremes of the community at large,—the very rich and the very poor; the young men not yet prepared to enter upon the duties of housekeeping, the old men who have escaped from its obligations; the numberless comparatively poor folk who have many children, the well-to-do married couples who have few or none. The modern builder, as if oblivious of the great secret of successful trade, despises this vast mass of population. He provides, in localities where professional men do not congregate, offices fitted only for them; and in all parts of Central London, comfortless and barren rooms for a multitude of bachelors who do not exist.

The whole of this fact is not understood by the principal newspapers; and seldom discussed by any. It is thought to be a speciality, and therefore avoided as likely to be distasteful to the general leaven of buyers and readers. Lately, however, several articles and letters upon the subject have appeared. A great journal, during the Easter recess, communicated some items of intelligence *apropos* of the Artisans' Dwellings Act and the delays of power; it also informed the two hemispheres that,—such is the vitiated character of the London slum,—a metropolitan official, of value and zeal, had twice, according to his own showing, imbibed the elements of typhoid fever in the performance of his arduous duties. But of the sort of houses with which to replace the rotting and rotten tenements under the ban of expropriation, ordinary journalism gives but the very slightest hint. Correspondents' views of improved dwellings, lately published in the daily papers, have unfortunately made nothing clear except their own superficial acquaintance with the difficult subject. The "Peabody flat" has been eulogised; and the desirability of "flat" building has been advocated under the apparent conviction that a startling discovery had been made, which ought immediately to become public property. But the Peabody buildings are neither very different from, nor better than, other blocks of the same description; and according to the statement of their architect they are not intended to be a profitable investment. Neither are they new. Clustered houses and blocks of horizontal tenements are at least 1,900 years old. Indeed, ever since the world of the moderns began,—and, Sir George Cornewall Lewis said, after the historian Niebuhr, "the history of all nations in the ancient world ends in that of Rome and that of all modern nations has grown out of that of Rome,"—the difficulty which masses of people, bent on the same or similar pursuits, experience in occupying a certain restricted space of ground has been felt. From the first century of the Christian Era houses of many stories have been the result and the remedy, in the Rome of Nero and in the Paris of Louis XIV., of Napoleon, and of the actual Republic. Only the Londoner has remained with his eyes closed to these special exigencies of a large population; and to the increasing inconvenience of an enormous, an unwieldy, and an ever-extending metropolis.

But a new era of things is at hand! You are going, O wise and potent Authority! to pull down the homes of thousands of Londoners; you are going to widen streets; to leave large areas of open ground in order to admit fresh air to the new houses; and you have undertaken—at least in the matter of certain dwellings,—to provide new and better homes for thousands of expropriated poor families. You cannot, however, fulfil the whole of the bargain, as the poor understand it, O wise and potent Authority! for a higher power than you is opposed to it,—the power of progress, whose agent only you are. No sane man will rebuild in a renovated Crown-street or King-street, Soho, houses which the people who now inhabit that quarter are in a position to occupy. The houses of the poor wretches who live and die in Bedfordbury are cheap, partly because of the risks which they brave, often unconsciously, in similar plague-begetting dens; to make them better and larger, to expropriate fever and malaria, is to raise their value; and to offer comparative luxuries, which the squalid poor are neither willing nor able to buy. Nevertheless, philanthropy, which has its sham side as well as everything else, is quite right in taking the part of the almost helpless classes whose present homes are condemned. The best argument at its beck is that many of these poor families pay a great deal more rent for their dens than they are worth. That the dens are such as they are is due in a great measure to their extemporised character: to the fact that the houses in which they are found were originally constructed for the special accommodation of a single family, and are therefore totally unfitted for lodging several distinct groups of tenants. Again, you cannot widen streets and leave a larger area for light and air without reducing the superficies of your building land. To accommodate the same number of people upon a restricted site, you must raise the height of your buildings, and pile story upon story in the new houses. In places like Bedfordbury you must have shops at the street level—shops at which the poor can obtain provisions, and the keepers of them must live over or behind their shops. But in thoroughfares like the proposed new streets through Soho, a totally different kind of traffic is likely to take place. There people must erect spacious shops, and probably large warehouses, at none of which the master-tradesman or his assistants will reside; and over them must also be piled story upon story for the accommodation of distinct groups or families. If now we glance at the manner in which this problem is solved, or attempted to be solved, upon some of the old estates, we may possibly point out to inquirers the reason why housebuilding in the heart of town is very often a poor and profitless undertaking.

A description of one of the new and unfortunate houses to which we refer will suffice to give an idea of all. It has a frontage to the street of 18 ft.—perhaps 20 ft.—and a depth of 50 ft.—perhaps 60 ft. The house has not been erected for purposes of speculation, or even of investment; the owner has carried on business in the same spot for a generation, and his father and grandfather probably occupied the whole of the old building it has superseded. He has built a new house simply because it was necessary for him to have a shop on a particular bit of land belonging to a duke or a marquis: that is, to one of the few owners of London land; and he has rebuilt, in obedience to a notice served by his ground-landlord's agent. His paramount thought is to make the new shop as convenient and as large as possible. He lives in the suburbs, and is utterly regardless of the sort of house which is placed over his shop. As in the limited width of 18 ft. he has obtained a shop-window, with a shop-door on one side and a house-door on the other, the entrances are necessarily narrow—the house-entrance ridiculously so—and the house-stairs are as steep as the staircase is confined. He has two rooms, sometimes three, on each floor,—one room looking to the street, the other to the back yard, and the third between, with a borrowed light from both sides. He has taken the basement-story for his trade purposes. The "man and wife" who clean the shop and guard it, before and after business hours, and who "do" the rooms over in case their master obtains tenants, inhabit a room in the roof. But he does not let the "upper-part-of-the-house"; for, if he ask the real value per annum of so much cubical construction, would-be tenants perceive that for a lower rental they can obtain a small entire house in another part of town, or a large entire house in the suburbs. His mistakes have been many; and they are apparent in dozens of instances which we can name. (1) He has erected upon a bit of ground originally covered by a shop and house intended for the shopkeeper's family, a shop and house intended for two or more groups of people who ignore each other's presence and dislike each other's propinquity. (2) He has built suites of two or three barren rooms, which may be taken as professional offices, or as residential chambers; and he has mixed up businesses and homes upon one slender stair. (3) He has imagined that a first-floor tenant, able to pay a rental of 100*l.* per annum, will share with the tenants of the other floors the same indispensable convenience. (4) He has made the two or three rooms *en suite* on each floor each open upon the public staircase. (5) He has forgotten that even mere bachelors sometimes delight in the carnal comfort of a kitchen hearth, and that the club is not always so close as to supply such a deficiency. (6) He provides no porter at the door, no lights on the staircase, no bedrooms for servants, no interior organisation whatsoever. Lastly, there are no solid and substantial horizontal divisions between the different stories of his house; and everything that is done on the third floor is heard by listeners on the second, who participate, often sadly enough, in the conversational exercise of inhabitants on the first.

The chief part of the blunder lies in having attempted to build a shop and house, such as we have just described, upon a site containing a frontage of only 20 ft. But this is not always the fault of the leaseholder, for he may not be able to obtain land with a larger frontage; and, in some cases, the ground-landlord does not permit a tenant to erect a house with a frontage wider than from 18 ft. to 25 ft. This actually occurs on the Bedford estate. When this estate was first cut up into streets, the building land was divided into narrow slices, each fitted for one residence, in a city containing, as we have before said, a population of half a million. Upon each slice a house was built, and between each there was necessarily a party-wall. The horizontal divisions were simply of wood, because the different stories were used in those days for particular purposes by members of the same family. So potent is custom, that a lessee who now borrows *two* orthodox slices at the Strand extremity of the duke's estate, with the avowed intention of erecting upon them *one* building for himself, is compelled to erect a party-wall exactly in the centre of it,—that is, in the centre of his own house,—and the lessor grants him permission to make a doorway in it. This restriction, strange as it seems to those who understand the subject

* A glance at the map suffices to show why at least one side of Garrick-street is a failure. Who can build upon such a plot of ground as that left by the intersection of narrow lanes just opposite the Garrick Club? New Oxford-street suffered from the same defects. It is not sufficient to buy land to make a new street; you must also make the building plots on either side of it of a shape and size fit for profitable erections.

of houses that will reimburse their builders and houses that are erected at a dead loss, has a logical meaning: its object is to protect the commercial interests of his grace, to whom the buildings will belong at the close of a certain number of years, when, so it is foolishly imagined, it may be easier to relet two small houses than one large one. The actual consequences of this restriction are to be seen in King-street and Bedford-street in more than one warehouse; and all around Covent-garden new houses, some wholly, others half empty, betray the obviously bad investment of often hard-earned savings.

On other land, further west, an exactly opposite system prevails. There the ground-landlord says to an intending lessee, "You may have this piece of ground, of 60 ft. frontage, which originally held three narrow houses, on condition that you build upon it only two houses, or,—and this I should prefer,—one block of tenements." The result is that the buildings are remunerative. In Ryder-street and in Jermyn-street, new houses, specially planned for a particular class of residents, and in which a system of household organisation is at work similar to that in vogue in many new blocks of offices in the City, are returning an annual income at the rate of 10 per cent. on the entire outlay for lease of land and building. In the Haymarket, a site, once occupied by three houses, is now covered with one new building, the ground-floor and basement of which are let at something like 1,000*l.* per annum, and the upper floors are, or can be, divided into distinct and comfortable dwellings; but we are credibly informed, and with some emphasis, that many of the tradesmen who have recently rebuilt shops and houses in the neighbourhood of Covent-garden are not realising three, or even two, per cent. for the money they have been compelled to expend.

We do not, however, lament the restrictions which a ground landlord can impose upon lessees, especially when they relate to the quality of construction to be executed upon the land; but, unfortunately, the usual restrictions touch upon the class of business to be carried on, or of tenant who will reside, in the new house, rather than upon the character of its construction. A piece of land, upon which an old, worn-out house has stood, is pretty certain to be black with the filtration of cesspools and the mode of drainage peculiar to the time in which it was built. At the expiry of a lease, or when such a house is pulled down, and fresh arrangements are made to build another house upon the site, the ground-landlord might easily compel his tenant (for the law is above such trifles) to substitute concrete for the putrid soil; but he does nothing of the kind. Again, the ground-landlord, from his knowledge of the surrounding houses, and the manner in which they are occupied, may plausibly conclude that the new house will be inhabited in the same manner; and if different groups of people are likely to live in it, he should say to his tenant, "Since the new house is almost certain to be let by floors, you must build party-floors; and since the staircase will be a public one, you must build it in concrete or in brick, so that it shall be fire-resisting." But, in the majority of cases, he exercises no such beneficial influence; although, as far as the law goes, in the absence of any serious control superior to his own,—and in the avowed monopoly of the soil,—the ground-landlord's omnipotence in building matters is only restrained by his cupidity.

We doubt also whether it is an advantage, either in a commercial or an artistic point of view, to cause a random design for the external wall of a street to be made in total disregard of the shape of rooms, or character of dwellings, to be placed behind it. We do not suppose that the designs, prepared, as we have already said, for the four façades of the square in which Covent-garden Market is situated, have been made without due reference to the buildings to be erected behind them. The front wall of a house should be fitted to the rooms of which it is partly the enclosure,—not the rooms to the front wall; for the exterior of a building, in good works of architecture, is the index of the interior. But the purpose of this article is not directed to the elaboration of grand fronts. Comfortable houses, and buildings which ought to be remunerative, not a loss to the investor, are what we want to see. The great secret in building houses over shops, the two having, like the shops and houses of Rome and Pompeii, no connexion with each other,—is to settle beforehand about the class of tenant likely to occupy the different floors of the superstructure. The public staircase, as well as the public entrance, must be something better than the London private householder is usually satisfied with. Sometimes there must be a servants' staircase; for if nothing is more disagreeable than the encounter of one's own domestic difficulties upon one's own stairs, how much more disagreeable must the sight of other people's pots, pans, and kettles be? Nor ought the housekeeper's friends and children to be obliged to ascend and descend by the public stairs. A lift for goods, coals, and other things is also desirable. The landlord must undertake to light and guard the hall and staircase; to clean, if not to warm, both; and he must not suppose that two or more families, or groups of individuals, will consent to share a common kitchen, either in the basement or the attic story. Moreover, he must remember that the public staircase is the chief ventilating-shaft of the house; that a housekeeper, with a brood of children located in the basement, cannot fail to vitiate the air of the staircase above; or that a housekeeper, with a brood of children in the roof, will ever do otherwise than close all the windows and stop all the ventilators through which the air of the staircase is alone cleansed and renewed. In fine, the investor in house property must bear in mind that what a medley of lodgers will support in an old house, and at a comparatively small expense, will not be tolerated in a new one, at even only a small additional cost. At the present moment, over a large part of Central London, if a tenant does not require a whole house,—and, there, the majority of business men and residents either do not require, or cannot afford, a whole one,—he takes a portion of one; and he settles down in the best way he can by sharing common objects and places with some and fighting over them with others. He then relieves his native indignation by an intermittent outcry against houses in general and his own bit of one in particular. But unless absolutely forced by circumstances superior to his control, the Londoner,—strange animal!—will not submit to the traditional discomfort of "lodgings" beneath a brand-new roof and within walls of uninviting, even though artistically papered, freshness.

LADY ARTISTS.

MADAME LEFEVRE-DEUMIER, who has just died in Paris, was one of the many lady artists that France of this century can boast of. Madame Lefevre-Deumier has been for many years a well-known personage in Parisian society. Once immensely rich, and remarkable for her beauty, she warmly advocated the romantic school of art, in which France has produced so many notables. Her first piece of statuary, a "Young Shepherd of the Island of Procida," appeared in the *Salon* of 1850; the "Morning Star," exhibited in 1863, is probably the only work of hers known well in England; the late Emperor of the French admired her works immensely, and the Imperial party were constantly her sitters, and innumerable busts emanated from her studio during the Second Empire. Unlike the authoress of the "Joan of Arc," Marie, Princess of Orleans, Madame Lefevre-Deumier has left no one great work on which her fame will repose, but she will long remain highly regarded as a devotee at the shrine of art.

Madame Sarah Bernhardt, whose success with the modelling tool and chisel has led her to try the porte-crayon and brush, is not yet so famous at the *Salon* as at the Théâtre Français, and Rosa Bonheur may be said still to surpass just now all other French lady artists. There are many ladies in Paris who professionally practise painting and modelling, but there is no lady painter that we know of who more exquisitely combines the charms of perfectly-contrasted hues and tones with the grace of form and expression than Madame Madeleine Lemaire, whose small water-colour drawings leave positively nothing to desire. We will take another opportunity of speaking of Mdlle. Berthe Morizot's work; it is of an exceptional kind.

In looking over the annals of the French Academy, we find the first lady member of that institution was Catherine Duchemin (wife of the sculptor Girardon), who was elected in 1663, from which time until Mdme. Lebrun we meet with a long string of names of lady artists whose works are regarded more as family relics than as popular objects of admiration. They are chiefly on fans, screens, or are miniatures in quaintly-shaped frames, still hanging in country châteaux, in well-kept chambers, where they have been hung and dusted carefully for 100 years; here and there we meet them in Berkeley-square, or in English country-houses, in Mayfair or Belgravia, in Russia, and who knows but some of our American friends might tell us that many exist in the old homesteads of New England or Louisiana.

Mdme. Vigée Lebrun, whose portrait is one of the most popular favourites at the Louvre, seems to have been, after these, the only lady painter of acknowledged eminence, and few of us are aware that she died as recently as 1842, at which time we suspect that Rosa Bonheur had already shown considerable power. In fact, we think her fine picture at the Luxembourg bears the date of 1850. We find twenty-five or thirty names of French lady artists who lived after the Restoration; but although their works have delighted many possessors, who cherish them in their families, their names have scarcely reached the ordinary lovers of art, whose knowledge of painters is chiefly dependent on those pictures exhibited and emphasised by *ciceroni* in public galleries.

Lady artists in England have for the last three centuries held a prominent position; in the seventeenth century, we have Mary Beale and Anne Carlisle, mentioned by Walpole as a copyist of Italian pictures in the time of Charles II., and Anne Killigrew, who is now best remembered by the praise of Dryden.

In the eighteenth century we find the names of Mary Williams, and Anne Lee, a painter of flowers, insects, and shells; of Angelica Kauffmann and the Honourable Mrs. Damer. Miss Cosway's portraits and Mrs. Mee's miniatures are almost within our own memory.*

In the present century Mrs. Charles Pearson and Mrs. Carpenter's portraits were very often quite as good as many of Sir Thomas Lawrence's, and Miss Heaphy has left us some portraits in water-colour, almost as graceful and, perhaps, more truthful than Chalon. Miss Setchell's "Momentous Question" made for the artist as sudden a reputation as that of Miss Thompson; and Miss Fanny Corbeau's pretty water-colour drawings pleased most of us a generation ago. Miss Sharpe occasionally elevated sentimentality almost into real sentiment, her beautiful picture of the "Bridesmaid," for instance, being quite equal to the literary sentiments of the day.

Miss Chorner in Rome for many years must have reproduced more "Madonnas" and copies of the *Cenci* and the *Esperanza* than any copyist has ever done; and Miss Kate Salomon's beautiful copies of the old masters can scarcely be too highly commended.

Miss Landseer many years ago painted dogs so well that as time passes on they may be mistaken for the works of her famous brother; but Miss Landseer's dogs are not equal to those of Miss Louise Swift, who represents the animal with unusual skill. Madame Bisschoff is now one of our most promising lady painters, and year by year we may expect from her still better work. After the Crimean War the world (not in society) was made acquainted with and was delighted and astonished by the beautiful drawings of the Marchioness of Waterford, and of Victoria, the Crown Princess of Prussia, who has been admirably taught, and works with all the care and regard to details that mark the true artist.

In the present day, lady artists happily and agreeably abound: the Misses Mutrie and Miss Coleman's flower-pieces are always beautiful; Mrs. Ward's pictures are known far and wide; Mrs. Alma Tadema and Mrs. Bridell-Fox are well-known names at our annual exhibitions; and Miss Hilda Montalba and Miss Starr advance year by year. Some little time since we used to see lovely drawings in novel and beautiful tones of colour, by Miss Spartali; and Miss Thompson has made a military fame of almost unenviable notoriety. Mrs. Jopling's pictures and portraits are positively charming; and Madame Bodichamp, Mrs. Marrable, Mrs. Fenessey, and many other names recal to our memory recollections of excellent work. Old lovers of lady artists will remember years ago the enormous pictures of Mrs. Annersley, who, however, studying as she did, and working truly "from the model," can scarcely be considered as a professional artist.

We do not know whether we are quite at liberty to speak of Mdme. V. as an admitted artist, but our exhibitions would certainly gain in intellectual attractiveness by the work of a mind so eminently artistic. Three or four years since there appeared at the Dudley some beauti-

* We have not the work at hand, but we fancy that in Cunningham's "Lives of the British Painters" he has ungallantly omitted the name of any lady painter; but forty years ago the feminine intellectual movement did not reach the wilds of Pimlico.

ful drawings by Miss Eastlake, a niece of the agreeable writer on "Household Taste," but we no longer see her name in the list of lady artists. Women sooner than men appear to forsake the real sources of happiness to be found in the pursuit of art for the means of felicity that unquestionably exist, but are sometimes not discovered, in marriage.

Ladies sketch from Nature with much skill, but their pictures or drawings often appear as if women were deficient as painters in that blessed patience that they never fail to manifest in other things.

Our illustrated papers have some valuable lady contributors, and week by week we see in the pages of *Punch* the spirited sporting sketches of George Bower. It is some years since we have seen the beautiful work signed "M. E. E.," but, considering the proverbial constancy and truth of women, we must confess they work, as artists, somewhat capriciously.

America has not been strong in lady artists; Gilbert Stuart, one of the best portrait-painters the world has seen (a pupil of Sir Joshua by the way), left two daughters, who in 1850 were living in Newport, Rhode Island, and working industriously, successfully copying the portraits of their famous father; but their knowledge of art appeared contracted and limited by their beautiful devotion to their father's memory.

Miss Hosmer's reputation can scarcely be called artistic, that young lady appearing more ambitious of sporting fame; but she has her admirers. Miss Stebbin works earnestly, but the social climate of Rome is enervating, and professional assistants are not difficult to obtain in the Eternal City.

Mrs. Hugh Cholomondley, an artist in more ways than one, has exhibited in England at least one work, her "Venus vanquished," which was a bold attempt, and she is doubtless at this moment preparing in her Venetian studio to again astonish and please her friends.

Australia also has her lady artists, but we can only recall one name, Miss Ironside, who for a year or two gained, in Rome, an extraordinary renown: Gibson praised her, and all visitors to Rome, of course, thought that they must do the same. Her designs at times approached the beautiful, but she failed in her attempts to carry out her dreamy thoughts, and her picture at the Exhibition of 1862 was pronounced a failure. The young lady, alas! died soon after in her beloved Italy.

QUARRIES AND BUILDING STONES.

In one of the volumes on "British Manufacturing Industries," to which we have recently referred, there is a chapter on quarries and building stones, by Professor Hull, F.R.S., Director of the Geological Survey of Ireland, in which he treats of granite as a building stone. If a piece of granite be examined, it will generally be found to consist of crystals of felspar and mica in silica (or quartz), the silica being in quantity from 65 to 80 per cent. of the whole. The silica appears to have been the last to solidify, but as it is the most difficult to fuse, it is inferred, says the author, that some other agent was present, such as water at high pressure and temperature, owing to which the silica was retained in a state of plasticity, until the felspar and mica had opportunity to enter into a crystalline state.

Granite in various places varies in composition. Some granites contain four compounds, some five, as silica, two varieties of felspar, and two of mica. When two felspars are present, as in some of the granites of Galway, Donegal, and Aberdeenshire, they consist of orthoclase and oligoclase; or, as in that of the Mourne mountains in Downshire, of orthoclase and albite. When two micas occur, they are generally black and grey varieties, as in the granite of Wicklow.

Many of the granites are exceedingly tough and hard; but, in some places, owing to the decomposition of the felspar or the mica, they are quite unfit for building purposes, and close observation of the natural exposed surface of the rock is very necessary, in order to see how it has withstood the weather. A cubic foot weighs about 166 lb., its specific gravity being about 2·6. It contains from 0·5 to 1·3 per cent. of water. A cubic yard, therefore, which weighs two tons or thereabouts, contains about 3½ gallons of water, and is capable of absorbing about a gallon more. The strength of granite to resist fracture by crushing varies much,—say, from 2 to 5 tons per square inch; but if it is well selected in the quarry, it will probably be, in every case, strong enough in practice. That which gave way under fire in America was probably not well selected.

Of limestones, there are five chief formations, viz., Devonian, Carboniferous, Permian, Oolitic, and Cretaceous. Of these the Carboniferous, or mountain limestone, is not used for building, except near the quarries, being generally of a hard, shelly, or crystalline nature, and not of a pleasing colour for street architecture. The great mass is made up of stony shells and skeletons of marine animals, often in a broken and fragmentary state, and bound together into a solid mass by calcareous cement; but although the bulk of this stone is not used for building purposes, there are many parts which yield a beautiful marble, which is polished at Ashford, Bakewell, Derby, and other places. Neither is the Cretaceous formation, or chalk, much used for building; and the Devonian limestone is chiefly used for ornamental purposes; thus of the five great formations two only yield building stones of much use, viz., the Permian and the oolitic. The Permian is well known as the magnesian limestone, or the dolomite of the north-east of England, and is of a yellowish colour and easily worked. This stone ranges from Nottingham to Tynemouth, but the range is interrupted for a short distance near Northallerton. Near Mansfield it is separated into an upper and a lower division by the interposition of marly strata, and contains a large proportion of silica,—about one-half of the whole quantity; carbonate of lime, 26½ per cent.; carbonate of magnesia, from 16 to 18 per cent.; iron, alumina, 1·32 per cent. in the white stone, and 3·20 in the red. But the Mansfield Woodhouse, and Bolsover stone contains only about 4 per cent. of silicate, and approaches more nearly to a pure dolomite. On the whole, the magnesian limestone is subject to much variation in mineral composition.

The oolitic limestone ranges from Dorsetshire into Yorkshire, through Somersetshire, Oxfordshire, Northamptonshire, and Lincolnshire. It lies between the lias and the cretaceous rocks, and consists of four divisions:—The inferior oolite; the Bath, or great oolite; the coralline oolite; and the Portland limestone. These divisions are separated by great beds of clay. The stone derives its name of oolite from being composed of little spherules of lime, either hollow or enclosing a grain of sand or fragment of shell, bound together by a calcareous cement. The lowest division, or inferior oolite, is chiefly developed in Gloucestershire.

The Bath stone is the best known of the oolitic freestones. The principal quarries are at the Box escarpment. The weather bed of the quarry is described as being generally used for plinths, string-courses, cornices; the "corn grit" for dressings; while the "scallet," which is the finest in grain, is used for ashlar. An average analysis of Box Bath stone gives 94·52 per cent. of carbonate of lime, 2·50 of carbonate of magnesia, 1·20 of iron and alumina, and 1·78 of water and loss.

The stone from Tainton and Burford was largely used at Oxford in structures belonging to the twelfth and three following centuries. The more modern buildings have been constructed for the most part of Headington stone, belonging, says Professor Hull, to the coralline oolite, which is of inferior durability.

The shelly oolitic limestones quarried at Barnac, Ketton, and Casterton, in Northamptonshire, and at Haydor and Ancaster, in Lincolnshire, formerly considered to belong to the Bath or Great Oolite, are now classed by some geologists with the inferior oolite. This kind of stone has been used in Lincoln Minster and other beautiful ecclesiastical structures in that part of England. Wollaton Hall and Belvoir Castle are also examples. Byland Abbey, of the twelfth century, is a good illustration of the Yorkshire oolites.

Portland stone is nearly pure limestone. It is denser than the oolitic limestones, weighing from 135 lb. to 147 lb. per cubic foot. To this series belongs the well-known Caen stone, obtained from quarries in Normandy. It has been used in England from the time of the Norman Conquest, and in Ireland from a possibly still more remote period. It is not to be trusted for external use in England at the present time. Kentish rag, a calcareous sandstone, is now much used as a building material in London and the neighbourhood, in place of Portland stone. It is obtained from the Lower Greensand formation, the principal quarries being at Godstone, Maidstone, and Boughton.

Of sandstones the Devonian and Old Red formations yield some good building stone of various degrees of coarseness, from the finest grain up to conglomerates of large rounded boulders, and of various colours—red, purple, and yellow, to light green or gray; and sometimes the stone is almost white.

The millstone-grit produces in Yorkshire, Lancashire, Staffordshire, Cheshire, and Derbyshire vast quantities of good building stone for nearly all purposes. Many of the public buildings in Manchester, Leeds, Bradford, Blackburn, and other large towns, are built of this stone. Some parts of it are especially suitable for foundations of engines, piers of bridges, and similar massive work.

The next in importance, if not, indeed, more important still, is the New Red Sandstone formation, which has been largely used for building purposes in Liverpool, Chester, Shrewsbury, Stafford, and generally in the central counties. This great geological formation has two divisions, the upper being called the Keuper and the lower the Bunter sandstone. Along the high ridge of Everton, Kirkdale, West Derby, and Roby, near Liverpool, the lower or Bunter division affords a good stone of light Brownish red, but in general this division does not yield useful building stone, being either too soft or too pebbly. A better stone is obtained from the lower portion of the Keuper division, which has been extensively used in the older ecclesiastical structures of the central and western counties. The formation ranges from the Mersey, near Runcorn, to Grinshill, near Shrewsbury, and is found extensively in parts of Staffordshire, Worcestershire, and Warwickshire. It is generally compact, uniform in texture, easily worked, and of light red, brown, or grayish colour.

SUBURBAN PUBLIC HALLS.

ASSEMBLY ROOMS, KILBURN.

London is sometimes spoken of facetiously as "the village." How unlike in dimensions and character to Goldsmith's "Sweet Auburn"! to which, however, it has, in one respect, a faint resemblance; the City proper is, for a considerable portion of every twenty-four hours, and to a great extent on the whole of the Day of Rest, a nearly "deserted village." Every morning the streams of the day population of London set in from the suburbs, north, south, east, and west, about eight o'clock, rising to high tide at from nine to ten, when the stream begins to abate, and at about eleven o'clock the complement of the day population may be said to be made up, with inconsiderable exceptions.

The process of desertion commences in the afternoon, when City magnates, merchants, bankers, brokers, agents, financiers, professional men, *et hoc genus omne*, with their battalions of assistants, clerks, "officers and servants," become possessed with their intermittent "home-bound fancy," and for a few hours after four o'clock the exodus continues in dense streams, radiating in almost all directions, and ere midnight brings on the "hour friendliest to sleep and silence," the City is hushed in deep repose. "The crowd, the hum, the shock of men," are followed by the "measured beat and slow" of the heavy-footed policeman, who has "ample room and verge enough" for his peregrinations. But sometimes, alas, he is reinforced in the occupation of the otherwise deserted streets:—

"When night
Darkens the streets, then wander forth the sons [and daughters?]
Of Belial, flush'd with insolence and wine."

But, though the places "where merchants most do congregate," and the places where City men and their legions of *employés* carry on business are deserted, the offices and the great piles of building emptied of their day population, the day is not yet done with the crowds who have just vacated them. They have taken home a modicum of life and energy, and have pleasures, perhaps duties, to experience and perform, as necessary to filling the measure of their social life. They, the *employés*, are, *mutatis mutandis*, in the position of Goldsmith's peasants:—

"When toil remitting, lent its turn to play;
And all the village train, from labour free,
Led up their sports beneath the spreading tree."

London clerks, whose homes are in the suburbs, have no "spreading trees" available for their sports or amusements; but they find a public hall an excellent substitute. Such halls are being provided all round London, either by

companies (limited), or by private speculators, and profitable speculations they generally prove, as well as very satisfactory public conveniences, furnishing the means of gratifying a wide variety of legitimate tastes, aspirations, and desires. The usual accommodation provided in connexion with these suburban halls is, a great hall for public entertainments, *soirées*, public meetings, &c.; a minor hall, much smaller, and let at a much lower rent; suites of retiring-rooms for ladies and gentlemen, cloak-rooms, and the accommodation required by the guests at a large social gathering. In some cases class-rooms are attached.

The nature of the successive occupations of these suburban halls is curiously diversified in character. To-night there may be a church missionary meeting, with a member of Parliament in the chair, the meeting addressed by rev. canons and clergymen, the "deputation," and local men of note. To-morrow night this meeting may be followed by a troupe of nigger minstrels, who give a concert "for one night only." A "spelling bee" succeeds, or did, during the little while the absurd novelty lasted. Next may come an oratorio by a local musical association; after it a series of meetings by revivalists of the Moody & Sankey type; then amateur theatricals for two nights; next an "anti-contagious," &c., public meeting, followed by an amateur vocal and instrumental concert. The amateur performers in these local halls, whether votaries of Thalia or Melpomene, of Apollo or Terpsichore, can almost always reckon confidently on having large and appreciative audiences. In the season such halls are frequently used for flower-shows, sometimes for bazaars; and triennially, many meetings are held in some of them to hear addresses from opposing candidates for seats at the London School Board. The *mélange* indicated above is liable to interruption by the proprietor of a peripatetic panorama, who, having had extensive experience, and "knows his way about," concludes that in such a neighbourhood his entertainment will "run" for a month: he takes the hall for that period, and is not disappointed.

Simultaneously with the progress of any of the performances in the great hall that have been indicated, those engaged in a Bible class, conducted under the auspices of the Young Men's Christian Association, or a prayer meeting, or the meeting of a building society, may carry out their proceedings undisturbed in a smaller room.

The most recent addition to the suburban halls is at Kilburn. It is situated quite near the Edgware-road, in the locality where the London and North-Western Railway passes under it. There is only the width of the road between the hall and the railway.

It is a sightly, substantial, and commodious pile of building, that covers 500 superficial yards. The frontage is 75 ft. long, of red Cowley bricks, and dressings of Bath stone; the base is of Staffordshire blue bricks. The front is relieved by three gables and a break in the centre bay. A good deal of ornamental brickwork is introduced with satisfactory effect. The front bears the legends "Town-hall" and "Assembly-rooms." The last title is unobjectionable, but the other is, we believe, quite a misnomer, no "Local Authority" having anything to do with the building, which is a purely private speculation, and not unlikely to prove profitable. It is the property of Mr. T. Bate, whose offices for carrying on his own business are on the ground-floor, to the front, and on the left of the principal entrance. The business announcements in these three front windows are scarcely compatible with the building being a "town-hall."

The entrance-hall is paved with tiles, and is 13 ft. square. The principal stair rising from it is of Yorkshire stone for the first flight, and above that of pitch pine. The large hall is at the back of the building, and is 75 ft. long by 40 ft. wide. The side walls are divided by pilasters into six bays. The room is 46 ft. high, and is lighted by dormers about 4 ft. deep, extending between the ends of the hall, and forming continuous windows. The cornice is dentilled and the ceiling partly coved. The open timber roof, of pitch pine, varnished, is effective. A platform is fitted up at one end, and communicating with it a small retiring-room. For ventilation, inlets are provided at the foot of four of the pilasters. The inlets are covered by panelled boxes, perforated. The colouring and picking out in the hall are quiet and in good taste, somewhat in the style of the Alexandra Palace decorations. The hall is lighted at night by ten star-burners. Provision is made, of course, for the escape of the products of combustion and vitiated air by the roof. Opposite Mr. Bate's offices, on the ground-floor, there is a committee-room, 25 ft. by 20 ft., and 14 ft. high.

On the first floor there is a minor hall, or supper-room, 65 ft. by 20 ft., and 15 ft. high clear; it is estimated that it will seat 150 persons. It communicates with a kitchen in the basement. On the second floor there is one large billiard-room, 45 ft. by 24 ft., and a private or club billiard-room, 24 ft. by 20 ft. The cloak-rooms, lavatories, and closets are all external to the main building. The work in every department is of good character, and combines, with the effectiveness of the design, and the convenience of the internal plan and arrangements, to reflect some credit upon Mr. F. W. Hunt, the architect, under whose supervision the building has been erected. We hear that there is a favourable prospect of the hall being much in requisition for local purposes and entertainments.

PUBLIC WORKS IN MADRAS.

The extensive and costly harbour works at Madras, in regard to the ultimate sufficiency and utility of which there have been widely divergent opinions among practical men, have again been under the consideration of the General Government of India, and they have instructed Mr. W. Parkes, C.E., engineer-in-chief of those works, to remain for some time longer where he is, and to arrange and initiate a series of observations which may subsequently be carried on by others under his direction, and in his absence. The proposed experiments are intended to test the nature of any movement of sand or action of currents that may be taking place at or beyond the ends of the proposed piers. A recent examination indicated sand in suspension at six-fathoms line in fair weather. It seems highly desirable, in the estimation of the Government, to determine whether the same conditions prevail at seven fathoms. This may probably be effected by placing, during fine weather, some large and heavy substance or object on the bottom, and watching whether the obstruction thus presented causes the accumulation of sand or not. Some such simple expedient might also be devised for testing the currents. Mr. Parkes is himself of opinion that such a series of observations and experiments will take much longer time than the advisers of the Government suppose, and, therefore, requests authority to delegate at once the task of experiment to those who are to remain on the spot and carry out the plan of the works. It is suggested that there may be, under some circumstances, a deep current, and an action on the bottom of the sea not yet ascertained. Such a possibility is admitted, and the desirability of testing it is allowed, but the thing cannot be satisfactorily done except by observations extending over many months, or even a couple of years, so as to include all varieties of seasonal influence. At present, there is not even a surface current. A day or two of steady northerly breeze might produce one, but if, upon examination, it should be found that there was no bottom current under such circumstances, it would not be wise to conclude that there would be none under the more powerful and persistent influences of the monsoons. Such experiments, then, as are proposed can be properly made only by competent persons resident at Madras.

The citizens of Madras have heard with much surprise that the Government have decided on forming a large relief encampment at the Red Hills, near the lake from which they derive their supply of drinking-water. It is also reported that this decision has been arrived at after the sanitary commissioner and the head of the medical department had reported strongly against the project as one that will threaten serious consequences to the sanitation of the city. Perhaps the Government may be of opinion that Madras cannot show a much worse bill of health than she does at present,—the mortality for the week preceding the despatch of the last mail to England having been no less than 94·4 per 1,000. Of course, this high death-rate is due, in great measure, to the invasion of the city by crowds of half or wholly starved people from the surrounding districts, who, in many instances, carry with them the seeds of the disease which so quickly carries them off in such distressing numbers. Considerations of public health demand that these poor sufferers should be ot once encamped well beyond the limits of Madras; but why run the risk of endangering the health of the regular inhabitants of the city by formi an encampment at the Red Hills? It would impossible to keep those people from the fi reservoir of water there; and if that water only once tainted, who can tell what the resu may be among the citizens of Madras who ha to drink it? The municipality is expected take immediate steps against this dangero proposal. There is not a medical man in Madr who does not condemn the scheme as a mo dangerous experiment. It is, no doubt, nece sary that there should be an encampment the north of the city to provide for the crow which are continually flowing in from the nor along the great Trunk-road; but surely son other spot might be selected for its site than t source of the local water supply. It is all t more necessary to keep the Red Hills wat pure, since so many of the ordinary sources drinking-water in Madras have this year failed

This same subject of water supply is excitii much attention in Madras, in connexion wi the present famine; and it is amusing, althou sad, to see how little wisdom comes by exp rience. Here are these people in the midst another famine, and a question much discuss among them is, "what irrigation works are to construct or repair?" It is as if their wat supply had been cut off, and they were to sa "Oh, come and let us make a new cistern to ho it." In so far as the new cistern gives emplo ment to the poor there is no harm in making or repairing it; but it never seems to stril some people that cisterns with no water a useless. "We lose our horses, let us build ne stables." When really bad seasons come, the reservoirs are full of emptiness. There is on one way of getting water in a bad season, a that is to dig for it; and wells are the cistern which ought to be hewn out,—not drains cisterns, but spring cisterns. Large teppacolum such as the Rajahs used to make, would be wor which, if executed in a famine year, would h something to show for the public money, and lasting benefit to the community. There is n such safe "reservoir" for water as the groun Dig to a certain depth and you find water. you can make reservoirs at a high level, and fi them in river freshes, that would be somethin gained, but then a famine year is always marke by the absence of river freshes. Accordingl as a rule, there is no work so safe, in such country as India, as digging into the groun In the midst of the drought and the consequen scarcity there is no good in repairing eithe pond or tank, so far as the present is concerne Water must be found now for the people, and time is lost and money frittered away, there ma be a famine of water as well as of bread. Thi many of the wisest men in Madras are beginnin strongly to feel, and hence not a few are earnestl desirous that at least a portion of the labour o the "relieved" should be expended in th digging of wells. To a small extent only thes large wells might furnish water for irrigation though the oftener water is drawn from a we the sweeter it is; but the object now f water for the people to drink. There ar magnificent works of this kind in Bellary an other districts. A large surface excavation i needed, and then the sides are in steps to th centre. The stone facing is very expensive; bu that might be deferred, and charitable indi viduals could add it afterwards. Sometimes th people might subsequently do the stone work b subscription; but such excavation would, i itself and in the meantime, be good relie work for the people in their own town or village and would be a permanent advantage afterwards In some districts there will be thousands an tens of thousands to support, and much Stat money will need to be spent. Sinking well shafts is a work which can only be well done by a special set of men; but every large steppe well will employ some hundreds of unskille labourers for a month or two; and then thes spring reservoirs can be pointed to with gratefu pride, not indeed as having irrigated the land t any material extent, but as having kept soul an body together, which cannot be done withou water to drink, and as having been dug by the people themselves when they were sufferin from famine. Those are sagacious men, me who are actuated by a far-seeing benevolence who advocate such a work of present relief. O road-making there must be a limit, but of thes reservoirs there need not be so long as there i distress to meet. It is well in this matter t take a leaf out of the book of the former nativ rulers of the land, and in such a respect as thi to do as they did. The present cry is,—"The

railways may bring grain, but who will supply water?" Here is a mode, both of water supply and of famine relief.

THE NEW DOCKS ON THE CLYDE.

The construction of the Stobcross Docks, the important undertaking which is being carried on by three separate contractors, under the direction of the Clyde Trustees and their engineer, Mr. Deas, is now being rapidly proceeded with, and it may not be uninteresting to furnish a brief account of the present position of the works. The dock will include 33½ acres of water-space and 27½ acres of quayage. The northern boundary is formed by the new Pointhouse-road, the eastern being near to Finnieston-street; on the west is the Kelvinhaugh-road, while on the southern side is the river, sheds, roadway, and quays. Projecting into the eastern end of the basin for about 600 yards will be a centre pier, 195 ft. in breadth, dividing that portion into two water spaces, the one on the north being 270 ft. broad, and that on the south 230 ft., leaving an enter basin 695 ft. in width at the west end of centre pier (where is to be found its greatest measurement), and 1,000 ft. in length. From a point in a line with the termination of the pier the south wall of the basin curves in a north-westerly direction to one side of the inner end of the entrance, while the north wall bends south-westwards to the opposite side, the basin thus narrowing to 300 ft. The entrance is 100 ft. wide, and a quay of 208 ft. forms the westerly end of the basin. The length of the north quay wall will be about 1,000 yards, the foundation for nearly 750 yards being boulder clay and rock, about 300 yards being already built. The height of the wall is 42 ft., and its foundation of 18 ft. in breadth rests on concrete blocks 2 ft. in thickness. At the level of the copestone the breadth will have been gradually diminished to 6 ft. 6 in. The total length of quayage will be two miles, and the depth at low water 20 ft. The greater portion of the walls will be based upon concrete cylinders, every one having a cast-iron shoe 4½ tons in weight for its foundation. Of these cylinders, 600 triple groups will be required to complete the work, and they will be sunk to a depth of 48 ft. below the quay level. Each cylinder will be composed of eleven courses of concrete, one course consisting of three, and another of four blocks, placed alternately. The weight of a single course is 18 tons, so that in every cylinder there are 198 tons of concrete and 4½ tons of iron in the shoe. Thus, the aggregate weight of material required for the whole of the cylinders amounts to the enormous sum of 364,500 tons. For the purpose of forming the concrete blocks a piece of mechanism, the efficiency of which is only equalled by its simplicity, has been brought into requisition for the first time in Scotland, and is very successfully applied for mixing the material. This latter consists of Portland cement, gravel, sand, and stone, the last being broken into pieces of nearly equal size by means of a small engine, which is driven by the same machinery as the concrete-mixer before mentioned. When sufficiently amalgamated by water alone, the mixture is deposited in wooden moulds of the required shape, and in a few days the blocks are ready to be lifted and swung by the cranes into permanent position. The blocks are moulded round a circular space of 5 ft. 9 in. in diameter, and the edges of the vacancies when brought together in building the cylinders form wells, from which conical diggers extract the soil by half tons at a time, the cylinders meanwhile slowly sinking under the pressure of many tons of superimposed iron rings, which are increased in number as the cylinder descends and the resistance to its downward course augments. Among the supplementary machinery employed in connexion with the dock-works, may be instanced the patent derrick cranes, having a lifting power of 10 tons each, and easily controlled by a single workman, and which, besides performing all the ordinary operations of a stationary machine, travel, with all their appurtenances, in any direction which may be required. Small and compact locomotives, but of powerful capacity for their size, are employed to draw loaded "bogies" to the mixing machines, and to perform work in various other branches of the works, these being in addition to the ordinary sized engines and ballast-wagons to be seen on the many lines of temporary railways intersecting the scene of operations in all directions.

At the excavations for the north wall, Messrs. John Morrison & Co., the contractors for the middle section of the dock, are just now cutting through a bed of boulder clay to the depth of 42 ft., for the purpose of laying the foundation of the wall, and are making use of dynamite to dislodge large portions of the clay at one time. Mr. J. S. Hunter, whose contract for the quay wall at the west end of the dock extended to 1,000 yards, has completed the same, with the exception of about fifty yards, while Mr. John Jackson, contractor for the eastern section, has commenced operations, being employed with the preliminary excavations and bringing forward of the necessary plant. The iron swing-bridge, constructed by Sir William Armstrong & Co., is now in position, and Mr. Hunter has all but completed a handsome block of buildings for the hydraulic machinery, also supplied by Sir William Armstrong's firm. One of the features of the building will also be an ornamental tower with a handsome clock, while one coal crane is already erected on the north wall, a second is in progress on the south, and two more are contracted for from the same firm who supplied the swing-bridge. Considering their magnitude, a year or two must necessarily elapse before the works are entirely completed, and as there will be direct railway communication, already partially established with the rich coal-field and principal seats of industry in the surrounding district, the new docks will be of incalculable advantage in furthering the trade and consequent prosperity of the great metropolis of the west of Scotland.

MANAGEMENT OF SOUTH KENSINGTON MUSEUM.

Sir,—Will you allow an old contributor to the *Builder* to make one or two remarks on your article on South Kensington bronzes and its catalogues. I have nothing of a controversial nature to say against the article. With the greater part of it I fully agree; and I think no subject more important to keep before the eyes of all students of art than the relation which should subsist between material and style. But a question, if I am not mistaken, of wider import than you have raised, lies behind the difficulties you have regretted. I may be permitted to cite an incident which bears forcibly on the views you have expressed. It is now some years ago that I was requested to write certain notices of particular branches of several forms of art which are richly illustrated at South Kensington. I need not particularise what they were. The subject was a fascinating one; and all the more so from the hope that, if wisely and happily treated, the result might become a sort of non-official hand-book, welcome to many a visitor. But, alas! the first chapter was hardly exhausted, and the pleasure of sending over friends to look through one's own spectacles was only on the verge of attainment, when it became, or seemed to become, evident to me that I had made some terrible blunder. I could not recognise what I had been describing on another visit to the Museum. All the land-marks were gone. Every thing was so entirely changed that the account drawn up might as well have been an account of a museum in Paris, so as any utility to the visitor to South Kensington was concerned. The first feeling, as I have intimated, was that of humiliation. It seemed to be my fault. Perhaps some little irritation, certainly a good deal of wonder, succeeded. Finally, I came to the conclusion that there was something inscrutable in the matter, but that, at all events, any literature that took South Kensington exhibits as its theme could only be of the most ephemeral nature.

Your article carries this idea a step further. For it shows that not only has the public writer to reckon without his host if he speaks of any collection, or branch of a collection, at South Kensington, but that even the persons selected by that establishment to write their own official descriptions and catalogues have to suffer from the same causes,—and that no indication given on paper can serve as a permanent guide in the midst of the kaleidoscopic whirl which has become the law of the spot.

Thus far, then, I have found nothing very novel to say on the subject. But the further inquiry which I wish to raise is, what is the cause, and what the effect, of a ceaseless change, which, together with all its annoyance to the student, is productive of constantly fresh pleasure to the sight-seers? In fact, in these words, the question has stated itself. Two opposite functions have been claimed for South Kensington and kindred establishments: one is to teach, the other is to amuse. Is it or is it not the case that opposite conditions are required for these two objects, and that no attempt to reconcile them can be permanently successful?

I fear that this is the case, and I think that this view will be borne out by a comparison of the effect produced on the mind by repeated visits to South Kensington, to the British Museum, and to the Crystal Palace. The more perfectly fitted any special collection is for consultation, that is to say for educational use, the less disposition every one feels to visit it a second, or at all events a third time, unless it be for a directly educational object. Look at the gallery of birds in the British Museum. Some of the specimens, it is true, are old and dusty, but even so they illustrate the specific forms quite as well as many an object of pottery illustrates anything in the history of the art of the potter. To my mind, the knowledge of specific organised forms of the relation of species to species, and of the extraordinary manner in which some wandering species in the Fauna or Flora of one part of the world fills up a gap in a series elsewhere, has a charm which no works of human skill can attempt to rival. As a collection, to persons of my way of thinking, the bird gallery of the British Museum has a deep and abiding interest which no collection of works of art can possess. But, still, we do not go to look at the birds, unless it is for a specific object. As a whole, the long gallery, if seen a dozen times, no more attracts the eye than do the titles of books on a row of shelves. The arrangement is, educationally, admirable, but the elements of novelty, of wonder, and of change are absent. If you go as a student, you may gain priceless information; if you go as a sight-seer, you are intolerably bored.

The same remarks will apply to any other of the galleries of the Museum. Look at the mineralogical collection. What can be more perfect,—what more instructive? What,—when you are in search of light on mineralogical subjects,—more beautiful? But who would ever visit that fine gallery for amusement? Look, again, at the sculpture in the Crystal Palace. Admirable representations are there of the finest statues in the world. Of course, there is a great difference between the marble and its reproduction; and the charm of the great galleries of Florence, Rome, Naples, or even Paris, is not rationally to be expected. But for the educational use of the student of sculpture I think there is a more complete field at Sydenham than in any other gallery I know. Who goes to look at it? Who regards the lovely torso of the Cupid of Praxiteles with more eager glances than he casts at the lamp-posts on the Thames Embankment? Even to the authorities of the Palace these costly and valuable casts seem to represent only so much sunk capital, and the students are few. It would by no means pay to keep up a gallery of casts for their instruction, and for the paymaster, the public,—I will not say the mob,—but the men, women, and children who go for an hour's relaxation and change, a new rag doll swinging on a rope would give much more pleasure than a third look at the cast of the Venus of Milo.

It is my belief that the able men who have directed the arrangement of the courts at South Kensington have long since found out this secret. Having done so, they have held their tongues, and acted on this discovery. They are aware that the kaleidoscope, though only composed of a tin tube, two plates of looking-glass, and a few bits of coloured glass, is an instrument very generally fascinating. They have turned their courts into so many kaleidoscopes, and by so doing they have kept up the number of their visitors. How long this may last is another question. On that I am not at this moment in possession of sufficient data to form an opinion. But I think if we even interrogate our own recollections, we shall find that when amusement, and not instruction, has been our object, novelty has been the very central element of success. It may be said that, if this is true, we must give up the whole long series of prelections about mingling the *utile* with the *dulce*, teaching by the eye, elevating the taste, and so on. Not so, I think, necessarily. As far as direct instruction goes, I think the order of a museum is requisite, and that the change which attracts the public is destructive of the utility of collections for educational purposes. There remains, however, the effect of the habituation of the eye to what is beautiful, and the effect thus produced in the education of the taste. We cannot, however, look for much advantage in this way by

the mere juxtaposition of numerous objects of splendour. The stately rooms of some wealthy persons are crowded with so many objects of costly beauty, each, it may be, excellent in its way, that the effect produced on the mind is like that of going to a broker's sale-room. Selection, order, arrangement,—a certain reserve,—are necessary for the efficiency of the mute lessons given by the exhibition of beautiful objects. It is very questionable whether the heterogeneous accumulation of a large number of costly articles, however beautiful each may in itself be, has not a directly deteriorating effect on the taste, if the assemblage be regarded in block, rather than by the painful labour of individual attention to the several items.

At all events, we require something more than an acknowledgment of the advance made in the beauty of the articles now commonly sold in our shops to prove that the efforts of the past twenty-five years have materially advanced the culture and the taste of the people. One thing certainly has been stimulated, and that is costly luxury. But if we look at the cycle of female fashions, and the point at which they have now arrived, at the decorations and dresses, or undresses, of the theatres; at the introduction of a certain class of adornment and of ritual in our churches; at the dresses, the demand for wages, and the general efficiency of our domestic servants; at the style of address to servants or superiors which young people, and those in inferior situations, so often adopt without check or mitigation; it is certainly open to doubt whether our æsthetic and moral culture has advanced during a quarter of a century of exhibitions. That luxury has advanced with gigantic strides there is no doubt. The advance of luxury in the history of the world has been hitherto coincident with national corruption, and the herald of national disaster. I trust that it may not prove so with ourselves at the present time. But one thing, at all events, I think we shall do well to re-consider, and that is whether the æsthetic centres which at the cost of millions of public and private money we have reared in and about the metropolis exert a wholly purifying and elevating influence on their frequenters, or whether, in the attempt to combine instruction with amusement, we are not in danger of losing the former without greatly advancing the latter. A. B.

DEAD CITIES ON THE GULF OF LYONS.

A SOUTHERN engineer, M. Charles Lenthéric, employed upon a succession of public works along the French Mediterranean coast, thought he had discovered, a few months ago, indications not referred to by previous investigators of places once inhabited, desert creeks which had formerly been ports, and hard tracks across the sand having all the appearance of being artificial. Feeling a strong interest in those semi-wildernesses, as all who have visited them must do, he commenced by exploring them as a geologist, and is concluding by bringing to bear upon them all his artistic and archæological instincts. Certainly, none who have wandered in that direction will wonder at his enthusiasm; but, suddenly, he came upon a world of treasures, often hinted at, and, indeed, illustrated in fragments, but in its fulness unknown. These he has described in a work, just published in Paris, under the title, "The Dead Cities of the Gulf of Lyons." It was, he says, the result of curiosity, rather than of pure scientific ardour; he saw things as they were, and wanted to know what they had been; and he even went so far as to predict for them an imaginary future. This last part of his most interesting study may, for the present, be left out of view. We accept his volume for what it is,—not a scientific treatise, not a narrative of travel; not a history, yet containing the elements of all three, and singularly interesting. The French coast of the Mediterranean, as M. Boissier has well remarked, is separated into two distinct and unmistakable divisions, presenting contrasts such as are to be met with in few other parts of Europe,—the one a garden, the other a blank. From Genoa to Marseilles, all is life, brilliance, and beauty, knowing no winter, scarcely knowing ill-health, free from the presence of poverty; from Marseilles to the Spanish frontier, on the other hand, all is solitude, depression, and desolation. It was into this unpromising region that M. Lenthéric carried his spirit of research, convinced that the neglect of ages had hidden there not a few secrets from the modern generations of mankind. Geologist he was, and in that character we are not concerned to follow him; but his geological habits induced habits of digging also, and he speedily found that he had to deal with ruins as well as rocks; he also noted how the changes of the earth accounted for these extraordinary changes along the borders of the sea. There unquestionably existed, upon the coasts of that vast gulf, cities of which the natural situation gave them a great command of commerce, and among them, although nothing beyond a shadow of it, shifted to a different position, survives Narbonne. This, in the Roman epoch, enjoyed a direct communication with the sea; it was encircled, like Venice, by a many-branched lagoon, studded with wealthy islands. It had its Grand Canal, burdened with big ships of commerce, crowded with triremes of the Imperial fleet, and bordered by sumptuous quays. Upon these, every one of which was an example of architecture, were heaped the riches of the East and West; but what did M. Lenthéric see? A lake dried up; a coast-line receded, and nothing left except a skeleton. Therefore he counts it among his "Dead Cities." Next he presents to us a picture of Arles, which, after Dax, is the most Roman of the Roman cities in France, and this also stood at the head of a semi-inland sea, around whose embankments an indescribable activity once reigned. It was, in its way, a sort of French Alexandria, having two ports—one to receive the great ocean-coming ships from India and the more distant East, another to afford anchorage to the thousand incessantly going and returning craft of the Durance and the Rhone, which put her in direct relation, indeed, with Lyon and all the rest of Gaul; besides which huge flat flotillas were perpetually fringing the outskirts of these peopled waters, until the very waters were sucked away, so to speak, and left a Clusium where there had been a Carthage. There are other more dreary relics, however, at Maquelone and Aiguesmortes, where the cities of old are absolutely dead: where they could not be more literally so did they lie buried at the bottom of the Dead Sea. Nothing left of them except a few stones, half sunk, here and there in an immense arid plain, varied by rare patches of verdure, upon which half-wild horses and oxen feed. And nothing, it seems certain, can be done to redeem these "Dead Cities of the Gulf of Lyons." Arles, Aiguesmortes, Narbonne, and Frontignan can never again be seaports, attracting all the mariners of the Levant, although the olive and the vine, at some future far-distant day, may take their place, while as for the actually swamped or buried towns, they must remain for ever ten times more invisible and uninhabitable than Pompeii. Still, even from them are brought, occasionally, relics upon which antiquaries have seized as favourable to a contested theory. Thus, from that far coast, and from beneath shifting waves of sand, one of the learned lately sent a number of tiles, which, according to him, demonstrated that the art of chromo-lithography was not unknown to the ancient. His discoveries included an ivory slab, variously tinted, bearing out, in his mind, two texts from Pliny, and an isolated passage in Cicero; two cylindrical stones, the one fitting vertically upon the other; a collection of portraits on different metals, which have evidently, by we know not what process, been multiplied, and so forth; and an inscription setting forth how a certain Atticus had called his friends together by what, in modern days, would be styled a circular. We must confess, however, to distrusting the palæographs of these extinct centres of population. Such might be sought for in the neighbourhood of Rome, or Athens, or the Etruscan cemeteries; but they present a spurious aspect when brought from the sandhills of Southern France. It is far more likely that they belong to the comparatively recent chronicles of Arles and Dax; or they may have been imported thither at a time when Dax and Arles were, as children, expatriated by their great parent on the banks of the Tiber. Nevertheless, none of this discredits the labours of M. Lenthéric, who has carried on valuable investigations, which will, in all likelihood, be productive of still more rich results. Even now, we have not mentioned the little medals in gold, silver, copper, ivory, and bone, to which no particular meaning can be assigned, but which have been disinterred in considerable quantities. They appear to possess a greater antiquity than the ruins beneath which they were discovered. But the whole field is one of which no more than a single corner has yet been ploughed, and the records of the investigations, up to the actual time, are very disjointed and scattered. It is difficult, indeed, from the mass of "memoirs" and "communications," to discriminate positively between the facts and the anticipations as they present themselves to the French archæological mind; the volume of M. Lenthéric is so enveloped by criticisms from every quarter of the jealous world in which art, and science, and speculation live, and move, and are, that it may be wise to wait for his further explorations among the cities of the dead before levying a tax upon dates, traditions, or theories.

GLASGOW NEW CLUB BUILDINGS.

THE committee of the new club, which at present occupies on lease a portion of the Scottish Widows' Fund premises, at the corner of West George-street and Renfield-street, have decided to erect a new and handsome club-house, on ground recently acquired by them, at 146 and 152, West George-street, and thus we are to have in the immediate neighbourhood of the New Stock Exchange, Merchants' House, and Crown Halls, a fresh addition to the palatial structures which at present adorn that locality. On the decision of the committee being arrived at, competitive plans were invited from five leading local architects, the successful firm being Messrs. Campbell Douglas & Sellars, the latter gentleman, with a view to embody the most recent improvements, and render the accommodation in the new building as luxurious and complete as possible, having visited and inspected the most important club-houses in London. The new premises, which are to be commenced in May next, will be in the modern French style. There will be a front elevation to West George-street of five stories and attics in height, and eight windows in length, while the interior arrangements will include dining and reading-rooms, apartments devoted to billiard and card-playing, and no fewer than twenty bedrooms. The cost of the new premises is estimated at between 20,000*l.* and 30,000*l.*

HOSPITAL FOR CONSUMPTION, BROMPTON.

PROPOSED ENLARGEMENT.

THE importance of the following letter is considerable:—

"Sir,—You are probably aware that the authorities of this important institution are about to erect an additional building on the south side of the Fulham-road, opposite to the present one, to afford the increased accommodation so long and so urgently felt.

The public, who have so liberally supported this hospital for many years, will look, like myself, with much interest at this further development of the resources of so admirable a charity, and will naturally expect every effort to be made to render the new building a model of modern hospital construction. I am therefore surprised to hear a report to the effect that it is the intention of the hospital authorities to instruct their surveyor to prepare plans for this new building! Surely, Sir, this institution should not be behind others of a like kind in endeavouring to secure, by the usual method of limited competition, the services of an architect of repute and experience in similar undertakings, in order that the public may feel satisfied that the new buildings will possess every advantage of construction and planning that modern progress can supply.—A SUBSCRIBER."

We know nothing more of the matter than our correspondent tells us, but have no hesitation in saying that if the Hospital Committee neglect to obtain the best possible advice in erecting their new building they will sin against the community. A very large sum of money has been placed at their disposal for the benefit of the public, and they ought to consider themselves bound to take every available step to ensure the construction of a hospital in accordance with the widest knowledge. In such a case as this four or five competent architects, known to have paid special attention to the subject of hospital planning and arrangements, should be invited to prepare designs, an honorary fee being paid to each, and the author of the most satisfactory project employed, on the usual terms, to carry it into execution.

The Portland Stone Trade.—The local newspapers describe the business in the Portland stone trade as being "very fair" at present.



STREET ARCHITECTURE, MANCHESTER: 62, KING STREET.—MESSRS. PENNINGTON & BRIDGEN, ARCHITECTS.

STREET ARCHITECTURE, MANCHESTER.

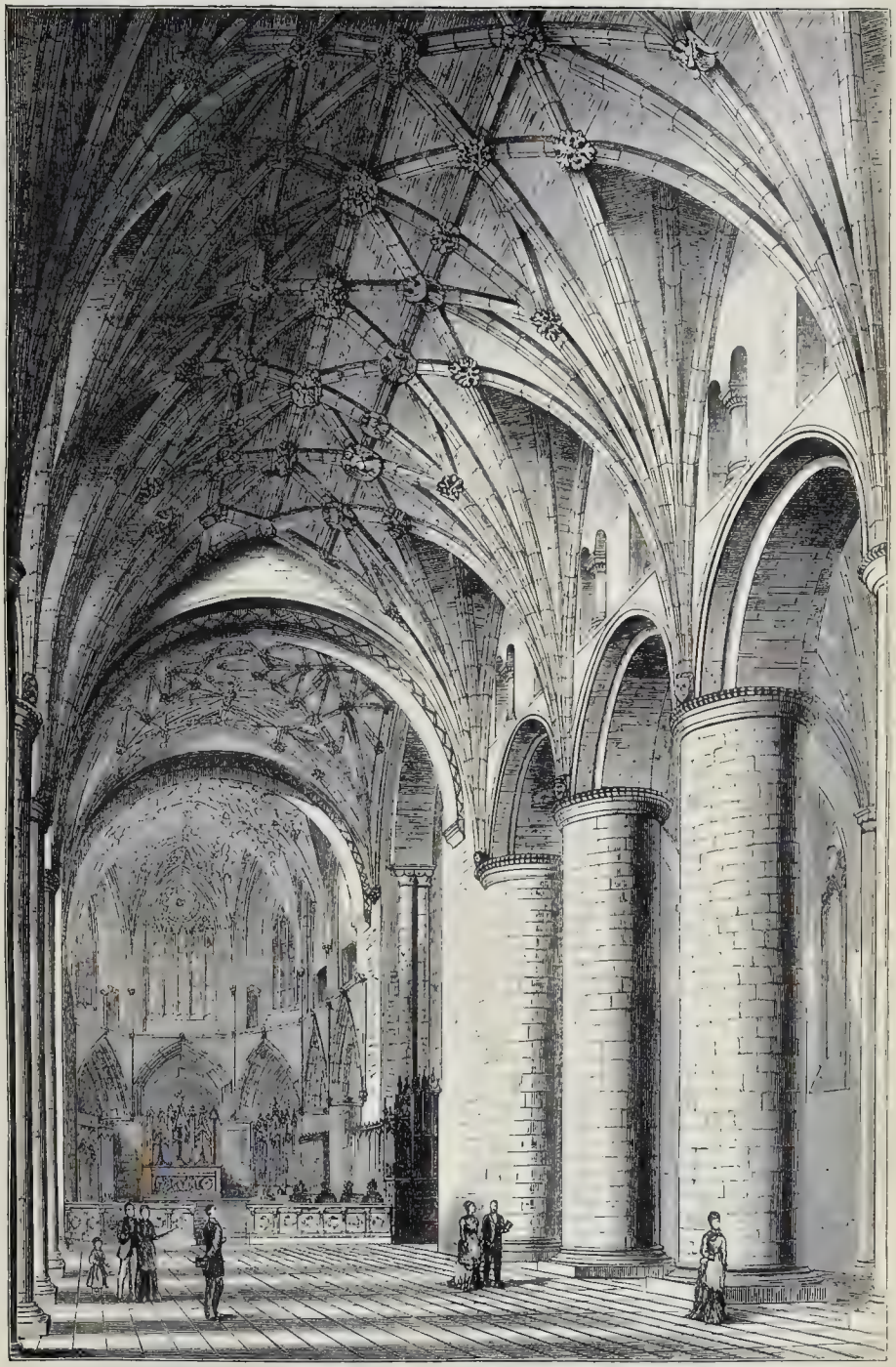
THE shop-front, No. 62, King-street, Manchester, which we illustrate in our present number, is now nearly completed, under the superintendence of Messrs. Pennington & Bridgen, architects. The building has a frontage of 24 ft. to King-street, and is a parallelogram on plan, extending backwards to South King-street (where it has a front of a more simple character)—a depth of 76 ft. A well-hole for light is formed through the floors, in the centre of the block.

The architecture is of almost Flamboyant character, and a large fleur-de-lys is introduced in the lines of the tracery of the gable-window.

The whole of the ground-floor is executed in polished red Shap granite, and the centre portion of the composition projects boldly therefrom on a curved line flanked by angle-shafts, which run through the eaves cornice, forming a gable with pinnacles. The eaves cornice, angle-shafts, pinnacles, and coping to gable are executed in red Mansfield stone, and the roofs covered with deep-red plain tiles, which contrast with the Bath stone of the structure, and give an agreeable warmth of colour to the façade, which has an east aspect. The heads of the windows are filled with lead lights, the lower portions with plate glass. The arms of Manchester and Salford are carved on shields in the panels over the second-floor outer windows.

The ground-floor will be occupied as a shop and ware-rooms by Messrs. Anderson & Co., stationers, and the upper floors will be let as offices.

Mr. Southern, of Salford, has carried out the work in a manner satisfactory to the architects



TEWKESBURY ABBEY CHURCH: VIEW LOOKING EAST. [See p. 361, *ante*.

SHERBORNE ABBEY.*

The Abbey Church of Sherborne, in Dorsetshire, is not very generally known, although it has claims not only from an historical point of view as one of the oldest of our bishops' seats, but also from its being in many respects one of the finest examples of "Perpendicular" work in England.

The church was restored in 1849 and onwards by my father, but he not living to complete the work, the last portion of it, the choir, for which he had left some designs, was completed by his successor, my late partner, Mr. Slater; and being in possession of many of the particulars of what was then done, I have sought to arrange them in a form which may serve as a record of these works.

In examining the church and its history, we find that although our first impression is that we are engaged in the study of a fifteenth-century building, yet we are carried back to a period not only as early as the Anglo-Saxon time of the beginning of the eighth century, but even earlier; for on the site of the church, a long time ago, a portion of a Roman pavement was dug up, with foundations of more than one building resting on it; however, it is in the early years of the eighth century that documentary and architectural history begins. Up to the year 705, Winchester had been the one Episcopal See of the West Saxons after its transference from Dorchester in Oxfordshire, but in that year, after the death of Bishop Headda, King Ina separated Sherborne from Winchester, and created it a distinct bishop's seat for the modern counties of Dorset, Devon, Cornwall, Somerset, Wiltshire, and Berkshire; and he then appointed his relative, Aldhelm, its first bishop. St. Aldhelm was one of the greatest and best men, and one of the first scholars, of that age; he was a great traveller, but settled down as a monk in the abbey of Malmesbury, where he had been educated under the abbot Maidulf, who had founded it in or about the year 640. Aldhelm, in 670, was appointed its abbot, and he refounded and reconstituted the monastery, founding also, and attaching to it, smaller monasteries at Frome and Bradford-on-Avon. St. Aldhelm possessed very great influence with King Ina, and was his adviser in the founding and building of Glastonbury Abbey and its church, that is, the new or "Major Ecclesia," which was then built to the west of that known as the "Vetusta Ecclesia," the, even at that time, ancient wicker church dedicated to the Blessed Virgin, and since rebuilt and called St. Joseph's Chapel. St. Aldhelm was, however, only Bishop of Sherborne for four years; he died in 709, in the little wicker church of Doulting; his body was brought to and buried in his old abbey church at Malmesbury, in the chapel of St. Michael, and by the directions of Egwine, Bishop of Worcester, crosses of stone were erected wherever the body had rested on its journey, and the wooden church was replaced by a stone one by the monks of Glastonbury in grateful remembrance of him. Portions of the old cathedral church of Sherborne, erected in the time of St. Aldhelm, still exist, as does "the little church," built by him and dedicated to St. Lawrence at Bradford-on-Avon. The cathedral of Sherborne was served by regular clergy, not by monks, whose day had not then come, for the monastery of Malmesbury, as then existing, resembled more nearly a collegiate or missionary body of the present day, and was very different to those bodies of monks of the great order of St. Benedict, which in the tenth century extended over Europe. It is now impossible to define the plan of this very ancient cathedral, but as the works would be progressing nearly simultaneously with the "Great Church" at Glastonbury, there would probably be some general resemblance in the two buildings. This church of King Ina's at Glastonbury is explained by Professor Willis to have been afterwards rebuilt on a larger scale by St. Dunstan, when abbot, and then again by its first Norman abbot, because, as William of Malmesbury says, "it did not correspond in magnitude with its revenues." It is possible, therefore, that the early Anglo-Saxon Church at Sherborne bore the same relative proportions to its Norman successor as that at Glastonbury; there is, however, a circumstance which, if it could be quite satisfactorily proved, would go far to indicate that the church was as long as it now is. It appears that in 860, Bishop Ealhstan, of Sherborne, a great military prelate, buried in his church the bodies of Æthelbald and Æthelbert, kings of the West Saxons, and elder brothers of Alfred the Great; and the place of this burial is described by Leland to be "behynd the high Altare of St. Marie Chirch, but ther now be no tumbes nor no writing of them seene;" however, about the year 1840, a coffin of Purbeck marble was dug up in the ambulatory, behind the altar, and removed to the north-east corner, and this coffin is believed to contain the remains of one of the royal brothers.

In the year 998, Bishop Wulsin, of Sherborne, by the authority of a charter of King Ethelred, expelled the secular clergy, and introduced the Benedictine order, and became abbot as well as bishop of Sherborne. This bringing in of the Benedictines seems to have greatly influenced the plan of the church at Sherborne, and the point was enlarged upon by Mr. Carpenter, who referred at some length to one of the peculiarities in plan of the ancient and powerful abbeys of the Benedictine order, viz., the large western porches. The remains of a similar feature have been found at Sherborne. These remains seem to have been so much buried as to have escaped the attention of Professor Willis and others who have examined the building. They have been now, however, uncovered, and there are visible the remains of a plinth or base course of a building 29 ft. wide outside, the centre line of which corresponds exactly with the nave. This ancient porch was pulled down either in Norman days, or to make way for the later Allhallows Church of the fifteenth century, and nothing now remains of it above the floor line of this church. The plinth mouldings, especially the upper one, are of a singular type, indeed almost Roman; and those on the south side are partially embedded in the west wall of the abbey church, which wall is partly Anglo-Saxon on the north side, and Norman on the south.

There is a tradition that the church was injured by Danes and Scandinavian pirates, who, at the end of the tenth century, invaded that part of England; however, if this were so, it is not likely it long remained ruinous, for at a great meeting of the Saxon Estates under Ethelred, at Eanham, in Oxfordshire, 1008, the duty of building and repairing churches was strictly enjoined on the country at large.

Altogether there were twenty-six bishops of Sherborne, the last being Herman, the chaplain of King Edward the Confessor. He united the see of Wilton to Sherborne; but after the decision of a great council under William the Norman in 1072, Herman removed to Old Sarum, and commenced its cathedral. The monastery at Sherborne was, however, continued until 1122 (or 1139 as says William of Malmesbury), when Roger, bishop of Sarum, destroyed the priory of Horton, and annexed it to his priory of Sherborne, which he made an abbey, and consecrated Thurstan as the first abbot, and afterwards, in 1125, Pope Honorius II. conferred large grants of lands and endowments on the abbey.

Roger, the third Bishop of Salisbury, was a notable figure in that period of English history, and he was a great builder. The castles of Malmesbury, Devizes, and Sherborne were erected by him in the reign of Henry I. The castle at Sherborne occupied the site of the ancient bishop's palace, which site had been transferred to the see of Sarum. These three castles are described by a contemporary writer as being "for space very large, for cost very chargeable, for show very beautiful; the stones are set in such exact order that the joints cannot be seen, and the whole structure seems to be but one stone." The ruins of the one existing castle, that at Sherborne, show that this is a fair description. There is little doubt that Roger also helped to build the churches at Malmesbury and Devizes, and he also rebuilt the abbey church at Sherborne with Abbot Thurstan. There is a great resemblance in the details and in the interlacing arcades at the church and castle chapel of Sherborne with work at Malmesbury and at St. John's and St. Mary's Churches at Devizes. St. John's Church is a fine specimen of late Norman work. Its central tower is a grand feature, and, excepting for a late parapet and pinnacles, and some filled-in windows, it remains at the present time as when first built. It is oblong on plan; and while the western and eastern arches are semicircular, the other two are pointed, but have similar details. Both the Devizes churches have square east ends, as that at Sherborne had.

But to return to the abbey church at Sherborne, much still remains of Roger's and Thurstan's work. They pulled down almost the whole of the Anglo-Saxon cathedral, leaving only the western doorway of the north aisle of the nave and some portions of the adjoining walls. This doorway (now blocked up) still exists, and is in the early Anglo-Saxon style, with jambs of "long and short work," rude impost moulding, and a projected label moulding continued down the jambs on to a rudely-chamfered base. A very similar doorway exists in the tower of Earls Barton Church, and at Brigstock Church the label-moulding of the tower-arch returns in a similar manner down the jambs. It is almost certain that we have in this doorway the one fragment of the work of St. Aldhelm and King Ina. Now, it is difficult to say with certainty how Roger treated this west end of the church, but there is an archway of his date existing in the west wall of the south aisle. As I believe, this arch gave access to a much wider western porch than formerly, or a chapel of three or more aisles. This view is strengthened by the fact that the west wall of the abbey church is exceedingly thin, is not faced with ashlar as the other Norman walls, and was not, as I believe, an external wall. This western chapel and all other chapelries in Sherborne and its neighbourhood belonged to the abbot, as rector, the nave of the abbey church being the parish church, and certain sacraments of the church, such as baptism, were always required to be held in it,—a rule which in later times led to serious riots and the destruction of the abbey church itself.

In Malmesbury abbey church, chiefly Roger's work, there is, in some respects, a similarity with that at Sherborne. There were then two towers, which were thus described by Leland:—"Two steples, and one that had a mighty high pyramis, and felle dangerously *in hominum memoriâ*; it stode in the middle of the transeptum, the other yet standeth a great square tower at the west end." Now, the old seal of Sherborne Abbey represents a church with a western and another, or central, tower, and a lofty western porch. There is the vagueness and disregard of details usual in old seals, and I do not think the date is known, yet it seems to show a Norman church, treated in a rather free and easy manner, and gives a general idea of Roger's church. If this is so, it would seem that the western tower may have been raised on the eastern portion of the early porch. There are no traces of this western tower now left, excepting, perhaps, a foundation of great thickness, distant some 20 ft. from the present west end, which may have belonged to it.

Leaving for the present the west end, which presents so many knotty points, we find the piers of the central tower are Roger's work. This tower, like that at Malmesbury and Devizes, is broader from north to south than from west to east. The arches opening into the transepts are narrower than the others. At Sherborne and Malmesbury they are highly-stilted semicircles; at Devizes, they are pointed. The two coupled shafts under the lower order of the arches are identical in detail at Sherborne and Malmesbury. The western arch is of a depressed form, partly due to its original construction, partly to the settlements which have so often put the tower in danger. The heart of the north and south aisle walls are probably of this date, and it is very likely that the core of the nave-piers, cased in later days, is Norman work. The Malmesbury piers are great cylinders, and from the portions of the responds left at Sherborne in the tower-arch piers, it seems as if they may have been so there, but it is, perhaps, more likely they were of square or oblong shape, with shafts like those opening into the transepts from the nave aisles. There are short lengths of the Norman string-courses existing in the north-west tower-pier, which are valuable as defining the respective heights of the abacus, the string-course under the triforium, and that of the clearstory.

There are no evidences of the Norman triforium, but there is a portion of one of the clearstory windows in the east wall of the north transept, which has rich zig-zag mouldings, supported by a shaft with a sculptured capital, in character with those of the south porch. This porch is a very fine example of the date. Its arch-mouldings and groining-ribs are exceedingly rich in detail, as is the inner doorway. The choir and monks' stalls were, as was then generally the case, placed under the central tower.

The external and internal masonry facings of

* Substance of a paper "On the Benedictine Abbey of St. Mary, Sherborne, with Notes on the Restoration of its Church," read by Mr. R. H. Carpenter before the Royal Institute of British Architects, on the 19th ult.

Roger's work are exceedingly well executed in courses of Ham Hill stone, averaging 7 in. to 10 in. high, with close joints. The inside core of the walls and piers, however, was discovered by my father to be no better than the generality of Norman builders' work; and the fall of the central tower of Malmesbury just before Leland's time is thus accounted for. The old roofs were of a higher pitch than the later ones, especially that of the aisles, the slope of which is indicated by a portion of the coping-stone on the inside of the western wall. It must have reached considerably above the sill of the present clear-story window, and the high-pitched roof of the porch would have gone back into it.

In the thirteenth century, at the time of the building of Salisbury Cathedral, the lady-chapel at Sherborne was built (possibly by the same workmen), and Bishop Roger's Chapel (the chapel on the north side of the choir) had its north and east ends rebuilt. The work in the lady-chapel, of which one bay only now remains with its groining complete, is exceedingly beautiful, and the mouldings and carved capitals much resemble the Salisbury work; and, although covered with whitewash (the chapel now forming part of a house), they yet retain their original colour and gilding. Many of the shafts are of Purbeck marble. The foundations which still remain show that this chapel was of three bays. It opened by the arch, now blocked, into the eastern ambulatory of the choir, which was groined in the style of the chapel, as is indicated by the lines in the wall of the former wall ribs, and marble abacus mouldings of the vaulting-shafts.

The changes made to the church in the fourteenth century were singularly few. Only a few windows (four in number) were inserted in the old wall of the north aisle of the nave, called the Trinitie aisle. These were, however, soon blocked up by the building of the cloisters, by Abbot Fryth, about 1360, and the aisle then acquired the name of "the dark aisle"; and, at the end of the fourteenth century, was built the church of All Hallows, adjoining the west end of the abbey, on the site of the west porch tower and aisles. These were all pulled down to the new church floor level, which was some 2 ft. above the abbey church level; they therefore left standing the curious plinth and base of the great porch, just high enough for the pavement to go over it.

The new church was of three aisles of unequal widths, with a narrow chapel on each side, at the ends of the ambulatory, between its altar and the abbey church doors. The aisles were divided by arcades with slender pillars, the responds of which remain against the west wall of the abbey church. The masonry is not equal to that of the other buildings, and the stone is soft. The line of the long low-pitch roof of this ambulatory is still marked on the west wall of the abbey church. The central aisle itself most probably had a clearstory, for there is in the gable of the old abbey guesten hall the springing stones of a flying buttress, which rose up to where the clearstory wall would be; but the roof on the ambulatory would be at the level of the aisles, which were not vaulted, but had curved wooden braces rising from wall-shafts. The north aisle wall of All Hallows still stands as high as the window-cills, and is arranged in a series of shallow recesses. The vicars of this church of All Hallows were appointed by the abbots, who held the great tithes as rectors, and still insisted on baptism being held in the nave of the abbey as the parish church of Sherborne. The vicars seem to have resented this; and on the abbot fixing a small doorway, evidently moved from some other place, in the old and wider Norman archway of the south aisle, where the font was, they made it a cause of dispute, and the old enmity between the regular priests and the monks broke out. Leland gives a full account of this. It seems to have extended over many years; during which the great work of the reconstruction of the abbey church was begun by Abbot Bruning, and his successor Abbot Bradford.

The choir was the first portion taken in hand, and the whole of Roger's work was pulled down to the floor level, and the new work built resting on it. The upper stage of the tower was rebuilt, with a new panelled eastern arch under it, in place of the Norman one, which was altogether removed; the walls of the choir and its aisles, including the springing stones of the groining (but not the groining itself), were carried up, and were temporarily roofed in and thatched until such time as it was considered safe to construct the groining. It was just then that the long-standing disputes between the secular priests of All Hallows and the monks reached a climax; and the priests erected a font for themselves in All Hallows, saying that the doorway into the abbey church was "too strait" for them, and that the monks would ring their bells just at the time when the sacrament of baptism was being administered, and further that the monks had moved the old font in the abbey church to another place. At the Easter processions, when the bishop was present, the case was laid before him, and he ordered:—1. The abbey font to be placed in the old position; 2. That the door should be enlarged; and, 3. That the bells should not be rung till after the sixth hour.

When, in January, 1436, the faculty for this was granted, and the monks replaced the old font and removed that in All Hallows church, the townspeople, aided by the Earl of Huntingdon, resisted and poured into the abbey church, and in the riot "a stoute bucher defacid clene the stone font," and a "priest of All Hallows [says Leland] shot a shaft with fier into that part of the top of St. Marye Church which divided the est part that the monks usid from that the tounsemen usid, and this partition chaunceing at that time to be thakkid in the rofe was sette a fier, and consequently all the hole chirche, the ledde and the bells melting, was defacid. But Bradford, abbot of Sherborne, persecutid this injurie, and the tounsemen were forcid to contribute to the re-edifying of the chirche."

The injury sustained was doubtless very great, especially to the old work of Roger's nave then standing. The choir walls were burnt and reddened by the fire, and are so still, as well as the great tower piers, where the stalls had stood; and the springing stones of the vaults are also much burnt. The flames seem to have specially raged against the east wall of the tower, on which their marks are everywhere visible. The lady-chapel and the porch, however, escaped, as their roofs were lower, and they were protected on the under side by their groining from the flames rising into them. Abbot Bradford, a man of great energy, at once set to work to repair the mischief, and arranged his designs for the reconstruction of the whole church in harmony with the new choir; and, forcing the people to contribute, he at once erected and completed the groined vaults of the choir and its aisles, leaving the old burnt stones to tell their tale of the harm done; and as an additional remembrance, he carved on some of the bosses a representation of a burning arrow. The design of the choir is exceedingly fine, by reason of the strong emphasis given to its vertical lines by running the shafts and panelling down without an interruption from the groining to the floor, and recessing the arcade arch to the plane of the mullions of the windows and running down these mullions, forming a series of blank panels for the triforium stage. Great effect of height is given by this, and by the high level at which the springing of the groining is fixed. This vault is exceedingly beautiful in effect, though surpassed by that of the nave. Neither of these vaults is mentioned by Professor Willis in his most valuable paper read here in 1842; an omission which it is difficult to understand, as they illustrate a type of vault which combines the beauties of the fan and lierne system to a much greater degree than any of the instances he gives. He mentions the vaults of the cloisters and porch at Gloucester, built about this time, as "the work of men of bold and original genius"; and he thinks that to them may be assigned the invention of fan-vaulting. Yet neither in boldness nor beauty of design do these Gloucester vaults equal those of Sherborne.

The choir vault is of rib and panel work. Excepting where the tracery requires to be sunk out of larger stones, these and the ribs are all in Ham Hill stone; and the filling in, originally of tufa, is now in the same stone. The thrust of the vault is supported by flying buttresses and heavy pinnacles. It seems that as the choir included the space under the tower, it was decided to continue the vault through from end to end without a break. So they boldly removed altogether the eastern arch of the tower, and the arcade passage and wall above, as much as was necessary, for a new and loftier panelled arch to be constructed, identical in curvature and height with the transverse rib of the vault (possibly this was done before the building of the upper stage of the tower). The aisles are groined with the same type of fan-vaulting as the choir, but of different design, and where the vault crosses the early English arch of the lady-chapel the fans are supported on pendants. At this time there were added eastward of the transept the chapels called the Wykeham Chapel, and that of the "Sepulchre"; both have fan-vaults. And Abbot Bradford seems to have arranged for prolonging the choir aisles as chapels. These, however, were not carried out by him, but by his successors,—Abbot Saunders and Abbot Ransam. After Abbot Bradford's death, in 1459, the works were continued by the pulling down of the old Norman clearstory and triforium of the nave, and the refacing of the south aisle and the insertion of new windows; for the refacing of the wall the old Norman moulded and carved freestone, turned with its ornamented face inwards, was used to a very great extent. When Abbot Peter Ramsam succeeded Saunders in 1475, and actively pushed forward his predecessor Bradford's grand plans for the nave, he cut the Norman piers and cased them up, forming an irregular octagon in plan, and treated them in a most massive and solid manner, with continuous panels in both arch and pier. The old irregular setting out of the Normans' work required the arches to be in different shapes, more or less pointed. He then groined the aisles, but possibly from motives of economy he did not use fan-vaults, but lierne-vaults of a very domical form. The superstructure of the nave was then proceeded with, and here Ramsam disregarded the irregular centres of the piers below, and spaced out *equally* the five bays of the clearstory. The transverse arch of this vault is more pointed than that of the choir, and is so designed and executed that it requires no flying buttresses nor any abutment beyond the thickness of the wall from which it springs, and yet it is as perfect as the day when it was erected.

In 1504 Ramsam died, and in little more than thirty years after his death John Barnstaple, the last abbot, surrendered the abbey to the Crown, and it was granted to Sir John Horsey, knight, of Clifton Maybank; however, fortunately, at that time the state of All Hallows Church, for some unexplained reason, was very ruinous, so the parishioners sold its aisles and roofs, and by bargaining with Sir John, bought of him, by degrees, the nearly new and magnificent abbey church and some of the abbey buildings, for the insignificant sum of 230*l.*; and it might be noted that the lawyer's bills for drawing up the necessary agreements only amounted to 14*d.* The domestic buildings of the abbey were at the same time granted to Sir John Horsey. In the centre of the cloister garth, as at Canterbury, was a hexagonal vaulted building, built by Abbot Mere, about 1510; into it water was brought by leaden pipes, and it was used as a lavatory. It was sold to the parish for 10*l.* by Sir John Horsey, and is now re-erected in the town, and serves a like purpose as the covered market-crosses of Chichester and Malmesbury. What is now left of the abbey domestic buildings owe their preservation to some portions having been granted by Sir J. Horsey for the school founded by King Edward VI., and more recently by the gift of other portions of them by Mr. Wigby to the school. Unfortunately, the first governors pulled down two-thirds of the lady-chapel and the eastern chapels, in order to erect their new buildings; however, what was left of the old buildings, including the abbot's lodgings and hall, the guesten hall, &c., have been carefully restored and utilised as school-room, chapel, studies, &c., for the school, under my father's direction. The church being nearly new at the time it was bought, was spared; but either then, or in the days of the Civil Wars, the tombs, of which there were several, were destroyed, and it is a wonder that the whole church did not share their fate, for in 1643 there is an entry in the register:—"Paid for drying a barrel of gunpowder in the Vestry 3*s.*"! The stained glass seems to have survived to a great extent up to the beginning of this century, as it is described by Hutchins in his County History, as having figures and many coats of arms painted on it; the local glaziers are, therefore, to blame for its destruction, as no remains whatever existed when my father reported on the church in 1849.

The central tower piers seem to have given way in early times, for the "Perpendicular" work was carefully adapted to the old settlement; matters, however, got worse when the number of bells was increased, and especially when the great bell, weighing three tons, was presented by Wolsey to the church; it is supposed to be the smallest of the peal from

Tournai, which he distributed to Lincoln, Oxford, Exeter, &c. We have no record of what was done towards repairing the piers until 1828, when Professor Wilkins (the architect of the National Gallery) was called in to advise and report to the parish. His report is a very elaborate and interesting one, and he seems to appreciate the building and speaks about it almost with enthusiasm; some words in his report show in what a "conservative" manner he, even in those early days, would have had the restorations carried out: he says, "In executing all works of repair or restoration, the utmost care should be taken to follow the original forms in mouldings and ornaments; a squeeze in clay may be taken from the most perfect and a cast in plaster made from it, from authorities alone thus obtained the workmen employed should be compelled to copy;" he fully explains how the bells caused the piers to be unequally weighted, and how the weight of the upper stage of the tower was carried by the shafts of the gallery instead of by the outer wall, in which evidences of early settlements then existed. The eastern arch, that inserted by Abbot Bradford, had sunk considerably, bringing with it the east wall of the tower, in which were great fissures. He proposed to relieve the weak walls of the weight of the bells, and transfer it to the stronger walls over the north and south arches, and to carry the bell-framing on two great double cast-iron girders, each pair weighing six tons; these were designed by Mr. Bramah, and being similar, as he says, "to those we made for supporting the large tower over the saloon window at Windsor Castle." The advice of Professor Wilkins was not, however, followed; but, after a fall of a stone from the vault in 1830, an alarm was created, and some works were carried out under a Mr. Percy, who introduced iron bands round the tower, and screwed and bolted up the ribs of the fan-vault to a network of iron ribs above them; he also supported the bell on two strong wood and iron trusses from north to south, thus adopting in principle Wilkins's advice.

In 1848 my father was called in to advise the parish; and in his report he specially drew attention to the serious fissures which had appeared in the choir vaulting, caused by settlements in the buttresses by the removal of the whole of the concrete filling in of the pockets of the vaults. [Wilkins, too, had remarked on this.] Under his direction the nave and transepts were restored, and the great west window lowered so as to get three rows of lights instead of one; "as," he says, "the author of the design of the church would have desired, had not the now destroyed building abutting upon the exterior rendered such a treatment impossible." The south porch was in a most ruinous condition, and had to be taken down; and, in the rebuilding, my father completed the original high-pitch gable and the tops of the pinnacles, instead of replacing the flat perpendicular quatrefoil ornamental parapet; and though this restoration has been questioned, I cannot but think that, as the whole was *rebuilt*, the best course was adopted. The tower then demanded serious attention, especially its old north-east and south-east piers: both were out of the perpendicular; the faces were bulged outwards, and the bases crushed. The foundations in the gravel were found to be perfectly good; but, on boring openings quite through the heart of the piers at different heights (after the erection of centres and shores), my father discovered that they were "filled with rubble work, which *may* have been grouted together, but the materials used for such a purpose have now entirely lost their adhesive qualities, and have become no better than road drift, and the whole work of supporting the tower has fallen on the casing of ashlar work, which has proved insufficient to uphold the burden imposed upon it." This ashlar was "in courses of 6 in., 9 in., and 12 in. in height, and 9 in. to 16 in. on the bed, *without any bond or ties*." In fact, it had the old and oft-repeated defects found in Norman towers, which have resulted in the fall of one after another of them. Professor Willis gives a long list of this unfortunate series of catastrophes. However, at Sherborne, acting on my father's advice, there were at once erected in the north, south, and east arches, and in the adjacent arches of the choir and aisles, solid walls of whole timber in four thicknesses, bolted and framed together, and resting on solid beds of concrete carried down to the gravel. On these rested the centres, which were wedged up tightly to the arches by screw-jacks; so much so, that my father himself was able to move the key-stone of the northern arch. Having, by means of these centres, and the shores and needles applied, gained complete command and support of the weight on the haunches of the arches, the whole of the two piers (excepting the panelled facing under the eastern arch, and the portions of the choir and transept responds) was taken out, and rebuilt in solid coursed masonry, which was previously prepared and arranged in accurately-fitting courses, coinciding in height with the old ones. The result has been perfectly successful. There was not then, nor has there been since, the slightest movement in the piers, or the arches resting on them; and the cost, together with the new bases to the other piers was under 4,000*l.*,—a very different sum to the gigantic cost of the very similar works at Bayeux, which amounted to 33,000*l.* It is, I think, a matter of regret that at Bayeux the architects have rebuilt the piers in courses averaging about 1 ft. 9 in. high, instead of the ancient 7-in. courses. The result in the appearance of the piers is, to my mind, very unsatisfactory; and it is a question if there has been any advantage to compensate for it.

The restoration of the choir under the late Mr. Slater was commenced in 1856, at the sole expense of Mr. Wingfield Digby, of Sherborne Castle, as a memorial to his uncle, Earl Digby. The state of the groining was so insecure that the walls had to be bound together by longitudinal and transverse timbers, so arranged as to carry the weight while the flying buttresses were rebuilt, and concrete laid and inverted arches turned between the foundations of the piers. These great timbers carried the centreing of the groining and a floor above it, so that the whole was readily taken down, repaired on the upper floors, and then refixed at its original curve (the crown of the old vault having dropped 7 in.). This was all completed in three months, at the small cost of 425*l.* The whole fabric of the choir and its aisles was restored, re-roofed, and seated with new stalls, made out of the old oak beams of the choir roof; the ancient stalls were also, of course, refixed. Many ancient tiles were found, and their patterns were reproduced in the new pavement. The stonework of the walls and vaults had been covered with yellow ochre: it is now cleaned, and the rich yellow tone of the Ham Hill stone, tinged in the choir with the deep red marks of fire, has a most beautiful effect, and shows how important for internal effect is the choice of a good coloured stone, and how fine the effect of one grand tone of colour is,—be it grey, like Westminster, St. Ouen, Tournai, or St. Stephen's, Vienna; red, like Chester and Lichfield; or yellow, like Sherborne; and no amount of painting or relieving by grey or varied marbles seems to be nearly so satisfactory or so dignified.

In the discussion which followed,

Mr. Ewan Christian, responding to the call of the chairman (Mr. Charles Barry), said he had never seen Sherborne Abbey Church except from a railway carriage, which did not afford a very satisfactory view. He thought the Institute ought to specially thank Mr. Carpenter for the manner in which he had brought the subject forward. If the Institute had more of such beautifully-illustrated papers it would be the better. He did not quite gather that there was very much ground for what Mr. Carpenter said about the porch; he did not appear to have discovered any very extensive remains. He begged to propose a vote of thanks to Mr. Carpenter.

The Chairman said that, like Mr. Christian, he had not had an opportunity of seeing the Abbey Church, but he wanted to express his appreciation of the great antiquarian research and learning which the paper evidenced, in addition to the careful study of the building. One thing which struck him was the little regard which our ancestors of one generation seemed to have had for the work of their predecessors. They seemed to have carried out alterations and additions to buildings which we should have hesitated to touch. It was often said that we in the present day were miserable hands at construction as compared with our forefathers, but he thought we had no very great cause to unduly depreciate our work. Those who had examined old buildings had found, as in the case under notice, many instances of what was very bad construction. For instance, the cores which formed so large a part of many old buildings could not be approved. Sometimes this bad construction was due to over-daringness; sometimes to what we should deem want of knowledge. The fact was, our forefathers were as weak and as mortal as ourselves, and that in ancient times, as amongst ourselves, there were some good men and some bad men. At the same time, architects of the present day might be said to have one excuse which our forefathers had not: he referred to the multiplicity of labours which the modern architect had to perform,—labours from which, as far as we knew, Mediæval architects were free. The "old men" had time and opportunity to elaborate and think out their designs to an extent which we could not hope for in these days when architects were saddled with so much of purely business details.

Mr. Ewan Christian, interposing, said that before the chairman put the vote of thanks to the meeting, he wished to say a word in defence of the cores used by the Mediæval builders. The principle of this mode of construction was good, provided the work was good. At the Bishop's Palace at Winchester there was an exceedingly good specimen of a coarse rubble core of flintwork. It remained in great overhanging masses, without any props or struts. It might not be generally known that all the piers of the nave of Worcester Cathedral were of rubble-work faced with stone, and they had stood admirably.

Mr. Phené Spiers having suggested that certain of the illustrations should be published in the Institute's "Transactions" with the paper, the vote of thanks was carried with acclamation.

Mr. Carpenter, in response, said that he might state that all the proportions of the building bore some relation to an equilateral triangle. As to old work, he had found that, in a church in Northamptonshire, all the work of the Saxon period was as hard as Norman work had the character of being, while the Norman work itself was so much rubbish.

ORNAMENT AND COLOUR.*

The next point to be considered is the treatment. There are two peoples that have achieved the highest artistic excellence we can conceive—the ancient Greeks, and the Northern Italians of the fifteenth and sixteenth centuries. We may admire the grandeur and magnificence of Egypt, but it is the semi-barbarous magnificence of a half-civilised people. We must be astonished at the creative power, the fertility of invention, and the sublime effects produced by the Moslem Arabs, and the Christian Mediævals; but in neither of the two latter cases was there anything approaching to the exquisiteness of finished perfection.

The Greek sought perfection in simplicity; he sought it in his oratory, in his poetry, in his sculpture, in his architecture, and his ornament, and of the latter we have now only to speak. He went to Nature, and conventionalised and abstracted; he omitted those parts which were unsuited to the material or to the purpose, but he kept the exquisiteness of form and the vigour of growth. Many of you here have been struck by the beauty of form of a flower; have drawn it; and you may even have been willing to submit your drawings to a master's eye; but, for all that, you have felt that the highest excellence of its form, or the vigour of its growth, has evaporated in the process (but not to miss the elegance is an art to which some living artists have attained). You may then have tried to conventionalise this flower for ornament, and then you have found that your drawing from Nature was elegance itself as compared with its conventional representation. You know, then, what study and what a happy genius is required to keep the elegance in its conventional form.

I will give you a remark by a great artist† not long since dead. He was criticising some conventional reeds, and said they were bad. "How am I to improve them?" said the designer. "Take a room by a river-bank where reeds grow, and make studies from daylight to dark for six weeks, stay six weeks longer, and watch for the same hours their motions and their changes, then go home and draw your impressions." It is only by such labour of love that such exquisiteness as that of the Greek can be got, and to such of you as have so ardent a love, I would recommend a thorough study of the figure, not to make you forsake ornament, but to perfect your faculties. You must draw figures with more exactness than you need draw flowers, even if they are only to pass muster. You must more constantly be learning purity, elegance, and subtlety of line;

* By Mr. George Aitchison, B.A. See p. 343, *ante*.

† George Mason.

and you have a wider knowledge to bear on figure-drawing than on anything else, but I would not have you think that there is greater elegance of line in any human figure than there is in some of the more exquisite flowers.

Nothing can be more opposed to Greek than Arab art, and yet Greeks and Arabs shared an equal gift; they knew where to put ornament; how to keep it subservient to the general effect; and how to make the ornament itself both beautiful and attractive. The interior of the mosque of Sultan Hassan at Cairo is so magnificent in its effect, and the ornament is so exactly placed where it should be, that you are tempted to exclaim, "This must have been done by the Greeks after they knew the pointed arch." Arab ornament, taken by itself, is the antithesis of Greek. It is by no means exquisite in form; it is complex in the highest degree. The main ornaments are not unfrequently again ornamented with minute patterns: it has the fatal error of seeming in motion, whereas one of the first requisites of good ornament is that it should have repose. It is almost impossible to classify *any* ornament, but it is especially difficult with Arabian, as it was constantly changing in character, from its first imitation of Byzantine to the fall of the Arabian dynasty. You must remember that it ceased to be purely Arab in a very short time in Spain from 711; less than a century from the Hegira it was Moorish; and it became debased under the rule of the Seljuck and Osmanli Turks; but taking it at the time when it assumed the marked character of what we call Arab art, we may say there are four main schemes of ornament:—

1. Border patterns of intertwining scrolls, not unfrequently two running in opposite directions, on which verses from the Koran are frequently superposed.

2. Circular or rectangular spaces filled with close spirals springing from one stem, and consisting of stalks close together, with flowers and leaves interwoven amongst the stalks.

3. Intricate patterns, mainly of straight lines forming stars, lozenges, and irregular pentagons and heptagons, with the spaces filled in with disjointed ornament.

4. Intricate patterns only, mainly formed on curved lines, the lines formed into stalks and leaves, and certain points as flowers.

I shall trouble you but little more with descriptions, but as we are now greatly under the influence of Chinese, Japanese, and Indian art, it would not be right to pass these over without a remark. The Chinese and Japanese have virtually the same art, though varying somewhat in form, colour, and treatment, and the Japanese are decidedly more inclined to preserve balance as a principle than symmetry; they keep the main body of the ornament in one corner of a square or in one part of a circle, but so skilfully is it done that the eye is satisfied. There are, too, some of the Chinese oddities carried to excess in Japanese work, which I think detestable,—the accidental sticking of things ugly or indifferent in themselves to other objects. This you may see on a plain cabinet; two or three dice, threads, bits of plaid or chequered stuff, haphazard on it as if they had been thrown at it and stuck, and the representation of a bit of a table-cloth, napkin, or dress that has been hung over a cabinet or box so as to cut off a corner. Though it is difficult to mistake either Chinese or Japanese ornament, it is impossible to lay down any principle on which they worked. I am inclined to think that they acted as some of our manufacturers are said to act who subscribe to the Society for the Propagation of the Gospel and the Peace Society, but also do a good trade in idols and war paint.

The Chinese supplied Europe, Asia, and Africa with porcelain, and however just was the principle they employed for themselves, they were quite ready to sacrifice it if some thing else found a better market; some of their ornament is founded on what we should call proper principles; the whole is spaced out geometrically, the main points or centres are ornamented with flowers proceeding from one stem, and subsidiary stalks and leaves most perfectly fill the intervening space, or the whole intervening space between the main pattern is marvellously filled with dots, circles, chequers, curls, or the like. The art of equally filling a space with a pattern is one of the most difficult, as it is one of the most necessary, arts of ornament. A great deal of Chinese ornament is disjointed, some is as bad as that I just spoke of amongst the Japanese, but rarely so pronounced. You have probably heard of the American architect who turned his Corinthian columns upside down for the sake of originality. The Chinese know as well as any skilful ornamentalist that where there are lines of structure on different planes, as in pottery, they should be treated separately; but either for a market or for the indulgence of a depraved caprice, they will form a pattern on a plate half on and half off the rim, or copy a print that has been stuck on a plate with half the figure on the front and the other half on the back. There is one thing in which the Chinese and Japanese scarcely ever went wrong, or at least until a late period, and that was in their colour; and we must overlook these eccentricities in consideration of the endless variety of design they have given us.

Indian ornament has borrowed much from the Persian and the Arab, and a little from the Greek and the Chinese. A great deal of Indian work is so completely filled with floral ornament that the ground left is a mere line or edging, and even where they leave any ground they have the skill to make the ornament and the space so perfectly equal that they can ornament a sword-handle with a most elaborate floral pattern, and yet if you shut your eyes and grasp it you cannot feel that it has been more than mechanically roughened to give a grip.

I must ask you to strike your pencil through the word colour, for I shall, I fear, barely have time to make a few remarks on what I have already said. I have brought you into a sort of chaos, in which all styles of ornament that were ever used are jostling against one another, but this is the exact position in which we are in the present day, not only as regards ornament, but as regards all the arts of design.

You must have heard the question asked, either about ornament or about buildings,—what do you call this style? Is it Greek, Gothic, Pompeiian, or Moresque? And if the designer declines to class it under any well-known style, he is looked on as a person who describes himself as of no religion,—a rather dangerous person, and to be avoided. Now, this supposes one of two things: either that there can be no more invention, because every form of the beautiful has been used up (as an eminent writer on one of the fine arts has decided), or that invention in the fine arts does not exist; but, truly, it is not complimentary to the arts to suppose the only possible alternative to be that of the rival broomsellers, where one only stole the materials, while the other stole them ready made. A more monstrous assertion can scarcely be conceived than that of supposing all forms of beauty to be exhausted. A nearer approximation to the truth would be that, in the hands of true inventive genius, one plant might be used to give lessons of beauty that might fill the world with more beautiful ornament and building than it has ever seen. I say this advisedly, for who could suppose that the debased egg and tongue could have given rise to one of the most striking architectural peculiarities the world has seen; and yet, if we may believe Owen Jones, the stalactite ornaments of the Moslems was founded on the egg and tongue.

If I may give advice to art-students, my first word would be, remember the eighth commandment,—"Thou shalt not steal." If you will steal, your case is hopeless; you live in the nineteenth century, and if you are to be an artist, however humble, you have to give to people of the nineteenth century some new revelation of beauty; if you feel you cannot do that, then you are not an artist. Practise your skill for your own delight, but get your living in some honest way. Next, I may say, you cannot be an artist unless you love something,—something, too, of the visual beauty of nature.

An eloquent writer, whom I quote from memory, says,—"The base Renaissance architects of Venice liked masquing and fiddling, so they covered their work with comic masks and musical instruments." There were other things they loved and did to perfection; but let that pass. Still, as far as I can see now, no one loves anything. Can any one point to a building, or any ornamental work whatever, of the present day, that could show the love of the artist for any single beautiful thing in the heaven above, or in the earth beneath, or in the water under the earth? The only instance of loving work that I recollect was in a criticism on a provincial town-hall of the last century. "The architect, for some mysterious reason, loved pumice-stone, for he had carved the good solid freestone of the lower story to imitate it; he loved punch and turtle, and ornamented the wall space of the upper story with the soup-tureens and punch-bowls he loved so well when full; he love figures, for he ornamented the pediment wit them. There was a drunken long-shore ma offering a red herring on a toasting-fork to Billingsgate fishwoman in scanty clothing, at th smell of which she was turning up her nose but this was dignified in the guide-book descrip tion as Neptune offering the spoils of the sea t Britannia."

There is another important consideration,— one, indeed, which is as needful as the invention,— the love and skill of the artist, and that is the love, taste, and knowledge of the public. N great period of fine art, or, for that matter, o any art or science, ever existed without there being a public to point the way by its desires, t restrain extravagance by its taste, to appreciate skill by its knowledge, and to honour it by its applause. Art, like the republic of which we have heard so much, is one and indivisible; i is the creation by genius of certain forms of the beautiful within the lines of public taste; and in every true period of art the logic of this public taste pervaded everything. The Greek sculpture, architecture, and ornament were all suited to one another; all were simple, refined, and elegant,—the dress, the furniture, the arms and armour, the jewelry, the pottery, everything that we have were consistent and congruous with one another. Any of you here would feel how incongruous a Chinese joss or a Gothic image would be in a Greek temple. The Mediæval was the same. Every building, every yeoman's house, hospital, monastery, church, castle, tower, bridge, or cathedral was built and ornamented on the same principle, modified by the requirements. Every piece of furniture or of dress was ornamented in conformity to the general taste. A lock or a reliquary was as much twisted and pinnacled, cusped and crocketed, as a cathedral.

Our Methodist forefathers were nearer art than we; they did not find ugliness repulsive (and I do not think we do), but they wanted everything they had to be good, substantial, well made, convenient, sober, and without ornament; they did not mind the gouty legs of their tables; they wanted them solid, and they wanted them round, so that they might not break their shins against the edges. Now here is a principle, then, almost universally prevalent, and if we had it now on that foundation we might gradually impart grace, elegance, and ornament; but what can be got out of people who want flimsy shams, who want a poor imitation of the last thing in fashion, a joss-house to-day, a Gothic cathedral to-morrow, a Greek building next, then an Egyptian, then Renaissance, Indian temples, Queen Anne, Louis Quatorze, or Japanese?

I believe in the usefulness of beauty; it is, next to air, the one great free gift Nature spreads out for the delight and instruction of all; it is as free to the poor man as the rich; and I cannot believe that we do not seriously injure ourselves by our ugly surroundings. Study the beauty of one blade of grass or one flower, learn to appreciate and understand its subtle graces, and you would improve your taste more than by reading all the treatises on art that were ever written. Most things in nature are beautiful, and yet, as far as we know, there is not a particle more than is required for utility.

I believe that what real taste there is in the country tends towards elegant simplicity, and if you would only develop this from the smallest and commonest article, we might work upwards to the highest. What a beautiful thing would a shoe be if it were moulded to fit an uncrippled human foot (supposing such a thing exists in England). Some of you may have seen a Greek greave, and for my own part I have seen nothing more beautiful, and yet it was merely moulded to fit the leg with two lines, and some dots between for the edge finishing. A dinner-knife made to take hold of and to cut would almost certainly be elegant, but this cannot be said for the present clumsy parallelograms of steel and ivory with rounded ends. We might have our crockery elegant in shape, even if it were plain white, and, at least, even if we only got to love a scarlet-runner, we might get some ornament. There is a small band of artists who are trying to teach the public the exquisite beauty of the human form,—Leighton, Watts, Poynter, Albert Moore, Armstrong, and a few others,—and as purity and elegance of form will only harmonise with other things pure and elegant, it might be a leaven to leaven the whole lump, but I fear their teaching is like the voice of one crying in the wilderness.

If I have led one person to learn the lesson

taught by the elegance and simplicity of one blade of grass, and so to avoid and discourage ugliness, tawdriness, and untruth, my lecture will not be thrown away.

A YEAR'S WORK IN A RURAL SANITARY DISTRICT.

A fair idea of the nature of a year's work of a rural sanitary authority may be gathered from the following notes of works, operations, and proceedings, either accomplished or in course of execution in the current year, in the rural sanitary district of Alnwick, Northumberland. In the matter of water-supply, the high-lying village of Newton-on-the-Moor has been supplied with spring-water from a spring nearly three miles distant, on the side of a hill at Glantlees. A Government inquiry was held, plans approved, and the works let and executed. The works consisted of a reservoir, built by the side of the spring, to hold 8,000 gallons, and the conveyance of the water, through pipes, by gravitation, down the hill, across the country, and up to the high ground on which the village has been built.

Plans have been also made for the supply of the fishing villages of Dunstan and Craster with water, and an analysis made of the waters of a spring at Spittleford, proposed to be used, and a Government inquiry has been held, of which, however, the results are not yet known.

At Embleton a well has been sunk by the inhabitants for the increase of their water-supply, and the existing well has been repaired.

For Radcliffe Terrace, a colliery village near Amble, where the only water to be had in the dry season is brought round in a barrel-cart, and sold by the pailful, a proposal and plans have been made to convey water from a well at Amble, the estimates for which undertaking are now before the Local Government Board.

And some small repairs have been made elsewhere, such as re-laying water-pipes broken by a steam-plough at Christon-Bank; and the removal of the roof of an alcove, in which the well at Hanxley is placed, to prevent the perpetration of nuisances there.

In the matter of sewerage, Newton-on-the-Moor, formerly without a sewer, has had a new 6-in. sewer laid down throughout the village, to which private sinks and drains are being connected. At the village of High Buston, a new 6-in. sewer has been laid down, to which private drains will be laid. The Board of Trade has approved of a plan submitted for the improvement of the eastern sewer outlet at Alnmouth; and a new 9-in. main sewer has been laid down at Grosvenor-place. For Embleton and Craster, plans of systems of sewerage have been made, and a Government inquiry held, the results of which are not yet known. Sewerage works at Amble, revised, after a Government inquiry, have been set and commenced, the owners of property connecting to them. At Rock Moor House a new system of sewers and drains is in course of execution by the Lord of the Manor. At High Hedgley the sewers and drains have been remodelled; and at Rennington Vicarage, Glanton, and Eglingham, new sewers, drains, and sinks have been laid down.

In the matter of condemnation of houses as unfit for habitation, a house at Embleton has been shut up; a house at Priest's Moor has been pulled down; and notice has been sent to the owner of another at Shipley Mill to amend it.

A polluted well at Amble has been closed; and the owners of the Hooket coal-pit have been required to provide water for the pitmen in their employment and their families.

Private supplies of water by gravitation have been made in a very complete manner at Harehope Farm and Broomhill Farm.

Two parochial committees have been formed and are in operation: one at Amble, the other at Embleton. A lodging-house at Embleton has been examined and bye-laws sanctioned.

At Alnmouth, a depôt for midden rubbish has been made, instead of allowing rubbish to be thrown into the sea and elsewhere.

A large number of notices have been served during the year, ordering the removal of nuisances, &c.

About a dozen structural improvements have been made in the district:—As at Warkworth, where the top of the village has been rebuilt; Field House, where new cottages have been erected; at Shawdon Wood House, where there is a new farmhouse; the toll-gate on the North-road at Alnwick, which has been enlarged; Togston Low Hall, where there are new conveniences; at Stamford, where there is a new farmhouse; at Embleton, where there are more conveniences in the Blue-row; at High Hazon, new privies; Low Hedgeley, new cottages; Bilton, new houses, &c.

Notwithstanding these active measures, and the general vigilance they suggest, fever has occurred at Alnmouth, Broxfield, Warkworth, Heckley High House, Dunstan, and Christon Bank. We can only conclude the cases would have been more numerous if these measures had not been taken; and we can only hope they will decrease, in this and in every other district, as time admits of the more complete administration of sanitary laws.

THE RIVER THAMES.

THE INSTITUTION OF CIVIL ENGINEERS.

At the ordinary meeting on Tuesday, the 27th of March, Mr. George Robert Stephenson, president, in the chair, the paper read was on "The River Thames," by Mr. J. B. Redman, C.E. He said it was not known whether the Romans or the Saxons carried out the earliest engineering works on the Thames. These were the embankments of the lower reaches, which shut out about thirty square miles of saltings, formerly overflown, but now from 3 ft. to 7 ft. under high-water spring-tides, representing at the lesser depth 70,000,000 tons of tidal water. The tidal column from Teddington to Gravesend was equivalent to 107,544,643 tons, so that the quantity abstracted might be said to be equal to from five-eighths to three-quarters of that volume. If the water were raised 12 in. in the upper reaches, on an average, by the embankments, one-eighth of the quantity would be returned. The low-water equivalent was even more conjectural, but no doubt the low-water *régime* had been deepened, and the course of the river had always been the low-water channel.

The removal of Old London Bridge, and subsequently of Blackfriars and Westminster Bridges, created a revolution in the tidal condition. On the Thames, as on the Tiber and on the Clyde, bridge engineering had been antagonistic to river conservancy. Waterloo Bridge was a case in point at the present time. The systematic removal of the low-water shoals, in addition, had developed the flood and accelerated the ebb, and about 37 per cent. had been added to the above-bridge tidal volume. The result was an earlier and a longer flood, with increased altitude, and a shorter, lower, and greater scouring agent on the ebb. Five centuries back high-water at London Bridge was three hours after the moon's transit; now it was two hours. During the last two centuries the period of flood had been accelerated one hour and a half; and high-water was at present half an hour earlier at London Bridge, as compared with Sheerness, than half a century back. This was mainly due to the removal of Old London Bridge, which had a waterway of 7,300 superficial feet, as compared with 17,600 ft., that of the present structure. This correspondingly impeded the tide, which now flowed higher 12 in. and ebbed 4 ft. lower above bridge than in former years.

The volume of water flowing over Teddington weir was 3,223,125 tons daily. The present daily quantity supplied to the London Water Companies was 542,958 tons, or about one-sixth of the land water. This was equal to 198,179,670 tons annually, sometimes estimated at 250,000,000 tons. The annual outflow of the river was 1,176,440,625 tons, equivalent to 3½ in. of rainfall over the drainage area of 5,162 square miles. An annual rainfall of 24 in. would yield 8,030,597,142 tons; one-fourth of this amount, after allowing for absorption, evaporation, &c., was 2,007,649,285 tons of available water. This, however, was one and two-thirds the actual result, so that instead of 6 in. of annual rainfall being available, not much more than about one-half, or 3½ in. were so, and this was only four times the quantity required for the Metropolitan water supply. The average outflow was equal to from one-sixth to one-seventh of the annual rainfall.

High-water at Sheerness was fixed by Colonel Lloyd, in 1830, as being 2 ft. lower, and low-water as being 20 in. higher than at London Bridge; but the tide now ebbed lower at London Bridge than at sea. Great tides had flooded London from an early period, varying from 3 ft. to 4 ft. above Trinity standard. Pepys mentioned that of the 7th of December, 1663, thus:—"I hear there was the last night the greatest tide that ever was remembered in England to have been in this river; all Whitehall having been drowned." The extreme range at Gravesend was 27 ft. The quantity of tidal water shut out by the Thames embankments was estimated at 365,000 tons; but they had compensated for it by raising the tidal column, and were thus recuperative. If the water surface from Blackfriars to Teddington had been raised 6 in., that would be equivalent to 700,000 tons.

To show the impossibility of providing reservoirs for land water, Mr. Symons had estimated that storage for 714,285,714 tons would be required, equal to from three to four times the daily tidal volume from Teddington to Gravesend. The winter flood of 1875 at Windsor amounted to 33,723,925 tons daily, so that Mr. Symons' estimate of storage would be for twenty-one days of the great flood. The average volume of extreme tides from Teddington to Gravesend was 322,500,000 tons, so that the land-flood water was one-ninth of the tidal water, or rather one-eighteenth during the day. The morning and afternoon tides of the 8th of April, 1874, both rose 21 in. higher at Blackwall than at Gravesend, 10 in. higher at London Bridge than at Blackwall, and at Westminster and at Lambeth 4 in. higher than at London Bridge.

ARCHÆOLOGICAL DISCOVERY IN YORK.

The *York Herald* of the 24th ult. published the following notes from the pen of Mr. Noble:—

Towards the close of the sixteenth century William Camden, the author of "Britannia," was in this city. In his celebrated work referred to, he states, "I saw in a certain alderman's house, at York, an ancient inscription in these words:—

"M. VEREC. DIOGENES IIIIII VIR.
COL. EBOR. IDEMQ. MORT. CIVES
BITVRIX HÆC SIBI VIVUS FECIT."

The six strokes, the prefix to the word "vir," represent the Latin numeral "sex." The whole inscription may be read thus:—"M. Verecundus Diogenes Sevir, Coloniæ Eboracensis ibidemque, Mortuus Cives Biturix Hæc, Sibi Vivus Fecit: Marcus Verecundus Diogenes Sevir (or Sex Vir) of the Colony of York, and who died there a Citizen of the Bituriges, made these things for himself during his lifetime."

Dr. Gale, Dean of York, who died in 1702, in an edition of the "Itinerary," gives a sketch of the inscription, and adds the letters "Cubus," to be inserted after the word "Cives" in the original inscription, and which appear to have escaped the notice of Camden. At the time when Dean Gale saw the monument it had been removed to Hull, where it served as a trough for watering horses at an inn. The Dean describes the monument as a stone "theca," or chest, 6 ft. long by 3 ft. wide, the inscription being on the oblong side of the stone. This monument was afterwards seen by the antiquary Horsley, who confirmed the Dean's reading of the additional word. The stone has, no doubt, been long since destroyed, which is the more to be regretted, as until recent times, it was the only inscription found within the ancient walls of Eburacum which described that city as a colony.

Biturix, the native city of Diogenes, was situated on the banks of the Garonne, in Gaul, not far from Bordeaux, in the modern province of Berri, a settlement of the tribe Bituriges Cubi. What the office of sevir was is open to great doubt. It was probably a civil, not a military, office.

On Saturday (the 17th ult.), not far from the new railway station, but nearer the banks of the Ouse, was discovered a stone coffin of the ordinary size, bearing the following inscription:—

IVL. FORTVNATE DOMO
SARDINIA VEREC. DIO
GENI. FIDA CONIVNCTA
MARITO.

"Julia Fortunata (or to Julia Fortunata), whose home was Sardinia, a faithful partner to Verecundus Diogenes, her husband."

Few can doubt, on comparing the two inscriptions, but that the name Verecundus Diogenes is identical in both. It is a somewhat strange coincidence that, after a lapse of 300 years, the tomb of the wife should have been discovered, probably near the same site as that of her husband,—let us hope to share a better fate, and to be preserved as one of the many historic monuments of Eburacum. After a lapse of fifteen centuries one can almost realise the sorrow of husband and wife dying in a strange land, far

away from their sunny home near the shores of the Mediterranean.

"Domo Sardinia"—"Fida Conjuncta Marito" is a truly touching inscription. In all probability the husband, himself the son of a slave, survived, and in the last three words was desirous to record that Julia was a lawful wife, and not a slave or a concubine. Sardinia was a possession held by the Romans, but never conquered. On several occasions, within the period of the Roman Empire, revolts took place which resulted in glutting the slave-market of Rome with slaves; and it was after one of these revolts that so many Sardinians were thrown upon the market as to give rise to the proverb, "Sardi venales," to indicate any worthless commodity.

It is satisfactory to know that this monument has been deposited in the York Museum.

NEW CEMETERY AT EXETER.

THE St. Thomas's district cemetery was formally consecrated by the bishop of the diocese, on the 31st ultimo. It occupies a picturesque slope, and an avenue of yew-trees from the entrance to the mortuary chapels will form a pleasing feature when fully grown. The chapels have been designed by Mr. Churchward, surveyor to the Local Board, and are in the Geometrical style. They form one block of building grouping harmoniously together, the church being distinguished from the Dissenters' chapel by a turret. They are built of nobbled and tooled Westleigh limestone, with dressings of Bath stone. The roofs are high-pitched, and covered with Welsh slates, capped with red crestings. They are open-timbered, and of Memel, the principals resting upon Bath stone corbels. All the internal fittings are of pitch pine. The floors are boarded save in the four porches, where Minton's tiles are used. The approaches have dwarf walls, with worked blue limestone cappings. The builders are Messrs. Stevens & Son, of Fore-street Hill, Exeter, and the carving has been done by Mr. Harry Hems. The landscape gardening was planned by Messrs. R. Colridge & Son. About 3,000*l.* have been expended.

THE ALEXANDRA PALACE AND ITS MISFORTUNES.

THE purchase of the Alexandra Palace and park by the London Financial Association affords another instance of the manner in which public buildings and other undertakings of a like character are sometimes sacrificed. It appears from the statements made at the half-yearly meeting of the London Financial Association, on Monday last, that they have purchased the Palace and grounds at about one-third of their cost, and now that the Palace has been leased and is about to be reopened upon the basis of this purchase, it may be presumed that its future career will be a successful one, although the original owners may be large sufferers. It was stated at the meeting that the entire estate and effects of the Palace Company had been purchased and become the sole property of the Association for the sum of 390,000*l.*, together with sixteen acres of freehold building land for 18,000*l.*, making a total of 408,000*l.* It was added that a very large proportion of this sum could be obtained on mortgage of the estate, and that there would be no difficulty in raising all the money, as an agreement for a lease of the palace and park alone had been entered into, which would pay a good rate of interest on the entire purchase-money, and leave about 250 acres of valuable freehold building land to be dealt with separately. The 390,000*l.* purchase included the whole of the chattels, and such things as the organs, statues, and other fixtures and fittings about the palace. The chairman remarked that he had been told by a very astute valuer that these were well worth from 22,000*l.* to 25,000*l.*, but had cost 50,000*l.* With regard to the outside land, he said that he held in his hand a letter from the manager and valuer of the largest land association in the kingdom, and who said that his valuation of the whole estate of 229 acres was 160,000*l.*, being an average of about 700*l.* per acre. That being the value of the building land at this moment, if they deducted that from the purchase of the Palace and chattels, they had purchased the Palace and Park for a little over 200,000*l.* He consulted the Company's valuers as to what the Palace had cost, and they said 700,000*l.* They had got the banqueting hall, worth 12,000*l.*; the circus, 10,000*l.*; and the race-stand, 16,000*l.*; and the whole of these were included in the purchase-money. As to the cost of the roads and drainage-works, he found that would be 20,500*l.* At the close of the meeting it was made special, for the purpose of submitting to the shareholders the Bill in Parliament authorising the sale of part of the Alexandra Palace grounds for building purposes. The shareholders gave their sanction to the Bill, as did also the shareholders in the Muswell Estate Company at a special meeting held on Tuesday.

BUILDINGS IN BURY.

THE formal inauguration of the Trevellyan Club, Bury, took place on the 28th of March, in Philips Hall, in the large assembly-room connected with the establishment. The premises comprise billiard-room for three tables, 50 ft. by 28 ft.; club-room, 32 ft. by 20 ft.; reading-room, 25 ft. by 20 ft.; library, chop-room, residence for steward, and extensive cellarage.

Philips Hall, in which the inaugural meeting was held, is a room on the ground-floor, 90 ft. by 60 ft., especially designed for large political meetings, with ample openings directly into the street, without the intervention of passages or staircases. The buildings are designed in the Domestic Gothic style, with pitch-pine open roofs and boarded ceilings throughout, which are thought by some to be the most perfect of their kind in England.

The premises belong to Mr. R. N. Philips, M.P., and are by him rented to the club at a low rate. The buildings have been erected in separate contracts by townspeople, at a cost of nearly 8,000*l.*, from plans prepared by Messrs. Maxwell & Tuke, of Bury.

The additions to St. Peter's Schools, Bury, are now completed. The whole building has been remodelled. A large annexe has been thrown out behind at right angles with the original long schoolroom. The floor of the old infants' class-room in the centre of the front has been raised 3 ft. The wall between this and the large room has been removed, and its place made good with wooden shutters. When these are closed the room is used as an ordinary class-room, when open it serves as a platform to the large room, which then assumes a cruciform shape.

The original long schoolroom has been docked at each end. One extremity is converted into an infants' class-room, and the other is divided into two ordinary class-rooms for more advanced scholars.

The work has been executed in separate trades by local builders, at a cost of 1,000*l.* The architects are Messrs. Maxwell & Tuke.

THE "BRITISH WORKMAN" BUILDINGS AT NORWOOD.

A NEW building, bearing the title of the "British Workman," intended for the use of the industrial classes in the locality, has just been erected and opened at Upper Norwood. It is intended for general social, educational, and literary purposes, one of its features being that single and other working men who may not find it convenient to have their meals at home can be supplied at the "British Workman" on reasonable terms, breakfasts, dinners, and teas being provided, and there is likewise a bar at which coffee and other non-intoxicating drinks are supplied. At the rear of the building, on the ground-floor, is a large and convenient hall, capable of holding several hundred people. Here lectures, concerts, and other entertainments are intended to be given, and the hall will likewise be let for public meetings when required. On the first-floor is a reading-room and library, well stocked with well-selected literary and educational works, in addition to which the daily and weekly newspapers are taken. Immediately adjoining is another room devoted to chess, draughts, and other games, and adjacent to this is the smoking-room. The upper floor contains a number of offices and the keeper's domestic and other apartments. The walls of the library and reading-room, smoking and chess rooms, are decorated with pictures and illuminated texts. The establishment may be described as being in every sense a working men's club.

CEMENTING GLASS.

SIR,—Will some one tell me the best material for so perfectly uniting the edges of three panes of glass (placed one above the other) as to prevent the entrance, or what is a water-colour painting, from all chance of injury from damp, &c., the above to form the light in a window with Bath stone framing? S.

A CLUB HOUSE, PUBLIC BATHS, AND GARDENS ON THE SHAFTESBURY PARK ESTATE.

AT a meeting held last week at the Shaftesbury Park Estate, Lavender Hill, Wandsworth, Mr. Swindlehurst, secretary to the Artisans' Dwellings Company, stated that it was intended to convert the premises used as the Estate Agency Office into a club-house, equal in accommodation to any at the West End, with library, reading, smoking, and billiard rooms. This, it was hoped, would be ready by June next. A hall was being built which, among other things, it was intended to let to benefit clubs and similar societies. The present hall it was intended to convert into swimming and washing baths if they met with the support of the inhabitants, and it was suggested that a company should be formed for the purpose. Brassey square, a space about one acre and a half in extent, the Estate Company were going to make into a garden like that on the Thames Embankment. Seats would be placed there, and it was intended to have a band to play there in the summer months. The board of directors had decided that the work must be done at once, and it was hoped that it would be completed by August, and that the next flower-shows would be held there. He added that the Board, at its last meeting, had resolved to offer to build a station and bridge on the site of the present level crossing, at its own expense, and also to bear the expense of working it until it paid the railway company, on condition that, at the end of five years, the money were repaid with 4 per cent. interest. Such a station, he observed, would be of great advantage both to the Estate and the railway company, and would advance the value of the property in the neighbourhood at least 20,000*l.* He remarked that he hoped before he died, to see the three estates completed,—Shaftesbury Park, with its 8,000 inhabitants; Queen's Park, with its 16,000; and the estate at the East End, with 12,000.

CASES UNDER METROPOLITAN BUILDINGS ACT.

GREENHOUSES.

AT Hammersmith, Mr. Henry King, a builder of Clarence-place, Kensington, was summoned by Mr. W. Coats, District Surveyor, for erecting a projection with wood at the rear of 10, Stanley-gardens, Notting-hill, contrary to the Building Act.

Mr. Coats said there was a balcony at the back of the house abutting on some garden ground, and the defendant had enclosed it with wood and glass, converting it into a kind of conservatory.

Mr. Bridge wished to know whether such a building was contrary to the Act?

Mr. Coats said it was, if not constructed of incombustible materials, iron bars, and glass. An application was made to the Metropolitan Board of Works to allow the building to be retained, but it was refused.

Mr. Claydon, who defended the summons, submitted that the building came under the exemptions applicable to greenhouses. The balcony consisted of stone, which had been merely enclosed with woodwork sashes and frames. Colonel Allen, who resided in the house, applied to the Garden Committee, who offered no objection to the plan.

Mr. Bridge, on referring to the Act, said greenhouses were exempt, so far as the necessary woodwork for sash-frames and doors.

Mr. Coats, in reply to the magistrate, said there was no more woodwork than was necessary for the sash-frames and doors in a greenhouse. He considered that it was a projection.

Mr. Claydon said almost every house in the neighbourhood had a similar conservatory.

Mr. Bridge held that it was a greenhouse, and dismissed the summons.

Mr. Claydon said Colonel Allen did not apply for costs, as he believed Mr. Coats had acted in good faith.

*** Mr. Bridge's words, if correctly reported, would admit of a wrong inference. The terms of the exemption are,—"Greenhouses, so far as regards the necessary woodwork of the sashes, doors, and frames," not "the necessary woodwork *for* sash-frames and doors." The Act does not permit any part of a greenhouse to be *enclosed* with wood.

Mr. Geo. Marcham was recently summoned by Mr. Knightley, the district surveyor, at the Hammersmith

olice-court, for erecting a greenhouse in his district thout giving notice.
The defendant denied it was a building, although it was ft. long, 12 ft. wide, and 7 ft. high, had a chimney, was rmed by hot air, and had a foundation of brickwork n. high above the surface of the ground.
The District Surveyor submitted that although in the terpretation clauses of the Act no definition of the word building" was given, there could be no difficulty in this se, as a greenhouse is defined to be a building, and is rtially exempted. He also contended that it was his ty to supervise such structures, and to insist on the pro- sions of the Act being observed so far as relates to the ickness of walls and footings, the construction of imneys, and fixing pipes for heating.
Mr. Bridge, the magistrate, told Mr. Marcham that he uld have given a decision against the district surveyor he could, but could not, as he believed him to be right.

COTTISH HONOURS TO A FOUNDATION. STONE.

The laying of foundation-stones is a ceremony at generally passes off in the metropolis with- t much fuss or expense. Our Scottish friends nsider, however, that the "planting of a new ilding" deserves a public holiday and gay rocessions—even when the cost is as low as 000*l*.—as witness the following description of ying the foundation-stone of the Public Hall of tonehaven, a seaport, and the county town of incardineshire.
The chief actors were of the secret order of reemasons, and the Masonic rites were per- rmed by Lord Inverurie, Deputy Provincial rand Master of Forfarshire, and not only was a oliday kept, but the inhabitants of Stonehaven d numbers of people from a distance turned t to witness the proceedings.
The procession was formed in the market- uare, where it was marshalled by the head oliceman on horseback. First came the local tillery volunteers, headed by their band. ext came a large number of Good Templars, earing regalia, and carrying numerous flags d banners. Then a concourse of school-boys, rrying bannerets, and cheering. Next came a mber of the ancient order of Foresters, wear- g sashes, horns, and displaying magnificent gs. The different trades of the town now llowed, the blacksmiths leading, with a couple stalwart smiths busily engaged at a forge on a rry drawn by horses; while seated on an ex- mporised "dickie" was an old man got up as ulcan. The operative masons followed with the ure of a "doobie," busily engaged hewing a one, said hewer smoking a cutty, and looking ry "beery." A lorry, drawn by three horses, th outriders wearing helmets, conveyed a uple of joiners, sweating away at a bench; ile a beautiful model of the intended building as carried by a number of men behind.
A naval element was then introduced in the ape of a well-known citizen "paddling his own noe," which, mounted on a vehicle, was drawn ng by a number of Cowie fisherman; and this s appropriately succeeded by the Life Brigade th a rocket apparatus, a large fishing boat, and great number of old fishermen.
Headed by another brass band, the Town uncil and Trustees of the new Hall next ap- ared, and then an imposing array of Freemasons m a great number of lodges from various rts of Scotland, in full costume, brought up e rear, accompanied by an interesting relic rried by the Town Clerk—a heavy old axe, hich had been thrown out by an explosion of a wder magazine at the siege of St. Jean d'Acre. After perambulating the principal streets of e town, all of which were lined with spectators, e procession returned to the new Hall, where arge stand was erected, crowded with ladies d gentlemen.
Lord Inverurie then laid the stone with a silver owel, in true Masonic style, the usual libation wine and oil being poured on, after his dship had administered the orthodox three ocks.
In the evening a grand banquet was held, and e inhabitants enjoyed themselves outside and side their houses with unbounded hospitality d hilarity.
The site of the hall is in Allardice-street, d the plans are by Messrs. Matthew & wrie, Inverness. The building will have a ndsome front elevation in the Italian style. e ground-floor will contain billiard-room and iring-rooms; on the first-floor will be the uncil-room and supper-room, which, by the moval of sliding divisions, can be converted o a hall; and the hall-keeper's residence is ove. The hall proper is placed immediately hind the front buildings, and measures 63 ft. 37 ft., and 28 ft. in height. The cost will be wards of 3,000*l*.

A BOULEVARD FOR LIVERPOOL.

The Liverpool Town Council have just decided upon a measure of improvement in the shape of a new boulevard, which, as Mr. J. A. Picton, architect and councillor, says, will become "the Champs Elysées of Liverpool."
A few years ago the Corporation formed a new park at the south end of the town called Sefton Park, which contains 382 acres, 113 of which are to be taken up with building sites. In front of this park is Prince's Park. The chief entrance to these two open spaces is through the Prince's-road,—a straight road, upwards of 900 yards long. Nearly the whole of the west side of this road is skirted by mansions, with large areas in front. Its width is 36 ft., with a footwalk on each side, 12 ft. in width; the total width of the road, therefore, being 60 ft. On the east side of the road lie the fields belonging, almost exclusively, until quite recently, to the Earl of Sefton, and which are called Parliament Fields. They have, however, been given up to the builders, been laid out in streets, and a great number of houses have already been erected. The Local Parks, Gardens, and Improvements Committee, perceiving the opportunity that this presented for the formation of a boulevard, instructed the Corporation surveyor, Mr. Thomas Shelmerdine, jun., to draw up plans with that object, and these plans have now, after some delay, been adopted.
It is proposed to leave the Prince's-road unaltered, but the present footwalk on the east side will be done away with, and a boulevard formed, extending from the Jews' Synagogue to the entrance of Prince's Park, a total length of about 870 yards. This promenade will be formed with a central avenue 10 yards wide, with grass verges on each side, 3 yards wide, planted with trees, seats being provided along the whole distance. Entrances will be left on the boulevard, for passenger traffic only, at the junction of cross streets, and ornamental lamps fixed in the centre. Beyond this, an inner road will be made, 7 yards wide, and a footwalk, 3 yards wide. The houses fronting this inner road will be set back, and have an open area 10 yards in width.
The necessary negotiations for this improvement have been made between the Corporation and Messrs. David Roberts, Son, & Co., on behalf of the Earl of Sefton and themselves. The Corporation buy the piece of land, twelve yards in width, for the sum of 7,200*l*.; the vendors giving the land for a ten-yard street on the east side of the promenade, divided into a 9-ft. parapet on the east side, and a 21-ft. carriage road. This road is to be completed at the ex-expense of the Corporation before the 1st of next January. The grounds and promenade are to be completed before the 1st of May in next year, and to be for ever maintained by the Corporation as a public walk and pleasure-ground.
Including the land, the cost of the whole improvement is estimated at about 12,000*l*.

EGYPT AND THE NILE.

One hundred and sixty water-colour drawings by Mr. Elijah Walton, made in Egypt, Nubia, and by the Nile, are now on view in the Burlington Gallery, Piccadilly, under the direction of Mr. W. M. Thompson, of Cockspur-street. They include a number of clever drawings, reminiscences of a country always interesting, and please us better as a whole than the Alpine drawings by the same industrious artist exhibited last year. Of some of the latter Mr. Thompson has produced chromolithographs, so exactly like the drawings as to give other drawings by the same hand the aspect of chromos.

"FROM TRAFALGAR-SQUARE TO OXFORD-STREET."

Sir,—A gentleman, who, I presume, is "a citizen" of London, and who dates from the St. James's Club, Piccadilly, wrote last Saturday to inform the *Times*:—"It is only through you [the *Times*] that the citizens of London can hope to make their voice heard when they would comment on the doings of the Metropolitan Board of Works." Now, it strikes me that others, besides the citizens of London, have in this particular case to thank the *Builder*, not the *Times*, for the reconsideration which has been given to the route of the new street from Trafalgar-square to Coventry-street; and to thank you for having pointed out the artistic incongruities patent, not to the last alone, but to other of the schemes of improved streets lately executed by the Board.
Moreover, some of the letters printed in the leading journal in the very biggest type,—notably that from the Suffragan Bishop of Guildford,—upon the overcrowded condition of houses in our metropolitan and city slums, almost imply a recent discovery of the fact. Have Londoners remained ignorant of the "overcrowding"?
Surely not for want of being told. It is wonderful to note for how many years the existence of evils may be pointed out without making any impression till the public mind has been prepared and the right moment arrives.

Only a Londoner.

"THE REVISED CODE" AND QUANTITIES.

Sir,—The article on "The Revised Code of the Institute," in your last issue, admirably accurate in general, seems to me to fail in defining the precise position taken up with reference to Fellows to be henceforth admitted under the revised declaration if they wish to supply their own quantities. Your article states that they may do so "only on the understanding that they are paid for by the client *direct*, and not by the contractor." The revised declaration for Fellows does not say this, or mean it. It makes a Fellow engage "that I will not take out quantities except for works to be executed under my own superintendence, and then only with the concurrence of my client, such quantities being paid for by him."
At the special general meeting where this declaration was adopted, the suggestion was made that the word "direct" should be introduced, so that the last sentence might run, "Such quantities being paid for by him direct." That suggestion was not adopted, and it was officially explained that what was intended would be carried out in any case where, the concurrence of the client being first obtained, the charge for quantities was included in the customary manner, in the contract sum, and *paid by the builders*, because being refunded to him by the client, it is really *paid by the clients*.
Possibly this is not as far as the rule can be carried with any hope of success. Certainly this is the law of the Institute as laid down in the most distinct manner in the hearing of the present writer. It may be objected that this ruling makes the legislation imperfect; but my object is to remove any possiblity of what is far worse than imperfection, namely, misapprehension, and to point out that, beyond all doubt, every Fellow of the Institute who signs the new declaration will under it be at liberty to take out his own quantities, and receive payment from the builder, provided he has his client's concurrence. This fact is, I think, alluded to, though not stated in so many words, in your article of March 17th on the Illicit Commissions Bill.

S.

BUILDING AT KILBURN.

Sir,—Having often noticed your readiness to comment on doubtful building transactions, I take the liberty of bringing under your notice a building operation in Kilburn. I am not a builder nor anything connected with the trade, but I could not help noticing the building of some houses on the Freehold Land Society's estate, near the Brondesley Park or Edgware-road Station of the North London Railway. I noticed that *road scrapings* were being carted to several points on this estate, and wondered what could be the meaning of it, when, in passing a row of houses, I noticed a labourer busily engaged in manufacturing mortar from what appeared to be road scrapings and dung, mixed with a small portion of lime and cinder ashes. This may be all right, but I should much like to know what the district surveyor and medical officer of health say.

E. S.

LAWN TENNIS.

Sir,—Will one of your correspondents tell me the best and cheapest mode of laying down a ground for lawn tennis? Say, when the formation level is completed, in what manner he would then proceed to lay a smooth floor requisite for playing lawn tennis on? Asphalt or cement would be too expensive.

W. E. B.

THE ANCIENT MONUMENTS BILL.

Sir,—Under this head I have read an article in your paper dated the 7th inst. with some interest, and I beg to be allowed room for a few remarks, seeing that among other acts named as Vandalism the Great Tolmen Rock, in Cornwall, has been mentioned.

This antiquity was, many years ago, offered and pressed on an association for a small amount,—not one-tenth of the real value,—but no archæological society would give it, and the efforts of the freeholder to secure the rock came to nought. The estate came to our family by purchase, and this landmark was looked on with pride by us, until the quarry foreman (who had strict orders not to touch the rock) blasted, by night, the foundations, and threw down the mass which was stopping his quarry operations. I would ask, how many cases, somewhat similar, may be found.

I cannot believe that Vandalism is the correct word to be used, but rather that until very lately there has not been that interest manifested by archæologists in such objects as to lead them to give an equivalent for property on which monuments stand, so as to preserve them from destruction.

Wm. Hosken.

Granite Works, Penryn.

FALL OF WORK, MEUX'S BREWERY.

On Tuesday morning an accident of an alarming character took place on the premises of Messrs. Meux & Co., the well-known brewers, Tottenham-court-road, by which six men were severely injured and two or three others severely shaken. The works in course of erection were for an ice-freezing room. It appears to have been constructed with two large wrought-iron girders, set about 13 ft. or 14 ft. apart (carrying rolled-iron joists and arches to make a solid floor), and brick enclosure walls, altogether a very strong structure, and to carry a considerable weight. Such a building, of course required some skill in designing, and also in execution, but we fear no architect was employed, the district surveyor merely having the oversight so far as the Building Act is concerned. The immediate cause of the accident seems to have been the putting too much trust in the old, though apparently sound and substantial, walls of the brewery, and so supporting the girders on these on the one side, and iron stanchions on the other.

There might have been also some special shock from some scaffolding falling, or some jar from the machinery at work adjoining, to set it going; but, still, the crushing down of the old wall was the actual and immediate result, causing the girders to slip aside and throw down the brickwork, and the poor fellows executing it.

The South Windows, Leominster Priory Church.—Sir Gilbert Scott, under date March 27, writes a somewhat lengthy letter to the *Hereford Times* in reference to the Priory Church at Leominster. He says:—"The restoration of this noble and historical fabric—begun many years back, and resumed last year—has now so far progressed as to give hope that before very long the whole church—instead of less than one-half of it—may be rendered available for its sacred uses. One hindrance stands in the way; the fact that the magnificent range of windows on its southern side is in such a state of ruin as to render it impossible that the part of the church to which they belong can be used for divine service till they are effectually repaired; while no funds exist to effect this essential object. . . . . They are on a grand scale, and each contains four lights. The whole and each of its halves is subdivided into two arches, each supporting a circle. The smaller circles are exquisitely cusped, while the larger are each divided into three cusped triangles and three cusped vesicæ. The whole of the mouldings, whether of jambs, arches, tracery, or cuspings, are studded with the ballflower, giving the whole a most rich and gemmed effect. . . . . The condition of these splendid windows is *simply deplorable*. . . . . There is, however, enough left to give the exact design of every part, and to supply the actual ancient material for a good deal. If, however, they are allowed to go on unrepaired, not only will it be impossible to use this part (nearly one-third) of the church, but the exquisite remains will very shortly fall and become things of the past."

Miscellanea.

Covering the Albert Memorial.—Our readers have probably heard of the proposition made by Mr. Wills to cover the Prince Consort's National Memorial in Hyde Park with glass. The proposed structure covering the memorial is designed by Mr. Bedborough, architect, for execution in iron, copper, and glass; it is octagonal on plan, 200 ft. in diameter, with projections on four alternate faces of the octagon, 80 ft. by 27 ft. The width of the central part, supporting the dome, is 130 ft., and the height from the ground to the springing of the dome 145 ft.; the extreme height from the ground to the top of the figure surmounting the lantern on the dome is 340 ft. The principal entrance, which is 25 ft. wide, is from Kensington Gore, the archway of the entrance, cuspated, is carried into the gable, which is fitted with Gothic tracery; the other principal faces of the octagon are similarly treated. Clusters of columns, forming the piers at the intersecting angles of the octagon, are carried up in stages to the springing of the dome, terminating in gabletted pinnacles and open traceried piers. From these piers (at the base of the dome) spring the gables which terminate the faces of the octagon. These are filled in also with cuspated Gothic tracery. East and west of the central structure, and connected therewith by corridors, it is proposed to have gardens, in which shall be placed trees and plants representing the vegetable kingdom of the four quarters of the globe. We run very little risk of being wrong when we say, without any reference to the goodness or otherwise of the design, that no such structure will be permitted in Hyde Park.

The Choice of a Place to Live In.—On the 24th ult. Professor Corfield delivered a lecture at the hall of the Society of Arts, John-street, Adelphi, to the Trades Guild of Learning, his subject being "The Choice of a Place to live in." The subject for the evening was moisture. Having first explained the use of hydrometers and the rain-gauge, the question of rainfall was dealt with. Very little connexion, the lecturer said, had been made out between the rainfall and diseases, except that after a very heavy rain or thunderstorm epidemic diseases declined. Quoting Humboldt's rule that in relation to health after height above the sea the most important thing was distance from the sea, Professor Corfield explained the causes of land and sea breezes, and the effect of nearness to the ocean in equalising temperature. As to choice of a dwelling-place, houses built upon pervious soils, through which the water could drain away, as gravel, sand, and chalk, were generally the most healthy. Lung diseases, rheumatism, and consumption, were less prevalent. In all houses there should be a damp-course to prevent the water from rising up the bricks of the walls, as it otherwise would do, and the basement also should be impervious to moisture. This was especially necessary where houses were built, as was often the case in London, on what was called "made ground."

Street Hydrants.—Mr. W. Haywood, the engineer to the City Commissioner of Sewers, gave evidence before the Select Committee on the Metropolitan Fire Brigade on the 26th ult. He said he was in favour of laying down hydrants in all the thickly populated parts of London; in other parts the necessity was not so pressing. When hydrants were laid down generally, the police could utilise them in extinguishing fires as readily as the Fire Brigade. Very little drilling would be necessary, because all that would be required was that a sort of drum or truck with a reel on it should be run out. The first five minutes at a fire are generally the most important.

The "Level" at Brighton.—The *Brighton Herald* says that the first step is being taken for rescuing the Level from the condition which has so long been a disgrace to the town, by effectually draining it. A large quantity of earth, obtained from the grounds at the back of the Training Schools, where building operations are going on, has also been carted on to the outer enclosure surrounding the Level, and the old iron railing is being removed with a view to being replaced by a dwarf wall and iron railing.

Fire in Southwark Bridge-road.—A slight fire occurred on Wednesday night, at the premises occupied by Mr. J. Stannah, doing but little damage to the offices. We understand that business will be carried on as usual.

The late Mr. Gutch, Architect.—The memorial window placed in Holy Trinity Church, Paddington, by Mrs. Gutch, was quite spoilt by the gallery cutting it in two. One has been erected, therefore, in the east window, Mr. Wailes having utilised the former one, adding four fresh subjects. The higher five lights show He is Risen, the Entombment, the Crucifixion, the Ascension; three angels below, with the emblems of the Crucifixion. The five lower lights,—The Six Works of Mercy, the Good Samaritan, and Dorcas working for the Poor; underneath, three angels holding the inscription "Go and do thou likewise." It was unveiled on Easter Sunday. The inscription at the base of the window is as follows:—"To the glory of God and to the memory of her beloved husband George Gutch, this window is erected by his widow, Mary. 1877."

"The Kensington Gore Mansions Limited."—Under this somewhat incomplete title endeavours are been made to form a company, with a capital of 250,000*l.*, to erect a pile of residences on the plot of land in the Kensington-road, adjoining the Royal Albert Hall. The architects somewhat disingenuously contradicted us when we said it was rumoured that those buildings were to be thirteen stories in height, and said they would be only five stories, the fact being that it was originally intended, as we learn on the best authority, that there should be twelve stories, and that the design now before the public shows in parts seven. The rent of the land, one acre and two-fifths in quantity, is called 4,800*l.* a year, or 3,429*l.* per annum per acre. At twenty years' purchase we get, therefore, as the value of the freehold land, 68,580*l.* per acre. At an average of 1*l.* per week per room a total rental of 31,760*l.* per annum is looked for.

The Exchange Seed Warehouse, Dumfries.—New premises for Messrs. Kerr & Fotheringham, seed merchants, have just been erected on the White Sands, Dumfries, from plans by Messrs. A. Crombie & Son, architects. The open court of the old auction mart (on the site of which the premises have been erected) has been covered in with a pavilion roof, supported on iron columns and girders, and now forms a most suitable warehouse, measuring 52 ft. by 68 ft. This will be devoted by the firm to the purposes of a corn exchange, and will be used by the farmers of the district. The tradesmen employed were,—builder, Mr. Lockerbie; joiner, Mr. Armstrong; painter, Mr. Muir; slater, Mr. Kirkpatrick Bridges; plasterers, Messrs. Moffat & M'Cubbin; plumbers, Messrs. Drummond & Son; concrete, Messrs. Wilkinson, Newcastle.

The Caxton Celebration.—On the 26th ult. a meeting was held in the Egyptian Hall of the Mansion House, to promote a loan collection of the works of Caxton and other antiquities and appliances connected with the art of printing. The exhibition, which will be opened for two weeks, commencing on Monday, June 11, will be held at the Exhibition Building, South Kensington. Judging from what we hear, the gentlemen who are managing the affair are either unacquainted with the proper mode of proceeding in such endeavours, or they contemplate keeping it all snugly in their own hands,—in which case a very modified success must be looked for.

Bursting of a Reservoir in America.—Particulars have been received in New York of the bursting of a reservoir at Staffordville, Connecticut. The reservoir contained a volume of water 600 acres in superficial extent, and when the dam gave way a torrent 30 ft. deep rushed at the rate of five miles an hour over six miles of country, through the village of Stafford Springs, where the church, town-hall, the bank, several business buildings and dwellings, the railway depôt, and half a mile of the line, were destroyed. The total loss is estimated at 1,000,000 dols. Only two persons are reported drowned.

Monument.—The memory of the late Right Hon. T. Sotheron Estcourt is to be perpetuated by a fountain and statue erected in the Market-place, Devizes. A committee, of which Earl Nelson is the chairman, has been appointed to carry out the arrangements. The cost of the memorial will be about 1,800*l.*

Sir John Soane's Museum.—The trustees of Sir John Soane's Distressed Architects' Fund met at the Museum on the 20th ult., and awarded the funds which had accrued during the year.

Royal Institute of British Architects.—t the ordinary general meeting of this Institute Monday evening last, Dr. Schliemann was ected, by acclamation, as an Honorary and orresponding Member, and the President, Mr. harles Barry, announced that it was proposed present the diploma of membership to the octor at a special meeting of the Institute to e held on the 30th inst., when it was hoped at architects would assemble in strong force to honour to the distinguished archæologist. In pply to a suggestion from Professor Donaldson hat some efforts should be made to obtain for he Institute some specimens of Sir Charles arry's exquisite sketches and drawings, the resident explained that when his father was a oung man he had embraced the offer made by Mr. Bailey to go with him on a tour to Rome nd Egypt, on condition that his pencil was laced at Mr. Bailey's disposal. His father ad, with Mr. Bailey's sanction, made a umber of drawings for himself, but unortunately these were all lost in landing t Calabria. The other drawings remained ntil lately in the possession of Mrs. Bailey, nd had been bought by Mr. Wolfe, an old riend of Sir Charles Barry, and presented to is godson, Mr. John Wolfe Barry, in whose possession they now were. The President said he ould take care that Mr. Wolfe Barry was aprised of the wish expressed by Professor Donaldson. Two papers on some of the condemned City churches were then read,—the first iving the results of some of the labours of a ub-committee appointed by the Institute; and he second, by Mr. W. M. Teulon, discussing the eneral questions involved in the removal of hese buildings. We shall give a report in our ext.

Labourers' Dwellings at Stratford-on-Avon.—On the 15th ult. the second annual eeting of the Stratford-on-Avon Labourers' Dwellings Company was held. From the report t appeared that during the past year seventeen ottages had been erected in Mansell-street, in ccordance with plans prepared by Mr. Thomas T. llen (the company's architect). The cottages ad been built by Mr. Thomas Bailey, of Leamington, whose tender for the work amounted to he sum of 2,683*l.* 16s. The whole of these cotages had been let to tenants selected from a list f 48 applicants, at a weekly rent of 3s. 6d. the top house letting for 4s.), and ten of the eventeen were now finished and occupied, and he remainder would be ready for occupation in few days. The directors had succeeded in urchasing from Mr. William Eborall, the block f buildings in Guild-street, known as Shakespere ourt, for 700*l.* The property consisted of four. een cottages, but the accommodation was otoriously bad, and it was the object of the irectors to make such improvements as would nake them fit for occupation by a respectable lass of tenants without families. To do this an utlay of about 200*l.* would be required, and hey could be let to pay at least 7½ per cent. on he cost. In conclusion, the directors reassured he shareholders that their investments would neet with a fair return in the shape of dividend, he first declaration of which would be made at heir next ordinary general meeting. The report was adopted.

Horsham.—A new pulpit has just been erected in the old parish church of St. Mary's. It is placed there as a memorial of the late Mr. Thomas Sanctuary, of Roffey Park, by his children, and was executed by Mr. Boulton. In design it is similar to the pulpit in St. Mary's, Powerstock, of which parish the Archdeacon of Dorset, one of Mr. Sanctuary's sons, is the vicar, and it was originally drawn by Mr. Hicks, architect, of Dorchester. It is octagonal in shape, and made of Caen stone. Four sides of the octagon are formed into niches, containing statues of St. Peter, St. Paul, St. John, and St. James the Great, standing on carved pedestals, and above them are ogee canopies, with crocketed gables and carved finials. The mouldings spring from carved angels holding the symbols of the Epistles and Gospels. The body of the pulpit is covered with diaper, terminating in a cornice.

The late Mr. Mark Antony Lower.—The Sussex Archæological Society propose to erect a memorial to the late Mr. Mark Antony Lower. It is suggested that it should be erected over the tomb where lie his remains, and also those of his wife and second daughter. Subscriptions are invited.

Architectural Association.—On Saturday afternoon last, a number of the members of this Association visited the new house which is now in course of erection at Holland Park, Kensington, for Mr. W. Burges, architect. Externally, the building is of red Chilton bricks, with Box Ground dressings, and the staircase is contained in a bold conical-roofed tower. On the ground-floor the accommodation provided consists of dining-room, 17 ft. by 17 ft.; drawing-room, 24 ft. by 16 ft. (exclusive of window recesses 2 ft. 8 in. deep); and library. The library and drawing-room can be thrown into one when required by the shifting of a sliding door. The accommodation on the upper floors consists of six or seven bedrooms, with dressing and bath rooms. In each room the chimneypiece will be a prominent feature. The work throughout is solid and substantial, and this is especially noticeable in the dimensions of the timbers supporting the floors. Mr. Burges has, of course, acted as his own architect, and has been aided in the supervision of the work by his assistant, Mr. Chapple, Mr. Heath acting as foreman and clerk of works. Messrs. Ashby, Brothers, of Kingsland-road, are the builders; and the cost, exclusive of stained glass, ornamental ironwork, &c., will be about 6,000*l.*

Carlisle Railway and Town Improvement Works.—Since last we referred to the Station Extension and Town Improvement Works, Messrs. Ward have made very perceptible strides towards the completion of their contract. In their disjointed state the ten or twelve separate lines perplex onlookers. Messrs. Ward's part of the new viaduct and approaches, including the laying of the water and gas connexions, has been so far completed that foot passengers are now allowed to pass that way. Therefore, though the highest and most commanding portion of the overway is not yet open, the public have the means of forming an idea of its relation to the various streets it intersects; and the idea is decidedly favourable. Another new line of viaduct and overroad,—namely, that from Currock-brow to Crown-street, proceeding at a high level over the three or four railways which it formerly went below,—is neither so elaborate nor so important as that connecting the two sides of Carlisle, but being now nearly made, its advantage to farmers and others coming from that side of the country can be appreciated. There are two other viaducts of large dimensions, but one—that over the North-Western and North-Eastern system at St. Nicholas—has been open for some months; the other, connecting James-street with Boustead's Grassing, — is practically completed, and will be opened shortly.

"Brickological."—The foundation-stone of a new hospital was laid at Walsall on Easter Monday. The building is to be erected from the designs of Mr. Henman, which were selected in competition. The *Birmingham Gazette* says: "We should have been glad to furnish our readers with a description of the proposed building, but instead will briefly state the manner in which our representative, together with a gentleman who has for many years represented the *Post* in Walsall, was received. The builder's son (Mr. Daniel Moore, jun.) having confessed his inability to correctly explain the style of architecture, which a bystander described as 'mongrel Elizabethan,' referred the reporters to Mr. Henman, who at that moment approached them. In reply to their inquiry as to what order the new building would belong to, he turned away with the very lucid reply, 'Oh, bother; it's brickological!' On the 25th of July last tenders were obtained, and that of Mr. Daniel Moore, Stafford-street, Walsall, was accepted, the amount being 5,835*l.* The work was begun shortly afterwards, and is to be finished in June, though probably it will be somewhat later." Is "Brickological" a new name for the "Queen Anne" style?

Opening of the Art-Exhibition at Naples. A despatch informs us of the successful opening, on Sunday, April 8, by the King of Italy, the Royal Family, and an infinity of distinguished personages, of the first Art-Exhibition in Naples. The building is well arranged. Statues, pictures, objects of antique art, fill it. Though narrow and long, it is in three stages. Their majesties remained three hours examining the objects exhibited. The collection is beyond all expectation, not only on account of the number, but of the artistic merits of the exhibitors, both native and foreign.

The Glasgow Campbell Monument.—On the hundredth anniversary of the birth of Thomas Campbell, the poet, which falls on the 27th of July next, a monument to his memory, consisting of a bronze statue, will be unveiled in Glasgow, his native city. The result of a public subscription, the monument has been designed by Mr. John Mossman, whose model was selected out of three submitted in competition. The sculptor has chosen to represent his subject in the prime of life, when his honours, literary and academic, were "thick upon him." The costume adopted is that of the Prince Regent's time. The casting has been undertaken by Messrs. Cox & Sons, Thames Ditton. During the spring this firm will also be proceeding with the Livingstone memorial, and they anticipate having both completed about the same time. The pedestal of "axed" granite, bluish-grey in colour, will have a height of 12 ft., and will closely resemble that on which the Burns monument stands. The *Scotsman* states that Mr. Carrick, master of works, who was commissioned to select an appropriate site, has recommended that the statue be placed opposite the Burns, on the south side of the square.

Early Literature.—The *Academy* says that Mr. Faulke Watling has made an interesting old-book discovery in the British Museum, namely, that the little sixteen-leaf anonymous "boke for to lerne a man to be wyse in buylding of his house for the helth of (his) body and to hold quyetnes for the helth of his soule and body, etc. Imprynted by me, Robert Wyer, dwellynge at the sygne of St. Iohn Euangelyst," &c., is, in fact, the first eight chapters of the well-known quaint old Doctor Andrew Boorde's racy "Dyetary of Helth" of 1542, &c. Mr. Faulke Watling has drawn up an account of the little volume, with a copy of its additional verses and collations, which will be printed at once by the Early English Text Society, and issued as a supplement to Mr. Furnivall's edition of Andrew Boorde.

Churchyard Crosses, Kidderminster.—The dilapidated condition of the ancient cross which has hitherto been an object of attraction to visitors to the parish church of Kidderminster, has been a matter of consideration for many years, and some time ago a body of young men, most of whom had been brought up in the parish church schools, determined to take measures either to restore it, or to erect another as nearly as possible like what the old cross is supposed to have originally been. Before, however, their intentions were brought to bear, a private individual came forward and expressed a desire to erect a new cross on the model and site of the old one, and, permission having been granted, Mr. Arthur Blomfield, architect, was employed to make the design, and Mr. Binnian, builder, to work it out in stone. The cross is now erected. The old cross has been placed opposite the chancel-door.

The Yorkshire Fine Art and Industrial Exhibition, 1879.—At a recent meeting of the Executive Committee, at York, under the presidency of Sir James Meek, it was announced that the drainage of the site of the Exhibition had been satisfactorily carried out, that the conveyance of the reversionary interest of the Crown in the land was about to be completed, and that, with the exception of a very insignificant sum, the whole of the first call had been promptly paid up. It was unanimously resolved that the day for the opening of the exhibition should be fixed for the 1st of May, 1879, and that the architects should immediately invite tenders to be sent in by the 13th of April next for the erection and completion of the permanent portion of the building by the 1st of October, 1878.

Defoe Memorial Manse, Tooting.—It is proposed to build a manse for a Nonconformist minister at Tooting, as a memorial of Defoe's residence there. The style of the building, for which plans have been prepared by Messrs. Tarring & Wilkinson, is Domestic Gothic. It is intended to place a life-sized statue of Defoe under an enriched canopy, between two buttresses, on the right hand of the main entrance.

Scaffold Accident.—Last week a shocking accident happened at Clapham, which has resulted in the death of one man and serious injuries to two others. Some alterations were going on at a mansion known as The Chase, Clapham, for which purpose a scaffold had to be erected, and while five men were engaged upon it it gave way, and they were precipitated to the ground, a distance of 30 ft. or 40 ft.

Jersey New Harbour Works.—The cost of the Jersey new harbour works will prove, it is believed, greater than was originally expected. The estimate of Sir John Coode, the engineer from whose plans the works are being carried out, was 240,000*l.*, but it now appears that that amount is too small by one-half. 170,000*l.* has already been expended, and fresh estimates prepared by order of the Investigation Committee appointed by the States show that 300,000*l.* will be required to complete the works.

Another Theatre!—The London correspondent of the *Northampton Mercury* says there is to be yet another theatre in the Strand! This time the site is to be nearly opposite Somerset House. He "cannot understand this mania for erecting fresh temples of Thespis, while we have so many, like the Queen's, standing empty."

Barnsley.—At a meeting of the Town Council held on the 13th March, Mr. A. K. Balls, of Maidstone, was elected out of thirty-five candidates for the Temporary Assistant Surveyorship, the appointment to become terminable at the pleasure of the Streets and Buildings Committee.

Society of Arts.—A course of lectures on "The Connexion of Greek and Roman Art with the Teaching of the Classics," by Professor Sidney Colvin, will be commenced on Monday next, the 16th inst. The lectures will be given at four o'clock in the afternoon.

Royal Institution.—James Dewar, F.R.S.E., Jacksonian Professor of Natural Experimental Philosophy in the University of Cambridge, was, on Tuesday last, elected Fullerian Professor of Chemistry in the room of Dr. Gladstone, resigned.

Mortuary Chapels and Lodge, Whitworth.—The contracts for these buildings have been placed in the hands of local contractors. The cost of the completed works will be about 3,500*l.* The architects are Messrs. Maxwell & Tuke, of Bury.

Institution of Surveyors.—The next meeting will be held on Monday evening, April 16th, when a paper will be read by Mr. J. Shaw, on "The Rivers Pollution Prevention Act, 1876."

Mr. E. T. Boston, of Bristol and London, has been appointed architect to the Keynsham Burial Board.

TENDERS

For rebuilding "Mount Ephraim," Hernhill, near Faversham, Kent. Mr. E. Gregg, architect. Quantities by Mr. R. Roberts:—

W. & J. Judges	£7,990 0 0
Ashby & Horner	7,546 0 0
Ashby, Bros.	7,460 0 0
Higgs & Hill	7,340 0 0
Smith & Co.	7,333 0 0
Baker & Son	7,308 0 0

For rebuilding warehouse, No. 48, Paternoster-row. Mr. T. Verity, architect. Quantities by Mr. Plimsaul:—

Lane	£2,253 11 0
Hobson	2,197 0 0
Bradwell	1,910 0 0
Simpson & Son	1,897 0 0
Bracher & Son	1,889 0 0
Sewell & Son	1,793 0 0

For marble work at Lord Zetland's private chapel, Aske Hall, Richmond, Yorkshire. Mr. Thomas Oliver, architect:—

Welsh	£1,125 0 0!
Nelson	950 0 0
Walker & Sonley	815 0 0
Beall (accepted)	759 0 0!

For the erection of a new tannery at Northampton, for Messrs. P. & R. Phipps. Messrs. R. Davison, Son, & Mackenzie, architects. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Dunkley (accepted)	£6,504 0 0

For new front fittings and additions, 221, Commercial-road, for Mr. W. Fladgate. Mr. Knight, architect:—

Judson & Dickerson	£785 0 0
Hearle	765 0 0
Barrow	575 10 0
Cox & Boome (accepted)	567 0 0

For the erection of a drying-shed in Willow-walk, Bermondsey, for Mr. Jonah Oastler. Mr. Alfred Porter, architect:—

Hart	£2,276 0 0
Coleman	1,930 0 0
Shepherd	1,942 0 0
Wells	1,786 0 0

For the erection of a billiard-room and Turkish bath at Holford Lodge, Regent's Park, for Mr. Durham Dunlop. Mr. Alfred Porter, architect:—

Wells	£1,054 0 0
Little	775 0 0
Coleman	769 0 0
Hart	750 0 0
Shepherd	725 0 0

For proposed enlargement of Emmanuel Church, Upton. Mr. George McDonell, architect. Quantities by Messrs. Goodchild & Son:—

Boyce	£7,295 0 0
Morter	7,215 0 0
Sheffield	7,199 0 0
Stamp & Bowtle	6,940 0 0
Perry & Co.	6,928 0 0
Browne & Robinson	6,640 0 0
Dove, Brothers	6,385 0 0
Hill, Higgs, & Hill	6,389 0 0
Gibbons	4,897 0 0

For alterations, &c., at 188, Tottenham-court-road, for Mr. Johnson. Mr. W. S. Treheame, architect:—

Perkins	£365 0 0!
Anley	300 0 0
Steed, Brothers	175 0 0!

For four schools, Llanbadarn. Mr. S. W. Williams, architect. Quantities supplied:—

Williams	£1,546 12 0
Morgan	1,496 0 0
Stephens & Bastow	1,408 0 0
B. A. & H. Hamer	1,348 0 0
Jones & Co.	1,344 0 0
Berry	1,335 0 0
Davies	1,326 0 0
Speake (accepted)	1,320 0 0
Griffiths	1,237 0 0

For Bristol new police-courts. Mr. J. Thomas, architect. Quantities supplied by Mr. Deane:—

Eastabrooke & Son	£10,300 0 0
Baker & Son	9,444 0 0
Hatherly	9,428 10 0
Davis	8,989 0 0
Brock	8,976 0 0
Cowlin & Son	8,860 0 0
Howell	8,665 0 0
Humphries	8,595 0 0
Krauss	8,500 0 0
Wilkins & Sons	8,475 0 0
Stephens & Bastow (accepted)	8,249 0 0

For house and stabling, Ilford-road, Stratford, E., for Mrs. E. May. Mr. G. Sparks, architect. Quantities supplied by Mr. W. Barrett:—

Pick	£1,200 0 0
Boyce	1,189 0 0
Fane	1,095 0 0
Ward	1,075 0 0
Lewis	1,066 0 0

For the enlargement of an infirmary at Rotherhithe, for the guardians of the poor of St. Olave's Union. Mr. H. Saxon Snell, architect:—

Kirk & Randall	£21,654 0 0
Nightingale	20,840 0 0
Higgs & Hill	20,320 0 0
Carter & Son	19,896 0 0
Chappell	19,889 0 0
Crockett	19,600 0 0
Wall, Brothers	19,312 0 0
Perry & Co. (accepted)	18,550 0 0

For the construction of roads, sewers, &c., at Castlehill, Ealing, for the Standard Life Assurance Company. Mr. W. A. Boulnois, surveyor:—

Nowell & Robson	£4,517 0 0
Seward	4,479 0 0
Keeble	4,426 0 0
Killingback	4,397 0 0
Jackson	4,150 0 0
Crockett*	3,999 0 0
Bloomfield	3,195 0 0
Adamson & Sons	3,082 0 0

* Too late.

For the construction of an elm trunk and other work in connexion with the extension of the present culvert 200 yards seaward, draining the St. Florence Valley, Tenby Mr. H. Morley, borough surveyor:—

Longe	£1,381 3 9
D. & J. Davies	1,373 6 0
Richards	1,251 16 4
Bonniwell	1,247 0 6
Coleman, Brothers	1,097 19 3
Thomas	943 1 9
Appleby & Lawton	854 6 2
May & Lewis	817 1 8
Wood and Iron Work only.	
Sinnette	880 0 0
Masonry only.	
Phillips & Cole	800 0 0

For rebuilding the Phœnix Hotel, Princes-street. Mr. A. E. Hughes, architect. Quantities by Messrs. Corderoy & Sandall:—

Hill, Higgs, & Hill	£9,340 0 0
Scrivener & White	9,200 0 0
Bywaters	9,140 0 0
Perkins	8,943 0 0
Grimwood & Sons	8,695 0 0

For the erection of two shops in High-road, Clapton, for Mr. A. W. Webb Mr Robert Blackmore, architect. Mr. Peyton Dashwood, surveyor:—

Honeywill	£1,638 0 0
Parker	1,630 0 0
Lindfield	1,470 0 0
Wood	1,369 0 0
Street	1,341 0 0
Niblett (accepted)	1,276 0 0

For warehouse, Great Eastern-street. Mr. F. W. Longmore, architect:—

Stimpson & Co.	£9,231 0 0
Scrivener & White	9,051 0 0
Manley & Rogers	8,952 0 0
Little	8,128 0 0
Waldram & Co.	7,429 0 0
Nightingale	7,263 0 0
Jacobs	7,248 0 0
Lawrance*	7,167 0 0

* Subject to his approval of terms of contract.

For the erection of meter and governor-house for the West Ham Gas Company. Mr. Edward R. Thorman architect. Quantities by Messrs. Franklin & Andrews:—

Mark	£1,285 0 0
Crabb	1,250 0 0
Bangs	1,140 0 0
Wood	1,123 0 0
Perry	985 0 0

For detached villa, Dartmouth Park Avenue, Upper Holloway, for Mr. T. D. Case. Mr. J. Glenn, architect Quantities supplied:—

	House.	Boundary walls, &c.
Lonn	£1,465	£113
Newman & Mann	1,416	114
Crocket	1,397	112
Staines & Son	1,385	108

For works at Homerton Hospital, for the managers of the Metropolitan Asylums Board. Mr. E. L. Bracebridge, architect:—

Main	£1,898 0 0
Barber, Son, & Lutwyche	1,890 0 0
Waldram & Co.	1,841 0 0
Allen	1,769 0 0
Smeaton	1,594 0 0
Hutchinson	1,490 0 0
Parker & Evans	1,376 0 0
Franklin	1,293 0 0
Winship	1,025 0 0
Seed	899 0 0!

For stabling, &c., for the London General Omnibus Company, at Fernhead-road, Paddington. Mr. P. Tosh, engineer. Quantities by Mr. A. J. S. C. Bolton:—

Beach, Brothers	£1,295 0 0
Rickitts	1,250 0 0
Howard	1,177 0 0
Wagner	1,175 0 0
Linfield	1,165 0 0
Parker & Evans	1,108 0 0
Niblett	997 0 0
Mason & Bristy	965 0 0
Aitchison & Walker	866 0 0

For alterations to stabling, &c., for the London General Omnibus Company, at St. Alban's Mews, Edgware-road. Mr. P. Tosh, engineer. Quantities by Mr. A. J. St. C. Bolton:—

Rickitts	£406 0 0
Wagner	367 0 0
Parker & Evans	357 0 0
Howard	345 0 0
Beach, Brothers	345 0 0
Mason & Bristy	336 0 0
Niblett	333 0 0
Linfield	296 0 0
Aitchison & Walker	266 0 0

For shops in Kendrick-street, Stroud, for Messrs. Holloway, Brothers. Mr. W. Chesold, architect. Quantities supplied:—

Niblett & Co.	£7,250 0 0
Drew	7,144 5 0
Wall & Hook	7,000 0 0
Jones & Co.	6,976 0 0
Harper, Brothers (accepted)*	6,050 0 0

* Including excavating for basement, and walling in same.

For the erection of a pair of semi-detached villa-residences, The Spa, Gloucester, for Mr. H. Belcher. Messrs. Haddon, Brothers, architects. Quantities supplied:—

Jones & Co. (accepted).

For the erection of a pair of semi-detached villa-residences, Heathville-road, Gloucester, for Messrs. Moffatt & Allen:—

Jones & Co. (accepted).

Erratum.—The amount of Tender for the cast-iron tank and girder for the Braintree Waterworks, by Messrs. Bells, Lightfoot, & Co., should be £295.

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We are compelled to decline pointing out books and giving addresses.

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The Builder.

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Archaic Architecture and its Symbolism at Mycenæ.

It is satisfactory to be assured, from the announcements that have already been made, that to the zeal and accomplishments of the most sagacious of explorers and excavators, Dr. Schliemann will add the merit of promptitude in laying the results of his discoveries before the world. We learn that he has already fixed an early date for resuming the work of spade and barrow on the ancient site of Troy; and that before his departure his portfolio of photographs will be ready for publication, together with his narrative of the operations at Mycenæ, and record of the precise *provenance* of all the objects he has so wondrously brought to light. Such a thoroughly authentic record is indispensable for the development of all the value of the discovery. The superposition of excavated remains has the same significance in archæological inquiries in their bearing upon human history, as the recovery of the due sequence of strata and eruptions in the study of geology. Space, as traversed by the excavator, is a summary of time; he turns over leaf after leaf as of a buried book, of which he knows upon the latest pages first; and he is the most skilful at the work who can read off the significant contents of each layer,—can mark its limit and the transition from one interior,—can note signs of gaps by missing leaves or layers due to previous removals, or even transpositions resulting from earlier disturbances. The notes, which must be taken as work is going on, can often be taken but hastily, and quickness of observation is required that nothing really important is overlooked. And yet the importance of a detail has often to be decided at the instant, must be recognised at first sight and at momentary sight. Much will be certainly lost by one who has no theory as to what to expect and what to look for, and much gain by one who is not on his guard against only seeing what he was confident beforehand could present itself, and missing what is still more important because utterly unexpected.

But the students who are waiting for the result and report of the excavator have to be warned on their part also against the disturbing influences of prepossessions. They, too, have their theories, and are liable to be put out sorely when what is turned up will not fit into place according to an old theory, and defies manipulation as obstinately to accommodate any new one that promises moderate seaworthiness when we are all launched together upon a chartless ocean of doubt. In the various notices of Dr. Schliemann's discoveries, there have not been wanting certain signs of impatience at the proportion of the inexplicable that they seem to involve; in some cases a disposition has seemed on the point of declaring itself to denounce, or at least decry, them as of little interest, because they, as it is said, illustrate nothing, affiliate upon no previous information, supply no missing link, but are like a loose link out of a chain that we have no other trace of, and, therefore, no interest in or concern about.

But we must demur to the "therefore"; even granting, for argument, the imputed alien character which is ascribed to the art of the objects found upon the very centre of ancient Greek occupation, this very individuality would constitute a special interest. Found where they were, they are indications of a state of society that cannot be divorced from some relation to those which succeeded it, and in which all civilisation has an interest. The more novel they are, the more important is the accession to our knowledge; if it be but knowledge how ignorant we were before, that they minister. They are "very strange"; but they prove that there are more things under the heaven and the earth of Greek territory than have hitherto been dreamed of in the philosophy of the archæological; and the sooner the philosophy goes humbly to school again, renounces weak carpings and weaker reticence, and admits its own incompleteness until it can find a place for such strangers, and "give them welcome," the better will it be for all of us. How far precisely the new discoveries may ultimately be susceptible of establishing themselves as something more than incidental and heterogeneous intrusions into the great series of events which constitutes the early development of the Greeks, can only be fully discussed when the publication anticipated from Dr. Schliemann is before us; some may be inclined to conjecture that the outcome at last, after this accession of evidence, will be but to prove that nothing better is under consideration than the remains of a barbarous tribe, which has no more claim to take place among the ancestry, direct or collateral, of the Achaians or Hellenes, than the subjects of the Incas, the Red Indians, or the Negroes to figure in the pedigrees of the Quakers of Boston.

For ourselves, the presumption that recommends itself to us is very different, and it seems worth while to set forth some of the grounds of it at once; in doing this we shall have but occasion to touch upon a few of the details of Dr. Schliemann's discoveries and those which have been placed in a general and popular way before the readers of the news of the day. There is sufficient here, as it appears to us, to furnish an attachment to what was known before of the antiquities of Mycenæ and Tiryns and Argos, and therefore to invite us to elicit somewhat more carefully all that can be fairly inferred from this earlier information. Unless we are deceived, we shall find ourselves brought up to the conclusion that in a rigid scrutiny of the evidence for the derivation of Greek art and culture, the newly-discovered tombs, together with the Cyclopean walls, the Lion Gate and the treasuries, are all links and marks of stages in one continuous historical series.

It is rather sad, and not a little astonishing withal, that there should be any provocation to advert to illiberal carping at and disparagement of the importance and interest of these discoveries. Against some reflections which it would not be easy to specify respectfully, it may be enough to direct attention to one cardinal fact; the discovery of a head of a cow in silver, with horns of gold, executed upon a truly massive scale, at once attaches the occupant of the grave at Mycenæ, wherein it was found, with a time when the mythus, which is known to us as that of Io, the transformed maiden—the priestess of Heré—was no mere matter of poetry, but a subject of religious veneration. Thus we are carried back to the days when the pastoral title Euboea of the meadowy precincts of the Temple of Heré originated, and when even the name of Mookeenæ (Μυκήναι) was most willingly connected with the lowing of the sacred heifer. Leaving to Dr. Schliemann himself the cogent arguments for his cow-headed Heré, we may be allowed to refer in this connexion to the impress of some of the golden disks, of which photographs were laid before the Society of Antiquaries. Several of these were stamped with what looked much more like a moth than even a clumsy butterfly. We do not doubt that it represents the gadfly, the brize, by which Io in her transformed state was pursued and maddened, or at least the symbol out of which the story of that form of jealous persecution was developed. It is a somewhat more risky conjecture, but we do not withhold it, that the numberless other small gold circlets impressed with combinations of circular patterns had some relation to another element in the mythus—"the patines of bright gold," which in one form of the story are the stars amidst which the horned moon wanders on its ever devious route through the sky, became then the myriad eyes of the herdsman of Io, Argus Panoptes, and at last found their fate as transferred to the proud tail of Juno's peacock.

One consideration primarily we are warned to take to heart by the surprising character of these remains, and that is, to how remote a period beyond the first syllable of recorded time must be carried back the commencements of even highly-organised human society. They would doubtless have been recognised as witness of most remote antiquity had they been brought to light when Æschylus was introducing the horned Io of Mycenæ on the stage and Herodotus was noticing how closely she was the equivalent of the Egyptian Isis. Tradition, even when most unfettered, is marvellously given to shorten up the perspective of the ages; to how remote an age do even the most frugal of the Egyptologists carry back the building of the pyramids of

Gizeh, and then what ages of earlier development do not the vast and highly-artificial structures imply. The translation of the Babylonian and Assyrian texts is gradually revealing the geographical as well as chronological scope of the activity of the great empires in Asia Minor; Cyprus, Crete, the southern peninsulas of Greece, are so many geographical stages that are successively within sight of each other, and in ages of violence there were causes of migration, by invitation or compulsion, that ever favoured the dispersion of tribes to the very limits that were set by utterly inhospitable regions or unmanageable barbarians. It has now become impossible to look back upon the ages which are occupied so busily by mythologised tradition as absolute blanks; it is becoming more necessary every day to recognise that in these traditions there are fragments of the true history of those ages,—history jumbled, perverted, multilated, epitomised, metamorphosed, but a medley,—a muddle, if you please,—of historical materials still.

Even, then, as we recognise the certainty of a vast history of society anterior to the pyramids, we may accept the high probability that even before Mycenæ was fortified as it now remains, the plain of Argos was the seat of tribes under organised government,—under one dynasty after another,—tribes that may have been more or less cognate,—more or less susceptible of fusion even when not originally allied, more or less uncultured, and yet susceptible of advance even by original self-development to the highest culture of all.

Now, architecture gives us, we may say, one certain synchrony,—and we may safely infer that at whatever unknown date B.C., the Cyclopean walls of Tiryns, Argos, and Mycenæ were built by communities of much the same characteristics, and flourishing together within the same period, whatever its unknown,—its probably enormous,—length. These three cities lay within an area locked by mountains, of some sixty or seventy square miles; Argos being most central, and Mycenæ furthest inland, but still not more than twelve miles from the sea. Such close proximity of independent cities is certainly quite consistent with the genius of the Greek nation as known in history. In practice, as in theory,—from the earliest recorded ages to the date when Plato and Aristotle disserted on the best constitution of republics at the very eve of the empire of Alexander, the Greek clung passionately to the independence,—the political autonomy of individual towns. Jealousy of this independence made them almost as incapable of loyal and permanent confederation as restiff under foreign control. It is quite in historical times that Tiryns and Mycenæ lost their independence by the growing power of Argos, and then the conquest could only be secured by expulsion of the citizens and destruction of the cities.

The architecture, again, gives us a brief summary of what may have been a very extended history. The walls of Tiryns are the most stupendous, and present in some respects the rudest examples of Cyclopean construction. For the most part they are formed of huge blocks, unshaped, and in no regular courses. Pausanias, with some patriotic exaggeration, thought it hard that Herodotus should imply that such works were insignificant in comparison with the Egyptian labyrinth and pyramids. Other portions of the defences, however, are formed of stones scarcely smaller, and equally irregular in size, but still rudely squared, and with an approach to regular courses. It may be questioned whether this was not an anterior style, so to call it, to that which is found at Argos and parts of the wall at Mycenæ, where huge polygons of various forms are arranged without regard to courses, but neatly fitted. One peculiarity of the fortification of Tiryns consists in the line of walls in some parts being triple, with double passages in the intervals, and covered in by the top stones, projecting to meet overhead. In one part the outer wall is interrupted at regular intervals, so as to form a kind of rude open porch or portico. These galleries are built of stones roughly squared, and the huge masses that project above have their lower angles cut off, so as to relieve the weight, and with the effect of producing a corridor with a false pointed arch.

When we turn to Mycenæ, we find the walls on either side of the road which leads to the Lion Gateway built of stones of smaller size than those at Tiryns, squared for the most part, and with horizontal, though not continuous, beds, and, as a consequence, without constant regard to covering alternate joints. No doorway appears to be standing at Tiryns, but in the doorway which is surmounted by the sculptured lions we see that reliance on the value of an enormous stone in emphasising the dignity which found expression in some entrance-doors of the most finished Hellenic temples,—as notably in that of Ephesus.

This lion gateway admitted to a lower acropolis, a spacious enclosed forecourt or barbican of the upper, and of which the general position will be familiar to most from the recently-published views and plans of the excavations. The enclosure was occupied originally partly by structures of which the foundations declare them to have been divided into passages and chambers, and to have belonged to the same general epoch as the surrounding walls; and the distribution of these betrays one of the two structures which can be thought of in such a position; they are assignable, as Dr. Schliemann decides, not to a temple or sanctuary, but a palace. How far a sacred character may have attached to the site all the same is still a point that we may waive the responsibility of deciding, when we remember how the tutelary Athene is represented by Homer as retiring to "the strong mansion of Erechtheus" at Athens.

Intermediate between the building and the entrance, Dr. Schliemann found the double circle of upright slabs, which once had been surmounted all round by flat stones, and so formed an inclosure to which one opening was left,—of what absolute height from the original level does not appear, but possibly at no greater than would allow them to be used as seats. That these were the actual polished stones which we read of as dignifying the seats of judges in early days, before judicial functions were committed to multitudes of dicasts, we cannot suppose; the place of such would probably be within the circle. But a very pertinent notice has been drawn by Mr. Paley from a very out-of-the-way authority, to the agora of Mycenæ, where a formal trial, that of Orestes for the slaughter of Clytemnestra, was conducted on the Acropolis. Such an agora,—such a place literally for public speech,—we may safely assume this circle to represent. It is a precise representative of that "sacred circle" within which the Homeric judges sit on seats of "polished marble." In the "Odyssey" we find that the seafaring Phæacians have an agora constructed,—that is, architecturally disposed and put together,—at the port. Here Alcinous and his guest, Ulysses, take their seats upon the "blocks of polished marble,"—the seats of dignity, and the herald summons the subordinate princes and people to attend.

The adoption of a situation for an agora like this at Mycenæ for the transaction of the chief business of the community is not without significance in respect of the seat of the strong power that controlled it; it expresses the fact that the rulers held at least their domestic court,—their king's bench,—like our own early kings, in connexion with their residence; nay, even that men of speech as well as action, they were true ancestors of the kings of the "Iliad" and "Odyssey," as by no means exempt from an admitted obligation to address a council, if not an assembly in public, and, perhaps like them, absolute as they might claim to be, to manage a public opinion that sometimes would not be managed without exacting a compromise.

It is now of the first importance to observe that this "sacred circle" of the agora attaches itself most positively to what we will call for convenience the Cyclopean period, inasmuch as while part of it is based on the native rock, another part is carried on a Cyclopean wall, which was built specially to prepare for and sustain it.

It was within this circle, as is well known, that the tombs and contents were discovered by Dr. Schliemann, of which the full details are awaited from his hand with such lively interest. Their position clearly recognises that of both the stone circle and the palace, but how far the circular area can have been used and frequented as a proper agora after these graves were established, whatever was the case before, may appear the more questionable, as doubtless there was originally some erection above them. Otherwise, their position before a royal palace as graves of royal personages is justified by a citation from Pindar, which is also due to Mr. Paley.

So far as at present appears, there are no monumental particulars available on which to found a presumption in favour of one date rather than another for the origin of these graves, within the wide-extended period from the building of the Cyclopean walls far downwards in the Achaian. It has not appeared that any of the ornaments or engraved objects that have been given up by the tombs betray any distinct relation to the sculptured lions and the symbols that are associated with them. It may be readily and heartily conceded to the discoverer that his sagacity is vindicated by the result, in inferring from the words of Pausanias that the tombs in Agamemnon and his companions were to be found within the Acropolis; but we must claim to be allowed to refer to them as the ascribed rather than the positively-certified tombs, unless some overt proof is given to attach them even to the age which is represented by the tale of Agamemnon. Pausanias only reported a tradition which had traversed too many centuries to have escaped the usual contingencies of traditions; and it was very much that they should have proved right even in respect of the existence of some tombs without claiming exactness as to whom they pertained to.

To return to the consideration of the construction of the walls: the triangular void over the gateway of the Acropolis, which is filled by the single sculptured stone, was manifestly designed to relieve the pressure on the arch or trave. Considering the strength of this stone, the precaution seems scarcely necessary, but even were it known to be so, the tradition, let us say the fashion derived from anterior weaker constructions might be too well established to be trifled with,—might be willingly taken advantage of as an opportunity for ostentation or for ornament. The form of the opening was obtained by the successive advance of the stones from either side obliquely, till at a certain height they came together; this is therefore another application of the principle that produces the colossal arches of the galleries of Tiryns, and so far evinces the connexion of the two sets if not two ages of builders. Occupied as it is, we may say that it is entitled to the honour of a precedent for the glorious pediments and pedimental decoration of the Parthenon and Phidias.

A still more important application of the principle was in the construction of the subterranean chambers called treasuries, of which there were several at Mycenæ,—among them one which seems to have been the largest and most elaborate, as it is still the best preserved, which goes by the name of the Treasury of Atreus. These were built of circles of comparatively small stones in regular courses, each course advancing inward somewhat beyond the other, until at last the dome-like cavity could be finally covered by a single stone.

Besides this general application of the primeval principle of construction, these treasuries declare their affiliation to the art and style of the Cyclopean builders of galleries and lion gateways by retaining the feature of a colossal architrave or lintel of the entrance with a discharging triangular vacancy above. The same construction is repeated in the Treasury of Atreus in the inner door-way to a rock-cut chamber.

As in the galleries of Tiryns, the projecting angles of the courses were cut off so as to produce a smooth continuous surface. This is set with small bronze nails, which are no doubt rightly interpreted as evidence that the interior was once lined with metal plates, which individually could not have been very heavy. Legend gives us hints of such a reminiscence in the story of the bronze tower in which Danaë vainly secluded the mother of Perseus, and then in the grotesque tale,—so grotesquely represented on the vases,—how Eurystheus was alarmed at the Erymanthian boar which Hercules, in obedience to his own commands, was bringing in alive on his shoulders, and retreated to hide himself in a brazen vase.

Metallic casing is specified by Homer as among the enrichments of the house of Menelaus; and at Sparta in after times one of the most archaic and venerated temples was that of Athene Chalcioikos,—Athene of the house of bronze. Dr. Curtius states that structures analogous to these treasuries were found at Sipylus, in Asia Minor, whither the Pelopidæ Atridæ traced their ancestry. He withholds a reference to certify the averment, and considering our experience of the relation of some of his historical inferences to authorities, we have really no delicacy in suspending opinion. Various fragments of either bases or capitals of columns and slabs of coloured hard stone sculptured with spirals and discs, have been brought from Mycenæ, and recent excavations have furnished more, which are said to have been found at least

connexion with these treasuries and their door-ys. With precise information which we trust y now be forthcoming as to the possible appli-tion and connexion of these fragments, they ll be valuable pieces of evidence indeed.

Here, again, we are afloat upon a sea of doubt nen we begin to cast about for proof that will tisfy us, one way or the other,—either that ese strange structures must need have been ong the works of the Cyclopean builders,—rhaps among their last achievements, or rhaps only elaborated continuations of their inciples of construction that survived to be nployed and developed by their supplanters or nquerors. And so we are led back to consider e pretermitted subject of the group of sculp-red lions which stands mysteriously between e remoter and the seemingly less remote mains,—is distinctly attached to some of the ost archaic, the colossal masses of the Acropolis enue and wall, and yet, in other respects, is ore distinctly in affinity to the coming art Hellas than anything we have hitherto met ith.

This world-renowned group stands at this y as it was seen by Pausanias, to whom we ve our earliest notice of it, and where it was oubtless seen by Æschylus, and there is as little ubt might have been seen by Homer. It is ulptured in bold relief upoh a single triangular ock, some 10 ft. high, surmounting the mighty rtal which admits to the enclosed area con-ining the circular enclosure with its graves d, as we have assumed, the primæval royal lace. In the centre, and reaching quite to the mmit of the stone, is a massive column raised on a basis, of both of which more is to be id. A pair of huge beasts stand one on either de, with their fore-paws resting on the margin the high basis, so that their heads are lifted a level with the capital of the column, and the tlines of their backs follow closely the slope-es of the enclosing triangle. The heads of e animals are lost, and as the space above the actured necks would not be large enough to mit them, it is clear that they must have been esented apparently somewhat sideways and twards, but in effect still boldly to the front. he advancing stones behind would not allow of e heads being turned outward and fully back; hether they were formed of metal and fixed on, we believe Dr. Schliemann has suggested, or, seems to us more probable, were carved out the same block, must perhaps always remain open question. The present account of the oup takes for guidance, in addition to the otices of Colonel Mure and other travellers, the reful drawing from a cast which is published d commented upon by Herr F. Adler in Ger-rd's "Archæological Journal for 1865." The mmentary is well worth consulting, and we are debted to it for many suggestions, and even hen we diverge most widely, not to say differ ost absolutely.

The two creatures,—the titular lions,—are en far less like a natural antitype than any of e heraldic supporters which, in attitude and pparent function, they so oddly resemble. In y case they might both seem rather lionesses an lions; they are without any indication of anes, either as sculptured or in smooth projec-on, that would admit of definition by painting; so eir tails are long, but by no means long enough, nd thicken gradually to the rounded end, which ontradicts any suggestion of a tufted termina-on. Again, there is lacking that marked con-rast in weight between the fore and hinder uarters that is so characteristic of the lion; hough a certain tenuity of the flank and belly s rendered appropriately enough.

Still the expression of the creatures in general orm and attitude is sufficiently in harmony with what ancient art, no less than Mediæval, under-tood as leonine, to justify us in allowing that ions they were intended to be, and may remain, s, after all, they are more like lions, especially n the strongly-pronounced anterior limbs, than ny other animals we could bring into comparison f consistent bulk. The monumental lion, from hat of Sir Edward Landseer upwards, has ever sserted his independence of slavish realism.

The artist, whoever he was, and of whatever ime, who executed the paired lions of Mycenæ, nucceeded in producing no mean or trivial types f vigilance and force. They stand manifestly s guards of the column which is between them, nd all that it may signify. There is a solid ssumption of position in the firm parallelism of heir lifted fore-quarters, while the alternate otion of their hind legs retains a reminiscence f a recent advance and up a gentle incline to the post which they finally occupy; there is just enough indication of movement, and not so much as to be inconsistent with, or to disturb, the confident repose of the challenge that is implied by the alert presentation of the heads.

As regards execution, the sculptor evidently had more power or more passion also for sweeping lines and broader surfaces than for minute details; the intention to emphasise joints is displayed with something of the exaggeration of the Assyrian sculptors, but the paws, on which the Assyrians laboured lovingly, are here quite rudely treated. An odd dewlap-like projection evidently represents the muscles of the breast, thrust together under compression of those of the legs in their strong tension. There is a certain contrast between the two figures,—apparently in favour of that to our right,—whether due to design or accident, to a different hand, or improvement of the same hand, as the work went on.

Carp, then, as some may be inclined and must be allowed to do, at much that is rude and something that is grotesque in detail, it must be admitted that in general spirit these fronting lions are grand, impressive, and suggestive of a thoroughly masculine, a majestic tone of mind in the original conception. So far it must be said that they are not out of harmony with the characteristics of the more advanced Cyclopean walls whose builders were credited by Pausanias with the sculpture of a head of Medusa, which in his time was at Argos. For the rest, were it not for that certain air of distinction and dignity combined with energy which might be Hellenic, the work might seem equidistant from the style of Europe at a later date, as from that of Asia. The reservation is very important, and must be extended when we come to examine the design of the intermediate column. Otherwise, the combination has decidedly an Eastern character, and we are equally carried to Asia, whether we are reminded by it of the paired lions of Assyrian ornamentation, the lions attendant on or controlled by Phrygian divinities, or by Ephesian or Persian Artemis, or by the guarded monuments of Sassanid coins.

But as regards the guarded object in the present instance,—here we come upon a link which seems to unite irrefragably the sculptors of this Cyclopean monument with the development and history of Greek art, in its strictest sense. The column, or rather engaged or semi-column, has a shaft, which, rising from a very shallow base of rounded profile, increases upwards, but less than is shown in many engravings, and is crowned by a capital of which the mouldings represent pretty accurately those of the Attic base in reverse order; in fact, if we turn the column upside down, making the present capital the base, we have presented to us a bold torus, duly divided by a well-marked scotia, or filleted hollow, from another smaller torus, which is surmounted by a narrow fillet,—the rudiment of the later apophyge of the shaft, its rapid widening out above the base; the shaft itself now diminishing normally, that is from below upwards.

Above the capital we have the segment of a peculiar entablature which demands attentive study,—so frequently has it been misconceived; a plain block representing an architrave is surmounted by four discs in contact; the circular outlines of those at either end are continued on the return as sides of cylinders; and it thus appears that they represent the ends of poles laid close together, with a blocking course above them, the combination which gave the most characteristic feature to the Hellenised architecture of Lycia. (See Fergusson's "History of Architecture" for fuller exposition.)

The illustrations of the orders of tombs in Lycia, published by Sir Charles Fellows and other travellers, exhibit the marble or stone imitation of this form of wooden construction in various stages. The coincidence, therefore, must be accepted as certifying that some measure of truth underlies the ancient fables which treat of intercourse between the plain of Argos and Lycia,—of the Lycian wife of Prœtus, who ruled at Tiryns,—of the building of the walls at Tiryns by Cyclopean labourers from Lycia, according to Strabo, and even as Pausanias could report, of the lion portal of Mycenæ itself. We must wait until Lycia has been far more thoroughly explored before we can be quite safe in assuming that there is no truth whatever in the story of Cyclopean works of primitive and imitative character in that country.

However, the fact is already declaring itself that in the Cyclopean remains which exist about the gulf of Argos, we have but the skeleton of an organism from which all the filling up and finish have been stripped away. Various architectural fragments have been found at Mycenæ, of sculptured slabs of hard stone which exhibit details that affiliate on the lion portal, but of which the precise assignment is undetermined. We read of semi-columns found in the treasuries, but are uncertain whether they may not be fragments of symbolical columns that once had the same relative position over the doorways as the lion-guarded semi-column. Attempts have been made to restore one column from fragments of a diminishing shaft and an ornamentally-sculptured torus;—it is a question, again, whether the restoration as propounded should not be inverted, and the apparent base be recognised, as in the antitype, for the original capital. One flat slab from Mycenæ in the British Museum exhibits a row of discs which are so far a continuation of the analogy. Parallels to the spirals which constitute the leading elements of the other ornaments must probably be sought among the remains that Dr. Schliemann will soon put before us.

It is important to notice that the surmount of the column is so carried up to the covering stones above as to preclude any theory as to it having represented either a fire altar or any of one or two other of the objects that have been desperately guessed at. It is a column with entablature pure and simple,—less probably as an emblem than a representation, a representative at most, of a given object. Before we speculate on what this may have been we must examine the basis on which it stands.

We can only agree with Herr Adler that this represents a double seat or throne. The semi-circular recess on either side of the column answers symmetrically to the divisions below. It is reduced in dimensions, no doubt, and kept flat, to accommodate the exigencies of the subject above and of relief in this position; but otherwise the plan and the carved recess below have a marked general correspondence with the seats of later times,—indeed, of all times. If a throne then,—certainly a royal throne or its symbol,—the united throne of a royal pair,—of monarch and consort,—or less naturally of monarch and assessor or guest. In the "Odyssey" Nestor at early morning takes his seat on the polished stones in front of his lofty portal, sceptre in hand,—the seat which his father Neleus before him had been wont to occupy, "a counsellor equivalent to the gods." To ancient imaginations as to modern the throne was a still more impressive symbol of majesty than the crown,—and this feeling is implied, however grotesquely, in the image which Nausicaa presents to Ulysses of her father on his throne.

> "Seated whereon he quaffs off his wine just like an immortal."

Her representation of the scene is, however, quite to our purpose. Ulysses, she tells him, will find her mother Arete seated in the reflection of the fire, engaged with her spindle, as she leans against a pillar, and her father's seat near her in the glow of the fire likewise; this is in the *megaron*, the great hall of the palace: so when Ulysses, in a similar chamber, is awaiting the recognition of his wife Penelope, he sits by a tall column, while she, not yet fully assured, sits, not by him, but opposite to him by the wall, the fire between them. A painter at Pompeii, taking liberties with his prepositions, seats Ulysses not by a column, but on the shaft of one that lies prostrate.

The column of the lion-portal may, therefore, be regarded with equal appropriateness either as the column of state in the great hall of a royal palace, or at the entrance of the palace. It is a natural symbol in either case of stability,—of that security of the royal possession and seat which the guarding lions no less naturally declare to be under the assured protection of vigilant courage and force.

Of lions as emblematical guards of palaces and thrones, history and figured antiquity are full, from early Egyptian monuments to those of Nimrod, of Persepolis, including the recorded ornaments of the throne of Solomon, and the portentous protector of the Acropolis of Sardis,—thought fair material for history by Herodotus.

To which of the epochs of the history of Mycenæ, as tolerably sharply distinguished, at least, in mythology, the lion sculptures are to be assigned is perhaps more difficult to decide than important to discuss. The Lycian detail points to the Perseïd period, and seems a fairer presumption than is supplied by mere Pelopid associations with the lion mythology of Lydia. The origin of symbolism of this class, however,

with one dynasty, by no means precluded its adoption by another that succeeded, whether, by inheritance or conquest,—by no means precluded considerable modifications in the process of transference.

But what protection can now be given to this somewhat matter-of-fact elucidation of the sculptures against the opinion which has in its favour a very considerable *consensus* of learned men, from Müller and Gerhard to E. Curtius, that the pillar is nothing less than a representative of the God Apollo,—of Apollo Agueus,—that is, Apollo as the guardian of streets and doorways?

Admitted it must be that pillars,—albeit specified as pointed,—were familiar in Greek cities as sacred to the god in this character, and even as the scholiast of Aristophanes assures us, as the god himself; and this type has been recognised on coins of Ambracia. The matter seems brought closer home when we hear the exclamation of the Cassandra of Æschylus as, after foreboding the murder of Agamemnon, she rushes to meet her own fate into the palace of Atreus,—

> "Apollo, O Apollo!
> Thou way-god! my destroyer!
> Ah! whither hast thou led me? To what roof?"
> *A. Swanwick's Trans.*

But all that can be admitted in the case is, that the contemporaries of Æschylus may have recognised such an indentification, without regard to the confusion they introduced between the most widely-separated epochs of symbolism. Half the value and instructiveness of this primæval monument will be forfeited if we do not recognise, in its simple reliance on a pure constructional symbol, the expression of a period anterior to that movement, which did not rest until every such symbol on the soil of Greece had been endowed with personality, with passions, with a history, and ultimately with an approach, at least, to human forms and features and members to correspond. Some cases of arrested development remained to very late times. Pausanias found simple stones in several places, with the titles and honours of gods, even of Love, and the Graces, and Zeus; in one case, a group of some thirty square stones, each with a divine name. The most familiar example of a stage of development somewhat in advance and fairly on its way to a far higher, is the square stele, with the head and attributes of Hermes, and figured antiquity supplies a whole museum of such instances in every stage of transition. The not less familiar figure of Ephesian Artemis is a highly-sophisticated symbol, but still retains the columnar form, without disguise. The Trojan Palladium, as described by Apollodorus, and shown on vases, is somewhat simpler. But the most remarkable example of which we have a detailed account on proper Greek ground was the figure of Apollo at Amyclæ, in Laconia. Pausanias guessed the height of this as some 45 ft. It was of rude archaic workmanship, and except for a helmeted head, and extremities of hands and feet, did not differ in appearance from a bronze pillar. The Christian Father, Clemens of Alexandria, preserves some verses which refer to the archaic figure of the Hera of Argos as merely a tall column.

Thus the records of Greek antiquity contain evidence of objects regarded with every variety and degree of veneration, as more immediate evidence or as absolute seat of divine power, as sacred by long-continued associations, or sanctified in a sense which the later Greek was ever eager to admit, as appealing to the sense of dignity and awe by true poetic impression.

That the pillar of Mycenæ, then, was originally designed either to represent a god or the direct symbol of a particular god we are by no means justified in assuming; but that as time went on it was likely to be assumed by lively imaginations tending ever in a certain direction, as either one or the other, is scarcely to be denied. From this point of view the columnar Apollo of Amyclæ becomes interesting from its associated objects that seem to have owed their strange juxtaposition to some anterior grouping like that before us. The bronze pillar god was erected upon an altar, above and around which was a throne of most elaborate workmanship decorated with a multitude of subjects and figures both in relief and in the round; the seat of the throne was divided into spaces, as if for several occupants, with an interval between each. In the central recessed space, which was wider than the rest, as if for the god to take there his seat, the columnar figure rose upright.

We cannot but believe that the elaborate throne of the sculptor Bathycles was in substitution of one of ruder construction, and that even the figure of Apollo, archaic as it declared itself to be, was a substitution of far earlier date, as its style declared, for an object of reverence more archaic still, the entire combination having originally started from even such an arrangement of naturally significant symbols as we have preserved to us in the lion portal of Mycenæ. If any associations of divine, or rather of dæmonian, nature were originally connected with this group, we should conjecture them to have attached to the guarding beasts; such, at least, might be the natural feeling of a listener to the singer of the "Odyssey" as to give splendour to the palace of Alcinous, he adopted, but heightened poetically, the familiar details of the royal seat of gold-abounding Mycenæ.

> "Of gold were the leaves of the doors that closed in the firm-built mansion,
> And of silver the jambs stood upright fixed in the brazen threshold;
> And of silver the architrave over,—the cornice, too, was golden;
> Dogs were there, one on each side,—of gold one, one of silver,
> The same which Hephæstus had wrought with deep inventive cunning,
> Ever to guard the house of Alcinous, large-hearted;
> Immortal they were, and exempt for all time from age's inroad."

The colossal walls of the Acropolis of Mycenæ and those of the cities around tell plainly of days when kings had to look out from their strongholds beyond more than one frontier, when jealousy was only lulled, not killed, by the closest alliances, and subject populations were kept at exhausting labour to prepare a bulwark against contingencies of violence. The one great plastic monument that remains carries back our associations, on the one hand, to those supposed Pelasgic times, when, as Herodotus tells us, men had not yet invented or imported the names and attributes and fables of later Greek mythology; when they were content to worship the gods under a general name expressive of a common origin for all the established order that was visible in the course of nature; this in one direction; but in another, as we have seen reason to infer, the design which we have studied comprises no equivocal indication that the rulers and the people who were here engaged in attempting to solve what might seem the most rudimentary problems of civil society, were yet akin to the tribes, which, as Hellenes, went so far toward carrying society to the utmost perfection that it is susceptible of, and certainly set it well forward on that way which it is still toiling painfully along.

THE PUBLIC USE OF CHURCHYARDS.

In the Consistory Court, on the 28th ult., before Dr. Tristram, Chancellor of the Diocese of London, an application was made by the vicar and churchwardens of St. Barnabas, Homerton, to appropriate a part of the churchyard for a public way, and an important question as to churchyards being used for public purposes was involved.

The application was for a faculty to widen a narrow road called Brooklyn-walk, abutting on the end of the parish churchyard, and being one of the roads leading to the church, by placing back the wall of the churchyard 3 ft. 9 in. The churchyard was consecrated in 1845, and closed for interments three years ago. There were no graves in the portion proposed to be appropriated, and on account of the increase in the traffic the road at that point had become dangerous, as two vehicles could not pass. The churchwardens had no funds to erect another wall, and the local Board had offered to spend 200*l.* in making a new wall with railings if it could be legally carried out. The vicar had joined in the application, and the Bishop of London had approved of the plan.

The learned Chancellor, in giving his decision, after narrating the circumstances, said he had a strong inclination in favour of the application if it could be granted with due regard to ecclesiastical principles and previous decisions. He referred to the case of "The Queen *v.* Twiss," in which Lord Chief Justice Cockburn laid it down that, when ground was once consecrated and dedicated to sacred purposes, no judge had power to grant a faculty to sanction the use of it for secular purposes; and that nothing short of an Act of Parliament could divest consecrated ground of its sacred character. He accepted the law as laid down by his lordship, and the consideration in the present case was whether a strip of ground not required for interment could not be utilised for the public way, for the convenience and safety of the parishioners. Faculties had been granted for footways in churchyards, and in numerous churchyards there were footways. No doubt applications had been refused when churchyards were still used for interments; but now traffic had increased, and roads, which were formerly sufficient, were found inadequate. Therefore, although he did not alienate the portion required, and if at any time it was not needed it could revert to the churchyard, still he felt it to be his duty, for the benefit of the public, to grant the application.

Lewisham Park Estate.—Messrs. Bonner & Mills have been appointed, after competition, architects for the houses to be erected on the Lewisham Park Estate.

UNEARTHED HISTORY.

It has been somewhat of a surprise to archæologists and antiquaries that in the excavations of the New Avenue de l'Opéra so few buried historical records of the past should have been brought to light. Here and there a few *louis d'or* of recent date have been found, but positively no treasure of any absolute value or interest has been discovered. On the Champs de Mars and the Trocadero, notwithstanding the primitive condition of the ground, no remains whatever of early human work have been brought to light; but to make up for this loss the engineers have come across most valuable quarries of building stone and gravel sufficient alone to supply the enormous requirements of the building.

The other day, however, in excavating the new carriageway which passes before the façade of the Tuileries, the workmen came upon some remains of the kilns in which for centuries have been manufactured the tiles for which Paris has so long been famous. If any doubt can remain as to how the Palace of the Tuileries obtained its name it is completely dissipated by this discovery of the remains of the tile-kilns (*tuileries*), from the fact of whose existence the property took its name.

For a long time past the exigencies of the traffic between the right and left banks of the Seine,—that is, between the Boulevards and the Pays Latin,—have led to a demand on the part of the public for some new thoroughfare, in addition to that provided by the Place du Carrousel and the Place de la Concorde. At last the municipality have taken up the question, and the want is shortly to be supplied. Much to the rage of the Monarchists and Bonapartists, the old footpath through the garden of the Tuileries, running along the whole façade of the palace, is going to be transformed into a carriage thoroughfare, and thus a great part of the traffic between the two banks of the Seine will pass before the palace through the old private garden, which only within this century has been opened to the public. When we consider that this thoroughfare will lead into the new Avenue de l'Opéra by the prolongation of the Rue des Pyramides, it will easily be seen how important a road it will become, and numbers of persons to whom the opposite bank of the river to that on which they live is practically a *terra incognita*, will be led to make more frequent excursions across the river.

With the ruins of the palace transformed into a museum, and a broad, busy thoroughfare before it, no wonder that the Monarchists and Bonapartists cry out against the new decision of the municipality, for away then fly all hopes of the once famous Tuileries being again a palace, royal or imperial. In the mean time the new street is rapidly progressing, and by the time that the famous old orange-trees, many of which date from the time of Louis XIV., are brought out again, the thoroughfare will be opened to the public.

It is as far back as the thirteenth century that the tile-kilns referred to previously were established on this spot, then outside the city walls. At the commencement of the sixteenth century the mother of Francis I., the Duchesse d'Angoulême, having found the royal residence at the Palais des Tournelles (on the site of the present Place des Vosges) somewhat distasteful to her, resided at the house of M. de Nauville, built on the site of the present Palace of the Tuileries. Charmed with the spot, Francis I. purchased it, and in 1564, Catherine de Medicis, having determined to abandon the old Palace of the Tournelles, charged Philibert de l'Orme with constructing for her another residence on the site of the "Maison des Tuileries." From this time then, the Palace of the Tuileries rose, stone by stone, and began to take a place in French history. There, as each monarch succeeded to the throne, the Court passed some portion of their time. During the reign of Louis XIII. there existed in the gardens of the Tuileries a *restaurant*, kept by one Renard, and there, during the difficulties of the civil war of the Fronde, met a great number of the principal personages of the insurrection.

It was in this same house occupied by Renard that, towards the end of the year 1640, the famous painter, Nicholas Poussin, ever in search of that retirement and seclusion from the busy and to him distasteful life of Paris, was installed by the orders of Louis XIII., and there he remained till his final return to his favourite and congenial adopted fatherland, Italy.

Paris.

DESIGN AND SUPERVISION OF BUILDINGS AND PUBLIC WORKS.

We have called attention on former occasions to the detriment to which the architectural beauty of London has been not unfrequently exposed from the want of some controlling authority, which should regard not only the convenience of any invading railway company or private builder, but the *ensemble* of our street architecture, and the imposing effect of our principal public places. The want of some such authority is shown, for example, when such enormous elevations as the wagon-roofs of the Charing-cross and Cannon-street stations have been allowed to soar into the air, to the utter extinction of any sense of scale or possibility of pictorial sky-line in the vicinity so afflicted. Again, it is but a few weeks ago that the correspondence printed in the columns of the daily papers afforded positive proof that the largest work of a character partly architectural and partly engineering that has as yet been executed in London, was undertaken without any adequate study of the effect which it would produce on the channel of the Thames. The arguments which were brought forward on behalf of the Board of Works to show that the quay-wall and embankment on the north side of the river could not in any way augment the flood to which the unfortunate inhabitants of Southwark and Lambeth were exposed had at least that force and upshot. It may be, and no doubt is, very true that the quay wall was not the primary cause of the floods. But it is certain, from the arguments which were brought forward to support this view, that the subject had not been properly investigated in the first instance, and that if it had been investigated at all it had not been approached with an exhaustive knowledge of either the facts or the principles of the case.

There is no doubt that a very strong reluctance would be felt, and we think not unnaturally felt, in many quarters at any proposal which might be represented at an attempt to appoint a "Minister of Taste," or a Secretary of State for the Fine Arts. A communication in our last number calls attention to certain serious inconveniences which have already attended the expenditure of public money in this direction. And, after all, with regard to the metropolis, the examples to which we have to refer as to the manner in which our Continental neighbours look after their public works are not directly in point. While a care and thought have been bestowed on the adornment of Paris, St. Petersburg, Turin, and other cities, of which the absence is very conspicuous in London, the Ædile who takes charge of architectural requirements in these countries is not a Minister of State. He is usually a municipal officer. And in our own case the absence of any such functionary is probably due rather to the irregular growth of our metropolis, and to the want of any comprehensive municipal organisation for the whole of London, than to any more recondite cause. The want of functionaries of this kind, who should exercise a wholesome influence over the whole great brick and mortar province of the metropolis, is only one of the many anomalous and inconvenient results of our love of independence, as it is shown, carried *ad absurdum*, in our parochial systems.

We have now, it is true, district surveyors, to whom is entrusted the duty of attending to the enforcement of the provisions of the Building Acts. But all are not aware that it enters into the attributions of these gentlemen to hold common council. They meet occasionally as an association, and if they were headed and represented by a chairman, and had some additional powers, the simplest approach to what every architect must admit to be desirable would probably be thus made. But the first steps have yet to be taken in that direction. We apprehend that the struggle with squalor and scamping, and the resistance to infringements of sanitary regulations, or of the prohibitions as to the erection of unsafe dwellings, must occupy the time of these gentlemen too fully to allow them much leisure to think of combined efforts for promoting the architectural unity and beauty of London. However, we offer the suggestion for what it is worth. That some directing or controlling influence, bent to the pictorial and architectural preservation of our street architecture, is desirable, we think few men of taste will deny. As to the means to be taken towards this end, there is much that remains to be done before any thoroughly good suggestion is likely to be made.

It is, however, otherwise with regard to those matters which directly affect the public service and convenience. As to architectural beauty, there will always be room for difference of opinion, for doubt, and for dispute. But as to engineering fitness, the grounds of hesitation are far more restricted. The only admissible cause for doubt as to an engineering scheme is ignorance; ignorance, more or less complete, of what are the facts, of what is wanted, and of what will be the real effect of the measure suggested.

We propose to inquire for a few minutes into the mode in which our more important Continental neighbours, the Great Powers of Europe, provide for the superintendence of their respective public works. This is for the most part done by a special Ministry, devoted to that end. There is good reason to believe that this is not only the most efficient, but by far the least expensive method. And its indirect advantages are even greater than those of efficiency and cheapness; for one great function of the Minister of Public Works is to supply to the public with the greatest freedom that full, accurate, and co-ordinate information which it is so impossible for any one to obtain in this country. Not a session passes that Parliament does not pile up returns moved for by private members, which for the most part are tossed into the waste-paper basket. Associations formed to carry out public works have to collect information at their own cost. Sanitary authorities have to sit down bewildered, in the want of any efficient guidance or instructions. Over and over again we collect partial details, which there is no machinery for welding into an available statistical whole.

We have one exception to this, and that is an exception so brilliant that it may be well wondered at that we have made no effort to extend the application of so fruitful a principle. We refer to the Ordnance map. This is an excellent instance of the mode in which general information of an exhaustive kind can be collected by the care of the Administration, and rendered fully and freely available, at a very moderate price, to all persons concerned.

The amount set down in our Civil Service estimates (for 1875) for public works, is 1,442,345*l.*, which comprises 150,043*l.* for the maintenance of palace and parks. This sum, however, does not include any cost of the Postal or Telegraphic Service, or of that of marine communications,—the packet service. These three items amount to 4,888,000*l.*, and raise the State expenditure on account of public works to 6,330,000*l.* per annum, or about 8¼ per cent. of the national expenditure. But this is very far from representing our national outlay in this matter. The local burdens are numerous, heavy, and everywhere increasing. Very many matters which, in foreign countries, are either supervised or actually executed by the State, are carried out in England by public or private companies, over which, slowly and reluctantly, the Administration is finding itself compelled to exact a supervision. Thus a railway expenditure of thirty-three millions a year is attended to by the Board of Trade, on the principle of shutting the stable-door after the steed is stolen; that is to say, of inquiring into the special cause of any fatal accident, instead of grasping the whole subject in a comprehensive and scientific inquiry, pointing out the one great vice of the system which is the direct cause of the majority of what are called accidents, and then enforcing such wise regulation as should remove the cause of so much loss of life and limb. That, however, it is left to a private inquirer to suggest, as in the analogous case of the protection of our sailors from unseaworthy ships, with but little result as yet, except sneers from railway managers. Then we have upwards of 20,000 miles of what were formerly turnpike-roads, and more than 100,000 miles of highways, the supervision of which, whether well or ill executed, is a cost to the country; and if it be a stinted cost, is a source of great expense and waste. As to our 4,000 miles of canals, there is no one to look after them at all, so far as the public are concerned. The same may be said of our rivers, of the length, volume, navigability, and other particulars of which we possess no general information whatever. On all these things waste, or cost, or probably both, are annually incurred and increasing, for want of a central and efficient supervision, so that to the 6,000,000*l* which we may make out from the budget that we lay out on public works, including the well ordered and lucrative service of the Post-office, we have to add an unknown but very large sum of annual loss, incurred from neglect, ignorance, and want of supervision.

In the Russan empire the twelfth head of the national expenditure is under the control of a "Minister of Ways and Communications." The cost of the administration of this department, that ranks as permanent, is 388,000*l.* per annum. The expenditure on roads, under this supervision, is 520,000*l.* per annum; that on waterways is 93,000*l.* per annum; that on the railways of the State is 22,000*l.* The guarantees to railway companies demand the sum of 1,500,000*l.* per annum. Altogether the budget of this minister, ordinary and extraordinary, exceeds 2,600,000*l.* per annum, and forms about 3 per cent. of the total national expenditure,—of course not allowing for the expenses of a war.

In Austria the department of Public Works forms a subdivision of the Ministry of the Interior. The sum allotted to this service in the budget for 1876 was 647,000*l.* for ordinary, and 262,000*l.* for extraordinary expenditure. But the budget of the Minister of Commerce includes 100,000*l.* ordinary, and 150,000*l.* extraordinary, expenditure for the service of the ports; 1,920,000*l.* for post and telegraphs; while the Minister of Agriculture spends 355,000*l.* in administering the domains and forests, and 471,000*l.* in working the mines of the State. Altogether, therefore, the department of Public Works costs the State in Austria 3,900,000*l.* per annum, amounting to nearly 10 per cent. of the budget of the countries represented at the Reichsrath.

In France, the Minister of Public Works expends 6,444,000*l.* out of a budget of 102,800,000*l.*, or about 6¼ per cent. of the national expenditure. Of this the general administration consumes about 400,000*l.*, or 6·2 per cent. on the outlay under the direction of the Ministry. The roads and bridges cost, for the ordinary expenditure, 1,278,000*l.*; the internal navigation, 384,000*l.*; and the harbours, 225,000*l.* per annum. Guarantees and subventions to railway companies amount to 2,072,000*l.* per annum. But the sums of 2,800,000*l.* for the post, 600,000*l.* for telegraphs, and 480,000*l.* for forests, have to be added from the budgets of other departments, making the State expenditure on the same group of objects as that which we have abstracted in other countries amount to 10,324,000*l.*, or more than a tenth of the entire national expenditure.

The budget of the German Empire is not published in such detail as to allow of an accurate comparison as to this part of the expenditure. The net products of the postal and telegraphic services appear in the receipts, as well as those of the railways. For the former two items, the gross receipts amounted to 59,989,000*l.*, and the expenditure to 54,708,000*l.*, showing a net income of 5,281,000*l.* The railway gross receipts were 1,857,000*l.*; the working expenses, 1,383,000*l.*, showing a working profit of 474,000*l.*, thus making the working expenditure 74·5, and the net revenue 25·5 per cent. of the gross income,—a state of things very far from admirable as regards the management of the lines.

In Italy the attributions of the Ministry of Public Works correspond more closely to what might be expected to result from the economy and centralisation of inspection of such matters in England, than is the case in either of the other Continental states. The postal and telegraphic services are included in the budget of this ministry, and some of the railways are both constructed and worked directly by the State. For the year 1876 the ordinary expenses of this ministry amounted to 2,106,000*l.*, and the extraordinary to 1,651,000*l.* There is, however, an item of 730,000*l.* set down to sanitary service, under the direction of the Minister of the Interior. This, according to our own distribution of expenditure, would come under the control of a department of public works, which would, of course, absorb the present unorganised and imperfect machinery of the Local Government Board. These items united amount to the sum of 4,487,000*l.*, or about 8·4 per cent. of the annual expenditure of the kingdom. But the cost of the Italian ministry is very light when compared to those of other Governments. For the central administration, by the law of 1876, the sum of 30,000*l.* only was demanded. The Royal Corps of Civil Engineers, to the members of which all supervision, design, and to some extent execution, of public works is committed, only receive 76,000*l.* per annum. The total cost, including travelling and all expenses, of the Ministry and the attached corps of engineers, is 143,000*l.* per annum. This is less than 3¼ per cent. on the gross amount of

the expenditure of the Ministry. And it is even a less rate than this as concerns the actual expenditure on public works; for the municipalities and the departments are each compelled to contribute, in certain specified proportions, to the constructing and maintenance of the departmental and public roads. Extreme activity is now displayed throughout the peninsula, in the construction of new roads, according to a general scheme prepared under the sanction of the Ministry. The rivers, canals, and waterways amount to an aggregate length nearly equal to that of the roads. The hydrographic survey of the greater portion of Italy has been completed by the Royal Corps of Civil Engineers; and the remainder is in course of completion. More than 800 private companies for irrigation, drainage, and reclamation of lands exist and are at work; and all the details requisite for the operations have been furnished, while the operations are supervised and controlled, by the same useful corps. In the ordinary budget alone about 360,000*l.* is the given expenditure on national roads. Hydraulic works, including banks for protection from floods, canals for irrigation and drainage, improvement of river outfalls and the like, require the outlay of 346,000*l.* For ports, harbours, &c., 135,000*l.* are allotted. The telegraph service costs 287,000*l.*; that of the Post-office, 775,000*l.*; and the supervision of the railways not belonging to the State costs 16,400*l.* The sum of 84,000*l.* is expended on working railways belonging to the State. Thus in every department of national industry, information, control, and professional guidance are supplied by the State for the construction and service of private as well as public works of an engineering nature. And if the outlay for supervision borne on the ministerial budget be compared with the practical service rendered to the country, we shall find reason to speak in terms of very high admiration of the method adopted for the execution of the public works of Italy.

The outcome of such a comparison (on which we have, as far as we are aware for the first time ventured), is extremely instructive. It is not too much to say that the intelligent civilisation of a nation may be to some extent gauged by the two opposite measures, of the proportionate amount of national expenditure devoted to public works, and of the cost of superintendence of the same. In semi-barbarous Russia we find an expenditure of 520,000*l.* per annum on the roads of an empire extending over 8,365,000 square miles; while a considerably larger sum (we have not at hand the extraordinary expenditure for the year in question, but it does not fall far short of the ordinary outlay) is laid out on the roads that serve the 111,410 square miles of Italy. But the Russian ministry costs more than twelve times as much as the Italian ministry. Italy may better compare with England than any other country. Its area, its population, the industry of its people, the long extent of seaboard in proportion to the area of the country, are all very close upon our own. The presence of coal in our soil, and the happy balance of our political organisation, have given us a great start in the race with our old masters,—a start, however, which every year tends rapidly to diminish. What we can collect from the abstracts of the national accounts, as to the comparative rates of outlay of the two countries, gives 8½ per cent. laid out in England against 8·4 per cent. in Italy. Neither of these statements is exhaustive. In both countries there is a large local expenditure, which does not come into the national parliamentary budget, while the activity of private capital in the United Kingdom is such as to exceed both national and local expenditure. But when we try to put our finger on the other gauge,—the ratio of the cost of superintendence,—we are absolutely nowhere. It might be an overstatement to say that we come nearer to Russia than to Italy in this respect,—but it would be difficult to prove to how great an extent this was a misstatement. In one case, that of Italy, we have a definite annual expenditure. We see what there is to show for it, and we find that the supervision falls very far below the rate of an architect's commission. The work,—as far as we can check it, and that is to a great extent,—is well done, and the cost is minimised. Now, if we regard all those items of expenditure, national or local, which are going on in every part of the country, inspection of railways,—inspection of mines, inspection of sanitary authorities,—and couple with these the far more costly items of non-inspection of canals, non-inspection of roads, limitation of inspection of railways, and non-assistance to sanitary authorities, we shall be certainly within the mark, if we consider that our want of system costs the country from three to four times as much as the Italian centralisation of system, and that an allowance of five per cent. on all public work bestowed on an efficient establishment of the nature of the Italian Royal Corps of Civil Engineers would be a saving of cent. per cent. to the country in direct cost, and perhaps of a thousand per cent. in avoidance of waste of money, labour, and time.

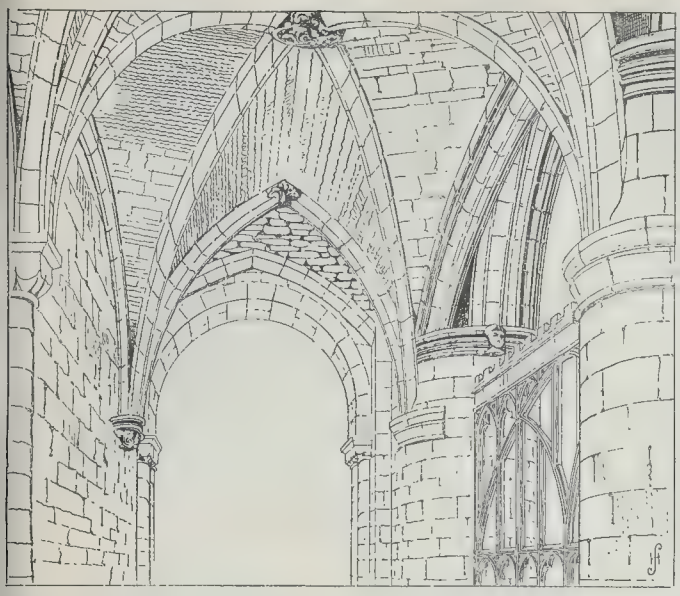
It is true that an extraordinary advantage has been secured to England by the activity of associated industry. The outlay of 630,000,000*l.* on our railways, without any assistance from the State, is an operation without precedent in modern times. When we contrast the receipt by the State, in the form of rates and taxes and of Government duty, of no less than 1,977,000*l.* per annum in the United Kingdom, with the item of 1,500,000*l.* paid as interest for railway capital in the Russian Budget, we become aware of an enormous difference in the industrial activity of the two countries. Again, our working cost of 54 per cent. contrasts very favourably with the higher rate of 74·5 per cent. on the German lines. To know how far this difference is altogether in our favour, however, we ought to know the rates of tariff, and the actual gross income per mile, in the two countries, as in the absence of such information mere comparisons of working ratio are delusive. It has been the policy of many Governments to encourage railways for the general good, by subvention of some kind from the State. We have carried out this policy ourselves in India, with the happiest results. The Belgian Government are carrying it out, as we believe, with a disastrous result. In the Russian empire the support of railways by the State may well be considered almost necessary to the national existence; though how Russia is to continue to pay 5 per cent. in gold on her foreign debt of 300,000,000*l.*, we are at a loss to imagine. But the more active our own expenditure, under railway companies, dock and harbour companies, or the new local authorities, the greater is our national loss for want of thorough and combined engineering direction. We have no love for the interference of the Government in any matter that can be better managed by private energy. But engineering matters, affecting the communications of the country, or the general regulation of its waterways, cannot properly be so managed. If we consider that we have taken fifty years to spend over 630 millions sterling on our railways, this gives an average expenditure of 12,600,000*l.* per annum. Five per cent. on this sum would have amounted to 630,000*l.* per annum. Reduce this by one-half, and we have a cost nearly equal to that of the Russian administration of public works. Can any one for a moment doubt that the railway companies could have paid this sum, out of their own money, with the utmost advantage, to avoid the heavy Parliamentary expenses with which they have been burdened, and the construction of duplicate lines? that the country would have been the gainer by millions a year if an educated tribunal had been substituted, at that cost, for the hap-hazard way in which we scramble through arrangements by the patient and orderly care of which waste, extravagance, and loss of all kinds can alone be avoided?

TEWKESBURY ABBEY.

In our last number* we had looked at the unrestored portion of the interior, comprising all the nave except the two eastern bays. Passing through the temporary screen erected at this point, we first become fully conscious of the real grandeur of the building, as well as of its exceptional treatment and interest. Here the whitewash is all scraped off, and the original character and tone of the masonry exposed to view. The first thing that strikes one is the grand effect of the blocks of masonry which form the crossing piers, and which are not formed on the principle of a square pier presenting the same face both to the main building and the transepts, but take (on plan) the shape of longitudinal blocks, with their length east and west, finished square towards the crossing, and on the side next the arcades rounded off into a respond to the circular piers, the rounded respond dying into the straight surface of the wall plane, with no line or break of any kind. The effect of solidity and mass thus given is partially shown in our last week's illustration, but must be seen to be realised. The crossing piers are thus, in fact, massive buttresses interposed between the thrust of the crossing arches and the line of the main arcades east and west. Their function in this respect seems to have been a little overlooked in some remarks made at the recent meeting at Lambeth by Sir E. Beckett, who observed that "the Normans knew how to plant a tower; they got all the strength of their piers in the east and west direction, leaving the spaces between the north and south"; but this way of putting it hardly expresses the real constructional point in the case, which is that the transept presents a tolerably solid abutment north and south, when the narrow space of the aisles is once got over, while east and west there is only an arcade. The builders of Tewkesbury saw to it that the thrust of the arches carrying the centre tower should never arrive at or disturb the main arcades: they interposed some 16 ft. of solid masonry between the two: and had such a system been carried out, for example, at Salisbury, we should not now have the spectacle of the arcade all pushed out of the perpendicular by the action of the tower and spire. On the side next the aisles these piers are thickened, to take the aisle arch, with a sub-order on two semi-circular wall shafts; but on the sides next the centre aisles the line of the pier is left completely unbroken, the sub-orders of the east and west crossing arches being turned from corbels at the level of their springing, and the main arches springing straight from the wall-plane. It is worth notice that the sub-arch in the east and west arches is turned from a different centre from the main arch, so that it has a face of only 3 in. or so at the springing, increasing to somewhat near 1 *ft.* at the crown,—or, in other words, the main arch is stilted to that extent. The difference is most marked in the east and west arches; less so in those of the transepts. The object seems to have been to reduce the corbel at the springing, without weakening the appearance of the arch at the crown. The treatment of the Norman portion of the transept is almost bare in its plainness, the north and south walls, partially occupied on their eastern angles by the square projections containing the stairs, being merely ornamented by two tall, narrow, blank arches, with round heads, without impost or moulding. The transepts and crossing are vaulted at the same height as the nave, with a vaulted ceiling of the same character; but the transept vaults are manifestly somewhat later, approaching more nearly towards the form of the fan-vault, and are besides, weaker and less rich in design than the nave vault. The vault of the crossing conceals the arcades of the Norman lantern, the tower having been formerly open to a much higher point.

So far the architectural ordinance of the church is of one scale and design. Eastward of the crossing everything is changed, and instead of a lofty ground-story, with tall columns, and an insignificant triforium and clearstory, we find a low ground-story, of short thick columns, and originally, in all probability, a large triforium. The original two-storied arrangement may still be seen in connexion with the east walls of the transepts. At this portion of the plan there was on the ground-floor the eastern apsidal chapel so common in Norman churches, and over this a chamber of the same shape and size, the practical use of which is doubtful. In the north transept the apsidal chapel and its upper story have both been removed to make way for the Early English chapel before mentioned: in the south transept the eastern chapel remains in excellent preservation, and its upper story, which had been walled up, has been reopened to the church; so that the Norman design of this transept is nearly complete, excepting the roof or ceiling. But in the choir the building has been perfectly changed. Standing under the crossing, and looking east, we see a short choir extending two bays eastward, and then terminated in a semi-hexagon; a form of plan which allows of a larger eastern bay than the semi-octagon, and so far of a better architectural effect, though the lines it makes are not so pleasing and symmetrical as those of the octagon. We have thus seven bays surrounding the choir, consisting apparently of the short Norman columns, with moulded fourteenth-century capping placed on them, and a deep, heavy fourteenth-century arcade springing from them. Over the arcade is a large and fine clearstory of the same date, but no triforium proper, though the sills of the windows are raised to a certain height above the string to allow

* See page 361, *ante*.



for the aisle roofing. The choir is vaulted with a roof of similar date and style to that of the transepts, but much richer and more satisfactory in design. But a complication in the effect of the main arcade is caused by the singular appearance of the longitudinal arches of the vault over the choir aisle or ambulatory, which are seen through the arcade as segmental arches springing from behind the springing of the main arches, and falling considerably below them at the apex. These are, in fact, what would be the "wall ribs" of the ambulatory vault, if they were against a solid wall instead of an arcade. On going round into the ambulatory, we find that the fourteenth-century caps seen from the centre are not on the level of the original Norman caps; that the Norman columns have been raised about three courses before the Gothic arcade was built upon them. On the aisle side portions of the Norman caps are left, sufficient to form a starting-point for the ribs of the aisle vaulting, which spring from the original lower level. The above sketch, taken in the south aisle of the choir looking westwards, will serve to show the manner in which the later work is joined on to the Norman, and give an idea of the strange jumble of lines and masonry of different periods which this part of the work exhibits. In the paper read before the British Archæological Association at Tewkesbury, referred to in our last article (foot-note, p. 362, *ante*), it is urged that this aisle must certainly have been added when the Norman arcade still stood, and was intended to remain. The only apparent reason we can see for such a statement is that the transverse and diagonal ribs of the aisle vault spring from the level of the original Norman abacus, a portion of which is left to receive them. But this is easily accounted for, both from the desire to keep the vaults low so as to get a large window over, and from the fact that part of the Norman wall on the south side of the aisle is left, with the original wall-shafts, one of which is seen to the left of our sketch,* and it was evidently the simplest way to use these existing caps to spring the vaulting from, and to spring those on the opposite side at the same level. The fact that the arch carrying the inner margin of the vault falls below the line of the main arcade is nothing to the purpose, for it springs from the Gothic cap at the new level, and moreover the backs of these arches, where they are seen through the arcade from the centre of the choir, are mostly ornamented with diaper-work on the portion which, if these arches were built before the Norman arcade was removed, would have been against the face of the Norman wall and entirely invisible. We think, therefore, that the manner in which the old and new work is fitted together plainly indicates that the whole alteration was done at one time, at all events as far as the ground story of the choir is concerned; the upper portion, with the large clearstory windows, may be a little later. These windows contain a larger quantity of original Mediæval stained glass than is often seen in one place; and apparently in unusually good preservation.

The peculiar and unique effect of the choir of Tewkesbury is still further enhanced by the chain of remarkably rich and varied memorial chapels which fill the spaces between the piers all round the arcade. Commencing with the western bay on the north side, we find here that called the Warwick Chapel, a piece of very rich Late Gothic work; the lower portion adorned with figures of angels holding shields, on which extensive remains of colour may be seen, the upper portion finished with very minute and rich canopy work. The ceiling inside takes the shape of a miniature fan-vault, and one half of the area has a second lower ceiling of similar design, in which the fans have sprung from thin shafts rising from the floor, two only of which remain. The next arch eastward contains the chapel of the founder, Robert Fitz-Hamon, which is an earlier and more simple design, with the ordinary characteristics of the Perpendicular style. The second bay on the south side, opposite to this, has a chapel called of the Holy Trinity, of the same date and nearly identical in design; both have imitation fan-groining as a ceiling: the Trinity Chapel shows some remains of wall-painting on its eastern end. In the third arch on the north side is the monument of Lord and Lady de Spenser, remarkable for the lightness and intricacy of its pyramidal canopy, which, however, must have undergone a good deal of restoration and furbishing up to look as it does now. The centre (east) arch is filled with a screen wall, with open tracery work of rather commonplace design at the top; but at the next arch, the south-east diagonal bay, we find the three sedilia, a splendid and sumptuous piece of work, of Purbeck marble, of the best style of Late Decorated design; the arches of the canopies, decorated with a double plane of cusping, spring from substantial richly-moulded piers dividing the seats; great part of the canopies is gone, but enough remains to give a pretty good indication of the nature of the original design.

Let us now go round the chancel aisle, and notice the peculiarities of design and arrangement here. Entering the north aisle from the transept, we first notice on the left the opening into the square Early English chapel which occupies the site of the original apsidal chapel on the east wall of the transept. The transept wall is built up, and the chapel is only entered now from the choir aisle; and through it we pass by another wide archway into the smaller apartment of the same date further north, which adjoins the north-east angle of the transept, and which, as noticed in our last article, has had to be shored and buttressed to keep it in its place. This last-named chapel at the angle of the transept has been a very fine piece of work in the most effective style of late Lancet architecture, and a good deal of the detail remains, though covered with whitewash,—quite sufficient to give data for its complete restoration. In the chapel next the choir almost the only direct evidence of date and style is in the caps of the angle vaulting shafts, which still hang to the wall in their places, though the shafts below and the vault above them are gone; the building having been afterwards covered with a wooden roof, itself now much dilapidated. Both the arches which connect these chapels with each other and with the choir aisle are low segmental arches of Decorated style; and it is evident that these openings were made after the building which formerly ran along the north face of the transept had to be removed owing to its failure, and the arrangement of this part of the church consequently altered. It is as if the angle chapel were a chancel on a small scale, with a small nave on its western side as usual; and we had taken away the original nave and placed another running north and south, and blocked up the original chancel arch. Now, it is just possible that this may be the real purport of the arrangement here. In Mr. Blashill's paper read before the Archæological Association, it is suggested that the small building originally at the north of the transept, and which stood to the angle chapel in the relation of nave to chancel, was in reality an additional lady-chapel erected at this part of the abbey in order to give opportunity for the laity to indulge their devotion to the Virgin, without bringing them too much into the *penetralia* of the Abbey Church. The building would, in fact, play the same part as the Galilee chapel at Durham. We have had occasion to differ explicitly from the author of the paper referred to in regard to two of his suggestions, and therefore take this opportunity of giving him due credit for what appears to us a very ingenious and probable explanation of the meaning of the unusual features in this part of the plan of Tewkesbury. The supposition would be, that when the original nave of this lady-chapel was taken down, the chapel adjoining the choir was used as its nave, though looking north instead of east, and the two new openings made with this object. At a later period it is on record that this chapel was habitually used for secular purposes: partly as a school.

Passing on up the north choir aisle, we come to the first of the *chevet* chapels, that of St. Margaret, the entrance arch to which has the same characteristics as that into the chapels we have just been mentioning. In this case, however, the chapel is of the same date as its entrance arch, all this *chevet* work being of the fourteenth century. St. Margaret's chapel is an octagonal apse, looking northward; it has been shut off by a partly-open screen, similar to that in the eastern bay of the choir arcade, but which has been removed in the centre to admit the later tomb of Sir Guy de Brien, which stands in the centre of the arch, the remaining portion of the screen abutting against it in a clumsy manner, no attempt having been made to "make good" the junction of the two. The tomb has a recumbent effigy, with a canopy over it with miniature vaulting, which appears to have been originally painted blue and powdered. With the next arch opening from the choir aisle we come to the oblique angle of the *chevet*, and find a wide arch giving access to what may be called a double chapel, facing north-east, the centre portions of the north-east wall being returned inwards and finished with a vaulting shaft at the inner point of junction, leaving on either side an apsidal recess, which, like the main plan of the choir, is semi-hexagon instead of the more usual semi-octagon form. The whole is called St. Edmund the Martyr's Chapel, but there must evidently have been two altars or shrines here. Under the entrance arch of this chapel stands one of the most celebrated of the Tewkesbury monuments, long called that of the last abbot, Wakenham, but obviously of earlier date. This has been to a certain extent restored, but not so as in any material way to

* The plan published by the restoration committee, in which Norman work is tinted black, and later work shaded in line, is not quite correct as regards this part of the choir aisle, the south wall of which is shaded as if entirely new.

falsify its architectural effect; and certainly it is one of the finest specimens of Gothic ornamental work of this type that could be seen. It belongs to the period when the Decorated style was merging into the Perpendicular, to which latter manner some features in the tomb belong, but the style and feeling of the work retain the impress of the former period in all its magnificence. The tomb is in two stories, as one may say; in the upper portion a canopy of splendid design droops its hanging foliated arches over a ghastly recumbent figure of a half-decayed body, with worms crawling about it; the lower shelf of the monument, close to the floor, is untenanted, and is open towards the chapel, and divided from the aisle on the other side by a screen of elaborate open tracery. The suggestion has been made that the corpse-like image originally occupied this lower shelf, and that the portrait effigy of the deceased occupied the upper one: a suggestion which is in keeping with some Mediæval representations in which the fate of the body in the tomb is in the same kind of manner represented below the effigy. In the next (eastern) bay of the aisle was originally the opening to the monks' lady-chapel, now built up and filled with a modern stained-glass window of crude and strong colour by makers who have done much better things since. It is proposed, we understand, to take down this wall, and rebuild it a foot or two further east, so as to uncover and render visible towards the aisle the jamb and arch-mouldings of the original lady-chapel arch, now nearly concealed in the modern masonry. No vestige of the lady-chapel itself is left which could give an excuse for restoration. There is no doubt the building loses greatly in its effect at this portion by the loss of the lady-chapel, which was, as at Gloucester, the culminating point of the apsidal plan. Even as it is, however, the effect on coming up the aisle on either side of the choir and opening out these chapels expanding from it, with all the varied perspective made by the obliquely-grouped arches and vaulting-lines (and the vaulting is particularly fine here), is most picturesque, and, in English architecture, unusual. An interesting variety in the effect is produced by the fact that the south-east chapel, called St. Faith's, corresponding to the north-east one just mentioned, is not made with the double arrangement there described, but is an unbroken semi-octagon. The chapel on the south side, corresponding to St. Margaret's on the north, has much the same design and characteristics; under its entrance arch stands the tomb of Abbot Cheltenham, a monument of no great importance architecturally: it stands against one jamb of the arch, not centrally. In this chapel are collected at present a good many fragments found during the restoration work, including a number of small fragments of coloured statues and ornament, some of them with the colour remarkably preserved. The space between this last chapel and the Norman apsidal transept chapel is occupied by what is now the vestry, an apartment with octagon termination externally like the other chapels, but which has never been thrown open to the choir aisle further than by the small doorway (fourteenth century) by which it is now entered. On the east side of this door is a tomb of some importance, with a purbeck marble coffin on a pedestal, within an arch of Late Decorated style, enriched with the ball-flower ornament, and with a finial terminating in one of those great square spongy-looking masses of foliage which characterise some of the ornamental work of this period, and which one must like more from association with the finer points of the style than on account of its intrinsic beauty. On the west side of the door is a much simpler monumental recess of earlier date, coeval apparently with the alterations to the choir, with a triangular canopy and an arch in three large cusps over the tomb-recess. Further westward, against the same wall, is the tomb of Abbot Allan, an elaborate work of Decorated date, with a triangular canopy and a richly-moulded arch and miniature vaulting, springing from buttresses which form the termination of the design at either end. There are one or two interesting monuments at the back of the main choir arcade, facing the south-east chapel; one of these being the tomb of Abbot John, in which the coffin is placed in a recess under a low segmental circular arch, with a broad flat band of carved foliage over it, which has a very unusual effect, and looks much more like modern than ancient Mediæval work, especially in the absence of any point to the arch.

Now a word as to the actual work done in the way of restoration, and its effects, concerning which a good deal has been said in other quarters, wisely or unwisely. The work was commenced at the east end, and has not as yet proceeded further than two bays west of the crossing, where the temporary screen is now erected, shutting off the part of the church not under operation. The work done has consisted in the removal of all post-Mediæval excrescences, including whitewash; the repair of the piers, walls, and responds, where they had been cut into and damaged in erecting galleries and other additions; the repairing and restoring of the vaulting and windows, &c., in the eastern chapels; the restoration of painting and gilding on the vaults where traces of it were found sufficient to show something of the original design, and the taking up of the paving and laying over the whole area a solid stratum of concrete, upon which the pavement, which includes not a few monumental inscription stones of great interest, can be relaid in a permanent manner. The pavement had become very much dilapidated and uneven from the nature of the ground upon which it was laid. While mentioning this, it may be noticed that in the choir-aisle, adjoining the eastern bay, is the vault below the floor which holds the remains of the Duke of Clarence,—"False, fleeting, perjured Clarence,"—and the crown of which rises a little above the floor-level, and has been simply paved over as it is, with no attempt to conceal it, the flagging rising in a little hillock; we heard it was proposed to place a raised step or slab over this to conceal the irregularity. We should suggest that an incident so characteristic of the carelessness of Mediæval building should not be obliterated. To return to the main part of the work: there can be no doubt that what has been done internally gives us more idea of the original character and grandeur of the building than we ever could have had before; and to say, as some ultra-conservatives have been affirming, that the grandeur and truthfulness of the building are destroyed by such restoration is idle. Let the conservatives, who would preserve even whitewash, just look at the untouched part of the nave, and then walk round to the restored portion, and if that does not open their eyes, nothing will. On the other hand, there are matters of detail in connexion with the restoration which we feel to be at least doubtful. At the time of our visit a great part of the newly-uncovered stonework had been black-pointed in the joints, and we presume this system is to be followed out. Why this should be done we cannot imagine; the stonework looks admirable where it has just been cleaned off without pointing; and there exists no more certain method of destroying tone and aërial perspective in a large interior than pointing the joints in black. As to the advisability of restoring the coloured decoration again, we are more than doubtful. What has been done consists in gilding the bosses and corbel heads on roof and walls (the gilding being set off by a strong red ground or margin), and painting certain panels in the vaults of the same red and a bluish grey. Now, of course there may have been data for all this; but, in the first place, it is a question whether the gilt bosses in the vault, for example, were not the salient points of a complete scheme of decoration, the less pronounced portions of which are no longer traceable; and that they would have had a different effect if the whole scheme had been complete. At all events, there can be no question that the effect of these rather coarsely-gilt bosses, as it is now seen, is very disagreeable and spotty, and that unless there were a complete scheme of colour to support them, they had better have been left plain.

With these exceptions, we must bear testimony that what has been done at Tewkesbury so far is in the direction of legitimate and necessary restoration and conservation; nor can we see that at present anything is threatened which is calculated to destroy or impair the interest of the building. Not a word has been said so far in the restoring architect's reports, as to touching the exterior of the Abbey, except in so far as doing necessary repairs bearing on the stability of the structure,—underpinning walls which rest on insecure foundations, providing better drainage for carrying off rain-water, &c. If any attempt should be made to tamper with the weather-stained but perfectly-preserved and sound surfaces of the tower and the noble west front, to deprive them of their colouring by the hand of time, and reduce them to the level of a new modern Mediæval building, we do consider that a public protest should be made in such language as cannot be mistaken; but we are bound to say that no such step appears to be contemplated as yet.

Visitors to Tewkesbury Abbey should not omit, while paying attention to the numerous details of interest in the building, to notice its effect from one or two points of view at a little distance. The church stands on about the highest ground of the town; the highest as seen from the west, though at no great elevation, the land in and about the town presenting only gradual and gentle undulations of contour. The view of the abbey from the south-east, from a lane running through the meadows 200 or 300 yards from the church, is a striking one; and, looking at the building from this point, it is almost difficult to believe that we are in England, so curious and (in this country) unique, so essentially foreign, is the appearance of the apsidal east end, with its numerous clustering chapels and their rough irregular pyramids of red-tiled roofing. Another good view is from the bridge over the stream nearly due west of the church, where the combined grouping of the western turrets and central tower, rising above the farm-buildings which shut out the lower portion, is very effective. Seen as we saw it at the close of a showery day, the west front and turrets in strong light from the setting sun, relieved against an inky cloud in the rear, with a foreground of green meadows partially flooded with water that reflected the towers, it made a picture such as Girtin would have delighted in.

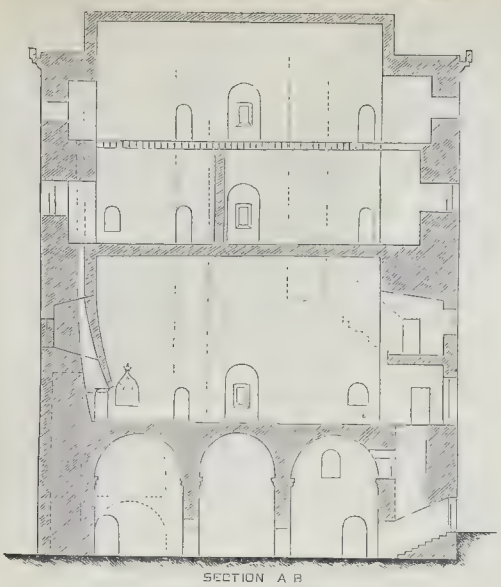
BORTHWICK TOWER.

Borthwick is a noble specimen of military architecture, and the finest extant example of the Peel tower so celebrated upon the Scottish border; meaning by a "Peel" a stronghold of which the tower is the only considerable work, and which stands within a walled base-court of moderate area. Here, indeed, the dimensions of the tower are those of a Norman keep, and the court, though small, is guarded by bastion towers of large diameter, but still the tower is itself the fortress, and was obviously the residence of the lord and his family, not only during a siege, but at all times. Such fortresses as Loch leven and Urquhart on Loch Ness, though far inferior to Borthwick in strength of masonry and grandeur, are nevertheless castles, whereas Borthwick is a Peel.

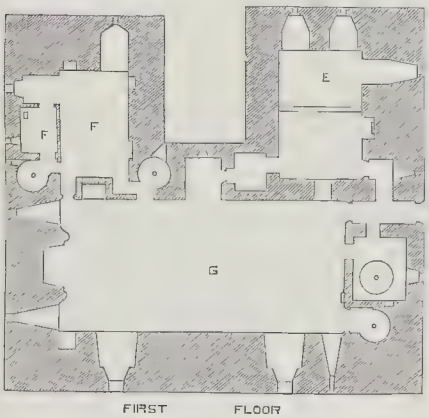
Though a ruin, and deserted probably for a couple of centuries, Borthwick is still in tolerable order, having been preserved by the unusual thickness of its walls and the excellence of their masonry, and the fact that both its basement and uppermost story are vaulted, and the upper vaults protected by stone roofing of a very substantial character. The intermediate timber floors are all gone, and the vast cavities are inhabited by a numerous colony of jackdaws, whose heaps of guano might be removed with advantage. No care has been or is bestowed upon the place, which until recently needed but little; now, however, the rank vegetation on the roof is displacing the tile stones, and the water penetrates the vaults. The grand fireplaces have fallen, and some of the lesser ones are about to fall. At present a few score pounds judiciously laid out would arrest the decay which, unchecked, will certainly in a very few years bring down the upper vaults, and involve the whole structure in irreparable ruin.

The tower stands upon a tongue of rocky land, protected by deep, rugged, and wooded ravines to the south, east, and north. Down two of these flow the heads of the Middleton burn, and, below the castle, unite, to fall into the Gore water, which, gathering its springs from the adjacent Lammermuirs, flows, parallel to the railway, down a pretty pastoral valley by Gore Bridge, to the South Esk. The tower, placed over the junoture of the three streams, is a very marked object from the railway, contesting the attention of travellers with Crichton Castle, in an opposite direction, but in sight, for a few seconds, at the same time.

The platform, covered by the base-court, is of an irregular figure, governed by the ground, rounded to the east, and presenting right angles to the north and south-west. Its dimensions are about 80 yards east and west, by 35 yards north and south. There is a large drum-tower at the south-west angle, and another, with a square rear, in the centre of the south front, and there are traces as of a third capping the south-east angle. These towers are 18 ft. diameter, have a

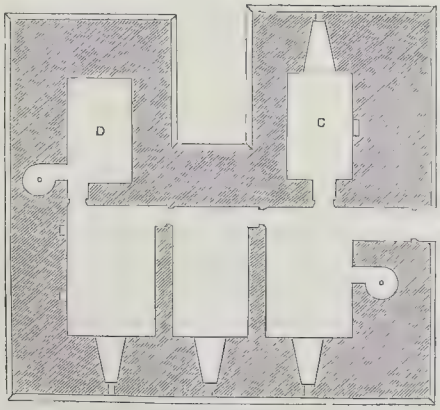


SECTION A B
LOOKING WESTWARD



FIRST FLOOR

SCALE OF 10 5 0 10 30 50 70 50 60 FEET



BASEMENT

C. Prison. D. Well-room. E. Kitchen. F. Queen Mary's Rooms. G. Hall.

BORTHWICK TOWER.

basement, a first and second floor, and are about 23 ft. high above the court, and 35 ft. to the field. In the west front, close to the angle-tower, is a gateway; an opening in a very thick low curtain, roundheaded, and probably of the date of the tower. It had a drawbridge and portcullis, and may have had a low upper story. Above the door, outside, is a flat entablature, with mouldings in the Renaissance style, and the adjacent bastion and curtain are pierced with long loops, placed horizontally, evidently intended for musquetoons, and therefore insertions. They are similar to those in the north-east bastion of Berwick town wall. The southern bastion has the original vertical loops for bows and arrows. The west is the weak side, for which nature has done nothing. The curtain accordingly is on that side thickened to 12 ft. or 15 ft., and there may have been a ditch, now filled up.

The court was divided by a cross wall, north and south, of no great strength, and the tower stood in the western half, from six to eight yards from the three outer walls. The northern curtain is an irregular heap of ruins; upon it, opposite to the tower door, there seems to have been a mass of masonry ascended probably by steps, and serving as an abutment to the stone arch by which the main or first-floor entrance was reached.

The *tower* is rectangular, 74 ft. north and south by 69 ft. east and west, and from 90 ft. to 110 ft. high, the latter height being to the ridge of the gables. In the west front is a recess, also rectangular, 14 ft. broad and 24 ft. deep, so that the building in plan resembles the Greek capital Π, and may conveniently be divided into a body and wings. The recess is not quite in the centre, the north wing being 31 ft. and the south 29 ft. broad. Also, the latter is rather the shorter, so that the north front measures 69 ft., and the south front 68 ft. The arrangement of the chamber is very simple, all being rectangular and parallel to the sides, but the mode of reaching them by staircases is very complex. The walls are of immense thickness, the north or entrance side being 14 ft., and the other from 10 ft. to 11 ft. Those of the recess, being protected, are rather less, and in parts only 6 ft. It is remarkable that these thicknesses are continued, with little or no reduction, to the top. The style is simple and severe, and although the material is cut stone, of remarkably fine workmanship both inside and outside the structure, there is scarcely any ornamentation. Over the outer door, in a shallow ogee niche, is a saint or bishop in low relief, and within is a handsome canopied niche for a statue and a sort of seat of state or sedile for the lord. The fireplaces also are good, and the two larger ones of magnificent character and dimensions. These ornaments belong to the Decorated style of architecture, and correspond with the known date of the building, the first half of the fifteenth century. The walls rise from a plain plinth, and are terminated by strong corbels, 2 ft. apart, and about 2 ft. deep, between each of which was a "meurtrière," and outside it a low parapet, now removed. As usual with Scottish towers, at each angle was a three-quarter low bartisan resting on the corbels, and probably rising no higher than the parapet. Also, the three high-pitched roofs of the body and wings rise above and within the walls, being set back from 6 ft. to 8 ft. The chimneys, where they remain, are tall and handsome, and the three well-staircases opening on the roof were housed in cylindrical turrets with conical roofs, of which one remains, wanting only its finial.

The basement is on the ground level, which is about 5 ft. below the exterior ward. Above it is a first-floor, which in the body is occupied by the great hall, above which is a second-floor containing the chapel and upper hall. Above this is a third floor. The divisions of the wings are made less lofty. The north contains six floors, the south five. There are five well-staircases in different parts of the building. Two ascend from the ground level to the first floor and there stop. Two others commence at that floor and ascend to the roof, supplying the intermediate floors, and another commences halfway up the height of the hall, threads two walls as a gallery, and finally rises as a well-stair to the roof. There was thus a ready access from the first and upper floors to the battlements in case of danger.

Basement.—In the body are three chambers placed crossways, east and west, side by side, all 23 ft. long, the central 14 ft. wide, the others 15 ft. The vault springs 14 ft. from the floor, and in each, at the east end, is a large full-

arched recess, high up, narrowing to a loop. At the springing line of each vault is a row of strong corbels, evidently to support a floor, a sort of windowless entresol. These lower chambers communicate by doors, and in the south wall of the most southern is a recess or cupboard. The outer doorway, 6 ft. wide, at the level of the ground outside, is in the north wall, and is closed by a stout door, within which the passage descends eight steps. In the same wall is a well-stair, which ascends from the basement to the first floor, and there stops. In this, half-way up, is a door into the entresol over the northern chamber, from which level the stair is continued to the first floor. The entresols over the other two chambers were reached by ladders. The whole range clearly was intended for stores, in case of a siege.

From the north and south chambers doors open into the basements of the two wings, also vaulted. The north, the prison, is 18 ft. by 12 ft., with a high and narrow loop to the west. In its upper part is also a small door, from the adjacent entresol, which may have opened upon a similar floor above the prison, or may have been an opening to look down into it.

In the left wing is a vault 20 ft. long by 12 ft. 6 in. broad, and only 8 ft. high. This was reached from the adjacent chamber in the body, and contained the well. From this chamber, opening in the south wall, is a well-stair, which rises 10 ft. to an entresol, and thence proceeds to the first floor. This entresol, also vaulted, was 18 ft. by 12 ft. There is a fireplace and cupboard in the north wall, and in the south a small loop, a mural garderobe, and the door of entrance. From it a rise of 14 ft. leads to the first floor, which is thus 24 ft. above the basement.

The *first floor* contains the great *hall*,—a noble chamber, 51 ft. by 24 ft., with walls from 12 ft. to 14 ft. thick. It is covered by a pointed barrel vault, quite plain, but, with the walls, of excellent ashlar. The height to the crown is about 30 ft. It occupies the whole breadth of the building. In the north end is a mural chamber, 8 ft. 6 in. by 7 ft. 10 in., which contains the head of the well-stair from below. This has a door into the hall and another into the entrance passage. This is the passage of the main entrance, 4 ft. 7 in. broad, and 14 ft. long, having a door at each end, but no portcullis. It is the main entrance to the tower. Outside, it seems to have been approached by a stone arch of about 8 ft. span, of which the springing-course is seen under the door-sill. In the vaulted mural passage are the opposite doors, one mentioned already upon the stair-head, the other leading to the kitchen, which occupies the north wing.

At the other extremity of this northern end of the hall a door opens into a well-stair, 7 ft. 10 in. in diameter, which here commences, and supplies the upper floor and the roof. The east side of the hall is pierced by two windows, square-headed, in deep-splayed arched recesses of 7 ft. opening, and 22 ft. apart. Besides these, towards the north end is a small light, a mere loop, in a recess of 2 ft. 7 in. opening.

The great feature of the hall, after its fine pointed vault, is a grand fireplace, 9 ft. broad and 3 ft. deep, with a projecting hood of stone, which dies into the wall about two-thirds of the way up, and is supported by two double half-shafts, with bases and carved caps and a flowered band above, all in the Decorated style. This occupies the centre of the south end, and on each side of it, high up, are recesses of 5 ft. opening ending in loops of 1 ft. The hood is broken down and the fireplace in decay, but its remains are very striking. Along the west side of the hall are various openings. In the centre is a window recess, 5 ft. 10 in. broad and 9 ft. deep, from which a side opening leads into a vaulted serving-room, 5 ft. by 11 ft., which again opens into the kitchen. In the south end of this side a door opens into the withdrawing-room, and another door into a well-stair, which here commences, and communicates with the upper floors of the south wing, and the roof. Near the north end of this side a low arch or buttery-hatch opened direct into the kitchen. Besides these openings, there are two ornamental recesses. The one a niche in the north wall for a statue, about 5 ft. high, with a handsome groined and floriated canopy and a base resting upon a half-shaft, probably for a statue of the patron saint of the family. Also in the west wall, near the fireplace, is a sort of sedile, 4 ft. broad, with an ogee canopy, containing on a shield the three cinquefoils the Borthwick arms. The walls of the hall seem to have been either painted or covered with devices, one of which, "Ye Temple of Honour," was recently to be seen. Here and in the staircases are many masons' marks. Two of the doors have heads as of three sides of a hexagon, something like the Berkeley arch.

The *kitchen* occupied the first floor of the north wing. It is 16 ft. by 22 ft., and is spanned by a large flat arch, throwing the western half into a stone hood, under which the principal culinary operations were carried on. There are three recesses with loops in the north and west sides, one of which is blocked by a later oven. There is also a small fireplace. The entrances are from the main door of the hall and from the serving-room, and between is the buttery-hatch.

The *withdrawing-room* occupies the south wing, and is 19 ft. by 14 ft. It was entered from the hall and from the well-stair, and has recesses and small windows towards the south and west, besides wall cupboards. The south wall contains, in a vaulted chamber, the head of the staircase from the well-room and its entresol; and in this wall also is a mural chamber, 8 ft. by 7 ft., with two doors, a window, and, in its flat slab-covered roof, a shaft, probably for a stove chimney. This is called Queen Mary's room, and was probably her bed-chamber when she visited Borthwick. This and the larger room are plugged for panelling, and the contiguous doorways from the stairs and the hall had a wooden porch shutting them off in the corner of the room, so that there was a passage either from the Queen's room or the staircase into the hall without entering the withdrawing-room.

Above the hall, a corresponding space, 51 ft. by 24 ft. is divided by a cross-wall into an upper hall and a chapel. The *upper hall*, 27 ft. by 24 ft., has a large fireplace, with a stone hood and flanking shafts, and near it a window, both in the east wall. In the north wall is a large recess and window, and a door into the north-eastern staircase. In the west wall is a window in a recess, and a door which leads by a mural passage into the north wing, and into a garderobe in the north wall.

The *chapel*, 24 ft. by 21 ft., has a recess of 9 ft. wide, in which is the east window, a piscina, and an almbry. It had also two south windows, and between them a small fireplace. In its west wall is the entrance-door from the well-stair, and a door, 2 ft. above the floor, from the south wing, which probably opened into a raised seat for the lord. Both chapel and upper hall had a flat timber roof, and were 14 ft. high.

The room next above these, the third floor of the body, was of the dimensions of the great hall. It had three windows to the east and one to the north, south, and west. It was entered from the well-staircase in the north-east corner, and that of the south wing, and it had a door direct into the north wing. This room has a long, full-centered barrel vault, which rises about 6 ft. above the walls, and is therefore, to the crown, about 15 ft. high. It is probable that this great chamber was broken up by partitions, but it contains no fireplace.

Corresponding to these floors in the body are, in the south wing, five,—the first being the withdrawing-room already described, and 13 ft. high. The second has two windows, a fireplace, and a mural garderobe, and is about 11 ft. high. The third, the same, and is 8 ft. high; the fourth has the same arrangements, and, in addition, a door into the private seat of the chapel. It is 17 ft. high. The fifth floor has two windows only, and is about 15 ft. high to the crown of its vaulted roof. All the chambers in this wing are of the same size, and one over another.

The chambers in the north wing are over, and of the same size with, the first floor or kitchen, the hood and chimney-shaft of which, built against the west wall, passes up through each floor, tapering as it rises. In this wing there are six floors, most having two windows and some a fireplace. The second floor—that over the kitchen—is entered from the eastern well-stair, whence, at 12 ft. above the floor of the hall, a mural passage threads the north wall and its window recess, and leads into the chamber. Hence, ascending in the west wall of the hall 10 ft., it reaches the commencement of a well stair, which leads to the upper floors and the roof. The uppermost and sixth floor is in the vault of the roof, and is lighted by orifices in its gables.

Besides these chambers in the two wings there are small mural chambers at two levels in the west wall, which are reached from the south stair, and look into the recess on the west front of the tower.

The battlements are still accessible by two staircases, and the three roofs are seen to rise independently from the rampart-walk level. They are high-pitched, and their vaults are covered with cut stone tiles fitted so as to form ridges and hollows, and so jointed as completely while perfect, to exclude the rain. This roofing has lasted well, and even now only needs relaying and the replacing of a few broken stones. The gables are of cut stone. The stair-heads are about 8 ft. high, circular, with conical roofs of ashlar. There seems to have been a low parapet all round, set out upon corbels, and between each pair a square machicolation. There is a clear walk all round, only broken by the chimney-shafts. The parapet has been removed, probably to prevent the tower being held as a military post. The east wall near the top is much injured it is said, by Cromwell's shot, when he battered the castle from this side, beyond the ravine.

Borthwick Tower was built under a licence from James II. to Sir William Borthwick of that ilk, dated the 2nd of June, 1430.

Billing gives an excellent view of this tower from the south-west, and a good drawing of the interior of the hall, showing the great fireplace before its fall, and the lord's seat.

HISTORY.

The family of Borthwick, though for centuries the owners of this estate, derive their name from a place on the shore of Borthwickwater, in the shire of Selkirk, whence, at a remote period they migrated to the lands and castle of Cutcane, holding it with Legertwood and Herriot Muir; whence they again removed to Lockerwart, to which they gave the name of Borthwick, an inversion common in Ireland, but rare in England and Scotland. Their predecessors at Locherwart were the Hays of Yester.

The first of the name on record was, I., *Thomas* de Borthwick, *temp.* David II., and who held lands in Berwickshire. His son, II., *Sir William* Borthwick, of Catcune, was living 1378, and his son, III., *Sir William* Borthwick, in 1387–1401, and who was father of, IV., *Sir William*, of Legertwood, who, in 1410, had a grant from Robert Duke of Albany of the lands of Borthwick and Thoftcotys, in Selkirk; V., another *William*, son of the last, was one of the hostages sent to England for the ransom of James I. To him, as Willelmus de Borthwic, miles, the king granted, 2nd June, 1430, a letter of licence "construendi castrum in illo loco qui vulgariter dicitur le Mot de Lochorwort. . . . . ac in eodem castro et fortalicio Constabularium Janitorem, custodesque necessarios et optimos pro sua voluntate providendi, removendi, et omnia alia quæ ad securitatem et fortificationem dicti castri necessaria fuerit faciendi."

Such a licence is rare in Scotland, where the nobles were very independent of the Crown, and the country commonly so disturbed that a castle was almost a necessary of life. To the castle so licensed to be built was given the name of Borthwick. It is probably from the term "Le Mot" that there was already a strong place there, for which indeed the position was very suitable. This Sir William seems to have been the first Lord Borthwick. His lineal male descendant, John, the eight lord, held out his castle for a time against Cromwell's artillery. His son, John, the ninth lord, died childless in 1681, and on his death the castle passed to his sister's son, Dundas, of Harrington, from which family, after two descents, the castle was purchased by Borthwick of Croston, descended from a younger son of the first lord, and his male descendant in the tenth generation claimed, in 1774, the barony, which, however, was ultimately granted to a still nearer male heir.

John, the fifth lord, was a strong partisan of Queen Mary. He it was who ducked the apparitor in the burn, and made him eat his letter of excommunication, steeped in wine. Mary fled to Borthwick Castle, about three weeks after her marriage with Bothwell, 7th June, 1577, and, being followed by the opposing lords, fled thence on the 11th to Dunbar, disguised as a page. No doubt she slept in the chamber called by her name. Bothwell, at that time, possessed the adjacent castle of Crichton.

The Borthwick arms carved in the hall of the castle are,—(A) three cinquefoils (sable).

The adjacent church was rebuilt, or nearly so, in excellent taste, in 1850. It has a western tower with a broach spire, a nave, chancel, and round apse, and two transepts, of which that to the south is old, and mainly in the Decorated style, though with some traces of Norman work.

Dr. Robertson, the historian, was born in the manse, which, however, has been rebuilt.

G. T. C.

A FOREIGN VIEW OF THE BRITISH COAL AND IRON INDUSTRIES IN 1876.

The *Deutsche Handelsblatt* on the state of the British iron and coal industries during 1876 will be read with interest:—"We (in Germany) are in the habit, and rightly so, of attributing the preponderance enjoyed by England in commerce and industry partly to the circumstance that she is greatly favoured by nature with respect to coal and iron. But it is just those two great supports of modern civilisation which have been more disturbed by the crisis than any other industry, and this may be easily explained. Even if over-speculation in those two industries had not been more especially active, the general stagnation of business must have re-acted more heavily upon them than upon other branches of trade. In the coal industry, before all others, wages were immoderately raised in 1872 and 1873. The owners of collieries acceded to the demands of their men only too readily. They found it profitable; they raised the price of coal, but quite out of proportion to the increase in cost of production. Those events have borne bitter fruit, not only for the owners, but also for the whole industry, especially for the iron trade; indeed, for the whole population of England. The price of coal has since fallen enormously; the wages of the colliers have also been reduced, but not at all to the same degree as the prices of coal; and to this must be added that in the former period the working hours also were shortened, and the colliers individually produce less now than a few years ago. Supported by their unions, however, the men firmly resist further reduction of wages or the re-introduction of longer hours, and we hear continually from the coal districts of wages disputes or even of strikes. Owners of collieries, however, declare that, under present circumstances, they work without any profit, in many cases even at a loss—at least of the interest on their capital. Many mines have consequently reduced work to a minimum, other owners have entirely stopped working them; and while we are writing this, we are informed that again several of the largest works in Wales and in the Durham district have announced to their men that they intend stopping work in a few days. But as long as no decisive improvement takes place in the position of the iron industry, which alone consumes about a third of the total production of coal, we need not reckon upon an improvement in the condition of affairs. The export of coal from England, however, which in 1873 had sunk to 12,619,000 tons, rose again last year to 16,266,000 tons. But this export is not at present very profitable. The average price of exported coal in the port of shipment was, at the end of 1873, 20s. 9d. per ton, at the close of 1876 only 10s. 3d., the cost of production not falling in anything like the proportion of this reduction. Amongst all the branches of industry of England, the iron trade shows the most deplorable results. All the different descriptions—pig-iron, hoop-iron, rod-iron, bar-iron, rails, boiler-plates, tin-plate, cast-iron, steel—exhibit in their export figures a considerable reduction against the preceding year, the decrease amounting on the whole to 240,000 tons. But this falling-off does not extend to last year alone; the decline has been steady since 1872, when the export of iron and manufactured iron reached its highest point with 3,383,000 tons, until last year it fell to 2,219,000 tons. The question arises now, Can there be expected, and under what conditions, an improvement of affairs? Producers of pig-iron affirm that they cannot exist at the present prices, and that they keep their works going, as far as they do, only to escape the enormous losses consequent upon the putting out of furnaces. This assertion is to some extent confirmed by the fact that the prices, or cost of production, of coals are still far higher than they were in 1869 and 1870, the prices of iron during those years being about the same as now, and that, besides, the large capital laid out in works at present partly standing idle is lying dead. Wages, however, have gone down again in the iron industry to the level before the general rise. But those wages are still higher than on the Continent; this difference, however, being more than compensated for by the geologically favourable position occupied by England. It is different, however, with iron produce and manufactured iron. Here a corresponding reduction of wages can hardly be said to have taken place. Especially in those branches in which more human labour is required, the difference between English and Continental wages becomes more important. The large modern works on the Continent are as perfect in their mechanical appliances as those in England; but they have, with equal individual power of production, somewhat cheaper labour at command, and this gives them the advantage over England. As soon as in London a large contract is brought into the market, several Continental, especially Belgian, firms appear at once as competitors, and even if they do not obtain the contract, they depress prices to such an extent as to make business unprofitable to the English producer. For some time, but especially during the last year, articles, in most cases manufactured from pig iron imported from England, such as girders, rafters, axles, &c., for which the home, even the local, industry had tendered, were imported into England at prices at which the latter could not compete. It is the same with many products of the higher branches of the iron industry. The export of all kinds of machinery, as well as that of tools, knives, blades, &c., has declined against the preceding year by 20 per cent. Those reductions may have their cause partly in a decreasing consumption; but it is becoming more difficult, especially for England, to compete in those branches with foreign countries, where they continue to develope. Carriage-springs, tools, blades, &c., are now imported into England from the Continent, especially from Belgium and France—indeed even from America. Solingen now exports scissors even to Sheffield. While export in all these branches of the British iron industry has thus so considerably fallen since 1872, the import of those products has greatly extended, that of all descriptions of steel goods having been increased threefold; and this rapid increase is beginning to attract attention, even to cause a kind of alarm, in England herself."

THE CONNEXION OF GREEK AND ROMAN ART WITH THE TEACHING OF THE CLASSICS.

Mr. Sidney Colvin, Slade Professor of Fine Art at Cambridge, delivered the first of a series of five Cantor lectures on this subject, under the auspices of the Society of Arts, on Monday afternoon last, Lord Alfred Churchill in the chair. The large hall was about half-filled.

Professor Colvin commenced by remarking that ever since modern Europe, at the close of the Middle Ages, commenced to turn its attention to the antiquities of Greece and Rome, two kinds of antiquities had been sought after and studied, viz., the remains of literature in books, and the remains of art and handicraft in architecture, sculpture, pottery, &c. But, although a Classical education might be defined as the training of the mind by a systematic study of the genius of ancient Greece and Rome, that study had been, and was being, pursued almost entirely with reference to the literary remains alone. Since the early days of the revival of Classic learning, our materials of all kinds had greatly increased, both with regard to remnants of ancient literature and relics of ancient art. The stores of literary and monumental remains which we now possessed would have overwhelmed the imagination of the early labourers in the field of Classic antiquities, enthusiastic as they were. Their enthusiasm gradually resolved itself into a settled, sober study of, and regard for, Classic antiquity, and all civilised nations had agreed that this study of Greek and Roman antiquities should form part of the education of their sons. However great might be the progress of science, and however important might be the increase in our knowledge of the natural world, the study of the antiquities of Greece and Rome would probably continue to the end of all things to be one part of the education of civilised men. A Classical education, properly speaking, was one which, firstly, sought to get as much knowledge, and that knowledge as thorough and profound as possible, of the works and life of those two great nations of antiquity, the Greeks and Romans; and, secondly, one which in the course of the acquisition of that knowledge would impart to the mind as complete a training as possible. The one sovereign characteristic of the Greek genius was anthropomorphism; this was the key to the whole of the achievements of that great people. Not only were they endowed with great physical beauty and perfection in their persons, but they lived under extraordinarily favourable conditions of climate, and the outcome of these conditions was that when they began to put their hands to tools and to paint and carve, in the course of a few generations they filled all their temples and towns with images the most beautiful the world had ever seen. Although an immense number of these works of art and handicraft had perished, they had not all disappeared, any more than had the whole of their literary remains, although it was unfortunately true that all the most famous works of art known to the ancients were either destroyed or lost. Nevertheless, we possessed a mass of material in the form of Greek art-treasures which could be made of the utmost service for purposes of study in connexion with the inculcation of general Classical learning. It should be borne in mind, too, that while the literary remains of ancient Greece and Rome were not at all likely to be materially increased,—or, at any rate, the possibility of their increase was very remote,—it was, on the other hand, quite certain that our store of Classic antiquities in the shape of sculpture, architecture, pottery, and specimens of handicraft generally, would be largely augmented,—to an extent, indeed, to which there was hardly any limit whatever. Perhaps some of his (the lecturer's) audience had read in the *Times* of that morning the interesting account which was given of one year's discoveries in that great centre of ancient art, Olympia. These and kindred discoveries gave us every reason to hope that we were now only at the dawn of an era of such discoveries, and encouraged us to believe that our stores of antiquities would be enriched to an indefinite extent. Now art was a language,—and a language, moreover, which did not change or become corrupt or forgotten, as did the languages of speech or literature. Was it not, then, of the highest importance that in imparting to our youth a knowledge of classic life and literature, we should also impart to them a knowledge of Classic art? This was a species of knowledge which, once properly imparted, would never be forgotten, and taken in conjunction with the study of Classic literature, would explain and illustrate the meaning of passages and make the study much more interesting. If a knowlege of Classic art and antiquities formed part of a generally-recognised curriculum, our museums would not have the aspect of so many collections of mere dry bones which they presented even to those who had had some Classical training. What did the average Classical scholar really know of Classical art and antiquities further than he was able to glean from perfunctorily turning to a dictionary to see how the toga was worn or what was the arrangement of a Greek theatre? Any systematic study of Classical art was almost totally unknown in England; in fact, it had only recently commenced to be known at all. It was almost completely neglected in our great centres of education, the universities; not that we had not in England great archæologists able to vie successfully with those of other European nations, but simply because they received no encouragement to popularise their special branch of learning, but had to pursue it almost alone or in connexion with positions they might hold at the British Museum or elsewhere. In short, it formed no part of the general *culte* of educated Englishmen. Here, Classical literature and language were studied to the neglect of Classical art and archæology; but it was not so in Germany, where there had been a great revival of Classical knowledge and studies during the last century, this revival being largely characterised by the renewed interest devoted to monuments and works of art. For a long while England was at the head of Classical scholarship, but since the time of Winckelmann her supremacy in this respect had been on the wane. In every university of importance in Germany there was a more or less complete museum of casts from works of Classic art, and the antiquities of Greece and Rome were studied, as they should be in this country, *pari passu* with Classic literature. The casts were used to illustrate the remarks of lecturers and professors, who were careful to make clear in what excellence in art consisted. These studies were having the result of placing the Germans in the forefront of archæological research, and we in England, who at one time took the lead, were often compelled to go and sit at their feet. For a long time they had excelled as interpreters of Classic antiquities, England being content with her until lately unrivalled *rôle* of explorer and discoverer (and amongst societies which had done much in this direction was the Dilettanti Society); but now the Germans were actually wresting from us the laurels which we had won in the exploration and discovery of ancient monuments. Incomparably the most important discoveries

which had been made of late were those at Olympia by German explorers, although they had not caused the sensation which has followed the excavations at Troy and Mycenæ,—these again being German discoveries. The remarkable discoveries in Cyprus, again, were the work of an Italian, acting as American vice-consul there. So that not only the scholarship of archæology, but the enterprise of archæology was passing away from us into foreign hands. The lecturer next explained, by means of an illustration on the wall, how the Greeks translated an epic poem into sculpture, choosing as his example the continuous sculptured frieze of the Choragic monument of Lysicrates, which represents the incidents connected with the attempt of the Tyrrhenian pirates to carry off Bacchus to Italy. The poem, which was read by Mr. Colvin, narrated how the sailors bound the god, how he broke the withs or chains with which he was bound, and changed himself into a lion, a well of wine at the same time bubbling up in the midst of the ship, and vines and ivy springing up and entwining with the ship's tackle; and how the terrified sailors jumped into the sea and were transformed into dolphins. All this, said Mr. Colvin, was faithfully depicted in the sculptured frieze referred to, and the way in which the subject was made to lend itself to the conditions and limitations of sculptural art was in the highest degree interesting and instructive. This, too, was only on a small scale, for the Choragic monuments were very small, and were merely used for the purpose of depositing the tripods which were accorded to the owner or trainer of the chorus which had been the most successful in musical or dramatic competitions, there having been a whole street of these monuments at Athens. In conclusion, Mr. Colvin said that in the study of Greek art for its own sake the student must necessarily acquire a knowledge of art generally and of its materials and capabilities. He must learn what could be done in sculpture and what in bronze, and what were the particular virtues and characteristics of other materials, such, for instance, as terra-cotta. Then, again, art had its historical phase, in common with literature. Of course the study of Classical art could not be studied apart from Classical literature, especially the writings of some authors who wrote what we should call guide-books. Amongst them might be named Pausanias, whose *forte* was geography and topography; Pliny, the encyclopædist of natural history and the arts; and Lucian, the novelist and writer of romantic criticisms.

The second lecture will be given on Monday afternoon next.

GLASS PAINTING.

At a meeting of the Architectural Section of the Glasgow Philosophical Society, held on the 28th ult., within the Corporation Galleries in that city, a paper was read upon the subject of "Glass Painting," by Mr. Stephen Adam. The chair was occupied by Mr. David Thomson, and there was a full attendance of members.

Mr. Adam commenced with a description of the labour involved in the production of a stained-glass window, which he said might be treated in three distinct manners, viz., the mosaic, the mosaic enamel, and the enamel. After details respecting these three methods of treatment he proceeded to trace the early history and modern development of the art, pointing out wherein modern artists had succeeded in catching the spirit of the old, wherein they had failed to do so, and by what means the art might be revived to its former position by avoiding the causes of decay. He showed that stained glass was probably known to the Egyptians, but there was no trace of its existence among the Greeks, and unless Dr. Schliemann should enlighten us on the matter we were likely to remain ignorant concerning it. He ventured the opinion that a nation so thoroughly imbued with a perception of the beautiful as were the Greeks, would not, could not, be blind to the use of glass as an exponent of nature and art. After noticing the existence of stained glass at a very early period of the Christian Church, Mr. Adam referred to the Early English style, with its three classes of windows, the medallion, the figure and canopy, and the Jesse. With respect to the decay of the art, the generally accepted theory was that this was attributable to the influence of the Reformation. With this he disagreed, though he believed the Reformation, and its consequent troubles, may have discouraged the practice of glass-staining. He believed the germs of its decadence were to be found in the introduction of a false style,—false in principle, and false and inconsistent in execution. He expressed his concurrence with the opinion that the golden age of glass-painting was the twelfth and thirteenth centuries; and, in concluding, stated that the causes which had led to the decay of the art were fully appreciated of late, and we were now in the dawn, or rather, in the midst of a revival. It were vain, however, to hope that we could ever attain to the simplicity and purity of early art, for even our imitations of it were to a large extent sophisticated. But he hailed the tokens already given of a new birth to the art as an indication of higher things, and accordingly looked hopefully to the future. With regard to the German glass, which had been so extensively introduced, he stated that this importation was not resorted to until native artists had put themselves out of court by varied and ever-increasing monstrosities. He was confident if they returned to the old ways of producing really artistic work, that there was sufficient patriotism among British connoisseurs to banish for ever the barbarous abortions. Were it possible, he believed it would be beneficial to establish an artistic tribunal for the purpose of testing all work professing to be high art, such tribunal to be armed with plenary power to accomplish the demolition of the many existing outrages on taste.

A vote of thanks to Mr. Adam for his interesting paper brought the proceedings to a close.

THE NEW BARRACKS NEAR GLASGOW.

The operations in connexion with the large military establishment at Maryhill are being rapidly pushed forward, and it is hoped that by the close of the current year but little will be wanting to complete the work. By the erection of the new barracks on a pleasant site on the eastern bank of the Kelvin, and about two miles and a half to the north of Glasgow, the intention of the War Office is to supersede the old military depôt in Gallowgate, a crowded and somewhat unhealthy district of the city,—at least, before the Improvement Trustees entered so vigorously upon the important scheme they have in hand. Originally the buildings at Maryhill were in the hands of a contractor who broke the ground some six years ago, but some misunderstanding arising, the War Department determined on assuming more direct control of the works. These, we learn, have since been carried on by a system of civil and military labour combined, and which has been attended with the most gratifying results. The buildings in course of erection cover an area of about 30 acres, allowing an additional 30 acres for the purpose of a drill and exercise ground. Fortunately the authorities were able to find upon their own ground a supply of stone excellently adapted for building purposes, and this, it is computed, has enabled them to effect a saving of several thousands of pounds. Accommodation will ultimately be provided within the boundary for a battalion of infantry 800 strong, stables for a squadron of cavalry, and quarters for a battery of field artillery. We have already described in these columns the plans of the various buildings in detail, but it may not be out of place to recall the leading features. From the extensive site it will be readily seen that the separate buildings are varied in character, and in every way adequate to the requirements of a large military establishment. Among the more prominent may be mentioned a chapel and school in the Gothic style of architecture, a spacious hospital which is all but finished, baths, wash-houses, canteen, game-rooms, and a gymnasium to be fitted up in the most approved style. The authorities have thus shown every desire to study not only the health and convenience of the men in providing them with suitable and commodious quarters, but have had due regard to the requirements of their higher nature in affording them the means of instruction and recreation. The main entrance to the infantry section of the barracks is by a massive ornamental gateway on the Maryhill-road, while the artillery and cavalry entrance will be by the Balgray-road. The burgh of Maryhill is a thriving one, and there are many collieries and public works close at hand. The surrounding district, however, is rich in scenes of natural beauty, and when viewed from the aristocratic terraces in Great Western-road the architectural features of the new barracks serve greatly to enhance the general effect of the landscape.

THE GROCERS' COMPANY'S MIDDLE-CLASS DAY SCHOOL.

This school, which forms the subject of one of our illustrations, has lately been erected on a fine open site facing the Hackney downs, from the designs of Mr. Theophilus Allen, architect, of John-street, Adelphi. It consists of three stories, and is planned on the Prussian system for the accommodation of from 500 to 600 boys. It contains fifteen class-rooms, nearly all of which have the advantage of a north light. On the upper floor are eight class-rooms and a library; on the principal floor, of which a plan is given, is the entrance-hall, placed in the centre of the building, from which a double staircase leads to both upper and lower floors. On the right of the entrance are hat and coat rooms, and lavatories, and on the left sergeant's room and secretary's office, &c. Five of the principal classrooms are also placed on this floor. The head-master's room, &c. forms a mezzanine story. On the lower floor, which is slightly raised above the playground level, the dining-hall for 200 boys is placed, with the kitchens, sculleries, larders, tradesmen's entrance, &c., adjoining thereto (which do not communicate with any other part of the building), and also undermasters' rooms and two class-rooms. In a sub-basement the heating apparatus is formed, which supplies warmed fresh air to all parts of the building.

One of the chief features of this design is a large semicircular lecture-theatre, placed at the rear, and entered from the principal floor, being nearly of the full height of the main building, and capable of seating upwards of 800 persons. The cloisters under the theatre form a covered playground. The building has been erected at a cost of 15,000*l*., Messrs. Holland & Hannen being the builders.

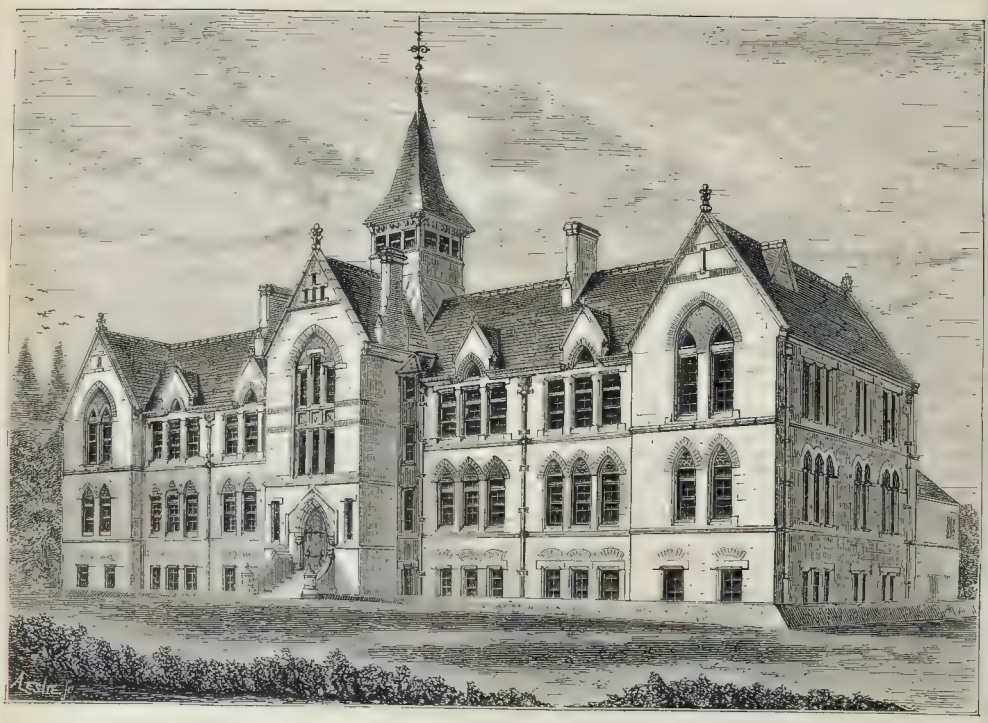
A NEW DOCK AT DEPTFORD.

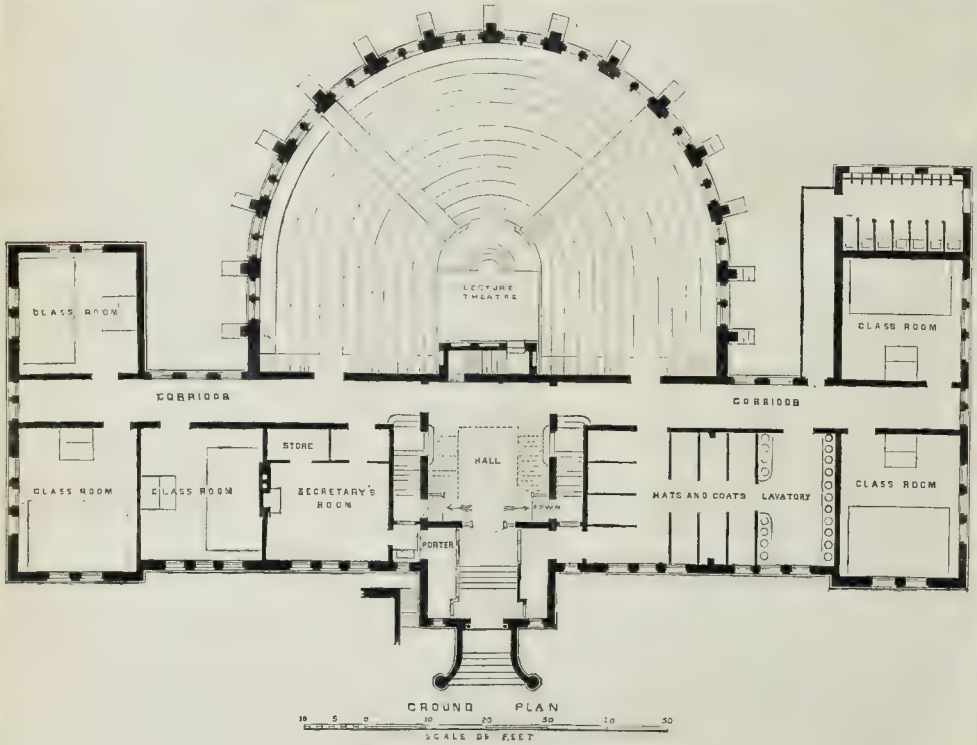
In addition to the numerous graving-docks situated in the locality of Deptford, an extensive one is about to be constructed for Messrs. Wm. Walker & Co., at their Deptford Green Yard, being the second large dock recently built for this firm, from the designs of Mr. E. C. Homer, C.E., the former one being 420 ft. long, 110 ft. in extreme width, and a brick entrance 63 ft. wide. The present dock will be 320 ft. in length, with an additional space at the head for lengthening it another 300 ft. (ultimately to be extended), 92 ft. in extreme width, and will have a 50 ft. caisson entrance, with a draught of water on the sill of 19 ft. When completed it will be fitted up with large pumping machinery, dolphins, and the most modern appliances for facilitating the docking and undocking of vessels, and capable of holding ships of between 3,000 and 4,000 tons burden.

LIVERPOOL ENGINEERING SOCIETY.

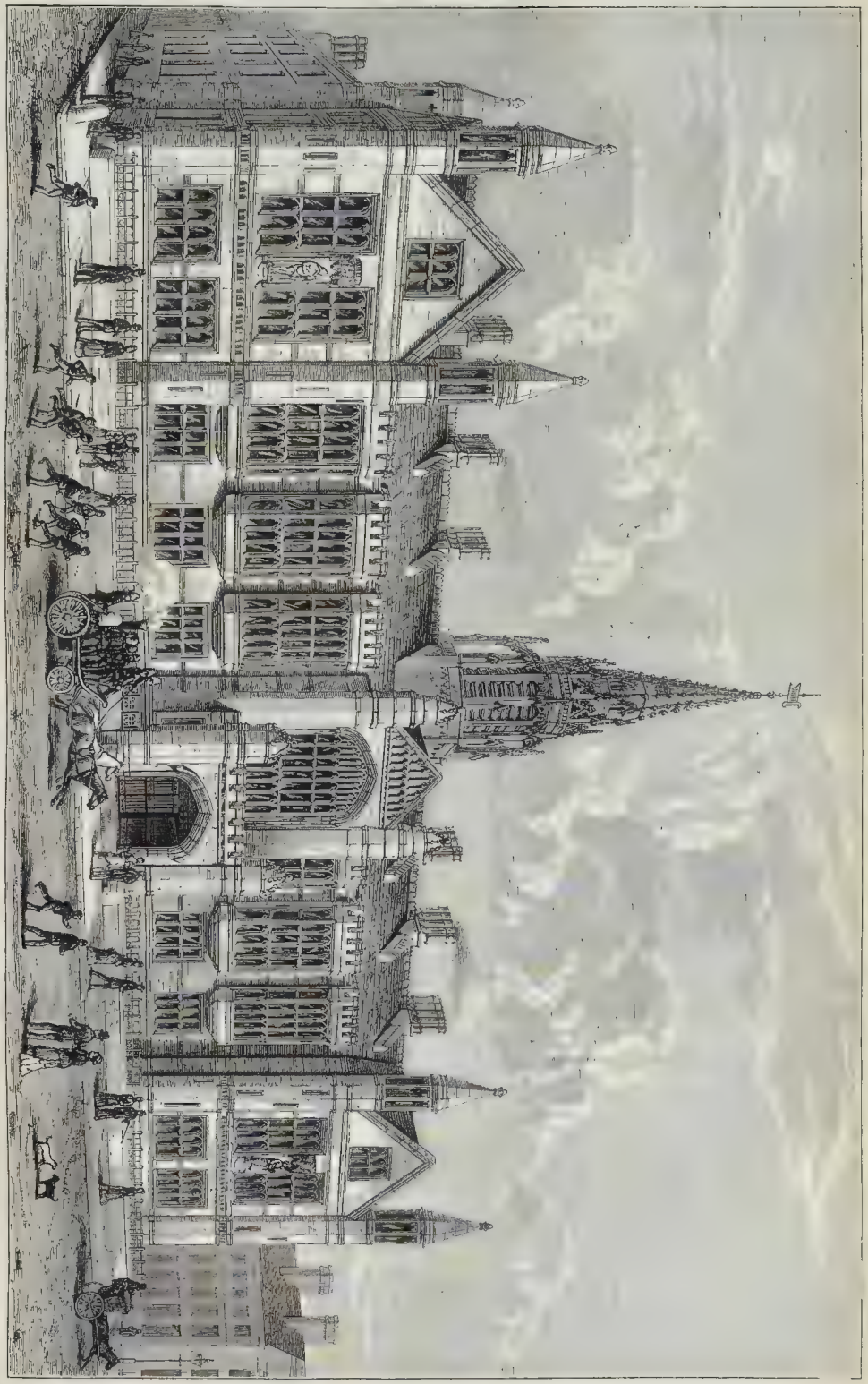
At the usual fortnightly meeting of this Society on Wednesday, Mr. Alexander Ross, district engineer of the London and North-Western Railway, read a paper on "Hydraulic Machinery, with Special Reference to its Application to Railway Goods Yards." The author, after enumerating the properties of water and the laws which govern its action, described the hydrostatic press patented by Bramah. He next described Sir W. G. Armstrong's method of transmitting power by water-pressure by means of a dead-weight accumulator, and explained the object and working of the various details connected with it, pointing out that the water was not a motive agent, but merely a carrier of power, much in the same way that shafting is used. For station-yards and places where machines are scattered over large areas and intermittent in their action, Mr. Ross strongly advocated the use of hydraulic machinery in preference to long lines of shafting or other means of transmitting power, as thereby the wear and tear is much reduced.

Titian.—The monument to be erected to Titian, on the tercentenary of his death, at Pieve di Cadore, his native place, will consist of a statue raised on an ornamental pedestal. The figure has been designed by Signor Antonio dal Zotto, a Venetian sculptor. It is somewhat over life size. The pedestal, which will be 12 ft. in height and of white marble, is from the designs of Ghedina, the painter. The statue will be cut by the brothers De Poli, of Vittorio.

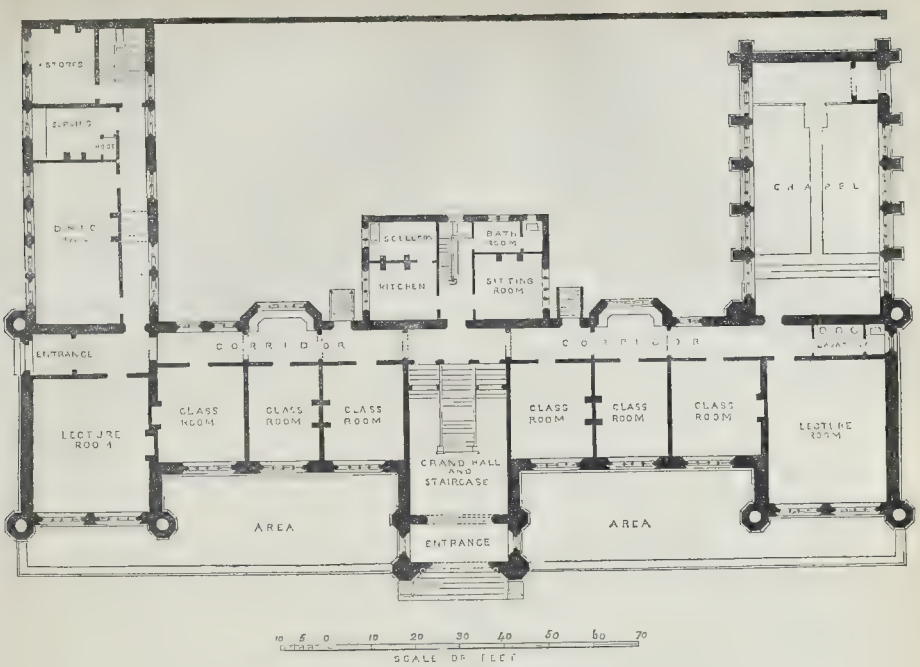




THE GROCERS' COMPANY'S MIDDLE-CLASS DAY-SCHOOL, HACKNEY DOWNS.—Mr. Theophilus Allen, Architect.



ACCEPTED DESIGN FOR TRINITY COLLEGE, LONDON.—Mr. Alfred Langston, Architect.



ACCEPTED DESIGN FOR TRINITY COLLEGE, LONDON.—*Plan.*

TRINITY COLLEGE, LONDON.

The accompanying illustration gives the front view in perspective of the proposed building for Trinity College, London. We publish also a plan. This institution was founded in 1872, and received incorporation by a special charter in 1875, for the purpose of promoting the advancement of musical and general education, musical science being the principal feature of the college curriculum and examinations. The council or corporation consists of twenty members, for the most part graduates in arts or music. Mr. H. G. Bonavia Hunt, M.B., F.G.S., is the warden, and Dr. John W. Hinton, M.A., is the present honorary secretary. The most popular work of the college has been the establishment of local examinations in elementary musical knowledge, in respect of which 100 local centres have been appointed, and upwards of 5,000 students have been enrolled. The accepted design is by Mr. Alfred Langston, 16, Tavistock-street, Bedford-square. The building when complete is to consist of a number of small class-rooms on the ground-floor, a large public hall, containing platform and organ, a library, a dining-hall, a college chapel, and rooms for official residence; the external architecture being Domestic Gothic throughout. We believe that negotiations are in progress for the purchase of a site near the Thames Embankment.

NOTES ON SOME CONDEMNED CITY CHURCHES.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute on the 9th inst., Mr. Charles Barry, president, in the chair, two papers were read respecting some of the condemned churches of the City of London. The first of these papers was read by Mr. R. Phené Spiers, and was in the form of a report prepared under the direction of and signed by the members of the sub-committee referred to. The following is its substance:—

In accordance with the request of the Committee for the Conservation of Ancient Monuments, that a detailed account of the condemned City churches should be preserved amongst the archives of the Institute, a sub-committee was formed consisting of Mr. Teulon, Mr. E. Ferrey, Mr. G. H. Birch, and Mr. R. Phené Spiers, who have for some time past been engaged in personally visiting the churches and carefully noting their appearance, present state, fittings, antiquities, and monuments. Broadly speaking, the very existence of most of these churches is threatened. A few sops to Cerberus, in the shape of some twenty of them, distinguished by their antiquarian or other interest, are to be retained; and all the others that have outlived the fire, and against whose walls the surging tide of the restless traffic of ages has beaten, are at last to succumb to be swept away, and their very sites and names forgotten. The necessity for the existence of the sub-committee on this subject is apparent from the fact that since they commenced their labours two of these churches have been destroyed, two more marked for destruction are awaiting the signal for the axes and hammers to commence the work of havoc; and another is being shorn and lopped of its bulk to suit the modified views of the nineteenth century. Passing by the historical question of when and by whom London was first divided into parishes, we make our starting-point the Great Fire, which had just swept over the devoted city, and of the 107 parish churches existing within and just without the walls, 22 only remained after the fire, and of these 22, nine have since been rebuilt, so that 85 were actually consumed in the flames. Of these 85, 35 were never rebuilt; but the parishes were amalgamated with the adjoining ones, so that one church served two parishes. The rebuilding of most of these churches took place within the next fifteen or twenty years subsequently to the fire, so that, roughly speaking, at the commencement of the present century we possessed 107 churches in London, that is in the City. In little more than three-quarters of a century this number has been reduced to ninety-five, twelve of them having been utterly destroyed, whilst two more are awaiting their fate. Only thirty-one, in addition to those already doomed and destroyed, are at present thought worthy of the same fate, and of this number some few are threatened with immediate destruction. With these few the sub-committee have now more especially to deal, and to draw attention, in accordance with their instructions, to their chief points of interest. These are the churches of St. Dionis Backchurch; All Hallows, Bread-street; St. Margaret Pattens; St. George, Botolph-lane; St. Mary Abchurch; St. Edmund the King; St. Mary Aldermary; St. Anne and St. Agnes, Aldersgate; St. Michael, Paternoster Royal, College-hill; St. Stephen, Coleman-street; and St. Benet, Paul's Wharf.

St. Dionis Backchurch consists on plan of an irregular square, divided into nave and aisles by four Ionic columns on each side. The nave is covered with a barrel-vault of elliptic form, being penetrated by four smaller elliptic vaults on each side, with circular clearstory windows. The aisles are covered by flat ceilings, divided by architraves, which are carried by columns at the wall sides; there are no responds on north and south sides. The exterior of the church, with the exception of the tower and east front, which are in stone, is built of rubble masonry covered with stucco. Some years ago Mr. G. E. Street made a design for entirely Gothicising the church, including the tower, but the scheme was abandoned. This church will very shortly be destroyed. The total cost of its erection was 5,735*l.* 10*s.* 8*d.*

All Hallows', Bread-street, cum St. John the Evangelist, Watling-street.—The plan of this church is a long parallelogram, without aisles. The front towards Bread-street is occupied at the south-west angle by the tower. The interior is not striking, the fittings only giving interest to it. The ceiling is flat, coved at the sides, the cove being groined to the windows in six compartments on each side. The reredos is of oak, and very lofty; the Corinthian columns on either side have been painted in imitation of marble. The carved wreaths of fruit and flowers are undoubtedly by Grinling Gibbons. A "deconsecration" service, whatever that may be, was recently held in the church, which has since been closed, and is now only awaiting the order for the work of demolition to commence. The sub-committee enter their earnest protest against the demolition of one of the most curious and interesting of Wren's towers, which, apart from the associations connected with Milton and Sir Isaac Newton, deserves to be preserved for its own artistic merit. The total cost of erecting this church was 3,348*l.* 7*s.* 2*d.*

St. Margaret Pattens, Rood-lane, is a parallelogram on plan, with an aisle on the north side and terminated on the west by the tower. The east end has three divisions; the central one is recessed, and contains the altar-piece. The western gallery-front forms a continuous canopy over the churchwardens' seats. The sword-rest, of wrought-iron, is richly designed, but the chief object of interest is the beautiful Renaissance lectern.

St. George, Botolph-lane.—The plan of this church comprises a nave and north and south aisles, with tower at the north-west end. The nave has an arched ceiling, enriched with coffers and panels, and pierced by circular clearstory lights. The aisles have flat ceilings, with flat architraves. A great defect in the interior is the wide space between the columns, which are Corinthian, and only two in number on each side, the effect being one of great weakness. The seating was lowered in 1838, and, although of oak, has been painted and grained a lighter colour. The pulpit is of unusual and elegant design. The east end is pleasing in proportion and arrangement. The aisles have sloping half-pediments, abutting against the centre projection of chancel, which is also pedimented.

St. Mary Abchurch-cum-St. Laurence Pountney. In plan this church is nearly a square of 60 ft. by 65 ft., covered by a cupola supported on eight arches and pendentives. This idea of a central dome Wren reverted to in St. Mildred's, Bread-street, and also in St. Stephen's, Walbrook. The treatment of the central cupola is very charming, and the interior generally is one of the most beautiful in the City. The fittings are intact The dome springs from a modillion cornice, and was painted by Sir James Thornhill. The subject represented is rather obscured now by dirt and smoke, but the idea is eight seated female figures, painted in *chiaroscuro*, representing saints or virtues. This part of the dome is pierced by four oval lights, above which is a painted cornice, and the remainder of the surface of the dome is painted in colours, with a representation of the cherubic choir playing on divers instruments of music. The oak altar-piece is remarkably rich, and is unquestionably from the hands of Grinling Gibbons. The woodwork generally throughout this church is thoroughly typical of the solid, dignified, and handsome work to be found in most of the City churches. Externally the church is not strikingly handsome, and any one ignorant of its internal beauties would be disposed to depreciate the idea of its being preserved. It was covered with stucco, but of late years this has been removed, revealing its red brick walls and stone dressings. The tower has circular-headed windows in the belfry-stage, with a cornice from which rises a square cupola surmounted by an open lantern and spire. The churchyard has been levelled, and made into a sort of courtyard on the south side, open to Abchurch-lane. The church was completed in 1686, and cost 4,922*l.* 2*s.* 4½*d.*

St. Edmund the King-cum-St. Nicholas Acons. This church is on the north side of Lombard-street, and its site is naturally one of those "intensely-compressed valuable ones," very much coveted. It stands north and south,—a very unusual deviation,—and in plan is a long parallelogram, with an altar recess at the north end, and a tower breaking into the area at the south. It is principally lighted from the north and south ends, the side windows having been blocked by the erection of the neighbouring banks. The ceiling is flat, and coved at the sides. There is a western gallery on each side of the tower, and the organ stands in front of the tower. From its position the church has but one front, which faces Lombard-street. It is set back about 5 ft. and the tower and spire project about 18 in. beyond this. The front is in stone, and in good condition. The church was rebuilt in 1690, at an expense of 5,207*l.* 11*s.*

St. Mary Aldermary.—In plan this church has nave and side-aisles, with a western tower, partly in the church. The interior has four columns of the Corinthian order on each side, and two attached columns at each end. These columns were set on plinths the same height as the old pewing. An architrave and cornice rest on them. The central part of the ceiling is arched; over the aisles the ceiling is flat; at the east and west ends of the arched part it is enriched with coffers and roses; in the centre it is pierced by semicircular windows, one on each side, making a complete groin. There is a western gallery, containing the organ. The church has lost nearly all its original internal fittings, and has endured the indignity of having tracery inserted in its windows. Externally, on the south and east sides, it is ashlared with Portland stone. The tower is in two principal stories, the lower one lighted by circular-headed windows, the upper one by square windows. The tower finishes with a block cornice and parapet and corner urns, above which is a turret of wood, covered with lead, in two stories. Of the extraordinary effect gained by Gothicising Wren's work, a worse example could not be offered than this church. The total cost of its erection in 1677 was 5,237*l.* 3*s.* 6*d.*

St. Anne and St. Agnes-cum-St. John Zachary. This church has an unprepossessing exterior of red brick stuccoed over, with a square tower also stuccoed, surmounted by a small turret of wood. The interior is very pleasing. The plan is simple. It consists of a square area with four Corinthian columns in the centre on lofty plinths. On these are entablatures from the sides, where they rest on corbels, dividing the area into a cross, the four arms of which have arched ceilings intersecting in the centre. These are ornamented by square panels and bands, with coffers and roses. All the oak work in this church has been painted and grained light oak; the reredos, of oak, has been painted in imitation of granite and marbles and plain white; it has some wonderful carving of fruits and flowers in festoons, but has been ruined by the paint. The demon of oil-paint has run riot here. The total cost of the church was 2,448*l.* 0*s.* 10*d.*

St. Michael, Paternoster Royal, cum St. Martin Vintry (College Hill).—The royal surname of this church is derived from its vicinity to the ancient Tower Royal, a residence of our kings, called also in Froissart's time the Queen's Wardrobe. Richard Whittington, four times chief magistrate of London, founded a college here, and was himself buried in its precincts, although no monument now marks his last resting-place. As long as the nave of Westminster remains, however, his name will be perpetuated. The plan of St. Michael's, like that of All Hallows, is a parallelogram, with tower included at the south-west angle. This is of very elegant design, with an octagonal stone lantern of three stages, somewhat similar to St. James's, Garlickhithe, and also to St. Stephen's, Walbrook, but is the best of the three. Internally it is free of columns, and has a flat ceiling coved at the sides. There was a western gallery, but this has been removed. On the whole, the interior of this church has not suffered materially from the alterations; the decoration of the walls being quiet and subdued. The total expense of this church, finished with the exception of the tower (which was not completed until 1713) was 7,455*l.* 7*s.* 9*d.*

As to *St. Benet's, Paul's Wharf*, the committee understand that the building will not be destroyed, but handed over to a Dutch congregation. Of *St. Stephen's, Coleman-street* [St. Catherine Coleman, Fenchurch-street ?], the communication of its probable removal came too late to be included in these notes.

Of the general question involved in the removal of these City churches Mr. Teulon treated in a paper, of which the following is the substance:—

The condemned City churches has been selected as the subject of this deliberation to allure you into thoughtful, though mournful, reflections on those dear old friends that are gradually but surely disappearing from amongst us, and in the hope of eliciting all the information that can be collected in reference to their respective features and history before they are lost to us, and even their former existence forgotten. While, however, we lament over what is taken away, and cherish a fond remembrance of every trifle connected with them, it would appear to be our next duty and labour of love to think for those which remain, that we may put forth our humble, yet earnest, endeavours to save them.

In the early part of last year certain resolutions were passed, and a report was issued, by the Fellows of Sion College, containing the appalling intelligence that they intended to apply for powers to take down thirty-one of the City churches. This stupendous proposal was consequently brought under the notice of the Council of this Institute, who one and all gave their most earnest attention to the information laid before them, the President, Sir Gilbert Scott, taking special interest in it. It may be quite worth while, in passing, to remark, that immediately after this report appeared several letters were published in the *Times* with the view of showing that the majority, if not a the City rectors, and the archdeacon, were oppos to this measure, but that they were not prese in sufficient force to prevail against it.*

meeting of the Conservation Committee wi held in the following week, Sir Gilbert Sco presiding, and then, at his suggestion, this sul committee was appointed to visit and repo upon the churches; this, as you may suppos is a work of time, and we have yet many mo to inspect before the work is completed, bu trust that what we have already done may b sufficient to show that with all the difficultie there are in getting four busy men togeth at stated times, and the drawbacks of dark after noons all through autumn and winter, we hav yet not been wholly unmindful of our commissio

Since the adoption of the report at Sio College, the resolutions have been said to be hel in abeyance, and it may occur to some mind that it is not wise to awaken a power which i dormant; but sleeping means waking, and a any time it may arise and re-assert itself indeed, I am even now under the impression tha within the last few weeks a member of th House of Commons gave notice of some motio to extend the operations of the Union o Benefices Act. We trust, however, that Mr Beresford Hope—who has been already con sulted—will, as past president and presen member of this Institute, favour us with all the information he possesses as to the future of thi question, in which we believe he feels a very deep interest; and that we may also not be wanting the sympathy of many other members in vigilantly watching the course of events, and guarding the interests of this our Eastern Question when it shall at any time claim the attention of Parliament. They will doubtless advise us in what manner we may most effectually claim to be heard, and to protest that the sacrifices already offered up may suffice, that the remainder of the churches may be spared; and in whatever way this memorial may be exhibited it is to be devoutly hoped that not one single member of the Institute throughout the whole kingdom may be wanting to give in his adherence to it. It may be our influence will fall before the Juggernaut of modern utilitarianism, but let us not throw ourselves under it. In expressing this hope we feel there can surely be no occasion in this room to vindicate the architectural beauties, scientific skill, and general excellence of workmanship presented in these churches, which we have in former days so much admired; if we were to do so I think you would only be inclined to resent it, for I do not imagine there are many architects even now who do not reverence the genius of Sir Christopher Wren, by whom most of them were designed; but should there be any such, well, then you have a few other churches, as St. Olave, Hart-street; St. Bartholomew, Smithfield; and All Hallows, Barking, of far greater antiquity, which are quite as likely to disappear as the others if this Act be moved against them, which, far more destructive than the axe of the Puritan—

"Leaves not a rack behind."

Who among us that has reached middle life will not remember the time when the merest forecast of what we have witnessed would have been regarded with nothing less than dismay; when it was considered one of the finest things in the world to view the forest of towers and steeples of the City from the river or any of the bridges, displaying every variety of design? Beautiful, and eminently picturesque! A thing to show visitors when they come to London, and which the late Professor Cockerell,—no mean critic,—thought it worth his while to group together in one picture, which we all know and think so worthy of the subject; and when in the City, did we ever pass an open church-door without entering to view the grand interiors and carved work of the fittings, which, like their towers, offer differences of treatment in each, with almost equal grace in all, besides in their ritual arrangements typifying a most interesting period in the history of the English Church? Apart from business which may connect us with the City, or the receiving of dividends, if we have any to receive, I really know of little else that is left to interest us in it; and yet we have seen one church after another disjointed, broken up and carried away,—and have made no sign!

* The President, the Rev. W. Milman, stated that the greater part of the minority withdrew, and thus rendering the adoption of the Report a certainty; some of the majority withdrew also. Another correspondent said that the total number voting was thirty out of a Corporation of 165.

Then there is the important interest of their archæology and history to be thought of; the existence of these churches preserves much that is left to us of the past as respects themselves, the City, and citizens, for there is hardly one that is destitute of something which gives us a view of bygone days either in ancient or more modern times. Sweep away the church and away goes the story with it; and the time will come when we shall heartily wish we had better appreciated the work and records of our fathers, and had them back again. Whose mantle can have been thrown over us that in our time we are so intent upon pulling down what they have built up? We doubt if it often, if ever, originates with the citizens—unless they be foreigners,—for they have heretofore always loved and venerated their sacred edifices, although haply they may gladly avail themselves of the apparent advantages resulting therefrom; still less should we impute it to the rectors, as it has already appeared they are generally opposed to it. Perhaps it is the Act itself which, possessing some mysteriously spiritual vitality, continually urges on new demands for sustenance, employing human agencies in places from whence we suspect they, obedient to the spirit of the age, look with envious eyes at these prizes now unhappily so much within their reach. It is both fair and politic in all such matters to carefully consider other views besides our own, just as it is in designing a building to study its perspective from more than one standpoint; and therefore it must be admitted that for buildings to be standing in the heart of a great commercial city, where every foot of ground is so enormously valuable, buildings perfectly useless all through the week, and very little less so on Sundays, is a very powerful argument in favour of their removal, and one which we have to face. Fully recognising this, it is yet natural, if in *sheer* despair, to inquire whether these churches cannot in any way be made adequately to fulfil the purposes for which they were intended; and whether the scant population is a sufficient argument for their destruction. If any satisfactory answer could be found to this question it would be a first step towards the solution of the problem; but this is not the place to discuss it. If, however, there is only one weapon of defence that can possibly meet this difficulty, and that is a purely religious one, surely in no assembly can it be out of place to use it merely for that reason; and therefore I ask permission, without in the least attempting to trespass on ecclesiastical ground, to venture on a prediction of what would happen under certain conditions, with unerring truth, viz., that the churches could be all restored to their distinctly religious uses as some of them have been; if two services were held daily in business hours, and they were left open during the interval, so that thoughtful men of business might go in and ask themselves a few questions; and if by any possibility the clergy could be afforded suitable houses, and reside in their parishes, providing attractive services on Sundays, with fervid preaching, thereby drawing not only their small body of parishioners, but also hundreds of persons from other parts, who habitually, for the sake of a walk, even now gladly attend various churches at a distance from their homes, then the reproach of uselessness would be most effectually rolled away like clouds before the wind, and other reasons for their demolition would have to be sought for; the old sanctity of these consecrated places would return, and so permeate the principles of transacting business as to encourage a hope that the disasters and panics which sometimes occur through unscrupulous or reckless trading and speculation might be averted, and in the long run augur far safer and more profitable investments than the acquisition of these sites would ever do.

Further, we can scarcely regard it beyond our province as Englishmen if we consider for a moment the question of ownership. I do not mean the ownership of tenure, supposing that all property is held ultimately at the will of the Crown, but as monumental and architectural edifices, may we not fairly ask if they do not belong equally to the nation at large, and as much for the pleasure of all as to any particular portion of it who may in a sense be benefited by the removal of them?

Another question occurs at this point, viz., what has become of the materials and carvings of those churches which have been already removed? The prevailing impression was that when the Act was passed it was provided the churches should be erected elsewhere, after the same pattern, exactly as they had been. Has this been done in any one instance?

I have now only to say a few words on work which has been brought to pass in some of these churches, which is, in my opinion, only a little less grievous than demolition. I hardly know what to call it; it is certainly not restoration or renovation, for it consists chiefly in altering everything that is possible, and completely changing the character of the composition; perhaps reconstruction approaches more nearly to a description of it, but not entirely so. I say some of them, because others have been either left intact, or done with some amount of good judgment. I could mention instances, which, if they were not so very sad, would be really amusing both in respect to structural work and attempts at decoration in colours, which remind one of the show vans we used to see at some country fair.

In a general way I would express my own individual opinion,—desiring it to be understood that the other members of this sub-committee are in no way implicated, for I do not even know what they think about it,—that the substitution of low seats for the original high pews is a mistake, both as regards the general aspect of the interiors and the necessity it involves to sacrifice much of the carved oak work, which is consigned to a place to rot among the dead in the vaults beneath. Still more do I feel the removal of side galleries,—a thing to be utterly condemned, for they are in most cases structural parts of the church, and the absence of them quite alters its proportions. In a Mediæval church, of course, the banishment of galleries is one of the first things that suggests itself; but in those which were designed to accommodate them, you cannot take them away without deterioration to a large extent, especially when, as is often the case, there are two orders of columns and pilasters, the lower one being specially intended to receive them. Besides this, it is to be considered whether any essential alteration is not an unwarrantable liberty to take with the work of an architect who has passed away.

In the discussion which ensued,

The Rev. C. Mackenzie, rector of All Hallows, Lombard-street, said that although the thanks of citizens and Churchmen were due to the members of the sub-committee for the report they had drawn up, they had treated the subject almost entirely from an antiquarian and architectural point of view. But there were also the pecuniary and ecclesiastical, or rather spiritual, aspects of the question. While the views of the authorities of Sion College had not met with the general approval of the City clergy, who did not think it necessary to remove or destroy so many churches as had been proposed by the College, it was unquestionable that many City churches might be removed with advantage, and the proceeds of the sales of their sites devoted to the erection of churches in other parts of the metropolis where they were more needed. Any one who knew anything of the subject knew that as the City was almost deserted on Sunday, in many of the City churches it was impossible to expect the attendance of more than a mere handful of people. His own experience of the union of benefices in the City had been very satisfactory. He was formerly rector of St. Benet's, Gracechurch, which until within the last few years stood at the corner of Fenchurch-street and Gracechurch-street, greatly to the obstruction of traffic in those busy thoroughfares. It had no architectural beauty externally, and nothing inside to attract, except, perhaps, the rector in his pulpit. It had been removed, the thoroughfares widened, and the benefice united with that of All Hallows, Lombard-street, and the congregation attending the latter church was now three times greater than the congregations which formerly attended either church. In addition, money had been provided for the erection of a large church in a populous neighbourhood, where it would have full scope for spiritual work. There was little fear of too much precipitancy being shown in the demolition of City churches, because, before all arrangements could be completed, so many conflicting interests had to be studied that it was often the work of years to get all parties to agree to any such proposal. He was strongly disposed, for the reasons he had given, to advocate the continued thinning out of the City churches, although there were some whose historical associations and architectural beauty ought to avail for their preservation in the face of the most utilitarian considerations. As to St. Helen's, Bishopsgate, for instance, he would rather lose a limb than that it should be taken down.

The Rev. Thos. Darling, rector of St. Michael's, Paternoster Royal, College-hill, said that after thirty years' service as a City rector, he was becoming more and more convinced every year that Bishop Blomfield did a great and wise thing when he obtained power to remove some of the City churches, and this was the opinion of all who knew how small was the resident population of the City. It was very well for outsiders to be sentimental, but the Church was for living work, and was something more than bricks and mortar. No doubt any one who had any eye for architectural beauty would regret the removal of any one of the spires which, with the dome of St. Paul's, presented such a magnificent *coup d'œil* from the river, especially in the days when the Cannon-street Station was not. But many of these churches had ceased to be useful in their present situation, and as ground was so valuable in the City it was impossible to allow them to remain. If they were situate in the country, it might be advisible to let them stand and go to ruin, but ruined churches in the midst of busy London would be sadly out of harmony with their surroundings. He believed that by removing these useless churches and selling the ground on which they stood, and erecting new churches in populous neighbourhoods with the money, they were best fulfilling the wishes of those who founded and endowed the churches. It might be advisable, in some instances, to retain the towers of some of the churches so removed, but if they were retained, they should be looked after and preserved in a state of decency and order, as was *not* the case with regard to the tower of the demolished Church of St. Mary Somerset, Thames-street, which was now utilised as a bill-posting station. Unfortunately, the administration of Bishop Blomfield's Act was not very logically carried out, as was seen in the case of All Hallows, Thames-street, whose interesting *ante*-Fire tower (the only part of the church worth preserving) had been removed, whereas the church (which was not wanted) was to be retained and a large sum was to be spent on its renovation. As to his own Church of St. Michael, Paternoster Royal, he had spent 1,800*l.* out of his own pocket in decorating it, and with, he thought he might say, good effect, for there had been no attempt at Gothicising. This church was particularly worth preserving, and he was glad to know that it was in no danger of removal. Richard Whittington founded a college adjoining, and was buried in the church, but until Mr. Darling put in a stained-glass window a short time ago there was no memorial of that famous citizen to be seen in the church.

Mr. T. Chatfeild Clarke moved a vote of thanks to the sub-committee and to Mr. Teulon for their papers, and said he was glad to have heard the two clergymen who had spoken give utterance to such liberal and common-sense views on the subject. When any church which had no special architectural beauty or historical associations had served its purpose, it was far better to remove it and to devote the money resulting from the sale of its site to supplying the spiritual wants of struggling populations outside the city. Wherever possible or advisable, the tower or any special feature should be retained. No doubt there were difficulties in the way of developing the site of St. Antholin's Church which precluded the preservation of its beautiful tower.

Mr. Hansard seconded the motion, and suggested that the Institute should communicate with the Sion College authorities with a view to the Institute giving advice on architectural points.

Mr. C. F. Hayward supported the motion, and also spoke in favour of the suggestion made by Mr. Hansard.

Sir Walter Stirling said he regretted that the discussion had departed somewhat from the purpose for which the meeting had been assembled. He had thought that the meeting was to have witnessed a general architectural lamentation, but he must confess that from what he had heard in the paper read by Mr. Spiers he saw no particular reason why any one of the churches he had named should be preserved.

The President, in putting the vote of thanks, expressed his disagreement with Sir Walter Stirling's remark that none of the churches referred to were worth saving. Many of them exhibited in their construction, and in the arrangement of their ceilings and colonnades, features of very great interest.

It was announced that in consequence of the pressure of Sir Gilbert Scott's professional engagements, he would be unable to prepare his paper on St. Alban's Abbey in time for reading at the next meeting (Monday next). Its place would be supplied by a paper by Mr. Thomas Morris on the Metropolitan New Streets Bill.

THE IMPROVEMENT SCHEMES IN THE METROPOLIS UNDER THE ARTISANS' DWELLINGS ACT.

THE evidence which has already been given before Mr. Cubitt Nichols, the Commissioner appointed by the Home Secretary to make an inquiry into the various improvement schemes of the Metropolitan Board of Works, under the Artisans' and Labourers' Dwellings Act, is of a gravely-important character, as showing the deplorable manner in which thousands of the population are still housed and exist in almost every part of the metropolis. An analysis of the facts which have so far been elicited, and the repulsive sanitary condition of the several districts proposed to be dealt with by the Metropolitan Board of Works, may be interesting.

Amongst the localities respecting which evidence has been taken is that of St. George the Martyr, in Southwark, where the Metropolitan Board have a scheme for improving three areas, named respectively the Elizabeth-place area, the King-street area, and the Mint-street area. The Elizabeth-place area contains 26,782 ft.; King-street, 18,147 ft.; and Mint-street, 46,123 ft., being a total of 91,052 ft., where 1,340 persons inhabit houses containing 602 rooms. Elizabeth-place was described as the most melancholy and miserable spot imaginable, whilst the other areas were also in a bad condition. Dr. Bateson, the medical officer of health for the district, said that many of the houses were built back to back, excluding ventilation, and harbouring contagious diseases, and even in cases where they were not back to back, the space between them was very small, and there were no windows. The health of the inhabitants was very bad in them all. There were epidemics, and nearly always constant illness of all kinds. Measles, scarlet fever, small-pox, and whooping-cough were very prevalent. The trade of fish-drying was carried on in the King-street area, not only in the rooms and the streets, but even in the water-closets. He knew no way of improving the condition of the neighbourhood except pulling the houses down. Dr. Matcham, speaking of the Mint-street area, said that the general dilapidated condition of the houses in the area made them quite unfit for habitation, and he could suggest no other remedy than demolition. Sir Joseph Bazalgette, engineer to the Metropolitan Board of Works, described the houses in the several areas as quite unfit to live in. The density of the population was very unhealthy. In one room he saw a woman and a number of children in a wretched condition, and the general appearance of the place reminded him of an Irish cabin. With regard to the Elizabeth-place area it was proposed to devote the whole of it to improved dwellings five stories high, which would have the effect of opening up the area, and securing thorough ventilation. There was a provision in the scheme for 230 rooms, instead of the 179 existing. There would be 20 single-roomed houses, 75 double-roomed tenements, and 20 with three or more rooms. The density of the present population would be much reduced. On the King-street area it was proposed to make the dwellings four stories high, containing 200 tenements of two, three, or more rooms. As regards the Mint-street area, the scheme proposed to have 140 single tenements, of which 90 would contain registered lodgers, 90 two-roomed tenements, and 20 three-roomed houses. It was also proposed to widen the streets in each of the areas. Mr. F. W. Goddard, valuer to the Metropolitan Board of Works, said that the property was in a wretched condition, and he described Mint-street as the Alsatia of London. Mr. Vigers, whilst under examination, stated that the land would be let by the Metropolitan Board to builders, whose operations would be under the supervision of the Home Secretary. The opposition to the scheme by the owners of some of the houses was of a rather remarkable character. Mr. Newell said he did not think there was so much disease in the district as was stated. The principal disease the population suffered from was starvation. If the houses were demolished the tenants would be driven into the streets, for they were so dirty that the new landlords would not take them in! The same doctrine was urged by Mr. Robert Gager, an owner in Mint-street, who said that if the lodging-houses were removed the lodgers would not be taken into new premises, as they were excessively dirty and ragged; whilst Mr. Levy, another owner, said he had lived there many years. He had brought up a family of nine children, and had never paid 5*l.* doctors' bills in his life. Several other owners also contended that the areas were healthy; and objected to the scheme on the ground of its cost, which is estimated at 59,760*l.*; but Mr. Williams, the counsel who appeared for the Metropolitan Board of Works, urged that as no evidence had been brought forward against the scheme the Act of Parliament ought to be enforced. The proceedings closed with an observation from the Commissioner that he would make a survey of the houses, and draw the attention of the Home Secretary to their condition.

The scheme for the improvement of Pear Tree-court, Clerkenwell, has also been before the Commissioner. Mr. Philbrick, Q.C., who appeared on behalf of the Metropolitan Board, stated that the tenements were in a most wretched condition, and that if ever an improvement scheme were supplied in connexion with any property it ought to be brought into operation here. The condition of the property had for years back been a reproach to the neighbourhood, and taking into account those persons who were removed from the district, sick, to hospitals and infirmaries, and who there died, the mortality of the neighbourhood was nearly 40 per 1,000, or almost double that which prevailed over the rest of the parish. Dr. J. W. Griffith, the medical officer of health for the parish, deposed to the thorough unhealthiness of the houses within the Pear Tree-court area. The rooms were small, dark, and overcrowded, and nothing could be done from a medical point of view to put the houses into a satisfactory condition. They should be pulled down, and other tenements built in their stead. Sir Joseph Bazalgette said he had inspected the property, and he did not see that there was any way of dealing effectively with it except by demolishing it and constructing tenements which would be better in all respects than those which at present existed. Sufficient and improved accommodation would be afforded by the scheme to those who would be displaced. In order to provide that accommodation it was proposed to make the new buildings four stories high, and to increase the number of rooms from 216 to 270. It may be incidentally stated that the Pear Tree-court area forms the site formerly occupied as a Benedictine nunnery, and has a still further historic interest from the fact that one of the tenements intended to be taken and demolished is a wooden building named Cromwell House, traditionally said at one time to have been occupied by the Protector.

Another area selected by the Metropolitan Board for improvements under the Act is that known as Great Wild-street, St. Giles's, and evidence respecting it has likewise been given before the Commissioner, which shows that its sanitary condition is equally bad with those already described. Dr. Levett, the Medical Officer of Health for the district, said he had known it all his life, and it was not fit for the habitation of human beings. The death-rate of the whole district was 33 per thousand, but in this particular area he estimated it at 39 per thousand at the very least, the plot having been long notorious for its unhealthiness and heavy death-rate, in consequence of its being the constant abode of zymotic diseases in their most contagious form. The lawless character of the occupants of this locality are best described by the police, who state that they break off the water-cocks and sell them, and use the covers of their dust-bins for firewood. Sir Joseph Bazalgette described the overcrowded and unhealthy condition of the district. The population was at the rate of 1,406 per acre, as against 800 in other areas. He had seen thirty people living, eating, working, and sleeping in nine small rooms. The scheme of the Board provided for the erection of five and six story houses, which, with better sanitary arrangements, would lodge more than those displaced. Great Wild-street and Prince's-street would be made 40 ft. wide.

The Bedfordbury area, described by the Medical Officer of Health for the district as the "plague-spot" of St. Martin's-in-the-Fields district, has also been before the Commissioner. Evidence was given showing that the scheme of the Board would clear away the blind alleys in the neighbourhood, which are destitute of both light and ventilation. The area proposed to b cleared is about an acre in extent, and on th site it is intended to build houses six stories h height, with special accommodation in the base ment for the barrows and stock-in-trade of th costermongers, who are said to constitute abou one-tenth of the population.

The proposal to deal with the Petticoat-lane are in the City, off Whitechapel, has likewise been th subject of an inquiry before the Commissione Dr. W. Sedgwick Saunders, the medical officer o health, spoke to the dilapidated and unhealthi condition of the houses in the district. D Fowler, surgeon, also gave evidence, stating tha considering that the whole block was intersecte by blind courts and alleys, nothing short o demolition would remedy the evil; and D Liddle, who has been twenty-one years medica officer, gave similar evidence. Under th scheme houses of four stories in height are to b erected, with widened streets.

The entire number of schemes at present i nine, and those in Westminster and Islingto have yet to be investigated by the Commis sioner.

THE LIVERPOOL WATER SUPPLY.

DURING the last twelve or eighteen months a fierce and bitter controversy has been going o at Liverpool respecting the future supply o water to that town. It is admitted on all hand that the present sources of supply are inade quate to the requirements of that importan community, and that new works of some kin or other must inevitably be constructed. Th point in dispute is whether the additional supply is to be obtained from wells in the local red sandstone, or is to be secured on the gravitation principle. One section of the community con tends that there is an abundance of water in the red sandstone formation in the locality, and tha there is no necessity for going to the enormou expense of bringing water from a distance, whilst others are of opinion that the supply from the wells would be uncertain, and altogether in adequate. This is the view taken by severa eminent engineers, and also by the water-com mitteeof the Corporation Mr. Bateman and other engineers have been employed, and have reported upon projects for supplying the town with water from the Cumberland and Westmoreland lakes and other places, and the Water Committee have on several occasions recommended the adoption of one or other of these several projects, but up to the present time no plan has been definitely agreed upon owing to the advocates of the local well supply demanding that its capabilities should be tested; and this has now been decided upon. At a meeting of the Town Council which has just been held, the Chairman of the Water Committee proposed that a tender of Messrs. Mather & Platt, of the Salford Ironworks, be accepted, to sink a bore-hole at Bootle, not less than 1,000 ft. deep, to test whether or not the local red sandstone contains sufficient water for the supply of Liverpool. Messrs. Mather & Platt undertake to provide the necessary pumps, engines, and boilers, capable of raising ten million gallons of water per week, from a depth of 400 ft. below the surface, and to deliver the same at 90 lb. pressure per square inch at the surface of the ground. They likewise undertake to erect the necessary buildings, together with a surface condenser. The engines are to be compound, and of the best design, workmanship, and construction. The amount of the tender is 15,900*l.*, and the work is to be completed within two years from the date of the acceptance of the tender. Although the chairman of the Water Committee advised the Council to accept the tender, he openly stated that there was not a single member of the committee who believed that the ultimate supply of water for Liverpool could be got from local sources. At the same time the committee were anxious to carry out experiments with a deep bore-hole. The chairman at the same time intimated that the arrangement would not prevent the committee from continuing their labours with the view of having an alternative scheme ready at hand if the deep boring proved a failure, as the wants of the community were running dangerously near to a dearth of this first necessary of life. In the course of a discussion on the subject, Mr. Alderman Weightman (formerly the borough surveyor and architect) remarked that he had begun to feel ashamed of holding a seat in the chamber, because he saw so much vacillation amongst members of the Water Committee themselves,

d such a determination on the part of some mbers of the Council to embarrass the pro- edings. The proposal for the acceptance of essrs. Mather & Platt's tender was adopted, d the deep boring process will now at once be mmenced.

ALUE OF PROPERTY IN SHOREDITCH.

Last week Messrs. Reynolds & Eason sold, the Mart, a large amount of building estates d other property in Shoreditch, which con- sted of seventeen lots, and contained alto- ther the large ground area of 50,000 ft. There as a very numerous attendance, and the com- etition was exceedingly spirited, the whole of e several lots being disposed of, and realising a aggregate sum of upwards of 25,000*l.* The roperty included seventy-two houses, besides orkshops, manufacturing premises, and vacant nd, partly lying between Curtain-road and the igh-street, Shoreditch, adjoining the plots of uilding land now being offered for sale by the etropolitan Board of Works on building leases, hich the Board acquired for the construction the new thoroughfare between Oxford- reet and Old-street. The property was ated to produce a gross rental of 2,000*l.* year. The first lot offered consisted of ve freehold houses in New Norfolk-street, ith a ground area of 1,450 ft., and producing annual rental of 148*l.* This lot realised 330*l.*, the auctioneer observing that all the lots ere for absolute sale, and would be sold to the ghest bidder. The next lot, adjoining, con- ining twenty-two houses and workshops, cover- g an area of 10,500 ft., and producing 464*l.* per nnum, was knocked down for 3,960*l.* A build- g site adjacent, containing 6,000 ft., on which here are fourteen houses, producing 252*l.* per nnum, realised 2,310*l.* It was announced that he North-London Railway Company had given otice for the compulsory purchase of a portion f this lot. A corner public-house, known as the orfolk arms, containing 1,350 ft., and producing 0*l.* per annum, was sold for 1,530*l.* A building te in Curtain-road, containing 5,300 ft., on which here are five cottages and a warehouse, producing 1*l.* per annum, fetched 1,510*l.* A block of six ouses in Norfolk-place, Curtain-road, with a round area of 2,700 ft., and let for 118*l.* per nnum, was sold for 1,360*l.* For the next lot, onsisting of spacious business premises, in urtain-road, and described as being in the heart f the cabinet trade, there was a very spirited nd close competition. The property, which as a ground area of 3,800 ft., and is let on lease or forty-five years, at 50*l.* per annum, nine years f the lease being yet unexpired, was sold for ,510*l.* It was stated that the premises were ubstantially rebuilt a few years ago, at a cost f 2,000*l.*, after having been destroyed by fire, nd that their estimated annual value at the resent time is from 250*l.* to 300*l.* per annum.

WORKING MEN IN THE OLDEN TIME."

This was the title of a lecture recently given n York by the Rev. C. H. Wellbeloved.

After some introductory remarks, the lecturer aid that under Saxon rule there were four lasses of the community—nobles, freemen, reedmen, and serfs. In describing the position nd characteristics of these different classes, he bserved that the freemen corresponded with ur middle-class population. The freedmen were hose who had purchased or otherwise obtained heir liberty. The majority of those moved into he towns, and formed themselves into guilds nd corporations, which were the foundation of ur modern municipal institutions. Having at ength described the miserable condition of the laves or thralls, and stated some of the crimes nd defaults by which freemen lost their liberty, nd became slaves, Mr. Wellbeloved said many f them were employed about the offices and ouses of their masters, and became handicrafts- nen of various kinds. If they could obtain their iberty they still carried on their trades. The ecturer then related the general character of he Saxon penal system, and its effect upon the eople. The manufactures of that period were ut few in number, the towns being small and hinly peopled. York, the greatest city men- ioned in Domesday Book, contained only 1,418 ouses, and of those 540 were uninhabited. The Saxon laws laid great restrictions upon trade f all kinds, with a view to secure honest dealing, hough they also facilitated the levying of dues. The lecturer then passed on to notice the manner f holding markets and fairs, and having sketched the condition of the clergy in those times, he went on to notice the state of our ancestors under Norman rule. He said the condition of the serfs remained almost unchanged, though the other classes suffered considerably from their Norman conquerors. Under the Norman feudal system the whole condition of things was altered; the Saxon freeholders gave place to the Norman vassals, who were little better off than the Saxon serfs. The lecturer then gave a long account of the state of the barons under William the Conqueror and his sons, and the anarchical condition of Stephen's reign. During that dire chapter in English history, the degra- dation of the Saxon freeman was completed by thrusting all degrees of tenants and servants into the common slavery, or at least into the strictest dependences. They continued in that state until the reign of John, from which time the true English nation dated its rise. The servitude of the villeins at the end of the twelfth century was as complete as that of the Anglo- Saxon thrall, and the great charter extorted from King John marked the first step upwards. The development of trade was one effect of the charter, and towards the end of the thirteenth century many improvements had been introduced into agriculture, arts, and manufactures. Agricul- tural labourers were very poorly paid, to judge from the wage of a haymaker, which was 1d. per day. The building trade must have been very brisk, considering the number of baronial castles, monasteries, and churches that were then built. In the reign of Stephen no fewer than 1,115 castles were erected. The dwellings of the poor were but rude cabins without chimneys, built of wood and covered with straw or reeds. Great attention was given to the working of metals for the purposes of armour, and the manufacture of church utensils in gold and silver was carried to great perfection. Linen and woollen manufac- ture may be said to have taken its rise in England in the middle of the thirteenth century, when several Flemish weavers came over to this country. The first two Brabant weavers that came over to England settled in York. Protection and special advantages were offered by proclamation of the King to any other weavers who would come and settle in England, and it was then that the English working men were rescued from slavery. The rate of wages and prices of various commodities contrasted curiously with those of the present day. Bread was the principal diet, there being no potatoes, and very few vegetables, which were difficult to obtain. In 1299, the price of a lamb in London, from Christmas to Shrove-day, was 1s. 4d. In 1350, the price of wheat per bushel was 1s. 10½d., and of an ox 1*l.* 4s. 6d., while the labourer's wage was 3d. a day. The soldier had 6d. a day. In the beginning of the fourteenth century slave labour was superseded by free labour. In con- clusion, the lecturer briefly touched upon the social and industrial life of England during the fourteenth century, and said the working-men of the present day ought to be supremely happy. The great things which had been accomplished by them were an earnest of what the future held in store for them.

CHINESE PROGRESS IN SCIENCE.

On April 11th a meeting took place at the Polytechnic Institution, Regent-street, to witness some of the phenomena connected with the polarization of light and other branches of optics, as shown by a new apparatus intended for an institution at Shanghai. The demonstrations were conducted by Mr. J. L. King, who delivered a brief lecture explanatory of the scientific prin- ciples which determine the phenomena, and who stated that the occasion derived its chief interest from the fact that it marked an awakening in the Chinese mind to the importance of scientific instruction. The Chinese institution owes its origin mainly to the influence and exertions of Sir Walter Medhurst, lately our Consul in Shang- hai, who was chairman of the Shanghai Com- mittee, and Mr. Fryer, who acts as honorary secretary. Their views have been energetically supported by our ambassador, Sir Thomas Wade, and by many of the leading mandarins, among whom may be mentioned Li-Hung-Chang, Feng- Chu-ju Taotai of Shanghai, Hsu-Tsuoh-Tsun, and his sons, who are well known throughout their own country for their technical skill and scientific enlightenment, and by many others who favour the importation of Western knowledge of every kind as calculated to render the most important services to their country. A build- ing has been erected at Shanghai, within which lectures are to be given and interesting apparatus and processes shown; and a reading-room pro- vided with suitable works, is already in active operation. These measures are expected and designed to lead up to a Chinese International Exhibition, at which the most interesting pro- ductions of the East and West will be brought into juxtaposition.

SOUTHPORT GLACIARIUM.

The foundation-stone of the buildings about to be erected by the Southport Glaciarium and Ice Manufacturing Company was laid last week, with some ceremony, by the Right Hon. Lord Clarence Paget, many gentlemen of local in- fluence being present. The directors have secured a central site, having a frontage of 120 ft. to Lord-street, and containing an area of about 6,850 yards. On this plot of land they have commenced erecting a real ice skating-rink, with other buildings for the accommodation of the machinery and manufacturing of ice. The buildings architecturally are "Queen Anne" in character, and are being faced with red bricks. The size of the rink (surface of ice) will be 144 ft. by 54 ft. The architects are Messrs. Asahel P. Bell & Geo. Freeth Roper, of South- port and Manchester; and the engineer is Mr. Beck, of London. Messrs. Bridge & Sons are the contractors. Considerable progress has been made, and it is expected that the rink will be opened in the early part of June.

MR. F. T. MAPPIN'S "COCOA-HOUSE," HIGHFIELD, SHEFFIELD.

A new building has been erected at Highfield, Sheffield, by Mr. F. T. Mappin, for the purpose of offering to working men the enjoyments and most of the comforts of club-houses, whilst avoiding the cause which too often makes working-men's clubs a mistake. It is to be, as its name applies, a cocoa and coffee house; and it will be conducted upon precisely the same principles which have been found to answer best in the management of the cocoa-houses in Liver- pool. There are several there, and the success attending them is so great as to justify the belief that similar houses will ultimately be found in most of our large towns. Hitherto they have been confined, we believe, to Liverpool; and it was a visit to one of them that induced Mr. Mappin to make a similar experiment in Sheffield. The building in Highfield has been specially erected for the purpose from designs by Messrs. Hadfield & Son. It consists of two stories. The first floor is one large room extending the entire length of the building. This will be furnished with chairs and tables, and with marble-topped circular tables, similar to those seen in many of the London and provincial refreshment-houses of the better class. Into this room any one will be at liberty to go. A cup of tea, coffee, or cocoa will be obtainable for a halfpenny, and a pint for one penny. Bread and butter can also be pur- chased at an equally cheap rate, or persons can bring their own food and eat it there. A broad staircase leads from this room to the story above. Here there is (according to the *Sheffield Inde- pendent*) one of the finest billiard-rooms in Shef- field. Separated from the billiard-room by a pair of folding-doors is the reading-room, which will be supplied with newspapers and magazines. The reading-room and billiard-room are equally open to those who visit the institution, but a small charge will be made for the use of the billiard-tables, chessmen and tables, and for packs of cards. Between the building itself and the steward's house at the back is an open piece of ground intended to be used as a skittle-alley. It will be covered in by a roof of glass. It is intended that the building shall be opened at half-past five in the morning, and remain open till eleven at night.

The institution was opened on the 9th inst., when Sir Harcourt Johnstone, M.P., Mr. Roebuck, M.P., and Mr. Mundella, M.P., were present.

Mr. Mappin's laudable undertaking deserves abundant success.

New Lectern, Banbury Parish Church. On Easter Sunday the new lectern in Banbury parish church was used for the first time. It was designed by Mr. A. W. Blomfield, architect, and was presented by Messrs. J. & T. Davis, builders. The lectern is of English oak; the eagle has been carved in wood by Messrs. Rattee & Kett, of Cambridge.

NEW PUBLIC HALLS.

Grangemouth.—The foundation-stone of a new hall which is being erected by the congregation of the Free Church at Grangemouth has recently been laid. The plans have been prepared by Mr. David Smart, architect, Perth, and the following contractors have been engaged for the work:—Mason, Messrs. Cuthbertson & Co., Grangemouth; joiner, Mr. Andrew Mickel, Linlithgow; plaster and slater work, Mr. John Murray, Grangemouth; plumber work, Mr. Patrick Mickel, Falkirk.

Smethwick.—On Easter Monday the Temperance Hall erected in Cross-street by the Smethwick Temperance Society was formally opened. The building is in the Gothic style, and is of brick with stone dressings. Near the main entrance and on the ground-floor are two anterooms, the hall being at the rear. The latter is well lighted, has a gallery at one end, and will accommodate nearly 400 persons. The upper portion of the building contains a large room, and this the committee intend to be used for meetings of Good Templars, Odd Fellows, and kindred societies; in the basement provision has been made for cooking purposes. Mr. John Harley, Smethwick, is the builder, and the estimated cost is 1,800*l.* The architect was Mr. F. Lloyd, of Birmingham.

NEW BANKS.

Inverness.—In consequence of the business of the Inverness branch of the Aberdeen Town and County Bank having increased considerably of late, the directors have found it necessary to make a change from Bridge-street to more commodious premises. After some negotiations, the prominent block of buildings known as Hamilton-place was purchased for 3,700*l.*; and considerable alterations are intended to be made, so as to suit the requirements of a banking establishment. Mr. Lawrie is the architect.

London.—The foundation-stone of the London branch office of the Royal Bank of Scotland, Bishopsgate-street, has been laid. The new building, which will stand on the site of the London Tavern, an area of 6,500 square feet, will be Italian in character, and will be treated in two orders, Ionic and Corinthian, the floors being taken under each order. The material of the façade will be Portland stone, and the height will be about 70 feet, which was the height of the London Tavern. Internally the building will be constructed with fireproof floors throughout, ample accommodation being given in the way of strong rooms and lavatories. A bold and handsome staircase will give access to the whole of the upper floors, and it will be surmounted by a lantern light. The bank will occupy only a portion of the new building, and to this there will be a distinct entrance. The cost of the building will be about 40,000*l.*; the site was purchased for 80,000*l.* Mr. T. Chatfeild Clarke is the architect, and Messrs. Merritt & Ashby the builders, Mr. James Wilkinson acting as clerk of works.

COMPENSATION CASE.

THE NEW RIVER COMPANY *v.* THE CORPORATION OF LONDON.

THIS was a somewhat novel compensation case, which occupied two days at the Sheriffs' Court, Red Lion-square, in respect to the freeing by the Corporation, out of the Coal Dues, Tottenham Mills-bridge, on the River Lee, being the first bridge, after the Metropolitan bridges, which came under the Act, 1869, and the subsequent statute.

The claim, as presented by the New River Company, was about 1,600*l.*, and on the part of the Corporation it was described as "enormous and extravagant." The New River Company had leased the bridge to a person named Ware at 12*l.* 10*s.* per year, with a speedy termination of the lease on notice, the tolls, independant of the wharf tolls, averaged for the last four years 152*l.* a year. The lease granted to Mr. Ware included about fifty acres.

Mr. R. Ritchie, surveyor, valued the bridge at sixteen years' purchase, and, with the other property, he estimated the claim, including the 10 per cent., to 3,580*l.* As only the bridge was required by the Corporation to free the same to the public, there were deductions to be made on the part of the Corporation, which, it was alleged, should be considered in estimating the value of the property.

The contention on the part of the Corporation was that a term of sixteen years was not to be taken as the value of a bridge.

The other valuer of the New River Company, Mr. Crantar, stated that a purchaser of the bridge ought to obtain 10 per cent. for his money.

Another item of the compensation was in respect to the Great Eastern Railway Company, who had taken some land with right of access, and it was denied that the New River Company had a right to claim either 700*l.* at present or 350*l.* in reversion.

During the investigation it appeared that the New River Company had exercised exclusive rights over the bridge, and tolls were demanded for vehicular, but not for pedestrian traffic, and they had power to exclude all vehicles which they considered objectionable. The bridge was used by the Great Eastern Railway to their cattle lairs, under the lease they had obtained.

Mr. Under-Sheriff Burchell, in placing the case before the jury, pointed out the peculiar circumstances surrounding the claim, and went through the several items contained in the claim. With respect to the 10 per cent. for compulsory sale, he told the jury there was no law on the subject, but he advised them to adopt the rule which had been followed in other cases. He directed the jury to find a verdict for the casual tolls, and also as to the value of the tolls granted to the railway company, which had been estimated at 35*l.* a-year, and to state whether it was as to the present value or in reversion, and the matter might go before the Chancery Division. Besides the customary 10 per cent., the jury would, if they thought proper, award a sum for a fence to protect the land belonging to the New River Company, which would result as consequential damages by the bridge being thrown open to the public.

The jury retired for half an hour, and on their return found a verdict for 1,360*l.* for the tolls of the bridge, and 150*l.* as the reversionary interest as to the tolls leased to the railway, assuming, they stated, that the lease would stand. They gave no sum for "consequential damage." A verdict for 1,750*l.* was accordingly entered.

ACTION FOR LIBELLING A BUILDER.

HOOPER *v.* COX.

THIS was an action for libel brought (in the Exchequer Division, before Baron Pollock and a special jury) against the proprietor and editor of the *Borough of Hackney Express and Shoreditch Observer*. The defendant pleaded that the publications were not libellous, were not issued with malice, were fair comments upon a matter of public interest, and were true in substance.

Mr. Morgan Howard, Q.C., Mr. Lumley Smith, and Mr. Charles Scott were for the plaintiff; and Mr. Serjeant Parry and Mr. Robert Lane appeared for the defendant.

The plaintiff was a builder (we take the report from the *Morning Advertiser*), and at the time of the publication was erecting forty-seven houses for the humbler classes by the side of the railway embankment at Hackney-wick. The defendant was the proprietor and editor of the *Borough of Hackney Express and Shoreditch Observer*. Upon the 19th of August, 1876, the following passage appeared in that paper:—

"'Express' Notes. By a Looker-on.—To take a note of useful things I am prone, and give the public knowledge little known. Has the attention of Mr. Lovegrove, the surveyor of the Hackney Local Board, or Dr. Tripe, the medical officer of health, been drawn to the composition and surroundings of a new street of jerry houses now being constructed alongside the railway embankment at the 'White Lion,' Hackney-wick? If it has not, the sooner it has the better, so that the District Board of Works may be furnished with a report at an early meeting. I do not know who is the builder or builders of these houses, nor do I care to know; but from personal examination of their design, arrangements, and materials, I unhesitatingly say that they are not only a most rubbishing lot of dwellings, but they are ill-constructed, and that sanitary requirements have received little consideration in their erection, either in the matter of foundation or drainage. They are of a class of slap-dash and slop work; in fact, not to mince matters too nicely, the workmanship is scamped in every branch that has contributed to their creation and completion. The stairs are mere step-ladders of very steep incline, boxed in between two flimsy stud partitions, said partitions and stairs being made to contribute to the support of the floors above. The stairs are break-neck, and most dangerous in case of young children, or men under the influence of drink the timber scantling, floor joists, and roofing rafters are of the poorest kind, and the joinery work, doors, sashes, and fixtures, are most miserable specimens of workmanship, bad in material, and of insufficient strength. In half a dozen years the general condition of the houses in this new street will be 'tumble-down houses.' The mortar of the brickwork is positive rubbish, with no more cementing qualities than if it was a lump of soap, and the plaster upon the walls is a conglomeration of dirt skimmed over with a white coat not much thicker in substance than what two coats of lime-wash might produce. These 'jerry' houses are built to sell, and in a short time they will prove they were also built to kill. To the unprofessional eye, on the outside they will, of course, appear to be nice genteel residences for working people, or others with a limited income. Let Dr. Tripe and Mr. Lovegrove visit them and examine them, or ask our professional contemporary, the *Builder*, to send its commissioner, and I am certain my strictures will be borne out. When will a stop be put to the manufacture by wholesale of murderous houses?"

The plaintiff's solicitor wrote to the defendant in reference to that publication, and on the 7th September the letter and its reply, and some further remarks upon the buildings, appeared in the defendant's newspaper. It was contended on behalf of the plaintiff that he was entitled to substantial damages in respect of such publications.

Baron Pollock, while the case was being opened by Mr. Morgan Howard, said that the libel was so very clear, and that while the defendant might be able to substantiate a part of the publication, yet, taking it as a whole, the plaintiff could not stand by and let such things go on.

Mr. Serjeant Parry explained that he appeared for the defendant, who had no knowledge whatever of the plaintiff, and who had made the remarks referred to wholly in the interest of the public. He was not insensible to the language in which some of the remarks had been made, but he would say that if ever there had been an editor actuated by a singleness of motive, it was the defendant in the present case.

Considerable consultation then took place between the learned counsel and the parties in the case. Ultimately it was agreed that a verdict should be entered for the plaintiff—damages 40*s.*; a certificate granted for costs and for a special jury; and that the defendant should make a handsome withdrawal of the language used in the publications.

Baron Pollock considered that the right course had been adopted, and that while in the present case to direct a charge had been made against a man of business yet it was quite right that the defendant should exercise his quasi-public duty in reference to sanitary and other matters which were of the most important public interest.

Judgment was entered for the plaintiff accordingly.

A LAW WRINKLE FOR BUILDERS USING STRANGE ROADS.

BURDON *v.* WHALEY.

THIS action (Durham County Court) should form a legal precedent to builders erecting scaffolding, and laying building material rubbish, &c., on strange land.

The plaintiff sought to recover compensation of the defendant, a builder,—not vindictive damages,—but to test a legal right.

Mr. Burdon said he leased a piece of land from the Dean and Chapter of Durham, and it being necessary to get a road through, he bought the reversion of another piece of land. He then reformed the "reversion" road by making it a little wider. He also made a retaining wall for the purpose of economising space and to keep up the road, as he intended to erect a shed. The wall was higher than the footpath, and the footpath higher than the cart track. Over the top of the wall he put palings about 8 ft. high, and also made a footpath 2 ft. 6 in. wide, and placed check-stones next to the cart-track. Commissioners also granted to Mr. Renney a right of road to land which adjoined witness's. When plaintiff purchased the land he built a candle factory on it. After this a piece of the same land was sold to the Manchester Co-operative Society to erect soap-works on it, the contract for which was let to the defendant, and whose carts and wagons used his (the plaintiff's) road for leading building materials, and in doing so cut it up to such an extent that they made it almost impassable. He also found a large quantity of masons' debris had upon the road, which raised it above the level of the footpath, which was now about 2 in. above the retaining wall, and the road was again rutted. Witness made a gutter on the south side of the road, and this was now filled up with broken bricks and other like material. Raising the road had caused the water to fall into witness's yard. The top of the retaining wall had given way owing to the pressure against it, by the footway being raised. Upon asking Mr. Whaley, the defendant, if the rubbish had been put on the road by his authority, defendant said yes, and that he would put upon it what he liked, that he would have none of witness's nonsense, but would have some. Witness replied that if he, Whaley, thought he could do what he liked with his, the plaintiff's, freehold, they would get to war very soon. He also told the defendant he had no right to dig holes in his freehold for the purpose of putting up scaffold-poles. The scaffold-poles were erected on his, plaintiff's, land. Never dedicated the road to the public.

The answer to the case was, that the road had long been used as a public one, and that the defendant could not get his building materials on to the building he was erecting without making use of the thoroughfare. That the stones and rubbish shot into the road were put there for the purpose of repairs.

The learned Judge said it was clear that neither builders nor other people had a right to dig holes in a road that was dedicated to the public, or a freehold, for the purpose of sticking up scaffold-poles, and in this instance alone the defendant had committed a trespass. Again, the road in dispute had never been repaired as a public highway, and, indeed, did not seem to have been dedicated to the public, and therefore the defendant had no more right to use it than he had to drive his horses and carts through a freehold garden. If persons chose to take land for building purposes, it behoved them first to find out a clear title of road to it. The builder in this instance had not taken an over civil view of his pretended right; if he had he would have avoided the war we threatened the plaintiff with. As heavy damages were not asked for, the judgment would be nominal, with costs for the plaintiff.

It transpired that the buildings in question were now completed.

THE NATIONAL MONUMENTS BILL.

SIR,—I consider that Mr. Hosken has absolved himself from just blame, with reference to the ruthless destruction of the old Tolmen at Constantine, Penryn. His notes in the *Builder*, vol. xxxi., p. 293, and vol. xxxv., p. 384, prove that the wanton mischief was effected without his privity or consent. In the *Builder*, vol. xxxi., p. 293, quoting from the *Gentleman's Magazine* for May, 1844, N.S., vol. xxi., p. 487, note,—I stated that the late Sir Charles Lemon, of Carclew, had offered to purchase the Tolmen from its then proprietor, but as the latter demanded 500*l.* for the Tolmen, the negotiation was broken off. The destruction of this relic would justify the enactment of Sir John Lubbock's useful law for the preservation of such monuments. In the *Builder*, vol. xxxi., p. 233, is a list of many of them.

In the Isle of Anglesea I have seen the remains of a fine cromlech, the covering-stone having been destroyed by a former tenant "in a drunken spree," as I was informed. A similar accident has occurred to the large cromlech, engraved in King's "Munimenta," vol. i., p. 236, and described by the author as a double cromlech (1799), "near an house called Trevor, two miles and a half from Beaumaris, in the road to Plasgwyn," and that "the only material difference between this cromlech and the former

t Plas Newydd] is that the second or inferior tar [yet extant] is placed a little further off om its lower end, and that its top is somewhat ibbose." The larger cromlech was placed on ur pedestals, two of which remain erect.

C. C.

STONE WORKING MACHINERY.

Sir,—In view of the impending struggle tween the masters with their contracts, and e masons with their abitrary and unreasonable mands, it will be some consolation to find that achinery will play a very important part in the uestion between capital and labour. Machinery r sawing stone, and machines for facing and rfacing stone, as also planing and moulding one, to any required pattern or moulding, were sed at the mansions, Grosvenor Gardens and ictoria-street, St. Thomas's Hospital, Burling-n House, New Post Office, St. Martin's-le-rand, and many other buildings in London and e provinces. It requires no patent machinery r the purpose of working and converting stone, nd to prove conclusively from careful and eliable data, the saving to the builder or con-ractor by the use of such machinery. I instance his fact in order to submit that if the work-en's society persist in their pernicious course, e engineer, with simple and effective machinery, ill most certainly step in and assist by echanical agency what the masons refuse to erform.

It cannot be denied that there are many ieces of mouldings and workings in stone that equire hand labour, and must continue to do ; but, on the other hand, there is an immense mount of work now done by hand-labour which ould be easily wrought by machinery, and it emains to be seen whether the masons will ompel masters to adopt machinery for the aximum part of their work, and hand-labour r the minimum.

I am of opinion that Messrs. Schofield & Co.'s uggestions to the trade will be beneficial, inas-uch as they will open the eyes of the masons o their true interests, or else they will materially ssist in instituting a new class of men, specially rained to work, dress, mould, and convert stone y machinery to any form and shape at about ne-fifth the present cost of hand-labour.

J. Rotherde.

SANITATION.

Sir,—I take the liberty to suggest the great advantage sanitary improvements, and their general study by the blic, were your influential paper to publish the sanitary rangements *in plan* of all the buildings you illustrate in e *Builder*. All the other arrangements are detailed in xt and plans. Would there not be as palpable gain in lding the sanitary appointments?

Lionel N. Bonar.

CHURCH-BUILDING NEWS.

Brooks's Bar.—The foundation-stone of the ew church of St. Bride, Talbot-road, Brooks's ar, has been laid. The plans of Messrs. Pen-ington & Bridgen, architects, were selected a limited competition. The church will be ruciform in plan, and will consist of nave, north nd south aisles, transepts, and apsidal chancel. tower, with spire, will rise at the crossing of the ave, choir, and transepts to a height of 150 ft. he only entrance to the church will be through western porch. The external walls will be aced with Yorkshire parpoints, the dressings eing in Runcorn stone. The arches and piers f the nave and chancel will be of stone, the alls only being plaster. The seating will be f pitch pine, and will afford accommodation or 800 persons. Mr. John Wilson, Erskine-treet, Hulme, is the contractor, the total cost eing estimated at 7,500*l.* At present the nave, isles, and porch only are being erected, which ill involve an outlay of 6,000*l.*

Northampton.—It has been resolved to restore t. Andrew's Church, Northampton. The church, lthough only dating back some thirty years, as become very dilapidated. Externally, the tone facings, which are of softer material than he other portions of the wall, have crumbled onsiderably, in consequence of the action f the atmosphere. Some repair is also needed o the roof. It is proposed to entirely reseat he church, to provide a new pulpit, and to put n a warming apparatus. The plans for the arrying out of the work have been prepared y Messrs. Law & Sons, whose estimate of the ost is 1,000*l.*

Walsall.—A vestry meeting has been held at Walsall to consider the plans which have been prepared by Mr. Ewan Christian for making certain alterations in the parish church. The plans show the organ-gallery entirely done away with, so that the arch is to be entirely opened out in order to show its proportions in the way which they deserve. Additional seats are provided in the chancel for the choir, to whose use it is proposed to give up the present vestry. Another vestry is shown on the south side of the chancel for the clergy, and over this is the organ chamber. At present a large space in the nave is occupied by a combined pulpit, reading-desk, and clerk's desk, popularly known as the "three-decker," and it is, therefore, proposed to so alter the seats as to fill up this space, and leave only a straight aisle down the church,—the pulpit being placed against the north side of the chancel arch, and the reading-desk at the opposite corner. The other seats throughout the church are also proposed to be altered, the result of the whole being a gain of eighty-four sittings and the leaving of the back of the transept galleries open for the better ventilation of the edifice. The plans were approved, and it was resolved to apply for a faculty to carry out the works.

Croglin.—Application has been made to the Worshipful Chancellor Burton, at the Carlisle Consistory Court, on behalf of the Rev. J. H. Green, rector of Croglin, and the churchwardens of the same place, for a faculty to authorise them to remove the present parish church and to make use of the materials in the erection of a new church to be built upon an adjoining site; and also to remove the present churchyard wall, if found necessary, and rebuild the same. In support of the application the rector produced a resolution of a duly-summoned vestry meeting, and stated that of the estimated cost (about 700*l.*) 530*l.* were already in the bank, 100*l.* had been promised by Lord Leconfield as soon as the church was finished, and there were other promises which would enable him to enter into the requisite bond for the completion of the work. The new church, the plans of which, by Mr. John Howison, were laid before the court, will accommodate about the same number of people as the old one, although the population of the parish has declined in the last ten years from 330 to 230, without the prospect of improving. There will be sittings for about 100 worshippers. The seats will all be open at the end, and all free in the nave, ample provision being made for kneeling,—a point which the Chancellor said did not generally receive sufficient attention from architects. No graves will be interfered with.

Hucknall Torkard.—On the 6th inst. a new church was opened at Hucknall Torkard. A year or two ago the parish church of St. James, famous as the burial-place of Byron, was restored at a cost of several thousand pounds. That building is, however, no longer large enough to meet the spiritual wants of the district, and just sufficient funds have been collected for the erection of a portion of a new church. The old building is at one end of the town, and that which has now been opened is at the opposite end. The building consists merely of a nave. The style of architecture is Early French. Derbyshire, Bath, and Bulwell stone have been used in the construction. There is accommodation for between 200 and 300 people. The cost has been, up to the present, 1,000*l.*, and it is hoped that when funds are available the transepts and a choir will be added. The builders' work has been carried out by Mr. Richard Stevenson, of Nottingham, from designs by Mr. Bromley, architect, also of Nottingham. By night the building is illuminated with gas, the fittings for which have been supplied by Mr. Stubbs, also of Nottingham.

Haxby.—It has been decided to rebuild Haxby Church, which has become altogether unsuited for the purposes of worship. The plans for a new edifice to seat 200 persons, and providing for a tower and spire, have been supplied by Mr. J. Demaine, architect, of Micklegate. The works have been let as follows:—Brick and stone work, G. Bailey & Son, Castle Mills Bridge, York; joinering, Mr. William Dennison, Marygate; plumbing and glazing, Mrs. Ann Hodgson, Stonegate; painter, Mr. R. Pearson, Goodramgate. The slating is to be given, also the heating apparatus, together with a stained glass window for the east end.

Irishtown.—The *Tipperary Free Press* understands that Messrs. A. Hammond & Co., Drogheda, have been accepted as contractors for the erection of the campanile at St. Mary's Church, Irishtown. The work will be commenced immediately, and the first stage will be completed in November. The outer work will be finished by October, 1878.

Fulford.—Tenders for the rebuilding of the portions of Fulford Church, Yorkshire, recently destroyed by fire, have been accepted as follows:—Mr. Simpson, of Darlington, for the masonry, joiner-work, and plastering; Messrs. Pycock & Co., Leeds, slating; Mr. Hodgson, York, plumbing and glazing; Mr. Boynton, York, painting; Mr. Taylor, Leeds, carving; and Mr. Forsyth, London, marble pulpit and font.

Ashbourn.—The restoration of the chancel of the parish church of Ashbourn is proceeding satisfactorily. The foundation has been entirely renewed in concrete and bricks laid in cement. All the plaster has been removed, and the warm red tone of the original masonry is revealed. The sedilia have been lowered, and the lancet windows have been carefully preserved. The tracery of the Perpendicular east window has been taken out, but will be replaced. Sir Gilbert Scott has resolved that this shall be a restoration of the existing fabric in a very literal sense. Mr. Clarke is the resident superintendent of the works. Domesday Survey states that Ashbourn possessed "a priest and a church," but hitherto it has been supposed that no traces of the Norman church remained. A short time since, however, several stones carved with ornament characteristic of the Norman period were found on the south wall of the chancel, close to the transept. A considerable number of fragments of encaustic tiles of the thirteenth century have also been discovered, and these are to be reproduced. New oak stalls will be provided, and the steps leading to the communion-table will be of black bird's-eye marble native to the county.

DISSENTING CHURCH BUILDING NEWS.

St. Anne's-on-the-Sea.—The foundation-stone of the first dissenting place of worship at the new town of St. Anne's-on-the-Sea was laid on Easter Monday, by Mr. Jno. Warburton, of Haslingden. The building is intended to serve as a school chapel for some time, and is being erected by the Wesleyan body at a cost of 1,300*l.* It is of brick, with stone dressings, and is placed behind the site intended eventually for the chapel. Messrs. Maxwell & Tuke, the architects for the new town, are also architects for this building.

York.—The new Wesleyan Chapel in Melbourne-terrace, York, has been formally opened. The chapel and school have cost about 8,000*l.* The tower of the former has an altitude of about 100 ft. The style is described as Palladian, the materials used being brick with stone dressings, and the internal arrangement includes galleries, and an elevated recess behind the rostrum,—this recess being for the choir and organ. Altogether there is sitting accommodation for 850 persons, and the schools behind provide room for 450 children. Mr. E. Taylor, of Stonegate, has been the architect.

Bishop Auckland.—A new Congregational church, recently erected at a cost of about 1,570*l.*, in Victoria-street, Bishop Auckland, has been opened for public worship.

Westleigh.—On Good Friday the foundation-stone of a new Wesleyan chapel which is being built at the expense of Mr. James Hayes, was laid at Westleigh, near Manchester, by Mrs. Hayes. The chapel will be in the Early English style, from designs prepared by Mr. J. J. Bradshaw, architect, Bolton, and is expected to cost about 5,000*l.*, the number of sittings being 620.

Birmingham.—A new church in connexion with the Birmingham Free Christian Society has just been completed in Lower Fazeley-street, and was opened for worship on Easter Sunday. The church has been erected by the side of the old chapel and schools, near the end of Lower Fazeley-street, and is in the Gothic style, and built of red bricks, with white stone dressings. Its length is 53 ft., its width 33 ft. 6 in., and its average height 26 ft.; and, together with the accommodation afforded by a gallery at the west end of the chapel, about 360 persons may be seated. The architect is Mr. G. Ingall, of Temple-row, and the builder Mr. G. Lidzey, of Deritend.

Wolverhampton.—The memorial stones of a new Wesleyan School Chapel have been laid at Wolverhampton, at the corner of Penn-road and Mander-street. The structure will, when completed, accommodate nearly 400 persons. The builder is Mr. David Evans, and the architect Mr. S. Loxton, of Walsall. The contract for the building is taken at 1,390*l.*

Books Received.

A Digest of the Law of Partnership. By F. POLLOCK. (Stevens & Son.) London, 1877.

THE possibility of every man becoming his own lawyer may be realised in some far-off Utopia, but certainly not in this modern and complicated life of ours. Still there are some branches of law so very closely connected with large and small business transactions, that to get a knowledge of their principles is really to get a better and sounder acquaintance with the fundamental rules which regulate some portion of every-day business life, and this digest of the law of partnership is just the sort of book which it will be well for business men to become acquainted with. There is nothing technical and narrow about it, for in it are stated, in propositions numbered and regulated as clearly as the articles of association of a joint-stock company, the main principles of partnership rules. These rules are such as judges by their decisions have laid down, and they are based on commercial and common-sense principles, or on customs which have now attained the force of law. If a man of business is about to enter into partnership, nothing is more important than that he should understand how his conduct is to be regulated in his intercourse with his fellow-partner and with the world in his position of a partner in a firm. If he gets into trouble of any sort, let him go to a lawyer at once; but he may very likely save himself getting into this trouble at all if he clearly understands the main rules, at any rate, by which his liabilities and corresponding rights are governed. The easiest way of making this fact plain is, by taking from the book itself one or two propositions which touch upon a matter of the most general kind, but the knowledge of which might very well save dissensions, and consequent expense and trouble. Proposition No. 39 runs thus:—"The partnership books must be kept at the place of business of the partnership, or the principal place if there is more than one, and every partner is entitled to have access to them, and to inspect and transcribe the same, or any of them, when he may think proper." But, like many other rules, this may be controlled by any private arrangement into which the partners may agree when they constitute themselves a firm; and in a large number of cases some such arrangement is in existence. Again,—"No. 40. No majority of the partners can expel any partner unless a power to do so has been conferred by express agreement between the partners." In such a case any power of this kind must be exercised with the utmost good faith, and any attempt to take advantage of it for purposes other than the benefit of the firm would very clearly be illegal. These two extracts will show very plainly the value of a book like this; for in barely over a hundred pages, including exceptions and explanations of the actual rules, a man of ordinary intelligence can find out for himself the ordinary principles by which he and his fellow-partners must be guided, whether as between themselves or with outsiders. It shows, too, the real practical value of a system of codification for the use of intelligent laymen and men of business. Such a system is not a panacea for litigiousness; on the contrary, it would probably increase it; but it certainly is an assistance to all classes in many respects. Many of the benefits which its supporters fondly imagine it will create are purely visionary; but a careful and accurate digest such as this "Law of Partnership" clearly has its practical advantages, and may well be studied by men of business. It would be out of place in a publication such as this to enter into elaborate discussions upon the law of partnership; we have contented ourselves here with some remarks upon a law-book which, by its form, appeals directly to laymen, and will be found of considerable use in forming clear ideas in their heads.

VARIORUM.

WE get the following from the last number of the *Live Stock Journal*:—"Our present farms are the result of many generations, during which the state of affairs, and the demands of the market, have varied almost as many times; and the result is a most complicated intermingling of pasture and arable. A re-adjustment to suit the present demand is not immediately possible. Taken on the whole, the aspect of pasture farming is not at present favourable to the increase of stock, irrespective of the risks from disease. It sounds like a paradox, but grass is too valuable to be turned into meat. The rent of meadow-land varies very much; but suppose we put the average at 2*l.* 10*s.* per acre. But an acre of meadow in a fair season will produce a ton and a half of hay, which, if it costs 1*l.* 5*s.* to make, still leaves, at 5*l.* per ton, 6*l.* 5*s.* to the farmer for his rent and living. Of course this is fallacious reckoning, inasmuch as he cannot sell the whole ton and a half, but must put a great deal back in the shape of manure. Still, it proves the great money-value of grass, quite irrespective of stock-producing. Could the owner of meadow-land only mow his ground year after year, keeping no stock at all, except, perhaps, sheep in to tack as the best producers of manure, and he might still make a large profit of hay alone. He is restrained, because perpetual mowing without stock-keeping would exhaust the land. If he could find a grass that he could mow annually without exhaustion, and had the courage to defy custom in not keeping stock, he might still receive a handsome return, so strong is the demand for hay. Turn it whatever way one will, it seems clear that the pasture farmer's personal interest is not wholly wrapped up in the rearing of stock."

Miscellanea.

Rubens as a Diplomatist.—At a recent sitting of the Royal Academy of Belgium, M. Gachard, Archivisit-General of the Kingdom, read a paper on the diplomatic mission of Rubens to London, and in which the writer retraced the events which passed between the month of August, 1629, and the 6th of March, 1630, the day on which Rubens left the capital of Great Britain to return to Holland. The negotiations of the painter diplomatist were crowned with success, as they had for result the sending of an Ambassador from England to Madrid to negotiate peace with the Spanish Cabinet, and the arrival of an Envoy from Madrid in London with the same object. M. Gachard read several despatches from Rubens, which seem to show that the great artist had a real aptitude for State affairs. He mentioned the distinction conferred on the Ambassador from Philip IV. by the University of Cambridge, which made him *magister artium*. He described how on the 3rd of March, 1630, Rubens received the order of knighthood from Charles I., who added to the favour the gift of the sword he had used in the ceremony, with a diamond ring from his own finger, a gold chain, and the ribands from his hat, and who afterwards gave him arms borrowed from his own escutcheon.

Church Building at Bolton.—The Rev. T. T. Berger, vicar of St. James's, Bolton, in a recent address on "Church Property," said that since he had been in Bolton there had been raised something like 100,000*l.* at the very least during the last sixteen years. Mr. Peter Ormerod built the parish church at an expense of about 45,000*l.*; St. Paul's, Deansgate, cost about 7,000*l.*; his own church (St. James's), cost 6,000*l.*; St. Matthew's cost 10,000*l.*; and St. John's, 8,000*l.* All Saints' Church had been rebuilt, the Emmanuel Church was built just before he came to Bolton, and St. Thomas's Church had been built in Halliwell near his own church. Of that 100,000*l.* how much had Government contributed? Not a farthing, and not a farthing had come out of the taxes. The late Mr. Nathaniel Greenhalgh, who had resided just outside his (Mr. Berger's) parish, and had passed through that rapidly-increasing place almost every day, had by his will left the sum of 40,000*l.* for the building of two new churches—one in St. James's parish and another in the Emmanuel parish. He had chosen his brother Thomas so see that the work was carried out. That was a specimen, and that was the way in which a great majority of the churches had been built.

Exhibitions and Dinners.—The Society of Painters in Water Colours, and the Institute of Painters in Water Colours, will both give their private view on this Saturday, the 21st inst. The private view at the Royal Academy will take place on Friday, the 4th of May. The dinner in aid of the Artists' Benevolent Fund is fixed to take place on this Saturday, the 21st inst. The Newspaper Press Fund Dinner, on the 5th of May; the Literary Fund dinner on the 9th of May; and the dinner for the Artists' General Benevolent Fund on the 12th of May.

New Gateway at Langton, Dunse, N.B.—A fine gateway has just been erected by th Lady Elizabeth Pringle, at the principal approac to Langton House, about a mile and a half t the west of Dunse, from a design by Messrs D. & J. Bryce, architects, Edinburgh. Th structure is in the Elizabethan style, and corre sponds with the mansion erected at Langton som years ago by her ladyship's brother, the lat Marquis of Breadalbane. The gateway face the turnpike road, with a frontage of 100 feet The principal gate—12 ft. 6 in. in width, an (including ornamental top) 22 ft. in height—i hung on massive ashlar pillars, 4 ft. 10 in. squar and 16 ft. in height, surmounted by a scrol finial, which adds other 8 ft. to their height The gates were supplied by Messrs. Sinclair Leith, at a cost of nearly 500*l.* The large gat weighs about 2½ tons. In the centre of eac leaf of this gate, Lady Elizabeth Pringle' initials, in monogram, are neatly interwoven while the design above the gate is filled in with a conspicuous figure of the Breadalbane arms The mason work has been executed by Messrs Waddell & Cowper, Gavinton. The total cos will exceed 3,000*l.*

North Staffordshire Brick and Tile Manufacturers' Association.—The annua meeting and dinner of this association took place on the 3rd inst. at Stoke. At the meeting it was decided to make no alteration in prices Mr. J. Timmis presided at the dinner, and in proposing "Success to the Brick and Tile Trade," expressed a hope that it would be as prosperous in the ensuing year as it had been during the past twelve months. He urged the importance of endeavouring to improve the quality of their goods, so that they need fear no competition, observing that the markets for their productions were extending in every direction. Mr. W. Brough, of Silverdale, whose name was coupled with the toast, responded, remarking that it rested with the individual members of the Association whether the trade was to continue to flourish. They had now a list of quoted prices to go by, which all the members of the Association were pledged to carry out. Referring to the increase in the number of merchants, he said they tried to persuade the members of the trade that they did not know how to make a blue brick. In dealing with merchants, they must remember that while they (the merchants) had only to deal with figures, the brick and tile makers had to deal with labour, material, and other matters.

Scarcity of House Accommodation in the North.—The Huntly correspondent of a Scotch paper says:—At no former time have houses for workpeople been in such great demand as at present. Whether from increase of the population, or the greater extent of accommodation required in consequence of better remuneration for labour, the supply is now found to be unequal to the demand, and unless there be an opening found elsewhere, this will be felt to a greater extent every succeeding year, as many of the present houses are becoming uninhabitable through age. The present rents are altogether inadequate to yield anything like a fair return for the outlay now required for building.

Temple Bar.—Mr. E. P. Spiller, of Furnival's Inn, writes to the *City Press* that if Temple Bar were presented to the Benchers of the Inner Temple, they might be induced to assist the Corporation to complete the undertaking. "If it were placed at the entrance of Mitre-court it would form a grand entrance to the Temple and present a splendid vista from Fleet-street. Only two houses in Fleet-street, with part of the Mitre Tavern at the back, and an enlarged opening at the end of the court, would be required to complete this desirable object. To mark the City boundary at Temple Bar two bronze statues might be placed,—one of Sir W. Walworth, and the other of Sir R. Whittington."

New Temperance Hall, Middlesbrough.—The New Temperance Hall in Gilkes-street, Middlesbrough, has been formally opened. The foundation stone of the new building was laid on Easter Monday, 1874. The cost is between 5,000*l.* and 6,000*l.* The hall is erected in the Italian style, and covers half an acre of land. It is built of common brick, with moulded stone dressings and cornices. The principal entrance is in Gilkes-street. The hall is calculated to seat upwards of 2,000 people comfortably. The architect was Mr. Councillor J. Hunter; the contractor for the whole of the work being Mr. Councillor J. Lord.

The "Pioneer Railway."—At a meeting of the Society of Arts, on the 4th inst., a paper was read by Mr. F. J. Rowan "On the Pioneer Railway, or Steam Caravan, for Undeveloped and Difficult Countries." That railway, Mr. Rowan explained, consists of a low fence or continuous girder, constructed of wood or iron, as desired, supported on edge upon posts or pillars, and surmounted by a single rail (not a single line of rails), the engine, carriages, and wagons running on this rail, and sitting astride of the fence after the fashion of the panniers or the packs on a camel or mule. The entire line and its plant can be constructed either at home or abroad, and when constructed the line or railway may be worked at considerable speed; and as any incline up to 1 in 10 is possible in consequence of the method of driving adopted, no expensive surveys are required, nor levels, except of the most simple kind. It is calculated that a line on this principle can be constructed at a cost of 1,500*l.* per mile. The working expenses of such a system will be light. The trains would stop anywhere to take up and set down goods, so that no station or porters would be required, as the railway runs on elevated posts down the main street of the town or village, and the principal *café* of the place would serve very well for a ticket office. The moderate speed intended for pioneer trains,—ten to twenty miles an hour,—coupled with their light weight and almost unlimited brake power, renders it quite possible safely to dispense with the paraphernalia and cost of signals.

The "Stowe System" of Wood Paving.—This method of laying wood paving, which hails from America, is, we learn, being tried in St. Pancras. The blocks are laid vertically, and care is taken to prevent, as much as possible, the filtration of surface water; but the main stability and preservation of the pavement depends on the strata on which it rests. The ordinary roadway having been excavated to the required depth, and properly "made," is covered completely with a bed of clean, sharp sand, 6 in. deep, and upon this are laid a series of rows of wooden blocks or cubes on end across the street. Between each row of these wooden blocks or cubes, wedges 1 in. in thickness are driven perpendicularly, and when a sufficient number of these blocks and wedges are laid to hold the sand firmly, the latter are driven below the surface of the roadway to the depth of 3 in. or 4 in. below the bottom of the level of the blocks into the bed of sand. The effect of this wedging is said to be to compress the sand to something nearly approaching the hardness of sandstone, without destroying in any material degree its elasticity or power of absorption, and to fix the wooden blocks or cubes much more firmly than they can be fixed by any other process.

"Tachymetry": a Royal Road to Geometry.—According to the *Globe*, M. Christophle, the French Minister of Public Works, has addressed a circular to the chief engineers of each department, as heads of the administration of "*ponts et chaussées*," recommending to their notice an invention lately made by a M. Lagout. The device has been christened by its inventor as "Tachymetry," and by means of it, to use the words of the Minister, "any one in the world may at once obtain the cube of a solid substance as quickly as by any of the processes hitherto employed." This is not, perhaps, a very lucid description, but the upshot of the whole matter is that, after having considered the invention and read the report of the commission which has inquired into it, M. Christophle has convinced himself of its practical merits, and concludes that it "may be very useful in making rapidly acquainted with certain rules of geometry the agents who have made no study of the subject." It is proposed, therefore, that all the inferior agents of the French "roads and bridges" shall at once be initiated by the chief engineer and his colleagues into the mysteries of "tachymetry."

To Detect Gas-escapes plumbers are in the habit of applying the flame of a lamp or candle to the suspected place of leakage. The following, if they keep the materials at hand, will be found a safer method:—Mix dark soap and water in the proportion of two pounds of the former to six or seven pints of the latter. The sticky liquid so obtained may be applied with a brush to the gas-pipe, when, if an escape is taking place, bubbles will readily be seen on the liquid, and the position of the escape determined without danger.

Demolition of Houses—The agent for the contractors engaged in the demolition of Churchlane, St. Giles's, has applied to Mr. Vaughan for assistance to prevent their labourers being impeded and molested in the execution of the work. The street has long been one of the lowest dens of infamy in London, and the houses had been condemned by the Board of Works as unfit for human habitation. The usual notice was given to the residents, chiefly Irish, to quit their lodgings; but they refused to go, complaining that the notice was insufficient. Some of the latter were present, and said that the cisterns and back walls had been pulled down, and they were without water. Mr. Vaughan said that the facilities now afforded by penny trains were so great that people industriously disposed could get much cheaper and better lodgings, and purer air, by going a little way out of town; but he hoped that the contractors would extend the time of notice another week, so as to avoid any appearance of harshness in dealing with these poor people. After that time the workmen must be protected from molestation.

Draining the Zuyder Zee.—Preparations are going on for the commencement of the long-projected work of draining the Zuyder Zee. A dam, 40 kilomètres (24 miles 1,504 yards) long, and 50 mètres broad at its base, is to be carried across the gulf, built up to a height of half a mètre above the ordinary level of high tide. Upon this, pumping machines of 10,000 horse-power will be erected, capable of pumping up from the enclosed sea, and discharging on the outside of the dam 6,500,000 cubic mètres of water daily. Taking the average depth of the water at four mètres and a half, it is estimated that the work of pumping will be completed in about sixteen years from its commencement. The total cost of reclamation is set down at 335,000,000 francs, but, huge as this sum is, the undertaking is confidently looked upon as likely to prove a most remunerative speculation. The success of the scheme will add to the kingdom a new province, 195,300 hectares, or nearly 500,000 acres in extent.

The Shakespeare Memorial Theatre, Stratford-upon-Avon.—Some slight alterations have been made in the programme for the ceremony of laying the corner-stone of the projected Memorial Theatre on Monday next. The Mayor (Mr. J. J. Nason) will receive the Corporation and governors at the Town-hall at one o'clock. The P.G. Lodge will be opened by the R.W.P.G.M. at the Town-hall at that hour, and not at the Corn Exchange as originally arranged. The procession will be marshalled outside the Town-hall at a quarter to two, and proceed viâ Chapel and Church streets, Old Town, and Southern's-lane, to the site of the proposed building. There the ceremony of laying a corner-stone will be performed, with the ritual of the Masonic craft, after which the procession will be re-formed and proceed along the waterside, Bridge-street, High-street, to New-place, where a luncheon will be laid out in a marquee for 750 persons. We have already given a view of the theatre in the *Builder*.

Our Canal Population.—In the House of Commons, in answer to Mr. Price, who asked whether it was true that at an inquest held at Runcorn, on the body of a child that met its death on board a canal-boat, the mother stated in evidence "that herself, her husband, and three children slept in the same cabin, which was only 3½ ft. wide by 5 ft. high," Mr. Cross said it was true that an inquest was held, and that the jury returned a verdict that the child was found dead in bed, there being no evidence to show that the mother had overlaid it. He believed that the matters stated at the end of the question were substantially true, though he could not speak positively as to the dimensions of the cabin. He wished to take that opportunity to state that he had already drawn up a Bill, which, he hoped, would meet the case of children habitually going about in canal-boats, and at the first convenient opportunity he would ask leave to bring it in.

Russia.—The interest taken at the present time in all that concerns Russia, her resources, and her people, has contributed to a large extent to increase the demand for Mr. Mackenzie Wallace's "Russia" (a capital book), of which, we understand, a fifth edition will be ready in a few days. Mr. Mudie has placed 1,000 copies in circulation, to satisfy the requirements of his readers, and, from all we hear, Col. James Baker's new work on Turkey is likely to excite a still larger amount of curiosity and interest.

The Carpenters and Joiners of Manchester and Salford.—The dispute between the carpenters and joiners of Manchester, Salford, and the district, is still pending; but it is believed that, before the 1st of May it will have been amicably settled. The men, nearly six months ago, asked the employers to grant them an increase of wages from 8½d. to 10d. per hour, to reduce their hours of labour half an hour per day, and to make them a concession with regard to the time allowed for walking to places of employment outside the city. The last-mentioned demand has already been abandoned, and there is every probability that the other applications will be somewhat modified by the men. The employers have offered to give an increase of ½d. per hour on the present wages; but, as this concession of itself is not likely to satisfy the workmen, it is considered probable that efforts will be made to secure a larger advance. In the event of a strike occurring, about 4,000 men will be thrown out of work.

Royal Italian Opera.—It was difficult to believe that Mdlle. Smeroschi had undertaken the part of *Norina* in "Don Pasquale," on Thursday evening last, at a very short notice, in consequence of the indisposition of Mdlle. Marimon, who was announced to sing. On the contrary, Mdlle. Smeroschi would appear to have played the part all her life, so perfectly at home was she as the sprightly heroine of this charming opera. Indeed, all who took part in it seemed to be actuated by the same motive, and the result was altogether satisfying. M. Capoul was heard to advantage, and his singing of the well-known serenade secured him a deserved encore. Of Signori Ciampi and Cotogni, it is only necessary to say they were as usual excellent. There have been some admirable performances at Mr. Gye's theatre since the opening.

Strike at Portsmouth.—The men employed in the erection of the new lunatic asylum at Portsmouth have struck. The Mayor, at a recent meeting of the Town Council, stated that the matter was of considerable importance, as the interest on the loan for the erection of the building amounted to between 60*l.* and 70*l.* a week. He did not mind expressing himself very strongly on the subject. These men were employed all through the winter, when they scarcely earned their money, and now that they had an opportunity of doing good to the contractor they turned round upon him. He did not think it was a manly act on the part of any trade union to behave to a contractor in that way. It was intimated that the contractor had expressed his intention of taking advantage of the "strike" clause in the contract.

The Guildhall, London.—A stained-glass window,—the gift of Mr. Alderman Cotton, M.P., the late Lord Mayor—has been placed in the Guildhall. It consists of four divisions, the upper two of which depict the presentation of an address to the Prince of Wales by the Lord Mayor and Sheriffs last year, congratulating him on his safe return from his Indian tour; and the lower two illustrating the presentation of the loving cup by the Lord Mayor to the Princess of Wales in the course of the banquet given in the Guildhall on that occasion. The openings are surmounted with canopies, consisting of emblematical designs in ornamental ribbon-work. The window, which was designed and executed by Mr. Wm. Ramsey, of Farringdon-street, replaces one presented in 1873 by the same Alderman.

M. Madou.—M. J. B. Madou, a well-known Belgian artist, died on the 3rd inst., at the age of 81. M. Madou was president of the Belgian Water-Colour Society, and only a few days before his death attended the opening of their annual exhibition in the Ducal Palace, Brussels. The King and Queen of the Belgians were present, and scarcely had M. Madou received their Majesties with a few words of welcome, when he staggered and fell insensibly into the arms of those near him. He had been, it appears, attacked by congestion of the brain, which has since proved fatal. He prosecuted his first studies under Célestin François, and devoted himself chiefly to genre painting. M. Madou was a member of the Belgian Academy, Associate of the Antwerp Academy, and Professor of the Brussels School of Fine Arts.

The Warwick Borough Surveyorship.—Mr. Broughton, formerly assistant under Mr. Prichard, C.E., has been appointed borough surveyor in the place of Mr. G. Lewis, resigned. The salary is 150*l.* per annum, with residence, and there were fifty applicants.

The White House, Washington.—An American paper says:—"A good many people are puzzled when asked the reason why the President's residence at Washington is called the 'White House.' The origin of the name is as follows:—'When the British, in 1814, took Washington, they destroyed the public buildings, including the President's mansion, which, like the capitol, was built of grayish sand-stone. The burning of the woodwork smoked and discoloured the stone walls, the natural appearance of which could not be restored. Uniformity was secured by the application of white paint. The changed appearance from gray to white attracted attention, and gave it the appellation of the "White House," which it has since borne.'"

The Clergy and Trade Unions.—The committee of clergymen who convened the two conferences lately held in London between representatives of the Church and of Trade Unions have issued a report. They cannot attribute any very definite results to those conferences, but have hope of very real benefit if they are wisely followed up. The points upon which the committee feel discussion is needed are:—"The justification and the limits of coercion; the alleged tendency of unions to restrain the better workman for the benefit of the worse; and the action of increased wages on the price of commodities, and the consequent partial neutralisation of one chief good effect claimed for the unions."

The Convalescent Home.—An Amateur Dramatic Performance, for the benefit of the Convalescent Home in connexion with King's College Hospital, will take place at Bridgwater House, on Monday evening, May 14th, when Mr. H. J. Byron's comedy of "Cyril's Success," to be followed by a Comedietta, will be represented, supported by many distinguished amateurs. Tickets, one guinea each, may be obtained, by letter, from Mrs. William Playfair, 31, George-street, Hanover-square, who acts as hon. secretary and treasurer, and acts well. The performance will take place in the Picture Gallery.

What Roof?—The *Windsor and Eton Express*, in describing some "town improvements" at Marlow, says,—"The dilapidated edifice by the river side, interesting for its antiquity and its association with the customs and opinions of remote ages, is to be removed, to make way, in all probability, for several pretty waterside villa residences, and a long-called-for improvement in the Thames from that side. The valuable roof of chesnut-wood has been promised by Colonel Williams to the Rev. T. E. Powell, to form the roof, or a portion thereof, of the new aisle which is about to be added to Bisham Church."

The Water Supply of London.—It is announced, on the authority of Dr. Lyon Playfair and Sir Henry Peek, that on Saturday last Messrs. Meux & Co., who have been engaged for some time in sinking a well at their brewery in the Tottenham-court-road, struck the green sand at the depth of 1,001 ft., and obtained water. Sinking 3 ft. more, an ample supply was obtained for their own purposes, and the engineers believe, contrary to the opinion which has hitherto been expressed by geologists, that in the green sand there is an ample supply for the whole of the wants of London.

Proposed Fine Art Exhibition at Derby. It is intended to hold a Fine Art Exhibition in the new School of Art at Derby, in June next. The principal wing of the building is nearly completed. The Duke of Devonshire has consented to undertake the office of president. Loans have been already offered by the Marquis of Hartington, Mr. Beresford Wright, Mr. Godfrey Meynell, Mr. Henry Evans, Mr. C. E. Newton, and other possessors of art-treasures. These will be in addition to the loan which the Government will furnish from the national treasures of the South Kensington Museum.

National Health Society.—A deputation from this Society will wait on the School Board on the 30th of May, to bring before their notice the desirability of opening the playgrounds attached to the Board Schools (comprising 57 acres of open space) on the half holidays and the summer evenings, when they are usually closed.

Bells at Kelvedon.—On Easter Day the parishioners of Kelvedon were awakened in the early morn by the sweet chimes of the church bells, which have just been rehung and retuned by Messrs. Mears & Stainbank, of Whitechapel.

New Chancel, Roman Catholic Church, Birkenhead.—A new chancel to the Church of our Lady has been opened by the Roman Catholic Bishop of Shrewsbury. It is semi-octagonal in plan, and has side chapels; the ceiling is wagon-shaped and panelled, and has clearstory windows (the centre one of stained glass). The three lights in each window are divided by red Mansfield stone columns, with carved caps, the mouldings terminating in carved bosses. The principals of the roof rest on four richly-foliated caps, emblematic of the seasons, having in the same line a carved string-course running round the whole of the chancel. The shafts under these caps rest again on four sculptured corbels, emblematic of the Evangelists, which are also united by a carved string-course. Between the shafts each wall is divided into four niches, all of them being surmounted by elaborately-moulded crocketed and carved canopies, which rest on red marble columns with carved caps. At the junction of the canopies are sculptured twelve angels, some adoring and some with ancient musical instruments, while foliated corbels join the walls. The arches dividing the side chapels are richly moulded, and terminate on carved corbels emblematic of the Sacrament, the Communion, self-sacrifice, passion, &c. Outside the tower a figure of our Lady is placed in a niche on a carved pedestal, and is surmounted by an elaborate canopy. The exterior is of Runcorn stone, while white Stourton stone is used inside. Messrs. Pugin are the architects, Mr. Wooley is the builder, and the carving has been executed by Mr. Maurice Geflowski.

Russian Archæology.—The *Athenæum* says that it is proposed to found a society in Russia for the protection of *kurgans*. These *kurgans* are the tumuli which are dotted over the face of the country, generally covering the remains of some man of note among the ancient inhabitants. The greater part of them are private property, and they are now liable to be demolished, or at least to be neglected. The proposal will be brought to the notice of the Archæological Congress, which is to be held at Kazan.

Proposed English Church at Neuilly.—Miss Ada M. Leigh, hon. secretary to the Mission Home at Paris, states that the number of British residents in the neighbourhood of the proposed church at Neuilly is 646, exclusive of the English pupils in French schools. Miss Leigh also mentions that Sir R. Wallace intends to build his new British hospital in this locality, which will doubtless increase the number of the English population whom it is intended to benefit.

The Proposed Indian and Colonial Museum.—The project to erect on the Embankment a joint Indian and Colonial Museum, which has been recently advocated, may, the *Daily News* has reason to believe, be regarded as dead, so far at least as the co-operation of the Indian Government is concerned.

English Art Academy in Rome.—A proposition for the establishment of an English Art Academy in Rome appears to have been taken up seriously. Such an institution there is greatly to be desired. The French Academy at the Villa Medici is well known.

The Victoria (Philosophical) Institute held a meeting at 10, Adelphi-terrace, on Monday evening, the Rev. Dr. R. Thornton in the chair, when a paper "On recent Assyrian Research, and the light it threw on Civilisation at the Time of Abraham," was read.

Kensington Vestry-hall Competition.—We have visited the designs which have been submitted and are now suspended in the Old National School Building, High-street, Kensington, but must defer our notice till next week.

Slaters' Wages at Brechin.—The journeymen slaters of Brechin have just got an advance of their wages to 7½d. per hour. It was unsolicited.

TENDERS

For a factory in Great New-street and West Harding-street. Messrs. Ford & Hesketh, architects:—

Colls & Sons	£4,645 0 0
Adamson & Sons	4,610 0 0
Laurence	4,595 0 0
Servenor & White	4,585 0 0
Ashby, Brothers	4,582 0 0
Kirk & Randall	4,563 0 0
Browne & Robinson	4,513 0 0
Morter	4,504 0 0
Brass	4,406 0 0

For the erection of two new villa residences, Lordship-lane, Dulwich, for Mr. Charles Smith. Mr. James Dudley, architect:—

Ward & Son	£1,900 0 0
Tyerman	1,898 0 0
Colsbrooke	1,750 0 0
Gillett	1,648 0 0

For the erection of a billiard-room at the King's Head, Holloway, for Mr. F. F. Anstiss. Mr. John Heath, architect:—

Channings	£445 0 0
Lamble	437 0 0
Davies	345 0 0
Vears & Co. (accepted)	325 0 0

For rebuilding the Wagon and Horses public house and stabling at Surbiton for Messrs. Young & Bainbridge. Mr. Keith D. Young, architect. Quantities by Mr. M. H. Young:—

Timberley	£2,834 0 0
Nightingale	2,679 0 0
Mudie	2,455 0 0
Parsons	2,309 0 0
Mason	2,294 0 0

For repairs at Nos. 6 and 7, Lincoln-terrace, Willesden-lane, Kilburn, for Mr. H. Stanley Smith, 8, Staple-inn. Mr. W. F. Potter, architect:—

Simpson & Annett	£275 0 0
Hayworth	260 8 6
Kerry (accepted)	260 0 0

For new business premises, High-street, Bedford, for Mr. H. H. Herring. Mr. F. T. Mercer, architect. Quantities by the architect:—

Foster	£4,788 0 0
Potter	4,680 0 0
Litchfield	4,620 0 0
Corby	4,468 0 0
Day	4,458 10 0
Lilly	4,411 12 0
Knight & Boston	4,376 0 0
Spencer	4,070 0 0

For laying new drain, making certain alterations, and erecting new class-rooms, &c., for the St. Paul's Brunswick Sunday Schools, Bristol. Messrs. J. W. Trew & Sons, architects:—

Pitt	£2,391 0 0
Box	2,221 0 0
Kingstone	2,200 0 0
Neale	2,164 0 0
Stevens & Gardiner	2,113 0 0
Gorvett, Brothers	1,943 0 0
Wilkins & Hill	1,880 0 0
Pugsley	1,880 0 0
Carter	1,875 0 0
Summerville	1,800 0 0
Hill & Prior	1,660 0 0

For alterations, additions, and repairs (including repairs to the external cement work) to the Farnham, Alton, and Hartley Wintney District Schools, for the governors. Mr. T. Wonnacott, architect. Quantities supplied by Mr. W. H. Brayshaw:—

Garland (accepted)	£2,897 0 0

For alterations and repairs at the Dundee Arms, Charles Street, Horselydown, for Mr. G. Freeman:—

Rugg	£245 0 0
Austin	198 10 0
Shadbolt (accepted)	187 10 0

For additions and alterations to No. 77, Addison-road, for Mr. John Leeming. Messrs. Goldie & Child, architects. Quantities supplied by Mr. W. H. Brayshaw:—

Lucas	£2,697 0 0
Roberts	2,647 0 0
Conder	2,629 0 0
Macey	2,620 0 0
Durant & Nash (accepted)	2,560 0 0

For building the new City Lunatic Asylum at Norwich, exclusive of foundations, already laid. Mr. R. M. Phipson, architect. Quantities by Messrs. Widnell & Trollope:—

Hawes	£49,000 0 0
Andrews	45,250 0 0
Girling	44,436 0 0
Lacey	44,250 0 0
Youngs	43,850 0 0
Everett & Son	42,900 0 0
Downing	42,898 0 0
Cornish & Gaymer (accepted)	41,719 0 0

For rebuilding premises on the Broad Quay, Bristol, for Mr. E. Handley, of Birmingham. Mr. W. H. Clark, architect:—

Box	£625 0 0
Pugsley	584 0 0
Davis	580 0 0
Walters & Crick	571 0 0
Crocker	547 0 0
Stevens & Gardiner	483 0 0
Beaven & Sons (accepted)	455 0 0
Forse & Ashley	445 0 0

For the erection of a chapel and vestry at Downend, near Bristol:—

Pugsley	£2,035 0 0
Crocker	1,822 0 0
Beaven & Sons (accepted)	1,717 0 0
Walters & Crick	1,692 0 0

For works to the Prince Albert, St. Martin's-lane, for Messrs. Watney:—

Boden	£138 0 0
Godden	138 0 0
Taylor	129 0 0
Grimwood & Sons	129 0 0
Shurmur (too late)	117 0 0

For completing dwelling-house at Woodford, for Mr. Vockham:—

Steel, Brothers (accepted).

For alterations and repairs at the Moneyer Arms, Provost-street, City-road, for Mr. Wood. Mr. H. R. Cotton, architect:—

Toms	£445 0 0
Anley (accepted)	425 0 0

For alterations at the Red Lion, Church-street, Stoke Newington. Mr. W. E. Williams, architect:—

Marr	£412	0	0
Eaton	390	0	0
Anley (accepted)	389	0	0

Bar Fittings.

Anley	120	0	0

For building a billiard-room at the Eight Bells, Ironmonger-row, St. Luke's. Mr. W. E. Williams, architect:—

Eaton	£290	0	0
Anley (accepted)	280	0	0

For building stabling in Sandal Mews, Camden-road, for Dr. Popham. Mr. Farley Hollis, architect. Quantities supplied by Mr. Boxall:—

Batchelder	£2,753	0	0
Brook	2,328	0	0
Cashmere	2,327	0	0
Lamble	2,325	0	0
Elkington	2,316	0	0

For repairs at the Black Horse, York-street, Westminster, for Messrs. Watney & Co. Mr. H. J. Newton, architect:—

Hockley	£268	0	0
Godden	250	0	0
Shurmur	239	0	0
Taylor	237	0	0
Lamble (accepted)	209	0	0

For re-building the Orange Tree Public House, Isleworth, for Messrs. Fuller, Smith, & Turner. Mr. W. Nunn, architect:—

Henning & Son	£1,955	0	0
Adamson	1,948	0	0
Hiscop	1,720	0	0
Chamberlain	1,678	0	0
Nye	1,630	0	0
Lamble (accepted)	1,525	0	0

For sinking well and fixing pump, &c., on Hampton Court Green, for Messrs. Fuller, Smith, & Turner:—

Lamble	£133	0	0
Henning & Son	127	0	0

For alterations and repairs to the Balmoral Castle, Caledonian-road, for Mr. R. Howland. Messrs. Bird & Walters, architects. Quantities supplied:—

Hockley	£2,420	0	0
Nightingale	1,915	0	0
Lawrence	1,882	0	0
Brown	1,827	0	0
Kelly, Brothers	1,820	0	0
Williams & Sons	1,790	0	0
Anley (accepted)	1,770	0	0
Outhwaite & Sons (withdrawn)	1,394	0	0

Warehouse, Great Eastern-street—The architect for this building (tenders for the erection of which we published last week) is Mr. W. A., *not* F. W., Longmore. The quantities were supplied by Mr. W. B. Catherwood.

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WALTER BAILEY, Town Clerk.
Guildhall, Winchester, April 10th, 1877.

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Durham, April 11, 1877.

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The Builder.

VOL. XXXV. No. 1783. SATURDAY, APRIL 28, 1877

ILLUSTRATION.

The Grosvenor Gallery, New Bond-street, London: Built for Sir Coutts Lindsay, Bart.—Mr. William Thomas Sams, Architect..... 423-427

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Architectural Practice among the Greeks.

IT is with a certain sympathy with the feelings of the leader of a forlorn hope that we make a first assault on the second division of the Lebadean inscription.* We do so with full consciousness of the many pitfalls and inevitable perplexities that have to be encountered by even experienced epigraphists in dealing with a document of such novel contents, and to them as, at least, more skilful and better on their guard it might seem that the perilous adventure might be left; the most zealous volunteer, apart from such guidance, no doubt exposes himself to disasters that are sometimes ludicrous; forms and phrases which no classical authority helps him to find an open way through, are recognised at once as old acquaintances by those who have devoted days and nights to the collation of obscure and often in themselves very insignificant lapidary texts. But there is a better reason than the mere contagion of enthusiasm that always fills up the numbers of a forlorn hope, for dealing at once and here, and however insufficiently, with the present problem. It is a case in which the epigraphist must look for assistance to the architect, and even to the practical mason; so minute and so special are the technicalities that come into question; and we must own that we shall be surprised if when the consultation breaks up to which they have contributed reciprocally all in their power, it is not admitted on all hands, that a great deal still remains obstinately defiant of elucidation.

To the inscription, then, we apply ourselves with the frank admission that what we can contribute towards explaining it must, of necessity, be very insufficient, and professing no less frankly that we accept the risk of falling into many mistakes, and missing many things by oversight. It may, nevertheless, be understood that we should not commit ourselves even under these reservations, but for seeing our way distinctly enough to presenting a fair outline of some of the questions involved, upon which the counsel of architects cannot be too soon invited.

There is no such careful series of stipulations in this part of the inscription as in the former, respecting sureties and payments of instalments, as if the contractor were assumed to be a more responsible person in this case; though indeed stipulations of any degree of stringency may have followed in the portion of the inscription that is lost.

For the present exposition to be of its full use it will be desirable to indicate some of the original expressions, and this may be done sufficiently from the Roman fount without plaguing the page with Greek typography,—the long vowels being marked when thought necessary, by an accent. Of course it is not pretended or supposed that a thorough commentary would demand anything less than to be accompanied by the full Greek text, and indeed by a critical revision to supplement the first copy before us; we are now only concerned with helping forward some preliminary considerations.

The section begins abruptly,—"The working and setting of the beams for the long flank of the outer circuit of the sanctuary [*sékos*] for the temple [*naos*] of Zeus Basileus."

The next sentence, as the Athenian editor observes, halts for lack of a verb, which may be taken as a warning that the copy is not to be certainly relied on; at least, it is a general principle in relation to Greek inscriptions of a good period, that no error ever occurs in them in respect of even a single letter. The sentence as we have it runs,—"He who has contracted with the *naopoioi* [the controllers of temple construction] appointed for the temple of Zeus Basileus [the King] for the working and setting of the beams, thirteen in number, of the hard Lebadean stone for the long flank of the part looking south of the outer circuit of the sékos." By the sékos we understand that end of the naos proper which was occupied by the statue of the god,—the end, therefore, that would be completed first on the same principle that the cathedral builders made it their first object to complete and cover in the choir. This sentence, such as it is, is entirely and curiously inverted in the original, as if to avoid putting Zeus the King in so undignified a position as at the very end of a long recital of technical details.

"The dimensions of these beams, in length, breadth, and thickness, will correspond with those which are in position on the long flank and completed, which they are to be put next to."

Again the original halts in its grammar, but it will be understood in other cases, as here, that in leaving the discussion of such difficulties aside to deal with the most probable meaning, we are not unaware of their existence; they must be brought to justice elsewhere, and by others; an inserted (?) may occasionally denote their occurrence.

The word which we translate beam (*catastrôtèr*) is literally a "coverer down," and is allied to the term *catastroma*, employed for the deck or hatches of a ship. In its shorter form (*strôtèr*) it is found elsewhere as the term for a rafter that rests upon a beam. The obvious conclusion, which is further borne out, is that these stones were to constitute a portion of the ceiling of the peristyle, and as such might be either, and, indeed, most probably, the comparatively plain transverse beams at intervals, extending from the epistylia to the wall, and carrying the stones of the lacunaria, or else these latter stones themselves, which sometimes rest upon such beams, and sometimes are independent of them, as is the case in the flank ambulatory of the Parthenon.

In the absence of direct information we are left to conjecture that this large Lebadean temple was Doric in style, and we are at no loss for Doric examples of the transverse beam of a peristyle. "The Unedited Antiquities of Attica," of the Dilettanti Society, furnishes several uniform models; it is a plain beam of rectangular section, but for a simple moulding along the upper edges, which meets a return moulding of intermediate blocks above the wall-plate, and sunk ledges above them to receive the overlying margins of the lacunaria stone.

Conformably with ordinary constructive usage the under surface of the beam at either end where it rested on other stones would be worked very smooth, so far as was necessary to ensure a very fine joint in front, but beyond this only roughened by cross-hatching and dotting. Not only was it usual for the mouldings to be left uncut until the block was placed, but the faces also were left rough,—that is, in the case of a beam, the exposed double sides,—but it seems reasonable to infer that the under surface, which could not then be so easily dealt with when in position, must have been previously fairly finished on the ground.

The ends of the beam and the upper surface, as both out of sight and not necessarily in contact with any other stones, might be left in a comparatively coarse state,—but might also, as probably, be worked to lie close to adjacent stones.

If all seems tolerably clear so far, let resolution be braced to deal with the next clause, which we thus do our best to represent:—"The contractor, after he has received the stones at the temple, where also they have been passed as sound, having the dimensions required for finishing off [?] to the inscribed magnitudes, shall, in the first place, work the under surfaces [*baseis*] of all the stones straight, unswerving, unruptured [=apparently—of straight outline at edge, level in surface, and perfectly smooth], convermilioned [*summiltous*], as regards all the parts that ride upon the containing members [*crateutai*] and the wall-plate or wall-beam [*hypeuthunteria*,=the under-director], for not less than 2 ft. from the advancing joints [*prosiontos harmou*] employing a strong [or close] clawed sharpened tool, but as regards the middle parts that rub together, with a rough clawed tool [*wois*], working them all straight by a *canon* [? a rule or templet] that is, not less in length than the stone which is being wrought, nor of less thickness than six dactyls [about 4½ in.] and half a foot high."

The clawed tools, of which the use is prescribed here, are, of course, the *gradini* of the Roman sculptors of our own day, which are distinguished as here by different degrees of closeness and sharpness of the teeth.

* See p. 336, *ante*.

The word which we translate as referring to the stones that are to lie close upon either side of the beam when in position has a probable warranty for this sense in Homer's employment of it for the fork or frame on which a spit turns. The word represented in the translation by "for finishing off" is employed by Herodotus for the operation by which the exiled Alcmæonids completed the temple at Delphi with a more expensive marble; so far the purport of the word here in itself seems beyond challenge, but its form is surely miscopied, and has to be wrested to make, not merely the sense assigned to it, but any sense at all. It will be observed that the finer tool is prescribed for working so much of the under surface that is adjacent to the visible joints, though the reference of the dimension of 2 ft. is not very intelligible, while the coarser tool suffices for the rough intermediate surfaces.

But, still, the clause bristles with difficulties. What is to be said of the mode and purpose of application of this stalwart *canon*, and what of the proper meaning of *con-vermilioned?*—a barbarous word, but the only convenient intelligible representative of the new Greek word.

From something which we shall come upon presently it will appear probable that the vermilion was in some manner employed by being smeared or spread over the canon, in which case our translation might —begging some indulgence from the text—import that the beds or under-surfaces were "to be convermilioned straight, level, smooth," &c., though we only so exchange one puzzle for another. However, let us go on.

"And he shall undercut [or cut below] from the bed of all the beams the part which rides upon the wall-plate to the indicated breadth and depth from the retiring-joint (*apoin's harmou*—query, of the back joint), working the undercuttings [or say, to avoid an equivocal expression —the subcuttings] in the same manner as has been written, down about the beds [that is, with a close-toothed and sharpened tool], making an easing [*chalasma*] in the subcutting, which is near the wall-plate, of not more than a little dactyl" [an ordinary dactyl being about three quarters of an inch]. This *chalasma* reads like an adjustment at the edge to take off the bearing from a projecting moulding below. "And he shall work all the retiring-joints of the beams convermilioned straight, level, and smooth, at true angles by the *prosagogeion* [an instrument described elsewhere in a sense not applicable here, as for straightening wood], solid all round on the three parts for not less than nine dactyls [about 7 in.], with a smooth sharpened chisel, applying vermilion [*miltologôn*] properly; but the intermediate rubbing parts with a coarse-toothed tool."

Here we have intermediate or middle parts again called parts that rub, and roughly dealt with. In the joints and beds of Greek masonry we are familiar with the smoothly-finished margin by which the stones were brought to the closest and finest proximity, and a central roughly-finished portion, of which no part could be left higher than the smooth margin, and indeed might seem to require to be slightly sunk. Sunk, indeed, for the most part, they must be if roughly tooled, as the highest bearing-points could not be higher than the smooth rims; certain portions, in fact, were made precisely level with the margins, for the sake of taking some responsibility for the bearing, and to this extent the central or intermediate parts would be in partial contact, and might get the technical name of the rubbing parts. The three parts more finely worked seems to be the bottom and two sides of the beam, which would show visible joints. Farther assistance, however, will be most welcome in explanation of the place and purpose of the subcutting (*hypotome*), the *chalasma*, and, not least, of the process referred to as *miltology*, of which we are to hear more.

Too many difficulties are before us to linger longer upon these at present.

"And he shall close up [*anathursei* = door or shut up] all the retiring joints with a stone canon, miltologizing properly [or applying miltology,—treatment with vermilion, properly,—with a stone canon], scraping all the canons as frequently as we bid him by the stone canon, which is in the hieron [or sacred building], when he has properly scraped all the retiring-joints of the beams as . . . . like those which are in position completed, by which he is about to place them." . . . The identification of the "retiring-joints" in question is probably the least difficulty in the interpretation of this passage.

Here the inscription has a lacuna, after which we come upon notice of quite new work, to something in "an upright position from the left,"—— "and when he has painted [?] the long flanks and lines [qy., mouldings] of the prodomus, in the presence of the architect, he shall remove the *prosergon*" [somewhat pertaining to the works,—qy., he shall strike the scaffolding]—— The prodomus may either be the proper pronaos between the antæ or the interior of the front portico in advance of them.——He is then to do something to a given breadth with a tool called a colaptèr, apparently from analogy to the word used for the pecking of a bird, a sort of pick.

——"And he shall treat with miltology the extremity [*acran*—perhaps the surface] of all the thirteen stones in position by a canon, not less in length than twenty feet, six dactyls thick, and half a foot high." Here we are all at once carried away from the thirteen stones that have to be wrought and set, to another thirteen that are already in position.

These dimensions are quite inexplicable, and, indeed, at this point, the inscription for a time becomes,—for us, at least,—nothing less than bewildering; especially as the copy provided only charily indicates where it is probable that the readings are uncertain. However, the best service that the case admits of is probably to plod on and give the best translation that can be arrived at under present circumstances, as a basis at least for the commencement of further study by other students.

Mention then occurs again of "miltologising with a smooth sharpened chisel [as previously stones were to be made *convermilioned* with a different tool,—line 104] . . . making some things [of neuter gender] straight, smooth, convermilioned of not less depth than . . . . dactyls, having first smoothed off figures [*sémeias*] . . . . according to each of the stones in the upright by the *prosagogeion* and [doing miltology to] the inscribed line by which he shall scrape [or rub off] the scraping [*paraxoe*]. And he shall also scrape the line [qy., the cut moulding?] in the prodomus; then he shall close up the joints by the stone canon of the beams in position, by which he is about to place [or set the others] in the manner as also has been written about the retiring joints. But when he is about to set the stones he shall first dress anew [*proepicopsei*] the containers [*crateutai*] at the head and the wall-beam,—the containers with a close-clawed sharpened tool, and the wall-beam with a smooth-edged chisel correspondingly with those that are in position and complete, and shall exhibit them properly dressed."

"Then he shall place the beams after he has worked them as has been written, beginning the setting from the left as may be indicated to him about one joint . . . . [doing something with somewhat] wedge-shaped and [marching or] going in a line in order with those which are in position and complete."

It is not easy to go through this without holding the breath and asking oneself what three-fourths of it really mean. That some passages which read most suspiciously are, in truth, least open to suspicion may be concluded from what now immediately follows to justify them in plain terms, though scarcely to explain.

"And he shall use pure olive oil for all the canons and vermilion of Sinope; and if he does not use vermilion of Sinope or pure olive oil, he shall be fined by the Naopoioi and the Boo-tarchs, and no stone shall be shut up [literally, shall be keyed or locked in] by him until he proves to the Naopoioi that he has used vermilion of Sinope and pure olive oil."

The repetitions which occur in this sentence are such as might be due to a desire to make the letters of the inscription tell up on the same principle that promoted the verbiage of modern law; in any case, it is a warning that the specification at large is in many clauses unduly extended from mere clumsiness of style. In the substance of the present clause we might reasonably hope for some hint as to the real employment and use of the (*miltos*) vermilion, which is referred to throughout the document in such various technical and grammatical forms. What we do learn is, that it was used in such a manner as made its quality of importance, and in such quantity as to give a motive for substitution of inferior quality. One obvious conjecture when we meet with the mention of vermilion at the commencement of the inscription, is that it may have been used in place of the chalk of our artisans for application to the line employed to mark levels and verticals; so we learn from Aristophanes how a cord reddened with vermilion was used to sweep the Agora at Athens of idle gossippers, when the public assembly was convened, and all who were not brisk enough skip out of the way and hasten to the meeting caught a red mark from it and incurred fin There is full probability that a vermilioned cor was put to the same use by the ancients as th chalked cord of the modern carpenter, but this manifestly inadequate to cover the formulas the inscription, except in one case where th editor suggests mention of a plumb-line as conjectural reading.

Vitruvius enters into detail as to the prepara tion of vermilion as well as into its applicatio as a pigment, and the process to be employed t preserve the colour against the influence of ligh but helps no farther, and we turn to Pliny chapter equally in vain.

Apparently, again, the vermilion was used i conjunction with—in fact, was mixed with— olive oil, and so applied to the canons, which i some cases were certainly of wood, but in other are specified as of stone, and employed in thi mysterious process of miltology, and requirin not unfrequent scraping in consequence. T increase the difficulty, miltolgy was to be ap plied in some cases, as we have seen, by agenc of a chisel, no canon being mentioned in tha case. In the Hercules furens of Euripides th Cyclopean constructions of Mycenæ are spoke of as having been "adjusted by purpled canon and chisels,"—

τὰ Κυκλώπων βάθρα
φοίνικι κανόνι καὶ τύκοις ἡρμοσμένα (946);

and we owe to a note on the lines an apt illustra tion from an epigram of Leonidas of Tarentum (Reiske, 23),—

καὶ μίλτῳ φυρόμενοι κανόνες—

"and canons [or workmen's rules or templets] smeared with vermilion."

The Cyclopean walls referred to are doubtless those of the so-called second order, composed o neatly-fitted but irregular polygons. Italian workmen at this day adjust polygonal slabs fo pavements by a rule which, taking an interna angle from stones in position, gives by the same adjustment the corresponding external angle fo that which is to be fitted to the recess; bu neither vermilion nor chalk is required for pro ducing work of this kind with considerable accu racy. Paving-stones, however, are but coarse illustrations of fine Greek temple masonry, and the secret seems to lie in some special manage ment for obtaining the exceedingly true surfaces by which even the joints of an architrave could be made all but invisible. On a forlorn hope, as we confessedly are at present, we need not shrink from admitting that the case suggests to us a possible anticipation of something like the pro cesses by which Sir Joseph Whitworth effected his great achievement of a perfectly plane sur face.

Mr. Penrose, to whose "Principles of Athenian Architecture" the illustrator of both the theory and the construction of the Greek temple may always be happy to own his obligations, remarks on the difficulty of explaining how the vertical joints of the Parthenon architraves could have been obtained of such exquisite fineness. He considers that the method most probably employed was in that case the same which is sometimes in use by modern masons, namely, passing a thin saw-blade between the two contiguous surfaces already carefully prepared, and afterwards wedging the stones closely together.

However, there is the case, for which the consideration of architects is solicited, as jurymen sometimes have to hear from a judge, in place of a detailed, not to say leading, summing-up,— "The case is before you, gentlemen; I cannot assist you."

Dodwell relates that the frustrum of a column of the Propylæa, when just thrown down, showed red chalk (?) marks, which unluckily a storm washed off before he could examine them; the pieces of square wood which received a central metallic pivot were painted red.

We now come upon still another enigmatical process—trimmatology. "He shall . . . . [apparently show] the working and setting to the architect, but the joints and beds [*harmoi* and *baseis*] of all the stones to the sub-architect [the hyparchitect], at the same time applying trimmatology [apparently smoothing by friction or rubbing, if not actual polishing]." . . . He is then to do something to certain things "that have gone into their special places, entire, unbroken, undeniable, with nothing below them, grinding together, as he drives the . . . . of the rubbings [query, marble-dust] so far as into the *containers* [crateutai], with a toothed, close,

sharpened tool [xoïs], and for the part below the ypeuthynteria [which we have conjecturally anslated wall-plate, or wall-beam], with a mooth-edged tool, and the joints with a smooth hisel from oil, and [through or] by an iron pin rhabdion ?]." Here we suspend commentary simple despair, and in very grave mistrust of ie sufficiency of the text provided for us.

"And when he has completed the joint after leansing it with soda, and washing it with pure ater, he shall then lock [or close] it in."

This clause shows that the preceding referred the process of actually getting the stone into s precise place, and "the joint" here means not ie smoothed portion of the upright surface of a ngle stone which it seems to import elsewhere, it the final bringing together of vertical faces.

"But the putting in of the plugs and clamps nd [axelike] or double clamps [*pelekinoi* = the *curiculæ* of Vitruvius] and the weight of these nd the running in of the lead, to the Naopoioi . . . let the contractor being present in per- n . . . . but not lock in anything that has not een exhibited. And should he so lock in any- hing, he shall raise it and do over again from he beginning, and shall be fined by the Naopoioi nd the Bœotarchs as he may appear to deserve r not doing what things have been written in ie agreement. And if any other of the asso- ated workmen should be convicted of bad work- anship in any matter, let him be expelled from ie work, and no longer take part in it; and if e disobeys he also shall be fined along with the ntractor. And he shall not run with lead any one before he shall have done what has been ritten down. And, if possibly, in the course of ie work, it may be advantageous to vary in any greee from what has been written by omission addition he shall do as we give orders.

"And when he has set all the beams he shall ess them by the head [qy., in order,—or from ove downwards,—or atop ?] correspondingly ith those which are in position and completed, nd apply miltology properly by the long canon itha clawed tool, chiselling [or pecking] them all ne after another—after having used the compass r level ?] to them throughout [or atop]." And the inscription as copied, from a parting puzzle, reaks off with the mutilated lines,—respecting ie circuit (*peritenesias*) of the beams—the pre- aration of cubes of dry or seasoned wild olive ood,—the exhibition of some things (neuter lural) straight and con-vermilioned (*summilta*).

M. Coumanoudes expresses a hope that he will ot be taxed with rashness in his treatment of ie text, and his endeavours to recover it in oubtful places; he may be safely credited with are and moderation in this respect, while nothing ut gratitude is due to him for the promptness ith which he has laid it before the world. We re the more disposed perhaps to recommend the ost liberal indulgence from consciousness that n attempt to elucidate the inscription is likely stand still more in need of merciful allowance. ome one, however, must lead the way, and, erhaps, not the least service of a first attempt, owever imperfect, is that the eagerness of a econd investigation is often marvellously whetted y the opportunity of seasoning his own dis- overies with smart reflections on the crudities f a predecessor. So to revert to our metaphor f the forlorn hope, a more fortunate expositor heartily welcome to make stepping-stones of s on his road to glory, which we shall not ympathise with any the less.

The only information that we have as to the ge of the inscription is, that the forms of the tters seem to indicate a time before the hristian era. The mention of Bœotarchs gives s no assistance; we meet with them in Thucy- ides as a board of eleven officials, having their ead-quarters at Thebes, but apparently repre- enting as many cities, which constituted the Bœotian Confederation; but even when the Confederation fell apart, Bœotarchs were still ppointed, and the office was precisely one of hose that were continued shorn of powers under he Roman Empire; and accordingly Bœotarchs ontinue to be found at Thebes as late as the econd century.

The Sunday Society.—The second public annual meeting of the members and friends of his society, which seeks to obtain the open- ng of museums, art galleries, and gardens on Sundays, will be held on Saturday afternoon, May 12th, at the Freemasons' Hall, Great Queen-street, when the Dean of Westminster will take the chair, and deliver an address as President.

THE KENSINGTON VESTRY COMPETITION.

The designs submitted in competition for the proposed new Vestry-hall in High-street, Kensington, were exhibited last week in the old Kensington Schoolroom, and will probably be open for public inspection next week; the present week, we believe, has been employed in a detailed examination of the plans by the Committee, or their professional representative. The Vestry have bound themselves by their conditions to call in professional advice, and we hope they have obtained the assistance of some one whose name will command the confidence of competitors, since it is unquestionable that a great and disproportionate amount of labour and skill has been expended on the drawings. In fact, the collection of designs would seem to indicate that there is more talk than reality in the sentiments about competitions, which have so often been put forth and endorsed by architects, in condemnation of the whole system. Those who have been bitten, and are consequently bitter for a time against the whole system, make up their minds, we must suppose, for one more try; and hence it comes that no less than sixty-five gentlemen are willing to send in sets of drawings, some of them of great beauty and elaboration, on the preposterously large scale of ¼ in. to a foot, forming a total of work which it is melancholy to look at, considering that all but a small portion of it must necessarily be lost labour. To comment in detail on the collection would demand an amount of space as disproportionate to the end in view as the collection itself must be said to be: we must content ourselves with a few notes as to the characteristics of some of the designs which struck us most favourably.

The new building is to stand on a site immediately east of that of the present Vestry-hall, the south or principal front adjoining the High-street. The plan of the site is irregular and awkward, scarcely a right angle being possible in the external walls of the new building, except at some sacrifice of space; the portion available for the building being an irregular parallelogram, of about 98 ft. by from 40 ft. to 50 ft., flanking the High-street, and considerably wider at the west than the east end, and an irregular but nearly square area adjoining on the north, making a kind of L-shape of the whole. The site thus naturally divides itself into two portions, and it is in the combining of these so as to produce a tolerably symmetrical plan and get over the odd angles by throwing them into unimportant parts of the building, that a good deal of the difficulty of the problem consists. The accommodation required may also be divided into two sections, the one comprising a large hall and committee-rooms, and the other the vestry clerk's and surveyor's departments and other offices. The most rational method of dealing with such requirements would seem to be, to group the smaller offices on one floor, and combine the hall and committee-rooms, which are all larger rooms, and require greater height, in a suite on another floor; in doing which common sense will, of course, suggest the placing of the business-rooms, which are for more general access, on the ground-floor, and the larger rooms on a principal floor above it, which will thus also form the principal story of the external design, considered from an architectural point of view. So far, the appropriate treatment of the building seems self-evident, as well as the placing of the principal entrance towards High-street; the question whether entirely seperate entrances for the business floor and the hall and committee floor are to be regarded as necessary would depend upon the nature of the plan and the degree of state character aimed at in regard to the hall entrance. But as the Vestry-hall in such cases is almost always regarded as a room available for public meetings and entertainments, apart from the business of the Vestry, it would appear to us that the most complete and satisfactory plan would be that which would furnish a special entrance and staircase of as much dignity and spaciousness as is consistent with the scale of the building and the practical utilisation of floor-area. Few, however, of the competitors have attempted this in reality; a good many have two or more entrances, of which one counts as a principal one, but without separating the internal traffic at all; so that there are but few instances in which the plan would really explain itself to any one entering the building, or carry out the division suggested in the exterior treatment.

The competitors are tied up in regard to design by an odd restriction, that the design "shall not be Gothic or Elizabethan." Certain prejudices against Gothic are comprehensible, in regard to ideas (only too much fostered by the practice of some designers) as to the inconvenience or unsuitability of Gothic buildings for business purposes; but why a style which lends itself so readily to the most practical modern building as Elizabethan is forbidden, it is difficult to understand, except on the supposition that the Vestry desire a palatial structure with Classic orders as their *beau idéal* of a vestry-hall. This wish, if it exists, has been eluded by a majority of the competitors, some of whom indeed have shown no little ingenuity in the manner in which they have used Elizabethan features with just so much freedom as to escape the letter of the law, or have combined Classic details in an *ensemble* essentially Gothic in character and principle; while others have taken refuge in a pure Queen Anne method, or a late Jacobean; which certainly is in harmony with the *genius loci*, if that argument is to be regarded as of importance. The limit of expenditure is placed at 18,000*l.*, and on the whole it does not appear to us that the possibilities of the sum named are exceeded nearly so much as we frequently find in competition designs.

Looking round the designs in the order of hanging, we have to pass over several before we arrive at any which seem to show special excellence or suitability. "Nos," the first of the set, has certainly a meritorious plan, with good and effective arrangement of the stairs; the design is up to the average merit of the collection, but hardly more. "Favete linguis" is a finely-executed set of drawings, but the plan is too full of odd angles, the author not having mastered the difficulty of getting rid of these in a convenient manner. "Plenty of Light" seems to have no special claim beyond others to that qualification; it may be described as a Gothic design with Classic detail; the author has aimed at a grandiose effect in his plan, not unsuccessfully, but at some expense of space which might be more practically used. "Lady Day" is a beautiful set of drawings of a design of Classic type, possessing dignity, if no great novelty; but the planning is not equal to the drawing: how does the author propose to light his large vestibule or entrance-hall, which takes up so much space? "Ercs" and "Spes" we may pass over; not meaning to infer thereby that they have no merit, but we can only undertake to notice those which come up to a certain standard of plan and design. We may observe, indeed, that the average of merit in this competition is higher than usual in such cases, and those absurdities of design and scheme which are to be found among all sets of competition drawings are in a very small minority here. We next come to "Experience," the author of which has sent two plans, one showing the large hall on the upper floor and in the front block, the other showing it on the ground floor and in the back portion of the plan. The former is very much the best plan, in fact the alternative one is scarcely worth considering in comparison: the author is a thorough master of planning; his centre vestibule takes up some space, but the rest of the plan is so compact and well arranged, and the vestibule itself so well utilised as the centre-point from which every part of the plan can be readily found, that there is nothing to object to in it as to convenience, and the arrangement is very effective. The staircases and lobbies are very well arranged; the large committee-room is placed downstairs, in connexion with the vestry clerk's office, but the idea of a suite of large rooms on the main floor is realised, and the space over the committee-room is made a large ante-room or supper-room, in connexion with the large hall; the manner in which the junction of these two irregularly-placed portions of the plan is effected by a small octagon vestibule intervening in the angle, is admirable. Something must be sacrificed to the extra room on the main floor; it seems to have been taken out in the rooms for the inspector of nuisances and medical officer, which are rather small; if they are practically large enough, however, there scarcely seems a fault to find with this plan. The surveyor's drawing-office is too small, and has the wrong light; this part would require a little re-arrangement. A separate entrance is provided to the public gallery of the large hall. One exterior design is made to serve both plans, which ought not to be, as they are radically different in arrangement; the design is Italian Renaissance, with one or two special decorative

features, such as shields for armorial bearings, and a panelled frieze under the cornice; the design is in good taste, but presenting nothing remarkable. Plan is the author's *forte*, and in this he may be said to be among the very best, if not the best among the set.

"Suitability" can only claim mention as an external design of some boldness and originality, though coarse in detail: a plan in which to little resource is shown in dealing with site as to allow one face of the great hall to assume an oblique angle, is not worth another look. The want of perception in regard to this point on the part of some of the competitors, the *nonchalance* with which they allow their principal room to assume the form of a trapezium, instead of getting rid of the odd angles in other ways, is extraordinary, when occurring in connexion with designs so well drawn and got up as to argue considerable experience. "Utility" is a clever elevation, but, again, a bad plan,—all angles and elbows. "To be or not to be" has a plan with some very good points, the offices and staircase approach opening out of a central octagon vestibule, which, however, would be rather deficient in light. The elevation is a square balustraded block of Italian detail, quiet, but not original, though tasteful in detail. "Spero," "Fair Field and no Favour," "T. H." (in a monogram), and "Experiar" are all meritorious plans, with more or less merit in the elevations, the second-named being the most original, but rather too eccentric in some of its detail. "Experiar," however, makes the oversight, which a large number, we think almost the majority, of the plans show, of placing the surveyor's drawing-office with a south light. It seems very odd that gentlemen engaged at the drawing-board themselves should not realize the importance of a good light, and should be oblivious of the excessive inconvenience of drawing at a desk under a south light in the summer months. "Cives" sets a good example in this respect, and the offices and committee department of this plan are well arranged; but the plan is too much cut up with corridors in a rather rambling fashion. The hall and committee-rooms make a *suite* on the principal floor; but the so-called "grand staircase" is very badly placed, and the planning of the approaches to the large hall generally is very faulty. The elevation is a rather florid Italian design, with some spirit and originality of detail; but it would be a very expensive one to carry out with all the decoration shown. "Utility," a second design of the name (No. 21 in the hanging), has the merit, so far as that goes, of representing in its architecture the *genius loci*, being a rather picturesquely-treated exterior of thorough old Kensington type, with a good treatment of angle turrets and windows. The tower, however, is a mere ornament, referable to nothing in the plan, and the latter is not very good.

"Usui Civium" produces an original effect in design by a mingling of Jacobean with more purely Classic features. The entrance-hall would be rather dark, but otherwise the plan combines dignity of effect with practical suitability more fully than most. "Spes" (in two triangles) has a simply-arranged, compact, and convenient plan, and a Queen Anne exterior, looking more like a factory or a prison than anything else. "Cavendo tutus" has, perhaps, the opposite defect of being somewhat too ornate and ambitious in the exterior, a Renaissance design of rather French type, with a good treatment of detail, kept rather flat and in low relief. The plan, with a centre octagon vestibule, aims at effect, but without overlooking convenience; the stairs seem rather far from the entrance, but the whole is symmetrical and well arranged: the windows are, perhaps, rather small. This is a very meritorious design, however, but also a rather expensive one.

"Experientia," like his English namesake "Experience," has his two alternative sets of drawings, each, however, with its own elevation; but the distinction between the two is rather in design than in plan. "Design A" is much the best, and is a very good specimen of the application of Italian Renaissance with some more modern specialities of detail. "B" is a Palladian design, good of its kind; both are admirably drawn, and the labour and care expended over the two sets are remarkable,—we might, perhaps, say melancholy,—to contemplate. We fear the plan has nothing special to recommend it; it is somewhat rambling in construction; not equal, certainly, to a good many others.

"Thorough" is a very clever, almost an amusing instance, of a determination to be Gothic, without employing Gothic detail. The plan has a curious degree of resemblance to one of those by "Experience," but is hardly so good.

"Acanthus" is a very clever picturesque design, of château type, showing much artistic feeling. The arrangement of the plan is peculiar, and differs in some respects from any other in the management of staircases and corridors; the idea seems to us capable of better and more systematic working out, but it is worth attention, and the drawings are admirable.

"If I win I'll crow" is an Italian design of merit and gracefulness, which would deserve more examination if the plan were more practical; but the author has sacrificed everything to an enormous hall running north and south the whole extent of the site, and crowding out the other business departments. His motto is illustrated by a sketch of a cock crowing, perched on a T-square,—a piece of wit which seems to have hit the level of the public mind, judging by the continuous chuckling over it among visitors.

"Well considered" justifies its motto. The design is a fine and dignified one, of a rather Venetian type of Renaissance, with the details very well treated, producing a rich, but not florid *ensemble*. The plan is generally satisfactory, and has some special points; the treatment of the west wall of the hall, for instance, as a segment of a circle, and of the vestry clerk's offices on the floor beneath. Some of the offices might be better lighted.

"A l'Envi" has a Classic elevation very prettily and effectively treated in the centre portion, which, under a brighter sunlight than we often get here, would produce a very pleasing play of light and shade. The plan looks symmetrical, but can hardly be considered very satisfactory in detail, though the manner in which the oblique angles are got over at some points is clever. The hall and committee-rooms form a "principal floor" to themselves, with a separate circular staircase.

"Alpha" is a very able and picturesque Queen Anne design, though with rather more florid treatment in some points than that description would usually imply. The elevation, which is shown in an elaborate pen-shaded drawing, exhibits a brick building with pilasters and large cross-mullioned windows marking the main story. The entrance-hall is rather large, but would be very effective, and the plan is a very good one in the main, and attention is paid to lighting. The whole set of drawings exhibits much ability.

"Utile dulci" is an ambitious and grandiose Italian Renaissance design, beautifully drawn and shaded. The offices are rather sacrificed to the hall, and there is a deficiency of lighting in some parts, but the whole indicates an able and practised hand.

"Xmas," a very fine set of drawings, showing a brick Queen Anne building, with a rusticated ground-story, and above that a story marked by brick pilasters, with pedimented windows between and a quasi-Doric frieze over; over the main cornice is a story which, in Classic design, would be called an attic, very tastefully treated, and the centre is marked by a well-designed open bell-turret. In spite of its mongrel Classic detail, the real feeling of this design is essentially Gothic. The plan is remarkably simple, but it is a simplicity which is the result of study. The hall and committee-rooms on the main floor have a special staircase leading only to them. Some points of the ground-floor plan may be deficient in lighting, but not in important parts.

"Argus" has lost himself in corridors and staircases, and an ingenious arrangement of octagon lobbies, which seems to have pleased him so much as to have quite taken away ninety out of his hundred eyes from studying the arrangement and convenience of the rooms themselves. The elevation is a very pleasing one, with considerable originality, and drawn in a very artistic style.

"Kensington" deserves mention for a design certainly clever, though too odd and eccentric. The plainest elevation (towards Church-court) is the best. The plan is out of the question.

"Old Kensington" is a beautiful set of drawings in the style which the title implies; and the plan is one of the cleverest in the room. The entrances and corridors have been planned with great consideration and ingenuity, so as to keep the traffic of one part of the interior totally separate from that with which it has no connexion, and to take every one almost necessarily to the rooms he wants. The drawing-office is in the wrong light, otherwise this plan is equally able and effective, and may probably contest the palm with "Experience," though on a very different principle. The design is ably and effectively treated in the style (or manner) adopted; but, unfortunately, the angle turret, pleasing as it is, is a glaring sham; it stands upon nothing and refers to nothing. Otherwise the high merit of this set of drawings is indisputable.

"Octagon" is marked by the bold idea of an octagon vestry-hall, occupying the north-east portion of the site; this is a good shape, perhaps, for a deliberative meeting-room, but then it is a decidedly bad one for purposes of public entertainment or public speaking, to which use we must assume the hall would from time to time be put. The author must, therefore, we fear, be content with the credit of an original idea combined with a tolerably well arranged ground plan. The elevation (Renaissance with some "modern touches") has excellent points.

"Audax omnia perpeti" has a good though rather heavy pilastered elevation, with some force of treatment, but which would, perhaps, hardly look so well in execution as in drawing. The plan has nothing especial to recommend it. "Design with Beauty, build in Truth," has the reverse characteristics, a good plan, and a rather ordinary design. "Alpha" has a good and dignified elevation of Florentine type of Renaissance, and there are good points in the plan, but there seems a want of system in its arrangement.

"For a Name" will not, we fear, fulfil its author's ambition, but it is highly creditable to him as a design, as it exhibits a really original and graceful treatment of details founded on Renaissance architecture; parts of the upper story are very pleasing in treatment, though the whole wants a little more force. The plan will hardly do, and seems to argue want of experience.

"Kensington," the second of that name (numbered 64), is a very pleasing elevation of Jacobean leanings; the plan has fine points, as in the rather stately arrangement and combination of the large rooms on the principal floor, but it is very deficient in light in some places, and cannot be considered as a well-arranged plan in detail.

"Fuimus" is the only competitor who cannot resist sending a Gothic elevation, contrary to orders; in connexion with which fact his motto, with its obvious reference to a former state of things, falls on the ear with a melancholy cadence which is quite pathetic. He provides, however, an alternative Renaissance design in compliance with the demands of a cold and stony-hearted committee. Both elevations (as the same plan) are well designed; the Gothic,—thirteenth-century type,—is the best. The plan is a good average one, with no specialty, and seems to waste too much room on corridors, &c. Much trouble has been expended on the drawings, which are very creditable to the author.

Three designs will be premiated and become the property of the Vestry, but with no condition that the author of any one shall be employed to carry out the building; and if one of them is so employed, his premium for all these large quarter-inch scale drawings will merge into the usual 5 per cent., and become a dead loss, as he will have, of course, to begin over again. We can only offer our sincere condolence and sympathy to the sixty-two gentlemen who will not even have the satisfaction of selling their work to the Vestry at a price considerably less (in the case of the second and third premiums, at all events) than the mere value of the time and labour bestowed, and wonder how long architects will be content thus to fill a room with proofs of laborious work, merely to make an exhibition for a committee to bring their friends to?

Liverpool Engineering Society.—On Wednesday evening, the 25th inst., this Society held its usual fortnightly meeting at the Royal Institution, Colquitt-street. Mr. C. Graham Smith, A.I.C.E., president, in the chair. Mr. Alex. Ross, district engineer, London and North-Western Railway, briefly summarised his paper on "Hydraulic Machinery, with special reference to Railway Goods Yards," read at the previous meeting. This was followed by a lengthy discussion, and the general opinion elicited was that hydraulic machinery is convenient, safe, and economical; and that where the machines are irregularly distributed and intermittent in their action, that water is the best means of transmitting power.

THE PRINCE OF WALES AT THE TROCADERO.

During the Prince of Wales's short visit to Paris, on his way to and from Nice, he contrived to pass two or three hours at the Palace of the Trocadero, and inspected with the most laudable care the progress of the enormous works. He was conducted throughout his inspection by M. Krantz, the commissioner-general, and M. Berger, commissioner for the foreign sections, to whom he expressed his belief that no possible complication in connexion with Oriental affairs would be likely to interfere in any way, to prevent England taking an active part in the Exhibition.

M. Krantz and M. Berger afterwards breakfasted with his Royal Highness at the British Embassy, in the Rue du Faubourg St. Honoré.

The Prince, in the course of the day, also visited the antique "Ginger-bread Fair" (*foire au pain d'épices*), which this year in Paris has been held with unusual ginger-bread magnificence. His Royal Highness enjoyed immensely as *incognito* in this motley fair,—an *incognito* that was so completely respected that on his entering a somnambulist fortune-teller's magic cell, the sybil said, "You are born under a lucky star, but you have not always been fortunate; and at the moment I speak to you, you have still serious obstacles to deal with. The qualities of your heart have often made you oblige ungrateful persons who would wish to repay by mischief the good you have done them. But persevere in the way which you have chosen, and you will triumph. You will soon inherit a large sum, which will permit you to marry the one you love." The amusement of his Royal Highness was excessive.

It is now quite determined that the Palace of the Trocadero is to remain a permanent building after the close of the Exhibition, the municipality having arranged the purchase of the Palace on certain conditions advantageous to the Parisian public; certain thoroughfares throughout the palace being stipulated for, to be closed only on rare occasions.

The works on the Trocadero, and also on the Champ de Mars, are already in so forward a state that the contractors are nearly two months in advance of their stipulated time, and already may be seen in the Champ de Mars a gigantic movable scaffolding, which is preparing for the erection of the iron work, and, we are told, will not merely be admirable for its constructive strength, but remarkable for its beauty.

The walls of the very large space that has been devoted to the exhibition of the fine arts are all but finished, and present a picturesque appearance in their rough condition, somewhat resembling the gigantic remains of Caracalla's palace near Rome, a resemblance that will very shortly lose its antique charm in the overwhelming attractions of completion and novelty.

The central garden, the delightful feature, it will be remembered, of the Exhibition of 1867, making rapid progress, but the Parisian horticulturists remove and transplant large trees and shrubs with so much ease that ornamental gardens spring up under their hands like magic. Many Londoners, on visiting this Exhibition next year, will be reminded in this garden of the pleasant little quadrangle attached to the French *Annexe* at South Kensington, in which so many Anglo-Indians and *emigrés* did their best to enjoy an outdoor repast.

We find some interesting details concerning the state of the works of the approaching Exhibition in the report of M. Guyon on the Budget of the Ministry of Agriculture and Commerce, from which, amidst a considerable array of figures, we gather that, from September 1st, 1876, to February 28th, 1877, 3,032,000 francs (that is, about 122,000*l.*) have been spent in the works of the Exhibition. It must be taken into consideration, however, that this sum is only *on account*, and represents very imperfectly the expense of the works realised. Since February 28th, twenty-two contracts have been accepted for the left bank (Champ de Mars), of a value of 18,000,000 francs (720,000*l.*), and ten contracts for the right bank (the Trocadero), of the value of 3,000,000 francs (120,000*l.*)

The accidental difficulties which were met with in the underground portions of the Trocadero have exacted a supplementary expense of about 1,000,000 francs (40,000*l.*); but on July 28th next, the two galleries of the wings will be finished, and will be in a sufficient state of dryness for the period when the art-collection will be placed in them.*

The advanced condition of the metallic works precludes any probability of delay, and thus will be raised, in a year's time, on the Champ de Mars, a palace with a superficies of nearly 60 acres.

Paris.

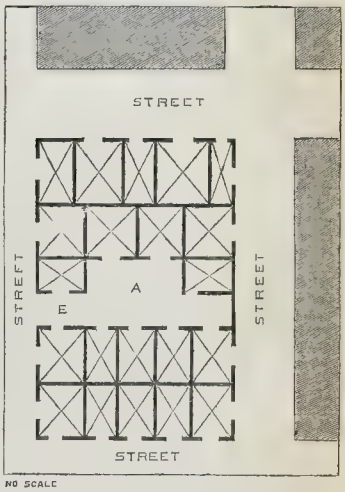
THE HOUSEHOLD AT DIFFERENT ERAS.†

THE CÆSARS, II.

Gibbon agreed with Perrault and Arbuthnot that the polite Augustus had neither glass to his windows nor a shirt to his back.

The crowded streets and clustered houses of Rome during the hundred years which preceded the death of Nero were the subject of much poetical lamentation; and the allusions to both by prose writers of the time are comparatively numerous. Horace tells of dismal funerals disputing the way with unwieldy carriages; of a mad dog on one side and a mud-begrimed sow on the other. At the same time a crane is being worked upon a new building, and now a stone, now a piece of timber is being raised; while the builder is hurrying along with his mules and carriers. Juvenal complains of the wagons passing in the narrow curves of the streets; of the rich man borne upon the shoulders of his slaves in a litter with shutters closed; of a tide of human beings who stop the way, elbow and trample upon each other; of the litter-pole, the beam, the wine-cask which struck him as he attempted to make a passage. Martial's excuse for not paying the usual visit to his patron was the steepness of the Esquiline Hill, and the path "dirty with footsteps never dry." He could not get clear of the trains of mules and the blocks of marble which were being dragged along by ropes. The noise in the streets, both by night and day, prevented Horace from singing and tracing "the difficult footsteps of the poets." Martial could not live for schoolmasters in the morning, corngrinders at night, and braziers' hammers all day and night. "Here," he says, "the money-changer indolently rattles piles of Nero's rough coins on his dirty counter; there a beater of Spanish gold belabours his worn stone with shining mallet." Soldiers, too, never ceased from their clamour; nor was the "sailor, with his piece of wreck hung over his shoulder, ever quiet." The noise and dread of fire prevented people in the meaner streets from sleeping. The houses, lofty and of many stories, with only the lowest walls of brick or masonry, were propped up in places; the upper stories projected over the streets and the internal courts. "Novius is my neighbour, and may be reached from my windows," is the beginning of an Epigram by Martial, who once occupied a single room on a third story; "in the whole city there is no one at once so near and so far from me. . . . If any one wishes not to see Novius, let him become his neighbour or his fellow-lodger." Juvenal, whose only attendant after dark was the moon, or the glimmer of a rushlight, enlarges on the perils of the streets, upon the height of the houses, and the chances of death from some object thrown from open windows when the inmates within happen to be awake. Though arrived safely home, rain, according to him, still hangs over all the tenants of a lodging-house. "The third story [doubtless the top story] of the house in which you live is already in a blaze; and you are still unconscious!" These are the kind of houses to which Vitruvius referred when he said that in Rome the mass of the people were "commodiously lodged." Some passages in the "Satyricon" of Petronius Arbiter relate to events which are supposed to take place in one of these *insulæ*, as they were termed, in contradistinction to the *domus*, or private house,—the former occupied by several families, groups of people, and individuals; the latter by a single family of wealth and station.

The literal meaning of the word "insula" is an island of shops and clustered dwellings; and the Parisians still use the derivative "îlot" to indicate much the same thing. But eventually the term was employed to denote each house in the island; and ignorance of this undoubted fact was partly at the bottom of the absurd estimates which have been made of the population of Rome. In like manner "insula" and "taberna" have been confounded and supposed to mean the same thing; but as the ground-story of houses in an *insula* most frequently consisted of shops, the confusion is easily explained; for in London at the present day it is usual to talk of a house and shop as a shop only, to distinguish it from a private dwelling-house. The annexed diagram is taken from the Marble Plan (third century); it shows an *insula* which, from its rectangular shape and studied distribution, must have stood in a part of the city carefully laid out after one of the later fires which devastated Rome at different periods of the first century. The principle of plan is that which has developed into the modern *maison-à-loyer* of the chief Continental cities; and in general outline far more resembles that of to-day than similar blocks let by stories and rooms which existed in Edinburgh during the sixteenth and seventeenth centuries, and in Paris during the reign of Louis XIV. A lodging in an *insula* often consisted of one room only; and Juvenal describes Codrus, a poet, living with his wife in one of such rooms. The shops were most frequently one apartment; but there were also some with a room at the back, lighted and entered from the shop. This was a *taberna cum cœnaculo*; and both kinds are shown on the fragment of the Marble Plan which we published in our first chapter of this section. Moreover, in many shops there was a wooden stage, or half



story, which became in the days of St. Jerome (A.D. 340—420) the "mediana" he refers to in his description of the houses at Rome—ultimately the "mezzanine" of Italy, and the "entresol" of France. The *insulæ* were not occupied, or, more properly, each of the houses composing an *insula* was not occupied, by several persons as joint property; nor were the houses in Rome either of Cicero's time, or of a much later period, mere "lodgings," as the word is now understood in England. They were rather "houses in flats," the rooms of which, compared to modern dwellings, were ridiculously small, and their arrangement deplorably primitive. Each shop, however, was complete in itself, and each dwelling was complete in itself—a mode of residence which, according to Dureau de la Malle, suited the host of *célibataires* who flocked to Rome in search of fortune or a patron. Unfortunately, the diagram we publish has none of those marks upon it which, in other parts of the Marble Plan, and also on the neighbouring *insula* we have etched, indicate stairs. It is, therefore, useless to conjecture whether the building was of two or more stories. A is a courtyard, and E is the entrance to it. There are twenty-one tenements in all; those on the outside lighted and entered from the street; those on the inside from the court. Obviously, no remains of similar blocks of building, except, perhaps, the foundations of a few shops, have been found in Rome; but at Pompeii the walls of a complete *insula* are standing. The "House of Panza," one of the largest in the city, is surrounded on three sides with shops and distinct dwellings; and on the fourth with a portico of two stories facing the garden. It was not a building of more than two stories, and nowhere at Pompeii are there

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* The total sum voted by the Chambers for the Exhibition is equivalent to about a million and a half of our money.

† See page 368, *ante*.

any traces of the tall houses which existed in the crowded parts of Rome. An advertisement, in which a number of houses, shops, &c., are announced to be let, was discovered at Pompeii. They were a source of revenue to many of the upper classes, who owned land and buildings; and the rents—the *merces insularum*, mentioned by Cicero—were collected by an agent, who, in the description given by Petronius, was either a freedman or a slave.

The traces of stairs,—the lowest steps being of stone, and the rest of wood,—are numerous not only in the dwellings which enclose the "House of Panza," but also in such public buildings as the Baths of Pompeii. In the latter these stairs are approached directly from the street; and their position leaves no doubt that the upper story was divided into dwellings, consisting, most likely, of single rooms called "cœnacula."* The upper story of the celebrated Baths at Baiæ was occupied by well-to-do citizens, who sought relaxation and change at that famous watering-place. In the season these Baths were surrounded by booths and huts erected by small traders often against the very walls of the building. Martial describes one Syriscus wandering about in Rome among the low *tabernæ* "in the neighbourhood of the four Baths,"—presumably those of Agrippa, Nero, Gryllus, and Titus. These little wooden structures, probably not unlike the *baraques* which once every year are to be seen on the Paris boulevards, were a kind of parasitical annexe to a substantial edifice; and only a hundred years ago the cathedrals and other large public buildings in Europe were encumbered in the same fashion. The *tabernæ* clung to the portico of a market-place or the side of a temple. Pliny relates the story of a raven, hatched in a nest upon the Temple of Castor and Pollux, which descended into a shoemaker's shop built against the walls; and that was in the time of Tiberius. They were often erected in the *area*, that is, in the open space in front of the large houses; and before them tables and seats were placed for the use of those who came to eat, drink, be shaved, or otherwise as the occupation of the shopkeeper might suggest. In the shops which contained articles for sale, the goods were displayed on trays often in front of the shop, and the shopkeeper lived with wife and children within. These obstructions in the already narrow streets of Rome necessarily impeded the circulation; moreover, in the time of Augustus most of the public thoroughfares were stepped much like the high street at Constantinople now,—up the hill from Galata to Pera. It was usual to be carried in a litter to the city gates, where people going a journey took horse or carriage. Travellers were not permitted, by an edict of Claudius, to drive in a carriage through the towns of Italy; and not until the reign of Domitian were the keepers of *tabernæ* in Rome forbidden to encroach upon the public way.

No contemporary description of a Roman house (*domus*) in the time of the Cæsars is extant; and the only means of knowing, perhaps conjecturing, what the household then resembled, is from diverse and scattered references to its composition, its extent, and to the manners of the time. Vitruvius has drawn a very distinct line between what was required for the residences of different classes of the community,—of trade, finance, the learned profession; and those of the nobility in whom the duties of the magistracy were vested. "The nobles," he says, "should have their houses constructed with splendid vestibules, lofty *atria*, and extensive peristyles; with plantations and spacious walks disposed with every attention to magnificence of appearance. Besides which they should have libraries and picture galleries; and in some instances *basilicæ* upon a scale of grandeur little inferior to that of national buildings, for it often happens that public meetings are held there, and the causes of individuals held and determined." Vitruvius also defines three inferior classes of houses. "Those," he says, "who expose to sale the produce of the country should have shops and stables at the entrances to their houses; and within them store-rooms calculated for the preservation of their merchandise, without any regard to propriety of appearance." Those who farm the revenue are, however, to have houses respectable in appearance, and secured against depredations; while the houses of advocates, and others distinguished for their eloquence, are to be more elegant and spacious, in consequence of the number of people who resort to them for advice and instruction. But the Roman architect who is thought to have dedicated his book to Augustus, and who is certainly mentioned by Pliny, affords little information concerning the size of rooms. He usually defines their proportions by doubling the breadth to obtain the length and so on; and indeed had not the ashes of Vesuvius preserved parts of Pompeii until within comparatively recent times, it would have been difficult to believe in the extreme pettiness of the rooms in Roman dwellings even of the best description.

Some light is thrown upon the duties of household life by an enumeration of the day's labours in the Fourth Book of Martial. He says that the first and second hours of the day exhaust the clients who pay their respects to their patrons; but unfortunately no scholar has yet been able to determine the exact time in modern reckoning which is meant by "the first hour." The clients waited on their patrons a little after dawn. Martial complains, jestingly, that unless Paulus will sleep longer in the morning he cannot accept him as a patron; Pliny started before sunrise to pay his respects to Vespasian. Visits between equals were also paid in the early morning; but morning varies at different seasons, and the only thing about which little doubt can exist is that business was transacted before the mid-day meal, and that the duties of recreation were performed between then and dinner. "The third hour," according to Martial, "exercises the lungs of the noisy pleaders," and during the fifth Rome was variously occupied. At the sixth hour people ate and rested, and the seventh closed the day's work. After that "the games of the oily Palæstra" and the Baths attracted at least the masculine portion of the community; and between four and five o'clock, perhaps in summer at seven o'clock, the last and principal meal took place. "The ninth hour," says Martial "bids us press the piled-up couches at table;" and he doubtless refers to domestic habits during the cooler seasons of the year.

Perhaps the relations of patron and client varied less in the course of years than the form of the *area* or *vestibulum* in which the latter waited. This vestibule formed no part of the house at any period before or during the era of the Cæsars; in early times it was the open and unappropriated space in front of a house, and ultimately it was merely part of the pavement, or, indeed, the public street. Originally the *atrium* was the house itself. The house door, unfastened during the day, was closed at night; and clients wishing to "pay their court" to the master of the house, waited outside the door in the open yard, that is, in the *area* or *vestibulum*. There, if he had any merchandise for sale, he exposed his goods under a shed or within a booth; there lay his horse or his cattle; there his wagon and his litter were secured. There, hawkers of petty wares, of small comestibles and drinks, ensconced themselves. Ultimately, this space was enclosed, shops were erected fronting the street, and a narrow passage between them led into the open yard in front of the house which became the new-fashioned *atrium*; and the house,—the old-fashioned *atrium*,—became the more modern peristyle. Thus, the external façade of even a large house consisted of a row of shops, between two of which a small recess* led to the folding-doors of the *atrium*. In the "House of the Tragic Poet," at Pompeii, these were of wood; they turned upon pivots set in two bronze rings fixed in the door-sill, and they were secured by a portable cross-bar inserted in the door-posts on either side. The janitor, whose province it was to guard the entrance, has been qualified by Horace in one instance as surly, even though a slave; and other poets have deprecated the demeanour of one who was sometimes chained to his post.

The division of the house into two parts was not accompanied, as in Athens, by the enforced seclusion of the women. The Roman wife was not only the nominal mistress of the household; she exercised power at home, and could use her liberty abroad. Except in the morning, when clients and visitors filled the *atrium*, or when guests were lodged in the chambers on either side of it, the house was as much hers as her husband's; and, unlike her Grecian sister, she frequented theatres and amphitheatres; she was treated, if not as an equal, with becoming ceremony by the men. But that she seldom ventured into the public places is certain; and she was probably as rarely seen in the highstreets as females of her position in Cairo or Constantinople at the present day. On one of the ruined walls, however, recently found on the Palatine Hill, there is a picture of a woman with a bouquet in her hand, coming out of a house followed by a slave; and above the door is a window through which a man is looking while on a neighbouring balcony there are two other women. Indeed, the freedom enjoyed by respectable matrons,—the maidens were kept strictly at home,—is so indisputable that the few houses at Pompeii which contain a *gynæconitis* or *venereum*, secluded from observation are due to the caprice of a few, doubtless Greeks, rather than to any fashion of the Romans. In the earlier *atria* no such seclusion was possible; and then the wife, even among the better classes, cooked, or superintended the cooking of the meals. Becker's German editor or his translator, says she "sat enthroned" in the midst of her maids, though what the means we are unable to penetrate; but we do know from Suetonius, that Augustus, so ran the story, seldom wore any garment except one made by the hands of his wife, sister, daughter, or grand-daughter,—which may imply that in the time of Augustus it was usual to make such things at home, and in the time of Suetonius it was possible to buy them ready-made. The same writer adds that Augustus had always clothes and shoes (the latter with heels like those of Louis XIV. to make him taller) in his bed-chamber for any sudden occasion; and the dimensions of a Roman bed-chamber, such as Augustus inhabited, would preclude the possibility of profusion. In the beginning of the first century, clothes, money, jewels, eatables were kept in wooden chests under charge of the women; or, for greater security, they were sealed. But the rights,—we do not use the word in the exaggerated sense, which is now fashionable,—of the Roman matron could not have been of an exalted character. Even Cicero, who, in his adversity, wrote such pathetic letters to his wife, put her away with apparent facility and another whom he married, he lent to, some say he divorced for the sake of, a friend. Indeed, the fact that deformed children might be put to death by the father, and the right of "exposing," as in Athens, a new-born child together with the power he held until death over his sons, point to the undivided sway of the Roman *paterfamilias*.*

The fact that no Roman citizen could serve another, occasioned the purchase and use of captives for domestic service, and the importation ultimately of large numbers of males and females, of all ages, from different parts of the world. A public market was held for their sale, though the younger and better-looking of both sexes were often privately sold. There cannot be any doubt that, when private wealth was at its height, the slaves, even in an ordinary household, were considerable if not enormous in number; moreover, some of these slaves were permitted to cohabit, and others bred without permission. But in the time of Cicero, and in the time of Horace, little or nothing is extant to show that the household slaves were numerous. Pliny's figures are not worth repeating; but those who know how much space is required to lodge a company of soldiers, can judge whether even a hundred slaves would find standing-room in an ordinary *atrium* at Pompeii, supposing the *impluvium* to be full of water, and space left to circulate round it. Even though a poet in the reign of Augustus may have possessed ten slaves, the servants of a young bachelor in the India Civil Service exceed that number. The Roman kept a slave for every species of household work; the English in India maintain servants on the same divided principle. But in face of the reputed magnificence of the Cæsars we venture to believe that no one of them, and certainly not Augustus

* The *cœnaculum* was the early name for a dining-room; it was not till after the subjugation of Greece that *triclinium* was adopted in preference. When houses consisted of only one story, and the house-tops were made like terraces, the *cœna* or dinner was taken there probably in the open. A covering of some sort was extemporised; then perhaps trellis work; and afterwards a more substantial shelter was erected. This became the *cœnaculum*; and eventually all the rooms in an upper story bore that name.

* See Fragment of the Marble Plan, fig. 3, p. 311, *ante*.

* The word "familia," even in its restricted sense, included much more than is now ordinarily understood by "family." It means, according to Becker's elucidation, the whole collected society of a house, free and slaves, of the head of which stands a *paterfamilias*. It also means "everything which an independent man has by right in *potestate*, or which is under his control, as well persons as articles of property"; and in the time of Cicero "a Roman family resembled a small state in which the *paterfamilias* ruled with patriarchal authority."

was served with the pomp, profusion, and luxury, which in Calcutta hourly surround a viceroy at Government House. Into the question of those slaves who exercised polite arts it is not now our province to enter. Becker says that the Roman used his slaves for purposes of luxury, not of revenue, as was the custom in Greece; and in the second century such may have been the case. But it is certain that before the time of the Cæsars, and doubtless during their sway, slaves were a source of revenue to their owners. Cicero, writing to Atticus about the gladiators the latter had bought, says,—"If you had cared to hire them out you might have cleared your expenses at these two last public shows"; and at that time, according to the researches of Arbuthnot, no slaves sold so dear as stage-players, because they returned large sums of money to their masters.

An acquaintance with the habits of life in different parts of India is almost necessary in order to grasp, however imperfectly, the character of a Roman house and household. Both in Rome in the first century, and in India to-day, the masters are of one race, the servants of other and different races; and the distinction between rulers and ruled is there comparatively as great as it was in Rome. The reserve and desire for seclusion which a European feels at certain times among people of his own nation, disappear in the presence of dependents indubitably inferior. The saying that no man is a hero to his valet applies neither to the ancient world nor to that part of the modern one which retains some of the customs of antiquity. The frequent presence of the naked form insensibly weakens, not innate delicacy, but rather the affectation of modesty which is peculiar only to Western Europe. In an Indian country-house, a curtain which neither ascends to the lintel nor descends to the threshold of a doorway, is often the only barrier between the dining-room common to all the guests, and the bedchamber of each one or of each couple in particular. The bedchambers of the Romans were closed in a similar manner, with this exception, that in India the rooms are comparatively large and the doorways many. In the latter country a great deal of life is spent in the open verandah, and even on the house-top. The life of the Roman was principally a public one, and his private life was passed beneath the open sky, within the enclosure of his own house. The assumption of Mazois that the internal porticos of houses were filled with a transparent stone (a kind of talc), is most improbable. No doubt curtains or drapery of some sort were suspended between the columns, because holes, doubtless for metal rods, were observed in remains of columns at Herculaneum. The doorways were only closed with doors when security was necessary: thus the *tablinum* was provided with folding doors, for there the archives of the master's family and relics of his ancestors were preserved. The idea of privacy even in ceremonies connected with the toilette is not so much of Western as of modern origin. It is unknown in older countries among women, certainly chaste, who will change their only garment, while half immersed in flowing water, under the very eyes of a stranger. It is equally difficult for many—especially in England—to understand how a bright and "useful" hearth can exist without a chimney, or a dinner be cooked without the blaze of a fire. But in spite of Horace's description of the kitchen fire at an inn in Benetum, from which an attempt has been made to prove that the houses of the Augustan age were provided with chimneys, and in spite of the shaft over the baker's furnace at Pompeii, the little nooks in Roman houses which we call kitchens were used to prepare, not to cook, food. That undoubtedly was performed over a portable brazier, or in some kind of portable oven placed in the peristyle or the *atrium* or outside the house-door. In winter the rooms were warmed by similar though smaller braziers, placed under the porticos and outside the different chambers to permit the escape of the smoke.

The mode, place, and quality of the daily repasts are not subjects of speculation; the only difficulty is to know to what period to apply the various descriptions extant. Of the three meals, the last was the only important one; and their order is similar to that in vogue at the present day in Paris. With the first, eaten just after rising, the wife had probably little to do; it consisted of bread and salt, grapes, olives, &c.; and was taken, standing or walking, promiscuously, by the *paterfamilias*, perhaps, in the *atrium* while receiving his clients and visitors. The mid-day meal was sometimes of fish and eggs with wine. The dinner was of several courses; more attention was paid to its composition and more time spent over it than with the Greeks, who hastened to begin the *symposium* which followed, and which was the *convivium* of the Romans. The dining-room of the ordinary house does not seem to modern eyes large enough to entertain numbers; and the injunction never to let the guests exceed nine, three on each divan, had probably more than a poetical signification in the days of Horace. The poet consecrated most of his Odes to the praise of good eating and drinking, and he used the traditional licence when he sang, as Mr. Forsyth has lately rendered it,—

"For the bard who devotes to nine Muses his life,
Nine bumpers his portion shall be;
The Graces, aye fearful of quarrels and strife,
Forbid you to touch more than three."

But as the houses increased in size and strength the divans were made larger; and then each certainly held more than three people. The *triclinia* were ultimately superseded by a semicircular divan, just as in some instances the square or oblong peristyle gave way to a circular one, examples of which are graven upon the Marble Plan. A dinner of sixty covers is described in an Epigram of Martial,* but it has all the character of a burlesque. As we have already explained, dinners were often eaten, especially in summer, on the house-tops, and on festive occasions in the *atrium*, or, perhaps, in the garden of the peristyle itself. But that either the *triclinium* or the Grecian *œcus* was generally used for ordinary dinners is certain from allusions made by Suetonius to practices permitted even by the Emperors, and indulged in by their guests. The room was often so oppressive that men changed their dress wet through with perspiration. But the amorous escapades of Augustus, or the offensive manners allowed by Claudian etiquette during dinner, cannot be mentioned here. No evidence of refinement in the accessories of dining and entertaining accompanied the "magnificence" of the Cæsars. The winter *triclinium* was dark; windows were neither agreeable nor safe, and a hole in the roof was not always feasible. Oil-lamps, the flame of which protected by no shade blackened the walls and poisoned the air of the room, were suspended from the ceiling, or fixed upon bronze standards. The diners were crowded together on the divans; they reclined, men and women, with the head towards the central table, the feet pointing from it. The divans upon which they lay were stuffed, and soft cushions were placed loosely upon them. The table was circular, and not much larger than the little round tables in front of a Parisian *café*. It was washed with a sponge between the courses; no cloth† of any size or colour was laid over it. The only linen used at a banquet was a small napkin spread across the breast, and usually brought by the guest himself. When dinner was over, and before the *convivium* began, a chaplet or garland of flowers to twine round the brow was presented to each of the guests; on festive occasions strings of flowers were also worn round the neck, but no such decoration was thought seemly outside the house. During the evening the guests could cleanse their hands upon sponges held by boys for the purpose; and, on arriving, a slave offered water for hands and feet. The question of foot-gear was then obviously a matter of importance; a man going out to dinner walked in shoes, and his slippers or sandals to wear upon the divans were carried after him by a slave. At Trimalchio's banquet the floor was strewn with sawdust, tinged with crocus and vermilion, and with specular stone (talc) beaten to powder, this use of which was an invention of Seneca's day. The slaves sat or squatted at the feet of the guests, from whose fingers torn and broken victuals dropped upon the marble pavement; and Pliny relates that one Pergamus devised a pattern of floor in mosaics which imitated the crumbs and scraps that fell from the dinner-table.

These mosaic pavements "left the ground for the arched roofs of houses, and they are now made of glass,"—that is, of glass mosaics. So says Pliny, who was killed by the same eruption of Vesuvius which destroyed the neighbouring cities. He also adds that in his time gold and marble had taken the place of paintings; that marble mosaics covered the walls; and that in the time of Nero coloured veins and spots were inserted in the marble, to enhance its beauty and variety. The assumed intolerance of the "ancients" for a sham or an imposture, in such small matters as a "blind" door, is confirmed by better authority than a MS. of Pliny. In a house at Pompeii the imitation of a door, 6 ft. wide and 10 ft. high, is painted on a stuccoed wall, to correspond with a real opening on another side. Even the ring which served as a handle to the real door is depicted upon the painted one. The fashion of covering walls of houses with "pleasing landscapes representing villas, porticos, groves, fish-ponds, and seashores," was introduced during the reign of Augustus. In another paragraph from Pliny it is said that the walls are now tapestried with old pictures, and that the portraits of strangers are prized. Horace refers to painted boards or tablets, doubtless signs, hung outside the shops. In his time it was the fashion to suspend on the walls of the *atrium* waxen masks of deceased members of the family, arranged each in its separate niche, with the name and titles of the individual inscribed beneath. But, of course, these were the customs of the great, and Pliny's lament that the masks instead of being made of wax, were of silver, and that they were not taken from the life, or, indeed, resembled at all any of the fortunate owners' ancestors, shows an old fashion succumbing to imitation and consequent imposture. "Not only," says Pliny, with the devotion of an ardent compiler, "do we consecrate in our libraries, in gold and silver, or, at all events, in bronze, those whose immortal spirits hold converse with us in those places, but we even go so far as to reproduce the ideal of features all remembrance of which has ceased to exist."

Now that there seems to be a real desire to return to the study of Grecian and Roman art it will certainly not be inappropriate to remind those who indite rhapsodies about the "ancients" that they must cease to treat of them in sublime disregard of time and space. Any one attempting to describe the arts of the English people during a thousand years of existence would not venture to omit mentioning the period to which he alludes; but the thousand years of historical antiquity,—from the rise of Greece to the fall of Rome,—are jumbled up in ordinary minds with a vague suspicion that the Five Orders of Architecture have, somehow, something to do with periods of transition and change. A few scientific men and several amateurs do, however, pretend to identify peculiarities of Roman workmanship with a certain century or even a certain emperor; and having recently unearthed the foundations of what, once, must have been spacious and beautiful edifices they have been pleased to christen some "The Palace of Cæsar Augustus," and others "The Palace of Tiberius" his successor. But not a tittle of absolute evidence can be produced to show that buildings as substantial as those which must have covered the walls now laid bare on the Palatine Hill existed in the time of the Cæsars. On the contrary there is a great deal of likelihood, even from the hyperbolical and contradictory descriptions of the Palatium extant, that such buildings did not then exist. The burning, the falling in of ill-constructed houses, the insecurity and danger which were felt in the narrow, winding, half barricaded streets in every part of Rome before the great fire of Nero, are mentioned by all kinds of writers. The fires which frequently occurred during the reign of Augustus led to the formation of cohorts of night watchmen. The Cœlian quarter was totally destroyed in A.D. 27; ten years after, the houses on the Aventine Hill were levelled to the ground by a similar disaster. Traces of the fire which happened in the reign of Caligula were visible until that of Vespasian. How many times during the era of the Cæsars was that famous Circus at the foot of the Palatine Hill in flames? At the close of Nero's reign, the whole of the Palatine region was destroyed; and the newly-built, the scientifically-planned city which rose out of ashes, is that to which the Third Satire of Juvenal is pointedly directed. In the second year of the reign of Titus a fire, which lasted three days and three nights, destroyed a large portion of the city: among

* Mazois made the "Palais de Scaurus" of colossal height, because, much more than a hundred years after, Martial described a glutton, named Santra, mounting to his garret, "up some 200 steps!"—the Roman steps being double, in height of rise, English or French steps. Martial said of himself, "I live up three pairs of stairs, and those steep ones." But a little discretion in culling quotations is useful, even in matters connected with architectural restoration.

† It would be curious to learn whence the custom, hallowed by centuries, of placing a huge white cloth over the table in pictures of the "Lord's Supper" is derived. Yards of canvas have, however, yet to be painted before the world will grasp the anachronism sufficiently to be ashamed of it; and then, perhaps, artistic interest in the subject will have abated.

a host of other public buildings, the Baths of Agrippa, and the Theatres of Balbus and Pompey. But who imagines that the conflagrations and sieges which have taken place in the amphitheatres of Arles and Nimes, and in the theatre of Orange, have contributed even a hundredth part of the ruin they presented at the beginning of this century? Who would hesitate to light a bonfire within the Pantheon? Yet we are gravely asked to believe that solid walls, the foundations of which now lie uncovered upon the Palatine Hill, were not only a constant prey to the flames but that they were literally burnt to the ground. Nor is the celebrated tradition that Augustus transformed Rome from a city of bricks to one of marble without another interpretation which has a moral, not a material, meaning. According to an authority equal to Suetonius, the emperor said:—"Rome, which I found built of mud, I shall leave you firm as a rock." Indeed, the tone with which building-works of marble are described by Pliny shows that even in his time the use of that limestone in domestic architecture was not so general in Rome as to be unworthy of remark or explanation. Moreover the sentiment, shared by Horace and Varro almost equally with Tacitus and Juvenal,—which glorifies the past at the expense of the present,—is almost the ruling passion of a progressive age. But all the pæans sung during an invasion of luxury, all the dirges chanted over early Republican simplicity, are of small value to modern inquiry in the inevitable absence of any means of comparison. Cicero's houses and villas were palaces, as the word is now understood, to one whose eyes could still rest upon the hut of Romulus; Roscius was the greatest actor of his day, but what the standard of merit was then is not and never can be known. In the third century of the Christian era the magnificence of Rome as a city of vast and beautiful buildings is indisputable, but the rise of that magnificence * dates from the close, not the beginning, of the first century; and the tale of architectural splendour during the waning years of the Republic is a myth as complete as any that time and custom have sanctioned.

THE TWO WATER-COLOUR EXHIBITIONS.

THE senior and junior water-colour societies opened to the public simultaneously, on Monday last, two exhibitions of fully the usual, perhaps more than the usual, interest. It is significant to note that the prevalent qualities which mark the two exhibitions respectively are somewhat less contrasted than before; that the lines of the two societies seem to show symptoms of approaching one another more nearly. The change is perhaps more on the part of the younger than of the older society. It may be observed that the Institute collection is smaller numerically than usual; that the small room at the end of their gallery is shut off and the works confined to the large room, where even the screens are not filled. As this cannot result from any deficiency in the number of applicants, we are led to put it down to the adoption of a higher standard. At all events, the standard is becoming a different one; and that it is so is owing in great measure to the "new light" of some of the younger or more recent members or exhibitors. The "drawing-master's" art of blue water, golden skies, and Roman ochre foregrounds,—which one used to suppose might be manufactured in so many yards at a time, and cut off for each exhibition,—occupies a manifestly smaller area on the walls, and must hide its diminished head still more, with the development of so true and manly an art as that shown in the landscapes of Messrs. Collier, Syer, Wimperis, and one or two others, who, let us hope, will soon throw into the shade what may be termed the "Bay of Naples" style. Mr. Collier's "Fittleworth Common" (128) has much of the quality of style which characterised David Cox; it is in a pure and unaffected water-colour style, with no niggling and stippling, and full of the light and air of out-door nature. For the last two or three years Mr. Collier has been *facile princeps* at the Institute in this style, but Mr. Syer in his fine work "The Road over the Moor" (171), which has been judiciously hung as a kind of pendant or balance to Mr. Collier's drawing, runs the latter very hard, exhibiting perhaps greater force and concentration of effect, though less refinement of colour and manner in detail. The landscape "at Broxton, Cheshire" (57), by Mr. Wimperis, is a masterly work; the artist has been very fortunate in his choice of a subject, or rather has shown a true artistic intuition therein. Mr. Orrock holds up the same standard of broad and bold water-colour treatment in his "Drovers crossing a Yorkshire Moor" (43); he has given up making rainbows, and got rid of the mannerism which seemed to threaten in his former works, and become a true and honest painter of nature. How, in the face of this kind of art, certain old contributors can go on sending effects of stage moonlight and gamboge trees every year, and how the committee can go on hanging them, is a mystery; but, as we have said, there is a smaller dose than usual this year, and we must do justice to Mr. Warren, in noticing in his large landscape, "The Vale of Desolation, Wharfdale" (116), a comparative absence of mannerism,—at all events, of the particular mannerism by which we have known his works here lately. Mr. Hargitt shows somewhat new effect and a broader manner than usual in his large landscape entitled "Highland Poachers" (7), which has very fine qualities. One old exhibitor, who has never deviated from the path which his genius has marked out for him, Mr. Hine, still enchants us with the exquisite truth and delicacy of his representations of down scenery, and in his largest work, "The Weald of Sussex" (50), he seems even to surpass his usual excellence. That his drawings are very much alike in style and subject is quite true, but then they are not mannered, any more than nature is mannered; they are always the direct and conscientious transcript of nature in her varied tones and contours, and we no more get tired of looking at them than we get tired of walking out on the downs. Among other landscapes, those of Mr. Reed, Mr. May, and Mr. Penson are to be noticed. The "Entrance to a Pill" (155), by the latter, is a fine work, a view in some wild desolated moorland, but there should really have been a foot-note to tell us what a "Pill" is, unless the word is a misprint.

Somebow we have begun upon the landscapes, but there are one or two figure-pictures of real importance. Mr. Linton's "Ave Maria" (149) shows more of the deep and genuine pathos which we used to recognise in his works than in his last year's drawings, and is up to his highest excellence in regard to rich and sober harmony of colour and careful modelling; unless, in regard to one point, we are right in thinking that the legs of the helmeted soldier seated in the centre of the picture are somewhat short, and are not quite successfully drawn. The subject is the exhibition of a primitive little statue of the Virgin by a benevolent-looking old man to three soldiers. What the man is, and why he exhibits the figures, which he does by opening the door of the small shrine he holds in his hand, is not quite apparent: he sits on the left of the group, regarding them with a countenance the simple piety and solemnity of which are most pathetically rendered. The character of the spectators is well contrasted; one young handsome man who stands a little behind is indifferent; the helmeted figure before mentioned seems to show only a conventional respect; the real devotion is on the part of the hard, bronzed, moustached veteran, whose face tells a tale of no quiet or pacific life, but who at this moment is under the influence of a deep and genuine contrition. As a piece of drawing, the figure of the young girl on the right receiving alms from a rather sleepy-looking woman, is exceedingly true and graceful. The picture is one to be returned to; it shows some of the highest qualities attainable in water-colour art. In strong contrast to this is Mr. C. Green's remarkably able work, "Here they come!" (38), a study on the course at the Derby. The close observation and study given to every separate figure and physiognomy in the crowded scene is something really remarkable; each face seems to have a character of its own, and each figure to be a separate study in drawing and posture. One can hardly call the result a pleasing picture; it is a hard realistic study of personages mostly repellent in type; but it is wonderfully clever.

Mr. Small's "Striking a Bargain, Connemara" (187), is a capital study of Irish character, only wanting, from an artistic point of view, a little breadth of treatment in regard to colour, such as might combine the pictu more into one whole. There is fine feeling a composition in Mr. Clausen's "A Tale of t Sea" (174),—an interior rather inky and dis greeable in colour, but with much character the figures, especially in the fine-looking la who stands in the centre of the floor absorb in the story. Mr. Hugh Carter, who is obvious a follower of Israels, reproduces certainly mo of the manner than the intellectual quality his great original; but his drawings are nev commonplace; "Le Premier Pas" (58) strik us as the best. Another palpable imitatio almost amusingly so, is Mr. Staniland's flatte ing compliment to Mr. Linton in "A Ticklis Errand" (28). Mr. Seymour Lucas's sm work, "The Last Purchase" (24),—an o gentleman in the long green coat of t Georgian era examining a picture, is an admi able and original thing; we have seen t green coat before, but it is a very good artist property. Mr. Corbould has a large drawi of Lady Godiva led out on horseback by h ladies, in which much less is seen of Lad Godiva than usual; fortunately or unfortunatel as people take it. For ourselves we have con to consider her ladyship a nuisance, who shou be repressed; indeed, she is generally only name for a "study of the nude." In the pr sent instance the artist certainly aims at som thing more, but there is no reality about t scene.

Any one who, entering the other exhibition Pall-mall East, goes up to Mrs. Allingha drawing of the Chelsea Hospital Gardens (13 will see something much better than La Godiva, in the shape of the two charming mode English girls, brunette and blonde, who form t centre figures of the scene. Though on a sm scale, these figures are completely and minute studied and finished, and seem to us to be simp perfect: nothing more charming could be se than the figure of the young lady with h profile to the spectator, so handsome and di nified, and yet so gentle-looking. The drawi is of rare excellence throughout; perhaps t effect of the flowers may be a little too stro and spotty in the middle plane of the pictur but otherwise everything is in keeping, and it worth while to notice how thoroughly studied a even the little figures in the background; t little girl's head seen over the flowers on t right; the various actions of the children w hang about the group of pensioners under t tree, are all separate and individualised studi though some of them are small enough to on a sixpence. In a very different way M Walter Duncan's "Love, Scandal, and Politics (180) may be studied as a figure-subject of high order. The artist is one of the few w show a disposition and ability for the treatme of abstract and ideal figure-subjects; the press work illustrates, by three groups of half-leng figures, the three ideas indicated; the lady "Love" is hardly as attractive as one mig wish, though the figure is by no means common-place one; the group of three ladi representing "Scandal" shows most delica *nuances* of expression and character in the face and the decorative effect of the whole in regar to colour is exceedingly fine. A small sketc on one of the screens, of a girl asleep (213 gives additional evidence of the artist's power drawing. We ought to look for much from M Duncan. We have another very interestin figure-subject by Mr. Buckman, whose clev little work in the last year's Academy, of me pulling a rope against each other, attracted son attention. The present work, "The Business Pleasure" (65) is more serious in aim. Th artist calls it "a decorative treatment of modern subject," but we do not see how deserves the title "decorative," except from th mere fact that the figures walk in processio nearly in one plane. It represents a party strolling performers on the march, and th character in their manner and expression mu be the result of much study and observatio and combines humour with real feeling. The ol fellow with the drum on his back is like one Dickens's most successful hits, and every figur has its own story to tell. It is gratifying to se in the fine and free drawing of figures and lan scape, called "The Guide" (112), that Sir Joh Gilbert is turning his thoughts to somethin besides cut-and-thrust paintings of Mediæv *mêlées*. Among other subjects in which figure are prominent may be mentioned Mr. Thor Waite's "On the way to School" (51), and M Parker's "On the Bank of the Thames" (160 which latter represents a group of children on

* Mr. Fergusson, in 1874, wrote that "of all the palaces ever built, either in the East or the West, this [that is, the Palace of the Cæsars on the Palatine Mount] was probably the most magnificent and the most gorgeously adorned." Mazois, before him, had written,—"Le palais de Néron peut être regarde comme le terme le plus élevé ou soit jamais parvenue la magnificence Romaine dans les habitations."

nk, fishing, or looking on. There is a great al of character and good drawing in the ures, but the treatment of the faces, hands, ., seems somewhat hard and wooden. The ntributions of one of the newer members, r. Radford, we really complain of. They seem get more and more hard and uninteresting, and ought to know that all his ladies have heads too ge for them, conveying the idea that he must int from a model with an over-large head. t the whole of his art, as far as we can see, is thing but manipulation.

Among landscapes, what is good is very good, ough there is, perhaps, more of mediocre or nventional work than we usually see in this llery. Some old contributors are in unusual rce; Mr. G. A. Fripp, for instance, whose Mountains at the Head of Loch Eynart" (97), is nal to anything we have seen of his, especially ie in the delineation of what may be called e anatomy of the mountains, without losing rial effect; and Mr. A. P. Newton, whose Unveiling of the Mountain" (42), represent- g the mist clearing suddenly aside from a eat snow-covered mass in the centre of the pture, is in his finest vein, notwithstanding a tle conventionalism in the foreground. His all drawing of "The Upper End of Loch rridon" (282), should be looked at also. Mr. aftel and Mr. Dodgson, whose art moves in rrower limits, are nevertheless admirable in eir own style, perhaps above their usual andard. Mr. H. Moore's "Sunset in the High- nds" (12), would never be taken for his at st glance; the manner of it is unusual with m, and the effect puzzling at first; but it only eds to be studied to indicate itself as a re- arkable work, in which every touch has its ptive, and there is a wonderful degree of air the evening sky seen over the dark shoulder of e hill. Mr. Powell, in addition to some small udies, sends "A Gale off the Coast of Arran" 3), in which he almost surpasses himself in the awing of sea-water in motion. So truthful e the lines and movement of the water, that e almost expect the dark wrinkled mass in the reground to pass away behind the frame, and e succeeding wave to roll up to us: the wild ect of the distance, half lost in rain and mist, fine also; it is a great work, which impresses the more we look on it. As a contrast, go m this to Mr. Boyce's two small quiet scenes, n Dunster Park" (206), and "A Mill-pool in rrey" (276), drawings which are for a con- mplative moment, and require careful examina- n to realise all the delicate truth of tone and tail that is in them—the faint shadows on e grass in the one, the admirable perspective the other, which crowds so much into a mere rip of the paper. Mr. Clarence Whaite's large awing "The Castle Rock in the Vale of St. hn's" (168), is unquestionably grand in effect, spite of the mannerism of colour which, less trusive here than in some others of his works, e artist seems unable to get clear of. All the awings by Mr. Davidson are good, and in a od style; the largest, "A Common,—Carting eather" (87) has qualities which recall the der English school of landscape, as represented Crome and others. Mr. Albert Goodwin is t altogether at his best; the most elaborate his drawings, "Water Babies" (71) may be garded as a pendant to his "Mermaid's ave" (we think that was the title) last ear; the effect is a little too artificial, hich can rarely be said of this artist, e local colour of objects in the foreground eing obviously sacrificed to give more effect the semi-transparent brown tones of the ater. The small drawing called "Veiled nnlight" (68), with its tender gleam of light ver a nook of a country village, shows the artist's ighest qualities better, as also the view of "An ld English Town" (45), in which it is notice- ble how completely we can trace the road into e town, and the construction of the place, so hat we fancy we could walk into it; and this ality is obtained without the slightest hardness r sacrifice of aërial effect. Mr. Alfred Fripp is well presented by one or two important drawings; st his very charming view on the "Coast of orsetshire" (138), bright and delicate as it is, ill not compare for real nature with the two st-mentioned small works of his younger com- er: with all it merits, there is just that upçon of picture-making, of artificial tone and ffect, about it, which takes away some of our tisfaction in contemplating it.

We should have mentioned a drawing by r. Tadema, "An Interesting Scroll" (218) rused by a seated Roman youth, which, how- ever, is not (for him) a work of importance. Mr. Arthur Hopkins's study of a team of cart-horses in "The Plough" (82), foreshortened and coming up a bank towards the spectator, is admirable of its kind; and among "Still Life" drawings, of which there are not many, Mr. Brewtnall's "Geraniums and Wall-Flowers" (199), in a green jar, is excellent, and a much more satisfactory work than his more ambitious subjects are.

NEW STREETS AND STREET IMPROVEMENTS, PROMOTED BY THE METROPOLITAN BOARD OF WORKS.

SUGGESTED MODIFICATIONS AND EXTENSIONS.*

I shall not pursue the growth of London from humble beginnings in remote ages, nor even dwell upon the improvements effected after the Great Fire by Wren and his coadjutor, Hook, the land surveyor. They accomplished much, though private interests interfered, as they too commonly do, with the public good. But no more great fires can be expected, and as the recurrence from time to time of some great rectifying motive is advantageous, a comprehensive Streets Bill ought to be welcome. The scope of that now before Parliament is certainly immense. The task is too Herculean for even the sedulous promoters to contemplate without apprehension, and they accordingly propose no less a term than seven years for preliminary arrangements and ten years for actual fulfilment of these undertakings. It may be assumed that the proposals are in many instances of self-proclaimed utility, and that the outlay will not be incommensurate; but no one person whatever could perhaps give an equal judgment on them all, varying as they necessarily do in extent and urgency as well as situation. It is far at least from my intention to attempt so great a task. I do not forget that the Metropolitan Board of Works has achieved many great results, will in all probability effect many others, and maintain a well-earned popularity. Nor can the public confidence, of which popularity is the expression, have a better foundation than a knowledge that the measures proposed by the Board would stand a far severer test than a fair and candid review by a body of British architects.

My long and cherished connexion with the architect of the Nelson Column, and a yet more extended occupation almost under its shadow, give me a vivid interest in all that concerns Trafalgar-square, and the important section of town of which that square is the focus. As a part of the aggregate capital the West End has a very distinctive character. It is the seat of the Court, the Legislature, and the Government, the abode of Fashion, and the home of Learning, Science, and the Arts. Non-commercial, ornate, stately, it is regarded with pride by every British subject, and taken as the standard of comparison with other capitals. It contains the most venerated shrines of Christian antiquities in the country, and many memorable works by our leading architects, from Inigo Jones to Scott. Go from the Regent's Park to Pall Mall, from St. James's-street to Charing-cross, from the Nelson Column to the Houses of Parliament, and from Westminster Abbey to Victoria Station; thence, proceed, if you will, through Belgrave-square, till Mr. Burton's entrances to the Royal Parks and the Marble Arch may be almost seen at the same moment, and Piccadilly to the Circus. What a throng of impressions may thus be formed—what a store of reminiscences called up! It is surely a place where even an amending hand should be reverently and cautiously applied.

Victoria Station exemplifies in a striking way the changed methods of locomotion. The bason of a tidal canal has suddenly become a stage of platforms, rails, and trains, and a scene of the utmost activity is constantly presented. It is an almost universal centre for home and Continental travel. The number of omnibuses that arrive and depart is very considerable, and affords a ready index to the direction of street traffic. One line has a service every fifth minute in the direction of Paddington and Kilburn; another of the same frequency takes the Strand, Clerkenwell, and Islington. A third, with twenty departures in the hour, has its route through Parliament-street, St. Martin's-lane, and Tottenham-court-road. There is also a short line to Oxford-circus by Piccadilly and Bond-street. A separate line from southern Pimlico to the City passes along Whitehall and the Strand. Between Lambeth and Oxford-street several lines of omnibus pass Charing-cross, so that Parliament-street and the somewhat picturesque way between the Admiralty and the statue of Charles I. are already becoming too narrow. The omnibuses, of which alone I have spoken, are mere, though I think reliable, indicators of the general concourse of every kind, whether by vehicle, horse, or foot.

But while it is apparent that Charing-cross must be thronged, I find that, after a very persistent struggle, an omnibus plying in another direction,—namely, between Victoria and Old Ford,—has been discontinued. My inference consequently is,—and it is confirmed by inquiries into the postal correspondence,—that between the north-east and south-west districts the direct correspondence is very small indeed. It would, therefore, occasion no appreciable inconvenience if the proposed junction of Hart-street, Bloomsbury, and Piccadilly were at least postponed for a term, during which convincing statistics might, if necessary, be obtained, and more urgent operations effected. I may, therefore, dismiss street No. 1, and the contemplated demolition of some of Nash's work at the circus. The widening of Dudley-street would also be saved.

With regard to the major intercourse between the City and the West, I shall confine myself to the Piccadilly line, since the Oxford-street route, which may be said to reach from Acton to Cheapside, makes the northern boundary of the district I have perambulated, and is not itself affected.

Assuming that all the traffic from the west has arrived at Regent-circus, part may be expected to turn northward into the Quadrant. On the south there are two very capital roads, namely, Regent-street and the Haymarket, though it is objected that the latter, not being trumpet-mouthed, abuts rather abruptly on Piccadilly. Both are carried, by means of Pall-mall and Cockspur-street, easily down to Charing-cross, Northumberland-avenue, and Whitehall. But no continuing road of adequate capacity is presented from the end of Piccadilly eastward; and all who wish to reach Somerset House or Temple Bar are subjected to a painful waste of time and labour by the Charing-cross detour and a descent of 40 ft.

The difficulties in the way of a direct street from Piccadilly to Somerset House or St. Clement's Church appear insuperable, so that instead of a stem we must put up with branches. One of these has so obvious a direction along Orange-street and Hemming's-row as to admit of no alternative; but it may be as well to recite the clause of the Bill which provides for a new street, No. 3, commencing at the eastern side of Regent-circus, Piccadilly, "by the widening of Piccadilly on the north side; then by the widening of Coventry-street on the south side, and the widening of Prince's-street on the west side; and thence by a short length of new street from the south end of Prince's-street to St. Martin's-street at its junction with Blue Cross-street; thence by the widening of Orange-street on both sides, and by a widening of Hemming's-row on the south side, and terminating at the east end of Hemming's-row, in the parish of St. Martin-in-the-Fields."

I cannot help suggesting, as of superior directness and effect, a street of easy curvature, from the top of the Haymarket to St. Martin's-street, combined with the removal of the close and unsuitable buildings between this new street and Leicester-square, so that Leicester-square, of which the face has been so completely changed by an act of private munificence, may be to some extent enlarged, and the value of the liberal step alluded to enhanced. Points of economy should hardly have too much consideration here, any more than in a people's park, an embankment, or an avenue. What better return can be had than embellishments, of which all feel proud and none grudge the cost? What higher profit can be sought than the moderate extension here proposed of a public,—yes, essentially a people's square?

In connexion with this part of the scheme, I should wish the block of public buildings comprising the National Gallery and St. George's Barracks to be made insular, and a street of communication to be opened between Leicester and Trafalgar squares. Those among us who work in a sort of mental perspective, and form their ideas as it were in stereotype, will, I have no doubt, perceive some eligible chances here. As to the effect of a reduction in the length of

* Substance of a paper read before the Royal Institute of British Architects, on Monday evening last, by Mr. Thomas Morris, Associate.

the National Gallery, I think the elevation would bear it very well. The design is rather attenuated and deficient in height, so that it would be benefited by compression of the extremeties. The end in St. Martin's-place is a fine composition, and might be well repeated at the west. The south front is open to the objection that on either side of the central portico, in which (it may be remembered by some) the columns of Carlton House were applied, a group of three windows is thrice repeated, which I should say is once too often. By bringing the antæ together, therefore, omitting the last three windows that separate them, the design would be strengthened, and a good part of the space for the suggested opening obtained.

Then from the north end of Leicester-square, where Bear-street and Cecil-court now are, I should propose a short street into St. Martin's-lane.

Not on account of this street alone, but having in view the increased traffic through Leicester-square and Long-acre, on the opening of the new Law Courts, I should retain and exercise the powers for widening Coventry-street on the south side.

We may now consider the thoroughfares in the direction of north and south, or from Westminster to Bloomsbury, whether existing, proposed in the Bill, or here first suggested.

The Bill provides a new street (No. 6) commencing in Trafalgar-square, at its south-east corner, to be formed partly by widening the roadway on the eastern side of the square by widening St. Martin's-place; thence by a short line of new street commencing at Hemming's-row, and terminating at Castle-street; thence by widening Castle-street partly on the east and partly on the west sides; thence by a new street from the north end of Castle-street crossing Prince's-row, Lichfield-street, Grafton-street, and Moor-street to the south end of Crown-street; thence by widening Crown-street on the east and partly on the west sides, and terminating at Tottenham-court-road.

Now, to my mind, though with all deference to Lord Bacon's precept about the purpose of houses, Trafalgar-square is a place to look at and contemplate at leisure, just as Parliament-square and the river-side gardens, studded with memorials of distinguished men, are becoming. Its buildings, if not æsthetically unassailable, constitute a very noble assemblage, and the number and scale of its embellishments promote its stately character. The gradient is fortunately too steep and dangerous for a large accession of miscellaneous traffic (no prudent driver shoots the square without previously skidding his wheels), and danger, though it sounds anomalous, may prove, like the stylobate of St. Martin's Church, a protecting obstacle.

An excellent road might be formed with the greatest imaginable facility at the east of the church by widening the west side of Adelaide-street; and were that street continued southwards across Northumberland-avenue to Scotland-yard, and by a curve just saving the statue of James II. opened into Whitehall at Montagu House, a new and convenient way would be obtained. The Chapel Royal would be insulated and more favourably displayed, as it unquestionably deserves; for this edifice, by our earliest great master of Renaissance, is as precious as the most valued contemporary picture, and should be framed in a border of unoccupied space. We talk of vandalism, indeed, but what desecration could be worse than making this monumental edifice the neighbour and boundary of stables? In my plan, I indicate a planted enclosure on the site of Gwydyr House. The Crown estate would be advantageously developed, and opportunities afforded for departmental offices or official residences. A dual way is needed here, but has not hitherto been practicable, nor will the opportunity remain after the appropriation of Northumberland-avenue to other objects.

In its northern extension Adelaide-street would penetrate the close region of Bedfordbury, through which it would also be desirable to extend Agar-street as well as Henrietta-street, giving an additional access to Covent-garden, and affording several square and open sites for buildings on the model or artisan plan.

Reaching by a curve the south end of Upper St. Martin's-lane, that short but capacious way is utilised, and from its north end I should widen on both sides Little and Great St. Andrew streets. Then from Broad-street I should adopt the line of the Bill to Hart-street, and extend it to the British Museum, which is rather too important an institution to be wholly ignored. Notwithstanding the vast concourse of visitors it attracts, it remains apart from any direct line of public conveyances. The privilege of exercising private rights and obstructing by barriers what are in every other sense public ways, closes the passage through Gower-street. Such impediments must in time be removed; but they are in the mean time as obnoxious and hurtful as the tolls charged till now by the builders of bridges, and with much less show of reason.

I consider this improved way through Seven Dials preferable to the line of the Bill, because it would suit the traffic from Hart-street, which may be little in common with that from the British Museum and district beyond, which no doubt is and will continue to be large, whether bound for Piccadilly or Charing-cross. The expensive measure projected would not effect a saving in distance of 200 yards as compared with the Cranbourne-street route for a possibly limited number of passengers to Piccadilly. It does not, like New Oxford-street, fill an obvious want by connecting two great streams of business, while the other takes Charing-cross Station, and forms part of the line to Victoria.

In the formation of new thoroughfares at this time, it is a fatal mistake to omit the principal railway stations, for they are centres of intercourse to which the traffic of the future will necessarily tend, and to which the streets must perforce have reference.

There remains for consideration the way to Tottenham-court-road, for which, instead of the line of the Bill taking one side of Crown-street for its centre, I should project a branch from near Seven Dials. The principle by which I am guided in fixing this line is the direct extension of Tottenham-court-road.

Were this road continued in a right line it would enter the Strand at Bedford-street, and there are circumstances that render such an event far from impossible. From King-street to Maiden-lane Bedford-street is of very fair width, though the widening of the southern parts remains a desideratum, but the extension northwards from King-street to St. Andrew-street seems already partly prepared for. The line, besides, has advantages of its own, and would open out a new thoroughfare of value, both for ventilation and traffic. It would pass on the south of St. Giles's Church, and help to display that edifice. I have adopted the St. Andrew-street route on account of the great fitness of the line, but in densely-peopled localities the formation of new ways disturbs fewer occupations than the amendment of old ones.

No abler executive than the Metropolitan Board of Works can be imagined, but with regard to those deliberate and artistic functions on which the convenience, dignity, and grace of districts may depend through many coming generations, might, I humbly think, be referred with no sacrifice of propriety to such a body as this Institute.

In reference to the subject of cost, it is obvious that an indifferent line may be as expensive as a good one; but that which is most direct will also be most economical.

MESSRS. DOULTON'S NEW PREMISES, LAMBETH.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

ON Saturday afternoon last the Architectural Association paid a visit to the extensive premises which Messrs. Doulton are now erecting overlooking the Albert Embankment, about a quarter of a mile higher up the river than Lambeth Bridge. The buildings * are, for several reasons, more noteworthy than manufacturing premises usually are. Seen from the river or from the Millbank shore they already present an imposing appearance. Primarily they are, of course, intended to subserve business and manufacturing requirements, but Messrs. Doulton, as manufacturers of terra-cotta and faïence, have very wisely, even regarded from a mere business point of view (although æsthetic considerations have had due weight, as it is unnecessary to say to those who know anything of the firm and its products in the shape of art pottery), determined that the buildings shall serve the secondary purpose, if such it can be considered, of showing the adaptability of their products for architectural treatment. It was their original intention to have the buildings erected by contract, but finding there would be much difficulty in adjusting the conditions of a contract in regard to the artistic work to be executed, they decided to erect the buildings themselves, under the superintendence of the manager of their engineering department, Mr. John Phillips, C.E. The buildings visited on Saturday last were, during the latter part of last year, the scene of the (as we ventured to say at the time,* and as we still think) unjustifiable strike of bricklayers because two men, said to have been plasterers by apprenticeship, but who subsequently attained great proficiency in the special skill required in the adjustment and setting of architectural details in terra-cotta, were not withdrawn from doing the work for which they were most competent, the contention on the part of the bricklayers being that the setting of terra-cotta was bricklayers' work, and not plasterers'. So, perhaps, it may be—if they can do it properly, which is a disputed point. How the strike defeated itself,—how, in spite of "picketing," Messrs. Doulton were by degrees able to obtain bricklayers to carry on their work, until eventually the "pickets" were withdrawn, are matters known to our readers; but it is probably owing to Messrs. Doulton being free from contract engagements,—being, that is to say, their own builders,—that the strike was successfully resisted. Another point in which the buildings are especially noteworthy is the excellence of the materials employed, and of the workmanship with which those materials have been put together.

Proceeding to give a brief description of the buildings, we must first of all state that they consist of two nearly square blocks, known as "Block A" and "Block B," separated from each other by a roadway (40 ft. wide) leading to other premises of Messrs. Doulton. Block A measures 84 ft. by 81 ft., and Block B is about 80 ft. square. The style adopted may be described as Venetian Gothic, freely treated, and the dominant colour in both blocks is given by the red facing bricks of the walls, these bricks coming from a place called Rowland's Castle, in Hampshire. All details, such as strings, mullions, jambs, friezes, columns, caps, bases, voussoirs, &c., are in terra-cotta and faïence, buff, red, brown, and otherwise coloured, and all have been specially designed and executed by Messrs. Doulton themselves. No stone whatever is used in the buildings except for the staircases. Block A (the one nearest to Lambeth Bridge) has its central portion recessed about 2 ft. The principal entrance is through a porch opening into a projecting bay occupying the ground-floor portion of this recess, and is very richly treated. Above this porch, and springing from the first-floor level, is a highly-ornamental oriel, which is carried right up to the top of the building, terminating with a spire rising to a height of 120 ft. These constitute the chief features of the principal façade of Block A, but it may be stated that the whole frontage is very richly treated. The side and back elevations are as richly treated as the front one, with the exception of the omission of the entrance porch and oriel; and this remark applies to both blocks. Block A consists of a basement about two-thirds below ground-line; ground-floor, with floor-level about 4 ft. above ground-line; first, second, and third floors; besides a series of rooms in the roofs. The basement will be well lighted, and will have an area space all round it. Each block will be completely isolated from the other by the central road before referred to, and there will be no communication between them, either by means of subway from basement to basement, or by means of a bridge connecting an upper floor of one building with the corresponding floor of the other one. Block A is to be entirely devoted to sanitary appliances of all kinds, such as water-closets, urinals, baths, lavatories, &c. On the basement floor there will be a boiler for supplying steam to an engine of about 25-horse power for actuating the machinery used in the workshops on the upper floors, and the remainder of the basement will be utilised for storage purposes. Entering the porch before referred to the visitor will pass through a small lobby into a reception or waiting room, whence access will be gained to the large showroom, 80 ft. by 50 ft. by about 20 ft. high. This room will be lighted on three of its sides directly from the windows, but the central part of the rear portion of this room will be lighted by a skylight which forms the bottom of a square well, 24 ft. by

* In addition to the buildings here described, Messrs. Doulton are erecting a new block of buildings to be appropriated to the purposes of offices and studios, at the corner of High-street, Lambeth. Of this block of buildings we gave a description and view in the last volume of the *Builder*, pp. 1182, 1195.

* *Builder*, 1876, p. 931.

1 ft., the well being continued upwards from he skylight in question open to the sky, and ned with white glazed bricks supplied by the 'arnley Iron Company. Round this show-room 'ill be an ornamental continuous gallery. The nternal embellishments of this show-room and f the reception-room already referred to will be ighly ornate, and will partake somewhat of the haracter of the decorations of the Ceramic alleries and the Refreshment-room at the South ensington Museum. In this show-room will be xhibited all kinds of sanitary appliances, and n niches or spaces beneath the gallery and else- here it is intended to fit up baths, lavatories, ater-closets, &c., as they are when ready for se, with water laid on so as to enable visitors asily to appreciate the "points" in each peciality. Occupying the centre of the back ortion of the ground floor is the upper part of he engine-room and boiler-room, on either side f which are clerks' offices. The first, second, nd third floors are devoted to workshops, dmirably lighted, not only from the windows n all four sides of the building, but from indows opening into each side of the well- ole already referred to. There will be a urther series of workshops in the roofs. At ach angle of both Blocks A and B will be a kind f mansard or turret roof surmounted by iron resting. These towers (one of those in Block A eing used to mask the chimney-shaft of the rnace of the boiler referred to, the chimney- haft being, in fact, carried up inside the mansard r turret) will extend to the height of about 00 ft. from the ground, and will be the same eight in each building, both blocks being of the me height, and having their fenestration to orrespond as to height, width, and distance part of the openings. The general archi- ectural treatment of both blocks is very similar, he principal difference being that in the main açade of Block B the central portion projects ightly instead of being recessed, and has its ntrance, which will be chiefly used by work- eople, less ornate than the entrance to Block A. n the south façade of Block B is a similar oriel that in Block A, and this is carried up and rminated at the height of 130 ft., in the form of square spire which has had its point cut off and eplaced by iron cresting. The reason for this is hat the chimney-shaft from the boiler in the asement of Block B is carried up inside, and oncealed by the spire in question, just as the himney-shaft in Block A has been already de- cribed as being carried up inside one of the ansards or turrets of that structure. A stair- ase communicating from top to bottom of the uilding winds round this chimney-shaft. Block B entirely devoted to the manufacture of art ottery, such as Doulton ware, faïence, terra- otta, &c. In the basement will be a boiler 27 ft. ng by 7 ft. 6 in. in diameter, the heated pro- ucts from the furnaces being utilised, before scaping up the concealed shaft already referred o, by being made to traverse a flue which passes hrough a clay-drying chamber in the basement. he steam from the boiler is passed through pipes hich heat the drying-rooms for modelled clay. hese drying-rooms are provided one above nother in the centre of the ground and super- osed floors, occupying, in fact, nearly the same osition in Block B as the well-hole occupies in lock A. On the north side of the clay-drying hamber is a large room for mixing the clay, which passed on to the various floors by means f a lift. The south side of the basement will e used for storage. On the ground-floor will e a large workshop extending through the eight of two floors, in which will be modelled arge pieces of terra-cotta, such as figures, c. These large blocks of clay will be laced on trolleys while being modelled, and hen the modelling is completed, the work will e run into the drying-room preparatory to its eing fired, kilns for which purpose will be rected on the south side of Block B, and ap- roached from the modelling-room through two rchways provided for the purpose. The mez- anine over the ground-floor in the northern half f Block B will probably be used as a showroom or art pottery. It is 82 ft. long by 27 ft. wide, nd has two large bay-windows, one in the entre of the north front, and another at the astern end. The first, second, and third floors re devoted to workshops, with drying-rooms in he centre, while the roof will be utilised for a eries of rooms for studios, stores, &c. Want of pace precludes us from entering more fully into etail with regard to these fine buildings. We ay, however, add that the roofs will be overed with red tiles, supplied from the Pen-y- bont Brick and Tile Works, Ruabon; these tiles are hard and non-porous, having a vitreous surface, and an ornamental effect is obtained by cutting off the two lower angles of each tile quadrant-wise, so that the lower edges of the tiles when put together form a series of half circles. The iron girders and columns are being supplied by Messrs. Matthew T. Shaw & Co., and the lifts (one in each building) are by Ellington. The brickwork throughout is of stocks, faced externally, as before stated, with red bricks from Hampshire. The mortar is made of grey stone lime, coarse sand, broken brickbats, and cinders from the furnace, ground up by an edge-runner. We can only, in conclusion, just mention that at the extreme south end of the building, *i.e.*, the end nearest Vauxhall Bridge, there will be a fine chimney-shaft for carrying off the smoke from the kilns of which we have already spoken. This chimney-shaft will rise to a height of 220 ft., and, partaking somewhat of the character of a campanile, will be unique certainly as to its ornamentation, and probably as to some details of its construction. It will be square externally, but the shaft proper will be cylindrical, and lined with firebricks, with a specially designed air-space in the thickness of the cylinder for ventilation, with the view of counteracting the effects of expansion and contraction. We cannot enter further into details now, and will conclude by saying that externally the chimney-shaft will harmonise with the two blocks of buildings which we have roughly described, being of red bricks ornamented with stoneware, faïence, and terra-cotta of various colours. In short, it promises to be *the* feature of this part of the river-side.

NEW RAILWAY WORKS IN THE METROPOLIS.

Few persons have little more than a faint idea of the enormous extent and magnitude of the railway works at this moment in progress within the metropolitan area. It is estimated that the cost of the several undertakings of this character now going forward in London, in connexion with the various lines having their termini in the metropolis, is upwards of six millions sterling, and that no less than twenty thousand artisans and others are engaged upon them.

The Great Northern Company alone are expending upwards of 500,000*l.* in the construction of two new tunnels near Holloway, in addition to a very considerable enlargement of the King's-cross Station, which has just been completed, at a large outlay, Messrs. Cubitt being the contractors.

Not far from this locality the London and North-Western Company have, during the last year or two, been engaged in the construction of a new tunnel, 1,180 yards in length, at Primrose-hill. With the exception of about 150 yards, this tunnel is now completed, the whole of the retaining-walls on each side having been finished, and it is intended to open it for traffic in June. The tunnel has cost a little more than 250,000*l.* The company have likewise just commenced the erection of large goods warehouses at Broad-street, which will cost upwards of 80,000*l.*

The Midland Company are also engaged in the construction of very extensive works at different points within the metropolis. Amongst these may be named the large depôt and goods warehouses which have for some time past been in course of erection on the site of Whitecross-street prison, and in immediate connexion with the Metropolitan Railway, near Moorgate-street. The land alone cost the company 200,000*l.*, and the works, including the construction of the depôt, and the erection of the warehouses, will involve an outlay of 120,000*l.* The works are now almost completed, and the depôt will shortly be opened for the merchandise traffic of the company. Another undertaking which the Midland Company have just commenced is the construction of a shipping basin and wharf at Poplar, on the site of Messrs. Wigram's ship-building yard, eight acres in extent, for which the company gave 110,000*l.* The cost of the works, including wharfs, river walls, warehouses and sheds, and branch railways in connexion, is estimated at 300,000*l.*; and in connexion with this undertaking the Great Eastern and London and Blackwall companies are jointly making a new branch railway from Bow to the London and Blackwall main line at Limehouse.

The Great Eastern Company are carrying out very large and costly works of a varied character in the neighbourhood of Stratford, for the better accommodation of the traffic. The works consist of new duplicate lines, and station buildings. When completed there will be four lines of rails for the traffic between certain points. Two of these will be for the main-line traffic, and two for the Woolwich traffic and the local traffic beyond. The company are likewise expending a large amount in the conversion of the Bishopsgate Station for goods traffic. The alterations at the station include the re-arrangement of a large number of arches which it is stated will secure the company a rental of 4,000*l.* a year.

The North London Company are also engaged in carrying out new works which will cost 200,000*l.* The principal portion of these works consists of a new dock at Poplar, upon which a large sum has been already expended.

When the East London line was in course of construction between Wapping and its junction near Liverpool-street, a large piece of land was purchased by the company near Whitechapel for the purpose of erecting a goods station and warehouses in connexion with the Great Eastern line, and the East London Company have just commenced the construction of the works.

The works which have for some time been in progress by the South-Western Company for the purpose of enlarging their Waterloo Station, and the extension lines, workshops, and buildings, at Nine Elms and Battersea, are of a very comprehensive character. These works have already cost more than 200,000*l.*, and by the time of their completion the outlay will have reached 400,000*l.* Messrs. Perry & Co. are the contractors for the works at Waterloo, and also for the workshops and buildings at Nine Elms, and Mr. Shaw, of Earl-street, Westminster, is contractor for the Nine Elms extensions.

The new line which the Metropolitan District Company are constructing between their Hammersmith Station and the Shaftesbury-road Station of the South-Western line for the purpose of giving the District Company access to Richmond, will cost more than 800,000*l.* It is to be opened in May next. Messrs. Aird & Lucas are the contractors.

DWELLINGS OF THE BOSNIACS.

In Bosnia, as in most of the provinces in Eastern Europe, Turks and Christians look far more to cheapness than excellence in what they purchase, and good workmanship and conscientious labour are neither appreciated nor encouraged. The consequence is that the quality of the work executed by workmen is miserably inferior. The workmen are far from being competent in their several departments. The native carpenter begins by purchasing a few rough tools, and working under the superintendence and in aid of a more experienced workman, and in a few months considers himself a master of his trade. When a house is being built, or any work done in which day-labour is paid for, it is usual for the employer to overlook the workmen the whole day, or to pay some one else to do this. They appear to have no sense of honour, and even when overlooked their principal object is to do as little work in the longest time possible. When our consul, Mr. Holmes, first arrived at Bosna Serai he ordered a cupboard to be made by a native carpenter, and to his surprise the cupboard was produced fastened together with huge wooden pegs. Dovetailing and glue were beyond the art of the carpenter, and the boards exhibited all the marks of the primitive plane which had been used on them. There are a few Austrian carpenters who execute ordinarily good work, but they are all drunkards, being like most of the foreign settlers in Bosnia, the dregs of the country from which they come. No artisans of any trade or class, native or foreign, seem to take a pride in their work. There is no emulation, but each gets what work he can, exacts the highest possible price for it, and usually executes it in the most slovenly and inefficient manner.

The dwellings of the Bosniacs are, as may be supposed, ill-constructed, and unfit for the climate. They are built of sun-dried bricks and wood. The walls of the upper part of the house are of the thickness of one brick. The rooms are surrounded by open verandahs, on which all the doors open, and two sides of each room consist of rows of badly-fitting windows. On the ground-floor the walls are generally thicker, and one room is there set apart for the winter habitation of the whole family, where they eat, sleep, and live habitually. A large stove maintains a heat which, to strangers, is insupportable; and

as the crevices in the window-fittings are pasted over with paper, and the windows rarely, if ever, opened during the winter, the atmosphere, as may be supposed, is extremely unwholesome. The upper part of the house is abandoned, and is only used in summer. These are the habitations of the better class. The houses of the poorer are mere hovels, without any kind of comfort or accommodation, situated in the midst of reeking filth, and as unhealthy as overcrowded and air-poisoned dwellings can possibly be. The drainage is most incomplete, and dirt and filth are left to accumulate in all directions. Whenever the cholera or other epidemic declares itself, the people in the poorer and consequently more crowded and unhealthy quarters are decimated.

The wages of those trades which chiefly offer employment to foreign workmen are,—Native carpenter 2s. per diem, foreign carpenter 4s. 2d.; native bricklayer 2s., foreign 3s. 4d.; native tailor 2s., foreign 4s. per diem. A labourer of the country earns about 1s. 2d. For these wages a workman can live, and perhaps save money, provided he is content with native food and lodging, but not otherwise. This consists chiefly of coarse bread, of which even the best is gritty, from the bad millstones used in grinding, and full of other seeds; a few cheap and coarse vegetables of a common species; very rarely meat or poultry, and lodging which an English mechanic would consider uninhabitable. Mutton is only fair during a couple of months in the autumn and is not killed at all during the winter months. The best of the cattle are exported, and the animals killed for consumption are those which can work no longer or are likely to become useless or unsaleable from ill-health. Native butter is very bad and unfit to eat, the cheese is flavourless, and milk is poor and watered. Fruit is abundant and cheap; but as it is gathered before it is ripe, it is to a European uneatable and unwholesome.

THE CRYSTAL PALACE SCHOOL OF PRACTICAL ENGINEERING.

THE thirteenth term of the school closed on Saturday, when a large number of the friends of the scholars and of the school attended.

After the work of the students in the several departments had been examined, the company proceeded to the Lecture-room of the school, in the south tower of the Palace, under the presidency of Mr. James Brunlees, M.C.Inst.C.E., who presented the certificates that had been awarded, and made an appropriate speech to the students.

Thirty-seven students attended the lectures of the term, of whom twenty-two received certificates as having satisfactorily passed examination. The highest number of marks attainable in this examination is 238. J. R. Millidge was first, with 204 marks; A. R. Sennett, second, 202 marks; H. U. Wollaston, third, 194 marks. Each of these twenty-two students had a second certificate for merit in a special department.

Twelve certificates were awarded for merit in the Drawing-office,—C. W. Carrington, first; J. S. Boyer and T. E. Fuller, equal seconds; and W. J. Christie, third. Thirteen certificates were awarded for work in the pattern and smith's shop,—E. Daniel, first; G. F. Hardy, second; G. B. Jenyns, third. Ten certificates were awarded for work in the fitting-shop,—G. S. Firth and A. R. Sennett, equal firsts; T. R. Millidge and L. W. Toms, equal seconds; H. W. Wollaston, third.

In the Civil Engineering section, first term, the order of merit was,—S. R. Lowcock, first; C. W. James, second; H. V. R. Reed, third. Second term, eight certificates,—E. R. Royston and H. Wilson, equal firsts; A. B. Black, second; and A. Keeling, third.

The Forthcoming Sewage Conference.—In view of the sewage conference, which is to be held at the hall of the Society of Arts, John-street, Adelphi, under the presidency of the Right Hon. J. Stansfeld, M.P., on Thursday next and following days, the council of the Society of Arts have instructed Mr. Gilbert R. Redgrave to visit some of the principal towns in Lancashire and Yorkshire, and to prepare a report upon the dry systems of dealing with sewage and the various processes now in operation for the manufacture of manures from excreta.

THE GROSVENOR GALLERY.

THE Grosvenor Gallery in New Bond-street is to open on the 1st of May. As many of our readers know, it has been erected by Sir Coutts Lindsay, himself an accomplished amateur artist, in a spirit of enterprise which is surpassed, in the opinion of many, only by the discretion and good taste observed throughout. The buildings themselves have cost about 30,000*l.*, the total outlay, including freehold site, amounting to no less than 120,000*l.*; but it is understood that the property included not absolutely required for the galleries will return a percentage on this amount irrespective of the takings at the doors. The principal façade is in New Bond-street, and occupies the sites of three houses. The style is Italian Renaissance, harmonising with the central feature on the ground floor, the handsome entrance doorway, which is reputed to be the work of Palladio, and formerly belonged to the Church of S. Lucia at Venice. This doorway was bought by Sir Coutts Lindsay, and is executed in Istrian marble, with two columns of jasper marble on either side. On each side of this entrance will be a shop. The façade will be four stories high, the material used being Portland stone, highly enriched.* At present only one of the side shops is in progress, and the façade is only about half-way up, but this incompleteness of the exterior will not materially interfere with the galleries themselves. Entering from New Bond-street, the visitor will pass through a handsome vestibule, flanked with marble columns, to the staircase, 15 ft. wide, with niches for statues on either side. Ascending the stairs the galleries will be reached. The principal gallery is a fine apartment, 104 ft. long by 35 ft. wide, with the corners at one end cut off or "canted." The smaller gallery is 60 ft. long by 30 ft. wide. In addition to these there is a third gallery, with top-lighted recesses for the reception of statuary, and beyond this again a small room for the exhibition of water-colour drawings. The roof of the principal gallery is coved at the sides, and divided into bays painted a deep blue, each bay or panel ornamented with a representation of the moon in one phase or another, accompanied in each case by stars of different magnitudes. The bays of this coved ceiling of course range with the bays or panels into which the walls themselves are divided. This division is effected by sixteen Ionic pilasters, of oak, richly gilt, which came from the *foyer* of the old Italian Opera House in Paris. The roof principals were originally designed with tie-rods, but these have been omitted, their absence being compensated for by rods passing down behind the coved portion of the ceiling into the brickwork of the external walls. The walls themselves are built in Portland cement; in fact, throughout the whole of the building cement is used to the exclusion of mortar. Externally the walls of the galleries are faced with glazed red and white bricks. Internally they are battened with 2-in. battening, which has served for the fixture of a surface of 1-in. boarding, thus leaving a space of 2 in. between the walls and the boarding. This boarding has in its turn been completely covered with a thick waterproof felting paper, and on this has been stretched and fastened a very rich crimson silk damask from Lyons, this one item of silk wall-covering alone having cost about 1,000*l.* Precaution has thus been taken to insure dryness in the walls, and it may be here noted that it is not intended to crowd the pictures close together, but to leave a margin of wall-space between the frames of contiguous pictures. The floors are fireproof, on Phillips's principle, and will be ultimately covered with Arrowsmith's parquetry, although this will not be completed in time for the opening of the gallery. Ventilation is secured by means of galvanised iron louvres, opening by means of cords to any extent desirable, on either side of the continuous glazed lanterns or skylights of the galleries. Internally the space into which these louvres open is covered with perforated zinc, the unsightliness of which has been obviated by a happy thought of Sir Coutts Lindsay, who has himself painted a number of panels each containing two small doorways covered with the perforated zinc. On either side of these doorways are figures of cherubs and *amorini*, some engaged in holding festoons of fruit and flowers across the doorways. Although there is necessarily a certain amount of sameness throughout these panels, each having its two doorways and its floral festoons, each is differently treated as to the figures, and the effect is very pleasing. Ventilation is assisted by the arrangements made for the admission of warm fresh air in winter and cool air in summer. Fresh air will be drawn down flues from the top of the building, and will pass into a calefactory or heating apparatus, and thence by other flues to the galleries, through perforated metal panels in the skirting-boards. In hot weather the fresh air will be made to pass through iced spray instead of through the calefactory. The smaller gallery will partake of the general characteristics of the larger one. Both will be illuminated at night by continuous rows of gas-jets, lighted by travelling lamps, on the same principle as that adopted at the South Kensington Museum and elsewhere; and blinds are provided for excluding the direct rays of the sun.

Beneath the principal gallery is a large dining-room, 96 ft. by 35 ft. 6 in. This is divided into, what, if we were speaking of a church, we should call nave and aisles, by two rows of Scagliola columns with gilt capitals. These columns are sixteen in number, eight on each side, and are used only for ornamental effect; for, although they come underneath the main girders supporting the gallery floor above, they can be removed at any time without structural detriment. They will serve to facilitate the grouping of the furniture into compartments or bays. Adjoining the dining-room is a commodious buffet for those who wish to obtain light refreshments. In the basement are the kitchens and concomitant offices, replete with every convenience. The entrance to the restaurant portion of the building will be distinct from that to the "Gallery" proper. It will thus be seen that while Sir Coutts Lindsay has provided a series of galleries in which the æsthetic faculty may be ministered to, he has not been unmindful of the more material wants of mankind. It is stated that some of the leading members of the Royal Academy will support Sir Coutts Lindsay in his enterprise, among them being Sir Francis Grant, the president of the Academy, Mr. Millais, Mr. Leighton, Mr. Poynter, Mr. Watts, Mr. Leslie, and Mr. Alma Tadema; and it is also announced that the undertaking has not been prompted by any spirit of animosity or jealous rivalry with the old-established societies of artists. For revenue, we believe it is intended to rely almost entirely on the ordinary shilling admissions, as exhibitors will not be charged for space, nor will they be expected to pay percentages on sales. It is contemplated to ultimately extend the scope of the galleries to music, and ample ground has been secured on which to build a large concert-hall.

The architect from whose plans, and under whose superintendence, the buildings have been erected, is Mr. William T. Sams, and the builders are Messrs. G. H. & A. Bywaters. The works were only commenced in July last, and were greatly impeded not only by the heavy rains of the past winter, but by the numerous injunctions applied for by adjoining property owners who were desirous of maintaining their ancient lights unimpaired. The work has not been done by contract, but by "measure and value," the surveyors employed being Messrs. J. & A. E. Bull. The Scagliola columns before referred to were supplied by Messrs. Bellman & Ivey; the gas-fittings and cooking apparatus were supplied and fitted by Messrs. Jones Brothers, Down-street; the plastering is by Mr. McManus, of Kensington; the heating and hot-water apparatus was supplied and fixed by Messrs. Herring & Son, Chertsey; and the ironwork was supplied by Mr. Bryant. Mr. Laidler was the clerk of works. We are told that the paints and enamels of the Silicate Paint Company have been used throughout the whole of the building.

The public will have reason to thank Sir Coutts Lindsay for a new pleasure.

* Of this we shall give a view hereafter.

A Casket.—The Baptist Missionary Society are about to present to their late secretary, Dr. Underhill, a testimonial, in the form of a casket of fine gold, of the Cinque-cento style, designed and manufactured by Mr. J. W. Benson, of Ludgate-hill. The obverse side contains a carved view, in ivory, of Benares. In the pilasters of the casket are introduced the sugar-canes, Indian corn, the vine, and bamboo. At the four corners are carved figures, in ivory, representing natives of Brittany, Jamaica, China, and India.



THE GROSVENOR GALLERY NEW BOND STREET, LONDON BUILT FOR SIR COUTTS LINDSAY, BART—Mr William Thomas Sams, Architect.

THE ART-UNION OF LONDON DISTRIBUTION.

The annual general meeting of the members f the Art-Union of London was held on Tuesday ast at Willis's Rooms, St. James's, for the purose of receiving the Council's report, and for he distribution of the amount subscribed for the urchase of works of art for the current year. ord Houghton, the president, occupied the hair.

Mr. T. S. Watson, secretary, read the report f the Council, the most salient points of which re as follow:—

The Council have to report to the subscribers that the sum ollected, for the year just closed, amounts to 15,586*l.* 4*s.* he great depression in every branch of commerce, in ll parts which has for a long time prevailed, and other ell-known causes, led to the expectation, that our funds ould sustain a greater decline than is thus shown from he unexampled amount produced by the exceptional ttractions of the engraving given for the last two years.

A design for a Tazza in brouze, founded on Schiller's oem of "The Driver," was made for the Society, by Mr. Vorrell, and a number of these will form part of the rizes to be allotted to-day.

In reference to the China Tazzas, which were given as rizes at the last distribution, the Council have to beeak the indulgence of those members to whom they ere allotted. Unforeseen impediments arose in consequence of the entirely new *form* which the potter was alled on to produce, technical difficulties connected with he baking had to be surmounted, and a great many casts ere spoilt in the process, before success could be chieved. A perfect work has now been secured, and, in very short time, all those entitled to copies will be in ossession of them.

The following is a brief summary of the receipts and xpenditure; a detailed account will, as usual, be printed n the report:—

Amount of subscriptions		£15,586	4 0
Allotted for prizes.....	£7,810 0 0		
Set apart towards providing works of art for accumulated payments	626 10 0		
For print of the year, almanack, exhibition, report, &c., and reserve.....	4,474 12 10		
		12,911	2 10
Agents' commission and charges, advertisements, printing, postage, &c.....		2,675	1 2
		£15,586	4 0

The amount to be expended on prizes will be thus llotted:—

40 works at	£10	each.
30 ,, ...	15	,,
26 ,, ...	20	,,
20 ,, ...	25	,,
16 ,, ...	35	,,
14 ,, ...	40	,,
12 ,, ...	45	,,
10 ,, ...	50	,,
8 ,, ...	60	,,
6 ,, ...	75	,,
5 ,, ...	100	,,
3 ,, ...	150	,,
2 ,, ...	200	,,

Ir. Armitage's oil painting of "Joseph and Mary," £400.

To these will be added:—

A painting on pottery, by P. Levin, of an allegory of "Faith."
6 Bronze Statuettes, "Cimabüé."
6 Townley Vases.
20 China Tazzas.
10 Porcelain Statuettes, "Net-mending."
25 Bronze "Diver" Tazzas.
100 Statuettes, "Whittington."
20 Folios of Autotypes from the Society's Prints.
30 Silver Medals of W. Mulready, R.A., by G. G. Adams.
40 Volumes of Etchings.

These, with the prizes given to unsuccessful members f ten years' standing, will make the total number of rizes 701.

Since the last annual meeting the Council have lost, by eath, one of its most useful and energetic members. Mr. William Smith died suddenly, on the 6th September last, hen returning from the funeral of a friend. By the eath of this distinguished art-antiquary the public re great losers. Famous throughout Europe for is knowledge of engravings, and above all for profound earning with regard to portraits, Mr. Smith devoted all he leisure of his later life to the service of those whose ursuits were like his own. Few men could approach im in extent and accuracy of knowledge. In England, rance, Germany, and Holland his name is widely known s a collector of prints and drawings; and he was one f the best judges of prints on record. He was for many years deputy chairman of the National Portrait allery. He devoted much time and attention to the ffairs of this Society, and great assistance was derived rom his thorough practical knowledge. . . .

In addition to the vacancy in the Council caused by he death of Mr. Smith, the Rev. Ed. Coleridge and C. J. eaf, esq., retire. R. H. S. Vyvyan, esq., J.P., and rthur Grote, esq., have been elected Members of the Council, subject to the confirmation of this meeting.

The members are aware that, on the incorporation of he Society by royal charter in 1847, a reserve fund was stablished, to be formed by putting aside every year t per cent. of the total amount of subscriptions,—by he accruing interest of the amount thus acquired,—by he balance on the sale of catalogues at the exhibition,—nd by the amount unexpended by prizeholders. The otal sum thus accumulated now amounts to upwards of 6,000*l.* This reserve was declared to be made "for the urpose of purchasing or building a gallery, and for proiding a permanent fund for assisting in carrying out he objects of the Society."

The house now occupied by the Association has long een found inadequate to the proper display of the colection of works of art of various kinds, forming the stock f the Art-Union, as well as the operations involved in the onvenient packing and despatch of the large amount of engravings and prize-works which have, each year, to be distributed to every part of the world; and, after considering several sites, which presented themselves, and which had, for one reason or another, to be rejected, the Council have succeeded in acquiring a piece of ground in the Strand, adjoining the Savoy, of an average width of about 36 ft. by 85 ft. in depth, on a lease for eighty years, from the Duchy of Lancaster, on which it is proposed to erect a building suitable in all respects to the Society's wants. The able advice and services of Mr. Ed. Barry, R.A., have been secured, as architect of the building, and it is expected that, in a few months, a new start will be made, in a new home, in which, increased prosperity may be hoped for commensurate with the enlarged facilities thus afforded for developing the objects of the Association.

In their report, in the year 1873, the Council felt bound to notice numerous schemes "which borrow the name of Art-Union, and improperly seek to avail themselves of the services of the Society's agents, although such projects were never contemplated by those who framed the Act of Parliament by which our proceedings are sanctioned."

The Council now feel it their duty to remark on a somewhat similar matter, which, in the last few months, has attained very large proportions. So great, of late years, has been the supply, through the agency of this Society, and kindred means, of really good impressions of high-class engravings, that it is difficult to find a house of any class that has not one or more of such examples to adorn its sitting-room; and yet, by playing on the natural tendency of human nature to take any bait that is covered by some outward show of mystery or ceremony, a host of schemes has been set on foot, with the effect of spreading broadcast, through the land, a flood of miserable ghosts of impressions from utterly worn-out plates, by engravers, who would have shuddered at the notion that their works would ever be so abused. . . . .

The Council would not have it supposed that they desire to monopolise the production of cheap art. Let art be as *cheap* as practicable, so that it be decidedly *good*. We gladly hail the productions of such works as the *Art Journal*, the *Portfolio*, the *Illustrated News*, the *Graphic*,—which constantly bring out good engravings, at a very low price; but we feel that we should not be doing our duty, in the position which this Society has attained, unless we sent forth a cry against the issue of such generally worthless productions as those to which we have above alluded.

The great popularity which attended the first appearance of the marine subjects, "Tilbury Fort," "Dutch Trawlers," and the small prints of Coast Scenery; and which continues to cause frequent demands for them; induced the Council to think that another plate, of a similar kind, might be acceptable to the subscribers, and they arranged with Mr. Edward Duncan, one of the first artists in that kind of subject, to produce for them a drawing, "The Return of the Life Boat"; from which Mr. Arthur Willmore has made a most interesting and effective plate; being of the same size as "Dutch Trawlers," and an appropriate pendant to that work. The drawing itself will be the first prize in the distribution next year. The scene is laid off the Yorkshire coast, near the entrance of Whitby Harbour; a wrecked vessel is seen in the distance, and in the foreground is the life-boat, having on board the rescued crew, so near that a line is being thrown to the crowd of men standing, ready and anxious, to haul the boat on shore. . . . .

Amongst the notable events of the past year was the opening of the Great International Exhibition, at Philadelphia, on the centenary day of the birth of the Great Republic; and it cannot be denied that, for vastness, and interest in the objects exhibited, it has not been surpassed by any undertaking of a similar kind. As far as mere novelty and freshness go, no such undertaking can well compare, to English people at least, with our own Exhibition of 1851. Everything was then new and striking; the idea, the building, its decorations, and its contents; and more than all, perhaps, the additional charm that was felt, from the fact of the Royal patronage accorded to it, and from the intimate personal interest taken in it by the much-lamented Prince Consort. It would be obviously impossible to repeat or rival such an exhibition as this was, all things helping and aiding it; and, in respect of want of novelty, all subsequent enterprises of the kind labour at a disadvantage.

However, this particular Philadelphia show seems to have been an undoubted success, and, to Englishmen especially, a most gratifying circumstance was the greeting afforded by the loud and often-repeated shouts of congratulation of the American public when the awards to the English contributors were announced, showing how completely every feeling of soreness which it cannot be denied survived for many years the declaration of independence of the mother country, has given place to friendship and affection in the breasts of our cousins across the Atlantic.

One evidence of this feeling was the prominent place given to Messrs. Doulton's fine terra-cotta reproduction of Mr. John Bell's magnificent group of "America," from the base of the Albert Memorial in Hyde Park. Thinking that the production of a reduced copy of this group would be a success as a work of art, the Council have commissioned Mr. Bell to make a reduction of the work for the Art-Union. This will be cast in bronze, and repetitions of it will form prizes in a future distribution.

It has been urged by some that because the excellence of the works produced by the artists of old arose from the circumstance that each lovingly studied out, and executed the object of his labour, there should be none of the reproduction by mechanical means which prevails in the present day.

Those who would thus limit the production of objects of beauty are in a kind of dream which ignores the fact of the increase of population. It would, no doubt, be a happy state of things if each household could possess one or more examples of works of art, exhibiting the individual phase of mind and treatment of an individual artist; and in some Utopia, where the number of households, and the individual means of paying for production, bore some proportion to the number of artists qualified to produce; to which, in the times of Greece and Rome, there may have been an approach, this condition might be attainable; but in these prosaic days we have to awake to the fact that the people craving for works to adorn their dwelling-places are numbered by millions, and in this, as in politics and many other matters, we are forced to put up with a compromise, and to ask whether, since only one person may have the means or the inclination to become the possessor of a beautiful vase in gold at a cost say of 500*l.*, other one thousand persons are not each to have a reproduction of the same work in electro-deposit, the whole number of copies not costing more than that sum.

Benvenuto Cellini made his beautiful ram's head cup, doubtless for one of his rich and noble patrons, and probably made no repetition of it; are we therefore to be debarred the pleasure derived by hundreds of persons from the possession of one of the admirable copies of this work which are now to be had? Only one bust of "Clytie" probably was ever chiselled by the author of it: is it a reason for not producing the thousands of excellent copies of the work distributed by this Society, that we may not, in each case, be able to preserve quite that full amount of life and spirit which could be imparted only by the hand of the first producer?

A considerable amount of public attention has been drawn to some remarks not long since made by Mr. E. J. Poynter, R.A., on the present state of art and art-manufacture in this country, at this moment, which appear to coincide with the views of the Rev. Mark Pattison, Rector of Lincoln, who expressed his belief that art in England had retrograded rather than advanced during the last thirty or forty years. To oppose to these views we have the authority of a nobleman, who, as an accomplished man of the world, occupying a high position in the country, has had the best opportunities for studying the subject. Earl Granville, in an address to the students at the Lower School of Art, maintained that taste in this country has materially *improved* during the above period, and, to any one who recalls the designs on carpets, curtains, wall-papers, china ornaments, and the ordinary crockery-ware of every-day use twenty or thirty years ago, and compares them with what are now to be seen in the shops, it must be at once evident that the improvement in point of taste is very great and very wide-spread. Of course, too many ugly things are still produced. Good taste is not a plant of rapid growth, but it would be as logical to argue that because there are still to be found spots from which disease, in one form or another, is never absent, therefore all our sanitary laws and preventive measures have been thrown away, as to assert that the occasional appearance of objects in bad taste proves that all our art-teaching has been in vain.

Can it be maintained that the number of exhibitions of pictures now, compared with twenty years since—that the distribution of thousands of pictures, and hundreds of thousands of engravings by this society, have had no effect on public taste?

Ample evidence of the great advance in the matter of design will be found in the engravings of objects of art-manufacture given from time to time in the *Art Journal*, whose able conductor has devoted so much energy, judgment, and zeal, to the improvement of the arts of this country, and who, more especially, succeeded, by preserving attack, in driving from the market those spurious imitations of old masters, which alone found purchasers amongst our art-collectors thirty years ago; in place of which fabulous prices are now paid for the works of British artists, both of present and past times, and for this, if it were the only good thing he had done, Mr Carter Hall deserves a large amount of gratitude from the artists of this country. At the time named not a manufacturer, whether of textile fabrics, ceramic ware, or metal work, had a regular artist in his employ; all patterns were either imported direct from abroad, or were clumsily made up of parts from existing designs. Now there is not a large firm of manufacturers of almost any kind that has not its artists' room, where several designers are continually at work to supply the wants of the establishment. It is true that at an earlier period Wedgwood employed Flaxman to make designs for his pottery, but this only makes the neglect of similar means at the time named the more remarkable.

Enormous efforts have been made in England during the last thirty years to compete with France, and these efforts have been successful,—successful beyond hope, when we consider that public art-education in France is the growth of centuries, and that it was unknown in England half a century ago. Yet we are told that all our labours have produced fruit more worthless than that of the Dead Sea. It is not to be denied that to the Science and Art Department is due, in a considerable degree, the improvement which has taken place. The authorities there are called upon to adjudicate annually on many thousands of original drawings, awarding prizes to the most meritorious, *i.e.*, the most practically useful. How many such were produced in this kingdom thirty years ago? Perhaps on this subject the opinion of a foreigner will carry more weight than that of many natives; and this is what was said, a short time since, in a periodical of the highest reputation in Paris, called *L'Art*. It began by saying that "twenty years ago the French were our superiors in art, and that in all that related to the arts and manufactures they were uncontested." Then "we are not in that position *now*. The manufactures in England, thanks to their merchants, thanks to the models which are cast into the country, thanks to their schools of design, are improving every day to an extent which you will hardly believe possible."

Closely bearing on this subject were some remarks lately made in a leading journal, that "the amusements sought by the people at set times, such as Christmas and Easter, and the spirit in which they are conducted, are, perhaps, better evidence of the progress they are making towards a higher or a lower style of life than can be gathered from their serious employments. We think it is observable that a much higher class of recreation is rapidly making way among the working people."

"There is a far more common yearning for the beauties of nature than was not long since the case amongst them. The entertainments which appear to excite most interest, and to draw together the largest crowds, were precisely those which were more than others intellectual in character."

"These facts appear to us to indicate quite as rapid a growth as could have been expected from the means which the nation is at no small expense, employing to educate the people."

"It may be calculated that every year draughts off, from a lower to a higher social state, an appreciable number of those who have received the advantage of our public elementary schools, and the various provisions which have been made in almost every populous place for the recreation of the masses who are daily immured in the cares and toils of life. The work remaining to be done is, truly, heavy enough, and will demand time for its success. But our labour has not been in vain. We have only to persevere in order to reach the goal of our best and most patriotic aims."

Lord Houghton.—I rise to move the adoption of the report, in my capacity as president of this excellent institution. I shall detain you but a

very few moments from the far more interesting occupation of finding out whether you are prize-holders or not. The report is extremely interesting, as you will see when you have it in your hands. It does not, however, state the large increase in the number of our subscribers which came in with a rush at the last moment. I think I am correct in saying that this year there was an increase of about four thousand subscribers, from various parts of the country, within a very few hours. These are days of surprises, and I only wish that all surprises we have to undergo were as agreeable as this. The report records the death of that excellent art-antiquary, Mr. William Smith, who was one of the most useful and energetic members of our Council. He was a very original man, and only this morning I heard of a curious instance of the vivacity of his appreciation of anything good. A sculptor, who happens to bear my name, was taking to the South Kensington Museum a small bust for the Byron competition. It was modelled in clay, and he was taking it there to compare it with some engravings. Mr. Smith happened to see it, and asked "What have you got there?" The sculptor showed him. "This," said Mr. Smith, "is the best bust of Lord Byron I have ever seen. But you must come and see my engravings,"—alluding to a splendid collection of portraits of the poet which he possessed. My friend only this morning told me how much he regretted the sudden death of Mr. Smith, and he added that it was strange he should have had the chance of making the acquaintance of such a distinguished man so suddenly, and that he should so suddenly have lost him. I will not enlarge upon what has been said in the report about the abuse of the name of "art-union," which has been unworthily taken advantage of for the sake of distributing throughout the country a very large number of inferior prints. I hope that the effect of the exposure of this imposture—for such it must be called—will be to increase the anxiety of all persons who wish to get good value for their money to join this, the true Art-Union, where they are sure, at any rate, to get something not only worth their money, but something that will be of advantage in the culture of themselves and their families. You have heard that the subject now to be put in hand for our next engraving is "The Return of the Lifeboat." You will remember the popularity of "Tilbury Fort" and "Dutch Trawlers." This engraving of the lifeboat will carry into thousands of English homes the memory of that interesting event which occurred on the sea coast of the county to which I belong, namely, at Whitby, in Yorkshire, where a schooner, attempting to enter the harbour in a heavy surf, went ashore south of the harbour's mouth. I myself saw that stranded vessel after the crew had been rescued by the wonderful efforts of the lifeboat men of the town. Perhaps there is no form of human energy more interesting than is afforded by such an incident, and there is no occasion on which the valour, the endurance, and the power of the English sailor—the power of self-sacrifice, of feelings of real humanity, and of a sense of duty—are shown to greater advantage. Such deeds are only equalled by that of those brave miners over whose destiny the interest of England has been watching for the last ten days. Allusion is made in the report to the International Exhibition at Philadelphia. I was not present there myself, but I was in America a short time before, and I was very much struck with the circumstance that in almost every well-to-do house in that country you will find some interesting works of art. You hear a good deal said about the love of the American people for material interests, for nothing but the "Almighty Dollar"; but if they use the "Almighty Dollar" in the purchase of works of art I am sure they are doing great good to themselves while at the same time they are spreading a sympathy for art and culture throughout that wonderful domain of English-speaking people. Every year there go forth from this country to what may almost be called the uttermost wilds of the earth myriad representations of the art and ingenuity of England. Not only does the Art-Union itself supply a considerable number of its own works to America, but I have no doubt, for instance, that from the wonderful collection which will be sold at the end of this week opposite * here, some examples, as is the case with every great art sale, will find their way across the Atlantic. I will merely say, in conclusion, that in the contest between Mr. Poynter and Mr. Mark Pattison on the one side, and Lord Granville on the other, my sympathies, and my knowledge as far as it goes, are all on the side of Lord Granville. It is not only extremely improbable in itself that all the efforts in the way of art-culture in England should have been entirely useless, but I cannot conceive that any person who mixes with the people of this country in any large sense can really believe that the popular taste for art has deteriorated within the last twenty years, knowing myself the utter meanness, poverty, and want of interest, that were exhibited many years ago in so-called art-products and in general manufactures. I compare, for instance, the engravings that were popular, and the caricatures that were sold then, the designs for plate, china, &c., with what these forms of art represent now, and the comparison makes it clear to me that it is an entire paradox to say that we have not been great gainers in all these particulars. Look at the wonderful works of the Mintons,—of Coalbrookdale; look at the very forms of popular humour as exemplified in the cartoons of *Punch*; look at even the smaller and less prominent forms of art, even down to scene-painting, for instance, and things which touch the popular taste, and I think it will be impossible not to see that the sense of colour—of harmony and richness of colour,—has very much increased amongst the people, and I believe also that the increase in excellence of design has been equally marked. It is in this belief that I assure you that this Society will do its best to continue worthy of your patronage. You have been told in the report that we now propose to expend the reserve fund which we have been putting by for so many years in adding to the art institutions of this great metropolis. This year will give to the public the Grosvenor Gallery, the great enterprise of Sir Coutts Lindsay, who has spent more than 100,000*l.* in providing an institution which will offer to many artists of great power whose names are almost unknown to the general public of this country advantageous opportunities of exhibition. We hope that next year we shall have the pleasure of opening to you an exhibition of our works in a handsome building worthy in its architectural features, by the genius of Mr. Edward Barry, of our popular institution, and one which will add at once to our street decoration and to the pleasure and interest of every subscriber to the Art Union. I will now call upon our excellent friend and enthusiastic vice-president, Mr. George Godwin.

* The Kensington House Collection at Christie & Manson's.

Mr. Godwin said he had been requested to second the adoption of the report, which he did most heartily, although he could have wished that the task had fallen to the lot of one who had been less often before them. It was a most satisfactory report which had been presented, and the Council had no need whatever to speak apologetically in any way. The past year had been one of disaster; there had been extraordinary depression in every department of trade; and these things, together with the cruel suspense in which Europe had been held for so long, had materially interfered with subscriptions to societies, and even with the comforts of homes. When it was remembered that there were more than 15,000*l.* subscribed to the Art-Union of London notwithstanding all these adverse circumstances, the meeting would agree with him that it was a subject for great congratulation. Moreover, if the amount subscribed was not quite so large as it was last year, there was a compensating circumstance in the fact that although the print for the year was not so important or so striking as those of some previous years, and had consequently not brought in so many new subscribers, it had not cost so much to produce, so that there was more money to be distributed in the purchase of works of art from the various galleries of the metropolis and elsewhere,—and no doubt the Council would put on its list the Grosvenor Gallery, whence it would probably derive some of the best of the Art-Union prizes. It was an admirable notion of an able man to provide a series of fine apartments in which good pictures should be seen with as much ease and pleasure as if they were in the visitor's own room. In the Grosvenor Gallery each picture was to have a space of wall-surface surrounding it, and no picture was to be "skied"; consequently the works exhibited would be seen to the greatest possible advantage. Allusion had been made in the report to the Philadelphia Exhibition, but no notice appeared to have been taken of the Paris Exhibition, which he earnestly hoped that all Englishmen who had the means, whether as artists or manufacturers, would do their best to support. The Prince of Wales was manifesting very great interest in the Exhibition, not only as a whole, but at the present time in respect of the constructive works now going forward so rapidly. The Palace on the Trocadero had already taken a shape which would astonish those who saw it; and so, in the art department, the great picture-galleries would be a particularly noteworthy feature of the Exhibition, in aid of which the French Government had voted a million and a half sterling. There were many other points of the report on which he should have liked to speak; as, for instance, the question as to the alleged falling off in public taste in art, which was discussed at the Social Science Congress in Liverpool last year. It was downright nonsense, and nothing short of it, to say that taste for art products in England had lately deteriorated, notwithstanding the assertion of two such eminent men as Mr. Poynter and Mr. Mark Pattison. Such an assertion needed no answer to those who had looked into the matter. He (Mr. Godwin) maintained that we had now more painters capable of doing good works, more architects capable of erecting good buildings, and more composers capable of giving us good music, than was the case twenty years ago. We failed, it was true, by some means or other, in the *highest* art work; we had plenty of good art, but very little of the highest; and it was a matter of the greatest importance that we should investigate this fact and see what was the cause of it. He thought that the Government might very fairly be called upon to inquire into this point. Before, however, art would have fair play in England, there must be more mural decoration appealing to the public, more commissions must be given to artists by Government and public bodies. It was not sufficient (though very necessary) to teach 70,000 or 80,000 people to draw. Means should be found for the employment of those who were able, by the decoration of our vestry-halls, town-halls, Government buildings, and such like, with good pictorial art, which would have an effect in educating the public taste. In the meantime, we should not be too eager for rapid progress. A breast-plate such as that found by Dr. Schliemann, which took us back centuries before Phidias, served to show how slow had been the growth of great art. In conclusion, Mr. Godwin spoke in high terms of commendation of the labours of Mr. Watson and the other members of the staff, whose assiduity in the discharge of their duties was deserving of all praise.

The motion for the adoption of the report having been unanimously agreed to,

Mr. Bennoch moved a vote of thanks to the honorary secretaries, Mr. Lewis Pocock and Mr. Edmund Antrobus, whose labours in the management of the affairs of the society bore testimony to their interest in the work. Mr. Pocock had been for forty years honorary secretary, and Mr. Antrobus had been his colleague for a very large number of years; both gentlemen had done excellent service to the society. Mr. Bennoch cordially endorsed all that Mr. Godwin had said as to Mr. Watson and the office staff generally.

Sir Walter Stirling, in seconding the motion, said he regarded the present almost as an epoch in the year. At a time when the public journals were announcing the near proximity of a fearful war, of which probably many now living would not see the end, he was delighted to be able to do something in furtherance of the arts of peace by seconding the resolution. Though it might be true that,—

> "No one regards the man who lays the stones,
> But all consent to praise Inigo Jones,"

it was certainly not the desire of those who managed the affairs of the Art-Union of London to detract from the merit due to those who had been its instruments in carrying on its work so successfully. Sir Walter concluded by parodying Byron as follows:—

> "How arts improve at each successive stage,
> Which mark the growth and progress of the age;
> While arts and artists flourish in communion,
> Fann'd, fed, and foster'd by our own Art-Union!"

The motion having been carried, Mr. Antrobus briefly responded on behalf of himself and Mr. Pocock, and a vote of thanks to the Chairman, accorded by acclamation, was followed by the appointment of Miss Capel and Miss Edith Verity as Goddesses of Fortune, and the drawing for the prizes. The following is a list of the principal prizeholders:—

In Oil Painting by Ed. Armitage, R.A., "Joseph and ...rgy," value 400l.—Garrod, C. W., Wells.

...00l.—Lay, Jno., Colchester; Young, T., Port Augusta, ...

...50l.—Hayes, T. H., 18, Geneva-road; Lillywhite, ... H., Richmond-hill; Rossiter, J., New Plymouth, N.Z.

...00l.—Bentley, W., Cheapside; Hollis, T. T., Old Dover- ...ad; Reed, Mrs. E., Boston, U.S.; Rose, W. H., Port ...rie, S.A.; White, J. L., Camberwell.

...75l.—Charlton, T., Lordship-lane; Geer, C., Local ...vernment Board; Gradwell, W., Barrow-in-Furness; ...rris, Samuel, Isle of Man; Hooper, W. E. P., Kil- ...rn; Maclean, R. M., Lombard-street.

...00l.—Arnold, C., Canonbury-square; Driver, W. P., ...hby; Evans, J. K., Holywell; Ford, J. T., Stour- ...idge; Knight, J. W., Hyde Park-square; Payne, A., ...verton; Wilcox, J. B., New North-road; Woodward, ...s., Maida-hill.

...50l.—Bremner, H., Liverpool; Cressman, Mrs., Camden- ...uare; Darling, A. J., Warren-street; Edmonds, W., ...gh Wycombe; Gardner, A. H., Folkestone; Hawes, ... E., Bedford-road; Masterman, J., Wakefield; ...cGillivray, A. J., Ottawa; Siddley, J., Oakfield; War- ...r, H. Farringdon, Alton.

...55l.—Beal, H. R., Bedford-row; Bovill, Mrs. W., Red- ...ffe-gardens; Cutler, H. F., Manchester; Fergusson, J. ..., Wood-street; Harper, —., Gibbons-place, Plymouth; ...mison, C., Adelaide; Lindsay, Mrs., Maidenhead; ...ay, Rev. J. H., Geelong; McKenzie, M., Railway ...earing-house; Smith, Griffith, Endsleigh-street; Taylor, ... C., Railway Clearing-house; Williams, Thomas, ...erthyr.

...40l.—Alleyne, R., Quebec; Birt, G., Port Elizabeth; ...own, E., Railway Clearing-house; Carr, J., Sheffield; ...aven, J. K., Kansas City; Dangar, F. H., Sydney; ...enny, H., 152, Strand; Jameson, J. A., Hull; Jones, W., ...ood-green; Kelsh, Rev. T., Hobart Town; King, C., ...estbourne-grove; Rolfe, Mrs., Harlestone; Sewell, Jno., ...dersgate-street; Sparrow, A., Liverpool.

...35l.—Barkley, W., Stirling; Campos, H. E., Oporto; ...hen, H. L., 2, Cleveland-terrace; Gate, A. J., Mecklen- ...rgh-square; Harper, G., Lockwood; Harris, J., 58, ...ilson-street, E.C.; Harrison, E. J., Birmingham; ...obart, F., Hingham, U.S.A.; Humphreys, Miss, ...alcott; Jones, Jno. W., Palmerston-buildings; Jones, ...iss A., Bartholomley; Mirfield, H., Railway Clearing- ...use; Purdy, W., Stamford-hill; Smith, Jno., Swaffham; ...ock, J., Invercargill; Warburton, W. J., Sheffield.

...25l.—Bennett, C., Kennington; Blinkhorne, E., Birchin- ...ne; Bosisto, T. B., Strathalbyn; Brunskill, H., ...ailway Clearing House; Cavenagh, W., Greymouth; ...rake, J. L., Walworth; Forster, H., 195, Malpas-road; ...over, W., Pontefract; Green, W. R., Ecclesfield; ...enshaw, H., Biggleswade; Hill, W., Boulogne; Holmes, ... Shacklewell; Holtby, R., York; Leighton, J. W., San ...ancisco; Northcote, W. C., Ealing; Ray, W., Man- ...ester; Trevor, H., 1st Life Guards; Webb, G., Crosby- ...uare; Weston, Thos., Macclesfield; Wigget, A., ...ince's-gardens.

...20l.—A. L. X., Barcelona; A. L. Y. F., Barcelona; ...rgess, R. M., North Shields; Chapman, S., Hudders- ...ld; Churcher, W. E., Fareham; Davenport, E., St. ...ban's; Davies, W., Portmadoc; Farquharson, J., ...uillac; Gemmell, A., Hobart Town; Graves, J. P., St. ...unstan's-hill; Gundry, J., 1, Soho-square; Henley, H. ...ondon-bridge; Jackman, J. R., Sandhurst, Victoria; ...ohnston, J., Kelso; Kingston, R., Woolsthorp; M'Cres, ... C., Halifax; Mitchell, T., Holbeach; Newcomb, R. J., ...erby; Noyes, Jno., Chippenham; Patten, C., Hokitika; ...hilips, J. R., Port Elizabeth; Pocock, Lewis, 70, ...ower-street; Richardson, J., Liverpool; Rothwell, W., ...merville; Stephenson, G., Plymouth; Tedexo, E., ...reenstown.

...15l.—A. B. Perth, W.A.; Allen, W., Lillington-street; ...oultbee, Captain, Bedford; Brown, C., Settle; Buck- ...rdt, N., San Francisco; Cane, C., Norwood, S.A.; ...ilcott, J., Kingston-on-Thames; Chipman, L. de V., ...entville; G. O. F., Barcelona; Griffin, G., Manchester; ...aslam, Rev. J., Willunga, S.A.; Johnson, Robert, ...aithamstow; Little, H. B., Basinghall-court; ...cPherson, H., Merino; Mason, G., G.N.R., N.; ...atthews, M., Bucklersbury; Matthews, E., Silchester- ...ad; Munro, J., Mossel Bay; Mummings, G., 39, Albert- ...reet; O'Hara, C., Berwick-street; Parkinson, J., South- ...a; Ramage & Son, Jermyn-street; Rolfe, H. L., ...icholas-lane; Row, C., Swansea; Thomas, W., Hill ...ver, S.A.; Walsh, Sam, Bradford; Webb, W., Hat- ...ld; White, E. E., Reading; Winoey, W. F., Gawler, ...A.; Wise, Mrs. Jane, Woodcote.

...10l.—Adams, E. L., Patricroft; Alcock, J. W., Sun- ...derland; Backler, H. M., Lordship-lane; Baker, H. M., ...over; Brown, G., Newcastown, Tyne; Champion, F. A., ...ollingford; Chovill, W. G., Piccadilly; Cox, H., Barns- ...ury; Dandison, W. J., Barnsley; Deane, J. A., Dews- ...ury; Denton, E. P., Adelaide; Denyer, E. C., North- ...mberland Park; D'Yesai, Louis, Jerez de la Frontera; ...dghill, N. W., Demerara; Eyssen, A., Frankfort; Ford, ... T., London, Ontario; Holditch, T. P., Market Row; ...ent, Jas., Sheffield; King, W. C., Lombard-street; ...awrence, V., Port Adelaide; Lennon, J., Quebec; ...ackinnon, B. B. T., Hornsey-lane; Mann, C., Adelaide; ...athews, P., Lee; Matthews, Mrs., 39, Manchester- ...uare; Mitchell, J., Cockermouth; Morter, J., Strat- ...rd; Newberry, —, Plymouth; Park, C., Long-acre; ...arkinson, J., Southsea; Rooke, E. A., Old Burlington- ...reet; Rumbal, J. J., Upper Clapton; Smith, H. W., ...oleman-street; Stennings, C. R., Marham; Summers, ..., Romsey; Trowek, J., Egremont; White, C., Lincoln; ...illiamson, Dr., Notting-hill; Wolfe, W., Greymouth; ...ood, R. A., Gateshead.

A Plaque in Pottery, with an original Painting, by G. ...evin.—Morris, M., Camberwell.

A bronze Statuette, "Cimabúé."—Bailey, W. W., Kil- ...rn; Barnes, R., Miltown; Begent, C. E., Chalk Farm; ...hurches, S., Mallala; Creaser, W., Adelaide; De Hain, ...essie, Port St. Mary.

A copy in bronze of the Townley Vase.—Aberdeen, E., ..., Boscobel-gardens; Beavis, R., Fitzroy-square; ...ummadale, Hon. Baron, Hertford; Knox, H., Cheapside; ...eed, J. O., Hartford, U.S.A.; Mixon, R., Shepherd's- ...ush.

A China Tazza.—Arbuthnot, H. G., Princes-gate; Bailey, ..., Stroud; Baker, F., South Kensington; Beardmore, ..., Dudley; Dean, H., Gawler; Denny, J. T., Portland; ...annsom, L. M., Ottawa; Irving, D., Newark; Morris, ..., Port Elizabeth; Reid, William, Taunton; Robinson, ..., Manchester; Russell, W. J., Ladbroke-road; Rycraft, C. E., Oakfield; Sadler, —, Southport; Sherwood, N. V., 6, Leadenhall-street; Suter, W., Arundel; Thomas, Mrs. R., Unlay, S.A.; Turner, G. B., 189, Victoria Park-road; Welch, A. G., Stoke Newington; Wells, C. S., Hull.

A Statuette, "Net-Mending."—Barber, W. R., Brixton; Cooper, J. G., Bideford; Cooper, Mrs., Cromwell gardens; Cooper, R., 32, Fleet-street; Gibbs, G., 19, Pembridge-square; Gossit, M., 4, Coleman-street; Mackrell, T. Reading; Maver, Alex., Limerick; Ritchie, W., Dundee; Rollinson, J., Aberdeen, S.A.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute held on Monday evening last, Mr. Charles Barry, president, in the chair, the following gentlemen were balloted for and duly elected, viz.:—As Fellow, Mr. Matthew Wyatt, of Great Russell-street; and as Associate, Mr. William Trimmer, of Great Queen-street.

Dr. Henry Schliemann, the excavator and explorer of Troy and Mycenæ, was elected by acclamation an Honorary and Corresponding Member, and it was announced that an extraordinary general meeting will be held on Monday next, the 30th inst., at eight p.m., for the purpose of presenting the Doctor with his diploma of election, when it is fully expected that Mr. Gladstone will be present. A limited number of tickets will be available for ladies (morning dress).

The Chairman said he had to announce, with much regret, the death of Mr. Charles Langham, Fellow. A more pleasing announcement was that the fund which is being subscribed to by the London members for the improvement of the Institute's premises now amounted to rather more than half the sum required (1,000*l.*), viz., 515*l.* The fund was increasing day by day, and there was no doubt that the whole of the necessary sum would be made up before very long.

With respect to his father's (Sir Charles Barry's) drawings, referred to at the last meeting,* the President stated that he had communicated with his brother (Mr. John Wolfe Barry), who would have much pleasure in presenting to the Institute a small selection from his father's drawings and sketches; in fact, as many of them as he could make up his mind to part with.

Mr. C. F. Hayward said this matter reminded him of the fact that the Institute hardly possessed any sketches or drawings by the late Professor Cockerell. It was greatly to be desired that the Institute should possess some of those beautiful works. He noticed that Mr. F. P. Cockerell was absent, so that he could not appeal to him personally; but he felt sure that if the suggestion he offered could be properly put to Mr. Cockerell, it would be adequately responded to.

The President said Mr. Hayward's remarks illustrated the saying that "gratitude is a lively sense of favours to come." Gratitude for what had been announced had prompted him to ask for a similar favour from Mr. Cockerell, who would no doubt give the suggestion his best consideration.

The secretary (Mr. Eastlake) read an extract from the will of the late Dr. Barlow, of Newington, bequeathing to the Institute the whole of the drawings illustrating his papers on "Symbolism" (read before the Institute some years ago), together with any architectural books in his library which might be selected by the Institute. The drawings were exhibited on the walls.

The secretary also called attention to a communication from Mr. Thomas Goodman, architect, Southend, stating that he had prepared accurate drawings of the fourteenth-century monuments and effigies of the De la Beche family in Aldworth Church, near Reading. These drawings are being prepared by Mr. Goodman for photo-lithography, and will be published together with a descriptive memoir by the vicar of Aldworth (the Rev. F. Llewellyn Lloyd) so soon as the names of 100 subscribers, at one guinea each, shall have been obtained, the profits, if any, to be given to the Church Restoration Fund.

Mr. Thomas Morris then read a paper entitled "West End New Street Improvements promoted by the Metropolitan Board of Works, with Suggested Modifications and Extensions." Of this paper we give the substance on page 421, merely premising here that many of the suggestions offered by the author have been already anticipated in articles which have recently † appeared in our own columns.

* See *Builder*, page 385, *ante*.
† *Builder*, p. 268, *ante*, and elsewhere.

A long discussion followed, in which Messrs. Vulliamy, White, Hansard, Whichcord, Hayward, Jennings, Hebb, and the Chairman took part. We shall give a report next week.

THE PROFESSOR OF ARCHITECTURE AT THE ACADEMY ON THE QUESTION OF MATERIALS.

SIR,—In your report of Mr. E. M. Barry's interesting lecture, the subject of which was "Town Architecture and Modern Problems," the following words occur:—"Polished granite is free from this difficulty, and if its costliness could be got over, might serve us admirably in our smoky and dirty streets."

I was much pleased to read this favourable opinion of the use of granite. As a Provincial architect coming to London some years ago, I was particularly struck with the unsatisfactory condition of the stonework of the public buildings, and after considering the subject well, I came to the conclusion that the true remedy would be found in the substitution of granite for stone, a conclusion I have occasionally urged upon the profession and the public. A few words, then, if you will allow me, upon the question of relative cost, which alone Mr. Barry seems doubtful about. During the last twenty years steam and machinery have been gradually reducing the cost of granite and granite work in London. Aberdeen contractors are willing to deliver the different colours of granite at the London railway stations, or at the Pool in the river, at 2s. per foot super., of optional sizes ready squared for ashlar; and machinists charge 3s. per foot super. for polishing. Thus for 5s. per foot we have all the material required for an absolutely plain granite building, and yet not absolutely plain, because the different colours of granite judiciously used constructurally would produce —to a certain degree—an ornamental effect. Of course, in addition to the 5s. for material there would be the cost of cartage in London, hoisting, setting, strings, architraves, and cornice of simple forms, and London contractors' profit. But if I take the dimensions and cost of the New Post Office,—a handsome but not very elaborate stone building,—a little calculation enables me to estimate the cost of the masonry of the two principal elevations at 20s. per square foot. Thus I have 15s. per foot to cover the above items, which any surveyor or practical man well knows to be not only sufficient for the purpose, but ample, in addition, for purely ornamental work.

Then there is an important point that should not be overlooked in considering relative cost, and that is, that stone buildings require periodical restoration. Last year there was a forest of scaffolding at the Houses of Parliament for this purpose, the cost of which must have been great. Lambeth Palace, Henry VII.'s Chapel, and the Temple Church, and many other buildings, have been entirely renewed. Granite building would save all this.

But a most important point connected with cost would be to ally this everlasting material with appropriate style and design. It is unnecessary for me to urge that a due regard to the peculiar nature of material is the very basis of all architectural design worthy of the name. The later Gothic styles, in which pinnacles, crockets, and carvings are more or less necessary, would be unsuitable for a granite building, but there are Byzantine, Romanesque, and Transitional structures, quite as ornamental, in which these features do not occur, that might be taken as models, to some extent. The decorative details are largely affected by incised and inlaid work and the use of coloured materials, all which would be available and suitable for a modern building of polished granite. The incised work, if of delicate patterns, might be gilded. The inlaid work would, of course, be flush, and executed either in coloured granite and serpentine or in the best encaustic tiles. But with the different colours of polished granite used constructionally, little purely ornamental work would be necessary. However much or little there might be, it is clear that it would not only be imperishable, but would harbour neither soot nor dirt. As regards the strings, jambs, and cornices, the styles suggested require only such as are of the simplest forms,—a few splays being all that we find in some of the finest examples. Beauty of proportion and boldness of design are conspicuous characteristics of most of these buildings rather than elaboration of detail.

Machinery will, of course, enter largely into the execution of a granite building, but whatever

we may feel as artists, it is impossible, in our day, as practical men, to set our veto upon the use of mechanical power. No contractor for a building in soft oolite stone submits to be so trammelled, for at the Law Courts and elsewhere the piston is as audible as the click of the mason's chisel. Still in an important granite building there would be plenty of scope for art in the mosaic work of friezes and spandrels on a bold scale. In conclusion, then, I think that no practical man will say that a building of imperishable polished granite may not be one of the architectural events of the future. For my own part, I feel very certain that it would have a magnificent effect; that the improved construction would be acknowledged; and that if the mode of building became general, our streets, instead of having a lugubrious and dirty aspect, as at present, would look surprisingly bright and cheerful. H. T.

TEWKESBURY ABBEY.

SIR,—As the writer of the article on this church, which has appeared in your numbers of the 14th and 21st inst., referring to my paper read at the Congress of the British Archæological Association in 1875, says I have made some "rather rash statements," I must put myself right in respect of the two which alone he specifies, and also repudiate the charge of rashness, which would have been hardly pardonable in me in such a case. His happy appeal to architectural students to visit this magnificent but little known building will doubtless bear fruit, and therefore this matter becomes of more than private interest. The singular termination of the western turrets called for careful study, as I found no critical observations upon them. It is true that Sir Gilbert Scott, in his first report, made twelve years since, mentions "the Norman pinnacles or turrets" "which are of a very peculiar design," but this slight observation upon a part of the building which was far off from the portions then about to be dealt with must surely not be taken as pledging him to a final judgment as to the date of the upper portions to which my observations referred. Having taken the trouble to go up to the turrets and carefully examine them stone by stone in company with the person whom I should consider to be most competent to assist at such a practical examination, I have no hesitation in repeating that "they are evidently modern imitations of twelfth-century work." The writer, whose remarks are, as he says, "architectural rather than archæological," will admit that mine being archæological rather than anything else, this mode of study was more likely to lead to a sound opinion than his careful examination "from below." I do not say that they are copies of any particular twelfth-century examples, but an imitation of the style, which accounts for their being, as everybody admits, curious, and, as he says, unique. When Dingley sketched the church in 1680, the high-pitched western gable was still standing, and he certainly shows these turrets with Gothic terminations, similar to those of the central tower. I think it probable that when the gable was lowered the pinnacles were altered, and the whole work looks more like eighteenth-century Norman than aught else.

I am very glad to hear my judgment as to the respective dates of the choir and its chapels questioned, because it opens up new ground, is of great interest, and there is no other place where such a problem can be started that I know of. The writer has shown very cleverly by the engraving on page 393 (which shows the first bay of the south aisle from the transept), what was actually done. Let us look at the feasibility of the course which he, and I suppose other persons who have seen the church, think was adopted in building these parts of it. The old Norman chancel, with its aisle (and chapels, as we may presume), having been cleared away all except the six short piers of the arcade, it is thought that the architect, being about to build a most rich, handsome, and costly eastern termination, hesitated to pull these piers down, raised the halves of them which were next the choir two courses, on which he sprang these arches, and on them raised the choir. He, at the same time,—one cannot conceive why,—sprang the vaulting of the aisle from the old capitals, on the other sides of these piers, so that the aisle and its surrounding chapels are pitched lower than the openings of the choir arches, and the faces of the vaults are exposed (as seen on your engraving, page 375), where the centre arch exhibits the vault, looking as if it ought to rest against a dead wall. The writer's first suggested reason cannot be the true one, for space could have been got for the vault even, if necessary, by raising the large windows, or, at least, by tilting the ridge ribs of the cross vaults till they cleared the apex of each arch. His second suggestion is improbable, because, having demolished about 60 ft. run of the old Norman aisle wall, they could hardly stand at the length of 6 ft., which remained; they would, at the least, have raised the old wall and vaulting shaft so as to make their rare and magnificent work complete, instead of building an aisle and chapel, which, however beautiful in themselves, look, when taken in connexion with the choir, squat and unsatisfactory. My suggestion is simply that they built the aisle and chapels before deciding to rebuild the choir, sprang their vaults naturally from the existing capitals, and let the inner faces of them die against the dead wall above the old Norman arcade. Then their ideas grew,—a not uncommon thing,—and the choir was rebuilt, raising the inner halves of the piers, and working as far as possible in the loftier proportions of the period. When I first saw the church the scaffolding was up in the choir, so that I could get with some little difficulty at the work, and I felt sure that the present condition of the arch carrying the inner margin of the vault was not its original condition, also that the diaper work was a mere filling in to hide the ugly end of the cross-vault. I have not said this is "certainly" so, but it is a point which any future observer might follow out by studying the mouldings of the choir and the aisles respectively, particularly those on the two sides of the aisle vault. I am glad to find that the writer agrees with my suggestion as to the structural history of the chapels attached to the north transept. There is a further question,—was the eastern lady-chapel built at the same time as the other apsidal chapels? If so, it would probably correspond with them in design, and be not very much longer than they are. But the parts of it which remain (as seen from the private garden at the east end, which is unfortunately not the vicarage garden) indicate a building of the fifteenth century, very rich, very high, and which is said to have been at the dissolution 100 ft. in length.

I am sure that your architectural description of the Abbey will be most serviceable in drawing attention to it, and in helping, by some of its useful suggestions, the work that is now going on. THOMAS BLASHILL.

ST. GEORGE'S HALL, LIVERPOOL.

SIR,—I observe that in the *Builder* of the 7th inst. you refer to the intended "Walker Art Gallery, Liverpool," the whole of the sculpture on the exterior of which is to be in its place before the building is considered finished and handed over to the town. This is a wise determination on the part of the donor, and will form a singular contrast to the neglect with which another building, its immediate neighbour, has been treated.

St. George's Hall, which must always necessarily form the central and most important feature, in the group of buildings to which the Art Gallery forms the latest contribution, has now been opened upwards of twenty years; and it is still externally, essentially unfinished. According to the design of the architect, the late Mr. Elmes, sculpture, formed a most important feature, especially on the eastern façade, which is in fact its most striking and original side, and that which is first seen by all visitors to the town who arrive by the London and North-Western Railway Station in Lime-street. The pedestals between the square pillars which flank the principal colonnade of this façade on the north and south, and which were intended to be surmounted by twelve emblematical figures in sets of six each, standing out from the background formed by the recessed wall behind, are still untenanted. Rough-hewn blocks of stone underneath each pedestal in the screen-wall from which the square pillars spring intended for the carving of bas-reliefs, as well as similar smaller blocks of rough stone at the semicircular north end, also intended to be carved in relief, all remain untouched by the sculptor's chisel.

All these enrichments formed part and parcel of the original design, as I have mentioned, and were specially shown on a very beautifully-executed plaster-of-Paris model prepared under the eye of the architect about the time of the commencement of the hall. This statuary, in combination with the architecture, formed, in fact, the crowning characteristic of the design and the knowledge of what this façade was really intended to be makes its present bald and forlorn aspect the more painful.

The attention of the local authorities has been called to this state of things from time to time for years past. Members of the architectural society of the town have endeavoured at their meetings to arouse the slumbering taste of the public, and the press have done their part, but apparently to no purpose.

There are in the town council, if I mistake not, gentlemen who talk most volubly upon the fine arts, and who proclaim themselves their warm advocates and patrons. Architects also, as well as merchants and tradesmen of wealth and influence, are to be found there. Can their united efforts do nothing towards removing this stigma which attaches to the taste of their town? Liverpool surely cannot plead poverty in such a cause!

This building is certainly one of the finest specimens of Grecian architecture in modern Europe, and may be claimed as a national monument. The whole country has an interest in it, and therefore residents and non-residents alike are concerned in its being done justice to by its immediate owners and custodians. F.

AN ARCHITECTURAL OPERETTA.

ARCHITECTURAL operetta has now to pass through the many stages, awaiting each fresh development of the arts before reaching the winter of its age. Perhaps it was its first appearance in England at which we assisted the other night at this session's *soirée* of the Architectural Association. Sentiments deemed oddly appropriate by a professional audience were then expressed, and some of them sung to well-known airs; the whole being put into a musical setting. "The Client" (performed by Mr. H. H. Stannus, the author of the sketch) determines to build a house with the finest modern improvements, considers carefully how he shall set about it, settles on a competition, and, like the judicious and original man he seems, settles at once the terms of his advertisement. He is thereafter visited by *Thirteenth Century* (Mr. A. C. Booth), dressed in the height of the fashion of his day, and bearing show-designs with him. This artist is full of confidence in himself, and yet benevolent enough to share confidences with the world. Mr. G. E. S. Langford personated the next arrival, *Sixteenth Century*, singing pretty songs, saying much the same sort of thing about studies, talents, and great things that can be promised. *Queen Anne* (Mr. E. G. Hayes, the honorary secretary of the Association) thereafter had her say anent "curlywiggy pediments in red brick" and other graces. The perplexities and resolutions of "The Client," and the final fate of everybody, need not be detailed; as a little knowledge and imagination may be used without danger. The record would, however, be very incomplete without mention of laughter, frequent applause, and encores. Author, actors, and audience were all supplied by the Association, and everybody is entitled to congratulations on the success of all the little novelties this year.

THE ARTISANS' DWELLINGS COMPANY AND THEIR TENANTS.

THE SHAFTESBURY PARK ESTATE.

AN indignation meeting of the tenants on the Shaftesbury Park Estate at Battersea, which was held last week, would seem to indicate that the purely philanthropic objects with which it has been alleged the Artisans', Labourers', and General Dwellings Company commenced their operations scarcely exist, and that the company is, after all, nothing less than an ordinary building association for the purposes of profit. It appears that the tenants on the estate have received notice from the Company that on and after the 7th of May their rents will be increased to the extent of from 12 to 13 per cent. The tenants complain that this proceeding is a breach of faith with them, inasmuch as the Company held out as an inducement to occupants that their leading objects were to assist the working classes to obtain improved dwellings, erected from the best designs, at the lowest possible cost, to help the tenants to become owners of the houses they occupy. The tenants further complain that the raising of their rents is an injustice, as they are placed in the exceptional

osition of being prevented from sub-letting any ortion of their tenements or of exercising rtain trades in their dwellings, and they con-nd that this is an answer to the Company's rgument that the rents for the same class of uses outside the boundary of the Estate are con-derably higher than those on the Estate itself. he tenants also point to the fact that at the st annual meeting of the shareholders of the ompany a dividend of 6 per cent. was declared, nd that there is no necessity for the rents to be aised.

At a meeting of the tenantry above alluded to, here were about 500 persons present, and ulti-nately a resolution was passed that a public neeting be held to endeavour to obtain a re-onsideration of the resolution of the directors, nd that Lords Shaftesbury, Lichfield, and Elcho e invited to attend the meeting. A committee vas likewise appointed to carry out the arrange-ents for the meeting.

HOW DID MEDIÆVAL ARCHITECTS WORK?

THE CHOIR, CANTERBURY.

At a meeting of the Sheffield Archæological ociety on the 12th inst., Mr. Charles Hadfield ead a paper on "The History and Re-building f the Choir of Canterbury Cathedral, A.D. 175." The Rev. J. Stacye, M.A., occupied the hair.

Mr. C. Hadfield stated that he proposed to ubmit to their consideration a series of facts on he designing and erection of Canterbury Cathe-ral, which would prove to be at variance with a omewhat generally received, yet mistaken, view f the way in which Mediæval building opera-ions were carried on. Mr. Street, the eminent rchitect, had, in his admirable work on Spanish rchitecture, given details of the Spanish Mediæval architects and their *modus operandi*, hich fully bore out his (Mr. Hadfield's) view, roving that they were men of culture, honoured nd sought after by princes and great ecclesias-ics, and often summoned from distant countries, hiefly France and Germany, to design and uperintend work. Mr. Street remarked,—"In hort, the common belief in a race of clerical rchitects, and in ubiquitous bodies of Free-asons, seems to me to be altogether erroneous. The more careful the inquiry is that we make nto the customs of the architects of the Middle Ages, the more clear does it appear that neither f these classes had any general existence; and n Spain, so far as I have examined, I have met with not a single trace of either." Having xamined the writings of Wilars de Honecort (thirteenth century), and a work edited by Pro-essor Willis on churches at Cambrai, Laon, Rheims, and other places, he pointed out that he recent researches of other well-known writers ad brought to light the names and details of a umber of Mediæval lay architects. We also new, from contemporary and trustworthy evi-dence, that during the rebuilding of the choir of Canterbury Cathedral at the close of the twelfth entury, lay architects were employed by the monks, and entrusted with the sole management of the designing and carrying out of the works. He would not, then, regret the trouble this paper might have cost him if he succeeded in so presenting the matter before them as to convey an enhanced appreciation of the efforts of those silent artist workers whose names and bodies alike had perished, but whose intellectual labours had been preserved to our own time by their works through long centuries. He then proceeded to discuss the manuscripts of Gervase, a monk of Canterbury, and an eye-witness of the martyrdom and interment of St. Thomas-à-Becket on December 29th, 1170, and of the destructive fire 1174, of which he had left what Professor Willis termed a valuable and minute account. These MSS. have been printed in complete form in the collection of chronicles known as the "Decem Scriptores," and quoted by most subsequent writers on the cathedral. In reviewing the history given by Gervase of the burning and repair of the Church of Christ at Canterbury, Mr. Hadfield said that, although the monks decided on something of the nature of a modern competition for the rebuilding of the edifice, they did not advertise far and wide for batches of smart water-colour or pen-and-ink drawings, which, in ninety-nine cases out of a hundred, are simply misleading and valueless, so far as they afford trustworthy evidence of the realisation of what is delineated, but sought counsel from a number of skilled men, heard what each one had to say, and then made their choice, having, doubtless, properly remunerated the unsuccessful competitors for their trouble. According to Gervase, "Convocati sunt artifices Franci et Angli,"—French and English artificers, as Willis translates it, though he (Mr. Hadfield) preferred the term "architects" or "engineers." He had in his mind a thirteenth-century hymn on the Incarnation, where the word "artifex" is employed in such phrase as to convey a correct interpretation:—

> "Latet sol in sidere
> Oriens in vespere
> Artifex in opere."

"The sun is concealed within a star, the Orient within the evening star, the Creator within his handiwork." Whilst some suggested the repair of the columns, and undertook to carry out the work without the removal of the superstructure, others boldly declared that the monks must make up their minds to the removal of the whole, and its reconstruction. William of Sens, a man full of tact and ingenuity, and well skilled in wood and stone construction, was retained on account of his lively genius and good reputation, and all the others were dismissed. "And to him and the providence of God was the execution of the work committed." Lanfranc was the first abbot of St. Stephen's Monastery, at Caen, where he erected, in 1064, the great church of the Abbaye aux Hommes, dedicated in 1077, after his removal to Canterbury. The two churches were building at the same time, and were nearly alike in dimensions and design, and were possibly the work of one architect. The fire which had enabled William of Sens to propound a scheme of reconstruction began in the roof of the choir. That portion of the building fell in, igniting the wooden seats and furniture, and the intense heat from the conflagration calcined and split the columns of the arcade to such an extent as to necessitate the removal of the whole within the two outer walls. These, as is evident from the portions remaining, were protected from the direct action of the fire by the stone-vaulted ceiling of the aisles, and were thus comparatively uninjured. The idea of William of Sens was to reconstruct in a new and commanding style the pillars and arcades on the old foundations above the crypt, and to cover them with a groined stone vault in place of the wooden ceiling, thus reducing the risk of another disaster by fire, whilst he proposed to retain the old stone walls and raise them to fit the proportions of the new interior work. The masonry from that point upwards is finer in execution than below, and in some instances the wall pilasters have been renewed down to the door-level. After reviewing the interior work in its details, as far as William of Sens was concerned, Mr. Hadfield showed that the latter, who was injured by the fall of scaffolding, was succeeded by another architect,—William by name, English by nation, small indeed in body, but highly skilled and trustworthy in many kinds of work. He followed out the plans of his predecessor, and we detect but a slight change in the superstructure, and that apparent to an architect only, after close inspection, in a certain gracefulness and freedom of design in some of the details of the eastern portion of the church. It is in the grand crypt or undercroft of the Trinity Chapel that we notice a departure from the first design, and that we see the mind and hand of the new master, and being unfettered he adopted a bolder, more advanced, and thoroughly English style of pointed work. In the beginning of the sixth year from the fire, September, 1180, and at the resumption of the works, the monks were seized with a violent longing to prepare the choir so that they might enter in at the coming Easter, and the master set himself manfully to work accordingly. The convent, ejected from the old choir by the fire of 1174, re-entered the new one in 1180. Willis considers the necessary funds for carrying on this work, and its subsequent completion four years later, were largely supplied from offerings at the tomb of St. Thomas. Bringing down the history of the cathedral to the present century, Mr. Hadfield protested against the vandalism of the Dean and Chapter in 1832, when they disfigured the fabric by a spiritless and feeble copy of the south tower in place of the low tower of Lanfranc's church, which had been allowed to remain through so many centuries and changes, as shown in Britton's views of the cathedral. It was with pleasure that he turned from its poor and crude carvings and details to examine the new figures set up by the care of the late Dean Alfred, about seven years ago, in the niches of the south porch and tower. They were the work of the late Theodore Phyffers, a clever Belgian sculptor, who had resided in England for some years, and who, he regretted to say, had recently passed away from us almost unnoticed. These specimens of his skill represent the kings of England and the archbishops, from the time of St. Augustine, and are works of art.

VENTILATION OF CHURCHES.

The Scottish Church, conjointly with the Press of North Britain, are at present concerned in a subject that might with great advantage be taken up by all creeds,—the ventilation of sacred edifices.

One writer, in the *Glasgow News*, deserves to be handed down to posterity for his racy researches into the cause of somnolency during a sermon, and considers the gulf that separates purity of air and purity of doctrine is about as great as that which divided Lazarus from Dives. Few church-goers can be strangers to the disagreeable sensation which meets them on entering at the second service.

A choking feeling of stuffiness, a powerful odour of fusty clothes and moist flannel, and a prevailing element of scents, form the more marked features of the atmosphere. How many churches ever have a window open from one year's end to the other? There should be no surprise that our churches are unfilled in the afternoons. Of those who go few remain awake, and in the evening naps are frequently prevalent. Most of us have, at some time or other, been present at an open-air sermon. The language may be poor, the train of thought weak; but who on earth ever saw any of the audience asleep?

It is sometimes a cause of surprise that so many people prefer to sit under the gallery in church, even though the sittings there are no cheaper. But the reason is plain; many people know they cannot keep awake in church, and modestly think it much better to take sittings where their slumbers will be less obvious and audible. In other words, they want to do themselves good by stealth, and not to have to blush to find it fame. But in such conduct they are only taking a hair of the dog that bit them; for the bad air of the church is worse under the gallery. It is, or ought to be, a fact well known to insurance agents that the death rate is much higher amongst those who sit under the gallery than amongst those who sit in the body of the church.

Of course many of these church-going unfortunates strive against their somnolency. Pins, scent-bottles, pinches, toe-treading, and friendly nudges are resorted to; but all in vain.

By the time that "firstly" is reached by the minister, the plethoric auditor is far into the heart of the land where the patient patriarch dwelt. And when the pricking of a faithful conscience have impelled a church slumberer to change to a "rousing" preacher or a well-ventilated church to keep him awake, he finds the change too late. He has been to church to have a nap, and the habit cannot be removed.

Sometimes vested interests close church windows and doors. An influential doctor or undertaker, as churchwarden or deacon, can scarcely be expected to ventilate his church. Clergymen who bewail the emptiness of their churches at Sunday afternoon services should first try the physician Fresh Air. Let them make their sermons heavier if they will, but let the air their audience breathes be lighter. Let only asthmatic beadles be appointed. Let them lose one-half of their salary, to be added to the fund for cleaning the church, if a single window or door remains unopened during a specified time before afternoon or evening services, and the other half if the doors and windows are not then duly shut, to let the church be warmed. Let the managers of the church be carefully weeded of doctors, chemists, and undertakers. Let the architect of the church be bound to sit one afternoon out of every four in the sight of the congregation, and fined 10*l.* if he betray the slightest symptoms of falling asleep. By such measures as these, and only by such, can we ever hope to have ventilation and health reasonably well attended to.

And what is true of churches is true, more or less, of many other buildings. It is not luncheon alone that makes judges and jurymen so sleepy as the afternoon steals on. Bad air, too, could explain many a fit of illness and ill-temper on returning from church. The biographies of clergymen record frequent cases of exhaustion

from Sunday labour, not so hard in itself, but terrible in consequences, on account of the bad air amidst which the exertions are made. Whoever saw a churchwarden awake, or even the choir, during a Sunday afternoon sermon? We implore, therefore, all managers of churches to give more heed both before and during the service to the ventilation of the churches under their care.

LEOMINSTER PRIORY CHURCH.

Sir,—As Sir Gilbert Scott has drawn attention to the church at Leominster, perhaps your readers would read with some interest a few particulars of this building, as it certainly is, in its way, unique.

The original plan was very peculiar indeed. It had a nave with aisles, chancel with apsidal termination, west tower and central tower, without transepts; the whole, as far as I can ascertain, of late Norman. The exact date, however, is not by any means easy to discover, as although the general tooling, finish, and treatment of the work seem to indicate a late period of the style, yet the excessive plainness of the design certainly seems to carry the date up considerably. The general treatment is very bold and effective, for the greatest peculiarity is the very great height, this allowing—notwithstanding the height of the cardinals and presence of the flattened roof—of an ample clearstory. In the centre of the nave an interruption occurs by the substitution for the ordinary arch of one of equal height, but very contracted span,—in fact, a mere opening. The use of this seems to have been the attainment of greater longitudinal rigidity in view of the thrust of two towers.

This constituted the priory church. Seemingly about the middle, or perhaps later in the fourteenth century, a parochial portion was added, consisting of a second nave, adjoining the existing Norman one, and south aisle, the original Norman south aisle being of course destroyed to make way for the new nave, or rather to leave its floor free. The cardinals were of course all filled up, and the clearstory windows also, which now, owing to the sufficient height of the additions, were thrown inside. The west tower at the same period received a superposition of considerable height.

In the fifteenth century a new large west window was inserted into the later nave; and still more recently the colonnade separating the two later portions was, for some unaccountable reason, rebuilt in a very thin and impure Tuscan; the east window of the newer nave seems also somewhat of this date. Before this time, however, the eastern portion had either been destroyed or allowed to fall to ruins, and a new east wall was run across,—out of the square by the way,—just about where the first arch of the tower formerly stood, the new east wall being pierced with a window of small and incongruous, but not absolutely bad, design.

The later portion was used parochially up to a comparatively recent date, when the restoration of the Norman nave and remaining aisle was satisfactorily accomplished, and the services were of course thenceforward held in that portion. The organ was shortly afterwards removed by myself to the east portion of the little Norman aisle, which just allowed it to be squeezed in between the wall and architrave. The fittings of the later portion, all of quite inadmissible character in a Gothic edifice, were at the same time sold to assist in paying for the restorations.

It will be easily imagined that, what with one thing and another, the south or later portion has got into a very bad state; but it is quite a mistake to refer this in any way to the apathy of the local authorities. Churchwardens have, we know, a good deal to answer for (although their whitewash preserved perhaps as much as it defaced), but they are guiltless in this instance. Leominster Priory Church has been most lovingly, most comprehensively, and most minutely treated, in a work published by a late vicar of the parish,—the name escapes me at this moment, but he was, I believe, the immediate predecessor of the present incumbent, Mr. Edouart. And, with respect to the lay authorities, the parish enjoyed for many years the services of,—I will not say an intelligent, for the word would be here an impertinence; but I will say,—an intellectual conservative churchwarden and a true lover of art.

The fact is, the bad condition of this portion of the building is the consequence of the absolutely vile,—I can find no other fitting word,—quality of the stone used. What could be done has been, and the south-west window (all the Decorated examples are struck from the same centres) carefully restored with good Caen stone, so as to preserve it to the minutest detail.

I am quite unaware what the parishioners intend doing, as my communication with the town has been closed many years; but will you allow me, through your columns, to offer a suggestion or two?

There seem three courses open:—

1. To restore the whole of the later portion.

2. To rebuild the south aisle exactly corresponding to that on the north, except that to retain a specimen of each of the windows, and at the same time not too much curtail the dignity of the west front to give the western termination of the new aisle the same height and width as the present later nave, thus retaining its large Perpendicular window; a new window, copied from the present Decorated ones,—a reproduction, in fact,—to occupy the southern face of this semi-transept or narthex; a pierced parapet, copied from the present one, surmounting the whole; the present pinnacles at the two exterior corners, and the sedilia or piscina (I am not sure which they are) put as an insertion in the new south aisle wall. Thus every fragment of the later portion worth preserving, would be incorporated; and, if funds still increased, the east portion might be rebuilt on the old foundations which yet remain.

3. To erect the new outer wall on the line of the present columns, rebuilding the Decorated windows, to occupy the usual spaces between.

The first method will, I sincerely hope, not be attempted; the expense would be enormous, and the space, when obtained, comparatively valueless, for it certainly would never be filled; the proportions of the church would remain at their present anomalous figures (the width being within 1 ft. as great as the length). The columns must come down, for they could not possibly be allowed to form part of the new design; and, in fine, the whole later portion would require rebuilding.

The third method is certainly better. The new wall could be run up between the columns, the architrave carefully incorporated, and the piers themselves then extracted, a great deal in the way of material being furnished from the aisle.

The second method is, however, doubtless, the best, besides being probably the least expensive. The Norman nave not being vaulted, there is not the least risk,—in fact, the church would be stronger, for the lateral over-push of the new nave certainly does no good, whereas the tower has lost, by the sacrifice of the low aisle its south buttressing, the same being now supplied by a brick prop of unapproachable hideousness. The new aisle might be erected and roofed complete as far as the narthex, the materials of the condemned aisle being employed. Then the condemned nave could be gradually removed, commencing from the east end, and the narthex (which would have a projection from the aisle of about, say, 12 ft. or more) constructed with the materials. The beautiful fourteenth-century design, of course, appears over a doorway or porch in the southern face. With the exception of the portions enumerated, there is not, as I said, a fragment of the later work reproducing as an integral portion of the design, and this third method, at a comparatively low cost, would retain all. The Perpendicular window could, of course, remain, properly restored. Any materials remaining could either be sold or stored for future completion of the east end. The increase of accommodation would be considerable, and the internal arrangement would require no alteration whatever.

John W. Warman, A.C.O.

WISBECH: THE DOCK QUESTION.

A special meeting of the Town Council was held on the 20th inst. The Dock Committee's report recommended, in order to remove the groundless fears of the opponents of the Bill, that a committee should seek an interview with the Duke of Bedford and other persons and bodies interested in the Nene between Peterborough and the sea, and ascertain their views upon the subject. The Port and Harbour Committee recommended the appointment of the Dock Committee with full powers to arrange with any opposing interest, and to prepare a Bill to submit to the Council. The Mayor moved, Alderman Hampson seconded, and it was unanimously resolved, that renewed efforts be made to secure dock accommodation at Wisbech by promoting another Bill in Parliament next session, and in the meantime to consult the opposing interests with a view to their concurrence in such a measure. The report of Mr. Abernethy, C.E., to the Town Council, upon the formation of a dock, is to be printed and circulated among supporters and opponents of the Bill with the view of drawing their attention to the importance of executing works, which are absolutely necessary not only for providing floating water for Wisbech, but for maintaining the safety of a vast quantity of land drained by the Nene.

CONGRESS OF FRENCH ARCHITECTS.

The Société Centrale des Architectes has issued its annual invitation for a congress of French architects, to be held during the week from the 11th to the 16th of June next, and has published its programme of proceedings. The subjects to be discussed are architectural societies; the organisation of the *personnel* in building operations; the law of condemnation of land and buildings for public uses; terra cotta as a building material; architects' commissions; commemorative monuments still existing in France; and the architectural exhibition at the *Salon* of this summer, which will be open at the time of the congress. The proceedings will occupy the whole week, and will include visits to the buildings and grounds for the coming Exhibition, to the old Hôtels du Marais, near the Bastille, and to the Hôtel and Musée des Archives. One day is set apart for a trip to Amiens, and the examination of its cathedral and other antiquities. M. Eugène Millet will deliver a discourse on the late Henri Labrouste, and M. Desjardins a lecture on Egyptian art with reference to the late discoveries of M. Mariette. The society offers prizes to the École des Beaux-Arts, the National Drawing School, and the Masons' and Stonecutters' Union. The session will close with a dinner and a musical entertainment.

M. Charles Lucas, one of the office-bearers, writes us to the effect that, notwithstanting the title of the congress, foreign *confrères* will be warmly welcomed.

A SOCIAL EXPERIMENT.

Sir Charles Trevelyan has forwarded to the Charity Organisation Society an account of a successful "British Workman's House," which has been established at Warrington. In doing so he writes:—

"It is so unlikely that our working class will give up the physical and social comforts of the ordinary public-house until a substitute has been provided for it, and so certain that nothing of this sort will endure and spread which is not founded on a solid commercial basis, that, with your permission, I will make known any information which reaches me tending to this important result. The Warrington house has been a success, and although I would by no means advise a servile imitation of any single model, it is instructive to see how this success has been obtained. The following extract from a recent letter contains the explanation:—

'Warrington, March 12, 1877.

We have several reasons to give for our success as a company. We do everything on a commercial system. Our capital consists of 53*l.* in 1*l.* shares, paid up. Our house is very centrally situated. We issue monthly tickets to members at 6*d.* each; annual, 4*s.* each. We charge every one else who passes beyond the refreshment-bar 1*d.* This brings us about 50*l.* or 60*l.* per annum. Our billiard-table brings us from 80*l.* to 100*l.*; our beds, 120*l.* to 140*l.* Altogether, we have an income of about 280*l.* This enables us to pay a rent of 105*l.*, and taxes, &c., in proportion; and, after paying all our other expenses, we paid last year 10 per cent. to our shareholders, a debt of 7*l.* to our capital account, put by 18*l.* to the reserve, and brought forward a small balance. At the end of this year our rent will be increased to 140*l.*, so that we shall have to stir about a bit to make this up. We have a very nice reading-room, and we shall have a club-room very shortly. Our refreshment-bar belongs to our manager, who, in return for the profits thereon, and house-room, coals, gas, &c., gives his services and those of his wife, and keeps our place in good order, and clean.'"

FIRE-TRAPS.

Sir,—The recent calamitous fire at the St. Louis Hotel suggests to me to ask you, with regard to the common practice of constructing the interior walls and partitions in houses of wood,—forming substantially a wooden flue for the flames to rise up and quickly set fire to floor after floor,—whether it would not be well to make it compulsory that all such partitions should be of brickwork or concrete? While not adding much to the expense, this would greatly check the rapid run of the fire, and give people, especially in the bedrooms, more time to escape.

A Reader.

ARCHÆOLOGICAL SOCIETIES.

Société Française d'Archéologie.—Congrès de enlis.—This year the Société Française d'Archéo-gie holds its annual meeting at Senlis, Oise. he town in itself is interesting and but little nown, being out of the grand thoroughfares, d presenting no inducement to the world of mmonplace sightseers to turn out of their reet line from Boulogne to Paris at Oreil, where branch line leads to Senlis. The Roman and ediæval remains of the place itself are dwarfed the extraordinary interest in places adjacent, hich will be visited, such as Beauvais, Com-igne, Champlieu, Pierrefonds, &c.; and a little rther are Soissons and Laon. In the last lume (vi.) of Mr. Roach Smith's "Collectanea ntiqua," the district from Compeigne and hamplieu to Laon, by Pierrefonds and the oman towns excavated at Mont Berney, is scribed. The director of the congress is . Léon Palustra, editor of the "Bulletin onumental," which, together with the Société rançaise, was established by the late M. de aumont.

London and Middlesex Archæological Society.—t the last meeting of this Society, an interest-g paper was read by Mr. T. Milbourn, on "The wo First Churches of St. Stephen's, Walbrook" r. M. Bloxam, F.S.A., presided. The paper ave a concise history of the two churches, the rst of which was built on the west side of Valbrook, and the second on the east. The chives of the churches, which had been horoughly searched, revealed some curious cts as to the prices paid for various services nd work performed. At one period there was doubt as to who had a right to maintain the hurch, and in the twenty-eighth year of the eign of Edward I. (1300), an inquisition was eld to determine who should do so, and the arish was called on to pay for repairs. Many f those highest in the church had paid for ashing the vestments and other things out of heir own pockets, and these sums were duly ecorded. The original building was a Gothic ructure of the Perpendicular period, and it had a ower, steeple, and belfry. The changes caused y the Reformation were duly marked by many vidences.

A NATIONAL ASSOCIATION FOR THE PROMOTION OF GOOD WORKMANSHIP.

Sir,—There being no great appreciation of, nd very little encouragement for, high-class workmanship by the wealthy classes of this ountry, I would propose to supply an artificial timulus to the production of fine work by the ormation of an association under the above itle. This association should annually offer mportant prizes to those workmen who should xhibit the best specimens of their special andicrafts. The prizes would be awarded to he actual producers of the selected works,—to rtisans, not to tradesmen.

It cannot be supposed that the present appli-ation of wealth to the purchase of old pictures, f old china, and of all the rococo of past enturies, will, in any sensible degree, tend to romote national excellence, either in art or in workmanship. Fine art and fine workmanship were created in Greece and Italy by the wealth f those countries being, amongst other things, evoted to the public and private employment f the artist and the skilled artisan. This is the ne only way to promote excellence in the arts nd in manufactures. It is useless for men o graduate for either the highest class of art r of handicraft, if there be no demand for it.

This association is proposed as a compromise, nd as an intervening step between the present nd that future when the duties of the State owards the arts and manufactures shall be better nderstood. W. C. T.

CITY CHURCHES.

The architect of St. Mary Aldermary, in Vatling-street, having *carefully restored* the orth aisle, has just discovered that the window-penings do not range with the sham outer open-ngs. It is to be hoped that he will ultimately iscover that the east end is not at right angles vith the nave of the church. Looker on.

The Unemployed in the United States.—t is estimated that in the United States gene-ally two million of men are out of work, and of hese, forty thousand are in New York.

THIS EASTERN QUESTION AN ENGINEERING ONE.

Sir,—People may call the strife between Russia and Turkey religious or political, but its physical basis is a geographical question.

Speaking summarily, it arises from the right of controlling navigation betwixt the Mediterranean and the Black Sea; at present this right is held by Turkey, it is claimed by Russia, and desired by every maritime power in the world, and it turns upon the possession of those two narrow water outlets called the Dardanelles or Hellespont and the Bosphorus or Straits of Constantinople.

It would appear that in prehistoric times this right was held by Troy at the European end of the channel, and when the Hellenes had captured Troy they were enabled to transfer the control to Byzantium at its Asiatic outlet, since called Constantinople or Stambul.

The physical conformation of this entire channel is peculiar, for the two narrow outlets are enlarged in the centre to some sixty miles or so, called the Propontis, the sea of Marmora or White Sea. It is very obvious that if we can turn or enlarge the two outlets we shall have a perpetual access from sea to sea, beneficial to commerce and productive of peace and good-will among nations.

The western channel is narrowed by a promontory called the Peninsula of Gallipoli: the land should be channelled and blown up at the neck of this peninsula to admit water from the Gulf of Saros direct to the Marmora. Engineering difficulties, so-called, are good for trade, and they cost a mere tithe of waste caused by the dreadful wars that the right of possession to this channel has led to.

The eastern outlet involves a more complicated process: here we must start from the Gulf of Ismid and turn Scutari; if it be possible, the navigable outlet to the Sea of Marmora on the east should be from the mouth of the river Sakaria.

I do not propose to meddle with the existing outlets, for this fresh opening will tend to obviate any difficulties arising from the respective water levels of the two seas, thus to be more fully connected. A. H.

CENTRAL LONDON HOUSE BUILDING.

Sir,—Referring to your excellent article on the above subject, induces attention to another great want in the commercial part of western London, *i.e.*, a good wide thoroughfare at right angles, say, to Oxford-street, with building running through to secondary parallel streets on either side, so as to provide show-rooms and agencies for some of the great country houses in the front, with cranes and facilities for loading and unloading, packing, warehousing, &c., in the rear. Few such premises are now to be had, yet London is essentially the commercial centre to which both buyers and producers gravitate, and the tendency is for all large manufacturers to have a representative establishment in the metropolis. To have to carry on the operations of loading and unloading from the front, thus impeding the traffic and interfering with their own and other people's business, is a drawback and nuisance with which we are all too familiar. Such an arrangement as above referred to would commend itself to commercial enterprise, and prove a good investment, either taken up as a metropolitan street improvement or as an estate improvement, by some of the large landed proprietors. T. C. S.

ANOTHER USE FOR "REFLECTORS."

Sir,—A curious accident occurred last week in Shoe-lane. A little boy, four years old, was playing on a sofa, close to a window, the blind being drawn down. The infant did not know the window was open. He rolled against the window and tumbled through a skylight underneath, about 20ft.; smashed the glass, and certainly would have been killed had he not fallen on a reflector which happened to be fixed in the bar-room of the Ben Jonson public house. The shock was deadened, and the child afterwards dropped on the floor, with only a cut about the forehead, but well enough to be running about half an hour after.

This reminds me of two similar accidents with a like fortunate result within the last two years. In Lawrence-lane, at the back of a house, a lad, whilst cleaning a window, lost his balance, and fell from the second story; happily, he dropped on a reflector fixed at the first-story window below, and was saved from certain death. The surface of the reflector was smashed, but the lad safe. The same thing happened to a porter in Bow-lane, whose leg would undoubtedly have been broken had not the reflector fixed below deadened the fall. P.

KNIGHTSBRIDGE BARRACKS.

Sir,—As it has been decided that a new building is to erected upon the old site, the works are now being carried on vigorously; the construction to be of red brick, with stone dressings; and it may be anticipated that an elevation not unworthy this beautiful position may supplement the old decrepit structure. The available site being 195 ft. in width (and that for only about two-thirds of its extent) is in length eight times its main width; for it is reduced to 90 ft. in width at the western extremity. So that for a central parade or drill-ground the space is too restricted; but by the new plan, doubtless, a greater length of inclosed quadrangle will be provided, by placing the riding-house and officers' quarters further westward. There is, however, one point of great public importance that should now be taken into consideration. On the eastern end of the plot there is a narrow public thoroughfare, leading from Tattersall's corner across the Kensington-road into the park; it is only 200 ft. in length, by a width varying from 9 ft. to 20 ft. On one side the Duke of Wellington's stables, presenting a tolerably fair elevation, borders the way. On the other there are three public-houses and four small lodging-houses, which occupy a margin of about 50 ft. in width, close up to the old barrack foundation. In fact, the back windows of this shabby range are within speaking distance of the west end of those of the barracks, which they darken and dominate.

On all other sides the position is open,—south to Kensington-road, north to the park, and west to the shrubbed border. Ought this squalid range to be suffered to remain on the east end,—above all, the three public-houses? Already there are five within 150 yards range of the barracks, three being directly opposite! Seeing that an appropriate canteen will be provided within the precincts, and that those rude and irregular structures will conceal the new barracks on the eastern approach from town, surely the whole range should be removed. Such a clearance would not only bestow an integrity of plan upon the new structure, but would also confer an inestimable advantage upon a great portion of the south-western district by enlarging and opening out (with border plantation next the barracks) a respectable open frontage thoroughfare to the Serpentine, and across the park, at either end of it. T. H. H.

BUILDERS' TENDERS.

LEWIS *v.* BRASS.

This was an action in the Common Pleas, before Mr. Justice Hawkins and a common jury, brought by Mr. Lewis, a draper in Oxford-street, against Mr. Brass, of Old-street, St. Luke's, for damages for breach of an alleged contract to rebuild the plaintiff's premises in Holles-street and Oxford-street. The quantities were supplied to the defendant and other builders, and contained a preliminary statement that part of the work which most affected the plaintiff's business, but which was not indicated on the plans or referred to in the quantities, would have to be completed by the —— day of ————, and that the general conditions would be very stringent on this and other points. There was also a note at the foot of the summary of the bills of quantities, stating that the general conditions could be seen at the office of the architect, Mr. Hughes.

The amount of the penalty and the time for the completion of the portion most affecting the plaintiff's business, and of the whole work, was left in blank in the conditions.

The defendant tendered for the work on a form supplied by the architect, whereby he agreed to execute the work shown on the plans and specifications for 4,193*l.* in twenty-six weeks, or 4,800*l.* in eighteen weeks. This tender was compiled in the absence of the defendant, and signed and sent in by a clerk, and was accepted by the architect, who stated in his letter that the contract would be prepared by the plaintiff's solicitor, and sent for signature. The defendant, however, ascertained that an error of 26*l.* had been made in the estimate, and withdrew his tender, and declined to carry out the work at that price; the plaintiff then negotiated with the builder who had sent in the next lowest tender, which was for 5,190*l.*, to execute the works in twenty weeks, and ultimately entered into a stringent contract with him for the execution of the work. Before that contract was signed the defendant offered to divide the 26*l.* with the plaintiff, and do the work for an increase of 130*l.* above his estimate.

It was contended by the plaintiff that the tender and acceptance formed a contract, but this was denied by the defendant, who contended that neither party intended to be or was in fact to be bound until the formal contract referred to in the quantities, and the letter accepting the offer was agreed and signed, and the details which had been left in blank in the form of conditions had been arranged between the parties.

The Judge held upon the point of law that there was a contract to erect a house according to the plans and specifications for a certain sum of money, but that neither party could have required the other to execute a contract embodying any unusual provisions in the building contract as to payment, penalty, or otherwise.

The Jury found that it was the intention of the parties that the tender and acceptance should be an agreement for some purpose, and also that the defendant was bound by his clerk's signature. The work executed was in reality different from that which was shown upon the plans and included in the specification, and which formed the subject of what was held to be the contract, and the jury ultimately assessed the damages at 26*l.*

Judgment was reserved by the Judge to enable him to consider as to whether he should hear further argument upon the point of law as to the existence of a contract.

Competition.—The designs of Mr. Stuart Colman, of Bristol, have been adopted by the committee of the Rev. David Thomas Memorial Church and Schools, to be erected at Bishopstow, at a cost of 6,000*l.*

MINOR COMMISSIONS.

SIR,—I have just parted from a foreman of works who came to pay for laths: as our conversation may be instructive, I venture to trouble you with it:—

"Now where's the plasterer's money?"

"I don't understand you."

"Why, we always get 2s. a load allowed in London."

"Indeed! What else do you get allowed?"

"Why, 8d. for 2 yds. of lime if paid at the time, 4d. if it is booked, 2d. for 1 yd., and 1d. for a ½."

"Then what return do you make for this allowance? You pass short weight, of course?"

"No, they don't get that out of me!"

"But now you are superintending work for your brother; how if you were not?"

"Oh, that would be another matter altogether!"

Comment on this is needless.

COUNTRY BUILDING MATERIAL MERCHANT.

DILAPIDATIONS: LESSEE AND LESSOR.

WILBERFORCE *v.* BLACHFORD.

IN this case (heard in the Southampton County Court) the Rev. Basil Wilberforce claimed 15*l.* for dilapidations in a house formerly occupied by the defendant under a repairing lease, he being the third occupier under the lease. Mr. Leigh appeared for the plaintiff, and Mr. Killby for the defendant.

Some discussion occurred as to the payment of costs, and Mr. Killby contended that too many particulars had been supplied, viz., to the amount of 31*l.* odd.

The Judge ruled that they could prove for the whole amount, but claimed only 15*l.*

Mr. Mitchell, architect and surveyor, was called, and proved the various dilapidations, which he estimated at over 31*l.*, and in cross-examination stated that these had been caused, doubtless, from time to time.

Mr. Killby contended that the action should have been brought against the lessor, not the assignee.

The Judge looked over a case, "Mule *v.* Garrett and Others," tried in 1870, in which the original lessee, having been sued by the lessor, in his turn sued the assignee, the latter being only liable for such damage as was done during his occupation.

In answer to his Honour, Mr. Mitchell said it was an old house.

Mr. Leigh said the lease of 1846 was a renewal of a lease dated 1822, but the covenant was that the tenant must repair and keep in repair.

The Judge said he should at the very first strike out 15*l.* from the surveyor's estimate. He considered 7*l.* 10*s.* was sufficient.

Mr. Leigh said that the Rev. Basil Wilberforce was bound to bring this action in justice to himself and his successors.

The Judge said he could not see this, the rev. gentleman was not bound. What had posterity done for him?

Judgment for 7*l.* 10*s.*, with costs.

CHURCH-BUILDING NEWS.

Southsea.—St. Jude's Mission Chapel, Southsea, has recently been consecrated by the Bishop of Winchester. The building, which is situated in Marmion-road, is intended principally to accommodate the poorer portion of the residents in St. Jude's district. The whole expense of the erection, including the site, has been borne by Captain Alexander Gordon, R.N. The building has been designed and carried out by Mr. Henry Lawrence, of Southsea, and will accommodate a congregation of 300 persons. It is 30 ft. wide, with a total length of 67 ft. inside, and 32 ft. high to the ridge of the open roof, with organ-chamber and vestry in the south-east angle. The style of the building is described as English-Gothic of the latter part of the thirteenth century. The exterior is built with split flints, and the windows, quoins, and dressing of Bath stone. Messrs. Maw & Co., of Broseley, supplied the encaustic tiles, and Messrs. Hart, Son, Peard, & Co., the gasfittings.

Wolverhampton.—Some time ago Miss Stokes made an offer of funds towards carrying out the original design of adding a spire to the church of St. Jude, Tettenhall-road. A meeting has been held, and a design, prepared by Messrs. Bidlake & Fleeming, architects, of Wolverhampton, has been approved of.

Bolsover.—For some years past it has been in contemplation to enlarge and repair the fine old church of St. Mary, Bolsover. The work has now commenced. The Duke of Rutland, whose ancestors repose within its walls and are commemorated on the costly monuments of its mortuary chapel, has undertaken to restore the chapel and the chancel, and subscribes largely to the rest of the fabric. The restoration is being executed under the superintendence of Mr. Mitchell-Withers, of Sheffield, who is also designing a new church for Whaley Thorne.

Midhurst.—St. Mary's Church, Easebourne (Midhurst), was reopened by the Lord Bishop of Chichester, on the 20th ult. The church is an Early English structure, dating back as far as 1290. Its register commences in the year 1638. It is situated on a spot adjoining the ancient Benedictine Priory of Easebourne, founded by Sir John de Rohun in the reign of Henry III. The restoration has been effected under the superintendence of Mr. Arthur Blomfield, and has been carried out by Messrs. Dove, Brothers. The church will comfortably accommodate 400 persons. The cost has been borne by the Earl of Egmont. Stained-glass windows have been added by Messrs. Heaton, Butler, & Bayne, and the peal of four bells has been recast in five bells by Messrs. Mears & Co.

Upper Slaughter.—On the 19th ult., the Church of St. Peter, Upper Slaughter, was formally re-opened, after restoration under the superintendence of Mr. J. E. K. Cutts, architect. Upwards of 1,300*l.* has been spent in the work.

Warminster (Wilts).—The Church of St. Aldhelm, Bishopstown, was re-opened, after restoration, on Easter Tuesday. The works consist of an entirely new chancel, except foundations; the restoration of the nave consists in the repair of the nave roof, the substitution of pointed windows for the previously unsightly circular-headed ones of recent date, all windows being treated in the fourteenth-century style, and fitted with tracery; a new oak pulpit and reredos; oak and pine seating throughout in chancel and nave; a new vestry and organ-chamber, chancel arch, and a renovation of the western entrance. Mr. W. Scott Champion was the architect, and Messrs. Wall & Hooke, of Brimscombe, were the builders.

York.—The new church of St. Maurice, York, is progressing towards completion. The gable above the chancel-arch has been built, the east and west walls have been completed, and the tracery windows inserted. The walls of the tower have been carried up to the height of 66 ft. from the ground, leaving a height of 14 ft. to be built to the top of the parapet, or a height of 25 ft. to the summit of the pinnacles. The woodwork to the whole of the roof is now completed, and the roofs of nave and aisles are slated in. Mr. Fisher is the architect.

DISSENTING CHURCH BUILDING NEWS.

Loftus-in-Cleveland.—A new Wesleyan chapel at Loftus, in the Cleveland district, was opened on the 20th ult., as a memorial to the Rev. Dr. Newton. The building occupies a prominent position at the east end of the village, and has accommodation for 900 persons. The cost has been about 3,000*l.*

Carbrook.—On the 8th ult., a building which is to be used as a Wesleyan Chapel and Sunday School, situated in Carbrook-street, was formally opened. The late Mr. Joseph Angus gave the site both for schools and chapel. The chapel is substantial and commodious, and well lighted. The total cost of the building, including the furniture, has been 1,700*l.*

Hucknall Torkard.—On the 3rd inst. a new Baptist Chapel was opened at Hucknall Torkard. The building is in the Renaissance style, and the end abutting on the Watnall-road is flanked on either side by massive towers with pinnacles. The structure is of red brick, with stone dressings, the external cornices being formed of ornamental brickwork. There is accommodation for between 700 and 800 people. The building has been erected from plans by Messrs. W. F. & R. Booker, architects, Nottingham. The joint contractors are Messrs. Joseph Munks and David Richer, the former doing the woodwork, and the latter the brickwork. The other work has been executed by sub-contractors, as follows:—Mr. George Pushman, stonemason; Mr. Peter Howis, gasfittings and ironwork; and Mr. Thomas Hall, plasterer. The cost has been about 4,000*l.*

Stargate.—On Easter Monday the foundation stone of a Wesleyan Methodist Chapel was laid at Stargate, a recently-erected colliery village situated about two miles east of Ryton. The contractor for the work is Mr. Thomas Marsh, of Blaydon Bank; and the edifice, when finished, is to accommodate about 200 persons.

Mirfield.—The four memorial stones of a new chapel for the Methodist New Connexion at Mirfield have been laid. The new chapel is calculated to cost 4,000*l.* Messrs. Sheard & Hanstock, of Batley, are the architects.

Ingatestone.—The Congregational Chapel at Ingatestone, Essex, was re-opened on the 5th inst., after alterations and repairs, and the erection of new schools adjoining. The plans were prepared by Mr. C. Pertwee, of Chelmsford, and the work was entrusted to Messrs. Choat & Son, of Chelmsford, builders, to execute. The total cost amounted to about 1,100*l.*

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

West Bromwich.—The opening of the new Roman Catholic Church of St. Michael and the Holy Angels, West Bromwich, took place on the 19th ult. The building has been erected from designs by Messrs. Dunn & Hansom, of Newcastle-on-Tyne. The style is Early English, and the structure consists of nave, chancel, and north and south aisles, with a chapel at the end of each. In the interior coloured materials have been liberally introduced. The cost has been about 3,000*l.*, and sittings have been provided for about 450 worshippers. The total length of the nave and chancel is 95 ft., and the width of the building 47 ft.

Wells.—The Hon. and Rev. Dr. Clifford, Roman Catholic Bishop of Clifton, has recently laid the corner-stone of a Catholic chapel about to be erected in connexion with the convent of Carmelite Nuns in Chamberlain-street, Wells. The chapel, which he dedicated to the honour of Almighty God, under the invocation of St. Joseph and St. Theresa, is being erected at the cost of a Catholic gentleman, a relative of one of the nuns in the convent, and is from the design of Mr. Charles F. Hansom, of Clifton, architect, the contractors being Messrs. F. & G. Brown, of Frome. The plan consists of nave, 45 ft. by 21 ft.; chancel, 20 ft. by 21 ft.; and nuns' choir at right angles to the latter, 35 ft. by 18 ft., with double sacristies, &c. The west end faces Chamberlain-street, and will be nearly 50 ft. high. The general design is adapted from an interesting example of a small "wayside chapel" in Norfolk,—a kind of building very common in France and Belgium, but, at the present day very rare in England. The roof inside is what is known as a "barrel roof"; it is entirely of wood, and is divided into panels by rich mouldings, having carved bosses at their interaection. The walls will be built of local stone, with dressings, &c., of Doulting freestone.

Templederry.—The new Roman Catholic Church at Templederry, which is being erected under the superintendence of Messrs. Wm. McCarthy Gearan, builders and contractors, Limerick, is rapidly approaching completion. It is expected to be ready for consecration this summer. The building is of cruciform shape, with semicircular apse. Its cost when complete will be nearly 4,000*l.* It is 92 ft. long from the apse to the end of the nave, and 72 ft. wide at the transepts. It will have an open stained roof. The style is Early English. Mr. M. E. Hennessy, of Limerick, is the architect.

SCHOOL BOARD SCHOOLS.

Carisbrooke.—The new Board school building in the upper part of the village of Carisbrooke were opened on the 12th ult. The site commands a view of Carisbrooke Castle, and neighbouring down and woodland scenery. The buildings, of dark coloured bricks, slightly relieved by courses of a lighter colour, present a neat exterior. The buildings comprise boys' schoolroom, 56 ft. by 22 ft.; girls' room, 50 ft. by 22 ft., lofty, light, and well found in the necessary appliances; the entrance to each is through a large porch fitted for depositing caps, coats, and cloaks. There are also commodious class-rooms, and a board-room with a separate entrance. The two playgrounds have sheds, lavatories, and every other convenience. The architect is Mr. T. Dashwood, of Ryde; and the builder, Mr. A. Young, of Sandown.

Stockton.—On the 12th ult. the Stockton School Board ordered instructions to be given to Mr. Clephan, architect, to prepare plans of a school building to accommodate 650 boys, girls, and infants, proposed to be erected on a site recently purchased by the Board in Portrack-lane. The new schools are intended to supplant the present schools in that district, which are inadequate.

Wootton.—The foundation stone of new Board school at Wootton has been laid. The building, which has been designed by Mr. T. J. Jackson, architect, Bedford, will, when completed, afford accommodation for about 130 children, and will consist of a spacious hall and class-room, with

aster's residence attached. The contract, mounting to 1,442*l.*, has been divided between Ir. James Potter, builder, Bedford, who does he brick and stone work, and Mr. Alfred Long, f Bedford, who is to supply the carpenters' and iners' work.

PROPOSED NEW HALL FOR THE CITY COMPANIES.

A PROJECT is under consideration for the rection of a new hall for the joint use of those f the City companies who do not possess the dvantage of having an official building for the ransaction of their business such as several of he great companies have. A meeting has just een held at the offices of Mr. Crawford, in loorgate-street, when the masters and clerks of he various companies who have no halls of their wn were present. The object of the meeting as to consider the subject of erecting a central all for their use. The question was discussed t considerable length, in the course of which Ir. Crawford said that there were three ways f carrying the matter out. The first was that he companies should unite in the creation of a ommon fund with the view of building a large all. The second suggestion was that some of he companies should build a hall which they night sub-let to the smaller companies. The hird proposition was to build a hall as a joint-tock enterprise. He observed that since the ondon Tavern was pulled down many of the ompanies had been sent adrift, so to speak. He dded that plans for a building had been repared by Mr. Walton, architect, and these lans were submitted. It was unanimously greed that a hall of some kind must be built, ither as a joint-stock undertaking or by some of he companies, and ultimately a provisional com-ittee was appointed to prepare a scheme to be ubmitted to a future meeting.

AN UNHEALTHY BAKEHOUSE.

SOME unpleasant revelations were made the ther day in the Lambeth Police-court, when a aster baker carrying on business in Peckham as summoned before Mr. Chance, at the instance f the Vestry of Camberwell, for an infringe-ent of the 4th section of the Bakehouse Re-ulation Act, 26 and 27 Vict., cap. 40. Mr. araden, vestry clerk, attended to prosecute.

James Comfort, one of the inspectors of nuisances, said March he visited the premises, and found a water-oset in the bakehouse. It was about 7 ft. from where e bread was made, and on a kind of counter close to e closet was a quantity of jam. The door of the closet ened directly into the bakehouse, and there was an luvium arising therefrom.

Dr. Bristowe, the medical officer of health to the vestry, re out th s statement, and added that, however well kept e closet might be, a nuisance would sure to exist likely be injurious to health.

Defendant said there was no backyard, and some place ast be found for the men working in the bakehouse.

Mr. Chance said it could not be tolerated that a closet ould be allowed in such a position. Such a convenience, doubt, was necessary; but it must not be of a character eiy to injure the public health.

Defendant said it had existed thirty years, and he had ard of no ill effects from it. He would try and have me system of ventilation communicating with the ect.

Dr. Bristowe said that would not, in his opinion, be fficient. It required a complete separation of the oset from the bakehouse. In addition to sanitary tters, it was anything but right, in his opinion, that ch a closet should exist within a few feet of where bread s made.

Mr. Chance said he quite coincided with this opinion. would give the defendant an opportunity of making h alterations as would be satisfactory to the vestry, d for that purpose adjourned the summons.

A Decision to be contested.—At the meet-g of the Camberwell Vestry on the 13th inst., e Sewers and Sanitary Committee reported at summonses were taken out at the Lambeth olice-court by order of the Vestry, under the st section of the Metropolis Management Act, d 64th section of the Amendment Act, 1862, ainst Mr. J. H. Clark for neglecting to lay on ter to the closets of some houses in Peckham, hich summonses were heard on the 7th March t, before Mr. Chance, who having heard idence from two surveyors on behalf of the de-dant, that in their opinion the places would t sustain the weight of cisterns, dismissed the mmonses on the ground that they came within e provisions of the 81st section of the Act, hich gave him the discretion to determine ether the laying on of water from a cistern uld disturb a building or not. It was agreed, er discussion, that the clerk should be in-ucted to get a case for the opinion of the urt of Queen's Bench.

OBITUARY.

ON Tuesday last Mr. Alfred Burton died suddenly at his residence, St. Leonard's-on-Sea, from an attack of heart disease. He was brother of Mr. Decimus Burton, architect, and one of the ten children of Mr. James Burton, the eminent builder, who so essentially seconded Mr. Nash in his enterprises in Regent-street and Regent's Park under the Prince Regent; and which was the first movement in opening up London, and led to the enormous improvements of the metropolis in modern times. The father, Mr. James Burton, was the founder of the present town of St. Leonard's, where there were then barely a few trees and shrubs, and not a house nearer than the old town of Hastings, with which it now forms a continuous line of three miles of handsome houses.

Miscellanea.

Use of Steel in Railway Structures.—The committee, consisting of Sir John Hawkshaw, Colonel Yolland, and Mr. Barlow, appointed by the Board of Trade to consider the practicability of assigning a safe co-efficient for the use of steel in railway structures, and the correspondence connected therewith, have made their report. They recommend that the employment of steel in engineering structures should be authorised by the Board of Trade under the following conditions, namely:—1st. That the steel employed should be cast steel, or steel made by some process of fusion, subsequently rolled or hammered, and that it should be of a quality possessing considerable toughness and ductility, and that a certificate to the effect that the steel is of this description and quality should be forwarded to the Board of Trade by the engineer responsible for the structure. 2nd. That the greatest load which can be brought upon the bridge or structure, added to the weight of the superstructure, should not produce a greater strain in any part than 6½ tons per square inch. They remark that cases may arise when it will be proposed to use steel of special make and tenacity, and when a higher co-efficient than the above might be permissible, but they think those cases should be left for consideration by the Board of Trade when they arise.

Builders' Technical Education Classes—A meeting was held, on the 19th inst., at the Eleusis Club, King's-road, Chelsea, for the purpose of establishing a branch class in that district. Mr. Frank E. Thicke presided, and there was a good attendance, the speakers being, in addition to the chairman, Messrs. Woodley, Berry, Gardner, Jeffery, Lawrence, Bachelor, and others. A retrospective history of the movement was given, wherein it was stated the committee had been successful in establishing branch classes in the Blackfriars-road and Greenwich, and were engaged in the preparations for forming classes in other districts which had sought their aid, such as Clapham and Hackney. At the close the names of thirty students were received as willing to join the local class in Chelsea. The chairman, in the course of his remarks, said that the success of these classes, now likely to be established all over the metropolis, was much enhanced by the material support given to them by the Royal Institute of British Architects, and he hoped that architects would personally assist in the good work.

The Institution of Civil Engineers.—At the ordinary meeting, held on the 24th of April, Mr. G. R. Stephenson, president, in the chair, the first paper read was "On a deep Boring for Coal at Scarle, Lincolnshire," by Professor Edward Hull, F.R.S. The second paper read was on "Street Tramways," by Mr. Robinson Souttar. Portland cement concrete formed the best foundation for a tramway, but care must be taken to give it time to set before laying and paving the lines. Where the work had to be hurried, bituminous concrete was preferable. Rectangular cross sleepers injured the concrete by their vibration, but if they had slightly bevelled sides, this objection would be overcome. Tramways with cast-iron bearings had been constructed in this country to a limited extent, but timber was preferable, as the jarring was diminished, and the travelling was rendered noiseless and agreeable. The life of the rail was also probably increased, and the concrete was saved from injury.

Great Fire at St. Louis.—The *Times* correspondent, writing on the 11th inst., gives details of this disaster. He says that the Southern Hotel, St. Louis, caught fire at half-past one that morning. This was one of the largest hotels in St. Louis, and formed an entire block, bounded by Fourth, Fifth, Walnut, and Elm streets. The building was six stories high, and contained accommodation for 700 persons. The fire broke out in the store-room on the basement, and, rapidly ascending by the elevators and the central rotunda, in ten minutes it had spread throughout the sixth floor under the roof where the servants mostly slept. Over twenty persons, chiefly women, jumped from the upper windows, and nearly all were killed. In an hour after the fire began the interior was all ablaze, and the roof and inner walls fell in. The hotel was entirely destroyed, and the loss is estimated at $1,000,000.

Technical Education and the Clothworkers' Company.—According to the *City Press*, the Textile Industries Department of the Yorkshire College of Science, Leeds, established and endowed in 1872-3 by the Clothworkers' Company, has been such a success that a deputation of the council of the college recently waited upon the court, and represented to the company the pressing importance of extending the textile industries department, which is by far the most successful branch of the college, and full to overflowing, by purchasing a new site, and thereon erecting a new and more extensive building, with necessary apparatus, &c. This the court has decided to do, and to do thoroughly, at a total estimated expenditure of 10,000*l.*, subject to certain conditions and obligations to be fulfilled by the council of the college.

Brass Eagles in Churches.—The unhappy dispute in the Established Church of England in regard to legal embellishments of the interior of sacred edifices is likely to lead to an attempt to remove the brass eagles that have, of late years, been introduced into several of our churches in lieu of the wooden reading-desks. The eagle destined for a first attack is, it appears, one at the church of St. Barnabas, Pimlico, and, so far as can be learnt, the "objectors" contend that it is a symbol of Popery, being used in heraldry, spread, to represent a prince of the Roman empire,—*i.e.*, the Pope. Others, however, only see in it the symbol of St. John, long used in the English Church. Thus it is that extreme claims on one side ever lead to extreme objections on the other.

New Post Office, Barton-on-Trent.—The new Post Office building at Burton-on-Trent was opened for business on the 17th inst. It covers an area of about 360 yards, and occupies the site of a block of dilapidated almshouses on the east side of High-street. It is from designs by Mr. Williams, of her Majesty's Office of Works, London; has been erected by Messrs. Lowe & Sons and their subcontractors; and, including cost of site, has involved a total expenditure of about 7,000*l.*

The Effects of Striking Oil.—One year ago (says an American paper) Bradford, Pennsylvania, had a small tavern and a few scattered farm-houses. Now it has 3,500 inhabitants, and hundreds of strangers are turned away from the hotels every night. Petroleum has wrought the miracle. The oil bolt seems to be about two miles wide, and wells have been sunk in the ravine of the Tunnungwant Creek. Land within twenty-five miles of the town in every direction is held at a fictitious valuation.

A Heavy Blast.—A successful blasting operation has been performed at one of the quarries of the South Cornwall Granite Company, situated near St. Blazey. About 700 tons were thrown down with very little breakage, and one block now standing in the quarry contains 8,000 cubic feet, or nearly 600 tons, without a flaw or joint of any kind or any discolouration. There are several smaller blocks of from 30 tons to 60 tons weight.

Kensington Assessments.—At the Kensington Vestry last week, Mr. Crowle being in the chair, a report was read from the Assessment Committee, stating that the valuation of property in the parish now amounted to 1,545,283*l.* Mr. Taylor in moving the adoption of the report, said that the increase in the valuation of property for the year amounted to 83,000*l.* He also said that the total expenses of the committee were 63*l.*, out of which 50*l.* were due to the clerk for his salary. The report was adopted.

Royal Architectural Museum.—On Monday last Mr. Maurice B. Adams was elected honorary secretary of the Royal Architectural Museum, Tufton-street, Westminster, in conjunction with Mr. Joseph Clarke.

Institution of Surveyors. — The next meeting will be held on Monday evening, April 30th, when the adjourned discussion on the paper read by Mr. J. Shaw at the last meeting on "The Rivers Pollution Prevention Act, 1876," will be resumed.

Sir Cordy Burrows.—A statue of Sir Cordy Burrows, physician and philanthropist, whose death is lamented beyond Brighton, is in the hands of Mr. E. B. Stephens, A.R.A. It is intended to occupy a site in the Pavilion grounds.

Pollution of Rivers.—The passage of the Danube or the Pruth by armies thirsting for each other's blood.—*Yorick.*

TENDERS.

For the erection of residence, for Mr. Chas. Stevens, Talfourd-road, Peckham-road. Messrs. Wm. Berriman & Sons, architects:—

W. & F. Croaker	£1,995 0 0
Faulkner	1,885 0 0
Bangs	1,880 0 0
G. & S. Fisher	1,690 0 0
Shapley	1,660 0 0
Prebble	1,605 0 0
Smith	1,597 0 0
Perkins & Co. (accepted)	1,360 0 0

For the erection of a villa residence in the London-road, Reading, for Mr. Brigham. Mr. E. J. Shrewsbury, architect:—

Woodbridge	£1,888 0 0
Simonds	1,657 0 0
Higgs	1,639 0 0
Sheppard	1,620 0 0
Woodroffe	1,620 0 0

For two cottages, stabling, &c., for Mr. Williams. Mr. A. J. Rouse, architect:—

	Two Cottages.	Stables and Coach-houses.
Cox & Son	£1,230 0	£245 0
Baker	1,100 0	267 0
Niblett	1,053 0	238 0
Groome	1,000 0	210 0
Esden	975 0	200 0
Edwards	920 0	210 0
Warr	869 0	195 0
Steed Bros	860 0	250 0
Bartlett	840 10	208 10
Congdon	830 0	320 0
Martin	780 0	220 0
James	755 0	199 0
Colebrook	745 0	195 0

For the erection of dwelling-house in Victoria Park-road, South Hackney, for Mr. D. Thomas. Messrs. T. & W. Stone, architects:—

Forest	£871 0 0
Howard	822 0 0
Stamp & Bowlle	773 0 0
Beal	675 0 0

For St. Saviour's Vicarage, Poplar. Messrs. F. & H. Francis, architects. Quantities supplied:—

	Vicarage.	Boundary Wall.
Watts	£2,671	£113
Nightingale	2,563	157
Bracher & Son	2,462	158
Atherton & Latta	2,315	140
Abraham	2,300	150
Sheffield	2,305	141
Bangs	2,290	143

For the erection of the Gravesend U.D. Board Schools for 600 children. Mr. A. J. Baker, architect. Quantities supplied:—

Gould	£6,055 0 0
Naylar	5,493 0 0
Cobham	5,032 0 0
Blake (accepted) *	4,990 0 0
Gates	4,584 5 0

* Subject to approval of Education Board.

For saw-frames and other machinery at Penmon Marble Quarries, Anglesea:—
Schofield & Co. accepted.

For the erection of a new Convalescent Home at Hunstanton. Mr. Robert Hutchinson, architect:—

Dawes	£3,091 0 0
Saunt	3,080 0 0
Bardell Bros.	2,962 0 0
Brown	2,930 0 0
Farrow	2,897 0 0
Dye & Clack	2,895 0 0
Bunting	2,820 0 0
Bennett	2,797 0 0
Southgate	2,685 0 0
Fisher	2,648 0 0

For new buildings at the rear of No. 126, High-street, Guildford. Mr. Henry Peak, architect. Quantities supplied:—

T. Swayne	£2,045 10 0
Cells & Sons	2,040 0 0
W. Swayne	2,025 0 0
Nye	2,006 0 0
Strudwick	1,934 0 0
Mason	1,929 0 0
Mitchell Bros.	1,922 0 0
Pearce & Clark	1,880 0 0
Garnett	1,868 0 0
Smith & Sons	1,815 10 0
T. Smith	1,841 15 0
Moon (accepted)	1,836 15 0

For additions and alterations to Alfold Rectory, Surrey. Mr. Henry Peak, architect:—

Spooner (accepted)	£645 0 0

For alteration to stabling at Palmerston-yard, Kilburn, for the London General Omnibus Company. Mr. P. Tosh, architect. Quantities supplied by Mr. A. J. St. C. Bolton:—

Hooper	£765 0 0
Mason & Bristy	717 0 0
Downs	698 0 0
Stephenson	696 0 0
Beale	676 0 0
Hunt	643 0 0
Ward	641 0 0
Parkins	634 0 0
Aitchison & Walker	608 0 0

For building new public elementary schools, with master's residence, boundary walls, &c., at Denham, Bucks. Mr. R. Groom, architect:—

Kearley	£2,535 0 0
Brown	2,375 10 0
Taylor (accepted)	2,340 0 0

For works at Wapping, for the Thames Steam Ferry Co. Mr. Alex. R. Stenning, architect. Quantities by Messrs. Lunsdell & Gifford:—

Contract No. 3.

Macey (accepted)	£4,500 0 0

Contract No. 4.

Newman & Mann	11,105 0 0

For enlargement of Methodist Free Church, Barking Side, Essex. Mr. F. Boreham, architect:—

Barnes	£230 0 0
Hannar	230 0 0
Horwood	210 0 0
Todd (accepted)	208 0 0

For Methodist Free Church schoolroom, Bellenden-road, Peckham. Mr. F. Boreham, architect. Quantites by Mr. C. Brooks:—

Tarrant & Sons	£1,054 0 0
Sawyer	1,053 0 0
Horwood	1,052 0 0
Crowhurst & Son	1,050 0 0
Thompson	1,038 0 0

For rebuilding No. 14, Nicholas-lane, Cannon-street, for Mr. C. V. Game:—

Ashby Brothers	£1,470 0 0
Newman & Mann	1,415 0 0
Manley & Rogers	1,398 0 0
Greenwood & Sons (accepted)	1,312 0 0

For additional story to hop warehouse, for Messrs. Dunk & Sons, Borough. Mr. Henry Currey, architect. Quantities by Mr. Gleed:—

Downs & Co.	£1,497 0 0
Josolyne	1,450 0 0

For fitting up and adapting room as lavatory, &c., at the Cathedral Hotel, St. Paul's Churchyard, for Mr. F. Sweeting. Mr. T. R. Parker, architect:—

Smith	£193 0 0
Temple & Forster	190 0 0
Reading	170 0 0

For building additional beer store and other alteration to the Stockwell Brewery, for Mr. C. Hammerton. Mr. T. R. Parker, architect:—

Merritt & Ashby	£478 0 0
Bragg	432 0 0
Maxwell Bros.	419 0 0

TO CORRESPONDENTS.

J. D. (such a scheme has been proposed by others besides our co respondent. We apprehend Mr Harwood made no claim for novelty —E. T. (either through the shrinking of the timber or the improp constitution of the plaster).—J. L. B.—A. & H.—W. W. L.—H. P.- R. H.—A. R. S.—W. V.—M.—G. & B. M.—R.—G. & Co.—G. & S. F.- R. G.—S.—R. M. P.

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The Builder.

VOL. XXXV. No. 1787. SATURDAY, MAY 5, 1877.

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The Grosvenor Gallery.



WE gave last week a view and description of the interior of the Grosvenor Gallery from an architectural point of view; we now turn to its pictorial contents, which were thrown open to the public on the 1st instant. There is a sufficient mingling of names belonging to different schools or types of art among the exhibitors to give colour to the protest which the promoters seem rather anxious to make, that the undertaking is set on foot in no spirit of rivalry with any other existing exhibition: still, a large portion of the contents of the principal room certainly show a leaning towards a special type of art, illustrated in part by artists who, whether wholly by their own will or not, do not exhibit at Burlington House. The prominent place among these is occupied by the works of Mr. Burne Jones, whose later achievements in his art will thus be seen and judged, by many *habitués* of picture exhibitions, for the first time. Mr. Holman Hunt, who usually has declined to exhibit of late years, except in a gallery set apart for his own work only, is also represented by several paintings. Mr. Spencer Stanhope is in great force, and the names of Armstrong and Albert Moore, though better known on other exhibition walls, represent a style sufficiently *en rapport* with those before named not to break the harmony of the combination. Mr. Legros and Sir Coutts Lindsay have little affinity, artistically, with this combination, or with each other, but may stand on the common ground of being both justified in complaining of shabby usage in "another place." Mr. Whistler occupies a considerable portion of wall-space with large-size sketches in his peculiar "arrangements," and nocturnes in different keys; and the remainder of the larger or West Gallery, in which each space between the pilasters is as far as possible allotted to one artist, so as to group the works of each, is filled up by Messrs. Watts, Poynter, Millais, Alma Tadema, Richmond, and two or three others. In the East Gallery there is more mixture of style and arrangement, the painters most numerously represented here being MM. Heilbuth and Tissot, of whom the latter exhibits no less than eleven works. Mr. Leighton has a portrait and two small studies in this room, but no work of the first importance. The catalogue is grouped under painters' names, in the same way as in the actual arrangement of the pictures. With a comparatively small number of pictures this system is as good as any in regard to convenience, and has a certain æsthetic fitness where the style of the artist is a marked element in the interest of the work; but it is a mistake to number each room separately, and thus have two or three duplicates of the same number in the book.

Of the works of Mr. Burne Jones, only two are contributed by the artist, and those are unfinished; but the others may be considered as practically new works, so far as most of the spectators are concerned. The most important is the decorative painting called "The Days of Creation," a series of subjects in six panels in an elaborately-decorated frame. This is an allegorical representation of the "six days" of Genesis, as angelic figures each holding a transparent globe, within which is seen the emblem or representation of the special objects of that day's creation. The figures are draped and winged, the wings being brought partially forward in most of the figures so as to overlap the drapery and give a great richness and variety of colouring. By a pretty device, each "Day" is attended by those which have preceded it, as background figures, so that there is one figure only in the first panel, two in the next, and so on up to six in the last, where the idea of rest and completion is conveyed by the principal figures being seated, and the one in the foreground offering a song of praise to the accompaniment of an instrument looking like an idealised guitar. It would be difficult, perhaps, to praise too highly the beautiful harmony of colour and arrangement throughout this series of small paintings; as a piece of decorative and typical painting it is of a very high order. It is when we come to regard the whole in relation to its intellectual interest and expression that our feelings become more doubtful. There is no grandeur, no diversification of character and feeling, in these rather pensive-looking figures, all alike in feature, which stand placidly in slightly varying attitudes. And if we turn from this to the painting that hangs to the left of it, "Venus's Mirror," which is supposed to deal with more real life, we find the maidens who cluster round the pond and gaze with such an unaccountably melancholy air upon their own reflections in the water, have all again the same type of face, the same full lips, as the angels of the "Six Days." This work is a much less satisfactory one, as it is not consistently decorative; a landscape background is introduced, but it is landscape with no recognisable scale, and none of the air and colour of nature. It is in decorative painting that Mr. Jones's power lies, and the large figure of "Fides,"—a finely designed and draped female figure in an architectural alcove,—is an admirable specimen of the kind of painting that may be used as high-class decoration in conjunction with architecture. There is more of spirit and freedom of action in the "Beguiling of Merlin"; though the tall passionate figure of the enchantress will hardly be accepted as "Vivien" by the generation of readers who are under the spell of the Poet Laureate's vivid delineation of this figure in Arthurian legend. Taken altogether, the collection of pictures at this end of the room, undoubtedly a remarkable set of works, and illustrating specialties of artistic power and execution peculiar to the painter, illustrates also a type of art which has been developed in the present generation, and which answers to ideas that are found current in contemporary literature also, the characteristic of which is to dwell always in a world of dreams, to eschew everything that comes too close to merely human and everyday interest, and keep us in a region of mild semi-religious mysticism. That this type of art has its charm is unquestionable; and it may be said also that this charm is one entirely removed from the commonplace, and appealing to a refined sense in the spectator; but its limits are exceedingly narrow, and an art which thrusts aside the true and normal forms of nature, and delights only in creating a kind of dreamy intermediate world of personages and scenes quite alien to our real experience, without attaining to any such lofty sublimity as might justify a departure from nature by claiming to rise above it, is in the main an unhealthy art, enervating to those who practise and those who preach it.

Taking it for what it is, however, this art is carried out by Mr. Burne Jones with remarkable finish and completeness, and a power over colour and manipulation which (profane as the remark will seem to some) might be bestowed on ideas better worth embodying. In the works of Mr. Spencer Stanhope we see what this kind of visionary art comes to in less gifted hands. Of the hard and unreal landscape backgrounds we say nothing; they would be pardoned were the figures more equal to the painter's (apparent) ambition. But in Mr. Stanhope's paintings one woman does duty for everything; a sort of artistic maid-of-all-work, serving to present Eve, Venus, Psyche, Andromeda, or whatever other feminine ideal may be required. The figure is so far fit for its multifarious occupation, that it comes no nearer nature in one case than in another. In the temptation of Eve in the Grosvenor Gallery, there is a certain Mediæval force, half grotesque, in the face of the human-headed serpent whispering into the ear of Eve, and a certain decorative mellowness and richness of colour pleases our sense in most of the artist's works. But how bounded must be the imagination of a painter who can invite us to contemplate as an ideal of the mother of mankind this ordinary, pale, bloodless figure, with expressionless head and the conventional lips which all the painters of this school affect. In "Love and the Maiden," where an ideal maid is represented waking from her sleep in a wood to the first glimpse of Love, who breaks away the boughs that screen them from each other, there is a little more of life and reality in the female face; our surprise in this case is at the apparent rapture of the maiden on seeing before her this awkwardly-posed figure, with blinking eyes, which have "no speculation" in them. "The

Mill" is a landscape with a figure in a boat reading or dreaming over a book (for none of the characters ever seem wide awake); and this has a quiet and sombre beauty of its own, though there is little enough of the light and air of day in it.

We can hardly accept Mr. Walter Crane's "Renaissance of Venus" as fulfilling its title. The old legend of the birth of Venus from the sea is supposed to be here made anew for us by a fair figure of a more or less modern beauty standing in sparkling shallow water in the foreground. So far as there is any localising of scene, it is an Italian landscape, with a half-ruined temple *à la* Claude in the middle distance; but the figures are not Italian, nor, indeed, of any very distinctly-marked type. The rather meagre contours and hard texture of the principal figure will hardly answer to any one's ideal of a modern Venus. There is more real grace in one of the bathers on the bank in the middle plane of the picture, who stands nearly with her back to the spectator. Our impression is that this sort of thing should be done better if done at all. It only appeals to a sensuous impression of corporeal beauty, and is not beautiful enough to be successful in that light. We must pass over with a word three small works by Mr. Armstrong, which do not represent the best that he can do, though there is artistic quality in his "Girl holding an Embroidery Frame," of a much higher order than in Mr. Crane's quasi-modern Venus. Next to these a considerable space is occupied by Mr. Legros, whose four studies, done in two hours each before the class at the Slade school, as a method of "teaching by example," are proofs of his ready skill. Of Mr. Legros's method of thus working out a subject before his class, of the powerful quality of his studies and the interest they create in the students, we had heard a good deal, and are glad to see some specimens put forth for public notice. Of Mr. Legros's finished works the best are, perhaps, the picture of the itinerant tinker ("Le Chaudronnier") at work at the roadside; but all the works shown deserve examination. That in his more finished works the artist's power is not so unquestionable or so complete as in his sketches and etchings, may be admitted: not that there is any careless work, but there is a certain lack of force and brilliancy, a too great monotony of colour, which tells more or less against the effect of his larger paintings. It is sufficiently absurd, however, to reflect that the author of them had to withdraw his pictures from the Academy for want of finding a respectable position there, when we consider what is annually found "on the line" there. Mr. Whistler's collection we see with little satisfaction. Clever his life-size sketches undoubtedly are, but this seems a very easy way of covering a great deal of canvas; and the artist has been run away with by his notion (a pretty one in itself) of studying particular combinations of tone and giving them musical titles,—a sort of experiment that is interesting enough once or twice in a way, but very soon palls upon us and comes to be regarded as a trick.

The works of Mr. Poynter, which occupy one bay of the Gallery, are not among his most important ones (except his beautiful little "Andromeda," which will be well remembered in a former Academy exhibition), and none of them, we take it, are painted for this exhibition; they are mostly small portrait studies, some of them in his most finished style, and rather instructive as a contrast to some of the sentimental and mystical pictures we have been referring to. Mr. Millais is represented also by portrait heads, chiefly of the Grosvenor family, in a sufficiently different style again, and illustrating a fine, free realistic handling, which certainly goes to obliterate all recollection that the author of them once belonged to, and was a leader in, the sentimental school of modern English art. Between the works of these two artists hang Mr. G. F. Watts's two large pictures, the very fine and forcible portrait of Mrs. Percy Wyndham, and the painting of "Love and Death," exhibited for the first time, although the study for it has been shown. Here we see ideal art without sentimentalism. A winged youth, representing Love, recoils horror-stricken and half-fainting from a heavily-draped figure, with its back to the spectator, the expression and countenance of which is left to our imagination to figure. There is a great deal that is very fine and impressive in this, which is a work of fine colour and real imaginative power: the one drawback is what appears to us as a mistake in perspective, by which the right foot of the youth is placed too far back, and leads to confusion of effect as to the fore-shortening of the limb. The works by Mr Tadema need not detain us for any special comment; one or two of them contain exquisite work on a small scale, but they are not such as would much affect his reputation one way or another. Sir Coutts Lindsay's portrait of Lady Lindsay of Balcarres holding a violin, is a fine, powerful, and characteristic work, reminding us a good deal of the style and feeling of the portraits of Mdlle. Jacquemart. Of Mr. Holman Hunt's works the most important is the figure of a woman carrying straw on her head, called "The Afterglow in Egypt," exhibited some time ago, which is powerful to a degree in colour and realism of detail, but which we cannot find specially interesting. Mr. Albert Moore is at his very best in regard to delicate beauty of decorative effect, in the "End of the Story," represented by a female figure draped in a light green mantle against a background of flowered stuff, producing an exquisite combination of colour. One must admit that this art of Mr. Moore's is also very limited in its range; in the present instance, for example, the interest lies entirely in the colour effect, not in the least in the expression of the maiden, or in anything we gather from her face as to the effect of the volume on her feelings. Still, it professes to be decorative art, and is a perfectly sound and healthy art as far as it goes. Mr. Richmond's "Electra at the Tomb of Agamemnon," a new work, has unquestionably fine feeling and fine qualities; somehow its effect seems hardly proportioned to its aims. A far finer work,—indeed, to our thinking the most complete thing in the gallery,—is his portrait of Mrs. Douglas Freshfield. We here see the attempt to give to a modern portrait a poetic and fanciful tone, without in any way losing sight of nature; although so much care has been expended, and such a delicate feeling for colour is shown in the accessories, there is not the slightest indifference as to realism in the treatment of the figure; the features are beautifully modelled, and the drawing of the fine thin hand, which lies on the front of the frame, is quite a study in itself.

In the east gallery there is less to invite critical questioning, the pictures being mostly more of the class which pretends to no specialty of sentiment or idea. The finest thing in this room is the half-length portrait, by Mr. Watts, of Lady Lindsay of Balcarres, playing the violin;—a picture radiant with life and energy, and very rich in colour. Mr. P. R. Morris exhibits a half-length portrait of a very pretty girl in a silk shawl, which is very fine and characteristic in treatment, and discloses new powers in this able and rising artist. His "Reaper and the Flowers" is more in the style by which he has been known in the Academy rooms and elsewhere; a study of somewhat idealised peasant character, children and an old man, as the foreground figures of an evening landscape. M. Tissot is largely represented, chiefly by pictures of modern life, some of them in his best style; whether it is in deference to the intellectual claims of the Grosvenor Gallery that he has undertaken a series of allegorical pictures with a moral, of which the first is exhibited here, we can only guess; the result is most unfortunate, and M. Tissot's admirers must sincerely hope that he will *not* complete the series, and that he will give up his attempt at allegory, and keep to his real ladies and gentlemen. Mr. Forbes Robertson, whose name may be more heard of (both on and off the stage), sends a rather hard but very conscientiously painted portrait of the Duchess of Westminster; and there is a very good work by Mrs. Jopling. Of Mr. Heilbuth's contributions the most important are not new; among those which are seen for the first time is an interesting Roman group under the title "Mother and Child," and a study entitled "Bougival," where a girl reclines on the banks of a stream; his two landscapes, "Iffley Mill" and "Parc de Courrances," claim attention, more especially in an exhibition which is remarkably weak in landscape for the most part. There are in this room some very bad things, chiefly by foreign contributors, which will hardly keep up the standard which we understood the Grosvenor Gallery was intended to maintain.

This last point is of importance, for on the maintenance of this standard the future of the Grosvenor Gallery seems to depend. If we could have a gallery where only a moderate number of works were admitted, and those only of a high standard, such an institution would be a real relief to eyes and spirits weary with the profusion of mediocre and uninteresting works which the Royal Academy exhibits on its spacious walls, and which, as long as nothing better is offered, it is in fact almost bound to exhibit, as illustrating the artists of the day, so long as a certain standard of execution is reached. But a select gallery, fitted up so comfortably and tastefully as the Grosvenor, which should not be the abode of any school or clique, but the home of all art of the highest class and the highest aims, and of no other, would be a great intellectual boon. It is towards this that the promoters of the gallery should aim; and if they could establish such a standard of excellence, intellectual as well as manipulative, that it should be felt that acceptance of his works was a warrant that an artist had soared above the commonplaces of painting, they would probably draw a large part of the real artistic genius of the day towards them,—perhaps even do something to stimulate and evoke it further. But to achieve such an end the line must be strongly drawn and firmly kept,—more firmly than it has been in this opening exhibition, which is nevertheless full of interest and promise.

A WORD OR TWO ABOUT ROME AND THE LECTURE HALL OF MECENAS.

THE history of architecture will hereafter be found to owe much to the Revolution which restored to Rome her ancient position of the capital of Italy. The Italian Government was hardly installed at Rome before it gave evidence of the sense which it entertained of its duty, *urbi et orbi*, as the conservator of the national monuments. On the 8th of November, 1870, a decree of the Lieutenant of the King of Italy established a system of superintendence of the excavations in the city and the province; and placed at the head of the department Signor Pietro Rosa, already known for his explorations on the Palatine Hill. Within a week the works were begun. Excavations were started at the Forum, at the Baths of Caracalla, at the Farnese Gardens, at the villa of Hadrian, and at Ostia. Unfortunately, this new-born ardour was characterised by more haste than good speed. The bad condition of the finances compelled the Government to restrict their payments on behalf of archæological and architectural researches to a sum altogether inadequate to carry out the designs at first attempted. The archæologists themselves were not blessed with that harmony of feeling and unity of purpose which might have been wished. Rivalries of a natural, if an ignoble, character, made themselves felt. Certain circumstances connected with the researches of the Coliseum gave rise to a good deal of public dissatisfaction. The Government consulted a Municipal Commission, composed of Signors De Rossi, Visconti, Lanciani, and other Roman archæologists, to whom were added, for the nonce, one or two foreigners of note, as Messrs. Henzen and Gregorovius, and decided to stop the progress of the works. At last, to put an end to disputes, Signor Bonghi, who then held the portfolio of Public Instruction, created a general director of excavations and antiquities for the whole kingdom, and entrusted the post to the able hands of the Cavalier Fiorelli, a scholar, a gentleman, and archæologist, already well known to the world, first, by the aid he had afforded to the researches of his Royal Highness the Count of Syracuse, and, after the fall of the Bourbon dynasty in Naples, as the director of the exploration at Pompeii.

Notwithstanding these checks and changes, the progress of exploration during the past six years at Rome has been attended by very valuable results. The chief gain of the period, and it is a gain which the architect cannot fail to appreciate, is due to the scientific spirit which has presided over the operations, and to the improved method adopted in consequence. In fact, though ever since the period of the Renaissance Italy has teemed with persons who called themselves archæologists, archæology proper is there a study but of yesterday. The kings, and popes, and princes who have burrowed in the Etruscan tombs, and rifled the treasures of the sepulchres from Baiæ to Taranto, have worked for their own glory, not for the sake of unveiling the monuments of the past. They have sought marbles, and bronzes, and gems for their own museums. The discovery of the remains of an ancient building was only taken as an indication where to dig for these portable treasures. Walls were torn down, pavements torn up; if frescoes or reliefs were found *in situ*, the only care taken was to remove

them with as little damage to themselves as possible, and the very dust of the ruined temples and palaces was passed through the sieve, in the hope of finding gems or minute objects of art. Thus while the museums,—public and private,—of Italy were growing richer, year by year, Italy herself was, by the same process, being stripped of innumerable records. Architecture was utterly sacrificed to the passion for minor works of art. Not even plans of the buildings, important as they sometimes were, thus ruthlessly destroyed, were made. We have ourselves been witnesses of the removal of some of the remarkable structures at Cumæ, where the sepulchres of three races, different in structure and orientation, were superposed one over another, with the result of obtaining a bronze urn and half a dozen terra-cotta lamps from the Etruscan tomb which was the lowest of the series. Thus in Italy (as in Egypt and other parts of the world) the labour of the antiquary was for a long time destructive rather than conservative. Great improvement has been effected in this respect by the Italian Government. We are yet, however, far from the time when a truly enlightened spirit shall render unnecessary such interventions of the law as Sir John Lubbock is now, with the hearty support of all men of truly artistic culture, seeking to obtain from the English Parliament.

The special condition of Rome renders it all the more important that no work of an exploratory kind, involving partial or total demolition, should be undertaken without the sanction and superintendence of the central direction. The law which appears to regulate the growth of all ancient cities, namely, that the soil becomes elevated with lapse of time, is nowhere more strikingly illustated than in the Eternal City. As Dr. Schliemann has shown to be the case at Hissarlik, so at Rome, one race has built over the foundations reared by another. As we sink in the Roman soil we pass through the Papal, the Imperial, the Republican, and the Regal strata, till we come down on unperished, though unexpected, relics of Etruscan work. The example of the researches at San Clemente is a case in point.

San Clemente is a noble basilica of the twelfth century, which is adorned by some fine frescoes by Masaccio. In the course of some repairs at this church, the discovery was made that it stood over a more ancient edifice, with granite columns, and curious paintings, which dated from the time of Constantine, and which had been used as a place of worship for 700 years, down to the time of the Sack of Rome by Robert Guiscard. Encouraged by this discovery, further search was made, with the result of discovering under the floor of the Church of Constantine a sanctuary of Mithra, and the remains of a Roman house of Early Imperial date. Yet again, before reaching the solid ground, were found constructions in tufa, which are attributed at the latest to the early years of the Republic, if not to the time of the kings. Thus, descending step by step, the explorer retraces the history of Rome, from the Renaissance to the very foundation of the city. San Clemente is, no doubt, a rare example. But it shows what may be found in almost any part of Rome. It was not the habit of the Roman builders to remove the traces of former buildings when they raised new structures. On the contrary, the desire to rise as high as possible into a purer and cooler air, which gives a special character to many of the great cities of Italy, led the Roman architects rather to bury than to demolish the works of their predecessors. Many of the later buildings are reared on enormous substructures. Thus, everywhere, in sinking through the accumulated made ground of centuries, the excavator comes upon the remains of earlier and still earlier buildings.

The question of the recognition of the dates and objects of these various discoveries is one of equal interest to the architectural and to the historical student. Researches into literature and into fact must go hand in hand. A knowledge of the date of a certain mode of dressing the surface of stone, of the period at which brick replaced tufa, and marble replaced brick, of the thickness or fineness of joints, of the nature of cement, and of all the minutiæ of architectural and constructive detail, is as essential as is that of the various descriptions and allusions which are patent or hidden in the whole body of Classical literature. Thus in a poem of Statius, which, as far as its own merits are concerned, only inspires the scholar of severe taste with disgust, as it is devoted to the flattery of Domitian, whom it extols above Cæsar, on the occasion of the erection of a colossal statue in honour of the tyrant, is found an indication of the relative positions of the Temple of Concord, and of the Julian and of the Emilian Basilicas, as well as of the temple erected to Julius Cæsar after his apotheosis, which afforded the clue to the discovery of the latter.

One of the most signally interesting of all the discoveries at Rome from an architectural point of view, was made on the Esquiline Hill, in the month of March, 1874. It has been described by Signor Lanciani, in the "Bulletino della Commissione Archeologica Municipale." In sinking for the foundations of a house on this site, the workmen came upon an ancient wall, curved on the plan, on which were detected some remains of fresco. The earth was cautiously removed, and it was discovered that the wall belonged to a large hall, in tolerable preservation, of which the length was 24 mètres, and the width 10 mètres. The hall had been decorated with great magnificence. Traces of a marble pavement were apparent. The walls had been richly and splendidly painted, and a vaulted roof had risen from over an elegant cornice of stucco. At either end of the hall, at the height of the cornice, and again at that of the dado, black friezes were beautifully painted with mythological subjects,—grave and gay, with nymphs and genii, and with charming landscapes. The colours, in many places, were well preserved. The walls were pierced, at regular intervals, with niches in the form of windows, each of which was filled by a landscape. The upper part of each scene had the blue of the sky, and masses of verdure, flowers, and trees were animated by birds walking on the ground or perched on the branches. The frescoes were more admirably executed than the best of the like work at Pompeii. The testimony of Pliny leads us to refer this style of decoration to the age of Augustus, when an artist made himself a great reputation by being the first to decorate the walls of apartments in this style. "He represented on them," says Pliny, "country houses, porticos, trees clipped into various forms, woods, thickets, hills, fish-ponds, canals, rivers,—after the fancy of every one. He placed on them figures of persons walking, in boats, on asses, or in carriages, or who fished, hunted, spread nets, or gathered in the vintage." That this artist was employed by Mecenas is highly probable; and the discovery of this building on the site of the gardens of Mecenas leads to the conclusion that we have lighted on an example of one of the finest of his works.

It is, at the first glance, a remarkable observation that this noble and highly decorated hall was, as far as its position and illumination was concerned, a sort of cellar. Its walls were sunk 10 mètres below the surface of the ground, above which they only rose to a height of 4 mètres. The remains of a vaulted roof, and the occurrence of fragments of broken glass, show that this sunken hall was lighted by skylights.

A farther investigation shows that this unusual mode of construction was intended to secure a luxurious retreat from the excessive heat of summer. Those persons who have dwelt throughout the year in any of the large palazzi of Italy are well aware how perfectly cool—even cold—are the subterranean or semi-subterranean apartments of these buildings, even during the six or eight fervent weeks in which the daily temperature only varies from four or five degrees below to as much above the height of 90° Fahrenheit. And the discovery of the object of the hall confirms this view. One end of the building is semicircular, and contains seven rows of rising steps, like those of an amphitheatre. At the other end of the hall are traces of a tribune. There can thus be no doubt that the apartment was used for some of those literary *fêtes* which contemporary writers describe as features of this period of the Empire, in which readings were given before a chosen and sometimes a numerous audience. In such a hall would an author first read a new work to his friends. Wrapped in a new toga, as described by Persius, with rings glittering on his fingers, he would take his place on the elevated tribune, and gracefully salute the audience. On the marble pavement at the foot of the tribune were placed seats for the patrons and more important personages. On the steps of the semicircle were ranked the clients, the poor friends, the numerous obscure people who paid for their admission by a prompt and hearty applause. The public readings often took place during the recesses of the Senate and of the Tribunals,—that is to say, during the month of August. The indication of the season is enough to account for the peculiar arrangement of the hall; an arrangement intended to secure the luxurious coolness derived from the earth, and one to which we owe this admirably-preserved relic, illustrative at once of a distinct period of the highly-adorned architecture of Imperial Rome, and of the thoughtful and scientific luxury which the great Romans of the Augustan times had contrived to introduce into their daily lives. In a villa like that of Mecenas, no doubt the winter apartments were as ingeniously contrived to suit the season in which they were used as was this summer hall of poetry and of literature.

The discoveries made on the Forum have been described by a young architect, a pupil of the French School at Rome, Monsieur Ferdinand Dutert, in a work published at Paris, under the title *Le Forum Romain*. M. Dutert followed, day by day, the explorations of Signor Ross. He was always amongst the workmen, his note-book in his hand, sketching, measuring, describing every fragment that appeared from beneath the soil. His work not only describes the present state of the Forum, but it does very much to recall the likeness of its former condition. Of course conjecture plays a part, more or less delusive, in all these attempted restorations; but M. Dutert has had the advantage of indications so precise for his starting-points, that the wings of his imagination must be regarded as clipped within very modest proportions.

In 1536, when the Emperor Charles V. passed through Rome on his return from Tunis, the Pope, Paul III., thought fit to lead the Teutonic Cæsar under the triumphal arches of Constantine, of Titus, and of Severus. For this purpose he made great demolitions. Rabelais, who was present at the time, says that two or three churches, and more than two hundred houses, were then levelled with the ground. Antiquity itself was buried under the rubbish thus produced. The Forum, degraded into a cattle market (*campo vaccino*), then lost its former aspect, and assumed that guise of ruin and desolation which it maintained down to our own time. Paintings of it exist in the Doria Gallery and in the Louvre; the former from the hand of Poussin, the latter from that of Claude Lorraine.

Although the half-buried columns projecting from the soil were enough to appeal to the whole civilised world to discover of what buildings they had formed part, every one who spoke or wrote on the subject had his own independent and discordant theory, and confusion reigned supreme, until it was dispelled by the labours of M. Rosa. The works executed under his direction have involved the removal of no less than 120,000 cubic mètres of soil, and the topography of the Forum is now definitely recovered.

The point of departure for the identification of the chief monuments of this part of Rome was the Julian Basilica. This building had been discovered by Canina, and partly cleared of rubbish by the Papal Government. It was one of the finest monuments of Imperial Rome, commenced by Julius Cæsar, and completed by Augustus. Its marble pavement, covering an area of 4,500 mètres, is now exposed to view, at a level of several steps above the surrounding streets. The marble is yet scored by hundreds of circles, traced by Roman boys for their games, as our own boys draw circles for games of marbles. The positions occupied by the pillars of the basilica are visible on this pavement, so that the plan has been recovered with certitude. We must not linger over the detail, highly interesting as it is. From an inscription of Augustus we learn that the basilica which he completed was between the Temple of Castor and that of Saturn. Of the former, the nearest to the Capitol, eight columns have been found *in situ*. They are of coarse execution, and bear marks of very hasty repair. Towards the Palatine exist three columns of the Temple of Castor, which Cicero calls "the most illustrious of monuments, the witness of all the public life of Rome." From the poem of Statius, as before mentioned, the next clue was derived, which led to the identification of the Temple of Julius Cæsar on the east of the Forum, in the midst of the space reaching from the Temple of Castor to that of Antoninus and Faustina. It is peculiarly interesting to find this temple distinguished (like that of Jupiter at Pompeii) by the replacement of the usual broad continuous flight of steps by a *perron*, or tribune, between two lateral staircases,—the arrangement familiar to us all as adopted in the National Gallery. The remains of a wall of the volcanic product known as *peperino*, which was covered with marble slabs,

indicate the spot (which Augustus adorned with the beaks of the ships taken at the battle of Actium) from which the orators addressed the public. The identification of this famous edifice completes the recovery of three sides of the Forum. The fourth is still covered by the houses of modern Rome. As to the monuments of which the remains may here be discovered, information has been obtained from two bas-reliefs, probably dating towards the close of the first century, which were found when excavating near the column of Phocas. The subject of the reliefs has been contested; but it is admitted that the scene is intended to represent the Forum. On one relief are to be recognised the temples of Castor and of Saturn, and the Julian Basilica; that is to say, the buildings on the south of the Forum. It follows that the other slab represents the monuments on the north, and as yet uninvestigated, side of this most famous historic site.

Disappointment has been felt, not unnaturally, at the modest limits to which the identification of these renowned monuments reduces the open space of the Forum. But it must be remembered that this area, the very heart of Rome, was not intended, like the Place de la Concorde, for architectural effect alone. The Forum played as important a part in Roman history as the House of Commons did in our own. The people assembled in its area. There they were addressed by the orators who sought to move their passions or to win their applause.

The downward slope of the adjoining hills converted the Forum into a sort of pit, or arena, in which the voice of the orator was more distinctly audible than would have been the case if he had stood on a hill, or in a more open space. But the distance to which the voice, even of the most stentorian speaker, could effectively reach was small. On a large area the position of the outer ranks of an audience would have been limited by this natural range, and an empty space would have surrounded the mass collected to listen. There was, therefore, no reason for maintaining a space, free from buildings, of a larger area than was actually necessary for holding an audience; and thus, as monument was added to monument, the Forum became surrounded with ranks of temples, arches, statues, and palatial structures, the *ensemble* of which must have given a view unrivalled for its structural magnificence, as matter of detail, and thus picturesque (rather than pictorial), with an historic grandeur to which the world could afford no parallel. But such a structural arrangement of the entire plan as the architect of a new city would demand as a necessary element of architectural beauty, must have been entirely absent from this part of Rome. The Forum grew with the growth of Rome; it reflected every great epoch, almost every great event of her history. Under Augustus, it reflected the life of eight centuries,—of eleven under the first Popes; but it had none of the measured, leisurely, artificial excellence which occurs only in cities which have been planned to the rule of a single founder, or which have passed under a stern foreign rule; such as that under which the Duke of Alva drove his sword through the centre of Naples, and thus endowed that city with the long, straight, pictorial avenue which is yet called by the name of the Spanish viceroy, the Strada di Toledo.

ARCHITECTURE AT THE ROYAL ACADEMY.

The architectural room at the Academy this year contains nothing which suggests any new development in architecture, but the collection includes a good many drawings of considerable beauty and interest. Ecclesiastical architecture is rather strongly represented, especially in the matter of decorative treatment internally. Civic architecture, on the contrary, is decidedly weak; the designs in this class are not numerous, nor for the most part important, the principal exception being the large view of the tower and main entrances of the Manchester Town-hall, which has been so fully commented upon in our columns from time to time as to render further remarks upon it almost superfluous. As we have said on former occasions, we do not admire the style of water-colour in which Mr. Waterhouse's views are generally executed; it is heavy and brown, and does not do justice in many cases to the buildings represented. The effect of the tower as shown here, however, will indicate what we have elsewhere said as to its solid and, at the same time, picturesque effect; the union of the two qualities of architectural expression, — the monumental and the picturesque,— is evidently aimed at, and has been successfully accomplished. Having first noted this, as the representation of the most important building recently completed, we will devote a few words to some of the principal designs which may be included under

Ecclesiastical Architecture.

"North-east View of the Church of St. Margaret, Ilkley" (1,072), by R. Norman Shaw, A.R.A. This is one of those designs in which the architect succeeds so thoroughly in reproducing the frank simplicity, and even rudeness, of Mediæval architecture in its less elaborate forms. Taken as such, it is a most picturesque design, illustrated in a beautiful and effective pen-drawing. Mr. Shaw is one of the few exhibitors who habitually and conscientiously adds a plan to his drawings, — an example we wish were more followed. The plan in this case shows something, if we mistake not, of an intention to produce a specially Protestant arrangement in the short choir and shallow square chancel. We fail to see the motive for placing the north transept windows so high up in the wall. On the other side, where the organ stands, there would be a motive for it. This is a point to be remarked upon, because the defence of this kind of accidental and picturesque designing is, that it follows the convenience of internal structure and arrangement; but if the external irregularity is quite independent of this, there seems no defence for it.

"South-east View of St. Mary's Church, Southampton" (about to be erected as a memorial to the late Bishop of Winchester) (1,109), G. E. Street. An exceedingly simple design of Early English character, marked by the author's usual power of giving dignity and breadth of effect to small buildings. The windows form a triplet at the east end, with canopied statues between. The low building (vestry ?) against the east wall has a bad effect, and looks like an excrescence. No plan.

"St. Michael and All Angels, Croydon" (1,116), by J. L. Pearson, A.R.A. This is a fine drawing of a very fine and impressive design, apparently in brick (judging from the handling of the drawing). The east end is in the form of an apse, and is flanked by two square turrets, terminating in a lantern stage and small square wood spire, but perfectly plain below; this same characteristic of a plain and massive substructure is carried out in the large tower, which is a most successful combination of massive and picturesque treatment; the base of the spire is marked by large well-designed angle turrets, above which the spire rises perfectly unbroken to the apex. The crossing is marked by a flèche. There is real architectural genius in this design, which is something quite out of the common run, without any oddity or straining after novelty. There is, however, no plan to enable us to judge how far the scenery of the building expresses its arrangement and structure.

"New Church at Beckenham" (1,172), H. Dawkes and E. F. C. Clarke, deserves mention as a fine drawing, combining plan and exterior and interior perspectives on one sheet; the range of large traceried windows (Geometric style) round the octagon apse, with a wall-arcading below, would produce a fine effect internally.

"Congregational Church and School, Beckenham" (1,174), J. Sulman. A pleasing design after an often-used type of the Decorated style; the octagon stage between the spire and tower is very elegant and well contrived.

"New Church for Penycal, North Wales" (1,187), Aston Webb. An almost ideal church for a country district in Wales. The walls are low but massive, with a high roof over them, and a timber bell-turret, simply but picturesquely designed; the drawing, pen-and-ink, is remarkably bold and free: the whole represents a model church for a mountain district, and has much character.

"Church of All Souls, to be built at Harlesden" (1,209), E. J. Tarver. This, which shows the building from the north-east angle, is a very delicate and finished pen-drawing, showing a group of buildings of unusual combination and outline. The style is a very simple one, imitative of Early English, more or less; the gable immediately facing the eye in the view is an oblique one, facing north-east, and joining the transept and apse. The latter has an open arcade under the eaves, somewhat in the style of North Italian architecture, and is flanked by circular turrets; a very elegant *flèche* surmounts the crossing. This is altogether an unusual and very charming design. Unfortunately, we have no plan to show the motive and detail of the eastern arrangement; and we much regret also the figure perched on the gable at the west end, which looks ludicrous, and we hope is not intended to be executed.

"New South Aisle, Kiltegan Church, Ireland, with Mausoleum in Churchyard" (1,220), by J. Brooks. The mausoleum is the important object, and expresses its function thoroughly. It is a heavy stone-roofed building with a strongly marked plinth, narrow slits for light, and a door with deeply-recessed arches springing out of the jamb; the whole is marked by unmistakable character. The author exhibits also several views of churches in the rather heavy but effective style which he has made his own.

Among interior designs we find "Bishop's Throne now being erected in Cork Cathedral" (1,065), W. Burges. This is a coloured drawing representing the throne with its open-work spire or canopy, in the midst of very Romanesque modern architecture with much colour: it may be observed that the canopy is more solid and substantial in character than such work often is, straight lines predominating. It is not very easy to make out from the drawing whether all the colour is structural or applied.

"Tewkesbury Abbey: View of the Choir, showing the proposed Re-arrangements" (1,081), Sir G. G. Scott, R.A. This is a pen-drawing giving a view of the interior from the point up to which the present restoration work has been carried, *i.e.*, two bays westward of the crossing. This does not, of course, give an idea of the whole effect of the interior, as most of the long nave is omitted. The characteristics of the work may be inferred from our interior view from the same point, engraved recently. The drawing of the capitals of the nave piers is scarcely faultless in regard to perspective; otherwise the drawing is a fine one.

"Church of the Holy Angels at Hoar Cross, near Burton-on-Trent: View from the Chancel, looking East" (1,089), G. F. Bodley. A fine water-colour drawing of a very richly decorated interior of late Gothic type. The reredos, filling the whole space below the large east window, is apparently carved oak, with a profusion of niches and figures. The whole effect is very rich, but the details are so entirely imitative of Mediæval work as to leave little room for comment.

"All Souls' Church, Langham-place: proposed new Apse and Arrangement for Choir" (1,140), J. O. Scott. A scheme for coloured decoration of a Renaissance interior, generally effective, though not too delicate or refined in colour-harmony to be out of keeping with the rather common-place detail of some portions of the architecture. The large painting over the reredos, in conjunction with the style and treatment of the latter, has perhaps a little too much the look of "a picture over the chimney-piece."

"Design for Reredos Decoration, to be executed in Venetian Mosaic" (1,146), W. Burges. It would be difficult to overpraise this as a drawing, or as the embodiment of the art of a particular Mediæval period. It is a coloured geometrical drawing, showing a system of constructive polychromy; the lower portion a wall diaper of admirable effect; above a series of marble canopies containing mosaic pictures; the effect of the mosaic being minutely represented. The whole is a most complete and finished thing. Whether it was worth while to bestow all these pains on a revival of this stiff, semi-barbarous style of figures is, of course, another question; but if it is to be done, it could hardly be better done than here.

Pressure of time and space compels us to defer our remarks on the rest of the drawings.

The St. James's Co-operative Benefit Building Societies.—About eighteen months ago the first of these societies was established at the Craven Chapel Lecture Hall, Marshall-street, Golden-square, on the principle of alternate ballot and sale, and met with such marked success that a second was soon after formed. The amount of business since done has been no less remarkable than their rapid formation, 11,000*l.* having been advanced, while the premium from the alternate sales amounts to over 2,000*l.* Thus encouraged, the promoters have determined to form a third society on the same principles, advancing 400*l.* for ten years without interest, on the payment of 1s. 6d. per week.

THE ARCHITECTURE OF TROY.

BY DR. HENRY SCHLIEMANN.*

A few weeks ago I had the honour to describe n this hall the wonderful accumulations of rub-ish on the solitary rock Hissarlik, whose identity vith the site of ancient Troy, the Homeric Ilium, think I have sufficiently proved. I am now oing to examine into the causes of this accumu-ation, because by the standard of our manner of iving, or even by the standard of the manner of iving of the ancient Greeks and Romans, we annot conceive how, by the accumulation of uccessive house remains, a solitary though flat ock could ever increase 53 ft. in height, and 32 ft. to 264 ft. in width. I am informed that even n the city of London, which has been inhabited or 2,000 years or more, the accumulation of ubbish does not exceed 14 ft., and this is about he average depth of the virgin soil at Rome; in ny explorations in the once so great, populous nd flourishing ancient Etruscan city, Populonia, found only in two places an accumulation 10 ft. leep, but the average depth did not exceed 3 ft., nd these same proportions I found in my ex-plorations in Segesta as well as in the ancient Carthaginian colony, Motye, opposite Lilybæum, he present Marsala, and in Lilybæum itself. My explorations in the ancient city of Tiryns ave shown that the accumulation of house uins does not exceed there 11 ft. 6 in. to 16 ft. 3 in. And my excavations in Mycenæ have hown that in the lower town and suburb the ccumulation is from 1 ft. to 3 ft., and only in wo places from 10 ft. to 16 ft. deep, whilst in the itadel of Mycenæ there is a 16 ft. to 26 ft. deep ccumulation of house *débris* only on the western nd eastern terraces, and even there it is partly ue to the *débris* which for ages have been washed own by the winter rains from the five upper ter-aces. But if the accumulation of ruins is on all hese sites of ancient cities so scanty, how comes t then to be so gigantic on the site of Troy ivine? The answer to this question we find in he architecture of the Trojan houses, towers, nd walls. If a house in London is destroyed by re the architect carefully clears the site, ex-avates it until he reaches the rock, or the com-act solid virgin soil, and only then he lays the oundations and makes large cellars. But alto-ether differently proceeded the Trojan architect; o him a cellar was a thing unknown; he did not o to the trouble or expense of clearing away the uins of the house destroyed by fire: nay, on its alcined ruins he erected walls of small stones ined with mud, if he had to build for the town's hief or king; the adjacent fields abound with ones, and thus this building material was ready t hand. But be it from economy or some other eason, he built the walls of the houses of common ortals of sun-dried bricks, for which the alluvial anks of the neighbouring Scamander furnished m the material in rich abundance. But it is y no means probable that either the house walls f the royal mansion, or those of the other in-abitants, were at all higher than they have been ought to light by my pickaxe, say about 6 ft. t all events, it is impossible that they could ave been more than one story high; in the rst place, because a two-story house, even if uilt of such light material as small stones joined ith mud or sun-dried brick, would be by far o heavy if erected without any foundations on hes or calcined ruins, and, in the second place, ecause the enormous masses of wood ashes at roy cannot be explained in any other manner an by supposing that wood entered very ex-nsively into the construction of the houses, nd that these had four or five stories of ood above the first story of masonry. But I ink that even a five-story high wooden house uld, if it were burnt, not produce a 6-feet deep yer of ashes; however, it is a fact that the nflagration of Troy produced a more than feet thick stratum of ashes, and this is more-er proved by the new town, which was built on e top of the ancient one, and not exactly on e top of the old house walls, but on the ashes nd the *débris* in which these lay buried. Thus e high wooden houses proving insufficient to plain the huge accumulation caused by one ogle conflagration, we must examine whether e cannot find another cause which might be strumental in it; and, indeed, we find this use in the vast quantity of terra-cotta vases, all sizes, with which the ashes are intermixed. the absence of cellars, large 4 ft. to 7 ft. gh, and 2 ft. 6 in. to 5 ft. broad, *πίθοι*, or jars of a 2 in. to 2½ in. thick baked clay, served the Trojans as places to keep the victuals cool and to preserve them, or they served as reservoirs for water, oil, or wine, because barrels of wood were altogether unknown, not only in a remote pre-historic antiquity, but even in classical times, and only under the dominion of Domitian (81—96 A.D.) large jars were partly replaced by wooden barrels. Besides, bronze or copper being dear, all the kitchen furniture was of baked clay, and barrel-like vases, or large basins of terra cotta served instead of buckets or washing-tubs; of terra cotta were all sacred vases, on which is modelled the winged owl-faced idol of Ilium's tutelary deity, Athena *γλαυκῶπις*; of terra cotta were all the thousands of whorls, with engraved religious symbols, which served as offerings to this goddess as Παλλὰς Ἀθηη Ἐργάνη. Nay, to prove the extensive use of terra cotta, I mention that my Trojan collection contains even three large hooks of baked clay for suspending clothes on, and in each of them we see the holes for three nails, with which they were fastened to the wall. As a further cause of the stupendous accumulation of *débris* on Mount Hissarlik, I may mention the immense masses of oval handmill stones of trachyte, and hammers or weights of diolite or granite. But not only did wood enter extensively into the construction of the houses; it entered also most extensively into the building of the fortifications, of which likewise only the lower part was of smaller or larger stones, joined without any binding material: the upper part was of wood. This is proved by the shape of the great tower itself, which is only 20 ft. high; it slants under an angle of 15 degrees, and there are the most evident signs that it was never higher. Such a tower can never have served as defence, because it can easily be scaled. Thus it must necessarily have been surmounted by a huge wooden tower, and likewise the whole of Troy's circuit-wall must have been surmounted by a high wooden wall, intersected by towers, for on its entire west and south side it has the same inclination as the great tower, and thus it can only have served as a sort of substruction for the great wooden works of defence. This is in the most certain manner proved by the 6 ft. to 7 ft. deep masses of wood-ashes, intermixed with terra-cotta jars, vases, plates, and by the large quantity of stone hammers and handmills with which the top of the tower and the walls, and their slanting outside were covered. I may here remark that in the different places where I have brought a part of this wall to light, it consists of large blocks, and though it is far less massive than the circuit-walls of Mycenæ, yet it belongs to that category of walls which we call cyclopean. Also the great double gate which leads in a south-westerly direction to the plain, must have been surmounted by a lofty tower, because not only do we see on the masonry of this gate the most unmistakable marks of a violent fire, but we recognise these latter also on the large flat slabs of a reddish sandstone, with which the road is paved, because when I excavated this gate in April, 1873, the slabs of the pavement looked as fresh as if they had but just been cut in the quarry, but on being exposed to the sun they quickly crumbled away, and have now long since entirely disappeared, within the gate, and for a distance of 13 ft. to 15 ft. from it, whilst further on they remained in a perfect state of conservation; and all this can only be explained by supposing that the pavement had within the gate, and for a distance of 13 ft. to 15 ft. from the same, been exposed to the violent fire of the wooden tower by which the gate was surmounted.

The question now naturally arises,—Have we any example of a city like this having elsewhere ever existed in antiquity? I should say that an idea of such a city answers to the description (Diodorus Siculus, xiv., 30) of the capital of the *Μοσσύνοικοι*, on the shore of the Black Sea, which consisted of wooden towers seven stories high, and which Xenophon with his 10,000 men was forced to storm and destroy (see also Xenophon, v., 4). According to Strabo (549) and Dionysius Halicarnassus (i., 26), even the name of the Mossynoikoi (*Μοσσύνοικοι*) is derived from Mossyn, which signified a wooden tower. I may further mention that we find the same style of architecture as the lower story of the Trojan houses, viz., buildings of sun-dried bricks, in extensive use in the ruins of ancient cities of Mesopotamia, whilst buildings of small stones joined with earth, like the first story of Troy's chief or king, we find in the pre-historic cities on the island of Thera and Therassia. Both these islands are the production of a volcano, which, in the opinion of the French geologists Fouquet and Gorceix, must have had a height of 3,800 ft., and must have sunk and disappeared in the sea about 1,700 years B.C., leaving the large round island which it had thrown out in the course of ages an earth-ring only. Of this latter two large pieces disappeared again in an earthquake in 205 B.C., and only the aforesaid two islands, Thera and Therassia, remained of it. But before its disappearance the great central volcano had, by an enormous eruption, covered the whole island, then densely populated, with three layers of volcanic ashes and pumice-stone, whose thickness varies between 40 ft. and 90 ft. In digging off part of them on the sea-shore, the inhabitants brought to light a pre-historic house; and systematic excavations having been made there by M. Burnouf, the director of the French School in Athens, several ruins of houses were found, which all represent the same style of architecture, viz., small stones joined with earth, exactly as we find it in the lower part of the large house just north of the double gate at Troy. But the question, did Homer know Troy with immensely high wooden towers, and houses on substructions such as I have just described, I must answer most decidedly in the negative. When he describes the architecture of the Phæacians' market-place on the island of Σχερίη (Odys., vi., 266–267), or when he describes Priam's palace, or that of his daughters (Il., vi., 242–250), according to Mr. Wright's excellent translation :—

> "Thence to King Priam's splendid courts he went,
> Adorn'd with shining porticos, wherein
> Were fifty chambers built of polish'd stone
> All side by side: there with their consorts slept
> The sons of Priam. Facing th se arose
> Twelve chambers side by side, of polish'd stone,
> Near to each other: there the sons-in-law
> Of Priam slept beside their blameless wives."

He can only have had in view, either an architecture of houses in which, like the treasuries of Orchomenos and Mycenæ, the stones are quadrangular, well fitted together, but only smooth on the internal wall, and this is more likely an architecture of houses of well-fitted square stones polished on both sides, such as appear indicated in the three small golden temples found by me in the third tomb at Mycenæ. In exploring in 1868 the island of Ithaca, I found at its southern extremity, immediately above the fountain which Homer calls Arethusa, and which until now has preserved that name, the ruins of eight or ten small chambers of very ancient masonry of rudely-cut quadangular stones well fitted together. I am far from maintaining that these eight or ten chambers form part of the twelve swine-stables which the divine swineherd Eumæus built for his master's hogs; but what I maintain is that Homer knew the locality, that he was aware of the existence of the twelve chambers, now reduced to eight or ten, and that he represents them as those built by Eumæus. Of fountains there are but a few in Ithaca; besides, Homer describes so well the place at the southern extremity of the island, he indicates so well the 100 ft. high rock *κόραξ*, which is even now called by the same name, and which descends vertically to the fountain immediately south of the twelve pigsties, that there can be no doubt in this respect. Thus those chambers or stables must represent a kind of masonry which Homer was acquainted with and which he describes.

In a beautiful valley near the northern extremity of Ithaca is a small, very ancient enclosure of wrought quadrangular stones, which tradition indicates as the "School of Homer." This can, of course, never be proved; but the minute and accurate description which the poet gives us of several parts of Ithaca perhaps give to the island a better claim than any other place in Greece to the honour of being his birth-place. So, for instance, he perfectly describes the grotto near the port Phorcys, between the tower of Badu and Mount *Ασπός*; the stalactites hanging from the natural vault of the grotto he calls the weaving-looms of the Nymphs, to whom the grotto was sacred, and whose sanctuary it was; he further says that it had two entrances, of which the northern served for the men to descend, whilst, by the other, which turned towards the south, descended only immortal gods, it being impossible for men to use it. All these details perfectly agree with the grotto as we see it, for it has only one door, which is turned to the north, and, besides, it has, due south from this entrance, a large round hole in the vault, by which of course no man can enter, because the grotto is about 50 ft.

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* Read at a meeting of the Royal Institute of British Architects on Monday night last, as elsewhere mentioned.

deep; and Homer's assertion, therefore, that it served as a door to the gods perfectly agrees. In the grotto we see on the south side an altar, and this also agrees with Homer, who says that Ulysses sacrificed three goats to the Nymphs. I suppose that the gap in the upper vault, which Homer calls the entrance of the gods, served as a chimney to lead off the smoke of the fire of the sacrifices. I do not hold all this from hearsay; it was in Ithaca that I began my career as an explorer. I lived there for some time, have often been in this grotto, have examined it most carefully, and as stalactite grottos are exceedingly rare (I know of not one in Greece), and as this one answers in every respect so perfectly the requirements of the Homeric description, I feel bold to maintain that even if there were no other evidence in Ithaca, this grotto alone would suffice to prove the identity of this island with the Homeric Ithaca. As is well known to my honoured auditory, the whole interior of both the treasury of Atreus in Mycenæ and that of Minyas in Orchomenos was ornamented with bronze plates; the two small bronze nails which we see in each stone leave no doubt in this respect. That Homer had seen similar buildings in Ithaca is, I think, sufficiently proved by the passage in the "Odyssey" (vii., 84-87). "As the sun or the moon beams in bright splendour so beamed the high palace of the magnanimous Alkinoos; for the bronze walls extended from the threshold of the gate to the innermost part of the building; their entablature was of blue steel."

Thus the architecture which Homer describes is an additional proof to the many given by the Right Hon. W. E. Gladstone in his classical work "Homeric Synchronism" that Homer was an Achaian. I further conclude from the foregoing that he never came to Troy himself; that he either heard the details of the Trojan war from the mouth of the returning Greek army, or that he knew them from the rhapsodies of preceding poets. Had he visited the Troad himself he could never have made the mistake of transferring the two sources of the Scamander, one with icy cold and the other with boiling hot water, from the top of Ida to the foot of Ilium's walls; besides he would not then have attributed those walls to the workmanship of Neptune and Apollo; walls like those of Tiryns or Mycenæ may deserve the honour of being attributed to gods, but not those of Troy. Moreover, Smyrna would never have had the honour of being considered as Homer's birthplace had it not been that this city was captured and destroyed in 627 B.C. by Sadyattes, king of Lydia, and remained in ruins and deserted until 301 B.C., when Antigonus began its rebuilding, which after his death was continued and terminated by Lysimachus. Thus Smyrna was dead during all the time when the enthusiasm for the Homeric poems was intense, and when the rhapsodists went from house to house chanting the divine hymns. Men are jealous of the living only, but not of the dead, and it was for this sole reason that, as one of the seven Greek cities which claimed the honour to be Homer's birthplace, Smyrna carried the palm. As I have given a summary account of my finds in Mycenæ both in the *Times* and before the Royal Society of London Antiquaries, I shall not repeat the story here, but will only observe that I do not at all recognise on the Mycenæan treasures the Orientalising influence of which so much has been written. That we find here an enormous mass of spiral ornamentation, and that we see also spirals on the Assyrian monuments, is not the slightest proof that the Mycenæan spiral ornamentation was imported from Assyria, or from elsewhere in Asia, because spirals we find also on the Mexican antiquities; and, as Mr. A. C. Murray, of the British Museum, rightly observed to me, the idea of the spiral is given by every metal wire. Indeed, I cannot find the very slightest resemblance between any one of the golden Mycenæan ornaments with ornaments contained either in the British Museum or in any other museum in the world. However, diadems with an ornamentation of rosettes in *repoussé* work, like the Mycenæan, existed in a high antiquity in Cyprus, because three or four of the most ancient Cypriote statues in the British Museum have the head ornamented with perfectly similar diadems. I may further mention, with regard to the objects found outside the five Mycenæan tombs, viz.,—the perforated beads of agate, or potstone, with two convex sides, of which the one is ornamented with rudely engraved animals,—that similar ones are in the British Museum, brought from the Greek islands. It has been lately asserted by a German scholar that the five tombs of Mycenæ, being cut into the rock, cannot be of the Homeric period, because the divine poet knew of conical sepulchres only. The latter assertion is perfectly correct, but there is no such conical tumulus in Greece, and, consequently, it could never have been the custom here to erect conical tombs over the ashes of the deceased. It certainly appears extraordinary that whilst Homer represents to us Greek architecture and Greek art only, he should speak to us only of tombs like those existing in the Troad. The same scholar asserts that since tombs similar to those of Mycenæ have never been found yet in Greece, they are likely to be of a comparatively modern period. But for the great antiquity of the Mycenæan tombs we have no less an authority than that of Mr. Charles Newton, and if no similar tombs have ever been found, it is merely because nobody before me has ever made in Greece deep excavations; at any rate, nobody before me has ever reached there the virgin soil in his excavations, and only for this reason similar tombs have never been found. But Greece has now the good fortune to have as Prime Minister Mr. Epaminondas Deligeorges,—a man of high culture, and both a soldier and an archæologist,—and he is doing all he can to encourage archæological researches in Greece. Thus in all probability there will now soon be found in Greece other instances of a similar mode of burial; but it is very doubtful whether tombs with such rich treasures as the five Mycenæan sepulchres will ever be found again. It has been objected that the five Mycenæan sepulchres cannot possibly contain the bodies of Agamemnon, Eurymedon, Cassandra, and their followers, for the reason that they were killed by their enemies, Ægisthus and Clytemnestra, who had usurped power, and would neither have buried them nor have permitted them to be buried, with immense treasures. But this objection falls to the ground before the testimony of Homer that even he who killed his enemy buried him in full armour, with all his weapons. So, for instance, Andromache says to Hector:—

> "To me no sire is left,
> Nor honour'd mother; fell Achilles' hand
> My sire, Eetion, slew, what time his arms
> The populous city of Cecilia razed,
> The lofty-gated Thebes; he slew indeed,
> But stripp'd him not; he reverenced the dead;
> And o'er his body, with his armour buried,
> A mound erected."

That it was the custom in the heroic age to bury the dead with those objects which had been dear to them in life is further proved by Homer (Od., xi., 72-76), where the soul of Elpenor begs Ulysses to bury his body with his weapons, and to erect a mound over him: "Do not leave me behind unwept for, unburied, when you go away, lest I should become the cause of the wrath of the gods against thee, but burn me with all the arms which belong to me, and erect over me a mound on the shore of the hoary sea." We see also in Diodorus Siculus (ii., 21-28) that Sardanapalus, the last king of Assyria, erected in one of his courts an immense pyre, on which he burnt himself, together with all his treasures, his royal ornaments, his wives, and his eunuchs. I further remind you of the large treasure of elaborately-ornamented gold and silver vases and other jewels, as well as bronze vessels and vases, arms, &c., recently discovered in a tomb at Palestrina, and attributed to the seventh century B.C., viz., to that period in which the influence of the civilisation and industry of the East dominated in Etruria and Latium. We see also in Sophocles (Ajax, 555) that Ajax begs to be buried with his arms. I further call attention to a passage in Herodotus (i., 187):—"This same queen, Nitokris, committed the following fraud.—Above the most frequented gate of the city (Babylon) she erected for herself a tomb, which protruded from the upper part of the gate; and in this sepulchre she engraved an inscription of the following tenor:—'Let any of the kings of Babylon, who succeeds me, and may stand in need of money, open the sepulchre, and take treasures as much as he likes, but let him open it in no other case than when he really needs money, because that would not be good.' This sepulchre remained intact until the kingdom passed over to Darius. Darius was vexed that he could never use the gate, and that though treasures were lying there, and though the treasures themselves invited him, he should not be allowed to take them. But this gate he could not use, because passing through it he would have had the corpse above his head. Now, in opening the tomb he found no treasures, but the corpse, and an inscription, which was as follows: 'If thou wert not insatiable and greedy after treasures, thou wouldst not have opened the tombs of the dead.'" This account of Herodotus proves two things: firstly, that it was the custom in Babylon to bury the dead with treasures; and, secondly, that the people were prevented by a religious fear from pillaging abodes of the dead. Diodorus Siculus (iv., 2-23) relates that, when Pyrrhus had plundered Ægeæ, which was the residence of the Macedonian kings, he left there the Galatians. These latter having learnt from some people that, according to an ancient custom, large treasures were buried in the royal tombs together with the deceased, they excavated all the sepulchres, and having robbed them, they divided the treasures among themselves; but the bones of the dead they threw away. Pyrrhus scolded them on account of this sacrilegious act, but he did not punish them, because he needed them in the wars. This proves again to us that it was an ancient custom in Macedonia to bury the dead of the royal houses with treasures, and that the people were deterred by a religious fear from touching them, because though it had been known for ages that the tombs contained treasures, yet nobody had dared to rob them.

I mention also the famous sepulchre of Corneto, whose contents are in the museum of Berlin. This tomb, which belongs to an epoch anterior to the influence of Greek culture in Italy, and therefore anterior to the seventh century B.C., contains not only the armour and weapons, but also the whole household furniture, bronze kettles, drinking-cups, &c., of a rich warrior. I hardly think it necessary to remind you of the habit in ancient Egypt of burying the dead with treasures; for all the collections of Egyptian antiquities in the world are procured from the Egyptian tombs. Thus we have the proof that in a remote antiquity it was the custom in Babylon, Egypt, Italy, Macedonia, and Germany to bury the rich with their treasures, and my excavations have proved that this custom existed also in Mycenæ in the time of the Atridæ.

PAINTERS' STUDIOS.

Many of us are old enough to remember when English arsists painted pictures that became, and have remained, very famous, in "painting-rooms" somewhat less magnificent than our painters of to-day occupy as workshops. Landseer's painting-room at Saint John's Wood, more than forty years ago, was comfortable, but even the same room, somewhat enlarged of late years, was never sumptuous. Leslie painted, and some of his best pictures too, in a very small but delightfully quiet back drawing-room in a house in the Edgware-road; and Wilkie and Constable never had what we now call a studio, such as we have the honour occasionally of being received in by our artist friends.

Artists thirty or forty years since, who found their commissions oppressing them, hunted about for large rooms on a first floor, with a central window looking either to the north or to the east, and their desires seemed perfectly satisfied if they found in Newman-street or Berners-street, in Fitzroy-street, or, rare good fortune, in Stratford-place, a good well-proportioned old house in one or other of the above familiar haunts.

We are not altogether sure that, if their necessities or luck have led them to forsake the narrower quarters that satisfied them of old, they could have done better than seek for fine old rooms in Portland-place, where they would have plenty of light and space, and the congenial neighbourhood of those equally favoured English mortals, the baronets of Great Britain. But either in forgetfulness or intentionally, they have overlooked the artistic qualifications of Portland-place, to say nothing of its interesting architectural associations, with its agreeable northern outlet to the country, and its southern approach to the Athenæum and the Garrick.

From what we hear of the magnificent studios that are being built at Kensington, we suppose that even Portland-place is not sufficiently grandiose for those fortunate painters and architects who now year by year delight us and our country cousins at the Royal Academy, and will at its chapel of ease, the Grosvenor Gallery.

Good bye to those pleasant days when one could call on one's artist-friend in Newman-street or Kensington-mall, and sit for an hour wasting his precious time while he filled in perhaps, the folds of Don Quixote's mantle from the skirt of our cloak, or, with more accuracy

availed himself of our generally well-kept hand for that of a portrait of a gentleman too much occupied in the City to hold steadily the partly-opened book, or the never-to-be-read or deciphered letter; telegrams are now placed in the hands of portraits of gentlemen, and the last edition of an evening paper in the place of the old Elzevir or Aldine edition.

Those were days when it was possible to "pick up" a choice "bit of colour" or a "clever sketch" for a small cheque, sufficient, however, very often to be very welcome, and enough at times to take the happy artist and his wife—who in those days was not always beautiful—a pleasant sketching trip to Derbyshire, or, perhaps, to Antwerp or the Hague, when the work that was brought home, executed under the happiest conditions, led to what are considered at this day some of our greatest artistic treasures; so that, to the kind and appreciative little patrons of forty or fifty years back we owe a debt of gratitude that we fear many of the magnificent purchasers of to-day will never be entitled to.

There must be moments when very promising artists, if they be really artists, must be perfectly satisfied with very small surroundings; there is no pursuit, probably, that affords its followers so many happy hours as music, painting, and sculpture realize. The architect in his early days must at times be equally happy, but his noble art seems in the present day to bring him too soon to that point of divergence of which they are justly proud, when the science of their profession commands the study of calculation and the minuteness of classification.

Painters, however, are not fonder of fine surroundings than other people, and, after all, our modern artists' houses are not one whit smarter than that of Rubens at Antwerp, or the house of the Zuccheri at Rome, or more graceful than Claude's Tempietta on the Pincio, or more comfortable than the substantial house that Angelica Kauffman occupied in the Via Sistina, or more magnificent than the modern Cammucini Palazzo in the Piazza Navona. Few painters can boast of a better studio than M. Gallait's in the Rue Verte at Brussels; and as for Paris, magnificent painting-rooms abound, and are springing up in all desirable quarters; but most of all we covet the quiet studio that Poussin sought, and found, in the Tuileries garden; and, what used to be called before 1850 Raffaelle's Villa, in the Borghese Gardens, must have been of all delightful places the most delightful to paint in.

The artist now, who communicates by private telegraph with his broker in the City between the intervals of waiting for a change of model, has no time or inclination to describe his methods of obviating the deleterious practice of using macgilp or other dangerous mediums, and no longer tells you delightful stories of the happy days or years that he passed in Italy, of his adventures with the brigands, or his tender tales of even greater dangers; he would now think it bad form to talk of the delights of the Café Grec even in those days when the dear old lamps were of solid silver! nor does he now venture any longer to tell you of his recollections of eighteenpenny dinners at Hancock's or the Lepri, and would not for the world show you his sketch-book of that time with a frontispiece of the head waiter, Pietro, to whom he often owed for a month's dinners, the rest of the book being filled with spirited sketches of long-haired artists who are now the occupants of our great modern studios. He may occasionally, if he be old enough, recall those early days in Rome when Papal society was made perfect by the presence of Lady ——, at whose house, as he will tell you, he used to meet many delightful people,—days when Canova lived, or even later, when Gibson reigned,—that was an age when there was but one correct opinion on the subject of art, the old masters were divine, and "Sir Thomas" perfection.

We all know,—at least, who care to know,—how painters now live; we have most of us had a peep into one or more of the gorgeous *studii* that abound at Kensington and St. John's Wood; we are all, even the richest of us and the most art-appreciative, amazed again and again by the accounts that reach us of the enormous sums that we hear of men paying for modern pictures, and the least calculating disposition finds it impossible at this season of the year, when pictures are daily sold for thousands, to resist speculating, in idea, on how pleasantly one's income would be augmented by the safe investment of the five thousand pounds that one is always hearing that some one or other has just given for some modern picture.

The ugly feature connected with these high prices consists in the bad feeling that it creates in the minds of many people who have a very natural desire to possess pretty things, but who do not exactly see their way to the sacrifice of a considerable portion of their capital to the possession of a Millais or a Meissonier, and, it is not unlikely that a feeling, amounting to the antagonistic, has arisen in some high quarters as regards art and artists, on the ground that those who purchase pictures for the love alone of the picture, cannot afford to compete with purchasers whose view is to sell some day at a profit.

The Germans have a saying that the use of a large brush does not make a great painter, but we believe that pictures painted in a large studio are likely to be very much better painted than those that have been studied and manipulated in a small room; it is absolutely impossible to obtain that enchanting atmospheric effect that is the result of careful observation of objects seen at a proper distance, by which the painter is able to compare carefully the extraordinary difference caused by what we understand by the term, "aërial perspective."

At the same time, we can recal some beautiful works painted in very small studios. Leighton's "Procession of Cimabüé" was painted in one of the smallest Roman *studii*; and we remember a great Roman sculptor at work in a room just large enough to contain a quantity of plastic clay, and a living model posed as Venus Aphrodite. The room in which Gibson habitually worked was exceedingly small and narrow; and we rather think that the designs of Sir Charles Barry's "Palace at Westminster" were perfected in a very small office in Foley-place.

It would be difficult to do good work in a smaller office than Sir John Soane made use of for his Bank of England labours, and probably Mr. Bauvard, the American panoramist, felt himself limited for space in executing his famous "three-mile" picture.

A large painting-room, with plenty of light, so contrived as to be easily diminished, is the best master and assistant that a painter can obtain. In Paris and Brussels, painting-rooms are positively perfection; in London our painting-rooms are too magnificent, without being grandiose: we are either too smart or too dusty; order is generally insufficient, and we are perhaps too fond of blue china.

Artists must not be too confident that they alone know how to artistically arrange their *sancta*; artists' minds exist and surround us everywhere, and manifest their exquisite leanings in all directions. Artistic taste harmonises badly, it is supposed, with the practical; but, on the whole, Gavarni's two pictures admirably express the truth,—one representing the typical long-haired artist exclaiming "Bah! don't talk to me of *bourgeois!*"—the other delineating with equal skill the well-to-do tradesman turning impatiently away, "Bah! don't talk to me of artists!"

THE IMPRESSIONISTS.

A CLIQUE of eighteen painters calling themselves Impressionists, and by others named "the School of the Batignolles," from the neighbourhood about which they mostly gather, have just opened in Paris their third annual exhibition.

That these painters have already exhibited their works is ample indication that they are not altogether beginners, and their aims appear sufficiently determined and matured to allow of their being unanimous in declining to submit their pictures to the selecting authority at the forthcoming exhibition of the *Salon*, and with more common sense than they show by their pictures, they have, one and all, abstained from venturing to make an appearance in the Champs Elysées.

The Impressionists, unlike the pre-Raffaellites of thirty years ago, make no attempt to go back to any known period of art; in their own opinion they are perfectly original, although they are not without their English parallels. They show no real or affected admiration for any school or particular painter, unless it be that they have perfectly agreed to follow M. Monet's manner and way of seeing nature, and in this respect the whole eighteen painters exhibit a singular, perhaps interesting, study for the oculist, as it is somewhat remarkable that so many eyes should so precisely acquiesce in their manner of rendering various coloured objects under the effect of light and shade. It is not a little curious that, in France as well as in England, inexperienced colourists should have so strong a disposition to see all shadows of whatever object inclining to a crude and unpleasant violet tone.

The Impressionist artists, whose number is less than twenty, work chiefly with turpentine colour or in distemper, *gouache* being the less familiar expression, and produce their pictures so rapidly that the exhibition in the Rue Lepelletier alone contains two hundred and forty-one numbers; one artist exhibiting no less than thirty-one canvasses, notwithstanding his having, a very few days before the opening of the exhibition, covered the walls of one entire room at the Hôtel Druot, his numerous works realising no inconsiderable return for his outlay.

It is this rapidity of production that may establish this pseudo-school as a reality; the fashion or the taste of the day here, as at home, being pleased by swiftness and clearness of execution. The trade, too, like bulk to deal with, and one Impressionist painter is able to keep fully employed a popular colour-man and two or three frame-makers.

It is scarcely possible to believe that any Impressionist painter can be really sincere in his work; they are Parisians, and they adore notoriety, they are probably not millionaires, and they are young enough to seek this means of becoming such; they have started a weekly paper, entitled *L'Impressioniste*, a journal of art, which, of course, is entirely devoted to their own interests, and they have secured the valuable aid of the good-natured newspaper-vendors who occupy the numerous *kiosques* on the Boulevards.

Those Impressionists who show real ability as painters,—and there are several, we must own, who do show ability,—will most likely, like our own pre-Raffaellites, very soon forsake the methods of their school for modes of painting and subjects to paint more in accordance with eclectic opinion, and we fancy we already see in the leaders of this clique a wavering from the more violent tenets that must shock the orthodoxy of the true believer.

Indeed, there is something to admire in the works of M. Piette, whose numerous scenes of provincial market-places possess much to remind one of such pleasant subjects, and one head in particular, of a young girl painted by M. Renoir, suggests that the artist has really been impressed with something not unlike a correct appreciation of beauty,—something, indeed, that reminds one of greater Impressionists, who, without affectation or attempt to astonish, have painted before.

Gainsborough and David Cox were great Impressionists, but they fortunately received perfectly correct impressions, and were gifted with the power of realising these with the utmost and happiest facility. William Hunt was an Impressionist, but he elaborated his impressions with a care and skill that ought to impress the French sketchers with emulative admiration.

Millais is an Impressionist of a magnificent order, with the rare gift of studying well out his exquisite impressions, and with the still rarer power of appreciating the merit of other men's works, which the French Impressionists are utterly incapable of doing, they going so far as to say, "Let all art perish rather than one picture by our great men": such, we hear, being the detestable views that these disturbers of the silent art give expression to.

The Impressionists are chiefly painters of landscape, and, as such, why should they go out of the way for new methods of work or fresh models to imitate? Have they not Hobbema and Ruysdaël, Crome and Constable, Turner and Troyon, Rosseau and Corot, to teach them how to interpret nature? And if sober and temperate propriety fail to affect them or to touch a chord of their souls, surely the bright and happy school of Fortuny ought to satisfy their love of the pleasant and agreeable.

We fear,—nay, we are certain,—that notoriety is the aim of the Impressionists, like our own London school of pavement artists, whom, indeed, they sometimes strongly resemble; they work probably with precisely the same object, seeking eagerly a portion of the present abundant cash rather than the rare and judicious *kudos*.

Paris.

London and Middlesex Archæological Society.—A general meeting of this Society will be held at Serjeants' Inn Hall, Chancery-lane, by permission of Mr. Serjeant Cox, on this Saturday, the 5th inst. A paper will be read.

FRENCH BUILDERS AND FRENCH POLICE.

UNDER somewhat influential patronage, the house-decorators of Paris recently held a meeting, and resolved to form a co-operative association. M. Clemenseau, assisted by two other members of the National Assembly, M. Frebault and M. Codet, presided over the assembly. The reading of a sympathetic letter from M. Cremieux, senator, containing a cheque as his subscription for four shares in the new association, proved an encouraging opening to the proceedings. The large number of artisans present, though not all ready to participate in the new enterprise and abandon comfortable and, in some cases, lucrative employment, to hazard themselves on the troubled sea of co-operation, nevertheless testified, and without exception, to the lively interest felt in the efforts of their more adventurous shopmates. The meeting was also the more successful, as its announcement excited the suspicion of the police authorities, and had to be postponed for some days, as the Prefect of Police could not at first make up his mind as to the expediency of sanctioning this gathering. To English readers it may seem preposterous to anticipate that danger to the State might arise from the effort of a group of workmen to subscribe money among themselves and start a co-operative productive society on a sort of joint-stock principle; but in France no movement on the part of the proletariat is approved and willingly tolerated by the authorities.

Nor is this the only recent case of police interference with the various movements in which members of the building trades are at present engaged. On the 27th of February last, a meeting held by the sculptors, moulders, and decorators in the Salle Pétrelle was interrupted, the Prefecture of Police having given orders that one of the subjects it was proposed to discuss should not be brought forward. The workmen had met chiefly for the purpose of electing delegates, who were to constitute, together with the delegates of other trade corporations, a commission of initiative to organise the representation of the French artisans at the forthcoming International Exhibition. But this they were forbidden to do by order of the Prefecture. Later, on the 2nd of March, the police prevented a meeting convoked for the purpose of eliciting united action on the part of the various corporations at the Exhibition of 1878. In both these instances this arbitrary interference was due to the fear entertained by the authorities of witnessing a federation of all the trades-unionists of France, however innocent the objects of such an association might be.

The workmen, however, energetically protested that the proposed movement was not due solely to political intrigue; that they felt, on the contrary, a legitimate pride in the welfare and honour of their craft. They wished that the fruits of their labour should be worthy of their country; and it was their object, in uniting, to send delegates to the Exhibition, to draw up technical reports, to compare the work of various nations, and thus to share in the benefits of the pacific and industrial tournament. They urged that even French workmen were capable of taking patriotic interest in their trade, and might unite to visit an Exhibition without of necessity seizing the opportunity to create a revolution. Doubtless these protests, supported by the voice of the general public, will end by modifying the severity of the police authorities. In all cases, the French working-classes will be well represented at the Exhibition; for, even if the various trade societies are not allowed to unite in one compact body for this purpose, they will individually send delegates who will not fail to accumulate and diffuse much information.

Already a scheme has been broached of a more ambitious description than any attempted at previous exhibitions. It is suggested that a certain portion of ground should be given over to the working men, or their representatives. Here the members of the building trade will plan, build, and decorate an exhibition, which shall be the exclusive work of artisans unaided by employer, engineer, or architect. Within, workmen belonging to various other trades will exhibit, in their own names, their work; so that, if the scheme is realised, there will be a workmen's exhibition, in which artisans will have a fair opportunity of showing what they can do unaided by the employer. From a social, political, and commercial point of view, this section of the Exhibition will prove of the utmost interest. The plan, we should add, met with the approval of the Paris Municipal Council, and has also received the sanction of the Prefect of the Seine, though at first this official did not fail to make a few objections. It now remains to be seen what view the Prefect of Police will take of the matter; and finally it will be necessary to obtain the consent of the commissariat entrusted with the general management of the Exhibition. Hopes are entertained that success will crown these efforts; but the opposition to a federation of the working men's societies will have to be abandoned if the scheme is put into execution; for some such union between the different corporations will be indispensable to ensure the good management of the enterprise.

DARLINGTON.

UNLIKE some of the many towns in the North which have either arisen or been invigorated by the upgrowth of the iron and coal industries, Darlington has a history. More than eight centuries ago, in the days of Ethelred, its name was known, and in these brawling eight hundred years it has frequently come to the front, as the place whence one or two kings issued important documents, as the site of the gathering of forces, the place of meeting of commissioners in the days of the Commonwealth, and the theatre of events notable in the history, if not of the country at least of the county known in the olden days as "The Bishoprick." Its situation on the great north road attracted to it some classes of trade, and there grew up in its bounds not only the manufactures, for which it is yet noted, but others which have given place to more modern and more extensive trades. It made "huckaback," and "checked tammies," small wares and spectacles, diapers, cambets, and bombazets; and there was established above a hundred years ago a manufactory of woollen and worsted goods which yet flourishes in its greatly extended form. But the industries of the town have all been moulded by the results of the action it took in the inauguration of the railway system. And, indeed, not only the trade, but the town itself has been revolutionised by the railway system which took its rise at Darlington. Prior to that era its chapelry contained only some 6,551 inhabitants; the town was governed by a bailiff appointed by the Bishop of Durham, and was composed of four ancient constableries. The town had the trade appertaining to market towns,—the rope and twine "merchants," the corn-factors, basket-makers, millwrights, and the skinners and tanners. In a small way, three or four worsted manufacturers, half a dozen attorneys clustered near the horse-market; there were two or three carpet manufacturers, a couple of coachbuilders, as many flax-spinners, and an equal number of founders, whilst a dozen linen manufacturers dispersed themselves along the course of the river Skerne. There was a stuff manufacturer, a firm of worsted spinners, and the usual gathering of ordinary trades brought up the rear of the commerce of the town. The town was one of note in these coaching days; three or four coaches, with full-sounding names, dashed up to the King's Head in their journey north or south, whilst others went east or west; and there were a still larger number of carriers' wagons traversing the roads, whilst trains of asses bore coal to the south, or lead to the place of shipment on the Tees. The few letters were delivered by one deliverer; the town was under the guardianship of two old constables, and one old lady was the sole representative of the gatherers or dispersers of news. The town itself was comprised in narrow bounds. Its north was at the little stream called the Cockerbeck, the square old town-hall enclosed its place of custody, the old cross still lingered, and a few decent dwellings, and a few thatched cottages beyond, were the homes of the populace of old Darlington. Religion had its shrines in the church of Hugh Pudsey, the Wesleyan chapel, and the meeting-house of the Quakers, even then the prominent sect in old Darlington.

At various times, during a series of years, projects for making by canal a better means of communication between the east and west of South Durham,—between the port of shipment and the rich mineral districts to the west,—had been brought forward and discussed, but these were set aside in favour of that first public railway which was so long and honourably known as the "Quakers' line." Fifty years ago, the capital, energy, and perseverance of the promoters,—who were chiefly connected with the Society of Friends,—carried out to completion such a mode of communication, which has made many of their descendants the owners of princely fortunes, and which has been the means of transforming the town which was the centre of their modest primal line. Its demonstrated success, as one result, enriched Darlington, and, as another, has planted in it a series of industries, and made the establishment of others possible. The linen manufactories have given place to ironworks, the woollen industries are concentrated and extended, and the town may be said to be almost encircled with factories and works. The industrial progress of the town divides itself into two phases,—that following the growth of the railway system, and that ensuing after the "commercial discovery," of the Cleveland ironstone. The first led to the establishment of works for the supply of the requirements of railways,—of works for the construction and repair of rolling stock, and of their contributory foundries and shops, as well as the enlargement of some of the industries previously glanced at, and it caused a concentration of some of the banking and commercial establishments of the county in the town. The second era showed its mark in the erection of blast furnaces at this central point between the ironstone district of North Yorkshire and the coal-fields and limestone district of South Durham. In the works of the Darlington Iron Company, it possesses one of the earliest rail-mills on a scale of magnitude in the North, which have grown until they have become probably the largest; in the works of its Forge Company it has one of the largest works for the manufacture of forgings,—more especially for railway purposes, such as axles, &c.; in its engine works, it has, perhaps, the most complete between Glasgow and Doncaster. In its rolling-mills,—the Skerne, the Rise Carr, and the Drinkfield,—it possesses facilities for the manufacture of plate and bar iron to a considerable extent, whilst in its foundries and wagon works employment is given to a considerable number of men; and in its School Furnishing Company's works it has the only example of works for the manufacture of school appliances in the North of England.

This growth of industry has necessarily swollen the population, which has steadily risen until it is now assessed at about thirty-four thousand. The old church has long ago known an appropriate restoration, and four others have been added to assist in the part episcopacy plays in providing religious accommodation. Methodists of various grades have made a more than equal addition; the Congregationalists, the Presbyterians, the Catholics, and others, have made good their footing, and erected ornate dwellings for their faith; and if the Quakers have not made equal growth in numbers, they have consolidated themselves and grown in wealth, in influence, and even numerically. They have largely assisted in the provision of educational appliances, until at the adoption of the Education Act, the town was in the proud position of possessing greater school accommodation than Governmental needs assessed it at. To these, within the last year, a splendid training college has been added, and to this an appropriate neighbour is now in course of erection in the shape of a grammar school. Its gas-works,—whose monthly make of gas is now nine million cubic feet—are now being largely extended, and their owners, the Corporation, are also engaged in the work of construction of a new market, long needed, as well as of sewage utilisation works. More surprising has been its growth bodily, for whereas old Darlington was comprised in one or two straggling streets, with diverging courts and wynds, Darlington now is stretching itself for miles from Harrowgate-hill, on the north, to near Blackwell on the south and west, and whilst in the north works and mills make the air resonant with noisy vibrations, in the south and west villas and halls present an almost uninterrupted front of verdure and lawns for miles. Rendered in part necessary by the growth of the town, its municipal boundaries have been, in the short period that has elapsed since its incorporation even, widened, and the rateable value of its township may be now stated at over 120,000*l*.

As showing its extent by inference, it may be stated that from its works there issues weekly a supply of water amounting in volume to ten million gallons; that through its post-office there pass about a quarter of a million letters, papers, and book-packets weekly; and that the number of telegraphic messages it receives, forwards, and sends, is about ten thousand a

month. Much less satisfactory are the police returns, for 700 drunkards,—including a large proportion of females,—are yearly charged, and there has been a rather heavy amount of juvenile criminality, whilst the amount of other offences coming under magisterial notice is fully up to the average of Northern boroughs. With the exception that as yet there is no free library in it, the literary institutions are now above the average of towns of similar size, as are also the philanthropic institutions. Unquestionably, however, one of the distinguishing characteristics of Darlington is the prominent position that the Society of Friends occupies in it. By reason of numbers, that body would take no pre-eminence, but for generations it has been the controlling spirit of the town. Early in the history of the denomination, its members settled in Darlington, and added to their small number the heads of two families, the Backhouses and the Peases, and each generation of these, for more than a century, has been increasingly adventurous in commerce, increasingly successful, and increasingly wealthy. This has been done by no spirit of parsimony, but by a foresight which took advantage of favouring opportunities to enter the woollen and manufacturing trades, to become coalowners on an extensive scale, to found and guide the fortunes of the first railway, and to perform more than yeomen's service in the development of the mining and iron industries of Cleveland. And the wealth thus acquired has been lavishly spent in endeavours to benefit mentally, morally, and spiritually the town of their adoption, without regard to sect or party. Naturally enough, their faith throve for a time in the town of their adoption, and in time it moulded, in some degree, its council and habits. And whilst, on the one hand, it is a mark of how far power has been entrusted to the members of a body which not long ago was prohibited from municipal service, it is, on the other, a sign of the extent to which they have devoted themselves to public life to learn that out of ten mayors there have been seven who are members of "the people called Quakers"; and that if in other respects the proportion is not so excessive, it is in all the public bodies sufficiently striking to make it one of the distinctive features of Darlington.

The future of the town cannot be other than one of promise. It is situated at the point which is the nearest to the meeting of the three great fields of raw material for the iron manufacture; and thus it acquires an iron trade which will probably increase with years. It is more and more becoming a local centre for railway work,—for engineering and rolling-stock work,—and for the subsidiary but important industries attached to these; and with the increase of the railway system and the development of the mineral wealth of the North, these industries must know a corresponding growth. And it still retains in some degree its older trades, so that the foundations of its future are broad-based,—built up on varied industries,—and substantial enough to promise permanence to the prosperity which, in commercial matters, has so long characterised the town which has been not inaptly named "The English Philadelphia." There is, however, a darker side of the picture. Better buildings are needed for the poorer classes, and the infant mortality is greatly too high.

DR. SCHLIEMANN'S DISCOVERIES AT TROY AND MYCENÆ.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN extraordinary general meeting of the Institute was held on Monday evening last at the rooms in Conduit-street, for the purpose of presenting to Dr. Schliemann, the explorer of Troy and Mycenæ, his diploma of election as an honorary and corresponding member. Mr. Charles Barry, president of the Institute, occupied the chair, and there was a large and brilliant attendance of ladies and gentlemen.

In opening the proceedings the President said: Ladies and gentlemen,—My first duty is to introduce to you the guest of the evening; and my next duty is to ask the Secretary to read the minutes recording his election as an honorary and corresponding member of this Institute.

The minutes having been read and confirmed,

The President, addressing Dr. Schliemann, said:—The Council of this Institute, having suggested that you should be invited to become one of our members, under the title by which we admit foreign gentlemen of distinction to our body, viz., that of an honorary and corresponding member, the suggestion was met with the unanimous and cordial assent of the members, and, as you have heard, you were elected by acclamation. We rejoice to find that the intended honour is appreciated and accepted, as we quite feel that such honour is at least reciprocal. The Council recognise the obvious fact that archæological research has been and must be greatly assisted by a knowledge and study of architectural remains. Inasmuch as architecture is naturally, from human necessity, the oldest of the fine arts, its works must speak eloquently to us of the habits and feelings of bygone times, and hence it must be of peculiar interest to archæologists who, like yourself, have explored the remains of past ages. The Council therefore feel that there is an intimate connexion between the two studies, and that they are rightly asking you to become one of us. We are very glad to welcome you as a member of our body. In accepting that honour, I may remind you that you will be one of a not undistinguished band of explorers and archæologists who have gone before. As an illustration of that I will refer to the excavations which have laid bare to us the Forum at Rome, to the still more wonderful excavations which have taught us something of Nineveh, and to the older as well as the newer gropings in the disinterred cities of Herculaneum and Pompeii. In connexion with these explorations you will be not displeased to find yourself associated with Canina, Layard, Lepsius, Parker, Viollet-le-Duc, and others well known to you. It has been well said that whenever Englishmen serving their country in distant lands have been called upon to perform deeds of danger or daring, their chief stimulus to exertion and their main recompense for suffering have been found in the question,—"What will they think of this at home?" So, in like manner, may the explorers of the arts and civilisation of by-gone races find an incentive to labour and a reward for hardship by asking themselves the question,—"What will my fellow labourers in the field of archæological research, wide as it is, think of this labour of mine?" Such a question, Dr. Schliemann, may often have been present to your mind during your labours, and you have your reward to a great extent in the answer which has been practically given by the great interest which your researches have excited all over the world; and that interest will, I have no doubt, widen more and more as the importance of your discoveries becomes more conspicuous. While you will, I am sure, accept this as a sufficient reward for what you have already done, it cannot fail to stimulate you to renewed exertions. The way in which your labours have been and are appreciated in this country is no great marvel, because you have brought to the task you have set before yourself precisely those qualities which my countrymen most admire,—the calm, thoughtful inception of a theory, and the patient and persevering application of means to test that theory, notwithstanding all obstacles which have intervened, these qualities being combined with an utter forgetfulness of the dangers incident to such an enterprise. For these qualities we cannot but admire you. It is not always that labourers in the field of research to which you have devoted yourself attain such signal success as you appear to have attained. On that success I congratulate you, in the name of this Institute and of the distinguished company assembled here to-night. We in this country, at any rate, shall watch your future labours with very great interest, and I indulge in the hope that some who may be here to-night to welcome you may be here on some future occasion to rejoice with you on your attainment of still further triumphs in the field of research which you have made your own. I will not longer detain the company with any words of mine, knowing how much pleasure they are anticipating from the communication you are about to make to us. I will only, in conclusion, express to you the great pleasure I feel in being the means of conveying to you this diploma of association with our body, feeling assured that among the many honours so rightfully given, and to be given to you, this of ours may not be entirely undistinguished in your regard and esteem.

Dr. Schliemann, who was enthusiastically received, said:—The appreciation of the scientific societies of England is the greatest honour to which I could ever aspire. It is the most powerful incentive to future work that I could possibly wish for. I thank you heartily. [Dr. Schliemann then proceeded to read a paper on "The Architecture of Troy," which will be found on pp. 443-44.]

In the discussion which ensued,

The President said: Ladies and gentlemen,—We are honoured to-night, as you know, by the presence of one distinguished in all ways in England, and especially for the extraordinary grasp and versatility of his intellect: I allude, of course, to the Right Hon. Mr. Gladstone, who, amongst all those engrossing political cares to which he has devoted his life, has found time to pursue the investigation of such subjects as the one before us in a manner which has marked him as one of the most finished scholars of the day. We may easily suppose that he takes very great interest in the discoveries made by Dr. Schliemann, and I therefore have great pleasure in calling upon him to open the discussion.

Mr. Gladstone, who was very heartily received, said,—I must say I feel greatly indebted to the president for his commendation, which in great part I must disclaim, because, except an intense love for those pursuits in which he gives me credit for having made progress, I can appropriate to myself no portion of the commendation which he has bestowed upon me. With regard to the interesting lecture which we have just heard from Dr. Schliemann, on every account I would prefer that I should have been left to pick up what I could from the abounding wealth of the members of this Institute, rather than expose my own poverty, which I am afraid will become more glaring when it is compared with your president's sanguine estimate already laid before you. The principal part of the lecture, and, as far as I understand it, the most interesting part, though, indeed, the whole has been most interesting, is that which relates to the seeming paradox of the enormous depth of the *débris* at Hissarlik as compared with what has been found to exist elsewhere. He could not have brought his theory on this subject to a body of gentlemen better qualified to test it than those who form this Institute, and if I commit myself by giving an opinion it will be simply, sir, out of obedience to you, and with all the reserve which I think ought to mark an opinion so given. I certainly am disposed to agree with the doctrine Dr. Schliemann laid down with regard to this great accumulation of *débris* upon the hill of Hissarlik. There has been something very remarkable in the fate of that portion of the globe from the earliest time. The choice of Constantinople by Constantine was not an isolated fact in history. It was the realisation of an idea that had possessed the mind of the Romans from the very earliest Imperial times. It appears as if the Dardanelles and the immediate neighbourhood of the Bosphorus had been a sort of hinge upon which turned the fortunes and movements of mankind from a very early period, and consequently I am not surprised when I see how circumstances have determined that state of things in historic times. I am not at all surprised to find the marks upon Hissarlik of the extraordinary interest attaching to that neighbourhood,—of a number of successive races, beginning almost with the earliest recorded periods of civilised settlement, endeavouring to lodge themselves upon this particular spot. To me it carries no paradox, because I think it greatly supported and confirmed by what we have seen since in respect to the desirableness of that spot. Its important connexion with the movement of race, the very circumstances of climate and soil, may, I apprehend, be considered as marking it as a very eligible spot; and, therefore, there is nothing strange to me in finding that a number of these different peoples should have planted themselves upon the hill of Hissarlik within the course of a certain number of centuries. If so, then we have the fact of the displacement tested in the strongest and clearest manner by the recurrence of conflagrations; for, if I understand aright, until we come to the upper strata of those which Dr. Schliemann has discovered, we have all through remains of conflagrations. If so, then I think his reasoning seems to work itself out by no unnatural series of steps. I can well conceive that the distinguished architects who sit in this room will be shocked to the last degree at the idea of rebuilding upon the *débris* of a former edifice. I do not recollect to have heard of a case of that kind in modern time that can be strictly so described. The nearest approach to it is one which is related by Mr. Street, or by some other gentleman who has written an extremely interesting book upon Christ Church in Dublin, where it appears that there was,—I think in that beau-

tiful edifice,—a noble stone roof; but yielding to the hand of time, this roof came down and covered the ancient floor of the church with the ruins to the depth of some 6 ft. or more. The parishioners or attendants at the church, thinking it would be a most laborious business to carry away all this stone, and that the church before had been quite unnecessarily high, put a wooden floor over the remains of the ancient stone roof, and a plaster ceiling in place of the original roof. I do not know whether that is an exact representation of the method of the Trojan architects, but I completely agree with Dr. Schliemann, and I suppose it is borne out by other remains, though there may be no such remarkable case to be found elsewhere of a site on which successive cities would be built without any clearing of the site at all, but simply building upon the site as it offered itself, provided it was of a practicable character enabling the people to build. I would further venture to make this observation,—that to a certain extent this accumulation of *débris* and the gradual formation of a hill was in itself an attraction,—that with a view to the purposes of defence, which was a main idea in all these ancient cities, if the mound be elevated 20 ft. from the ground it would be better than 10 ft., and if elevated 40 ft. or 50 ft. it would be better than 20 ft.; and therefore this *débris* and this accumulation in such a case would really form an additional inducement to the raising of a new city, and consequently we see the accumulations which Dr. Schliemann supposes fit into one another and adapt themselves to the circumstances of the case. With regard to the materials, assuming that Dr. Schliemann has shown that Hissarlik was the site of ancient Troy, I must say in his presence that, as far as I am able to judge, he has done more to give reality to that ancient city of Troy, and to bring it down out of the cloudland to which some speculators had banished it, and to incorporate and give it historical being and substance in the eyes of reasonable and competent judges, than all the students who have preceded him in the field of Homeric investigation. With regard to the materials used in these cities I should say certainly, drawing my inferences not from any wide acquaintance with archæology, but from a conscientious study of the poems of Homer,—a study which has been both conscientious and prolonged,—I should say with confidence that as a general and almost universal rule the materials were of a very fugitive and perishable character, and that the use of stone was an extreme rarity in the cities of the period to which we refer. That, I apprehend, would be entirely borne out by the position of the hill of Hissarlik, as the stone where it is found indicates either some great work of defence for the city in general, or else the palace or dwelling of some person of the first eminence; and with regard to all other dwellings we should be led to suppose, in the absence of reference to materials, and from what we know of the state of labour and of art, that they were of an exceedingly perishable material. I suppose, by chemical aid, more may be done than has yet been done to ascertain what these materials were. I should be very much surprised to find that Hissarlik in general was built of well-prepared bricks. I should expect to find that it was built either of wood or clay, or of bricks in a very imperfect state of preparation, and that the action of fire upon it would rapidly reduce it to a state of entire and utter ruin. Of course a city into the composition of which such materials entered largely would yield a very considerable mass of *débris*. I do not see, therefore, though discussion may raise suggestions leading to a different conclusion, any reason why we should not follow Dr. Schliemann in his views. There was one point which dropped from him incidentally on which I should like to make a remark. He spoke of houses having the entire walls lined with plates of bronze, and of his finding bronze nails or marks of them in certain stones which he has discovered, I am not sure whether at Hissarlik or Mycenæ? [Dr. Schliemann.—Mycenæ.] I am not at all surprised at that, but I am in great doubt about the material. He has himself referred to a passage in the "Odyssey," where the shining glittering metallic plates, with which palace walls were lined, are mentioned by Homer. I remember at one time I was examining very much into the question what it was that Homer really meant by χαλκός, and I consulted Dr. Percy, and I think he was stongly of opinion that these metallic plates were not of bronze, but of copper. I dare say that Dr. Schliemann's use of the expressions "bronze plates" and "bronze nails" is not founded upon actual analysis, though nothing but such analysis would enable the distinction to be detected. But the use of copper nails, as I have reason to know, is very important, because in a house which I recently parted with in London, attached to an outer wall was a coating of tiles, 40 ft. in height. These had been fastened with iron nails instead of copper, for the sake of economy, and the consequence was that one night,—providentially when the house was empty,—the tiles all came through a skylight over the staircase, and it cost me 200*l.* to put them up again with proper copper nails. I may mention, in referring to this curious circumstance, what I believe is correct,—that we now do not know how to make copper nails hard enough to drive even into the softest wood. Sir Gilbert Scott will correct me if I am wrong, but that is what I was told at the time; so that in order to put these copper nails into their places holes had to be bored into the wood before they could be put in. It is remarkable, because it is a *reductio ad absurdum*, this state of things with regard to copper nails, when we consider that the ancient Greeks had undoubtedly some means of hardening copper, an art which seems to have been entirely lost. I have no doubt that the great bulk of the instruments and implements mentioned by Homer were made of copper. Indeed, I have read in the work of a German scholar, whose name I forget, but who carefully collected instances of copper arms, that in one case he found a set of surgical instruments made of copper. That is certainly a very remarkable case, even if we suppose these instruments to have been of a very imperfect character. I think I have sufficiently vindicated what I said as to the poverty of my own resources on this subject, and I will now release you from the pain of listening to me, and leave you to gather information from the more valuable remarks which are at your disposal.

Mr. C. T. Newton, C.B. (keeper of the Greek and Roman Antiquities in the British Museum), said he had not recently visited the scene of Dr. Schliemann's operations at Hissarlik, and therefore he should confine his remarks to what he saw during his recent visit to the excavations at Mycenæ. He was sorry to say that the unsurpassed discoveries which had been made by Dr. Schliemann did not seem to be properly appreciated by some of the leading archæologists on the Continent, who seemed to be filled with doubt and scepticism only to be effaced by a patient examination and study of the things brought to light during the excavations. One of the most distinguished of these sceptics was Professor Curtius, who had, however, at Mr. Newton's earnest entreaty, spent two days in examining the things which had been found, with the result that he had considerably modified his previously-expressed opinion as to them, and had come to the conclusion that some, at any rate, were of the heroic age. In his (Mr. Newton's) opinion, the things found at Mycenæ afforded *prima-facie* evidence of being anterior to the Græco-Phœnician period, which might be considered as ranging between the period of the beginning of the Olympiads (say 800 B.C.) and the time when Greek sculpture in marble was at its height (say 500 B.C.). A piece of collateral evidence of which we could not divest ourselves was found in the fact that Mycenæ was, in the heroic age, the seat of a great monarchy. Whatever might be said of the Atridæ, it could not be denied that there was a dynasty of some sort at Mycenæ. What had been found by Dr. Schliemann only tended to confirm the opinion that had generally prevailed for a long time amongst archæologists as to Greek architecture having been very slowly and gradually developed. One of the most interesting remains at Mycenæ was the wonderful Gate of the Lions. As he (Mr. Newton) saw the lions at Mycenæ, lighted up by a western sun, he was struck with the high degree of excellence in modelling which they exhibited. Between the two lions was, as was well known, a column, the mouldings of which were very sharply defined; but, as far as he knew, this column had no sort of affinity with any of the orders, and its origin was still unsolved.

Mr. Penrose said he was exceedingly glad that it had fallen to the lot of Dr. Schliemann to discover Troy, for no one had more deserved to find it. It was remarkable that Virgil should have so accurately described the wooden walls of Troy; he doubtless had access to sources of information which had been lost to us. The question which Mr. Newton had raised as to the column between the lions was a very interesting one. He (Mr. Penrose) should be inclined to associate it with the Ionic rather than with the Doric order.

After a few words from Mr. Geo. Grove, of the Palestine Exploration Fund,

Mr. Watkiss Lloyd said, with regard to the scepticism referred to by Mr. Newton as prevailing on the Continent with reference to the importance of these discoveries of Dr. Schliemann's, he did not know how to refer to it with any degree of patience, because it was impossible to understand how the simple chain of evidence which had been put before the world with such straightforwardness and honesty, and with a boldness which was the best warrant of genuineness, could provoke scepticism. The suggestion that had been made by some that the things found by Dr. Schliemann were Byzantine was utterly absurd, and he hoped that Dr. Curtius would set himself right with the world, and do justice to his own acquirements, by committing to print the modifications of his views which he appeared to have partially communicated to Mr. Newton. It was a matter of great interest to know what was the relation of the remains which Dr. Schliemann had found to the builders of the Cyclopean walls on the one hand, and to the Agamemnonic and Homeric age on the other hand. Did the utensils, weapons, and remains found by Dr. Schliemann belong to the men or giants who actually raised the Cyclopean walls? His (Mr. Lloyd's) impression was that they did, although Dr. Schliemann attributed them to the age of Agamemnon, which he (Mr. Lloyd) was inclined to think was considerably later than the age of the Cyclopean walls. The age which Homer referred to as the age of the expedition against Troy was an age posterior to that which raised the Cyclopean walls. He would direct Dr. Schliemann's attention to a contemporary of Homer, Hesiod, whose writings, though capable of throwing a good deal of light on this question, had been unduly neglected in this discussion. With regard to the column of the Lions' Gate, the mouldings of the capital were those on an Attic base reversed, while the entablature had a strong analogy to a Lycian entablature.

Sir Gilbert Scott said that in the buildings of the South of France, Venice, and Byzantium, a great deal of ornament was to be found which was essentially Greek in design and feeling. Taking a long skip backwards, we found the same ornamentation in the true Hellenic art of the time of Alexander the Great, and in some of the Etruscan tombs. Why, then, should we wonder that the ornaments found in the tomb of Agamemnon should resemble later Byzantine ornament?

Mr. Gennadius, the Greek *Chargé d'Affaires*, and Mr. Leighton, R.A., having made a few observations,

Mr. Wood, the discoverer of the Temple of Diana at Ephesus, tendered his congratulations to Dr. Schliemann on his successes as heartily as he had been congratulated by the Doctor on discovering the pavement of the Temple of Diana. It was exceedingly satisfactory to hear Mr. Newton's testimony as to the great antiquity of the remains found by Dr. Schliemann.

Mr. Gladstone.—I begin to fear lest Dr. Schliemann should get tired of our compliments; at all events, I think we are not in the habit of paying compliments which are not sincere. All the compliments and marks of honour which he receives in this country,—and they cannot be too many,—come from the hearts and the understandings of the people. It pleases me particularly to move a vote of thanks to him for his interesting paper. I think that the mature judgment of so distinguished an authority as Mr. Newton in favour of the great antiquity of the things brought to light at Mycenæ must be felt, even by Dr. Schliemann, as an honour well worth accepting.

The President, in seconding the motion from the chair, said,—I venture to remark that if any confirmation were wanting of the sentiment which I ventured to express at the outset of these proceedings, that architecture and archæology are very closely allied, that confirmation has been given in the extremely ingenious and interesting paper which has been read. In conclusion, I would only draw the attention of our honoured guest to the words of the motto (found in Nestor's speech to Diomede, in the ninth book of the "Iliad") which we have placed over the mantelpiece this evening:—

Οὔτις τοι τὸν μῦθον ὀνόσσεται, ὅσσοι Ἀχαιοί,
Οὐδὲ πάλιν ἐρέει· ἀτὰρ οὐ τέλος ἴκεο μύθων,—

and which may be translated as follows: "No one among the Greeks has censured thy remarks, or answered them; but thou hast not said all that has yet to be said on the subject."

The motion having been carried with much applause, the meeting terminated.

THE CONNEXION OF GREEK AND ROMAN ART WITH THE TEACHING OF THE CLASSICS.

PROFESSOR SIDNEY COLVIN delivered the second* lecture of this course of Cantor Lectures at the Hall of the Society of Arts on Monday, the 23rd ult.

After giving a *resumé* of the previous lecture, Professor Colvin proceeded to say that the creations of Greek and Roman art were co-extensive not merely with a part of the life of the Greeks and Romans, but with every phase of it. Everything which those people did or dreamt of, or suffered, or desired, found a permanent record in the handiwork of the artist, as well as in literature. In the present lecture he proposed to take a rapid glance—for it could hardly be called a survey,—of the range and extent of ideas represented, personified, incorporated,—incarnated, in fact, for they became real living beings in the minds of the ancients,—in sculpture, painting, and the subordinate arts, but especially in sculpture. The study of ancient architecture, as a separate study, might fairly be set aside for the present purpose, although it was one of the most interesting studies possible. The way in which the genius of the Greeks showed itself in the proportion and planning of their buildings was surprising, especially in their temples, upon which the whole genius of Greek architecture was concentrated. In short, the study of Greek architecture was one which was capable of revealing the Greek mind in a most characteristic way. Proceeding then to glance at the range of the conceptions to which the Greek imagination, and, subsequently, Greek art, gave human lineaments, the lecturer spoke first of all of those works of art which we knew to have existed from the fame they obtained, and from records which had been handed down in the writings of antiquity. Naturally the embodiments which presented themselves first for consideration were those of the twelve great Olympian gods, who divided among them the empire of the world as it existed in the Greek imagination. First of all was the sovereign father of all, Zeus, who also personified the physical powers of the sky, and hence he was always represented as holding a thunderbolt in one hand, and his familiar attendant was the eagle, both being symbols of power to swoop down suddenly from the sky. Associated with him was his wife Hera, the sovereign goddess of married womanhood. Then came Poseidon, own brother to Zeus, who was the presiding deity of the sea; Demetria, who represented the fruitfulness of mother earth; and Proserpine, her daughter, who presided over the death of mankind. Of the children of Zeus, Athene represented light and brightness, at first only physically, but at a subsequent period ideally, as the personification of intellectual light and learning generally. Time did not permit of allusion to all the great gods and their characteristics, but all had their temples, more or less famous. Each temple had its temple precinct, and each precinct had its images. Although for the purposes of the present lectures it was not proposed to consider architecture, it was necessary for the audience to fix their minds upon the chief product of Greek architecture, the temple, as the central point round which all the products of sculpture arose. In the beginning Greek sculpture was essentially subordinate to Greek religion, and therefore subordinate to the seat of Greek religion, the temple. Later on, when the art of sculpture began to progress towards perfection, it acquired a much greater freedom, and there came to be three classes of the Greek sculpture associated with the Greek temple. First of all there was the statue of the god himself,—the temple-image, properly so called. That was originally, in the early times of Greek art, a very rough wooden image of archaic type, and even after Greek art had attained a high degree of perfection, these rough images were regarded with great sanctity. In course of time, however, these rude wooden images passed away, and gave way to figures of the central images in the utmost perfection of art. Besides these, each temple and each temple precinct had a great number of dedicatory statues of the tutelary divinity, varying more or less from each other in the representation of the god's attributes. These statues were for the most part set up and dedicated by people who were desirous either of making a thank-offering for some benefit received, or of propitiating the god in order that he might not punish them for their evil deeds. The third-class or order of sculpture was purely decorative, and was used in the ornamentation of the temples themselves, as in friezes, metopes, pediments, &c. In the pediments at either end of the great Greek temples the richest part of the purely decorative sculpture of the Greeks was displayed. Of the first and second classes of sculpture it was highly improbable that any considerable remains would be found, but now that there seemed to be a sort of revival in archæological exploration, it was very likely that many valuable finds of decorative sculpture, *i.e.*, sculpture which had been used in embellishing the architectural features of the temples, would be made, and by a comparison of specimens of this class of sculpture with each other and with representations of the great statues or temple images depicted on coins, &c., together with a closer study of the writings of antiquity, our knowledge of Greek art was capable of being widely extended. The lecturer then proceeded to take a hasty survey of the most famous of the Greek temples and their statues, beginning with the temple of Zeus at Olympia, and its chrys-elephantine statue described by Pausanias. This must have been irrevocably destroyed centuries ago; for even had not the gold and ivory of which it was composed excited the cupidity of invaders, the structure of the statue was such as to need the frequent application of oil or water,—or perhaps both,—to keep it from "springing." It was on record that some of the statues of this description were regularly looked after and cared for in this way by specially-appointed attendants. The only clue we had to the splendour of this statue of the Olympian Zeus were a few fragments of Greek statues in the Vatican purporting to be representations of it. The representation of Bacchus and the Sileni was the particular delight of a certain school of Greek art,—the later Attica school, represented by Scopas and Praxiteles. The lecturer went on to point out that it was often difficult to fully understand the meaning of a Greek bas-relief, even when the scene depicted was some historical incident, for intermingled with the real *dramatis personæ*, so to speak, were ideal figures, such as that of Victory, &c., only slightly, if at all, distinguishable from the other figures. In the great central time of Greek art, portraiture was unknown, every representation of a figure being more or less symbolical. It was only in the time of Alexander the Great that real portraiture was known. The portrait of the Carian bronze from the tomb of Mausolus, in the British Museum, was probably one of the earliest specimens. Death and Sleep were almost indistinguishable in Greek art; in fact, it was not quite certain whether we possessed any Greek representation of Death. Very probably the beautiful figure in the British Museum, with great wings, and having a sword by its side, and which is in company with Mercury and other gods, was meant to represent Death. Death was never regarded by the Greeks as a thing to be dreaded, and consequently it was never represented in a repulsive or bogy-like form. Sleep generally was represented as a winged youth, sad of aspect. The lecturer concluded with some remarks bearing upon one or two illustrations exhibited. One of these represented the celebrated group known as the Naples Gladiators, which had been proved to be a Roman copy of the statue set up by the people of Athens, about 476 B.C., to the Tyrannicides. Another cartoon represented the remains of a winged figure of Victory recently found at Olympia, which, dating from the great central time of Greek art, was one of the most valuable fragments we had, although it was not comparable for beauty with our Elgin marbles. A third cartoon represented one of a large number of bas-reliefs which had been excavated at Athens. These bas-reliefs were undoubtedly funeral monuments, and the one in question well illustrated the Greek idea of death, which was regarded merely as a parting, a going out, a separation for a time. This was expressed with infinite delicacy by a servant assisting her mistress in preparation for going out. Another instance cited by the lecturer in illustration of the way in which the Greeks regarded death was that of a scene depicted on another of these sepulchral monuments, where a man going out in the morning stooped down to pat his little dog. The whole series of these monuments showed how ready and willing the Greek was to depart this life,—a life which was so full of glory for him,—and to spend his time with those gods so divine, calm, and strong, and compared with whom he was only one degree less divine, calm, and strong.

Professor Colvin delivered his third lecture on Monday afternoon last, dealing with the materials of the study, firstly, as divided according to the art employed, as sculpture, painting, and their subordinate arts; secondly, as divided according to the nature of the work produced, as statues in wood, gold and ivory, marble, terra-cotta, free and decorative statues, reliefs, wall paintings, vases and vase-paintings, coins, gems, gold ornaments, bronze armour and implements, glass, &c. He remarked that it was necessary, before beginning to discuss these materials, to classify and group them in some way; but it was a very difficult classification to establish, as it was hard to draw a line of demarcation between objects which, though generically belonging to different classes, ran into each other, so to speak. For instance, sculpture and pottery might be taken as totally distinct groups, but under which of the two could be classed terra-cotta statues? It might be claimed for either, and for both, with good warrant. In the classification which he was going to adopt for the purposes of the present lecture, he should include under the term "sculpture" statues of all kinds, whether in the round or in relief. Of the votive or dedicatory statues referred to in the last lecture as being set up by individuals in the precincts of temples, a large number,—the majority, in fact,—were of bronze, but most of them had irretrievably perished. Bronze was the material which from the severity of treatment which its use involved was best suited, on the whole, to express the genius of the Greeks in its highest expression. The art of Phidias was, in the main, a bronze art. Of the durability of the material itself there could be no doubt; but, unluckily for students of antique art, bronze had a fatal facility of being turned into pennies, and of this facility barbarian invaders had not been slow to avail themselves. It was not surprising, therefore, that the known remains of Greek bronze were comparatively few and disappointing. By far the best collection was that in the Museum at Naples, most of which came from Herculaneum and Pompeii, and as to which it was probable that the greater portion was not Greek art, but Roman reproductions. The Naples Museum possessed one or two statues of great beauty, notably the celebrated statue of Narcissus. Not many years ago there was found at Brescia a bronze draped figure of Victory writing upon a shield resting on her knee. That was an important discovery, but, after all, it was only a Roman statue, copied, no doubt, from the Greek, but not coming from the fountain-head itself. At Olympia lately an exciting discovery had been made of the ear and a portion of the head of what were recognised as belonging to a celebrated bronze cow which was known to have existed there. In the British Museum there had been for the last few years a splendid female head in bronze; we did not know where it came from originally, but it was said to have been dug up in a garden high up in the mountains of Armenia behind Erzeroum. The fragments of antique bronze which we possessed were, however, especially "ornamental" bronze work as distinguished from figure subjects, not Greek, but Etruscan. The Etruscans showed a certain stiffness and mechanical quality, and lacked the ingenuity of the Greeks, in their figure subjects, but in purely ornamental work they were unrivalled. The lecturer then proceeded to give an historical sketch of the accumulation and distribution of the materials for the study of classic art, and touched upon the principal excavations which had been carried on, referring, *inter alia*, to the establishment and maintenance of museums. In the border-age between the Middle Ages and the Renaissance, little more heed was paid to any stray specimens of antique art which might turn up than would have been paid to them in the Middle Ages. Even while the Renaissance was dawning, antique or "Pagan" statues were destroyed, as boding no good to the community amongst whom they were found. By the time the threshold of the modern world was fairly reached, however, this antipathy to the remains of antique art had

* For abstract of first lecture see p. 397, *ante*.

almost entirely disappeared, and was being replaced by enthusiastic admiration. By the end of the fifteenth century the exploration,—it might almost be said the scientific exploration,—of Rome had been commenced. From the end of the fifteenth to the end of the sixteenth century was the most active time of exploration in the Eternal City, and since that time the work has been continued with more or less of perseverance and continuity of aim. As might naturally have been expected, a vast number of statues had been found in Rome; the number had been calculated at 170,000, but it was impossible to speak exactly. It was during the most active period of exploration in Rome that some of the most famous statues in the world, such as the Laocoön, the Apollo Belvedere, &c., had been found. In those days, too, were formed the first great private galleries of the world, such as the Farnese, the Medici, the Ludovici, &c. These ultimately formed the nuclei of some of the great public collections, that of the Medici being transported to Florence, and forming the nucleus of the Uffizzi. One of the greatest treasures in this collection is the famous Niobe group, evidently copied from an original by Scopas or Praxiteles, and found in Rome in 1483. Lord Arundel, in the time of Charles I., was the first Englishman who took an active interest in the revived study of antique art, and, although the famous collection bearing his name had been for the most part broken up, there still remained at Oxford a few remnants of it. Towards the middle of the last century, from 1730 onwards, it became the fashion for rich young Englishmen to go "the grand tour," to Rome and Greece, and to bring back with them antiques of more or less consequence. Many of these were "restored" conjecturally and in a hap-hazard kind of way, one of the most active "restorers" being a man named Jenkins. Nollekins in his youth was employed in such work. From the collections brought over by instalments, so to speak, by the scions of noble houses, were formed the numerous private collections of this country, some of which had gone to swell the contents of the British Museum, originally formed from the collection of Sir Hans Sloane. About the beginning of this century the collection of ancient marbles entered upon quite a new phase, owing to the exertions,—the very up-hill exertions,—of a man whose name had been unjustly covered with a great deal of obloquy, but one who, in the history of human civilisation, would hold a high place, viz., Lord Elgin. The debt of gratitude which mankind owed to Lord Elgin for rescuing the frieze and pediment sculptures of the Parthenon from inevitable destruction was a debt of which it was impossible to exaggerate the greatness, notwithstanding the shrieks with which he was assailed by Byron and others. His work was hard, and his labours were ill-rewarded. He was sent out quite a young man to Constantinople as our ambassador. While he was there, an architect, named Harrison, thought it would be interesting to obtain casts of the corner capitals of some Ionic buildings at Athens, and then came the notion of taking casts and making drawings of the Parthenon. While this was being done, it became evident to those concerned in the work that those beautiful sculptures were continually being injured and mutilated, and this to such an extent that if they were to be preserved it could only be by removing them altogether. Lord Elgin got a firman from the Sultan, empowering him to remove them, and in the course of a few years 180 cases were packed and shipped to England. The subsequent history of these cases was strange and romantic. Some of them went to the bottom of the sea, and had to be recovered by divers years afterwards. Lord Elgin, coming to England through France in 1802, was arrested and imprisoned, and during his detention the cases containing the marbles were lying about at various ports in the country waiting for their consignees to claim them. When Lord Elgin was released, he had great difficulty in getting all the cases together, and after that he had almost greater difficulty in getting the dilettanti to appreciate their value. The amateurs of the day, infatuated with what they regarded the "perfection" of the showy and restored statues of the Vatican and other galleries, obstinately refused to see any merit in the Parthenon sculptures, and it was only after such men as Canova, Visconti, and Haydon had testified as to their value and high artistic merit that, in 1816, they were bought by the Government for 36,000*l.* (perhaps half the sum they had cost Lord Elgin). They were deposited in the British Museum, and from that time the public taste and knowledge of Greek sculpture had been extended and enlarged, and Bloomsbury had become the necessary Mecca of all students of Greek sculpture. Having passed in review the discovery of the Ægina marbles (which, he said, were lost to this country through the misunderstanding of his instructions by the British official who was deputed to secure them, and which were now at Munich), and the results of the explorations at Halicarnassus, Ephesus, &c., the lecturer, after briefly discoursing of antique coins and gems, and showing the great light which their study was capable of throwing on antique architecture and sculpture, made a passing reference to encaustic painting, and concluded by describing the so-called "Etruscan" vases, which, he said, there was good reason for believing were not Etruscan products at all. They were essentially and entirely Greek, and were exported by the Greeks to Etruria in exchange for bronzes.

MODES OF DECAY IN STONE.

AT the usual monthly meeting of the Architectural Section of the Glasgow Philosophical Society, held on the 18th ult., Mr. John Honeyman, president, in the chair, Mr. James Thomson, LL.D., Professor of Civil Engineering and Mechanics at Glasgow University, read an interesting paper on Modes of Decay in Stone. Dr. Thomson said that his attention had first been specially directed to this subject by observing the condition of the walls at Queen's College, Belfast, in 1862. Along one of the walls, at the level of a few feet above the base, was a regular band of decay, 2 ft. or 3 ft. broad. Below this line the stones were damp, but perfectly sound, above it they were dry and perfectly sound. He had satisfied himself that the same stone had been used throughout, and that, therefore, the effect was due to conditions which should be investigated. The conclusion he had arrived at was, that the decay was caused by constant evaporation drawing the salts from the pores of the stone towards the surface, where they crystallised, the growth of minute crystals causing the disintegration of the stone. He had brought this matter before the notice of the British Association at the Cambridge meeting, and subsequent observation and experiment had fully confirmed the views which he had at that time expressed. Dr. Thomson referred to the great power exerted by crystals forming or accumulating, and brought numerous illustrations before the meeting. He did not mean to assert that no other agent contributed to the decay of stone, but he believed that, in the case of sandstone especially, it would generally be found that the decay could be accounted for by the process he had described. He had little faith in any external applications for preserving stone. He had often observed as a result of their use that instead of the crystals throwing out minute particles from the surface, their accumulation behind the artificial skin resulted in large flakes of the stone being thrown off.

After some discussion, in which Mr. Campbell Douglas, architect, Mr. James Thomson, architect, Mr. Mayer, and others, took part, the chairman asked Mr. Wunsch, as a geologist, if he could suggest any mode of determining what stones were likely to stand well when exposed in a building.

Mr. Wunsch said he would be guided by observation; he would examine the old buildings in the locality where he was going to build (or get his architect to do so), and find out where the stones which had stood the test were got, and use the same stone. He would consider his architect responsible if stones which decayed were used in his house.

Mr. Douglas repudiated the idea of the architect being responsible in such a case, and referred to the Houses of Parliament, when even the advice of a distinguished Royal Commission had not led to the use of a durable stone.

The Chairman expressed regret that so few architects were present to take part in the discussion of a subject so deeply interesting to them, while they were bound to observe carefully the phenomena referred to by Dr. Thomson, and to take every available means of obtaining for their works the best materials: of course, he agreed with Mr. Douglas as to their responsibility. Sometimes they had no choice in the selection of stone; at others the stone they preferred was practically unobtainable; while at others, having taken every pains to find out the best quarry in a locality, their utmost care was baffled by finding stones which appeared precisely alike in the quarry, or on the "siege," turned out so differently in the building, that while some remained perfectly sound, others, before the tradesmen left the ground, were badly decayed. He thought we had a right to ask our geologists and chemists to help us in the matter, and supply us with some practical test. He considered Professor Thomson's paper a valuable contribution to our knowledge of the subject. It was a great step in advance towards prevention or cure if we thoroughly understood the nature of the disease. His own observations directly confirmed Dr. Thomson's theory. The action of the special impurities of the Glasgow air caused by chemical works, referred to by Mr. Mayer, seemed to have nothing to do with the decay of sandstones. He had found Glasgow and other sandstones go as rapidly in the purest country air as in town, when favourably situated for developing the process of decay indicated by Dr. Thomson. He asked the members to assist in the elucidation of the subject by carefully noting the phenomena presented in cases coming under their notice.

Professor Thomson having briefly replied, received a cordial vote of thanks.

DESIGN FOR COVERING THE ROYAL ALBERT MEMORIAL IN HYDE PARK.

WE have already briefly mentioned the proposal made by Mr. Wills, of the Royal Exotic Nursery, Onslow Crescent, to erect an enclosure over the Albert Memorial in Hyde Park, and that a design had been made for the structure by Mr. Bedborough, architect. In our present issue we give an engraving of the design, and will let Mr. Wills tell his own story by printing part of his letter addressed to Her Majesty the Queen:—

"In the first place I submit to your Majesty's gracious consideration that the magnificent memorial, in Kensington Gardens, erected to the memory of the great and good Prince Consort, by your Majesty's grateful subjects, is much too beautiful and costly to be exposed without protection to the injurious influences of the vitiated atmosphere of London.

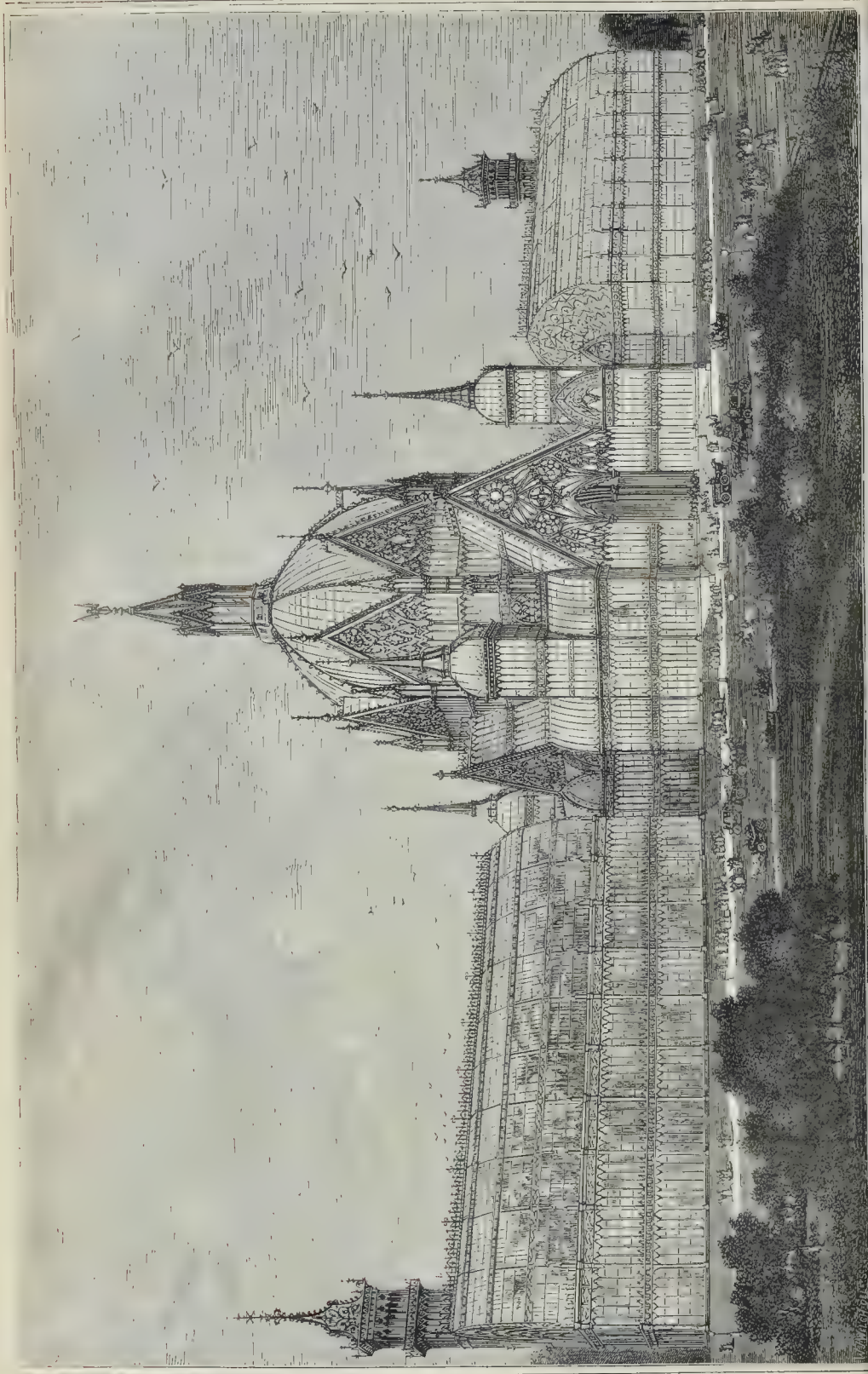
Secondly, that a suitable covering is absolutely necessary, not only to prevent a speedy disfigurement, through atmospheric influences, of the nation's memorial, but also to enable the admiring thousands who so much appreciate the virtues of the late Prince Consort to enjoy, in all weathers, an inspection of the beautiful work of art raised to his memory.

Further, I humbly beg to submit to your Majesty that, as the arts and sciences of the four quarters of the globe, are faithfully represented in marble, and as works of high art command the admiration and appreciation of all privileged to view them, it would be in perfect harmony with the whole to add suitable illustrations of the vegetation of each quarter of the globe, also as a means of popular instruction, and as illustrative of the social and commercial benefits conferred on the subjects of your Majesty.

The proposal I have the honour to lay before your Majesty is to erect a commodious glass structure, in five main divisions, the centre division to cover the whole of the Memorial, and the other four divisions to be devoted to the growth of plants, trees, &c., representing the four quarters of the globe. Examples of the vegetation of Europe, for instance, to be arranged in a garden by itself, adjoining the group of sculpture, representing the products of that part of the globe, and a similar arrangement to be made in respect to the remaining groups of statuary."

In conclusion, the writer submits that if this proposal could be carried out, it would appropriately honour the memory of that great mind whose aim it was to foster the arts and sciences for the benefit of the English nation.

St. Paul's Cathedral.—The Dean and Chapter have accepted the offer made to the Lord Mayor by the "Chambre Syndicale des Ouvriers Menuisiers en Bâtiment," in Paris, to give a splendid carved pulpit, of the value of 1,400*l.*, for use in St. Paul's Cathedral. The new pulpit will be placed in the nave of the Cathedral, which will thus be made more available for the occasional services which are held there.





INTENDED FAÇADE OF THE GROSVENOR GALLERY, NEW BOND STREET.—Mr. William Thomas Sams, Architect.
Doorway by Palladio.

AÇADE OF THE GROSVENOR GALLERY.

According to promise, we give a view of the trance front of the Grosvenor Gallery, now in rse of construction. The doorway, as we id in our account of the building,* is under- od to be from the designs of Palladio, and me from the Church of Sta. Lucia, in Venice. e doorway is of marble. The remainder of e front will be of Portland stone. We have viewed the contents of the gallery on another ge.

NEW STREETS AND STREET IPROVEMENTS BY THE METROPOLITAN BOARD OF WORKS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

In the discussion which followed Mr. Thomas rris's paper† on this subject,

The President (Mr. Charles Barry) said that the g list of street improvements which had been erred to in the paper showed the all-reaching ilance of the Metropolitan Board of Works, ose operations in all parts of London fully tified its title. It was gratifying to know that their colleague in the membership of the stitute, Mr. Vulliamy, the Metropolitan Board Works had at its command the services of an ucated architect. No doubt he would be able show very good and substantial reasons for lines of the new streets projected by the ard. It was to be hoped, however, that he uld bear in mind as much as possible that atever improvements might be made in the ghbourhood of the National Gallery, it was inently desirable that that treasure-house of should be made an isolated building, with iciently wide streets bounding it on all sides. obvious advantage of this in case of fire so great that he need not say more on the ject. It would also be very interesting to w what course the Board intended to pursue onsequence of the withdrawal from their Bill before Parliament of the clause which con- plated interference with the porch of St. rtin's Church. How did the Board propose get over the difficulty of having a narrow et leading from Trafalgar-square into the e new street which it was proposed to form 'ottenham-court-road?

Ir. Vulliamy (Superintending Architect of the ropolitan Board of Works) said he would wer the chairman's question first. He ught that the Board had done wisely to defer ublic opinion in the matter of leaving the fine ico of St. Martin's untouched, although the ot would be to render the proposed new et, for the present, at any rate, of less ice at that particular point. The Board felt as the public so strongly opposed any inter- nce with the portico the matter should remain at present, leaving the public to take the ative in regard to the matter if any great nvenience were found to result from the in- pleteness of the improvement. As to the onal Gallery, the portion of the scheme of et improvement in the neighbourhood of nming's-row would be given up, as the War e authorities would not consent to allow any ion of the barrack-yard to be taken, as the mander-in-chief was most strongly of opinion its retention, together with the barracks, most necessary for quartering troops for the ection of the public in case of riot. It was rly useless to press this portion of the Bill, would be opposed by the Government, and opposition would jeopardise the whole sure. He had listened with a great deal of ntion to Mr. Morris's proposals and sugges- s for the improvement of the intended lines of street communication, but he afraid that Mr. Morris had not had experience in street-making that he (Mr. iamy) had. For sixteen years he had the laying out of the new streets, such outhwark-street, Queen Victoria-street, &c., h had been carried out by the Metro- an Board of Works, and the one main item e considered in such matters was that of Obviously it was very easy to take a map draw a line from point to point and say,— s is the best line for the new street to "; but to make a new street in this way d involve an outlay, very often, of millions oney, the greater part of which might be d by slight deviations to the right or left obtaining what would be nearly as good a line of thoroughfare for the traffic as the more direct line, although as a mere matter of planning and *ensemble* the effect would necessarily be inferior. The whole of the lines of street improvement now before Parliament had been surveyed several times by Sir Joseph Bazalgette and himself, and the lines of route fixed upon by them had been adopted by the Board, the members of which were all practical men. A very important line of street improvement, that from Old-street to Hart-street, Bloomsbury, was now well advanced towards completion, all the work being in hand except a portion in Theobald's-road, Holborn. Several of the schemes discussed by Mr. Morris had yet to be approved of by Parliament, and, as they were now before the Legislature it was hardly fair to discuss them too minutely or to prejudge their cost.

Mr. W. H. White asked what the Metropolitan Board of Works proposed to do in consequence of the refusal of the War Office to allow any portion of the barrack-yard to be taken for the proposed new street.

Mr. Vulliamy said that the only thing the Board could do was to wait until next year, and then come before Parliament with a plan of an amended route *vid* Orange-street and Leicester-square.

Mr. Hansard said he sincerely hoped that one part of the scheme now before Parliament would not be carried, and that was the *débouchement* of the proposed new street into Piccadilly-circus, one side of which (that between Tichborne-street and the Circus itself) would have to be demolished, leaving a very irregularly-shaped open space opposite the Criterion Restaurant,—such an awkward-shaped space, in fact, as to be almost, if not quite, incapable of any satisfactory or effective architectural treatment. The Circus and the Quadrant were the great beauties of Nash's scheme, but if interfered with in the manner contemplated they would be greatly marred and disfigured. He quite agreed with Mr. Vulliamy's remarks as to cost, but at the same time he thought there was such a thing as false economy in street-making, and this false economy was sometimes exemplified in not acquiring sufficient land on either side of the proposed new streets to make good, useful, and practicable building sites; and in cases where the new street cut through the property acquired at a more or less acute angle, some of the plots were almost useless. Wherever practicable new lines of street should be partially constructed and new buildings erected before demolishing the whole of the property required. This was a mere precautionary measure for retaining the manufacturers or tradesmen on the spot, instead of compelling them to migrate, perhaps to a distance, because in many instances of enforced removal of this kind the tradesmen or manufacturers had necessarily to remove a considerable distance away, and the new street, when made, had a hard struggle to get tenants. This was exemplified in the case of the new buildings on the Holborn Viaduct, which were only now beginning to be occupied as offices and business premises.

Mr. Whichcord said that some two or three years ago it was proposed to make an underground railway uniting the Midland and North-Western Railway stations in the Euston-road with the South-Eastern Railway at Charing-cross. The proposed railway was to have been constructed in great part beneath a new street which was projected, if he remembered rightly, on almost the same line as that proposed by the Metropolitan Board of Works. That scheme was, for some reason or other, not sanctioned by Parliament. He regretted this, because he felt convinced that, even though we made new street improvements of the kind under discussion, we wanted more railway accommodation in London if we were not to see our streets continually blocked with traffic. Mr. Morris had treated the subject in a very suggestive manner, and his paper was well worth attention; but, at the same time, no one was better qualified than Mr. Vulliamy to speak with authority and emphasis upon the practical difficulties and financial considerations involved in the making of new streets or the improvement of existing thoroughfares in London. He agreed with Mr. Vulliamy that suggestions which, on the face of them, appeared to be the most feasible and obvious things in the world, were, in carrying them into practice, opposed by insuperable obstacles. An important point to consider in connexion with new street improvements was whether they were to be partially appropriated to tramways, and if so, whether some improved means of constructing the lines could not be adopted, so as to maintain the roads in better order. On all these questions there would naturally be great diversity of opinion. For his own part, he could not but think that it was an abomination to allow tramways, as at present constructed and maintained, in our streets; and now that they were threatened with steam power for drawing the cars, the outlook was not a pleasant one for those who were in the habit of driving. The æsthetic part of the question involved in Mr. Morris's paper,—a very important part,—had only been glanced at, but it was particularly interesting to them as architects. There was no doubt that the effective opening-out of new streets called for great judgment on the part of the designer, so as to display to their utmost advantage any churches or interesting buildings of any sort. In this connexion Mr. Vulliamy was deserving of great credit for the pains he had taken in so arranging the route of Queen Victoria-street as to show at their best the few remaining church towers of Wren's time. These towers were exceedingly picturesque, and lent a great charm to the street. On the other hand, however, he regretted to find that the churchwardens, or whoever else might be responsible, had erected a glaring red brick screen wall in front of the churchyard, greatly to the detriment of, or rather in sad contrast to, Mr. I'Anson's fine building for the British and Foreign Bible Society. In conclusion, Mr. Whichcord moved a vote of thanks to Mr. Morris for his paper.

Mr. C. F. Hayward, in seconding the motion, hoped, with Mr. Hansard, that the proposed interference with Piccadilly-circus would be abandoned, especially as the proposed line of street was capable of being modified by carrying a street through from Gerrard-street to the top of the Haymarket, which would be not only cheaper, but would better accommodate the traffic. The present traffic of Regent-circus was quite sufficient for it, and to lay on extra traffic to it would be to choke it up. On the other hand, the top of the Haymarket was a point which would bear a great deal more traffic. A curve from the top of the Haymarket to join Gerrard-street would lead to Grafton-street, and so on to the circus which it was proposed to make slightly to the westward of Seven Dials. This route would pass through the building formerly occupied by Burford's Panorama, but now a Roman Catholic chapel, but with that exception it would not involve the removal of any buildings of importance. The traffic by this means being brought to the west side of Leicester-square, a curve could be made without difficulty, and without passing through any valuable property, which would lead through Suffolk-street, Pall Mall, into Cockspur-street, and so on to Charing-cross. It was, however, very easy for those who were irresponsible to make these suggestions; the actual working out of the matter involved great expenditure and careful consideration.

Mr. Jennings remarked that Regent-street, great as was its capacity for traffic, was at times congested, and it was therefore of great importance that additional arterial communications should be made from north to south. But all street improvements effected in London would be comparatively ineffectual to cope with the increasing traffic unless the subsidiary aid of railway communication were called into requisition to a greater extent than at present.

The President had great pleasure in putting the vote of thanks to the meeting, but he was sure it would be the desire of the members to include in it an expression of thanks to Mr. Vulliamy, who had kindly found time, amidst the pressing duties of his official position, to attend and give all the information in his power. He was sure that the members were very much indebted to Mr. Morris for bringing this important subject forward at so opportune a time. Mr. Morris had conjured up visions of an architectural future which would suffice to lead the younger members of the profession to fame and material prosperity. It was very easy to carp and cavil at the doings of a great administrative body like the Metropolitan Board of Works, but the public stood, in relation to the Board, somewhat in the same position as that occupied by the Opposition in relation to her Majesty's Government. Everybody thought himself capable of criticising the doings of those in authority, although those who were in possession of all the facts and data were presumably the best judges. Mr. Vulliamy, acting for those who controlled the expenditure of the ratepayers' money, had a great deal of responsibility devolving upon him, and there could be no doubt

* See p. 424, *ante*.

† Read on the 23rd ult. (see p. 421, *ante*).

that he acted with great discretion. Of course, as had been pointed out, the question of cost was of very great importance, although he was one of those who ventured to think that the Metropolitan Board of Works existed not only for the improvement, but, to some extent, for the adornment of London, and cost should not intervene absolutely to the exclusion of æsthetic considerations. It was gratifying to know that in the person of Mr. Vulliamy the Board possessed the services of an educated architect, and it was sincerely to be hoped that he would not be unduly trammelled and fettered by the bugbear of cost, which was not begrudged in the long run if good results were arrived at. In conclusion, the President suggested that it would be desirable that the Board and the Institute should cultivate friendly relations with each other, to the end that they might take mutual counsel on matters of the kind before the meeting. The vote of thanks having been carried by acclamation, Mr. Morris and Mr. Vulliamy acknowledged the compliment, and the meeting terminated.

ARCHITECTURAL ASSOCIATION.

AT the ordinary general meeting held on Friday, the 27th ult., Mr. H. C. Boyes, president, in the chair, the following gentlemen were elected to membership, viz., Messrs. A. T. Murray, E. Komlosy, J. G. Perrott, and Sydney Turner.

On the motion of Mr. J. Douglass Mathews, a vote of thanks was given to Mr. H. H. Staunus and the Entertainment Sub-Committee for their services in connexion with the members' *soirée*; and votes of thanks were also given (on the motion of Mr. Hayes), to Messrs. Tarring & Wilkinson, Messrs. Waring & Nicholson, and Mr. John Phillips, in connexion with the recent visit of the Association to Messrs. Doulton's new premises at Lambeth (described in last week's *Builder*), and to Sir Coutts Lindsay and Mr. W. T. Sams for their kindness in allowing the Association to visit the Grosvenor Gallery, New Bond-street.

It was announced that a visit would be paid to-day (Saturday) to a new building which is now in course of erection in Billiter-street for the East and West India Dock Company. It was further announced that Messrs. Penstone & Avern had been elected members of the committee, to supply vacancies, and that Mr. T. W. Cutler had been nominated to serve as Vice-President, in the room of Mr. W. W. Robertson, who lately resigned in consequence of his removal to Edinburgh on his appointment as Surveyor of Public Works and Buildings in Scotland.

The President called the attention of the members to the list of prizes offered by or through the Association to its members for the present session, which will be found in the "Brown Book," pp. 36 *et seq.*

Mr. Thomas Williams then read a paper "On Architecture as contributing to the Pictorial Arts," which we give below.

ARCHITECTURE AS CONTRIBUTING TO THE PICTORIAL ARTS.*

I HAVE resolved to limit myself to some necessary preliminary observations upon the mutual relations of the arts and the assistance which they derive from one another, and to draw your attention to some of the most remarkable and instructive instances of the use made of architecture in the works of the earlier masters of the Italian schools, which represent a period in the history of art which is especially interesting and, I think, suggestive to architects.

In considering the question in this view, those works in which the main object has been to represent architectural features, or in which the architecture introduced is a more or less direct representation of an edifice, or portions of an edifice, existing at the time when the work was executed, are necessarily excluded as foreign to my object, which is to point out the use made by the masters to whom I have referred of architecture as accessory to the figures introduced into their works, and not to draw your attention to architecture in itself.

The pursuit of art is the striving after ideal perfection, and the more completely the artist is able to emancipate himself from the narrow formulæ of any particular school, the nearer he is likely to approach to ideal beauty. While nature nowhere presents to us in any object ideal perfection, nowhere is there absent an abundance of the materials from which the artist may, for himself, evolve ideal perfection. The materials are at hand, but the gift of genius, which confers upon the artist the power of appreciating, selecting, and combining the materials which Nature presents into one complete and harmonious whole is given to few, and when given, may be wasted and almost forfeited owing to unfavourable influences. The man entirely without this gift is brought into contact with natural beauty. He perhaps observes, admires (he knows not why), and passes on. The man who has this gift in some measure, but who has not recognised it, or who has regarded it as worthless and left it undeveloped, or who has suffered himself to become habituated to thinking in a groove, may perhaps do more. He mentally notes such of the materials of beauty presented to him as are consonant with the peculiar tone of his mind, and stores up the ideas which he thus derives, not to add them to that store of universal knowledge of nature which is the only source whence can proceed conceptions of ideal beauty and fitness, but rather, by the very exclusiveness of his study of nature, to deepen the groove in which he delights to run.

But the true artist is as much above these men as inspiration is above talent. To him it is given to gather everywhere, sometimes by careful seeking, and often involuntarily and unconsciously, the materials which enable him to conceive and produce his ideal, an ideal which will approach perfection just in proportion to the capability of his mind to receive, in all their fulness, the universal impressions of beauty which are presented to him.

Such a man possesses a great power of educating and elevating his fellow men, and incurs a deep reproach if he misuses or neglects the gift entrusted to him. His mission is to be a centre of refining influence,—a medium for conveying to those who have not the capacity of reading it in the original tongue, the message which is addressed to every man in the open pages of Nature.

But, alas! there are many obstacles to the representation of ideal beauty. Art is long, and time is fleeting, and the artist's hand may be palsied by age before he has fully overcome mechanical difficulties; or the mind may be more susceptible of impressions of truth of form, colour, and expression than the hand is apt to reproduce them. The spirit of beauty which lies in exquisite lines of form and subtle harmonies of colour which the artistic faculty appreciates when presented to the eye, and which are seen with a glow of pleasure, may evaporate during the tedious process of reproduction, and on the canvas or in the marble may become mere representations of Nature, lacking Nature's life.

But, besides these conditions imposed by man's infirmity, there are, I think, two influences which work strongly, and are often fatal to the attainment of a lofty ideal in any art. They are: the natural tendency to mannerism which exists in every man, and the degrading influence of the desire for the world's applause, which tend to debase the work of every artist, and to drag him from the earnest seeking for an ideal, perhaps to him unattainable, down to the level of respectable mediocrity,—from his faithful, but, perhaps, in a low sense, unrequited allegiance to art, down to the world's level of success.

What I have called the natural tendency to mannerism is the inclination to proceed in the path which seems to promise immediate success. A student of art finds the apprehension of some particular phase of art is to him easy, and that he possesses a peculiar facility for conveying to other minds the impressions which strike him so forcibly. He follows, blindly, where the peculiar bent of his mind leads him, and, gratified by the success which the very narrow concentration of his views insures to him, ceases to consider the grander and more universal aims of art, and, after a time, pays the penalty by losing the power of generalisation with which he was once endowed.

We need not look long among the professors of any art, in the present day, to find one who has been overtaken by this fate, and who goes on from day to day enjoying more and more success and worldly reputation at the expense of his art.

But if the case of such a man as I have described is almost hopeless, how entirely desperate is the state of one who has yielded to the seductions of pecuniary gain, and, in allowing the enjoyment of worldly prosperity to be h compensation for discarding the principles art, has become a skilled artificer instead of a artist. Such a one sells the talent which ha been given him, and becomes nothing better tha an intelligent machine. He hits upon an acc dental success in some line of art, and imm diately discarding all the noble aspirations whic alone can endue the works of an artist wit power and life, puts himself up to the highe bidder. This, I am afraid, is the case largely i the present age, when the increased luxury life, the universal striving for notoriety an applause, and the insatiable desire for wealt may often extinguish the fire of genius, whic fanned by the purer and more encouragin influences of a simpler life, of conditions mo favourable to a retiring worship of art, and of less sordid ambition, might have been kindl into such a flame as illuminated the world in t times of Raffaelle and Michelangelo. The gre lights of art have always been free from th reproach, and if they have often gained world distinction, which is almost independent of re merit in art, it is because it followed them, a was thrust upon them as a tribute of admirati by men who had sufficient culture and genius recognise their gifts, and not because they ma it their aim to attain it. Such men have ke themselves undefiled by never losing sight their one great goal,—ideal perfection. Th have turned a deaf ear to the voice of the wor entreating them to turn aside from their cour into the pleasant pastures on either side, in which they might easily enter, but which th could hardly leave, and where they might bart the brightness of the fire with which God h illuminated them for the flickering and uncerta light of the world's flattery. Great men ha made the wiser choice and been constant to th art. The many have accepted the world's of and become mechanical.

For such a man as I have just described the is no hope. He has voluntarily given up art a devoted himself to money-making; but the ca is far different with the man whose peculi facility for one branch of art is likely to invol him in mannerism. His remedy lies near hand, in the study of forms of art dissimi from those to which his natural abilities incli him; and I think I shall be able to demonstr the truth of this theory by showing how lo are the aims of those of the masters with wh we have to do to-night, who have pursued m than one branch of art at the same time, and ha so been able to subdue any tendency to crudi or exaggeration in either.

The architect is placed at a singular dis vantage in this respect. The peculiarity of art is that it is indissolubly allied to a pur mechanical science. The architect must be fi a scientific constructor, and his art must restricted to the beautifying of the forms wh his building takes. The forms are determin in the vast majority of instances, by considera tions which have no reference, or a very part reference, to the art which is to adorn the and the architect is, therefore, more restric than any other artist by causes which are ternal to his art. But, on the other hand, he the advantage of producing works which live many generations, and which are, as it were, for upon the attention of the most indifferent. careless may turn away from a picture o statue, but they cannot escape from architectu They cannot approach a doorway for the purp of passing through it without being aware t it is well or ill proportioned. They cannot habit a room without knowing whether the portions of it are pleasing, whether the deco tions are cheerful, splendid, or imposing, as case may be, and they are, therefore, in a gr measure at the mercy of the architect.

The masters of the Italian schools were v keenly alive to the influence which architect has upon the minds of those who are brough constantly in contact with it, and in their pa works they have not overlooked the charm grace of outline and pleasing contrast of f which is to be found in the judicious comb tion of the most refined types of architect with representations of figures and drap That the later masters of these schools, aimed at making their works sumptu grandiose, and highly decorative, should relied very largely (and sometimes very discriminately) upon architectural decorat was, of course, inevitable.

I venture to think that the study of various modes in which these masters have u architecture as a handmaid to painting is ca

* By Mr. Thomas Williams. Read at the Architectural Association, as already mentioned.

ɔd to interest and instruct; but at the same e, I must disclaim all pretensions to treating subject, or this branch of it, at all fully. hall have realised my hopes if I am the means drawing the attention of any who aim ɔeing artists in the highest sense of the word, he consideration of a subject which cannot ɔe them unimproved, and which may be the ɯs of preventing their sinking into any of pitfalls which lie in the path of every pro-ɔor of art, and into which the peculiar and ɯewhat incongruous nature of the architect's ling is likely to allure him.

t will not be unnecessary for me to mention this room that the revolution which was ɔoted in art by the rise of Christianity had what might appear to be an immediately ntary effect. The fact that Pagan art found expression principally in sculpture, which resented the gods themselves, or subjects ich were in some way connected with the rship of the gods, is sufficient to account for restrictive influence which appears in the lier productions of Christian art. We shall, refore, not be surprised to find that the lier Christian mosaics are principally of what nay term symbolical subjects. The recent ancipation from Pagan traditions had almost vitably led to a studious avoidance of the free-n which characterised Pagan art, and it required lapse of many centuries before it was thought upatible with the semi-religious character of work of a Christian artist for him to adopt freer use of accessories which did not con-ɔute directly to the religious teaching of his ture, but could only be said to contribute irectly by making the whole work more ɔrous and striking. Until the time of Giotto man had not risen who was to initiate the ɐr style of composition, and who was to prove t all the variety which is imparted to pictures the use of representations of objects not ɔotly allied to the principal subject might ɡiven without detracting from the principal ɔects of the pictures of that time,—to teach ɔrine, and to record religious history and ɖition.

shall perhaps be told that I ought to have ɔed Cimabüé first in this category, but I ɔk the point of departure is to be found in the ɔearance of Giotto. Cimabüé has the honour of ing perceived and encouraged the genius of tto, and that of itself places him on a con-ɔuous pedestal among the masters of the time. nte says (I quote from Cary's translation) :—

> "Cimabüé thought
> To lord it over Painting's field; but now
> The cry is Giotto's; and his name eclipsed."

ɔre is a painting by Giotto in the Arena ɥpel, Padua, representing Justice. It is a ɯned female figure seated within a screen of hic design, with three gables with crockets a trefoliated arch beneath each gable. The ɟpery of Giotto has been remarked upon in "Handbook of the Italian Schools," edited by late Sir C. Eastlake. He refers to the flow-and long-drawn folds of the drapery, and tinues, — "This last peculiarity is charac-stic of the whole period. It recurs con-ually as an established type, though modified the peculiarities of the more eminent masters, as an architectural influence is everywhere ble in the measured forms of the severe style drapery, we may place the above-mentioned ɐtment in close connexion with Gothic archi-ture, to the character of which it corre-nds universally." Giotto affords an instance the advantage of a universality in art, as he ɔtised as an architect, as well as being the ɐtor of a school of painting. In 1334 he was ɔointed master of the works of S. Maria del ɔre (the cathedral), at Florence, and architect the walls of Florence and of the cities within confines of the state. While engaged in this ɔe he designed the beautiful campanile, and the sculpture with which it is decorated; upon his death resigned the unfinished ɖding of the campanile to Taddeo Gaddi, his ɟil, who was one of his most celebrated fol-ɔers as a painter also. I believe the architec-ɟe introduced into Giotto's pictures is all of a ɖt Gothic character. There is a beautiful ture of the Coronation of the Virgin in our ional Gallery. The Virgin is seated, holding infant Saviour, upon an elegant Gothic ɔne, raised on two steps. There are four ɐls adoring at the base.

Taddeo Gaddi, to whom I have already re-ɔed, was largely engaged as an architect in ɹilding the houses destroyed by an over-ɟ of the Arno in 1333. His works as a painter are very numerous, although not nearly so many are in existence as there are of Giotto. I have brought a photograph of a very characteristic fresco in S. Maria Novella, Florence. The architecture, as far as I know, is quite unlike that to be found in any of the works of his master Giotto.

The next master to whom I would refer is Orcagna, an artist who, without, so far as is known, having had any direct communication with Giotto, seems to have inherited his style in a very great measure. He, again, was a many-sided man,—an architect, painter, and sculptor. The tabernacle of Or San Michele is entirely his design, and the bas-reliefs are by his own hand. He was employed as architect in the building of the cathedral of Orvieto, and executed a mosaic for the front.

Orcagna, in the architecture introduced into his pictures, seems to have succeeded Giotto more completely than Giotto's own pupil Gaddi. In our National Gallery there is a Coronation of the Virgin, who is seated on a throne with a most elegant Gothic canopy.

Duccio, of Siena, is an important painter of this period, and is remarkable on this occasion as revelling in architectural representation in his pictures. In a large altar-piece which he painted for the cathedral at Siena, there is a singular use of architecture made in the compartment representing Our Lord's Entry into Jerusalem. The procession winds round a street inclosed on both sides with walls. It is about to proceed through an archway towards the city, which is chiefly conspicuous by an octagonal Gothic building, and in the foreground is a doorway leading into the street. Nothing could be more enlivening and interesting than the scene. There is much expression in the faces. The grouping of the figures is very pleasing, but with all this, the perspective is ludiciously wrong. It would be impossible for one of the disciples who is accompanying Our Lord to pass through the doorway, which is nearer to the spectator than they are, and there are heads looking out of windows in the distant city which are longer than those of figures in the foreground. I mention these peculiarities of the style of the time because I hope to be able to show that the discovery and use of linear perspective which was subsequently made led to the use of architecture in many cases as a sort of skeleton for the composition of the picture, a device which was very necessary, as I do not think any attempt was made until much later to produce any effect of aërial perspective.

The next master to whom I naturally refer is Simone Martini, who is not, however, particularly interesting in our present point of view. The architectural features of his works were more elaborated than those of Giotto, but were otherwise not dissimilar. I now pass over a large number of the Sienese school who were not distinguished from one another in any marked degree by the architectural parts of their works, and come to Fra Giovanni da Fiesole, commonly known as Fra Angelico, who was born in 1387. Fra Angelico painted entirely for the glory of God, and only religious subjects. His works are full of grace and refinement, and bear, I think, intrinsic evidence of his earlier occupation as an illuminator of religious books. His architectural backgrounds are very interesting as conveying, almost as much as the expression of the figures, the painter's mind to the spectator. They generally consist of symmetrically-placed vistas of arcades, and in many places the principal figures are arranged as symmetrically as can be in reference to the architecture. This is notably the case in a picture of St. Lawrence, in the Vatican Chapel, where the figure of the saint occupies an exactly central position in front of a perspective view of a Renaissance arcade terminating in an apse. The "Coronation of the Virgin" now in the Louvre collection shows a very elaborate Gothic canopy over the throne, and affords another instance of the fondness for symmetry which this painter so often exhibited.

I must now again pass over a host of painters of the Paduan, Bolognese, and Neapolitan schools, who would claim attention if this were a volume instead of a pamphlet, and reach a period important in the history of art, and especially so to the architect as being the time when the science of linear perspective was first systematically elaborated. This science we owe to Paolo Uccello, who was an apprentice of Lorenzo Ghiberti, the sculptor, who produced the wonderful gates which are so well known to us all, and which Michelangelo said were fit to be the gates of Paradise. I have been told on good authority that there is not at present a photograph of a work of Uccello's to be found in London, and I must, therefore, content myself with saying that there is a very fine battle-scene by this master in our National Gallery, and that he employed his knowledge of perspective more in the grouping of his figures than in the introduction of architectural accessories. It is, therefore, principally interesting to us on this present occasion as marking an epoch in art, viz., the introduction of perspective as an exact geometrical science.

I may now mention Domenico Veneziano, who was not a master who marked any epoch in art, or who rose pre-eminent among his fellows, but who introduced some very interesting architectural features into his works. I exhibit a photograph of an altar-piece at Florence, which is, I think, rather remarkable as a fresco, showing in a very interesting manner a transitional style of architecture. The pointed arches are supported on caps of an elegant free Ionic form.

I would next call your attention to Fra Filippo Lippi, whose character as a man was not so high as his fame as a painter, if Vasari is to be believed. He was a Carmelite monk, and is said to have been the father of Filippino Lippi. He, like Fra Angelico, often used symmetrical architectural backgrounds, but, unlike Fra Angelico, his backgrounds were often of a heavy type, which is noticeable, I think, in marked degree in the photograph which is here, and which is from a fresco in the Academy at Florence. I have not been able to find that he ever worked as an architect, although the illustration before us might have led one to suppose so, by the completeness of the architectural background.

I very much regret that I have not been able to illustrate any of the works of Sandro Botticelli, Lippi's great pupil. He was a very great master, and has made a remarkable use of architecture in some of his works, notably in one in the Uffizi at Florence, where an allegorical scene representing Calumny has for a background an exquisite Italian-Renaissance arcade, with very solid piers relieved with ornamental niches, with statues. Botticelli, like Francia, to whom I shall presently refer, was also a goldsmith, although it does not appear that he practised that art to any extent.

I have a photograph of a picture at Florence, by Cosimo Roselli, a master of no great renown, who was associated in some works of decoration with Botticelli. I commend to your notice the architecture introduced here as particularly heavy and ugly. Roselli seems to have been a man who, while eminently respectable as an artist, had not enough individuality to acquire a great name. Not so, however, with his contemporary, Benozzo Gozzoli, who deserves especial mention as having been the first of the Italian masters to exercise his unfettered taste in introducing into his works all such external objects as could add to the liveliness and variety of the scene, whether they immediately contributed to his object or no. Gozzoli, having once struck out this line for himself, seems to have thought that he had better give complete licence to his imagination; and we, therefore, find his works charming in the variety of the grouping, in the ingenuity which he has shown in making every inch replete with interest and life, and to us particularly in the fertility which he has shown in the introducion of cities, castles, and buildings of every kind.

Benozzo di Lese di Sandro was a pupil of Fra Angelico, a pupil who did his master infinite honour; not, however, in following his example, but equalling him in finish while he substituted for his master's elevated religious tone his own gay fancy. Until about 1479, when he was fifty-five years of age, having been born in 1424, he worked a great deal in conjunction with Fra Angelico, keeping, of course, to his style; but about that time he appears to have dissociated from the Frati, and to have begun his career afresh on his own principles. Benozzo is chiefly renowned for his frescoes in the Campo Santo of Pisa, of which there are twenty-one by his own hand. Here the painter seems to have revelled in pictorial licence, and has produced a series of charming Scriptural tableaux. I, unfortunately, have only enjoyed them in the folios of Rosini, whose splendid work I commend to any one desirous of studying the works of the Italian masters. I exhibit five photographs of the Campo Santo frescoes. These are very small, and can only be seen on a close inspection, but, on the other hand, they are taken from engravings, and so are much clearer than they would have been if taken from the original frescoes. I doubt, indeed, whether it would be possible to photo-

graph these successfully owing to the obscure light in which they are placed.

Benozzo Gozzoli is profuse in his use of architecture, and the examples which I produce are full of it. I will allude to them no further than to remark that they severally represent the building of the Tower of Babel, the history of Joseph, the birth and subsequent history of Jacob and Esau, the drunkenness of Noah, and the worshippers of Baal. The authorities of Pisa, with rare humour, marked their sense of the festive character of Gozzoli's works by presenting him with a testimonial in the shape of a sarcophagus.

Five-and-twenty years after the birth of Gozzoli, Domenico Corradi, called Ghirlandajo, saw the light. He was one of the masters of the Florentine school who mark a period. His genius was less discursive than that of Gozzoli, and his representations of architecture are less quaint and more rich. Any one wishing to study arabesques could hardly find a better model than Ghirlandajo furnishes. His pictures are replete with the florid and elegant architecture of the time, worked out with infinite care and skill, and in the most accurate perspective.

I exhibit an example of this most elegant and finished style, an example which is as useful a study for the architect as for the painter. It represents the "Birth of the Virgin," and the original is in the choir of S. Maria Morella. Another example, the "Adoration of the Magi," is from the Uffizzi Palace, and I would here remark the introduction of what I will venture to call the vicious effort to gain picturesqueness by exhibiting ruined architecture, — ruined in this case I think in a most unnatural manner. This mode of producing effect was subsequently carried to a great excess by Paolo Veronese.

Of Luca Signorelli I should have liked to have an example, but I could not obtain one, and it would be difficult to find a work of his specially interesting in the view which we are now taking. At the same time I could not reach this stage of art without mentioning his name.

Passing over a number of more or less distinguished masters of the Umbrian School, I will merely mention, in passing, Pietro della Francesca, as having reduced to a tangible form the laws of perspective which he learnt from Paolo Uccello. In the Ambrogian Library at Milan is a treatise by him upon that science which is said to be quite complete. There is evidence that he worked in conjunction with Domenico Ghirlandajo, and very probably assisted him with his scientific knowledge in the elaborate perspective of that master's works.

Giovanni Santi must be mentioned as deriving a reflected light from that luminary of art of whom he was the father. He was a painter of a refined and somewhat simple style, but not interesting for our present purpose. Perugino also derives from Raffaelle a reflected light as having been his master; but at the same time the intrinsic merit of Perugino's works was very great.

Perugino, as far as I know, made a very simple use of architecture, and more inclined to the quiet refinement of Fra Angelico than to the florid grandeur of Ghirlandajo in this respect. The example which I exhibit is simple, I think, to rudeness in the plain vaulting, which cuts against the Virgin's head. I cannot help thinking that this groining is inappropriate and ugly, especially taken in connexion with the elaborate character of the pedestal upon which the Virgin is placed. This picture is in the Uffizzi.

Bernardo Pinturicchio was a pupil of Perugino, and in some respects excelled him. He possessed the refinement of Perugino, and more than he the gift of expression. The most important work on which he was engaged was a series of frescoes illustrating the life of Eneas Silvio Piccolomini, afterwards Pope Pius II. They are in the library of the Cathedral of Siena. I show a photograph of one of these, which illustrates the use of architecture in combination with figures in a very happy manner. The effect of distance which is given by the courtyard intervening between the building in which the ceremony is going on, and the arcade through which the spectator looks on the left, is very fine. The arabesques on the pilasters in the foreground are very elegant. He is supposed to have been assisted in this series by the youthful Raffaelle.

Francesco di Marco Raibolini, known as Il Francia, was born at Bologna about 1450. He, like several other masters whom I have mentioned, was apprenticed to a goldsmith, and was always proud of the double distinction, signing his works in metal "Pictor," and his frescoes "Aurifex." Although he did not practise painting until quite advanced in life, he showed a remarkable power of representing the expression of the human face and form, and several of his works have been attributed to the hand of Raffaelle, until assigned by documentary evidence to their real author. I am fortunate in having obtained three good photographs of this master's works. The first, "Virgin and Child, with Saints," is curiously heavy composition, as far as the architecture of the canopy beneath which the Virgin is seated is concerned. One might almost have thought that Francia was an architect when one remarks the tie-rods introduced, to take the thrust of the arches of the arcade. There is, however, I believe, no ground for believing Francia ever practised architecture. The next, an "Adoration," at Bologna, is remarkable for another example of the introduction of ruined architecture. The third, the Virgin enthroned, also at Bologna, is not remarkable from our point of view.

We now pass to a most interesting master, in the person of Andrea Mantegna, considered the founder of the Paduan school, who was born at Padua, 1431. In this great master's work we find an instructive use made of architecture, and the architecture itself introduced has generally much merit, independently of its use as an accessory. It is often of elegant design. None knew better than he how to contrast the flowing lines of the figures which he was *facile princeps* in drawing with the regular lines of architecture, and none better than he could adapt the character of architecture employed to the nature of the scene in which it was introduced. I show here a photograph of the decapitation of Saint Christopher, in the Church of the Eremitani, at Padua. I think it will bear out my remarks as to his grand use of architecture. England is especially fortunate in possessing such a glorious work of this master as the "Triumph of Julius Cæsar," at Hampton Court. This set of designs was executed between the years 1487 and 1492 for the Duke of Mantua, and served to decorate the theatre of the Castle of Mantua. They were bought subsequently by our Charles I. from the Duke of Mantua of that time, and having escaped destruction at the hands of Oliver Cromwell because they could not be called superstitious, were sold by his orders for 1,000*l.*, and in some way found their way back to the royal collections after the Restoration. After these vicissitudes, these unfortunate designs incurred the awful fate of falling into the hands of the restorer in the person of Laguerre, who was employed by William III., who had as much knowledge or taste for art as the Sultan has for the Sermon on the Mount, to repaint the figures. I dwell upon Mantegna, because he was a striking instance of the combination of knowledge of various kinds of art, and he is peculiarly interesting as having been almost the first master to take up again the thread of antique art which was dropped when Christian art superseded that of Paganism.

I now pass to an example of the work of Antonio Vivarini da Murano, one of a family of three, who may be said to have been the founders of the Venetian school. I cannot refer to the architecture of this picture in terms of commendation, but it is interesting, if ugly. The other Vivarini is by Luigi, who was a subsequent master of the same family. The architectural features here appear to be skilfully used to give effect of light and shade, and the architectural design itself is much more elegant and less licentious than in the work of Antonio Vivarini, to which I have just alluded.

I must mention Carlo Crivelli, but need not do more than say that, as far as I know, the architectural portions of his pictures call for no special remark. They are not unlike the example of Luigi Vivarini, which is shown, but are often much more ornate.

Vittore Carpaccio is the next important master who used architecture largely to give effect to his pictures. The illustration which I exhibit is a good example of this. A mass of architecture lighted up by the sun is a favourite background of this artist. He flourished at the beginning of the sixteenth century.

There are also three examples by Cima da Conegliano, who almost, if not quite, invariably introduced architecture into his works. A favourite device of his was the introduction in the distance of the fortified town which was his native place, Conegliano. He was contemporary with Carpaccio. Giovanni Mansueti was a master of this period and school, who used architecture very much.

Up to this point I have proceeded, roughly speaking, in chronological order, to mention most of the masters of the Italian schools who have been specially remarkable for the introduction of architecture in their works; and here I must stop, for one step more will bring me into the presence of the greatest masters who have ever lived. I cannot venture now to undertake to make any remarks upon the works of Leonardo da Vinci, Michelangelo, Fra Bartolommeo, Raffaelle, Giorgione, Corregio, Titian, and others. The most superficial consideration of the works of these and other masters of the period of the highest development of Italian art would demand to be looked at strictly from our point of view even, much longer time than I have already occupied.

I have, however, obtained a specimen of the work of Lorenzo di Credi, who was a fellow pupil of Verocchio, with Perugino and Leonarda da Vinci. I think the arrangement of the architecture here is most pleasing.

I give one example of Raffaelle as illustrating a favourite symmetrical arrangement of architecture, and I cannot refrain from producing several examples of Paolo Veronese, who never, I think, painted a picture without introducing the most sumptuous architecture. He was also in the habit of introducing architecture in ruins or the most incongruous nature, which I cannot but think was a fault. Of course the grandiose architecture which he usually made use of is often very incongruous also; but the splendour of the *ensemble* generally atones entirely for an incongruity which would otherwise strike the spectator.

MR. THEODORE MARTIN ON THE ACTED DRAMA.

At the lunch which followed the laying of the corner stone of the Shakspeare Memorial Theatre at Stratford last week, Mr. Theodore Martin, in proposing as a toast "The Drama," said,—The toast which I have now the honour to bring before you is "The Drama." It is one on which it would be easier to say much than to say little; but I trust I shall not abuse your patience if the very few remarks which I think it necessary to make. By "The Drama" I do not mean the literature of the drama. I mean the drama illustrated on the stage,—the drama which, in Shakspeare's words, appeals to "the very faculties of eyes and ears." In doing this I am sure of carrying you along with me, for you have shown by the practical form which you have given to your memorial of Shakspeare in the theatre of which the foundation-stone has been laid to-day that you are not of those who would divorce his works from the living stage. Indeed I go so far as to hope that not only do you not share the opinion of writers who tell us that no acting can do justice to Shakspeare, but that on the contrary, you hold as I do, that it is only upon the stage that full justice can be done to his conceptions. Let us never forget that these, the greatest of all plays, were written, not to be read but to be acted; not to be mused over in the retirement of one's own room, but to be looked at and listened to by mingled audiences of men and women, all moved by the feelings "which make the whole world 'kin" under the spell of the actor's art. Shakspeare himself at least thought their true home was upon the stage; for he seems to have shown no concern about having them printed, but was content to leave them to his partners and brother players, to be put to the use for which he had originally designed them. Ask any actor of experience, and he will tell you that Shakspeare's plays test more than all others whether a man has the true stuff of an actor in him. And why is this? It is not merely that there is more subtlety in the delineation of his characters, more weight and variety and richness in his language, more knowledge of human nature everywhere. No! It is because Shakspeare leaves more for the actor to do, and to fill up by action and expression, than any other writer. I appeal to your own experience in proof of this. It is quite true that a play of Shakspeare's must be badly acted indeed not to set us away all the better for having seen it. The stories are so interesting, the plots are developed with such marvellous skill, the characters are true to nature, the language is so steeped in thought, in feeling, and in fancy, it is, besides so familiar to us and so dear, that it is no mere pleasure to hear the words reasonably well spoken and to see the parts reasonably well interpreted. But let a great actor or actress appear, and

at a change is wrought! What life, what our, what force is imparted to the picture!

"Let genius touch it, all at once 'tis fired,
Not touch'd, but rapt; not waken'd, but inspired!"

en, indeed, it is that we seem for the first time have known the very Juliet, Imogen, Portia, desdemona, Beatrice, Rosalind, that Shakspeare amed, to enamour generation on generation the last syllable of recorded time." Then y do we seem to have seen the true Othello, mlet, Macbeth, whom Shakspeare had pre- ted to his mind's eye as he poured their ughts and emotions into words, which not his n age only recognised, but which all time will ognise as the aptest and noblest expression human intellect and passion. No one rates her than I do what a few great commen- rs and critics, foreign as well as English, e done for the elucidation of Shakspeare. rather than all they can teach or say, give the living commentary of actual imper- ation by such actors and actresses as the glish stage has seen, and, as I doubt not, it again see. If I am right in what I have l of the actor's power to raise our concep- ns of what the greatest of dramatists has e, what shall we say of his noble and utiful art, and those who aspire to practise

You were probably amused, like myself, n on a late occasion one of the most rally-minded of our bishops expressed ething like surprise that he had discovered contact with two or three distinguished aments of the stage that actors and actresses ld be gentlemen and ladies. Had a man of a d so candid as the Bishop of Manchester ected for a moment, he must have seen ; he would have been more entitled to feel prise had he found them to be otherwise n ladies and gentlemen. I speak not of ural gifts, which are not peculiar to any s; I speak not of the inborn nobleness, he fine sensibilities, of the refinement and e, without which eminence as an actor he higher drama was never yet achieved. I ask you to think of the studies which day night engage the thoughts of the great rionic artist. He lives with the poets—with greatest of all the poets, the dramatic poets. his business to live into the lives—to pene- te the very souls of the ideal beings whom poet has conceived, in order that he may able to set them before us "in form and ing, express and admirable." Do you k he can do this unless his own soul is in sympathy with what he has to express— ss he has so transformed himself by his ing spirit of imagination that "his nature, the dyer's hand," is "subdued to what it ks in?" What makes other men poets es him an actor. Other men write their poetry ords. He stamps his poetry upon the minds is audience by the living emanations of his spirit, which speaks in eye, in voice, in a ence and deportment altogether worthy of character with which he identifies himself he time. An actor, to be great, must live n atmosphere of culture and refinement. y of you may remember the saying of the brated French actress, Mdlle. Clairon, the con- porary and friend of Garrick,—"If I be only a ar and ordinary woman during twenty of the nty-four hours of the day, whatever effort I make, I shall be only an ordinary and vulgar an in Agrippina or Semiramis during the aining four." If this be true,—and most it certainly is,—who but ladies can fitly rsonate Shakspeare's women? who but lemen can fitly impersonate his men? And another Churchman has lately been denounc- the actor's vocation, as having been at all s branded with infamy. Yes! Branded by try and ignorance, of which it is not well for rchmen to remind us by showing that they linger here and there within their own ranks. n we read such things as these, let us re- mber that Shakspeare was an actor, just as ère, who follows next in rank after him ng dramatists, was an actor. Let us re- mber that they loved their art, and, despite bigots of their day, were proud of it. Let us mber that it is to the fact of their being rs that we are indebted for the great lessons manity, of virtue, ay, and of religion, which have sent home to men's hearts through teaching of the stage. When people speak disparagement of actors and their art, is call to mind what Shakspeare has said t, that "its end, both at the first and , was and is to hold as 'twere the mirror up to nature, to show virtue her own feature, scorn her own image, and the very age and body of the time its form and pressure." Let us think, I say, of what this implies, and when invectives are hurled against the stage by the ignorant and the uncharitable, let us say of them, with Dante, "Non ragionam di lor', ma guarda epassa!" But just because I think so highly of the actor's art do I feel strongly that something should be done here in England to raise it to its proper level. England has a poetic drama which is the envy of the world, but notoriously she has not at the present time a force of actors adequate to do it justice. Men and women rush upon the stage without culture, without discipline, without natural qualifications, without the rudiments of the knowledge which the stage requires, even for its lower walks. The actor's art, the art which, of all others, demands rare qualities, both natural and acquired, is attacked as if, like reading and writing, according to Dogberry, "it came by nature." This is a scandal to England, a reproach to her audiences, no less than to her actors. But I believe that the first step to a reform will be that the nobleness, as well as the difficulty, of the actor's art shall be generally acknowledged; that the pretenders to it shall be rebuked into the insignificance which is their due; and that actors themselves shall submit to the severe study and discipline without which genius itself cannot rise to excellence. If actors and actresses will do their duty, the public, I am sure, will do theirs. If actors will respect themselves and their vocation, as the professors of other liberal arts and professions do with theirs, then I am sure a great future is still open to the British drama. Then, too, we shall have, as we ought to have, a stage which not only shall beguile our weariness with pleasantry and wholesome mirth, but shall educate the mind and heart in all those "nobler thoughts and nobler cares" which it is the peculiar province of the poetic drama to inspire.

The applause with which these observations were received showed that they were fully appreciated.

ARTISANS IN EGYPT.

The house accommodation for artisans in Egypt is miserably deficient. Those who are provided with houses, such as they are, are only the principal responsible mechanics in charge of the factories. Any other artisans who choose to go to the interior in hopes of finding employment at jobbing have to lodge themselves as they best can; and for these, says Dr. Mackie, surgeon to her Majesty's Consulate, decent accommodation does not exist in the country. In the neighbourhood of large towns, such as Cairo and Alexandria, many of the large works are at a long distance from town; but the *employés* have to find lodgings in town, and the most trying part of their labour is the fatigue of going to and returning from their work, especially in the heat of summer. For the price that an ordinary artisan is able to pay for lodging, it is all but impossible to find dwelling-rooms ventilated, premises drained, free from miasmatic dirt, overcrowding, and air-poisoning. Although the rate of wages he receives may seem to be high, the rate for board and lodging is also high, out of proportion to his wages; the consequence is, that he has to take the cheapest place he can find, which, of course, is in the filthiest and most unhealthy parts of the town. It is, indeed, a most difficult thing for a workingman to find lodgings near his work such as an English artisan could venture to live in. In the villages in the interior the artisans superintending cotton-factories, or machinery of any sort, as steam-pumps, &c., are provided with houses by their employers. If the employer is a person accustomed a little to European society, he may provide a comfortable-enough house. If he is a native, however wealthy, the house is generally a most miserable, unfurnished, unhealthy hovel. English mechanics who were engaged to take charge of cotton-factories in the interior, and entitled by their contract to be provided with a good house, have in many cases been surprised and disgusted on arrival at their destination on discovering the house to be a miserable mud hovel, little better than the ordinary Arab hut, and, perhaps, much more unhealthy, swarming with all sorts of insects, surrounded by all sorts of filth and bad smells.

English mechanics and artisans are employed in Egypt, with few exceptions, exclusively as engineers to steam-ships, engine-drivers on railways, engineers in charge of machinery of all descriptions, and as platelayers and fitters. They get high wages. For instance, engineers to steam-ships and cotton-pressing and ginning factories receive from 20*l.* to 30*l.* a month; engine-drivers from 18*l.* to 25*l.*; and platelayers from 17*l.* to 20*l.* a month. But the word "engineer" can hardly be taken in the same sense as in England. For instance, the men who, as engineers to factories receive in Egypt, 25*l.* a month, would not command more than from 8*l.* to 10*l.* at any of the large engineering firms in England, and the man who there would receive 20*l.* per month would find in Egypt no suitable corresponding employ except possibly under Government. There is this, also, to be borne in mind, that though the English engineers receive higher wages, their tenure of work is uncertain, notwithstanding any contracts for services they may have entered into, inasmuch as in a bad cotton year, or occasionally when the supply exceeds the demand, the employers who have made a large outlay are ruined, the factories closed, and the men thrown out of employ. The skill and trustworthiness of the workman exercises very little influence on the rate of wages; that, with private individuals, employers of labour, depends so much upon circumstances outside the influence of the workman,—such as the price of cotton in America, quantity sown in Egypt, &c.,—that the artisan is not always paid according to his merit; and in the service of the Egyptian Government, which employs by far the largest number of English artisans, the great object, under any circumstances, is to get them cheap, although an Englishman will, as a rule, receive wages at a little higher figure than any other European artisan. No artisan can do the same amount of hard work or under the same fatigue as in England; if he attempts it, he will soon fall sick of diseased liver, low fever, or sunstroke, if exposed. In summarising his remarks on the purchase power of money for labour or provisions, Mr. Stanley, our consul at Alexandria, observes "that skilled labour costs twice as much as in England, rent nearly three times as much, necessary provisions a very little higher than in England, so that a steady mechanic can certainly save more in Egypt than he would at home, and in the large towns would live as well; and, indeed, would have many luxuries,—cheap, wholesome fruit, for instance,—to which he was unaccustomed in England." But for artisans in the interior of the country, far from any of the large towns, it is difficult to procure the necessary food, almost all the villages being peopled by the peasantry, or "fellaheen," who live principally upon vegetables, oil, and fruit, with very coarse cheese and extremely bad bread. Beef is not always to be had in most of the villages; mutton is often very scarce and very bad; so that, unless an English artisan can afford the expense of ordering the necessaries of life from Alexandria or Cairo, the diet of his family must be of the coarsest kind, and also the same thing day after day.

In every branch of native industry the system of esnafs or guilds has for centuries been established in Egypt, and the system is probably maintained from the facilities it affords in the collection of the capitation and other personal taxes, as well as for the guarantee it is made to offer for the due execution of works ordered by the Government. Every esnaf is provided by a sheikh appointed by the Government nominally upon the recommendation of the higher members of the guild; and a fee of 20*l.* sterling is paid by the sheikh on nomination and the registration of his name in the Government offices. He is practically the ruler of his guild; he admits members, directs the manner in which contracts shall be carried out, fixes the wages of the craftsmen, and selects workmen to carry out the various works entrusted to him; he collects all taxes from his guild, and is responsible to the Government in all matters connected therewith. The members of the guild are furnished on admission with certificates stating their proficiency and the rate of wages they are entitled to receive. They are as a rule restricted to the particular craft or trade of the guild they have entered; or if, as is rarely the case, allowed to follow two callings, or even separate branches of the same calling, they are charged with an increased tax for each unless they can arrange matters privately with the sheikh. They are permitted to contract for work by the piece, but if working by the day are not authorised to demand a higher rate of wages than that set forth in their certificate. With regard to the quality of the work executed by native handicraftsmen, it is not found as a rule satis-

factory. In some departments, especially in embroidery, specimens of good workmanship are occasionally produced, though inferior to European productions. This work catches the European eye probably from its being applied to objects with which embroidery is not generally associated in Europe, and from the pattern being usually of an Eastern type; but the generality of work executed is sadly deficient in finish, and is frequently of the most clumsy character. The Egyptians are inferior workmen in every industry, except perhaps as masons, in which they are much helped by the excellent material of the country. They are also fair rough shoemakers and tinsmiths, and carders of cotton for mattresses and divans. They do their work conscientiously, and take a certain pride in it, firmly believing that no work can surpass theirs. Manufacturing and other industries, save in a rude state, are little developed amongst the native inhabitants of Egypt, which may be said to be an agricultural country, and the artisan classes bear but a small proportion to the tillers of the soil, and to the rest of the population. It appears from an approximate estimate that the total number of native artisans in Egypt amounts only to about 55,000, or to little more than 1 per cent. of the population.

PICTURE SALES.

"CHRISTIE'S" was a sight last week while Mr. Albert Grant's pictures were on view, the rooms being crowded to excess. This was also the case on the days of sale; the mere loungers filling the room beyond the doorway, and keeping out many who desired to buy. The sum realised by the two days' sale was 106,262*l.*, an amount which would have been thought enormous (for 205 paintings and drawings) if it had not been known, or at any rate asserted, that the sum paid or promised for them by Mr. Grant was half as much again. Some of our most popular artists, whose prices have been forced up by the doings of the dealers, were anxious before the sale lest their works thus forced into the market should realise less than had been paid for them, not to the artists themselves, but to those who had last sold them. And this was to a great extent the case, but need not be viewed by individual artists as any indication of a real diminution of popularity. The knowing ones are aware that there is what the Americans would call a Picture "Ring." A certain number of gentlemen bid against one another, or do *not* bid against each other, according to circumstances, but with much the same results as regards themselves. Pictures are bought and sold, and bought and sold again; and, if the whole story were told, it would somewhat astonish the public.

NEW OFFICES FOR GREENWICH DISTRICT BOARD OF WORKS.

THIS building, situated on the main road from Greenwich to Deptford, has been opened for use. In July, 1875, the Board advertised for designs, and that submitted by Messrs. Wallen & Paxon was selected, and has been erected under their superintendence, by Mr. Tongue, builder, Plumstead. The foundation-stone was laid on the 11th of April, 1876. The building is Italian in character. The elevation is of stocks and Portland stone. The central feature is a portico, the leading lines of which are carried up by stone pilasters to form a small clock tower, which is finished with a zinc dome and lantern.

The portico, entrance-hall and staircase are in the centre, dividing the building into two parts. On the left side is a corridor running the whole depth of building, from which are entered the clerks' and accountants' offices; on the right side of the building is a similar corridor, from which are entered the engineers' offices, &c. Between the above-mentioned corridors, from back of staircase to end of building, are placed the strong-room, store-room, and lavatory.

The Board-room is 57 ft. 6 in. by 40 ft., and 22 ft. high from floor to ceiling; public gallery at the end, windows on three sides, and two sunlights in the ceiling.

On the first floor there are also two committee-rooms, each about 24 ft. by 17 ft., and a waiting-room, hat and cloak room, and lavatory. The entrance-hall is laid with marble mosaic pavement, executed by Burke & Co., of Newman-street. The Board-room, staircase, and corridors are heated with hot water. The "Instructions to competing Architects" fixed the cost of building, exclusive of furniture and fittings, at 7,000*l.*

ELECTION OF A DISTRICT SURVEYOR.

AT the meeting of the Metropolitan Board of Works on the 27th ult., the first business on the agenda was to receive applications from candidates for the appointment of district surveyor for the eastern division of the City of London (in the room of the late Mr. John Young), and to proceed to the election. There were twenty-six candidates (without reckoning Mr. W. Hilton Nash, whose name was struck off the list under the circumstances detailed below).

On the motion of Mr. Selway, chairman of the Building Act Committee, the following resolutions were agreed to *nem. con.*:—

"That the number of candidates be reduced by one vote to six; that the names be then put to the vote *seriatim*, and that the candidate having the least number of votes be struck off at each voting."

"That the appointment of district surveyor be subject to the condition that he shall make no claim for compensation in case a diminution of income shall at any time hereafter arise from any reduction or alteration of fees by the Board, or from any change of system which may be adopted, either as to the office, its duties or emoluments, or from any division, reduction, or re-adjustment of districts."

"That the appointment of district surveyor be subject to the condition that he shall furnish the Board with information of those cases in his district in which the orders of the Board, or the requirements of the Local Management Amendment Act, 1862, with regard to the width or entrances of streets, or to any building, structure, or erection or projection therein beyond the general line of buildings, are not complied with, and of those cases in which the limitations contained in the Building Act as to the cubical contents of building are exceeded."

"That the district surveyor be required to keep his district office open daily, from 10 a.m. until 4 p.m."

The following is the list of candidates, with the number of votes recorded for each in the preliminary voting, viz.:—H. H. Collins, 31; V. J. Grose, 31; A. Bovill, 28; F. Wallen, 28; J. Clarkson, 22; A. Payne, 21; A. Allom, 20; T. Williams, 19; F. C. Notley, 18; E. Street, 18; D. R. Dale, 16; F. Hammond, 16; T. W. Willis, 16; J. Goldicutt Turner, 15; J. S. Quilter, 14; W. Tasker, 13; G. McDonell, 11; J. Young, 11; F. W. Hunt, 7; F. Todd, 7; L. W. Ridge, 6; A. Millwood, 5; R. B. Bell, 3; J. W. Ferguson, 3; W. C. Leonard, 3; and S. Turner, 0.

In the course of taking this preliminary vote,

Mr. Lowman Taylor inquired of Mr. W. Hilton Nash (whose age was "not stated" on the voting cards) how old he was.

Mr. Nash.—Twenty-seven.

Mr. Lowman Taylor.—Are you not aware that the limit of age fixed by the Board for candidates for these appointments is between twenty-eight and fifty years?

Mr. Nash replied that he believed that was so.

Mr. Lowman Taylor.—Then why do you present yourself as a candidate if you are not eligible?

On the motion of Mr. Selway, Mr. Nash's name was struck off the list of candidates.

In reference to the candidature of Mr. J. Goldicutt Turner (who is at present acting as deputy for his father, Mr. John Turner, district surveyor for East Islington), Mr. Lowman Taylor asked whether, if he were elected, and resigned the position he occupied as his father's deputy, his father would be able to carry on the work of his district?

The Chairman (Sir J. McGarel-Hogg) ruled that such a question as this was out of order, and could not be put.

The Board then proceeded to vote on the six candidates highest on the foregoing list, in accordance with its usual practice, and with the following results:—

	Second Vote.	Third Vote.	Fourth Vote.	Fifth Vote.	Final Vote.
Bovill	23	21	21	17	—
Clarkson	13	10	—	—	—
Collins	27	20	21	21	24
Grose	21	20	9	—	—
Payne	12	—	—	—	—
Wallen	27	21	20	20	15

Mr. Collins was therefore declared to have been duly elected. Having expressed his willingness to undertake the duties of the office on the conditions imposed, he thanked the Board for his election, and promised to do all he could to merit the confidence reposed in him.

Wakefield Town-hall Competition.—With the assistance of Mr. Street, as assessor, the designs sent in have been examined, and the first, second, and third best designs selected. The whole were exhibited on Monday and Tuesday last.

TEWKESBURY ABBEY.

SIR,—Mr. Blashill, in his letter in your l number, recapitulates his reasons for think that the eastern chapels and the vaulting of ambulatory at Tewkesbury were built before alteration of the arcade was determined on; no doubt his reasons are strong in themsel but they must fall to the ground unless he explain one thing, viz., how it comes that inner longitudinal arch of the vault spri from the *upper* level, from the new cappi although the other vaulting-ribs are spri from the old level. Your illustration (p 393, *ante*), the correctness of which Blashill seems to admit, shows this clear and it certainly seems impossible to understa how that arch could have been built at a ferent period from the rest of the ambulat vault. Moreover, I think most persons examine the building would say that the dia ornament on the inner face of these arches the appearance of being intended from the fi and not as an afterthought.

The detailed examination Mr. Blashill appe to have given to the curious western turrets, course, entitles his remarks to their due weig At the same time, it must be observed that character and tints of the masonry in th turrets seem entirely the same as those of undoubted Norman masonry below them, a that this similarity is even emphasised by contrast of the masonry in the window-jambs the upper story of the turrets, which (as Blashill pointed out in his paper, before quot were obviously modern, but also are as obviou different from the masonry in which they inserted.

Mr. Blashill refers also to an old engraving evidence that there were crocketed pinnac here previously; but surely he must know h completely misleading engravings often are old engravings especially,—as records of arc tectural detail, and that it is impossible to t them as reliable evidence on such a point. would depend, no doubt, on the degree of diff ence which the engraving showed from w exists; but if it were merely showing crocket where there is none, I should think the evide would go for nothing. Such a book as Wicke "Towers and Spires," for instance, got up comparatively recent times by an architect, c tains far greater deviations from truth than th

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GLASGOW BUILDING OPERATIONS A THE IMPROVEMENT SCHEME.

AT the last meeting of the Glasgow To Council, ex-Bailie Morrison, as the Convener the City Improvement Trust, made a statem as to the progress of the Improvement sche in the course of which some important facts w disclosed. The contemplated operations of Trust, he reminded the Council, involved demolition of 10,000 houses, with an estima population of 51,304 persons to be displaced removed to healthier homes. Up to Wh Sunday, 1876, the carrying out of the sche involved the destruction of 5,075 of th unhealthy houses, which, estimated at persons per house, had brought about ejection of 25,275 persons. The work templated up to Whit-Sunday, 1877, by removal of the east side of Salt-market and improvements in Main-street, Gorbals, and Cal would cause the removal of 718 families, 35,900 persons; making the total displacem after Whit-Sunday next of 5,793 families, (say) 28,965 persons. Thus the scheme m be said to be at about the middle of its car He proceeded to quote elaborate statistics w a view to show that the way in which the sche was being carried out inflicted hardship o section of the community, as was someti urged, by tending to reduce the house acc modation. For instance, within the munici boundaries there were at the present t empty,—of the smaller class of houses,—si apartments, and one, two, and three rooms kitchens, 2,149 houses, which, at the usual cal lation of five persons per family, afforded acc modation for 10,745 persons. These, with total of 3,673 houses outside the boundary wh would be ready for occupation by Whit-Sund made a total provision for 29,110 persons aga the contemplated displacement of 5,793, accommodation for a surplus of 23,317 individu A return prepared by Mr. Campbell, the va tion assessor, went to show that immediately a ine with the municipal boundary, or with

lius of half a mile outside, there were additional houses, empty or in course of erection, to the extent of 2,792, affording accommodation for 960, which, being added to the above 29,110, made the surplus accommodation larger than ever. He showed by other statistics that from the year 1836 to 1876, during which the Improvement Act had been in force, no fewer than 40,460 houses of all classes had been erected in the city, a provision for a population of 202,300 persons. From the fact that by far the larger proportion of these consisted of the smaller class of houses, he argued that the wants of the artisan and labouring class had been duly attended to, while the extent of the building operations generally outside and immediately outside the line of the municipal boundary tended to show that the progress of Glasgow during the past ten years had been unprecedented, not even excepting the American city of Chicago. In dealing with another charge brought against the improvement trustees,—their influence on the rise in rents,—he pointed out that as regarded the central part of the city, rents depended to a large extent, so far as the main arteries were concerned, on the demand which was in excess of the accommodation. He showed that the rise in rents, and, in fact, in everything, was due to the rise of the workmen's wages and the increased price of materials. Scarcity of supply, in the face of the fact that such an enormous amount of accommodation had been provided for the artisan population during the operations of the Trust, could not be reasonably alleged against the City Improvement Trustees. The supply of houses was actually five times more than the demand. The result of the agitation for increased wages by the workmen was that they had increased everywhere. In 1856 a slight advance was made; in 1866, very little; but since 1866 to 1877 wages had risen so rapidly as to materially increase the price of every article which was the product of wages, half of the houses being erected by men who had to be paid one-third, and in some cases one-half, more than was the case previously. In twenty years from 1856 the cost of erecting houses of the smaller class, according to a calculation made by the most experienced man in Glasgow, Mr. Thos. Binnie, had increased 60 per cent., the greater part of that increase having taking place during the last ten years. He found that a house which would cost 100*l.* to erect in 1866 or in 1856, now cost 160*l.*, owing to the increase of wages; and what further showed that the charge against the capitalists was an erroneous one was, that while the increase in the cost of erection had risen 60 per cent., the increase of rents up to the present time was only 35 per cent. Having quoted a number of other statistics, he concluded by saying that he took these facts to show that whatever increase of rents there was, as far as he could judge, had arisen from natural causes, the increase of wages, and the rise in the price of material, tending to increase the price of every article that was produced.

After some discussion ex-Bailie Morrison was awarded a vote of thanks for his statement.

After the meeting, a deputation from the town council of Birmingham, which visited Glasgow for the purpose of inspecting the work of the Improvement Trust, was conducted by Mr. Morrison through all the areas of property at present undergoing alteration, and afterwards went over the model lodging-houses in Drygate and East Russell-street. The deputation consisted of the Mayor (Mr. Alderman Baker), Councillors William White (chairman of the Improvement Committee), Cooke, Martineau, and Deykin, and Mr. Wm. Martin (surveyor).

THE NEW PREMISES OF THE BANK OF NEW ZEALAND.

Structural and other alterations of an extensive character have just been completed at the National Safe Deposit Company's new buildings in Queen Victoria-street, in order to adapt them for the business of the New Zealand Banking Company, who have leased the whole of the ground-floor portion of the building, together with a part of the basement as a strong-room. The alterations have consisted in the removal of the lifts and the staircases which communicated between the ground-floor and the basement, and the new entrance for the business of the Safe Deposit Company has been formed in the centre of the Queen Victoria-street façade, the large entrance at the corner of the street facing the Mansion House being now that leading to the banking premises. The whole of the ground-floor has been repaved with ornamental encaustic tiles, supplied by Messrs. Barry & Co., of Gresham-buildings, Basinghall-street. The walls and ceilings of the banking premises have likewise been elaborately decorated by Messrs. Kershaw, of Baker-street. The whole of the carved and moulded mahogany fittings, including desks, counters, partitions, and other requisites, have been executed by Mr. Drew, of Hatton-garden, from designs furnished by Mr. Whichcord, the architect of the building, who has superintended the whole of the alterations. The strong-room which has been constructed in the basement for the bank is a prominent feature in the alterations which have been effected. It is circular in form, and about 18 ft. in diameter. The walls are lined with iron, and again faced with steel plating, and the apartment is secured by large iron doors, 6 in. in thickness, furnished by Milner's Safe Manufacturing Company, of Liverpool and London.

New offices for the business of the Safe Deposit Company have been formed in the deep and spacious basements of the building, together with additional staircases, approached from the new entrance in Queen Victoria-street, and which likewise leads to the safe vaults.

ENLARGEMENT OF THE ROYAL FREE HOSPITAL.

An extensive addition is in course of being made to the Royal Free Hospital in Gray's-inn-road, which will almost double the present accommodation for patients. The enlargement consists in the erection of a new wing at the south end, uniform with the existing Sussex wing at the north end, which will effect a great improvement in the architectural appearance of the Gray's-inn-road façade of the structure. When the enlargement is completed, the entrance, which is now at the south boundary of the elevation, will be in the centre, with the north and south wings on each side. The Gray's-inn-road elevation of the new wing, which is upwards of 50 ft. high from the street level, is carried up to about one-half of its height in Portland stone, rusticated, the upper portion to the cornice being in white brick with Portland stone quoins, dressings, and window shafts. The upper portion of the elevation contains a large central arched window in three divisions, uniform in design and appearance with the imitation window in the north wing, in which stands the full-length figure of the late Duke of Sussex. The elevation will be surmounted by an ornamental pediment in Portland stone. The new wing is 120 ft. in depth from the Gray's-inn-road frontage, and consists of three lofty floors, in addition to a deep basement. All the floors are fire-proof, with iron girders, and constructed on Dennett & Co.'s patent. The entrance to the new wing will be at the extreme north-east corner of the open area or court-yard inside, where there will be a spacious stone staircase leading to the several wards. At the rear of the court-yard, immediately in front of the east block of the old building, a subway or tunnel is in course of formation, for the purpose of making a covered communication between the north and the south wings. The floor of the subway will be on a level with the basement floor of the building, the subway itself being lighted from above by Hyatt's patent illuminator. The basement portion of the new wing will be devoted to the administrative department of the institution, and will contain a dispensary, together with surgeons' and other offices and apartments, whilst the three floors above will contain the patients' wards. The enlarged building is expected to be completed and ready for opening in August, and is now almost ready for covering in. The estimated cost is about 15,000*l.*

The architect is Mr. Harvey, of Whitehall, and the contractor, Mr. Shepherd, Mr. Brindley superintending the erection of the building as clerk of works.

Royal Horticultural Society.—We are glad to observe renewed vigour here. At a meeting on the 18th of last month twenty Fellows of the Society were elected. A list of fifty-one guinea members elected by the Council was also announced. At the previous meeting, held on April 4th, twenty-five Fellows and eighty-five guinea members were elected. The show on Wednesday last was a great success.

THE IMPORTANCE OF STAMPS.

JORDAN *v.* WHITEFORD.

This was an action brought in the Bloomsbury County Court, before Mr. Russell, judge, in which the plaintiff, the landlord of the defendant's house, No. 100, Hampstead-road, sued to recover the sum of 50*l.* as damages for dilapidations, under the following circumstances:—

Mr. McCaul, who appeared as counsel for the plaintiff, stated that the defendant in December, 1873, paid his client the sum of 50*l.* as a premium, and obtained possession of the premises with an agreement (produced), in which the defendant was bound to keep them in tenantable repair, and that prior to the expiry of this agreement the defendant had applied to the plaintiff for a renewal of it, to which the plaintiff assented on receiving an additional 60*l* by way of premium for the renewal, when the clauses as to repairs which were inserted in the former agreement were included in the present one.

At this stage of the case the defendant's counsel objected to the second agreement being put in as evidence as not bearing a sufficient stamp.

The learned Registrar supported this view, and told the plaintiff that if 11*l.* 5*s.* were paid as a penalty the document might be produced in evidence.

The plaintiff said he would pay the penalty, but not having the money in his possession at the time, asked for an adjournment to enable him to do so; when

The Judge said that unless the plaintiff paid the costs he would not grant one, as he had no sympathy with those who endeavoured to impose on the revenue. Cases constantly occurred before him in which the provisions of the Stamp Act were attempted (whether wilfully or not he could not say) to be evaded; upon which the plaintiff offered his cheque, which the Registrar refused, as it was enacted that the fine must be paid in the current coin of the realm.

The case having reached this juncture, the defendant's counsel said he would not object to an adjournment on the costs being reserved, as it was his intention of quoting from Woodfall on "Landlord and Tenant," p. 100, to bring a counter-action for the second 50*l.* the plaintiff had received, as it was enacted that in the case of money being paid for the lease of premises which was not stated on the face of the agreement, the money so paid was entitled to be recovered from the lessee as money had and received, as no proper consideration had been given for it.

The learned Judge suggested that the defendant might be embarrassed by a counter-action, and that it would be better to plead a set-off under the old law.

The defendant's counsel said that this had been a most vexatious action brought by the plaintiff, and as he had no fewer than six builders and surveyors in court to prove the defendant's case, he hoped the learned judge would allow him to plead a counter-claim in lieu of a set-off. He stated if that was allowed he had no doubt that from the evidence he should be able to adduce, the case would last several hours.

Upon which his Honour said he would reserve the costs, grant time to bring a counter-claim, and adjourn the case for further hearing till the 11th of June, unless the parties could settle the case by reference to two competent surveyors.

The defendant's counsel said it was now too late to agree to this, and the case stood adjourned accordingly.

Costs reserved.

The court was thronged by builders and others interested in the case.

BAD DRAINS A BREACH OF AGREEMENT.

WILSON AND ANOTHER *v.* HATTON.

This was an action brought by trustees in the Exchequer Division, before the Lord Chief Baron and Barons Pollock and Huddleston, to recover a sum of 472*l.* 10*s.* from Mr. Murray Finch Hatton, one of the sons of the Dowager Countess of Winchilsea, for whose occupation No. 43, Wilton-crescent, London, had been obtained on lease from the 17th of May to the 31st of July, 1875, and in respect of which no rent had been paid.

It was alleged on behalf of the defendant that when the Countess arrived at the house she found the drains were so defective that she declined to take possession. An action was brought, and the jury returned a verdict in favour of the defendant.

Mr. Brown, Q.C., now moved for judgment for the plaintiff on the ground that the defendant had no right to throw up the lease, but should have gone to an hotel or elsewhere until the defects had been remedied, and brought an action against the plaintiff for damages.

Their lordships decided in favour of the defendant, and dismissed the motion with costs.

WEST END NEW STREETS.

Sir,—A foot-note on p. 431 has caused me (a constant if negligent reader) to refer to the article of March 23, which, cogent as it is, must have yielded at the time to the yet stronger interest of the plan issued with it; and though the distinctiveness of my paper remains, I am gratefully conscious of the force propositions must acquire when concurred in by the *Builder*. My purpose was less to criticise the measures of the Metropolitan Board of Works than to produce a scheme, based upon intimate knowledge and study of the locality, exercised with perfect independence of other objects than the good of the town itself. I have added the lines of approach to Carey-street (incidentally spoken of). I regard these approaches as in the very front of coming necessities, and think that your remarks at p. 207 cannot be too much insisted on; for it should be remembered that although termed a private Act, the Streets Bill is not strictly analogous to that of a railway, since in the one case private or proprietary capital is dealt with, but here the money of the ratepayers is at stake. Many will therefore, I have no doubt, heartily subscribe to your dictum that "a radical alteration of a large part of the West End ought not to be made until the House of Commons has patiently considered the arguments for and against schemes of alteration."

Thomas Morris.

ART AND SCIENCE IN THE CITY.

AT the Court of Common Council held on the 26th ult.,

Mr. T. K. Freeman moved,—"That, with a view to encourage and develope research in art and science, it be referred to the Library Committee to take the necessary steps, once in every year, to arrange a *conversazione* in the Library and the Guildhall; the exhibition of objects of interest to be continued for one day subsequently; and that such arrangements be carried out at an annual expense to be fixed by this Court." The mover said there could be no doubt that *conversazioni*, if properly managed, did tend very much to encourage research in art and science. The Corporation had done something in this direction in days gone by, and now that they had the advantage of having the new Library at their disposal, he thought they had a good opportunity of doing something further.

Mr. Edmeston seconded the motion, although he would prefer the subject going to the committee as an open question.

Mr. Deputy H. L. Taylor thought this a very fair subject for inquiry by the committee, but he objected to the Court pledging itself at once as proposed in the motion. He suggested the following as an improvement:—"That it be referred to the Library Committee to consider the desirability of having an annual *conversazione* in the Guildhall for the purpose of exhibiting objects of interest, and to report thereon with an estimate of the cost."

Mr. Freeman accepted this suggestion, and the motion thus amended was at once carried.

HOW THEY LIVE IN BERMONDSEY.

A CASE came before the Southwark police magistrate last week showing the shocking condition of the houses in some parts of Bermondsey, where no owners can be found for the property, and where the occupiers live amongst filth, dirt, and dilapidation without paying any rent. Jeremiah Kenealy, the occupier of a tenement in Salisbury-street, Bermondsey, was summoned by the sanitary inspector to show cause why the house should not be closed, owing to its filthy and dilapidated condition, and being totally unfit for human habitation. The Sanitary Inspector said he had visited the house, and found it not only overcrowded, but altogether unfit for habitation. There were only two rooms, and the roof was nearly all gone, as well as the floor, for there was nothing but the bare earth, which was covered with filth. On a second visit the defendant refused to leave the house, although the stench from the filth in the yard was unbearable. In answer to the magistrate, the Inspector said there was no owner to the house, and the defendant had lived there for two years without paying any rent. Mr. Dixon, medical officer to the Bermondsey Vestry, deposed to having visited the house and found a family of eight persons in one room. He had no hesitation in saying that it was totally unfit for habitation, and if not closed it would most likely spread disease in that thickly-populated neighbourhood. The magistrate made an order for the house to be closed in seven days.

THE BEDFORD ESTATE, LONDON.

SIR,—Now that the agent of this estate is no more, it is to be hoped that the Duke of Bedford will give the appointment to so important an office, as on other estates, to an architect of taste and standing in his profession. You had occasion some weeks ago to point out how the late agent used to make a tenant, at the fag end of his lease, pay for his dilapidations first, and then after getting a new lease do them. Professional people are driven off the estate, and large houses remain unlet, longer than perhaps on any large estate in London, through the foolish requirements or high rents asked by the late agent or steward. This should not be, and it is to be hoped his Grace will see the wisdom of at any rate appointing a *gentleman* to look after his interests.

BLOOMSBURY.

New Town-hall at Reading.—A movement has been recently commenced for the purpose of supplying the town of Reading with a new public hall, to comprise a free library, reading-rooms, museum, art and science classes, lecture-rooms, &c. The project has been well supported, and some think there is no doubt of its ultimate success.

GREEK PRACTICE—VERMILION.

SIR,—Is the following suggestion as to the use of vermilion, mentioned in the Lebadean specification, a plausible one? (p. 413):—

For the purpose of insuring accuracy in the faces of the stone, a straight edge (canon) of the full length of the stone and 6 in. by 4½ in. was painted with a thin mixture of olive oil and very finely ground vermilion, and applied wet to the stone; the least inequality was thus apparent, both to the mason and to the architect, or clerk of works. After this test had been entirely satisfactory, the beds and joints were painted (con-vermilion), and the stones placed together temporarily, and upon being then taken apart again the paint would show any defects in the surfaces. This process would be repeated until a perfect joint was obtained. Why the vermilion should come from Sinope only it is difficult to guess; perhaps it could be ground more finely than any other, or, had import duties anything to do with it?

C. G. S.

METROPOLITAN BUILDING ACT, 1855.

SIR,—I shall be greatly obliged to any of your professional readers who will reply to the following queries:—

If an architect be engaged to design and superintend the execution of works in respect of which notices to district surveyors are required, who is to give and to be responsible for giving such notices?

If alterations to existing premises have (*inter alia*) been indicated on the architect's drawings, and a builder be employed by the owner without the architect's knowledge to execute certain of them prior to and independently of the main works, upon whom then falls the responsibility of any omission in respect of notices?

When the Act defines "builder" as including "master builder or other person employed to execute or who actually executes any work upon any building," and afterwards provides that the "builder" is to give notice, does it mean the builder in the ordinary sense of the word, or is the architect implied by the term "master builder or other person employed"?

I have hitherto understood "master builder" to mean the man who employs and pays the workmen; but in a case in which I am professionally concerned, a legal gentleman has stated that where an architect has been engaged he, and not the builder, is the person liable under the Act; and that, moreover, all respectable architects invariably give notice.

ARCHITECT.

*** The "legal gentleman" is misinformed. The builder, not the architect, is liable to penalty under the Act if notice is not given. Specification, when work is done under contract, should direct that builder is to pay all fees.

DONCASTER-ROAD BOARD SCHOOLS, MEXBOROUGH.

THE first Board school was opened here last month, and is designed in the Gothic style of architecture, the material used being pressed bricks and stone dressings (both from the neighbourhood). The principal school is 61 ft. by 22 ft. 6 in., with two class-rooms conveniently arranged, the sizes being 17 ft. 6 in. by 17 ft. 6 in.; also large cloak and hat room, with lavatories attached, and fitted up with "Macfarlane's patent fittings," from Glasgow. All the roofs are open-timbered, and boarded with moulded principals, all stained and varnished. The principal school is heated with hot water by Messrs. J. L. Bacon & Co.'s system. A bell-turret is placed in the centre of the roof, which also acts as a ventilator, and is regulated by cords and pulleys. Accommodation is provided for upwards of 200 children. The contractors are Messrs. Saul & Jones, of Mexborough. Messrs. Tacon & Rawson, of Rotherham, are the architects to the Board.

CHURCH-BUILDING NEWS.

Wookey Hole, near Wells, Somerset.—This new church, dedicated to St. Mary Magdalene, the nave of which was opened in 1874, has now been made more complete by the construction of the chancel, organ-chamber, and vestry. The upper portion of the tower and proposed spire still remain unfinished. The chancel is 24 ft. 6 in. long in the clear, and 21 ft. 4 in. wide; the walls are mainly built of the rough warm-coloured local stone. The dressings and quoins are of Doulting stone, the external shafts to the side chancel windows being of Kilkenny sanded marble. The roofs are covered with Broseley tiles, with a specially designed red ridge tile. Internally, the roofs are panelled of stained deal, that to the chancel being polygonal in form, with octagonal moulded bosses, containing various carved sacred devices, such as the Star of Bethlehem, Lily, Rose, &c. The chancel seats are of oak, with moulded ends, the book-boards carried on wrought-iron floriated standards. There is a new pulpit of oak, with pierced panels, the lower part of red Mansfield stone. There are moulded oak sedilia, and the altar-table is of cedar. The reredos is of Corsham Down stone, with mottled alabaster, dove marble spar, and other inlay, and a red Mansfield stone base. The east window is filled with painted glass by Lavers, Barraud, & Westlake. The chancel and its adjuncts have been built as a memorial of the late Mr. William S. Hodgkinson of Wookey Hole and Wells, by his widow and children. The cost of the portion of the church just built is about 1,100*l*. Messrs. Stephens & Bastow, of Bristol, were the builders; and Mr. Edmund B. Ferrey was the architect.

Cromford.—The new church and churchyard at Cromford, Derbyshire, dedicated to St. Mark, have been consecrated. The church is capable of seating 200 persons. It is of the Early English style. The reading-desk, lectern, and stalls for the choir are of oak, and are the gift of Captain A. P. Arkwright, M.P. The east window, of three lights, has been filled by Messrs. Clayton & Bell. The centre compartment contains a representation of the Resurrection, the right and left ones delineations of the Resurrections of the Son of the Widow of Nain and Lazarus respectively. The architect is Mr. John Parkin, of Idridgehay; and the contractors were Messrs. Walker & Killer, of Wirksworth. The carved work in the chancel has been, to a great extent, executed by Mr. Smith, of Cromford. The cost has been upwards of 1,850*l*., exclusive of churchyard.

Gissing.—The parish church of Gissing, near Diss, Norfolk, has been reopened by the Bishop of Norwich, after restoration. The work done has included the restoration of the nave and chancel roofs, and re-covering them with the old flat tiling, chipping off all the plaster on the outside, and pointing the old flint walls of the whole church in grey mortar, as they originally existed; rebuilding the parapet of the round tower, which was in a shaky state, on its old lines; inserting a new Early Decorated three-light east window; benching the church in accordance with its fifteenth-century seating, using all the old poppy-head ends as far as possible, laying the passages and space within the altar with Minton's encaustic tiles, erecting new altar-rails and stone steps, and an elaborately-carved oak pulpit and prayer-desk. The church is fitted with Gidney's hot-air apparatus. Want of funds has prevented the north porch being restored. The north and south chapels are also untouched at present, but Sir Kennett Kemp, to whom they belong, intends shortly to restore them. The whole of the work has been executed by Mr. Grimwood, of Weybread, from the designs of Mr. R. M. Phipson, architect.

SCHOOL BUILDING NEWS.

London. — Large new schools have been erected, and were recently opened in connexion with Holy Trinity Church, in the Gray's-inn-road. The site selected for the schools is the south-west corner of the church-yard, immediately adjoining the church. The school buildings have their main frontage to Gray's-inn-road. The elevation is 90 ft. in length, and 60 ft. in height, the building containing three floors, consisting of boys', girls', and infants' schools, with class-rooms, with accommodation for 700 children. The materials are red and white brick, and the elevation is surmounted by a central gable, with two smaller gables on each side. There are entrances at each end, that at the south end being for the boys, and that at the north end for the girls and infants. Mr. Cook, of Burlington Chambers, is the architect, and Messrs. Langmead & Way, of Gray's-inn-road, are the builders. The cost of the schools has been 5,500*l*. It may be added that the disused church-yard, which is nearly three acres in extent, is about to be ornamentally laid out and planted in a manner similar to that in which several others of the metropolitan church-yards are undergoing improvement.

Macclesfield.—The Old Church Branch School, Beech-lane, has been opened. The plans were prepared by Messrs. Firth & Sheldon, and the building has cost 800*l*., accommodation being provided for 150 scholars, thus making the cost at the rate of 5*l*. 6s. 8d. per scholar.

Ashton-upon-Mersey. — The foundation-stone of the new clock-tower of the National schools at Ashton-upon-Mersey has been laid. The tower will be built of grey-ended bricks, and faced with dressings of Runcorn stone. It will be surmounted by a cupola of wood, in which will be hung five bells. The tower is intended for a clock, which will be made after Sir Edmund

pkett's specification, with three illuminated ls, and will strike the hours and chime the estminster quarters. Messrs. Wilson & Old- n, of Manchester, are the architects.

Mansfield.—The foundation stone of the new ildings for the Mansfield Grammar School was l on the 4th ult. The plans were obtained competition. Six architects competed, and the ign of Messrs. Giles & Gough, of London, s selected. The first premium was awarded Mr. A. H. Potter, of Mansfield, whose plan eeded by 500*l.* the sum sanctioned by the arity Commissioners (4,000*l.*). The second mium was carried off by Mr. R. H. Carpenter. the new buildings, accommodation will be vided for 150 scholars, with a residence for head master. The school building proper sists of an entrance-hall and corridors, school- m, 46 ft. long by 21 ft. wide, with raised tform or stage, 13 ft. 6 in. by 9 ft. 6 in.; ool library, reading-room or large class-room, smaller class-rooms, boys' lavatory, and hat coat room. The principal entrance is in the tre of the south front, opening into the hall, h a corridor running direct therefrom to the s' entrance from the playground. The mate- to be used is Mansfield stone, with a lining brick, and the roof will be of Broseley tiles. builders are Messrs. S. & W. Pattinson, of aford.

MR. MILLAIS'S "EFFIE DEANS."

THE picture of Effie Deans and her lover, which being exhibited in King-street, is, as the printed arks put into the hands of visitors duly set h, a curious parallel and contrast at the ne time to the artist's famous picture of the guenot and his sweetheart. Each portrays meeting, under circumstances of exceptional pathetic interest, of a loving pair; but in one case it is a contest of pure love with heroism, in the other it is the meeting of ucer and victim under feelings of reproach contrition in the latter, and selfish in- rence in the former. Yet, in despite of the igher nature of the former subject, the latter ure will be more satisfying to those who honour painter, and wish well to his fame. In "Huguenot" picture we saw him under dominion of an essentially false mannerism, ch he has since forsaken for the true and thy paths of art. In the present painting e is nothing but simple unaffected nature; training after effect, no overworking of acces- s to exhibit mere cleverness. Everything is eeping, and the whole picture is so quiet and trusive as at first sight to make us inclined ay, "Is this all?" But in that reticent ity lies the very excellence of the work. sadness and bewilderment of "Poor Effie," the cold worldly face of her false lover, are n with a simple and unpretentious reality h affects us more than any convulsions of m or expression. The picture is a true con- tious work, the result of more thought and y than would appear on a cursory examina- We are so thoroughly pleased with its ine and simple character as to regret the tation of compiling a pamphlet to enable ors to understand (?) it. The picture ex- s itself, without any such adventitious aids.

CITY CHURCHES.

,—My attention has just been called to a letter under bove heading, and signed "Looker on," which ap- d in your impression of the 28th ult.

ur correspondent, if he had inquired, might have t that what he describes as a recent discovery has s been known, and that the reopening of the windows d to (and which were broked up when the church epaired after the Fire of London) was delayed for of funds, and which the committee in charge of the have now scraped together.

shall indeed be pleased to get them to take into con- tion the rebuilding of the east wall, if your corre- ent will kindly find the means to defray the cost. meantime, the new and handsome stone reredos, ft of my co-churchwarden, Mr. Alfred Dyett, and will cost him upwards of 300*l.*, will to a very great hide the inaccuracy of line your correspondent

HYMEN A. JOSEPH,
cting Churchwarden of St. Antholin's parish, now united to that of St. Mary Aldermary.

Michael's Church, Great Torrington, h Devon.—In response to the advertise- ts of the committee inviting designs for a reredos in the above church, about twelve ngs were submitted by Mr. Harry Hems, s. Cox & Son, and others; and the design e former gentleman has been accepted by mmittee.

VARIORUM.

UNDER the title "Dwellings of the Poor in London, with special reference to the Working of the Metropolitan Building Act" (Strangeways, Castle-street), Mr. Charles Forster Hayward, F.S.A., has published, in pamphlet form, his paper on the subject read at the Royal Institute of British Architects. It is sold for a few pence, and may be usefully circulated.——In recent numbers of *Notes and Queries*, Mr. William J. Thoms, F.S.A., has published some very interesting particulars relating to the earliest numbers of this periodical, entitled "The Story of *Notes and Queries*." Under the able guidance of its present accomplished editor, Dr. Doran, F.S.A., it well maintains its position, and is the accredited "medium of intercommunication for literary men, general readers, &c."——"Sanitas Sanitatum et Omnia Sanitas," by Richard Metcalfe, F.S.S. (vol. i.). (Co-operative Printing Company). The main object of this work, or, at any rate, of this part of the work, is to advocate the use of the Turkish bath. It includes some valuable statistics of provincial baths and washhouses. ——"Overcrowding in the City of London, its Cure in the Present, and its Prevention in the Future," by Henry Chevassus (106, Old-street). It is not overcrowding in houses that is here referred to, as would be expected, but the overcrowding of the streets of London, and the author suggests various new lines and arrangements.——Mr. W. Haywood's Report to the Streets Committee of the Honourable the Commissioners of Sewers of the City of London, on the condition of the Wood and Asphalte Carriageway Pavements in the City of London, as existing on February 1st, 1877, has been printed. The information is given in a tabular form.——The wise and interesting lectures delivered to working men in King's College, London, by Professor Leoni Levi, have been published as a little book, under the title, "Work and Pay; or, Principles of Industrial Economy" (Strahan & Co). It will benefit all who read it.——The April number of *The Quarterly* includes an article on "The Kitchen and the Cellar," which, if scarcely up to the high mark of some similar articles in the same periodical some years ago, is yet instructive and entertaining. Miss Martineau is treated of in another article somewhat sharply. ——*The Nineteenth Century* has sprung into popularity, or, rather, was born with it. It is edited by Mr. James Knowles, whose name and works, in another field also, are well known to many of our readers, and he carries with him such a body of contributors as must ensure success to any undertaking of the kind. In No. 3, just now published (for May), we find a sonnet by the Poet Laureate, papers by Mr. Gladstone, Mr. Arthur Arnold, Cardinal Manning, and other well-known men, concluding with a Modern Symposium, which brings together Dr. Ward, Professor Huxley, Mr. R. H. Hutton, and Sir James Fitzjames Stephen,—a capital idea, though not yet so well carried out as it will be.

Miscellanea.

Cathedral Restoration.—A meeting, called by the Dean and Chapter of Canterbury Cathedral, has been held for the purpose of promoting the restoration of the west end of the choir. Mr. Beresford Hope, M.P., presided, and said the cathedral itself was in capital repair, the Dean and Chapter, with singular generosity, having for a long time devoted to this purpose income from capitular property which they might have put into their own pockets. He did not know whether they ought to use the word restoration, for fear of raising up controversy, and he would therefore say the object was to reinstate the cathedral choir in its condition of ancient beauty, and render it fit for the performance of divine service. Such a work ought, he thought, to stir the zeal of all Englishmen. Sir Gilbert Scott described the work which was proposed, and said it would cost 9,000*l.* or 10,000*l.*, towards which 5,000*l.* had been promised. Several other gentlemen addressed the meeting, and a resolution was unanimously carried pledging those present to raise the necessary funds.

Grosvenor Gallery.—The ironwork, including roofs, was supplied by Mr. W. H. Lindsay; not by Mr. Bryant, as stated. Three lifts were furnished by Mr. Alexander Moffatt, and Mr. Hiram Neale, of Queen-street, Brompton, hung the silk damask.

The "Hackney Express" Idemnity Fund.—Our readers know that an action for libel has recently been decided against Mr. Joseph Cox, proprietor of the *Borough of Hackney Express*. The question at issue was one of an essentially public character, having reference to the construction of certain houses which had been criticised in the columns of the journal, whereby it was maintained that the public health and safety were endangered. Although the builder failed to obtain more than 40*s.* damages against the paper, the proprietor has to pay *all* the costs,—which cannot amount to less than between 200*l.* and 300*l.* We are glad to learn that a committee has been formed, and a subscription commenced, with a view to raising such a sum as will meet the expenses incurred in this action. Mr. Thomas Turner, 56, New Gloucester-street, Hoxton, amongst others, will gladly receive contributions.

Iron in the Antique Days.—Dr. Schliemann, at a dinner given by the Ironmongers' Company last week, replying for the "Visitors," said in the course of his speech:—The age of iron is bearing fruits far nobler than those fabled by the poets of olden days; and in truth richer even than their age of gold. What, for instance, was the state of civilisation at the time when "the king of men," the ἀναξ ἀνδρῶν, Agamemnon, was buried at Mycenæ with his immeasurable treasures? The alphabet was unknown, there were neither schools nor commercial ties and intercourse; wealth was not acquired by industry, science, or art, but by piracy and plundering war. Nay, piracy was deemed a perfectly honourable profession, and, as Thucydides quotes Homer to show, it was nothing unbecoming to ask a man whether he was a pirate. Iron was unknown at the time of Agamemnon; for I found no trace of it either at Mycenæ or at Troy. Even in the time of Homer it was a very rare and costly commodity, and was prized more highly than gold. I find great difficulty in believing that in the time of the divine poet the inhabitants of Greece and Asia Minor knew the process of extracting the iron from the ore, because this process must have been an exceedingly difficult one to primitive man. I believe rather that at that time meteoric iron only was in use, and this seems to be proved also by the Greek word for iron, σίδηρος, which is evidently derived from an ancient word for star. An Egyptologist has only to-day informed me that he has similarly explained the origin of the hieroglyphical word for iron, *bénipê*, which my friend Dr. Birch, of the British Museum, translates "stone of heaven" or "sky-stone." But on this whole subject of the archæology of the metals, I cannot do better than refer you to the *con amore* researches of my other illustrious friend, Mr. Gladstone. Strange to say, the Greek word I have mentioned was already lost at the time of Homer; but that it once existed in the oldest Pelasgic form of the Greek tongue seems certain, because we find it in the Latin *sidus*, in the genitive *sideris*. Hence the lost ancient Greek word for star must have been σιδήρ, whence the primitive Greeks called meteoric iron σίδηρος, as being derived from the starry region.

The Drapers' Company.—On Thursday evening, last week, the Masters and Wardens of this ancient guild entertained a select company at dinner in their stately hall, situated in Throgmorton-street; the Master, Mr. Samuel Cross Fish, presided. Several well-known representatives of art, science, and literature were amongst the invited guests, but the toasts were chiefly confined to law, politics, and the municipality, Lord Selborne, the Lord Chief Justice of England, and the Lord Mayor being amongst the speakers.

The Sunderland Borough Engineership. The committee charged with the examination of the testimonials, &c., of the applicants for this appointment met on Monday last, and selected the following five candidates for submittal to the Town Council, with whom the final selection rests, viz.:—Mr. C. Thwaites, Norwich, 16 votes; Mr. G. E. Thoms, Liverpool, 14; Mr. T. Smith, Sunderland, 10; Mr. Duncan, Sunderland, 9; Mr. Balfour, Sunderland, 8.

Land in the City.—Within the past month land in the Poultry has been let on building lease at 1*l.* per square foot per annum; and since then some vacant land in Moorgate-street, almost on the borders of the City, fetched 8*s.* per square foot.—*City Press.*

Competition.—The designs of Mr. Stuart Colman, of Bristol, have been adopted by the St. George's School Board for Board schools at Plummer's Hill.

A Two-foot Rule.—Keep the feet dry.—*Yorick.*

TENDERS.

For alterations and additions, Skelton-street, Greenwich, for Mr. A. Budds. Mr. Henry Roberts, architect:—

Todd	£882	0	0
Sanderson	875	0	0
Bridel (accepted)	865	0	0

For new school and residence at Stokenchurch, Oxon. Mr. Arthur Vernon, architect:—

Hunt	£1,929	0	0
Wells	1,894	0	0
Taylor & Grist	1,849	0	0

For additions to stabling at High Wycombe, for Mr. A. Leadbitter. Mr. Arthur Vernon, architect:—

Silver & Son	£366	0	0
Loosley	334	0	0
Hunt	325	10	0

For St. Joseph's Catholic Church, North Brighton. Mr. W. Kedo Broder, architect. Quantities by Mr. Sargeant:—

Stenning	£16,330	0	0 !
Lockyer	13,698	0	0
Barnes	13,666	0	0
Chappell	13,592	0	0
Cheeseman	13,250	0	0
Colls & Sons	11,160	0	0
Bruton (accepted)	9,585	0	0 !

For the erection of a villa residence at Roath, Cardiff, for Mr. Robert Bird. Mr. Peter Price, architect:—

Evans	£3,345	0	0
Milton	3,329	10	4
Jones	3,208	0	0
Price & Son	2,987	0	0
Biggs	2,980	0	0
Thomas	2,878	0	0
Shepherd	2,825	0	0
Parnell & Fry	2,750	5	0
Barns	2,750	0	0
Jones & Co.	2,680	0	0
Jones, Bros.	2,660	0	0
Robins	2,640	0	0
D. J. & D. Davies	2,580	0	0
Clarke	2,560	0	0
S. & A. Lewis	2,550	7	3
Howard	2,490	0	0
Cocks & Clarke	2,350	0	0

For alterations and additions to Swiss Cottage, St. John's Wood. Messrs. Bird & Walters, architects:—

Nightingale	£4,215	0	0
Newman & Mann	4,162	0	0
Drew	4,120	0	0
Hockly	4,095	0	0
Brown	4,080	0	0
Mark	4,055	0	0
Longmire & Burge	3,979	0	0
Aney	3,970	0	0
Williams & Son	3,945	0	0
Temple & Foster	3,184	0	0

For additions to Hotspur Lodge, 101, Goldhawk-road, Shepherd's Bush, for Mr. James Percy. Mr. H. J. Hanson, architect. Quantities by Mr. H. Smith:—

Adamson & Son	£997	0	0
Lathey, Bros.	930	0	0
Gregory	929	0	0
Smith	899	0	0
Webster	832	0	0
Appleton & Co. (too late)	798	0	0
Baker (accepted)	785	0	0

For works to the Prince Albert public-house, St Martin's-lane, for Messrs. Watney & Co.:—

Boden	£138	0	0
Godden	138	0	0
Taylor	129	0	0
Grimwood & Sons	129	0	0
Shurmur (accepted)	117	0	0

For rebuilding Nos. 13 & 14, Chenies-street, Tottenham Court-road, for Messrs. Hewetson & Milner. Messrs. Batterbury & Huxley, architects:—

Smith	£2,867	0	0
Patman & Fotheringham	2,567	0	0
Bird	2,469	0	0
Manley & Rogers (accepted)	2,346	0	0

For erection of studio, &c., at Hampstead-hill Gardens, for Mr. C. Green. Messrs. Batterbury & Huxley, architects:—

Linzell & Son	£1,700	0	0
Pizzey	1,660	0	0
Lathey, Bros.	1,656	0	0
Kelly, Bros.	1,649	0	0
Manley & Rogers (accepted)	1,600	0	0

For alterations and additions, with new billiard-room, for Mr. William Smith, Woodfield. Mr. T. Tayler Smith, architect:—

Gimm	£493	0	0
Bentley (accepted)	493	0	0

For the erection and completion of two villa residences for Mrs. Babbs, on the Bush Hill Park Estate, Enfield. Mr. T. Tayler Smith, architect. Quantities by A. G. Winsor:—

Hampton, jun. (accepted)	£1,470	0	0

For the erection of All Saints' Church, Wolverhampton. Mr. T. Tayler Smith, architect. Quantities by Mr. Edward Pincher:—

Groome	£7,170	0	0
Nelson	6,567	0	0
Lovatt	6,475	0	0
G. & F. Higham (accepted)	6,420	0	0
Horseman & Co.	6,185	0	0

For the erection and completion of a villa residence, for Mr. J. H. Belfrage, at Shepperton. Mr. T. Tayler Smith, architect:—

Harris (accepted)	£1,360	0	0

For the erection of Board Schools at Mina-road, Bristol. Mr. Stuart Colman, architect. Quantities by Mr. A. Drane:—

Baker & Sons	£4,980	0	0
Banner	4,549	0	0
Cowlin & Son	4,388	0	0
Hatherley	4,298	0	0
Wilkins & Sons	4,200	0	0
Box	4,179	0	0
Davis	4,135	0	0
Stephens & Bastow	4,157	0	0
Humphreys	3,964	0	0
Cowlin	3,940	0	0
Hill	3,930	0	0
Pugsley	3,929	0	0
Wilkins & Hill	3,870	0	0
Lewis & Edbrooke	3,830	0	0

For sewers, water-closets, lavatories, sinks, &c., at the Union House, Buntingford, for the Board of Guardians. Messrs. Smith & Austin, engineers:—

Gibbons	£347	0	0
Gray (accepted)*	294	0	0

* Subject to approval of Local Government Board.

For the constructing and fixing of new deep-well pumps in Shoreditch Workhouse. Mr. J. Wallace Pegge, engineer:—

Blundell, Bros.	£875	0	0
Ford, Bragg, & Co.	839	0	0
Jackson	716	0	0
Tilley	711	0	0
Marshall	667	0	0
Waygood & Co.	660	0	0
J. & F. May	615	0	0
Evans, King, & Wingate	630	0	0
Gimson	620	0	0
Pontifex & Wood (accepted)	581	0	0
Colinge Engineering Company	(informal)		
St. Pancras Iron Works Company	(informal)		

For new detached infirmary at the Earlswood Idiot Asylum, Redhill, Surrey. Messrs. Lamb & Church, architects:—

	Gault Bricks.	Bath Faced. Extra.
Colls & Son	£6,259	£1,200
Roberts	5,647	1,650
Shurmur	5,643	1,270
Killby	5,550	1,241
Higgs & Hill	5,424	760

For erecting a new wing to No. 128, Rectory-road, Stoke Newington, for Mr. S. Cook. Messrs. C. J. Jones & Co., architects:—

Cox	£389	0	0
Stamp & Bowtle	369	0	0
Thomerson	333	0	0
Burton	295	0	0
Jarvis & Sons (accepted)	285	0	0

For the erection of a house at Balham-hill, for Mr. S. W. Causton. Messrs. E. Habershon & Brock, architects:—

Carter & Sons	£2,999	0	0 !
Jullian & Co. (late Ennor)	2,795	0	0
Maitock, Bros.	2,793	0	0
Newman & Mann	2,787	0	0
Loat & Son	1,989	0	0 !

For the Shakspeare Memorial, Stratford-on-Avon. Messrs. Dodgshun & Unsworth, architects. Quantities supplied by Mr. James Gandy:—

Dove, Bros.	£14,800	0	0
Hill, Higgs, & Hill	14,350	0	0
Cook & Wilkins	14,247	0	0
Warne & Hook	12,676	0	0
Lovett	12,106	0	0
Smallwood & Co.	11,932	0	0
Bull & Son	11,601	0	0
Lascelles (accepted)	11,224	0	0

TO CORRESPONDENTS.

R P (we can forgive much which has for its motive the reduction of the smoke nuisance) —W. C. H (we have no recollection of the query in question).—O. F. (firm were not bound to keep him: no period was specified).—L. H.—H. H.—M.—J. P.—C. B.—C. N.—T. B.—A. S.—A. M.—F.—M. & Co.—Messrs. P. C. & C. I.—J. P.—H. N.—A. C.—R. P.—J. W. & Sons.—J. W. P.—H. J. H.—W. S.—S. K.—C. E. P.—J. F.—W. H. L.—S. & A.—C. W.—W. W.—H. A. J.—B. & A.—W. H. L.

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ATES for YOUNG LIVES will be found MATERIALLY t than heretofore.
ge effected this year will be entitled to share in the Profits at Division, in December, 1879.
s of Proposal, &c. will be sent on application to the Office.

WARD ROBERTS, Deceased.—Pursuant to the Act of Parliament, 22 and 23 Victoria, cap 35, an Act to further amend the Law of Property and to relieve, and notice is hereby given that all persons having any CLAIMS upon or against the ESTATE of EDWARD ROBERTS, ey of Parliament-street, in the City of Westminster, but late 86, Blomfield-road, Paddington, in the county of Middlesex, No. 9, Victoria-chambers, Victoria-street, in the City of Westminster, Architect, deceased, who died on the 16th day of ch, 1875, and Letters of Administration of whose estate and effe granted by Her Majesty's High Court of Justice at the hi Registry of the Probate Division thereof, on the 1st day of ber, 1876, to Emily Eleanor Mellvenna Roberts, the widow of deceased, are required to send particulars of their Claims or s to the said Administratrix, at the Office, No. 25, Austin London, or her Solicitors, Messrs. MERRIMAN, PIKE, & MAN, on or before the 10th day of MAY, 1877, after which said Administratrix will proceed to distribute the assets of deceased among the parties entitled thereto, having regard the claims and demands of which the said Administratrix en have had notice; and the said Administratrix will not be ur any part of the assets so distributed to any person or of whose claim or demand she shall not then have had notice. this 11th day of April, 1877.
MERRIMAN, PIKE & MERRIMAN,
Austin Friars, London, Solicitors for the said Administratrix.

LERS and BRICKLAYERS' COMPANY.—The Court of the Company are prepared to provide REMIUMS of 25l each, for APPRENTICING BOYS to LAYERS for a term of seven years. Persons desirous of unt boys, and Bricklayers willing to take them as Apprenare requested to communicate in writing with the Clerk, at the undermentioned, before the 15th of MAY, 1877.
Bedford row. ARTHUR BIRD, Clerk

TOWN COUNCILS and SANITARY ENGINEERS. The Council of the Borough of Reigate, being to DISPOSE of the SEWAGE EXTRACTORS, patented by am esq. C.E. and erected by him at the Sewage Farm, d, in 1871, invites OFFERS for the PURCHASE thereof. ractors may be seen in operation, upon making an appointth me.
nder my hand this 21st day of April, 1877.
By order, CLAIR J. GRECE, Town Clerk.

RD ST. JAMES'S CO-OPERATIVE BENEFIT BUILDING SOCIETY.—Alternate BALLOT and 400l for Ten Years without Interest. Weekly subscriptions. Tuesday Evenings Eight to Nine at the Craven Chapel Hall, Marshall-street, Golden-square, W. First subscription esday next May 8. Prospectuses post free of the Secretary, BRICKER, 22 Charles-street, Middlesex Hospital.

. RRIS & ARCHER,
No. 198, OLD STREET, ST. LUKE'S,
CARPENTERS and JOINERS to the TRADE.
ates given for Doors, Windows, Shop, Office, and Warehous
Every description of Joiners' work on the shortest notice.
pt in stock.

SIGNS efficiently PREPARED from ROUGH SKETCHES or otherwise. PERSPECTIVES DRAWN SQUARED, or ETCHED, in the best style. Terms moderate.
MYERS TAYLOR,
2, BURTON-CRESCENT, RUSSELL-SQUARE, W.C.

. RICHARDSON, ARCHITECTURAL ARTIST, 30a, Lincoln's-inn-fields, W.C.
Perspective in outline, colour, or etched, competition, working other drawings, designs from sketches or instructions. eference. Moderate terms. Established twenty years.

STERING (Labour only) TO BE LET, ne Ten-roomed Houses.—Apply, 18, St. Michael's-road,

JOINERS, &c.—WANTED, to CONTRACT for the JOINERY of a lot of Small Houses.—M. M Chancery-lane.

PICLED PUPIL.—An Architect, Surveyor, and House and Estate Agent, with a large practice in is prepared to receive a well-educated PUPIL in his Office. H. C. Post Office, Swindon, Wilts.

PARTNERSHIP.—10,000l. to 15,000l.—An opportunity occurs for the introduction of a Gentleman with a sound Engineer's, Ironfounder's, and General Contractor's business as PARTNER, either active or otherwise.—Address, Messrs. PARKER, Solicitors, 17, Bedford-row, London.

PARTNER WANTED (Active or Sleeping), with about 1,500l. (to further a first-class business). If active, a gentleman with some knowledge of Sanitary Engineering preferred.—Apply to Messrs. CATES & SON, 84, King William street, E.C.

PARTNERSHIP (To BUILDERS), or with a view to PURCHASE a BUSINESS. An active middle-aged person.—Address, with full particulars, L. L. 29, Quay, Bideford, Devon.

NOTICE.—The Board of Works for the Lewisham District is prepared to receive APPLICATIONS for the Office of an ASSISTANT SURVEYOR. Salary not exceeding 250l. He will be required to devote his whole times to his duties, and to reside in the District. Candidates should be between the ages of 25 and 35, and must have had considerable experience in Surveying, Levelling, and taking out Quantities. Applications to be made in writing, enclosing testimonials (not exceeding three), stating age, qualifications, nature of employment, and amount of salary received during the past three years, to be delivered on or before the 12th day of MAY next, addressed to me at this Office. Candidates are requested not to canvass the members of the Board.—By order,
SAML EDWARDS, Clerk to the Board.
Board of Works Offices, Catford, S.E. 16th April, 1877.

SURVEYORSHIP and ASSISTANT SURVEYORSHIP of ST. MATTHEW'S, BETHNAL-GREEN.—Candidates for the Office of SURVEYOR, and for the Office of ASSISTANT SURVEYOR for the Parish of St. Matthew, Bethnal-green, are to send in written Applications, with testimonials (marked outside "Surveyor"), to me the undersigned before SIX p.m. of the 17th of MAY next. The Surveyor will be required to devote his whole time to the duties of the Office, and will not be allowed to engage directly or indirectly in private practice. The salary of the Surveyor is 400l and of the Assistant Surveyor 150l. per annum. The Vestry will proceed to ELECT on THURSDAY, the 7th of JUNE, at SIX p.m. Such Candidates as the Vestry may desire to see will be communicated with after the examination of the applications. Further information may be obtained on application to me.—By order,
ROBERT YOBB, Vestry Clerk.
Vestry Offices, Vestry-hall, Bethnal-green, April 27th, 1877.

EDWARD BROWN
(Brother to the late G. A. Brown),
ARCHITECT and SURVEYOR,
No. 25, Church-street, Spitalfields,
(Established 1811).
Candidate for the Office of SURVEYOR to the Vestry of St. Matthew, Bethnal-green, E. vacant by the death of the late respected Mr. Wm. Mundy.

BUILDER'S SURVEYOR and GENERAL MANAGER WANTED, for a permanency, by a builder in Cheshire. A good salary will be given to a really competent person, capable of measuring up work, estimating, and preparation of drawings and quantities.—Address, Mr. B. HOBBS, Builder, Henley-on-Thames.

ACCOUNTANT (Partial Employment).—WANTED, for three days a week, a CLERK competent to take charge of book-keeping in a Brass Finishing and General Fitting Business.—Applications, stating terms and giving references as to sobriety and ability, to be addressed, Box 129, Office of "The Builder."

ASSISTANCE required in a District Surveyor's Office, for three or four days a week.—Address, stating age, qualifications, experience, and salary expected, Box 174, Office of "The Builder."

ASSISTANT WANTED, in an Architect's Office in the North of England. Must be a good draughtsman and neat printer. State age, salary required, and when disengaged.—Address, DELTA, Post office, Carlisle.

CLERK.—WANTED, a Short-hand Writer as above, in a Builder's Office, who will make himself generally useful.—Address, stating whose system of short-hand, salary expected, references, &c. Mr GEO. MARTIN, Builder, Carlton-road, Putney-hill, S.W.

CLERK (Estimating and Measuring) WANTED by a Building Firm near London. Must be experienced. Address, stating salary required and references, Box 133, Office of "The Builder."

CLERK in a Builder's Office WANTED. Must be able to square dimensions and post accounts.—Address, stating age, terms, and where last engaged, Box 137, Office of "The Builder."

CLERK (good) WANTED, for the Blenheim Estate Office, accustomed to the general work of a Land Agent's Office, and who can survey land and trace plans. Salary 100l. per annum.—Address, WHATELEY, MILWARD, & CO. 41, Waterloo-street, Birmingham

CLERK WANTED, by a Builder, in London, competent to take out quantities, measure up work, estimate, and general office work.—State age, references, name of last employer, and salary required, Box 141, Office of "The Builder."

CLERK.—WANTED, a thoroughly experienced, to Assist in a Builder's Office (Evening Employment). Must be well used to posting up accounts.—Address, BUILDER, Mr. Clare, Upholsterer, New Park-road, Brixton-hill, S.W.

CLERK and ASSISTANT.—WANTED, for a Constancy, by a Jobbing Builder and Decorator, a sober, energetic, persevering young Man as above. One with a practical knowledge of the business preferable. Must be of punctual habits, &c and would take an interest in the management of the business in the absence of the principal.—Address, in first instance, to A. B. C. No. 684, Chalk Farm-road, Haverstock-hill, N.W. stating abilities, age, salary required, and where last employed.

CLERK of WORKS.—WANTED, in the Country, an efficient Person to act in this capacity. Must have been accustomed to first-class work. Applicants are requested not to forward testimonials, or copies of same, but merely to state experience, age, trade, last employer, and recent reference. Salary, 2l. 10s. a week.—Box 139, Office of "The Builder."

YARD CLERK (Builder's) WANTED. Must have filled a similar situation before. Will be required to attend the same hours as the workmen.—Apply to 125, Office of "The Builder."

JUNIOR CLERK.—WANTED, by a London Contractor, a CLERK, accustomed to the office routine, of strict integrity, and able to trace, and calculate correctly and quickly.—Address, stating age, salary required, and reference to last employer, Box 172, Office of "The Builder."

ROAD INSPECTORS (FOUR) required, to Superintend the Men and Horses employed, and the Materials used in Repairing and Cleansing the Roads, &c. in the Parish of Battersea. Must be between 25 and 40 years of age, and able to write. Those having a previous knowledge of parish work preferred. Wages, 30s. per week. Applicants to attend, with references as to character, &c. at the Surveyor's Office, Stone-yard, Bridge-road West, Battersea, on THURSDAY, the 10th of MAY, at THREE o'clock in the Afternoon. No travelling or other expenses will be allowed.
J. T. PILDITCH, Surveyor.

THE LLANDUDNO IMPROVEMENT ACTS, 1854 and 1876, and the PUBLIC HEALTH ACT, 1875. WANTED, by the Commissioners acting under and in execution of the above Acts, a WORKING FOREMAN, to perform, among others, the following duties:—To Superintend the Men and Horses in the employ of the Commissioners, to keep their time, and to set generally under the direction of the Surveyor. He must be able to speak the Welsh language, and must possess a knowledge of Road making and the other works usually undertaken by Local Boards. Each candidate must provide at least two testimonials as to character and suitability for the office. The applications (in the candidate's own handwriting) stating age, and salary required, together with the testimonials, to be sent to the undersigned, on or before the 15th day of MAY, 1877
THOMAS T. MARES, C.E. Clerk and Surveyor.
May 1st, 1877.

BOROUGH of BURNLEY.—WANTED, a good UNDER-FOREMAN of WORKS, accustomed to ROAD MAKING and DRAINAGE WORKS, with a fair knowledge of Building Operations. A Mason preferred. Wages 36s per week at the commencement.—Applications, stating age, with testimonials, to be forwarded to JOSEPH VICKERS EDWARDS, the Borough Surveyor, not later than TUESDAY, MAY 8th.—By order,
A. B. CREEKE, Town Clerk.
Municipal Offices, Nicholas-street, Burnley.

BUILDER'S FOREMAN WANTED, to superintend the erection of a large factory in the country. Must have had good experience, and be well recommended.—Address, BUILDER, Messrs. Deacon's, 154, Leadenhall street.

FOREMAN WANTED, to Superintend the Erection of a lot of Small Houses near New Cross.—State trade, age, experience, wages, &c. K. K 117, Chancery-lane.

OUTDOOR FOREMAN WANTED. Must thoroughly understand Painting and Plumbing, and general knowledge of all trades. Only those who can be well recommended need reply.—Box 127, Office of "The Builder."

GENERAL FOREMAN (good) Wanted, directly, to push on a job quickly.—Address, with references, Box 143, Office of "The Builder."

GENERAL FOREMAN or CLERK of WORKS WANTED (active, energetic, and experienced), about 35 or 40 years of age, to fit, service Jobbing Work. Must be thoroughly competent to superintend and direct all kinds of work, as well as shoring and the construction of stands and temporary buildings, and also to keep account of labour and material.—Address, with references and salary required, X. Y. care of Messrs. Drew & Wood, 10 Basinghall street, E.C.

WORKING FOREMAN of CARPENTERS and JOINERS WANTED. Must be a good economiser of time and material, well up in repairs and alterations, with a good knowledge of the value of work. Must be steady, sober, and energetic.—Address, in own handwriting, stating wages required, and references, Box 135, Office of "The Builder."

STOREKEEPER WANTED, in a Decorator's Shop. One used to making up colours.—Address, stating age, wages, &c. Box 145, Office of "The Builder."

DECORATOR.—WANTED, by a West-end Firm, a first-class Decorative Artist. Send references, age, and capabilities to Box 101, Office of "The Builder."

WRITER WANTED (must be first-rate) for a CONSTANCY.—Apply with specimens at 13, Lancaster-street, Hyde Park, W.

JOINERS (several good) WANTED. None but good hands need apply.—ALFRED VIDLER, Contractor, 24, Havelock road, Hastings.

JOINERS (good) WANTED, where the heavy work is done by machinery. 9d. per hour.—Apply to Mr. GEO MARTIN, Carlton-road, Putney, S.W.

CARPENTER.—A strong, active Man, who has had experience in making and repairing contractors' railway trucks, and is a competent workman in other respects, may hear of Constant EMPLOYMENT. Good personal character indispensable. Apply to Mr. JUPP, Stone, near Dartford.

CARPENTER and GENERAL REPAIRER.—WENTED, a Man who understands all kinds of Carpentering, Painting, and Glazing, and can make himself generally useful. Constant employment.—Apply, stating amount of wages wanted, &c. to CRANSTON & COMPANY, King's Acre Nurseries, near Hereford.

CARPENTERS WANTED, to take the LABOUR to Forty Small Four-roomed COTTAGES, near East Dulwich, at per house. As a fair price will be paid, only those who can give good personal references will be supplied with particulars. Also Three good HANDS at 34s. Address, enclosing stamped directed envelope, to Box 147, Office of "The Builder."

IMPROVER in Carpenter and Joiner's Shop.—WANTED, an energetic young Man. Would have good opportunity of learning every branch of the trade.—Apply on Works, PORTER & ABRAHAM, Builders, Riversdale-road, Green-lanes, N.

BRICKLAYERS.—WANTED, a Few good BRICKLAYERS in a Country Town.—Apply to A. V. Nos. 31 and 32, Cock lane, Viaduct, London, E.C.

BRICKLAYER WANTED, who will Contract for the Labour of a Lot of Cottages, near New Cross. One with scaffold preferred.—X. X. 117, Chancery-lane.

PAPERHANGER (good) WANTED by a Firm of West-end Decorators.—Box 101, Office of "The Builder."

MACHINIST WANTED. One accustomed to Fowis James & Co.'s General Joiner preferred. None but first-class machinists need reply.—Box 131, Office of "The Builder."

MACHINIST WANTED, in a London Contractor's Machine Shop. He must have a thorough knowledge of modern working machines. Will have to prepare and set cutters, and keep machines generally in good working order.—Address, stating reference, age, and salary, Box 172, Office of "The Builder."

PLUMBER (good) WANTED, for a Permanency. Fill up time with painting.—Apply, 222, St. Paul's-road, Highbury, N

MASONS' LABOURERS and Cemetery Mason (good) WANTED for a Permanency.—Apply, Preston's Cemetery Works, Nunhead Cemetery, London, S.E.

DRAWINGS of every Description for BUILDINGS or ALTERATIONS accurately and expeditiously prepared by a good practical DRAUGHTSMAN.—A. B. 2, Boscobel-gardens, Alpha-road, N.W.

AGENCY.—A Gentleman, having Offices in a prominent position in Westminster, and a connexion among Engineers, Architects, and Contractors, would be glad to undertake an AGENCY for a country firm of Manufacturers, &c. The highest references.—J. A. B. 6, Westminster-chambers, S.W.

TEMPORARY ASSISTANCE rendered in Design, Construction, Quantities, Measurement of Works, Levelling, and Surveying. Perspectives drawn and coloured.—J. A. B. 6, Westminster-chambers, S.W.

BUILDERS and Others occasionally ASSISTED and ADVISED in Quantities, Estimates, Extras, and Accounts by an experienced Surveyor. Terms moderate.—Address, METER, City News Rooms, 4, Ludgate Circus Buildings

QUANTITIES Taken Out, and Buildings Measured Off, with accuracy and despatch.
C. ANDERSON,
BUILDING AND QUANTITY SURVEYOR,
Office, 27, Coney-street, York

ENGINEERING SURVEYOR (experienced), aged 29, seeks a RE-ENGAGEMENT.—A. B. C. Brunswick villa, Gipsy-hill, Norwood.

ENGINEER (young), now in Town Surveyor's Office. Mechanical and general experience. Well versed in theory. Surveyor and leveller Experience on extensive works. Salary Two guineas.—C. E. 23, Newport-street, Burslem.

DRAUGHTSMAN (Architect's). — Good, rapid, and clever. Perspective, sepia, design, detail, and competition.—T. C. D. General Post-office, Manchester.

DRAUGHTSMAN (good Architectural) desires an ENGAGEMENT immediately, in London or large provincial town. Terms moderate.—K. W. care of J. J. Thomson, esq. No. 57, Charing-cross, S.W.

DRAUGHTSMAN (Architectural), seven years' experience, seeks a TEMPORARY ENGAGEMENT. Terms moderate.—ROE, care of Mr. Hartrope, News Agent, 11, Lewisham-road, Lewisham, S.E.

DRAUGHTSMAN and TIMEKEEPER requires an immediate RE-ENGAGEMENT in an Architect's or Builder and Contractor's Office. Salary moderate. First-class references.—W. H. C. 11, New-court, Farringdon-street, E.C.

ARCHITECT'S ASSISTANT requires a RE-ENGAGEMENT in a London office. Good draughtsman, perspective, sepia, and etching. Moderate salary.—Address, S. at A. Sidney's, esq. 20a, Lincoln's-inn-fields, W.C.

ASSISTANT ARCHITECT is open to an ENGAGEMENT to Take Management of Office, or otherwise. Highest references. Terms 3½ guineas per week.—Box 168, Office of "The Builder."

ASSISTANT (Architect's), Disengaged. First-rate draughtsman, and well up in details Salary moderate.—ARCHITECT, 33, St Peter's street, Islington, N

ASSISTANT (Architect's) having two or three days a week at his disposal is desirous of EMPLOYMENT for same. A London Office preferred.—N. B. W. 3, Colebrook-road, West Brompton, S.W.

ASSISTANT (Architect's, &c.), eleven years' experience, competent in design, and constructional details. Country office or London Well versed in surveying and prices.—Mr. WOOD, 13, Francis-street, Gower-street, W.C.

ASSISTANT (Architect's General) aged 28, desires an ENGAGEMENT Town or country. Twelve years' experience General knowledge of surveying.—G. U. J. care of Mr. Handley, Stallour, Paradise street, Birmingham.

ASSISTANT (Architect and Surveyor's) requires a RE-ENGAGEMENT. Seven years' experience. Good reference. Terms moderate.—G. J. T. 89, Liverpool-road, Islington, N

ASSISTANT (Architect and Surveyor's), of five years' experience, desires an ENGAGEMENT, in London. Good draughtsman, &c. Highest references. Terms, 2l per week.—Box 170, Office of "The Builder."

ASSISTANT (Architect and Surveyor's) wants an ENGAGEMENT Perspective, design, and specifications. Able quantity surveyor. Or as CLERK of WORKS. Has a thoroughly practical experience. Or to combine the two Properly qualified Aged 29 Unexceptionable character Salary 2l 10s. In the north of England at present.—Box 164, Office of "The Builder."

ASSISTANT (Quantity Surveyor's), well acquainted with Quantities, Measuring, and fair Draughtsman, is open to an ENGAGEMENT.—SURVEYOR, care of House keeper, Rugby Chambers, Bedford-row, W.C.

ASSISTANT (Junior). Good draughtsman, surveyor, and leveller. Four years and a half in a Borough Surveyor's Office Good references. Aged 21 Terms moderate.—A. B. Town-hall, Leicester

GENERAL ASSISTANT.—A Builder's Son desires ENGAGEMENT as above, having taken charge of several Jobs, and can assist in Office Work. Age 25.—E. B. 52, Cross street, Islington N

GENERAL ASSISTANT, good Surveyor, Leveller, and first-class Draughtsman, understands building, drainage, sewerage, &c Highest references. Eighteen years' experience.—F. L. B. 1, Thorne-road, Clapham, S.W.

HEAD ASSISTANT (Architect's).—A Gentleman is open to an ENGAGEMENT, as above, with a view to Working Partner Highest testimonials.—Address, W. G. 20, Baker street, Lloyd's-square, W.C.

JUNIOR ASSISTANT requires ENGAGEMENT in Architect's or Engineer's Office. Five years' experience in Architect's and one year in Ironfounder's Office. Age 20. Salary 25s. W. H. 3, Mill street, Bolver-square.

JUNIOR ASSISTANT (Architect and Surveyor's) is open to an ENGAGEMENT in a good office. Has served his articles. Age 21. Highest reference.—R. A. 33, Carlton-street, Kentish Town, N.W.

MANAGER (Contractor's) and CLERK, accustomed to a very active life and the oversight of men, can be highly recommended by his last firm. seeks a RE-ENGAGEMENT, where sobriety and integrity are essential. Well up in accounts, pay sheets, &c. Security. Aged 34.—H. G. B. 30, Barnwell road, Brixton.

TO LAND AGENTS and SURVEYORS. WANTED by a Gentleman of ten years' experience, a SITUATION as SUB-AGENT or ASSISTANT, with a view to partnership. Well up in all the branches of agent's work surveying plan drawing, buildings, dilapidations, woods, shorthand, &c. The very best references.—Address, LAND AGENT, Messrs S. Deacon's, Leadenhall street, E.C.

ACCOUNTANT'S MANAGING CLERK, of twenty years' experience, and large practice in Builders' and Contractors' Accounts, Balance-sheets, Profit and Loss Accounts, Writing up Sets of Books Prime-cost Accounts &c wishes TEMPORARY or EVENING ENGAGEMENT.—ACCOUNTANT 5, Southampton row, Bloomsbury

ESTIMATING and MEASURING CLERK (experienced) wants a SITUATION. Well up in accounts, quantities, prices, &c. Efficient in every respect. First-class references.—W. B. Mr. Fenton's, 377, Kingsland-road.

BUILDER'S CLERK, of great experience in measuring up works, estimating, making out accounts, quantities, &c. wishes EMPLOYMENT, Temporary or otherwise. First-class references.—J. B. 7, Montague road, West Dalston.

BUILDER'S CLERK, 23 (experienced), desires a RE-ENGAGEMENT. Practical experience at bench and works, neat draughtsman, take off quantities, and measure up works. Good references. Salary moderate.—ALPHA, 93, Caledonian-road

MANAGING CLERK (Builder's) seeks RE-ENGAGEMENT. Good estimator, quantity taker, and measurer. Age 34. Ref-rences from London Firms.—WILLIAM H. CLARK, Charlcombe House, Southbridge-road, Croydon.

CLERK (Builder's). — Accountant, Prime Cost Clerk, Measurer, and Assistant Estimator desires an ENGAGEMENT. Fifteen years' experience. Aged 31.—H. P. 7, Kyllachan-road, Stoke Newington, N.

CLERK of WORKS, or to Superintend a Building Estate Accustomed to manage men in all branches. Superior testimonials.—Box 130, Office of "The Builder."

CLERK of WORKS.—A RE-ENGAGEMENT required. First class testimonial from London Architects. Five years in one situation.—Box 124, Office of "The Builder."

CLERK of WORKS. Will be disengaged in three weeks.—C. W. Architect's Department, North Eastern Railway, York.

CLERK of WORKS (strict, honest, and thoroughly competent) will be DISENGAGED in a week or fortnight. Joiner.—E. M. West Ashby, Lincolnshire.

CLERK of WORKS seeks a Re-Engagement. Town or country, on mansions or public works. Thoroughly practical and competent.—Box 162, Office of "The Builder."

CLERK of WORKS or GENERAL FOREMAN wants a SITUATION as above. Good references from previous employers.—C. C. No. 8, Ladywell terrace, Lewisham.

CLERK of WORKS or BUILDER'S MANAGER (energetic). Aged 32. Joiner. Four years in present situation. Well up in machinery, quantities, estimates, drawings.—T. 379, Mare-street, Hackney, E.

CLERK of WORKS, thoroughly practical, wants a RE-ENGAGEMENT. Has had many years' experience on first-class works.—Box 125, Office of "The Builder."

CLERK of WORKS seeks an ENGAGEMENT Practical man. Great experience Good references from last employer.—Box 154, Office of "The Builder."

CLERK of WORKS or BUILDER'S FOREMAN wants RE-ENGAGEMENT. Town or country. Several years' experience. First-class references.—Address, E. J. L. No. 9, Sewardstone-road W. Victoria Park, E.

CLERK of WORKS or GENERAL FOREMAN wants a RE-ENGAGEMENT Thoroughly practical in all branches. Able to prepare working drawings and superintend and measure up work. Carpenter and joiner. Good references and testimonials.—C. M. care of Dreley & Co 53, Great Portland street, W.C.

TIMEKEEPER or CLERK wants an ENGAGEMENT. Seven years' character from late employer. London or suburbs preferred.—R. B 86, Tilson-road, Camden grove North, Peckham, S.E

TIMEKEEPER and ASSISTANT CLERK. RE-ENGAGEMENT WANTED by a young Man, aged 24, in Town or country.—C. 43, Effra-parade, Dulwich-road, Brixton, S.W.

TIME or STORE KEEPER wants an ENGAGEMENT. Experienced, with first-class references.—X. Y. Z. 23, Fairford-grove, Lower Kennington-lane, S.E

TIME or STORE KEEPER wants a SITUATION. Steady. Aged 30 Has been on a railway. Good reference. Box 158, Office of "The Builder"

GENERAL FOREMAN wants a RE-ENGAGEMENT. Bricklayer & trade. Aged 35 Good references.—A. G. 6, Emily's-cottages, Boston-road, Walthamstow, Essex.

GENERAL FOREMAN wants a RE-ENGAGEMENT. Just finished large Job in Town Aged 38 First-class London references.—JOHN HOWELL, 20, Aylesbury street, Walworth, S.E.

GENERAL FOREMAN or MANAGER, a thoroughly practical and experienced Man, joiner by trade. Well up in all branches Good testimonials.—M. F. 53, Robert-street, Chelsea, S.W.

GENERAL FOREMAN (thoroughly practical and energetic) Carpenter by trade Good manager of men and general duties. Good references, &c.—SCOTT, 26, Job-road, Notting-hill.

GENERAL FOREMAN wants a RE-ENGAGEMENT Aged 39 Seventeen years' London experience Carpenter by trade. First class references —J. P. 35, Bridge-road, Battersea, S.W.

GENERAL FOREMAN wants a RE-ENGAGEMENT (Carpenter and Joiner by trade). Experienced in all branches of the building trade, on extensive works in Town and country. First class references. —X. Y Cheswardine, Market Drayton, Salop.

GENERAL or WORKING FOREMAN wants ENGAGEMENT. Just completed large Job. Thoroughly practical and energetic. Good manager of men Carpenter and joiner. Good references B. B. 31, Amsbury-street, Vincent-square, S.W

GENERAL MANAGER or BUILDER'S AGENT.—WANTED, by a Gentleman, 35 years of age, a SITUATION as above. He has been 14 years with his last principal, and has had every variety of experience in a first class business. The highest references as to character and ability. — SIGMA, 25, St Oswald's-road, West Brompton, S.W.

MANAGER or GENERAL FOREMAN to Builder or Contractor Has carried out large public works, good manager of men, draughtsman, measurer, &c.; well versed in superintendence, fully competent to take entire charge. Good references —A. B. 53, Great Ormond-street, W.C.

OUTDOOR FOREMAN to a BUILDER wants a RE-ENGAGEMENT. Understands the general trade. Or to Superintend a private Job. Carpenter.—R. B. care of Mrs. Bright, No. 1, James-street, Goswell road, E.C.

ERECTION of IRON or WOOD PIERS and BRIDGES.—A practical Man, just arrived from abroad, is open to TAKE CHARGE of the above Twelve years' good character.—C. ALLESTON, 24, Rolls-road, Old Kent-road, S.E.

MANAGER, or WALKING FOREMAN requires RE-ENGAGEMENT. Thoroughly practical energetic Well up in all branches of the building trade Joiner trade.—G. M. 52, Gowrie-road, Lavender hill, Wandsworth.

FOREMAN of MASONS (thoroughly competent), in Charge of a Job. First class references and testimonials.—F. F. 124, Upper Kennington-lane, Vauxhall, London.

FOREMAN (Builder's) wants a RE-ENGAGEMENT Well up in every branch. Joiner. G draughtsman. Manager of men. Reference first-class. Aged 3 T. F 133, St George's-road, Peckham.

FOREMAN of CARPENTERS (Shop General). Accustomed to machinery, accounts, funeral w &c.—E. A. R. Shelswell Park, near Bicester, Oxon.

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The Builder.

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The late Edmund Sharpe, M.A., Architect.



OST of our readers will have heard, and all who have heard will have shared our regret at the tidings, of the unexpected and almost sudden death of Mr. Edmund Sharpe, at Milan, on the 8th of this month. Mr. Sharpe had been busy, we hear, at his much-loved work of sketching and illustrating ancient buildings, only the day before, with the energy and interest in his self-imposed labours which always characterised him. He had gone to Italy about two months since, and was expected to return in a few days, when a telegram was received by his relatives in Lancaster on the morning of the 8th, stating that he was dangerously ill, followed by another in two hours announcing his death: the melancholy event being the result of a violent sore throat accompanied by inflammation of the lungs. Mr. Sharpe was in his sixty-eighth year; but, though we learn that his health had been failing rather, those who were in the habit of meeting him up to a very recent period could testify that his youthful buoyancy of manner and his capacity for hard work would have led most people to reckon his age at considerably less than the truth.

Mr. Sharpe was born at Knutsford on the 31st of October, 1809. Whether during his early youth he had contemplated adopting architecture as a profession, or it was contemplated for him, we are unable to say. The fact that he went through a University career would, according to the present habitudes of professional education, argue that his choice of the profession was an afterthought; but at that period the general culture of the architect, apart from professional knowledge, was not so much neglected, or so indifferently regarded, as it unfortunately is in the present day. However this may be, Mr. Sharpe entered at St. John's College, Cambridge, took his M.A. degree there, obtained the "Travelling Bachelorship" of the University, and by the advice of Dr. Whewell, whose own interest in and knowledge of architecture (as of most other subjects) were not inconsiderable, took architecture for his "thesis" while travelling for three years in France and Germany, and thus laid the foundation of that extensive knowledge of the remains of European Mediæval architecture which afterwards became so valuable to him in affording materials for comparative criticism of the characteristics of the styles of various dates and localities. Returning to England, he settled in Lancaster as an architect, either at first or subsequently practising in partnership with Mr. Paley, who became bound to him also by other ties of family connexion. The "firm" of Sharpe & Paley carried out a considerable number of churches and other buildings; but before his professional career was very far advanced, Mr. Sharpe, who had fortunately become more or less independent of professional earnings, withdrew from practice, and devoted himself rather to the study and illustration of his favourite Mediæval architecture, leaving to his former partner the task of putting into practice the adaptation of the Mediæval style to modern building; a work which has been carried out by that gentleman (now with the co-operation of his former pupil, Mr. Austin) in a manner showing a combination of practical experience with a true perception of the spirit of Mediæval building more complete than has been generally realised in the present day.

During the remainder of his active life, Mr. Sharpe's energies, so far as architecture is concerned, were exhibited in the production of a remarkable series of illustrative works,—remarkable not merely for the thorough knowledge of the subject which they showed, and the beautiful manner in which they were illustrated, but for the liberal expenditure bestowed upon a class of publications which can scarcely ever be anything but a loss, in a pecuniary point of view, to their producer. The first and most remarkable of these, and the work upon which his reputation with architects long rested, was the book in two mighty folio volumes (published in 1848, before he relinquished architectural practice), in illustration of the Yorkshire Abbeys, always a favourite subject with the author, under the title of "Architectural Parallels." The churches illustrated were Fountains, Kirkstall, Byland, Whitby, Rievaulx, Jervaulx, Netley, Tintern, St. Mary's (York), Guisborough, Selby, and Howden. The first volume contained restorations of the buildings in geometrical elevation, executed in a simple but remarkably effective manner, in line drawing, with the jointing and details of construction carefully indicated, but with addition of a light brown tint, in two shades, for the nearer and further planes in sections, &c.; a method which greatly heightened the effective appearance of the drawings without detracting from their exactitude. The other volume contained perspective views, in the same combination of line drawing and monochrome tinting, of the buildings as existing at the time of the publication. The illustrations included many drawings of ornamental detail; and a supplement was added containing full-size sections of mouldings. After the lapse of nearly thirty years, and during a period of great activity in the production of architectural illustrative books, it may be said that this work of Mr. Sharpe's still remains one of the finest, most accurate, and most valuable of our published illustrations of Mediæval architecture; it has been hardly equalled, and certainly not surpassed. In the next year was published his work on "The Rise and Progress of Decorated Window Tracery," which was of more interest then than it would be considered in the present day, when most of those who are bent on fitting architecture to the requirements of the day have, more or less, abandoned the idea of reproducing the forms of this period of architecture; besides which, an admiration for the earlier and sterner phases of Mediæval building has of late years led to a comparative neglect of its more ornate developments. But as an illustrative work, this too, on a much smaller scale, has been most thoroughly carried out, including finely-drawn illustrations of sixty windows, arranged chronologically, so as to exemplify the progress of the development of tracery, from the early English experiments at it, to its full bloom in the fourteenth century. In 1851 was published one of the most useful and comprehensive of all his works, the "Seven Periods of Gothic Architecture." In this, as our readers are aware, Mr. Sharpe opposed to the original nomenclature of styles adopted by Rickman (for whose labours, however, he always expressed the highest appreciation) a new analysis, dividing the history of Mediæval architecture into seven periods; the most distinctive point of the analysis consisting in the differentiation of the period of the transition from Norman into Pointed architecture, as in itself marked by sufficient peculiarities to constitute a distinct style, which he called the Transitional. Upon this point, and the admirable character of this late Norman or early Gothic work, he was fond of dilating, and he certainly did a good deal towards influencing the minds of many of his contemporaries among the architects of the day in a leaning towards this style, and his nomenclature for it is not unfrequently used, and has been tacitly adopted to a considerable extent as affording a convenient brevity of expression. But it may be doubted whether this distribution of styles by Mr. Sharpe is as comprehensive or as correct in its principle as that of Rickman, which, empirical as it was in a certain sense, has admirably served the purpose of classification; and it seems hardly so logical to distinguish, as a style, a manner of building which really, after all, has nothing definite in its method, and constitutes only the progress from one style to another. But the real value of the "Seven Periods" consists in the clear and comprehensive manner in which the characteristics of Gothic architecture are expressed and illustrated, and what may be called the logic of the style followed out, in a short space; and the illustrations are admirably chosen and arranged, consisting of a series of beautifully-executed small steel engravings giving each two bays, external and internal, from one of the most typical buildings in each style; thus affording the opportunity of comparing at a glance the characteristic treatment of the same features at different periods. The distinction between this book and some other more popular illustrated "manuals" of Gothic architecture is that it aims at giving the principle of the style rather than a number of details; and we have more than once had the

testimony of amateur readers, to whom we have recommended the book, as the best comprehensive illustration of the subject, as to its remarkably clear and intelligible character. A second edition of it was issued in 1861; and in the same year were published in one volume his papers on Chichester Cathedral and on Boxgrove and Shoreham Churches. Ten years later, in 1871, Mr. Sharpe commenced a series of works published in successive Parts, and which are among the most useful and valuable of his contributions to the architect's library. Indeed, at this comparatively late period of his life he seems to have inaugurated a fresh career of architectural activity, for he was really publishing, as one may say, double-barrelled, keeping two or three series of works going at once. One of these, published in three parts, was "The Mouldings of the Six* Periods of British Architecture, from the Conquest to the Reformation," giving accurate sections of mouldings, taken full-size and reduced to third or quarter size. It is characteristic of the methodical manner in which the author went about his work, that he contrived in this book an application of colour to distinguish at a glance the dates of the various mouldings; the profiles being shaded with various tints, each representing a special date and style. This method, originally suggested to him by Professor Willis, had been before applied by Mr. Sharpe in the preparation of diagrams for lectures, but was here first used in published illustrations. Almost contemporaneously with this was another series, entitled "The Ornamentation of the Transitional Period," commenced in 1871, and which was to be complete in three Numbers, each Number being a good thick book, containing some fifty plates, more or less. Of this work the first Number was published separately, and the second followed, divided into two parts; they were all noticed in our columns as they appeared. What appears to be intended as the third Number of the same publication is only recently out, and yet lies on our table awaiting the special notice it would have received in a week or two, when we had no expectation of so soon losing its author. It appears, however, from an alteration in the external title-page, which now describes the work as "Illustrated Papers on Church Architecture, Part III." (though the other title is found on the fly-leaf within the cover), that the author had contemplated extending the series further and giving it a more comprehensive title: indeed, we understand that his visit to North Italy, at the time of his death, was made with the view of collecting materials for a further continuance of this series of papers. Whilst these important works were going on, there was published also in 1874 a small quarto book in the same form, on "The Architecture of the Cistercians," a subject to which the author's attention had been much turned, partly by the coincidence of the formation of that order, in point of date, with his favourite "Transitional" architecture, and also of late years, apparently, by a strong feeling on his part against the over-use of colour in decoration, in churches especially. His "Four Letters on Colour in Churches," originally addressed to this Journal, struck the keynote of his feeling on this point, and attracted a good deal of attention and controversy; and his "Architecture of the Cistercians" was not merely an historical study, but an appeal from the example of the Cistercian builders, in favour of what he regarded as a purer and more intellectual style of Gothic. He held strongly the view that the remains of brilliant and even gaudy colouring which have been found on the walls of some of the finest Mediæval buildings, were the work, not of the men who built them, but of the monks of a later day and a more meretricious taste; and, though on the question of abstract good taste and refinement of effect there can be little difficulty in agreeing with his view, it may probably be taken that his rendering of the historical facts of the subject was a good deal influenced by his taste. The stringent prohibition as to strong colours in the Cistercian churches, upon which he dwelt a good deal, is in itself a proof that such colouring was a practice of the early Mediæval architects, or there could have been no motive for forbidding it so strongly in this case.

Whilst Mr. Sharpe was thus showing such a remarkable activity in publication in his later years, he took up at the same time another line of usefulness, in itself occupying no little time and strength. This was his scheme of conducting annually large parties of the members of the Architectural Association (as representing the younger section of the profession) over some neighbourhood rich in architectural remains, and acting as guide and lecturer on the history and architectural characteristics of the buildings. The proposal, when first made, was not at once accepted; partly, we believe, because the members of the Association, who are a little too apt to allow themselves to remain ignorant of what their brethren of the elder generation have accomplished, were not by any means aware of their correspondent's claims to be an expositor on the subject. Renewing his offer subsequently, and perhaps suspecting the state of the case, Mr. Sharpe added, in a quiet, matter-of-fact way, a sort of schedule of his doings in the field of architectural study, by way of an excuse for inviting them to accept his guidance,—a statement which at once opened the eyes of the Society to whom it was addressed, and who, by their enthusiastic loyalty to their friend ever since, have certainly more than condoned for a little coyness at the outset. The first of these excursions was made from Lincoln, as headquarters, in 1870, and, as a novelty, was reported in our columns rather more fully than any subsequent one has been.* Subsequent excursions were made to Ely, to the Northamptonshire district, &c., and two to France, of which the second one, to the Angoulême district, was really remarkable in its results, as displayed in the splendid series of illustrations made by members of the party, and displayed when Mr. Sharpe gave his lecture upon it subsequently in London. The display resulting from the previous French expedition was excellent, but was almost thrown into the shade by this latter one. There can be no doubt that in conducting these sketching expeditions Mr. Sharpe did a great deal towards promoting enthusiasm and application amongst the younger members who attended them, and enabled some students to make their first practical acquaintance with some of the most remarkable monuments of architecture under exceptionally favourable circumstances. Mr. Sharpe hoped that the idea of this annual excursion, thus started and kept up for a time by himself, would be carried on when he was no longer able to undertake it; and it will be a melancholy reflection for those who were most in the habit of attending on these occasions, that the excursion which was intended to be the last under Mr. Sharpe's personal guidance (he having recognised that the exertion would become too much for him before long), will now have to be undertaken without that pleasant and profitable companionship.

In 1875 the annual Gold Medal of the Institute was awarded to Mr. Sharpe, and the manner in which he was greeted on the occasion showed the popularity of the award, and the sense that the honour was well bestowed. The President on that occasion (Sir Gilbert Scott) alluded not only to the work Mr. Sharpe had done in the way of architectural illustration, but to the influence he had exercised in bringing about a greater interest in, and a more reverent care for, the remains of the great ecclesiastical structures of England. But it must not be supposed that the work he did in connexion with his special subject of architecture represented the activity of his life. Though so much engaged in the study of the past, few men were more business-like, more wide-awake, and more active in regard to the present. He had a strong spirit of enterprise, and a great capacity for administration, which he displayed to so much advantage in regard to the construction and working of railways, among other things, that he was able to make one or two small lines pay, and leave them in a prosperous condition, which, before he took them in hand, had been regarded as utterly bad bargains. We are indebted to an account in a Lancaster paper for some of the following particulars as to his various occupations at different times. He came to Lancaster in 1836, was made a member of the Town Council in 1841, and was elected Mayor in 1848. (We believe we are correct in adding that he filled this civic office two or three times.) He was a strong advocate of sanitary reform, and did much to bring about the establishment of waterworks and of an improved system of sewerage. He took a leading part in the formation of the Athenæum Society and the Choral Society of Lancaster, and did much, probably more than any one, to promote a love of music and provide opportunities for its enjoyment in the town. He was principal promoter of the Little North-Western Railway, for a time its secretary, and afterwards contractor for part of the line; and he undertook the formation of a line of railway from Conway to Llanwrst, of street tramways in Geneva, and a railway from Prades to Perpignan in the South of France. For a considerable time he had the Phœnix Foundry, at Lancaster, in his hands; and at one time held the office of Bridgemaster for Lonsdale South, and was architect to the justices of the County Asylum and Castle. In the middle of all these occupations Mr. Sharpe found time to establish a cricket club and a boat club. We may add that the Prades and Perpignan Railway, if we are not mistaken, became ultimately his own property; and during the latter part of his life, Mr. Sharpe usually passed six months of the year at Perpignan; and while at Lancaster during the rest of the year, fortnightly reports of his railway were regularly transmitted to him. Another railway scheme in which he was temporarily involved is not mentioned in the above list, but we remember hearing some of the particulars of it from himself. The line was that from Liverpool to the then inchoate and struggling watering-place of Southport, and the small and equally struggling Railway Company had powers to run into the terminus of a larger company at Liverpool, from whom also they hired rolling-stock; but the larger company, in a fit of jealousy, though they could not stop the use of the terminus, announced one day that no rolling-stock would be let after a certain early date. Either at this juncture, or previously, Mr. Sharpe's administration had been invoked, and many years after he related, with all the pleasure of a schoolboy who has outwitted a master, how they astonished the big company by getting locomotives and carriages made on the sly, and conveyed to the Southport terminus, and how on the fatal morning the big company, who thought they had disposed of their small rival, were dumbfounded to see a new engine and carriages run into their station in triumph. His endeavours, however, were not known or appreciated by those who travelled on the line, and one evening, when he found himself one of a number of passengers crowded out into the luggage van of an unusually full train, he had the amusement of listening to the most unstinting abuse of himself and his administration for half the journey, till, thinking they had had their turn, he suddenly stood forth and declared himself, harangued them all in his genial and good-humoured way, explained the difficulties he had to contend against, and landed them at the Southport terminus a group of excellent friends, full of cordiality, and ready to shake hands with him all round. We merely recal the outline of the anecdote, which he used to tell, however, in a very amusing and dramatic manner.

Touching again on Mr. Sharpe's architectural career, we may observe that though such an enthusiastic admirer of Mediæval architecture, his common-sense and practical character preserved him from a wish to rest in mere revival, and that he showed his sense of the desirability of consulting modern conditions of building in the early interest he took in terra-cotta as a building appliance, and which he practically exemplified in building a church in that material, carefully going into the details of construction necessary to the conditions of the material. He was fond of drawing attention to the many differences of plan and design in Gothic buildings even of the same period, urging that in the same spirit we could take up the style, and, without quitting it, treat it in our own free manner, and put into it our own originality. He was one of the most beautiful of architectural draughtsmen, as far as line-drawing was concerned, and had acquired great facility and certainty in perspective sketching, which he usually executed in pen-and-ink, preferring this to pencil for greater precision and permanence. He was, however, no colourist, and declared frankly that he never could put a respectable figure into his drawings; but, on the other hand, he had a way of his own of finishing and touching the details of masonry in his drawings which was remarkably effective, and not easy to imitate; and he complained, when his drawing became so extensive that he was obliged to employ the assistance of draughtsmen, that he never could get the proper *feeling* put into the jointing and shading, and used not unfrequently to reserve this for his own hand, after the drawing had been lined in by an assistant.

* "The *Seven* Periods of Church Architecture," it may be noted, included the Saxon, while the "Mouldings" naturally commences with the Norman.

* An account of it will be found in the *Builder* for August 27th, and September 3rd and 10th, 1870.

In other respects he would hardly have been alled much of an artist in feeling; his taste in rt was somewhat limited, nor was he in any vide sense a man of literary culture. He had, owever, considerable accomplishment as a odern linguist; and next to Mediæval archi- ecture what interested him most was music, f which he had a genuine and earnest love, nd some skill himself as an organ-player; be- ides undertaking occasionally the training of a hoir, and publishing a collection of hymn-tunes f his own composition, intended partly to upply tunes for out-of-the-way or neglected ietres: some of these are very pleasing, and ecame very popular in churches in Lancaster nd the neighbourhood. His musical interest as shown in a more original way, in a little ractical invention of his own for facilitating in- trumental music at home. This consisted in the anufacture of several instruments which were eally small harmoniums with an "expression top" (we forget the special name he gave hem,—they had a name), with a sufficient range f keys to represent the compass of the violin, iola, and violoncello respectively. Any one who ould play the piano a little could play a single string" part on one of these; and when iolinists and violoncellists were not to be had, he trios of Mozart and Beethoven, for pianoforte nd strings, could be given in this way; the result as not exactly like Joachim and Piatti, cer- inly, but still the music was realised in a easurable way, as we remember having evi- nce of in a little home performance; and the ea is really one worth remembering, for ob- aining instrumental part-music in the family.

In person Mr. Sharpe was of rather short ature, very quick and energetic in his manner, d with a countenance and address unusually ank, open, and cordial. We remember that e first time we saw him, now many years o, his appearance impressed us as illustrating markably the common phrase "the picture health," and of healthy cheerfulness and ight spirits. This vivacity and cheer fulness of nner he preserved to an unusual degree in his er years, as all can testify who accompanied m on the annual excursion before mentioned; t what was a still more pleasant trait in his aracter, as illustrated on these occasions, was s ability and readiness to be young with the ung. The band of mostly quite young men o, during these excursions, raced about the untry with him, sketching and measuring urches as if life depended on getting through e work, felt that while their guide was em- atically a person to be respected, a thorough ntleman, who would both give and expect ery courtesy in his relations with them, his esence was not the slightest restraint upon m; no one of the party was in more buoyant rits, no one joined more heartily in the laugh er any little amusing incident of the trip, or mpathised more readily with any fun that s going on. So happy a preservation of thful sympathies is not often found in a man t his sixtieth year, and those who were in company on these occasions will not think have done him a word more than justice in s respect. Indeed, the almost affectionate ard with which he inspired his companions the excursions was a stronger testimony than y mere words, and one which we have reason think he himself very highly valued.

We may mention that a portrait of Mr. Sharpe l be found in our volume for 1870, p. 1,026. s Mr. Sharpe and his friends considered to be good a likeness that he used the block (with willingly-given permission to so old a friend) a frontispiece to one of his own books.

The Forthcoming Social Science Con- ss at Aberdeen.—A meeting of the digni- es and inhabitants of Aberdeen has been l to take steps for making arrangements the forthcoming meeting of the Social nce Congress in Aberdeen. It was resolved, the motion of Sheriff Thomson, "That the ting pledge itself to spare no effort to make approaching Congress successful and honour- to both city and county." In the course of remarks, he said that although he had no hority to make a definite announcement as to presidency of the Congress, he could mention he was in a position to state that Prince old had favourably considered the request e that he should be next year's president. cal general committee and an executive mittee were appointed.

THE BUILDING ACTS AMENDMENT BILL.

At the meeting of the Metropolitan Board of Works, on the 11th, the Works and General Purposes Committee submitted another report, stating the result of the communication with her Majesty's Government relative to the Metropolis Management and Building Act Amendment Bill, and recommending that the chairman be requested to introduce the Bill into Parliament.

Mr. Richardson said the provisions of this measure had already been fully stated to the Board, and in pursuance of the authority conferred upon them the committee had had an interview with the Home Secretary, for the purpose of ascertaining whether her Majesty's Government would be prepared to undertake the introduction of the Bill into Parliament, and they had now received a communication to the effect that, as at present advised, Mr. Cross had no objection of his own to make to the draft Bill, and was disposed to give the Board every facility for passing the Bill through Parliament. Mr. Cross stated, however, that the Bill must be brought in by the chairman on behalf of the Board, and that if any objection was raised in any quarter Mr. Cross must be free to take any course that might seem to him most proper. The committee, under the above circumstances, were of opinion that the chairman should be requested to introduce the Bill into Parliament, and they recommended accordingly. He moved the adoption of the report.

Mr. Selway seconded the motion, which was put and carried.

THE LATEST CONTRIBUTIONS TO OUR KNOWLEDGE OF THE SEWAGE QUESTION.

It is with some feeling of disappointment, not to say of perplexity, that we endeavour to skim the cream of the recent five days' debate at the Institution of Civil Engineers on the subject of the sewage question. Very much in that debate was of a nature to command respect. New facts were cited. Old facts were illustrated or proved. Men of undoubted eminence in different departments of science addressed the meeting. The dissatisfaction to which we refer arises, not so much from any want of earnestness, skill, or perseverance, but from the fact that, in spite of all, we seem to get no further forward in the matter. The sittings of the 6th, 13th, 20th, and 27th of February, and of the 6th of March last, were occupied in reading and discussing a paper by Mr. C. Norman Bazalgette on the sewage question. But the sittings of 2nd March and 4th and 11th April, 1876, had been occupied by the reading and discussion of papers by Mr. G. R. Redgrave and Mr. W. Shelford on branches of the same subject; and no doubt if we were to trace back the accounts of the Transactions of this body year by year we should find that these were but a few out of many similar debates. But when we ask what is the upshot, we find little more than a record of the experience of contradictory opinions, urged over and over again, among which the bewildered engineer is as much at a loss as ever. We confess that the most distinct conviction which a study of the debate has brought with it is one to the effect that we have too much undervalued certain institutions of the country, on which of late no small degree of discredit has been cast. We mean those rough and imperfect, but yet practical, modes of arriving at a decision on the main gist of a dispute, which we are in the habit of effecting by the verdict of a jury in certain cases, and by a division in either House of Parliament on legislative matters. If some sort of division were called for as to the "conclusions" with which each writer terminates his essay, so that the world should understand that such conclusions did, or did not, meet the acceptance of the majority of the Institution, we might gain much. Not that this would be all that is requisite to make these debates as valuable to the country as they are interesting to those who take part in them. We want the classification so roughly effected in our law courts as to matters of fact and matters of law. We require some sort of seal to be set on the veracity of the statements of fact laid before the Institution; and then should follow a judicial summary of the scientific bearings of these facts. Indeed, we want a series of decisions on specific resolutions, and a competent summary of the upshot and tendency of these conclusions. If this were done, the progress might be slow, but still it would be progress. Now, the movement may be apparently more rapid, but it is, after all, only beating time. No ground is gained. Some of those conclusions as to which we confess we were ourselves disposed to hold that a general acceptance might be predicated, were more ably and more fiercely controverted in the recent debate than probably at any previous time. Mr. Bazalgette referred to the conflicting opinions expressed by the Rivers Pollution Commissioners, by the speakers at the Conference of the Society of Arts, and by the sub-committee of the British Association, and the number of disputants might have been almost indefinitely increased. But in his classification of treatment with chemicals, which if it had been altogether new would have been of permanent value, this gentleman took no notice of the tabulated statement of the comparative outlay on certain chemical processes which was laid before the Institution by Mr. Shelford last year. In his "conclusions," Mr. Shelford then gave exact statements, which must be capable of either verification or disproval. In the former event, a reference to points thus established would have saved much time, both in the composition and the reading of Mr. Bazalgette's paper, and in the discussion which followed. In the latter case, it is no less important that the disproof should have been made clear, so that no unwary person should have been led to rely on the paper last referred to, as embodying conclusions accepted by the main body of the profession. Without offering, at the moment, any opinion as to the actual soundness of any of the views expressed, it is obvious that the form of Mr. Shelford's paper is more exact than is that of Mr. Bazalgette; and that, as matter of convenience, the substitution of a more general for an exact statement, unless to the effect of proving the latter to be made in error, is not advance, but retrogression.

The "conclusion" arrived at by Mr. Shelford is to the effect that however difficult, and even impossible, it may appear, there can be no doubt that any treatment of sewage which falls short of its profitable application in agriculture, fails to solve the sewage question. The "conclusion" of Mr. Bazalgette is "that no profit must be expected from the cultivation of crops by the sanitary authority, and only a moderate one by the farmer." Mr. Bazalgette further lays down the "conclusion" "that towns situated on the sea coast, or within the tidal range of rivers, should avail themselves of the means of outfall thus presented, as affording the most economical and efficient means of dealing with the sewage." Mr. Crookes, F.R.S., a scientific man of no small note, contends, "were the whole of the sewage to be discharged into the sea, the supply of fixed nitrogen could not stand the drain very long. If, then the community continued to waste the supply of available nitrogen, the time might come when there would be neither bread nor beef,—and not even gunpowder." It will be seen that if statements of such antagonistic character are published side by side, or even year after year, without any indication of the degree of truth which, in the opinion of the majority of the debating body attaches to either side, the value of the debate, as such, is *nil*, and we merely have an opportunity for the statement of a number of incongruous private opinions, which no one has the power to seize and weld into the compact metal of truth.

It is obvious, in our opinion, and we have before now expressed that opinion, that the first thing to be done in order to arrive at any positive scientific rules with reference to the disposal of the sewage of our towns, is to ascertain whether the product has, in any given case, a practical value. That it has a theoretic value we are ready at once to concede to Mr. Crookes and those who agree with him. As to the maximum money value there is not so much dispute. The practical question is, how many shillings will it cost to extract 5s. worth of value from the corresponding quantity of sewage, while at the same time the offensive and dangerous character of the substance is effectually destroyed? Now, without assuming to speak too positively, it cannot be denied that the general upshot of all experience to that effect is, that no economic treatment, generally applicable, has as yet been discovered. Something to this effect is Mr. Bazalgette's first conclusion: "No chemical process can efficiently deal single-handed with sewage, but must be assisted by subsequent natural or artificial filtration of the treated sewage; and therefore no chemical process *per se* should be adopted for the purification of town sewage." With certain qualifications, we are disposed to accept this conclusion of Mr. Bazal-

gette. But what the public will ask is,—Is this the conclusion of the Institution of Civil Engineers, or the mere opinion of an intelligent barrister?

Now, we must confess, with all deference to the many able men who have joined as combatants in this part of the fray, that we are at a loss to understand how it is that this primary question should be at the present time in doubt. We do not make this remark by way of introducing any idea of our own as necessarily the right one, but in the hope of indicating such a mode of inquiry as must lead all impartial investigations into the way of truth. Mr. Crookes tells us that the population of the United Kingdom waste, at the rate of ½ oz. per unit, 445 tons of fixed nitrogen daily, the market value of which is 44,500*l.*, or yearly 16,000,000*l.* Dr. Voelcker, who travelled all over Belgium with a view of getting special information from the town authorities, on the other hand, knows of no process, nor believes in the existence of any, for the profitable manufacture of portable manure from sewage. He instances how, in what is called Campbell's process, the addition of 63*l.* worth of chemicals to the million gallons of sewage produced a precipitate of nitrogenous matter of the value of 65*l.* 5*s.*; but that the cost of the precipitation process for the quantity was 90*l.*, which gave a deficit of 1*l.* 2*s.* 10*d.* on every ton of manure produced.

Until such extraordinary divergencies in the statements of experts can be explained, it is evident that we have yet to learn the A B C of the sewage question. And it seems to us that the difference between the theoretic and the practical view may be thus investigated. The ingredients of sewage consist of four groups,—namely, water, organic substances, gas, and minerals. Of these water forms nearly 93 per cent.; and the object of the sanitary engineer is to send forth that water chemically pure from his works. Organic matter forms 4·62 per cent. (We are speaking not of dilute sewage, but of pure excreta; for sewage there will be a dilution of from 90 to 100 fold, exclusive of any further dilution from storm water.) It is here that the main source of danger lurks. It used to be considered that the organic matter was a valuable food for plants. It is now, we apprehend, generally known that the reverse is the case. Plants cannot assimilate organic albuminous refuse, and the only thing which can be done with it, to prevent its evil results, is to burn it,—whether that is done by filtering through porous soil, when it becomes gradually oxidised, that is to say, burnt, or in any other manner. No doubt exists as to the fact that this 4·62 per cent. is the main cause of our perplexity and danger, and that its resolution into other forms by combustion is the first object of the engineer. There remain ·70 per cent. of mineral, and 1·8 per cent. of gaseous matter. The mineral matter has been derived, by the process of vegetation, from the soil. Its presence is necessary for organic growth. Its return to the soil is a matter highly desirable, or even necessary, if the soil be defective in the elements in question. But here lies the doubt. The mineral elements are lime, magnesia, silica, oxide of iron, soda, potassa, sulphur, and phosphorus, the latter being found in the form of phosphoric acid. It is the last substance alone of which the rarity is such that the return to the soil of the quantity actually abstracted by the animal growth of the crops is an object of extreme importance. It is rather by the mixture of soils, as in Wales, where lime is in many places the only manure employed, than by the return of sewage to the land, that all these minerals, except the phosphorus, and perhaps the sulphur, can be best supplied. So that the real question here is, in what manner can we most economically supply to the growing crops the phosphorus or phosphates which they require?

With regard to the gaseous elements of sewage, a more undetermined, and therefore a more serious, question arises. That vegetable growth requires the presence of nitrogen is well known, as it also requires that of carbon, oxygen, and hydrogen. No doubt, all these gases exist in sewage. But the question which is not as yet absolutely clear is, in what manner, and from what substances, does the plant derive its requisite supplies of these elements? The general view is, that it is from those combinations which are known to exist, and to occur more or less freely mingled with the atmosphere, viz., water, carbonic acid gas, and ammonia, that plants derive their food. If this is exclusively the case, it can only be the nitrogen which exists in sewage in the form of ammonia that is of agricultural value. The quantity of this gas found combined in nitrates or nitrites must be left out of sight. Further, it is by no means established that, supposing the other conditions favourable to growth to be present, the plant is unable to supply any deficient amount of nitrogen from the air itself, of which that gas forms so large a portion,—a portion, moreover, not held in chemical combination, as it is in ammonia, but—as is usually considered—in mechanical mixture.

It results that the only element of the food of plants of which we can be tolerably clear that we annually deprive the land by continued cultivation, without return of the manure of the animals, including man, fed on its area, is the phosphorus, in some form, and perhaps the sulphur. Most of the other elements we can readily supply, and at far less cost, than is involved by any process of extracting them from sewage. The phosphates we have also different methods of supplying, of which, it seems very probable, the extraction from sewage is the most costly and unmanageable. We are not at present speaking of the direct application to the soil of effluent sewage. That is an independent question. We are inquiring into the general subject of the extraction from the sewage of great towns of those elements of agricultural value which are not only essential to the growth of plants, but which cannot be more cheaply obtained by any other method, or from any other source, than by extraction from sewage. It is here that so much confusion is allowed to linger. People are too apt to consider the result of a combined process to be favourable, while it might be the case that the result of two independent processes,—one simply a matter of cost, but the other remunerative, would be far more advantageous. It is a consideration of this nature alone, in our opinion, which is adequate, if not to put Dr. Voelcker and his friends in perfect accord with Mr. W. Crookes and his supporters, yet at all events to explain to a third person how it is that two such eminent men take such opposite views, and to show how much truth there is in each of them.

We shall, therefore, be extremely glad if we are able to elicit, from those persons who are able to speak with authority on the subject, a statement of those points on which general, if not unanimous, accord exists as to the main principles which most regulate the satisfactory disposal of sewage. We think we may assume as a primary and cardinal article of accord, the position that all water which has formed a portion of sewage, or come in contact with sewage, must pass through the earth before it is to be regarded as disinfected; and that whatever other methods of disinfection be employed,—filtration, precipitation, or what not,—this earth process is indispensable. We may add, as corollaries to this proposition, that the purifying value of different kinds of earth varies; that experiments have been made on this subject, but that contention still exists as to the value of the results obtained; that further experiment and information are highly desirable; that experience up to this time points to a silicious sand, of sharp grit, as the most valuable sort for the purpose of oxidising sewage; and that the flow of sewage through the stems and roots of plants alone, or through herbage on the surface of the ground, is entirely inadequate to purify the effluent water.

The second proposition, as to which we hold that an almost unanimous assent will be given, is that the organic matter contained in sewage is a positive source of mischief and danger; and that until it be in some way combined with the dose of oxygen which it has lost, it is pernicious, and not useful, to vegetable as well as to animal life. A corollary of this proposition is the statement that the oxidation of this matter at the very earliest moment possible, is the great object which the engineer has to set before him. For example, if cost would allow, the purification of sewage at the very source by the abundant supply of a material containing a large over-dose of oxygen, such as is the case with a well-known disinfecting fluid, would set this matter to rights without more ado. We know, then, what to do, were expense no object, and our efforts should all tend in this direction, while attempting at the same time to exercise practical economy.

Thirdly, it would be of extreme service to all sanitary engineers and agents if chemists and physiologists could arrive at a clear and luminous knowledge of the mode in which plants assimilate their food. The chemical elements of the plant are known. The fact that certain mineral elements, such as silica, are more or less freely present in different plants of the same species, according to the nature of the soil in which they grow, is most important as bearing on this part of the inquiry. But the main point which it is needful here to ascertain is that of the manner in which plants imbibe their gaseous food. Do they at any time absorb oxygen from the atmosphere by their leaves or by their flowers, or only pump it up, as an element of water or of carbonic acid gas, from their roots, and evolve it from their surface? Again, how do they behave as to the other gaseous elements? and in what manner do they assimilate carbon? The general use of vegetable mould as manure points to the view that there is a power in the growing plant to assimilate carbon which is not,—when brought into the proximity with the roots,—in the form of carbonic acid. This point should be made certain. We shall then be more able to ascertain whether nourishment of a nitrogenous kind is derived from the presence of nitrates in the soil, from that of ammonia, or from the nitrogen of the atmosphere. Remembering the curious phenomena of what is called the nascent action of gas (as in the case of the action of hydrogen on spongy platina), and looking at the use of leaf-mould or even of soot, as a manure, there is much reason to suppose that there may be a power in the spongioles of the roots of plants to dissolve solid compounds, or to form new liquid and gaseous compounds, so as to feed their fibres on particles of carbon brought near them in a solid state. The same, it might be inferred, may be the case as to nitrogen. On the other hand, if the opinion that the plant absorbs a main part of its nutriment from the atmosphere directly be correct, it is an argument in favour of the absorption of nitrogen in the same manner. And this is not a mere pedantic bit of trifling, or physiological puzzle; it is a definite, practical inquiry, of a direct economic import. If the plant absorbs all its nitrogen from ammonia, the only value of the nitrogen in sewage will be that due to the quantity of that element which, in the state of ammonia, can be brought into contact with the plant. In that case the nitrates have no agricultural value, except in so far as their mineral elements are concerned, and that is hardly worth discussing. If the plant can derive nitrogen from nitrates present in the soil, the value of that portion of the constituent parts of sewage may be considerable. But if the plant can absorb the comparatively small quantity of nitrogen which it requires in different modes, and can take it from the atmosphere, whether it be present in combination, in the form of ammonia, or in mixture, in the form of atmospheric air, it is plain that we may grossly overvalue the nitrogen present in sewage, and thus be only incurring useless expense by endeavouring to utilise it as manure.

We cannot urge too much the importance of deciding the question of the value of the gaseous elements in question as applied to the growth of plants. No discovery can tend so powerfully to the settlement of the sewage question as this. There is a very strong, and, we believe, a spreading conviction, that the advance of the sanitary question has been more hampered and throttled by the idea that sewage is to be utilised than by anything else. The idea is certainly becoming more and more general that what is wanted is not utilisation, but destruction. Until this fundamental doubt be settled, it is idle to hope for any material progress in the matter. We may question whether the plan of throwing the sewage into rivers or into the sea be a good one or a bad one. But it is one thing if we have only to decide whether we had better, at a given cost, establish a set of outlets of this nature on our shores, or, at another cost, oxidise—that is to say, burn—the offensive matter at home; and another thing if we have to deal with a man who, with all the authority of Mr. Crookes, tells us that throwing into the sea, or burning on the shore, is alike wasteful, and that by adopting either process we are slowly depriving the country of its natural wealth. What we desire is that there should be independent, impartial, and combined scientific effort to remove such a question from the limbo of doubt and of floating opinion altogether, and to place it on the sound basis of scientific truth. And in saying this, we think that it is as much in the interest of the high and honourable position of the truly scientific man, as it is in that of the advance and discovery of truth, to add that the experts whose opinions will be most valued will be those who are entirely disconnected with any process or project of a financial nature. We neither intimate nor believe that any scientific

man, worthy of the name, would be consciously biased in giving a chemical or an engineering opinion by personal interest. But those must have a very imperfect knowledge of human nature who are unaware how strong is the influence of unconscious bias. To that influence, in nine cases out of ten, all differences of opinion in matters of scientific research are primarily due. To that cause, to go no further, must be ascribed much, if not all, the reason of the opposite views taken by such men as those to whom we have referred. What is requisite is, that scientific investigation should be purely and exclusively scientific,—that the result which is to come from the test-tube or the receiver should be a matter of indifference to the analyst. Thus only shall we really advance towards common accord,—by discarding assumptions, by abandoning all erroneous ideas, by laying a firm basis as to what we know, and by thus advancing, step by step, with equal certitude, to that which we desire to know. With the ground quite clear as to the utmost financial advantage which, under given circumstances, can be derived from the chemical elements of which we have spoken, we shall be in a position to discern the cost at which such advantages are to be obtained, and thus to strike the balance of profit and loss, and to understand in which direction to put our shoulders to the wheel.

MORE ABOUT THE ACADEMY EXHIBITION.

COMING to portraits, we find the catalogue of this year headed by a portrait group of two ladies painted by a third lady,—Miss Starr's "Daughters of Robert Russell Carew, esq." (1), a very agreeably composed and balanced picture, the figure standing and the other seated, and showing power in drawing and decisive character, but unfortunately very unsatisfactory in colour; hard and white. Miss Starr has done better, and can do better than this. The only other portrait in the first room which much attracts attention is the very charming likeness of "Miss Ruth P. Bouverie" (13) by Mr. Ouless, who painted an admirable portrait of Mr. Bouverie last year, it may be remembered. This is a half-length, representing the lady in garden costume, with sketching materials, seated with her back to a tree, and is notable for its great refinement of colour and grace of manner, and the truly ladylike impression of the whole. Such a work seems to promise that the artist may revive something of that refinement in the portraits of ladies which was the glory of Reynolds and Gainsborough, and which even the more powerful of contemporary portrait-painters seem somehow to miss. The work is balanced by Mr. Wells's "Countess of Portsmouth" (18), a good portrait more solidly painted than that just mentioned, but not attracting us by any such marked character and artistic feeling.

In the second room the portrait of "Earl Cowper" (125), by Mr. Watts, is a noble example of his restrained and great style of portraiture, in which all adventitious accessories are disdained, and the sole aim is to reproduce the character and personality of the subject. This is a quarter-length, showing the sitter in a simple brown velvet dress, just sufficiently indicated; the general low, warm tone only broken by a small piece of white collar, and even that is "assimilated" as much as possible. There is a remarkably manly and even chivalrous air about this portrait, in which the painter had no doubt great advantages in the striking personality of its original. Mr. Richmond's likeness of the Rev. Harvey Goodwin, D.D., Lord Bishop of Carlisle" (131: spelt incorrectly "Hervey" in the catalogue), forms a curiously contrasting pendant to this; it is a good likeness, with much character and geniality about it. Mr. F. G. Cotman sends two portraits, which seem to argue considerable originality of aim in this branch of art, and deserve notice accordingly, though they are by no means of the most elevated character artistically: one is that in the room we are speaking of (77), and shows a spirited delineation of a rather unusual physiognomy; the other, called "A Family Group" (375), hangs in Gallery IV., and is a work of some life and spirit, but the lady seated in the chair is certainly drawn in a rather extraordinary way; judging from the amplitude with which her dress fills up the picture, the lower part of the body would seem to be out of all proportion to the scale of the head and bust. Still there is sufficient of vigour, though with rather a want of refinement, in Mr. Cotman's portraits, to make one look for his future works in the same line.

In Gallery III. we come on a portrait by another eminent painter whose practice as illustrated here is the very reverse of that of Mr. Watts. "Mrs. Archibald Milman" (169), by Mr. Poynter, is a fine example of the class of portrait in which the aim is to realise an imposing decorative effect, of which the sitter is the centre. The rich dress, with its lace trimming, and the furniture and hangings which form the accessories, are painted with the greatest force and reality, and the face, as a necessary consequence, finished with a degree of precision and minuteness which makes it, to our thinking, a more mechanical, a less intellectual form of portrait than those of Mr. Watts, though a very fine and almost imposing decorative *ensemble*. Mr. Sant's "Lady Harleoh" (164) has much decision of character; but whether it be that the artist's practice and feeling have changed, or that some more recent portrait-painters have accustomed us to another ideal, it would seem to us that in this and some other works (336, 940) his old delicacy of artistic feeling in portraiture is somewhat diminished. If "Gleanings" (310) is to be taken as a portrait, which there can be little doubt that it is, it shows more refined painting than those we have been noticing. This represents a very pretty girl, dressed in a semi-rustic manner, with a large necklace of amber beads, bringing in a basket of odds and ends of flower-garden and farmyard produce. This is a very pleasing picture, and very clear and decided in its intentions as to tone and drawing. Returning to Gallery III., we notice Sir F. Grant's "Sir W. Gull" and Mr. J. P. Knight's "Dr. Benson, Bishop of Truro" (202, 211), as portraits which are very suitably made pendants to each other, being marked by the same characteristics of straightforward simplicity of style, giving a frank and not too hard or minute representation of the sitter, without any especial attempt at artistic effect. Mrs. Jopling's portrait of "Gerty, Daughter of George Lewis, Esq." (227), is a very pretty specimen of a child-portrait,—a little lady in furred walking-dress, with her hands in her muff. In his equestrian portrait of "Lady Victoria Leveson Gower" (263), Sir F. Grant has certainly been more successful with the pony than with its rider. The most noticeable of the other portraits in this room are Mr. Watts's likeness of a young lady who has appeared before on these walls as a subject for the brush of another eminent painter, though not under her name; and Mr. Richmond's half-length of "Earl Granville" (281),—an admirably characteristic likeness of the typical representative of the old school of Whigs. As a matter of effect, the broad blue ribbon and the crimson hanging which form the background form rather too strong a combination; the painting of the face is forcible; it may be said that the character of the features in this case is so marked as to render the task of realising it an easier one than in some cases.

In Gallery IV. one of the best portraits is by a comparatively young exhibitor, Mr. Wirgman, and accordingly gets up pretty high on the walls. It is called simply "A Portrait" (294), that of an elderly lady in black facing the spectator, and whose refined and delicate features are drawn and modelled with conscientious care. Mr. Wells's "Hon. Constance Lawley" (333) has "go" about it undoubtedly, but is too prominent in effect for entire good taste. Mr. Richmond's "Baron Cleasby" (338) is a fine portrait, but the difficulty of dealing with judges' robes, with their mass of scarlet and white, in a portrait, seems almost insuperable. Mr. Hanson Walker has done, but not done justice to, the countenance of "Mr. F. Leighton" (342). And hence we wander to Gallery V., where nothing specially detains us, except a very refined and pleasing portrait of the "Warden of Keble College" (449), by Mr. Richmond; and if Miss Escombe's painting of "An Etcher biting" (455) be taken as a portrait, as in one sense it doubtless is (though hardly showing the face sufficiently), it is an original and clever thing. In Gallery VI. Mr. Ouless seems, notwithstanding what we said just now, to have contrived to master the difficulty of the judicial costume in his portrait of the "Right Hon. Russell Gurney" (196); here the costume certainly does not kill the portrait, owing to the remarkable force with which an equally remarkable face, full of intellectual acuteness and energy, is painted. This is undoubtedly one of the most powerful portraits of the year. Mr. Richmond's "Late Earl of Leven and Melville" (545), a head against a crimson background, is remarkable for its patrician refinement of type, and the delicacy with which this is realised by the artist. The same artist, in Gallery VII., has two portraits that cannot be passed over, that of Mr. Balfour, M.P., and of the Earl of Dalkeith (510—6); the former has the most individuality, partly to be credited to the sitter, perhaps. Mr. W. B. Richmond's "Lady Susan Harcourt" (527), again, is a portrait of singular refinement in expression and colour; a head and bust only, in profile. In Gallery X. Mr. Lehmann's portrait, a head only, of the Vicar of Sevenoake (1,355) is very marked in expression and character; and the picture called simply "A Portrait" (1,376), by Mr. Claude Calthorp, is even more so; too much so, in fact, though it is very clever. It represents a young woman in black, with thin, earnest face, leaning forward, her chin on her hand, and looking intently out of the picture. This is striking, but it is too deficient in repose for permanent satisfaction.

In landscape there are two or three works which will necessarily stand out in the estimation of every one as specially important; and we may consider these first, for the landscape of the year, taken *en masse*, is too scattered and too unequal in value to make it worth while to follow it regularly through the Exhibition. Mr. Millais's landscape is now an annual event, and that which hangs in the large gallery this year will excite an interest not inferior to that with which all his former remarkable productions in this class of art have been viewed. "The Sound of Many Waters" (273) is a scene on a Scottish (we may suppose) stream, looking up the stream between a closing perspective of wooded banks which nearly meet in the background at a narrow gorge, where we just discern a fall of rather more height than those in the foreground. The foreground is occupied by detached rocks and scanty vegetation, around which the stream hurries in every direction, broken by slight falls and rapids. As in all the artist's landscapes, since "Chill October" (which in certain respects he has hardly equalled), the effect is produced by a realism of detail rather than by a broad and comprehensive treatment aiming at giving the whole feeling of the scene at a glance. In this light, the most remarkable portion is the centre group of rocks, and the bank of trees on the left, in which the combination of linear and aërial perspective is given with the greatest delicacy, and the superposition of one tone of foliage in front of, yet not altogether observing what is behind it, is given with most minute truth. The water seems to us the least real: we do not seem to hear it, and perhaps there is no portion of the painting so intensely real as that of the foreground of last year's picture; but on the other hand the artist has, in avoiding the introduction of any distance, got rid of that in which he has hitherto been least successful, and been able to confine his treatment of the landscape within the limits in which his power specially lies. From this we pass to another equally realistic landscape,—from Mr. Millais's river to Mr. Brett's sea, which this year we view from the high coast over "Mount's Bay" (946). Within its own field, this is a wonderful picture; the same effect which the artist has given us twice before, but in the present instance he has almost surpassed himself, and yet without overstepping the limits of nature. We must imagine it a blinding hot day and an almost perfect calm, and there is nothing in the effect beyond what may be seen in nature, though not often in our "rainy isles." The rock which stands out by itself in the water looks absolutely solid, with its blotches of shadow and the vivid yellow green of the vegetation which covers it here and there in patches. This is what we have had before; where we think the picture shows an advance on previous works is in the learned and elaborate drawing of the perspectives of the sea-surface,—the manner in which the zones of slightly-varying tint resulting from currents or variations of depth in the bay are made use of to enhance the idea of space and distance; and the perspective of the distant country beyond. The painter has also given us clouds less solid and with more of the doubtful insubstantiality of heat clouds than in previous works. The picture looks different under different lights: on a gloomy afternoon it scarcely tells as at other times; it seems to require the accompaniment of bright sunlight to harmonise with its own defiant brightness and strength of colour.

There are few things in the room that can be

looked at after this with much chance, as far as force of effect is concerned; but there are two landscapes in the same room which compete with it from another point of view. One of these is Mr. H. Moore's "Last of the Light" (1,004), an evening scene by the seaside, with the retreating tide sleepily curling and washing on the beach; nothing but an expanse of water beyond, and a few craft dotted against the twilight sky. At first sight, there may seem to be little in this; but stand before it, and by degrees its serene calm and truthfulness tell their tale on the spectator, who seems actually to hear the monotonous dreamy wash of the ripples "turning over," rather than "breaking," on the sand. Near this is a very different scene, painted in a kindred spirit, Mr. Farquharson's "When Snow the Pasture Sheets" (1,017). We are the more pleased with this, because last year we seemed to find out what Mr. Farquharson was likely to do, and drew attention to the rare and unobtrusive merits of an evening scene, the title of which has escaped our memory at the moment. The present work carries farther the promise of last year's picture: it contains the true poetry of landscape. It is a long, dim, twilight, snow-covered field, receding from the eye to be lost in the obscurity of the more distant landscape; on the right a belt of dark trees through whose stems a faint line of evening light is seen; the trees make a dark receding mass also into the distance, and help the perspective of the scene. The charm of it is not very definable in words, but it shows the most true feeling and delicate observation, and deserved a much more central place.

As to placing, the same complaint may be justly made by Mr. Aumonier, who, being a comparatively new landscape painter, with a new and real feeling of his own, is got out of the way as much as possible, and this year, as in the last two years, his excellent landscape is hung too high to be done justice to. It is "Eastern Broad, Suffolk,"—a marshy foreground, a stretch of "water parted from the sea," a spit of sand, and the line of dark sea beyond. The figures in the landscape are sundry solemn storks, who stand about in the marsh. There is an unusual feeling about this landscape, which, simple as its component parts are, is one that grows upon the eye. Another specimen of admirable style bestowed on a very simple subject is to be found in Mr. Mark Fisher's "The Meadows" (364), a painting recalling the type of some of the best French landscape art of the present period (or, rather, perhaps, of a few years back; for things seem to move very fast,—too fast,—in contemporary French art); simply a flat meadow, with patches of water lying in it, occupied by cattle, and with a row of trees on the margin of the stream to the left. The charm of the work consists in its broad and yet perfectly truthful handling,—realism without hardness. There is a fine and most unusual work by Mr. Alfred Hunt, a scene on the Yorkshire coast (390), on what may truly be called "an ironbound coast," for the mass of dark rock on the right seems of no less stern material. Across the flat beach we see in the distance, on the right, the fume of the surf flying raggedly about, giving the last touch of wildness to the scene.

In the landscapes of Mr. H. W. B. Davis, one is glad to see much more of sentiment, much less of mere hard and rather cold realism than in his works of last year. One or two of his evening scenes are marked by more feeling than from previous works, more than we had supposed to be within his reach; and the artist may pride himself on his cattle, too, which are admirable, the group called "Contentment" (591) especially. Mr. J. C. Hook has out-Hooked himself in "Word from the Missing" (126), where a couple of children have picked up a bottle, with an inscription, on the seashore; the incident, of course, serving only to give a name to what is simply a landscape or seascape. Without losing in the least his characteristic breadth of style, the artist has here realised the freshness of the sea, the broad, free, open-air light on the rocks and sloping knolls that bound the coast, in a manner which is just perfection. One is positively inclined to order a boat. There are others in the same style, but this is the finest; and Mr. Hook also sends one of his inland country scenes (337), as remarkable, too, for its fresh breadth of style.

Really, there is a great deal of fine landscape, after all. Here is Mr. Poole's "The Dragon's Cavern" (193), in which the landscape is to produce on us the effect of awe, as of something gloomy and supernatural, which the dragon might be supposed to produce if we could see and believe in him. It is, in other words, a grand rocky scene with a certain degree of unnatural light thrown over it: a sentiment embodied in the form of landscape. Mr. Vicat Cole has got some real light in the sunset sky over his "Arundel Castle" (432), and Mr. Oakes has effects and perspectives and tones, marred unfortunately almost always by the touches of mannerism in his foregrounds: in the regulation steely lights on the water, for instance. Mr. E. W. Cooke shows some of his best work in "Schevening Pink preparing for Sea" (288). Mr. Knight's "Tidal River" (329) is a landscape in which much feeling and effect is evolved from the simplest materials, and without a touch of mannerism; notice especially the way the distance loses itself, naturally and truly, with no stage effects. We had nearly omitted, in mentioning Mr. H. Moore, his work on a more important scale, "Loss of a Barque in Yarmouth Roads" (489), which is in his grand grey style of foaming seas, with just not quite enough transparency; but the hopelessness with which the ship is settling down into the surging water is remarkably given. Still, we are disposed to think the smaller and less ambitious work the more perfect one. A little way from this hangs a picture of remarkable specialities, "A Baptism of Flowers," by Mr. Albert Goodwin (509). This is an attempt to realise the brightness and glitter of an early spring day in an open glade of wooded country, covered with bright blue patches of blue-bells; the graceful birch trees are not yet clothed in their foliage, and their delicate silver branches and twigs stand like a kind of lace-work against the background of dark firs behind, between the stems of which is seen a distant blue hill. It is remarkable how thoroughly the perspective of Mr. Goodwin's landscape is preserved; how one seems to look through it and into it. Altogether this is a remarkable treatment of an unusual and most difficult subject. "Gorse in Bloom" (519), by Mr. Reid, has somewhat similar kind of merit, though notso brilliant or dealing with so difficult a subject. In the next room, Mr. Wyllie's "Digging for Bait" (577) claims notice, the rather as it is one that has been purchased (as mentioned in our last number) by the funds left under the Chantrey bequest: it is a rather small work representing very truthfully an expanse of sand left at low water on a flat shore, with interspaces of shallow pools which reflect the figures and the lights of the sky; the effect, and the tone of the wet sand, are very well given, and what is more noticeable is the clearness with which the sandhills in the distance stand out in the air, with that sharpness of definition as to tones and outline which one sees in sea-side scenery on a fresh clear day. The tone of the evening sky to the right we do not seem to make out, quite; it is too yellowish and dead in effect. Mr. Fahey's "Still Waters" (601) is pretty nearly a repetition of "He never came" last year, though from the foreground figures it is gratifying to see that he *has* come at last. Mr. R. Leslie, in "A Gale" (602), shows some fine and powerful painting at the swing of sea-water. Mr. Tom Lloyd, whose works in water-colour we have noticed before, is excellent in his small landscape entitled "Nearly Home" (636), an evening scene, in which most of the picture is in half-light, only the rising ground on the right being high enough to catch still the last warm tints of sunset; the cold shadows on the slope are very truthfully given, and the perspective of the whole scene is exceedingly real. Mr. MacWhirter's "Source of a River" (656) is a very painstaking and able study of foreground detail of vegetation, ferns and wild flowers, &c., round the source of a stream, with just an indication of the slope of a hill beyond; it is a little hard, but very bright, and with much to look at in detail.

Mr. Albert Goodwin's "Return of the Toilers" (1,329) is a view over an expanse of sea from high land; a little fishing village beneath the foreground, and some hills very beautifully painted on the farther side of the way. Our impression is that the sea generally is fine also, but it is next to impossible to judge of the picture which, though necessarily one with a high horizon, is hung so far above the eye that the whole perspective seems distorted. Mr. Leader's "Valley of Clear Springs, Lauter-brunnen" (1,348), though spoiled by his usual hard, mannered style in the foreground, has much beauty of drawing and aërial effect in the distant snow mountains and the green hills in the middle distance; with a touch of the theatrical, it is, nevertheless, a very effective work, and certainly deals with a glorious scene, enough to make any one paint. Mr. P. Graham's "Gently heaving Tide" (1,371) is the best and most marked work he has this year; it is a study of sea-weed-covered rocks with the swirl of dark-green semi-transparent water round them, on a comparatively calm day, beautifully given; we almost expect to hear the lap of the water against the rock. The only drawback to it is that the scale of the foreground objects is not very obvious: the artist has put in some sea-birds with a view of helping this, but they do not quite accomplish his object. Among minor landscapes we may mention Mr. Henderson's "Among the new-mown Hay" (529); Mr. J. White's "The Brook" (564); Mr. J. Knight's "Rainy Day" (1,051); Mr. Barclay's "Sandy Bank" (1,052), a very clever small drawing of an old-fashioned village-street scene; Mr. E. A. Waterlow's "The Brow of the Hill" (145).

Peccavimus! In mentioning figure-pictures last week we omitted any word about Mr. Moore's one contribution, "A Reader" (469), a very delicate study of low warm tones in the dress of a girl whose face has a little more of expression, though an indolent and dreamy expression, than the artist usually allows to his fair creations. She may stand as a sort of pendant to "The End of the Book" in the Grosvenor Gallery. We omitted also a very clever picture of Mr. Orchardson's, one of the best he has ever done, "The Queen of Swords" (174), where a troup of ladies, of the early Georgian era, are coming in procession through an arch formed by the crossed swords held up by two rows of gentlemen; the queen, marching first, a very stately figure: one must allow for the peculiar texture and tones which the artist affects, and which we should never really get to like, but the whole thing is very spirited, and shows admirable drawing in some of the figures. We must mention also Mr. Britton Rivière's two paintings, "A Legend of St. Patrick" (70), and "Lazarus" (519), recognising at the same time the drawback to the enjoyment of pictures which profess to represent subjects in which the figures ought to be the principal objects, but in which they are really only an excuse for the painting of animals. If an artist is by nature an animal-painter, it is better for him to adopt the *rôle* frankly, and not try to disguise it by putting in poor and uninteresting figures and naming the pictures after them. Mr. Philippoteau sends another of his battle-pieces, "The Battle of the Alma" (937), in which he shows his remarkable capacity for giving the general movement of a battle, and combining with this most forcible painting of separate incidents. The present picture, however, is not equal to his Waterloo picture, which first gave him a name at Burlington House two or three seasons back, though it is, perhaps, the best he has sent since. Mr. E. M. Ward, by the way, illustrates an interesting trait in the life of William III. (197); and Mr. Elmore illustrates with considerable brilliancy and force an interview between Mary Queen of Scots and Darnley (282). Among other things we noted here and there as worth attention are "The Charity School" (1,038), by M. Degrave, a dark but rather remarkable study of the interior of a Roman Catholic school for the lower order of children; "Buffaloes clearing the Canals in the Pontine Marshes" (1,340), which, besides having merits of execution, represents a really curious scene, new certainly to most of us; "Home?" (453), by Mr. Waller, part of the exterior of a deserted mansion where deer have broken into the garden; "Early Promise" (292), by Mr. Joseph Clark, a very clever study of expression and character; and an unfinished picture by the late Mr. Lewis, "The Street and Mosque of the Ghoreeyah, Cairo" (454); the sunlight on the opposite wall is wonderfully real, the figures have not yet caught the light, as one may say. How some of their robes, now dingy, would have glowed with colour and reflected glare had the cunning hand been spared to bring the sunlight to them.

A word about the sculpture, perhaps, at another time; though in truth there does not seem much to speak about. But among the paintings there is a considerable variety of interest, perhaps above the average.

The Tower Bridge Bill.—We understand that this Bill, as it has not yet been reached in Committee and doubts existed whether there would be sufficient time to carry it through both Houses of Parliament, has been withdrawn for the present session.

ARCHITECTURE AT THE ROYAL ACADEMY.*

Decorative Work.

THE drawings illustrating decorative work in churches have been mostly spoken of under the head of ecclesiastical architecture, to which they seem properly to belong. The position which decorative design for domestic and civil buildings usually occupies now in architectural exhibitions, marks the change of late years in the idea of the function of the professional architect. Indeed, the danger has been of late lest the architect, so far from seeming to neglect decoration and decorative furniture, should subside too much into an upholsterer and cabinet-maker. The architectural room at the Academy this year contains, however, hardly so many designs of this class as we have sometimes noticed; but what is there is mostly good. The first we notice is "20, Queen-street, Mayfair: one Side of Dining-room" (1,071), Aston Webb. This is an elevation in pen-drawing, a method which seems sufficient to show the chief characteristics of this design, which apparently would not depend so much on colour as on arrangement and mouldings, and other *quasi*-architectural detail. The wall is divided by pilasters, with wainscot work between, which, in the part of the wall shown here, is carried up in two of the spaces to the ordinary height of a door, conveying at first glance the idea that there is a door on either side of the fireplace. The motive for this is not very apparent, unless it be to balance two doors on the other side of the room, which, however, seems hardly a correct principle to go upon. The centre of the drawing is filled by the fireplace with marble mantel, and a mirror over surrounded by a deep wood frame with panelling and carved ornament, Renaissance with a certain modern type about it: there are touches of Gothic detail here and there, in fact; but the whole keeps together very well.

"Dining-room at Brighton" (1,079); "Boudoir, 52, Princes-gate" (1,106, 1,219), G. Aitchison. The decorative drawings of Mr. Aitchison are always a feature in the architectural room now; and we cannot but wish that other architects who exhibit decorations of rooms would be as careful in illustrating the colour-effect of their schemes. It is particularly insisted on in the present day that we want more colour, more attention to polychromatic design; and yet some of the very persons who would be most forward in upholding this view send elaborate illustrations in pen-drawing in which the colour-effect can only be guessed, and which, it may be safely said, never represent the real effect of the work. Mr. Aitchison's drawings are really representations on a small scale of the design as executed, and are carried out with great minuteness. In the two schemes here shown the effect is obtained by a strong distinction between the different portions of the lining of the apartment, rather than by any attempt to carry out an architectural scheme which shall occupy the whole side of the room. The dado and the doors and architrave form one section, with the wall-paper (or pattern) as a background, and the cornice decoration has reference to the wall-pattern rather than to any of the more architecturalised details. This method, simple enough in idea, seems the most unaffected way of treating an ordinary sitting-room with plastered walls. In the Brighton house the stiles of the woodwork are mostly a dull red, more or less relieved with gilding, the panels the same ground, but covered with foliage designs of Classic type. The wall in this case is covered, not with a small diaper or repeated pattern, but with large sprays of a palm-like character of growth, of which the stems rise vertically from the sur-base, and which are grouped in alternate longer and shorter forms; but one repetition of the design fills up the whole height. This would need a large room, and perhaps the vertical lines would be useful in giving height where a room was considered to be too low in proportion; but in general we should prefer a more distributed design for the wall-pattern. The Boudoir design has this character; a mottled-looking crimson wall powdered with small gold flowers regularly spaced. In other respects the designs are not very dissimilar in general effect; the stiles are black; in 1,219, which shows the door side of the boudoir, there is a more ornamental effect than in 1,106, the stiles of the door and wainscot in this case being decorated with foliage, and the door-panels apparently ground glass; a large square panel over the door is filled with rich arabesque ornament springing from a centre point, on gold ground. The ceiling is given in this drawing, and is very gracefully treated, with a large centre panel with light foliage design in low relief; but is it not very white in effect compared with the strong colouring of the works below? The frieze, with a gold ground (and ornament of birds and flowers), may serve to connect the two, but we should say the ceiling wanted a little more colour, or, at least, gilding.

"Dining-room for Hugh Gorringe, Esq., Kingston House, Sussex" (1,080), S. Clarke, jun. This is a simple but very pleasing arrangement of a wainscoted room, with paintings occupying the larger panels of the woodwork, and a little carved ornament of an unobtrusive Elizabethan type. The wainscot reaches the cornice on the chimney-breast projection, but on either side it is kept lower, and leaves room for a white plaster frieze with floral ornament, which gives value to the tone of the wood. The panels are shown a little darker than the stiles. Niches for china are provided over the fireplace.

"Design for a Dining-room" (1,095), E. W. Poley. This is one of the pen perspectives of the class on which we remarked; some of which occur every year, and have a wonderful similarity of effect. The drawing is very good; the view of the interior of a room, with all the furniture and fittings lined and shaded minutely; but we can form no idea of the real effect. As shown here, it looks over-worked and deficient in repose. The method of giving importance to the external angles by planting an Elizabethan pilaster or baluster on them, connecting the wainscot with the cornice, is original; whether it would look over-heavy and prominent would depend on the tones of the wall and the woodwork.

"Interior of Dining-room, West House, Portland-place, Brighton: in Tapestry and Oak" (1,108), S. Clarke, jun. There is something unusual in this very simple and thoroughly tasteful arrangement. The colour effect of the oak and tapestry is carefully given. The tapestry fills up a large panel in the wainscot on either side of the door, the whole wall being lined with wood; the dado is ornamented merely by arranging the pieces in different ways of the grain (oak parquetry, in fact), and the door, with a separate frieze and architrave over it, ornamented with Classic detail of a simple description. The whole is remarkably well suited to execution in oak, but we hope the tapestry is old, otherwise it is far too much of imitation-antique. As colour it combines very well with the oak.

"Ceiling Decoration, designed and executed for the Marquis of Bath, at Longleat" (1,117), J. G. Crace & Son. A ceiling apparently on an oak ground, to judge from the colouring of the beams or soffits which divide it into panels, unless this is merely colouring. The panels are adorned with white Classic scroll-work on a blue ground, and with figures; the scroll-work seems too large in scale to go well with the figures, which it dwarfs. The question of figures on a ceiling is a very difficult one, hardly solved here. Two of the panels have full-length figures, under a sort of architectural canopy. An architectural detail of this sort, introduced horizontally on a ceiling, seems to us unfortunate. The able designers have felt the difficulty about right and wrong way up in connexion with standing figures on a ceiling. The two figures thus shown are placed at right angles to one another, in order to weaken the idea of the ceiling being wrong way up from one side of the room; this is ingenious, but the whole is open to discussion. The colours seem rather strong, unless the apartment is a very high one.

"Design for Decoration of Wall, St. Thomas's Church, Clapton" (1,118), C. Campbell. An arcade of round arches, with rather curiously-designed capital mouldings (for which very likely the author of the design is not responsible), the spaces in heads and spandrels of which are filled with flowing patterns of a Gothic character. The wall above is painted (in fresco?) with scenes in relation to the birth of Christ; the figures are well drawn. There seems no special reference to St. Thomas in this; but it is, perhaps, only part of a larger scheme.

"Design for Decoration and Furniture of Dining-room" (1,130), R. Davey: an elaborate and beautifully-tinted elevation of a wainscot scheme of decoration in oak, of more or less "Queen Anne" type. An order of flat wooden pilasters is carried up at intervals, with corresponding pilasters in the dado; between the pilasters above are figures connected with the chase, painted on gold ground. The wainscot stops short, so as to leave space under the ceiling for a plaster frieze painted with conventional foliage in panels. Everything is in very good keeping; but we cannot but think that the notion of ornamenting a dining-room with representations of the preliminary process of food-getting is somewhat naïve and uncivilised, and for a high-class room the style of the furniture, the sideboard especially, has too much of the cottage about it,—cottage *ornée*, no doubt; but still we do want something like dignity of design for the sideboard of a dining-room in a good house; the notion of simplicity of taste may be carried too far. The panels not filled by figures are ornamented with conventional foliage in two tints meandering through a trellis design on a gold ground: this ornament is effective, but seems a trifle large in detail, for purposes of scale.

"Original sketch of a stained-glass window, which the Society of Arts proposed to put up in St. Paul's Cathedral to commemorate the recovery of H.R.H. the Prince of Wales" (1,183), F. W. Moody. As a design of a figure subject this is no doubt above the average of decorative design here; as a design for stained glass it is really so utterly wrong that we can only be glad that the past tense in the word "proposed" seems to infer that the Society of Arts have changed their mind. The design represents in its principal portion, apparently, the healing of the widow of Nain's son, and in a kind of predella below is a design in more conventional style, having more direct reference to the event commemorated,—the thanksgiving day at St. Paul's. The upper portion, though we recognise the ability in figure drawing (much beyond what is generally shown in modern stained-glass design), appears to us somewhat too broken up in regard to plane for stained-glass work,—too much a picture, in fact; but this defect is as nothing in comparison with the architectural background, which is constructed out of bad Renaissance detail delineated with a coarseness of drawing and proportion, and a hideousness (we can say no less) of colour which is really unpardonable. We have no wish to ignore the real power of drawing the figure which this designer undoubtedly possesses; but when we find this style of decorative work coming from an artistic instructor under Government, who we must presume is engrafting his own taste, more or less, on numerous pupils, we feel forced, even unwillingly, to speak our mind plainly.

"Design for portion of external Keramic Frieze" (1120); P. H. Newman. A small drawing not hung so that one can examine it well,—it represents scenes from English history, well-drawn in a rather conventional style, but not more so than the conditions of Keramic work would seem to render desirable.

Illustrative Drawing.

In this class of drawings, illustrating old buildings or existing works, we notice some very remarkable specimens of clear precise pen-drawing in perspective, made by W. S. Weatherly as illustrations to Sir G. Scott's Royal Academy Lectures. These (1,068, 1077) illustrate portions of the Cathedrals of Sens and Canterbury (comparative drawings in one frame), and the vestibule of the chapter-house of St. Mary's Abbey, York, reproduced from existing remains.

"St. Alban's Abbey, Herts" (1,096), J. Neale. Two very minute geometrical drawings, showing side elevations and sections of the great abbey church, every part from measurement. The construction of the masonry at different points is indicated by notes, as well as by the drawing. This is the kind of illustrative drawing we want to see more of; though we hardly know why it should be so very small. It is wonderfully complete, however, for its size, and a paragon of neat workmanship in this kind of drawing. The same author sends a perspective view of the exterior of the abbey, in pen shading (1,205), equally neat and finished, but wanting a little more force of effect. His small pen sketch of the tower of Holmer Church (1,119), illustrates a singularly picturesque and peculiar bit of Mediæval architecture; it is a square tower standing detached; plain masonry, pierced here and there with small windows, halfway up, when there is a set-off, and the tower is continued in half-timber work, with a low roof like an Italian campanile; indeed, it almost suggests the notion of a rude imitation of a campanile.

"Chapel of St. Edmund, Westminster" (1,203), by W. J. Boddy. A large water-colour, in which the artist has contrived to

* See pp. 442, 474, *ante*.

preserve a pure and broad water-colour style, while giving the solidity and texture of the masonry adequately. There is very artistic character in this drawing.

"Sunrise at Westminster" (1,207), by H. M. Marshall. This may count as an architectural drawing, as its main object is a view of St. Margaret's, Westminster, with the tower of the House of Parliament just indicated in the rear, and a faintly-lighted sunrise sky, mottled with cloudlets behind. The early morning effect is very truthfully given.

"Cheetham Hospital, Manchester" (1,210), by E. Bancroft: a good interior sketch of an old staircase, executed in a broad and forcible style.

"Pulpit in the Church of San Fermo Maggiore, Verona" (1,214), by A. H. Haig. This is an interior view of some importance, in which the effect of gorgeous decoration in the way of gilding and wall-paintings is shown in water-colour with much force, without hardness. A noticeable point is the vertical band of paintings of saints in quatrefoils, which runs up the wall, and forms the boundary of the decorative scheme in the rear of the pulpit.

"Campanile del Duomo, Pistoia," pen-and-ink (1,216), P. J. Marvin: a beautifully firm and neat architectural perspective view of this singularly elegant and characteristic campanile.

"Tréguier Cathedral" (1,217), J. Medland: an exterior perspective, in which the draughtsman has hit the happy mean for architectural views in pen and ink, neither too hard and clear, nor too "effective" for accuracy: it is a remarkably good drawing.

"A Peep through the Gates of Henry VII.'s Chapel, Westminster" (1,218), W. H. Romaine Walker: a very good and clear water-colour drawing, but a hard one, destitute of tone and air. The difference between this and 1,203 just illustrates the difference between an architectural draughtsman's and an artist's water-colour view of a building. The architectural draughtsman's style of colouring, however, is wanted at times, and is very well exhibited here.

"Terra-cotta Balcony, South Kensington—Etching" (1221), J. Watkins. This is an interesting little work, as showing that a perfectly modern bit of architecture may also make material for a most picturesque sketch: it illustrates also the application to architectural subjects of a branch of drawing which might be more employed in this way. The etching is of the highly-finished type, rather imitating engraving; not the manner of handling which brings out the most characteristic qualities of etching; but this was almost unavoidable in consideration of the nature of the subject.

We cannot but note how utterly the pencil is neglected now as a means of architectural illustration. There is not, in fact, a pencil drawing in the room. Yet probably no manner of working enables one to illustrate architecture with more full effect, in comparison with the time employed, than pencil with light tints of colour. We need only remind sketchers of David Roberts's productions in this way.

HISTORICAL AND ANECDOTIC PICTURES IN THE "SALON" OF 1877.

IT is probably owing to the desire that French artists have to make a great show at the Universal Exhibition of 1878, that the *Salon* this year is deficient in attractive pictures, but it would be unfair to the painters who have devoted so much time to the illustration of historical events, to pass over their pictures for the more agreeable duty of pointing out the efforts to please.

We are all, perhaps, apt, on visiting a picture exhibition, to expect at once to be amused, instead of being instructed, and the few people who are knowing enough to desire the acquisition of greater pictorial information are rarely satisfied with the painter's interpretation of events that the historical student and the antiquary generally know much more about.

French painters, whenever they represent events relating to the terrible history of the end of the eighteenth century, are invariably accurate in their details, and the Belgian painters are equally at home in the representation of the interesting events of the days of the Dutch Republic, but in all the French pictures representing incidents anterior to the later days of Louis XIV. there is manifested a want of sympathy in the simplicity of the earlier period, and we are always reminded, in looking at their pictures, of the aid the painters have derived from their friends and brother artists, the actors.

M. Laurens's large picture of the "Death of General Marceau" (1796) is one of those scenes that French artists delight in depicting, the dignity of military glory, and it would be difficult to praise too highly the careful study and well-considered arrangements in every portion of this fine picture; the colour is not agreeable at first sight, but the picture, seen from a proper distance, and regarded with the seriousness that it merits, must take a place in the memory of all thoughtful observers, never to be effaced. The story of General Marceau has become legendary, and all lovers of "Childe Harold" will remember how Byron, not so very many years after the death of the hero, speaks of the young soldier, who, a volunteer of the first Republic, had arrived at the position of general through his courage, and, above all, his intelligence. Mortally wounded under the walls of Coblentz by the ball of a Tyrolese chasseur, he fell into the hands of the Austrians, by whom he was tended with every possible care and attention; three days later he succumbed, and thus passed away, at the early age of twenty-seven, the young hero, chaste as Scipio, just as Aristides, brave as Condé, wise as Turenne. And then occurred the incident which the picture of M. Laurens so carefully represents, the officers of the Austrian staff, "all full of esteem for his valour and character, hastened to visit him; the Archduke came himself to see him; Kray, that old and respectable warrior, placed near the bed of Marceau, gave the most touching marks of his regret."

M. Melingue's "Morning of the Tenth Thermidor," another large canvas of some twenty life-sized figures, is perhaps not quite so successful as the former picture, but the very great attention and laudable care that have been bestowed on every portion of this terrible scene, entitle the young painter to the highest praise. M. Melingue has placed before us a picture of the event with an accuracy that leaves no doubt in the mind but that the scene was precisely as he has painted it. On a table lies wounded the awful Robespierre, his jaw shattered by the ball of the gendarme Meda; extended at length, lies the once dreaded author of that "*loi des suspects*" by which thousands had suffered, the king of that "reign of terror" the deeds of which were to send a shudder of horror through Europe. But a few short hours previously, Robespierre was still in power, and he and his colleagues, St. Just, calm and contemptuous, Couthon, the paralytic, Lebas, and the younger Robespierre, with a number of others, had met in the famous "Cabinet Vert" of the Hôtel de Ville to write a proclamation to the people. The paper completed, the witnesses signed, Lerebours, Payan, and Legrand had placed their names to the document, and the pen of Robespierre had traced with much indecision the three first letters Rob——, when the door bursting violently open, the gendarme Meda entered, and seeing Robespierre, demands him to deliver: an instant later, the report of a pistol resounds through the room, Robespierre falls, his jaw horribly shattered, Lebas kills himself on the spot, the others fly; all the prisoners are taken to the Conciergerie, while the wounded Robespierre is borne to the room of the committee general, where he is left on a table* all night, suffering agonies, and when the morning of the 10th of Thermidor broke, the scene took place which M. Melingue has depicted with such startling actuality. The old soldiers who look upon that once dreaded face, pale with agony, unable to complain, his jaw so injured; the torture is soon ended happily for him, and as the head of Robespierre rolls on the scaffold, a long loud shout of joy burst from the crowd assembled in the Place de la Révolution.

In the same room, and within but a few feet of his brother's studied representation of a scene of the Revolutionary period, M. Gaston Melingue has brought before us "A Dinner at Molière's House at Auteuil," in which the famous father of French comedy, surrounded by his faithful friends, Boileau the poet, Racine, and La Fontaine, the immortal fabulist, are listening to La Chapelle, who is reading them some piece of his composition. What famous times those were at Auteuil, that delightful suburb so dear to all Parisians; what a clique that was, for opposite Molière Racine had his house; old Boileau too, who loved his garden and his game of skittles, as he admits himself, lived hard by, and many were the roysterous scenes that the friends indulged in. Though M. Melingue's picture is not in every point of view satisfactory, yet we must thank him for the care he has taken in recalling the firm friendships of those seventeenth-century worthies; and many a train of thought has this remembrance of Auteuil woke up: readers of Walpole cannot fail to immediately recall the description of his visit to Mdme. de Boufflers's English garden, given by him in one of his letters home in 1775, we imagine. But apart from that remembrance, Auteuil is doubly interesting as having been the residence of Mdme. Helvetius, in whose small saloon used to meet a number of the celebrities of the end of the last century, notably Franklin, then minister from the newly-formed American Confederation; there also young Bonaparte was seen occasionally.

From M. Melingue's reminder of some of the literary celebrities of the seventeenth century, we are irresistibly attracted to a very different scene, one of the eighteenth century, M. Fichel's picture, representing the famous *cabaret* the *Tambour royal* kept at the end of the last century by Ramponneau. There we see the jolly face of the jovial landlord welcoming the crowds of arriving guests, who in the rude rough room have a strange appearance, dressed as they are in the fashion of gentlemen of about the year 1770; but it must be remembered that a sudden mania had induced the whole of Paris to visit the *cabaret* situated within so short a distance of the walls of the city. Voltaire tells us that princes even went to see old Ramponneau, and weeks ahead rooms were engaged at his hostelry for dinners. To enter the *restaurant* the visitors were obliged to make *queue*; indeed, one of the incidents of M. Fichel's picture shows a number of gentlemen entering arm in arm; for what we know, one of them may be Walpole. Everybody went, Wilkes, Sterne, Foote, Gibbon, perhaps Reynolds, certainly Johnson. Paris went mad about Ramponneau; hats were worn *à la* Ramponneau; snuff-boxes, head-dresses, sticks, stuffs, silks, and other objects were christened after him, and from one end of Paris to another not a soul but knew of and talked about jovial old Ramponneau, and that is why it is that we see mingled with the *mousquetaires* and the *grisettes*, the Savoyards and 'prentices, the paniers and hoops, the swords and bag-wigs of the ladies and gentlemen of the gay court of Louis XV. With all due praise to M. Fichel, the subject might have been treated with greater accuracy; it is one admitting of much research, thought, and beauty, while, by the judicious introduction of some more portraits of contemporaries, the picture might have been made really historically valuable.

Of another famous *cabaret* of the same period, and, curious to say, a neighbour of Ramponneau's *Tambour royal*, the *Porcherons*, we have also a careful picture, for which we have to thank M. Pille. In this case, there are only two figures, a French guard, who is tasting with much gusto the thick new sweet wine which the young lady of the establishment has poured out for him from the wooden *broc*. Under an arbour, in the back-ground, may be seen the entrance to the gardens and the old farm-house which stood at the gate; strange as it may seem, the site of this once famous establishment is occupied by the church of the Trinity, within five minutes' walk of the Madeleine and the Boulevards, and little do Parisians, much less strangers, imagine that barely a hundred years ago there stood on the site of the modern church the famous *restaurant*, the Porcherons. Mdme. De Genlis, in her charming Memoirs, tells us how one day she determined to visit the renowned garden: so, in company with several other ladies of her acquaintance, disguised as *grisettes*, they threaded the green walks, and mingled with the happy groups of *mousquetaires* and *grisettes* who usually, together with a certain number of young gentlemen, visited the Porcherons. Mdme. de Genlis it appears was much beset by one of M. Branca's *coureurs*, and she amusingly tells us of her difficulties in repulsing his advances.

Of the same period is M. Outin's picture, representing Manon Lescant and the Chevalier des Grieux together in the cart that is to bear the two lovers to Havre. The story of the changeable, pleasure-seeking, charmingly lovable young girl who forms the heroine of the Abbé Prevost's famous novel, "Manon Lescant," is not sufficiently well known to English readers. Few stories are more touching; and, worthless as may appear the character of Manon, and ruined as may appear the life of the hero, when one closes the Abbé's delightful volume it is with

* This table is now at the Palace of the Archives in Paris

a feeling of sad pity; indeed, the charming heroine inspires love in the reader, and one cannot help repeating after Alfred de Musset:—

"Folle que tu es,
Comme je t'aimerais demain, si tu vivais."

M. Leon Glaize's great picture of the "Fugitives" makes no claim to the now commonplace swiftness of execution, nor can such a nearness to perfection in composition be ever arrived at by any but slow and gradual processes. Such a picture as M. Glaize has this year painted, possesses many of the characteristics and attributes of the grandest style. It is scarcely too high praise for such work to class it with the "Raft of the Meduse," by Gericault, or the superb picture by Prud'hon, "Justice pursuing Crime."

It must be the hope alone of the splendid rewards that France offers to great efforts like this that can induce artists to attempt subjects so difficult, and yet the reward may have already reached the artist, and it is possible that no success that may overtake him in after-life will secure to him more moments of happiness than he has experienced in the course of the laborious days that he has passed in painting this grand picture.

The number of large canvases, on which are represented great traditionary and classical incidents that surround the principal rooms of this year's *Salon*, do not seem to show that the longer period French artists have been accumulating experience of principles that have never for a moment been shaken has given them the advantage over us that we have reason to expect from so much careful culture.

The grand style of French art, which seemed to have culminated with Conture and Regnault, is no longer visible in the works of the present painters. Some years ago broad-minded English artists, we fancy, were disposed to think that French artists more than any other had obtained that perfection of sight which consists in a thorough knowledge, and we secretly, and sometimes openly, admired the cultivated vision that aided the French artist to emphasise his thoughts on canvas, or with the modelling tool. We gladly gave them credit, and justly so, for superior intimacy with the great works of men whose culture was never at fault.

It must be owned that we seemed less familiar than they with the existence of the perfection of style to be found in the pictured art of the first century, which we gather from the exquisite remains recovered from Herculaneum; we had learnt less from the great masters of the Renaissance, and we lay claim to no Renaissance of our own.

We, perhaps, had not sufficiently appreciated the perfect style to be met with in Hogarth and Reynolds in the eighteenth century, and it is only now at the present moment that our own Royal Academy shows us artists such as Watts, Leighton, and Poynter, whose style is the result of the very highest degree of cultivation; and where can we expect to meet with a manner of painting more felicitous than that of Millais, Moore, Long, or Pettie?

It is scarcely reasonable to talk as some are disposed to do, of the decadence of art in the present day; we have had, at least, a peep into the clear and true paths, and great artists and thoughtful critics have placed before us, in glowing colours and convincing words, glorious examples of our emulation. It is not likely, therefore, that we can fall back into methods and ways that earlier artists were forced to stumble long in their search, always earnest, for the beautiful.

Of the nude subjects in this year's *Salon*, how can they be condemned too severely? Of their conventional indecency and common-place, unmeaning nakedness, we cannot feel too great a disgust. Not one nude figure in this year's exhibition approaches in beauty the distressed woman in the picture of the "Knight Errant" lately sold at Christie's; but we believe that Millais has been known to say that he was willing to rest his future reputation on the merits of this picture.

Another comparison may be drawn between some of the pictures in this year's *Salon* and a picture lately sold at Christie's,—Ward's fine picture "The Last Sleep of Argyle," which gives the a very good idea of the general character and style of historical work at the *Salon*.

Henri Gervex's exceedingly fine picture of the "Première Communion" reminds one of Legros's finer, solidly-covered canvases, and if painters would endeavour to see nature with the same intellectual vision, and imitate her, as Gervex, Legros, or Bastien Lepage, we should have no reason to complain of any falling off in the art of the nineteenth century; indeed, our respect for such serious thinkers and workers would compel us who try to criticise to be more careful before we condemn.

M. Prion's "Music Lesson," representing a respectable old satyr teaching several young satyrs to play on the *tibia*, depicts with great skill the vigorously artistic savage, doing his utmost to teach the young that to be masters of their instrument they must be thoroughly in earnest; the amusing way in which the dear little satyr is endeavouring to imitate the elder's manner of emphasising some particular point, is perfectly portrayed, but the landscape is too like a modern French *paysage*; the *Hermes*, at the foot of which the family party are pleasantly domesticated, is not painted with the care that these fascinating *termini* deserve, and it is difficult to believe that the beautiful little satyrini can grow into the picturesque ugliness of the sylvan monster.

M. Lesrel's large picture, "The Horrors of Pillage," in spite of the horrors depicted, fails to impress the spectator; nor does Edouard Toudouze's equally large and ambitious picture of Lot's wife do more than astonish us with the boldness of the attempt.

There is no place on earth where one can become more easily acquainted with horrors than in a Paris *Salon* exhibition, or where the public are allowed the favour that Ruskin tells us is the peculiar privilege of the artist, that of seeing our friends as they would look undressed. But the undraped figures may be called the complacent horrors; such pictures as the two Sultanas who are on the point of being strangled, and the pretty red-haired Jewess, in the bath, with the head of the still prettier black-haired and younger woman in a dish behind her, with the number of decapitated figures in other pictures, together with the usual amount of military horrors *au naturel*, painful martyrdoms of saints, and feasts of vultures at their terrible banquets, with many other horrors sometimes milder, and very often more provocative of grief than the more serious horrors, make one at last almost indifferent to terrors, more obnoxious than portraits simply of distinguished senators or over-dressed great and half-great ladies.

The hideous pictures may be planned by the skilful decorative contrivers of Parisian shows, to add an easily-acquired charm, by vulgar contrast, to the exquisite beauty that meets us in so many directions in this city of delight. It is impossible to conceive in art a much greater contrast in favour of the less, than between many of the large canvases and the beautiful little Venetian "Quarrel," painted by Van Haanen, or by Casanova's little picture that he has called "Temptation."

The picture of the "Death of Diogenes" represents the cynic philosopher with a robust frame and black hair, which, considering that the sage is said to have lived to ninety-five years of age, is not likely to have been his condition at his death, nor do we think that Diogenes would have worn in his tub what must once have been a very magnificent silk undershirt, unless Lais, in addition to other favours, had presented it to him some fifty years previously; the traditionary lantern, its last whiff of smoke just curling out of it, and the other accessories of the pictures are superbly painted.

M. Levy's "Gladiators" at the *Meta Sudans*, notwithstanding the excessive care with which the picture has been studied in all its parts, appears at the first glance as if it were a representation of a modern market scene, but the exquisite style and manner that Mr. De Tadema's pictures have accustomed us to, inclines us to regard all other methods of treating such subjects as dangerous. The fact is, De Tadema's pictures appear so perfectly like what he represents, that all other reproductions of such scenes are unsatisfactory.

M. Fritet's "Despair of Œdipus" is not likely to gain for the painter the praise he covets. The despair of Œdipus conveys a grief too loud and vehement to be lasting. M. Fritet should have studied his great countryman Perrault's "Despair" at the Luxembourg, or he should have looked well at the encaustic pictures from Herculaneum, and especially the ancient mosaics, whose treatment in design and colour is admirably adapted for the grandest style of poetical painting; the mosaics even of the early centuries of the Christian era are superb in the sober grandeur of their tone and treatment.

Much is said, and great admiration is be stowed, on M. Henner's two pictures, the "Head of John the Baptist" and the undraped lady, supernaturally lighted by a peculiar process, which refuses to illuminate any object surrounding the chief point of attraction; and notwithstanding the exquisite beauty of colour and surface that Henner obtains by his method of painting, the utter sacrifice of every kind of detail to enhance his one aim, is surely unworthy a great painter.

We have not exhausted the big pictures in this year's *Salon*, but we have named some of those that are likely to gain honour for the painter: in years to come we shall hear more, we fancy, of Laurens, Melingue, Glaize, and Bridgman.

Paris.

ROMAN POTTERY-KILNS.

A DISCOVERY of an extremely interesting character has just been made at Colchester, the Roman *Camulodunum*. In a field on the Sheepen Farm, halfway between the High-street and Lexden, the remains of several kilns for burning Roman pottery have been found. One of them is very perfect, and is said to be the most complete ever found in this country. It should be remembered that in all these kilns, the lower or furnace portion is found more or less uninjured, the upper chamber was banked up after the urns had been arranged in it, and was more or less of a temporary character.

If our readers will turn to Mr. Thomas Wright's "The Celt, the Roman, and the Saxon," p. 212, they will find a representation of a Roman potter's kiln, discovered in 1844 at Castor (*Durobrivæ*), in Northamptonshire. This will give a good idea of the kilns at Colchester. This pottery was better in shape and ornamentation than that called Upchurch, to which we shall presently refer. As the Samian was imported, the Castor was the most important manufactured in Britain. Much of the ware was of a bluish colour, and the elegant scrolls and other ornaments which decorated it were often of white.

Mr. Artis made a careful examination of the Castor Potteries, which actually extended for twenty miles on the banks of the Nen. He says he "was led to the conclusion that the blue and slate-coloured vessels, met with here in such abundance, were coloured by suffocating the fire of the kiln, at the time when its contents had acquired a degree of heat sufficient to insure uniformity of colour. I had so firmly made up my mind upon the process of manufacturing and firing this peculiar kind of earthenware, that for some time previously to the recent discovery I had denominated the kilns in which it had been fired, *smother kilns*. The mode of manufacturing the bricks of which these kilns are made is worthy of notice. The clay was previously mixed with about one-third of rye in the chaff, which, being consumed by the fire, left cavities in the room of the grains. This might have been intended to modify expansion and contraction, as well as to assist the gradual distribution of the colouring vapour. The mouth of the furnace and top of the kiln were no doubt stopped; thus we find every part of the kiln, from the inside wall to the earth on the outside, and every part of the clay wrappers of the dome penetrated with the colouring exhalation." He goes on to say that these potteries "are principally confined to the gravel beds on the banks of the Nen and its tributary streams; the clay used at some of them appears to have been collected at some little distance from the works. The kilns are all constructed on the same principle. A circular hole was dug, from 3 ft. to 4 ft. deep and 4 ft. in diameter, and walled round to the height of 2 ft. A furnace, one-third of the diameter of the kiln in length, communicated with the side. In the centre of the circle so formed was an oval pedestal, the height of the sides, with the end pointing to the furnace-mouth. Upon the pedestal and side wall the floor of the kiln rests; it is formed of perforated angular bricks meeting at one point in the centre. The furnace is arched with bricks moulded for the purpose. The side of the kiln is constructed of curved bricks, set edgeways, in a thick slip (or liquid) of the same material, to the height of 2 ft."

The vessels were loosely packed in a kiln of this character, in the form of a dome or pyramid. Hay or reeds were placed over the top of the whole, and clay banked upon this, connecting the dome-shaped mass with the sides of the kiln. Wood was used for firing the mass. The Durobrivian, or Castor pottery, is frequently

covered with representations of men in armour, hunting scenes, &c., which are extremely valuable as illustrations of the manners and sports of the period.

The finest example of this ware in existence forms a prominent object in the Museum of the Essex Archæological Society at Colchester Castle. It is called the "Colchester Vase," and was found in that town in 1853. The figures which ornament it are of a high order of excellence, and represent scenes in the arena. A man in armour lashes an animal with a whip, gladiators are engaged in combat, and a hare and two stags are being pursued by a dog. A mortarium covered this vase when discovered, and had preserved an inscription which was cut over the heads of the three principal gladiators. This inscription (cut with a stylus) is:—"Secundus Mario Memn N Sac VIII. Valentinu Legionis XXX." Mr. Roach Smith thinks that this sentence refers to the subject depicted on the vase, and was scratched by the owner, to remind him of a gladiatorial scene he had witnessed, *Memn* meaning a victorious gladiator named Memnon, or Memnius.

Another description of pottery made to a large extent in Britain in the Romano-British period was the Upchurch. The Halston and Upchurch marshes on the banks of the Medway formed a very suitable situation for extensive potteries. The land was not so much under water as it is now. The importance and extent of the potteries may be ascertained at the present day by passing up some of the creeks, which intersect these marshes, at low water. If the sides of these creeks are examined, a stratum of broken pottery will readily be seen extending for considerable distances, and the beds of the creeks will supply much more. Vases in a perfect state have been found in these places. The clay in these marshes produces a blue-black coloured pottery of hard texture. It is not so artistic as the Castor ware, but has been better preserved. The ware was sent to all parts of England, and was much esteemed. Many of the ornaments of this kind of pottery appear to have been produced by a stick, or some implement formed for the purpose, pressed into the surface at certain intervals so as to form various patterns. The dots and analogous ornaments in relief were probably stencilled on.

There were also potteries in the neighbourhood of York, and the Romans did not neglect the Shropshire clays. Ware made from the latter has been found at Wroxeter in large quantities. It is well known that potteries were carried on in Staffordshire, but the ware does not form a distinct type. Where ferruginous clays are found the ware burns to a reddish colour. A class of vessels well known to archæologists of brown clay have female heads at the mouth. These are believed to be of foreign origin. The terra-cotta statuettes sometimes found on Roman sites were likewise probably of foreign manufacture, though we had clays which might have been used for the purpose.

The fragments found scattered around the kilns at Colchester showed that more than one variety of pottery was fabricated there. A careful examination of the pieces of Samian ware found there also showed that they had been brought there for imitation, as many specimens of the black ware were discovered with the same patterns, only of ruder execution, as the Samian. This is a very interesting fact.

There can be no doubt that the majority of specimens of the beautiful ware called Samian were imported into this country. We shall presently refer to the question whether any variety of it could have been manufactured here. This exquisite coralline ware was called Samian from the island of Samos. It is frequently mentioned by the classic writers as forming the general table services of the upper circles in the countries which acknowledged Rome. Pliny tells us it was also made at Aretium and Sarrentum in Italy, Saguntum in Spain, and Pergamus in Asia Minor. Aretium is the modern Arezzo, and it is interesting to note that discoveries made there some time ago included the kilns in which this red ware was baked, and a work was published by M. Fabroni on the subject. The specimens of the *fabrique* there discovered differ in some respects from the Samian found in Britain; for instance, its colour was a deeper red than our own.

Samian ware, though of close texture, was extremely brittle, and that quality is alluded to by Roman writers. For example, in Plautus a man is requested to knock gently at a door, and he answers, "You seem to fear that the door is made of Samian ware." It is not uncommon to find bowls and pateræ which had been broken and then mended with leaden rivets. In a spot at the mouth of the Thames called Pan Rock, the fishermen frequently dredge up fragments of this ware, and it has been conjectured that some vessels engaged in importing the ware to England were wrecked here.

The decorations are generally executed with great delicacy and manipulative skill. The egg-and-tongue border is frequent, as well as that of the ivy-leaf. Mythological scenes are depicted often with great spirit, and gladiatorial combats, hunting-scenes, and affairs of common life, illustrate in no unimportant degree the habits of the period. The potters' names found under many specimens induced Mr. Roach Smith to think that the *faïence* was made in Gaul and Germany. There are such names as Dagodubnus, Dagomarus, Divicatus, Cobnertus, Tasconus, &c. Kilns in which the ware was baked, and moulds for its fabrication, have been found at Brusche (Bas-Rhine) and Rheinzabern, in Bavaria. The moulds at the latter place were bowls of earthenware, with the figures impressed on the inner surface: so the clay was pressed into them, and came out when the object had shrunk in baking. It is conjectured that the clay when found native was not of sufficient redness to give the required tint, but that this was produced by the addition of oxide of iron and other substances. In a very rare kind of Samian the figures and decorations were not moulded on in the manner just described, but the ornaments were worked separately, and afterwards attached. The result was naturally a superior sharpness of outline.

In 1856 some vases, soldered together, were found at Teulon, a village near Moulins-sur-Allier. Researches were made by M. Tudot, and the result was that it was proved that extensive potteries of this ware existed over a considerable portion of the surrounding country. Moulds are found, but not tools.

Those who have not examined the collections of bowls, pateræ, and fragments,—chiefly the latter, unfortunately,—in the British and various local museums, have no idea of the immense variety of the borders and other designs appearing on this ware. It is well known that in the Middle Ages the sites of Roman towns and villas were examined, and the engraved gems and other objects preserved and utilised. We think it not improbable that when pieces of Samian were in this manner discovered the decorations might have been copied by an illuminating monk in a neighbouring monastery, as a border for a page of a rich missal. It is curious that fragments of a superb bowl were found some years ago in the ruined area of the abbot's parlour at Haughmond Abbey, Shropshire, and came doubtless from the site of Uriconium. Josiah Wedgwood appreciated the ceramic excellencies of this ware, and copied many examples.

We think it very probable that the Roman British potters, although they might have produced a ware something like Samian, could not imitate its beautiful glaze. Experiments have been made at Sèvres to ascertain its components, and give, says Miss Meteyard, in her "Life of Wedgwood," vol. i. p. 27, "for this lustre, when entirely free from paste, silica, oxide of iron, and lime in various proportions, and the intensity of its polish seems derived from partial vitrification. The lustre is, in fact, a fine coating of silicate, and seems in itself to have been devoid of colour, but set off by that of the paste, which was coloured with red ochre. It is thus a true porcelain glaze, and was applied by a brush, or the immersion of the ware, as in the case of a cup-shaped vessel discovered on the level of Roman London, the inside had been left unvarnished."

Dr. Kendrick, in a paper on the Roman station at Wilderspool, Warrington, the presumed *Condate* of Antonine, in "Reliquary" (xi., p. 43), states that from a careful examination of Samian fragments discovered there, he can observe such a marked difference in quality that he divides them into two classes,—true and fictitious. The number of pieces of true Samian were very few, and unornamented. The execution of the decoration of the ornamented specimen forming the fictitious class is very poor. The ground, or *field*,—as we should say in heraldry,—is in some cases filled up with an unmeaning blotch, or spot, which Dr. Kendrick thinks another proof of its local origin. The paste of this pseudo-Samian, also, does not appear red throughout; the coralline colour is on the surface of the object, the body of the vessel being of a fawn colour. Lumps of clay, impressed with finger marks, were found, and Dr. Kendrick, by a "happy thought," had some of them baked by Messrs. Adams, of the Victoria Pottery, Hanley. The result was that a cone very much like the fictitious Samian was produced. But, curiously enough, the clay of which the lumps were formed is not found in the locality, and the place whence it came has not been ascertained. Mr. Roach Smith, in his "Collectanea Antiqua" (ii. 34) speaks of some fragments of pottery found at Colchester many years ago, and which he thought might be local imitations of the celebrated ware, and after Kendrick's experiments we are inclined to think that an inferior kind of Samian may have been made in Britain, but the subject requires further investigation.

THE STATE AND THE ARTS IN THE NETHERLANDS.

AMIDST the excitement which a European war creates, even in a country far removed from the scenes of slaughter, and at a time when the Legislature is flooded almost daily with masses of papers relating to massacres, or the futile endeavours of diplomatists, those documents which touch upon the arts are likely to be overlooked. But the correspondence lately presented to the House of Commons upon the attitude of the State to the Arts in European countries is one which possesses an intrinsic interest in itself, as well as considerable value from the lessons which may be learned from it for our guidance in artistic matters in this country.

Always active in industrial and artistic matters, the Dutch, untroubled by the necessity for great military or political reforms, have lately been able to devote careful attention to the cultivation of the Fine Arts, and therefore, though among the smallest of nations, the Netherlands are not the least important kingdom when peaceful things are under consideration.

Up to the year 1875 the management of matters connected with the fine arts belonged to the Education Department, which in its turn was under the control of the Minister of the Interior. But in July of that year a marked and very radical change was introduced, for a new department was created,—still, indeed, under the same minister, and still forming a division of his office, but specially and solely concerned with the arts and sciences. As we shall see, there are three sets of individuals, including the minister, who have a control over these matters.

Six officials have the management of this department,—namely, a *référendaire*, the head manager; a *commis-en-chef*, or chief clerk; six clerk (*commis*); and three assistant-clerks (*commis-adjoints*). The responsible person is, of course, the Minister of the Interior; the six individuals already mentioned simply forming what in England we should call "the office." The subjects which fall within their department are divided by the Minister of the Interior into fourteen separate parts, though as a matter of fact, as will be seen, so large a subdivision is not strictly necessary. They are as follow:—1, the preservation of ancient artistic and historical monuments; 2, the construction of architectural monuments; 3-10, the management of the various galleries of pictures, sculpture, and other collections at the Hague, Amsterdam, Haarlem, and Leyden; 11, the supervision of the school of art; 12, the encouragement of the schools of music; 13, of artistic works and undertakings; and 14, the teaching of drawing. Thus it will be seen that the scope of Government management is very wide, ranging from the preservation of ancient monuments,—a fact which it would be well should be carefully noted in England at the present time,—down to the duties of curators of museums and encouragers of artistic education. So much for the general outline of the powers of the State. But the Dutch have wisely guarded against the evils of officialism and red tape by the institution of a body or royal commission which was established in 1874, known as the "Collége de Conseillers pour les Monuments d'Histoire et d'Art" ("Ryks Adviseurs voor de Monumenten van Geschiedenes en Kunst"). This commission, consisting of fifteen persons, like the trustees of our National Portrait Gallery, is unpaid except that travelling expenses are defrayed, attached to it is, however, a paid secretary and three "Dessinateurs-architectes." This body has also the further advantage of being able to nominate domestic and foreign correspondents from whom information can be obtained, so that

they are kept well informed of improvements in other countries. The actual duties, or rather powers, of this commission are fourfold. Firstly, either at the request of the Government or voluntarily, it advises upon measures for the preservation of monuments or other interesting subjects connected with Dutch history or art. Next it seeks for objects of historical or artistic interest, and forms lists of those which belong to public institutions. Thirdly, it proposes measures which are necessary for the proper management of the State galleries of art and history; and lastly, it advises upon the construction of new buildings undertaken by Government, or on the restoration of those in which the State is partially or wholly concerned. Thus it will be seen that whilst the actual responsibility as to artistic matters rests with a minister of State, there is a small but compact staff to carry out all necessary details, and a competent body of gentlemen to advise upon measures which should be undertaken by the department. The Budget of 1877 has set apart for the expenses of the commission a sum of 16,300 florins (1,358l.). But to follow the work of the commission. The number of ancient monuments actually under their care is small, no more than ten: namely, the tumulus monuments of Drenthe, the old feudal castle of Minden, a building of the thirteenth century; the ruins of the castle of Brederode, of the same age; the ancient door of the prison of the castle of the Counts of Holland at the Hague; the "Falkhoff" Chapel and the Kronenburg tower at Nymegen, the Porte d'Enfer at Maestricht; the cloister of the Cathedral of Utrecht; the monument to commemorate the battle of Waterloo at Boarn; and those commemorative of the Peace of Ryswyk and the battle of Heiligerlee. Most of the other historical and artistic monuments belong either to the communes or to religious bodies. And here a weak point in the Dutch system is apparent, for there is no actual law to ensure the safety of these monuments, and some communes have destroyed buildings well worthy of being carefully preserved. Still, although the vestries and the communes have this freedom of control, they appear of late years to have become aware of the importance of their buildings, and the State, by giving them sums to aid in the work of restoration, has succeeded in indirectly preserving many valuable monuments, and encouraging the people to look after interesting objects. But monuments belonging to private individuals are in no way under the control of the State. Moveable objects, again, are under the control of the commune, whilst those which are so far private property in that they belong to the ancient guilds are placed in the charge of the local bodies. So far as regards the second head, it is only necessary to observe that the official engineers, aided by private architects, have the management of the construction of public works. Passing by the management of the public galleries, we may next point out that the school of art at Amsterdam was established so recently as 1870, and that it consists of six professors, who teach drawing, painting, engraving, sculpture, the principles of art (*l'esthétique*), the history of art, artistic anatomy, and perspective. Architecture, singularly enough, is taught not here, but at the École Polytechnique of Delft. A directorate of five has the actual superintendence of the school, and one item of the 29,000 florins granted to it by the State is paid to pupils to enable them to continue their education in foreign countries. The next two subjects, the encouragement of music and science, may also be passed over; and then, coming to the last head, we find in the public schools of the second class, that is, in those connected with the higher branches of primary education, drawing forms an important subject, as also in the civil schools for the middle class, and in the polytechnic schools, in which, as mentioned, architecture is not omitted. But it is only this year (1877) that a normal school or training college for the purpose of instructing teachers in drawing has been established. Thus it will be noticed that only the Academy or school of art, the Polytechnic school, and now the normal school for drawing, actually receive state aid. But in some respects art education is increasing in importance, and every year it is being more carefully and more liberally fostered by the State. No doubt the coming Exhibition at Amsterdam will act as an incentive to the more purely industrial part of the teaching, as well as to Dutch industry itself. But it is quite evident that great strides have been made within the last few years, and the main portions of the art system of Holland are well worthy of careful notice in this country. The union of official responsibility with private advice and assistance is most to be remarked, so that the valuable qualities of each are preserved in moderation, and prevented from running into excess: thus officials cannot fall too much under the power of office rules and traditions, and private style cannot develop into foolish crotchets.

THE STRAND: AND SOME ITEMS NOTEWORTHY IN IT.

It is, without doubt, a most curious subject to go into,—the past as contrasted with the present of the older streets and highways of a city; to note what they once were, and what they now are. An old map of London, like that of Peter Vanden Keere's, of the end of the sixteenth century, reveals some curious matters, and, as contrasted with the present, some not a little startling. And if this be so, and no one probably will dispute it, the matter becomes yet more instructive, if much of that past work remains in the present, and forms now a part of it. Huge London City is in this state, for not only are very many of the leading thoroughfares through it the same, in direction of roadway, as they were when the famous City walls and gates were in existence, but very many of the actual houses are yet standing, and are inhabited, and thickly and closely too. Let us take but a single highway, known to all the world,—the Strand. In Vanden Keere's map but a very little of this is shown, the map all but ending at Temple Bar; but "Fleete-streete" is shown through its whole length with Eastcheape to the Tower; and the whole way must have exhibited much of the same character and style and manner of housebuilding and arrangement. In more recent maps, and as we come down to the present day, more and more of the way westward is of course shown, so that the gradual growth of the huge metropolis may be seen as successive additions were made to it.

But the changes amid so much that is fixed of a single street, as the Strand, are quite sufficient to engage a little earnest attention, and we propose to note a few things in and about it, not perhaps so generally known as they ought to be. The "Strand" is so well known a thoroughfare,—for who is there that does not know it?—that it would seem all but impossible to utter a word about it not already noted; but to know a place well you must need do a something more than simply now and then pass through it.

Let us begin, then, with the very foundations of it, hidden away as they are by the buildings, street-way, and foot-pavings. Very many of the houses, especially between the two churches of St. Mary-le-Strand and St. Clement's Danes, are uninhabitable in the basement stories from the damp and the rotten nature of the ground. This ground would seem to have been but little if at all disturbed for generations, and is saturated with "damp" and even sewage matter. Many of the houses are drained through the old high-level way system, and it does not go down to the lower level, between which two levels there is a distance of many feet. Ancient London was a picture-filled town, that is certain, but it could have been but a very poorly and badly drained one. Indeed, the high tides must at times have all but washed away parts of it, or there must have been some special provision to guard against them; and, even as it is, with a granite embankment between the river and the street-ways close to it, the water seems to possess the power of so penetrating the ground and saturating it as to make its presence felt much further than might be supposed possible. That the embankment is a useful work there can be no doubt, but that it was not built up high enough is certain from the constant additions that are every now and then being made to it, and most certainly its foundations do not go deep enough. To "embank" a river running through a vast and crowded city is yet an engineering problem.

Again, there are running right and left out of the Strand a number of narrow lanes and covered ways, picturesque enough, and we sometimes wonder that they have not been taken advantage of, and made to do some sort of duty on canvas, for when such are found in foreign towns, and out-of-the-way spots, the Turners and Prouts find them out by instinct, and compel them to subserve a picture-making purpose, and right well do they merit it. Why not here? And be it observed that this mode of street and way planning is a thing of the past, and that what remains of it is rapidly disappearing, modern "improvement" rejecting such inconvenient picturesqueness. But surely such may with advantage be perpetuated on paper and canvas, for most certain is it that to make a picture out of an improved length of straight street way, bounded on either side by rows of evenly-built tall houses, is beyond the power pictorial of mortal man. "Improvement" is all about us, as in the Strand; but a long price is paid for it, and mental sacrifices not a few must be made, as it would seem, to obtain it!

The wealth of the Strand, from Charing-cross to Temple Bar, who will venture to estimate?—but the poverty to be met with down its narrow courts and ways may be but too readily come at. It would hardly be credited if told and made note of. Improvement is, however, on the move even here, and a most wonderful problem is in course of being worked out, which, if anything be, is worth the noting. Nothing can be well more out of repair, or more dilapidated, than the houses down the courts we have indicated, and in and about Drury-lane, of famous memory; and right full they are, and thickly crowded with poor humanity. That ubiquitous body, the Board of Works, it need hardly be said, has found this unhappy spot out, and a wide-spread work of improvement has already commenced, and is now at this present moment going on. Whole streets are condemned, and blocks of poor houses are going, and gone; and the perplexities and difficulties of those who lived in the houses demolished, and now in those condemned, are hardly to be told. The crowding of the houses remaining in these courts and alleys is, as might be expected, greater than ever. A better class of houses and better tenants are to be the rule; but it may be asked, Whither are they to go who are thus turned adrift, and compelled, somehow or other, to find fresh quarters? And it seems a pity, indeed, that before such wholesale destruction is carried out, some provision is not made to fill up the void created by it. Why not, we would ask, when a row of houses is thus condemned, pull down part first, rebuild more commodiously, and with more stories?—thus providing for those turned out an improved dwelling, always improving those who dwell in it.

We have made some minute inquiries on the subject of this wholesale pulling down of thickly-populated dwellings, and leaving the ground for months, and even years, bare and empty, while so much is needed. Such mode of proceeding makes matters already bad much, very much, worse. It would, as we must contend, be difficult to exaggerate the amount or the kind of suffering caused by it, and it would be quite impossible for the kindly feeling and charity of those who interest themselves so untiringly with such all but hopeless matters to do more good than to glance at it. House accommodation in such localities as these,—close to the Strand,—for those who do so much that is necessary and disagreeable, and so much that must needs be done, is to the full as necessary as the "bringing water to the thirsty city." Nay, is it not more so?—for it is close at hand, and may be seen every day and all day long.

And, further, to do some real good here is the more to be sought after, inasmuch as it may be accomplished at but little extra cost, if any, as we have above hinted at, nothing but plain house-building being needed. All this is not actually in the line of the Strand, but may be seen from almost any of its turnings.

But leaving these things, what is there not in the architectural way through the long length of the Strand? All but every kind and style of architecture, and of very many dates, too. There is the reproduction, or copy, of the last of the "Eleanor Crosses,"—things remarkable in so many ways,—in the courtyard of the Railway Hotel. Then there is the fine Water-gate (for though not in the Strand, we cannot pass it), by Inigo Jones, a right happy and classical bit of architecture. Why not make of it again a true water-gate on the Embankment itself, as near as may be to its present site? Surely some society taking note of these things might interest itself in this water-gate,—it is well worth it,—and that, too, before it is too late. Then there is the well-known entrance into Exeter Hall, as good an example of Greek architecture as London can boast of. There is Somerset House, which needs must be seen, and the two churches, remarkable as standing in the middle of the street, in the roadway, and the first of them, St. Mary's-le-Strand, a good example of Italian or Renaissance architecture, taking the mind to the days of sturdy Johnson.

We might go on, and point to much more of true architectural interest in the Strand, but must forbear, but can hardly do otherwise than point to the New Law Courts, now in part roofed in. These will contrast with all else in this line of thoroughfare, and may well engage the attention of the student of modern Gothic art; for one of the most difficult of all architectural problems is, as it would seem, being worked out,—that of "designing" the picturesque. Can this be done? What is the picturesque? Standing at the east end of the narrow Wych-street, or Holywell-street, the picturesque may be seen, and will define itself far more convincingly than wordy definitions can do it; and it is soon apparent, that the picturesque comes of accident, each house or block of building the work of a distinct hand and time. The old and the new may thus be usefully and instructively compared. And then missing thus so very many things of more or less note, there is the noise of the Strand, all but, it is to be hoped, unique. It begins at about four a.m., before it is light, and a very few minutes after the publication of the first sheets of the daily press, and then never ceases for a moment till long after midnight,—about two hours only of quiet. For continued noise, concentrated noise, we must contend that that of the Strand is unique, and without rival. The way is paved from Exeter Hall to Temple Bar with granite boulders, and though strenuous efforts have been made to substitute noiseless wood for the noisy granite, they have hitherto failed.

"HOUSES OR HOMES?"

UNDER this title we have an architect's earnest appeal, in a pamphlet, to the Duke of Bedford, as one of the territorial princes of the metropolis to assist in improved methods of house-building upon the Bedford estate (published at 15, Russell-street, Covent garden). It takes the tone of some recent articles in our pages, and thus reiterates *inter alia* an assertion made there which has been doubted by correspondents:—"Take another, not a hypothetical, instance, in which the leaseholder, one of your Grace's tenants, perceiving the mistake of his neighbours, determines to be wise in time. He will build, not only good business premises for himself, but also a house fitted for the description of people who are able and willing to inhabit it. He has heard of, perhaps seen, a Parisian *maison-à-loyer*. He proposes to build over his shop three or four superposed residences, each planned as a distinct home. To do this, the piece of land upon which his predecessor, ninety-nine years ago, built a shop as well as his residence above, is not wide enough; a frontage of 18 ft., or even 25 ft., to the street is not sufficient, he therefore proposes to borrow two pieces of your Grace's land, in order to obtain a frontage of, say 50 ft. These are readily granted to him; but your Grace's agent says to the tenant,—'You may have, if you want them, twenty pieces of the duke's land, but it is on condition that you rebuild, on the very spot where a party-wall has stood for ninety-nine years, another similar wall, which shall stand for another seventy or eighty years.' That is to say, he may build if he likes, upon the two pieces, one house, but he must plant in the very centre of it a thick wall, through which, on the lower story, he is permitted by your Grace to make a door. Thus the lessees of land upon the Bedford estate have no alternative but to erect the old-fashioned house, originally intended for a single family. Under this ban many of the houses near Covent-garden have been recently built, and they represent a dead loss to genuine investors."

We are not surprised that the statement has been doubted, its motive being incomprehensible. The writer is not proposing to alter the dwellings of those who can afford to hold an entire house. The majority of us would prefer the discomforts and extravagance of a vertical house to the discomforts and economy of a horizontal residence of similar cubical extent. But it is different with numerous groups of the population who are unable to occupy an entire house of several stories, yet who love a town life; and it is for these the author speaks.

The gist of his appeal lies in a desire to provide distinct residences for a multitude of small families and groups, neither poor nor ill-bred, who now live higgledy-piggledy in "lodgings." Much of the cubical space now absolutely wasted over shops can be utilised for that purpose to the undoubted profit of the owners. It is merely a question of modified frontage. Instead of building upon a slice of land, 25 ft. in width, a shop and nine or ten rooms over it, with two dark kitchens, two servants' "attics," and two water-closets; instead of compelling a tenant who borrows two such slices of land to build two such houses upon them,—permit him to erect upon the two slices, thus containing together a frontage of 50 ft. to the street, one block of buildings. The depth say 60 ft. The writer's advice is this:—The block shall contain two shops extending over all the surface of the site except those portions occupied by a small area, the staircase, and the two entrances to the upper parts of the building. Under each shop, and communicating with each, there shall be a basement containing rooms, a lavatory and water-closet, stores and cellars for the exclusive use of the shopkeeper. The first story over the shops shall be a mezzanine story, approached, through a special entrance from the street, by a special stair. It shall contain six business offices, or three sets of offices, a lavatory and water-closet; above, on the first floor, the second floor, and the third floor, there shall be six distinct town residences, each complete in itself, and fitted for the sort of family, group, or individual I have described in a preceding paragraph. Each residence will be closed by a private door opening to the staircase landing as an ordinary house-door opens to the street. Each shall consist of an entrance-hall, a sitting-room (17 ft. by 14 ft.), two bed-rooms, and a linen closet; a kitchen, a pantry, a coal-store, and a water-closet; and a servant's bed-room. There need not be a dark corner in any part of such a residence; every room, except the servant's room next the kitchen, can have a fireplace. The house need not rise higher than some of the new houses on the Bedford Estate. The six residences can be contained in three stories; and the horizontal divisions between them shall be of concrete. A lift for goods and provisions shall be fixed in the staircase, which shall be fire-resisting, spacious, light, and airy. This stair shall be common only to the six residences; be reached from the street by an entrance distinct from that leading to the offices, and distinct from the shops. Between the street-entrances,—for the residences and for the business-offices,—there shall be a porter's lodge, in which shall be stationed one of Captain Walter's Commissionnaires, who shall be responsible for the guarding, cleaning, lighting, and general superintendence of the public parts of the building. Thereby an actual inconvenience, felt in both new and old buildings when the householder does not reside on the premises, will be avoided. Neither underground kitchens nor "attics" need be occupied by an entire family, often of a very poor class, the presence of whose friends and children upon the common stair is a frequently-recurring nuisance. The caretaker of two entrances, two staircases, and one goods-lift need not be a resident. The scientific subdivision and completeness of the different parts of the building leave to each sub-tenant the duties and responsibilities of housekeeping. The pamphlet is published at an opportune moment, and deserves the consideration of other land-owners than his Grace the Duke of Bedford.

THETFORD CORPORATION WATER-WORKS.

THESE works, which have been constructed from the designs, and under the superintendence of Mr. Jabez Church, C.E., of Great George-street, Westminster, the engineer appointed to carry out the undertaking, were handed over to the Town Council in a complete state on the 7th inst., at the Guildhall, when a vote of thanks, which was proposed by Mr. H. Fyson, the ex-mayor, and seconded by Major Marsham, the mayor, was tendered to Mr. Church, upon the successful termination of his labours. After the meeting, the Town Council accompanied that gentleman to the works, which were much admired for their pleasing and businesslike appearance.

The water, of which there is an abundant supply of very superior quality, is obtained from an artesian well, sunk about 160 ft. into the chalk, and is pumped therefrom into a reservoir constructed of brick in cement, whence the town is supplied by gravitation. The engine and boiler houses, together with the coal-store, are grouped in one block, and have an agreeable elevation in white brick facing the high road. There is also a house for the manager, with a Board-room therein, for the use of the Water Committee, corresponding in architectural character with the rest of the buildings. The cost of these works will amount to about 7,500*l.*, or 30*s.* per head of the population.

THE SHAFTESBURY PARK ESTATE.

THE feeling against the way in which the Artisans' and General Dwellings Company is managed seems to grow stronger. With the agitation against the raising of the rents we have not much to do. It is a commercial matter, and must be settled on commercial principles. The general conduct of the company is another thing. The inquiries of an impartial surveyor have shown, we believe, that dividends have been paid out of capital, and an uncomfortable state of opinion is growing up. A requisition has been forwarded to the directors by Lord Fortescue, the Chief Baron, Lord Cavendish, and others, worded as follows:—"That an extraordinary meeting of the shareholders be called to consider the propriety of appointing a committee of investigation, consisting of eight shareholders, to inquire into the financial condition of the company, the purchase of the estates, the cost and qualities of materials used in building, the methods pursued in building, the condition and prospects of each of the company's estates, and such other matters relating to the general business of the company as they may deem necessary."

WADHURST PARK, SUSSEX.

THE accompanying engraving represents the central hall of this house, which was built a few years ago for Mr. De Murrieta.

It is approached from the front-door by a flight of eight steps, constructed within an entrance-hall, which is thus 4 ft. loftier than the other ground-floor rooms, and which is 20 ft. wide by 34 ft. long, and contains a billiard-table, and a deep chimney-corner, flanked by seats. A "bachelors' stair" adjoins the entrance.

The central hall is 14 ft. 6 in. wide by 33 ft. long, and about 24 ft. high. On the ground-floor level it gives access on the left to the library (not shown on the engraving), and to the ball-room, and, through the door in the end wall, to the drawing-room. These three rooms have also doors of inter-communication, so that a complete circuit is established.

In the far right-hand corner is seen the entrance to the principal stairs. These are provided, midway, with a large half-landing, having a semi-octagonal bay-window commanding different views, and fitted up with writing-table, seats, &c.

The next landing is on the first-floor level, and comes into view on the engraving.

A gallery traverses the end (the central portion being recessed, so as to avoid casting a shadow on the drawing-room door beneath it), and gives access to several bedrooms.

A second gallery (shown on the right hand in the engraving) is lighted through a series of arches formed in the upper part of the wall, and leads to other bedrooms, and, further round, to the bachelors' stairs.

Thus all parts of the house are connected together by means of this central hall, while the consequent danger of the spread of fire is met by iron rolling-shutters at various points, and hydrants, with the hose ready attached to them.

This house, which cost about 12,000*l.*, exclusive of the terrace walls, was built by Mr. W. Shearburn, of Dorking, from the designs, and under the superintendence of, Mr. Edward J. Tarver, architect.

The marble chimneypieces were supplied by Messrs. H. Poole & Sons, one of those in the drawing-room being lofty, and surmounted by a fine painting (signed), in three compartments, by Macrinus.

The grates were supplied by Messrs. D. C. Boyd, and the chief part of the wainscot joinery and fittings, as well as the decoration, by Messrs. Green & King.

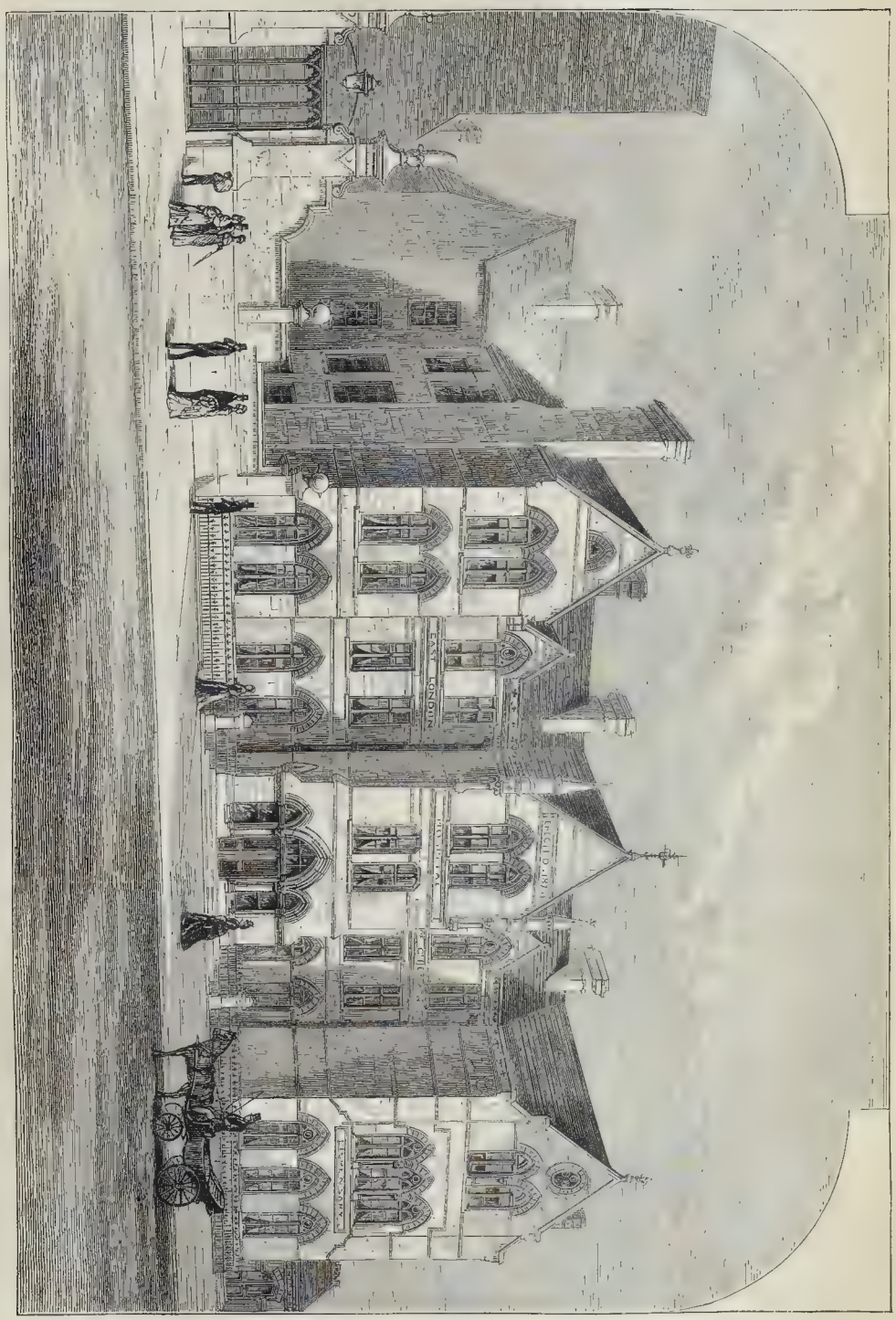
Bullevant's fittings were *ordered* for the sash windows.

The house stands on a commanding hill, consisting of Tunbridge Wells sandstone, overlying Wadhurst clay, an iron-bearing formation.

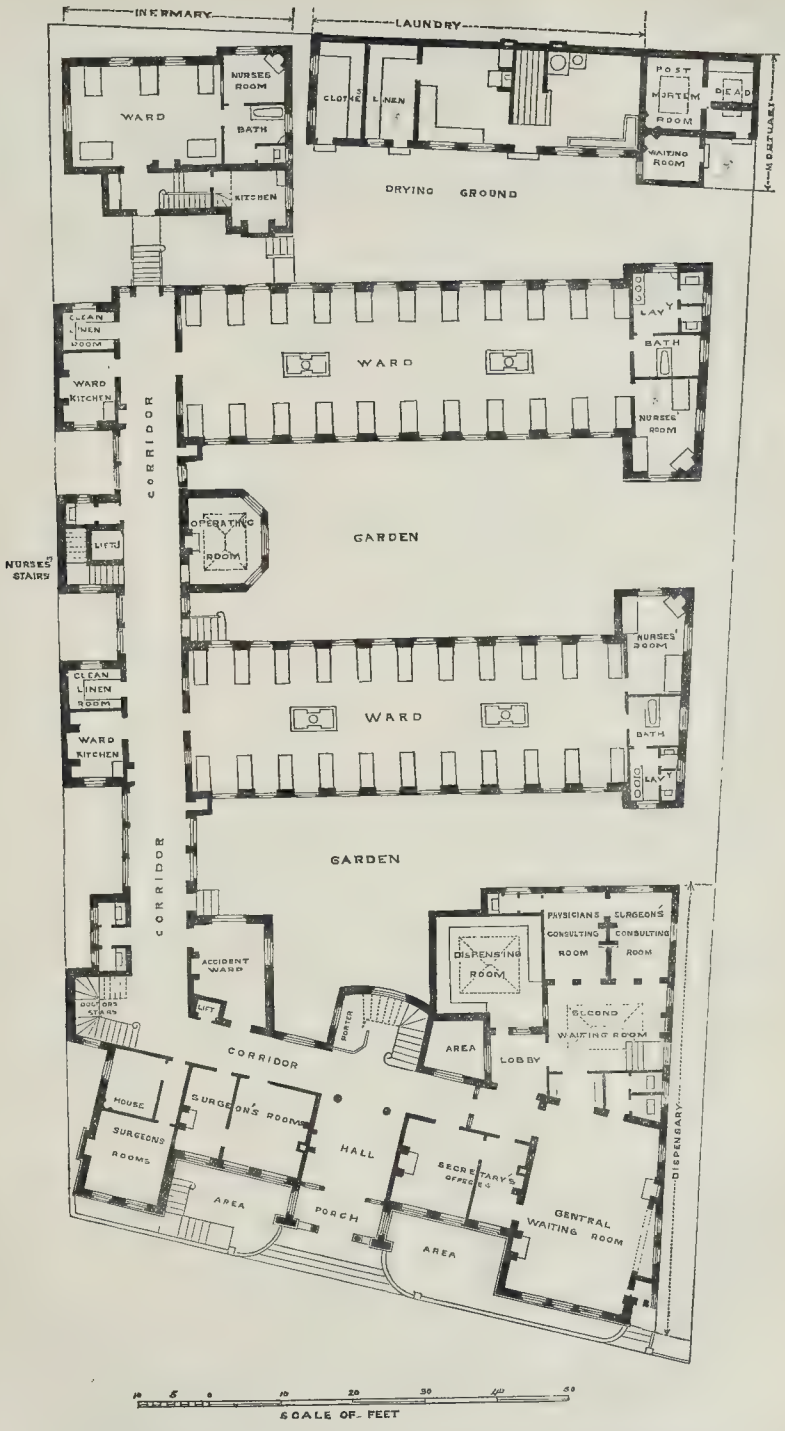
It is not so very long since the last foundry at Wadhurst was abandoned, and the local iron monumental slabs in the parish church, as well as the numerous fire-dogs, &c., in the neighbourhood, still attest the former manufacture of this material.



WADHURST PARK, SUSSEX: CENTRAL HALL.—Mr. Edward J. Tarver, Architect.



THE EAST LONDON HOSPITAL FOR CHILDREN.—Messrs. Henry S. & C. A. Legg, Architects.



GROUND PLAN OF THE EAST LONDON HOSPITAL FOR CHILDREN.

THE EAST LONDON HOSPITAL FOR CHILDREN, SHADWELL.

This hospital, recently opened for use, is designed upon the pavilion or separate block principle, and consists of five buildings more or less detached.

The administrative block contains apartments for the resident medical officer and assistant surgeon, the lady-superintendent, the matron, the large board-room, the secretary's offices, nurses' and servants' rooms, and in the basement the kitchen, scullery, rooms for stores, drugs, &c., as well as cellarage for beer, wine, and so on.

Connected with this block is the *Dispensary*, which has separate entrances and exits, and which, although adjoining the hospital, and sufficiently connected with it to be served by part of the hospital staff, is to otherwise quite distinct and separate.

The ward blocks are upwards of 70 ft. long, and specially designed with reference to aspect, light, ventilation, and general supervision, and allow 1,000 cubic feet for each child. Each ward has attached to it its ward-kitchen, bath-room, nurses' room, lavatories, &c., complete.

The ventilation is obtained by windows on both sides of each ward, which open in such manner as to avoid down-draught; in addition to these the so-called Tobin's principle is introduced throughout. The warming is by two sets of double stoves in the centre of each ward, the intention of the architect being to draw off the vitiated air around the smoke-pipes, but this has been abandoned by order of the committee.

There is an isolated building in the rear containing ten beds for infectious cases, or cases requiring separate treatment. This building is complete in itself.

The laundry department is also in the rear, and contains a washhouse, drying-room, ironing-room, and clean-linen stores, &c. The *post-mortem* room and dead-house and small museum adjoin. The operating-room, fitted up with necessary conveniences, is situated between the wards. Lifts are placed in convenient position in the corridors, and the lift for taking children up and down is designed, but has to be erected. Hydrants are fixed on each floor with a supply of water in case of fire. All the corridors and staircases are fireproof.

There are airing-yards laid out as gardens for convalescent children.

The total cost of the hospital as at present is 13,000*l*. One ward block remains to be erected, the estimated cost of which is 5,000*l*.

The number of beds at present accommodated in the ordinary wards is ninety-two. The number of beds in the block to be erected will be seventy, less sixteen in temporary wards. The total, therefore, when completed, will be 148 beds.

The shape of the land is irregular, but the buildings have been adapted to it. The principal front next the road (as shown by the engraving) happening to be the narrow end of the site, the building looks less important than it otherwise would.

The architects of the building are Messrs. Henry S. & C. A. Legg, of Bedford-row, under whose direction all the works have been carried out.

ON THE APPLICATION OF THE ARTISANS' AND LABOURERS' DWELLINGS IMPROVEMENT ACT, 1875,

TO SOME OF THE COURTS AND ALLEYS OF THE METROPOLIS.*

Amongst the many valuable measures in what may be termed the domestic legislation of this country introduced by the present Government, none can claim to be of greater importance, or more calculated to improve both the moral and physical well-being of the working-classes, than the Bill introduced and carried by the present Home Secretary entitled "An Act for facilitating the Improvement of the Dwellings of the Working Classes in large Towns."

One pauses on the threshold of the inquiry to consider whether it is strictly within the province of any Government to legislate upon such subjects. Strict political economists might be found to say that it is no more the duty of the Government to improve the dwellings of the working-classes than it is to find the necessary funds for decorating those occupied by persons in a higher grade of life with the view of affording sound lessons in æsthetics. It is the glory of the British Constitution, however, that it admits of innumerable compromises, and possibly this circumstance, more than any other, has helped to preserve that Constitution for the number of years during which we have had the happiness and privilege of living under it.

Across the Channel, notably in France, leading politicians are invariably devoting themselves to plan constitutions which may be considered perfect upon paper, and which, so long as they are regarded as treatises on Constitutional Government, may be pronounced as closely approximating to all that could be desired for the well-being of a country; but when tried by any untoward circumstances they are found to be so unyielding in their character as to give way upon tension, or any forced state of affairs which tests the constitution in anything like an unusual or abnormal degree.

Good government having been rightly described as the obtaining the greatest happiness for the greatest number, it will no doubt be found that though the application of this Act is intended for houses occupied by the lower orders of society, yet, as is pointed out in the preamble of the Bill, the diseases which are generated there not only cause death and loss of health to the inhabitants of the courts and alleys which the Act is intended to improve, but also in other parts of the cities and boroughs in which the same may be located. It amounts to this in fact, that, as it has been found practically impossible to prevent the spread of any epidemic disease from the court or alley in which it may originate to the adjoining property, in the interest of the upper as well as the lower classes, legislation such as that we are about to consider this evening has been found to have become imperatively necessary. "*Salus populi suprema lex*," than which no higher incentive could be found for efficient legislation in this particular.

The third reading of Mr. Cross's Bill having passed the House of Lords on the 17th of June, 1875, I thought it my duty immediately to turn my attention to the application of the Act to a portion of the Metropolis over which I have official charge; and on the 5th day of July, 1875, I submitted to the Board of Works for the Holborn District a report, accompanied by plans, showing the application of the Act to the courts and alleys of Gray's-inn-lane. I had a profound conviction that in no district in London could a set of courts and alleys be found which more required the application of some such vigorous measure as this; and as I was persuaded that the other districts in London would be equally anxious to obtain a remedy for evils of a like character existing therein, I came to the conclusion that the Holborn District should not suffer through any want of energy or zeal on my part.

I would here remark that efforts had been made to improve the condition of the courts and alleys forming the subject of my report by the agencies previously existing directed to this end, that all that could be accomplished by the application of the several Sanitary Acts, Mr. Torrens's Bill for improving the dwellings of the labouring classes, and the powers conferred under the Building Act and the Metropolis Local Management Acts, had been tried time after time without producing any material results. Nor is the reason for this failure difficult to discover. The several Acts of Parliament which I have just enumerated, whilst enabling the sanitary authorities to operate upon one or two houses, or even a block of dwellings of an unsanitary character, did not admit of any sweeping measure of reform, and all that was achieved was a slight palliative of some of the most glaring evils which fell under the cognisance of the authorities. There was no opportunity afforded for concerted action on the part of the different owners of property, nor could steps be taken by the local authorities with the view of clearing the site, except upon agreement with the owners of all the interests concerned, which practically rendered such operation impossible.

The report presented by me to the Holborn Board of Works was quickly followed by the necessary official representation on the part of the medical officer of health, and this, as required by the Act, was duly forwarded to the Metropolitan Board of Works, who are constituted the authority for carrying out the provisions of the Act in all portions of the metropolis save and except the City proper, where the Act is confided to the care of the Commissioners of Sewers.

The official representation of the medical officer of the Holborn district was dated the 19th of July, 1875, and on the 31st of that month the Metropolitan Board proceeded to view the and having satisfied themselves that the ho courts, and alleys within the area referre were unfit for human habitation, and that t evils could not be effectually remedied other than by an improvement scheme for the arrangement and reconstruction of such str and houses, did, on the 6th of August, pa resolution to the effect that the area in ques was an unhealthy area; and they further structed their Engineer and Architect forth to prepare for their consideration a scheme the application of the Act to such area, an report the probable cost of carrying it out.

On the 30th of September, 1875, Sir J. Bazalgette and Mr. Vulliamy presented their port, which in due course was referred to Committee of Works.

Whilst the improvement scheme which I down dealt with 14 superficial acres, that s mitted by Sir J. W. Bazalgette and Mr. Vullia dealt with 10½ acres only—the latter gentlem having eliminated from the area all the propert which were occupied by commercial or ot buildings, and confined themselves almost clusively to the dwelling-houses which w found on the site dealt with by them.

I may state briefly, that when I commenced deal with the area in question I resolved th the only building which I would preserve, which I considered as worth preserving in t entire area, was the Church of St. Alban, a having come to that conclusion I had no gre difficulty in laying out the remainder of t space.

For the purpose of intersecting the area wi the necessary streets, I invariably chose to co tinue the lines of such streets as were in exi ence in the immediate neighbourhood, and th was particularly the case in regard to the stree intersecting the plot from east to west. Th the lines of Hatton-wall, Cross-street, and Charle street were continued to Gray's-inn-road. Th feature did not seem to have been considered b the engineer and architect to the Metropolita Board.

When their joint report was referred to th Works Committee of that body, very serious an material alterations were made in the improve ment scheme. The committee considered it thei duty to again inspect the area, and this tim with the object of going over the property house by house, with the view of determinin how many of the houses fell individually withi the scope of the preamble of the Bill, and having ascertained the number, they carefull eliminated all the rest, so that when the deposited plan was prepared, it was found to deal with fou acres of property only, that being ten acres les than the scheme prepared by me, and six acres and a half less than the scheme submitted by the Board's own engineer and architect.

I will briefly bring to your notice the chie points of difference between the scheme a recommended by the Board's own officers an that delineated on the deposited plan. First with reference to the important point of th widening of Gray's-inn-road, Sir Joseph Bazal gette and Mr. Vulliamy state in their report :—

"Whether this improvement can properly be regarded as the necessary widening of an existing approach to the area under the terms of the Artisans' Dwellings Act, whatever view may be taken of this question, this portion o Gray's-inn-road ought to be widened to at least 50 ft., and this is the proper and economical time for effecting that improvement."

The officers, in dealing with the area when cleared, proposed to form four new streets therein, each 40 ft. wide; and also to make five paved footways, each 25 ft. in width, at right angles to the new streets, so as thoroughly to open up the area for access, light, and air, whilst leaving large spaces available for the erection of artisans' dwellings. The Board proposed the formation of only one street of the width of 40 ft., another of the width of 35 ft., the widening of three existing thoroughfares (Dorrington-street, Beauchamp-street, and Baldwin's-gardens) to 30 ft., as also the widening of an existing footpath through Bell-court and Brooke-court to 20 ft. This, with the removal of two houses in Portpool-lane, and two others in Greville-street, embraced the entire scheme as submitted on the Board's deposited plan.

Manifestly insufficient as was this scheme in reference to the number and width of the proposed streets and approaches, it failed entirely to provide anything like sufficient space for the number of artisans and labourers who are most unhealthily located on the area now under our review. In a word, the Board, whilst endeavouring to carry out the letter of the law, utterly

* A paper read before the Architectural Association on Friday, the 11th inst., by Mr. Lewis H. Isaacs, F.R.I.B.A.

missed its spirit; and their proposed method of dealing with the area was little if any better than that which could have been effected by the operations of Torrens's Act, to which I have before referred.

It is not, therefore, matter for much surprise that when the Home Secretary appointed a Commissioner to inquire into the merits of the scheme, the District Board of Works and the various charitable and religious organisations were found to be in opposition, on the score of its manifest insufficiency, and of its failing to solve the problem which had been submitted in a thorough and comprehensive spirit.

It may perhaps be said, in justification of the action taken by the Metropolitan Board of Works in regard to this matter, that they were somewhat alarmed at the size and scope of the improvement scheme which their own officers had devised. They felt that if they were asked to apply the Act in so wholesale and sweeping a manner as was suggested in this scheme, they would be entailing upon the ratepayers of the metropolis a burden larger than had been contemplated when the Act passed the Legislature, and they probably felt that the right time to make known their views as to the proper working of the Act was in the preparation of the deposited plan submitted to the Home Secretary, in reference to the first application for setting in motion the powers conferred by the Act. That they were wrong in this view is, probably, now admitted by themselves. Suffice it to say, that after an exhaustive inquiry, before Mr. Cubitt-Nichols, the Commissioner, the scheme was rejected by the Secretary of State.

Before dismissing the alternative schemes, it may be interesting to state what would have been the annual cost to have been paid out of the public rates, charging interest at the rate of 3*l.* 17*s.* 6*d.* per cent. per annum upon the amount of the deficit after taking credit for the whole of the ground-rents that would have been received, for carrying out the original scheme prepared by myself. I find that such annual deficit would have amounted to 4,937*l.*, whereas the deficit on Sir Joseph Bazalgette and Mr. Vulliamy's scheme, as stated in their report, would have been 3,466*l.*, a difference of 1,471*l.* It is matter for consideration, however, whether, having regard to all the features of the proposed improvement, this sum of 1,471*l.* would not have been partially, if not entirely, covered by the enlarged advantages which would have accrued from carrying out the original scheme.

"All's well that ends well," and whilst regretting the delay which has occurred, I am happy to be able to draw the attention of the Association to a plan which shows that the Board of Works are seeking in the present session of Parliament to obtain the necessary powers from the Legislature to effect the widening of Gray's-inn-road, and the consequent removal of many of the courts and alleys abutting thereon, as a metropolitan improvement.

It does not very much matter whether this great boon be accomplished one way or another, so long *as it is* achieved. It would, indeed, have been strange if, after public attention had been so forcibly drawn towards the subject, the improvement of the squalid courts and alleys in the neighbourhood of Gray's-inn-lane had been allowed to remain undone.

The Board of Works allege that their greatest difficulty in dealing with this matter when presented to their notice was the doubt they had as to their possessing the necessary powers under Mr. Cross's Act to effect so great a public improvement as the widening of Gray's-inn-road in the light of "a necessary widening of an existing approach to the area" under consideration. Similar doubts were expressed when the corporation of Birmingham brought their intended application of the Act under the notice of the Commissioner appointed by the Home Secretary to inquire into the same. All uncertainty on this score should be at once removed by the introduction of a short measure, giving the necessary powers, if they do not at present exist, and allowing, with this object, that two schedules of property should be prepared, one giving the market value only of the property when falling fairly within the scope of the Artisans' Dwellings Act, and the other giving the customary 10 per cent. for forced sale when the property is required for an improved approach.

Soon after the Holborn scheme was propounded, an official representation was made by the medical officer of health for the Whitechapel district in reference to an area lying partly within that district and partly within the adjacent parish of Limehouse. The area comprises certain streets eastward of the Royal Mint, and abutting on Upper East Smithfield on the south, and Royal Mint-street on the north, the Great Eastern Railway Viaduct intersecting the area. The area will admit of twenty-two blocks of dwellings being placed thereon, with paved courts and streets alternating, the superficial area of the dwellings being 92,488 ft., which would admit of 3,600 persons being lodged. The net cost of this scheme, which I may state has successfully passed through the ordeal of an official inquiry by the Commissioners appointed by the Secretary of State, and for which the necessary Act of Parliament has been granted, is 54,400*l.* This was the only scheme in London which passed successfully through the various stages during the session of 1876.

For the present session of 1877 no less than twenty-two schemes referring to the improvement of the courts and alleys of the metropolis were submitted to the consideration of the Metropolitan Board of Works, and these twenty-two schemes were situated in thirteen different districts of the metropolis. Of the twenty-two schemes, eleven, or just one half, are being proceeded with; the necessary plans for the improvement schemes have been prepared, notices given to the owners and occupiers of property, and in a great many cases the inquiries of the Commissioners appointed under the Act have taken place. The following is a list of the schemes:—

I. *Bedfordbury Scheme* (*St. Martin's-in-the-Fields*).—The area comprised in this scheme consists of a block on the east side of Bedfordbury, and includes several courts of very old and dilapidated houses, so densely populated that it is found necessary to erect buildings six stories in height in order to reinstate the population on the same site, and to afford them fair accommodation and a proper amount of ventilation. In connexion with this scheme it is recommended that Bedfordbury be widened to 30 ft., and that the houses in Chandos-street, on the east side of Bedfordbury, be removed so as to widen the street to 42 ft. The net cost of this scheme is estimated at 63,995*l.*

II. *Great Wild-street Scheme.*—This scheme relates to a block of courts and alleys between Great Wild-street, Drury-lane, and Princes-street, and comprises some of the most wretched houses in the metropolis, in which the inhabitants are closely packed. It will be requisite to erect buildings of six stories in order to provide proper accommodation for the numbers to be displaced. It is recommended that Princes-street be widened to 30 ft., and that Great Wild-street be of a width of not less than 40 ft. The net cost of this scheme is estimated at 49,540*l.*

III. *Pear-tree-court Scheme* (*Clerkenwell*).—This scheme includes some houses of the lowest class. The improvement proposed shows that a projecting block of buildings in Clerkenwell-close will be removed, and that the close will be connected by a carriageway, *viâ* Ray-street, with Farringdon-road. The net cost of this scheme is estimated at 5,050*l.*

IV. *Whitecross-street Scheme* (*St. Luke's*).—This scheme comprises two areas marked A and B in the official representation of the medical officer, the first being situated between Golden-lane and Whitecross-street; and the second between Whitecross-street and Bunhill-row, each consisting of a labyrinth of narrow courts and alleys, the houses in which are, for the most part, very old and dilapidated, and without proper ventilation.

V. *High-street, Islington Scheme.*—This comprises two small areas on the east side of High-street, one on either side of the Philharmonic Theatre. The net cost of this scheme will be 7,960*l.*

VI. *Elizabeth-place Scheme* (*St. George-the-Martyr*).—This includes a small and compact block situated between Tower-street, Duke-street, Webber-row, and Ann's-place, in the immediate neighbourhood of the Waterloo-road. A great part of the property in this area is of a very objectionable character, and the population displaced might be reinstated in blocks of five stories. The net cost is estimated at 2,717*l.*

VII. *King-street Scheme* (*St. George-the-Martyr*). This scheme comprises portions of Gun-street, Flint-street, and Martin-street, many of the houses in which are in a very dilapidated and filthy condition. New buildings may be erected of four stories on the sites of the old ones, to accommodate a larger number of persons than those to be displaced. The net cost is estimated at 5,486*l.*

VIII. *Mint-street Scheme* (*St. George-the-Martyr*).—This area, which adjoins Mint-street, from Harrow-street to Blue Ball-alley, is morally and structurally one of the worst in the southern portion of the metropolis. A rearrangement of the houses can readily be effected on the same site, so as to give improved accommodation. The net cost is estimated at 25,150*l.*

IX. *Old Pye-street Scheme* (*Westminster*).—This area is situated on the south side of Victoria-street, and comprises houses in Orchard-street, Old Pye-street, St. Ann-street, and Perkin's-rents. The estimated cost of this scheme is 5,830*l.* net.

X. *Goulston-street Scheme* (*Whitechapel*).—This scheme comprises an extensive area lying between High-street, Whitechapel, and Wentworth-street, bounded on the west by Middlesex-street, and on the east generally by the houses in Goulston-street. The net cost of this scheme is estimated at 124,700*l.*

XI. *Flower and Dean-street Scheme* (*Whitechapel*).—This area is situated to the east of Commercial-street, and extends from High-street, Whitechapel, on the south, to Flower-and-Dean-street on the north. It contains an unusually large proportion of dwellings of the worst description, and includes a considerable number of registered lodging-houses. To the south of Wentworth-street a large proportion of the area referred to by the medical officer has been omitted, as its condition does not appear to warrant its demolition. The erection of five-story buildings is recommended in this block, and it is suggested that Wentworth-street should be widened to 40 ft., and Flower-and-Dean-street, Keate-street, and George-street, each to 30 ft. The net cost of this scheme is estimated at 23,073*l.*

By the courtesy of Mr. Vulliamy, the superintending architect of the Metropolitan Board of Works, I am enabled to place before you plans referring to the whole of these schemes, and I may state that the area proposed to be cleared consists of twenty-four acres; that the gross cost of the clearances has been estimated at 903,460*l.*, the recoupment being estimated at 491,173*l.*, showing the net cost to be 412,287*l.* The number of persons proposed to be displaced is 14,314, who are at present located in 5,752 rooms, showing the average to be about 2½ persons in each room.

Three different areas in the City of London have been submitted to the Secretary of State for putting in motion the machinery provided by this statute. The first area was in Fetter-lane, and it was proposed to deal with houses accommodating 260 persons, the ultimate cost devolving upon the Commissioners of Sewers being estimated at 32,000*l.* The second area was in the immediate area of Golden-lane. It was proposed to remove houses which accommodated 1,230 persons, and the net cost, after recoupment, was estimated at 90,000*l.* The third scheme was one in the neighbourhood of Petticoat-lane, or Middlesex-street, Whitechapel, and it would remove houses accommodating 1,150 persons, at an ultimate cost of 162,000*l.* These three areas would therefore entail an ultimate cost to the City of 284,000*l.*

It may be useful, for comparison's sake, briefly to refer to what other cities and towns are doing in reference to the application of this and similar Acts. From information just received as to the cost of carrying out the several Improvement Acts obtained for the City of Glasgow, the following facts are gleaned:—

Paid for lands and houses	£1,431,593 11 10
Forming new, and improving old, streets	44,704 8 3
Houses and land bought, but not paid for	135,000 0 0
Works not yet executed	50,000 0 0
Management and expense of Act	100,000 0 0
Alexandra Park	40,000 0 0
	£1,801,298 0 1

The total extent of land embraced within the improvement works is about 80 acres, of which about one-fourth will be thrown into streets. The remaining three-fourths are expected to realise within 360,000*l.* of the whole moneys expended, which sum is therefore the cost of the improvements to the community.

I may state that the excellent working of the Improvements Acts obtained for the city of Glasgow first directed the attention of Mr. Secretary Cross to the feasibility of introducing a general measure for obtaining the like results in the metropolis and urban sanitary districts in England and Ireland containing a population of 25,000 and upwards.

The first town in England to set the Act in motion was Birmingham, where the Corporation have propounded a scheme which has successfully passed through all the various stages prescribed by the Bill, and they have just received tenders for a sum of a million and a half of money to be applied in the clearance of a large area within the borough. The interest to be paid is at the rate of 3½ per cent.; the loan is spread over a period of sixty years, being repayable at par on the 1st of June, 1937, if the bonds have not been cancelled previously.

The town of Sheffield is also about to direct its energies to the application of this Act in a very vigorous manner.

In the city of Dublin inquiries are now being held on the proposed application of the Act to various areas within the limits of that city, and from a thorough knowledge of the Irish metropolis I can say that I do not know any city where a sweeping measure of reform in this respect is more urgently needed.

Taking the net cost of the application of the Artisans and Labourers' Dwellings Act to such schemes as have been already proposed for the City of London and other portions of the metropolis, it would appear that London is as yet far behind some of the provincial towns in reference to the cost proposed to be incurred by the application of this Act, as the following figures will prove:—

Whitechapel and Limehouse Scheme (Session 1876), net cost	£54,400
Estimated net cost of three schemes for the City of London (Session 1877)	284,600
Estimated cost of eleven schemes proposed by the Metropolitan Board of Works (Session 1877)	412,287
	£750,287

So that up to the present moment the whole of the metropolitan area, including the City of London, is committed to an expense of one half the amount proposed to be outlayed by the town of Birmingham on the same measure.

Of the value of this outlay, both as regards the moral and physical welfare of those for whom it is made, little need be said by me. There can be no doubt that the influence of a man's home, both as regards his duty to himself, his family, and his country, is very great. A healthy and agreeable home, whilst tending to elevate the tastes and improve the morals of those who are lodged within its walls, results in an amount of self-respect being created which almost precludes a man from becoming a pauper, and certainly saves him from becoming a criminal. If the ratepayers of the metropolis will consider what the eradication of the existing slums in the metropolis will save them in the way of rates which are now needed to meet the expenses consequent on the disease, pauperism, and crime which the courts and alleys we have been considering mainly produce, they may come to the conclusion that the example of Birmingham may be followed with good results in the metropolis, and that the three-quarters of a million to which we are already committed may be doubled, or even quadrupled, and landowners would still be gainers by the outlay. It may be questioned whether the expenditure under this head should not have preceded that under the Elementary Education Act, since it is idle to expect that the teachings of the School Board can bear good fruit so long as the children's homes remain as at present, so deplorably filthy, wretched, and unwholesome.

In conclusion, we may congratulate ourselves that when once the existing foul slums, and still fouler dwellings therein, have been removed, the expense incurred in the operation will not have to be repeated; as, thanks to the protection afforded by the Building Act, the Metropolis Local Management Act, and the various Sanitary Acts, no state of things like to that we have been considering this evening can again be produced. There can be no courts or alleys of a less width than 20 ft., no buildings placed over the entrances to such courts, no dwellings erected for human habitation unless every room therein is lighted and ventilated either from the street or from an open yard in the rear, so that those two great essentials—light and air—would seem to be thus secured. A constant supply of water may be hoped for at no very distant date, now that Parliament is to be appealed to to transfer the control of the water companies to the municipality. Finally, proper and efficient drainage is assured by the clause in the Metropolis Local Management Act which directs that every house shall be drained into a public sewer, where one can be found within 100 ft. of the dwelling; and it must be a very rare case where this clause cannot be put into operation owing to the non-existence of the necessary outlet. So that light, air, copious water, and good drainage being thus guaranteed, we have made fair way in the necessary preliminaries for ensuring healthy homes for the labouring classes.

A discussion ensued, to which we will return.

A LETTER WITH A MOTIVE, BUT WITHOUT A *MOTIF*.

SIR,—You probably do not ignore the cause of my prolonged silence. The excision, at your hands, of a sentence in my communication published in your pages on the 17th of February last, offered small inducement to continue a series of letters which might have formed an attractive addition to a paper like the *Builder*. I refrain from saying more, now, than that such an excision was unprecedented, unauthorised, and inexcusable. My views upon men and things, conspicuous amongst a tissue of tiresome technicalities, not only serve to brighten the reader's intellect, clouded as it must be with descriptions of Phœnician pots and Mediæval monks, but they show the "working-man" to be confined to no one class of the community—that he labours in a club at St. James's quite as seriously as in a workshop at St. Giles's. Indeed, the only distinction I can perceive between "gentlemen of the press" and gentlemen lies in the fact that the former often write correctly the English they are unable to speak, and the latter talk correctly the English they are unable to write. I myself am an exception to this general rule, doubtless, because I inherit from my poor uncle,—as facile in speech and manner as with the pen,—his enviable and difficult accomplishments. Nor, sir, can you be unaware or inappreciative, both in a mundane and an æsthetic point of view, of the high value set upon my remarks by the public of all denominations. It cannot have escaped your attention that a quotation from my last letter has been circulated throughout the length and breadth of the British Isles,—that a well-known tradesman, casting aside the padding of your fifty-two pages, drew, from the button-hole of "Vitruvius Redivivus," a flower with which he now catches his customers by the nose.

You will perhaps remember that my poor uncle, whose writings were edited by the late Mr. Thackeray, said that a man to be amusing and well-informed had no need of books; he should go to the world and to men for his knowledge. I might add that for the French idioms he should go to the Parisian ladies, and hang upon the words which fall from their lips, to catch the true accent and appreciate the full force of labial expression. So it was that George Savage Fitz-Boodle went into every capital and learnt to order a dinner in every language spoken in Europe. But, returned home,—*une fois de retour chez lui*,—he did not lard his *pièces de résistance* when *en famille*, or at the club, or in the *feuilles* of *London Society* and *Vanity Fair*, with absurd phrases collected from dead and foreign languages, like mere vulgar *literati* or the ordinary *dilettante* critic. He spoke and wrote his mother tongue forcibly and intelligibly. He used French words when he invented "the gastronomic agent" for the employment of younger sons among the nobility; he used German words while describing his loves with Dorothea and Ottilia, but that was necessary and inevitable. When, however, he was obliged, *nolens volens*, to use classical or continental expressions, he took care to apply them properly and according to the meaning pertaining to each in its own country and in its own time. An historian whom my father used to meet at Holland House,—a man to whom the Whigs gave a peerage because he was a bachelor, and had conclusively shown that all progress was entirely due to them,—Lord Macaulay, though he pounced upon Lord Mahon for transforming a modern *abbé* into an abbot, always wrote the name of Louis Quatorze as Lewis the fourteenth. He also said,—"It is better undoubtedly to use an English word than a French word; but it is better to use a French word than to misuse an English word." Nothing can be more sensible, and I entirely agree in this matter with Lord Macaulay. The introduction of French phrases into English prose is most objectionable; it is also greedy and unnecessary, seeing that our own language contains a far larger *répertoire* of expression than the French. Not that I dislike the Gallic vernacular; on the contrary, I have revelled in it from my earliest days. You cannot have overlooked, or even forgotten, a passage in the "Fitz-Boodle Confessions" which refers to my own childhood. Our Swiss governess, who was a very pretty girl, frequently used to take my sister and me down St. James's street; and one day we met Uncle George. He was delighted to see us again; and we all went to his chambers. Maude and I were despatching the tarts my poor uncle had bought for us, and he was saying all sorts of funny things to Mademoiselle, when a lady's voice was heard outside, and my uncle's door opened with a rush. There stood grandmamma, and in such a towering passion! "Mamsell, ontondy voo?" cried my Lady Fitz-Boodle, "metty le bonny à Mamsell." Then she threatened to send her back to Switzerland, and called her a relation of Courvoisier, the murderer, I think, of poor Mrs Brown. "We, we," she shouted, "Courvoisier voo compreny." Ah! how vividly is the scene depicted in my memory! It had a lasting effect, for from that moment I aspired to speak French like grandmamma; and now that my days of *première jeunesse* have flitted, I may say without egotism—why does Mr. Carlyle call it egoism?—that my most ambitious hopes have been realised.

With what consternation, therefore, with what a medley of emotions, did I discover that a Slade Professor has been represented, through the abominable machinations of your printer, as having given vent to the following oracular statement:—"The Italians, in the early days of the Renaissance . . . . . were quite ignorant, up to a certain period, of the fact that all the antiques which they so hastily restored and catalogued were Greek in *motif*,—that most of them were but Roman copies or echoes of the works of the Greeks." When, moreover, he continued to expatiate upon the impetus given to the study of Grecian antiquities during the last century, you, sir, clipped the long list of names Professor Colvin doubtless gave,—the host of scholars of several countries who contributed at the end of the last and the beginning of this century to the elucidation of Grecian principle and the delineation of Grecian remains,—by mentioning only the late Mr. Cockerell, Mr. Watkiss Lloyd, and others. These, according to Mr. Colvin, conclude that *queue* of *savants* whose "systematic exploration engendered the learned school of criticism of antique art which exists in Germany." Ye gods! I will quote no more; I will hyper-criticise no criticism. My attention shall be directed solely to that little word, "*motif*," which your printer must have inserted gratuitously in the swift and sententious utterances of a Cantor lecturer.

The word "*motif*" is so often misapplied by English writers and speakers upon architecture that from sheer compassion and the desire to set you right with the cultivated classes, I drove down on Saturday last to the British Museum and asked for the superintendent of the library. He was smiling a conventional smile, in which official gratification and ecstatic despair strove for mastery, while a lady literary in outline, and waspish in expression, was pouring her hopes and griefs into his ear. The attendants, knowing from my dress and appearance that I was a total stranger to the Reading-room, volunteered their help in a decidedly civil and becoming manner. I explained what I wanted without mentioning names, and was referred to M. Littré for the proper definitions of the substantive "*motif*"; but, as I told my informant, it would be impertinent for me to introduce myself to M. Littré's notice without some kind of introduction. Would therefore the superintendent make the necessary inquiries of M. Littré for me? He stared, a little vacantly I thought, but consented; and I had the satisfaction of learning soon afterwards that M. Littré entirely agrees with me. It appears that *motif*, used in an architectural sense, is newer even than *motiver*, which has only been admitted into the Dictionary of the French Academy since the year 1740. The substantive has three significations. (1) *Motif*, equivalent to our word "motive"; (2) a term in music, for instance:—*Motif principal, la phrase de chant qui domine dans tout le morceau*; (3) a term of architecture, "*Se dit*," to repeat M. Littré's words, "*de certains sujets de sculpture*,—'*Près du cercle international se trouve le parc anglais dont le motif principal est une pagode de l'Inde.*'—*Le Journal Le Siècle*, 1867."

The application of the word in music and architecture is not dissimilar. This is further explained by a definition of the verb "*motiver*." Thus the quotation "*motiver les entrées et les sorties dans une pièce de théâtre*," is "to render natural the exits and the entrances in a play." I have

made inquiries in another quarter; and I find many English architects use the word *motif* in the sense of a "bit of detail," or in the sense of aspiration. In fact, the word, as it is technically used by members of your profession in France, is partly a slang expression; and though generally refers to *sculpture de bâtiment*, yet door or a window, a portico or a pediment, or bid of carved ornament, may be the *motif principal*, or the *motif-milieu* of a façade. Mr. Daly has used the word in a very broad sense in the title of his book—"Motifs Historiques d'Architecture." It does not, however, mean even in that case *détails historiques*; the plates in the book represent the more important architectural features of French buildings erected at different epochs. The word *motif*, or *details*, is used in France in the same way as in England; architectural details cannot possibly be called *motifs* unless they are *motivés* by position, or conventional arrangement, or unless they tell some story connected with the building. You may rely upon the accuracy of the statements, and may command me for any abstruse questions of the kind. A stone window-sill is an indispensable detail of construction, but it is not a *motif*; support it, however, with two corbels or consoles, hang a garland between them, and the whole will be a *motif d'architecture*. If out of a row of three or five windows the sill of the middle one be treated, then it will be considered a *motif*. The word has grown out of the modern practice of imitation and revival; for the best works of the Greeks, and of the Mediæval architects, are *motivés* in all their details. In the artificial nature of modern art a piece of sculpture may be a *motif* without being *motivé*. To say that an ornament is "*Grec en motif*" is not much, though to say that it is "Greek in motive" may not be altogether un-English. As the Professor, however, need not fear singularity in misquoting French. In 1870–1 a still more unpleasant duty devolved upon me: I administered a severe rebuke to the authorities of the *Saturday Review* for not only using the slang expression *chic*, but spelling it "chique."

I should not be surprised to learn that many of your readers believe me to be actuated, in writing this letter, with malevolent feelings against the great and shadowy circle of professors in general, and that inexpressible, irresponsible being, a Slade Professor. But I have never to my knowledge seen one of the latter category of specialists; and I envy him the complacent tone of authority with which he intones his dicta into the ears of men who believe in the things of this world. Far from deprecating it, I have the deepest sympathy with him, as well as with that increasing mass of the community who talk about Art,—sometimes with an echo—and at Camford I rebuked an hereditary though a plebeian doorkeeper for describing to me a Slade Professor as "a young gent." I am quite sure, as far as this country goes, that the flood of talk perpetually swelling about Art is a sign that it is in a healthy and vigorous condition. I have met in distant lands men who never heard of a "principle," who talked freely and could not write, yet who were truer artists than some fashionably accomplished Philistines in England. It strikes me that though knowledge can only be acquired, dexterity is largely inherited, and that a time of great artists is the product of several generations,—first in the same family, afterwards in the same nation,—artists, bad, indifferent, and good. *Au fait*, the Professor Colvin's duty is to talk about Art. Can he not be induced to talk about it in English alone? I know what he means by the word *motif*, but I doubt whether from the way in which he used it he knows what he said. He will not say that the subject of Roman Topography is Greek in origin and inspiration as he might have added, often in execution; but by saying it was Greek in *motif* he rendered himself as unintelligible to most Englishmen as to understand French, as to most Frenchmen as to do not understand English.

The best way to disgust people with the perilous habit of introducing French or Italian phrases into English composition is to read some of those newspapers which in Paris devote themselves to the *Sport du grand monde*. An elegant and long fashionable mode of diction, unsurpassed by the *Court Journal*, has provided immense satisfaction to the imperial democracy of a neighbouring capital. Something like the following has been usual on occasions:—"Le jeune et brillant fils du Comte de Stanley, accompagné de sa fille—une charmante *miss* qui épouse, dit-on, le fils aîné du Comte Russell,—a descendu hier, en *breack*, au Courses de Longchamps, où il a été reçu par les *jockeys* les plus éminents, et conduit au *betting*. Le noble *my lord* a donné un *shake-hands* à la belle bouquétière, qui portait *the colours* de M. de la Grange. Jamais le *higlife* du *club* n'a été plus gaiment représenté." I have not the smallest hesitation in believing that professors of sport will acknowledge the above literary extract to be truly English in *motif*. That you, sir, will take care that this and the many salient points of my letter are tellingly punctuated; that neither my French nor English words suffer mutilation from sub-editorial conceit, or massacre from the typical printer, is not more than can be legitimately demanded by

BOODLE FITZ-BOODLE.

HISTORY OF THE POTTER'S ART IN BRITAIN.

PROFESSOR RUDLER, F.G.S., delivered a lecture on this subject on Saturday evening last, in the theatre of the London Institution, Finsbury-circus, under the auspices of the Cymmrodorian Society.* The Right Hon. W. E. Gladstone presided, and, in the course of a few introductory remarks, said the lecturer was well qualified to speak on the subject, not only from his appointment in connexion with the University College of Wales, but from his former connexion with the Museum in Jermyn-street.

Professor Rudler said that in one sense it is true enough there are few things more easily destroyed than a piece of pottery; yet, in another sense, it is equally true there are few things more imperishable. Let a piece of earthenware or of porcelain fall upon the ground, and it is broken perchance into a score of fragments; but those fragments may be exposed age after age to the action of the atmosphere without suffering disintegration. A piece of any of our common metals, or even of certain varieties of stone, will be much more readily attacked by a moist atmosphere, and may eventually be converted into chemical compounds in which all trace of the original form is lost. The free silica and the silicates which enter into the constitution of a piece of earthenware are, however, remarkable for their stability; and, as a consequence of this stability, we find pottery, more or less fragmentary, among the most abundant relics of archaic civilisation. Contrary, then, to what might perhaps at first have been expected, the relics of the potter's art have come down to us in tolerable abundance, and in a fair state of preservation. The lecturer dwelt on the great antiquity of the art, and the obscurity of its origin; touched on the use of natural objects, such as gourds and calabashes, skins and horns, as substitutes for pottery; and showed that even in an advanced state of the potter's craft some of these objects had been used as models for very elegant vessels. Unquestionably, the oldest specimens of fictile art found in Britain are those vessels which are occasionally brought to light during the exploration of our tumuli or barrows. These burial-mounds are probably of very different dates, but some clue to their relative antiquity may be found in the character of the weapons, ornaments, and other objects associated with the interments. Some of the barrows are probably to be referred to the *Neolithic* period,—a period in which man was in the habit of using in this country polished stone implements, but was ignorant of the use of metals, excepting, perhaps, gold. A large number of sepulchral mounds indicate, however, a higher phase of civilisation, and belong to that period which has been called the bronze age. This pottery generally takes the form of mortuary urns containing the ashes of the dead; but in interments by inhumation smaller vases, called "food vessels," are not unfrequently found at the head or at the feet of the skeleton. Still smaller vessels are occasionally met with, and these are fancifully known as "incense cups," but more probably they may have been used, as Dr. Birch has suggested, as lamps. Another class of sepulchral pottery is found in the "drinking-cups," which are tall narrow vessels, generally ornamented more highly than the others. The ornamentation of all this early pottery is extremely rude, consisting for the most part of mere incisions running in horizontal bands around the vessels, and sometimes disposed in zig-zag and cross-like patterns. The paste is always very coarse, and commonly contains white grains of quartz and flakes of mica. The pottery has been but imperfectly fired, so that the heat has in most cases not penetrated to the interior, but still the vessels are not, as has been asserted, merely sun-baked. It is believed that all this early pottery is hand-made, that is to say, it has not been thrown upon the potter's wheel. Ancient as that simple contrivance unquestionably is, it does not appear that it was used in Britain prior to the Roman invasion. As an example of this ancient British pottery the lecturer selected a cinerary urn which was discovered in 1813 in a stone cist beneath a tumulus on the banks of the river Alaw in Anglesey. The spot on which it was discovered is still known as Ynys Bronwen, and here, according to tradition, was the burial-place of the famous heroine. Reference was made to the description of the burial in the *Mabinogian*:—

"Bedd petruse a wnaed i Fronwen ferch
Lyr ar lan Alaw, ac yno y claddwydhi."

Whilst acknowledging the extreme caution necessary in attempting to identify any interment with traditional associations, it was admitted that much might be said in favour of the identification in this instance. Assuming, then, that this urn really contained the ashes of Bronwen, its date would be about A.D. 50. During the Roman period, great quantities of pottery were imported into this country, and carried whithersoever the Roman arms extended. At almost every station fragments of the so-called Samian ware are to be found. Attention was called to its beautiful sealing-wax red colour, to the very fine texture of the paste, to the delicacy of the glaze,—which is due to an alkaline silicate,—and to the elegance and variety of the ornamentation in relief. Specimens dug up in London were exhibited from the lecturer's collection. Whilst most of this Samian ware appears to have been imported, it is probable that some of it, or at least an imitation, was manufactured in this country, for a fragment of a mould evidently used in making a Samian bowl has been lately discovered at York. Whatever doubts may exist, however, as to the place of manufacture of this ware, there can be no question that an extensive fabrication of coarser ware was carried on in this country during the Roman period. Remains of Romano-British potteries have been discovered in the Upchurch marshes at the mouth of the river Medway; in the New Forest; at Caistor, in Northamptonshire; and, quite recently, near Colchester. Of the latter discoveries, an interesting account appeared in the *Times* of the 11th inst. Specimens of these wares were exhibited by the lecturer, and their characteristics explained. Our knowledge of the pottery of the so-called Anglo-Saxon period is not so full as that of the preceding epoch. The rude English invaders appear to have used vessels of glass, metal, horn, and wood, but their pottery is chiefly known by sepulchral urns. These differ from the Celtic urns in being generally thinner in the body, and in having been thrown on the wheel, whilst the form is generally that of a bottle, with an oblate body, ornamented with bosses and rudely-stamped marks. Passing over the Danish conquest, which does not appear to have greatly affected the potters' art, reference was next made to the Anglo-Norman pottery, especially to the kiln discovered in Derbyshire by Mr. Llewellyn Jewitt. Of Anglo-Norman pottery, the lecturer referred to a representation on the walls of a large pitcher ornamented with horse-shoes, &c., the arms of the Ferriers, a family etymologically equivalent to our English Smiths. Nor were the glazed tiles of our Norman abbeys overlooked. As to the vessels made by the Mediæval potters, little, definitely, can be said, though the researches of Mr. Chaffers have taught us what were the principal types used for household purposes. Unless they are found in association with coins or other objects, by which a date can approximately be fixed, it is by no means easy to refer these vessels to their proper periods. The "grey beards," or stoneware bottles with a grotesque mark under the spout, were extensively imported from the Low Countries. Such vessels were also known as "Bellarmines," in derision of the famous cardinal of that name. Delft-ware, or earthenware coated with an opaque white tin-glaze, was likewise imported from

* A re-revival of a society of the same name established in London in 1751. The objects of the society are to encourage the study of Welsh literature, poetry, music, science, and art; to assist in the development of skill in designs and manufactures; to offer prizes for compositions at Eisteddfodau, &c.

Holland. At the same time, it is certain that a large quantity of coarse pottery was manufactured at certain localities in this country; and at as early a date as 1466, we find references to the potteries of North Staffordshire,—potteries which have since grown to such a state of development as to be at the present day the great centre of the fictile industries of Britain. Large dishes of coarse earthenware, tygs or many-handled mugs,* and the curious old butter-pots, are among the best known examples of early Staffordshire pottery. The lecturer called attention to a green-glazed puzzle-jug made in the Staffordshire potteries in the year 1691, and bearing the incised inscription, "John Wedg Wood" (*sic*), with the date. This interesting piece is now in the Museum of Practical Geology in Jermyn-street, which contains the finest known collection of specimens illustrating the history of the potter's art in Britain. The John Wedgwood here mentioned was great-uncle to the famous Josiah Wedgwood, who stands forth as the central figure in the history of our ceramic industry. In order to mark the influence which Wedgwood exerted, the lecturer referred briefly to the principal kinds of ware manufactured in Staffordshire prior to his appearance. These were, especially the old agate-ware, the tortoise-shell ware, and the salt-glazed pottery, often termed Elizabethan ware. Descended from a long line of potters, Josiah Wedgwood was born at Burslem in 1730. At an early age he was apprenticed to an elder brother, who had succeeded to the pottery which had belonged to their father. After the termination of his apprenticeship, Josiah worked in other parts of Staffordshire, associated at one time with a well-known potter named Whieldon. At the age of thirty Wedgwood returned to his birthplace, and established a business of his own. It was when thus thrown upon his own resources that the genius of this remarkable man asserted itself. The lecturer described the principal kinds of ware which Wedgwood either improved or altogether created. These included the cream-coloured earthenware known as "Queen's ware," in allusion to Queen Charlotte's patronage; the fine crystalline bodies known variously as "granite-ware," "onyx-ware," &c.; the dense black fine-grained ware termed "basaltes" or "Egyptian-ware;" and, above all else, the famous "jasper." The peculiarities of the last-named material were explained, and reference was made to the use of barium minerals as components of the paste. It was in this ware that Wedgwood's finest pieces were executed, including his famous reproductions of the Portland vase. The history of this remarkable vase was sketched. During Wedgwood's career he was fortunate in associating himself with Mr. Thomas Bentley, a gentleman of excellent artistic taste and classical learning. Working together, they left no stone unturned to improve and elevate their art, Wedgwood giving his attention especially to technical improvements in the paste, and Bentley to the selection of the finest classical models, which were copied by such artists as Flaxman and Pacetti. Whilst Wedgwood executed his works in extremely fine materials, it must be borne in mind that he never attempted the production of *true* porcelain. Before concluding this portion of his remarks, the lecturer called attention to what he characterised as a most interesting exhibition of Wedgwood ware, now on view at Messrs. Phillips's, in Oxford-street. The collection consists of upwards of 1,100 pieces of great value and interest, many of them being lent by the Wedgwood family. After referring to the early production of a material believed to be porcelain by Dr. Dwight, at Fulham, the lecturer passed to the old productions of the famous factory at Bow. Evidence can be produced showing that these works were modelled after the pattern of those at Canton, and were consequently called "New Canton." The excavations at Bow Common by Messrs. Bell & Black in 1868 were referred to, and the character of the early Bow china explained. Attention was called to the resemblance between some of this, and that produced at the works which were soon afterwards established at Chelsea. Lady Charlotte Schreiber's researches into the history of the early porcelain works of this country were referred to, and the interest of her great and valuable collection was noted.

* The lecturer incidentally remarked that the use of the word "mug" as a vulgar synonym for the human countenance was doubtless due to the employment of representations of the face on the spouts and other portions of jugs.

The marks used on our different kinds of English porcelain were exhibited, and selected examples were represented in a series of diagrams sketched by the lecturer. On the disposal of the Bow and Chelsea works to Mr. William Duesbury, of Derby, Derby became the great seat of porcelain manufacture. After referring to the Chelsea-Derby or Chelsea-Duesbury china, the speaker referred to the well-known Crown Derby pieces, and told the story of the pair of vases made by the workpeople for presentation to King William IV. on the passing of the first Reform Bill, but not accepted in consequence of their political significance. Dr. Wall's porcelain works, established at Worcester in 1751, were described, and the characteristics of the early Worcester china noted. Mr. Carlyle's description* of the famous Worcester mugs ornamented in transfer printing with the portrait of the "Protestant hero," was mentioned. It is pleasing to note that while a great advance in our ceramic industries was made at so many localities about the middle of the last century, Wales did not lag behind in this movement. About the year 1750 a pottery was established at Swansea, and specimens, marked "Cambrian pottery," are well known to collectors. According to Donovan's "Excursions in South Wales," porcelain was made there during the last century, but it is believed that no china of repute was manufactured until the year 1814. At that time the works were in the possession of Mr. Lewis Weston Dillwyn, who had purchased them of the former proprietor, Mr. George Haynes. Under the name of "opaque china" a superior kind of ware was made at Swansea in the early part of this century, and this ware became famous for the remarkably faithful representation of birds, insects, and other natural history objects. This was due to Mr. Dillwyn's taste and knowledge as a naturalist, and to Mr. William Weston Young's skill as an artist in depicting natural forms. The introduction of the fine paste which became so well known as Swansea china, and was generally marked with the name of the locality, and sometimes also with a trident, appears to have been originally due to Billingsley and Walker, two workmen from Worcester. After it had been made for only a few years its manufacture was abandoned, and eventually the plant was sold to Mr. Rose, of Coalport. This was in 1820, and at this date, therefore, the production of the old Swansea ware ceased. Mr. Rose also purchased about the same time the porcelain works at Nantgarw, near Cardiff, where a very beautiful china had been made since 1813 under Billingsley and Walker. All the porcelain previously noticed has belonged to that class which is termed "soft paste." The lecturer next proceeded to describe the discovery, by Cookworthy, of materials with which he was able to imitate the famous "hard paste" of Oriental potters. These materials were the Cornish china-clay, which he compared with the Chinese *kaolin*, and the Cornish china-stone, which he believed to be similar to the Oriental *pe-tun-tse*. Whether the identification was right or wrong did not much matter, but armed with these materials he succeeded in making a true hard paste at Plymouth. After a few years devoted to this manufacture, he sold his patent rights to Richard Champion, of Bristol. Instead of dwelling on the Bristol china factory, the lecturer referred his hearers to Mr. Hugh Owen's "Two Centuries of Ceramic Art in the City of Bristol," and contented himself with describing a tea-service made by Champion for Edmund Burke, for presentation to Mrs. Smith, of Bristol, with whom Burke stayed while contesting the Bristol election in 1774. The patent for producing the hard paste was sold by Champion in 1777 to a company of Staffordshire potters. In conclusion, the lecturer presented a graphic representation of the history of the potter's art in Britain, in the shape of a curve, tracing its development from the commencement of our era to the present day. He regarded the productions of the present time as standing, on the whole, higher than those of any previous period, and referred to the excellence of the Worcester porcelain manufactured under Mr. Binn's direction. Looking to the future, he expressed his belief that the development must continue, and therefore he carried the historical curve onwards to the twentieth century; for, he observed, we have in this country all the scientific knowledge necessary to assist the potter in effecting technological improvements, *i.e.*, improvements in the character of the paste, of the glaze, and of the colours used in decoration. The potter of th present day can command scientific resource utterly unknown to his forefathers, and it pleasing to note that manufacturers seem aliv to the advantage of applying the principles science to the development of their industri arts. The desire for technical education show this, and the lecturer referred to the scheme f the establishment of a metropolitan technic college by the city companies, in whic it was to be hoped that the potter's a would occupy a place. And if we posse the science necessary for the technologic development of the potter's art, do we n equally possess the art needful for its æsthet development? The lecturer referred to th training of designers in the Government school of art, and the aid which could thus be given t the potter, illustrating his observations b reference to the ornamental stoneware recenti manufactured at Lambeth by pupils of th Lambeth School of Art, under Mr. Sparke By the kindness of Mr. Henry Doulton, a larg selection of this "Doulton ware" was exhibite But the lecturer held that the schools of ar were doing a greater work than that of merel training professional designers, in that the spread a knowledge of the principles of ar among the people. Whether the potter's art i to improve in the future depends, indeed, upo the people rather than on the manufacturer When the manufacturer launches a number o new designs upon the market they undergo "struggle for existence," and whether the goo or the bad forms survive is entirely at the pleasur of the people. If the public taste is refined, i discards the bad examples, and these will there fore die out, whilst it selects those whic possess the greatest excellence. When ne designs are wanted, the manufacturer will natu ra'ly take those which have been most popular and endeavour to improve and modify thes selected types. Public selection then come again into play, and any modifications whic have been conceived in bad taste, go to the wall whilst those which are really improvement come to the front. In this way we may hope t accumulate improvement upon improvement and gradually to evolve higher and yet higher forms of beauty. Beauty, however, is not the only element which the manufacturer needs t take into his consideration. Most of our pottery is made for some useful purpose, and we may rest assured that it will not find a market unless it fulfils its destined function. What we want, therefore, is a combination of beauty and utility. But if the taste of the people be sufficiently cultivated by a wide-spread knowledge of the principles of art, the future of the potter's craft in Britain is well assured. For in that great struggle for existence to which all new designs must need be exposed in the market, public selection will determine the survival only of the fittest and the fairest.

Mr. Gladstone, in moving a vote of thanks to Professor Rudler, said:—I must quite sustain, so far as I am able, what has been said by the lecturer with regard to the potter's wheel. We have enjoyed the presence this evening of a gentleman of great distinction, Dr. Schliemann, to whom you are desirous of paying a tribute of admiration, and to whom all those who are interested in the early stages of human history and human effort are most deeply indebted. He, like me, is apt to date the beginnings, in many instances at least, of our knowledge from the period of Homer, which may be fixed at somewhere between 1,000 and 1,200 years before Christ, and that is a period in which we find the potter's art, not in its very earliest stage, but in the stage at which, apparently, the potter's wheel had been just invented and had come into use. It was then a rare object, attracting a great deal of curiosity, and the use of which had not been at all common. . . . . I cannot pass by the name of Wedgwood without a word. Perhaps I am a little given to what is called hero-worship, and Wedgwood is one of the heroes whom I worship. I do not hesitate to say that I consider Wedgwood, taken altogether, to be the most extraordinary man whose name is recorded in the history of the commercial world. Putting together the whole of his qualities and the whole of his performances, Wedgwood completely revolutionised the character of the whole of the fictile wares made in England in his period. He recalled into existence the spirit of Greek art. Whatever we may say of earthenware and porcelain manufacture prior to Wedgwood's period, it had never risen to the level of the spirit of Greek art. If you compare the famous porcelain of Sèvres—the vases of

* "Frederick the Great," book xviii., chap. 10.

Sèvres—with the vases of Wedgwood, or the forms of Chelsea and Bow with the forms of Wedgwood, I do not hesitate to say that, in my opinion, they are greatly inferior. Although Wedgwood revived Greek art, although he seems to have shown he was not satisfied with the forms of Sèvres, yet he did not revive classical forms in a servile spirit. Though in all his productions you are reminded of Greek art, they are not mere reproductions. His style is strikingly original; and although, as the lecturer has said, he was most powerfully aided by such men as Bentley, yet I may say of him what people have justly said of Queen Elizabeth and her Ministers Burleigh and Walsingham,—"How came she to have these great Ministers?" It was because of her judgment and discrimination, which enabled her to bring them around her. Not only did Wedgwood completely revolutionise the character of the fabrics, but he carried the manufacture of earthenware which is not porcelain to by far the highest point which it has ever attained in any country in the world. Before the time of Wedgwood England was not particularly distinguished in respect of the potter's art, and down to the eighteenth century, on the whole, we were importers and not exporters of pottery. We learnt from the world, rather than supplied the world; but from the hour Wedgwood came upon the scene all this was altered, and we became great exporters of pottery, and from St. Petersburg on the one hand, to the Mississippi on the other, the name and the productions of Wedgwood became familiar, and were everywhere met with. The crowning triumph that he achieved was this,—that Continental factories set about the imitation of his works, and the royal factory of Sèvres, richly and largely endowed as it was by State funds, not only condescended to endeavour to rival Wedgwood and his works, but directly imitated them. At the same time, it must be admitted that, great as was the power applied in their department of this art at Sèvres, Sèvres Wedgwood is not equal to the genuine work of Josiah himself. Those who love the art of the potter and his works should ever bear in veneration the name of Wedgwood. There is a very curious circumstance in connexion with Worcester porcelain I might mention, which, I think will be interesting to those who have heard the lecture. Unless I am very much mistaken, the Worcester porcelain works were distinguished from most of the factories of the day by their self-supporting character. Chelsea, in a great degree, was dependent upon the assistance it received from the Duke of Cumberland. The factory at Worcester took its origin from a very curious circumstance. You have heard of Whigs and Tories. In the middle of the last century one of these parties had the upper hand in the elections in the town, and I am so impartial in this matter that I have absolutely forgotten which it was. The party that were undermost founded the Worcester porcelain factory, in order to keep together a good, compact, stout body of voters, so that they might attain predominance at future elections. I quote from Mr. Binns's history. But what is astonishing to me is that this strong political infusion into the factory did not utterly spoil the work. I should have feared, under the circumstances, that the workmen, instead of thinking of anything beautiful or likely to give vitality to their works, would have had their thoughts diverted to the last or to the coming election. It is presumptuous of me to endeavour to fill up what I may be pardoned in supposing to be a blank on the part of the lecturer, but I would suggest that the anchor-mark, which Mr. Rudler described as peculiar to Chelsea pottery, may have been derived from the original connexion of Chelsea pottery with the Venetian porcelain manufactory. It is a known sign of the Venetian potters, and there are many resemblances between the Venetian works and those of Chelsea. I am bound now, after what I have said about Worcester, to state that the Worcester people made great use of what the lecturer has called "the blue chequers mark." I am afraid I must now convey to you a suspicion which prevails upon my mind of a painful character. I am afraid that the blue chequers mark savoured strongly of forgery, and was intended to convey, in an illegitimate manner, the notion that this kind of ware was the product of the East: it is a common mark upon Eastern porcelain. I will give you my reason for fearing this is the case. The Worcester people did not confine themselves even to the marks which are delineated on the diagrams. I was on one occasion in an auction-room at Christie's, when I had more time for such a purpose than I now have. I noticed there what was manifestly and palpably a Worcester tea-pot, with a beautiful blue glaze, and flowers in red and gold. I took up this tea-pot, and to my great astonishment I found upon it the well-known German mark "Karl Theodor." I thought this was very singular, and that I should get this tea-pot for an "old song." I was unable to stay myself, so I commissioned a dealer who was in the room to buy it. I told him that as it had got the "Karl Theodor" mark upon it, it might not be recognised as Worcester, and that he would most likely get it for a guinea. He got it for under a pound. If, instead of having the "Karl Theodor" mark upon it, it had had its own Worcester mark, it would have been worth at least five guineas. This was a remarkable illustration of the proverb, "Honesty is the best policy." I think it supports my suspicion that the chequers mark was intended to convey to the uninstructed the idea that the work was an Oriental product. I wish, in conclusion, to express the strong opinion that I entertain, which matter it has hardly come within the scope of even this comprehensive lecture to declare, that the fictile art of porcelain is strictly a branch of fine art—as truly a branch of fine-art as the art of the sculptor or the art of the painter. I do not say it is as important a branch, or so high a branch, or one by which we may rise so far into the region of the ideal as in sculpture and painting, but, in my opinion, it is strictly a branch of the fine arts. I will tell you why. The representation of the human figure is the crowning-point of all fine art in all branches of it. Now, I contend that there are certain specialities in the use and application of the art of making porcelain to the representation of the human figure. You represent the human figure in the solid in porcelain, and you can represent it in the most complicated groups. You are accustomed to see four, five, six, or eight figures put together in groups of porcelain without the smallest sense of impropriety; the combination appears perfectly harmonious. Now, to the sculptor in marble that is almost impossible. Even amongst the most famous works of the ancients,—I am speaking of solid figures, not of bas-reliefs,—it is extremely difficult to find instances where as many as five or six figures have been successfully combined; indeed, it has seldom been attempted. It has been attempted in the famous case of the Dircean Bull at Naples, which is a very unsuccessful attempt and most unsatisfactory in itself. In the case of porcelain, you will find no difficulty in these combinations; they are perfectly natural and proper. When you produce the human figure in the solid in porcelain you can combine with it a perfectly free use of colour. That is peculiar to porcelain; you cannot have it in bronze or in ivory; and even those who have carried furthest the doctrine of the application of colour to sculpture have never proposed anything more than an extremely limited use of it. The limits of size in porcelain appear to be fixed by nature. Of porcelain figures so modelled as to be called works of art, the smallest, I think, are between 3 in. and 4 in. high; from this they ascend to from 20 in. to 24 in.; but within these limits of size there is scope for every facility of combination, for every variety of attitude, as well as a free and unrestrained use of colour. It appears to me that this description of production has a peculiar claim to be denominated a branch of fine art, on account of those facilities in the expression of the human form, with specialities of colour, which belong to productions of no other description.

PROPOSED EXTENSION OF THE HOSPITAL FOR CONSUMPTION, BROMPTON.

THE sub-committee determined against a limited competition, such as we recommended, but advised the Committee of Management to make a selection of an architect out of the following three names,—Mr. Alex. Graham, Mr. H. A. Hunt (the hospital surveyor), and Mr. Thos. H. Wyatt. At a meeting of the Committee of Management on the 10th, Mr. Wyatt was elected architect, after a ballot.

The Simpson Statue, Edinburgh.—It is stated in the *Scotsman* that the Statue of Sir James Simpson, bart., the pedestal of which has just been erected at the west end of Prince's-street Gardens, is likely to be unveiled on Saturday, 26th inst. The sculptor is Mr. Brodie.

THE HEALTH AND SEWAGE OF TOWNS.

CONFERENCE AT THE SOCIETY OF ARTS.*

WE this week conclude our notes of this Conference. The exigencies of space render it impossible to record all that was said during the two days over which the Conference extended, and what we do record must necessarily be brief.

Treatment of Sewage at Manchester, Salford, and Birmingham.—Mr. P. Le Neve Foster, secretary to the Society of Arts, read a paper on this subject, in the course of which he said that there are some 67,000 houses in Manchester, and only 10,000 water-closets. The attention of the authorities has been mainly directed to dealing with the larger portion, which has hitherto been principally served with ash-pits, middens, and privies, and the like. These, however, under the active operations of the Corporation, are fast passing away, and their places being taken by improved cinder-sifting closets, which, under compulsory powers, are superseding the old system. At the present time, there are 28,000 closets on the cinder-sifting principle, and 14,000 of the old midden closets still remaining. These latter, however, are gradually being got rid of, and the improved closets substituted in their stead. The change is taking place at the rate of about 200 per week, and it is expected that this rate will increase, and that the whole will be converted in a year and a half from this time. This closet is either put up by the owner, or the Corporation supplies the closet complete for 4*l.* 4*s.* Under the seat the fæces and urine are received in a special metal or wooden pail or tub. By the side is a cinder-sifting arrangement, by means of which the fine ashes fall into the pail or tub, whilst the coarser parts fall on the floor below, and are ready for use again as fuel. At the back of the closets is a movable wooden receptacle, where all the other house rubbish, such as vegetables, straw, house sweepings, &c., are thrown. Slop waters pass through a grid into the sewers. At Salford, the Corporation was perpetuating an improved midden system, compelling all to be covered in, though in some instances they were getting Morrell's automatic cinder-sifting closet into use; but the cost of conversion (stated at 12*l.*) was operating as a strong check to its introduction. At Birmingham and its saburbs, with about the same population as at Manchester, there are 8,000 water-closets, and 20,000 pail-closets, and a still larger number of middens and privies. The pails here collect the fæces and urine together, but no ashes are mixed therewith. General Scott subjects the contents of the pails to chemical treatment, which results in the production of a highly-concentrated manure, stated to be saleable at 6*l.* 10*s.* per ton.

Pail, Pan, and Middle Systems generally.—Mr. Gilbert R. Redgrave presented a report which he had been commissioned to prepare by the Council of the Society of Arts on the various systems of disposing of dry sewage. He remarked that for various reasons, the water-closet system has never yet been generally introduced into some of the most important manufacturing towns of England. It is useless, in the case of these towns, to point out the numerous advantages to be derived from the use of water as a carrier, or to show that, even when a so-called dry system is resorted to, some arrangements must be made for dealing with the slop-water and the rainfall. Even in the midden towns, there is, of course, a more or less perfect system of sewers and drains, as also in the water-closet towns there must always be a properly organised dry collection, for disposing of the ashes and street refuse. A double system is, in fact, everywhere imperative. Mainly owing to the exertions of the officers and inspectors of the Board of Health, and the admirable reports of the medical officers to the Privy Council, the abominable midden system, as it formerly existed in all old towns, is fast disappearing, and in its place we find numerous contrivances for abating the nuisance and evil occasioned by the retention near our dwellings of vast heaps of putrefying refuse. He looked upon the pail system, when properly attended to, and superintended by the local authority, as the most simple and practical plan of dealing with the excreta of a manufacturing population; and it is certainly the only one which holds out any hope of the profitable utilisation of fæcal matters in the future. The report then went on to consider the pail system in detail under three sub-divisions, viz.:—(1) Pails used without absorbents; (2) pails used in conjunction with

* See p. 484, *ante*.

absorbents; and (3) pails used for the joint collection of the ashes and the excreta. Having described the application and practical working of one or other of these systems in towns of different sizes and under varying conditions, the report proceeded to lay down the following general rules to be observed in the working of pail systems:—

"That one week is the longest period that should elapse between the times of emptying each receptacle, unless the liquids and solids are kept separate.

That the covers used for the removal of the pails from the house to the van should be absolutely air-tight.

That the vans for the conveyance of the pails to the depôt should have air-tight doors, and be sprinkled at the bottom with some cheap deodorant.

That the introduction of deodorants into the pails is of little use, as the quantity that can be applied is almost immediately buried or exhausted.

That no system of 'filling-up' or emptying the pails into liquid-manure carts should be permitted, but that each pail, with its contents, should be brought to the depôt, and a clean one substituted for it in the privy.

That it would be an advantage in the pail-system to provide some ready means for the separation, in the receptacle itself, of the solids from the liquids; and, lastly,

That the removal of the pails should be entirely in the hands of the local authority, and should be conducted upon some such careful system as that practised in Rochdale."

The report concluded by reviewing at some length the practical and financial aspects of the various plans now being tried for the utilisation of the excreta for the manufacture of manures. All such plans might still be said to be in the experimental stage; but they presented much that was hopeful, and gave promise that the difficult question of the profitable utilisation of excreta was in a fair way of being solved.

Utilisation of Nightsoil.—Mr. Milburn read the substance of a paper describing the treatment and utilisation of nightsoil by its conversion into a concentrated manure by means of his drying machinery. The manure thus prepared he stated to have a market value of from 7*l.* 10s. to 8*l.* per ton.

In the course of the discussion which followed, Mr. Alderman Towle, of Oxford, who described himself as an old practical farmer, ridiculed as utterly fictitious the asserted values of the various chemically-prepared sewage manures. Some of the stuff resulting from long and tedious processes of manufacture it was not worth the farmer's while to cart upon his land, even if it cost him nothing.

Sewage Farming.—Mr. D. H. Humphris stated that at Cheltenham the larger solid particles were strained in the tanks, and the fluid was disposed of on the land of neighbouring farmers. The average deficiency on the operations of the past six years was about 90*l.* per annum. The Corporation was anxious to obtain an increased area for irrigation, but the negotiations had been interfered with by the passing of the Rivers Pollution Act, under which the proprietor of the land thought he incurred some risk.——As to Croydon, Mr. Baldwin Latham reported that during the past year sewage irrigation had been carried on at less loss than in previous years. The main obstacle to a satisfactory financial result was the exorbitant price demanded for land for purposes of irrigation. The Local Board was now paying 12*l.* per acre for 500 acres, and at Norwood 20*l.* per acre was now demanded, being an increase of cent. per cent. on the rental formerly paid. True, the land was rising in value for building purposes.——As to the Wrexham sewage-farm, Col. Alfred Jones, V.C., read a statement of accounts showing that during the past five years his receipts in respect of the farm had been 7,245*l.* 2s. 10½d., while his expenditure on the same account had been 7,428*l.* 8s. 3½d. The valuation of live and dead stock, taken on the 1st of February, 1877, amounted to 877*l.* 3s. 2d., and the present value of permanent works to 786*l.* 6s. 5d.; consequently, by adding these two sums to the total receipts of the five years, —7,245*l.* 2s. 10½d. + 877*l.* 3s. 2d. + 786*l.* 6s. 5d.,—we have the gross produce of the farm for the period, viz., 8,908*l.* 12s. 5½d., and deducting the gross payments, 7,428*l.* 8s. 3½d., the remainder, 1,480*l.* 4s. 2d., represents the actual profit for the five years, subject only to any possible failure to realise the estimated value of stock and permanent works. This profit gives an average of 296*l.* 0s. 10d. per annum, being about 21¼ per cent. per annum on the average amount of capital embarked in the concern, or at the rate of 3*l.* 4s. 4½d. per acre per annum on the average extent of land occupied, viz., ninety-two acres.——It was reported by Mr. Kempson, of Leicester, that the Earl of Warwick's sewage-farm near Leamington was a very great success. 375 acres were occupied, and the land of adjoining farmers to the extent of 100 acres was supplied with sewage. It was as good a specimen of sewage-farms as could be seen, being well laid out, and drained to a depth of from 4 ft. to 5 ft.

Effluent Waters and Storm Overflows.—With reference to this subject, Mr. Chesshire said that the effluent of the Birmingham sewage was passed into the river Tame, but that river was infinitely fouler now, with all the filtration and precipitation of the sewage which had been going on for the past five years. It was, therefore, very clear that particles of solid sewage matter got into the river somehow, and without doubt the storm-water overflows were responsible for this. The town of Birmingham had thirty-five storm-water outlets, which represented an area eight times as large as the area of the two sewer outlets. When the sewers began to fill with storm-water the fœcal and flocculent matter, paper, &c., which adhered to the surface of the sewer in dry weather (and which were the source of all sewer gas) were dislodged, and, being of light specific gravity, they floated on the top of the water, and were carried over the culverts into the storm overflows, so that the impurity of the river was not to be wondered at.——Mr. C. Wollaston, C.E., described the works which he had carried out at Hurstpierpoint for the purification of effluent water by the Sanitary Carbon Company's process. The sewage, treated with a small quantity of lime in the form of milk of lime, combined with chlorine and chloride of magnesium, and the alumina contained in the ash of Kimmeridge shale, is allowed to flow through four tanks, each 11 ft. by 60 ft., and from the tanks is conveyed to two filter-beds, either together or separately used, of 25 ft. by 12 ft. area, prepared as follows:—1. A layer of sea-beach shingle, about 3 in. 2. 15 in. to 18 in. of sanitary carbon, broken to pass through a ½-in. sieve. 3. The carbon coarsely broken. 4. A top layer of shingle, in order to prevent the displacement of the carbon. Although the outlay was small, the practical results had been very satisfactory.

The Liernur (or Pneumatic) System of Sewerage was the first topic discussed on the second day, and came before the Conference in the form of a paper by Captain Liernur (read by Mr. Adam Scott, C.E.), describing the application of the system to the town of Dordrecht, and in which the writer called in question the accuracy of a great many statements made as to the system by Mr. Rawlinson in his Report to the Local Government Board for 1876.

Market Value of Manures manufactured from Sewage.—In reference to this question, Mr. Baldwin Latham said it was practically impossible that the evaporation of liquids, collected by means of any pail-system, or the drying of sludge, could ever be made to pay its cost.——Professor Way said he was obliged to confess, after twenty-five years' investigation of the subject, that the collection of excreta and its treatment for manurial purposes could not be made to "pay" commercially.——Alderman Taylor (of Rochdale) and General Scott contested this statement, while Mr. Alderman Towle (of Oxford), while reiterating his views as to what he considers the utter valueness of "chemists' manures," in a humorous speech advocated the collection of sewage matter on the "separate" system, apart from the storm-water, and letting it flow over the heaths and commons round about. We might take a lesson from Berlin in this matter. He denounced as criminal, and foolish to boot, the custom of throwing our sewage into the sea. Mr. Redgrave cited what had been done, and was being done, at Paris by the evaporation of urine, to show that it might be made to pay, and pay well, in England.

Escape of Sewer Gas into Dwellings. — This was the subject of a paper read by Mr. Rogers Field, C.E., who said that in considering how to prevent the passage of sewage gases into dwellings we must start with the fundamental proposition that water-traps of themselves are no sufficient security, and seek for other means of effecting the object. The only reliable means are,—(1), The prevention, as far as possible, of the formation and accumulation of sewer gases; and, (2), The severance of the direct connexion between the sewer and the house. The formation and accumulation of sewer gases can be prevented, to a very great extent, by constructing the sewers and drains so that there is no retention of foul matter in them, and by efficiently ventilating them. Efficient ventilation of sewers, however, implies more than is generally supposed. It is not sufficient merely to afford relief of undue pressure, but the openings for ventilation in the sewers must be sufficiently large and numerous to create a continuous current of fresh air through them, so as thoroughly to dilute any gases which are formed in them, and prevent their accumulating in a concentrated form. The severance of the direct connexion between the sewer and the house will, if thoroughly carried out, render any passage of sewer air into the house practically impossible. One of the simplest forms of this severance, or "air disconnection," is the well-known arrangement by which the waste-pipes of sinks, baths, cisterns, &c., are carried through the exterior wall, and made to discharge with open ends over a trapped gully. It cannot be too strongly insisted on that this only way to prevent the sewer air being "laid on" to dwellings is to isolate the whole of the house-drains by disconnection. It is often considered that it is sufficient to disconnect the waste-pipes from sinks and cisterns, and that the soil-pipes of water-closets may be left in direct connexion with the sewers. This is an entire mistake. Take, for instance, the arrangement condemned by Dr. Buchanan, at Croydon, and which is a very usual one. The soil-pipe is left in direct connexion with the sewers, and a small ventilating-pipe carried up from the bend of the soil-pipe. This ventilating-pipe is, of course, an improvement as far as it goes, but it will only prevent undue pressure, and will not clear the soil-pipe of sewer air. In fact, the ventilating-pipe rather tends to draw sewer air into the soil-pipe than otherwise; as, if any air is removed by the ventilating-pipe, it must be replaced by air from the sewers. The effect of this arrangement is that if the least escape of air takes place into the house from the soil-pipe or the water-closet, it is "the common air of the sewers, not simply charged with the impurities it may receive from the particular house, but charged with any dangerous quality that it may have brought from other houses." It is, therefore, evident that, to leave the soil-pipe in direct connexion with the sewers, is literally to "lay on" sewer air to the houses. The only objections to severing the direct connexion of the soil-pipe with the sewers which are worth mentioning, are (1) that the soil-pipe ventilators will thus be prevented from acting as ventilators to the public sewers; and (2) that a smell may escape from the opening which is required on the soil-drain, in order to effect the disconnexion. As regards the first object, it cannot be considered the business of private householders to ventilate the public sewers, especially when danger is thereby incurred to the houses. Moreover, the arrangement of ventilating the public sewers by soil-pipe ventilators is a very insufficient one, as the openings would be too small and too indirect to create a current of fresh air through the sewers, which is the true function of ventilation. The second objection appears at first sight a more plausible one, but the danger of smells from the disconnecting opening on the soil-drain is more imaginary than real. The first step to be taken in order to prevent sewer-gas being laid on to houses appears to be that the Local Board of Health or other sanitary authority should have a proper set of by-laws prepared for house-drainage, based on sound sanitary principles. The bye-laws of most sanitary authorities are at present lamentably deficient in this respect; but there is no reason for their continuing so, as the Local Government Board will allow very stringent bye-laws to be adopted. The next step is that the sanitary authority should insist on these bye-laws and regulations being rigidly carried out in all cases of new houses or new connexions with the sewers. This would put a stop to the crying evil at present in existence, of new houses being continually built with all the drains directly connected with the sewers in such a manner that the passage of sewer-air into the house is an absolute certainty, and would compel architects to pay more attention to this matter than they do at present. With reference to old houses, the case is much more difficult, as the bye-laws could not be generally enforced in their case.

After a discussion in which the views of Mr. Rogers Field met with the almost complete concurrence of nearly every speaker,

Sir Henry Cole remarked that most of the gentlemen present were to be congratulated on the fact that they, not living in the metropolis, were able to effect any necessary sanitary works. We in London had spent four or five millions of money in making a gigantic set of sewers, but very happily, according to what had been stated,

as more than one-third of the houses in the metropolis drained into them. This sewage-gas was a terrible thing. For all that the vestries seemed to care, the health of London might go to Jericho. London was "governed," as it was called, by a combination, or rather a confusion of authorities, and between one authority and another a pretty muddle they made of it. As a practical illustration of this, he would only say that the successor of Mr. Stansfeld at the Local Government Board sat in one of the worst-constructed offices in London. Next door to him sat Mr. Cross. The eminent architect from whose plans these buildings had been erected seemed to have entirely ignored the whole question of sewage, or probably left it in the hands of a clerk of the works. It was only when the clerks began to get typhoid fever, and when Mr. Cross's nose was very much offended, that the drainage was seen to, and this in buildings which had cost 400,000*l*. He did not want to make this a personal matter, but he had no doubt the distinguished architect got his five per cent., and if so he ought to have given more attention to such important points; for, notwithstanding their cost, the buildings were totally unfit to work in. He hoped he had aroused the sympathy of his audience for "us poor Cockneys," who were under the sway of a Board of Works so benighted as to be unable to see any faults in the sanitary condition of London, and who stigmatised as "busybodies" those who, like the members of the Conference, were desirous of bringing about a better state of things. Any one going to remonstrate with them was assured that everything was perfect, and if he did not thankfully accept the assurance he would have the door shut in his face. Although in his parish typhoid fever was chronic, owing to the shortcomings of the authorities, the inhabitants could get no redress.

Mr. Richard Weaver, C.E., read a *précis* of a paper he had prepared "On the Exclusion of Sewer Air, with Notes on the Condition of Metropolitan Buildings." He said it was many years ago since he became acquainted with the inadequacy and insecurity of the usual hydraulic traps applied to house-drainage to stop the back flow of sewer air. At the most, and under the best conditions, assuming perfect joints, and with sound materials, they merely obstructed the rush of air; the passage from the drains to the house took place more slowly and insidiously. After labouring for some time for improvement, he adopted a simple device formed out of a syphon glazed ware pipe, with an opening at the socket, and communicating with the ground surface for the entrance of fresh air, and then, by the aid of openings at the tops of stack, bath, and soil-pipes, to keep up a system of natural and self-acting air circulation throughout the drainage; so that any passage effected through the porous pipes, joints, or traps,—very little, perhaps, by reason of the equal tension of the air within and without the pipes,—would be robbed of virulence, because the air, being ordinary atmospheric air, and not sewer emanations, is quite harmless. The idea was taken from, and, in fact, was an attempt to adopt underground, the system, not much practised in London, but common in provincial towns, of severing connexion with the scullery, by delivering the pipe into the air over a trapped grating, but which had never been carried into practice, so far as he knew, with water-closets, nor with drains passing through the house. As the arrangement had become known through the professional press and by the proceedings of a kindred association, and was possibly known to them, he would not further describe it. He might state, however, that with some years' experience of its working it gave him every satisfaction, as it thoroughly effected complete severance between the house and the sewer, preventing the admittance of any foul air and pollution to water, the whole being accomplished at a cost which is not immoderate, considering the substantial benefits derived; and that it did not generally exceed 5*l*. per house in occupied buildings,—in new structures practically amounting to nothing extra upon the usual drainage outlay. Some question had arisen as to the feasibility of implied action of the syphon system of ventilating and tapping drains and sewers, which was best answered by stating the result of many hundred examinations. The air circulation is produced by compound causes,—first, we have the currents due to the natural mobility of the air, as exemplified in all vertical shafts open at each extremity, and well illustrated by a chimney flue without a fire. This motion is accelerated by the passage of water down the pipes, creating a reversed aërial current, and again by the warm discharges from the kitchen. The upward flow is augmented by the heat absorbed from the sun's rays by the ventilating-pipes. But the most potent agent in keeping up the circulation is the wind blowing squarely across the mouth of ventilating-pipes, creating an exhaust and consequent up-current, for it is old knowledge that the rapid passage of a fluid across the orifice of a tube reduces the tension within that tube. Under exceptional circumstances and local obstructions, there is occasionally a down-draught through the pipes, which act as the long leg of the syphon system of ventilation, but this is of no moment, for the outlet being lower down and outside the building, the aërial discharge takes place there after sweeping through the drain-pipes, and is generally devoid of smell, for he found that after a few weeks' operation with fairly laid glazed pipes, although they might have been down for years, the oxidising effect of the continuous body of fresh air passing over the surface deposits within the pipes entirely consumed the putrid matters. The currents, however, were generally ascendant and delivered at the roof level. A series of observations conducted under varying conditions and localities determined the average velocity of flow at three to four lineal feet per second in calm weather, which increased to 9 ft., and often 12 ft. with a strong wind. And it was to this severance of the house from the sewer by the water seal of the syphon trap, in conjunction with the sweeping air currents maintained through every drainage pipe of the house, that he depended for clean air and clean water within the building.

After a great deal of discussion, the practical value of which was not enhanced by the gratuitous assumption on the part of some speakers that architects were generally either careless or indifferent to the importance of good drainage,—an assumption which was well answered by the practical remarks of Mr. John Honeyman and Mr. Ernest Turner, both architects,—the Conference terminated, apparently well satisfied with its two days' sitting, if the closing speech of the chairman (the Right Hon. James Stansfeld) might be taken as a criterion.

FIREPROOF FLOORING.

SIR,—I have just seen a short article in the *Times* of April 20th, 1877, on "Fireproof Flooring," which is there treated as a novelty and invention. Allow me to observe that this system of close-timbered flooring is, since more than two centuries, usually applied here to dwelling-house buildings. This system is one of the main features in our buildings. Its construction is regulated by the building laws of this capital; I therefore think that I might be entitled to say a few words on this subject which may be of some interest to your readers.

This sort of flooring seems to have been adopted by our forefathers chiefly as a safeguard against fire, or, at least, as a means of preventing the too rapid spread of fire in a building, and the experience of centuries has shown that it well answers this purpose if properly constructed.

The fireproof flooring alluded to in the *Times* seems to me to be defective in several points. First, as to fire from below, it is not sufficiently protected by the way it is spiked or screwed together, and by the method with which the protecting plastering is fixed. The spiking or screwing together of the joists is no protection against the cracking of the plastering which invariably sets in when the timbers begin to shrink, which they will do, at any rate, after a few years; but, as soon as the plastering is longitudinally cracked, it loses its protecting properties. The same is to be remarked as to fixing the plastering on half-driven nails or dove-tailed grooves; for as soon as the greater heat reaches the plastering, it crumbles to pieces. We lay the flooring in this way:—Round beams, of about 10 in. to 11 in. in diameter, are sawn through, in two halves, longitudinally, of course, and the sides are partly hewn vertical. These timbers or beams are laid close to each other, and the spikes applied to them diagonally, the spikes having no other purpose than to unite all the joists for bearing equally the weight laid on them. The plaster is then applied in this way. Dry reeds are laid vertically to the length of the beams, and fixed to them by wire and nails in such a manner that there should be a small space left between each stem of reed. If the reeds are not long enough to reach from one end to the other of the ceiling, they must at the joining ends overlap for at least 12 in., and be fastened by additional wires. The plaster laid on this rough surface is a mixture of common plaster and plaster of Paris or cement, and has a final layer of stucco.

I am sure that the flames and smoke which broke through the experimental flooring at the trial in London were entirely due to the shrinking of the joists.

In the second instance, as to fire from above the flooring, I find that it was not protected at all. We here place on the joists a layer of rubbish or refuse from the smelting furnaces, 4 in. to 5 in. thick, and apply the planking or parquets on the top of this layer, by first embedding into it 3-in. by 3-in. scantlings.

This flooring, if made of well-seasoned timber, and with proper care, will last centuries, and resist the attack of flames for a very considerable time. In fact, we have here very rarely a case of fire where the floorings are burnt out. Usually only the roof is burnt off, and the ceiling of the last upper floor damaged by water. It must be noted that we make this last ceiling exactly in the same manner as the other floorings, with the only difference that it is not timbered over with planks, but either a layer of stiff clay is laid on, or it is paved with flat tiles, and that there is also left a space of at least 6 in. between this top and the joists of the roofing structure.

As to building stairs with timber, we have found that it is impossible to make them fireproof; not that the woodwork could not be protected against rapid ignition, but because the danger lies in the inevitable twisting and bending of slight woodwork in great heat, which circumstance renders every protective covering nugatory. The law, therefore, here is, that all communication between the apartments and the street-door must be built of incombustible material; that is to say, that all the corridors, passages, and stairs must be built of bricks, stone, or iron, and vaulted in with brickwork.

I wish to say now a few words as to the drawbacks of this structure. In the first instance it must be stated that very wide spans cannot be floored over conveniently with this system, because this would require the strengthening of the wall to a very extravagant extent; the timbers require a certain amount of space for support on the wall. Let it be here remarked that it is unsafe to lay the timbers into the thickness of the wall. This space cannot be less than 3 in., but if the span to be floored over is more, than 20 ft., the support space must be increased proportionately, or the floor must be supported by pillars. Whatever contrivances may be applied for the better support of the floor timbers, it must always be borne in mind that ultimately it is always the wall which has to carry safely the whole weight and vibration of the structure and the incidental burden, and consequently there must be a corresponding strengthening of walls.

The timbers have to be kept carefully at a certain distance from all fireplaces and flues, and many are the structural contrivances by which we accomplish this, but all tend to weaken the strength of the flooring. Great care must be taken to protect the ends of the beams against decaying. This is not an easy task to accomplish, as these ends are the very Achilles-heel of the whole structure. Of late years we have had some very disagreeable experience in this, in spite of the great experience our builders and workmen have in carrying out this sort of flooring.

But after all it is very questionable whether all the advantages of this sort of flooring could not be secured by a judicious modification of the ordinary joist and scantling floor, which at any rate is much lighter, and therefore does not require such heavy walls as the close-timbered floor. Supposing the ordinary joist flooring to have underneath a planking with the same sort of reed and stucco cover as our flooring, and to have on the top of the upper planking a layer of rubbish, upon which the floor-planks or parquets are laid, would not that do the same service as far as fireproof requirements are in question? I certainly should say *yes*, and would also remark that the air-channels between the joists could well be used for ventilating and other purposes; besides we have found that the timbers are by far easier to protect against decay if there is a sort of ventilating space between them. We have many houses built here in this way, and they have behaved during fires just as well as the close-timbered houses; but, strange to say, we have again reverted to the old method of

close-timbered floors, in consequence of the greater cheapness of the latter, and partly also because the close-timbered floors are capable of supporting safely a greater weight and motion without so much vibration as the joist-floors.

In conclusion, I beg to say that you are at liberty to make any use of this letter you please, and that I shall be most happy to furnish you any details you may desire, be it in this or any other matter concerning the building profession.

Ladislas Vidéky,
Royal Hungarian Engineer at the Met. Board of Works of Buda Pest.

LARGE NEW COAL DEPÔT FOR THE MIDLAND COMPANY AT KENSINGTON.

The Midland Company will shortly add another to the large and costly coal depôts which they are from time to time constructing in different parts of the metropolis. At a cost of about 40,000*l.* they recently purchased a plot of land, upwards of seven acres in extent, situated immediately to the west of the Metropolitan Railway, and adjoining the High-street, Kensington, station, and on this land they are now engaged in the construction of an extensive coal depôt. The land is bounded on the south by the Kensington workhouse and casual wards, and on the west side by Wright's-lane, where access to and from the depôt will be had, and there will also be access to it on the south-east side from Kelso-road, thus placing the depot in communication with the neighbourhood of High-street, Kensington, on the north-west side, and with the localities of Brompton and South Kensington on the south-east. The coal-bays will be at the south end of the depôt, covering an area of 360 ft. in length and 82 ft. in depth, and to prepare this space for the bays a heavy amount of excavation is required, and already upwards of 20,000 cubic yards of earthwork have been removed, and about 10,000 cubic yards have yet to be cleared away. The excavations have been carried to a depth of about 20 ft., and at the northern end a retaining wall, 3 ft. 6 in. in thickness, has been erected, and wooden piles, secured by iron rods and girders, have been carried up to the level upon which the railway-bays—sixteen in number—will be laid. There will be thirty-four shoots for discharging the coals out of the wagons into the carts, and storage ground beneath. On the remaining portion of the area of the depot northwards, in the direction of the Kensington Station, a number of lines of rails will be laid down to be used as sidings, and for the temporary storage of coal in the trucks. The portion of the depôt forming the bays at the south end will be covered in with a roof of corrugated iron. The Midland Railway having no direct physical communication with the Metropolitan line at Kensington, access to the depot will be obtained by a rather circuitous route. The coal trains will be diverted from the Midland main line at the Welsh Harp, and thence pass along their Acton branch to Gunnersbury, from this point they will proceed along the South Western line to the Shaftesbury Park Station, and thence by the extension of the District line, now in course of construction, between Shaftesbury Park Station and the Hammersmith Station of the District company. From Hammersmith they will be continued to Earlscourt, and *vid* this route will finally reach the depôt at High-street, Kensington, by an incline of 1 in 50, now in course of construction, between the station and the depôt. The making of this connecting incline will necessitate the removal of the large water-tank belonging to the Metropolitan Company, immediately adjoining the station.

The entire cost of the depôt, including the land, will be upwards of 55,000*l.* Messrs. Wall Brothers are the contractors, and Mr. Odish is superintendent of the works.

NOTTINGHAM EDUCATIONAL BUILDINGS.

Sir,—As your critic of last week confesses himself puzzled by the *dormers* on my design, may I explain that the chimneys (each containing two flues 4½ in. by 9 in.), which are combined with them, are not intended to carry off *smoke*; but the fumes from the "evaporation niches" in the laboratories. At Bonn and Berlin these are concealed in the parapet; in other instances they are down-draughts connected with one ventilating shaft. My object was to show them, and thus give a definite character to the design. The *oriel windows* also are practically useful for microscopical observation.

Edward J. Tarver.

RYDE, ISLE OF WIGHT.

Ryde is sewered into the Solent in front of the town, the sewage being poured out into shallow water (at low water), where pleasure-boats congregate. Plans have been made, and an estimate has been prepared, for the diversion of the sewage so as to discharge it away from the front of the town, out into deep water, and into a swift current; but the Rydeite members of the Town Council will not undertake the work.

Recently there has been local inquiry in Ryde for extensions of main sewers and other works. The inspector learning that the sewers of Ryde are unventilated, and that the outlet is into the sea, and the street gradients are steep, he properly inferred that sewage gases in a concentrated form pervaded the sewers and houses, to the serious injury of hundreds of innocent victims.

The inspector then pointed out to the Local Authority the dangers of retaining sewers unventilated, and drew attention to section 19 of the Public Health Act, 1875, which expressly stipulates that sewers shall be ventilated; as also to the printed suggestions issued by the Central Board, pages 9, 10, 11, as to main sewers, ventilation, &c., and extracted a promise from the Ryde Local Authority,—that is, the committee which attended the inquiry,—that the main sewers should be properly and fully ventilated, as detailed in the suggestions, and, as required by the Public Health Act, 1875. The Mayor, who attended the inquiry fully acquiesced in the promise. The Town Council, over the heads of the Mayor and the committee, have rescinded the promise made to the inspector, and have passed a resolution not to ventilate the sewers. We understand that it is the intention of the Government Board to withhold sanction to any loan for the extension works.

Some years ago the Brighton Town Council was as backward as the Town Council of Ryde of this day; but on finding that sewer ventilation was insisted upon by the General Board before any sanction to a loan for sewer works would be granted,—and Mr. Lockwood, the borough engineer, advocating ventilation, and preparing plans for the same,—the main sewers of Brighton have been ventilated, greatly to the benefit of the ratepayers generally, and to the comfort and health of visitors specially. Unventilated sewers are so dangerous and injurious that persons who know nothing of correct sanitary science, seeing the effects of such miserably defective work, wrongfully come to the conclusion that modern sewers and drains necessarily introduce fever. Liverpool, Sunderland, Leeds, and some other towns, constructed miles of main sewers having no adequate ventilation, disease in excess being a consequence. These towns have, under pressure, adopted main sewer ventilation, very much to the relief of the inhabitants, and lowering of the local sick and death rates. Half-ventilation of main sewers will not do; the means for dilution of sewage gases must be abundant, and, if at any point, or at any one or more ventilator, there should be an offensive smell, this is no reason for shutting up the sewer ventilators, as some in ignorance do, but additional ventilators should be formed in the district, until the perceptible taint or smell is reduced by dilution so as to be done away with. Sewer and drain ventilation to the open air is a prime necessity to modern town sewering and house-draining.

MASTERS AND MEN.

Bolton.—Four hundred masons of Bolton and the neighbourhood have struck work for an advance of 4s. per week. The masters strongly resist the demand.

Sheffield.—The Sheffield plasterers have succeeded in obtaining an advance of 2s. per week on their wages. In January they gave four months' notice of an application for an advance of 4s., and the masters have agreed to offer them a 2s. rise. This the men have accepted, on condition that the remaining 2s. are conceded to them in March, 1878.

Leeds.—The threatened strike in the Leeds building trade has been amicably settled, both masters and men having made certain concessions.

Cardiff.—The Cardiff stonemasons, who gave notice for an advance of ½d. per hour six months ago, have been unsuccessful in their demand.

Liverpool.—The strike on the part of the Liverpool plasterers has been averted in consequence of the masters having acceded to the demands of the men. The masters had offered to pay the men a weekly wage of 1*l.* 18s. 11½d. for a week of 55 hours, but the men prefer to work only 49½ hours, for which they wished to be paid 1*l.* 17s. 1d. The masters have agreed to reduce the hours of labour to 49½.

IMPORTANT TO BRICKMAKERS.

BREACH OF CONTRACT.

At the Lambeth Police Court, before Mr. Ellison, on the 10th inst., several brickmakers (moulders), were summoned by their employers under the Masters and Workmen Act, for breach of contract.

The first case heard was that against John Reeves, Mark Moss, and Richard Salter, who were summoned by Mr. Walter H. Harris, a builder and brickmaker, of Clapham. It appeared from the statement of Mr. Chipperfield, solicitor for the complainant, that the defendants had been engaged since the brickmaking season commenced in moulding bricks, at 5s. 9d. per thousand, the "stuff" being laid on the table. During the winter months they had been engaged in preparing the "stuff." Moss had been in the employment of the complainant for fourteen years, and Reeves for ten years. A few days ago the defendants made an application to the complainant for 6d. per thousand more, saying that other brickmakers in the neighbourhood were giving that amount of increase. The complainant refused to do so, but subsequently offered them an increase of 3d. per thousand. This offer was not accepted, and the defendants struck work. The question to be decided in the present case was whether the men had not been guilty of a breach of contract in absenting themselves from their work. It was contended on behalf of the complainant that brickmakers were not at liberty to strike or leave their work when they chose to do so, seeing that they were engaged for the season. Evidence was given by the complainant, and by a sub-contractor named Welch, to prove that this was the usage of the trade. Amongst other evidence adduced was that of its being the custom for the employer to retain in his own hands 6d. or so on the price of moulding every 1,000 bricks, these "pence," as they are called in the trade, being retained in order to insure that the men should fulfil their contract, the price paid per 1,000 for moulding including remuneration for looking after the bricks while they were in the hacks to dry before being put into the kiln. The complainant deposed that by the custom of the trade he should not feel at liberty to suddenly discharge the men unless for some gross misconduct. In the course of his evidence, the complainant said that if brickmakers were allowed to play fast and loose with this well-established custom of the trade, the employers would suffer greatly, seeing that every fine day was of the utmost importance to them. If they did not work up all the stuff which they had prepared during the winter season, it would be a dead loss to them. In cross-examination, the complainant said he did not retain the "pence" as a guarantee against having badly-moulded bricks. He estimated the loss sustained by him at 15*l.* per man, but did not press for compensation to that amount.

In the second case, Mr. King, of Thurlow-park (Brickfield, Dulwich, summoned John Eyland and Edward Reeves under similar circumstances, with the exception that the rate of payment was 6s. per thousand (on which an increase of 3d. was demanded), and that in the case of Eyland there was a written agreement. He sought to show that he had signed a blank agreement, but this was disproved. The complainant's foreman, it may be noted, stated in his evidence that in the absence of a written agreement "he did not see how the masters had any hold on the men for the entire season." This evidence, however, was outweighed by that of all the employers concerned.

In the remaining case, Mr. John Loat, brickmaker, of Acre-lane, Brixton, summoned two men named Henry Sandys and John Smith, under similar circumstances.

The magistrate decided that the men were legally liable to their masters for the loss sustained through the strike; but at his suggestion an arrangement was come to between the parties, whereby the masters were to give an increase of 3d. per thousand, the men to return to their work at once on these terms, or be called upon to compensate their masters (the amount claimed in each case being 15*l.* per man). In order to ensure the fulfilment of this arrangement without a further strike or demand for wages, he adjourned the case for a month, and said that after that he would adjourn it from month to month, so that if there was any failure to carry out this compromise, an appeal could be made to him. Seeing, however, that the defendant Eyland had committed a deliberate breach of a written agreement, he ordered him to pay 1*l.* as compensation to his master. At the solicitation of Mr. King, the magistrate reduced the sum to 10s., which was given by the complainant to the "poor-box" of the court.

The cases lasted two hours in investigation, and the court was crowded with brickmakers and others interested.

Technical Education.—The court of the Drapers' Company has just made the grant of 1,000*l.* to the Society of Arts for the promotion of technical instruction. This money is to be expended in providing courses of lectures suitable for artisans, the subjects selected by the technical committee of the company being (1) metal-working and (2) working in wood. The lectures are to be given at the Society of Art's House, and the arrangements are to be in the hands of the Society, aided by a committee of the court of the Drapers' Company. A further offer has been made by the same company to give prizes to the value of 50*l.* if the technological examinations of the Society of Arts can be modified sufficiently to allow of attendants at the lectures being examined.

Miscellanea.

The Rhind Lectures on Archæology.—Last week Dr. Arthur Mitchell delivered the third lecture of the course, in the Freemasons' Hall. The subject of the lecture was, "The Tools and Weapons of the Caveman and his Art Faculty." Dr. Mitchell remarked at the outset that he should deal almost solely with the early occupants of the Kesslerloch and caves of the Vezere, and with the discoveries made in those particular caves. They had two things to look at,—first, the condition of the occupants of the caves; and secondly, their antiquity. In other words, what sort of men lived in those caves in the age of the mammoth and the reindeer,—in what phase of civilisation they were, what capacity for culture they exhibited, and how long ago it was since they lived there. Dealing with those questions separately, the lecturer took up first the consideration of the phenomena of the caves tending to throw light on the condition of the so-called Troglodytes. The chief of these were their tools and weapons, in stone, bone, and deer-horn; their engravings or drawings and carvings; their personal ornaments; their needles; the evidences of a knowledge of fire and of pottery; and the remnants left of themselves,—their own skulls and bones. The stone which the caveman affected was flint. It was this that he generally used, and he found it generally at no great distance from his cave. That he manufactured his flint implements in the cave was so probable as to be safely accepted as true. The tools or implements which he made of this material were of various sizes and forms, and were evidently designed and used for different purposes. The great majority, however, of the flint tools which had been found in the deposits, if not solely intended for, were at any rate just such as would be needed for the manufacture of the implements of bone and horn. Passing on to the consideration of the engravings and sculpturings of the cavemen, Dr. Mitchell pointed out that these also were full of instruction as to the condition of the early man of Western Europe,—the earliest European of whom we had any knowledge,—the primeval man, as he was commonly called. In concluding, Dr. Mitchell said that if he might be allowed for once to let fancy have its play, he should ask whether it was not probable that a people who showed so much art in one direction would not also show it in others; and whether there might not have been among them bards and musicians, as well as decorators and sculptors in stone and bone.

The Sunday Society.—The second public annual meeting of the Sunday Society to obtain the opening of museums, art galleries, libraries, and gardens on Sundays was held in the large hall, Freemasons' Tavern, last Saturday afternoon. The hall was crowded. The chair was occupied by the Dean of Westminster, the president of the Society. Among those on the platform were Professor Tyndall, Professor Huxley, the Rev. John Oakley, the Rev. Mark Wilks, Professor Henry Morley, Dr. B. W. Richardson, Joseph Arch, Mr. James Heywood, Sir Henry Thompson, the Rev. W. Rogers, Mr. E. R. Russell (Liverpool), Mr. W. H. Domville, Dr. J. Shaw, the Rev. H. G. Henderson, Miss Anna Swanwick, Mr. Lewin Hill, the Rev. Arthur Mozley, Dr. W. C. Bennett, Mr. J. F. B. Firth, Mr. A. Elley Finch, and Mr. Thomas Henry Farrer, secretary of the Board of Trade. Professor Tyndall moved the first resolution, "That this meeting rejoices in the progress of the movement for the opening of museums on Sundays, as shown in the second annual report of the Sunday Society, and requests the chairman to sign a petition praying the House of Commons to support the resolution which is shortly to be submitted to it for the opening of the national museums and galleries during a part of Sunday." The resolution having been seconded by Professor Henry Morley, and supported by Dr. B. W. Richardson, was carried almost unanimously.

Bane and Antidote.—A Frenchman, M. Ambroise Pétry, has hit upon a device for applying the remedy at the right point in case of theatre fires (?). Considering that such fires usually originate from the gaslights, he proposes to make a connexion between the gas-piping and water-piping of theatres, so that when fire occurs the gas can be turned off, and the water, being turned on simultaneously, would find its way directly to the point where the gas had raised the flame;—and other places besides. What would the gas companies say?

Artists' General Benevolent Institution.—Sir William Harcourt, in his speech as chairman at the dinner in aid of this Institution, on Saturday last, addressed himself chiefly to the criticism of the day, which he spoke of as intolerant. Some gentlemen, he said, seemed to think it was utterly impossible to admire one particular painter, sculptor, architect, or school without disparaging every other. Art in this respect ran the risk of being treated very much like our religion had been treated. It became an affair of sects and dogmas, and had its exclusive creeds, and, indeed, its damnatory clauses. It had its "Index Expurgatorius" and its Syllabus; and it sent to the stake all who ventured to differ from it in opinion. There seems to be a lamentable want of catholicity in all this,—a want of breadth of mind and largeness of sympathy. It would be better if some of these critics would remember that the palace of art is like the home of the blessed, "a house with many mansions." He did not say that this was a fault characteristic of criticism in art alone. It had happened also in literature and in music. The secretary announced that the subscriptions amounted to 2,191*l.*, including a sum of 265*l.*, the proceeds of the sale of the catalogue of Mr. Grant's pictures. It was a noticeable incident of the dinner that Mr. Alma Tadema brought ninety-seven friends to it. The dinner was as usual much indebted to the honorary officers, Mr. P. C. Hardwick and Mr. J. E. Millais.

St. Pancras Baths and Washhouses.—The Report of the Commissioners for Public Baths and Washhouses, just now published, shows that last year the increase of bathers was nearly in the proportion of two in the second class to one in the first class; this year the increase is 4,827 in the first class and 1,534 in the second class. There is, however, a slight falling off in the number of washers, which may be accounted for to some extent by the very mild winter, and also that there is less washing put out by many families. The sale of soap and soda, &c., to bathers and washers has been 196*l.* 9*s.* 4½*d.*; and the cost of all cleansing materials required for the establishment is 130*l.* 2*s.* 1*d.*, showing a profit of 66*l.* 7*s.* 3½*d.*, besides providing for washing upwards of 310,000 towels. The total receipts from all sources, exclusive of money received from the vestry, is 4,037*l.* 7*s.* 11*d.*, and the expenditure for instalments and interest on the loans paid off, 1,826*l.* 5*s.*, and the accruing interest on the balance of the several loans to the 28th of February, 264*l.* 14*s.* 10*d.*; the working expenses amount to 2,543*l.* 3*s.* 8*d.*; thus showing the profit on the receipts to be 1,494*l.* 4*s.* 3*d.*

Sermons by Telephone.—A remarkable application of the telephone is, according to the *New York Herald*, about to be tried. It is proposed to erect a marble retreat in Union-square, New York, with tubes connecting every church in the city. On Sunday the congregations will assemble as usual, but instead of gazing into the minister's face they will look at a huge funnel-shaped projection in the middle of the chancel. A popular preacher will be placed in the marble retreat with an eloquent and stirring sermon. He will preach at about 500 open tubes, and his eloquence will be transmitted to as many congregations, and emerge from the bell-shaped projection in the chancel with all the various modulations of the preacher's voice. Church music will be done on the same principle by means of the "pyrophone,"—an organ with copper pipes, whose notes can be distinctly heard over the whole city. This latter invention will enable the people to sit in their own houses and listen to a sacred concert, or gather on their "front stoops" and unite in a congregational hymn, while a precentor up in a balloon ["wind and weather permitting"] beats the time.

"Gluck."—In our notice of the history of the decorations in the Grosvenor Gallery, in last week's number, the name of the great German opera composer, who was so closely connected with the history of the Paris Opera-house, was by a slip printed "Glück," instead of "Gluck," without the diphthong-mark. The difference looks slight in type, but in pronunciation it is important. The mistake is so constantly made by English writers on music that it is the more necessary we should correct it.

Mr. Christopher Thwaites, M.I.C.E., city engineer and surveyor, Norwich, and son of the late chairman of the Metropolitan Board of Works, has been elected borough engineer for Sunderland by a large majority.

Prize Designs for Plate.—In January last Messrs. Watherston & Sons, manufacturing silversmiths, with a view to the advancement of British art in its application especially to silversmiths' work, to be exhibited at the Paris International Exhibition of 1878, offered four prizes of 100*l.*, 50*l.*, 30*l.*, and 20*l.*, to be awarded by the Department of Science and Art, in a competition among students of schools of art throughout the kingdom, for the best designs for dessert service of plate. The number of designs presented has been small, and none are considered to be of sufficient merit to justify the award of the first prize of 100*l.* The awards which have been made by the Department are as follow:—Owen Gibbons, formerly student at Cirencester School of Art—second prize, 50*l.*; W. H. Singer, student at Frome School of Art—third prize, 30*l.*; Robert Elson, student at Lambeth School of Art—fourth prize, 20*l.* The designs are now on view in the new Architectural Court of the South Kensington Museum.

The Property Market.—During the week ending the 9th inst. the sales reported, according to the *Metropolitan*, amount to 167,620*l.*, making the total for the year 3,333,685*l.* War and a rumour of war unsettle every market, and that for property forms no exception. At the same time it is a question if the uncertainty attending investments in both foreign and some English stocks does not rather tend to direct attention more to land and house property as a means of putting by savings. The general tendency is towards a hardening of value, and good freehold securities are increasing in value, and are much sought after. Messrs. Parish sold freehold ground-rents at Greenwich on the 3rd of 101*l.* per annum for 2,210*l.*, about twenty-two years' purchase; this may be considered cheap. Messrs. Newbon & Harding sold ground-rents at Hoxton for forty-two years of 100*l.* for 1,605*l.*, just sixteen years' purchase. Mr. E. Robins sold for 180*l.* three amphitheatre stalls in the Royal Albert Hall.

A Liverpool Scandal.—What is called the "Corporation Art Scandal" has been much discussed in Liverpool. Mr. B. H. Grindley, the secretary and director of the Exhibition of Pictures held periodically in the Corporation Galleries, has been accused by Mr. W. S. Caine, a prominent citizen, with what amounts to the levying of "black-mail" upon exhibitors. The Library, Museum, and Arts Committee of the Corporation, having fully investigated the matter, have come to the conclusion that there was no foundation whatever for so grave a charge. Mr. Caine, however, persists in the accuracy of his statements, and there is some talk of a further investigation before a judicial tribunal.

The National Penny Bank.—The Lord Mayor, at the invitation of the Trustees of the National Penny Bank, went in state, accompanied by the Sheriffs, from the Mansion House to lay the foundation-stone of the Shoreditch branch of the bank in Great Eastern-street. The ceremony excited considerable interest. It may be stated that the first branch penny bank was opened in October, 1875, and that at the close of last year the number of branches was,—ten open every evening, sixteen open once or twice a week, four in workshops, and twenty in schools.

The Institute Library.—In accordance with resolutions of the general meeting on affairs of the Institute (14th March, 1877), the library will now be open *continuously* from 10 a.m. to 9 p.m.; on Saturdays, 10 to 2. Measures will shortly be taken for the formal admission to the library of students from,—1. The Architectural Class of the Royal Academy. 2. The classes of Professors Kerr and Lewis, and of members of the Architectural Association.

Kensington Vestry-hall.—At the fortnightly meeting of the Kensington Vestry on Wednesday night, Mr. Churchwarden Pearson in the chair, it was resolved that a professional gentleman be appointed to advise in the selection of the three best designs and the probable cost.

Metz Cathedral.—Comparatively little has been said of the fire by which the roof of the cathedral of Metz was entirely destroyed on the 6th inst., probably because the illuminations on account of the arrival of the German Emperor are supposed to have led to this deplorable event.

The Blackpool Borough Surveyor.—At the meeting of the Blackpool Town Council, held on the 1st inst., the salary of Mr. T. Sunderland, borough surveyor, was increased from 170*l.* to 250*l.* per annum.

Value of Land in the Strand.—A plot of building land, the site of three houses and premises, at the corner of Savoy-street and the Strand, belonging to the Duchy of Lancaster, covering a superficial area of 2,394 ft., was lately let by tender, by Messrs. Driver, of Whitehall, on a building lease for eighty years, and realised a rent of 601*l.* per annum, or 5*s.* a foot.

TENDERS.

For erection of St. George's German and English Schools, with master's, mistress's, and caretaker's residences, in Little Alie-street, Whitechapel, for the Rev. Louis Cappel, D.D., and Mr. Oscar von Ernsthausen. Mr. E. A. Gruning, architect. Quantities by Messrs. Williams & Gritten:—

	Buildings.	Fittings.
Conder	£5,684	£395
Peters	5,627	269
Brass	4,993	405
Larter	4,991	380
Nightingale	4,870	314
Newman & Mann	4,576	444
Jacobs	4,660	350
Browne & Robinson (accepted)	4,437	284

For addition to laundry building, for the Guardians of St. Matthew's, Bethnal-green. Mr. H. Webster, architect:—

Sharman	£400	0	0
Judd & Hawkings	391	0	0
Heal & Son	387	0	0
Wire	380	0	0
Cohen	354	0	0
Thomson	353	0	0
Webb	344	0	0
Page	340	0	0
Linfield	327	0	0

For the erection of a pair of cottages at South Leigh, Oxon. Mr. W. Eve, architect:—

	Design A.	Design B.
Bartlett	£830	£590
Dover	575	470
Wicks (accepted)	495	483

For the erection of a bridge, with lock doors, at Marnham, Notts, for Mr. E. R. C. Clast. Messrs. J. S. Padley & Thropp, engineers. Quantities supplied:—

Martin & Sims	£799	0	0
Hobson & Taylor	597	0	0
Binns	499	12	0
Duke	411	4	0
Wilson & Bulling	380	0	0
Semper (accepted)	370	19	0

For a new retaining wall, and the widening of the County bridge at Market Rasen. Messrs. J. S. Padley & Thropp, engineers. Quantities not supplied:—

Kendall	£453	15	0
Walls	449	0	0
Scupham	447	10	0
Chapman (accepted)	400	0	0

For house at Balham, for Mr. S. W. Causton. Messrs. E. Habershon & Brock, architects:—

Carter & Son	£2,999	0	0
McLachlan & Co.	2,965	0	0
Ennor, Julian, & Co.	2,793	0	0
Mattock, Bros.	2,793	0	0
Newman & Mann	2,787	0	0
Loat & Co.	2,250	0	0

For new family residence at Hampstead. Mr. G. Stooke, architect. Quantities supplied:—

Cousins	£1,124	0	0
Brown	1,089	0	0
Wilson (accepted)	990	0	0

For Woodfield, Streatham, for Mr. Beriah Drew. Mr. Richard W. Drew, architect. Quantities by Mr. Thomas M. Deacon:—

Higgs & Hill	£5,441	0	0
Colls & Son	5,376	0	0
Macey	5,055	0	0
Caudle	4,950	0	0
Adamson & Sons	4,785	0	0
Jarrett	4,493	0	0
McLachlan	4,490	0	0
Newman & Mann	4,376	0	0

For the erection of a grammar school for the governing body of the Portsmouth Grammar School. Messrs. Davis & Emanuel, architects. Quantities by Mr. H. P. Foster:—

Lewis	£5,248	0	0
Jones & Co.	4,965	0	0
Cooper	4,897	0	0
H. & W. Evans	4,833	0	0
Lawrence	4,810	0	0
Roberts	4,785	0	0
Ward	4,754	0	0
W. R. & C. Light	4,750	0	0
Hayter	4,750	0	0
Burbidge	4,747	0	0
Hide & Co.	4,280	0	0

For the erection of a public elementary school,—705 places,—for the Portsmouth School Board. Messrs. Davis & Emanuel, architects. Quantities by Mr. G. Rake:

Ward	£7,998	0	0
W. R. & C. Light	7,419	0	0
Quick	7,218	0	0
Cooper	7,136	0	0
Roberts	6,843	0	0
Lawrence	6,829	0	0
Burbidge	6,766	0	0
Hayter	6,150	0	0
Hide & Co. (accepted)	6,073	10	0

For alterations, &c., at the Coach and Horses public-house, Stoke Newington-green. Mr. Lavender, architect:—

Shurmur	£424	0	0
Langmead & Co.	275	0	0
Andrews	269	0	0

For alterations to 11, High-street, Hampstead. Messrs. Spalding & Knight, architects. Quantities by Mr. Geo. Fleetwood:—

Sage	£850	0	0
Shepperd	795	0	0
King & Brown	779	0	0
Burford	758	0	0
Nightingale	743	0	0
Gould & Brand	689	0	0

For alterations and repairs at No. 136, Strand, for Mr. H. Sotheran. Messrs. George & Peto, architects:—

Manley & Rogers	£561	0	0
Sykes	560	0	0
Perkins	552	0	0

For the erection of a Foresters' Hall at Crowland. Messrs. Hay & Oliver, architects:—

Godwin	£430	16	0
Elworthy	420	0	0
Sharp & Britchfield	404	0	0
Judson (accepted)	380	0	0
Hall & Arch	375	0	0

For a villa residence at Bath, for Mr. J. Mallett. Messrs. Hay & Oliver, architects:—

Higginson & Cavill (accepted)	£1,183	0	0

For the erection of School Board schools at Croyland. Messrs. Hay & Oliver, architects. Quantities by Mr. A. Deane:—

Andrews & Lowe	£2,606	0	0
Sharp & Britchfield	2,492	0	0
Godwin (accepted)	2,199	0	0

For the erection of three shops and two dwellings at High-street, Brentford, for Messrs. Rowe & Co. Mr. N. T. Elsam, architect. Quantities supplied:—

Adamson	£1,850	0	0
Beauchamp	1,797	0	0
Nye	1,658	0	0
Brunsden	1,600	0	0

For the erection of four shops at Ealing, for Mr. Gosney. Mr. R. Willey, architect:—

Waters	£3,330	0	0
Stops	3,075	0	0
Piller	2,782	0	0
Brunsden	2,750	0	0
Nye	2,680	0	0

For erection of a mansion at Forholes, near Hitchin, for Mr W. Tindall Lucas. Mr. James Shilcock, architect. Quantities by Mr. Henry Lovegrove:—

Stapleton	£5,643	0	0
F. Jeaves	5,595	0	0
G. Jeeves	5,542	0	0

For sundry alterations and repairs to the Bethnal green-road Chapel:—

Jarvis & Sons (accepted).

For the erection of stabling at Warwick-road, Kensington, for the Vestry of Kensington. Mr. Wm. Weaver, architect:—

		Allow for Old Materials.
Cowland	£1,879	—
Haynes	2,880	£20
Hockley	2,870	20
Nash	2,860	10
Colley	2,763	10
Torkington	2,690	15
Simpson	2,629	59
Mears (accepted)	2,323	—

For new shops, 101, 102, and 103, Bishopsgate-street Without, for Mr. W. H. Willats. Mr. Geo. A. Bion, architect. Quantities by Mr. F. O. Foden:—

Chessam	£4,641	0	0
Sewell & Sons	4,519	0	0
Marks	4,500	0	0
Scrivener & White	4,389	0	0
Cook	4,277	0	0

For billiard-room at the Red Lion public-house, Deptford, for Messrs. Watney. Mr. H. J. Newton, architect:

Godden	£700	0	0
Shurmur	676	0	0
Hockley	675	0	0
Lamble	475	0	0

For alterations, &c., at the Phœnix public-house, Lissongrove. Mr. John Viney, architect:—

Salter	£147	0	0
Shurmur	144	0	0
Eaton	130	0	0
Godden	130	0	0

For rebuilding the White Hart public-house, Bethnal-green-road. Mr. John Viney, architect:—

Hanley	£3,950	0	0
Atherton & Latter	3,900	0	0
Shurmur	3,760	0	0
Downs	3,737	0	0
Bangs & Co.	3,683	0	0
Outhwaite	3,644	0	0
Forrest	3,587	0	0
F. & F. J. Wood	3,456	0	0
Stamp & Bowle	3,157	0	0

For twelve houses, Kensington Hall Estate, for Lord Beaumont. Mr. Thomas Dudley, architect. Quantities supplied:—

Adamson & Son	£21,489	0	0
Lascelles	21,088	0	0
Nightingale	20,424	0	0
Newman & Mann	20,352	0	0
Longmead & Way	20,250	0	0
Cooke & Green	19,510	0	0
Macmanis	19,358	0	0

For the erection of a small villa residence, Thorntonheath, for Mr. H. Salt. Quantities by Mr J. Sargeant:—

Seward	£1,259	0	0
Reading	1,145	0	0
Nibbett	987	0	0
Ridge	946	0	0
Shapley	935	0	0
Prebble	892	0	0
Warr	762	0	0

For warehouse in Farringdon-street. Messrs. Lan Church, architects:—

Hill & Higgs	£5,984	0	0
Steel, Bros.	5,800	0	0
King	5,750	0	0
Kirk & Randall	5,630	0	0
Dove, Bros.	5,575	0	0
W. & F. Croaker	5,569	0	0
Williams & Son	5,442	0	0
Shurmur	5,445	0	0
Kilby	5,218	0	0
Sabey & Son	5,075	0	0

For additions to Failands House, near Bristol, for Hon. Mr. Justice Fry. Mr Stuart Colman, architect:

Stephens & Bastow	£4,555	0	0
Hatherley	4,525	0	0
Box	4,200	0	0
Wilkins & Hill	3,799	0	0
Wilkins & Sons*	3,700	0	0

* Accepted subject to modifications.

For alterations and fittings at the Victory public-hou Trafalgar-road. Mr. William Smith, architect:—

Everett & Co.	£1,628	0	0
Dunford & Langham	1,427	0	0
Lascelles	1,356	0	0
Shurmur	1,315	0	0
Batley	1,120	0	0
Grover	1,107	0	0
Aitchison & Walker	1,063	0	0

For the erection of a lodging-house, Nicholl-stre Gloucester-street, Haggerston, for Mr. H. Baker (Co tract No. 6). Messrs. Ebbetts & Cobb, architects. Qu tities supplied:—

Aitchison & Walker	£1,275	0	0
J. & A. Eborall	1,134	0	0
Steel, Bros.	950	0	0

For design and erection of wrought-iron foot-brid across the Serpentine, Moor Park, Preston, for t Preston Corporation:—

Gardner & Co. (accepted).

For three warehouses, Goldsmith-street, City, E. Messrs. Ford & Hesketh, architects:—

Browne & Robinson	£11,093	0	0
Downs & Co.	10,985	0	0
Brass	10,748	0	0
Killby	10,654	0	0
Mark	10,496	0	0
Crabb	9,882	0	0
Shaw	9,815	0	0
Peto, Bros.	9,340	0	0
Lawrence	9,268	0	0
Hawtray & Co.	9,196	0	0
Boyce	9,004	0	0
Newman & Mann (accepted)	8,845	0	0

For swimming-bath and other additions to house Downshire-square, Reading, for Mr. W. F. Bland Messrs. Morris & Stallwood, architects:—

Wheeler, Bros. (accepted)	£1,035	0	0

For the erection of fireproof factory buildings at Rea ing, for Messrs. Huntley, Boorne, & Stevens. Messr Morris & Stallwood, architects:—

Bricklayer's Work.

Grover (accepted)	£2,570	0	0

Asphalte Roof.

Claridge's Co. (accepted)	£317	12	0

Carpenter's Work.

Woodrofe (accepted)	£893	0	0

Wrought-iron Rolled Girders.

Shaw, Head, & Co. (accepted).

Cast-iron Columns.

Hood & Co. (accepted).

For the erection of three warehouses and alterations t two existing ones, for Mr. W. E. Gates, in Great Eastern street, E.C. Mr. J. W. Brooker, architect. Quantitie by Messrs. Edes & Brooker:—

	No. 1.	No. 2. Finishing to one as a dwelling-house.	Extra o No. 1, wood revolvin shutter
Wyeth	£3,498	£235	£110
Ward	2,964	399	194
Parker & Evans	2,950	330	64
Warne	2,927	295	160
Waters	2,893	313	60
Webb	2,875	275	125
Sharman	2,788	304	70
Crockett	2,772	286	85
Battley	2,757	260	88
Stamp & Bowtle	2,754	303	65
Webber	2,744	270	70
Goodman	2,734	275	110
Staines & Son	2,544	254	128
Loft	2,349	219	60
Sabey & Son	2,329	270	66
Tulley	2,320	220	71
Prebble & Co.*	2,290	230	100

* Accepted.

For the erection of a warehouse, for Mr. H. Vaughan in Curtain-road, E.C. Mr. J. W. Brooker, architect Quantities by Messrs. Edes & Brooker:—

Linzell	£2,069	0	0
Downs & Co.	2,035	0	0
Crockett	1,895	0	0
Lawrence	1,788	0	0
Morter (accepted)	1,735	0	0

For the erection of Wesleyan Chapel, Northgate-street Gloucester. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Ashbee & Sons (accepted)	£5,432	0	0

The tender of the Brunswick Rock Asphalte Company has been accepted to pave Newstead-road, &c., and Mano Park-road, S.E., with 3-in. concrete and 1-in. asphalte (about 6,050 square yards in all), by the Plumstead Board of Works.

The Builder.

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The Removal of Obstacles to the Architectural Improvement of London.

THE study of architecture is triple. The student has to become acquainted with a science, an art, and a craft. Architecture differs from her sister arts of Sculpture and of Painting in the firm hold which she takes of the ground, by the doctrine of scientific structure, no less than she does by the strong element of practical utility which is the object of her pursuit as a craft. At one time advance in professional excellence occurs on one of these lines, at one time or another. It is rarely the case that there is a gain along the whole line of frontier. We look back to periods in the history of the building art when the creative power,—the imagination,—was at its zenith; and when structural forms of such grace and beauty were designed by the architect, that a tacit but unanimous admiration has stamped them with universal approval, and they have crystallised into orders which bid fair to last for all time. At another period the æsthetic aspect of domestic building, and even of such ecclesiastical or palatial building as the few exigencies of the time demanded, was altogether overlooked. Comfort, snugness, economy, were the objects in vogue. And to such periods we owe much of that which is at once most comfortable, and most decidedly ugly, in the brick structures of England.

To those who consider that the art of structural design is a matter like the acquisition of a language, and that when we have learned all that is known down to our own time on the subject, we are at an end of our study, such remarks as to the triple nature of architecture will possess only an academical value. But it is with a distinctly practical aim that we venture to utter them. It is only by keeping steadily in view the threefold conditions, by the due observance of each and all of which it is alone possible to attain a mastery of the subject, that we shall be enabled to see where the weak point of our practice, at any given period, is to be found. And the due appreciation of this valuable, because neglected, subject of study can hardly fail, to some extent at least, to remedy the mischief.

It is of especial service to the profession (from this point of view) to detect and bring into full light any lurking causes of unarchitectural, that is to say anti-architectural, influence which may be secretly but obstinately acting to prevent the healthy growth of contemporary practice. One of these causes, and in our opinion a very serious and mischievous one, has been the general prevalence of that spirit of helpless *laissez faire* which is the natural outcome of the teaching of a certain ethical or political school.

It has rather been when writing upon social than upon directly architectural subjects, that we have most frequently found occasion to point out the mischievous tendency of attaching too much weight to these partial truths, which—valuable as they are as a basis for partial investigation,—become purely misleading when they are regarded as controlling causes of human action. The particular instance which we have in mind is the doctrine of the correlation of supply and demand; and the abuse of what is rather truism than truth, in the abstract statement of that relation, with which we are now concerned, is to the effect that the supply of that kind of building which is suitable to the circumstances and the wants of the day will be the certain outcome of public taste and of public request. What is true here is that house-room is demanded in proportion to population, or that with the increase of population there will be an increased demand for houses. This is an increase which we have before seen some reason to hold to approximate to an outlay of 50*l.* in new buildings for every unit added to the population; that is to say, to every unit of the gain of the birth-rate over the death-rate. Up to this point the truth of the "Law," as it is called, of supply and demand is unquestionable. But then those with whom we contend carry this law, or this truism, a step further. They tell us not only that the quantity of building supplied will be regulated by the demand for house-room (which is the case within certain limits, although not absolutely), but that the same will be the case with the quality of the building. The builder or the architect, we are told, is the minister of the public taste; what that taste demands he will at once supply, and if he attempts to offer anything out of his own head which is not demanded by the public taste, his buildings will remain a drug in the market.

Now, in this statement, while there is much of truth, there is more of falsehood. If a growing population demand houses for which they can afford to pay a rent of from 40*l.* to 50*l.* per annum, while the builder will only provide them with dwellings at a rental of from 70*l.* to 80*l.*, it may be said that the supply does not meet the demand, and that the houses will be unlet. But if,—amount of accommodation and price for the same being fixed,—the question lies between the most thoughtfully and tastefully arranged residence, and the stucco villa, which is the mere reproduction of the worst outcome of the Georgian era, there is, we apprehend, but little doubt which line the demand will follow. And even with regard to the question of rental, we are of opinion that a very considerable pressure is at this moment exerted on a large class of society by the speculation of the builder. It costs so little more, in comparison, to run up a house that may be let for 70*l.* or 80*l.*, than to build well one that could let for 40*l.* or 50*l.* (not forgetting either the increased value which has been put upon building land), that the construction of the latter class of dwelling is almost abandoned. Young professional men, young persons of modest income in every department of life, who require only a very small house, but want that house to be characterised by a certain degree of elegance, are very rarely able to find what they require. That there is a demand for good 45*l.* houses may perhaps be denied, because it is so rarely the case that any are to be found. But that there is a strong wish, or want, for comfortable and respectable accommodation of that nature there can be no denial. And if the builder did not think it better worth his while to provide only an article that is more expensive than that which is really in demand, because he can force people to take it if there is nothing cheaper that will suit them, this is a very unfortunate instance of the infallible excellence of the operation of the great law of supply and demand.

Under circumstances of this nature, good service is done at once to the public and to those interested in the profession of the architect or in the craft of the builder, by pointing out any particular obstacles that tend to check concerted and well-designed efforts to provide for a large portion of the population of London a class of accommodation that shall be at once within their means and acceptable to their tastes. We referred in our last number to the mode in which a blot of this kind has been met by the writer of a little pamphlet, under the title of "Houses and Homes," of which we gave some account. We may add to our former remarks, as well as to those of the writer of the pamphlet, that when the Bedford estate was built over, the architectural arrangement, although far less complete than that which the actual state of civilisation demands, was appropriated to the wants of the day, at all events, as far as the number, and to some extent the size, of rooms demanded for family use were concerned. That estate was a century ago a favourite residential site. The houses were inhabited by families; and the gradations from the ducal mansion, or the large house in a large square occupied by some City magnate or prosperous merchant, to the small house in the bye-street, occupied by the small tradesman, with or without a shop, or by the numerous families that live, we hardly know how, on the verge of professional and of mercantile life, were fairly provided for. London, at the time when the Bedford estate was built on, was not so large as to be residentially unmanageable. The population of the metropolis in 1745 we have seen estimated at 600,000 Between that date and 1818 the area was increased by probably 50 per cent. Red Lion-square, at the latter date, was, of course, not to

be compared to Belgrave-square, at the present day, as to the style and magnitude of its houses; but it occupied a not very different position as far as its quasi-suburban position was concerned. An enormous zone of building was drawn around this nucleus in the next fifteen years, and the building frontier was pushed half-way along the line of the Regent's Park. In 1835, north of St. John's Wood Chapel, the Eyre Arms and the Swiss Cottage stood alone in the fields. Noble elms and swelling downs stretched from Belsize Park to Kilburn and to Edgware, each of which was a country village. What the expansion of building has been since we need not say. The point we have to bear in mind is, that by the mere force of the growth of London, the Bedford estate, as well as others of which we are not now speaking, was so hemmed in and built up that its original residential character was entirely changed, and that, with this change in the habitable nature of the locality, came a change in the class of inhabitants by whom it was populated.

This here, and in such cases as these, that the idea of the self-acting relation between supply and demand altogether breaks down. Local change,—the simple effect of building up all outlets to the country, whether for air or for excursion, produces residential change. The family, as a rule, migrates to the suburbs, or to those country places not as yet swallowed up in the great sea of suburb, to which railway accommodation has given a new and vigorous growth. The family is replaced by a collection of units. The houses no longer tenable by children and young people, occupy the very situations most convenient to those individuals who require only two or three rooms, but seek for them within easy access of the heart of the City traffic. The latter class of residents, therefore, naturally replace the former. But the houses built for the former are every way unsuited for the latter. "The three stories consist of two rooms over two rooms, reached by a narrow and steep stair. . . . . they will be offered indiscriminately to professional men as offices; to bachelors, and even to married people as residences. But to climb a first, or at most a second floor, is incompatible with business habits; and a necessarily exorbitant rent cannot be obtained for 'houses' in which neither a chop can be cooked nor a servant lodged,—houses in which the storage of a ton of coals is an impossibility,—where the staircase is not lighted, and the house-door never guarded."

Time, however, which brings remedies for so many evils, is here so far our friend that these houses, now no longer fitted for their site, are not imperishable. Quite the contrary. That many of them yet stand is something of a wonder. That any of them will long remain, is hardly to be expected. If, then, a totally different class of house be demanded in order to utilise the advantages of the site, may we not expect that it will spring up? Our theoretical friend says, "Yes, it certainly will. Supply will follow demand." If we have made out (as may easily be done) a good case to show that there is a demand, we have nothing further to do but to go to sleep on both ears, leaving the natural effects to follow in the order of things. When we wake, we shall find the Bedford estate covered with well-arranged residential chambers.

How is it then that, year after year, we do not find that new structural arrangement, as to the desirable character of which there is so little room for dispute, gradually spreading over the district in question? To this practical inquiry the Fellow of the Royal Institute of British Architects, who wrote "Houses or Homes," has furnished a very pertinent reply. It is a reply that calls for the serious attention of all interested in the locality. "The sheepskin interferes with the drawing-board. The solicitor stands in the light both of the architect and of the tenant who desires accommodation. The agent of the estate is inexorable. No one shall improve the Bedford property. Was it not built in the days of Duke Francis, or other famous heads of the house of Russell, and shall the pattern then laid down be departed from for mere matters of convenience or of fancy?"

We can hardly conceive it to be probable that the obnoxious provision cited shall be allowed to prevent the proper structural utilisation of the Bedford estate, and the endowing of London with a district of residential chambers of which so ready an occupation may be confidently expected, when once the matter is duly understood, and properly ventilated by the press. That a house should be contained within sufficient boundary-walls is, no doubt, a *sine quâ non* for all urban architecture. But that a house, whatever be its size, should have a natural unity, is no less self-evident. And that unity demands internal freedom of communication quite as rapidly as it requires cutting off from the outer world.

It is by no means necessary, for the validity of these remarks, to insist on the erection of any definite type of house. What is required is, that architects should be at liberty to design, and builders to erect, houses that will be suitable and decent for the common abode of tenants who are strangers to one another, and who have no wish to be forced into the common occupation of those very parts of the building in which privacy is most requisite. We could point to houses recently erected in the City in which the ground-floor consists of only a single room,—although it is a room of such a size that it lets for the rent of 1,500*l.* per annum. Even in this case, however, where the first-floor lets for 1,000*l.* and the second-floor for 500*l.* a year, the forms of the different apartments are all more or less injured by the necessity of providing for the staircase. Had the house we have in view been built as one of a pair, or rather of half a double building, with an adequate central staircase, space would have been economised to an appreciable degree. The common staircase would not have required more than 60 or 66 per cent. of the room given to two separate and independent staircases, and the forms of the rooms on each floor would have been rendered more symmetrical.

In the foregoing remarks we have attempted to illustrate, by reference to the latest literary contribution to the subject of the improvement of the domestic architecture of London, the general question of the removal of those obstacles which prevent the systematic adoption of the best results of educated experience. The main impediment we take to be the helpless assumption that it is sufficient for a certain class of abode to be desired, and that, if such is the case, it will certainly spring up. This we hold to be, as an absolute proposition, decidedly untrue. We consider that if dwellings well designed to meet the wants of tenants are erected, and offered at proper rents, they will be readily taken. But the converse of this proposition does not necessarily follow. On the contrary, we think that there is, not only in London proper, but over the whole 700 square miles of the area of Greater London, a very great want of a class of house which is rarely to be found. If such be the case, it is a very proper thing for the architect to consider in what manner the deficiency can be most readily supplied. One method of supply that has been suggested is the division of residences and offices in horizontal rather than in vertical compartments. It is not too much to say that it is desirable that this should be tried. We are not suggesting any violent revolution or sudden change in domestic architecture. We are pointing out a direction in which certain advantages are offered, and in which it is certainly desirable that further experiment should be made. And we are met, in a particular part of the metropolis, with the special difficulty to which we have called attention.

It follows that it is a matter well deserving the study of the profession to investigate the question of the various local obstacles which, in different parts of the metropolis limit the power of the architect to make the best of the site. In this respect the past twenty or thirty years has seen a very considerable change. But, so far as we are aware, no general view of the changes which have occurred, and of the further modifications which have thus been rendered possible, has yet been attempted. We may refer to the great improvement effected by the substitution of the noble Embankment line of road for the unsightly mud banks which formerly skirted the river. To a certain extent advantage has been taken of the improvement thus effected; but there has not been any evidence of a general effort on the part of the owners of adjoining property to take full advantage of the new and splendid frontage thus secured. Many places exist in which it would be possible to introduce a style of building which should at the same time contribute to the architectural grandeur of London, especially as viewed from the bridges, the river, and the Embankment road, and also provide accommodation for both families and single tenants of a kind that would be eagerly sought for, and admirably paid for. It is not for us to indicate positions more distinctly; but if an architect or an enterprising builder were to devote a few hours to the survey of the line of building which here more or less irregularly abuts on the Embankment road, he could hardly fail to observe many pieces of land available for valuable residential improvement.

Another direction in which the eye of the provident architect may be turned with advantage is that of the lines of communication over the bridges. The abolition of the tolls on the metropolitan bridges can only be a question of time. Whether the Bill now before Parliament for that purpose will have a better fortune than its predecessor of last year we are not, of course, able to predict; but that, sooner or later, this great reform must be effected, there can, we apprehend, be but little doubt. This reform, when it takes place, will alter the character of the main lines of route over those bridges. The change may prove to be of a commercial rather than architectural character in the first instance. However that may be, there is every reason to expect a greater assimilation in the value of house property immediately north and south of the Thames than that which now exists; and thus a very important field is open for the development of genuine architectural design. In this case it is highly desirable to ascertain whether there exist any legal or other obstacles to the free action of the architect, such as those which have been pointed out on the Bedford estate. When existing sites are improved in their residential value, those who have the skill and foresight first to take advantage of the change will no doubt reap a deserved reward.

Again, there is the yet unsettled question of the adaptation of the large spaces which have been cleared by the purchases of the different railway companies within the City and some other parts of the metropolis. This question is intimately connected with that of the housing of a large body of working men. This, again, is intimately connected with the subject of rating. All these matters are so tied and bound together that it no longer is competent to the owner of a single plot of building land in London exclusively to study his own fancy or convenience. Certain great changes have already been made; others are in progress; others are yet in the future. What is now of most moment is to obtain such a general idea of the course which urban transformation is taking, and of the points towards which the requirements of City life gravitate, as shall lead to an appreciation of the best mode in which the architect can meet these requirements, and of the obstacles which may be found to lie in the path of genuine and enlightened improvement.

Our national *forte* does not lie in organisation. The whole structure of English social existence has grown from a natural origin. It has not been formed on a plan. And there is a very strong and instinctive dislike to that mode of clearing the ground and starting afresh to which our French neighbours are so prone. It is not of much use to run a tilt against a national bent. It might be very possible to suggest an admirable normal plan, on paper, in subordination to which metropolitan improvements should in future be carried out. But we cannot but feel that such a plan would be little more than waste paper, however ably it were drawn. The opportunity for forming such a plan was once afforded. The man capable of seizing the opportunity was then to the fore; and he made the plan. What came of it? Those who remember the degree of success which attended Sir Christopher Wren's design for the rebuilding of London after the Great Fire will not have any great confidence in the general adoption of any system, however admirable, for the steady improvement of the architectural and residential character of London. At the same time this very spirit of independent individualism offers a worthy reward to the individual architect, or to the individual builder, who shall most profoundly master the true requirements of the residential population of the metropolis, and shall then, with a full knowledge of the latest improvements adopted in other great capitals, design and construct abodes suited to the urgency of these requirements.

Canterbury Cathedral.—The Rev. W. J. Loftie, F.S.A., Member of Council, Royal Archæological Institute, protests against the proposed removal of the choir-stalls, which are good examples of the delicate carved work of the age which produced Grinling Gibbons. It is proposed to remove them as incongruous, and supply their place with modern work in imitation of some fragments of a stone screen of the fourteenth century. Mr. Beresford Hope combats the objection, and gives reasons for the removal.

ILLUSTRATED PAPERS ON CHURCH ARCHITECTURE.

IN the course of our notice of the life and works of the late Mr. E. Sharpe, in the last number of the *Builder*, we mentioned that his most recent publication was still before us for notice. This is the book which is partly the continuation of the illustrations of the "ornamentation of the Transitional period," partly the inauguration of a proposed extension of the same project under the more comprehensive title given at the head of this article.* The materials for this work were collected during the author's early tour as travelling Bachelor of Arts to the University of Cambridge; and the illustrations are from drawings made at that period (1832-3).

The examples in this book belong to the latter part of the Transitional period; but it is almost needless to remark that in Germany the style characteristic of this period, though strongly resembling that of France and England at the same time (and, indeed, the universality in Europe of certain characteristic Transitional details is remarkable), did not culminate in any such complete and pure style of architecture as that of the thirteenth century in England. On the contrary, German Gothic architecture remained through nearly the whole of this period still in a more or less tentative stage, retaining many characteristics of transitional feeling which had at the same period entirely disappeared from English architecture. During the twelfth century, however, the styles of Germany and England have sufficient parallelism to furnish occasion for comparative criticism. A difficulty in the way of carrying this out in detail, and tracing the development of the German Transitional style, however, still exists in the fact that so few of the buildings of the time in Germany can be accurately dated. This circumstance induced Mr. Sharpe, in treating of the style, to reverse the usual order of history, and taking the monastery of Ebrach, in Franconia, one of the few of which the date (*circâ* 1200) is pretty accurately fixed, as a specimen of the character of the German work about the close of our Transitional period, to trace the changes which led to the style here shown, "upwards instead of downwards," during the thirty or forty years preceding.

The book does not, however, really contain any regular attempt to trace out the style, which is left to the observation of the reader, from the copious and fine illustrations, and with the aid of some brief remarks on each example. The plan of Kloster Ebrach is remarkable for the arrangement of its square east end, with external chapels looking north, east, and south; and also for the kind of miniature church, which is added along the extremity of the north transept. This small interior, a regular cruciform church in plan, occupies, it may be observed, just the same position as the Early English chapel adjoining the north transept at Tewkesbury, and which is also unusual. It seems open to suggestion that these chapels, found in the same position in connexion with larger churches, and not differing by very many years in date, may have had a similar object, though as the one belonged to Benedictine and the other to Cistercian rule, this point could not be pressed too much. The Tewkesbury Chapel, as our readers know, has been explained, and with apparent probability, as a lady-chapel for general worshippers, apart from the monks. The Kloster Ebrach Chapel Mr. Sharpe explains as a mortuary chapel. Both surmises rest mainly on conjecture; it is just a question of some little interest whether the two examples ought not to be regarded as influenced by the same ritual object, in spite of their distinction of locality.

The arches of the crossing and of all the vaults are pointed, those of the windows and doorways, circular; "in other words, the arches of *construction* are pointed, and the arches of *decoration* are circular"; which, as the author observes, is an interesting fact, when occurring at so late a date, in reference to the progress and the causes of the change from round to pointed architecture. Externally, the building is plain to the degree of bareness, at the east end especially; internally, it shows much richness of decorative detail, in the chapel especially. The capitals of some of the wall arcading here are remarkable for a very rich and effective, though not very pure, form of design, in which the capital proper, which is tolerably elongated in form, carries on it another shallow capital of greater projection, also ornamented beneath the abacus with foliage of a perfectly regular symmetrical character, and looking very like a reminiscence of Greek work. It is noticeable that the shafts here are of a baluster form, with a swell in the middle; exactly the same form, in fact, which is found in the one or two Saxon remains of this kind in England, but never later than the Saxon period. A great deal of the detail in these carved capitals, illustrated in the engravings, is very new and suggestive to eyes accustomed chiefly to English and French detail; although, on the other hand, one must admit that there is in these examples a clumsiness and want of feeling in much of the detail, in the mouldings and in the proportion of capitals to shafts, &c., which renders it very inferior to anything with which we are familiar in the early architecture of England. The Byzantine feeling of some of the ornament is remarkable; see, for instance, the capitals to the jamb-shafts of the doorway from Kloster Hailsbronn (plate x.). The doorway from St. Burchardt's, Warzburg (plate xix.), presents us with forms and details perfectly anomalous, and of which it is difficult to say whether they should rather be called embryo Gothic or corrupt Classic; and in the view of St. Waldric's Chapel, Murrhardt, which concludes the volume, we see a building of the most singular incongruities of detail; part of the ornament round the apse coming quite close to Classic forms, while immediately beneath this the exterior of the apse is decorated by a wall arcade, with straight-lined pointed arches decorated with flat bands of interlaced ribbon ornament in a manner which almost recalls Celtic work. The plates of illustrations are, in fact, quite a collection of curiosities of architectural detail, some of them suggesting a good deal in regard to the relation of Transitional Gothic in Germany to the architecture both of the East and the West.

* Illustrated Papers on Church Architecture. By Edmund Sharpe, M.A., F.R.I.B.A. No. III. November, 1876. The Ornamentation of the Transitional Period in Germany. E. F. & N. Spon, London and New York.

In mentioning last week Mr. Sharpe's architectural publications, we omitted one very interesting book, the account of the excursion in Lincolnshire with the Architectural Association, accompanied by a great number of illustrations, furnished from among the collected sketch-books of the party. This was the only one of the excursions which was permanently illustrated in this manner; but we believe ample materials exist for illustrating some of the more recent excursions in a similar way, and one or two really valuable illustrative works might be thus formed, if there be any means of meeting the difficulty which, in the case of the Lincolnshire volume, Mr. Sharpe took upon his own shoulders—the expense of publishing a probably unremunerative work.

SOME FAMOUS FRENCH ARCHITECTS.

PIERRE LESCOT.—JEAN GOUJON.

NOT without design have we associated the two names of Pierre Lescot and Jean Goujon, names which have become, to a certain extent, inseparable. Both of the same age, and intimate friends, they were both employed in the construction of one of the most famous buildings in France,—the Louvre. "Both," as remarks M. Quatremère de Quincy, referring to Lescot and Goujon, "are considered as the first in architecture and sculpture to have raised to their proper level the principles and work of Classic antiquity. Both, after having been the glory of that first period in France, have produced works which for two centuries and a half have defied, from more than one point of view, all that their successors have produced."

It would not, perhaps, be out of place to mention here some of the general causes which created so great a love of the arts during the reign of Francis I., and roused the extraordinary talent of two such men as Pierre Lescot and Jean Goujon. We have only to consider the motives which gave France this new impulse to see explained the otherwise difficult problem of the sudden apparition of two great geniuses, who at first sight seem to have issued from the earth from seed unsown, as also to understand the principle, not only of their formation, but also of their development. This principle was not of home growth, and Lescot and Goujon, often called the creators of good taste in France, alone were so from the fact that they had been the creatures of that refined culture which, for a century past, had ruled in Italy, and which now, when it first was introduced into France, had reached its height.

It was to the Italian campaigns of Charles VIII., Louis XII., and Francis I., that was almost entirely due the new communication between the two countries, and, indeed, as has been remarked, the only real result of the wars in Italy was the knowledge of its artistic *chefs-d'œuvre*. It is needless here to do more than mention the names of Leonardo da Vinci, Benvenuto Cellini, Il Rosso, Primaticcio, and the numerous other artists whom Francis invited to his court. Our duty is alone to point out how Italian taste was transported into France, and how architecture profited by this.

It is well known that Primaticcio revisited Italy for the purpose of purchasing casts of famous statues or original works for Francis; and on his return to Paris was accompanied by Vignola, who remained in France two years. Nor must we forget to mention Sebastiano Serlio, who stayed many years in France, in which country he died.

Some few French artists were fortunate enough to have been able to visit Italy; Philibert de l'Orme, as we have already pointed out, spent much of his early youth in Rome; while if there remains any doubt that Pierre Lescot and Jean Goujon passed some period of their lives in Italy, it is certain that they must have conversed freely and intimately with those who were either natives of that Classic land or had visited it.

As the architect of an important portion of the Louvre, Pierre Lescot merits a place after Philibert de l'Orme. It is of little interest to most people, and least of all to the English reader, to inquire deeply into the origin of the family of Pierre Lescot: suffice it to say that from all appearances it would seem evident that the family of the Alessi, to which he belonged, was of Italian extraction.

Born at Paris in 1410,—that is to say, about the same period as Philibert de l'Orme, Jean Bullant, and Jacques Androuet du Cerceau,—we know little of the early life of Pierre Lescot, except what what we may gather from an epistle addressed to him by Ronsard the poet, in which we are told how Lescot, even when very young, was gifted with a mind and wit so seductive that Francis I. and his son Henry II. wished always to have him at their table, to be distracted agreeably by listening to him; and that especially Henry II. preferred his conversation to that of all other persons. Further, we learn that like himself (Ronsard), who made verses when young to the annoyance of his parents, Lescot, when in class, amused himself, to the grief of his masters, in drawing angles, circles, and geometrical figures, and that at twenty he studied with success architecture and painting.

Without doubt it was early in his career that Lescot visited Italy, from which land he drew so many powerful inspirations, the fruits of which were to ripen in after-years. Nothing, however, is known of the details of this visit, and we hasten to reach the period when Lescot was employed by Francis I. in the construction of the Palace of the Louvre.

It was in 1539, when the Emperor Charles V. came to Paris on the invitation of his royal brother, that having to be lodged in the Louvre, considerable repairs had to be undertaken in the long-deserted old fortress, to make it in a fit state for the reception of the great Emperor. For not yet were either the Louvre or the Tuileries (commenced twenty years later) occupied by the French court, which then resided at the Palace of the Tournelles, on whose site has since been built the Place Royale, that picturesque quadrangle which has undergone so many changes of name, and is now called the Place des Vosges.*

Justly irritated as Francis was at the necessity for these repairs, he determined on adorning the capital with a monument which should be worthy both of him and the French nation. Sebastiano Serlio happened at that time to be his architect at Fontainebleau, and to him Francis applied, to substitute for the existing Gothic constructions of the Louvre some design which should be more regular.

In accordance with this report the plans were drawn out and presented, but the Bolognese artist, by no means satisfied with his own designs offered to withdraw it. At the same time the hard conditions of the treaty of Madrid, the political difficulties then existing, in addition to

* Originally the Place Royale, in the great Revolution it received the name of the Place d'Indivisibilité, and after being again the Place Royale, after the 4th of September it was the Place des Vosges.

the first grumblings of the interior storm to burst out in the religious wars of the next reigns, caused the brilliantly commenced patronage of the fine-arts sadly to suffer.

It was not till some years later that the rebuilding of the Louvre was taken up again,—a suggestion greatly aided by the fact that the Constable de Montmorency having been exiled from court, had commenced the elaborate decoration of his château at Ecouen, in which the utmost skill of Jean Bullant and Jean Goujon had been displayed.

Surpassing in splendour even the royal residences, Francis determined to again take up the project of the rebuilding of the Louvre. By this time Pierre Lescot had returned from Italy, and having presented his designs, when Serlio saw them, he, with a modesty rarely to be found, especially in a rival, pronounced them superior to his own, and they were consequently adopted.

From this time (1540), in conjunction with Jean Goujon and his intimate friend, and truly a kindred spirit, that portion of the palace now called the Old Louvre rose bit by bit. The portion alluded to consists of the south-west corner of the principal court, where still may be seen and admired, not only the work of Lescot, but the charming sculpture of Jean Goujon, not sufficiently well known to visitors of the Louvre and its treasures. But a small portion of the original plan seems to have been carried out by Lescot himself, though successive monarchs have at length completed the large quadrilateral which now forms the principal court.

The exigencies of the subsequent achievement of this court having obliged the attic of the southern wing to be sacrificed, the composition of Lescot's plan can alone be judged of from the western side; that is to say, by a portion simply of his design, deprived of those dimensions which are so necessary in giving the required effect to any architectural work. Injured as it is, we can still, however, admire Lescot's design. On the ground-floor are a number of porticos, sustaining upon groups of ingeniously composed columns of the Doric order, the vast ceiling of the room known as the *Salle des Gardes;* this *salle* interiorly is of great beauty, terminated at one extremity by a tribune supported by the famous caryatides of Jean Goujon (not, however, as generally stated, his *chef d'œuvre*), and over which is placed Benvenuto Cellini's equally famous "Diana."

Through those massive bronze gates (chiselled by Riccio) have passed many a gay, yes, and many a sad *cortège*, for it was in this hall that Henry IV. celebrated his marriage with Marguerite of Valois, and it was into this same hall that was borne his bleeding body, after Ravaillac's cruel stab. It was in this hall that during Louis XIV.'s reign Molière the immortal played before Louis XIV. in those pieces of his own composition, which we all now read with such delight, and which future generations will continue to devour.

This wing of the Louvre (built by Lescot), of which it has become to a great extent the type, ought to be spoken of from two points of view; that which relates to what is called the classed portion of the architecture, and that which includes the decorative portion.

From the first point of view, we must render Lescot justice in saying that he displayed in his disposition as much knowledge of the principles of beautiful architecture as any of his cleverest predecessors. The porticos of which he formed the ground floor, offer as just proportions, as happy application, and details as correct as in the best-known works. He employed the Corinthian order in all its purity. His profiles are of perfect regularity.

"We see that his intention was to put into the whole of his composition the greatest splendour. It was for this object that he placed on the ground-floor the Corinthian order, reserving himself to surpass the luxury of this story (according to the ideas then received), by the pretended order which was called composite, for the upper story. In reality this is superior to the lower, by the luxury of its windows, as also by the elegance of the festoons of its frieze. That there is a little too much resemblance or equality of style, and of ornament as well as of proportion, between the two stories or the two orders, we must acknowledge, but each one taken in particular does not denote less the architect brought up in the best doctrines, filled with the beauties of antiquity, and possessing all the secrets of his art. It was in consequence of his system of progressive luxury from base to top, that Lescot expended in his attic, a story of necessity, so much splendour that it was impossible to add more. Everywhere may be seen in this portion of the Louvre a scrupulous attention to take advantage of the old foundations, of the old walls, and even the local distributions where it was possible to adapt them to the new work, in order to economise both time and expense; and these are qualities which show the talent of the constructor as ably as they do that of the architect. When we come to the decoration, opinions differ, but the most competent authorities agree that the prodigality and wealth of ornament used from the base even to the attic serve in great measure to spoil the general effect; but it can be easily understood how the artist was led into this, by the transition from the superabundance of the Gothic to the simplicity of the Greek, and by the principle of which he did not seem to have recognised the falsity, an increasing progression of ornamentation from story to story. Without doubt from the education that Lescot received, he was a great designer, and as such, singularly well versed in the matter of decoration. Putting aside the abundance of his ornaments and the excess of details which one might find in the story which crowns his edifice, we must recognise that there is not one part of his decorations, not one of his details of ornamentation, which is not grandly imagined as a whole, or in each of the parts. Let us mention also, that he had at his disposition the chisel of sculptors, as skilled in the grandiose and the bold, as in the finesse, the elegance, and purity of their tastes. We can see that Lescot wished to give to these rare talents various motives, and numerous opportunities of increasing their power. Who would dare now to complain of a superfluous decoration to which we owe such beauties"?*

Until his death, which happened in 1578, Pierre Lescot was from time to time employed in the Louvre, but no other portion of the palace was regularly continued; and we hasten to say something of his brother artist and intimate friend, Jean Goujon, who in the perfect accord and agreement with which he worked by the side of Lescot, showed an example of that friendliness that ought ever to exist, and which always has existed, at the best periods of art, between the architect and the sculptor; but we must despair, we suppose, of architects and painters perfectly agreeing.

Jean Goujon is generally regarded as the most illustrious of French sculptors, and it is owing to this circumstance that it is not usually remembered that he was also an architect. Such, however, is the title given him by two of his contemporaries, both men well able to judge of his merit, and one of whom, Pierre Lescot, had certainly very intimate connexion with him. But if we remain in ignorance as to the architectural works which Jean Goujon directed, and if it seems that these were of no great importance, especially in comparison with his works of sculpture, we have at least the right to consecrate to him a place among the great architects of the Renaissance, among whom three of the most eminent, De l'Orme, Pierre Lescot, and Jean Bullant, sought him as a fellow-worker, and were only too happy to be assisted by his tried skill.

In the first place, is it difficult to believe that a sculptor of the sixteenth century joined to his talent of statuary that of constructor? Have not the genius of sculpture and that of architecture been often united in the same men during the fifteenth, sixteenth, and seventeenth centuries? Must we cite the most famous, Brunelleschi, Michelangelo, Sansovino, Bernini, Algardi, Ammanati, and Puget, as proofs?

But, abandoning probabilities, let us bring forward an almost complete proof of Goujon's knowledge of the science of architecture. In 1547 appeared at Paris, in a folio volume, a translation by one Jean Martin, of Vitruvius, and this translation was not only accompanied by several designs, drawn by Jean Goujon, but was followed by an epistle addressed by that artist to the reader. This little treatise is composed only of five pages, but it is full of information. "Superfluous language," as the author observes, "is annoying to all people of good sense." It would be perhaps out of place to give here a *resumé* of the epistle, but from the existence of this work, three conclusions may be drawn: the first, that Jean Goujon knew at least how to draw architecturally; the second, that he was no stranger to the didactic notions of that art; and the third, the most conclusive that he was recognised in his time as an architect, since he was with this title employed by the Constable de Montmorency in his château a Ecouen; lastly, he was of the number of the king's architects.

The usual custom of associating, in speaking of the Louvre, the architecture of Pierre Lescot with the sculpture of Jean Goujon, has led to the belief that elsewhere and reciprocally, in the sculpture of Jean Goujon, when combined with architecture, the design could alone be that of Pierre Lescot.

Hence the opinion, that the Fontaine des Innocents, at Paris, so famous for its sculptures, was in its architecture the work of Pierre Lescot.

Unfortunately the monument, seriously altered in form at the end of the last century, and re-erected in the middle of the *place* it now occupies, it is much more difficult than formerly to judge of the taste of its architectural design.

To be convinced of the fact that Jean Goujon was really the author of the architectural portion as well as of the sculpture, one must either, from description, or, better still, by the numerous designs which exist, restore the monument to its primitive state.

Originally built at the corner of the Rue Saint Denis and of the Rue aux Fers, it formed, with its basement, from which the water gushed, a long square pierced with arcades, one on one façade and two on the other. The artist wished to make of it, by his decoration and the subjects of the figures, a little hydraulic edifice. However, the architectural feature was only an accompaniment, or, one might say, the frame of the sculpture. Everything seems to have been disposed with this view. The spaces between the Corinthian pilasters were occupied by figures of naiads, the most delicious representations of female grace that possibly (since the Grecian days) the sculptor's art has ever produced. Above each of these, in a small scroll, were the words *Fontium nymphis.* The attic and the basement were filled with bas-reliefs and analogous compositions, which would have made, if the monument had been terminated, a sort of *ædicula*, consecrated to the nymphs of the fountains. Although we speak of the work as one of the past, notwithstanding the transformation it has undergone, we can still see in it the reality of what has been described, and also the connexion between the architecture and the sculpture of the monument.

Much as we should like to give at length M. Quatremère de Quincy's criticism on this monument, the quotation would be too lengthy: suffice it to give the first sentence:—"It seems to us that never has a greater conformity of style, of taste, and execution reigned between the work of the architect and the sculptor."

The taste, or what the same author calls "the physiognomy" of this architecture, appears more certainly to belong to Jean Goujon, as we see it plainly written on a portion of another building, which no one hesitates to attribute to him,—the gate of the Hôtel Carnavalet, in the Rue Sévigné,* and there, again, in so far as the architecture goes, one remarks that identity of taste which never deceives the experienced eye.

Before leaving here these two friends, Pierre Lescot and Jean Goujon, let us not forget to mention that Jean Goujon, in company with several other distinguished artists of that period (such as Du Cerceau, Jean Cousin, and Bernard de Palissy), was a member of the reformed religion, and a touching tradition, which, though it may have no proofs of its truth, has never been openly denied, exists to the effect that on the morning following the awful night of the massacre of the Protestants (on Saint Bartholomew's Day, August 24th, 1572), Jean Goujon, having mounted the scaffolding of the Louvre to complete some of his sculptures, was killed,—by a stray ball, some say, but doubts will ever remain on the subject, which is involved in impenetrable mystery.†

Sale of Pictures.—On Saturday last a sale of water-colour drawings, collected by Mr. J. Knowles, of Trafford Bank House, Manchester, took place at the auction-rooms of Messrs. Christie, Manson, & Woods. The day's sale realised 24,571*l.* 6*s.* 6*d.*, or an average of nearly 250*l.* per picture.

* M. Quatremère de Quincy.

* Now the *Musée de la Ville.* It was in this house that the famous Madame de Sévigné lived, from which fact the street has within the last few years received her name.

† Jean Goujon was born in 1510. His father, in 1562, suffered the penalty of death as a Reformer; and, indeed, after this date no exact information can be found respecting his son.—*Haag, "La France Protestante."*

ORGANIC CONSTRUCTION—NATURAL AND ARCHITECTURAL.

We have a distant recollection of a book,—it ay still, for aught we know, be current and rviceable about the world,—which, under the tle of "The House we Live In," set forth the rfections of the structure of the human rganism. The physiologist was certainly quite ithin his rights in turning the tables upon chitects, and claiming the same liberty to make eir works an illustration of the marvellous com- nation which he was most concerned to study, as any architects, and from of old, had exercised in serting for the noblest of their successes an alogy to the noblest of all created forms. The uman body is doubtless a habitation, a fleshly abernacle; piety and philosophy alike have agreed regard it in this light, and the sportive rebuke Socrates to the question how he would choose be buried, as if what was to be or could be aried was Socrates,—Socrates, who was nothing not an immortal soul,—is in the spirit of all e teachings that most elevate mankind. But e body is something else besides a habitation; is also a carriage that subserves locomotion; comprises a full set of serviceable instruments d tools for the furtherance of all kinds of con- ivance and manipulation. The physiologist, erefore, who should confine his exposition ithin the limits that he would be bound to by e quoted title, would give after all but an in- mplete account of the subject which he had ken in hand. And let it be said that the andest of created works, so far as known to , suffers somewhat under derogation by being aralleled to even the best of artificial arrange- ents. To the architect, on the other hand, be permitted in a spirit of worthier reverence to ok up to an archetype which it is beyond his ope or his pretence to rival, but that it raises m in dignity and power to look up to ever, and least aspire to emulate.

The analogy between the body of man and ch a work of architecture as worthily accommo- tes his purposes and sentiments, has, like chitecture ever, its prosaic and poetical aspect. fix at once upon some of the most obvious ints of agreement,—agreement which has me about by force of fundamental propriety, t as result of a preconceived theory of arallelism,—external symmetry is as charac- ristic of the noblest buildings as of the body; d in either case we find that it may be estab- shed consistently with considerable absence of mmetry in internal distributions. Nothing trays to the eye from without that the heart, t to speak of other organs, lies unsymmetri- ally; but still these various organs fall into roups, which may be said to be governed by eed of relative dependence, and, indeed, in irtue of this fall into combinations and con- nctions which are in harmony with relative gnity also. Chambers, "built for pleasure and r state," passages of communication, offices, nd stores of all sorts, have never been so aptly, marvellously, contrived and adjusted as are e organs that complete the corporeal economy. n the first place, in either case just determina- ion is indispensable of the elements which are emanded for a certain effective combination of he specific parts required to constitute a set, nd parts which can only be available as a hole by the due introduction of even the most ubordinate of the items; from this point of iew we may observe that there is a require- ent for a history of architecture still, which, aving aside considerations of orders and even f styles, shall set forth the sequence of inven- ion of various kinds of apartments and their ependencies and collocations, and appreciate he degree of success with which, at every poch, special combinations met special purposes, nd how far in each case the complex purposes f a particular phase of social life were fitly esponded to by what merited, in its entirety, he title of an architectural organism. In con- ucting such comparisons it will of course be rong to shut our eyes to the facts that architec- ure may sometimes suffer by having to conform erforce to defective social conditions, and then hat it is only when it is called upon by these in heir highest and happiest manifestations,—as or halls of justice or legislation, or temples for rorship,—that organising genius has its full pportunities.

The highest ideal of organism involves the onception of numerous parts most distinctly pecialised, but all subordinated nevertheless to pervading characteristic symmetry in their istribution. So it is that the highest expres- sion of unity is attained when all diversities are so grouped at last that a pair of similars and no more declare themselves as constituting the single whole. In the natural and in the artificial structure alike, the distinction of functions is most absolute in the most perfect examples, and no less the concentration and correlation of all however most distinct.

It is in the grandest of all structures that the principle of symmetry has ever been most pronounced; a Gothic cathedral is as exactly divisible by a median line and plane as a human skeleton,—and it is the same with a Greek, not to say with an Egyptian, temple. But, it may be objected, the human figure is as mobile as the temple is rigidly stationary; nay, the value of symmetry in respect of the beauty of the figure is never fully pronounced until a certain degree of disturbance supervenes. Bolt upright, full front and resting equally on either leg, and with arms close to the sides, the figure has but little of the beauty that is discovered when the balance is altered,—the weight transferred to a single leg, the level of the shoulders changed for a slope, the trunk inclined and partly turned, the arms in contrasted position, the head swerving from the direct aspect. When variations such as these are introduced in subordination to a definite intention or sentiment, precise linear symmetry vanishes, no doubt, but we do not lose our consciousness that it subsists fundamentally all the same, and it still betrays itself as subsisting, and, indeed, as governing the directions and the range of variation. And even so we do not lose hold of the analogy for architectural effect. The same enhancement of beauty that is obtained by contrasted action in the figure results from the contrast which is introduced into the aspect of architecture by change of point of view. The direction of entrance to the Acropolis of Athens, through the propylæa, is the chief, but only one, example of the care of the Greeks to secure a presentation of their noblest buildings on a line oblique to the front. By this means perspective introduces the effective contrast of the two similar halves of the front at the same time, and the like holds good for the figure; interest is heightened and satisfied by the display at once of the entire distribution. One of the chief advantages of the double western towers of a cathedral,—the justification of the second æsthetically where utility is out of the question,—is the happy contrast which is thus obtained on an oblique view of the same majestic form. An attempt to wrest the advantage of contrast by making any considerable difference in the designs of companion towers will only have the unhappy effect of a mismatch between the halves of a human face. It is a problem for an artist, which an artist only knows how to solve, but can solve, what exact amount of secondary variation may be and should be introduced between features of the same bust, between details of paired windows or towers, for the sake of evading dryness, of expressing richness of resource, and still without disturbance of the indispensable spirit of dignity and repose.

Every fine work of art is, therefore, an organism, and involves in its structure the principles of an organism, though they may never have been recognised abstractedly; and very often, indeed, the genius of the artist works like the other powers of nature,—

> "Which know not what, nor why, but do effect
> Rare issues by their operance,"

The distinct recognition of principles, however, has a scientific value independently of any particular case of their application; and there is no little interest in looking back at the stages of their definite development. The earliest of these, as it seems to us, may be carried back to Socrates, whose name has already found its way into our lucubrations. The loitering slipshod philosopher liked nothing better than to diversify his dialectical enjoyment of posing a self-sufficient sophist, by wandering into the studio of the sculptor or the painter, or to the open workshop of an armourer or a saddler, and tempting artist or artisan into discussions as to the relation of technical skill to first principles. Xenophon is our chief informant as to these conversations, though Plato gives general confirmation; but for this we might be inclined to suspect that Xenophon merely pleased himself by putting into the mouth of his master his own independent conclusions, for they are those by taking which to heart so thoroughly in his own function as a soldier and a general, he made himself a most conspicuous name in the history of the art of war. It may seem that we are getting rather far afield when, starting from the analogy of natural and architectural symmetries, we stumble on such a subject as the development of the art of war. The seeming remoteness of this subject, however, will prove but another illustration of the analogy that underlies all the arts,—the useful, the fine,—and, we must needs add also, the too often worse than useless and far from refined,—the destructive art of the campaign and battle.

The lively recognition by Socrates of the principles and value of organism, as put before us by Xenophon, is illustrated by examples of which the Natural Theology of Paley only supplies an expansion; Paley takes the well-known watch as his example of a work of contrivance and skilful design, to be brought into comparison with the marvels of natural organisms; the Greek, as characteristically, put the perfection of created man into comparison with works of art,—the epos of Homer, the dithyramb of Melanippides, a tragedy of Sophocles, a statue of Polycleitus, a painting of Zeuxis. There is also something more noble in his inclusion among the proofs of design in creation, of more than anatomical details,—of the instincts of parental affection as well as of self-preservation,—of the faculty of speech,—the capacity for extended forethought,—the sensibility of devotion. His examples of apt construction and arrangement with which we are more concerned are selected with much acuteness. He cites the variety of the organs of sense,—the regard to the delicacy of the eye, its use and preservation, in the protecting eyelid which keeps open as spontaneously by day as it closes at night, the strainer-like fringe which protects it from flying dust,—the penthouse eyebrow that diverts the sweat of the forehead;—he notes the fitness with which in all animals the incisor teeth are set in the front of the jaw, while the as specially differentiated molar, which are to grind the already separated food, are placed conveniently behind,—the advantage of the nose being set as guard over what enters the mouth, of the collocation of the chief organs of sense in front, and the removal to a distance from them of what functions would minister offence.

It is with precisely the same sense of the fit adjustment of various means to the assemblage of special ends that he discourses of the arrangements which were required to make a house answer, in all diversified respects, its double purpose of agreeableness and use. In a Greek establishment, which included numerous slaves, both male and female, the separation of the private from the open apartments was a determining consideration of the plan, and most strictly guarded; then places are enjoined to be assigned for stores of corn or wine, or other things respectively, with relation to dryness, coolness, or light. The aspect of the house was to the south, and the portico advanced in front was made lofty, in order to admit the sun's rays freely throughout the winter months, and at the same time of such projection that the higher sun of summer cast an agreeable shade precisely where it was most wanted. Any porch or opening on the north side was kept low, in order not to admit the bleak wind. In one apartment or another every season of the year would be enjoyed at its greatest advantage.

In the "Œconomics," Xenophon disserts at large on the value of provision for orderly arrangement in a house, and brings naval architecture into his scheme of illustration by an interesting notice of the perfection of systematic arrangement on board a merchant-ship under a Phœnician skipper.

He reverts to a constructional illustration in one of the most important passages of his "Romance of Cyrus," in which he describes an order of battle, and the principles that determined it. The imaginary battalia that he marshals includes a greater variety of arms than a Greek commander up to that time had ever brought into the field; and the scheme of its array,—which is justified by a parallel to the mutual interdependence of foundation, superstructure, and roof in a house,—reads like an anticipation of the highly artificial but admirably effective orders of battle of Alexander the Great. Xenophon, however, was something more than a romance-writer, and it is in studying his personal narrative of the retreat of the ten thousand Greeks that we learn to appreciate the skill and vigour with which he put into most concrete practice what we meet with as abstract speculation in his "Memorabilia of Socrates." The theory of an effective organism which could be extended from the human to an architectural

structure proved equally applicable to the organisation of an army. This is not exactly the place to dissert at length on the revolution in war which was initiated by the conduct of this great retreat; it completes our purpose to note that the change was mainly due to a great advance in the combined employment of troops of various arms, and to their distribution in every conflict with reference to the peculiar circumstances of the case,—the enemy to be encountered, and its position,—to the calculated combination of forces of attack, of support and reserve. So it was that whatever the pupil of Socrates effected in the field was due to that lively appreciation of the principles of organic and constructional efficiency that made him so enthusiastic in his admiration of the perfections of the human body and constitution, so explicit in his assignment of various materials in construction, and so urgent in insisting on a coherent plan and well-adjusted elevation in architecture.

NOTES ON PERSHORE ABBEY CHURCH.

The attention just now directed towards Tewkesbury Abbey Church may render of interest a remark or two on what may be called, architecturally speaking, the companion church at Pershore, eight miles from Worcester. Not that the architectural visitor would find there anything like the grand and complete interior which he finds at Tewkesbury; or any such noble stroke of genius in building as the west front of the latter. At Pershore the west front is not, for the whole of the nave is gone. But what is left is of great interest, and curious in its analogies and resemblances to the more complete building in the neighbouring county.

What we see, as we turn out of the open square or place in the centre of the quiet old-fashioned town (which looks as if the hurry and bustle of the nineteenth century had never reached it), is an Early English choir, with a later low-pitched roof, and some modern additions, and a fine tower of Late Decorated date, evidently built on the lines of a Norman tower. Of this portion, a word presently. It is on going round to the west of the building that we find its special interest in comparison with Tewkesbury. From the masonry with which the old western arch of the crossing has been built up there project the rounded responds, from which commenced the nave arcade, which was carried on tall cylindrical pillars, in the same way as at Gloucester and Tewkesbury. The remains of the aisle arch and its respond-shafts and capital are also visible. Over the line of the round arch of the crossing is seen the apparent trace of a pointed vault built over the nave, as at Tewkesbury, at a much later date. Indeed, there is every indication that these were rival abbeys, endeavouring to out-do each other in magnificence step by step, as we so often find in comparing Mediæval buildings in neighbouring parts of the country. The south transept remains, and part of the north one. The changes which the north transept has undergone are truly curious. It has obviously been a Norman transept of the usual length. It has been vaulted, and received a high-pitched roof, the weathermould of which is on the tower. In all probability a low-pitched roof was afterwards substituted for this, as over the choir now. But subsequently to this, probably in the fifteenth century, it became desirable or necessary, for some not easily comprehensible reason, to remove a part of the transept, shortening it to a mere projecting bay, a new wall being built up as its northern termination, and a Late Perpendicular door and porch made in the centre of this wall. Part of the west wall of the transept remains, however, standing out in the likeness of a deep buttress, and is finished with gabling and sets-off of Late Gothic work. The stump of transept thus left is roofed with a lean-to roof, and the vault has been removed. The treatment of the eastern wall of this transept is the most singular. Here the original wall also projects as a buttress, but has been cut off to a regular slope, continuing the line of the lean-to roof nearly down to the ground, and finished on the top with a Late Gothic coping, on masonry packed up to a regular slope, with joints at right angles to the line of the coping. The buttress finishes 5 ft. or 6 ft. from the ground with a horizontal return, leaving a kind of square pier, to which in the Post-Gothic period a ball termination, like the top of a regulation gate-pier, has been affixed, perhaps in place of some original Gothic terminal which had been destroyed. The whole makes an extraordinary medley of very picturesque appearance. The door in the north wall of the transept would seem to have been inserted at a very late Perpendicular date, and in the course of Sir G. Scott's restoration some ten or twelve years since it has been built up again and the porch removed.

The choir externally is of remarkably pure and simple-looking Early English work, with plain lancet windows with splayed jambs in two orders, but no mouldings or other ornament; although the work, as we find from the interior of the building, was not early in the style. A battlemented parapet has been added when the roof was lowered. The buttresses alone exhibit a more ornate character in their finials or pinnacles, of which only the lower half is old; the terminations, crocketed pinnacles in the style of the best period of Decorated work, are all modern restorations; and whether there were any old fragments to give the design, or whether they are entirely conjectural, is not apparent. But it is obvious that these pinnacles, in their original form, were a later edition to the Early English work. The most interesting point in the exterior of the choir is the fact of the hexagon termination, in which again it resembles Tewkesbury, and which there hardly can be a doubt follows the line of the original Norman foundations. The *chevet* chapels, which give such special character to Tewkesbury, are not, however, to be found here, but the small square north and south chapels form part of the Early English plan. The lady-chapel projected from the eastern bay of the hexagon, as at Tewkesbury. Every trace of this has disappeared, except the arch which gave access to it, which, before the recent restoration, was built up, but is now opened, and a modern octagon apse in Early English style added, which forms the space for the communion-table. It hardly appears that the space was required in the church, and the addition of a modern-mediæval apse to this part of the building, where everything else is genuine, is to be regretted.

Coming round to the south side of the choir, we find a very interesting corner. The east wall of the transept has a whole history of changes written upon it. We see the arch of the original apsidal chapels eastward of the transept, and indications of the same two-storied arrangement as at Tewkesbury. An Early English chapel, contemporary with the rest of the choir, has apparently stood in this angle, succeeded by a larger and more ambitious one of Decorated date, the vaulting shafts of which are left on what is now the external wall. The entrance to the chapel was through an arch occupying the western bay of the south aisle, and now of course built up. The east wall of the transept has been thickened up to the height to which the new chapel extended, and dies away by a set-off above that point into the plane of the original Norman wall. This wall has been much restored and patched above the set-off, and the corbel table, adorned by grotesque heads, is mostly restored; but it shows, what is interesting, that the Early English builders were not in this case so careless of adapting the new building to the old as Mediæval builders generally were, as they have made the corbel-table of the choir range with, and in some degree assimilate with, that of the Norman transept. It might seem that there was, in the earlier periods of Gothic, more thought given, on occasion at least, to matching old and new buildings than in later days. We noticed, in speaking of Romsey Abbey some little time since, a distinct instance of modification of the clearstory details from the prevalent forms of the period when they were made, in order to assimilate them with the early transitional work. Instances such as these should be noted, as their comparative rarity renders them the more significant. It is interesting to compare Pershore tower with that of Tewkesbury, the late fourteenth century and the Norman tower, both standing upon Norman bases, much resembling each other. The general proportion of the two towers does not differ very much to the eye; and there is a kindred spirit in the architecture of both, notwithstanding differences of detail. Pershore is a very well preserved and very fine specimen of its class. The lower portion, clear of the roofs, consists of plain masonry pierced with two windows on either face unconnected by any wall decoration; over these a strongly-marked string-course adorned with the "ball-flower" ornament (once so dear to the modern Gothic designer) and by a kind of sham battlement, similar to that on the choir ro used decoratively, as if the tower had be originally intended to finish here: above t a richly story of very fine and complete charact in which windows and narrow wall-arches ran with each other and fill up the whole face; ov this another cornice with ball-flower orname again: the angle pinnacles are modern, of t date of the late restoration. The south wall the transept is a curious piece of patch-wor the wall having been "made good" with n masonry when the conventual buildings we destroyed, in the lower portion: above is a b imitation lancet triplet of modern date, and ov this we come to Norman work again, a w arcading with a "cable" moulding as a stri underneath it. The west side of the transept so overgrown with ivy as to hide the buildin The cloister doorway is left, a good early D corated doorway in tolerable preservation, resti on a small portion of wall left, just sufficie to take the arch, which thus stands out from t transept wall in a sort of flying-buttress fashio This is all that is to be seen outside. Of t conventual buildings and the nave of t church not a vestige seems to be traceable.

Entering the church by the door in what now the west end, we are still more struck wi the resemblance to Tewkesbury. There are t same massive crossing piers with their leng east and west, and it is obvious that the round responds died straight into the wall-plane, in t manner we noticed as so effective at Tewkesbur There are in the south transept the same sm triforium arches on short stumpy columns; have here, however, the original clearsto windows, also; small circular-arched windows the same character as the triforium openin The crossing arches have the same single cessed sub-arch under the main arch, only this case the sub-arch is carried on two respo shafts rising from the floor, while at Tewkesbu the east and west arches are stopped on corbe One or two other differences lead one to thi that the church was slightly later than Tewke bury. The stair-turrets in the angles of t transepts show a circular plan towards the int rior (as at Worcester), instead of the square pr jections which cut so awkwardly into the angl of the transepts at Tewkesbury. One may surmi that these had been thought clumsy, and Persho was a refinement upon them; and the interestin remains of an ornamental wall-arcade on th south wall, in the space now partitioned off the vestry, show an advance in decorative tas upon the stern simplicity of Tewkesbury. I the roof of the transept we have the same effe as at Tewkesbury; the building of a Goth vault upon the Norman substructure; the ro here would seem to be a little earlier than t transept roof there, the fan-form being mo rudimentary. The tower is now open nearly t the top; and above the string which runs ove the head of the crossing-arches commences t fourteenth-century work, very rich and ornat here, in the interior of the tower, which is all succession of shafting and panelling above whe the Norman work ceases; the internal desig however, has hardly the dignity and simplicit of the external, and seems, indeed, curiousl different in character, considering that the tw designs form absolutely one piece of building one would think that two different architects ha presided over the interior and exterior of th walls respectively. It is in this tower, as ou bell-ringing readers may remember, that th curious contrivance has been made, at the resto ration of the church, of providing a ringing floor for the ringers, hanging in mid-air, sup ported by beams from the four walls, and reache by a light-railed gallery on one of the beams the object being to get the ringers far enoug below the bells, without putting a floor whic would conceal the architectural design of th tower above its level.

In the choir the Norman work has all disap peared, and has been superseded by very fin Early English work in the fully-developed forr of the style. The vault is something later, th foliage of the bosses losing the Early Englis character, and inclining towards the Decorate style of ornament. The triforium has bee treated with great boldness; or rather, we migh say, the triforium and clearstory are architectu rally in one, a fine triplet of open arches bein carried through from the ground-story string u to the level of the heads of the clearstory win dows, but standing far within the window-plane and quite free. The triforium passage run behind these, and the triforium story itself i only marked, in height, by the space of blan

wall which runs under the sills of the windows, behind the arcading. Here, again, we see something of the same idea as in the choir at Tewkesbury, where the clearstory windows are brought down as low as possible, and only a portion of blank wall left between them and the floor of the triforium gallery; and in both cases we probably trace the influence, on the builders of the new work, of the arrangement and design of the two-storied Norman choir which the thirteenth-century work supplemented. The choir of Pershore, it should be observed, is on a larger scale than that of Tewkesbury, being five bays in length, including the canted bay at the east end, while Tewkesbury is only three. There is, however, nothing like the internal effect of the apsidal chapels of Tewkesbury.

Among some fragments found during the restoration, and collected near the west end of the church, is the accompanying portion of a



capital of the original nave, which illustrates one of the many forms of ornament found in these Norman capitals, and seems curiously suggestive of a reminiscence of Classic decoration.

DRAIN VENTILATION: DIFFUSION *VERSUS* REPRESSION.

IT is curious to observe how universally two opposite principles prevail in the world, both in physical and moral affairs, viz., Repression and Diffusion, the concomitant of the one being Stagnation, and of the other Motion. They are formulated thus:—

Repression = *Stagnation* = *Putridity* = DEATH.
Diffusion = *Motion* = *Freshness* = HEALTH.

Let us try the proposition by a few tests. Say we begin with stagnant water upon land—the result of a flood. The stagnation is caused by the repression consequent on the confinement of the water; it cannot run off the land. The mere act of flooding does the land no harm, if the water can run off again, but if not it becomes stagnant: it injures the land and its occupier in many ways; it spoils the herbage and sours the ground; it deprives the occupier of the use of the land for the time, it creates malaria in the neighbourhood, it injures the foundations of buildings, and makes houses damp; but if it has constant motion none of these evils ensue. On the contrary, it quickens the crops and freshens the air.

To come to our more immediate subject: sewer gas becomes putrid and malignant when confined in contact with sewage, but if diffused into the atmosphere it is quickly diluted and rendered harmless.

The immediate occasion for our remarks is that a certain method of ventilating drains, which is wrong in principle, has of late been much written upon in sanitary journals with commendation, which being unqualified is injudicious. We may admit that the ventilation of drains and sewers is a good object, and that it ought to be attained without delay, and yet believe it to be retarded by injudicious advocacy of such things as can be patented. Those who have "invented" the method and patented it, have, we think, been led away from true principles by a notion which, on a first consideration, is sufficiently "taking," with the expectation that it will remove the evil which is complained of so loudly by every one, viz., the entry of sewer gas into houses.

The method here alluded to forms part of a so-called "system of sanitation," according to one patentee, and of a "new system of drainage" according to another, and consists in making a hole at or near the bottom of a ventilating-pipe. This is the gist of the whole thing. The several patents are not precisely alike, for one includes a cowl, to be placed upon the top of the pipe, which is unnecessary.

But to explain the matter more fully, we must look beyond these petty things. The object before us is the ventilation of the drains of buildings, whether large or small, public or private, and we may call them all house-drains. Now a house-drain is laid from the upper part of the proximate street sewer to, and sometimes into, the house or other building, for the purpose of conveying away the sewage. The house-drain may be a 6-in. pipe, or a 9-in. pipe, or other size. The sewage itself runs along the bottom of the drain, and occupies but a very small part of its space, much the greater part being occupied by air, at first by atmospheric air only. Likewise, the sewer itself is mostly filled with air, the sewage occupying at most times but a small part of its space. This proximate sewer is, again, connected with other sewers. The air in those which lie below the proximate sewer is free to traverse them all, and, under certain conditions, does pass upwards to and into the sewer in question, and thence upwards again into the house-drains.

A particular point now to be observed is that the upper end of the house-drain is always at some considerable distance from the sewer with which it is connected.

Not every house has a water-closet above the ground-floor, but many have, and there is a "soil-pipe" erected upon the drain. Too often the soil-pipe is carried up no farther than the closet, terminating there, and forming a direct communication between the drain and the closet. So that there is a "trap" of some kind, people are contented, believing that it prevents sewer-gas from coming into the house. It has, however, been recognised, after much teaching, that it will not do so, and that the soil-pipe must be carried up beyond the closet, and made to terminate in the open air above the roof. Upon this discovery being made, plumbers set to work with their lead piping, and deftly made a small communication between the soil-pipe and the open air above the roof. Still sewer gas came into the closet, and thence into the house, and continued to make people ill, despite the plumber and his charges. The reason why the pipe does not carry off the sewer gas is that it is too small. The quantity of foul air is large, and the time in which it must be discharged is short, and a small pipe will not permit of the desired operation being performed through it; the air sticks fast against the sides of the pipe, and, after the first effort, returns into the soil-pipe, and thence into the closet. Here, then, it is plain that the soil-pipe should be prolonged upwards, *of its own full size*, and that is all that needs be done if the sewers be as they should be. That satisfies all requirements. It is all that those who have had most to do with sewers and drains outside and inside houses require. But, unfortunately, it is not sufficient for some few inventive persons who have not had so much to do with sewers and drains, and who apparently are unable to comprehend more than a part of the whole question. No one can properly deal with house-drains who does not thoroughly understand sewers also: the whole question must be considered together.

When we hear people talk of cutting off communication between the soil-pipe and the sewer we may know that they are not practically acquainted with sewerage and house drainage, and for what seems a personal good are about to do general harm. The soil-pipe is separated from the house-drain, and is itself alone ventilated by admitting fresh air at or near its lower end. It is this disconnexion between the soil-pipe and the sewer which is wrong in principle. The sewer gas is prevented from reaching the soil-pipe by a trap on the drain. The soil-pipe is, in fact, separated from the drain, and ventilated, leaving the drain itself unventilated, full of sewer gas under our feet, which awaits its opportunity to escape, and which becomes the fouler the longer it lies there stagnant. It cannot descend again to the sewer, and the only practicable way to prevent it coming into the house is to make a way for it to continue its upward course to the top of the building into the open air above the roof. There is, indeed, we fear, no practicable way of ventilating the sewers other than by means of the house-drains and numerous pipes and openings. Ventilation in detail is the principle to be adopted. Each householder is responsible for the effects of the sewage he makes. The gas resulting from the sewage he contributes to the sewers is for him to deal with; it returns to his house. To those who live in their own houses this has a direct reference, but to an occupier of another person's house it can have only an indirect reference, the person directly interested being the owner of the house. It is for him to make provision for the proper escape of the inevitable gas resulting from the house-sewage, precisely for the same reason which induces him to make a flue to carry off the smoke from his tenant's coal fire. It will add something to the cost of the house, but it is a necessary part of it. It might, at the outside, add 5*l.* to the cost of the house, for which 10*s.* per annum additional rent may well be charged.

It has been attempted to ventilate sewers without at the same time ventilating house-drains. It seemed that the purifying effect of charcoal on foul gases might be brought to bear, and charcoal in trays and baskets of various forms was interposed between the sewers and the openings from them into the atmosphere; but for various reasons it does not effect the purpose, and forms, practically, an obstruction rather than a help to ventilation.

Mill chimneys have been connected with sewers with great expectations that their power of draught would do much to relieve sewers of foul air, but their action does not reach far, they draw air only from an immediately surrounding small area.

Street gullies used to be left open, but as no provision was made for the escape of sewer gas elsewhere it issued from them into the street. They were then trapped, but as still no provision was made for ventilating the house-drains, the effect of closing the street openings was to drive the sewer gas still more into the houses; until sewer authorities have wisely ordered these openings to be again unsealed and left open to the atmosphere.

If, now, they would go one step further in this direction, and order that each house be provided with its own means of carrying off the sewer gas resulting from its quota of sewage, the whole thing would be accomplished, once and for all. In ordering these street openings to be untrapped, the authorities have said, "Better let the sewer-gas escape into the street than into the houses"; but it is a matter of experience that where, in addition to leaving these places open, the house-drains have been ventilated—that is, simply extended upwards by vertical pipes of sufficient diameter to conduct the sewer-gas above the roofs—the ventilating-pipes and the drains being left wholly open from end to end, these street openings, instead of emitting sewer-gas, admit fresh air to the sewers, which traverses them and the house-drains throughout, causing dilution of the sewer-gas to such an extent that it is practically destroyed. What of it is formed is carried up above the roofs of the houses, much diluted even before its escape, and much more after. We apply in this case the principle of diffusion, and in no part of the sewerage system that of repression. Guidance is not repression, and we make use of traps to prevent the escape of sewer gas at improper places, but we make at the same time a way of escape for it where it will do least harm.

One thing remains to be said, that by repression we do not mean prevention. To prevent the formation of sewer-gas, if that were possible, would be the best thing of all. It is true, indeed, in all affairs, that to prevent the beginning of an evil is better than to cure it, or to palliate its effect. All we mean to say is that where sewer-gas is formed it should not be repressed, but diffused to the utmost.

There is safety for the whole in no other system.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

TREATMENT OF CHURCH INTERIORS.

THE impression conveyed in my former essay* on the above-named subject of the impropriety of leaving the stonework of a cathedral interior unpainted was derived from an inspection of that of Chester, to which colour is applicable. In edifices containing statues, or rich carving in stone, the application of painting becomes more difficult. But I am fully persuaded that, whatever was the intention of the Mediævalists, it is a mistake to consider bare stone as delicate or precious enough for the inner face of a church; and that the whole of the said face,—plain, moulded, and carved,—whatever is incapable of polish, ought to receive a coating of oil paint, which, I believe, could be applied by an artistic hand without any appreciable injury to delicate sculpture.

While public galleries and halls, and the chief apartments of most secular buildings, present often one expanse of mirrored and pictured walls and ceilings; while fortunes are exhausted in the luxurious finishing and decoration of

* See *Builder*, vol. xxxiv., p. 1023.

boudoirs and reception-rooms, is it proper that the House of God should be left with no surface superior to that of sandstone? Such treatment renders churches not only the scorn of other buildings of inferior destination, but it produces a want of keeping within themselves,—between their own several parts. What harmony or keeping, for instance, is there between the material in question and the stained window, which is now never omitted but from necessity? the one exhibiting a beauty and refinement beyond any feature the drawing-room can boast, the other a coarseness and rudeness that would not be tolerated in kitchen or scullery. Not only with the windows and other features of the interior is the sandstone surface at war, but with the entire exterior surface of the building, which is constantly renewing its interest and beauty by the weird devices of time and nature, and exhibiting a species of mural decoration that no human agent,—charm he never so wisely,—could bestow; and which the highest efforts of painting and carving within are insufficient to balance; the more so as the exterior grows rich also in the sanctities of age and historical eloquence, by which it becomes to men of imagination and feeling more interesting to the mind and affections. Indeed, the operations of nature on the exterior of a church, as throughout her works, seem to me to rebuke the practice of leaving a bare sandstone face within. Nowhere is she satisfied with bare rock or stone, but everywhere,—in mountain, plain, and valley,—decorates it with grass and flowers or minute vegetation. She never suffers bareness, such as our church interiors generally exhibit, anywhere, either in her own works or in those of man that are exposed to her influence. Great outcry is made against the whitewash of the church-warden period. But there is really not much to choose between white or yellow wash and bare sandstone.

Some misgiving as to its sufficiency seems implied in the polished marble or other shafts which we sometimes see here and there interpolating church interiors of the day,—chiefly, I think, in window reveals. They indicate a desire for something richer; but they only make matters worse, by rendering the surrounding aspect of the place to which they are introduced more barbarous; and, in the case of a cathedral, rich reredos, pulpit, throne, carved stalls, increase the anomaly; and so does the rich mosaic floor, on which we shall, perchance, see prostrate elements,—figures of the Saviour and Fathers of the Church,—that ought to have adorned the walls. The ceiling is more free to receive such embellishments; but painting and gilding on a ceiling do not harmonise with bare sandstone walls and piers.

I fully sympathise with Mr. Sharpe in his dislike to crude, gaudy colours, as expressed in his "Four Letters on Colour in Churches," reprinted from the *Builder*, and entirely agree with him that whenever the effect of colouring is to attract the eye more than the forms of the design, colour is an impertinence. I consider form as paramount in architecture, of which painting is the handmaid, not the mistress, nor even rival. I remarked, some twenty years ago, in a paper on "The Decoration of St. Paul's Cathedral," and published in the *Builder*, that polychromy would be the artistic destruction of that building. I hold the same opinion in reference to church interiors generally, of whatever style. But the application of one colour, leaving the joints in piers, walls, arches, &c., visible, would not obliterate or in any degree impair the charm derived from their manifest constructive reality. Nor would it mar their rich forms and delicate contours, or their capability of an infinite variety of delicate effects of light and shade. Nor would it disturb that general grandeur and solemnity for which the Mediæval Cathedrals are remarkable.

On the contrary, by the application of colour, in which I believe there would be much scope for artistic taste and judgment, some corrections and refinements might be effected in the design of pier and arch mouldings. Diversity of the capitals of columns might be increased, if needful, by its means; which, in some cases, would be a very important improvement. I would apply painting, not so much for greater warmth or richness of colour as for obtaining a more delicate surface, and hiding a coarse material. And in any pictorial embellishment I should employ the sombre colour of the Roman school rather than the rich colours of the Venetian. I should prefer a solid material, possessing the desired qualities,—marble, for instance, or polished granite, as a lining to a church: the former a material that, in the South, thousands of human habitations exhibit on their exteriors; but, in lack of that, I think painting is a legitimate appliance.

I have often wondered that what may be called the Fore-Christian Church,—the Temple of Solomon at Jerusalem, symbolic as it was of the Church of Christ,—beautiful in itself, and "beautiful for situation on Mount Zion, the mountain of God's holiness, and the joy of the whole earth," the entire of which was overlaid with gold, had not more universal and lasting influence on Christian churches, and especially on the Mediæval cathedrals; in the construction of which a similar motive of sacrifice seems to have operated. Not only was this temple covered with gold so that there was no stone seen, but with fine, pure, perfect gold, gold of Parvaim; and moreover garnished with precious stones for beauty; while the timber employed was the glory of Lebanon,—the cedar and olive-tree; and though I doubt not barbaric in regard to art-qualities, yet it was an embodiment of the highest art of the day,—the highest art that Phœnicia or Assyria had to give or lend, being the work of the most skilful and ingenious artist, guided no doubt by the counsel of the wise king.

The Early Christians who had adopted whatever they consistently could from Judaism, and had formed their first societies in a great measure on the model of the synagogue, were greatly influenced in the form and character of the Basilican churches which they first built for worship by the second temple of the Jews,—and by the synagogues, in which no doubt much of the temple was reflected. The altar of the primitive church was a table of marble or porphyry; sometimes it was of massive silver or even gold, enriched with precious stones. How long the richness continued I cannot say, but there would have been nothing irrational in allowing a certain amount of authority to the Jewish edifice and its predecessor, built by Solomon under Divine directions for the worship of the true God, over the character of Christian churches in all ages,—authority more especially due as the glory of the Jewish tabernacle and temples seemed to participate in, and be a reflex of, the glory of the dispensations of God to man. If the spirit of sacrifice is to operate at all in architecture, it is surely in its ecclesiastical branch it should more particularly display itself; it is surely in the structures reared to enshrine the awful form of religion on earth that we ought to find the flower and perfection of architecture, executed in the most beautiful and precious materials which nature or art furnishes, and which seem essential to perfection in building.

But there are many Protestants who hold that architectural excellence is not required, and that sculptural and pictorial adornment are even mischievous in a place of worship; and are content to leave them to those who hold the doctrine of the real bodily presence of Christ in the sacrament. But if they believe in the promise of Christ to be spiritually present wherever two or three are gathered together in his name, and which is emphatically expressed by the bishop in the ceremony of church consecration: "Lift up your heads, O ye gates; and be ye lifted up, ye everlasting doors; and the King of Glory shall come in," they have as much reason for making the place of His feet glorious as the Church of Rome or the High section of the Church of England. No consideration can be more inspiring to the architect than this, or more likely to lead to the highest and most earnest efforts of the human mind in the direction of architecture,—to an exhibition of the utmost power and beauty that the art can reach,—an art in which there is certainly scope for the marking of the relations of the soul with the most sublime and beautiful of the works of the Creator. To ignore this fact, or not to act upon it, is to introduce anomaly and disorder among the creations of the art, as regards their relative rank, and allow in many cases the servant to be, in point of merit and beauty, above its lord. The House of Worship must be considered as connected with the great ends of life; while all other structures, though differing in rank, stand related only to the means.

The interior of a cathedral or mother church, I conceive, should be an embodiment of solemn and sublime poetry, and requires in its architect for its successful treatment and embellishment innate sublimity of imagination, and great tenderness and purity of feeling. The Christian, it is true, in reference to his place of worship, may equally exclaim with the Psalmist, "How amiable is Thy tabernacle, O Lord," as it is no less a type of Heaven and of the redeemed Church of God than was the temporary curtained tabernacle to which David referred. But I cannot resist the conviction that it should, by all possible art-beauty and richness of material, be rendered worthy of this spiritual character and association, and made "like the king's daughter, all glorious within." It seems to me that it is not sufficient that a church by its spire and vertical character of composition,—its yearning, as it were, upwards,—should point to Heaven; it should be rendered worthy of its celestial relations. The building of all earthly buildings most associated in the mind with Heaven should rejoice in the most exalted and ethereal species of beauty. A mean, semi-barbarous building, pointing to Heaven from amid sumptuous human dwellings, may seem rather to insult Heaven than to direct attention reverently to it.

I shall have something further to offer on this subject in a future art-ramble.

SAMUEL HUGGINS.

THE WASTE OF WOOD.

HERR VON ETZEL, Imperial Forstmeister (head forester, or inspector of forests) at Colmar, has recently contributed an exhaustive article on the Destruction of Forests and the Waste of Wood to the *Zeitschrift für Forst- und Jagdwesen*, a technical journal devoted to matters concerning forests and its denizens. The waste going on in the forest in all parts of the globe is so enormous that it becomes of the greatest importance to devise means for preventing its continuance, and for this reason the remarks of a practical man like the writer are of especial weight, being sure to lead to reflection and to insure improvement.

The author says that fifty or sixty years ago the production of wood exceeded consumption, and most countries grew enough for their own immediate wants. But the nearer we come down to our own time the greater becomes the consumption of wood, a natural consequence of the rapid growth of trade and industry. Central Europe, and especially Germany, possesses, as is generally known, at the present day, still a very good stock of excellent old wood, but it is equally well known that this store is not inexhaustible, and that we shall hardly be able to grow and to leave to our great-grandchildren such a stock of wood as we have received from our ancestors. Want of money compels governments to wait no longer in public forests until trees are technically fit for being felled; financial reasons generally guiding them in the management of forests, which policy in some German states has already assumed, or is assuming, the character of mere financing. Increase is checked by the stock trees being cut too soon, before the total growth has reached its maximum point. The so-called rational economy of forests demands it.

After thus criticising the principles which regulate the economy of forests in Germany, the author asks,—What is the position of foreign countries with regard to their forests? Referring first to Austro-Hungary, he says that, until very recently, it seemed as if that country were going to put all its forests to the hammer. The former impenetrable forests of Hungary and of the lowlands of the Danube can tell a tale about that, and the greater part of the seemingly inexhaustible tracts of forests in Croatia and Sclavonia has been changed into a bare and desolate waste. The river Save still carries vast quantities of wood annually down to the Danube and the Black Sea, and from Trieste hundreds of shiploads of excellent wood from the Julian Alps are exported, year after year, to other countries, especially to England.

In Russia, vast tracts of forests have still been preserved, notwithstanding that yearly recurring forest fires reduce thousands of acres of wood to ashes. The consumption of wood in the country itself is very considerable, however, not only on account of the climate, but because, for want of stone, nearly all buildings have to be erected in wood. When once the country has been crossed, opened up, and made accessible in all directions by railways, the time will not be far distant when not only will there be no excess of wood, but when an actual want will make itself felt.

In England, *i.e.*, in the islands of the mother-country of Great Britain, forests proper of any considerable extent do not exist, although in the numerous parks there are still preserved many

splendid specimens of old oak-trees. But what enormous masses of wood, the author exclaims, are used in the wharfs and building yards of this country especially! No less than four hundred million cubic feet arrive yearly from its own possessions in America, India, Australia, and from Scandinavia.

Sweden, Norway, and Finland have undertaken to supply all the coasts of the Atlantic Ocean with the wood of coniferous trees. Norwegian firs are found in Rio de Janeiro, as well as in the islands of the Southern Ocean. Thus it happens that the North of Europe has within ten years doubled its export of wood, and continues to manage its forests regardless of the future. In a report of the Norwegian Administration of Forests to the Government and the Chambers, it is stated that "the present destruction of forests has reached the limits of the permissible, probably even exceeded it." In addition, it must be borne in mind that the soil there produces of wood only about the fifth part of what grows in Southern Germany; local consumption being, besides, very considerable.

France has only a few provinces rich in wood, and the import of timber has within fifty years increased threefold as regards quantity, eightfold as regards value, and is eight times as great as her own production.

Spain, Italy, the Levant, Africa—with the only exception, perhaps, of Algeria, where the fire of the Arabs has yet spared a few forests—are as good as devoid of wood, and draw their wants for buildings, fleets, and railways from abroad.

But Australia and especially America, it will be objected, possess inexhaustible supplies of wood. This is a mistake. In the former part of the globe, far in the interior, considerable forests are said to have been discovered recently, but the transport of wood to the coast and from there to Europe will for a long time yet meet with insuperable difficulties, and be confined, on account of the great distances, invariably to the most valuable material. The wealth of North America in forests, however, will be exhausted, before the expiration of another generation, to such a degree that attention will be directed rather to import than to export. Already now England gets comparatively little wood from Canada. It is used in the country itself. Chicago, the great centre of the wood trade, sends enormous quantities to the prairies devoid of forests, to Illinois and Indiana, and the St. Lawrence carries still larger masses to New York.

It will be seen, therefore, that everywhere on the globe more wood is used than is added by growth, and the time does not seem far distant when it will be absolutely impossible to supply the curved timber and planks for shipbuilding, and the millions of oak sleepers, which are rotting under the rails of our fabulously-increasing railways in the tenth part of the time it takes to grow and ripen the wood of which they are made. It is, therefore, high time, the author considers, to think of measures for meeting the great danger which is undoubtedly threatening, and not leave solely to posterity to help itself as well as it may, in the perhaps too striking conviction that later generations will be wiser than the present one, and that means will be discovered of which we have at present no idea.

In the first place, it is our duty, says the author, to put a stop to the excessive destruction of forests. As regards Germany, there has been for a long time no destruction, properly speaking, going on in the crown forests; but even the sale of public forests should be reduced to the minimum, and should be confined solely to smaller isolated plots with excellent soil, or situate in the neighbourhood of numerous villages with a poor population. It is not sufficient to employ the sums realised in such sales in paying off the public debt, as is done most conscientiously, for instance, in Prussia; all the money gained should be reserved for buying and replanting tracts bare of trees, a certain percentage also of the net profits realised from forests being added to it. Legislative steps should further be taken with respect to the care of forests belonging to corporations and public institutions, and private owners ought also to be subjected to some extent to control by the government. At any rate, wanton extirpation of forests in mountains, on sea-coasts, and other endangered points, should not be permitted in the interest of the public. A good beginning was made in Prussia in this direction, by the law of July 3rd, 1875, respecting forests which are a protection to the country, and it is to be hoped that this will be sufficient. But governments have also other duties in the matter. The author recommends that they should lend assistance to corporations, or private individuals without means, willing to replant their lands, whether in the form of loans, subsidies, prizes, or by donations of seed or seedlings, and the gratuitous services of trained foresters paid by the state. A law, also, on disappropriation of waste lands, formerly forests, and now dangerous to the neighbourhood, after the pattern, perhaps, of that in force in France, might be useful. But it seems of the greatest importance to keep to the fundamental principle, at least in the case of public forests, that they are, in the first place, existing only for their own sakes and that of the wood, and that the realisation of the greatest financial gain is only a secondary consideration. The department of the forests ought therefore in no country to form part of the ministry of finance, and its technical chief should be able to act independently, though at the same time he should be responsible to it.

Although the development of forest culture is steadily and rapidly increasing, greater attention ought to be bestowed on experiments having for their object the acclimatisation in our part of the globe of foreign trees of rapid growth. Such a tree, according to a local exhibition report from Algeria, is the blue gum-tree (*Eucalyptus*), which is said to prosper wonderfully in that country. Railway sleepers made of trees five or six years old have proved excellent. A telegraph pole which had been in the ground since 1873 was perfectly preserved. The trunk of a tree planted in 1868 measured 20 in. in circumference. The polished wood of different species, especially that of *E. marginata*, is described as splendid. Several proprietors of land in Algeria have planted hundreds of acres with the blue gum-tree. Successful trials have also been made there to cultivate an Australian acacia (*Acacia saligna*). Besides being an excellent wood, the bark of that tree contains considerable quantities of tannin, nearly double the amount yielded by oak-bark. Undoubtedly, there are numerous other kinds of trees which, under careful cultivation, would produce in time proportionately larger quantities of wood than those we are now utilising for building and other purposes, and so help to somewhat counterbalance the enormous consumption of that material.

But the principal aim should be directed towards putting a stop to the excessive waste of wood. No serious result need be feared with regard to wood used for firing, the pocket of individuals suffering more in the case of waste than the general community. Besides, the application of wood surrogates becomes more general. Wood, however, used for building and manufacturing purposes of all descriptions must be husbanded. Savings in this respect cannot only be very easily effected, but they are imperatively required. For instance, the use of timber in the construction of bridges or viaducts should no longer be permitted, and pile framing, which consumes forests of timber, should be restricted to the greatest possible extent. The use of iron in building is by far not so general as it might be and ought to be. Constructions of wood should be erected only where its physical properties, bad conductivity of heat, relative lightness, elasticity, exclude its being replaced by any other material. But the sorest point is the enormously increasing demand for railway sleepers. Here it may be rightly asked, where is this to end? On the whole globe, only a fraction grows of the oak wood embedded annually below our rails, to rot there, notwithstanding all preparations, in a few decennials. It is only too certain that the second, perhaps the third, generation reckoned from us will have to face the impossibility of building railways with oak sleepers, even though they were paid for with their weight in gold. Sleepers of other kinds of wood, being less durable, will also be getting dearer and scarcer, and will at last no longer be obtainable. The many experiments made to replace wood sleepers by other materials seem to have yielded at present only negative results, at least as regards beds of stone. Sufficient data have not been yet collected as to how far iron in the form of cross or longitudinal sleepers is suited to replace wood. It is therefore very desirable, the author thinks, that such experiments should be diligently continued, and that we ought not to cease with them until the proper substitute for wood has been found, or it may be too late.

THE CONNEXION OF GREEK AND ROMAN ART WITH THE TEACHING OF THE CLASSICS.

PROFESSOR SIDNEY COLVIN delivered the fifth* and last of this course of lectures in the Hall of the Society of Arts on Monday, the 14th inst. Having summarised the points touched upon in his previous lectures, he remarked that the study of Classic antiquities had now arrived at a point (in regard to all essentials, at any rate) of almost scientific exactness, and it was one which was well worth pursuing,—nay, it was absolutely necessary to pursue it,—if we were to keep up the standard of Classical education. It no longer became us to neglect this great half of what a Classical education should be. Now what kind of future, what sort of recognition, ought we to desire for this study in England, and how ought we to set about obtaining that recognition for it? First of all, it was necessary to have a central institution for such a study, and such an institution must necessarily be a national institution. For the most advanced part of the study the British Museum was and would continue to be the great laboratory. It was one of the richest of all museums in original works of Classic art, especially in sculpture, the Elgin marbles alone constituting one of the most important series of sculptures which any museum could possibly possess. But great and precious as was the British Museum, although it was necessarily the head-quarters of study not only for ourselves, but in great measure for all Europe, still the great fact of having established it was not enough for us to have done. The great proportion of those who visited it did not know how to enjoy what they saw, and it was therefore an important question to consider how we could change or modify our national education so that such great collections as that in the British Museum should be the means of affording instruction and delight to a larger number of persons than at present. By what mode could we hope to make the visitors to the British Museum enjoy what they saw? He did not think it was possible to do it by asking the officers of the Museum to give lectures explanatory of the collections. The officers of the Museum had already sufficiently onerous duties in respect of the custody, classification, arrangement, and cataloguing of the antiquities under their charge; and if a special class of officers were to be appointed to act as *ciceroni* he did not think the experiment would succeed. What was wanted was that the people should come to the Museum prepared to appreciate the merits or demerits of what they saw, and sufficiently intelligent to understand the why and the wherefore of at any rate the most remarkable characteristics of the objects in the collections. There were many reasons why it was to be desired that the British Museum should become a greater educational institution than it at present was, and especially was it to be desired that members of Parliament as well as the public should have some fair idea of the merits and value of its contents or of objects proposed to be purchased for it. There was, however, another mode of studying ancient art, and especially sculpture, which was likely to come before the public more prominently before long, viz., that afforded by means of museums of casts. The British Museum, for all that it contained the Elgin marbles and other priceless treasures, was not, and never could be, a complete national laboratory for the study of antique sculpture in the original material; and the same remark applied to all other museums, whether the Louvre, the Vatican, or those at Naples, Munich, Berlin, or elsewhere. The reason of this was, of course, that the greatest works of the various schools of antique sculpture were scattered all over Europe in various museums, and consequently could not be compared with each other side by side, except by means of plaster casts. Now it was no good denying that between a plaster-cast and an original statue in marble there was a very great difference. In a statue of Parian or Pentelic marble certain effects were produced by the sculptor by taking advantage of the translucency of the material, and these effects it was utterly impossible to reproduce in a plaster-cast, however accurate, simply because the plaster was a dull, opaque material. Still, for study of form, as distinguished from beauty of surface, the plaster-cast was almost as good as the original work, making necessary allowance for the seams. Thus, then, although

* For abstracts of the previous lectures see pp. 397, 449, and 482 *ante*.

plaster-casts were not at all comparable to original works in point of beauty, they were, for purposes of study, the only thing we could have if we wished to bring together the sculptured works in all the museums of Europe for purposes of comparison and study. For instance, we had the sculptures of the Parthenon in the British Museum, and would like to compare them with those from the Temple of Ægina, now at Munich. How could they be brought together but by means of casts? The lecturer proceeded to cite several instances of the value which such a museum of comparative sculpture in the form of casts would be in throwing light on the historical development of the plastic art of Greece and Rome, and said that although the cost of providing the casts for a complete museum would not be great, yet the space required for them would be considerable, because among the most important and indispensable objects in such a collection would be a large number of pediment groups. By far the greatest and most complete gallery of the casts which existed was the one at Berlin, but every university in Germany was provided with a small although complete museum of typical casts. A very spirited attempt was made in this country more than twenty years ago, when the Crystal Palace was founded. It was, as everybody knew, intended that the palace should be a place for culture as well as recreation, and great expense was incurred in having casts taken of works of sculpture in the different galleries of Europe which had up to that time never been moulded. Unfortunately, all the incentives to culture which were provided by the promoters of the Crystal Palace had been of little effect, save and except the single one of music. It seemed to have been expected that the public would go and study and admire these casts, but this expectation was disappointed, probably because although people might admire a real statue in marble for its intrinsic value, they would have a tendency to look upon a cast as something almost worthless, simply for want of art-knowledge to enable them to appreciate the beauty of form which it presented. Gradually these casts had diminished in number, some having been removed to make way for Blondin and kindred attractions, while many were destroyed in the great fire eleven years ago. The instruction afforded by this failure was worth bearing in mind by the energetic students who were at present engaged in endeavouring to promote the establishment of a museum of casts of antique sculpture on a scientific and systematised basis in London. He wished them the most complete success, for they could be engaged in no more laudable enterprise. It was desirable, however, to remember that the Crystal Palace casts were not so thoroughly well selected from an historical point of view as they might have been, making due allowance for the accumulation of our knowledge on the subject since the palace was opened. The casts at Sydenham seemed to have been mainly selected from a decorative rather than from an educational point of view,—in other words, with the object of making as good a show as possible, rather than with the idea of conveying instruction. The promoters had found out to their cost that it was a mistake to expect the British public to appreciate the casts. The Museum to establish which efforts were now being made must depend for its success entirely on its being made a purely educational institution; it would never succeed as a means of amusement, seeing that, owing to defective education, the great mass of the people cared for none of these things. In order to succeed, it must either be an appanage of some educational institution, or else some professorship of archæology must be established in connexion with it. The lecturer, in conclusion, proceeded to enforce the thesis that the study of Classic art ought to form a necessary part of the curriculum of study for all who were desirous of obtaining a liberal education. If, as school boys, people had been taught something of the principles and history of Classic art, they would feel a real pleasure, and have a living interest in such collections as that of the British Museum. In former times, books constituted almost the only aids to learning which it was necessary to employ, but within the last fifty years, consequent on the increased attention which had been given to physical studies, laboratories and apparatus of all kinds had necessarily been called into requisition, and with the best possible results. Now, what was wanted was not only that in every university and public school there should be small but typical collections of casts of antique statues and electrotypes of ancient coins, but that in every class-room where Classic history was taught there should be models of historic sites and portrait medallions of the personages referred to in connexion with those sites, together with representations of the tutelary deities. Could it be supposed that boys would not be more interested about Cicero's orations in the Forum at Rome if they had a model of the Forum before them? Again, would they not be more impressed with what they learnt from Scipio could they have before them his lineaments as they had come down to us, with those of many others, from a school of portraiture the most vivid and striking which had ever existed? Electrotypes of ancient coins would be of inestimable value in this connexion, especially as an electrotype was practically as good for purposes of study as an original coin. Photographs of sites and temples, and of domestic utensils, furniture, &c., could be largely used with advantage. These appliances would serve to indelibly impress upon the eye what the teacher was endeavouring to impress upon the mind of the scholar, who would at the same time be gradually learning that which it was desirable above all things that he should learn, viz., the secret of the beauty of Greek art. He would get his eye trained in these small and minor ways to appreciate that consummate power of the hand, working in the serenest partnership with the mind, which was the glory of Greek art. As to the further means that might be taken to further a knowledge of antique art, the lecturer pointed out that the Germans and French, being well aware that travel was needed to make a finished archæologist, had established and maintained abroad, principally at Government expense, national institutions for promoting the study of antique art. Rome, at one time the only possible centre for such institutions, had long ago had institutions to which students from France and Germany resorted for the completion of their archæological studies, and since the era of Greek independence Athens had been made a centre for similar schools, the French taking the lead, singularly enough, seeing that in France the study of Hellenic literature and civilisation was exceptionally limited as compared with the amount of attention given to such study in England. It was certainly a reproach to England that neither in Rome nor in Athens had she any institution corresponding to those of France or Germany, notwithstanding the amount of attention given in this country to classical studies. Such a reproach ought to be removed without delay, but how was it to be done? It might be thought that our universities might do it, but even when the resources of both universities were combined, it was as much as they could do to provide funds for the prosecution of the many new branches of study which the scientific progress of the past half-century had opened up. Then there were the Dilettanti Society, the Society of Antiquaries, and the various archæological societies, but the work hardly came within their scope or means. Then there was the Government; but the Government of this country had not, as a rule, made the subject of the higher branches of education a Government matter. Probably by the co-operation of the Government, the Universities, and the great archæological societies, we might succeed in wiping out this reproach; but how it was to be done he was not exactly prepared to say. Anyhow, it was an opprobrium and a discredit to our country, seeing that we had for so long and by so ancient and honourable a tradition devoted ourselves to the study of the literature and languages of ancient Greece and Rome, that we should have no organisation whatever for the encouragement of the study of ancient art in its native home,—no means of sending out to Athens or Rome, or of supporting during his stay there, any student who might have shown special aptitude for such studies, and who might desire to perfect himself where alone it was possible for such studies to be perfected.

Sculpture.—Count Gleichen has completed his statue of Alfred the Great, executed for the birthplace of the great ruler, Wantage, through the liberality of Col. Lloyd Lindsay. It is of Sicilian marble, and 8 ft. in height, a fine bold figure in the cross-gartered hose of the time, holding an axe in one hand, and a charter in the other. The pose is good, and the folds of the cloak give more variety to the back view than statues sometimes exhibit. We congratulate alike Wantage and Count Gleichen.

TWO NEW BRIDGES AT ROTTERDAM.

DUTCH engineering skill and enterprise have just completed an undertaking of a magnitude second to none of the many great works achieved by the Dutch before. It is well known that for centuries the Dutch people have waged constant war against the encroachments of the sea and the rivers by which their country is intersected. Their hydraulic works are the first in the world; their bridges at Zütphen, Kuylenburg, Bommel, and Maesdijk rival those of America. A fifth, the new railway-bridge which crosses the Maas at Rotterdam, has just been added, which was formally opened on April 29th, and the importance of which for Holland need hardly be pointed out. Up to the present time the line of railway leading from Hertogenbosch to Utrecht was the lowest down stream which crossed the mouths of the Maas and the Rhine. A continuous line of rails between Antwerp and Amsterdam did not exist, and all merchandise which, coming from the south-west, was to be sent into other parts of the country, had to be unloaded on the bank of the Maas opposite to Rotterdam, and thence brought on barges into the city. It was especially the great breadth of the Maas (about 1,600 ft.) which made its crossing by a bridge difficult. But the work, after an expenditure of nearly 2,000,000 florins (166,000*l.*), of which rather more than half has been expended on the superstructure and less than half for the substructure, has been completed within eight years, about the same time required for the construction of the similar bridge at Hamburg, and that between Venice and the Continent. Five gigantic wrought-iron arched girders, resting on granite piers, and of spans ranging from 216 ft. 6in. to 295 ft. 4 in., and a height of nearly 20 ft. above ordinary high-water level, connect the city with an island in the middle of the stream, two other arches uniting this island with the opposite shore.

The lowness of the shores, and the imperativeness of permitting a free passage at least to ships of average size, necessitated the construction, on both shores, as a continuation of the bridge, of large railway viaducts, one of which, following the former course of the river Rotter, and resting on alternate granite and cast-iron columns, crosses the whole city at a height of about the second story of the houses. This gives to the city a very peculiar architectural appearance, such as we have been used to now for a long time in London; with this difference, however, that while in the metropolis all those lines have long ago been covered with a dingy coat of smoke and soot, at Rotterdam the fresh light grey of the columns and the yellow coating of the superstructure are still shining in the full splendour of newness. The bridge over the Maas affects and generally dominates the whole architectural characteristics of the city to a much greater degree than we find this to be the case anywhere else, for the almost uniform height of the houses is scarcely broken by any imposing building.

It may not be uninteresting to allude here, in passing, to another great work at Rotterdam, now in course of completion, especially as that undertaking has attracted general attention on the Continent. A few paces below the railway bridge, another bridge, the so-called "Willemsbrug," to serve for the ordinary carriage traffic of the city and for foot-passengers, is in course of construction. The foundation-stone of this bridge was laid three years ago by the King of Holland in person. This, like the railway bridge, is provided with two pivot arrangements, of which one is within the city, the other in the canal called the King's Harbour (Konings Haven), 656 ft. wide, between the opposite shore and the island above mentioned, to permit the passage of even the largest ships.

This bridge was originally planned of such low elevation that, as soon as the particulars of its construction became known, some just fears were entertained that, if carried out as designed, it would lead to a virtual blocking up of the Maas, the principal channel of the river Rhine, This estuary, inappropriately, we think, called "Maas" by the Dutch, receives its largest supply of water from the great German river. Now, in accordance with the Convention of Mayence, of March 31st, 1831, the navigation of the Rhine, along its whole course, from the place where it becomes navigable to the sea, is to be perfectly free. This provision includes in its scope the several arms into which the Rhine divides before it enters the North Sea, and consequently their navigation for purposes of com-

merce can be prohibited to no one. The Convention likewise stipulates that vessels belonging to subjects of the States bordering on the Rhine, and entitled to the navigation of that river, shall not be compelled to transship their cargoes or to break bulk on passing from the waters of the Rhine through the kingdom of the Netherlands into the open sea, or *vice versâ*.

The subject, as soon as attention was directed towards it, was ventilated in the German press; the great navigation companies took the matter up, and a memorial was addressed by them to the Dutch Government, containing a protest against the completion of the local bridge as planned. The Rotterdam Chamber of Commerce also acted in the matter, by presenting an address to the Town Council, in which they stated their conviction that the latter body had been somewhat precipitate in sanctioning the construction of a fixed bridge interfering with the navigation of the river. The consequence of all these representations was an alteration in the original plans. The authorities of Rotterdam acknowledged the justice of the objections made by raising the elevation of the bridge, which could be effected all the more easily as the piers are only now rising a few feet above water. The difficulty, however, is not entirely removed. Though yet another class of ships will be able to pass under the bridge, the largest description of vessels will still have to make use of the passage provided by the pivot arrangement. Inconvenient though this may be to the shipping interest concerned, it cannot be denied that the Dutch have acted throughout with perfect good faith, and that they will suffer quite as much from the inconveniences attached to all bridges as the other nations concerned.

The ceremonies which had been arranged for the official opening were partly spoiled by the interference of Jupiter Pluvius, more especially the fireworks announced for the evening. The director of the Maatschappij tot Exploitatie van Staatsspoorwegen received the guests invited at the Delft Post Station; they included representatives of the leading German railways and the Dutch Ministers of the Interior, for Foreign Affairs, and of the Finances, while the King had sent a congratulatory telegram. The gentlemen were taken over the new bridge—which had before been tested by a train consisting of thirteen heavily-loaded locomotives,—whereupon they embarked on board a steamer, which took them along the Maas, for the inspection of the great warehouses and docks constructed by the Rotterdam Trading Company, in connexion with the new railway, at an expense of over a million florins (nearly 85,000*l.*). A banquet in the evening, in the large waiting-room of the new station near the Rotterdam Exchange, concluded the day's proceedings.

ORNAMENTAL IRONWORK.*

THE earliest historical reference to iron is found in Genesis iv. 22. "Tubal Cain, an instructor of every artificer in brass and iron," lived, according to Biblical chronology, about 3700 B.C. He is supposed by many, and with good reason, to have been the same as Vulcan. He was not merely a smith, but he was an ornamental ironworker, "an instructor of every artificer." The Hebrew word *kheresh*, "artificer, cutting instrument," is akin to *kheresh*, "cunning worker"; both being derived from *kharash*, "to cut, carve, engrave, sculpture." Among other Biblical allusions, we may note "an instrument of iron," Num. xxxv. 16; the giant Og's "bedstead of iron," Deut. iii. 11; "chariots of iron," Josh. xvii. 16; "saws, harrows of iron, and axes of iron," 2 Sam. xii. 31; "chains and fetters of iron," Ps. cxlix. 8; "an iron pillar," Jer. i. 18.

Some doubts have been expressed whether Homer knew anything of iron, but Hesiod, who, according to Herodotus, was a contemporary of Homer, speaks of the "iron age," and the iron money of Lycurgus was in circulation about 850 B.C. Notwithstanding the interference of rust with the preservation of ironwork, iron hatchets have been found in the Etruscan tombs; an iron forge, tools and nails among the lake dwellings of Switzerland; and iron pillars are still standing in India which are supposed to be more than 1,500 years old. Rings, both of gold and of iron, circulated as money in Britain, at the time of the Roman conquest, but they were probably imported. Iron works were in active operation upon the island, A.D. 120.

* From a lecture by Professor Pliny E. Chase, entitled "Lessons of the Centennial," delivered before the Franklin Institute, United States, March 13th.

The peculiar combination of carbon with iron, which we call steel, and the art of tempering, seem to have been known in pre-historic times. At the beginning of the Christian era, the best steel was imported into Rome from China, that of Parthia being of inferior quality. Steel armour was in common use among the soldiers of William the Conqueror. Steel was manufactured in Sweden as early as A.D. 1340, but the art of fusing steel in a crucible, and then casting it into bars so as to form a homogeneous "cast steel," was invented at Sheffield in 1750, and was long kept secret. Bessemer steel is prepared by forcing a powerful current of air through a quantity of melted iron. The oxygen of the air, uniting with the carbon and silicon and other impurities of the iron, produces a rapid combustion and intense heat. The blast is continued until the carbon is nearly all consumed, when an alloy called "ferro-manganese" is added, in such proportions as are needed to re-carbonise the metal and produce such "low" or "high" grade of steel as may be required. The largest present use of Bessemer metal is in the manufacture of steel rails of a "low" grade, combining great tenacity and durability, with slight brittleness and feeble tempering properties. The bends and twists and cuts and tensile tests of the specimens on the table show how admirably this material is fitted for artistic ornamental treatment.

The art of casting iron seems to be quite a modern one, but the date of its invention is uncertain. There is a cast-iron grave-slab in Sussex, England, made about A.D. 1350. A minute proportion of phosphorus, which renders iron wholly unfit for the Bessemer process, adds greatly to its fluidity, as is shown by the remarkably sharp and beautiful ornamental castings in Berlin iron. The Centennial display, by American ironfounders, of cast statuary, vases, railings, bronzed and enamelled work, stoves, grates, &c., showed a taste of design and care of execution worthy of almost unqualified praise. The architectural combination of cast and wrought iron, in the structure of the main building, also produced many pleasing and commendable effects. But there seems to have been little thought of the admirable results which might be reached by a treatment similar to that of the best Japanese bronzes; the casting being regarded merely as a convenient way of forming a mass which can be more readily cut into shape than a larger piece of metal.

Both cast and wrought iron admirably illustrate the importance of the great natural principle of oscillation or vibration. It is now commonly believed that no two material particles are in absolute contact, but that, even in the most solid substances, there are continual internal tremors and orbital motions, much more complicated than those which keep the planets and "stars in their courses," and yet governed by similar laws. In consequence of such internal motions, glaciers and rocks and metals can be made to "flow," not only through the intervention of the fiery fingers of heat and flame, but also by simple continuous pressure. M. Tresca, who has studied the subject very carefully, is unable to find any limit between the fluid and the solid conditions of matter. There are merely differences of viscosity, analogous to that between water and molasses. By means of this flow, iron and many other metals may be rolled into sheets, drawn into rods or wires, or hammered into various desired shapes by skilful workmen. Here is a core-chuck, which can be put into a turning-lathe, for shaping a flat disk of metal into a hollow vessel. As the chuck revolves, a gentle steady pressure causes the flowing particles to adjust themselves to its sides, so that, by having proper cores, we can "spin" bowls, vases, teapots, creamers, and various useful or ornamental dishes, with great rapidity.

After the vessel is spun, it may be prepared for ornamenting by vibrations and flow of another kind. You remember the beautiful "repoussé" work in many of the departments of the Exhibition, and some of you, doubtless, were curious enough to inquire how it was made. The old method was by simple, careful hammering from the back; but there was always danger from an unlucky blow, that would break the metal and ruin the work of many days or months. Here is a "snarling," or repoussé* iron, firmly fastened in a vice. Mr. Krider has kindly sent us one of his skilful workmen, who will show us the process of snarling. The floral or other design is drawn on the outside of the vessel, and you see that when Mr. Sloan hammers on the end of the snarler which is nearest the vice, the whole tool is set in vibration, and the rapid, gentle taps of the other end gradually raise a knot or snarl of the desired height and outline. After the snarling or repoussé work is done, the chasing process follows. The hollow is filled, as you observe, with a softish cement, which yields slightly to the pressure of the chisel or graver, or such other tool as the artist may select from this large assortment, and the design is thus wrought out into the beautifully-finished details of stem and leaf, stamen and petal, and tendril and delicate veining.

Iron is fitted by its cheapness, strength, elasticity, malleability, ductility, and plasticity, for general application to ornamental uses, and for taking expressions in tracings and foliage such as no other material can supply. The processes which I have just explained furnish an immense addition to the facilities of the artisan for the expression of his thoughts, and make it the more wonderful, as well as the more deplorable, that the æsthetic treatment of wrought iron and steel should have become so nearly a lost art. In all parts of Europe there are many Mediæval specimens of such treatment preserved, which are worthy of special study. Candelabra, grilles, railings, newels, balusters, crosses, brackets and rings for cornice-poles, chapel screens, gargoyles, vanes, bolts, hinges, locks, keys and escutcheons, knockers, handles and rings for bells and doors, are decorated with *eisen-blumen* or flower-work of beaten iron, or with various tracery, both serious and grotesque. They display an exuberance of invention and judicious taste which are calculated to enhance our respect for the earnestness and thoughtfulness of the unknown workmen, whose resounding hammers so lastingly imprinted lessons of faith, hope, and love.

In Germany, Bohemia, Switzerland, and especially in the Tyrol, men in armour, bears or other animals, skilfully wrought, and holding the flag of the district or canton, are often found in the public squares or market-places. At Jensbach there are remains of ancient smelting works, and of a forge which seemed specially devoted to a peculiar symbolic teaching. The great grey stone houses of the village are adorned by emblems of love and social feeling, being nearly all protected by curious huge dolphins, which are, apparently, just on the point of flitting from the watersponts. In nearly every village church or graveyard the artistic eye may be gratified by contemplating the taste displayed in a cross, or a rood-screen, or an altar-gate, or a chandelier, or the ridge-cresting and the terminals which wed the Gothic architecture to the sky and landscape, as if with a fringed network of delicate lace on the delicate grey, and against the blue. Sometimes the rods of the screen are so arranged in perspective as to represent an iron-arched arbour, under which one must walk in traversing the length of the aisles. Sometimes the symbolism is made still more expressive by combining rich clustering vines with the intricate blossoms of passion-flowers, displaying a wealth of tendrils and leaves naturally and gracefully entwining the palings of a simple or rustic gate; always the evidences of devout aspiration, child-like trust, deep feeling, and loving labour, are such as to bring us into a reverent sympathy with the artists who sought to give visible utterance to some of the most universal and most far-reaching longing of humanity.

Near the west door of Antwerp Cathedral is a well with Gothic canopy and tracery of iron, surmounted by the statue of a knight in armour. It was executed, in 1480, by Quentin Matsys, "at one time a blacksmith, afterwards a famous painter," whose romantic history is briefly commemorated by the inscription on a neighbouring tablet:—"*Connubialis Amor de Mulcebre fecit Apellem*,"—"Connubial love made an Apelles from a Vulcan." It is said that this first "learned blacksmith" fell in love with a painter's daughter, and in order to obtain her for his bride he changed his profession, acquiring even greater reputation as a colourist than he had gained by his handiwork at the forge. In the knowledge of that universal language which rings so sweetly in the ears of youthful admirers, he set a precedent for the learned blacksmith of our own days; but, unlike his far-famed successor, he manifested no disposition to trace the universal language into all its dialects. His parity of success in his two vocations shows that he had the fire of true artistic genius, and his fame may encourage the wielder of the

* The terms "spinning" and "snarling" seem to have been borrowed from the textile arts. The French word "repoussé" signifies "pushed back," indicating the mode of hammering.

hammer, as well as the sitter at the easel, to look for an ever-ready appreciation of whatever depth of thought finds expression through patient, faithful work.

It is a quarter of a century since the first London "World's Fair" revived a European interest in the capabilities of wrought iron for artistic uses. The progress of the revival is most strikingly exemplified in the Oxford Museum, which was erected in 1867, but traces of it are to be seen in all directions about the modern public and private edifices of Great Britain, as well as in many of the churches. A notable example of good ecclesiastical work is the Hereford Cathedral Screen, which was shown in the International Exhibition of 1862, before it was removed to the place for which it was designed. Dr. Dresser speaks of it as one of the finest examples of artistic work with which he is acquainted. The grilles, altar-rail standards, and English fire-dogs, in the present Loan Exhibition of the Pennsylvania Museum and School of Industrial Art, placed, as they are, beside a pair of ornamental Florentine andirons of the sixteenth century, show that neither good taste nor skilful execution is wanting in the smiths of our day, and that an educated demand will call out work which may challenge comparison with anything Mediæval. The pagoda-like pavilion of Messrs. Hart, Son, Peard, & Co., with its great variety of contents, cast, woven, or hammered into "joys for ever," justly claimed a large share of attention from the visitors to the Main Exhibition Building, and in the Belgian department, Prosper Schroyer's door, with its wrought-iron vines, grapes, and bunches of climbing flowers, furnished more food for thoughtful study than the rich laces and costly embroideries which surrounded it.

Our own city already shows the effects of the revival, but, unfortunately, our most satisfactory ornamentation is imported. The magnitude and importance of the iron and steel interests in the Keystone State should stimulate our ornamental designers, architects, and contractors, to a generous rivalry with their European brethren. Elkington's Helicon Shield showed admirable effects from working steel with other metals by "appliqué," inlaying, and repoussé; the Spanish, Moorish, and Indian departments contained much successful punching, pressing, and damascening; the Russian electrotypes in iron, by the Jacoby process, gave a delicate surface-finish which might be often used artistically with great advantage; the plasticity of steel, through its capabilities of alternate softening and hardening, and the elasticity of its graceful shapes when finally and permanently tempered, were everywhere full of suggestiveness. Shields, suits of armour, weapons of war, knives, kettles, steel and iron jewelry, and other articles of personal or household decoration, were well represented, most of them adorned with traditional and conventional embellishments which have been handed down from a remote antiquity. Let our wise designers study such examples; let them cleverly combine the different ways of working and different styles of ornature; let them learn from the worker in bronze, the goldsmith, and the jeweller, new devices to charm the eye and elevate the imagination; and their field of labour will be so much enlarged that they will seem to have invented a new industry.

I have spoken of the symbolical thought which was so generally expressed by the ironworkers of the cinque-cento. How can it be better revived and expanded than by taking lessons from the old schoolmasters of Eastern Asia, "these from the land of Sinim?" The gipsy kettle, as it is often called, the common-bulged tripod dinner-pot, which is used the world over, is copied from Chinese incense-burners that were in use more than five thousand years ago. The Chinese have long had a mania for collecting old bells and vases, partly from their universal reverence for antiquity, partly for the severe simplicity of outline and garniture by which the articles are generally characterised, partly for their moral lessons and associations. A motto from Confucius, or a line of wise advice from some other favourite author, is commonly cast, stamped, or cut into the bronze; the "all-seeing eye," under various modes of conventional treatment, looks from the outer surface, even as it looks from the amulets and edifices of Egypt and Yucatan; the three feet are said to represent the three guardian spirits that watch over the emperor, the nobles, and the people. Nearly all the old metallic vases have a special history, independent of their antiquity, for it has been a practice, from time immemorial, to use them as presents from princes and nobles, and men of wealth or station, to those whom they wished to honour. In the magnificent and unique collection of Cloisonné enamels which adorned our Centennial, the delicate filagree and the richly variegated hues of the cellular glazing seemed to be lavished with a peculiarly loving tenderness on the old homely and homelike form which we all know so well. Our workmen enamel iron skilfully for common purposes; who doubts that they might rival their almond-eyed brethren in applying the art to æsthetic purposes, if they were rightly encouraged? Any ornamentation upon articles of daily use, especially if it be symbolic or otherwise suggestive of high ideals, may become a source of continual gratification and of constant ennobling instruction.

I can think of no decorative process that has ever been employed upon any metal which is not equally suited for iron; indeed, I doubt whether there is one which has not been repeatedly and successfully tried upon that most precious metal. A judicious Renaissance may lend new force to the Jewish legend which has been so well illustrated by Schuessele with his brush, and by Sartain with his burin. The story runs that when the temple was finished, Solomon gave a feast to his artificers. On unveiling the throne, a blacksmith was found in the seat of honour, on the right of the king's place. The people clamoured, and the guards wished to cut him down, but Solomon commanding him to speak, he said:—"Thou hast, O king, invited all craftsmen but me, yet how could these builders have raised the temple without the tools I furnished?" "True," answered Solomon, "the seat is his of right. All honour to the iron-worker."

WORKING MEN IN THE DUCHY OF HESSE.

The German working-man often lives in a small house in the neighbourhood of the town where he works; this is especially the case with many of the working-men at Darmstadt and Worms. They save a little money, and then buy a cottage and garden. It has the advantage of giving them a stake in the country, and, so far, more independence; but it has also its disadvantages, for the working-man has rarely, if ever, enough to pay for the cottage at once, and so pays part, and has to pay the rest off by degrees, a mortgage being held on the house till he can afford to pay it off: then if sickness visit him or his family, if two or three bad years come near together, and provisions are dear, or he gets out of work, his children, and his children's children, may have the debt like a stone about their necks; and a man who has paid part of the price of a house, if work is scarce and ill-paid in his neighbourhood, is likely to hang on there, living from hand to mouth, rather than move to where his labour is more required and better paid.

If employed in one of the larger towns, the working-man would probably be able to find lodgings near his work, paying about 3*l.* 10*s.* to 5*l.* a year for a couple of rooms and a small kitchen at the top of the house. In Darmstadt a co-operative building society has been established for buying up building lots, and erecting working-men's houses thereon. The member who takes the house pays four per cent. on the capital, and pays off the price of the house by instalments, varying from five to thirty per cent. on the capital expended (inclusive of the four per cent. interest), and becoming the owner of the house after a term of years, which, according to his payments, may be from $41\frac{1}{12}$ to $43\frac{5}{12}$ years. One of the unpleasantnesses which the working-man would have to put up with is the system of disposing of the refuse of the towns. As it is collected in closed cesspools, it often happens that there are, especially in the narrow streets in the old parts of the town, very bad smells, and when the refuse is removed by peasants, and not by the air-tight cask-carts, the odour during the operation is most offensive; but it is said that if the refuse is not allowed to remain long enough to decompose, it does not breed disease, and, though disagreeable, is so far not hurtful, though it is difficult to believe that the older parts of some of the towns can be wholesome for any one to live in. Another disadvantage would be that, as no water is laid on in the houses where the workmen live, water would have to be brought from the nearest public pump, where women await their turn in all weathers.

In Mayence there is a place to which workin men, especially cabinetmakers, can send furni ture and such like articles made by them fo sale; but we gather, from personal experience that this bazaar is in no great favour. Buyer find that, in getting common household furni ture, for instance, the things are worse mad and proportionately dearer than if bought of large and well-known firm. Still this place i very far from useless. Intelligent working-me who might invent some new model, or improv some old design, have in this bazaar an oppor tunity of bringing their new ideas into notice also cripples, invalids, &c., who might be un able to leave home to work for a master, migh always contribute something towards the house hold expenses by doing what work they coul at home for such an establishment.

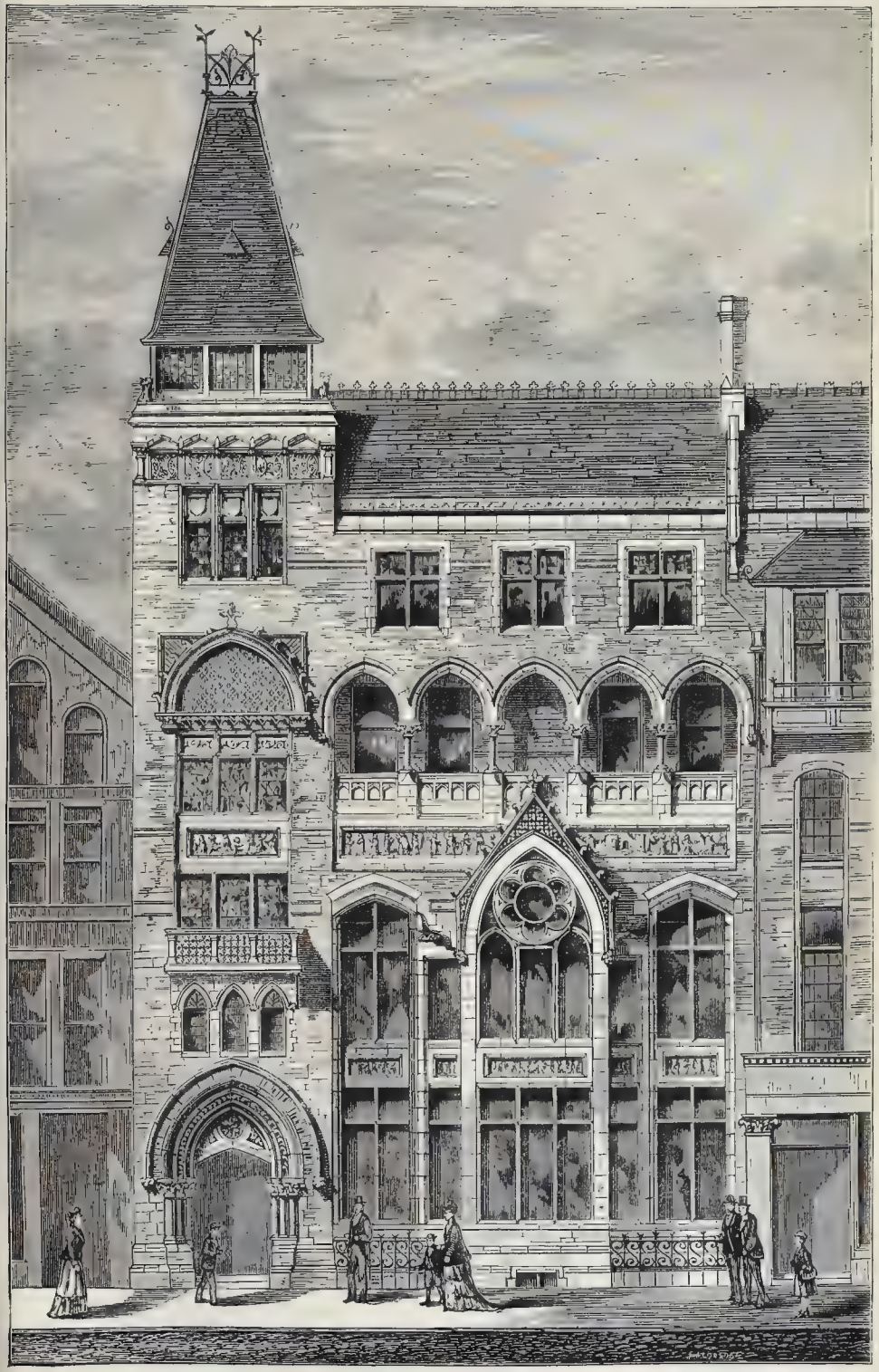
As regards food, a working-man from Englan would find ordinary food cheaper, but meat no so good as at home, the cattle not being s well fatted as in England. An Englishma would hardly relish the black bread, a mixtur of rye and spelz, eaten by the working classes An Englishman eats more meat, and as h would probably continue to do so, and ea wheaten bread, he would not live so cheaply as a German workman; and if he tried to liv more as his foreign comrades, and eat more food prepared from flour and vegetables, hi English wife would probably be some time be fore learning how to prepare the dishes fo him, during which he would be grumbling a having come abroad at all. The working-ma would find himself better off as regards drink he would get a cheap and wholesome beer,— not the strong heady stuff he had been accus tomed to in the public-houses at home, but light beer, with which he could quench hi thirst without its getting into his head, and which he could buy at about 1d. per pint, o bottled for home consumption at about 2½d. t 2¾d. per bottle, the size of a Champagne bottle Tobacco is also much cheaper in Germany tha in the United Kingdom, and common Rhin wine can be bought at about 4d. per pint and upwards.

In respect of clothing, a man going out i the air would require in winter warmer clothe in Hesse than in England, and especially o coming out from a workshop or room, as these are kept heated by the stoves to a much highe temperature than men are accustomed to work in at home. The natives keep their throats wrapped up very much, and consider it very necessary in the sharp air of the winter in Hesse. Fuel is dearer in Germany than at home; and although with the stoves in use there is far less waste of heat than with English grates, the burning of wood comes much dearer.

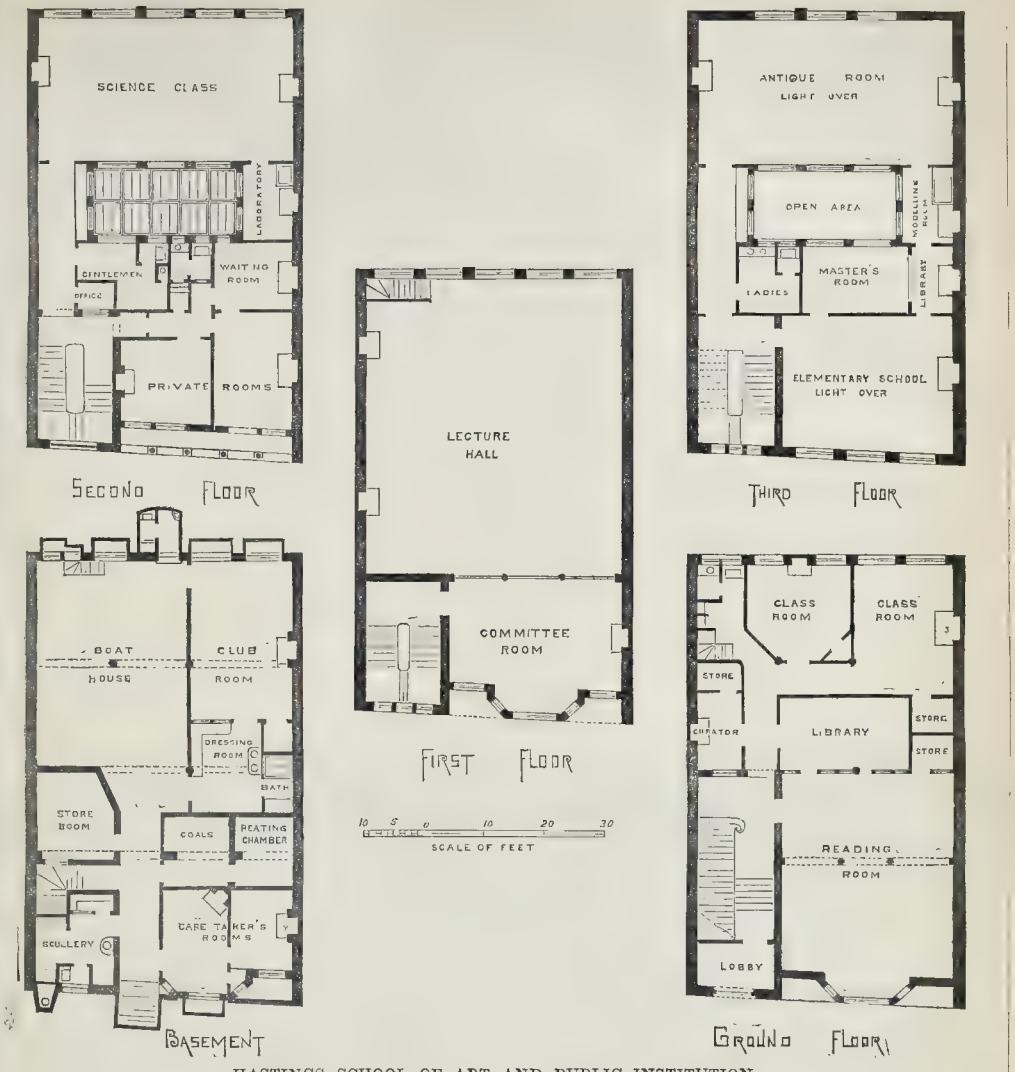
The rates of labour in towns are, for daywork, from about 10*s.* to 15*s.* a week; jobwork, 2*s.* a day; and in the country, day-work from 8*s.* 6*d.* to 12*s.* a week, and from 1*s.* 2*d.* to 1*s.* 8*d.* per day. These rates do not apply to skilled workmen doing piece-work, who might earn from 20*s.* to 40*s.*, or in some trades even more, per week with steady work, and some artisans would of course earn more at certain times of the year than at others, as, for instance, coopers during the wine harvest. As regards the quality of the work, one can get things well or slovenly made, according to the price one is willing to pay; but an order is usually executed very slowly, and in many things there is a tendency to stick to old patterns and ideas, and if you want anything out of the common it is cheaper to import it than have it made by a native workman. Many of the best workmen, who have no special tie to bind them to Germany, seek work in England or America, and make more money there without the risk of their gains being interrupted by compulsory military service; but by absenting themselves there they are considered emigrants, and lose their rights in their own commune. Although there are complaints of the want of good workmen, it is no country to go to on a speculative search for work. British workmen would not be able to live so cheaply as the German, and as the man who would go abroad to look for employment would not be a first-class workman who could always get full employment at home, he would not be so useful to the master employing him as the best native workman, and would therefore not be worth so much wages. Of course, a man having a distinct contract from a known employer of labour would be in a different position. But with our colonies open to him, with the present influx of English into South America, and, lastly, the United States (in good



THE MOSCOW COVERED MARKET.—Mr. Nikeforvg, Architect.



HASTINGS SCHOOL OF ART AND PUBLIC INSTITUTION.—Mr. W. L. Vernon, Architect.



HASTINGS SCHOOL OF ART AND PUBLIC INSTITUTION.

years) within a few days' sail, it is impossible to conceive a British workman going to Germany, except on a distinct contract giving him profitable terms. Working men do, however, go there, and not unfrequently say that the masters as soon as they can fill their places with German workmen at lower wages make things disagreeable for them, with the hope of getting rid of them; while the masters assert that the British workmen are too bumptious, and give themselves such airs that it is impossible to get on with them.

THE MOSCOW COVERED MARKET.

At the end of last year took place at Moscow the ceremony of inauguration, and, with it, the opening of the first covered market, erected on the Smolensk Market-place, near the newly-opened Novin-Boulevard. The building was executed by the architect of the Town Council, M. T. Nikeforvn, after a scheme of Mr. Dale, the eminent Academician. The building expenses were estimated at 80,000 roubles, but the works cost a little less. The erection of this market began in the month of July, 1876, and in November it was already opened for trade. The building, of which we give a view, forms a rectangle of 25 sajens (175 ft.) in length and 10 sajens (70 ft.) in breadth. In the underground floor are the cellars and storehouses for twenty-four, and, when wanted, for forty-eight shops; from each shop there are constructed hatches and ladders for descending into the storehouses. The trusses of the building rest on twelve stone pillars. The roof is of iron. On both main entrances are seen coats of arms of the town of Moscow—St. George killing the Dragon. The floor for the present is of wood, but it will be made of asphalte in the summer of this year. In this covered market there are constructed two basins, with water brought to them from the springs of the "Khodin-Field." The building is lighted with gas. In a short time similar markets, we are informed, will be erected in four squares in the same city.

Purchase of a Museum.—The Kirkwall Archæological Museum, belonging to the late George Petrie, has been sold by auction, and purchased for the Antiquarian Museum, Edinburgh.

HASTINGS SCHOOL OF ART AND PUBLIC INSTITUTION.

This building is now being erected in Claremont, Hastings, for Mr. T. Brassey, M.P., who intends, when it is completed, to devote it to the uses of the various scientific, friendly, and other societies in the town, and for the accommodation of the thriving School of Art.

The building consists of five floors; the basement being devoted to the rowing club; the ground-floor to the Mechanics' Institute; the first-floor to a lecture-hall and committee-room for many of the smaller societies; and the remaining floors almost entirely to the school of Art.

The structure is of a substantial character. Fareham red bricks and Corsham Down stone being used for the exterior. Messrs. Simpson & Sons are engaged in preparing tile decorations for the panels in the front, suggestive of historical scenes connected with Hastings.

Mr. W. L. Vernon, of Hastings, is the architect, and Mr. A. Vidler, the contractor.

Hastings is to be congratulated upon having in prospect such commodious and complete

arrangements for the various wants of the neighbourhood.

It may be added that a large printing and publishing establishment is being erected for the proprietor of the *Hastings and St. Leonard's Observer*, adjoining the Institution; and which also presents the same architectural style and effect.

ONE VIEW OF THE MANAGEMENT OF INDIA.*

THE Staff engaged by the Indian Government in the management of Public Works has increased considerably during the past nine years, and seems almost to have reached a limit. Now and again, symptoms of dissatisfaction at their prospects have appeared on the part of members of the service who have recently joined, notwithstanding the scope apparently afforded by an organisation which has been enlarged from some 360 officials in the years preceding the Indian Mutiny to its present numbers, amounting to close upon 900 engineers of all classes. Those who compete for, or accept, appointments in India, do so in full view of the remuneration offered; and, if critically disposed, are able to calculate their chances of promotion by the ordinary rules of probability; and junior engineers are to be considered fortunate in securing such defined prospects as the Indian authorities hold out. If, after this, there are complaints, the cause can hardly lie on the surface, and even those who consider they have grievances may be unaware of their exact nature and real origin. Few branches of the public service of any country are so well equipped in many respects as the Indian Public Works Department. The regulations, though voluminous, are to be considered sensible and clear. There is an adequate provision of instruments for field and office work, and improvements are not slow in being introduced. Systems of good roads, piles of building of solid execution, and canals full of running water, are not wanting to point to as the tangible result of wisely-directed expenditure. Where, probably, it is that selected candidates experience disappointment is, when they first come out, at not finding the condition of India answer their expectations formed in England. The great majority in British society still adhere to the tradition that India is a country of fabulous wealth, making steady and tremendous strides in civilisation and improvement, and that it is a region prepared to yield an enormous interest on expenditure in canals of irrigation and railways. The country is talked of as if it were under a somewhat similar constitution to that of an ordinary crown colony or American state. Many engineers who are sent out arrive with the notion that any number more are required, that they have a continent before them, and that the natives of the country are two barbarous ever to dispense with European services. On public occasions the attractions of Indian public works are dwelt upon as the Spaniards depicted the Indies discovered in the west, till the young engineer leaves for the scene of his appointment with a very exaggerated estimate of his prospects, and of the nature and tendency of the works he embarks to superintend. To speak, however, exclusively of the composition, scale, and immediate duties of the Public Works Department would greatly narrow the question, and not explain any grounds which engineers may have to doubt the grandiloquent terms which retired Anglo-Easterns affect when describing the future of State enterprise. What is required is that some conception should be imparted of what Hindustan really is, what are its resources, and what means the Indian Government has at its disposal for employing engineers upon public works. The settler in the interior may continue for some time under the delusion that he is living in a free country with most of the familiar laws and institutions of his own about him: he can write what he pleases to the press, post his letters in pillar letter-boxes, telegraph from one end of the country to the other, bank and remit money, and travel by road and rail without the espionage of a ubiquitous police. But just let him oppose the revenue collector or commissioner in whose district he lives, and he will find at once, that, in important directions, he is no more free to act than the tenants on an English baron's estates are free to vote for a member of Parliament. To understand India, it is necessary to take down a file of the Ordnance maps on a scale of four miles to an inch, when the country will be found teeming with the names of villages among which the better-known names of towns are as a mere drop in the ocean. India is actually a conglomeration of villages, amongst which the land of the peninsula is divided, and by whose inhabitants the fields are owned—sometimes individually, sometimes as a joint community—and cultivated. Even the waste tracts are considered the appanage of some village or other. Every Indian village is a republic complete in itself. All are not on one precise pattern in their minutiæ, but there is a strong general resemblance. In each there is a head man and an accountant, paid by the villagers, who collect the Government tribute, and are responsible for good order, and the rendering of statistics. There are also servants paid by the community of the village. One class of these watches the crops, is bound to run messages, and to show travellers the way from village to village. Another class of servants organises cultivation. A third watches the irrigation, and keeps the sluices and ducts clear. A fourth protects the trees. And there are the indispensable artisans,—the blacksmiths, potters, washermen, and barbers. The Indian Civil Government is merely a fabric raised on the humble basis of these simple communal establishments. A varying and manageable number of villages are grouped together in a revenue division called a Taluq, presided over by a native Tahsildar, who, while he collects the revenue, has also the powers of a magistrate, and can flog and imprison.

At this point in British territory native authority determines, and the covenanted civil servant takes up the reins of power. A certain number of Taluqs, with their Tahsildars, are placed under the control of an assistant "magistrate and collector," who again wields criminal jurisdiction in addition to powers of taxation. The assistant magistrates are subordinate to the Collector of the district, who is aided by a joint magistrate. The Collector has among the natives almost unlimited authority. He is the head of an immense body of village servants, through whom he can command, and deal with, each village in detail. He has the jail within a stone's throw of his office for the recalcitrant. Ever since the covenanted civil service of India was placed on a proper footing there has never been any doubt that the Collectors have used their enormous magisterial powers with integrity and forbearance, as far as they are individually concerned. But the Collector seated on his bench is not unfrequently a mere expression of British authority, and in the background are a body of astute, wily, and venal native clerks, forming the Omlah or Cutcherry, who actually, from the immense compass of the business done in the vernacular languages, transact most of it. The Collector in some provinces of India is placed, as far as revenue matters are concerned, in subordination to a Revenue Commissioner, who corresponds with the secretary to one of the Boards of Revenue. In other provinces there is no Commissioner, and the Collectors refer directly to the Board's Secretary. The Revenue Board itself is composed of two or more old and experienced civil servants, who are in constant communication with the Chief Secretary to the Governor of the Province. The chain of civil government is now complete. The measures resolved upon by the Governor are passed to the Board, the Collectors, the Tahsildars, and down to the village head man, by a set of invisible wires always ready to carry on the electric impulse. It seems to have always been so from the earliest times, and ages before British occupation. Any conquerors who have been able to send their mandates along the proper line have had them obeyed in the villages in the ordinary matters of civil administration. Were the inhabitants of the Indian villages welded into one homogeneous race, the state of affairs would resemble what exists in Russia; and the method by which they are ruled would be as simple as A B C. This is not so in India. The actual cultivators of the soil are the descendants of aborigines, or are of second-rate castes; but the few in each village who have any sort of political power are commonly either Brahmins or Mohammedans. In a purely civil aspect the Brahmins may be said practically to govern the people of India. They are scattered with a singular uniformity all over the country, and partly by a sacerdotal influence exerted from their shrines and temples, and partly by being the only class of Hindoos educated spontaneously to read and write, have the greatest weight in village counsels. The offices of the European civil servants are filled with Brahmin clerks, who are of necessity aware of all the business transacted, and by collusive correspondence with their caste fellows in the villages, of the real merits of every revenue case that comes before the Collector for decision. This is more than the European civil servant can be; as what correspondents has he among the swarms of villages? No Collector, therefore, can be considered independent of the Omlah, who have made a study of his personal character, or can prevent their advice from being the resultant of bribes. It is on this account that British-born subjects have always resisted the passing of a Black Act, subjecting them to the criminal jurisdiction of a civilian judge. The judge might have every European instinct, but would really be in the hands of Brahmin and Mahommedan advisers, whose insidious pressure he could not possibly withstand if it became worth the while of these obscure functionaries to exert it. British merchants on similar grounds retain, as they say themselves, their capital under the shelter of her Majesty's High Courts at Calcutta, Madras, and Bombay; and employ any of it very sparingly in the interior. The villages pursue the even tenor of an immemorial style of life, furnishing the land revenue of India, and their government, of a mechanical nature, goes on like clockwork. The civil engineer coming to India finds, however, that he is quite outside the patriarchal despotism headed by his countryman the Collector. His presence can hardly confer any immediate benefit on the rural population. The offer of money wages by the Engineer draws off the village labour from the fields; carts are attracted from the conveyance of village productions to the quarry and brickfield; roads bring European travellers round, with their servants, demanding fowls, straw, and eggs; while the Collector himself drives to the neighbourhood, to detect some intrigue, for the success of which the villagers may have paid the Collector's right-hand man a nice and irrecoverable sum. There is an irritation at the appearance and operations of the Engineer, and it would be strange if it did not permeate to the European civil servants, who are not, as a body, very strong allies of a scientific and Public Works Department. But the villagers and the Collectors are not the whole, though a very large and the most substantial part, of the empire of India. Every village sends into the Indian world waifs and strays for whom there is no occupation or land at home. The invasions of Tartars, Affghans, and other Mahommedans have contributed a great number to the floating population and to the crowded bazaars of the political centres. There has always been a fighting Hindu caste. The different powers who have ruled India have availed themselves of these less deeply-rooted portions of the population to dragoon and coerce the village communities, oblige them to listen to a central authority, and pay the State land-taxes. The East-India Company had immense levies, supplemented by a smaller contingent of local European and Queen's troops, by which they maintained their "Regulations," till the native army, catching a glimpse of its strength, mutinied in 1857, and caused the total upset of the Board-room table in Leadenhall-street. Just now order is preserved by a crushing force of British troops, supplemented by a moderate number of native soldiers for duties demanding exposure to the sun. India then turns out not to be a colony or a free country in any sense of the term, but a military despotism. The only places where real civil law prevails are within the limits of the three Presidency towns under the ægis of the Queen's High Courts of Judicature. But the empire of India, though in essence military, is not subjected to ordinary martial law, or the supervision of generals serving with the colours. The peculiarity of the system adopted is that relative military rank is conferred upon the covenanted civil servants, so that age for age the civil servant ranks considerably above the officers commanding the troops who take the field. It may be thought that this is a mere drawing-room precedence, and that the relative rank means really nothing; but a merchant or capitalist inclined to assert independence, or show up abuses, might discover the possession of even relative army rank by the civilians a considerable element of power. At any rate, some of the Civil Engineers have made a grievance of the want of this rank, which has been conceded to the Chief Engineers, and the First Grade Superintending Engineers, but no lower.

The Public Works Department had its origin in the building of barracks, and construction of

* We have had occasion to express an opinion on one or two of the points here touched, different from that given in the following statement. This, however, does not lessen the value of the information it contains.

military roads, and for long was managed by a Board consisting of the Senior Engineer, Artillery, and Commissariat Officer, at each Presidency. Whatever changes have since been effected, it is still the Public Works Department of a military empire, and more or less under the control of a Civil Service whose members hold the highest relative army rank. The resources available for the Public Works of India have now to be considered. From the way the annual accounts are made up, it is far from easy by computation, and quite impossible on mere inspection, to ascertain what the revenue and expenditure really are. There have been continual Indian loans, and latterly a steady borrowing of capital to carry on irrigation canals and railways has become an avowed policy. The following statement arranges both charge and discharge under the same heads as those of the British budget, and presents a fair view of the condition of the Indian finances, which are universally acknowledged to be very inelastic.

Revenues of India.

Customs	£2,576,000
Excise	2,389,000
Stamps	2,476,000
Land Tax	20,520,000
Income Tax (Salt duty in India takes its place)	5,986,000
Post Office	831,000
Telegraph Service	206,000
Crown Lands	744,000
Miscellaneous (opium, &c.)	12,496,000
Total	£48,174,000

Expenditure of India.

	In India.	In England.
Permanent Charge on Debt	£3,033,000	£2,137,000
Interest on Loans, &c.	514,000	1,856,526
Consolidated Fund Charges	2,010,174	326,000
Army (including the Military Public Works)	12,452,000	3,650,300
Navy	377,000	197,000
Civil Services	9,1 8,000	1,123,000
Post Office	616,000	41,000
Collection of Revenue	3,306,000	29,000
Telegraph Service	366,000	84,000
Repayments (chiefly loss by exchange)	685,000	None.
Civil Public Works	1,212,000	48,000
	£38,288,174	£9,885,826

It is thus apparent that, after providing accommodation for troops, and provincial roads and buildings, the expenditure on which has been merged in the expenses of the army and civil services, the sum of one million and a quarter pounds sterling remains as the true Indian surplus available for public works of a magnificent or remunerative class, or to meet the interest of any further loans. Directly this moderate surplus is absorbed by the interest on liabilities, India becomes unable to carry out any further improvements without retrenchment, which the politics of Asia and Europe may render impracticable. Civil engineers thinking of going to serve on Indian works, or candidates intending to compete for places, should satisfy themselves that the Indian Government are able to continue the past rate of promotion, and hold out permanent prospects with a surplus amounting to but about 2½ per cent. of an inexpansive revenue. Half the present strength of the Public Works Department may be considered supported out of the ordinary Indian revenue; and wanted to keep the works already constructed in repair, as well as supervise the outlay on such ordinary works as have a provincial or military character. The other half of the Department has hitherto been maintained out of the loans raised for reproductive works. As the powers to borrow this money depend upon the annual sense of Parliament, which again is influenced by whether the works return a fair interest on the capital expended, the situation of a very large number of engineers in the Public Works Department of India is at least precarious. This brings us to the consideration of the reasons for the revenues of India being stationary, notwithstanding the large sums spent in railways, and on irrigation canals and reservoirs. France, for example, is in some respects a country under a sort of military despotism, and yet the resources are known to be immense, and little affected in their growth by curtailed freedom. It has already been observed that India is mainly a collection of thousands of villages; the villagers owning and cultivating the lands adjoining each, and being connected with the governor of the province or presidency by a continued chain of officials, the principal of whom are the covenanted civil servants, a class now selected in London by public competition. The world of India outside this agrestical fabric consists of the miscellaneous population of the larger cities; the emigrating surplus population, constantly emerging by twos and threes from the villages, and straying abroad in search of a livelihood; and generally of all those classes who have no capital, and do not own land. British institutions of all kinds chiefly influence this exoteric and landless Indian world. It is this material which is educated in English colleges and schools, drilled into regiments, organised into the artisans and labourers on the larger public works. With this part of the population the covenanted civilians do not come into patriarchal contact. Nothing pleases an Anglo-Eastern more than to appear in two or more different capacities. Formerly pluralities were common in the Indian service, as officials drew their salary under each nomenclature. This is now rare in any and unknown in the Public Works Department; yet an engineer signs some documents as Chief Engineer, and some as Secretary to Government, though these offices are combined in the same person. The covenanted civilians accordingly dispense with their patriarchal habits, and assume a more westerly tone in dealing with the miscellaneous population. But whether due to the civilians, to the Brahmins, or to the conservatism of villagers reacting upwards, the greatest possible obstacles are opposed to a free transfer of land. European planters have great difficulty in obtaining a few acres for tea or coffee plantations; and from the nature of the waste land rules, it is obvious that the Indian officials do not want more British colonists than can be avoided. The natives are instinctively and strongly averse to disposing of any of their land to Europeans, and like to keep it as far as possible in ancestral hands. The consequence of the prevalence of this feeling is to impose a barrier on every description of change, and to lock up the great bulk of the land of India in strict entail, not so much upon individual families, as the groups of these, forming the commonwealth of a village. British civilisation in India has therefore had most scope in the towns and stations, whose populations are mostly engaged in trade. It is through these that the Customs and Excise duties are drawn, and much of the stamp revenue, and from them the proceeds of an income-tax when there is one. The principal increase in the Indian revenues has occurred in consequence of the improvement of these classes under our rule. But in a country which has a very feeble internal trade, scarcely any manufactures worth mentioning, and no particular mineral wealth, the trading population is not really wealthy, and its capital increases with extreme tardiness. The prime and stable source of wealth in India resides in the land, which is the property of the village communities, and is tilled by successive generations of villagers. There are three grand classes of soil to be met with in India, and singularly enough they are very much coincident with, and representative of, the Presidencies of Bengal, Madras, and Bombay. These are the alluvial, the volcanic, and the granitic. The plains of Bengal stand over an estuary, reaching along nearly the whole course of the Ganges, which has become filled up, in course of ages, with the fat silt of the Himalayas. The Bombay territories have a soil derived from the decay of basaltic rocks. The soil of the Madras Presidency has been produced by the weathering of gneiss. The specific differences of these soils appear on a consideration of their composition, as disclosed by chemical analysis. In order that the qualities of these soils may be compared, the result of the analysis of a specimen of each is quoted below, as nothing can be more marked than the difference between them:—

Chemical Constituent.	Per Cent.		
	Bengal.	Madras.	Bombay.
Water expelled at 212°	1·155	7·610	10·700
Do. above do.	3·892	10·190	none.
Silica	60·443	35·817	61·500
Alumina	15 835	27·988	16·660
Peroxide of Iron	12·662	17·265	6·030
Lime as Carbonate	trace.	none.	0·454
Do. Sulphate	0·414	0·014	0·121
Do. otherwise estimated	2·100	0·024	1 377
Magnesia	0 295	0·036	0·720
Potash	1·830	0·660	0·573
Chloride of Sodium	0·679	0·020	0·053
Soda otherwise estimated	1·022	0·120	1·719
Phosphoric Acid	6·250	0·007	0 166

It is to be regretted that analyses of Indian soils are exceedingly scarce, but those given are sufficiently typical to suggest minuter inquiry. One of the soils in the table was taken from Lower Bengal, the other from Coonoor on the Neilgherry Hills, and the last from the neighbourhood of Jubbulpore, in Central India. To enable an idea to be formed of the relative value of these soils, the analysis of a peculiarly barren description of soil, occurring in the North of India, and known as "oosur," is subjoined:—

	Per Cent.
Water	4·5
Organic Matter	4·1
Silica	66·16
Alumina	16·05
Oxide of Iron	2·16
Lime	0·81
Magnesia	trace.
Alkali, mainly Soda	2·85
Chlorine	0·54
Sulphuric Acid	1·10
Carbonic Acid	1·73
Phosphoric Acid	trace.

This class of soil allows of no vegetation whatever. The natives have found that, as was to be expected, even the "oosur" might be made to produce grain under good tillage. In general the greater part of the land in India is cultivated without the use of any manure. What is really going on in that country is a steady and systematic exhaustion of the fertility of the soil. In Bengal it must take a long time to absorb all the constituents which analysis shows are fairly adjusted to the present wants of crops; though there are not a few indications that sterility is coming on by slow degrees. In Bombay and Madras there are the most decided and alarming evidences that the soil is nearly run out. But as it requires some familiarity with agricultural chemistry to appreciate these symptoms, and assign them to their true cause, they pass without the attention they require. Meantime the Government view the financial position with considerable distrust; and it is a question whether public works may not have to be perforce largely curtailed. Of course, the fact of declining fertility is as ample an explanation of financial embarrassment as the ebb tide of the stranding of a ship on the ooze of a river's mouth. Those who have compared the statistics of one or two hundred years ago with those of recent years, are said to be painfully struck with the comparative unproductiveness of modern India, which has dwindled down in its produce to about a third of the proper amount. It is little use to form roads and extend railways if agricultural productions, which are the mainstay of Indian commerce and revenue, get less and less every year per acre cultivated. There is nothing to fall back upon. Government have as yet not interferred with the mode of culture pursued by the villagers, and these themselves have done little more than groan under the burden due to a decreasing fertility, whose cause is too subtile for their blunt perceptions. The efforts of the immense outside classes who conduct trade, but do not occupy land, have brought the country to a certain pitch of prosperity, but are now weighted by the incubus of the villages, with their antiquated agricultural practice, and swarms of petty officials. The Indian engineer, who is also an architect, has, in consequence of the state of the finances, a very restricted field indeed. If India were advancing there would be a great many buildings to erect in every large station; but, as it is, there is little being done, even in the larger cities. The natives live in the merest hovels, and, generally speaking, because they cannot afford better residences. They have almost ceased to call for handsome public buildings. In addition to the general poverty due to a neglectful treatment of the land, there is the additional obstacle of scarcity and dearness of timber. Very little attention has been devoted to forestry, and exceedingly little money spent in reclothing India with trees. The forests are mere specks on the map, and the wide extent of the country, from Cape Comorin to the Himalayas, is almost bare of trees, and for several months of the year a scorching and unshaded wilderness. The trees there used to be have all been cut down for fuel, and timber is imported from Burmah, to fill the vacancy, at the high price of 3s. to 4s. per cubic foot, and upwards. Government have some forest officials, who are kept in the small forests, that are the relics of an arboreal vegetation, once, according to tradition, widely diffused. They are compelled to show a profit on their operations, so that, practically, the Indian Government expends scarcely a fraction of its revenues or borrowed capital in increasing the stock of timber in the country. It may be seen, then, that both the

engineer and architect have in India to contend with most peculiar conditions. The engineer has to work against the prejudice of millions of villagers, which is reflected to some extent by the officials in the districts whose present interests are not in any way promoted by an outside class being thrown upon the general wages fund. The operations of the architect cannot fail to be influenced by the uniformly-spread and accumulating indigence which follows a system of agriculture that has no other termination than in the exhaustion of nearly all the land in India held by natives.

WATER PRESSURE MACHINERY.

THE INSTITUTION OF CIVIL ENGINEERS.

At the ordinary meetings held on Tuesdays, the 8th and 15th of May, Mr. George Robert Stephenson, president, in the chair, a paper by Sir G. W. Armstrong, C.B., on "The History of the Modern Development of Water-pressure Machinery" was read.

The author's attention was first called to the subject of water-pressure as a motive power by noticing the waste of power exhibited by mountain rills in the Craven district of Yorkshire. He was thus led to devise a water-pressure engine, which combined the use of pistons with the continuous rotation of a water-wheel. A large working model of this wheel was tried in 1839, by connecting it with the street water-pipes in Newcastle, when it gave a high co-efficient of effect. After tracing the progress of the invention, the author said that until 1849 he had met with no opportunity of realising his original idea of utilising mountain rills; but he was then consulted by Mr. Sopwith, M. Inst. C.E., as to substituting water-pressure engines for overshot water-wheels at Allenheads. The water was collected in reservoirs at elevations of 200 ft., and all the purposes to be served required rotative motion.

By the end of 1851, the principle of transmitting and distributing the power of a steam-engine through the medium of water stored in an accumulator had become thoroughly established. The original idea of utilising mountain torrents, which was the progenitor of the accumulator system, had only been partially realised; but although the cascades and rapids in many unfrequented districts were still generally neglected as sources of motive power, and might continue to be so while coal was plentiful and mountain valleys remained difficult of access, yet it could hardly be doubted that the descent of water from elevated land was destined, at some future day, to become an important source of motive power. The transmission of the power might be facilitated by employing the prime moving column to pump water into accumulators, and by conveying the highly-pressed waters in a comparatively small pipe to situations where its value would be appreciated. The engine required would be a mere intensifier of pressure, and would be of the simplest description, consisting mainly of a press-ram and a pump-ram, in direct connexion with each other, and having their areas proportioned to the acting pressure on the one side and the resisting pressure on the other. Even falls of small height, sufficient only for water-wheels and turbines, could be employed for giving a high pressure to water for the purpose of transmission, and this had actually been done near Allenheads; and it had lately been proposed to utilise, in a similar manner, the first Cataracts of the Nile. The author then proceeded to describe the various forms of water-pressure machines which had come into use under the heads of hydraulic engines, hydraulic cranes, movable cranes, movable jiggers, hydraulic hoists, coal-discharging apparatus, coal-loading machinery, hydraulic machines for docking ships, sluice machines, swing-bridge machinery, draw-bridge machinery, hydraulic applications to gunnery, and corn-warehousing machinery. He explained the modifications and improvements which had been progressively made, and showed the state of development at which water-pressure machinery had arrived.

The President's annual *conversazione* will take place on Thursday, the 31st of May, at the South Kensington Museum.

Recognition of Merit.—The *Times* states that the Queen has been pleased to signify her intention of conferring the honour of knighthood on Col. Herbert Sandford, R.A., in recognition of his services as Commissioner for this country at the Philadelphia Exhibition.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association on the 11th inst., Mr. H. C. Boyes, president, in the chair, Mr. A. F. Taylor was elected a member, and a vote of thanks was accorded to Mr. Manning, the engineer of the East and West India Dock Company, for his kindness in allowing the members to visit the new Dockhouse in Billiter-street, described on p. 483, *ante*.

Regretful reference was made to the death of Mr. Edmund Sharpe, M.A.

Mr. Lewis H. Isaacs then read a paper "On the Application of the Artisans' and Labourers' Dwellings Improvement Act, 1875, to some of the Courts and Alleys of the Metropolis," published in our last issue.

In the discussion which followed,

Mr. Blashill, in moving a vote of thanks to the reader of the paper, said that Mr. Cross's Act was of the utmost value, inasmuch as it clearly recognised the principle that where private enterprise was manifestly unable to do the work of providing better dwellings for the poorer classes, the Government, as represented by the local authority, could step in, and by clearing away the houses in unhealthy areas which existed, would provide sites for the erection of improved dwellings by private enterprise. It would not at all compete with the enterprise of private companies or individuals. The ground cleared under the operation of this Act by the local authority could not be let for the erection of shops or warehouses, or of any buildings other than artisans' dwellings, and would be competed for by the various companies who make it their business to supply the poor with improved dwellings. The result and justification of the Act would be that in the metropolis and in all large towns the standard of the minimum of cleanliness and comfort would be raised. An Englishman might claim it as his proud prerogative to let his wife and children continue as dirty and as ignorant as possible, but the Education Act and other measures, in which all parties were, happily, agreed, would teach him otherwise. It could not be denied that it would be for the general good of the community to rebuild the dwellings of the 14,000 people which were included in the schemes before Parliament, even although all the people evicted during the carrying out of the works never got quartered in the new houses. He could not help sympathising with Mr. Isaacs on account of his plan having been ridden over roughshod by the authorities. Mr. Isaacs had instituted a comparison between London and Glasgow and Birmingham with reference to the public outlay on these schemes; but with regard to Glasgow and Birmingham the parts which had been dealt with under their Improvement Acts were in the central and more business parts of the towns, and therefore the cost of acquiring the property was a great deal more than in some of the London schemes under Mr. Cross's Act. Mr. Isaacs was to be congratulated on the fact that two such experienced officers of the Metropolitan Board of Works as Sir Joseph Bazalgette and Mr. Vulliamy had, in their plan for the laying out of the Gray's-inn-road area, scheduled as much as ten acres out of the fourteen and a half embraced by his (Mr. Isaacs's) plan. He thought, however, that although Mr. Isaacs's plan was more picturesque in treatment than that of the officers of the Metropolitan Board, it was not so well calculated to allow of a free circulation of air, seeing that he had planned several of his blocks in the form of courtyards entirely open on one side only, whilst the plan prepared by the officers of the Metropolitan Board showed the disposition of the site in streets open at both ends,—an arrangement which was certainly more conducive to a free flow of air.

Mr. Lacy W. Ridge seconded the motion, and expressed his satisfaction at the good likely to be effected by the Act. A Government which took upon itself to decree that the ratepayers of London should spend from 10,000*l.* to 20,000*l.* on a single block of school buildings would be inconsistent did it refuse to allow the expenditure of the few thousands necessary to carry out the schemes which had been brought before the meeting by Mr. Isaacs. He (the speaker) could conceive of nothing more ludicrous than to "educate" the "Arabs" who came out of the courts and alleys of the Gray's-inn-road, while doing nothing to purify them in their bodies. In comparing the relative expenditure of London with that of Birmingham or Glasgow for the purposes contemplated by Mr. Cross's Act, it should be borne in mind that the condition[s] London was enormously superior when the A[ct] was passed to the condition of Glasgow [or] Birmingham. He saw some property adjoin[ing] the High-street of Glasgow last year in cou[rse] of demolition, and the view of the old hou[ses] eight or ten stories high exposed by the ope[ra]tions was extremely picturesque; in fact, t[he] houses were of such a class as were usua[lly] associated with such Continental towns [as] Rouen. These houses were four or five centur[ies] old, and built on a system which was [no] applicable now. How the people of the Mid[dle] Ages got sufficient air in such confined quarte[rs] it was not easy for us to understand, except [on] the assumption that they were differently co[n]stituted as to their lungs. As to Birmingham, [it] was a town which grew up much more rapid[ly] than Glasgow, to meet the exigencies of man[u]facturing industry, and without any supervisi[on] whatever in the form of building bye-laws un[til] comparatively recent times. The business us[e] to which all parts of the City of London h[ad] been applied had necessitated the removal of [a] great part of the older and most closely-co[n]pacted houses, and consequently it was only [in] some few outlying parts of London where [we] could look forward to a very large application [of] Mr. Cross's Act. In looking at the plan deposit[ed] by the Metropolitan Board of Works for t[he] Gray's-inn-road or Holborn scheme, it could n[ot] but be felt that the Commissioner and the Hom[e] Secretary took a view of it which must commend itself to architects. The plan might have be[en] the outcome of people of large experience on t[he] Board, but not on the drawing-board. He agree[d] with the former speaker as to the very picturesqu[e] way in which Mr. Isaacs had laid out on pap[er] the Holborn area, and he was especially to b[e] commended for the way in which he had mad[e] the fine church of St. Alban the central featu[re] of the plan, although he had heard that some [of] the people connected with that church had pr[o]tested against the remodelling of the neighbou[r]hood, on the ground that the *raison d'être* of th[e] church would be removed when it could no longe[r] be said that it worked in the middle of a slum [or] Mr. L. C. Riddett, in the course of a humorou[s] speech, said that although Mr. Cross's Act ha[d] not its "aggrieved parishioner," in the sense [of] the Public Worship Regulation Act, yet it ha[d] its "aggrieved parishioners" in the gentleme[n] who did not want their wretched property to b[e] removed. Now, when a new railway passe[s] through a neighbourhood these "aggrieve[d] parishioners" did not offer any great oppositio[n] to their property being taken down; but, where[as] ever the Commission appointed under Mr. Cross' Act had held an inquiry, there they entered the[ir] protest against their property being schedule[d] under the Act. The fact was that these property owners were, to a certain extent, immolate[d] upon the altar of public health, inasmuch as the[y] did not receive the consolatory ten per cent. fo[r] the compulsory purchase of their propert[y] under the Act, although this *solatium* was given in the case of public improvements or railwa[y] works. While we did not mind curing the evi[l] of overcrowded and unhealthy dwellings, w[e] should be careful in the disposition of our build[ing] estates, and in the class of buildings erected thereon, that we did not perpetuate the evil. He had lately visited Kilburn, after an absence of some years. In lieu of the bright, joyou[s] green fields of his boyhood, he saw the regulation hundred acres of bricks and mortar (it wa[s] called "mortar"), having at the corner of every street the regulation nastiness in the form of [a] public-house. He could not help feeling tha[t] here was a place which was fast degenerating into an "unhealthy area," and great was his astonishment, on speaking of it to a professional brother, to learn that it was the property of the Ecclesiastical Commissioners! Now, what could be fairly expected of poor private owners of property when great public bodies, such as the one he had named, did not take care to see that the buildings put upon their land were healthy and decent? As to back-to-back houses, they were utterly condemned by all experience. Some years ago the Great Eastern Railway Company had tried this arrangement under the most favourable conditions, but it had to be abandoned on account of the prevalence of zymotic diseases.

Mr. North said he was quite convinced that Mr. Isaacs's proposal to remove the entire congeries of courts and slums on the Holborn area was the only one that would commend itself to those who knew the site. It was quite true that the various artisans' dwellings companies had done much to improve workmen's

habitations; but they could not, as commercial speculations, afford to provide for the wants of the very poorest. It should not be forgotten that in providing better dwellings for one particular class of the poor, viz., costermongers, it was necessary to afford accommodation for their donkeys and stock-in-trade.

Mr. Stannus said he noticed that the plan prepared by the officers of the Metropolitan Board of Works had respected or left untouched the various manufactories included in the Holborn area, whereas, with one exception, Mr. Isaacs's plan swept them all away. Would it not be possible to graft the two plans together, allowing all factories to remain, except such as were needed for the making of improved thoroughfares or approaches? The removal of manufacturing premises would not only increase the cost of the schemes, but would take away, perhaps, to a great distance, the employment of the people who at present resided on the spot. Was this politic? Obviously, bad dwellings might well be removed to make room for better dwellings; but it was a question involving some abstruse points of political economy whether manufacturing premises should be removed to provide sites for dwellings. Mr. Isaacs was to be congratulated on the way in which he had made the fine church of St. Alban the central feature of his plan.

Mr. H. W. Pratt asked what was to become of the artisans who at present lived on any of the areas while the sites were being cleared and new dwellings erected?

The Chairman, in putting the vote of thanks to the meeting, said it was gratifying to know that the operation of Mr. Cross's Act would not be antagonistic to private enterprise, but would rather, on the contrary, assist it. Mr. Isaacs deserved the warmest thanks of the Association for the trouble he had gone to in preparing several of the large maps exhibited on the walls in illustration of his paper.

The vote of thanks having been carried,

Mr. Isaacs, in acknowledging the compliment, said that so far from private enterprise being clogged or fettered by Mr. Cross's Act, it would be accelerated and helped. Local authorities were not permitted under the Act to become building owners or speculators, and when the sites had been cleared private enterprise would step in and compete for them. At one of the Architectural Conferences held of late years under the auspices of the Royal Institute of British Architects, much valuable information had been given on the subject of the cost of providing artisans' dwellings, and among the facts elicited was that the sum of 4d. per annum per foot superficial was the utmost limit to which the companies and associations for providing dwellings for the poor could go in view of a fair margin of profit on their operations, and therefore at some such figure as this the land would have to be let. As to Mr. Blashill's objection to the plan of building in quadrangular form instead of in parallel rows, he (Mr. Isaacs) had deliberately adopted it, principally for the reason stated in his report to the Holborn Board of Works dated 5th of July, 1875, namely, with the view of providing for one of the greatest wants of the age among town populations, viz., spacious and secure playgrounds between the blocks. So important did he consider this point that he even ventured to suggest that the basements might be excavated and arched over to serve as playgrounds for children. In regard to Mr. Ridge's remarks, he might say that the plan he (Mr. Isaacs) had prepared for the improvement of the Holborn area had met with the warmest approval of the clergy and laity of St. Alban's, who would only be too glad to see the people surrounding them better housed. Mr. Stannus's suggestion as to the retention of the manufacturing premises was a very good one regarded as a general proposition; but under the Act if you touched a man's property at all you must take the whole, and under the circumstances he thought the best thing to do was to make a *tabula rasa* of the entire area, with the exception of the church and the one factory he had mentioned. As to Mr. Pratt's question, the Home Secretary had power to make bye-laws for the better working of the Act, and one of the bye-laws which he had made was that while a site was being cleared not more than 500 persons should be evicted at one time, unless provision had previously been made for their lodgment.

Borough Engineer, Hertford.—Mr. Grindle has resigned the office of borough engineer of Hertford from the 24th of June next.

SIR JOHN SOANE'S MUSEUM.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

The house (No. 13) in Lincoln's-inn-fields which was formerly the residence of Sir John Soane, and which since the death of that distinguished architect in 1837 has been known as "Sir John Soane's Museum," was visited by about a score of the members of the Architectural Association on Saturday afternoon last. Of those who were thus present, hardly more than one or two had ever crossed the threshold of the well-kept and always cleanly-painted mansion, and they were therefore agreeably surprised at the interest and value of its contents. Many who made their first visit to the Museum on Saturday last went away with the determination of cultivating a fuller acquaintance with its contents,—a determination due in no small degree to the very kind reception given to the visitors by Mr. Joseph Bonomi, the learned curator, who very cordially invited them to come again and bring their friends with them. "We have here," he said, "the whole of Sir John Soane's magnificent library, but nobody comes to read it." Surely the Museum only needs to be known amongst the younger members of the profession to be more frequented by them.

Before giving a rough outline of its contents, we may note, for the benefit of our younger readers (for a full account of the institution appeared in the *Builder* some years ago) that in the year 1833 Sir John Soane obtained an Act of Parliament (3rd Will. IV., chap. 4), intituled "An Act for settling and preserving Sir John Soane's Museum, Library, and Works of Art in Lincoln's-inn-fields, in the County of Middlesex for the benefit of the Public, and for establishing a sufficient Endowment for the due Maintenance of the same." On the decease of Sir John on the 20th of January, 1837, the Act came into operation; the trustees named therein entered on their trust, and immediately took the necessary steps for carrying into effect the provisions of the Act to the fullest extent of which the funds placed at their disposal by the founder would admit. The first section of the Act, which prescribes the rules of the institution as respects its public exhibition, enacts that

"The said trustees and their successors shall and will from time to time, and at all times thereafter as occasion shall require, inspect and exercise a due care of over the said museum, library, books, prints, manuscripts, drawings, maps, models, plans, and works of art, and the house and offices in which the same are deposited, and provide for the due preservation of the same in the said house, being No. 13 in Lincoln's-inn-fields aforesaid, so that free access shall be given at least on two days in every week throughout the months of April, May, and June, and at such other times in the same or in other months as the said trustees shall direct, to amateurs and students in painting, sculpture, and architecture, and to such other persons as shall apply for and obtain admission thereto, at such hours and in such manner, and under such regulations for consulting and inspecting and benefiting by the said collection, as the said Sir John Soane shall have established previous to his decease, or as the said trustees shall establish relating thereto."

The present trustees* have consequently, since they entered on their trust, kept the Museum open to the general visitors on Wednesdays and Thursdays from the first in February to the last in August, and likewise on the Fridays in April, May, and June, for the accommodation of those who, from particular circumstances, may be prevented from visiting the Museum in the months specified by the Act. Persons desirous of obtaining admission to the Museum can apply either to a trustee by letter, or to the curator, or personally at the Museum.

The contents of the Museum are as varied as they are interesting. The drawings and models of the many important buildings designed and carried out by Sir John Soane form an important though a comparatively small portion of the whole collection. These drawings and models (which, of course, include those of the Bank of England) will afford much useful instruction to the young architect as well as to the general visitor. Amongst the models is a large one in cork of the ancient city of Pompeii, and above the glass framework which covers this are arranged twenty beautifully-finished models, in plaster of Paris, of ancient Greek and Roman buildings (restored), by the late M. Fouquet, of Paris. These include the Parthenon, the Tower of the Winds, the triple temple of Erechtheus, Minerva Polias, and Pandrosus at Athens, the Pantheon at Rome, the Temple of Fortuna Virilis, Rome, the great temple at Pæstum, the tomb of Mausolus at Halicarnassus, &c. Sculptures, bronzes, vases, fragments of ornament, and antiques of all kinds and of almost all periods, are here in abundance, and there is a good collection of plaster-casts in what is known as the "Students' Room." For those who care for none of these things there is a small but interesting picture-gallery, the capacity of whose walls is quadrupled by means of ingenious folding screens. The pictures include works by John Jackson, R.A., Sir A. W. Callcott, R.A., Henry Howard, R.A., Sir F. Bourgeois, R.A., Zucherilli, Canaletti, Watteau, and, amongst others, Hogarth's four celebrated pictures representing "An Election" in days when the ballot and household suffrage were far in the future. These pictures represent (1) "The Entertainment," (2) "The Canvassing for Votes," (3) "The Polling," and (4) "The Chairing of the Members." In what is called the "Sepulchral Chamber" is the famous and splendid ancient Egyptian sarcophagus discovered by Belzoni in 1817 in a royal tomb in the valley of Beban el Malook, near Gournou, Thebes, and which was purchased by Sir John Soane of Mr. Salt, in 1824, for the sum of 2,000*l*. It is formed (according to the description given in the official hand-book to the Museum) out of a large mass of alabaster from Alabastron, a city on the eastern shore of the Nile, fifty miles north of Thebes. The external dimensions are as follow:—Length at the top, 9 ft. 4 in.; breadth in the widest part, 3 ft. 8 in.; depth at the head, 2 ft. 8 in.; depth at the foot, 2 ft. 3 in. The cover when placed upon it, added 15 in. to the height. The whole surfaces of the exterior and interior of this sarcophagus are covered with interesting and well-preserved hieroglyphs depicting the journey of Ra, the Sun, through the chambers of Amenti or Hades, during the hours of the night. At the head end is the scheme of the universe as it was entertained at the period of Oimeneptha I., who is supposed by some Egyptologists to have been the father of the Pharaoh of the Exodus, and by others to have been the identical Pharaoh. Among the subjects treated of on the sarcophagus is one embodying the ancient doctrine of metempsychosis. Another subject is a representation of heaven. This sarcophagus alone is well worth a visit. The lid is in fragments, but these were put together by the curator, Mr. Bonomi, in 1864, by order of the trustees, and placed in glass cases in the students' room. In addition to its contents, the building is worthy of notice and examination on its own account, in respect of plan and arrangement, and as the residence of a distinguished architect. The ceilings of the dining-room and library are very finely decorated, and enriched with pictures by the late Henry Howard, R.A.*

We have perhaps said enough to show that the Museum is well worthy of a visit. Such it was thought to be on Saturday afternoon last, when, on behalf of the members of the Association present, Mr. Stannus tendered to Mr. Bonomi a hearty expression of thanks for his kindness. In acknowledgment, Mr. Bonomi said he should be only too glad to see his visitors and their friends at the Museum as often as they could come.

* The life trustees are:—Mr. Sydney Smirke, R.A., Professor Donaldson, Mr. Frederick Ouvry (President of the Society of Antiquaries), and Mr. David Mocatta, F.S.A. Additional trustees elected by different societies are:—Sir Philip de Grey Egerton, M.P. (by the Royal Society); Sir Francis Grant, P.R.A. (by the Royal Academy); C. S. Perceval, esq., LL.D. (by the Society of Antiquaries); Alan S. Cole, esq. (by the Society of Arts); and Alderman Sidney (by the Corporation of London).

* The house and contents are fully described and illustrated in a volume by the late John Britton.

NEW WESLEYAN CHAPEL AT FARNWORTH, NEAR MANCHESTER.

On Saturday, the 12th inst., the memorial stones of a new Wesleyan Chapel at Moses Gate, Farnworth, were laid by Mrs. Nuttall, of Southport, and Mrs. Jas. Nuttall, of Moses Gate.

The new chapel is designed in the Gothic style of architecture, Early English type, and will be built of stone for foundations, and brick for the superstructure, but faced externally with Yorkshire parpoints. The chapel is cruciform on plan, and comprises nave, 77 ft. by 42 ft.; transepts, 23 ft. 6 in. by 14 ft. 6 in. each; chancel, 24 ft. by 14 ft.; minister's vestry, with lavatory, &c, on one side, and band-room on the other. There will be galleries in the transepts, and one to the front, each having separate staircase and entrance. There are three entrances to the front, one central, and by side porch and front staircase entrance, all opening into a spacious vestibule, having glazed screens, folding-doors, &c. The front will have a reduced gable, porch, and staircase, being set back or recessed. The front doorway will have a porch-

like projection, with side buttresses. The front doors and windows will have dressed and splayed jambs and arches; the principal feature of the front being a four-light tracery window over the gallery, having single-light each side, and single lights underneath for the vestibules. The side windows will be two-light, and the transept gable windows three-light, the jambs and niches worked in parpoints; wooden frames. All the windows glazed in lead-lights with cathedral tinted glass.

There will be buttresses to the front and side elevations, boldly weathered in, and the coupled buttresses to the front gable carried up above the roof, and finished with cap-gablets to the front and side. All gables will be finished with copings, strong stone corbels, springers, apex stones, &c.

The chapel will have high-pitched roof, hammer-beam principals to the nave, and arched principals to the transept. The ceiling is formed underside rafters, and to the nave on the top of the collar-beam, panelled with roof timbers, ceiling-beams, &c., plastered, provision being made for ventilation in the nave ceiling by perforated panels, and under the eaves by perforated fascia boards. The organ will be placed in the chancel on a raised platform, with balustrading and panelled screen. The rostrum and the communion will be placed in front of the chancel, having terraced seats on each side for a double choir. The walls will be wainscoted, and plastered above; and the chapel will be fitted up with comfortable bench-seats for about 845 persons, including free seats and scholars' seats.

The internal woodwork of the roof, ceiling, and fittings, will be of pitch pine, and varnished. The foundations have been put in by Mr. Silas Seddon, Little Lever, under a separate contract, Mr. Chas. Hollows being the mason. At present it is not intended to put in the transept galleries or their staircases, nor to erect the band-room and boundary walls, these being left for a future extension scheme, when required.

The estimated cost is about 4,000*l.*, including heating and lighting, but the tenders have not yet been received.

The architect is Mr. Thomas Ormrod, of Bolton, under whose supervision the work is being carried out.

A NEW CRYSTAL PALACE RAILWAY STATION.

The London and Brighton Railway Company have followed the example of the London, Chatham, and Dover Railway Company in erecting a handsome and convenient new station for the Crystal Palace traffic, somewhat similar to the High-level Station at Sydenham of the last-named company. The new station, which has cost nearly 13,000*l.*, has been some time in course of erection, and, being now complete, was opened last week. The structure has been built over the main line of railway, supported on iron girders with brick arches, the floors immediately above the railway-level being of concrete several inches in thickness. The building, which is surmounted by a tower, is of an ornamental character, and the structure internally is architecturally finished and decorated. In a spacious and handsome hall, paved with Minton's encaustic tiles, are the booking-offices. The roof of this hall consists of one semi-circular span, supported by iron girders, and along the centre runs a lantern-light. Adjacent to the booking-offices are spacious waiting-rooms for first, second, and third class passengers, the first and second class waiting-rooms being elegantly fitted up and furnished with carpets, chairs, tables, and lounges. In connexion with the station, large dining and refreshment rooms have also been provided. In addition to the new station itself, new booking-offices, waiting-rooms, and additional platforms, upwards of 100 ft. in length, have likewise been erected on the up-main-line side of the station, and on the Croydon side, for the greater convenience of the constantly-increasing traffic. The station is approached from the Anerley-road, along a new road passing through a portion of the Palace grounds (the land for which has been given by the Palace Company), and constructed by the railway company. The new station replaces the old and inconvenient wooden building which has done duty for the Palace traffic of the London and Brighton Company since the first opening of the Palace now twenty-three years ago, namely, in 1854.

The building has been erected from the joint designs of Mr. Banister, the company's engineer, and Mr. Gough, architect; and the contractors were Messrs. Dove, Brothers.

PROPOSED NEW COUNCIL CHAMBER, GUILDHALL.

At the last meeting of the London Common Council, consideration was given to a report to the Court from the Coal, Corn, and Finance Committee of the Corporation, in relation to providing funds for a new Council Chamber at the estimated cost of 50,000*l.*, and also the further sum of 56,000*l.* for the re-arrangement and construction of committee-rooms and offices on the north side of Guildhall, making together 106,000*l.*, exclusive of fittings. A model of the proposed chamber, prepared by Mr. Horace Jones, the City architect, was displayed during the sitting of the Court. Mr. John Pound, chairman of the Coal, Corn, and Finance Committee, moved that the Court proceed to consider the report, which, for financial reasons, recommended that the proposed buildings be not proceeded with, and that the committee be allowed to delay answering the reference. Upon that Alderman Sir Francis Wyatt Truscott proposed, as an amendment, that the recommendation contained in the report relative to the continuance of the coal dues be agreed to, and that it be referred back to the committee to consider the whole subject and to report thereon; that the City Lands Committee be instructed forthwith to advertise for tenders for the erection of the council-chamber and offices, according to the plans approved by the Court, and that it be referred to the Coal, Corn, and Finance Committee to provide the necessary amount out of any funds or by any means they may consider most advisable. Mr. Colls opposed the project on the ground of the inexpediency of undertaking such a work at present, demurring to it at every point for the reason mostly of the enormous extravagance which it involved. The amendment having been seconded by Mr. Gover, the debate was continued by Mr. Waddell, Mr. Lawley, Mr. Deputy Fry, and Mr. Deputy Shephard, and at the rising of the Court, on the motion of Mr. Dresser Rogers, it stood adjourned.

REBUILDING OF FOUNDERS' HALL.

The materials of Founders' Hall, in St. Swithin's-lane, in the City, were last week sold by auction, and the building is now in course of demolition preparatory to a new hall being erected on the site. The old structure is a plain brick building, devoid of any architectural pretensions, but we understand it is to be replaced by a handsome and costly new edifice in stone and polished granite, uniform in design and execution with the several new buildings which are from time to time being erected in the City and other parts of the metropolis.

AS AGAINST THE USE OF GRANITE.

Sir,—Under the above heading, "Feldspar" states in your paper some of the objections which he thinks would apply to the use of polished granite as a building material. I think they all show that he has given a very limited consideration to a subject which has been pretty fully discussed in your pages.*

He asks, "What would be the effect if the sunny side of Oxford-street consisted solely of houses with polished fronts, which, *equally with glass*, would reflect the sun's rays, and so become very painful objects to behold?"

The question at once suggests the answer,—its refutation.

Did "Feldspar" or any one else ever feel the plate-glass shop-fronts on the sunny side of Oxford-street "painful to behold"? For my own part I have passed a large part of my life in London, and never observed any refraction. If pain from this cause were felt, we should see one side of the street deserted,—which we do not. Is not "Feldspar" trusting to his imagination?

The fact is, that the bright surface of glass, granite, or tiles, is only observable when the sun's rays are at a certain angle to the building in which these materials are employed.

I live in the neighbourhood of the Crystal Palace, and have seen it in sunny weather at all hours of the day, but never saw more than a few bright spots on the ridge-and-furrow roof, a peculiar structure well calculated to receive the sun's rays. Elsewhere, there was no indication of the bright surface of the glass of the immense building.

I think, therefore, that the use of *polished* granite as a building material would be quite unobjectionable; and if granite is used at all, the process of polishing is necessary to develope its beauty, and to secure a perfectly smooth surface, so essential in the sooty atmosphere of London.

"Feldspar's" remarks about the non-endurance of the polish are refuted by many examples. For brevity let one suffice. The Crimean Monument at the front of Westminster Abbey was erected twenty years ago. The polished red granite shaft is as clean, bright, and perfect as on the day the workmen left it; not so the stonework, which is a melancholy mass of fuliginous deposit.

As regards the effect of excessive heat upon granite, your correspondent (page 137, *ante*) who investigated the matter at Chicago and New York, states that the prevalent unfavourable opinion in this respect is erroneous. Doubtless the truth is that granite, like stone and other materials, will only withstand a certain degree of heat, but in discussing this point I have already endeavoured to show that granite, as I propose it to be used, is only likely to be applied to our more important public buildings, and that these—if we except theatres—are not very subject to uncontrollable fires. Fires are, of course, internal, and granite or stone ashlar is a mere external skin to thick walls. The ashlar is therefore much protected, of whatever material it may be.

It is scarcely necessary to notice "Feldspar's" quibble about words. The question under consideration being the use of two similar materials, it was necessary to use terms that would keep the distinction clear.

H. T.

* See vol. xxxiv., p. 1221; and pp. 68 and 137, *ante*.

Re NATIONAL MONUMENTS BILL.

Sir,—I thank "C. C." for his letter in the *Builder* of 21st April last, where he has done me justice, but the rights of the Tolmen story are not properly understood by "C. C." and many others. In or about 1844 the freeholder was in want of money, and offered to sell the Tolmen with good ground all round the same, and with right of way through the estate to the rock, for 200*l.*, and was willing to entertain a lower offer if made. He had on two occasions spoken to Sir Richard Vivian, of Trelowarren, in the parish of Morgan, and then by way of creating an interest, he appointed a day for the public throwing down of this huge rock. Numbers flocked to see the sight, and the beer-barrel was in requisition, and yet, notwithstanding the numerous assembly, the owner put off the day indefinitely.

From what one of the family has now told me I believe 100*l.* put down would have secured the purchase, and he tells me that Sir C. Lemon never to his knowledge made any reasonable offer for the rock, the value of which (as a key to hundreds of thousands of feet of beautiful grey granite) is not easily estimated.

Wm. Hosken, Granite Works, Penryn.

POTTERY AND SCULPTURE.

Mr. James Hughes writes:—"I read with much interest Mr. Gladstone's remarks on the potters' art at the London Institution. Only a few days previously the application of porcelain to the production of models of the human figure was brought under my notice, as chairman of the committee of the 'George Moore Memorial Buildings,' by our architect, Mr. Knightley, and instructions have been given to prepare from his designs a bust of my late partner, and a bas relief in Della-Robbia ware, which will be placed in front of the new infirmary now erecting in connexion with the Commercial Travellers' Schools at Pinner."

We may add to this statement that many months ago the committee for raising a testimonial for Sir Henry Cole, determined that the tangible memorial of this testimonial should be executed in Della-Robbia ware, and that this has been executed under the able direction of Mr. Moody, and only waits the completion of a portrait of Sir Henry in mosaic, which forms part of the memorial, to be set up wherever the authorities may determine.

ARCHÆOLOGICAL SOCIETIES.

Society of Antiquaries of Scotland.—At a meeting of this society on the 12th inst., the first paper, entitled "Roslin Chapel: its Builders, Architect, and Construction," was read by Mr. Andrew Kerr, architect, F.S.A. Scot., formerly of her Majesty's Board of Works. Having briefly sketched the prominent incidents in the life of Sir William St. Clair, the founder of the Collegiate Church of Rosslyn, Mr. Kerr referred to the common statement that it was erected by foreign workmen, and came to the conclusion that Sir William, who was an accomplished man and a liberal patron of the arts, was himself the architect of the building, which was in process during thirty-four years of his life, and was not completed at his death. Mr. Kerr exhibited a drawing of the inscription along the top of the north clearstory wall, which gives the initial letters of the following sentence:—"William Lord Sinclair fundit yis College ye zeir of God MCCCCL." Having examined the architectural features of the building in detail, Mr. Kerr showed that the entire plan was almost a repetition of the choir of Glasgow Cathedral, and exhibited ground-plans and views of the retro-choir in both buildings to demonstrate the resemblance. The lower chapel, though latterly used as a sacristy, appears to have been originally designed for a distinct chapel dedicated to the Virgin. The paper concluded with a summary of the characteristic architectural features of the building. The next paper was entitled "Notes on the Secular and Ecclesiastical Antiquities of Culross," by Rev. Arthur W. Hallen, M.A., F.S.A. Scot., in which he gave a detailed account of the minor antiquities of Culross.

Wilts Archæological Society.—Warminster has been selected by the committee of this society as the centre for this year's meeting.

Cumberland and Westmoreland Antiquarian Society.—The annual council meeting of this society was held on the 15th inst. at Penrith, when the following meetings were arranged:—Gilsland, for Bewcastle, June 21st and 22nd; Shap and Furness Abbeys, for some time in July or August, to meet the Durham and Northumberland Society; and a winter meeting at Whitehaven.

COMPETITIONS.

Manchester Wholesale Fish Market.—Some five or six weeks ago the Markets Committee of the Corporation of Manchester invited four firms of local architects:—Messrs. Maugnall & Littlewoods, Messrs. Barker & Ellis, Mr. William Dawes, and Messrs. Speakman & Hickson—to send in designs for the proposed extension of the wholesale fish-market at Shudehill. We learn from the *Manchester Courier* that at a special meeting on the 17th inst., the committee unanimously decided to recommend the City Council to select one of two plans prepared in a Continental style of architecture by Messrs. Maugnall & Littlewoods, of Brown-street. The plot of land purchased for the extension of the wholesale fish-market covers an area of about 2,000 square yards, and is bounded by Thomas-street, New High-street, Stable-street, and the existing market. By the plan selected, it is proposed to lay out that portion of the plot fronting Thomas-street for shops and offices. This building, which would be three stories high, would be 149 ft. in length, 30 ft. in depth, and would cover an area of 500 square yards, leaving a net area for the extension of the market of about 1,500 square yards. With this addition the market will cover a total area of about 4,000 square yards. The design recommended for adoption shows the roof of the proposed new market constructed in two bays, each 45 ft. wide, and supported by cast iron columns similar in design to those in the existing market. It is estimated that the cost of the erection of the market in accordance with this design would be about 15,500*l.*

Bristol Cathedral Restoration.—The Dean of Bristol has made a further appeal to the public on the subject of the Cathedral Completion Fund, and as an inducement and justification almost promises that the nave will be opened in October. At one time it was expected that the event would take place in July. Towards finishing so far, the Chapter have 1,717*l.* in their hands, and have entered into contracts for 500*l.* more towards works needed to place the new part in such a state that the doors can be opened to the public at the date mentioned.

THE LATE SIR M. DIGBY WYATT, ARCHITECT.

WE record with deep and unaffected regret the death of Sir Matthew Digby Wyatt, which took place on the 21st inst., at Dimlands, Cowbridge, Glamorganshire, in the fifty-fifth year of his age. We will in our next give an outline of his useful career, prematurely cut short by the long illness which has ended in his death. Many of our readers, on seeing this announcement of his decease, will remember early days of struggle and triumph, and murmur affectionately with us, "Poor Digby!"

MASTERS AND MEN.

Buxton.—On the 12th inst. the joiners of Buxton went out on strike for an advance of wages. The men gave notice that unless an advance of 3s. per week was given they would cease work. The masters agreed to offer them the same price as is now being paid, and to reduce the number of hours by one. This offer was rejected by the men.

Halifax.—The *Halifax Guardian* understands that the firm of Messrs. Bedworth, Horton-street, builders, have advanced their joiners' wages from 7½d. to 8½d. per hour. The advance is five weeks before the men expected it.

Kirkwall.—The Kirkwall master joiners have offered the men ½d. per hour, the men having asked for 1d.

St. Helen's.—The strike of the joiners at St. Helen's still continues. At a meeting of the Master Builders' Association it was resolved:—"That we still adhere to the offer made to the operative joiners, viz., 8½d. per hour for fifty-four hours a week, and 6d. per week for lodging-money when working out of town; and as these are the terms agreed to by the Liverpool employers and their workmen, which came into operation on the 1st of May inst.,—with this exception, the Liverpool men work fifty-five hours per week, while the St. Helen's men work only fifty-four hours weekly,—we do not feel justified in giving more."

Portsmouth.—The Portsmouth painters have struck work, in consequence of the masters having refused to entertain the demand which the men made for an advance from 5½d. to 6½d. per hour. At a meeting of the men, one of them expressed an opinion that if the demand had been couched in more respectful terms the employers would have met them half-way.

Edinburgh.—The strike of painters here still continues. At a meeting of the Master Painters' Association, reports were presented showing that many of the workmen had resumed work with their former employers, and that the vacancies still unoccupied were likely to be filled shortly by operatives from London and other towns in the south.

York.—A dispute has arisen between a number of the plasterers and their employers. On the 19th of March the men gave a general notice, terminating on the 14th inst., that they should require an advance in their wages of 1d. per hour, the price they were then receiving being 7½d. per hour. With the exception of the men in one shop, those connected with the society had the full increase granted, and in the other case half the amount asked for was given. A meeting of the local lodge was subsequently held, and it was agreed by the majority that they should turn out for the 1d. An application had been made to the Executive Council of the National Association of Operative Plasterers at Birmingham for the usual strike allowance, but as the men had not given the employers three months' notice they refused to sanction a strike. The minority of the men in York, six in number, refused to turn out without the strike-money, and have continued at work at the ½d. advance. The men who did strike immediately found employment at the new station.

Bromsgrove.—In reference to the strike in the nail trade, we note that at a meeting of the masters it has been unanimously resolved that all men who are willing to work at the 10 per cent. reduction from the price list of 1875 should be allowed to do so for one month, during which time a revised list of prices will be prepared in accordance with the requirements of the trade. A great many of the men are anxious to commence work, but have been unable to do so because the masters refused to supply them with iron. Those who are now willing to work at the reduction can at once commence.

Manchester.—A large and influential meeting of the employers of the carpenters and joiners of Manchester, representing upwards of 120 firms, was held on the 15th inst. It was reported that not a single member of the Masters' Association had given the advance to the men, but that they had as a body adhered to their original resolution, and were unanimously of opinion that the men would come back to their work eventually at 8½d. per hour. It was resolved not to call another meeting of the employers until after this week. The workmen still appear determined not to commence work on the masters' terms. They have had offers of support from the joiners in many towns in the country. A meeting for that purpose was held on the 15th inst. in Leeds, and meetings were announced to take place on Thursday in Liverpool and London. It is eleven years since a general strike took place in Manchester and district, consequently the lodges have large funds on hand, which the men declare they will spend rather than accept the terms of the masters. Can nothing be done to prevent the waste?

THE ARTISANS' AND LABOURERS' DWELLINGS (TORRENS'S) ACT.

MACKLEY *v.* VESTRY OF SHOREDITCH.

THIS was an appeal, heard at the Middlesex Sessions, before Mr. Edlin, Q.C., and a Bench of magistrates. There was an array of medical officers, surveyors, and tenants, as witnesses, and a model of the houses in question and surroundings, prepared by Mr. Robert Walker, of King's Arms-yard, the Vestry's surveyor in the case, was exhibited.

The premises in question consist of one house in Boundary-street, and eleven small houses in Ann's-place, a court in Boundary street, near to Shoreditch Church. The order of the Vestry was that, these houses, being dangerous to health and unfit for habitation, and incapable of being rendered habitable by structural alterations, should be demolished. The appellant traversed these allegations by asserting that the premises were not, at the time of making the order, in such a state as to be unfit for habitation, and that if they were so, the defects could be remedied by structural alterations.

After evidence, a view of the site, and long conference, the Court said the following arrangement had been arrived at, which, for convenience sake, had been reduced to writing:—

"The appeal to be adjourned until the October Session for appeals, in order to enable the appellant in the meanwhile to make such alterations and repairs, structural or otherwise, as may be necessary for rendering the several premises fit for human habitation. The question of the sufficiency of such alterations and repairs to be then determined by the Court, either upon view only, or upon view and evidence to be given thereupon; each party to bear his own costs up to the present time, but the order in this respect to be subject, nevertheless, to the Court being satisfied that such alterations and repairs are sufficiently done, the Court reserving liberty to require the appellant to pay the respondent's costs in the event of the alterations and repairs proving in their opinion insufficient for the alleged purpose. The Vestry are to render all the assistance in their power for the purpose of enabling the appellant to drain the premises into the public sewers."

The Assistant Judge also stated that the Court were of opinion that no time should be lost in carrying out the contemplated improvements.

This is only the third case in the metropolis that has been before the Quarter Sessions on appeal since the passing of the Act in 1868. One in 1872 at the Surrey Sessions resulted in the order of the Vestry for demolition being discharged, and an order for repairs made without costs; and one in St. Giles before the Middlesex Sessions last year being discharged with costs.

HARD ON THE VICAR.

AT Southwark, the Rev. F. G. Lee, the vicar of All Saints' Church, York-street, Lambeth, was summoned before Mr. Partridge, by Mr. Fry, on behalf of the Metropolitan Board of Works, to show cause why he, as the owner of the said church, refused to pay the sum of 105*l.* 19s. 5d., moneys expended by the Metropolitan Board of Works in the repairs of the spire of the church, which had been proved to be in a dangerous condition. Mr. Biron prosecuted.

It appeared that in the early part of May last, one of the pinnacles connected with the spire fell, and injured a person severely. The dangerous state of the spire coming to the notice of the Metropolitan Board of Works, Dr. Lee was summoned to this court, and on the 30th an order was made upon the reverend gentleman to put a hoarding round the bottom of the structure. The defendant contended at the time that he was not liable, as it was the duty of the churchwardens to keep the church in repair. The Board of Works, however, performed all the work, and now they came before the magistrate to make an order on defendant to pay the above sum as "owner" of the structure. Mr. Partridge, in giving his judgment, said he had carefully considered all the points urged on both sides, and he came to the decision that the defendant was the "owner" within the meaning of the Act, and he must make the order upon him. He, however, could not issue any distress, as the remedy lay with the Metropolitan Board of Works. He sympathised with the rev. gentleman, and he hoped that the proceedings would be of some good by causing the parishioners and others to come forward and assist him to keep the church in repair.

CASE UNDER THE MASTERS AND WORKMEN ACT.

ALEXANDER V. BORRODAILE.

AT the Darlington Borough Police Court, recently, Mr. Robert Borrodaile, builder and stonemason, was summoned by William Alexander for the non-payment of 6*l.* 2*s.* 10½*d.*

Plaintiff stated that he was a letter-cutter at High Felling. The defendant sent to a friend of his named Phillips at Newcastle to do some lettering, but as he could not go himself he suggested that he (the plaintiff) should take the letter and get the work. He did so, and the defendant accepted his services. He charged the defendant 1*s.* a dozen for the letters on freestone, 2*s.* on marble, and for carving and gilding a dove in marble 3*s.*, and for cutting letters 3 in. long 1½*d.* an inch. Defendant had paid him 8*l.* 11*s.*, leaving a balance of 6*l.* 2*s.* 10½*d.* Plaintiff called Phillips to prove that he had charged a reasonable price.

Defendant stated that he sent a letter to Phillips naming the amount he was willing to pay for lettering, and he was to come if he could upon those terms. This letter, however, Phillips denied receiving. Defendant then called his brother, who stated that all he paid was 9*d.* for lettering in freestone, 1*s.* for marble, and 2*s.* for granite, and that the plaintiff's charge was an exorbitant one.

The Bench, after hearing the evidence, gave judgment for the plaintiff, with costs.

DRAINAGE DISPUTE.

NEAVE AND OTHERS *v.* CORPORATION OF WISBECH.

THIS was a case heard on the 14th inst. before Mr. Justice Hawkins and a common jury at the Guildhall, London.

The action was brought by plaintiffs, as contractors for certain drainage for the Urban Sanitary Authority of Wisbech, to recover about 900*l.* for work done.

The defendant paid about 400*l.* into court, and pleaded that nothing further was due, owing to plaintiffs' failure to carry out their contract, which stipulated that if any injury was done to the property of a third party compensation should be paid by the contractors.

Plaintiffs, however, alleged that the injury referred to resulted from obeying an order of defendants' engineer, which was a divergence from the original contract.

This was denied by defendants, who, it appeared, had been compelled to pay 500*l.* compensation.

The Judge, immediately after the formal opening of the case, suggested that a more convenient mode of trial might be adopted than that of a judge and jury.

Counsel acquiesced, and mentioned that twelve extensive plans would have to be used and scientific witnesses called on both sides.

Ultimately it was arranged that a verdict should be entered for the plaintiffs for the amount claimed, subject to a reference with power to state a case and raise any question of law.

PARTY WALLS TO MODERN SUBURBAN HOUSES.

SIR,—The necessity for some precaution in the construction of "Party-walls," as pointed out by your correspondent, Wm. Percy Trueman, is self-evident. The wilful disregard of the provisions of the Metropolitan Building Act, evinced by speculating builders and others, is mainly owing to the apathy displayed by district surveyors.

I have known cases where servants have held animated discussions, and made a friendly exchange of family secrets, by simply removing a brick from the back of the kitchen range.

I am acquainted with an estate on the outskirts of London, where a very ingenious method is adopted to hoodwink the district surveyor. The chimney-breasts are built with scanty projection, inadequate to receive either a range or stove; but, sir, such obstacles, when they confront genius, are soon surmounted. The Act stipulates that chimney-backs shall be 9 in. thick. So they are in this case. The backs are built with three thicknesses of brick on edge, the centre only being laid in mortar (?); the two outer shells in sand; which latter are removed prior to the setting of the stoves; so that on the next visit of the surveyor all is apparently as it should be, and he utters a growl of satisfaction, little thinking, however, that in almost every case the back-to-back fire-openings have but a thin partition 3 in. thick. This was related to me by the clerk of works, and treated by him as a capital joke. Such an instance as this clearly shows that greater care is necessary in enforcing the strict observance of the Building Act.

J. G. B.

*** We should suppose this was a quite exceptional case. The district surveyors with whom we are acquainted seem quite as sharp as our correspondent.

Lichfield Cathedral.—It is stated that the probable cost of the restoration of the west front of this cathedral is estimated at slightly over 30,000*l.*, exclusive of the figures, which may cost another 5,000*l.*, and that it is not at all improbable that the restoration will be undertaken and accomplished in sections.

BRAMHALL HALL.

SIR,—In your paper some weeks since appeared a notice that Bramhall Hall, near Stockport, had been purchased by a society, and that the estate would be built upon.

As this is one of those fine old mansions which are the glory of England, perhaps some of your readers may be able through the medium of the *Builder* to give some information as to its probable destination; for it is to be hoped that in such a wealthy district as that in which it is situated such a fine example of the art, taste, and skill of our ancestors will not be allowed to suffer destruction or modernisation, but that it may (like Aston Hall in this locality) be carefully preserved, and, if not inhabited, be made a museum or receptacle for art-treasures by the citizens of Manchester and its vicinity.

ALLEN E. EVERITT.

Books Received.

The Architect's Guide. By FREDERICK ROGERS, Architect. Crosby Lockwood & Co.

THIS is an addition to the number of text-books for architects and architectural students, which contains a good deal of information put together in a rather irregular fashion; but, as in the case of some previous publications of the same kind that we have noticed at different times, it is rather difficult to say for what class of readers the book is really adapted. The title, "The Architect's Guide," implies, we need hardly observe, a very great deal; more, certainly, than this book furnishes us with, since it only gives the usual outlines of information as to various forms of construction, materials, &c., and refers a good deal to other and standard works for further information. Any architect who wished to refer to books for information on some difficult point would, of course, go to one of those standard works at once, and would not require a smaller book to tell him to do so. What an architect in practice wants as a *vade mecum* is something smaller, more practical, and more comprehensive than this; something in the nature of a pocket-book of formulæ and memoranda; of which class of publication there are one or two admirable specimens to be had. The book before us appears to give memoranda of this kind pretty completely, but combined with a great deal else which makes it much larger than a pocket-book, and therefore less convenient; and the more general information is what an architect qualified to practise would have already in his mind as far as ordinary problems are concerned; and for any information beyond ordinary problems the book is not full or minute enough. As a first practical book for a student beginning architecture it might be very useful. For an architect's reference-book it either goes too far or not far enough. It seems desirable to call attention to this, as there are certainly too many books of this class brought out, and there is really no room now for any but a very good one, with a very definite and strictly followed out plan.

VARIORUM.

MR. MURRAY has added to his "Handbook to the Cathedrals of England" a little volume devoted to St. Alban's. Intending tourists may be glad to hear of this. We will look at it critically presently.——Of the "Saturday Half-holiday Guide" a new edition (the ninth) has been issued. Through it every one may become acquainted with the principal attractions presented by the London parks and recreation grounds, sports, natural history, historical sites, antiquities, &c., and be able to make the best of a Saturday half-holiday. Bradshaw's Railway, Station, and Guide Map to the environs of London and twenty-five miles round accompanies the book, and all for a few pence.——"The Chairman's Handbook" will prove a useful help to many (Knight & Co. are the publishers). The fact that it is written by Mr. Reginald Palgrave, of the House of Commons, is an assurance that it may be depended on.——The *Leisure Hour* talks thus of the Stationers' Company:—"The Stationers' Company was originally a voluntary association of publishers, with their journeymen and apprentices. With very slight exceptions, it has consisted, and still consists, of those who have in some way to do with the production of books. Unlike most of the City companies, its name, even to the present day, is not misleading; for, out of the 312 liverymen now existing, 300 are 'in the trade.' According to the authority of Mr. Nichol, the stationers formed themselves into a guild as early as 1403. This date is confirmed by a petition emanating from the craft of writers, which was in all probability identical, or very nearly associated, with that of the stationers. Their subsequent history can be pretty readily traced. On the 4th of May, 1556, they became a royally incorporated fellowship, and in the year 1560 they were created one of the forty City companies. The book trade formed in these years a close, compact monopoly; none could take part in it but those who had been apprenticed to a recognised member of the craft, and each apprentice paid sixpence to the Stationers' Company on being registered. It is noticeable even in our days of free-trade that books tend to classify themselves according to the names of the publishing firms on their title-pages. But what is now matter of choice and convenience was a thing of compulsion three centuries since. Publishers had their monopolies of certain classes of books, which could be by no legal means infringed. The name of the publisher was then as now, a clue to the nature of the book, though for a different reason. In the case of cheap reading and spelling books, this monopoly was sometimes infringed by means of secret presses. Such books could be thrown upon the market by means of travelling pedlars; and as they were not distributed through the usual channels, there was time to make a profit before the remainders were seized and confiscated. The barriers, however, to the free diffusion of knowledge were many and serious."

Miscellanea.

British Archæological Association.—At the twelfth meeting of the session, the Rev. S. M. Mayhew in the chair, a large collection of Roman remains, recently found at Sittingbourne, Kent, were exhibited and described, together with other interesting antiquities. A communication was made by Mr. C. H. Talbot, of Lacock Abbey, who minutely described the Saxon arches of Britford Church, recently opened, and which from their being formed with mortar containing pounded brick, after the Roman manner, had been declared to be of Roman date. The Rev. Canon Ridgway read a paper on the "Temple and Worship of Baal, with reference to similar Remains in England." The lecturer traced the rise of the worship of Baal in the East, and its spread to contiguous countries, and went over the indications of its former presence in Great Britain, by reference to the names of places, the Baal fires, and numerous rites. Mr. G. Wright, F.S.A., announced that the next congress would be held at Llangollen, and that visits would also be made to St. Asaph, Denby, Valle Crucis Abbey, and other places of interest in this charming locality. The names of many local supporters were announced and agreed to. We will give particulars in our next.

Payment for "Quantities" to Borough Surveyor.—The *Hampshire Advertiser* reports a somewhat unseemly squabble at a meeting of the Southampton Town Council on the 16th inst. The Council was discussing a report of the Special and General Works Committee as to the new sewerage works at Portswood, when Mr. Parmenter said he saw that in the bills of quantities the surveyor was to have two per cent. on them, and that would amount to 400*l.*; and would the town have to pay that? Mr. Lemon (the borough surveyor) wished to know whether Mr. Parmenter intended to say that he took the 400*l.* and put it into his pocket? Mr. Parmenter: I mean what I say. I see that in the contract two per cent. is allowed for getting out the bills of quantities, and that amounts to something like 400*l.* Mr. Hamilton Dunlop rose to order, as it was undignified to allow an argument to take place between a member of the Council and an official. He hoped it would not be pursued any further. Mr. Parmenter argued that he had a right to put the question, and Mr. G. Perkins explained that it was arranged among the builders that they should allow two per cent. to the person who got out the bills of quantities. It had nothing whatever to do with their borough surveyor.

St. John's Hospital, Ripon.—At a meeting of the trustees for the above charity, it has been decided to erect a block of six almshouses on the site of the present St. John's Chapel, in Bondgate, and they will be commenced forthwith. The houses will be built of clamp bricks, with red and blue Staffordshire ornamental bricks for string-courses and window-heads. The roofs will be covered with plain tiles, and the gables and porches will be fitted in with half-timbered work. Mr. R. H. Broderick, of Ripon, is the architect.

Technical Education. — On Saturday a meeting was held as arranged at the Artisans' Institute, Castle-street, St. Martin's-lane, to hear the opinions of various skilled workmen on the subject of "Technical Education: what is needed to make it practical and thoroughly efficient." Mr. Mundella, M.P., was announced to take the chair, but he was absent from indisposition, as were other gentlemen, including Alderman Sir S. H. Waterlow, M.P., Mr. Samuel Morley, M.P., and Mr. Thomas Twining. Members of several City guilds, including the Dyers, Drapers, Clothworkers, Goldsmiths, and Carpenters, were present, as well as Major Donnelly, R.E, of the Science and Art Department. The Rev. H. Solly occupied the chair, and read a letter from Mr. Twining. Several addresses were delivered, and ultimately Mr. Edward Watherston moved the following:—"That this meeting is of opinion that the statements made by the workmen now present are well worthy of public attention, and that energetic efforts should be made to bring the subject of technical education prominently forward." Mr. Savage seconded the motion, which was carried unanimously. A committee was formed to use efforts with the view of requesting the President of the Council of Education to receive a deputation for the purpose of laying before his Grace the advantage of giving every facility to the furtherance of technology.

Orange Peel on Pavements.—The dangerous nuisance caused by the culpable thoughtlessness of those who throw orange-peel on the public footpaths came under the notice of the Court of Common Council on the 17th inst., when Mr. Boor moved that it be referred to the Police Committee to consider what steps could be taken to prevent the dangerous practice. Mr. T. Fricker said it was absurd for the Court of Common Council to trouble themselves upon such a subject. How were they to prevent people from throwing orange-peel on the pavement? Were they to pass a law to compel them to swallow the peel? The matter had already been discussed by the Commissioners of Sewers, and it appeared to be clear that nothing could be done to prevent the practice. Mr. E. D. Rogers inquired if the motion would include lemon-peel. The motion of Mr. Boor was ultimately agreed to. That the evil is not one that ought to be pooh-poohed by the small witticisms of two Common Councilmen, the records of our London hospitals testify. Whether municipal authority can do much to prevent it or not, something might be done if everybody who saw a piece of orange-peel on the pavement would kick it into the gutter.

Liability of Employers for Accidents.—Mr. Justice Brett was examined before the Select Committee of the House of Commons on this subject on the 15th inst., and, in answer to Mr. Lowe, gave an exposition of his views as to the state of the law upon the matter in the following terms:—Injury to workmen arises generally either from the intrinsic danger of the employment or work to be done, or from some defect of machinery or plant, or from want of skill or negligence of another workman, or from the negligence of the workman himself. In the first case, where injury has arisen from the intrinsic nature of the employment, there is no remedy by law; where it arises from defects in the machinery, the master is not liable unless he was aware of the defect and the servant was not. In the case of want of skill or negligence, whether by the workman himself or his fellow-workman, there is no liability on the part of the master. Mr. Justice Brett submitted his opinion that the exception of the master's liability in respect of accidents arising through the negligence of one workman to another was founded upon a wrong application of the principle of implied contract.

Scarborough Aquarium.—The new aquarium at Scarborough was opened on Whit-Monday. The building, like that at Brighton, is underground, and designed by the same architect, Mr. E. Birch. The works have been executed by Messrs. Kirk & Parry, of Sleaford, at a cost of 100,000*l*. The dimensions are 500 ft. by 250 ft.; the style of the entrance court, and reading and dining rooms is described as "Mohammedan-Hindoo"; the brick arched corridors between the side tanks are Arabesque; and at the shore end is a representation of the caves of Elephanta; the orchestra is placed in a romantic rockery, with shrubs and cascades. The tanks are twenty-six in number, and vary from 12 ft. to 36 ft. square.

Builders' Benevolent Institution. — An election of pensioners on the funds of this Institution took place on Thursday at Willis's Rooms, St. James's. Mr. George Plucknett, treasurer, in the chair. There were vacancies for three pensioners, two men and one woman, and there were six candidates, viz.:—Francis Davey, Hoxton, aged 71 (first application); Jeremiah Taylor, Nunhead, 68 (first application); Susannah Webb, Little Essex-street, Kingsland-road, 60 (third application); Elizabeth Thorn, Acton, 68 (second application); Ann Noyes, Dalston, 75 (second application); and Rebecca Brown, Jamaica-road, Bermondsey, 67 (first application). The result of the poling was declared by the chairman to be as follows:—Davey, 61; Taylor, 90; Webb, 3,023; Thorn, 3,761; Noyes, 925; and Brown, 3,551 (including 130 votes due to the candidate by reason of her husband having been a subscriber to the Institution). The chairman therefore declared the successful candidates to be Francis Davey, Jeremiah Taylor, and Elizabeth Thorn. Votes of thanks to the secretaries (Messrs. Thomas Stirling and Matthew Hall) and chairman brought the proceedings to a close.

The King of the Belgians' Prize.—Some of the members of the Common Council were much "exercised" last week because the Society of Arts sent them a letter stating that the King of the Belgians had offered a prize of a silver cup of the value of 5,000 francs, to be awarded at the next International Sanitary Congress to that municipal authority or private association which shall by the improvement of the dwellings of the wage classes effect the greatest reduction of their death-rate at the lowest cost. Deputy Lowman Taylor said it was very kind of the King of the Belgians to offer a prize for the purpose mentioned, but he did not see why the King of the Belgians or the Society of Arts should interfere with the municipality of London. The municipality need not compete for it unless they like, but surely it was only courteous on the part of the Society of Arts to let the Common Council know that such an offer had been made. And so the majority of the Common Council thought, and they referred the letter to the Improvement Committee.

A Protracted Law Case.—The protracted litigation between Mr. C. M. Campbell, M.P., and Mr. M. D. Hollins seems in a fair way of coming to a close. The House of Lords has rejected Mr. Campbell's appeal against the injunction of Vice-Chancellor Malins, on the ground that the appellant had issued an advertisement which was likely to mislead the public into the belief that he had succeeded to the encaustic tile business of Mr. Herbert Minton, or rather of the firm of Minton, Hollins, & Co. Not having been sufficiently explicit in this regard, judgment was given against Mr. Campbell, and he was ordered to pay the costs. Three of the five law lords who heard the appeal gave expression, informally, to the opinion that there was nothing in his agreement with Mr. Hollins which prevented Mr. Campbell from producing encaustic tiles like those of Mr. Hollins, provided he made it perfectly clear to the public that he was making them on his own account, and not as the successor of Mr. Herbert Minton, or Minton, Hollins, & Co.

The Birmingham Improvements.—The *Birmingham Post* understands that the Improvement Committee propose, at as early a period as possible, to begin their work by opening up the sanitary area at the Aston-street end of Lichfield-street, and to continue it thence towards the centre of the district, so that when the new street improvement is entered up a complete thoroughfare will be at once rendered available. The committee are also arranging for the erection of artisans' dwellings on a large central block of land very suitable for the purpose. It is necessary to make such a provision, as in some instances dwellings in the neighbourhood of London 'Prentice-street which were unfit for habitation have been cleared of their tenants. In many other instances the buildings have been improved and put in a condition of temporary repair, so that the population may not be displaced until adequate dwellings are provided elsewhere.

The late Professor Willis.—The Museums and Lecture-rooms Syndicate of the University of Cambridge, in their eleventh annual report to the Senate, state that the collection of models, instruments, and tools belonging to the late Professor Willis has been re-arranged, repaired, and augmented, by the personal energy of Professor Stuart, at a trifling cost to the University.

The New Hull Botanic Garden. — At a preliminary meeting, with a view to the formation of the above company, held at the Town-hall, the following resolutions were proposed, and carried unanimously:—"1. That a company be formed, called 'The Hull Botanic Garden Company (Limited),' and that the prospectus thereof, as read to the meeting, be printed and circulated prior to a public meeting to be held at the Town-hall, at an early date. 2. That the solicitors prepare the articles of association, obtain the signatures of the necessary number of shareholders thereto, and file the same. 3. That the gentlemen present at the meeting be a committee, with power to add to their number, to carry out the above resolutions." We understand that capital to the extent of nearly 6,000*l*. will be available for the new garden from the old, in addition to which a considerable amount of share capital was promised at the meeting. A bird's-eye view of the new garden and its surrounding villas, prepared by Mr. Hagen, architect, of Hull, was exhibited in the room.

A Sheffield Worthy.—We lately mentioned the presentation of a testimonial to Mr. Alderman Bragge, of Sheffield, who will be known to many for his labours in connexion with the local school of art. "Spectator in Hallamshire," in the *Sheffield Independent*, says:—"Sheffield is so far from being rich in men of culture, refined taste, and public spirit, that it can ill afford to lose Mr. Alderman Bragge. I had hoped we should find him take root among us, and that he would be a means of infusing into society here a more decided love than has yet appeared for those various branches of fine art he has so earnestly cultivated. Mr. Bragge has made his mark among us, and his good works will live and produce fruit hereafter. Still it is a misfortune that we are deprived of the benefit of that growing influence he might have exerted among us."

Darlington and the Artisans' Dwellings Act.—A correspondent of the *Darlington and Stockton Times* expresses his surprise at the indifference of the Darlington Corporation to the application of Mr. Cross's Act to that town. "If ever," he says, "there was a place where vice and filth wanted rooting out, it is in this town, among the old tumble-down houses that do duty for human habitations. You have only to take a radius of, say, a quarter of a mile from the market-place, and you find hundreds of houses up narrow yards all back to back. The air of heaven never blows through them, and the light and sun cannot get near them. The ash-pits are within a few feet of the door and windows, and in some cases actually resting on the wall of the house. The fire of the room draws in the foul air for its sustenance, the wet from the rotten roofs, and bad drainage keeps the walls and floors in a perpetual state of damp."

The Doom of St. Werburgh's, Bristol.—We learn from the *Bristol Times* that on the 12th inst. a resolution was adopted, at a meeting of the vestry and churchwardens of this parish, that as more than a year had elapsed without the Corporation finally accepting their offer of the site of the church and tower, the matter between the two bodies be now considered at an end, as the value of the property in the meantime has so increased that the sellers have been tendered 2,000*l*. more for the site than the Corporation was asked to pay for it. The tender (our contemporary believes) came from the London and South-Western Bank. If a bargain is struck by the parish with the Bank, the Corporation will have to purchase so much of the site as is needed for the purposes of street widening. No other body save the Corporation was empowered to preserve the tower, and the Corporation on the previous Tuesday determined not to preserve it.

Street Improvements in Dundee. — A return of the expenses incurred in connexion with the Dundee street improvements up to the 31st of December last has been submitted to the Police Commissioners. The sum paid amounted to 320,327*l*, including price paid for properties, 312,571*l*. On the other side of the account it appears that 106,758*l*. have been obtained for building-lots sold and feued. The expenses incurred by arbitrations amounted to 9,185*l*.

Sewerage Works in Chelsea.—The Vestry of this parish unanimously resolved on the 22nd inst. to reconstruct the sewers in the streets, as recommended by Mr. G. H. Stayton, C.E., their surveyor, and to apply to the Metropolitan Board of Works for a loan of 10,000*l*. for the execution of the works.

The Canal Boats Bill.—The Bill introduced by Mr. Sclater-Booth, Mr. Cross, and Mr. Salt "To provide for the registration and regulation of canal boats used as dwellings," proposes to enact that all boats so used are to be registered, and that regulations shall be made by the registration authority for registration, for fixing the number of persons allowed to dwell in the boats, for promoting cleanliness, and preventing infectious disease, and for the education of children dwelling in the boats. The registration authority which is to carry out the provisions of the Act is to be, in the port of London, the port sanitary authority; in other parts of London, the vestries and district boards; and in urban sanitary districts not under the jurisdiction of the port sanitary authority, the urban sanitary authority of the district.

"A Prohibited Picture."—"The Triumph of Order," by Ernest Pichio, a picture representing the execution of Communists in the Cemetery of Père la Chaise by Government troops, is now on view in the London Stereoscopic Company's Gallery, Regent-street. The Minister and the Director of the Fine Arts refused to have this blood-stained canvas submitted to the jury of the French *Salon*, alleging that it was of a nature to stir political passions; and we do not wonder. If this ghastly picture tells a true story, and extracts from the *Daily News* are quoted in proof of it, the "Party of Order" would seem to have little to distinguish them from the Communists.

Business Premises, Exeter.—The premises of Messrs. Tucker & Sons, milliners, &c., High-street, have just been altered and enlarged, by taking in an ancient chapel and a number of houses in the rear. The chapel, which was used by the Wesleyans from 1778 to 1813, is said to have formerly been the High School, founded and built A.D. 1343, by Richard de Brayleigh, dean of Exeter. The alterations and additions have been carried out under the supervision of Messrs. Hayward & Son, architects. Mr. W. R. Commings has executed the building work; the cabinet-fittings have been provided by Mr. D. Dingle; the painting and decoration by Messrs. Davey & Son; and the gas-fittings and plumbing by Mr. Hubbard.

Owain Glyndwr's Parliament House.—That curious old piece of architecture, which is pointed out to visitors at Dolgelly as being the Parliament House of Owain Glyndwr, has been sold by auction for 800*l*. We are sorry to hear that the building will probably be demolished, and its site occupied by a modern building devoted to trade.

Fire from Lime.—The following incident may serve as a caution to those connected with building operations:—In the rear of Mr. Davis's new building, Upper Richmond-road, Putney, on Saturday last, part of a load of lime was covered over with a tarpauling, sacks, and felt, in order to keep it dry until resuming work. On Sunday morning the whole of the coverings were in flames.

Defalcations by a Builder's Foreman.—Charles Dickenson has been committed for trial by the Newbury magistrates, charged with a series of defalcations while employed by Mr. Crook as foreman over the men engaged in the erection of the new municipal buildings in the market-place.

Bequest to the South Kensington Museum.—The collection of manuscripts, books, paintings, and sketches formed by the late Mr. John Forster, the biographer of Dickens, Goldsmith, Walter Savage Landor, and Swift, and bequeathed by him to the nation, has been arranged in the picture-gallery of the South Kensington Museum, by Mr. Sketchley. The volumes number nearly 19,000. The sketches and paintings are very numerous, and include specimens by Gainsborough, Janssens, Maclise, Stanfield, Watts, Reynolds, Frith, Boxall, Webb, of Dusseldorf, Landseer, Cattermole, F. D. Hardy, Thackeray, &c. The collection was thrown open to the public on Whit-Monday.

Manchester Town-halls: New and Old.—At a recent meeting of the General Purposes Committee of the Manchester City Council, several members complained of the acoustic properties of the room, and the Mayor promised to bring the whole matter before the Town-hall sub-committee, and see if some remedy could not be found.——The Council, at a subsequent meeting, authorised the Libraries Committee to use the old Town-hall (*pro tem.*) for the purposes of a central free reference library, and, in the meantime, to look out for a suitable site in the centre of the city for the erection of a permanent reference library.

Association of Municipal and Sanitary Engineers and Surveyors.—A meeting of the members in the Home and Eastern Counties districts will be held at the Town Hall, Ipswich, on Friday, the 1st of June next, at twelve o'clock, when the programme will include a paper on "State Medicine and Sanitary Engineering," by G. S. Elliston, Medical Officer of Health, Ipswich; and a paper on the "Cost and Suitability of Tar Pavements for Surburban Paths," by E. Buckham, C.E., Borough Surveyor of Ipswich. A discussion on Pavements for Footways will follow.

Great Northern Railway: Batley to Dewsbury.—The directors of the Great Northern Railway have entrusted the construction of this line to Messrs. Charles Baker & Ralph Firbank. The works are heavy, consisting of a tunnel about 200 yards long, a viaduct about 150 yards long, 50 ft. high, with two bridges under the London and North-Western Railway. There are about 50,000 cubic yards of masonry and brickwork, and several new streets and diversions of sewers in the borough of Dewsbury. The works are to be commenced forthwith, and are expected to be completed within a couple of years.

The Tower of London.—Some improvements have been effected during the past few weeks upon the Tower Wharf. After the late destructive high tides, which came over the footwalk, steps were taken for raising the parapet and stairs by some 3 ft. This work has been done, and gravel has been laid down from end to end, trees planted, and seats provided. The improvements have been carried out by Messrs. Martin & Wells, of Aldershott, under the superintendence of Mr. Buchanan.

TENDERS.

For polished red granite front to warehouse, No. 43, Cannon-street, for Messrs. Griffiths & Co. Mr. R. Adolphus Came, architect. Quantities not supplied:—

Macdonald, Field, & Co.	£329	0	0
Freeman	280	0	0
Fenning	275	0	0
Nicholson (accepted)	270	0	0

For the erection of twelve houses on the Kensington Hall Estate, for Lord Beaumont. Mr. T. Dudley, architect. Quantities supplied by Messrs. J. & A. R. Ball:—

Adamson & Sons	£21,489	0	0
Lascelles	21,088	0	0
Nightingale	20,423	0	0
Newman & Mann	20,352	0	0
Langmead & Way	20,250	0	0
Cooke & Green	19,510	0	0
McManus	19,388	0	0

For the erection of a mission-house and school, for the parish of South Acton, Middlesex. Mr. E. Monson, jun., architect. Quantities supplied:—

Nye	£1,043	0	0
Bartram	992	0	0
Johnson	990	0	0
Hunt	985	0	0
Wilson	925	0	0
Beach	895	0	0
Waters	886	15	0
Baker (accepted)	826	0	0

For alterations and repairs to the Alexandra Hall, Blackheath. Mr. Henry Roberts, architect:—

Lathey, Bros.	£1,130	0	0
Sanderson	1,032	0	0
Todd	990	0	0
Bridel	895	0	0
Bulford	860	0	0
Chapman	854	10	0
Wheeler	832	0	0
Wood	817	16	0

For converting premises at corner of Horne-street and Katesgrove-lane, Reading, into a working men's club, for St. Giles's parish branch of the Church of England Temperance Society. Messrs. Morris & Stallwood, architects:—

Wicks (accepted)	£623	0	0

For new vicarage-house, for the parish of St. Mark, Cold Ash, Berks. Messrs. Morris & Stallwood, architects:—

Bailey (accepted)	£2,067	0	0

For entrance-lodge at Sunninghill Park, for General Crutchley. Messrs. Morris & Stallwood, architects:—

Watson (accepted)	£410	0	0

For the erection of two warehouses in Great Eastern-street, E.C., for Messrs. Wells & Co. Mr. J. W. Brooker, architect. Quantities by Messrs. Eedes & Brooker:—

Linzell	£4,993	0	0
Downs & Co.	4,973	0	0
Crockett	4,830	0	0
Morter (accepted)	4,564	0	0
Lawrance	4,525	0	0

For the erection of a warehouse in Curtain-road, for Mr. W. H. Vaughan. Mr. J. W. Brooker, architect Quantities by Messrs. Eedes & Brooker:—

Downs & Co.	£1,490	0	0
Crockett	1,423	0	0
Linzell	1,393	0	0
Lawrance	1,380	0	0
Morter (accepted)	1,326	0	0

TO CORRESPONDENTS.

R. H. B.—M. P.—C. C. H.—T. B.—W. G. S.—T.—G. A.—M. T. K.—R. T.—S. G.—M. W.—Mr. C.—F. S.—E. & S.—P.—Gas Engineer (next week).—G. W. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors

Advertisements cannot be received for the current week's issue later than THREE o'clock p.m. *on THURSDAY.*

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The late Sir Digby Wyatt.



OUR readers will have noticed the melancholy announcement made in a brief paragraph in last week's number of the *Builder*, of the death, at a comparatively early period of his career, of one of the most accomplished and active-minded of the men who have been connected with the profession of architecture in our day. For some time past it had been matter for regret to Sir Digby Wyatt's friends to learn that his health was not good. His brain seems to have been overworked, and it was found that absolute rest and quiet were necessary to give him a chance of recovery. It was with the object of seeking quiet, principally, that he had recently given up his house in town and taken a country-house in Wales, where he might recruit his health; but unhappily, the precaution came too late, and he died but very shortly after he had retired to his new residence. He was buried at Usk, in Monmouthshire, on the 25th ult.

All our readers who knew anything of the man, as well as of his works, will have sympathised with the spirit of the few words in which his decease was announced in our last; but the withdrawal from the scene of a man who has filled so large a place in the profession of architecture calls for something more from us than a mere expression of regret, however sincere and heartfelt,—the rather because the part he took in the architectural field was, owing to the nature of his acquirements and abilities, somewhat unusual in its character.

Before looking, however, at the nature of his work while living, we may just summarise here the principal facts in his life. Matthew Digby Wyatt was born July 20th, 1820, and was the youngest son of Mr. Matthew Wyatt, then living near Devizes, but who was subsequently a magistrate of one of the London police-courts. His choice of a profession was probably in the first instance determined by the fact that his elder brother, Mr. T. H. Wyatt, was an architect, and at the age of sixteen he entered his brother's office as a pupil. In a spirit in every way honourable to him, the elder brother, whose abilities and present eminence we need not certify to our readers, determined to see that the young candidate for the profession should receive the most thorough education which he could bestow; and probably few people have entered on the profession more fully trained and instructed in the subjects of study which belong to it than Digby Wyatt. This fraternal care, however, must have been well seconded from the first by the natural ability of the pupil, since it is on record that in the same year in which he was articled he gained the Architectural Society's prize for an essay. After going through his course of office study, he travelled for two years over the Continent, studying the principal buildings in France, Italy, and Germany, and brought home, among a large number of drawings, sufficient studies of the Mediæval mosaic work of Italy and Sicily to form the subject of a large volume illustrative of "the Geometrical Mosaics of the Middle Ages," which was his first publication of importance. His power of expression, both in writing and speaking, in regard to art-subjects, became developed at an early period of his life, and was no doubt one of the gifts to which he owed his ultimate success, of which at this time he was by no means sanguine. In 1849 he was commissioned to report to the Society of Arts on the Industrial Exposition at Paris; and produced a report which was thought so well of, and showed such extensive knowledge of the subjects dealt with, as to lead to his appointment as Secretary to the Committee of the Society of Arts in connexion with the Great Exhibition of 1851. In carrying out the business he had undertaken in connexion with this important and then novel enterprise, he showed a great deal of administrative ability, and probably his conduct in this official position did much to confirm his after-career, bringing him under the notice of and in contact with many who could appreciate his ability. Among the fellow-workers with whom he was a good deal allied at this time were Brunel and Owen Jones, and between the latter and Digby Wyatt, who had may interests in common with him, there sprang up a close friendship, dating probably from this period, and which seemed to have its public as well as its private phase; as it certainly happened, whether accidentally or otherwise, that the two men were working together continually throughout their life, till the earlier death of Owen Jones put a close to this brotherhood in art-work: if Digby Wyatt was on a committee for considering a subject, Owen Jones was almost certain to be a colleague, and *vice versâ*. It was shortly after this that Mr. Wyatt published a treatise on the "Industrial Arts of the Nineteenth Century," which was followed by one of the works of a class which he had special qualifications for writing,—illustrative works in reference to special departments of ornamental art: this was "Metal-work and its Artistic Design." Of this and some others we will say a word more specially presently. While the re-erection of the Exhibition building as the "Crystal Palace" was in progress at Sydenham, Mr. Wyatt was superintendent of Fine Arts Department, and he and his friend, Owen Jones, as every one knows, together designed those courts characteristic of different periods of art and architecture which have always been among the chief attractions of the Sydenham Palace, and gave it an artistic interest beyond that of a mere pleasure-place. At the Exhibition of 1855 in Paris, Wyatt was a juror on furniture and decoration, in connexion with the British Government, and his claims to distinction were recognised by the French Government also, by whom he was on this occasion created a Knight of the Legion of Honour. About the end of the same year he was appointed surveyor to the East India Company, with whom he had been previously connected also, in assisting to arrange their department in the Paris Exhibition.

It may be mentioned here also that it was about this time that he and his brother conjointly gained a Government premium for the best design for model cavalry barracks, a piece of conditional success of which he has not lived to reap the fruits, as it is only now that the new barracks at Knightsbridge, intrusted to Mr. T. H. Wyatt, in consequence of the result of this competition, are about to be carried out.* But his appointment as surveyor to the India Board was really the step which brought him most into notice, and led to his receiving the honour of knighthood, and also to the design of one of his principal works in London, the Court of the India Office. In 1866 Sir Digby Wyatt was awarded the gold medal of the Institute, on an occasion when, as recorded in our columns, there had been a little fight, or an intention of a fight, as to the claims of another candidate who had been named, but who withdrew his name rather than continue a discussion the result of which was probably not doubtful. It is noticeable that the feeling which gave the preponderance in favour of Wyatt on that occasion was not merely the consideration of his abilities, but also of his public spirit and readiness to be useful to his fellow men, in which he was thought, and not without justice, to stand in very favourable contrast with some of his compeers, who, whatever their talents, seemed to work only for themselves, and were not heard of on committees and other schemes for the general advancement of art. Subsequently he received an honour which he must have esteemed at least equally highly, in being elected the first Slade Professor of Fine Arts in the University of Cambridge; and his lectures from this Professorial chair were published, and form an important item in his literary work. At the time of his election the honorary degree of Master of Arts was also conferred upon him. Besides the official positions and distinctions which have been mentioned, we may add that Sir Digby Wyatt was a Telford Medallist of the Institution of Civil Engineers; that he received, in 1852, the Prince Consort's Private Gold Medal; a present of 1,000*l.*, with a set of medals from the Royal Commission for the 1851 Exhibition; and received from the King of Italy, in 1867, the Officer's Cross of the San Maurizio and Lazzaro Order. He was Surveyor to the Secretary of State in Council of India, as well as to the East India Company. He was on the Council of the Art-

* Particulars of this competition, and, indeed, of most of the leading incidents in Digby Wyatt's professional life, will be found in our volumes of the time.

Union; and was, in conjunction with Mr. Redgrave, R.A., and the conductor of this journal, a referee in all those competitions of art workmen, originated—and with good effect, so far as they went—by the Society of Arts. We may add he was a Fellow and past Vice-President of the Royal Institute of British Architects, having at one time acted as Honorary Secretary; President of the Graphic Society; Fellow of the Society of Antiquaries; and a member of he Institution of Civil Engineers. He was also a member of some Foreign Societies.

With regard to architectural work not already mentioned, he assisted in settling the plans of the building for the Great Exhibition of 1851, and had part charge of the erection; was associated with Mr. Brunel in designing the Paddington Station and other works on the Great Western Railway; designed the East India Museum, &c., for the East India Company; he restored the chancel of North Marston Church, Bucks, for the Queen; did several works for India; restored the mansions of Compton Wynyates, Warwickshire, and Isfield-place, Sussex; erected the Garrison Chapel, Woolwich (with his brother, T. H. Wyatt); Addenbrooke's Hospital, Cambridge; the "Ham," a mansion in Glamorganshire; Old Lands, Sussex; Newell's, Coolhurst, Sussex; a house at Uckfield, Sussex; Brambridge House, Hants, for Sir Thomas Fairbairn; "The Mount," Norwood; a mansion in the Azores; the Royal Indian Civil Engineering College at Cooper's Hill; the Burlington Fine Arts Club; shops in Dublin, Oxford-street, and Gracechurch-street; restored the Hall of Clare College, Cambridge; executed the Crimean Memorial Arch at Chatham for the Royal Engineers; barracks, chapel, hospital, &c., for the East India Company at Warley, Essex; the Indian Government Stores, Lambeth; mausoleum for the Baroness de Rothschild at West Ham; Italian gardens, water tower, conservatories, &c., Castle Ashby, Northamptonshire; industrial art works for Messrs. Maw & Co., Messrs. Woollams, Messrs. Howell, James, & Co., Messrs. Templeton, and others. He also executed various works for the Duke of Argyll, the late Marquis of Lothian, the Earl Brownlow, the Earl of Leitrim, Sir J. G. T. Sinclair; the Hon. F. Leveson Gower, M.P.; the late Right Hon. Edward Horsman, M.P.; Sir Wm. Drake, and others.

One important work in modern domestic architecture, a view of which we published, was the large house for Mr. Louis Huth, at Possingworth, Sussex; the exterior view, which we gave, is more remarkable for elegance and suitability than for any great architectural effect, but the interior decoration has been much admired for its taste and the completeness with which it is carried out. Another house which is very familiar to Londoners is that built for Lady Marian Alford, at Kensington Gore, the red-brick house with the spirit of *rococo* Renaissance so completely carried out that it compels admiration for its finish and unity of effect, even from those who do not sympathise with the style; this, if we remember rightly, was illustrated in the architectural room of the Royal Academy, by a drawing as characteristic as the building itself. The court of the India Office, before alluded to, was illustrated in our pages at the time of its completion.

Of the numerous and elaborate works on decorative art and on subjects connected with architecture, which have been left by Sir Digby Wyatt, the first, as already mentioned, was his book on "The Geometrical Mosaics of the Middle Ages." The illustrative portion of this work is the most important, and consists of finely-executed coloured plates of mosaic ornament for floors and walls (chiefly reproduced from the sketches and notes made by the author on the spot during his first tour on the Continent). These are confined to the period indicated by the title; but the descriptive portion of the work embraces a sketch of the history of mosaic, and the characteristics of this branch of art in various ages; the subject being divided under three great periods, that of Antiquity, down to the commencement of the fourth century; Mediæval, down to the commencement of the cinque-cento period; and "Modern," from the time of Raffaelle to the present day. The comprehensive way in which Sir Digby Wyatt had already learned to look at subjects of this kind is shown in the completeness with which this short history of the subject is planned and worked out; and we may take the following quotation as an example of the manner in which, in this as in all his books of the kind, he deduced suggestions for the present day from the study of the art of former periods. He is speaking of the Pompeiian mosaics:—

"When we consider, moreover, the appropriation of the subjects, and their relation to the positions for which they were designed, we cannot fail to be struck with the general congruity existing between the nature of the idea depicted and the character of the apartment to be adorned. Thus in the houses at Pompeii we find portrayed in mosaic the faithful dog guarding the threshold, or the hospitable inscription, hailing and welcoming the visitor with a kindly 'salve' even in the doorway; in the atrium, or hall, a rich though simple pattern is elaborated; in the triclinium, or dining-room, we meet with the *opus asaroton*, or representation of fragments of food dispersed on the ground,—in the gymnæum, or women's apartment, compositions of ornament, foliage, animals, of the greatest delicacy,—in the grottoes for the preservation of the lares, or household gods, and in the pavement near them, are to be found the noblest subjects and the most refined works of art. This happy unity of idea is extended and enhanced by a similar taste displayed in the distribution of the other pictorial embellishments. What a lesson should this afford to those who heap together in the decoration of their apartments the most incongruous ideas and the least harmonious associations,—who place an Annunciation in a dining-room, flanked by a sporting print and the portrait of a gentleman."

This latter accusation is, of course, less generally applicable than it was five-and-twenty years ago; and probably most of our readers will agree with us, that the representation of fragments of food on the dining-room floor is a piece of execrable taste, whether antique or modern; but at the time the words were written, the idea of a systematised scheme of decoration was probably a new one to most people, and the lesson is distinctly and pointedly given.

The next large work produced by Wyatt was that on the "Industrial Arts of the Nineteenth Century," in 1852: a sumptuous work in two folio volumes, containing very fine chromo-lithographs of specimen objects of various branches of art-work. The Exhibition of 1851 was, of course, the inspiring cause of this publication, which was dedicated to the Prince Consort; but it is more noteworthy as a fine "show" book, and as an example of the care which the author always took to have his illustrations finely executed, than as supplying any special place in art-criticism. The book on Metal-work, published a year after this, was of a more important nature, going systematically into the subject under the heads of "Theory," "Practice," "Decorative Processes," and "History"; and the extent of historical and practical knowledge contained in this work is really remarkable, combined also with the same side-lights on modern theory and practice in the art. The "Notes on Sculpture in Ivory," published in 1856, showed Sir Digby Wyatt's familiarity with another totally distinct subject; and so again did the "Treatise on Illuminating" (1859), which was divided into two sections, treating of what illuminating had been, and of what it should be in the present day, and giving a great deal of minute practical information in relation to the processes and materials employed. Some remarks on the possible application of this art in the present day will serve again to illustrate what we wish to bring out, the attention which the author of these works kept on the present application of the arts treated of. He observes that because such an embellishment as illuminating was only used for books in the Middle Ages, there is no reason why we should not apply it to wood, metal, slate, stone, canvas, plaster,—any material that will take colour, and any vehicle of colour which we find it practically suitable to use. "The original occupation of illuminating has been superseded by chromo-lithography; and an equally elegant and useful application of the art would be to enrich ceilings, walls, cornices, string-courses, panels, labels round doors and windows, friezes, and stained and painted furniture in churches, schoolrooms, dwellings, and public buildings of all kinds, with beautiful and appropriate inscriptions of graceful form and harmonious colouring. Such illumination would form not only an agreeable, but an eminently useful decoration. How many sentences worthy in every sense of being written in letters of gold, might not be thus brought permanently under the eyes of youth, manhood, and old age, for hope, admonition, and comfort! No more skill, energy, and taste are required for the production of this class of illustration than are essential for satisfactory work upon vellum and paper; and while in the one case the result of the labour may be an accustomed enjoyment for many, in the other case it is seldom more than a nine days' wonder, shut up in a book or portfolio, and seen so seldom as scarcely to repay the amateur for the expense and trouble involved in its execution."

The highly interesting and important subject of pictorial mosaic as an architectural embellishment was treated by Sir Digby Wyatt in one of the ablest of the several papers he contributed to the Proceedings of the Institute of Architects; and another of the best among his shorter publications was his lecture called "An Attempt to Define the Principles which should Determine Form in the Decorative Arts," forming No. XIX. of the series of lectures on the results of the '51 Exhibition, and which his friend Owen Jones followed up by a paper with a similar aim in reference to principles of colour.

In addition to the works we have mentioned, he published portions of the "Art Treasures of the United Kingdom," and "The Grammar of Ornament"; "History of the Manufacture of Clocks"; "Report on the Paris Exhibition, 1867"; "Report on the Vienna Exhibition, 1873"; and "Handbooks of the Crystal Palace Courts." The lectures of Sir Digby Wyatt as Slade Professor, published in 1870, form a very characteristic memorial of him, embodying as they do, in the most connected and yet comprehensive form, the ideas and views of art which had influenced his critical writing when treating more in detail of special branches of art. The lectures are thirteen in number; the three following the introductory lecture deal with architecture, which was probably placed first not only on account of his own connexion with it, but from a feeling that it was in a sense the basis or background of the other arts. Lectures 5, 6, and 7 treat of sculpture; the four next of painting; and the twelfth and thirteenth came round to what was with him a favourite subject, applied industry, and the relation between art and labour. We have only space to say a word in regard to his treatment of architecture, in respect to which the reader is struck here and there by his independence of view, and the entire absence of the echoing of the *dicta* of any clique or party in art-criticism. In the face of the then too exclusive worship of Mediæval architecture, more prevalent at our Universities than elsewhere, he had the independence to say that the old studies of the "Five Orders" were not without real practical use, in reference to modern building, in training the eye to the appreciation of relations of scale in design. Other remarks may be adduced as exemplifying the original and suggestive manner in which he sometimes stated the principle which was at the basis of a special phase in architecture, as in the admirable remark in reference to the Renaissance architecture, that "the special struggle made by the Renaissance architects, developing out of Gothic architecture, was towards the increase of domestic enjoyment, through the hall, the hearth, and the home; while the tendency of the Italian Renaissance architects, developing out of culture direct from the classicality, was towards that semi-public domesticity which took the form of the more stately palace," words which seem to suggest, in a remarkably comprehensive manner, the motive at the root of the architecture of the epoch referred to. The following passage, which touches on points that are often discussed with more or less earnestness by architects and architectural critics, is a good sample of the style of criticism pervading these lectures, and illustrates again that independence of opinion to which we have alluded:—

"The alliance of architecture with utility as well as beauty gives it a practical character which allows of the ready application of reason in testing success or the reverse.

The present danger in the exercise of this reason, with respect to architecture, consists in regarding the architectural elements which make up the art as separate parts rather than as a whole. There has been a doctrine spread among us of late years which, based upon a correct analysis, has yet, I believe, led to many injurious results in regard to the practice of architecture. Writers have so separated the elements of utility and beauty from one another, in treating of architecture, as to conceive the propriety of constructing by the light of utility independently of beauty, and of ornamenting by the light of beauty independently of utility. We have been constantly and emphatically told that we should first construct, and then ornament construction. I hold that doctrine to be most pernicious. The idea of beauty should be present to the architect in the very first conception of his design, as the sense of utility should guide and restrain him in the last touch he may apply to his building."

And he adds that the great object for which an architect should prepare himself by study, should be "to realise every condition of the structure at the earliest possible moment after the conception of the plan. . . . . It is, in fact, not by conceiving a skeleton, and then clothing it that the architect is to proceed, but by conceiving a perfect man, and then reasoning out his anatomical construction."

One other passage, in which the Slade lecturer gave his view of the architectural situation as at present, may be quoted as both interesting in

itself, and appropriate here as a close to our brief notice of his voluminous literary work in connexion with architecture: it forms the closing paragraph of his third lecture:—

"I would gladly hail a declaration of peace in the architectural camp. I would have the followers of the two armies in no wise neglect the banners under which they have achieved past victories, but I would recognise them rather as walking hand in hand as in a joint triumph, and labouring to one common end of union and glorification of all the fine arts as perfected, and as made to harmonise with the highest civilisation and the most excellent forms of life. I sincerely believe that we may trust much to the efforts of individual genius, provided that we endeavour to give it a large and secure basis from which to start. If that basis consists only of a general affection of the people of our country for the arts themselves, we may safely trust to the artists, whom that love is sure to engender, for a fair and satisfactory progress. If we unite the objective practice of Pugin and the Mediævalists to the excellent subjective system transmitted to us from the Classical ages, I believe we shall have no reason to fear in our practice the attainment of results commensurate with theirs, and yet reflecting simply and justly the condition and historical situation of our nationality and advanced scientific culture."

As the above words sufficiently indicate, Sir Digby Wyatt was not a strong partisan or a man of pronounced views on one side or another, but rather one who wished to look to the bright and pleasant side of things, and to find in modern art a source of union rather than of disruption. Of his practical work as an architect it is perhaps less easy to speak than of his illustrative publications. Although his assistance was much sought after for the design of ornamental detail, artistic furniture, &c., as well as designing buildings *en masse*, and though in such designs he always exhibited the most fastidious and refined taste and knowledge within the limits of the style in which he most usually chose to work, it can hardly be said that original power in the design of structures was his strong point; and the decided predilection which he manifested for some of the less pure forms of Renaissance ornament is singular and not very easy to understand on the part of an architectural designer who was so familar with some of the finest schools of ornament in existence, and who often laid down in his writings principles admirable in themselves, and admirably expressive, which his own designs hardly seemed always to illustrate. He drew beautifully, however, and sketched admirably in ink, in a style of his own, which was not done justice to in reproducing the illustrations to his book on Spanish architecture, the original drawings of which were much superior in effect to the reproductions, and showed great freedom of touch and a marked and individual style. Many of his drawings and designs ought to be of value now to a large circle of architects, for he certainly seemed to have anticipated the present run upon Queen Anne architecture or something cognate, and his drawings are worth study by those who wish to succeed in treating this style. It may be observed that he never seems to have had much sympathy with pure Mediæval architecture, which is not the subject of any of his illustrative works, nor does any trace of its influence appear in his executed works in architecture.

In his personal character Sir Digby Wyatt may be said to have been a man made to be generally liked, even by those who only knew him casually, and to be beloved, as he certainly was, by those who were intimate with him. Of remarkably gentlemanly appearance and address, he had also a vivacity and mobility of manner which gave him a marked personal individuality, and suggested the idea of a mind always on the *qui vive*. This rather mobile demeanour operated, perhaps, against him on some occasions. As chairman of a meeting, for instance, he wanted a little more repose and collectedness of manner, though his mode of addressing a meeting was always quiet and dignified. Indeed, the restlessness of habit alluded to was probably only the first stage, in the form of nervous irritability, of that over-excitement of brain under which he ultimately succumbed. His general courtesy, which made him many friends, and no doubt contributed much to his success, has been made the subject of criticism by those who believed, or affected to believe, that he advanced in his profession chiefly on the basis of courtesy or courtiership; an ungenerous sort of insinuation, which is not unfrequently made by those who are not able, or do not take the trouble, to make themselves similarly acceptable in society; and at the worst it is really open to question whether the power of making your society a source of pleasure to others is not a real and valuable gift in itself, deserving of a little more admiration and emulation than it receives in some quarters. While speaking of the personal character and manner of Sir Digby Wyatt, we may add that his portrait is to be found in our volume for 1869, page 906.

A short time before his retirement to Wales, when the malady which proved fatal was becoming pronounced, he talked over with us some of the earlier incidents of his life, dwelling especially on the doubts and fears which had beset him as to his career just previously to the origination of the 1851 Exhibition. Speaking of minor matters, he referred to a little dinner, given by the conductor of this journal in 1856, and dwelt with a curious sort of pleasure, as he had done once before, on the fact that he was the youngest man invited; and then, bursting into tears, he lamented that while several of those who had been present,—his seniors,—were working as vigorously as ever, his career, he felt, was ended.*

Sir Digby was married, and leaves a widow, but no children. The result of this marriage is told in an observation which he made to us when speaking of his independence of external matters, not very long before his illness first showed itself,—"While my wife lives I shall be a happy man; if she were to die I should be a miserable one."

We are tempted to dwell on other personal recollections, but want of space forbids.

As will have been gathered from what was said above, we do not expect that Sir Digby Wyatt will be regarded as an architect who had reached the greatest eminence in the more specially practical work of planning and constructing buildings. He has done some excellent things, but his *forte* did not lie so much in the active business of the profession as in studying and illustrating, and in influencing art generally through his writings and criticisms. The remarkably extensive knowledge he possessed gave him peculiar fitness for this task, to which he devoted himself with an energy and thoroughness which have enabled him to leave behind him what may be termed a library of beautiful and valuable works. Men who will do this kind of work, and do it so well, are wanted every now and then, and Digby Wyatt has filled an important place in the art-study of his generation, and the special part which he has played in it could, perhaps, hardly be better or more comprehensively defined than in a sentence from the address of the then president of the Institute of Architects (Mr. Beresford-Hope), who, in presenting to him the gold medal in 1866, charactorised the recipient of it as "a most distinguished combination of the literary man with the architectural investigator and practical administrator."

* The party included Sir Charles Barry, Sir William Tite, Mr. Cockerell, Mr. J. B. Bunning, Mr. Charles Mayhew, Professor Hosking, Mr. Ferrey, Sir G. G. Scott, Mr. Henry Baker, Mr. Charles C. Nelson, Mr. Robert Rawlinson, Professor Donaldson, &c.

WORK DONE AT THE INSTITUTION OF CIVIL ENGINEERS.

It is to be expected that when, as has recently been the case in England, a nation sets to work to reform its education from the foundation (to use the words of the immortal Dominie Sampson), unexpected lights will, from time to time, be shed upon the process. By watching these sudden glimmers and cross reflections, we may at times learn more than by a more general, but at the same time a more distant, survey of the entire field. That part of the subject which most naturally suggests itself to our consideration is the influence which special, exerts on general, education. And it is, of course, to the technical education proper for the formation of the architect, the engineer, the artist, and the operative that our special attention is in the first place directed. There are already in the country a large number of institutions devoted to the primary or to the higher education of the large group of working bees whose toil is illustrated in the columns of the *Builder*. In some few cases on the Continent, as at Creuzot, and at the works of Herr Krupp, there is perhaps a more directly effective machinery at work for the education of the children of the workpeople than is to be found in our own great centres of industrial life. But here we must not forget Saltaire. And there may be, and probably are, many great employers of labour whose efforts for the education of the children of their workpeople are none the less deserving because they are carried on without any great sound of trumpet. If we consider all that is going on in the schools for the infants and young children of the working classes, in the mechanics' institutes throughout the country, in the proceedings of the more important aggregates of professional men, as the Royal Institute of British Architects, the Institution of Civil Engineers, the Iron and Steel Institute, the Institute of Mechanical Engineers, and then remember that noble endowment by which Sir Joseph Whitworth devoted a portion of his well-earned wealth to encourage the industrious student of the calling which he has done so much throughout his life to advance, we shall form some idea of the amount of good work which is being done in the way of the practical, technical, and scientific education of those engaged in the various branches of the great pursuits of operative and decorative construction.

Foreign as it may be to our usual English habits, it is yet worthy of remark how much the hands of all labourers in this great field would be strengthened if some common bond of organisation would be provided. It may, perhaps, be too much in advance of the time to suggest that a country like England, the position of which among the nations of the world is becoming more and more dependent, year by year, on the mechanical excellence of her workmen, would derive extraordinary advantage from the erection of an Art University. When our existing institutions,

> "Yet so famous,
> So excellent in art, and still so rising,
> That Christendom shall ever speak his virtue"

(that of the great cardinal, whose name is yet remembered in the Commemoration Prayer in the pulpit of St. Mary's), were founded, they were intended to provide for the efficient study of the arts proper to man. These arts were chiefly known by, and taught through, the study either of letters or of mathematics; and thus, in course of time, letters and mathematics have remained the chief subjects of university study, while physical and mechanical science, and the study of the principles which underlie the practice of fine art, have made a triumphant advance, which is in no way adequately reflected within the walls of Oxford or of Cambridge.

It would, in all probability, be neither feasible nor desirable so to enlarge the *curriculum* of either of our ancient seats of learning as to admit of a transformation of the general scheme of education, as regarded by the heads of the universities, corresponding to the transformation of the general field of the arts as they are now actually cultivated amongst us. Such a change would probably swamp the study of letters; for the army of art-industry is so large, the requirements of its leaders are so wide and so numerous, and the opportunities of entering its ranks, in different grades, from that of the historic painter, or the most cultivated architect or engineer, down through all the countless varieties of decorators, builders, surveyors, and mechanics, are so numerous, and so eagerly sought, that if a central corporate form were once given to Oxford or to Cambridge as really an art and science university, the probability is that learning, pure and simple, would go to the wall. Yet, without suggesting anything like a revolutionary change in our existing institutions, it may be permitted to suggest that some means of drawing together those scattered establishments which at this moment are concerned in one or another branch of the technical education of the artist and of the mechanic would of itself add immensely to the utility of each and all of those meritorious institutions.

Let us look at a little of the practical work which has been done, in the last twelve months, by one of those self-supporting and self-elevating associations of technical and scientific men, of which the progress has been a very favourite object of the most distinguished among the "makers" of England. Smeaton, Mylne, and Rennie established the Smeatonian Society of Civil Engineers, which was the first of the kind in England. It was a social gathering in the form of a club, assembling its members occasionally at dinner, where they could discuss matters connected with their calling. Up to that time, Sir John Rennie tells us, "we were simply known as vulgar mechanics,"—men who toiled with their hands, as masons, bricklayers, carpenters, blacksmiths, &c." There were at that time little more than a dozen engineers in the kingdom. The motto of the Society was *Omnia numero pondere et mensura*. The exact date, late in the eighteenth century, is not at this moment before us. In 1845-6-7, Sir John Rennie, son of one of the three founders of the Smeatonian Association, as president of the Institution of Civil Engineers, drew up detailed

reports of the history of the profession from its commencement in Great Britain down to that time, which reports were subsequently published in the "Transactions." During the comparatively bad times of the civil engineer that have followed as the natural consequence of an undue stimulus applied to the construction of railways, involving the construction of public works (not for the sake of the public convenience, but for the profit to be made by the contractors), the chief vitality and utility of the profession may be said to have been concentrated in the Institution. The president is now publicly recognised, in any matter of Government reference or debate, as an authority of weight. The sixtieth session of the Institution closed on Tuesday last (29th May, 1877). Twenty-three ordinary meetings have been held during that session, in which twelve papers have been read and discussed. A reference to the subjects on which light has been thus thrown will show how wide is the field now occupied by the engineer, and how active are his researches, not only in mechanics, but in physics and in chemistry. The first subject brought forward, on the 14th of November, 1876, was that of the Lighthouses of Japan, to the peculiar features of which, in so far as proposed means for averting damage by earthquakes were concerned, we called the attention of our readers. The Fracture of Railway Tires was next brought forward, and when we find that no less than 660 instances of fracture are reported by Captain Tyler as occurring in 1875, it is clear that the subject is one of primary mechanical importance. A paper by Mr. J. Lucas, on the "Chalk Water System," to which we have also referred, was under discussion on the 28th of November and the 5th of December; on which latter occasion forty-six members and associates were added to the roll of the Institution. On the 19th of December the fifty-ninth annual meeting took place, Mr. George Robert Stephenson, president, in the chair. It then was stated that the number of members and Associates, exclusive of students,—which in December, 1862, was exactly 1,000,—had reached the figure of 2,462. The income of the year had amounted to 11,181*l.* The library had been increased by 3,000 volumes within three years, and contained at that date 13,431 volumes. Telford Medals and Premiums had been awarded to fifteen out of twenty-eight essays sent in to the Institution. With a view of disseminating information as to the state of engineering on the Continent, an epitome of some of the most important papers in foreign transactions and periodicals have been embodied in the proceedings. These abstracts include descriptions of works, studies of a purely theoretical nature, memoirs, and results of costly and elaborate experiments, the details of which are not to be found in any other English publication. In addition to the ordinary meetings within the year, there have been fifteen supplementary meetings for the reading and discussion of papers exclusively by students, nine of which had received Miller prizes.

At the sixth ordinary meeting of the session 1876-7 the paper read was on the "Repairs and Renewals of Locomotives," by Mr. A. Macdonnell, M. Inst. C.E.; and the discussion was continued at the next meeting. On the 30th of January the subject brought forward was the "Combustion of Refuse Vegetable Substances for raising Steam," by Mr. John Head, Assoc. Inst. C.E. From the ninth to the thirteenth meetings the members were occupied by the reading and discussion of a paper on "The Sewage Question," by Mr. C. Norman Bazalgette, to which we have previously referred at some length. At the fourteenth ordinary meeting, on the 13th of March, his Majesty the King of the Belgians was elected by acclamation an honorary member. The paper read was "On the Transmission of Motive Power to Distant Points," by Mr. H. Robinson, M. Inst. C.E.; the discussion of which subject was continued on the next occasion of meeting. On the 27th of March was read a paper by Mr. J. B. Redman, M.Inst.C.E., on a subject that has at different times been somewhat fully illustrated in our columns, viz., "The River Thames," which also occupied the next meeting. On the 24th of April the first paper read was "On a Deep Boring for Coal at Scarle, in Lincolnshire," by Professor Edward Hull, F.R.S., which had been carried out, by the Diamond Rock Boring Company, to the depth of 2,030 ft., reaching the carboniferous strata. The second paper was "On Street Tramways," by Mr. Robinson Souttar, which was also discussed on the 1st of May. At the twenty-first and twenty-second ordinary meetings a paper was read and discussed on "The History of the Modern Development of Water-pressure Machinery," by Sir W. G. Armstrong, C.B., F.R.S., V.P. Inst. C.E. The discussion of this highly interesting and important paper, with that of a paper by Mr. G. Haycraft, Assoc. Inst. C.E., "On an Economical Method of Manufacturing Gunpowder Charcoal," and the annual *conversazione* of the President at South Kensington Museum, on the 31st of May, bring this full and active session to its close. Eighty-two members, eighty-six associates, two honorary members, and sixty-four students have been added to the list of the Institution during the past twelve months. The numbers of these several classes are now 952, 1,683, 16, and 464 respectively, making in all 3,115, and showing an increase at the rate of 7¼ per cent. per annum. The Transactions have now reached forty-eight volumes. Volumes 49 and 50 are promised for the 1st of August and the 1st of November next, and on the completion of the fiftieth volume a General Index to the whole series is intended to be issued, which, it is needless to add, will be a work of very high professional value.

It will be seen from the foregoing *resumé* that very excellent work is being done by this long-founded and vigorous Institution. That upwards of 3,000 of those who are essentially master-workmen should support and be enlightened by such an educational machinery is a matter deserving congratulation. It shows the exertion of an influence of the right sort, that will radiate far and in many directions. At the same time the very scope and range of the subjects discussed is such as to raise the question whether some distribution, like that of the sections of the British Association, will not, before long, become imperatively necessary. On the one hand, the engineer gives his hand to the architect. With regard to lighthouses, for example, we have seen how necessary it is to regard that subject from an architectural standpoint. So with reference to sanitary engineering. Within and adjoining the house, and in designing the town—when proper design is present—there are many matters which more naturally belong to the department of the architect than to engineering proper. On the other hand, the investigation of boring for coal appertains to a special branch of engineering—that of mines. The question of combustion of refuse vegetable substances, and that of charcoal for gunpowder, come within the province of the chemist. Fractures of tires, locomotive expenditure, the transmission of force, and the history of water-pressure machinery, belong to the mechanical rather than the civil branch of the profession; and the discussion of the Thames and the chalk-water systems brings us to surveying and hydraulic engineering. Of all these papers—some of them very able, and many of them keenly discussed—there is not one that represents the central idea of the work of the civil engineer, by the discussion of a great public work, recently and successfully carried out. We mention this, not by way of criticism, but as pointing to the fact that a division and distribution of subject will by and by become imperative; and that unless steps are taken to organize union, as well as subdivision, much valuable brain-power will be frittered away. Thus, for example, the fusion or affiliation, in some mode, of the civil and mechanical associations of engineering, would give additional power and status to the entire body, and yet save time, as in the discussion of such papers as those of Mr. Macdonnell or Sir W. G. Armstrong. So, again, with regard to the School of Metallurgy and Mines,—perhaps with regard to the Institute of Surveyors, probably with the Iron and Steel Institute,—if such an association were established among the councils or other directing powers of these bodies as would allow of a distribution, by common accord, of time and of subjects, so as to direct to each the special attention of that group of students whom it most concerned, the gain would be very great. And it will be further evident that, call it by what name we like, if some such union among men, or, rather, among institutions, of a mechanical character, were once set on foot (in which case we might hope that a like fraternisation would bind together the architect with the great family of engineers, civil, hydraulic, mining, metallurgic, mechanical, and geodesic), we should really have the first elements of a technical university. If such an idea ever took root, the advantages to be commanded, both educational, and as concerns the elevation in *status* of every member of the association, would become so manifest that it is not out of the way to suggest that the fine-art profession might desire to add a faculty of their own. Structure, as regulating the proportions of buildings of all descriptions, in all material, and for all purposes, civil and military, might form one faculty or group. Survey, whether geodesic (which includes astronomy), topographical, geological, descriptive, or special, might form a second; mechanism in all its branches, a third; and fine art or decoration, a fourth. We do not wish to offer any special recommendations, still less to hint that fine art is solely, or principally, decoration, but rather to indicate the direction in which it is desirable that the thoughts of those who take interest either in maintaining and improving the *status* of the professional man, or in improving the facilities for professional study, should be turned, in the hope that, from time to time, more light may be shed on this extremely important subject, and we may be led to combine, in order wisely to distribute, our efforts, so that that duplication of work which now so often has to be lamented should be avoided.

For the rest, we cannot but express the opinion that, already technical students, even when they are not men of liberal education, are in a far better position to hold their own before a general public, than political or legal celebrities appear to be, in addressing a technically educated audience. And this, we think, must be admitted by all friends of sound education. The speciality of the study of the mechanic, or the structural artist of any kind, is not a bar to a wider education, but an essential standpoint for it. It is well to know much generally or practically,—but at least *one thing* should be known profoundly and thoroughly. In the absence of one central and complete study, all others are apt to be superficially and loosely handled,—and although it may seem hard to call all superficiality dishonest, it really comes to that intellectually, if not morally. The man whose position, for instance, in the law is due rather to the support of a party than to the profound mastery of his difficult profession, may have made a short cut to a dignity he could never have reached by the more regular route. This is not possible for the mechanic. He may be a man who has attained a very high social position, and who adorns that position by grace of manner and knowledge of the world,—but he has attained it as a mechanic and because he was a good mechanic. He therefore views with undissembled aversion efforts to turn the attention of the student, or of the mass of serious mechanical men, from the steady pursuit of their proper study and calling to political or social wild-goose chases. To be,—to use a very homely adage,—a tub standing on its own bottom should be the first aim of an independent man. That integrity of position is to be commanded in one way, and in one way alone,—by thorough mastery of one's own business. The man who succeeds in that, is like enough to have weight and influence elsewhere. His opinion will be respected, because, having given proof of his sound sense in matters which chiefly concern himself, he will be thought likely to form a wise opinion on such matters as interest himself and his neighbours together, when they are naturally brought before him. The difference between this mode of action, and that recommended by the flattering speeches of those who strive to please the working man, while careless or ignorant of the real secret of his welfare, is just that of putting the cart before the horse, or the reverse. Private business first,—and, when that has well succeeded, public business afterwards,—is the maxim that tells best both for the individual and for the community.

Furness Abbey.—The *Barrow Herald* says that the owner of the magnificent ruins of St. Mary's Abbey is taking the precaution to prevent any further demolition, by buttressing several of the main walls which seemed likely to fall. "The heavily-freighted trains passing along the railway within a few yards of the Abbey will doubtless cause a vibration not at all conducive to the safety of the ruins, and it is gratifying to find that the much-respected owner of all that now remains of the once glorious abbey is taking the wise precaution to check any demolition arising from this source, as well as keeping back, as far as possible the natural decay which is being brought about by time and circumstances."

PORTRAITURE AT THE "SALON" OF 1877.

SIR ROBERT PEEL, the great minister, once d in the House of Commons, in a debate the in-his-time much-vexed question of the yal Academy, that the portrait-painter's art s the only true historic style. Doctrinaires d not then appeared in England, and his- ical painters considered themselves gifted ngs in pursuit of aims far beyond the power ordinary individuals.

Literary men have at all periods admitted the ue of portraits as historical records, and as ie, which used to creep, but now gallops on d commands our greater reverence, we all gard with more honour, and value more highly, e old portraits of men and women distinguished the history of the past.

In this year's *Salon* there are very few por- its that will live to gain the respect of coming s, although there are men represented whose nes will be familiar as long as French history lures.

M. Bonnat's portrait of M. Thiers, which at t disappointed, has grown greatly in every- 's esteem since the opening of the *Salon*; the raordinary character and truth in the paint- of the hands, which every one observed on t seeing the picture, have been found to aracterise the whole, and the better we become quainted with the rare merits of this picture higher we must regard it; it owes absolutely thing to any charm of colour or mode of nting, and it has already taken a place in estimation of critics as a rare historical trait.

Mr. Healy's portrait of Gambetta is far less ccessful, and is very inferior to the same ist's fine portrait of Thiers exhibited some ars ago at the Royal Academy; and that pic- e was even inferior to Healy's portrait of old oe Hume," or the exceedingly life-like por- it of Pius IX. or Baron Humboldt, and we joy, if we had by us those exceedingly inte- ting hundred volumes and more of the Royal ademy catalogues, we should find Mr. Healy's ne as the painter of many a famous person o has taken a part in the history of the last y years.

M. Henri Lehmann also must have painted ring a similar period in Paris many a great d useful man, and Lehmann's portraits always ssess that peculiar excellence which consists in uracy of resemblance, and a simple unaffected th that will command for his pictures for ny a day the highest respect.

M. Henri Lehmann's brother, M. Rudolph hmann's, portraits, are equally well known in ndon, and possess very much the same merits: th painters are utterly free from that ob- xious vice of vulgarising their sitters, a fault hich has condemned so many portraits to the rret or to the store-room.

Mr. Baccani's portrait of a lady is like all that inter's work, painted strictly on traditionary inciples, and without any attempt to astonish means or methods beyond the legitimate pro- nce of the portrait-painter.

A great many French portrait-painters appear have followed Horace Walpole's excellent commendation to weak portraitists, to give a lue to their work by placing on the front of e picture their name and the date, together th the name of the individual delineated,—a actice which, if it had been followed univer- lly by portrait-painters, would have saved tiquaries and historians many an hour's not together unprofitable research.

One of the most interesting portraits now in e National Portrait Gallery,—that of Secretary muel Pepys, once in the possession of Mr. eter Cunningham,—was discovered to be the ortrait of the old diarist by a small scrap of aper which he holds in his hand, on which r. Cunningham deciphered some lines that epys had himself composed, and which he had xpressed in his diary a determination to have ainted on his picture.

Meissonier has written on his portrait of umas, in this year's *Salon*, "To my friend umas.—E. Meissonier, 1877." And several her painters have done similarly.

That very delicate distinction which the dicious understand so well, which divides very ad portraits from the very fine, has never been ore distinctly shown than in this year's *Salon*. he facility with which so many portrait-painters ow produce their pictures makes it difficult to nderstand what Sir Joshua meant by his reply a friend, who admired a beautiful picture that he had just finished, that there were twenty other better pictures underneath it; Sir Joshua, however, frequently finished a picture in three sittings, as we learn from one of his letters, and Vandyck probably, and Frank Hals certainly, again and again commenced and finished a portrait within the working-hours of a single day, a simple twelve-o'clock dinner intervening. Lady Blessington sat thirty times to Sir Thomas Lawrence for one portrait; and Mignard must have found it equally pleasant work to paint the portrait of Madame de Maintenon, at that time Madame Scarron, as her witty old husband more than once expressed his affected innocent wonder at the immense time the painter occupied on the portrait. This charming picture, taken when Madame de Maintenon was less than twenty-four years of age, was utterly free from that peculiarity which all portraits of that time possess, and which has gained the name so well understood—"*mignardise*."

Of the thousand and more portraits in this year's *Salon*, half of which are pictures painted in oil, it is simply just to say that not half a dozen of the five hundred can be called really fine pictures; Meissonier's "Dumas," Bonnat's "Thiers," Cabanel's "Portrait of a Lady," Sebastien Lepage's "Lady L.," the same painter's portrait of his parents, and Robt. Fleury's portrait of his mother, are all pictures possessing some of the highest attributes of first-rate portraiture. Baudry's portraits have this year the appearance of being weak imitations of Velasquez on Millais, but it is impossible to be blind to the fact that the faults of his pictures are not all his own. Portrait-painters' sitters have much to answer for; painters are not the only vulgar, in or out of society, and Baudry, like many another artist highly favoured by the world and injured by his friends, paints portions of his pictures with a skill and a care that show he possesses merit that can scarcely be concealed.

It seems impossible that the Parisians, with their absurdly egotistical belief in their own exclusive right to be arbiters of taste, should endure, even for a season, such portraits as Benjamin Constant and Carolus Duran exhibit; and Clairia, the painter last year of the exaggerated portrait of "Mlle. Sarah Bernhardt," has this year caricatured even his own mode of exaggeration in his portrait of a juvenile "grande-dame," in which the very worst elements of modern French portrait-painting are offensively made prominent.

Chaplin's portraits of ladies remind one of the days when highly sophisticated people, with simple views of art, admired Winterhalter, and firmly believed that the crinoline was established as a permanent fashion. Schlesinger continues still to contrast the blonde and the brunette with the trickery that we see in better form at any minor theatre, and two or three hundred other portrait-painters exhibit pictures of individuals, which remind one painfully, we are constrained to admit, of a style of art the exact parallel of which we in England possess, a school of portraiture that seeks admirers and profitable patrons in Regent-street and other popular thoroughfares.

Surely there is just now in London an opportunity, when so many picture-galleries are springing up, for a great modern portrait-gallery, where portraits alone might be exhibited. We should like very much to see such a show, with a spirited manager at its head,—a well-instructed magnifico like Sir Coutts Lindsay, or an immaculate dealer, specially educated for the position,—a M.A., with a mind sufficiently broad to admire excellence in portraiture from what is called the dry and stiff manner of Holbein to the free-and-easy method of Baudry or Millais.

M. Edouard Dubufe, a name known for many years in Europe as a portrait-painter, sends two portraits, one of M. Emile Angier, of the French Academy, and the portrait of M. Harpignies, both painted in that offensive style that the nineteenth century has fully and wonderfully developed.

The clever portrait of Mdlle. Reichemberg, by M. Pescador, cleverly as the Alsatian costume is painted, but poorly recalls the charming acting of the original in the delightful play of "L'Ami Fritz." The Londoners will be fortunate if the actress who is to take the part at the Gaiety plays it one-half as well as it has been done in the Rue Richelieu.

Of the several hundred crayon, pastel, and other styles of portraits, there is positively not one that merits any special notice, with the exception of M. Feyen-Perrin's full-length of General Thomasson, drawn with charcoal so skilfully that the tone and light and shade are altogether perfect. The same artist exhibits also a full-length portrait of a girl on the sea-shore, which he calls a study in pastel, but which is in reality executed in turpentine-colour, tastefully touched with coloured chalks,—a mode of execution worthy of imitation or experiment, and admirably adapted for decorative purposes.

It would be exceedingly unfair not to mention M. Fantin la Tour's serious portraits, or M. de Winne's "Leopold, King of the Belgians," in which the painter has attempted to give that out-door look that a sitter has, shaded by green trees. The effect is not altogether agreeable; but in this picture it is very successfully imitated.

Mdlle. Nelie Jacquemart's military portrait, like all the work of this lady, is, in its way, excellent, and M. Royer's portrait of the Vicomte de M. reminds one of Prescot Knight's work in his best day. Mdlle. Salles-Wagner's are exceedingly like what most people seem to admire; Mdlle. Amelie Valentino's portrait of a lady, in a white satin dress, with dark fur, is beautifully represented; and Mdlle. Mendeville's portrait of a Spanish lady is surprisingly artistic in its treatment, reminding one of a very excellent art which the painter can scarcely have picked up in her native country,—Monte Video.

On the whole, the lady portrait-painters are this year rather stronger than their brothers of the palette. The American portrait-painter, Mr. Sargeant, has not done himself or his sitter justice. Mr. Sargeant had better give up the teaching of Duran, and try a year or two with Cabanel, before he returns to the wide field of beautiful sitters that are waiting for him in Philadelphia.

M. Blanchard's portrait of Mdme. la Duchesse de Castiglione-Colonna is a magnificent full-length, faultlessly painted in every portion of the picture, with the important exception of the head, which leaves much to desire.

How is it that the *Salon* exhibits so many superbly painted silk and satin dresses and elaborately begilded and be-tasselled *fauteuils?* Can there be in Paris a school of costume-painters, who are privately in league with the great manufacturers at Lyons, and the great dressmakers and upholsterers of the Rue de la Paix, who find their profit in encouraging the provincials and foreign visitors to believe that to be right you must be altogether incorrect, and that simplicity and beauty no longer assimilate in the æsthetic philosophy of the "brain of the world"?

The good taste that Hallam ascribes to Molière's unmerciful exposure of the affectation and pedantry that existed in Paris previously to his time is not now invariably detected at the *Salon*, where art at least reigns triumphant, or in the household arrangements and adornments of all our friends here, and the unfortunate individual in Paris whose ship has just come in, and who may be desirous to decorate his walls with pictures, or his staircases and conservatories with busts and pieces of statuary, will have to be content with very questionable aids to true embellishment.

"ICI ON PARLE FRANÇAIS."

IN the recent Ministerial changes which have so lately disturbed France, it has been on several occasions openly stated that the Exhibition of 1878 would be postponed. M. Krantz, the commissioner-general, has also been obliged to deny the report of his resignation. Much anxiety, however, seems to have been allayed by the visit which Marshal MacMahon made on the 25th ult. to the works of the Exhibition, on which occasion he, in a truly imperial manner, stated that the Exhibition would be duly opened on the 1st of next May. It was observed that at this point M. Krantz simply bowed. Notwithstanding this official assurance of the President of the Republic, there still must remain in the minds of those who have inspected the Champ de Mars much doubt as to the possibility of the Marshal's statement becoming a prophecy, and M. Krantz seems to have rendered himself somewhat unpopular by his complaint of the short time allowed him to carry out his plans. Be this as it may, M. Berger, the director of the foreign sections, has issued a letter to the European powers assuring them that the Exhibition will be, as promised, opened in May, 1878.

The sad intelligence that has just reached Paris of the death of Sir Digby Wyatt, at the early age of fifty-seven, causes much regret amongst Parisian architects, many of whom

remember him personally during the period that he acted as secretary to the Executive Committee of the Great Exhibition of 1851, but to the general French artiste he is more familiar from their knowledge of the interesting work connected with the Crystal Palace at Sydenham, and certainly he deserves the utmost praise for the manner in which he there revived the beauty of Classic art, and presented to us the glories of the Mediæval age.

From all we hear in Paris of Leighton's "Athlete," and from what we see of the sculpture in the *Salon*, there is nothing in the Champs Elysées to compare with the Burlington House bronze; certainly not M. Peinte's "Sarpedon," which has gained the *Prix de Salon*. This prize, founded some three years ago, and which gives a right to three years' stay at Rome, must not be confounded with the *Grand Prix de Rome*, which, instituted in 1667, gives a right to five years' stay in Italy. Till this year the *Prix de Salon* had been awarded to painters, and now it is the turn of the sculptors.

Each year the State and the City of Paris devote a certain sum to the acquisition of pictures and works of sculpture exposed in the *Salon*. This year six paintings have been purchased by the State to be placed in the Luxembourg Gallery or in the provincial museums, and no less than sixteen works of sculpture.

Victor Hugo's exquisite poem, "L'Art d'être Grand-père," is having an enormous success in Paris; the press, extreme or otherwise, are lavish in their praise of their ideal Frenchman, and the author of "Hernani" of fifty years ago is at this moment enjoying a renewal of his romantic fame of early days.

The surroundings of the once famous "Cora Pearl" have just been dispersed by that prince of auctioneers, M. Pillet, and the industriously but ill-gotten and badly-assorted so-called treasures, have gone into other hands, in but few cases more worthy than the last owner's.

The contents of the studio of the painter, Charles Marchal, whose sudden death shocked his many friends a month or so ago, were sold on Saturday last at the Hôtel Drouot. Of many sales this season, it proved the most spirited of the artistic, the amusing and enthusiastic interest manifested by Marchal's friend Alexander Damas, fils, and his handsome phalanx of brother *littérateurs* and painters, as the characteristic lots were put up, can never be forgotten by the frequenters of the Hôtel des Ventes.

The gardens of Versailles, deserted as they are at present by sentimental senators, are now in perfect order, as beautiful almost as Hampton Court; the lilacs which Marie de Medicis originally introduced into France are this year more than ever luxuriant, and never have the gardens of Paris been more embellished by this lovely shrub, or the multitude of Parisian *cache-pots*, or bouquet-holders, been more in request.

Before the origin of fine-art exhibitions, which goes back to 1669, criticism, says the *Liberté*, was not regulated as it is in the present day; then the descriptions of the exhibition were only pamphlets on loose sheets, very few of which have been handed down to our times. It is from the exhibition of 1669 that dates the first criticism which possesses any serious character. It was written by Florent le Comte. This critic praises highly Jouvenet's "Descent from the Cross," and a picture representing "Christ driving the Money-changers from the Temple," as also a portrait of the poet Boileau, by Bonis.

Paris.

Badly Housed.—Dr. Burke, the registrar-general for Ireland, in his return for the last quarter of the year 1876, says that in some villages it will be impossible to work the Sanitary Act, owing to the construction of the houses,—miserable abodes, densely packed together, with no outhouses, the people consequently being obliged to keep the pig as an inhabitant, and having no place for the manure but just at the entrance of the dwelling. The registrar of Hollymount, Ballinrobe, visiting a house in which there were three cases of malignant diphtheria, two of the victims dying after three days' illness, found in one room, of about 18 ft. by 12 ft., the owner and his wife, a sick child, three cows, two pigs, and a donkey. The registrar reported the matter to the sanitary authority, but was not aware when he made this return that they had yet taken any action to compel the erection of external accommodation for the inferior animals. We quote but one of a large number of similar cases.

DEFENCE OF MODERN RESTORERS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE first part of the ordinary fortnightly meeting of this Institute, held on Monday evening last (Mr. Charles Barry, president, in the chair), was made "special" for the purpose of considering and confirming the award recently made by the Council of a honorarium of fifty guineas to Mr. Charles L. Eastlake, secretary, for special services rendered during the past twelve months to the committee for the improvement of the Institute, and in other official work.

The motion having been moved and seconded, was unanimously agreed to; Mr. Eastlake expressed his thanks, and the meeting ceased to be "special."

The following gentlemen were balloted for and duly elected:—As Fellows: Mr. P. B. Hayward, of Exeter, and Mr. J. E. Watson, of Newcastle-on-Tyne. As Associate: Mr. G. D. Oliver, of Carlisle.

Among the donations was a portrait of Mr. James Burton, father of Mr. Decimus Burton. Professor Donaldson, in making the presentation, referred to the enterprise and public spirit of the subject of the portrait, who was the founder of that flourishing seaside resort, St. Leonard's-on-Sea.

The Chairman announced that the fund being raised for the Improvement of the Institute premises now amounted to 785*l.*; 1,000*l.* were required before the recess, so that the Council might feel justified in proceeding with the work. He was informed by Mr. Phipps, the secretary to the fund, that there were forty-five fellows and 142 associates practising in London who had not yet replied to the circulars sent to them appealing for funds, but most of them would, it was hoped, make some response within the next week or two.

Deceased Members.

The Chairman said he had to perform the melancholy duty of formally announcing the great and irreparable losses which the Institute had sustained by the decease of two of its most esteemed members. Mr. Edmund Sharpe, whose sudden death abroad took everybody by surprise, and inflicted a pang as keen as it was sudden, was not very well known to him (the chairman) personally until quite recent years, but in the short period since he had known Mr. Sharpe he had learnt to like him very much. He was very highly esteemed by a large circle of friends, not only for his genial and earnest character, but for his professional abilities. He took the liveliest interest at all times in the proceedings and welfare of the Institute, and by the Institute in its corporate capacity as well as through its individual members, his loss would be severely felt. The Institute had sustained another great loss by the death of Sir Matthew Digby Wyatt. After great and long-continued suffering, a brilliant light had been, in the Providence and All-Wisdom of God, extinguished. He could speak of him from much greater personal knowledge than he could of Mr. Sharpe, for he well remembered many years ago when Sir Digby Wyatt, then a young and enthusiastic student just returned from abroad, came to see his (the Chairman's) father, who early recognised the talent of the young student, and predicted his future success. He had fallen, a labourer in his labour, and they had lost him because he was so earnest and so unsparing in his work. He had died in harness, and he did not think that any one who was earnest in his work would wish otherwise. Above all, they would desire to leave such a memory as Sir Digby Wyatt had left behind him. Of his various characteristics and powers it would be presumptuous in him to say a single word. The feeling of all would be one of simple sorrow at a very deep loss.

Sir Gilbert Scott said he knew Mr. Sharpe well, and the Institute had lost in him a most valuable member. He had occasion, at the time the gold medal was presented to Mr. Sharpe, two years ago, to say a good deal about what he knew of him, which he would not repeat on the present occasion. Although he had been in wholly independent circumstances for some years, and had given up professional practice, he had continued to devote himself to the art of architecture, and had published some most valuable works, as everybody knew. He was also deserving of grateful remembrance for his labours in conducting for some years past a contingent of the Architectural Association over various parts of England and France, for the study and delineation, under his able guidance, of architectural monuments of the utmost interest. Such labour of love as this was probably unique in the architectural profession, and there was nothing to lead him to undertake it but the generous impulse of his grand and genial disposition. The chairman had already said nearly all that he (Sir Gilbert) could say of their dear friend Sir Digby Wyatt. He had carried out work with him almost in partnership, and a more noble, honourably-minded, and genial-hearted man he had never been brought in contact with.

Professor Donaldson then read a brief but interesting memoir of the late Mr. Thomas Bellamy, architect, a number of whose drawings, given by his executor to the Institute, were hung upon the walls. The two best-known works of Mr. Bellamy, namely, the Law Fire Insurance Office, in Chancery-lane, and King's College Hospital, Carey-street, were briefly described in the memoir, which, it need hardly be said, was a graceful tribute to the memory of a departed friend.

Architectural Restoration.

Mr. J. J. Stevenson then read a paper on "Architectural Restoration,—its Principles and Practice," the pith of which we give on another page.

In the discussion which followed,

Mr. Beresford-Hope, M.P., said that, after having listened with much interest and much amusement to the sparkling and tolerably good-natured epigrams of the author of the paper, they must, after all, ask themselves what was the principle that underlaid the paper? What was the gospel of art that it had preached? He was afraid the conclusion must be that the gospel they had listened to was a gospel of despair and death. Everything that was bad in English church architecture, every bit of stinting and scamping by the village carpenter in league with the insolvent bricklayer, under the pastoral superintendence of Parson Trulliver,—all and everything was to be sacred, whether stones, fanguses, the creation and corruption of death, frightful and ugly as they might be, were to be preserved. Coming to our own age, the age which at least, by the author's own admission, had taken some pains,—a great deal of pains, and a very increasing amount of pains,—to ascertain what were the principles of ancient art, we were told nothing. There the curtain was allowed to fall. "Hitherto shalt thou go and no further." Put a little lead on the roof, said the author; put a buttress,—an ordinary one of stone or brick, it was to be presumed, though one of cast iron would surely be more consonant with the author's views. In the name of criticism, in the name of art, in the name of all things in heaven and earth, were we to be expected to keep untouched all the poor, wretched, defaced, mutilated buildings that our children who came after us might say,—"In the Middle Ages they had taste, in Perpendicular days they had taste [and he was not one of those who despised Perpendicular work], in the days of the Renaissance they had taste and fancy [neither did he despise the Renaissance], in the eighteenth century they had nepotism, blindness, and stupidity; and in the nineteenth century an insane desire that the worst of the bad taste of our ancestors might be handed down to us." The author had referred to galleries (although he apparently afterwards recollected that there was not a gallery in an English church 200 years ago), and said that there was something beautiful in them which we did not see now. He would ask the author whether two centuries hence he thought that the then-existing Institute of British Architects would be assembled with a Mr. Barry in the chair,—for he (the speaker) believed that in the house of Barry taste and art would be hereditary,—to listen to the Mr. Stevenson of that time read a paper in which he would say,—"Well, really, there was some spirit, some beauty, some picturesqueness, in what those venerable fathers of our artistic taste, the Barrys, the Scotts, the Streets, the Ferreys, and the Stevensons produced; but what is there to deserve respect in the laborious imitations of Queen Anne work which we poor fellows now turn out?" They all knew that in this work of church restoration they had committed innumerable blunders,—flagrant, gross blunders,—but he blessed God that they had committed those blunders, for they could only have learnt their lessons by such blunders. The author of the paper asked,—"Why obliterate the history of the English Church; why stigmatise the Reformation as a mistake?" He (Mr. Hope), for his

art, did not say that the Reformation was a istake,—he thought it was a blessing,— or did he want to obliterate the history f the English Church,—only that which was ot the history of the English Church,— ie history of the absence of a knowledge f art,—the history of the difficulties caused y bad clayey roads, which prevented mate- als being carted from one part of the ountry to another,—the absence of the ostal service, of the telegraph, and of every- ing that was essential to the practice of an rchitect in the present day. If Hawksmoor, hambers, and Gibbs, those great men, whom e sincerely admired, had been able to avail emselves of the resources of communication nd travel which we in the present day had at ur service, they would have gone down to our ountry parishes, and the churches throughout ie land would have been completely trans- rmed by them. Had we in the present day ursued the course which in all probability would ave been pursued by the distinguished archi- cts he had named, there would have been some anding-ground for the doctrine laid down by e author of the paper, who had either gone a reat deal too far or not far enough. Take a et-case of his own. He said there were certain omanesque windows in Durham Cathedral, of road span, that had been filled in, in Perpen- icular times, with Perpendicular tracery, and at this tracery, so far from defacing the win- ows, had broken them up and given proper ale to them,—had, in fact, taken away from em their distinctive Norman character, much their improvement. Of late years, we were ld in the paper, this Perpendicular tracery ad been removed, and the windows were all e worse for the change. That might be so; t what he (Mr. Hope) should like to know as, what was the putting in of the Perpen- icular tracery in the first instance but a ork of alteration? and what was its re- oval but a work of restoration? Surely if r. Stevenson defended the man who put this rpendicular tracery in for attempting to im- ove the windows, he could not condemn the an who took it out with the same motive? is was but a specimen of the inconsistencies t forward by Mr. Stevenson. The whole of e paper was a bill of indictment against all e architects of the present generation, and a neral whitewashing of the monk of St. ban's. Everything was to be kept to a certain ad level,—nothing was to be brought out. The atchword of the author seemed to be, "As you , of Medusa's head, all rotten, all dead." ey were to respect, at any cost, weather-stains, e timbers of rotten galleries, and the fancies water-colour artists in general and of senti- ntal dreamers in particular. He wished the thor had lately paid a visit to Canterbury. d he done so, he could not have described at had gone on there in the terms he had ed. Parenthetically, he must say that it was t fair to appeal either to the bishop's throne to the pulling down of the western tower of nfranc as parts of the present scheme of storation. The wanton destruction of the ver was received with indignation, and it was t indignation which was one of the first lying cries of that ecclesiological movement ich Mr. Stevenson deprecated. The tower s taken down, with lamentable want of taste, ty-five years ago. As to the throne, it was ried out by local unaided ability, and not by ofessional architectural advice. He appealed Mr. Stevenson and those who thought with n to be fair. Let them denounce the rks of the present generation of archi- ts as much as they liked, but let them drag in matters like those he had referred which had been really some of the main entive causes of the increased study which l been given to Gothic architecture of late rs. Mr. Stevenson talked of "the screen t divided the choir of Canterbury from the re," and said that the screen was about to be en away. Now it so happened that the screen ich divided the nave of Canterbury from the ir was not only *not* to be taken away, but it s to be made visible on one side, as it was not ible at present. The older part of it was an egral and most important portion of Prior stry's choir enclosure, and was at present den by other work. Mr. Stevenson had been led by his informants, and it was a pity that y had not given him a more accurate brief. l they done so they might have told him t what was proposed to be removed was not reen at all, but a series of western stalls of great beauty, worthy of being preserved, and worthy of standing where there was some light to see them, which there was not in their present position. In removing these stalls to where they could be set up in perfect harmony and preservation, without any incongruity whatever, they would not only be not destroying the old choir-work of Prior Eastry, but would be preserving it and opening it out to view. Was not this preservation, and not destructiveness? Having had occasion recently to visit it, and having publicly committed himself to what was proposed to be done, he felt bound to notice the references to it in Mr. Stevenson's paper. Would Mr. Stevenson say that the west end of Prior Eastry's choir, a veritable part of our history and traditions, ought to be hidden from view, and that the stallwork of later date which at present hid it from view and was not itself seen was not to be removed to where it could be seen? He protested, in the name of the Institute, in the name of the party which had laboriously, year after year, been working back into conservative and more conservative, and at the same time more eclectic and liberal principles of restoration, against the attempt to confound them all in one epigrammatic indictment,—good things and bad things all jumbled together,—in obedience to a principle which, if legitimately carried out, could only be the stagnation of art, and the dropping of the curtain between the history of the past and of the present,—in other words, the glorification of intellectual barbarism.

Mr. Benjamin Ferrey said he had on many occasions listened to interesting papers in that room, and he was far from saying that the address which they had heard that evening had not some points which deserved to be looked into. At the same time, he thought that the indiscriminate attack which the author had made upon every architect who had hitherto considered himself a conservative restorer, or, rather, repairer of churches, was something startling. Sir Gilbert Scott had been specially singled out for attack, and he felt it his duty to incite Sir Gilbert to say what he could so well say in defence of himself. Probably the discussion would not end that evening,—he hoped it would not, because no doubt many of the gentlemen who had been most actively engaged in church restoration would feel called upon to say at least how far the indictment was applicable to them. Mr. Beresford Hope had already spoken out nobly, on the general question, and Sir Gilbert Scott might safely be left to speak for himself.

The Chairman said he cordially echoed the desire expressed by Mr. Ferrey that Sir Gilbert Scott would reply to some of the strictures contained in the author's paper. Sir Gilbert had been attacked with such kindly cruelty that he could not help being reminded of the way in which old Isaak Walton instructed his disciples to put a worm on the hook: "Deal with it tenderly." He thought Mr. Stevenson had had this injunction in view, but he would find that in Sir Gilbert Scott he had not got a worm to deal with, or at any rate that the worm would be able to give an answer.

Sir Gilbert Scott said he hardly knew what to say. He had been rather personally dealt with, but not, he thought, on the whole, unkindly. Mr. Stevenson had scolded him as if he loved him. He (Sir Gilbert) perhaps rather deserved to be abused for any shortcomings or excess of zeal which he might possess as a restorer of churches, because he did not think any human being had more abused other architects for spoiling churches than he had. For thirty-five years he had been, in season and out of season, finding fault with other architects for the blunders they made in restoring churches, and if he lived for thirty-five years longer he should continue to find fault where he thought fault-finding was necessary. In reference to Mr. Stevenson's strictures, however, he (Sir Gilbert) laboured under the disadvantage that Mr. Stevenson had never, so far as he (Sir Gilbert) knew, tried his hand at restoration. Mr. Stevenson thus possessed an undue advantage over him. He was a happy man, like a new-born babe suddenly endowed with the powers, intellect, and a little bit of the censoriousness of a full-grown man. He was not only incapable of committing sin, but had never experienced temptation. He might throw as many stones or shoot as many arrows as he liked at others, knowing that no stone or arrow aimed at him could do him any harm, seeing that he had never done anything good or bad in the way of restoration. On the other hand, he (Sir Gilbert) knew what were the temptations, difficulties, and troubles, and what were the possibilities of making mistakes and errors of judgment in such matters, and he was ready to be shot at. It so happened, however, that he was particularly invulnerable to the shafts of persons who, like Mr. Stevenson, were so childlike in their innocence. The author of the paper, it must be confessed, had shown that he had devoted some amount of study to unrestored churches, but he seemed to have viewed them in somewhat a *couleur-de-rose* aspect. He had pictured some most lovely and beautiful scenes in old churches, but such scenes as he (Sir Gilbert) had never witnessed during his forty years of active practice. On the contrary, he had seen squalor, wretchedness, and contemptible and contemptuous neglect. He had seen galleries erected which would be a disgrace to a stable. Were such things as these to be preserved? He had seen roofs falling down on to the people; and, only within the last month or two, window tracery hanging down, and only prevented from falling out by the slender ironwork. Was that a state of things to be perpetuated? Would not Mr. Stevenson do better to carry his theory as much further as ever he liked in advocating conservative treatment rather than to advocate the doing of nothing,—which might be very good advice, but which he knew could not by any possibility ever be acted upon? What was the use of giving advice which the adviser knew could never be followed? Let Mr. Stevenson tell them how to do things, and abuse them when they were done badly if he liked; but to tell them to do nothing was simply to make fools of them. He (Sir Gilbert) was conservative to the backbone, and took the greatest delight in studying the old buildings which Mr. Stevenson had so poetically described, and when he had to deal with them it was his wish to deal with them rightly. His ability might not be equal to the task, his judgment might be wrong, but he was not the inconsistent being which he had been described to be, much less was he guilty of abusing other architects and criticising their blunders for the sake of benefiting himself, for he believed this was what was meant to be insinuated; at any rate, something very like it appeared in one of the public papers a little while ago. Mr. Stevenson had singled out three things for criticism. Firstly, there was what was proposed to be done at Canterbury Cathedral, with which Mr. Beresford Hope had very ably dealt. It was an extremely fair subject for discussion, because it happened in a case of extreme difficulty. There were two very interesting features, one hidden by the other, and the question was whether one should be left hidden by the other, or whether both should be shown. The second point had reference to the works carried out at Chester Cathedral, where Mr. Stevenson said he (Sir Gilbert Scott) had pulled down a chapel and added an apse, of which traces were met with in the foundations, putting over this apse a half-cone or semi-steeple roof copied from a church in Normandy. Now what was the real state of the case? At the side of the exquisite lady-chapel there had been erected, during the Perpendicular period, another chapel, which he should never for one moment have thought of interfering with had it not been absolutely rotten. They were obliged to pull it down or it would have fallen, and in the course of the work they found within the walls the fragments of an apse which bore traces of having been covered with one of the Norman-like semi-steeples to which Mr. Stevenson had referred, and of which there was no other example in this country. The fact was that the apse had been rebuilt almost entirely with its own materials, and the steeple was not imitated from one in Normandy. He could the more positively state this seeing that it had taken him five years to trace out the details of the building, and fragments of almost every part had been discovered. As regarded St. Albans, the question had been raised whether the plastering on the exterior of the great tower ought to have been removed. Now, the fact was that the plaster had fallen off and was continuing to fall off in great slabs, and it was utterly impossible to save it. He was at first inclined to have it preserved, and quoted the very monk who had been mentioned by Mr. Stevenson. He found, however, that it was impossible to preserve the old plaster, and had the tower partially replastered, but the effect was so awfully ugly that he was obliged to strip the plaster off again. Like other men, he made mistakes sometimes, but he always made a point of recording his errors when he knew of them. He felt himself to be in the same boat with Mr. Stevenson,

excepting that Mr. Stevenson had exaggerated his (Sir Gilbert's) view to such an extent as to render it impracticable and absurd.

After some consideration, it was resolved to adjourn the discussion to Monday, the 11th inst.

ARCHITECTURAL RESTORATION: ITS PRINCIPLES AND PRACTICE.*

FOR many years I have felt that restorations, as usually conducted, were a mistake; that they were destroying the old art, and obliterating the history of the country. But it seemed useless to say anything, and the few whom I knew to hold similar views were equally hopeless. The mass of the architectural profession was against us; the clergy, who had the chief say with regard to churches, the most numerous and important of our old buildings, considered it a duty to art and to religion to restore them, giving liberally their exertions and their money, and exhorting all whom they could influence to aid in the good work. The tide in favour of restoration was so strong, that it seemed hopeless to oppose it,—the only result injuring oneself, and offending friends; for it was useless to speak without giving examples of the harm and destruction we believed were being done. Yet we are bound to face even these risks if we are right in thinking that irremediable harm is being done to the old art-records of the country. I am sure that those whose system of restoration I am attempting to prove wrong will acquit me of any personal motive in expressing my opinion.

To illustrate the present practice of restoration, I have taken my instances from the practice of Sir Gilbert Scott, Mr. Street, and others, whose standing and eminence are a guarantee that their work is a favourable example of the system.

I take a paper of advice to the promoters of restorations, issued by the Institute of British Architects, as a fair exponent of the present system. It is entitled "Conservation of Ancient Monuments." It seems to me to consist mainly of recommendations for their destruction. This paper bears date March, 1865. It was, I believe, the result of an admirable address on the evils of restoration, read by Sir Gilbert Scott to this Institute in 1862. It is difficult after reading this address to believe that any more old churches would be destroyed by restoration. Yet the process has been going steadily on, approved by clergy and architects, the press, and the public (as holy work). But the dissatisfaction with the restorations of the last thirty years had been more wide-spread than we thought. Since I undertook to read this paper, a society has been formed which includes names prominent in the Church, in literature, and in art, with the view of opposing the present system, convincing the public of the error of it, and trying to save what of our historical buildings yet remain untouched and untampered with. . . . .

An old church which has not been restored is an absolutely-trustworthy historical document, a continuous record of English history. . . . . Thirty years ago England was full of such old churches. A few are left, but to our children they will be absolutely unknown. Unless the fashion changes, every one will have been restored. The ignorant and foolish destruction of historical records which restoration too often perpetrates is noticed even by those who are in favour of restoration. In the paper I have referred to, published by the Institute of British Architects in 1865, entitled "Conservation of Ancient Monuments, or General Advice to the Promoters of the Restoration of Ancient Buildings," it is stated (par. 17) that "many districts have been robbed of their antiquities through rash and unskilful operations in restoration."

Sir Gilbert Scott says in his address:—

"I am uncertain whether we do not *all* go on a wrong principle in our dealings with ancient churches. I could almost wish the word '*restoration*' expunged from our architectural vocabulary. . . . . The seating all taken up, floors removed, plastering stripped from the walls, the whole church left for months at the mercy of the elements by the removal of its roof; windows which do not please the clergyman or the squire replaced by more pretentious ones. We all of us, however conservative our views, adopt something approaching to this as the necessary view of a restoration."

"Now this," Sir Gilbert Scott goes on to say, "is really beginning to tell in a *fearful* manner upon the value of our ancient churches." "All through the country," he says again, "the most interesting features of our old churches are being weeded out through carelessness, prejudice, or deliberate barbarism." . . . .

The Institute paper contains some excellent advice, and some much-needed warning against the destruction which restoration has so often perpetrated. It says (par. 15),—

"It cannot be too strongly insisted on that in dealing with an ancient church or other building the object should be not simply to put it in good repair, but to preserve it as an authentic specimen of the ancient art of our country. Every old building has an historical value, and it should be remembered that this is gone when its authenticity is destroyed. . . . . It must be remembered that new work is of no value or interest, excepting so far as it serves to preserve the ancient design, and that no interest will ever be attached to it unless original parts remain to attest its authenticity."

It raises a horrible idea of the extent to which ancient monuments have been destroyed by restoration that such advice should have been necessary. Other paragraphs of the paper are even more suggestive. "Ancient painted glass," it says (par. 6), "with the original leading and iron framework, should be carefully preserved." "Plastered surfaces of ancient date are often found, and should be preserved if possible." This implies that restorers had been removing old stained glass, and destroying the old wall surfaces.

Good as the advice in this paper is, so far as it goes, I venture to assert that it is wholly inadequate, even if followed (and unhappily it has not been followed), to save our ancient monuments from being destroyed by restoration; that, keeping within the four corners of its advice, almost any amount of tampering with old buildings, and their destruction as historical records, is possible; and, farther, that the paper encourages and advises such tampering and destruction: for, in the first place, there is implied in it throughout, underlying every sentence of its advice, the view which seems held by all restorers, from the most eminent, learned, and conservative, to the most ignorant and destructive, that the Reformation was a mistake; that since then the Church of England has no history worth recording; and that the historical monuments, and the ecclesiastical arrangements of these three centuries of darkness and degradation, ought to be destroyed. This, we know, has been the almost universal practice in restorations. In accordance with it, much costly work, —the best which its age could produce,—has been removed or destroyed; and more is threatened by those who, while destroying it, proclaim their conservatism, and declare that their object is to preserve historical records. It is proposed, for instance, to remove the rich carved oak screen which separates the choir from the nave in Canterbury Cathedral. Unless on the idea that the monuments of the Church of England since the Reformation have no historical value, the removal of this screen flatly contradicts par. 16 of the Institute's "Advice," which says:—

"A vigilant guard should be kept against the indulgence of individual fancies for or against particular features or styles; and especially against the theory that a restored church must be purged of all features subsequent to some favourite period. All such notions are in the highest degree dangerous, and have rendered many a restored church actually worthless as an historical monument."

These words are true and comprehensive, but other parts of the "Advice" contradict them; the most eminent and conservative restorers deny them constantly by their work. . . . .

Sir Gilbert Scott says it is wrong to keep the Houses of God in their present state of mutilation as mere architectural specimens for our study. If this is so, a religious sanction of restoration must override all considerations both of art and history. But the claim is a doubtful one. It justifies the Reformers in their destruction of art in purging the churches from what they thought was idolatry. The spirit which prevailed at Nuremberg, where they preserved the old art in their churches,—the sacrament houses and the pictures of saints,—though it ceased to represent their new opinions, seems to me wiser and not less Christian. . . . .

What right has the Institute, or any restorer, to say that the historical records of England and of the English Church for the last three hundred years, should be destroyed? It is not sufficient reason that they dislike them; for, as the "Advice" truly says, we have no right to indulge individual fancies for or against particular features or styles. Even admitting that the work of the last three centuries is ugly, they are centuries of English history, and we have no right to destroy their records because we dislike them. . . . .

Taste changes: there is a feeling growing that the art of the last three centuries was not wholly worthless; that it had dignity and richness, and a sense of proportion.

Some restorers include in the modern wor which it is their duty to destroy, any additio or alterations in the Perpendicular style to th original design of the building. . . . . .

In Durham Cathedral the plain, round, Norma windows of the aisles were once filled with th most delicate Perpendicular tracery. It wa obvious to the meanest capacity that this wa not part of the original design. What th meanest capacity could not see, however, wa how the division of the tracery increased th appearance of size in the church; how it delicacy brought out by contrast the massiv grandeur of the piers. So, in the continua tinkering to which that unfortunate Cathedra has been subjected, this tracery was cleare away. The windows now, with their mea stained glass, look dull and poor. . . . . .

At Chester Cathedral, Sir Gilbert Sco removed the Perpendicular chapel which stoo against the south wall of the lady-chape Instead of it, he erected, at the end of the sout aisle, an apse, of the foundations of which h had found traces, with the curious form of ro consisting of half a cone found in some ol Norman churches, but not, so far as I am awar in England. I cannot think that such change even when they did improve the appearance o the buildings, add to their value as historica documents.

The Institute paper advises the destruction o Perpendicular work, stating that "one mai object in all church restorations should be to ge rid of modern additions put up without regar to architectural propriety." Among these includes the flat roofs of Perpendicular time saying that, though these are by no mean always to be condemned, the new roof shoul be made of the same steep pitch as the origina roof. This implies that flat roofs are generall to be condemned, and such is the practice of th best restorers. Mr. Street has done this several churches; Sir Gilbert Scott replaced th old flat roof of the Venerable Bede's Church Jarrow by a steep one. The result is, that th tower looks low, and is hardly noticed from distance. Formerly, standing clear from th flat roofs, it was most conspicuous, and had remarkable appearance of height, and held i own even among the factory-chimneys whic surround it.

But even if Perpendicular work is bad, w have no right to destroy it. It is the special English architecture. It grew up as the peop threw off foreign influences, Norman an Angevin, and asserted their English indiv duality. I have to confess that I like it; that do not understand the dislike which man architects have to it. . . . . .

While restorers have shown no scruples i destroying Perpendicular and Renaissance worl they have generally professed to treat work earlier date with respect. But no period is sa from them. At Canterbury Cathedral one of th western towers was Norman. The authoritie thought the two towers should be of the sam design, so they pulled down the Norman towe thus destroying the evidence it gave of th length of the original Norman church, and bui a copy of the later tower, which they scrape and altered to look like the new one, so that th symmetry might be perfect. . . . . .

The great tower of St. Alban's was covered the time it was built with smooth plaster, whic remained almost complete till the late restora tion. One of the monks records with admiratio that the building looked like a single stone. Th monk's taste may have been defective; S Edmund Beckett, though he disapproves of re moving plaster, thinks the tower does not loo ill, as it is redeemed by the large quantity dark cement used in the late restoration. H has a right to that opinion. But this plaste covering was historical, and no one has a righ to destroy historical documents. To remove was to tear a page out of the records of Englis history.

I have never been able to understand th curious delusion which possesses many moder architects, that plastered surfaces on walls ar inconsistent with the Gothic style. In ne buildings they are welcome, of course, to carr out the idea, and to show brick lining inside their houses, if their employers will let them But they have no right to remove, as they d the ancient plaster from Mediæval building Yet the Institute paper advises this course. . . .

The mess which has been made in many ol churches by restoring away the ancient plaste

* From a paper read before the Royal Institute of British Architects on Monday, the 28th ult., by Mr. J. J. Stevenson, as mentioned on p. 550.

is really shameful. Mr. Street stripped the walls of the nave of Burford Church, and left the rubble pointed. We all know from the admirable illustrations of Bowman and Crowther the beautiful church of Heckington, in Lincolnshire, which was a perfect example of the exquisite delicacy of the Middle Pointed style. The restorer has shown his appreciation of it by clearing the plaster from the inside, leaving the coarse rubble-work, as the Institute recommends, exposed to view, and *pointing it all over with wide black joints*. The ugly network is the only thing one can see in the church. One would think that to perpetrate this must have required the ignorance of a builder, joined to the self-conceit of an architect.

But there is high authority for this treatment. M. Viollet-le-Duc did the same to Notre Dame at Paris, where, however, the effect is not quite so atrocious, as the stones are squared, and the dark network consequently more regular. . . . .

Judging from their practice, one of the most remarkable characteristics of some restorers is their incapacity to see the marvellous colour which time gives to buildings, and their want of appreciation of the interest and dignity which is given them by the marks of age. They like to scrape everything clean, and, as the specifications say, to "leave all perfect." In so doing they neglect the Institute's "Advice," which says that "in the restoration of decayed stonework no scraping or tooling of the surface of the stone should take place under any circumstances." . . . . . .

Of all restorations, the most thoroughly destructive are those which attempt to restore the coloured decorations in the interior of old buildings. . . . . .

The pity is that once the buildings are recoloured, the record of what they once were is completely and for ever destroyed. The whitewash did not destroy it, but rather preserved it. The modern decorator seems to think that one blue or green is as good as another.

It may perhaps be asked, What should be done as regards the restoration of ancient buildings? Is it too much to suggest that we should leave them alone; keep them in repair; keep out the wet; piece the roofs where needed; mend them with lead, and not with the botcher's companion, —Portland cement? If the walls are sinking, underpin them. If they are bulging, build a buttress or tie them in. Surely our building and engineering science is capable of so much? Such repairs will not destroy the record, as pulling them down and rebuilding, and making them as we believe they were at first, must always do. Do not destroy the evidence of age, for it is this which gives the buildings their value. . . . . .

Above all things, save the few churches which are still untouched from thorough restoration by an architect. For it is the knowledge and skill of the architect which destroy the authenticity of the building as a record of the past. He is by profession a clever forger of old documents. He is trained to the tricks of the trade. As the forger selects paper like the old for his false documents, so the architect is taught in renewing an old church always to use stone of similar character to the old, so as to make his false work indistinguishable from the genuine. In a restored church we can never tell whether the new windows we see are old ones renewed, or the product only of the architect's imagination; and thus doubt is cast on the authenticity of every part of the building. This is why our alterations are deceptive, while former ones, each in the style of the time, were not so. We have no style, we only forge old ones.

Surely what architects have already done in restoration may suffice them? Out of all England they might leave a few churches untouched. They would be the only ones worth visiting as authentic and continuous records of the past. . .

After the destruction which has been already perpetrated, we may at least ask that restoration, even by the most eminent and conservative restorers, should not be looked on as certain and unmingled good, which it is the duty of all to promote. Rather let us watch with jealousy, because they are so few, the few old churches which still remain untouched records of English history.

Property Investment Association.—Mr. C. P. Edwards, late assistant to the district surveyor of South Kensington, has been appointed architect to the Freehold Property Investment Association, upon their estates at Quaker's Hall and Vine-court, Sevenoaks, Kent.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

TREATMENT OF CHURCH INTERIORS (*continued*).*

WHAT renders the high artistic excellence in the construction and decoration of the House of Prayer insisted on in my last speculation the more becoming, is that art-beauty is of divine origin, being drawn by man from beauty impressed upon creation, of which it is the glory; and an instrument for the purification and elevation of the human soul, which cannot but be moved heavenward by its nobler forms and manifestations. So that in making the place of God's peculiar presence on earth glorious or beautiful, we are doing it after a divine exemplar, as Moses built the Tabernacle in the Wilderness after the pattern shown to him on the Mount. If architects, who, as well as painters, are, or should be, priests of the mystery of form and colour, were more familiar than they generally are with the pure exquisite beauty of external nature, uncontaminated by the hand of man, which cannot be found around great cities, but only in her wilds and solitudes, they would be more careful what sort of architectural or art-work they offered to God in His temple.

While art, which as an interpreter of God's material works—His word on the roll of creation, would thus minister to religion, religion would raise and ennoble art, which always flourished most when inspired by the requirements of devotion or the religious sentiment, and employed in the service of the altar; and the best thing we could now do for her would be to restore her to her lost place in the sanctuary. I think these views of the demands of religion upon architecture—I mean architecture in its largest sense, including sculpture and painting—essential to her due progress, and the attainment of her proper rank. It was the Greek religion that produced the Parthenon, and, in the present day, doubtless the highest efforts of architecture must be inspired by Christianity, which presents the highest standard to art that can be conceived,—one that partakes of the spiritual and infinite,—as much above the standard presented by secular purposes as heaven is higher than the earth. It has the same tendency to raise architecture above the level of palaces, theatres, and human habitations, into the highest regions of architecture, as the embodiment of gods by the Greek sculptors had to raise sculpture above nature into the ideal, and add a divine supplement to the imperfectness of the real in the human figure. The highest efforts of architecture, those which have exhibited the high-water mark of the art, have always, in every country, been religious edifices, temples, mosques, pagodas, or churches.

Those who look with suspicion on the arts when introduced into the temple, and condemn all modes of operating on the mind and heart through the senses, it is probable are more impressed with the spirituality of religion than with the true character of the fine arts; which are nature brought through the mind of man in a new creation, the handy work of God in a double sense; and can no more be irreligious in their tendencies than original nature herself. Such persons are not only ignorant of the nature of art, they are but imperfectly acquainted with the nature of man. God is purely a spirit, but man is not; and the House of Prayer is to be adapted to the nature of man as well as to that of his Maker. Truth to her true votaries is lovely, even undressed in the garb of art and fancy; but everybody has not mind or spirituality for her due appreciation. And we have no right to deny to the less intellectual the help which the arts would afford. They possess the peculiar advantage of being able to operate on minds that cannot reflect; for there are many who are unable to pursue a chain of argument, or see the force of a demonstration, who could yet feel a powerful stroke on the fancy or passions, aimed through the medium of the eye.

But the two divine art-sisters have an inalienable right through all periods of the Church of God to a place in the temple, there to join with music and poetry in one grand symphony as of old, and kindling the sublimest emotions of which we are capable, so often expressed by the Hebrew prophets and bards, and which bears the soul aloft as on the wings of eagles.

As regards general external and internal composition, the scene of true character and expression for the House of God was reached by the northern Gothic architecture in its aspiring cruciform pile, with which every minute feature seems to sympathise. Such compositions as the cathedrals of Salisbury, Lichfield, Canterbury, Lincoln, Frieburg, Antwerp, Amiens, and that unrealised conception of one of which the choir of Beauvais is a fragment, must be considered as efforts in the direction of architectural greatness of design, both within and without, which probably could not be surpassed. But in Italy only, I consider, where the greatest painters and sculptors devoted their lives to the adornment of the sanctuary, as witness the church of St. Francis at Assisi, St. Peter's Church and the Sistine Chapel at Rome, the cathedrals of Milan, Florence, and Parma, and St. Mark's Church at Venice, on which the skill and treasures of the East were lavished, and which it is said was to the Venetians more than a place of worship, was the debt of painting and sculpture to Christianity fully acknowledged and paid. Not only were the pre-Raffaelle painters,—I mean the painters of the thirteenth and fourteenth centuries,—but those of the great Roman, Florentine, and Venetian schools, through the golden age of painting in Italy, essentially religious painters; and their highest powers were exerted in conceiving and worthily embodying Christian subjects for the adornment of the great churches of their country. It is true a higher and purer religious feeling which arose in Siena, and attained perfection in the works of Fra Angelico and the early Florentine and Umbrian school, existed, before Raffaelle's much-talked-of change of style, than was exercised afterwards. But religion was to the last, even in the Eclectic school of the Caracci, the chief inspiration. Art was not considered a medium of amusement, but a vehicle for religious impressions; and the Genius of Christianity or Holy Spirit was as really the muse of painting, and the inspiration of the mighty style of Michelangelo and the highest works of the greatest painters of Italy and the Netherlands, as it was of the "Paradise Lost" of Milton, in whichthe Divine spirit is expressly and emphatically invoked. Some of the greatest painters were members of religious orders; and all of them may be considered as much churchmen as the regular clergy; for their art was almost exclusively the servant of religion. Such works as the "Assumption of the Virgin," by Correggio, on the cupola of the cathedral of Parma, which exhibits every excellence of painting; the sublime prophets and sibyls on the sides and vaults of the Sistine Chapel, the triumph of modern art, and which cannot be contemplated without reverence; and the "Transfiguration" and others of the best works of Raffaelle, the unrivalled portrayer of the passions, are sufficient to show that the greatest efforts of painting were devoted to the service of religion.

It is after some such examples as these, I presume, that St. Paul's Cathedral is to be decorated. But painting and sculpture are as applicable to the adornment of our Mediæval cathedrals as to St. Paul's and the most Classic of the Italian churches; and money, which I should hope could be at least as easily obtained for this purpose as for the so-called restoration of the exteriors, could not be better spent than in so applying them. I conceive the best thing that could now be done with those interesting stone records of otherwise almost unrecorded times would be, instead of destroying what architectural life remains to them, by renewing their exterior faces, to increase the life and eloquent expressiveness of their interiors by sculpture and painting; in other words, restore or complete the interiors by filling the numerous empty niches with appropriate statues, and the panels with paintings embodying the history, and illustrating the spirit and power of the religion of which the whole buildings are the remarkable and glorious trophies.

Many of these structures, grand as they are, are greatly wanting in the highest element of architectural vitality and expression—sculpture, the supplying of which would greatly raise them in the scale of art and beauty; statues,

> "Shedding the calm of their celestial mien,"

of men of whom the world was not worthy,—men to whom the world is indebted for having kept alive the flame of heroic virtue and piety through all generations,—would, indeed, add a charm to these buildings it would be difficult to overrate; and the introduction of such statues, along with paintings, so far as the presence of stained windows would permit, would be a restoration of them in the true spirit of their original design. It would be adding to their beauty, and not taking from it that which they already have.

* See p. 525, *ante*.

I know no worthier application of sculpture in the present day, or one better fitted to redeem the art, than this. As, so employed, it might be, and ought to be, of an intensely imaginative and creative character, instinct with the utmost amount of poetry that marble can embody; which I mention in opposition to a vague idea abroad, that sculpture applied to architecture cannot be, like detached sculpture, of the highest class. The frieze of the Parthenon and the groups of the pediments, embodying the religion of Greece, were sculpture of the very highest class, in which the human figure was nature raised to the divine; and if such sculpture would harmonise with the grand forms of the Greek architecture, there is no reason why it should not with the Gothic. The Pythian Apollo, a statue divinely beautiful, shows that the largest amount of life and expression can be had in the highest class of sculpture with the least disturbance of that posture of repose which architecture requires of it.

I recommend this diversion of attention from the exterior to the interior of our cathedrals, and the sparing of the former, the more earnestly, from a deep conviction that the most fitting and becoming grace which a place of worship can have, is that of age,—"the golden stain of time," which it is now so much the fashion to wipe out,—the evidence of its having maintained its distinctive architectural and sculptural character, like an organic and living thing, while all around it,—human dwellings and their inhabitants, and the natural features of the earth itself,—have been changing and passing away. I consider this quality, which gives dignity and pathos to all buildings, peculiarly appropriate in an ecclesiastical edifice, which is certainly rendered by it, to creatures of a day like ourselves, more symbolic of,—more in harmony with,—our ideas of Him who inhabits eternity, who is significantly styled the Rock of Ages, and in whose sight a thousand years are but as yesterday when it is past, and as a watch in the night.

SAMUEL HUGGINS.

"THE ECCLESIASTICAL ARCHITECTURE OF SUFFOLK."*

FOR what knowledge I have of the architecture of Suffolk, I have to thank my good fortune in obtaining the Pugin Studentship in 1873, the counties I then chose to travel in being Cambridgeshire and Suffolk. I divided the time pretty equally between the two counties, spending most of my month in Cambridgeshire at Ely, while the month in Suffolk was divided among the principal towns having churches or mansions of any particular interest. My paper to-night is not intended as any description of that tour, but only of a small part of it,—namely, of the churches of Suffolk. I need hardly say that any one who goes to Suffolk with a strong taste for twelfth-century work, and nothing but twelfth-century work, will find little there to engage his attention, it being quite the exception, except in the case of the plain round towers, to find any work of early character; but much of the best late work is to be found there, and whatever may be our individual predilections of one style over another, no one will doubt, I take it, that it is our duty thoroughly to study all styles of all dates, as far as in our power lies, before we venture to undertake to perpetrate in stone any of our own fancies, from which the architecture of the present day must finally be judged, and, let us hope and strive, not be condemned.

The chief specialities of the architecture of Suffolk, which will be apparent to all who go through it, however rapidly, will be,—first, the circular towers, which, like all Suffolk towers, are, as far as I observed, invariably placed at the west end; secondly, the similarity of style in which all the churches are built, and which suggests the immense activity and religious zeal which must have prevailed throughout the county during the fifteenth century, when the churches were either restored or entirely rebuilt, many being of the most gorgeous and costly description; another also of the specialities is, externally, the flint and stone, or flush-work, carried to great beauty of design in some churches, the chapel of Long Melford, of which I have drawings here, being in my opinion one of the finest examples. Another of the specialities of the Suffolk churches is the magnificent woodwork of the interiors, of which most of them contain examples of more or less elaboration and beauty, especially noticeable in their hammer-beam roofs, rood-screens, and bench-ends. The remains of the beautiful colour decoration on their woodwork must also not be forgotten. The plan of most of these churches is very simple, consisting of a long, well-proportioned nave and aisles, with capacious chancel and western tower. Height of nave was generally aimed at, with large clearstory windows, and a lofty nave arcade, the construction always showing great lightness and economy of material, which may possibly have arisen from the scarcity of building stone, but also, no doubt, from the love of large windows, for the display of painted glass. The interior of Lavenham Church is a good example of this light construction, the appearance of lightness being still further increased by the elaborate panelling over all the solid surfaces. The piers are cut up into so many members that it is difficult to realise that there is any weight in the building for them to carry. That it suffers greatly in dignity through this elaboration there can be, I think, no doubt.

The question of the round towers being principally an archæological one, I do not propose to go much into it now. Few of them possess architectural features of much interest, with the exception of Little Saxham, which is prettily arcaded in the Early Transitional style. That these towers were used as belfries only, and not for defences, as some have contended, I think there can be no doubt, as in many cases they have stood till the present day, when the church has been destroyed or rebuilt, while, if for defence, they would probably have been the first to go; the absence of staircases is also another proof of this. Mr. Parker's ingenious theory as to the cause of their circular form is probably correct, namely, the wish to avoid the use of any quoin stones, which would have become necessary had the towers been built square, necessitating angles which could only have been finished in freestone. Their date is often spoken of as being much earlier than any I have seen. That at Little Saxham is evidently Late Norman, with a slight touch of French feeling about it; this feeling being observable also in other features of the Suffolk churches which I shall touch on presently.

Panelling being one of the chief characteristics of the Perpendicular style, it is most commonly found as ornament in these churches, and I would say in passing that the name of the Panelled style, as suggested by several, appears to me more appropriate than the name Perpendicular style, first given by Mr. Rickman, for in no period do you get so many horizontal lines as in that called Perpendicular; in fact, one of the great features is in the horizontal lines, especially noticeable in the tracery of the windows and the continuous strings. Internally, the panelling is often exceedingly rich, but very similar in design and arrangement to that found in other churches of the same date throughout the kingdom. In the exterior it is often formed in flush work, being, as you know, a combination of flint and stones. How this came into general use I cannot positively say, but I have strong suspicion that a practical reason was the first cause of its being used. Flint walls are, through the smallness of the stones and their unequal sizes, almost entirely without any bond, and unless made of immense thickness are, therefore, anything but strong. In order to tie these walls together bands of stone or bonding stones were introduced, and in some of the earlier towers plain bands of stone may be seen; this soon suggested that they might be made ornamental as well as useful, and, so this flush work became elaborated, as we see it in the large churches. Though there is often much beauty in the arrangement and detail of these flint patterns, I confess it rarely seems to me altogether satisfactory, though it appears mostly so when the stone is used in constructional lines, looking like a thin framework of stone filled in with flint. I may mention, in passing, that the stone invariably forms the pattern, and the flint the ground-work. It is largely used as ornament in parapets and bases, where the detail is often beautiful, but seldom satisfactory as a whole. In the later work, the stone is often hollowed out to receive a sort of veneer of flints, which, in some cases, has since fallen out. This, I take it, must be a false application of the method; and that, wherever the stone has the appearance of having been hollowed out to receive the flints, it is a misapplication, as it is a manifest sacrifice of the higher material for the introduction of a baser. Take, for instance, a quatrefoil pattern in parapets, which is very common. The stones must be the full size of the parapet, but, in order to show flints, they are cut away,—an amount of labour which would have enabled a panelled stone parapet to have been introduced, and this seems to me the more proper treatment.

I have, with the kind assistance of Mr. Attwater, drawn the specimen of flint-work which I think the most satisfactory to a large scale to explain my meaning more fully. This is the lady-chapel, as it is called, attached to the east end of the great church of Long Melford, and to my mind the most perfect example of flint-work. The church itself was built between 1450 and 1480, and is very rich in flint-work. The spaces between all the windows of the clearstory are filled in with stone tracery and flint, which at a short distance gives the church the appearance of being all windows with no solid wall-space at all; and, I venture to think, is eminently unsatisfactory. The lady-chapel, in which these defects do not at all appear, was built fifteen years later, in 1497, as shown by inscription on parapet, and the architect, no doubt, saw the defects in the church I have mentioned, and took the hint, and did not fall into them again. The chapel was built by the Cloptons, the great family under whose patronage and protection Long Melford throve for many years, and who seem to have been models, as far as their beneficence towards the parish went, of great landowners. The church, the hospital, and the charities, all bear witness to the liberality and goodness of this great old Clopton family at Kentwell Hall, a mile from the village. The family lived there till about 1600, when the male line became extinct; the place knows them no more. Externally the house is a grand example of an Elizabethan house, approached through an avenue of limes a mile long. Internally the place has long been handed over to the upholsterers and decorators, who have treated it in a manner which I fancy would rather have astonished the Cloptons. But to return to the lady-chapel of Long Melford. There is no attempt at showing window tracery; the stone is nearly all in strips, and by increasing the number in the lower division, a richer kind of plinth is formed, and what might otherwise have been too stripy an appearance, is avoided. Notice, also, how the building is bound together top and bottom by ornamental but solid stone bands. The quatrefoil plinth is here introduced, entirely of stone, and looks exceedingly well. Though the walls above are flint, the windows stand out well from the walls, and there is no mistaking one for the other. In the upper gables the arrangement is equally good; the difference in level between the two outer and centre gutters is taken advantage of, and another rich band introduced, which gives a level base to the triangles above. These are filled with plain stone panels in the centre, shields and devices filling up the remaining spaces. Before leaving the exterior of this beautiful chapel, I would point out to you the careful way in which the ambulatories,—a feature in the plan,—are also marked in the elevation by a bay of increased width at each angle. The plan is curious, and shows that the chapel was probably built to hold some sacred relics, the ambulatory round being used for processional purposes. This ambulatory has a curious flat-pitched wooden roof, with carved principals and deeply-moulded rafters and ridge piece, the centre portion of the chapel (which is now used as a school) being higher. I would draw your attention to the way in which the mouldings of the rafters are stopped and let into the ridge and principals, and also that the oak boarding is laid longitudinally on the rafters, instead of transversely, as usual, in order, probably, to avoid showing joints: this method, however, is not good: the planks have split down the centre in many cases, and sagged in nearly every instance. The angle principals are very picturesque, having under the inner and at each corner a niche and canopy for figure. The chapel has independent north and south doors, besides doors leading through vestries into the church.

I must now leave this portion of my subject, and, in passing, mention that spires are almost unknown in Suffolk; one has been added to Woolpit Church in modern times, with what precedent I do not know; many of the towers were once crowned with low lead spires, but few of these now remain. I will now pass to the next part of my subject—*the roofs*; and, as the finest of these are so well known, and have been illustrated so often, I do not propose to say much about them. One feature is striking, the almost

* Paper read before the Architectural Association on the 25th ult., by Mr. Aston Webb.

universal plan of having a boarded barrel-roof to the chancel, with an open timber roof in the nave. This must have been for acoustic reasons, the close-boarded roof of the chancel acting as a sounding-board to the minister's voice. The roofs over the nave and chancel of Capel Church are very good illustrations of this; that over the chancel is a particularly fine example, richly moulded, and most quiet and satisfactory in general effect. I know no roof of the most elaborate character that is more satisfactory to me than this little roof over the chancel of Capel Church. The stopped ends of principals which now show were probably originally finished with shields, as the lower ones against the chancel walls still are. There are no means of getting to the interior of this roof, and I was therefore unable to examine the construction, which must be very ingenious. The span is 17 ft. The double hammer-beam roof of Woolpit Church is well known. The span here is 18 ft., and the effect, though very rich, is, I think, a little fussy. The wood dowels with which the work is fixed together are left projecting quite an inch. Many of these roofs still bear the remains of original colour, though in still more cases this has been replaced with fearful travesties by energetic and ignorant amateurs. The effect of this class of enthusiastics on the chancel-screens is of far greater and lasting damage than that perpetrated by Dowsing and his followers. Any colour decoration seems to have a peculiar fascination for them; they seem to imagine that any one can restore a bit of colour, whereas we know how seldom even among architects themselves the work is satisfactorily carried out, and how often one is tempted to wish for the powerful scraps of the original, instead of the gorgeous transcript of what it may or may not have been! The very curious roof over the nave of Framlingham Church should also be mentioned, its peculiarity consisting in a cove on either side boarded, and following the shape of the hammer-beams of the principals. Among the many bits of original colour still remaining, none struck me so much as that in the easternmost bay of the south aisle of St. Mary, Bury St. Edmund's. The roof is a flat boarded one, divided into compartments by principals and purlins. The decoration of the single bay of the south aisle, of which I show a sketch, was to form a decoration over a chapel of Our Lady, by one John Baret; the diagonal motto, "Grace me, goneme," is his family motto. The decoration is done in a white ground, in quiet greens and blue-greys, with the introduction of a little vermilion; the whole effect is quiet and good. After the roofs, the great feature of the interior of Suffolk churches is of course the chancel-screens, most of which had originally, no doubt, rood-lofts over them. These and the roods are now in most cases destroyed, as the Reformers, in order to prevent the possibility of the re-erection of the rood, destroyed also the loft. The screens of Suffolk are of course all of late work, and the mullions are, therefore (being a characteristic of the style), formed of various mouldings, with occasionally a slight buttress up the centre, or a group of buttresses, but never with shafts properly so called, with caps and bases, as found in earlier work. The lower panels are invariably solid, and the upper portions are usually of a more light and slender construction than those found in other counties, and are therefore better adapted to serve as models for screens to be erected to suit the worship of the present day. That a chancel-screen greatly adds to the due decorum and reverence of our Church services I take it few now will deny. That it greatly adds to the picturesqueness and beauty of the interiors of the churches themselves all must admit. They seem to have been regarded in the fifteenth century by the good people of Suffolk as indispensable, as there is hardly a church of any importance but either still has one, or bears traces of where one used to be.

The carving on the screen-work and stall-work is very remarkable, and was carried to a great pitch of perfection by the various guilds who supported this craft, and most diligently kept its secrets. The rood-screen at Barking Church is a good example of screen parclose, the easternmost bay of the north and south aisle being also enclosed, which gives a very rich appearance to the church; this is not an uncommon arrangement, and was usually done with a view to form chapels on either side. Since the Reformation, however, these, of course, have become disused for this purpose, and they now sometimes contain the family monuments, or are made the great comfortable family pew, where the squire can attend the service, and sleep or pray as he feels inclined. At Parham is a good example of a light screen, which has mullions so slight and so far apart that very little view is intercepted; this screen has been brilliantly redecorated in the original colours. The colours mostly used in all these decorations are red, blue, green, white, and black, with yellow or gold used very sparingly. The colours are generally counterchanged in this case; for instance, the lower panels are red and green. The mouldings are all counterchanged in colour also. Primary colours only are generally used, with the addition of a dull sage-green,—usually replaced in the amateur restorations already referred to by a brilliant pea-green. The screen in Parham Church is a singularly interesting one; the screen itself is plain, but of particularly good proportion, and the original colour is exceptionally well preserved, owing to its having, till very lately, been blocked up with old pews,—a reason for the good preservation of many of these lower panels, when the colour on the upper part has been almost entirely worn away. The lower panels are painted in pairs alternately black and green, with the fillet on mouldings always white, which looks well, and the ovals alternately red and green with the carved spandrels yellow; but the most remarkable part is the white ornament on the field of all the panels, and which, apparently, was put on at the same time as the remainder of the decoration; the latter is evidently taken from the Greek honeysuckle pattern, but treated in an eminently Gothic manner, which seems to make it indigenous at once with the style. The chapel screens in All Saints' Church, Sudbury, are also fine examples of this work, though the small buttress stopping in the centre of the arch cannot be said to be so satisfactorily managed as in many other instances. I now come to the finest screen, as far as the decoration goes, which I saw, namely, that in the church of Southwold, a small, out-of-the-way, but very pleasant, little watering-place, well removed from any railway station; and to any one contemplating a tour in Suffolk, I would advice him, both on account of the architecture and of the good sea-air, to plan his trip with a good stay at Southwold.

The church of Southwold is an interesting and fine one in almost every respect that these Suffolk churches are interesting. One curious fact about this church is worth mentioning. The tracery of the windows in the north aisle is carried a great deal more below the springing of the arch than is the case in the south window, and this is attributed to the fact that the north side being a great deal more exposed, this was done to lessen the length of the mullions and the size of the glass. The interior of the church suffered much during the time of the Protectorate from the hands of Dowsing, Cromwell's general in the eastern counties, and to whom every mutilation in Suffolk is ascribed; that there is some reason in this case will be shown by the following extracts from Mr. Wake's interesting book on Southwold, taken from Dowsing's own journal:—

"Southwold, April 8th, 1643.—We brake down one hundred and thirty superstitious pictures, St. Andrew, and four crosses on the four corners of the vestry; and gave orders to take down thirteen oberubims, and to take down twenty angels, and to take down the cover of the font."

I should think some of the 130 superstitious pictures referred to must have been the saints and emblems painted on the chancel screen, in which case, fortunately, his orders were only executed to the extent of scratching out their faces. The great glory of Southwold Church is the magnificent remains of the rood-screen, which stretches right across the church from the north aisle wall to the south aisle wall. All that pious, loving, and skilful hands could do seems to have been done to make this screen worthy of its place, as marking the sanctuary in God's house. The highest painting art could produce was expended on it. Solid gilding was lavished wherever judgment indicated it could be used to advantage; and provision was made, we read, by bequests from several persons, for replacing, repairing, and rebuilding any injury that might be occasioned by time or change. The centre portion of the screen is divided into six compartments, three on either side, which again are divided into two panels, one of the twelve Apostles being figured on each. The figures are painted on a gold ground, relieved in a very peculiar manner, and which I have not seen elsewhere. A raised diaper pattern is formed in a sort of resin-wax most delicately carved; even the enriched parts of the gilt mouldings are also covered with this raised ornament, and the whole of it is then gilt, giving an exceedingly rich appearance. In the centre of each diaper is a grotesque head; this was probably done by stamping, but the impressions are wonderfully sharp and clear, and when gilt quite remind me of Japanese lacquer work. I exhibit a full-sized detail of a panel mould enrichment of extraordinary beauty; here the base of the buttress is enriched. In this relieved gilt work the ornament has the appearance of being put on with the brush with the greatest freedom, many little variations in each pattern allowing no idea of stencilling to be entertained for a moment. The general character of the ornament has almost a Persian look, and I think there can be no doubt there is a foreign feeling about it. This is still more perceptible in the figures, their style of dress, and decoration, which have most undoubtedly a strong Flemish character. Many are the stories, though none, as far as I know, confirmed, of the vessel from Flanders shipwrecked on the coast, the one foreigner rescued who knew something of the arts, and who, in order to keep himself and save enough for his passage home, worked with earnest care these splendid pictures on the rood-screen of the parish church; but whether the story is true or not, certain it is that this example is splendid in decoration beyond any other in the county, and though the fact that this county was in constant communication with Flanders in the cloth trade may account for it, still, it is a matter of astonishment that if an artist so eminent as he must have been came over to paint this screen, he was not also employed in some of the neighbouring churches,—Blythburgh, for instance, a large and very costly church only three miles off, with a good deal of screen-work, but no decoration like this at Southwold. A paper might well be written on this screen alone, explaining all the figures, emblems, and symbols pictured on it. I have often hoped to go back again and take careful full-sized drawings of the whole; it is well worth it, and, as far as I know, has never yet been done, but it is a chance for some one who has time and inclination to preserve memorials of a most interesting Mediæval work not, I fancy, as well known as it deserves to be.

Near Southwold is Dunwich, once a town of note, returning two members to Parliament, now nearly all swept away by the sea, and one half-ruined church only remaining, and that of little architectural interest.

Only one other point of architectural interest in the Suffolk churches I propose to touch on, and that is the stall-work and benches, which we should naturally expect to find showed some of the skill in wood-carving which is shown in the screens; and here we must return again to Southwold, where some of the most elaborate and curious stall-work exists. This chancel is interesting from the exact position of all the stalls having been maintained by being placed on a stone riser, which rendered it impossible to shift them; this riser is pierced with traceried work through its entire thickness, and the dark apertures formed in the white stone look exceedingly well. The work of the stalls themselves is very elaborate, and also has a slightly Continental look about it. Other good bench-ends exist at Little Saxham, plain but good; and at Dennington there is a very rich and well-designed end, remarkable also because the backs of the benches are elaborately carved, and present to the spectator, standing at the west end of the church when the seats are vacant, a mass of carving.

If my paper has the effect of inducing any of those members, who have joined us in large numbers during the last and present years, to sketch earnestly and faithfully these remains of Mediæval architecture which, in conjunction, of course, with other earlier Mediæval and Classic styles, can alone form a sure foundation to any architect who shall presume to perpetrate his own fancies in stone, I should like to repeat the warning (I believe much needed) which Mr. Spiers gave in his recent paper, that though there may be much that is piquant and good in the Queen Anne style, still, to succeed in it, all must first study and thoroughly master the drudgery (if I may so call it) of becoming acquainted with the proportions and principles of those styles which have formed the groundwork of design to architects for many ages, and which must form the groundwork still. I say we ought to remind each other of this while we all meet here together as students, because any one who looks into the recent numbers of our sketch-book, for instance, cannot fail to see that there is without doubt a tendency (at present only a tendency) to sketch

rather debased work. Plenty of balusters and bits of red brick are now found which, I take it, are admitted because the other work is not forthcoming. I fear myself we are drifting towards a time when a "Queen Anne" church will become again a possibility in England, and much as I admire many bits of Domestic "Queen Anne," I do think this would be a positive calamity. The restoration and building of our cathedrals and churches are at present in safe hands. As times go on, changes must take place, and it will fall to the lot of some of those now studying to take up the work. Unhappy the architecture and unhappy the man if he has put his reliance in the days of his youth solely in Queen Anne. It is for us here in the Association to see that the Gothic revival, brought about with so much labour, is not now thrown away, but rather that the ideas which it embodies should be taken up and gradually developed. I would close my paper with the words of him to whose memory I was indebted for this pleasant tour, as true now as they were when written in 1850. He says, at the close of his work:—

"I, therefore, most earnestly conjure all those men who profess to revive true architecture, to look to the wants and circumstances of the time, *not to sacrifice principles, but to prove that the real principles can combine with any legitimate requirement of religion.* Let the bishops and clergy practically perceive that Christian architecture fulfils perfectly all their wants; let there be light, space, ventilation, good access, with the absence of draughts, which destroy devotion and excite prejudice against pointed doorways.

Avoid useless and over-busy detail, and rely on good proportions and solemnity of effect. Above all, we must remember that everything old is not an object of imitation, everything new is not to be rejected. If we work on these golden principles, the revival would be a living monument as it was in days of old; and may God grant us means to carry it out; may He enlighten the hearts of the obdurate and unite the faithful in one great bond of exertion for the revival of the long lost glory of His Church, sanctuary, and altar."

A brief discussion ensued.

QUEEN ANNE'S MANSIONS AND MILTON'S GARDEN.

SOME time since we gave a notice in the *Builder* of the monster blocks of dwellings,—more appropriately speaking, perhaps, residential towers,—which Mr. Hankey has for some time past been engaged in erecting at Queen Anne's-gate, St. James's Park, for that portion of the community who prefer living in "houses in flats" rather than in separate and detached mansions. The demand for the blocks already completed, which are 116 ft. in height, and contain ten stories, has been so great as to have induced Mr. Hankey to erect still more blocks, and the fact that with the assistance of the lift instead of the ordinary staircase the upper floors are easily reached, has caused these upper floors to be to a great extent preferred, notwithstanding their unusually lofty altitude. This is attributed in a great degree to the fine panoramic view of the country for miles around which they command, the Crystal Palace and the Surrey hills being prominent objects to the south-east, whilst there is an equally interesting prospect in a north-westerly direction, extending to Highgate, Hampstead, Edgeware, and the surrounding districts. This circumstance appears to have led to the erection of still loftier buildings than those already finished and now fully occupied, for the blocks at present in progress contain eleven stories, and are 130 ft. high, an altitude loftier than the average church tower and spire. The rents which these buildings command may perhaps be regarded as another inducement to continue Babel-like structures. When a floor containing six rooms, without any grounds, commands 300*l.* per annum, and two rooms 60*l.* per annum, there is a strong encouragement to continue the erection of such a class of structures. These are the rents which Mr. Hankey is receiving from tenants who, with few exceptions, are persons of position.

The buildings now in course of erection are situated immediately to the west of those finished, which have their main frontage to Broadway. The north frontage faces St. James's Park, while the south elevation is in York-street, and a special interest attaches to them from the fact that Milton's house and garden occupied the site upon which some portions of the new mansions are now being built, the poet's former residence in York-street having recently been demolished to clear the site for the new structures. The mulberry tree standing between the Wellington Barracks Chapel, and that part of Mr. Hankey's buildings where the great fire occurred a little more than a year ago, and which is believed to be the identical tree which stood in Milton's garden, has been preserved in the erection of the new mansions. It is well known that Jeremy Bentham lived at one time in an adjoining house to that of Milton, and had the run of what was once Milton's garden. Bentham caused a stone slab to be fixed on the garden side of Milton's house, on which was inscribed, "Sacred to Milton, Prince of Poets." In the demolition of the house this slab has been preserved, and it will be placed in a prominent position on the buildings to mark the spot where the house stood. It is believed that it was in this house that after he became blind Milton dictated to his daughters the successive books of "Paradise Lost," and that it was also in this house that both his first and second wife died.

Two of the blocks now in course of erection are respectively named the "Milton" and the "Bentham." With regard to the buildings themselves it is sufficient to state that in their general construction and appearance they in nearly every respect resemble the completed blocks, the difference consisting in the increased height of those in progress, and the additional thickness of the main walls owing to the higher altitude. These walls are 4 ft. 6 in. in thickness at the base, gradually reduced until they come to 14 in. at the top story. They also differ internally from the finished block, so far as regards the floors, all of which are said to be strictly fireproof, constructed with iron girders, and filled in with concrete. There are likewise ventilating valves in the walls, both at the floor and ceiling line of each story. As a precaution against fire there will be tanks at the top of the buildings with a capacity for containing 40,000 gallons of water, the tanks being connected with hydrants, jets, and hose to every floor.

The structures are carried out by the owner's own workmen, under the superintendence of Mr. Nash as surveyor.

A LARGE NEW HOTEL IN THE CITY.

AN important improvement is about to be carried out in the City, at the junction of Aldersgate-street and Long-lane. The premises formerly occupied by the proprietors of the *City Press*, together with a number of houses and shops adjoining, have been purchased by a limited liability company, who are about to erect a high-class hotel on the site, which it is stated will be the largest and most complete establishment of its kind within the City. The property which has been purchased by the company for the purposes of their undertaking covers an area more than an acre in extent, and the old buildings are now in course of demolition and the site is being cleared, preparatory to the new hotel being proceeded with. The building is intended to be a handsome structure, and very lofty, being upwards of 80 *ft.* in height, and containing seven stories above the ground-floor, which will consist of large and spacious shops, the upper portions of the building being intended for the hotel proper, with a main entrance upwards of 6 ft. in width, at the angle of Aldersgate-street and Long-lane. The building will have two uniform frontages to Aldersgate-street and Long-lane respectively, together with an angular elevation at the junction of the two thoroughfares. The erection of the hotel will be accompanied by an improvement in the street frontage, the company having agreed with the authorities to set the building several feet back at the corner of the two streets, thus widening the thoroughfare at this point, and substituting a circular line of frontage for the present unsightly projection at the junction of the two streets. The elevations of the hotel will be to a large extent in Portland stone, and have Mansard roofs.

THE NEW BUILDINGS ON THE SITE OF ST. ANTHOLIN'S CHURCH.

AMONGST the new buildings which have so rapidly risen up in succession in Queen Victoria-street, another is now in progress on the site where, until recently, stood St. Antholin's Church. The building has two commanding frontages,—namely, one facing Queen Victoria-street, and the other having its frontage to Budge-row. The latter, stretching to Size-lane, is 80 ft. long. The elevation in Queen Victoria-street is 50 ft. in length, and both frontages are 60 ft. high: in Portland-stone, rusticated at the angles. They consist of the ground floor and three stories above. The ground floor, which is intended for shops, is very lofty, being 17 ft. from the ground line. The upper floors will all be occupied as offices, of which there will be fifty-two on the several floors. The windows, which are circular, are ornamented with red granite columns, and above the third story there are label-dormers. In addition to the light from the windows of the Queen Victoria-street and Budge-row frontages, the premises will also be lighted from an open area and well-hole carried round the centre of the building. The erection of this building will almost complete the south side of Queen Victoria-street, in the direction of the Mansion House. The architect is Mr. E. Saunders, and the contractor Mr. Brass.

DULWICH COLLEGE AND THE ACTORS.

IT is understood that a correspondence is at present going on between the Charity Commissioners and the Governors of Dulwich College with reference to another contemplated new scheme for the future administration and management of Edward Alleyn's bequest, and it is not improbable that this new scheme will shortly be before the public. Meanwhile the actors are moving in the matter. They have addressed a memorial and statement to the Charity Commissioners, praying that in any new scheme which may be decided upon the actors may be included amongst those who shall participate in its benefits. Hitherto the actors have been altogether excluded from any of these benefits, and they ask the Commissioners to put an end to the exclusion of the dramatic profession from the benefits of a charity founded by one who was himself an actor, and who made his fortune by the stage. A copy of the memorial is placed for signature at the various theatres in order to give every member of the profession an opportunity of signing it. It is suggested that Alleyn must have contemplated the actors participating in his bequest, inasmuch as the parishes entitled to benefit by the charity specially include those whose theatres existed at the time the benefit was made, and with many of which theatres he was closely identified. It appears that at present there are twenty-four resident recipients of alms at the College Almshouses, and that not one of them belongs to the dramatic profession, nor have the claims of poor actors ever been recognised during the two centuries since Alleyn's bequest was made. Originally worth 800*l.* a year, the property is now said to be worth 16,000*l.* per annum, and is still increasing, and as something like 2,000*l.* a year out of this sum is expended in the almshouse and out-pensioners' department, the actors urge that according to the spirit and intention of Alleyn's will they never ought to have been studiously excluded, as they have been.

WIMBLEDON PARK: NEW ENTRANCE AND HOUSE FOR RESIDENT AGENT.

OUR illustration presents the Resident Agent's new House at Wimbledon Park, and the Entrance to Lake-road, which curves and rises through that portion of this estate which has hitherto been reserved with the old Manor House, long associated with the names of Earl Spencer and the Duke of Somerset, by whom her Majesty the Queen was there entertained in 1838.

The total area of the Wimbledon-park estate, when purchased from Earl Spencer thirty years ago, was over 1,200 acres; of this, about 500 acres on the Putney side have already been sold in plots and built upon by a wealthy class of residents. The south side of the park adjoining the village of Wimbledon, and lying between the South-Western main line of railway and the common, with Wimbledon Station only 500 yards from the new entrance, is now being developed on the same principle, and the whole park, when completed, will form a very charming spot,—an arboretum and garden, within the very neighbourhood of London, it being only a pleasant half-hour's drive by road from the West End, through Brompton, Fulham, and over Putney Bridge, or from Victoria over Chelsea Bridge, by Battersea Park, and from the City through Kennington and Clapham. By rail it is about a quarter of an hour's ride, either to Wandsworth, Putney, or Wimbledon Stations, from Waterloo; and twenty minutes' from Ludgate-hill, Victoria, and London Bridge, to Wimbledon Station.

The manor-house of Wimbledon Park has now about twelve acres of the old pleasure-grounds reserved with it, and several sites around have already been purchased, and built upon.



WIMBLEDON PARK: NEW ENTRANCE, AND HOUSE FOR RESIDENT AGENT.
MR. RICHARD ARMSTRONG, ARCHITECT.

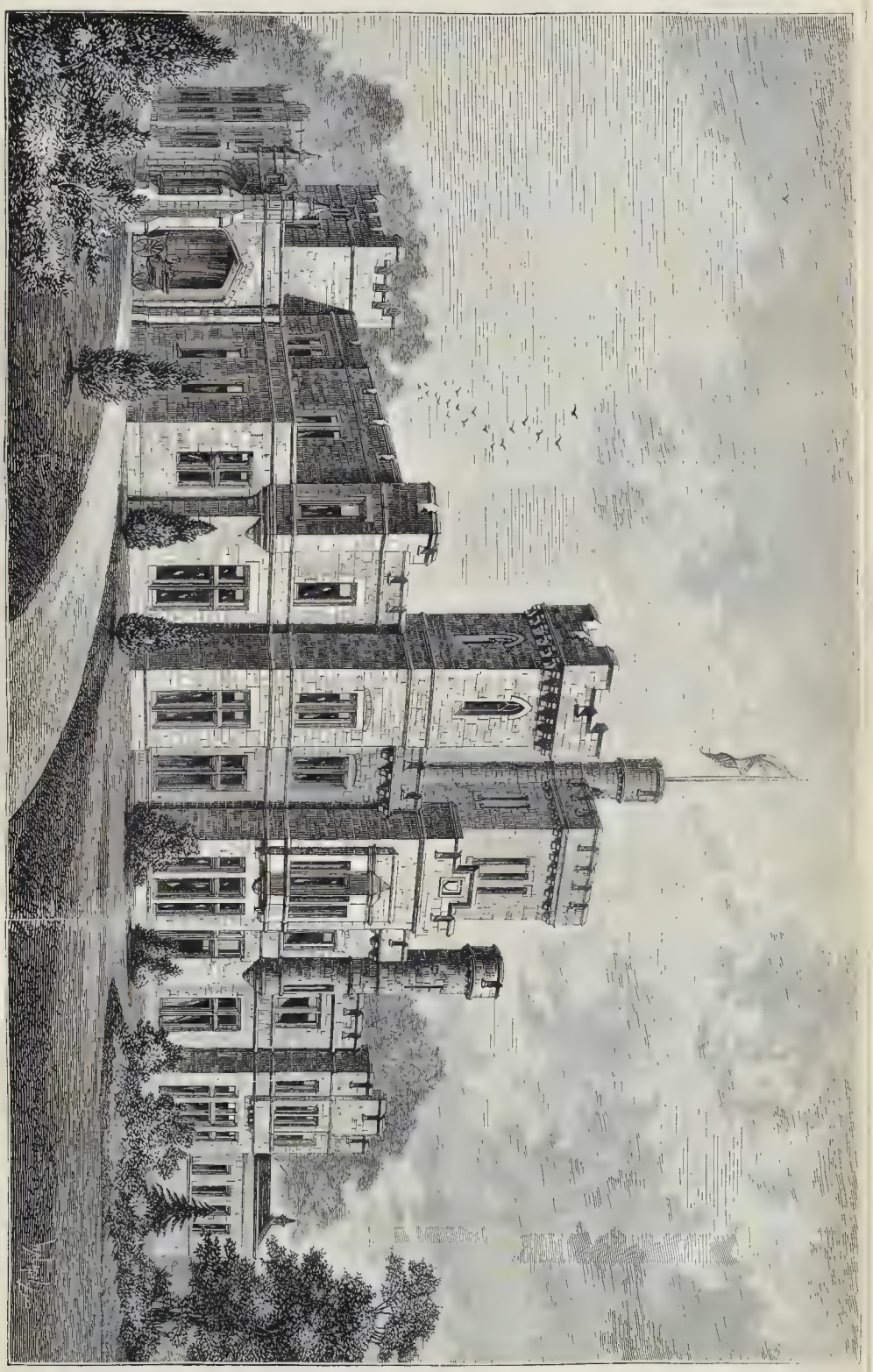
The first house erected is that nearest on the left, being Sir Joseph Bazalgette's new residence. It stands in about three acres of grounds, and the builder of it was Mr. Henry Harmer, of Wimbledon. Next, is the residence built for Mr. C. A. Hardman, of which Messrs. Francis Bros. were the architects, and Messrs. Merritt & Ashby the builders; it is in the modern Elizabethan style, and occupies a beautiful site of about two acres and a half. The next house is the residence of Mr. H. C. Forde, erected from the design of Mr. J. Nichols, architect, and Mr. John Hermon was the builder. The site includes about three acres and a quarter of gardens and pleasure-grounds. Near this (past the new road called "Church-hill"), is the residence in course of erection for Mr. N. M. Roberts, on an elevated site, with an acre and a half of lawns, terraces, and gardens. Mr. John Norton is the architect, and Mr. J. Garrud the builder. The house almost completed next below this is for Mr. Sydney Howard, it stands in about an acre and a half of garden-grounds, and Messrs. Ashby & Horner are the builders, Mr. J. T. Reede being the architect.

On the adjoining plot, of about an acre, foundations of a residence for Mr. Haines Jones have just been commenced. The next is the corner plot shown on the left of the park entrance in our illustration; this, and also the plot adjoining up Lake-road, have both been disposed of, and will probably be built upon this season; so that in the short period of two or three years nearly the whole of the west side of this amphitheatre of land that recently formed part of the private grounds of the mansion has been transformed into a succession of residential properties, which, to the builder and contractor, represents work done to the amount of 30,000*l.* or 40,000*l.* The landscape gardener also takes a prominent part in the formation of such properties as are here described, and we may commend the manner in which Mr. Thomson, of the Wimbledon Nurseries, has done his work here.

Taking the reader back to the mansion, on the site to the right of it at the top of Lake-road (about where the previous park or manor-house stood when King Charles I. was its royal owner), now stands the residence erected for Mr. Percy Mortimer, which has recently been completed; the grounds extend to more than three acres, and the house was designed by Mr. J. Nicholls, architect; Messrs. Bull & Sons being the builders. A site of 4 acres, next the mansion, embracing part of the old grounds, with some fine cedar trees upon it, overlooking the interior of the park with its lake, and commanding views across to the Surrey hills, has been purchased by Mr. John Carr; and there are several equally attractive sites remaining for sale on the line of high ground, which commands the same views, the land being of a very light gravelly nature and about 170 ft. above high-water mark.

Returning to the right-hand side of the amphitheatre of ground presented in our illustration, there are two good sites on the summit of the ridge,—one of four acres and a half, the other six acres and a half. Continuing along this side, as the ground begins to slope, there is a site on which a residence is being erected from the designs of Mr. Richard Armstrong by Mr. J. Garrud, the same builder who had the contract for Mr. Roberts's house.

The entrance-gate piers and agent's house were built by Messrs. Dove, Bros.



GWYNFRYN, NEAR CRICCIETH, CARNARVONSHIRE.—MR. GEORGE WILLIAMS, ARCHITECT.





GWYNFRYN, CARNARVONSHIRE.

GWYNFRYN: NEAR CRICCIETH, CARNARVONSHIRE.

THE mansion illustrated is in course of erection for Mr. H. J. Ellis Nanney. The site commands a noble view to the south of Cardigan Bay, with Snowdon, the Merionethshire range of mountains, and Cader Idris on the left; a handsome park well studded with fine timber stretches out in front, and the back is well sheltered by lofty trees. The entrance to the house is through a carriage portico and vestibule to a central hall two stories in height, covered with an oak open-timbered roof; a gallery, also of oak, runs round it, on a level with the chamber floor. The fittings af the central hall, the vestibule, and five entertaining-rooms, are of oak.

On the chamber floor there are twelve good bed-rooms, five dressing-rooms, ten bed-rooms for servants, bath-room, housemaids' closets, &c. Wine and beer cellars and heating chambers in the basement. The external walls are faced with hammer-dressed local stone of a dark-grey colour, relieved with white Cefn stone window and door dressings. The house will probably be lighted by gas from private gas-works to be erected in a valley below. The keep tower is not to be erected at present.

The architect is Mr. George Williams, of Buckingham-street, London. The grounds have been laid out by Mr. Thomas, landscape gardener. The contractors are all from Liverpool; Messrs. Wm. Jones & Co. undertaking the excavators', bricklayers', and masons' work; Messrs. Haigh & Co. the carpenters' and joiners' work; Messrs. Tanner & Son the slating and plastering; and Mr. Ewing the plumbing, painting, and glazing. Mr. T. P. Thompson, of London, is clerk of works.

THE NEW METROPOLITAN CENTRAL FIRE-BRIGADE STATION IN SOUTHWARK BRIDGE ROAD.

IN consequence of the present Central Fire-Brigade Station in Watling-street having for some time past been found to be altogether inadequate to the requirements of the brigade, the Metropolitan Board of Works have taken steps for the erection of a large new central station in Southwark Bridge-road, and for this purpose they have purchased land and property, covering an area of about two acres, upon which the new station buildings will shortly be erected. An old building, known as Winchester House, for several years past occupied as a hat manufactory, stands upon a portion of the land purchased, and it is popularly believed that it was formerly one of the episcopal residences of the bishops of Winchester. The old buildings on the site which it is necessary to remove before commencing the erection of the new station are now in course of demolition, but Winchester House itself, which is a substantial structure, is to be retained, and so altered as to form a portion of the buildings in connexion with the new establishment. The works will be carried out from the designs of Mr. Vulliamy, superintending architect to the Metropolitan Board of Works.

The new building will have its principal frontage to Southwark Bridge-road, and will be about 110 ft. in length, including the boundary-wall and gates, the building itself having a frontage 60 ft. long. It will be 70 ft. in height, surmounted by a tower, 80 ft. high from the ground line. It will be Gothic in character, and built of red brick, with Portland stone ornamental dressings. The entrance-gates from the Southwark Bridge-road frontage lead into a spacious quadrangle, and yards in the rear, and the quadrangle will serve as a drill and instruction ground for the members of the brigade.

The several buildings, offices, and apartments in connexion with the structure will render the new establishment the most perfect and complete of its kind which has hitherto been erected in the metropolis. It will contain the residence and offices of Captain Shaw, the head of the brigade, and also residential accommodation for fifty firemen, with separate and distinct apartments for the married members of the force. In connexion with these there will be washhouses, laundries, and other domestic conveniences; and for the instruction and improvement of the members of the brigade and recruits, there will likewise be a school-room and class-rooms. This accommodation, as well as the residence and offices of the head of the brigade, will be provided by the internal alterations made in Winchester House.

The plans also provide an engine-house for six large engines, together with stabling for fourteen horses, workshops for the repair of the engines and fire-escapes, including smithy, fitting-shop, and wheelwright's shop, together with storage yard, recreation-ground, and a drying-ground. The fire-escapes will likewise be kept at the new establishment, where the resources of the brigade will all be concentrated. The new station is expected to be completed and ready for occupation in abont twelve or eighteen months.

ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of this Association on Friday, the 25th ult., Mr. S. Flint Clarkson, vice-president, in the chair, a vote of thanks was accorded to Mr. Joseph Bonomi, curator of Sir John Soane's Museum, for his kindness in conducting some of the members over that institution, as recorded in last week's *Builder*.

It was announced that a visit would be paid this day (Saturday) to the new buildings which have been erected for the St. George's Union, Fulham-road, under the direction of Mr. H. Saxon Snell, architect.

Mr. J. S. Quilter, past-president, then proceeded to read a memoir of the late Mr. Edmund Sharpe, M.A. He remarked at the outset that he feared he should fall very far short of giving even an outline sketch of a life so full of detail as that of their lamented friend, and his difficulty had been increased by the articles that had already appeared in the professional journals in reference to Mr. Sharpe's career. This was the first time, within the author's recollection, that the Architectural Association had ventured upon an "In Memoriam,"—and the very nature of the Association appeared somewhat at variance with the subject, even as it was most difficult for those who were just entering upon the battle of life, with youthful vigour and blooming hopes, to stop in their eager pursuit to read the epitaphs on the tombs of the departed warriors; but no apology was needed for departing from the usual course of the Association in this instance. The name of Mr. Sharpe afforded the Association every reason for venturing upon a duty which otherwise belonged more naturally to those with whom Mr. Sharpe was a compeer. He would not say—

> "God's ordinance,
> Of Death is blown in every wind,
> For that is not a common chance
> That takes away a noble mind,"—

but—

> "His memory long will live alone
> In all our hearts."

Mr. Quilter than went on to give some account of Mr. Sharpe's career, taking three epochs in his life,—the first during which he practised as an architect, and commenced his work as an architectural author; the second, when he retired from the study of architecture; and the third, when he returned to his favourite pursuit, to which he devoted himself until his death. As the essential points in Mr. Quilter's memoir were all referred to in the memoir of Mr. Sharpe which appeared in the *Builder* a fortnight ago, we need not here repeat them. Referring to the first French excursion of the Association under Mr. Sharpe's guidance, the author remarked that no one who was present at the following meeting in Willis's Rooms could forget the results of the excursion as shown in the magnificent display of illustrations prepared by the members of the party under the superintendence and with the assistance of Mr. Sharpe. It was gratifying to know that the publication of these illustrations was in so complete a state that there would be no difficulty in shortly presenting them to the public. Animated by the success of this excursion, Mr. Sharpe conceived the idea of exploring and illustrating the Romanesque architecture of the South of France, of which but little was known, and he proceeded to organise what was to be his last excursion. Having carefully obtained all necessary information by a personal examination of the whole district of La Charente, commencing at Angoulême, he arranged for visits to every building of any importance in the district which would afford an illustration of the development of the style. The peculiar feature of the excursion was the systematic division of the party into sections, for obtaining as complete a record of each building as was possible in the limited time available. The successful result of this admirable plan was too recently* brought before the Association to need any particular description now, but it was most sincerely to be hoped that the sudden loss which they had sustained in the death of their valued and kind friend had not also deprived them of the result of this successful termination of so bold a venture. Mr. Sharpe had hoped to have this work ready for publication by the autumn of this year, but as he was engaged upon two other works at the time of his death, it was to be feared that, unless some one could be found who would complete it, this valuable addition to architectural history would be lost. The work upon which Mr. Sharpe was engaged at the time of his death was the development of the transitional period of architecture in the north of Italy, where for the last two months of his life he had been engaged in carefully measuring the principal buildings of Lucca, Pavia, and Pistoja, with the assistance of Mr. Talbot Browne, Mr. Gill, and Mr. Deane. In conclusion, the author remarked that of those who were only acquainted with Mr. Sharpe in his public life, few knew how tender and sensitive a nature he possessed. He had always a ready helping hand for all who needed it, and took the greatest interest in the welfare of others. His generous and hearty sympathy won for him the confidence and esteem of all who knew him. His unobtrusive character prevented any assumption of superiority, and in the company of younger men he was always genial. His superior knowledge was at their service without dogmatism or patronage, and if he differed from any he was always ready and willing to hear what could be said against his opinion. He was a pleasant companion, a valued friend, and an earnest worker. Those who knew him felt his loss, and to those who knew him not the loss was greater. The Association, as a band of earnest workers, had lost a valued friend, and although his works would live after him, it was to be hoped that some steps would be taken to indicate the estimation in which his memory was held and the appreciation of the work he had done. It would be difficult to suggest how this could be accomplished. Possibly the plan that would most appropriately follow up the work which Mr. Sharpe so energetically commenced would be the formation of an annual scholarship to assist students in their studies of English and foreign architecture. In this, however, the Association could not act independently, and it would be necessary to seek the assistance of the other societies as well as private individuals, in order to carry it out. He had given but a brief outline of the work which required nearly fifty years of indefatigable energy to accomplish. Mr. Sharpe's work would speak for him. It had been said by an old writer that dead counsellors were best, because their works were free from interest, fear, or ambition, and they were heard with patience and reverence.

In the discussion which followed,

The Chairman said that among the many admirable traits of Mr. Sharpe's character, one that was peculiarly striking was that, having found out for himself, almost intuitively, his proper sphere or vocation, he thoroughly followed it out, bent on pursuing the work to which he had set his hand with the utmost diligence and completeness. The historical aspect of the development of Gothic architecture, not only in England, but abroad, was a study in which he took the greatest possible delight. This study, as put into form by Rickman and others, was taken up and extended, and made clear to almost the meanest capacity by the clearness and chronological sequence of his illustrations. He found himself particularly cut out for the task he had undertaken by the circumstances in which he found himself. He not only had a natural liking for the work, but he was blessed with ample means for carrying it out. He (the speaker) believed that Mr. Sharpe considered that the loss on his publications was upwards of 200*l.* a year. "Architectural Parallels" had just succeeded in paying its expenses two years ago. He did his work to perfection, and was thus worthy of emulation by all.

Mr. F. C. Penrose said that what made Mr. Sharpe so remarkable was not one quality, but several. The wonderful knowledge that he had acquired by diligent inquiry, the opportunities that time and means afforded him, were combined with an extraordinary power of sympathy which he had for everybody who took the slightest interest in the subjects which he studied. He

* See "Byzantine Architecture and the Architecture of La Charente," in last year's volume of the *Builder*, p. 632.

had a wonderful faculty of imparting instruction to others, and especially was this evidenced in the course of the excursions of the Association. He had, too, a keen sense of humour. It was earnestly to be desired, as Mr. Quilter had intimated, that the drawings made during the French excursions should be published, and he felt certain that those among his pupils,—and they were all his pupils,—would be only too anxious to help in the good work. The few things which he was good enough to ask him (Mr. Penrose) to undertake he would be answerable for, and he trusted that some one would be found to take the editorship of the work. It was greatly to be desired that what was learnt during these excursions should be adequately recorded. The suggestion for the foundation of a scholarship was an excellent one, but this was not of immediate importance. The first thing to be seen to by the Association, in his opinion, was to complete the record of Mr. Sharpe's excursions. He begged to move a vote of thanks to Mr. Quilter for his memoir.

Mr. H. H. Statham, in seconding the motion, said that those who, like the members of the Association, had known Mr. Sharpe of late years, had known him mostly as an archæologist; for of late years he had given up professional practice, and taken to study. But he differed from many other archæologists in that he was besides a thoroughly practical business man. The utmost system and method were shown in his publications, down even to the minutest details. A great many archæological works were given to the world, put together with such want of methodical arrangement as greatly to detract from the usefulness of the valuable information which they contained. Mr. Sharpe's well-known little book, "The Seven Periods of Gothic Architecture," was calculated to make plainer to non-professional readers than probably any other book what were the prevailing characteristics of our national architecture at various periods. While he was a very devoted student of ancient Mediæval architecture, he was not a mere Mediæval dreamer. Nor was he a bigoted Mediævalist, seeing beauty or excellence in only one phase or period. Indeed, he always looked upon the study of Gothic as a means of applying it to modern buildings. He was fond of drawing special attention to variations in old buildings, with the object of showing how wide was the scope for variety in buildings erected in any one style. He was a completely wide-awake man of the world, living in his own time, though studying the architecture of past times. One of his great practical achievements was the application of terra-cotta to church architecture. In studying what was old, he ever kept before him the light of the time in which he lived.

Mr. Phené Spiers, in supporting the motion, said he believed that the completion and publication of the record of the excursion to La Charente would be the one testimonial to his memory which Mr. Sharpe would desire to be carried out if he could be consulted in the matter. He had, in fact, already promised to put down 100*l.* as a guarantee fund towards defraying any deficit. The suggested scholarship was scarcely a matter which the Association could initiate unaided, but probably the Institute (which benefited so largely by Mr. Sharpe's munificence) and other societies and private individuals could be induced to lend their aid.

The motion having been put and carried,

Mr. Phéne Spiers alluded in feeling and appreciative terms to the loss which architecture and art had sustained by the death of Sir Digby Wyatt.

Mr. Aston Webb then read a paper on "The Ecclesiastical Architecture of Suffolk," which will be found on another page.

A brief discussion ensued, in which the Chairman and Messrs. Quilter, Phené Spiers, H. H. Statham, E. W. Piper, and T. Blashill took part, and the meeting terminated.

A Monolith.—I have been to view at Messrs. Brindley & Farmer's a large "stick" of Westmore. land shap granite, 25 ft. long, 3 ft. 6 in. by 3 ft. 3 in.; weight 18 tons. It is supposed to be the longest stick ever brought into London. Messrs. Maudsley, the eminent engineers, lent their strongest iron trolley for its conveyance from Camden Station (night time). During its progress an idea got among the onlookers that this was Cleopatra's Needle. A shopkeeper was heard to say that he was glad that he had lived to see it; he knew it in a moment, its history, past, present, and future!—R.T.

DRAINAGE MATTERS.

Esher.—Colonel Cox has issued his report on the inquiry recently held by him as to the drainage of Esher. The Board of Guardians, as the Sanitary Authority, proposed to construct a system of sewers at an estimated inclusive cost of 5,500*l.*, of which 2,587*l.* were for sewers, manholes, &c. The sewage was to be pumped into tanks, having been previously mixed with sulphate of lime, as is used at Coventry, the solid portion of the sewage being precipitated into tanks, and the effluent passed over and through six acres of land, and thence into the Mole. As to the merits of this scheme, Colonel Cox says that, as usual, there was a direct conflict of opinion. Mr. Birch, Mr. Baldwin Latham, Mr. Robinson, and Mr. Mellis all stated their opinion that the works would prove sufficient, and create no nuisance, Sir Joseph Bazalgette and Mr. McDougall, however, being equally convinced to the contrary. Colonel Cox thinks that it would be more to the advantage of the place to be united for main sewerage purposes with the other districts in the Thames valley specified in the Hampton Wick application than to proceed with the present separate scheme, and upon this ground he recommends that the sanction of the Local Government Board be withheld.

Frome.—A special meeting of the Rivers Pollution Prevention Committee, appointed by the Local Board, has been held, at which Mr. Stow, the surveyor, presented his plans and scheme for an intercepting sewer and irrigation works for the town. The total length of the proposed sewer is two and three-quarter miles 200 yards, from the starting-point at Lower Keyford to the outflow. It provides for a fall of upwards of 100 ft.

Newbury.—Mr. Lemon, the borough surveyor of Southampton, has prepared plans for the drainage of Newbury and district, including Speenhamland and Greenham.

Boston.—Sir J. Hawkshaw, C.E., and Mr. Harcourt have been in Boston, making a survey, &c., of the river Witham, with a view of preparing a report on the drainage of the same for the Witham Commissioners.

Omagh.—The Omagh Board of Guardians, acting as the sanitary authority, have resolved: "That Mr. French be requested to report as to the several main sewers of the town of Omagh, and advise this Board as to the proper steps to be taken in relation to the same."

Howden.—At a recent meeting of the Howden Rural Sanitary Authority, a communication was read from the Local Government Board stating that they had had under consideration the report made by their inspector, Mr. Harrison, after the inquiry held by him with regard to the application of the Sanitary Authority for the Board's sanction to borrow 4,000*l.* for sewage works at Howden. The Board concur in the objections expressed by Mr. Harrison to the scheme submitted by the Sanitary Authority, and request that it shall be reconsidered as early as practicable. Mr. Harrison, in his report, says the real difficulty to be met is as to the system of outfall. Mr. Johnson, the engineer, proposes to concentrate his system of sewers to one point, to clarify the sewage in tanks, and to discharge the effluent water by Bishop's Clough into the Ouse. Mr. Harrison is in favour of two or three outfalls.

Longtown.—At the last meeting of the Longtown Rural Sanitary Authority, a letter was read from the Local Government Board refusing to sanction a loan of 500*l.* for the sewerage of Longtown, on the ground that Mr. Harrison, the inspector to the Board, had reported adversely to the plans submitted to him.

Hounslow.—Major Tulloch, R.E., inspector to the Local Government Board, has held an inquiry with respect to an application made by the Heston and Isleworth Local Board for a provisional order to acquire certain land at Isleworth for the disposal of sewage, according to plans prepared by Mr. Moore, C.E. The area of land proposed to be taken was 8½ acres, and it was intended to deal with the sewage on the A B C or some kindred principle. The cost was estimated at 30,000*l.*

Maldon.—The Maldon Town Council are so well satisfied with the sanitary condition of the town that they have carried, by six votes to four, the following resolution:—"That this council, having in view the good sanitary condition of the town and the low rate of mortality that exists and has existed for several years past, is of opinion that the present system of drainage should not be disturbed, but that everything should be done consistent with it in order to preserve for the town the present high standard of health that it enjoys." According to one of the councillors who opposed the motion, however, they have, "comparatively speaking, no drainage" in Maldon, except the surface-drains put in many years ago.

The Thames Valley.—In February last Colonel Ponsonby Cox held an inquiry on behalf of the Local Government Board respecting an application from the Local Board of Hampton Wick to form a united district for the carrying out of a system of sewerage for certain districts named. Colonel Cox has now reported in favour of combination, and in pursuance thereof the Local Government Board have determined to issue a provisional order constituting a united district, to be called the Lower Thames Valley Main Sewerage Scheme. The districts affected are the borough of Kingston, the Surbiton district, the parish of Richmond, the local government districts of Twickenham, Teddington, Hamcommon, Brentford, Heston, and Isleworth, Hampton Wick, New Malden, East Moulsey, and the rural sanitary districts of Richmond and Kingston. The population of the district was in 1871 nearly 70,000, and the rateable value just over half a million.

Slough.—Colonel Cox has held an inquiry at Slough with reference to an application by the Slough Sanitary Authority to put in force the Lands Consolidation Acts, for the purpose of acquiring certain lands for the sewage works of the district. The land under consideration belonged to Sir C. J. Palmer, and Mr. R. B. Grantham, C.E., engineer to the Sanitary Authority, gave evidence in favour of it.

Sevenoaks.—The Sevenoaks Local Board have resolved to instruct their engineer, Mr. Hennell, to make a survey and estimate for a sewer to take the sewage of the Sevenoaks Urban Sanitary Authority, to join the West Kent Main Sewage Works at Dartford, the sewer to be made of sufficient size to receive the drainage of the Sevenoaks Rural Sanitary Authority from Westerham.

Basingstoke.—Mr. J. Thornhill Harrison, C.E., one of the inspectors for the Local Government Board, has held an inquiry at Basingstoke relative to a scheme of sewage disposal put forward by the Urban Sanitary Authority through Mr. Rowell, C.E. In the course of the inquiry, Mr. Lemon, C.E., was examined by Mr. Bazalgette as to the working expenses that would be necessitated if it were decided to adopt the Crockford site. He said sixty acres,—one to every 100 persons,—would be needed, and would cost 3,600*l.*; about 3,000*l.* would be required to prepare the land; the cost of an iron main, the most expensive kind, would be 3,000*l.*; the pumping station, engines, and buildings, 3,400*l.*; the two tanks, 960*l.*; and the internal sewerage of the town, 4,664*l.*; making a total of 18,624*l.* Allowing for contingencies, he was of opinion that 20,000*l.* would more than cover the total cost. Mr. Bailey Denton stated, in answer to Sir N. Rycroft, that if the Basing-road site were irrigated as proposed, it could not fail to be prejudicial to the health of the workhouse inmates, and if effluent water were allowed to flow into the Loddon, the water would be rendered quite unfit for the Basing people to drink or use. At the suggestion of the inspector, a consultation took place between Lord Bolton's agents and legal representatives, as to whether a better site could not be offered, which resulted in the offer of a piece of land known as Hill-side, situated between Chineham and Basing, and between the Great Western and South-Western Railways. This land, which has a subsoil of chalk 70 ft. or 80 ft. deep, his lordship offered at 100*l.* an acre. Mr. Bailey Denton and Mr. Lemon declared, without any hesitation, that the last-named site was by far the best and cheapest that had been named, and that the town could be effectually drained for about 14,000*l.*, including the purchase of thirteen acres of land at the price named.

Birmingham.—An inquiry which has already lasted some days is now being held at Birmingham before Mr. Harrison with reference to the advisability of forming all or part of the following districts, viz., the districts of the borough of Birmingham and the Improvement Commissioners of West Bromwich, the Local Government Districts of Aston Manor, Balsall-heath, Handsworth, Harborne, Saltley, and Smethwick; and the Rural Districts of the Aston, King's Norton, and West Bromwich Unions, into a united district, for the purpose of carrying into effect a system of sewerage for the use of all such

districts, and for other purposes of the Public Health Act, 1875. Mr. Dugdale appeared on behalf of the Corporation, and explained at considerable length the necessity that had arisen for a united drainage scheme such as that proposed, and said it was intended to deal with the area by means of intercepting sewers, to be constructed at the expense of the districts from which the sewage was taken. Evidence was then called on behalf of the promoters, and Mr. Alderman Avery stated that if the amount to be contributed by each district were fixed in proportion to the rateable value of property, Birmingham would contribute 13*d.* out of every 16*d.* raised.

SEWAGE PURIFICATION.

Coventry.—On the 5th ult., the Coventry sewage works were handed over to the Rivers Purification Association, who have acquired the original and recent patents for the Coventry process, and of Latham's Extractor for the removal of solids from the liquid. One of the conditions of the agreement between the Association and the corporation is, that each body is to receive half of the receipts from the sale of manure. Considerable quantities of this sewage manure have been tried by various parties in the neighbourhood, who, it is stated, have approved of it.

Trowbridge.—The drainage committee, to whom the subject was referred by the Local Board, have met and decided to recommend to the consideration of the Board the plan of Mr. A. W. Estridge, the principal features of which are large tanks, into which it is proposed to pump the sewage, and then to deodorise and precipitate it.

SANITARY CONDITION OF MADRAS.

DR. H. STANBROUGH, Special Health Officer, has reported to the Government, that the Special Health Department has still an uphill duty to perform, for the Municipality has to fight against poverty, overcrowding, improvidence, and all the evils which beget and intensify contagious disease. There has been a steady improvement in the cleanliness of the streets and parcherries, but if there be any neglect in inspecting these places they speedily become as dirty as ever. He says he considers small-pox to emanate from the crowding together, the filthy habits of the natives, and from the dirt and decomposing fœcal and animal matter lying about everywhere. The health of Madras would be much improved if the numerous collection of crowded dens, called parcherries, were demolished; they are incurably defective, and interfere with the ventilation of other places. Spots should be selected in less crowded thoroughfares for parcherries, and the poor segregated beyond the city. He does not see his way to successfully combat this frightful mortality, or increase the security of infantile life, unless some sort of provision be made for housing the poorer classes, for their present dwellings are unfit for human habitations. He does not find so much fault with Cox's Parcherry in Poodoopet, or the Tinnevelly Settlement in Royapuram. They only require supervision and drainage, but he refers to the smaller description of parcherries. Take for instance the one in Moore-street, a densely-crowded and most unwholesome place, containing 200 or 300 persons crowded in about one quarter of an acre of ground without water-drainage, or latrines, the ground always in a state of moisture and filth, and refuse in every corner. Can we expect such a place to be healthy? Madras has hundreds of such places. They are all private property, and the ground-rent of a hut is about 2 annas a month. In fact, there is such an utter disregard of sanitary precautions that it is only surprising that the present epidemic has not produced more deaths. The main sewers of Madras are a source of danger; they cannot be flushed, and they are not ventilated. The one running to the north is blocked up with sewage. The water-supply is everywhere deficient and not of good quality. These statements are confirmed on all hands.

The Committee of the City Carlton Club, which is at present situated in King William-street and Abchurch-lane, have just procured, on advantageous terms, according to the *City Press*, a site for a new club-house in Sherborne-lane, King William-street, on a building lease from the Goldsmiths' Company.

SUGGESTED ENCLOSURE OF THE ALBERT MEMORIAL.

WE have received several letters objecting to the erection of the suggested glass and iron structure in Hyde Park. Mr. Cave Thomas forwards copy of a letter he has addressed to Sir Thos. Biddulph proposing instead "that a dome of glass of fine proportions should be held aloft by a columniation of architectural beauty, having main and subsidiary openings through which the Memorial would be seen from the outside. I would further suggest that this dome, with the Memorial beneath it, should form the centre of an English Walhalla, from which architectural vistas should open, decorated with mural paintings illustrating English history and statues of our great men."

We have already expressed our conviction that neither the Office of Works nor public opinion would ever permit the erection of a permanent structure in Hyde Park. We, therefore, do not think it necessary to print the letters of objectors.

PROGRESS OF THE LINCOLN'S INN IMPROVEMENTS.

THE rebuilding of the several sets of chambers in Lincoln's-inn, from the designs of Sir Gilbert Scott, which has been gradually progressing in sectional blocks during the last two or three years, is now so far advanced that the western blocks immediately adjacent to the gardens are now almost finished, and those portions having one of their main frontages to Chancery-lane, by which they are bounded on the east, have just been commenced. The Chancery-lane elevation of the new buildings, when finished, will extend in a southerly direction from Crown-office-buildings to a point some distance beyond the ancient gateway entrance from the lane to the different Courts in Lincoln's-inn. The new street frontage will be more than 200 ft. in length, and the substitution of the new Gothic elevation for the present old dull and gloomy-looking frontage will impart a greatly improved architectural appearance to the west side of Chancery-lane, which, it may be observed, is likewise undergoing other improvements by the erection of several new buildings on the east side of this well-known old thoroughfare. What is to become of the gateway? The block which has just been commenced is that situated at the north boundary. It will have four frontages, generally alike. The south elevation will face Lincoln's-inn Chapel; that to the west overlooks Old-square; the north frontage overlooks Crown Office-buildings; whilst, as already stated, the east elevation faces Chancery-lane. In carrying out the whole of the intended new buildings the Perpendicular style will be adhered to, each block containing five stories, and being about 70 ft. in height, the several elevations terminating with gables. The materials are red brick, Ancaster stone facings, and the slating of pea green. When completed the whole of the buildings belonging to the benchers, including the hall and library, will present a general architectural uniformity. Mr. Shaw, of Earl-street, Westminster, who, with his former partner, Mr. Jackson, has executed those portions of the buildings already completed, is carrying out the works now in progress.

CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE thirty-fourth Annual Congress of this Association will be held on Monday, Aug. 27th next, and continue for a week or ten days, at Llangollen, Sir Watkin Williams Wynn, bart., M.P., P.C., has become the president of the Association for the year, succeeding to the Earl of Mount-Edgcumbe in that honourable position.

Mr. George R. Wright, F.S.A., Congress Secretary of the Association, has, in conjunction with Capt. R. Massie Taylor, of Tyn Llwyn, Corwen, arranged a good week's work for the members and visitors of the meeting, which will be found to include visits to the following places of interest and antiquity in and around the lovely valleys of the Dee and Clwyd rivers, Valle Crucis and Cymmar abbeys, Castell Dinas Bran, Rhuddlan, Denbigh, and Chirk castles, St. Asaph Cathedral, Gresford, Wrexham, Derwen, Llanridion, Llanderfel, Corwen, Rüg, and other churches, &c. At Llangollen, the arrangements for the comfort of the visitors of the Congress, the excursions by special trains and carriages, the holding of evening meetings at the Assembly rooms, for reading papers, the free use of which has been granted by the Local Board, will be under the care of the Local Council, of which body, Mr. S. Gregson Fell and Capt. Best are honorary secretaries.

The Prince of Wales has consented to be the patron.

THE ROMAN WALL.

A.D. 1873, when in the north of England viewing ancient remains, I inspected much of the relic described by the Rev. J. C. Bruce, and other authors. Venerable Bede, A.D. 73 described the wall as being 8 ft. broad, 12 ft high, in a straight line from east to west St. Gildas, the monk, previously stated that the Romans, at the public and private expense joining to themselves the assistance of the miserable inhabitants, built a wall, different from the former, and of the same structure as wall generally, from sea to sea, according to the usual manner of building along, by some cities that had been contrived there by chance, for fear of their enemies. The Anglo-Saxon chronicle alleges,—"Severus succeeded to the empire, A.D. 188, and he went with an army into Britain, and subdued a great part of the island by battle; and then for the protection of the Britons he built a rampart of turf and a broad wall thereon from sea to sea. Ethelwerd, the most ancient British writer, as Camden stated added, with towers and forts, which he called Fossa Severia."

The stations, according to Bruce, were:—No. 1, Segedunum, or Wallsend; (2) Pons Ælii, or Newcastle-upon-Tyne; (3) Condercum or Benwell Hill; (4) Vindobala, or Ratchester (5) Hunnum, or Halton Chesters; (6) Cilurnum or Walwick Chesters; (7) Procolitia, or Carrawborough; (8) Borcovicus, or Housesteads,—Stukeley's Tadmor of Britain. This is the most interesting remaining station. (9) Vindolana or Chesterholme; (10) Æsica, or Great Chesters (11) Magna, or Caervorran; (12) Amboglanna or Burdoswald; (13) Petriana, or Walton,—Chester, or Catsheads; (14) Aballaba, Stanwicks; (15) Congavata, or Burgh; (16) Axelodunum, or Drumburgh, otherwise Drumbrigh; (17) Galvosentis, or Bowness. Ancient maps and Leland (1539) describe this relic as the Picts' Wall. Some authors allege that Hadrian commenced, but that Severus repaired or completed it (Bruce's "Roman Wall," 3rd ed. p. 385). This author states the work consisted of a stone wall, with ditch on the north side of a vallum, or earth wall, south of the stone wall. Stations, castles, watch-towers, and roads completed the work. The length from Wallsend to Bowness was 73½ English miles, according to Bruce. The earth wall seems to have been about six miles less in length, extending from Newcastle to Dykesfield. The Castella, or mile-castles were quadrangular fortresses, erected one Roman mile from each other, being about 60 ft. square in size. Near Housesteads, and at Castle Nick, I saw fair specimens. At Harehill, near Naworth I saw the fragment, 9 ft. 8 in. high, mentioned in Warburton's "Vallum Romanum," 4to., A.D. 1753, being, with a trifling exception, between Bowness and Port Carlisle, the sole remains of the wall westward. An author, Jenkinson, believes that the whole works belong to the reign of Hadrian, for most of the inscribed slabs and altars at the stations and castles on the wall belong to this reign, and most of the discoloured coins are those of Hadrian. This author alludes to a small portion of the wall extant between Bowness and Port Carlisle, and he thinks that the vallum was continued to Bowness. He mentions "pieces of wall in the hedge, 5 ft. high, at Craggle, west of Hare Hill, where the 9 ft 10 in. piece, seen by Hutton, remains, and "a fine specimen of the wall in the vicarage garden at Gilsland. He adds, "for about 500 yards close to the road at Berdoswald westward, the wall, 7 ft. broad and 7 ft. high," is preserved as I saw it during my visit. The wall at Portrose Burn enters Northumberland. Its course may be traced on the 1 in. to a mile, and still more plainly on the 6-in. Ordnance maps for Cumberland and Northumberland. Bruce, Hutton, and Jenkinson show its course minutely in their works. I walked from Carvoran on or along the side of the wall over high hills to Housesteads by Cawfield Mile castle, twenty yards by eighteen yards, with walls 7 ft. thick and 4 ft. to 5 ft high, having gateways in the centres of the north and south walls. At Winshields, 1, 2 3

above the sea, I observed an extensive prospect towards the north. Here is the extreme altitude. At Peel Crag, and a mile westward, I passed mile castles near the ruins of Burcovicus,—relics "before any existing buildings were erected in Britain." Eastward are few traces of the wall; but the north ditch, vallum, and relics of mile castles are visible at various places. Watling-street is stated to have crossed the line of the wall. Pieces of it are extant at Heddon for some yards, at Dean House, two miles east, and at Denton Burn, three miles and a half from Newcastle,—"eight yards long and 3 ft. or 4 ft. high, enclosed by wooden railing." At Rutchester I saw the stone cistern, or sepulchre; and at Burdoswald, the extensive remains of the station. In Bruce's "Roman Wall," p. 223, and on the 6-in. Ordnance map, the unique Roman milestone at Little Chesters, seen by Stukeley, 1725, is marked, being 6 ft. high and 22 in. in diameter. For a further description of the wall see Bruce's "Wallet Book," Maclaughlen's folio work, Brand's "Hist. of Newcastle," Gough's "Camden's Brit.," Horsley's "Brit. Romans," Hutton's "Roman Wall," and Mackenzie's "View of Northumberland," vol. i., p. 193, A.D. 1825. When returning from Bewcastle to Gilsland, having seen its camp-cross and castle, I encountered the mounds and maiden way, described and planned by the late Rev. Edward Maughan, in the "Archæological Journal," vol. ii. I found it near Spade Adam; and for several miles northwards Mr. M. traces this road from Burdoswald to Castleton, in Scotland.

CHR. COOKE.

OPENING OF THE CAPPOQUIN CONVENT NEW INDUSTRIAL SCHOOLS.

ON the 8th of May, in the midst of the unrivalled scenery of the Blackwater, the above institution, under the management of the ladies of the Convent of Mercy, at Cappoquin, was inaugurated by a public demonstration. These schools closely adjoin the station-house of the Waterford, Dungarvan, and Lismore Railway, and are situate immediately behind the house and premises previously used as a temporary school and house for a small number of boys. The buildings are T shaped in plan, and are two stories high, the ground-floor being devoted to schools and workroom, dining-hall, large and commodious bathroom and lavatories, kitchen, scullery, pantries, &c.; the first floor to dormitories, superintendent's room, granaries, clothes-room, &c. The elevation is plain and substantial. The under-sides of all the floors and the roofs of the dormitories are formed of open timber work, and varnished so as to show the grain of the wood. The dormitory is some 70 ft. long by 26 ft. wide. The designs for the buildings were supplied by Mr. Matthias T. O'Keeffe, of Cork, and the work was executed by Mr. John Sheehan, contractor, and superintended by Mr. Michael Morrissy, both of Cappoquin.

THE DANGER OF BUILDING OVER WORKED-OUT MINES.

CONSIDERABLE alarm was felt by the residents of Westbourne-gardens, Downhill, a suburban locality in the west end of Glasgow, owing to the partial subsidence of several tenements on the morning of Sunday, the 13th ult. The houses referred to are four stories in height, all self-contained, and consisting of about ten apartments, with servants' accommodation. In all cases they are occupied by the proprietors. The tenement, which has suffered most is No. 37, occupied by Mr. Collins, but the houses on either side of this have been in some degree affected by the mishap. It seems that a crack had been observed in the wall of Mr. Collins's house on the previous day (Saturday), but this caused no serious apprehension. Early on Sunday morning, however, the servants were alarmed by a series of loud cracking noises, and on examination being made, it was found that a rent, extending from the basement flat to the roof, had taken place. The proprietor being from home, he was immediately apprised of the circumstance by telegraph, all possible precautions being taken in the meantime to prevent more serious results. Of the other dwellings affected, Mr. Jackson's, No. 38, suffered most, and on the following day the furniture was removed to a neighbouring house. It also appeared on the Monday that the buildings generally had sunk to a lower level, and at night the fronts of Nos. 37 and 38 seemed to be in danger of falling forward. The services of Mr. Rankine, C.E., were called into requisition, and that gentleman having examined the building, expressed the opinion that it was erected over a wrought-out mine, the roof of which was perhaps about 20 feet below the surface. No. 37 was probably above a "room," and in its subsidence dragged the neighbouring houses with it. He was of opinion the erection would sink lower still. The whole of the occupants have since removed. The damaged buildings, which are on the south side of the triangle known as the "gardens," have been but recently erected, and some of the adjoining houses are only now being finished. As the property is of a superior kind, and in a fashionable locality, the pecuniary loss alone is serious.

NEW PUBLIC HALLS.

Melksham.—A new public hall, erected at a cost of about 2,000*l.*, has just been presented to the town of Melksham, Wilts, by Miss Fowler, in celebration of the completion of her eightieth year. The hall, which has sitting accommodation for 300 persons, is faced with freestone, and is 40 ft. long by 28 ft. 6 in. wide, and the height of the hall is 19 ft. Mr. Balgin was the builder.

Newport.—The Blyth Hall, Newport, Dundee, which has been erected by Mrs. Kerr, of Ashbank, in memory of her brothers, Henry, Thomas, and Charles Blyth, was formally opened on the 19th ult. by Provost Robertson. The building will comfortably accommodate about 600 persons. The cost of erection has been about 4,000*l.*

Canterbury.—The new hall which has been built by the Loyal City of Canterbury Lodge of Odd Fellows in Orange-street, Canterbury, has been opened. The building has cost over 2,500*l.* Mr. Wiltshier was the architect, and Mr. Besley the contractor for the work.

Tayport.—The new Temperance Hall at Tayport, Dundee, has been opened. It is a plain and substantial edifice, and was built from plans by Mr. John Bruce, architect, Dundee. A back wing striking out from the west side provides for an ante-room, seated for about fifty people; while the sunk flat below it will serve for the hall-keeper's house. The hall, which measures 60 ft. long by 34 ft. broad, provides ample accommodation for 500 people. The contractors were:—Mason, Mr. David Halley; joiner, Mr. Dowie; slaters, Messrs. Simpson & Son; and plumber, Mr. Murray, Broughty Ferry.

NEW HOSPITALS.

Southport.—The Sanitary Committee of the Town Council of Southport has just erected two hospitals for fever patients on a plot of land two miles away from the Town-hall, to the right-hand side of Churchtown on leaving Southport. The hospitals are each divided into two wards, affording a total accommodation for twenty-four beds, and allowing 1,700 cubic feet of air space to each patient when the beds are full. The various buildings are arranged on the pavilion plan, and the hospitals are placed parallel one to the other about 90 ft. apart, each being 65 ft. long, 24 ft. wide, 10 ft. 6 in. high to eaves, and divided into two wards. Midway between is a building, 30 ft. by 20 ft., containing the surgery, store-room, and kitchen, with a passage in the centre; this communicates, by means of open corridors covered with galvanised corrugated iron roofs, with the hospitals on each side, affording convenient access in all directions. The hospitals have, at the four gables, projections fitted up with hot baths and Heap's patent closets for dry earth. Brick foundations are laid to support the framework of the walls and floors. The sides, ends, divisions, and roofs of the buildings consist of a framework of timber, covered on the outside with galvanised corrugated iron sheets, and on the inside with tongued and grooved boarding, moulds, and skirting, varnished and painted. The design of the arrangement of plan is in accordance with the suggestions of the medical officer of health, Mr. H. H. Vernon, M.D.; and Mr. Crabtree, the borough surveyor, has had the supervision of the entire work during the execution by the contractors, Messrs. Edward T. Ballhouse & Co., engineers, of Manchester.

Grimsby.—The new hospital for Grimsby and neighbourhood was opened by the Countess of Yarborough on the 22nd ult. The building, which has been erected at a cost of 5,000*l.*, has a frontage to the westward, and is designed on the block system; it will, when completed, accommodate upwards of fifty in-door patients. The wards have hollow walls, the windows at each side are taken close up to the ceiling, and fresh air is brought in by tubes and admitted by gratings in the floor, and both these inlets and the foul-air outlets are controlled from the wards, and are perfectly noiseless. The wards are warmed with hot water on the low-pressure system. The walls are faced with the red kiln bricks used in the neighbourhood, and the angles and quoins of the windows are picked out in stock bricks, and Bath stone dressings are also introduced. The style is Domestic Gothic, freely treated, the entrance being finished with a small tower and spirelet. The buildings have been erected under the superintendence of Messrs. Smith & Brodrick, architects, Hull, whose designs were selected in a limited competition, and the entire work has been carried out by Mr. E. Dawson, for Messrs. Logan & Hemingway, contractors, of Grimsby.

STEREOSCOPIC EFFECTS.

MR. W. MATHEWS, of the Royal Fort, Bristol, writes as follows:—

Most persons have become acquainted with a simple and readily-constructed apparatus, by means of which drawings, portraits, or plans may be very closely copied. It consists, in its most primitive form, merely of an upright sheet of glass supported transversely or affixed in a groove upon a flat surface. When it is in use, the drawing which the student purposes to reproduce is placed upon the board, lying immediately before him. Then, looking from left to right, the eye rests upon the glass, in which is seen mirrored an exact image of the thing to be drawn,—imprinted apparently upon the blank sheet, which lies at the student's right hand. By this means he is enabled to obtain an accurate tracing of the portrait or sketch. Now, it will be evident that when the apparatus is efficiently constructed, this duplicate copy of the drawing can be withdrawn for examination at any stage of the work, and may be afterwards carefully replaced and proceeded with. So, too, it will be equally evident that in the instance of copying a *portrait*, the substitution of any other face than the original one would be attended by a falsification of the image, and a consequent destruction of the true identity. At this point, then, the reader may be requested to surmise for himself the arrangements that have been devised for communicating to the image, as presented in the mirror, the utmost possible degree of vividness, and for efficaciously utilising the apparatus as an agent of judicial identification.

These details consist, in the main, of certain accessories for directing a powerful concentration of light upon the portrait, with the employment of a mirror-plate of superior quality and of an especial tint. Thus furnished, it is next necessary that two life-size photographs shall be so arranged under the light and on the reverse sides of the mirror-screen, that the vividly-illuminated features of the one shall be perfectly imaged at the precise angle and point of sight where the other appears. All being satisfactory, an entire novelty awaits the investigator. For, in the event of the photographs being those of the *same person*, and the attitude corresponding, then, *at the precise moment when perfect unison is reached*, one single image starts suddenly into existence, with all of those statuesque effects hitherto deemed peculiar to the stereoscope, and with all the vivid realism of life itself! It will suffice to say that I have not here specified all the paraphernalia requisite to bring about these effects in their most brilliant form; but the general principle will be sufficiently obvious to the intelligent reader.

Ancient Coins.—A discovery of ancient coins has just been made on the estate of Mr. Allen Gilmour, a few miles from Cupar Fife. In draining a portion of land some labourers struck on what appeared to be a boulder, but subsequently was discovered to be a pot. A stone was firmly wedged into its mouth, and on being removed it was found that the vessel was filled with coins, the total number of pieces being 9,000. Most of them have the appearance of a well-worn sixpence, a few the size of a florin, though not quite so thick, and a small number are about the size of a shilling. They are all silver, and so far as has been ascertained, of the twelfth, thirteenth, and fourteenth centuries.

LLANDUDNO PROMENADE PIER.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

AT the meeting of this society, held on the 24th ult., the president, Mr. R. M. Bancroft, in the chair, a paper was read on the above-named pier, by Mr. Charles H. Rew, illustrated by thirty sheets of general and detail drawings. It was stated that the quantity of materials to be used in this work will be,—600 tons of wrought iron, in lattice-girders, bracing, &c.; average span of girders, 50 ft., with a depth of 4 ft. 2 in.; 450 tons of cast iron, in 162 piles, 12 in. diameter; 50 tons of ditto, in parapets; 5,000 cubic feet of greenheart timber; 4,800 ditto of pitch-pine in flooring; total length of structure, 1,234 ft.; average width between parapets, 25 ft.; total cost, 26,000*l.*, equal to, say, 63*l.* 5*s.* per yard.

The work is being carried out under the direction of the engineers, Messrs. Brunlees & M'Kerrow, their resident being Mr. Herbert Neal; and the contractor, Mr. John Dixon, of Laurence Pountney-hill, London.

The cast-iron piles are driven an average of from 5 ft. to 7 ft. into the ground; and all iron-work painted with Griffith's patent silicate enamel paint.

In the discussion which followed, Messrs. H. Valpy, H. Ellis Hill, W. C. Street, A. Payne, and J. Love took part, and at the close a vote of thanks was given to the author for his paper, which is a valuable addition to the society's records.

FIREPROOF FLOORING.

MR. W. H. COZENS HARDY writes to the *Times* from Letheringsett Hall, Norfolk, as follows, viz.:—"Having had a considerable fire on my premises some years ago, I was much interested in the account you published some weeks back of the fireproof flooring designed by Messrs. Evans & Swain. I have a large malt-house, 40 ft. by 180 ft., which was built about the year 1824, over which is a chamber of the same size for storing barley and malt. The floor was made without any joists, and having resisted the ravages of a large fire on the 1st of April, 1827, it may interest your architectural readers to learn how it was constructed. The building is 40 ft. wide, and strong beams, 6 in. by 15 in., were placed on the brick walls, 7 ft. apart, each beam being supported by two iron-wrought columns; upon these beams 3 in. deals, grooved and tongued, were fastened without any joists. The fire originated in this building, from the spontaneous ignition of high-dried malt, and in less than an hour the whole roof fell upon this floor. Some time elapsed before a fire-engine could be obtained. At length the fire was got under, but continued to burn for some twenty-four hours afterwards. To my astonishment, none of the beams were destroyed, and the floor was scarcely at all injured (only about a dozen small holes having been burnt through), and the floor exists at the present time as strong as it was fifty years ago. I may observe that this floor, though somewhat moist in its construction, was simply made for strength, and without any idea of its being less liable to be destroyed by fire than ordinary floors. I am quite certain that the safety of this floor arose entirely from the 3-in. deals being grooved and tongued, thus preventing the air from getting between the joints and feeding the flames. If a floor on this principle were made with a double thickness of 3-in. deals, tongued with hoop iron, one above the beams and the other under, with concrete between, and with a ceiling of thick plaster, as suggested by Messrs. Evans & Swain, I have no doubt it would resist the action of fire much longer than so-called fireproof buildings, and the cost would be very trifling. I shall be happy to show my malt-house to any one who may wish it."

SIR,—We notice in your number for May 19th a letter from a Hungarian engineer, Herr Ladislas Vidéky, commenting on an article in the *Times* of April 20th, describing the trial of our patent fireproof construction. Will you kindly allow us a small space to reply to his letter.

He states that "our system is no novelty, but has been in use more than two centuries in his country"; but certainly our construction has never, so far as we are aware, been either used in this country or elsewhere, and most decidedly, as far as we are personally concerned, is a *bond fide* invention of our own.

After this statement he proceeds to give a long description of the Hungarian system, which on examination proves to be widely different to ours (though founded on the same theory), and so far from being superior is possessed of many radical defects and disadvantages which ours has not. We believe that Herr Vidéky has not quite understood the method of construction used by us, and this is not to be wondered at if he has only gained his information from a short article in the *Times*, and not from our full descriptive pamphlet (which we have now sent to him). The Hungarians, it appears, construct their floors of round beams, 10 in. or 11 in. diameter, and sawn in half, and then laid close to each other. Now, we act in direct opposition to this, using thin timbers, 2 in. being preferable to 3 in., and by this means the possibility of *shrinkage* is reduced to a minimum, which Herr Vidéky speaks of as being such a drawback to the Hungarian method. The spikes used by us are not so much to overcome the shrinkage of the timber (though, in a measure, they certainly do this), but to bring them all into close proximity, and thus form a solid wood floor, as much for bearing power as for prevention of shrinkage. Herr Vidéky's system of reeds and plaster is just an ordinary lath-and-plaster ceiling, only substituting reeds for laths, as is sometimes done in our own country, where reeds are cheap and easily obtainable, and this can, of course, be just as easily applied to our groundwork of solid timber; but we prefer our system of dovetail keys or nails, as the chance of cracking from shrinkage is materially reduced thereby. The advantage of our key is, that if the wood dovetail shrinks, it separates from the plaster without cracking it, leaving the latter loose as regards the wood-work to which it is attached, and yet securely, being held in its place by the dovetails.

Where Herr Vidéky says,—"I am sure that the flames and smoke, which broke through the experimental flooring at the trial in London, were entirely due to the shrinkage of the joists," he is in error altogether. The smoke only found its way through that portion of our floor which we had purposely left unprotected by plaster, to test the difference between a solid wood ceiling alone, and one protected by plaster. We assert, and those who were present at the trial will bear us out,—that "no smoke whatever came through the protected portion; what did come through the joints of that part, and which may have been mistaken for smoke, was steam caused by the plaster being green and not properly dry" (the short time, for which we had permission to use the ground having prevented us from giving the plastering as long a time to dry as we could have wished), "when it (the plaster) became heated, steam was formed at the back, and forced its way between the joints in one or two instances blowing out the plaster stopping where the joint was a little wide. We can confidently assert that for four hours at least no smoke found its way through the joints of our protected portion of floor."

Herr Vidéky is certainly right in saying "the upper surface of our floor was not protected at all"; this is one advantage of our system. Nothing is wanted in a building for ordinary purposes; it is only necessary when used for the storage of inflammable goods, and then we introduce on the top of the floor tiles, cement, or stone. We must not trespass on your space further, but conclude by saying we are quite willing to set our system against the Hungarian one advocated in the letter we reply to, and will guarantee that, span for span, ours will carry more weight and stand a far larger amount of fire.

EVANS & SWAIN.

NOTES FROM CHESTER.

Proposed Widening of Northgate-street.—At the quarterly meeting of the Chester Town Council, on the 16th ult., it was resolved, on the motion of Mr. H. T. Brown, "That a special committee be appointed to consider and report upon the necessity of widening Northgate-street from the Cross to the Market, and of improving the access to the Market, and that they be empowered to call in the assistance of professional surveyors, &c., if deemed by them necessary."

School of Art.—The annual distribution of prizes to the students of the Chester School of Art took place on the 16th ult., under the presidency of the Mayor. The hon. sec., Mr. Cottingham, read the report for the past year, which states that the school has been making satisfactory progress, and is at present increasing in numbers and steady attendance. The total number of students who have attended during the year has been 103, being an increase of twenty-two upon the number who attended during the previous year. This increase applied to every class. The financial year shows an increase of receipts from students' fees of 24*l.* over the amount last year. The quality and advancement of the stages of the work done by the students have been superior to that of previous years, and the success at the Government examinations has been very gratifying. Mr. Craister is the head master. The Rev. E. L. Y. Deacle, rector of Northenden, presented the prizes, and gave an interesting address.

DIFFERENCE IN IRON.

SIR,—Can any of your readers tell me the reason why some wrought-iron work rusts and shells off, and some does not?

The iron railing round the Albert Monument, opposite the Town-hall, Manchester, was in a state of decay some few months ago, although it appeared to have been well painted. I have seen wrought-iron nails, bands, &c., on old church doors, quite fresh-looking, and without paint on them (probably worn off). In fact, the house I live in has a lot of old wrought iron about the oak, internally and externally, and it is 130 years old; nearly all of it appears to be sound, except in a few instances.

Is the iron of the present day of inferior quality, or is it burnt up too much in being wrought?

H. T. P.

SURVEYORSHIP ITEMS.

Carlisle.—At the last meeting of the Carlisle Urban Sanitary Authority, the clerk read a letter from Mr. Joseph Johnston, resigning his situation in the surveyor's office, and the question at once arose as to whether the Urban Authority should appoint somebody in his place or let the surveyor do it at his own cost. The surveyor (Mr. McKie) said there was work for four men, and it was hard if he had to find that assistance. He had lost 400*l.* a year dead by taking this appointment. He came to settle among friends, but it was at a dead loss of 400*l.* a year, and at present it was 500*l.* a year loss. They would not find any place of importance where the surveyor found all the assistance. After some further discussion, Mr. Wheatley said:—If Mr. McKie will make an application to the Council for a higher salary I will be prepared to move that he have it and devote his whole time to us. The subject then dropped.

Wolverhampton.—Mr. Anthony Morgan, C.E., borough surveyor, of Wolverhampton for the past twelve years, recently died. At a meeting of the Town Council, on the 14th ult., the General Purposes Committee reported that, having carefully deliberated upon the subject of the appointment of a successor to the late Mr. Morgan, and also as to the necessity of filling the vacancy at as early a date as possible, they felt it imperative, in the interest of the town, to recommend the Council to appoint a gentleman with status and qualifications similar to those possessed by the late borough surveyor, not only because the ordinary duties of the office require a gentleman of high scientific attainments for the efficient performance, but because the artisans' scheme and other important improvements will require the attention of an experienced engineer and surveyor. Under these circumstances the committee recommended that the salary of the surveyor shall be 500*l.* per annum, he finding the necessary staff in his office. The recommendation was adopted.

GAS AND WATER.

UNDER the heading of "Bane and Antidote," in a recent number of the *Builder*, there is a suggestion from M. Ambroise Pétry to connect the water supply to the gas arrangements in theatres, so that in the event of fire water could be turned on instead of gas. This is actually carried out at the Park Theatre, Camden-town, and has already caused some inconvenience, through persons explaining the arrangement, and letting the water into the gas-pipes, which had to be removed before proper light could be obtained.

In the case of a fire, the action of the water would be so localised as to be of very little use, and in the early stages of a fire the absence of light in the dark places about a theatre would be a great source of danger to those who were endeavouring to extinguish it, or to save property.

GAS ENGINEER.

THE PARKS AND PATHS ABOUT THE PALACES.

SIR,—Some operations are in progress, and now perhaps those who direct and give orders may deem it worth while to consider whether it may not be economy to spend a little more on good and sufficient gravel, rather than let the public cut out new tracks to avoid the disagreeable walking which they are expected to perform. That path from Piccadilly, opposite Devonshire House to Buckingham Palace, and the vast acres in front of the said Palace, have been all this winter in a disgraceful state of muddy ridges, and hollows, and swamps, and now dry weather has set in, resulting in the only possible change to dust and gritty rubble, water-carts occasionally only making it sticky and dirty, and there is a perfect fortification of hurdles to drive unfortunate walkers back to the path unless they like the wet grass better. If only a tidy path were made, all that hurdle management might be saved, and the public saved; but no, the thoroughfare is for common people only, and they may grind their boots to shreds, while nice clean paths are kept near the houses where nobody walks, and the parts devoted to horse-riding are far more carefully kept up, though taken from the grass part, which is so woefully reduced from its former extent. Why should all that desert be kept in front of the Palace? It is the most dreary uncomfortable place in all the West End; corners of it harbour rubbish, weeds, and disagreeables, instead of fine trees, shrubs, or good architecture. A fine space spoilt!

H. C.

"20, QUEEN-STREET, MAYFAIR."

SIR,—Permit me to explain, in reference to your notice of my "Side of Dining-room," at the above (Royal Academy), that the doors you criticise form what have been found very convenient cupboards on either side of fireplace, and do not correspond to any doors opposite.

ASTON WEBB.

SOME THOUGHTS ON THE SANITARY ARRANGEMENTS OF DWELLINGS.

SIR,—That a reasonable amount of pains should be taken to perfect the sanitary arrangements of our brick-and-mortar dwelling-houses there can be no manner of doubt. But the perfectly-arranged house which sanitary enthusiasts sigh for does not appear to be practically attainable, and would, if attainable, probably not be desirable. For in that perfectly arranged dwelling alone would there be pure air, and exemption from draughts. Its owner, therefore, would, if it could be realised, be in constant danger of suffering from exposure to the variations of temperature of his outer mansion, the world at large. In this our planetary palace we daily complain of the weather, that its ventilation is not all that we, as sanitary reformers, could desire. There are exceeding draughts in it in the guise of hurricanes, tornadoes, and cyclones, and there are corners where life cannot be sustained, miasmatic regions, &c.

We have been exhorted not to be righteous overmuch, and by a parity of reasoning we ought to come to the conclusion that there is danger in being "sanitary" overmuch. We may overstep a certain moderation in these matters and fare worse; for what greater means of torture could be inflicted upon a human being than to provide him with a house free from draughts, and wherein he should breathe perfectly pure air, if he have to pass two-thirds of his time exposed to the atmosphere, the changes of temperature, and the cold and damp of the outer world?

But there is yet another house with respect to the sanitary arrangements of which we give too little heed,—in which the admirable provisions of nature are times out of number thrown out of gear with the most contemptuous effrontery. I mean the house of flesh and blood,—the dwelling of the soul,—it is the mismanagement of this house which is nine times out of ten the cause of those ailments and diseases which bring it prematurely to dilapidation and destruction. Yet most of these ills are preventible if men and women were only better instructed in the laws of health. But, strange to say, in no subject does there exist a greater degree of ignorance than in that which treats of the proper management of the soul's tenement; and in this ignorance we are too prone to lay our ailments at the door of some mal-arrangement of bricks and mortar.

While discussing the proper construction of the elaborate mansion of brick or stone, we should not forget that there are dwellers in tents, and that these do not fare badly. There are also temporary dwellers under umbrellas; and an umbrella in these pouring times is no despicable shed. Yet it pains one to see grown persons and children on their daily errands, exposed to an incessant downpour, without either a silken or a cotton roof to protect them. Need I state to what results such exposure, and then partial drying in close rooms, lead? Would it then not be a great work of charity to bring about a manufacture of cheap umbrellas? At present, in their cheapest form, umbrellas are too expensive for many poor creatures to obtain. An umbrella in time would often save the greater expenses of hospital and poor-house, and also prevent the loss of many human lives.

W. CAVE THOMAS.

SPANISH CHESTNUT.

SIR,—I should be glad to ask if any of your readers who may be sufficiently acquainted with this timber can send me particulars of any cases in which they certainly know it to have been used in Mediæval carpentry? I find that the belief in its use still exists, and I have had some cases named to me which seem worth investigation. I want evidence rather than tradition, and my inquiry has an important bearing on the durability of this timber. THOS. BLASHILL.

MODES OF BUILDING.

SIR,—Please send all your staff and all your readers to inspect in skeleton, carcasses unplastered, substantial, new (?) brickwork and mortar of basement, party, and foundation walls of unfinished residences between Highbury New Park Hotel and Finsbury Park, Seven Sisters-road, and report fairly without malice thereon. Q.

*** We relegate the duty to the District Surveyor, and shall be glad to have his report.

THE TREES IN KENSINGTON GARDENS.

SIR,—It would appear that occasionally you take up matters that do not always apply to bricks and mortar, and not unfrequently your columns are extended to acts of charity.

You put up houses and build and pick up men. May I ask from you the same benevolence and kindness to help me in finding food and nourishment for those poor old trees in Kensington Gardens?

While trotting over the bare roots, which I do every morning at seven a.m. to procure a cup of that well-known refreshing spring-water, I wonder how it is the young plants are nourished with manure, and the spade used to loosen the earth, while those charming old trees are forsaken, until the roots are as bare as the trunks.

An old castle, an old man, and an old tree deserve the same attention, on the principle of "Do unto others as you would be done by."

ELDRIDGE SPRATT.

SAFETY IN THE MINE.

SIR,—The Rhondda Valley excitement has nearly subsided,—aid and sympathy extended, but no remedy provided. What has happened may re-occur to-morrow; mechanical contrivances can prevent loss and sorrow; gas, fire, water, the exit blocked, hundreds in death's arms are often locked; brave hearts and strong arms will dig, delve, and dive, but next time will they bring five out alive? All admit that prevention is better than cure. Call in Dr. Genius or Dr. Inventor, but the latter is poor. A best-plan competition at once let there be, and the A 1 position is hoped for by me.

I would build a safety retreat on the diving-bell plan; send air, food (liquids and solids) to supply every man; a post-office, too, for transmission of letters: this, and more, can be done for entombed coal-getters. Supplies always come in if markets demand; we stand at "ready" for the word of command. R. T.

COMPETITIONS.

Devonport, Stoke, and Stonehouse High School for Girls.—The Council have selected the design "*Au fait*," by Mr. H. J. Paull, of Manchester, and the building will be proceeded with immediately. There were twenty sets of designs. The intended accommodation is for 250 pupils, including a Kindergarten department.

The Liverpool Eye and Ear Infirmary.—The *Liverpool Journal* says that the plans for the proposed new Eye and Ear Infirmary are now displayed at the Medical Institution, Hope-street. A sub-committee, appointed for the purpose, has been for some time past engaged in examining the drawings, and the award is likely to be made very shortly. The new infirmary will be arranged for the accommodation of eighty patients. Separate wards will be reserved for infectious cases. A certain number of private wards will be reserved for patients whose means are sufficiently large to render them able to contribute a moderate sum for their maintenance and attendance. The competition was limited to local architects. Seven have responded to the invitation. The elevations vary greatly in style and costliness. Four are Gothic or pseudo-Gothic; the remaining three are in that mode of brick-building familiarly known as "Queen Anne." Our contemporary hopes that it will not have to lament another lost opportunity for beautifying as well as benefiting the town, and says that good work and sound art cost little more than jerry-building.

Haddington Memorial to John Knox.—This town is the birthplace of John Knox, the Reformer, and founder of the Scottish system of Parochial Education. The Board of Education for Scotland having directed that a school for higher education should be formed in place of the ancient Burgh School, and the old buildings having been condemned as unsuitable, the oLcal School Board conceived the idea of making the new school a building of a monumental character as a memorial of the Reformer. Subscriptions to the extent of about 5,000*l.* having been received, competitive designs were called for. The plans submitted by the respective competitors are stated as being very much upon an equality; and the chief question left for the decision of the School Board was as to the elevations. After deliberation the Board have decided in favour of those submitted by Mr. Starforth, of Edinburgh.

Kensington Vestry-hall.—Mr. Whichcord has undertaken to report on the designs submitted, and to make the required selection. The whole are referred to him.

STAINED GLASS.

Thirsk.—A new stained glass window has been placed in the western end of the parish church, Thirsk. The window, which is of large size, is the gift of the late Mrs. Macbean, and has been erected in memory of Mr. Frederic Bell (her son), late lord of the manor. The window contains six groups, having reference to the last hours of the Saviour, namely, the Agony, the Mockery, Carrying the Cross, the Crucifixion, the Burial, and the Resurrection.

Castle Donington.—There has just been erected at Castle Donington Church, near Derby, to the memory of Mrs. Elizabeth Ann Wyer, a two-light stained-glass window. It represents the Presentation in the Temple, and has been executed by Messrs. Mayer & Co., of Munich.

SCHOOL BOARD SCHOOLS.

Hull.—The new board school in Fountain-road, Hull, has been opened. The building is in the Gothic style, and is faced with red pressed bricks, with Ancaster stone dressings. The entire area of the site is 2,665 square yards, and the principal frontage is 220 ft. in length. The school is in three departments—boys, girls, and infants, and is designed to accommodate in all 750 children. The cost of the site was 1,432*l.*; the contract for the building is 6,420*l.*; and the heating apparatus and school fittings will probably cost about 300*l.*; thus making a total of 8,152*l.* The architect is Mr. Wm. Botterill, and the contractor is Mr. Geo. Jackson.

Somerby.—New Board schools at Somerby, Leicestershire, have been opened. The master's residence forms part of the group. The buildings are of the native brown stone, with Box ground stone dressings, the interior of the schools being laid with pressed bricks. The roofs are open-timbered, and covered with Welsh slating, the ridging in red ware of an ornamental character. The principal entrance is surmounted by a bell-tower. The fittings throughout are of red deal, varnished, and cast-iron standards. The works have been carried out by Mr. Geo. Hayes, of Melton, builder, from the designs of Mr. R. W. Johnson, architect, Melton Mowbray. The total cost has been upwards of 1,700*l.*

SCHOOL BUILDING NEWS.

Sutton Valence.—The new wing of the Sutton Valence Grammar School, now in course of erection by the Clothworkers' Company, to whom the foundation belongs, is fast approaching completion. The contractor is Mr. Naylar, of Rochester. The new school-room is a spacious and lofty chamber open to the roof, approached by a broad flight of stone steps, and forms a striking contrast to the somewhat contracted room formerly known as the school. The large hall beneath has been partitioned off into class-rooms, but the partitions are so constructed as to be easily removed. A number of well-appointed studies have been provided; and several new dormitories, well lighted and well ventilated, have also been added.

Sheffield.—On the 13th ult. new schools in connexion with the Burngreave Congregational Church, Sheffield, were opened. The foundation-stone was laid in October last, and the schools have been built on a plot of land immediately behind the chapel, by Mr. Milner, from the plans of Mr. James Hall, architect. They consist of a large room and four class-rooms, and under the same room is a house for the chapel-keeper. Accommodation has been provided for 400 scholars. The building of the schools was let on separate contracts for the sum of 1,436*l.* 19*s.*

Kelso.—The foundation-stone of Kelso New High School was laid on the 21st of May, with Masonic honours. The building will occupy a site at the east end of the town, and will be erected from the plans of Mr. Carnegie, architect, the contractors for the mason work being Messrs. Dickison & Son, Kelso. The building is to be of red sandstone, faced with white stone, and will consist of a large school-hall 70 ft. long, with proper class-rooms attached, above which will be the dormitories, capable of accommodating thirty pupils.

CHURCH-BUILDING NEWS.

Aughton.—Christ Church, Aughton, was consecrated on the 4th ult. by the Bishop of Chester. It has been erected from plans prepared by Messrs. W. & J. Hay, architects, Liverpool, and is Middle Pointed in style. The body of the church is of five bays, divided by arcades of clustered pillars and pointed arches, and the aisles are lighted with three-light windows with flowing tracery. The whole of the interior is lined with solid ashlar stone, and the floor laid with black and red tiles. An archway at the west end opens up into the tower, and shows a traceried window of four lights, while a moulded arch with clustered jambs opens up the eastern end into a decorated chancel of three bays, terminating in a five-light window, filled in with stained glass, by Wailes, representing the principal events of Our Lord's Passion. There is a sculptured reredos of Caen stone, marble, and alabaster, which extends right across the chancel under the east window. The carving has been done by Mr. Rogerson, of Liverpool, Messrs. Harris & Sons, of St. Helen's, being the builders.

Middlestown.—The new church of St. Luke, Middlestown, in the parish of Thornhill, has been opened for worship. It is in the Early English style, and consists of a nave, north and south aisles, chancel, south tower (the lower part of which forms the porch), organ-chamber, with clergy and choir vestries forming a connecting link between the parsonage and the church. The north and south arcades consist of four arches, the chancel arch between the nave and chancel being of lofty proportions. The chancel is apsidal-ended, and is raised three steps above the nave, the sanctuary being further elevated by three marble steps. The central window of the chancel is filled with stained glass by Wallace, of London. The pulpit is made of wrought iron, by Mr. Joshua Ingham, blacksmith, of Middlestown, and rests upon a carved stone base. The heating is effected by means of Musgrave's patent hot air stove. The contractors were as follow:—Masonry, Mr. Walter Kilburn, of Thornhill; carpenter's and joiner's work, Messrs. Firth, of Dewsbury; plasterer's work, Mr. Sanderson, of Ossett; slaters' work, Messrs. Rawsthorne, of Dewsbury; painting, glazing, &c., Mr. Carter Lodge, of Thornhill. The whole has been carried out from the designs and under the superintendence of Mr. F. R. N. Haswell, architect, North Shields. Mr. Alfred Hepworth, of Barnard Castle, was the clerk of works. The church is estimated to accommodate 480 persons, and the total cost will be about 5,000*l.*

Nuneaton.—We learn from the *Nuneaton Chronicle* that for some time past the works at St. Mary's Abbey Church, Nuneaton, have gone steadily, if slowly on, and are at length beginning to assume some definite appearance. The old remains at the eastern end are being bricked in, so as to form part and parcel of the building proper. The architect is Mr. Clapton Rolfe, of Reading, and Mr. Smith, of Chilvers Coton, is the contractor. Sir Gilbert Scott lately visited the building. The north and south arcades are now beginning to assume a finished appearance, the fine Attleborough stone, of which the dressings are composed, contrasting pleasantly with the rough hewn stone (Tuttle Hill) of which the walling is built. The new capitals have all been carved in the same style as the existing examples, by Mr. Harry Hems, of Exeter.

Beer (Devon).—Beer Church, or chapel-of-ease, which is locally thought to have been erected by a member of the Walrond family towards the end of the fifteenth century, has been removed to make way for a new church. The foundation-stone of the new building has been laid by the Hon. Mark Rolle, the lord of the manor. The old building accommodated about 500, but the new one is to seat between 650 and 700, and is to partially occupy the old site. It will consist of a nave with a clearstory, a chancel, two aisles, an organ-chamber, and two vestries. There will be a tower with a spire at the north-west angle. The spire is to be 110 ft. high. The walls are to be of Hooking blue stone, with Beer stone dressings. The roof will be open and the piers of the arcades will be of marble, with carved capitals. The architects are Messrs. Hayward & Sons, of Exeter, and the contractors Messrs. Stephens & Bastow, of Bristol. Mr. Harris is the clerk and Mr. Hampton the foreman of the works. The cost, which will be borne exclusively by the Hon. Mark Rolle, is estimated at 6,000*l.*

Great Stainton.—On the 17th ult., a new church in the village of Great Stainton, near Darlington, was opened by the Bishop of Durham. The old church is generally supposed to have occupied the site of one of Saxon origin, and its entire removal has not been accomplished without some amount of dissatisfaction from an archæological point of view. Mr. Pritchett, of Darlington, designed the new building, and superintended the carrying out the work. The style adopted is Late Decorated. There is a nave, chancel, porch, vestry, organ-chamber, and a spire 80 ft. high at the west end. The cost has been about 1,700*l.*

Crookham.—The newly-built chancel of Christ Church, Crookham, has been consecrated. It has been built by Mr. J. Lining, of Crookham, from designs by Mr. W. H. Woodyer, architect. On the right is an organ-chamber, and on the left there is a small aisle for the school children.

Radcliffe.—The new church of St. Andrew, Radcliffe, near Manchester, has been consecrated by the Bishop of Manchester. It has been erected at a cost of 5,000*l.* by Mr. G. Napier, builder, of Manchester, under the superintendence of the architect, Mr. J. Lowe, whose designs were selected in open competition. The building is of stone, being faced externally with parpoints, relieved by Yorkshire stone dressings. Some of the internal dressings are of Bath stone, the shafts of nave pillars being of red Mansfield. All internal woodwork is varnished. The floors of aisles, chancel, baptistery, &c. are laid with encaustic tiles. In arrangement the edifice consists of a nave, aisles (used as passages only), chancel, with polygonal termination, organ-chamber and porch, vestry, south porch, north porch, with tower and spire rising to a total height of 115 ft.; baptistery, cellar for Haden's heating apparatus, &c. The church is in the Early English style, and affords accommodation for 500 worshippers.

Wandsworth.—Last July we recorded the opening of the new church of St. Peter, Ploughlane, Clapham Junction, built from the design of Mr. W. White, F.S.A., and have now to note the dedication, recently, of another church from the designs of the same gentleman in that immediate neighbourhood. This building, dedicated to St. Matthew, situate in Gowrie-road, Lavender-hill, Wandsworth, is a brick edifice. The style is of an early type, and wood is made to bear a prominent part in the constructional arrangements. The interior is well adapted for congregational purposes, the nave being broad. There is a wooden pulpit, which, without steps, is entered immediately from the stalls in the chancel. Its principal feature is a canopied and crocketed niche, in which is a goodly-sized figure, in pitch pine, of the patron saint, in the attitude of reading the Scriptures. The pulpit is by Mr. Harry Hems, of Exeter, who also modelled the 'sgraffito panels in a line with the clearstory, and which run from east to west on either side of the building. Mr. W. H. Williams, Meyrick-road, Clapham Junction, has carried out the whole of the work, under the immediate superintendence of the architect.

Redyon.—The parish church of Reydon, Suffolk, has been re-opened, after thorough internal restoration. The old pews and "three-decker" pulpit, desk, and clerk's seat have been removed, and open seats of pitch-pine erected. Those in the chancel (not yet completed) have carved poppy-heads. The floor has been re-laid throughout, and the chancel floor raised one step. Among the special offerings are the pulpit and desk, carved in oak and pollard oak, by Mr. Cornish, of North Walsham; and an adjusting brass pulpit desk, chased and illuminated. The walls have been cleared of whitewash, and stuccoed rough. The old rood staircase and two piscinæ have been laid open. The contract for walls, windows, and seating was taken by Mr. R. J. Allen, of Southwold.

Nottingham.—St. Nicholas's Church, Nottingham, was re-opened on the 17th ult., after renovation. Mr. Henshaw has done the joiner's work; Mr. Humphrey the gasfitting; and Mrs. Marshall the decorations; the whole of the work being under the superintendence of Mr. Fothergill Watson, architect.

GAS FROM PARAFFIN.

SIR,—I should be glad if any of your readers could give me any information about the American invention for making gas from paraffin oil,—if it is suitable for lighting a country house, and if experience has proved it to be as good in all respects as gas made from coal

SUBSCRIBER.

Miscellanea.

Drainage of Oxford.—Mr. W. H. White, C.E., and engineer to the Oxford Local Board, in a paper recently read before the Ashmolean Society, has given the following particulars of this work:—The total length of new sewers and surface drains was 32¾ miles. Of this length 7¼ miles have been constructed of brick and 25 miles of stoneware pipes. The temporary pumping power supplied consists of a portable double cylinder engine of 14 nominal horse power and a 12-in. centrifugal pump driven by a belt from fly-wheel of engine. At a fair working speed of 90 revolutions of engine 2,300 gallons of sewage are discharged per minute, and at present about a million and a half are dealt with daily. The water supply of Oxford is about 2,000,000 gallons per day,—that is, 60 gallons per head of the entire population, and in very wet weather the 100 acres contributing surface water to the sewers would yield about the same quantity. Therefore, if the present amount of water continued to be pumped into Oxford the ultimate wet weather flow would be something like 4,000,000 gallons per day. He concluded by stating that 370 acres of land had been purchased at Sandford for an irrigation farm to connect which with the pumping station a rising main of cast-iron pipes 1½ mile long has lately been commenced.

The Naval and Military Club.—Great changes are being made in the interior of this club, which occupies the residence of the late Lord Palmerston, in Piccadilly, close to Half Moon-street, and facing the Green Park. Modest as the house (which is the property of Sir Richard Sutton) may appear from the road, the rent of it is 5,000*l.* per annum on a sixty years' lease. The Club committee, in concert with the members, finding the internal accommodation to be insufficient for the use of their increasing numbers, determined some time since on enlarging it, and in no niggard manner, as the cost of the proposed extensions and alterations (which will be completed next January) is estimated at nearly 30,000*l.* The whole of the front portion of the ground-floor has been thrown into one, in order to make a large hall. The structural additions begin from the coffee-room, and extend down White Horse-street to Shepherd's Market, a distance of nearly 150 ft., by 70 ft. or 80 ft. in width. The brick wall facing Piccadilly will make way for a slight iron railing, and the ground in front is to be turned into an ornamental garden. Mr. J. MacVicar Anderson is the architect.

New Parks for Salford.—The Salford Town Council some time since determined to construct three additional parks—at Seedley, Broughton, and Ordsall—for the recreation of the rapidly-increasing population of that borough. Seedley Park was opened a year ago; the Albert Park, Broughton, was on the 12th ult. formally dedicated to the use of the public; and the park in the Ordsall district is expected to be completed in a little more than twelve months. The Albert Park is most conveniently situated, being bounded on the north side by Great Cheetham-street, on the south by Camp-street, on the east by Great Clowes-street, and on the west by Grecian-street. When the land, which is sixteen acres in extent, and cost 6,000*l.*, came into the possession of the Corporation it was a flat waste, but under the superintendence of Mr. H. Moore, the head-gardener at Peel Park, it has been transformed into a Park. It has a lake two acres in extent, and gymnasia for males and females are being erected.

A Roman Pavement in the City.—During the excavations now in progress preparatory to the erection of a large block of buildings at the junction of Cannon-street with Queen Victoria-street, opposite the Mansion House Station, the workmen employed by Messrs. Taylor & Locke, architects of the new buildings, discovered portions of a Roman pavement. The architects at once gave direction for the whole of the pavement to be unearthed, and it appeared that its extreme length was nearly 18 ft., and breadth about 16 ft. Much of the pavement had been destroyed, so that it was difficult to trace the design, but it appears to have been of a simple character, the centre space consisting of white tesseræ, without any design, and about 5 ft. 6 in. square, surrounded by a border of black about 2 in. wide, the whole of the remainder being red with small irregular stars of black and white tesseræ.

Cromwell House.—"The play 's the thing," least, every one just now thinks so, and ateur actors abound. A very large number Mr. and Mrs. Freake's friends assembled last dnesday evening to see and hear two original ces,—"The Queen of Hearts," an operetta in e act, the music composed by Miss Harriet ung; and "Deeds," a comedietta in three s, written, we believe, by the versatile hostess rself. In the operetta, Miss José Sherrington, o may not be included in the ranks of ateurs, distinguished herself both in singing d acting. The music is bright and charming, d several of the numbers, to use the technical m, will soon be popular in the drawing-rooms the work should come before the public. In e comedietta Mr. Brandram, Mr. C. Colnaghi, . Dundas Gardiner, Mrs. Copleston, and Miss rriet Young, were efficient exponents. The ce is very ingenious and interesting, and emed to please every one.

"Penny-wise and Pound-foolish."—Dis-rsing of "Public Sewers and Private Drains," e *Richmond and Twickenham Times* says:—Dividing the provinces of the civil engineer d the architect, strictly speaking, sewage, gether with the allied questions of water pply and collection, drainage, irrigation, puri-ation of rivers, protection of springs, and the e, come within the scope of the former; ilst the internal arrangements of house-pipes, ains, sinks, closets, &c., may be held to be thin the province of the architect. Small out-y and small details are involved in the perfec-n of this part of the sanitary system of town bitation; and thus, to avoid expense, or from e very general and most mischievous fallacy at it is the cheapest in the long run for a man be his own architect and his own engineer,—all events, in small matters,—the care of the ys of life in this respect has been allowed to op into the hands of the plumber, the brick-yer, or even far less educated workmen."

Builders' Grievances in Liverpool.—At a eeting of the Liverpool Health Committee, on e 17th ult., it was stated that letters had en received from Mr. Owen Michael com-lining that he had been summoned for non-mpliance with the building regulations in spect to certain houses which he alleged had en longer built than other houses he specified, d in respect to the deficient dimensions of hich no notice had been taken by the com-ttee. The Borough Engineer presented a port in which he says that in no case has any viation from the Building Act so great as that anted by the committee to Mr. Michael been owed; and that, in order that there may be possible misunderstanding, the assistant rveyors have strict orders not to allow the viation of even a fraction of an inch below the nimum height specified in the Act.

Children in Brickfields.—At the Greenwich lice Court, on the 17th ult., Mr. W. F. choils, owner of the East Dulwich and Brockley gs brickfield, and Henry Bates, a brickmaker, re summoned under the Factories and Work-ops Act, for allowing a girl under the age of teen to be employed in brickmaking. Mr. dgrave, inspector appointed under the Act, ve evidence as to a visit paid to the brick-lds on the 10th instant, and to finding a ughter, aged fourteen, of Bates assisting him the making of bricks, the father having been mmoned twelve months since for a like offence another employment, for doing which he was en cautioned by the magistrate. Mr. Balguy, e magistrate, imposed a fine of 10s. and 4s. sts, on the employer, and the father was fined s. and 2s. costs.

The Crippled Boys' Home.—The Princess uise has consented to lay the foundation-one of the new dining-hall of the additions hich are about to be made, under the superin-ndence of Mr. E. C. Robins, architect, to the ational and Industrial Crippled Boys' Home, right's-lane, Kensington. The ceremony is to ke place on the 20th of June, at five p.m. The w schools and dormitories facing the new road-y about to be formed by the Midland Com-ny, in line with the present buildings, will be to the first floor by that time.

The Orleans Club.—At the flower-show, rden party, and ball, of the Orleans Club, en on the 28th ult. at Twickenham, in honour the visit of H.R.H. the Prince of Wales, who s now become a member of the Club, the illu-nations, decorations, and general arrangement the grounds, were entrusted to the Messrs. fries & Sons.

Builders' Benevolent Institution.—In the paragraph which appeared in last week's *Builder* (p. 543), recording the results of an election of pensioners in connexion with this institution, the *scrutineers* (Messrs. Thos. Stirling and Matthew Hall) were, by a printer's error, referred to as the "secretaries." While correcting this mistake we are asked to add that after the election the members of the committee dined together, and in proposing the toast of "The Institution," Mr. Plucknett, the treasurer, reviewed its past and present position; and while acknowledging its present very satisfactory state, said he thought that was no reason to rest contented. Considering the magnitude and ramifications of the building trade, he felt the Institution ought to stand second to no other charity of the kind, and he urged the younger members of the committee to follow in the wake of those who had gone before, for then there must be a glorious future in store for the Institution, and the number of pensioners might be doubled.

Death of Mr. Weekes, R.A.—We have to announce the death of the well-known sculptor, Mr. Henry Weekes, R.A., which occurred on Monday at his residence, 96, Buckingham Palace-road. The deceased gentleman was born at Canterbury in 1807, and in early life became a pupil of the late Mr. W. Behnes, afterwards studying under Chantrey, to whose studio in Pimlico he succeeded. When a young man he was a constant exhibitor at the Royal Academy, and in 1837 completed a bust of her Majesty, the first that was taken after her accession to the throne. He executed numerous works. In 1852 he obtained the gold medal offered by the Society of Arts for the best treatise on the Fine Arts section of the Great Exhibition of 1851. He was elected an Associate of the Royal Academy in 1850, and a Royal Academician in 1863.

The Freemasons' Hall, Exeter.—The new Masonic Hall in Gandy-street, Exeter, has been dedicated with due ceremonial. It appears that in the early part of last year Mr. S. Jones, one of the most active brethren in the province, made a movement for the erection of a hall. Suitable premises were found in Gandy-street, central, and, if enlargement should be necessary, there is space to permit it. The building is an ancient structure. On the ground-floor are rooms for the convenience of separate lodges, and other offices, and on the first-floor is the great lodges-room, decorated with emblems of the order. The total cost of site and work has been over 1,700*l.* The architect was Mr. J. Jerman; builder, Mr. J. Stocker; and other works were carried out by Messrs. Algar & Rouse, masons.

Woodbridge.— The public canopy, cattle-trough, and town pump, erected by the Seckforde Charity, have just been completed and opened with some ceremony on the Market Hill. The materials used are Portland and red Mansfield stone. The plan is square, having three basons and steps within the four sides, the pump and well being surmounted by an arched and buttressed canopy with spire, angle pinnacles and finials of stone and iron. The style is Gothic of an early type. Mr. Benjamin Dove is the contractor; the mason's work and ornamental details were wrought by Mr. W. Stephenson; and Mr. W. H. Lockwood, of John-street, Adelphi, is the architect.

Royal Scottish Academy.—The exhibition of the Royal Scottish Academy, which has been open for the past three months, has been closed. This year the exhibition is stated to have been in every respect most satisfactory. Greater numbers of the public have resorted to the Galleries this year than formerly. The number of works of art sold this year shows an increase of one over 1875, and twenty-seven over 1876, and their money value is also greater. In 1875 the amount realised was 9,011*l.*; in 1876, 8,468*l.*; while this year it is 9,504*l.* 11s.

Sanitary Institute of Great Britain.—The general meeting of this Institute was held on the 17th ult. in the hall of the Society of Arts. The first business was to elect the Council, consisting of twenty-four gentlemen recommended by the Committee, one-third retiring annually, but to be eligible for re-election. The corresponding members of the Council were next chosen. Dr. B. W. Richardson was elected chairman of the Council.

New Crystal Palace Railway Station. We are asked to note that all the wrought and cast iron work was manufactured and fixed for the Brighton Railway Company direct by Messrs. Matt. T. Shaw & Co.

Maps.—To the bundle of maps of the countries which may be termed the seat of war, already issued by Messrs. Wyld & Co., has now been added "a Military Staff Map of Odessa to Constantinople." After the illegible scrawls we are favoured with by some of the newspapers and elsewhere, it is agreeable to look at such a clearly printed and inclusive map.

Royal Architectural Museum. — The Hampstead and Kentish-town Working Men's Club went over this Museum on Saturday last, accompanied by Sir Gilbert Scott and Mr. Ewan Christian. Westminster Chapter-house was afterwards visited.

TENDERS.

For the erection of middle-class schools for girls, Mare-street, Hackney. Mr. Edmund Woodthorpe, architect. Quantities supplied by Messrs. Welch & Atkinson:—

		Less if Bath Stone in lieu of Portland.
Conder	£6,540	£190
Colls & Son	6,517	196
Stimpson & Co.	6,204	200
Crabb	6,025	169
Boyce	5,818	180
Kilby	5,736	290
Scrivener & White	5,779	220
Brass	5,707	130
Johnson	5,703	200
Larke	5,690	150
Perry & Co.	5,683	184
Sewell	5,547	159
Nightingale	5,539	130
Bayes, Bros., & Allen*	5,432	143

* Accepted.

For proposed works at Girdlers' Hall, 39, Basinghall-street. Mr. Edmund Woodthorpe, architect. Quantities supplied by Messrs. Welch & Atkinson:—

		Add for Portland Stone.	Less if Deal in lieu of Wainscot.
Conder	£3,455	£181	£175
Ashby, Bros.	3,396	175	180
Pritchard	3,385	156	176
Colls & Son	3,217	270	220
Rider	3,238	212	212
Brass	3,126	175	204
Ashby & Hor.er*	2,999	120	140

* Accepted.

For the erection of a mortuary, for the St. Olave's, Southwark, District Board of Works:—

Brighton	£278 10 0
Stephens	278 0 0
Greenwood & Son (accepted)	268 0 0

For additions to printing works, Carlisle, for Messrs. Hudson, Scott, & Sons. Quantities by the architects, Messrs. Hetherington & Oliver:—

Black	£1,471 0 0
McGuiness	1,462 0 0
Bell	1,420 0 0
Batey & Forster	1,360 0 0
Court	1,329 0 0
Irving	1,324 0 0
Wright (accepted)	1,319 0 0
Hill & Heaty	1,246 3 11

For detached villa residence, Wilton-road, Salisbury, for Mr. George Read. Mr. Fred. Bath, architect. Quantities supplied:—

Plowman	£1,492 14 6
Sawkins	1,463 19 0
Mist	1,452 0 0
Dolman	1,450 0 0
Tryhorn	1,349 15 0
Young & Sons	1,333 0 0
Harris	1,300 0 0
Hopkins & Son (accepted)	1,298 10 0

For additions and alterations to Warehousemen and Clerks' Schools, Caterham, Surrey. Messrs. Berney & Monday, architects. Quantities supplied by Messrs. Franklin & Andrews:—

Warne	£8,839 0 0
Brass	8,666 0 0
Robinson	7,777 0 0
Morter	7,465 0 0
Rider	7,388 0 0
Smith	7,324 0 0
Saker	7,237 0 0
Josolyne	7,066 0 0

For alterations to the Victoria Tavern, Queen's-road, Dalston, for Mr. Moore. Mr. Jones, architect:—

Cole	£216 0 0
Smith, Bros.	169 0 0
Bradford	115 0 0

For new south aisle, &c., to Christ Church, Great Warley, Essex. Mr. John Young, architect. Quantities by Mr. Sidney Young:—

		Aisle.	Heating, &c.	Repairs
Jacobs	£1,357	£90	£116	
Everett & Sons	1,035	90	100	
Gregory	1,240	100	109	
Cross	1,234	72	64	
Hammond (Romford)	1,231	70	69	
Hammond (Warley)	1,222	75	61	

For the erection of villa residences at Gladstone-road, Chesterfield, Derbyshire. Messrs. Rollinson & Son, architects:—

Excavators', Masons', Bricklayers', Slaters', &c., Work.

Maw (accepted)	£662 0 0

Carpenters', Joiners', and Painters' Work.

Madin (accepted)	£434 0 0

Plumbers', Glaziers', and Bellhangers' Work.

Gothard (accepted)	£117 0 0

Accepted for the erection of buildings required at the new Cattle Market, Mansfield, Notts, for the Improvement Commissioners :—

Fisher, Bros.	£2,493 15 0

For the erection of warehouse and premises at No. 43, Cannon-street, City, for Messrs. C. H. Griffiths & Co. Mr. R. Adolphus Came, architect. Quantities by Mr. J. Schofield :—

Gammon & Sons	£2,420 0 0
Rider & Son	2,388 0 0
Perkins	2,373 0 0
Longmire & Burge	2,222 0 0
Ashby, Bros.	2,193 0 0
Morter	2,142 0 0

For the erection of a warehouse in Gloucester-street, Great Eastern-street, for Mr. T. H. Harris. Mr. J. W. Brooker, architect. Quantities by Messrs. Barnard & Brooker :—

Masters	£856 0 0
Morter	830 0 0
Hosking, Bros.	798 0 0
Prebble & Co.	780 0 0
Killby	777 0 0
W. & F. Croaker	773 0 0
Allen	752 0 0
Lawrance (accepted)	725 0 0

For the restoration and enlargement of the church at South Normanton, Derbyshire. Messrs. Rollinson & Son, architects :—

Wright	£2,819 16 0
Broomhead	2,673 0 0
Thompson	2,248 0 0
Fidler	2,205 0 0
Chadwick & Co.	2,150 0 0
Askew (accepted)	2,033 0 0

For the erection of addition to a villa residence, at South Normanton, Derbyshire, for Mr. S. Sampson. Messrs. Rollinson & Son, architects :—

Broomhead	£636 0 0
Thompson	576 0 0
Evans	565 0 0
Askew (accepted)	549 0 0
Winn	435 0 0

For rebuilding three houses in Margaret-street, and warehouse in Great Titchfield-street. Mr. A. E. Hughes, architect. Quantities by Messrs. Corderoy & Sandall :—

	Contract	Credits.
Newman & Mann	£10,333	£118
Scrivener & White	10,101	120
Little	9,999	100
Boyce	9,921	155
Grover	9,870	250
Richardson	9,750	200
Simpson & Son	9,794	250
Perkins	9,633	230
Sewell	9,623	240
Falkner	9,641	160
Bayes, Bros., & Allen	9,198	350
Downs	9,987	137

For new cartridge magazine, Staines Moor, for the West London Rifles. Mr. Thos. Durrans, architect :—

Ashwell & Stevenson	£278 0 0
Gladman	250 0 0
Edgar	227 10 0

For the renovation of the Adelphi Chapel, Hackney-road. Mr. W. H. Gathercole, architect :—

Jarvis & Sons	£238 0 0
Anning & Wilkinson	187 0 0
Thomerson (accepted)	170 10 0

For the erection of new schools for the School Board for London. Mr. E. R. Robson, architect :—

Henrietta-street, Marylebone :—

Pritchard	£9,490 0 0
Brass	9,326 0 0
Scrivener & White	8,807 0 0
Crockett	8,791 0 0
Grover	8,783 0 0
Boyce	8,734 0 0
Keyes & Head	8,654 0 0
Kirk & Randall	8,397 0 0
Thompson	8,370 0 0

Middle-road, Kensal-road :—

Stimpson & Co.	£11,280 0 0
Downes	10,993 0 0
Stephenson	10,985 0 0
Brass	10,505 0 0
Perry & Co.	10,478 0 0
Pritchard	10,327 0 0
Rankin	10,260 0 0
Thompson	10,245 0 0
Chamberlain, Bros.	10,226 0 0
Hook & Oldrey	10,100 0 0

Marlborough-road, Chelsea :—

		Alternative Estimate.
Wall, Bros.	£9,907 12 10	£8,129 0 0
Brass	9,788 0 0	8,086 0 0
Stephenson	9,663 0 0	8,263 0 0
Perry & Co.	9,563 0 0	7,943 0 0
Scrivener & White	9,495 0 0	7,880 0 0
Rankin	9,490 0 0	7,960 0 0
Downes	9,470 0 0	7,959 0 0
Pritchard	9,345 0 0	7,718 0 0
Stimpson	9,300 0 0	7,600 0 0
Tongue	9,218 0 0	7,608 0 0
Hook & Oldrey	9,199 0 0	7,599 0 0

For block of new school buildings and appurtenances at South Hallsville, for the West Ham School Board. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons :—

Killby	£10,998 0 0
Grimwood & Sons	10,950 0 0
Brown	10,800 0 0
Hosking, Bros.	10,416 0 0
Sayers	10,011 0 0
Wall, Bros.	9,989 0 0
Knight & Dastow	9,888 0 0
Morter	9,843 0 0
Perry & Co.	9,592 0 0

For reconstruction of two houses in Park-street, Windsor, for Mr. J. Edwards. Mr. P. J. Byrne, architect. Quantities by the architect :—

Simpson	£1,320 0 0
Oades	1,290 0 0
Colsell (accepted)	1,150 0 0

For rebuilding Mr. Wm. Gardiner's shop, Egham. Mr. P. J. Byrne, architect. Quantities by the architect :—

Simpson	£835 0 0
Oades (accepted)	805 0 0

For repairs to Clarence Villas, Windsor, for Mr. J. Edwards. Mr. P. J. Byrne, architect :—

Maynard	£153 0 0
Lawrence	149 0 0
Stevens	133 0 0

For the connexion of the existing sewerage system, Basford, Notts., with the Nottingham and Leen District Interception of Sewers. Mr. H. Walker, engineer :—

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Cordon	4,905 0 0
Smart & Co.	4,488 0 0
Greenwood & Co.	4,403 0 0
J. & G. Tomlinson	4,350 0 0
Pickering	3,370 0 0
Attenborrow	3,364 0 0
Meats, Bros. (accepted)	3,184 11 0

For alterations and additions to house at Long Ditton, Surrey, for Mr. Cousins. Mr. John Ashdown, architect. Quantities by Mr. Roording :—

Dorey	£1,885 0 0
Waters	1,534 0 0
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For erecting a new school-room and class-rooms, and lengthening the Abney Congregational Church, Stoke Newington. Mr. Thomas J. Fife, architect :—

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Haworth	2,663 0 0
Staines	2,448 0 0
Groom	2,420 0 0
Barber	2,410 0 0
Bayes, Bros.	2,373 0 0
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For the erection of new premises, Nos. 30 and 31, Fleet-street, and No. 1, Salisbury-court. Mr. A. Peebles, architect :—

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Temple & Foster	14,776	14,756	14,936
Adamson & Sons	14,078	13,966	13,934
Macey	13,961	13,675	13,682
Nightingale	13,959	13,830	13,813
Stimpson & Co.	13,905	13,845	13,430
Brass	13,629	13,684	13,664
Lascelles	13,765	13,665	13,596
Scrivener & White	13,721	13,480	13,311
Newman & Mann	13,565	13,326	13,180
Langmead & Way*	13,403	13,161	13,162

* Accepted.

For alterations and repairs at "The Civet Cat Tavern," High-street, Kensington. Messrs. Bird & Walters, architects :—

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Brown	483 0 0
Williams	430 0 0
Mark	422 0 0
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Hockley	380 0 0

For rebuilding Nos. 2 and 4, Langham-street, and part of Langham-chambers, Edward's-place, Regent-street, for Mr. Lowes Dickinson. Messrs. Eales & Son, architects :—

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Crockett	10,619 0 0
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The Builder.

VOL. XXXV. No. 1792. SATURDAY, JUNE 9, 1877.

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Strikes, Lock-outs, and Arbitration.

IT has not unfrequently happened, on those occasions of open outburst of hostility between masters and men which all lovers of their country deprecate, that we have felt bound to show that the latter have chosen to appeal to force rather than to reason. It is, therefore, the more readily that we call attention to the appeal to reason, rather than to force, which has been made by Mr. George Potter, in a letter published in the daily papers of the 30th of May, on the subject of the lock-out on the Clyde. We do not at present wish to intimate any opinion as to the side on which the right,—or the least wrong,—may lie on the present occasion. Opinions of a judicial character, when expressed by a public writer, should, in our judgment, be plainly and distinctly stated, with indication of the ground on which they are formed. They are not to be implied, or brought in under false pretences. It is as well to make this remark, because it is desirable to draw a broad line between what is worthy of the utmost respect and commendation in the arguments of Mr. Potter and the merits of the existing controversy. What is especially welcome is, to see an attempt, on the part of the majority, to appeal to reason rather than to force.

It does not, indeed, follow, that the majority are actually the stronger party. We think it is a matter of the utmost national importance that it should be fully recognised that this is the case. So much has been said and done of late to enforce the doctrine that the majority must be on the right, that the pernicious character of that fallacy cannot be too broadly exposed. In the first place as the majority will always,—or at all events in our time,—consist of the less informed, the less educated, and the least competent portion of the nation, there is certainly no ground for anticipating that its views will naturally be correct. It would be a false assumption to say that the minority would be more likely to be right than the majority, because the minority consisted of the better educated or the anyway better people. But it would be correct to say that the voice of the minority would be the nearest to truth *if* such was their character. In other words, counting noses has no relation to right and wrong. It is sound reason that settles that. There is, however, thus much in favour, under any circumstances, of the minority. Suppose both sides in a long dispute, or series of disputes, to consist of men equally qualified to come to a right conclusion as to right and wrong, and equally swayed by those human passions and weaknesses which are so apt to prevent the judgment from being impartial. In that case the majority, confident in their strength, will be apt to show impatience of argument, and to carry their measures by acclamation or by ready and common assent to the proposals of their leader. The minority, on the contrary, having no weapon left but that of reason, will be driven to make the best of that. Thus if we suppose a case, such as often occurs, in which there are faults on both sides, and in which it would be extremely difficult for an impartial judge to decide in which direction the balance really inclined, it is pretty clear that the side of the minority would be the most lucidly, patiently, and logically stated. At a distance of time or of space, therefore, the minority will always appear to be in the right, because they will have given more care to the statement of their case than their victors have cared to bestow on their own. And even if the majority had really the better claim to be adjudged in the right, the probability would be that the sense of power, added to the conviction in their own minds, would lead rather to overbearing by vote than to convincing by argument.

These remarks are extremely pertinent to the present case. Hitherto most of the conflicts between masters and men have been engaged, openly, on the ground of force. "You cannot do without us," says one party; "we will only come in on such and such terms, and there is the affair in a nutshell!" And it must be remembered that, on whichever side it has turned out that the real balance of power lay, the majority has invariably been on the side of the men. The very fact of their immense numbers has given them confidence. They have looked on the strong hands and brawny arms, which were the natural implements of labour, and which had only, it might seem, to strike the earth to bring forth plentiful fountains of wealth. They have been naturally impatient at the idea that any occult power,—call it capital, enterprise, education, intellect, knowledge of business, or what not,—is so essential to the production of that wealth that it has the right to enter into a partnership with labour on at least equal terms. This feeling is perfectly intelligible. It is one which a more intimate knowledge of the case entirely dissipates,—but it is only to be dissipated by such superior knowledge; and it is for this reason that those public writers whose aim is national welfare rather than party success, have always taken a tone which many of the working classes have failed to comprehend. Men who are intimately acquainted with the conduct of business, who are aware of the state of probable demand for certain products, who know the condition of the labour market, not only in the chief centres of production in the United Kingdom, but in France, Belgium, Germany, and the United States; who have visited the seats of former commercial prosperity, now reduced to silence or to beggary,—these men are aware of the great skill needed for the maintenance of a trade in any particular country or district, and are thus nervously anxious to discourage any of those disputes which endanger the permanence of such a trade. Who is right and who is wrong is a comparatively unimportant matter in the eyes of men who occupy a standpoint of some little elevation. It is the old story of the oyster and its shells,—while man and master in England are disputing for the upper or the under shell, the oyster is being eaten by a French or German rival, who will gladly lend his aid, and contribute his mite, to keep up the dispute.

On these grounds we regard the letter of Mr. Potter as a tacit admission that, on the present occasion, the Clyde masters are the stronger party. We do not say the party who are in the right. As to that, we reserve judgment. But when we find the advocate of the workman appeal—not to the argument of force, which has been usually that of his side of the question, but to that of morality, we cannot but infer that he doubts whether force is on his side. However that may be, we rejoice to see the mouthpiece of the working-men take this tone. We hope that it will be well responded to in a right spirit, and we hope, moreover, that when in the next swing of the pendulum labour shall again be sought for rather than have to seek employment, the spirit now manifested may be returned.

Mr. Potter speaks with truth and with feeling. "Hunger is, in truth," he says, "a horrible housemate." "The men may be beaten by the hunger of their wives and their children." "The miseries of war, without any of its questionable glories, will be suffered by them." "Twenty-five thousand workmen mean at least 70,000 souls, nearly the whole of whom are personally outside the quarrel." Mr. Potter's argument, in fact, is that of the wickedness and immorality of war. As to this, all good men are agreed. The question is, by what controlling force is war to be prevented? As to the civil war between employer and employed, Mr. Potter suggests the employment of arbitration. He has our most hearty and thorough concurrence in that wish to introduce this mode of settlement. We have little doubt that the large majority of the employers of labour throughout the country are of the same opinion. But what is necessary is, that arbitration should be not only resorted to now and then, as on the Clyde to-day, but should be made, if appealed to at all, universal, imperative, and armed with full power to carry out its awards in their integrity. As prophecy is proverbially unsafe, we will not say that it is only by some such method that the industrious primacy so long enjoyed by this country can be maintained; but we confess that we entertain a very strong opinion to that effect.

We think, however, that Mr. Potter stands in his own light, and opposes an unnecessary difficulty in the course which we should gladly see followed, by a little shortness of memory. "The men," he says, "never do make it any part of their policy to refuse to work for employers with whom

they have no quarrel for the purpose of defeating those who refuse to concede their demands." If this were the case, not only would the ground be cut away from under the feet of any employers who should propose a lock-out, as far as any question of right and justice is concerned, but it is not too much to say that the question of a lock-out could never arise. At all events, it is not the impression of either the employers as a body, the public, or those who, like ourselves, have watched with painful inquietude the labour struggles of the past quarter of a century, that the policy of the workmen has been such as Mr. Potter now intimates to be the case. "Such an imperial, high-handed policy as this, which perpetrates a general wrong for the attainment of a special end, is in the battle of labour purely an employers' policy,—too grand and too far-reaching in its sweep to be adopted by men who earn their bread by daily labour." On the contrary, it is the very idea that the policy of the unions, though anything but grand, in the sense of good for the country, is only too far-reaching in its sweep, that has worked that spirit of union among the masters which is a new feature in the case, and which seems likely to shorten, though it may embitter, the strife.

If the world at large has formed an erroneous view of the policy recommended to the working men by the counsellors of the trade unions, it is due to all parties that this misapprehension should be at once dispelled. The view which has been taken by the masters we will state. It is, as will be seen, directly contrary to the above rather rhetorical sentence of Mr. Potter,—a sentence which at once prejudges any question to be submitted to arbitration by quietly affirming that all the injustice and immorality of past struggles lies at the door of the masters. The latter are under the impression that it has been the distinct aim and definite purpose of the unions to attack them in detail. Such, at all events, whether of set purpose or not, has been the course pursued. To some extent it has been a course indicated by the necessities of the case. It is obvious that as the subsistence of the workingmen is derived from wages, a universal strike, under existing circumstances, is impossible. Unless a solidarity be established amongst different trades, the general strike of any trade is impossible. For such a step would be no other than sawing off the branch of a tree on which the operator sat. There would be no power of resistance, no means of maintaining life for a struggle. But if, on the other hand, employers can be attacked in detail, the men who are on strike in one yard, or in one town, can be maintained by the contributions of their fellows at full work elsewhere. And as for special grounds of quarrel, they are always to be found when wanted. There can be no difficulty on that score. Thus then, it is the apprehension of the masters, they will be attacked and vanquished in detail, and by this policy, which is the only one on which any general movement can be organised, the supremacy of the unions will be finally established.

Against this policy,—which, if not openly avowed on the one part, has been both dreaded on the other, and indicated as practically adopted by the history of the contention,—the only defence on the part of the masters is counter-combination. This is a movement as much prescribed by the circumstances of the case as was the adoption of isolated attack. It involves, no doubt, the infliction of suffering on innocent people; but so does all war: and these are measures of war, though fought out, not by powder and shot, but by folded arms and frowning looks. The cruel and bitter nature of war no moralist can exaggerate. Of its absolute wickedness there can be little question. But it is not the use of a particular weapon, or the loss of life incurred by a particular operation, at which the moralist points with horror. It is at the entire system. So far as blame is apportioned, the heaviest part of it is laid on those who commence. The question is, "Who struck the first blow?" This should be remembered by Mr. Potter and his friends. He is now urging, against a lock-out, the same arguments which were urged against the last great strike in the Welsh collieries. We think that these arguments are most weighty. It will be a matter of national gain if their truth and force be fully appreciated by the great body of workmen. But they apply not to one move, but to the entire game. If we may take the fact that they are now urged as an intimation that those who began the struggle are now willing to treat for peace, it will be the best thing that has happened to the country for many years. We hold no brief for either party. We have no title or commission to speak for one more than for the other. But as patient and anxious watchers of the labour question for many years, grieving at acts on both sides, we can scarcely doubt that the employers of labour will be ready, in such case, to meet the men at least half-way. But there must be no mistake about the matter,—no blowing hot and cold. If the advisers of the unions are now ready to come forward and say, "We admit that the organisation of class against class, involving as it does great suffering to innocent parties, is not only an immorality but a mistake," they will find the offered hand very warmly grasped. But if they only have to say, "The organisation of the men against the masters is a weapon which we intend to retain: it is only the organisation of the masters against the men to which we object," the case is really one which cannot be put in plain English without showing its true character. If a lock-out is immoral, what is a strike? One is the counterpart of the other. Just as, in the variation of trade, at one time the demand for produce presses on the labour-market; hands are too few, and wages naturally rise: so at another time the slackening of demand throws unemployed labour on the market; hands are superfluous, and wages fall; so is it in all questions between man and master, unless those questions be closed by hearty and intelligent accord. If it be attempted, by artificial organisation, to interfere with the natural result on wages of the increase or decrease of business, the consequence can only, in our opinion, be disastrous. But, even if there be any doubt whether organised action, on either side, intended to affect the market value of labour be anything but a mistake, it is most certainly to be expected that organisation on one side will call forth counter organisation on the other. And each of these rival camps will—and, if they must fight, should — adopt its own most advantageous tactics. Attack, on the part of the workmen, is in detail. Even if such be not a decided plan, it is a necessary consequence of the position. In point of fact, it is always thus that strikes occur. Defence, or counter attack, on the part of the masters, is useless and idle in detail; it is only practicable as a combined movement. Can it for a moment be expected that the sole method of available defence should be abandoned? The lock-out is the reaction from the strike. Let the first be abandoned, and no one will hear of the second.

If Mr. Potter and his friends, therefore, are now so far on the same platform with ourselves as to say that they have found out, by long experience, that the attempt to organise labour against capital is a mischievous mistake; that it can be shown to be fallacious by the laws of political economy; and that it has, in actual practice, involved masters, men, and their common country in heavy and all but irremediable loss up to the present time, we have only to put our shoulders to the wheel together, and to block out the best measures to be adopted for substituting the peaceful method of arbitration for the wasteful and hateful warfare of strike and lock-out.

But if this is to be done, it must be done seriously,—well done,—done once for all. It cannot be done without the aid of the Legislature. It is not a hap-hazard recourse to good offices that will be of any use. Arbitration, if appealed to in earnest, must be an armed mediator, possessing power adequate to repress aggression on either side. Arbitration will forbid lock-outs; true: but she will also forbid strikes. If she has not power to do one, it is idle to talk of giving her power to do the other. The country,—the great third party which is so serious a sufferer by these civil wars of labour,—would gladly see arbitration instituted in the functions of a competent keeper of the peace. It is not impossible to indicate, at all events roughly, how this might be done. The Arbitration Act of 1867 gave licence for the erection of Courts of Arbitration, consisting of a chairman and from two to ten members for the settlement of disputes. From the operation of these courts, however, the main causes of dispute, rates of wages and hours of labour, were excluded. In 1872 a new Act was passed, somewhat amending the more obvious vices of the first; but still leaving the matter optional. Under the Continental code, in all cases of dispute between partners, arbitration is compulsory; and for it to be of any general avail such must be the case in this country.

Without professing to give a detailed scheme, or the draught of a Bill,—at least in the present instance,—it may be well to indicate the outline of such an arrangement as would lead, in our opinion, to an equitable result.

On any claim on the part of men for an advance of wages, as a general measure, or on any resolution on the part of masters, to reduce wages, a written notice, extending over a clear fortnight, terminating on a regular pay-day, should be given in writing by the party proposing the change to the other party.

A copy of this notice to be sent, within forty-eight hours, to the arbitration authority to be established by the new Act. Such notice to give the name of the arbitrator appointed by each party.

If, at the same time, notice be given that an umpire is agreed on by the two arbitrators, the arbitration authority to appoint a time and place for the investigation of the matter in dispute; adding, if it think fit, a legal assessor to the arbitration court. Otherwise, the authority to appoint the umpire.

The court, when constituted, to hear each party severally, in the absence of the other; and then to have the representatives of each party before it together, with the view of an amicable settlement. Failing this, the umpire to make his award in writing, which should have legal force, and only be subject to appeal, within a limited time, to a higher court.

Any attempt to force a change in the rate of wages, otherwise than by notice to the court of arbitration, to be heavily punished as a misdemeanour.

The details of such a measure would be matter for discussion. Thus there would be the question of giving security to abide by the results of the arbitration. This might be met by the expedient of continuing the rate of wages current at the date of notice until the delivery of the award, a portion,—say 10 per cent.,—of such wages being paid, not to the recipients, but into court, pending the decision. If the demand were for a rise in wages, security to be given by the respondent to the Court.

It is evident that the great objects to be secured by arbitration are two. First, to impress, not only on the minds, but on the hearts of our industrial population, that the rate of wages is not a question of caprice or of good pleasure, but of equity; and that the right rate at any given time is not a matter of opinion, but a figure at which experts can arrive without any dispute when all the facts of the case are before them.

Secondly, that this rate being thus a matter of business, it is to be settled as such, not by a recourse to the expedient of savage warfare, or to those combined movements of which the first result, whether man or master be the mover, is the paralysing of the arm of the labourer, and the drying up, for a longer or shorter period, of the very fountain of wealth. When once it is understood that there is such a thing as an ascertainably just rate of pay, a rate by which the supplier of handiwork can derive his proper share of the benefit of common enterprise, the only question which can remain for honest and intelligent men to discuss is, How shall we most readily ascertain what that rate is? When once that view of the case is taken, there will be an end put to armed injustice, whether it take the form of a strike or of a lock-out.

THE RESTORATION QUESTION.

"EXTREMES MEET" is an old and often illustrated proverb, of which we are reminded by the recent paper and discussion at the Institute, still uncompleted, on the subject of architectural restoration. As Sir Gilbert Scott observed in the course of the discussion, no one has abused people more than he has for not showing proper care of old churches and Mediæval monuments, and for restoring them in a careless, wanton, and destructive spirit. Now there comes an architect, the spokesman of a clique of architects and *dilettanti*, who from a completely opposite standpoint of architectural sympathies, finds fault with Sir G. Scott and others on the very same score. Both parties profess to be equally in earnest about the conservation of ancient buildings, though they differ diametrically as to the method of doing it, and as to what ought to be preserved.

The stand taken by Mr. Stevenson and his clique is on historical rather than on architectural ground; at least, that is the strongest ground which they have. The argument is that which has been used, less dogmatically and with

more reason, by the Dean of Westminster in regard to monuments of bad taste in the Abbey, which, however artistically and architecturally atrocious, are part of the history both of private families and of public taste. We are quite aware that the apostles of the new anti-restoration movement (who, after all, are but following the lead of some who went before), are prepared to urge their views on the ground of the intrinsic artistic beauty of the work of the post-Reformation period; but this side of the subject was not brought prominently forward in Mr. Stevenson's paper, perhaps because he felt instinctively that there was less chance of evoking sympathy on that ground. The line of argument taken mainly amounts to this,—that the history of the Church and the country since the Restoration, as illustrated in architecture, is just as interesting and important as its Mediæval history, and that one portion of the records of this is being completely obliterated. This is a strong way of putting the question, and there is much to be said for it, and which has been said for it by ourselves. It would, however, be open to some one holding a different view to reply that the ecclesiastical revival of the present day is as important an historical fact, and may claim equally to leave its material record in the buildings of the period. And if it be urged that this ought not to be done to the detriment or removal of records already existing, it might be replied (and this point has certainly been strangely overlooked in all that has been said and written on the subject) that such indifference to the records of the past, in comparison with the interest in what is wanted for the present, has almost always been evinced in cases of restoration, and is in itself a proof that the demand of the restoring party, however mistaken, is for the time being a genuine one. Mr. Stevenson and others seem quite to forget that the reverent care which they demand for whatever is in the building, because it is there, is a practice not sanctioned by any noteworthy precedent. The Mediæval architects had no right to claim immunity from restoration or removal for their own works, for they were perfectly indifferent to the work of their predecessors of the same epoch; the builders of the Early English period removed without the slightest compunction the work of the Normans, to be in time treated in the same way themselves by their successors of the next style; and the Perpendicular builders, more than all, were perfectly reckless as to the manner in which they spoiled and cut up a fine design of earlier date by the most clumsy and inartistic insertion of porches and windows in their own style, in the midst of work with which it did not in the least harmonise. When the Gothic style died and the Renaissance taste came in, the same "vandalism," as it is now called (or perhaps we should rather say, as it used to be called) was exercised by the workmen and architects of the new era, and niches, and reredoses, and windows were blocked up by quasi-Classic additions. Then, as we know, came the time, some thirty or forty years ago, when a great sighing over and condemnation of this same vandalism was set up: pious and enthusiastic hands tore away the reredoses designed in the chaste style of Inigo Jones and his contemporaries; and thrilling accounts went through the land, on the wings of the ecclesiological journals, of the resurrection of beautiful niches and other Mediæval remains, long entombed behind these excrescences in the taste of the detested Renaissance. Now the turn has come for the Gothic restorers, and they are charged with ruthlessly removing, or thrusting out of sight, work which gladdened the eyes of their ancestors a century since, and which is, at all events, equally entitled with Mediæval work to the respect derived from historical interest. To which, of course, the other side may reply, "Undoubtedly it is so entitled: then let it receive the same respect; which is, to be removed now that we no longer care for it."

We put this view of the case, without saying that it is entirely to be accepted, but because it seems to have been so completely overlooked. The persons who put up the post-Gothic additions and galleries in our cathedrals were utterly indifferent to preserving the historical character of the building; why then should it be such a crime to treat them as they treated others? to sacrifice the relics of a taste that is past to the demands of the present taste and of a new movement in ecclesiastical feeling? Some may think the ecclesiastical revival a mistake from other points of view as well as from that of architecture; but it is a fact in the history of English feeling, as real as any other; and that it should have found expression in its treatment of the edifices is a perfectly natural and logical corollary, and only what has happened, within certain limits, in every such case before.

In pointing out this view of the subject, we are not saying that there has not been a great deal of over-restoration carried on of late in England, or that the case of modern Mediæval restoration is precisely parallel to that of the intrusion of Renaissance work into the old cathedrals. That proceeding was *intrusion*, not restoration—not an attempt to bring back to pristine freshness and newness any old thing previously existing: the cases are only parallel in that they both involve a carelessness about pushing out and damaging what happens not to be in keeping with the taste of the moment. The more forcible argument against the restoration work of recent times would be that it has destroyed, in some cases certainly without sufficient reason, the reality of the old work, and substituted what is really a modern copy. In this respect we can hardly think that the replies to the paper at the Institute, so far as they have gone, were entirely satisfactory. Sir Gilbert Scott unquestionably made a "point" when he alluded to the advantage which Mr. Stevenson had over him in that he had never restored a church, and therefore presented no side for attack; but when, referring to one specimen of restoration which has been much questioned, he stated that the apse at the south aisle of Chester cathedral had been rebuilt mostly with its own materials, we must call the statement a somewhat courageous one. On the other hand, his reply as to the treatment of the tower of St. Alban's appears to us to be complete, and the attack of Mr. Stevenson upon it, and his quotation of the opinion of the monk who praised it in its original plastered state as "looking all like one stone," foolish and unreasoning. The plaster was falling off; it would have to be reinstated. We do not now believe that a plastered tower looking "all like one stone," is beautiful or architecturally truthful; therefore it was not worth while to re-cement it with new work which would have no historical value; better far to pull off the plaster which was coming off, and leave the brickwork, which is genuine, and will not come off. We are at a loss to know what other course could be recommended, and think Mr. Stevenson's attack on this head perfectly gratuitous and unjustifiable. Would he have left the Norman plaster hanging in patches, to come off little by little? There is no other course; and Sir G. Scott was really quite justified, in view of such a case as this, in taunting Mr. Stevenson with being merely destructive in his criticism, telling us all we should *not* do, but nothing that we should.

The fact is, that in the attack which has been made, not without reason in some ways, upon the restoration movement, mere sentiment plays too large a part, and certain aspects of the subject, both from an artistic and a practical point of view, have been totally overlooked. Taking the æsthetic side of the subject, it is idle to pretend that the post-Reformation work,—chiefly woodwork and decoration,—which it is asserted is removed and treated disrespectfully by Mediæval restorers, is of the same artistic value as the Gothic work which it in many cases conceals and disfigures. In the first place, unless all that we know and believe about the principles of artistic and decorative design, and of the treatment of material in design, is a delusion, the style of a large quantity of the work in question is, abstractedly considered, irredeemably bad; even the work of Gibbons, remarkable as it is in its own way, is admirable for delicacy and brilliancy of execution, for achieving impossibilities in wood-carving, rather than for anything in the taste or ideas embodied, which are too often exceedingly vulgar. And even were this not so, it cannot be pretended, with any show of reason, or of just criticism, that the work of a period which is itself a revival, like the Renaissance, and which, as practised in this country, was a very corrupt revival, is to be compared in interest with the remains of a great original style in architecture and ornament, which was of spontaneous development, and depended for its essential elements of greatness upon no repetition of what had gone before. The Gothic revival is a revival, or an attempt at one, of what was itself original; the movement which has got the name of "Queen Anne," is the revival of a revival, the original of which is itself a corruption of Greek elements of art through three or four stages of decadence and debasement. To put the two things on the same footing is out of the question. Bearing this fact in mind, it is to be remembered also that there is the question of the architectural and artistic unity of a great structure to be considered. It is perfectly true that the Mediæval architects did not consider this, but patched on to a cathedral, each in the style of his own day; true also that the historical interest of the buildings is increased by this patchwork. But that does not alter the fact that there is such a thing as coherence and unity of architectural style and effect, which is an end desirable in itself; and when any piece of historical patchwork is so decayed as to necessitate its removal, there is much to be said in favour of restoring, not an imitation of what has been removed, the only value of which is gone the moment the thing itself is gone, but what will harmonise with and complete the main design, regarded now as a work of art, not of archæology. Mr. Stevenson's comments as to the improvement effected artistically by the introduction of Perpendicular tracery into the windows of a Norman cathedral we look upon really as audacious nonsense, the expression of a taste utterly blind to the conditions of architectural fitness and unity of expression. To say that Perpendicular tracery thus inserted is historically interesting, and ought not to be removed as long as it is in proper repair, is one thing, and is an opinion in which we should be entirely disposed to concur; to say that in an abstract point of view it improves the architectural effect of a structure with which it has not the slightest affinity of style or feeling or constructive motive, is simply to exhibit deplorable critical incapacity. Architectural effect is one thing, archæological and historical interest is another: the latter should have pre-eminence as long as the existing remains can be preserved; when this cannot be done, the archæological consideration is set aside, and that of architectural completeness takes its place.*

But there is another view of the question of restoration, the practical one, which seems to be utterly left out of sight by the attacking party. Whatever the private opinion of any of us may be as to the ecclesiastical revival, it is, as we have pointed out, a fact which must be recognised. There are an immense number of persons, and will be probably for a good while to come, who look at things from an ecclesiastical point of view, and to whom churches to worship in are what must be called a practical necessity. Why, this being the case, they are not to be allowed to keep their buildings in repair, and even to redorn them, it is difficult to say, provided it be done rationally, and in good taste. With Mr. Stevenson's remarks upon some of the treatment of Mediæval churches by restorers, such as the thick black-jointing in Heckington Church (the effect of which is detestable, and has been before specifically condemned by us), we quite concur. But why there should be a tirade against redecorating and beautifying a church or a cathedral the interior of which has grown old and dingy, when it is really in practical use for daily or weekly service, it seems impossible to show upon any ground of common sense. It would be as reasonable to find fault with the Duke of Northumberland, for instance, for decorating and refitting Alnwick Castle. Members of what we will call the anti-restoration clique have set up the complaint, in the columns of certain journals, against the new look of the restored interiors, with varnished woodwork and shining tiles. The Rev. W. J. Loftie, in a paper in the current number of *Macmillan* on "Thorough Restoration" (a paper, we admit, marked by much more general sense and better literary style than some previous efforts by the same writer would have led us to expect from him), laments over the loss of the old-fashioned parish church, with its high pews and other venerable absurdities. We sympathise entirely in the feeling of regret over the loss of what is inextricably bound up with early association; still, we may reasonably ask Mr. Loftie and his friends, if they took a lease of an old mansion,—such a place as Haddon, for example,—to live in, not to look at, would they not furnish it comfortably according to their tastes? And why is a church, which is in practical use, not to be fitly refurnished? All this these gentlemen seem totally to forget in their jeremiads. And even the question of practical

* We assume, and are disposed to abide by the position, that no old work of an original style, and marking points in the history of the structure, should be interfered with: still, we are by no means sure that where inferior and later work really spoils, architecturally, a grand building with which it is not in keeping, its removal is not justifiable on architectural grounds. There is at least much to be said for this view of the case.

safety seems to be ignored. We can fancy the sentimental anti-restorer gazing upward in a fine rapture at the front of some beloved edifice, his thoughts running somewhat in the strain of Congreve's too celebrated musing on the reverend face of "This tall pile," and accosted by the practical parishioner:—

"But, sir, the 'tall pile' is in a dangerous state. The foundations were not properly looked after by the Mediæval builders, and the stone was not judiciously selected, and unless we renew and reface and underpin there seems some question of its stability. The foundations want draining, too——"

Anti-Restorer.—"Oh, sir, disturb not the venerable structure. The centuries have set their mark upon its stones; do not wantonly and irreverently obliterate the touches of time."

Parishioner.—"By no means; not wantonly or irreverently, I hope. But, sir, I and my family sit in the church every Sunday; and from the way the walls have spread, and the general aspect of the whole, we fear the vault will fall on our heads some day."

Anti-Restorer (with tears in his eyes).—"Ah, sir, let it fall! Touch not its mouldering stones! Let it crumble piece by piece! True, it may come down on your head in the middle of the Litany some day, and possibly you may be killed; but that is only a possibility. You will have shown your reverence for the ancient structure!"

Parishioner.—"I may be very stupid; but that seems to me rather an upside-down way of reverencing the structure. I am very fond of an architectural ruin; but I *must* have a church to worship in."

The parishioner possibly would not be very well up in architectural polemics (the luckier for him!), otherwise he might proceed to say, what we add for him, that this passage of arms on the subject of restoration savours a great deal more of sentiment and party-spirit mingled, than of common sense and genuine interest in the buildings in question. It is absurd for those who have started this campaign to suppose that people do no see through the tactics employed. We all know well enough why certain gentlemen's names always appear together in connexion with the subject,—why a certain leading architect is always libelled in the columns of the *Athenæum*, and so on. And, to say truth, the respectability which would attach to the movement, if we could believe it to be more genuine in character, rather disappears when we perceive pretty plainly that it is only the war-cry of a new sect of architects and amateurs, who wish to make their voices heard in some way or other.

The lesson to be learned from both sides alike is to get clear of sentimentalism about architecture, ancient and modern. When the Mediæval revival was set up there was doubtless a dire amount of sentimental nonsense talked about it by persons who took for their motto "*donec templa refeceris.*" Now they have had their turn, and another set of sentimental gentlemen have got up another sort of watch-word, and wish to insist that we shall recognise their sentiment as the only proper and genuine one. Concerning all which our comment would be, that sentiment in architecture has led, and almost necessarily must lead, to doings which, though they may be applauded by one generation, look ridiculous to the next; and that what both sides want is a larger indulgence in the quality which architecture, of all the arts, most specially stands in need of, but of which it gets in these days so very little,—common sense. And the teaching of common sense in this matter is, as we have long endeavoured to show,—Touch all old buildings and monuments with reverence, but prevent the necessity for wholesale renovation hereafter by careful maintenance and repairs in time.

Right to Foreshore at Portsmouth.—The Corporation of Portsmouth have established their right to the foreshore of the harbour in an action brought against them by the Crown, to which *primâ facie* belongs all the ground between high and low water mark. The Corporation produced charters, one of which dates from the year 1230, to show that the Crown had transferred its rights to the borough, and they gave acts of ownership by the Corporation, including the lease of some portions of the land in question to the Crown, who had paid rent to them. The Exchequer Division held that the title of the Corporation displaced the *primâ facie* title of the Crown.

DUTCH PUBLIC WORKS.

PERHAPS no part of the earth's surface has been changed so much by man's hand in the course of the last decades as the Dutch province of North Holland. Any one using the railway from Haarlem to Amsterdam thirty years ago observed on both sides a boundless waste of water,—on the one side the Y, on the other the Sea of Haarlem, the crumbling activity of which seemed to threaten even the safety of Amsterdam, Haarlem, Leyden, and Utrecht. At the present day, on the contrary, he overlooks in both directions a wide expanse of garden and pasture land, for the draining off of the Sea of Haarlem was completed as early as 1853, and that of the Y will be concluded in a few years' time. All these works bear a certain relation to each other; they form the parts of one grand scheme, the purpose of which is to obliterate the encroachments made by the sea in the province of North Holland in the thirteenth and fifteenth centuries, and to restore to Amsterdam its former importance as a commercial emporium. The construction of the Canal of Holland "op zijn smalst," commenced in 1862; the completion of the line of railway leading from Amsterdam across the Y over Zaandam to North Holland; the establishment of a shorter communication between Amsterdam and the Rhine by making the projected canal through the Gelder'sche Vallei; as well as the laying dry, to be completed in ten years, of the southern part of the Zuyder Sea,—will complete the present works, and, in Dutch opinion, be sufficient to restore to Amsterdam to the fullest degree its former importance. In former years, when the draught of ships was less, and the engineer's skill had not yet so completely mastered the difficulties attendant upon the construction of harbours close to the sea as at the present day, it was the custom to place commercial towns as far inland as possible, which was all the easier as the effects of the tide, though in a gradually decreasing degree, are felt for miles up the estuaries of rivers. At that time the larger Zuyder Sea served very well as the entrance to the harbour of Amsterdam. When this inland sea, of little depth, dangerous on account of its storms and shallows, no longer answered the raised requirements of the draught of ships, the North Holland Canal was proceeded with, which, crossing the whole of North Holland, reaches the North Sea at a distance of nearly forty-nine miles, to run which took at least eighteen hours, the low depth at the entrance often besides necessitating an unshipping of part of the cargo. In consequence of those disadvantages, with the laying dry of the Y, the construction of the Canal of Holland op zijn smalst was proceeded with. The latter reaches the sea at a distance of about sixteen miles, involving a run of four hours, its depth permitting an unimpeded passage to even the largest sea-going ships.

Any one travelling at the present day on one of the numerous small steamers running between Amsterdam and Zaandam observes as the remnant of the former Y only a canal of double the breadth of the Rhine at Cologne. The remainder has been parted off by dykes constructed of fascines and stone, but the operation of pumping dry the ground gained and the process of transforming it into pasture land have not yet been quite completed. West of Amsterdam, the swivel railway bridge, not yet finished, of the line of railway from Amsterdam to Zaandam crosses the canal, and still further westward the line from Haarlem to Alkmar. The canal, which naturally is less wide in those places where there was no natural channel, and an artificial one had to be excavated, is completed along its entire length, but not the two large dykes which form a kind of harbour at its mouth at Uitmoden, and which are to facilitate the entering of ships. The construction of those dykes meets with extraordinary difficulties, not so great, however, as will be encountered in the intended harbour works at Scheveningen. At the same time that the damming in of the Y was proceeding, a further tract of land, at Amsterdam itself, extending for 547 yards from the dam formerly washed by the sea, has been wrested from it, and at this outermost strip of land, called the Buitenkant, the great central railway station of the city will soon be reared.

The intended construction of the new Rhine Canal may be passed over, particulars respecting it having already appeared in this journal;* but a few additional figures respecting the Zuyder Sea may not be without value, the States General having passed the Bill for its drainage. The laying dry of the 18,000 hectares (44,480 acres) of the Sea of Haarlem, the bottom of which was in some places as low as 16 ft. 6 in. under the lowest water-level of Amsterdam, was completed in thirteen years, after an expenditure of nearly 1,175,000*l.* The sale of the land gained, producing only 775,000*l.*, the works resulted in a loss to the exchequer of 400,000*l.* But in the case of the Zuyder Sea, such an unfavourable result is not expected, the value of the land gained being estimated at 80*l.*, the cost of reclaiming it at only 48*l.* per hectare (or 37*l.* 16*s.* and 19*l.* 8*s.* per acre respectively). If it were intended to drain off the whole Zuyder Sea, a dyke of a length of from nine miles to ten miles, from Enkhuizen to Stavoren, in Friesland, would have to be drawn, besides providing an exit for the Yssel, which, during the winter months, discharges a volume of from 35,000 to 140,000 cubic feet of water per second into the basin of the Zuyder Sea. The present plans of laying it dry, consequently, include only its southern part. In four places, at Enkhuizen, Kampen, and at both sides of the Island of Urk, a dam of a length of 25½ miles is to be taken in hand, the height of which, above the lowest water-level at Amsterdam, is to be 16 ft. 6 in.; above the highest level, however, 8 ft. 3 in.

It may be left undecided whether Amsterdam will succeed by all those works of retrieving its former importance, as compared with Antwerp and flourishing Rotterdam. The two latter cities are undoubtedly somewhat nearer to Central Europe, because they possess a better river communication with it, and Amsterdam would perhaps never have risen to its former importance for commercial reasons alone if the wars of the sixteenth century had not destroyed Antwerp's prosperity, and had not placed Amsterdam, which escaped, politically in a most favourable position.

* See *Builder*, Jan. 20, 1877; also Dec. 11, 1875, as to draining of Zuyder Sea.

THE CAXTON COMMEMORATION.

THE loan collection of books from the press of Caxton and other early printers, together with specimens of modern printing and printing machinery, to commemorate the introduction of the art of printing in this country, will be opened next Friday, in the western galleries of the Exhibition buildings at South Kensington. The celebration was inaugurated by a special service, at which Dean Stanley preached, held last Saturday in the Abbey under the shadow of whose precincts William Caxton set up the first English printing-press. It may perhaps not be amiss, in noticing the opening of the exhibition, to place before our readers a translation of the ode published as a memorial-plate (but rarely seen in this country) issued at the fourth centenary jubilee of the art of printing, celebrated thirty-seven years ago all over Germany. The ode commemorative of the Caxton celebration remains to be written.

MEMORIAL PLATE

FOR THE FOURTH CENTENARY JUBILEE OF THE ART OF PRINTING, 1840.

Sublimest art! by type's oft varied stages,
To lend an echo to the lucid word,
So that forthwith from thousand magic pages
The South and North resound with one accord:
A ray of bliss, succeeding gloom of ages,
It flashes through the nations bright record,
To keenly point in ever clearer light
The path of truth, of virtue, and of right.

The force of protean type with apt precision
Sets nimbly free the soaring flight of thought;
It utters loud the people's free decision,
In open combat bringing fraud to naught:
Humanity, thrill'd deeply by the vision
Of this first book, does homage free, unsought;
"Hail to th' invention!" about the peaceful legions
In latest times, to the remotest regions. O. S.

"Road-Stuff" *v.* Thames Sand.—At a late meeting of the Holborn Board of Guardians, Mr. Cornwell said that when at the schools recently, he went on the scaffold and found that the bricklayers were bedding the bricks of the new building with "road-stuff," in place of Thames sand, and on asking why this was done, he was told that they were afraid of frost, but that the joints would be filled in with Thames sand. It was unfair to the other contractors to use road-stuff, as it was a saving of about 7*s.* a yard. He trusted that the matter would be gone into. It was resolved that a letter be written to the architect (Mr. Saxon Snell) on the subject.

UNITY IN COMPOSITION—NATURAL AND ARCHITECTURAL.

WE observed in a recent paper,* which may not yet have passed out of the recollection of all, that the highest expression of unity is gained for an artistic composition when all the diversities which it includes are so grouped, at last, that a pair of similars and no more declare themselves as constituting together the single whole. The application which was then given to a principle so enunciated regarded only the case of bilateral symmetry, such as is exemplified in the façade of York Cathedral or of the Pantheon,—in the human face or form, or, indeed, in almost any leaf or flower from any shrub or tree. But the principle here involved may be developed to another and broader application, with new opportunities of variety, and it becomes in this new phase especially contributory to richness of design from the very circumstance that it does not conflict, but is susceptible of combination, with the former. The examples already adduced, when taken strictly, imply the repetition of similars, not only in kind but in quantity,—that is, in bulk and dimensions also; and in such case the tameness of mere repetition of like forms extended in a row is left to be countervailed alone by diversity of position,—by the balance of reversed and contrasted presentation. This is the single fundamental difference in the entire assemblage, which is harmonised and reconciled by the binding tie of equality. But when differences among the elements of a composition are more declared in character, the question of equality in respect of dimensions among parts that must of necessity be combined, but make no pretence to similarity in form, is set aside perforce. A spire with its supporting tower may be a whole of which the unity declares itself by exact symmetry about a central vertical plane with the happiest effect, but we shall be disappointed if we think to compass or improve an effective result as unerringly and as matter of course, by making the tower and spire of equal heights.

For the relation of equality we must substitute what, indeed, is but an extension of the leading principle, the relation of simple proportionateness; we have to recognise that the single relation, let us say, of one to two as between heights of tower and surmounting spire,—the spire being double the height of the tower, or *vice versâ*,—supplies a principle of regulated combination, that is, of unity, quite as absolutely as was conveyed by the relation of one to one, or exact equality, in a comparison of the lateral halves. In what manner variable proportions may be applied to lateral as well as vertical distributions, as to the relative magnitude of flanking and central portals,—or the gradations of the leaflets of a roseleaf,—is matter for independent exposition; at present it concerns us to notice how the recognition of the extended principle opens most liberal opportunities for very varied schemes of combination, accordingly as one proportion or another is adopted out of a crowd at command. Not, however, that the crowd may be dealt with indiscriminately, and that there are not certain classes or ratios which have prerogative advantages for specific applications. We shall find ourselves led up to the recognition of some of these before we have gone very far with the illustration of one or two leading examples. One caution only it is as well to premise,—that the effectiveness which may be ascribed to certain numbers or ratios is only to be claimed or allowed in virtue of demonstrable effectiveness, and not from merely mystical or cabalistical presumptions. The traditions or the practice of the ancients and the Mediævals may be of use in prompting a line of investigation, and even, in fortunate cases, of putting us on the right track; but authority alone is not to be accepted in favour of so-called sacred numbers or proportions; their importance must rest upon, and is bound to be verified and accounted for by, experienced effect and rationality.

Provided we adhere scrupulously and watchfully to due generality, we shall find that the same analogy holds good between the human form and architectural compositions in respect of due proportion as contributing to efficiency and beauty, that has already been set forth as obtaining between their organic proprieties. But the subject seems to grow upon the imagination as we attempt to grasp its general outline, and it may perhaps be approached most satisfactorily if, dealing in the first instance with human proportions, we bespeak free confidence meanwhile that all deductions will finally be brought home to an architectural application. An appeal for confidence in this matter is in itself no moderate display of the quality which is relied upon; some considerable experience of what reception our present subject usually meets with in verbal exposition warns us of as much. The very mention of the word Proportion, still more of Theory of Proportion, has been observed too frequently to produce an expression of alarm which preludes the moving of some previous question,—the resort to some stratagem, however crude, "how not to" entertain the question in any form at all. When the admissions have been challenged with such a design, and it has been candidly conceded, that objects which are equally beautiful do not agree in their proportions, and that theory, when best understood and most fully set forth, still gives no help to working out a set of proportions, which, by simple process of deduction, evolve a beautiful result as if mechanically, —if, in fact, the calculating engine requires any further exertion beyond turning a handle so many times, and then reading off results, the entire subject is declared to be smitten with judicial sterility, and ears are stopped, or attention resolutely withheld from any further exposition or protest. It is the happiness of the written word, however, to appeal with coolness to a cooler and larger circle of students, and to reach inevitably many minds of more confirmed logical fibre, to say nothing of being gifted with that quality of candour which only lives in conjunction with the courage to incur responsibility for an opinion after a full hearing.

Those who object that objects equally beautiful have different proportions, may be left aside with the parting recommendation to consider that their own thesis implies that variations in beauty are affected by variety of proportion,—the very mystery which it is proposed to investigate; those who denounce as barren the theory which does not pretend to supply an automatic rule for the production of the beautiful, may be invited to reopen the discussion when they have succeeded in persuading musicians that it is idle to give labour to studying a theory of harmony, which, after all, will confessedly not enable them to work out by system a single beautiful air. As to those who object that proportions, of which we cannot recognise the numerical expression, must be without influence on our sensibilities,—"Waste we not words on these,—just glance and pass."

It is worth while, before dealing with the results of inquiry, to state succinctly the process by which results of any value may be hoped for. It is to the unbiassed sense of beauty that we have to trust, in the first instance, for the identification of the subjects which merit analysis, — the beauty of nature especially, which declares itself to all, and, in the case of art, the beauty of whatever monuments have been crowned by the applause of the most refined judgments of successive generations. Beauty so manifest ever makes manifest no less that it is largely dependent on the relation of its parts to each other, in respect of bulk and linear dimensions,—that is, on proportion; the fact is certified by a "method of differences,"—by the constant experience how variations, of more or less on either side of some standard, not the less certainly existent because occult, transform beauty into ugliness; that beauty is also dependent on the combination of various proportions, and proportions realised, moreover, with very considerable exactness, is an inevitable conclusion from the same experiences. Scientific confirmation of a character superior to cavil is supplied in the instance of music, where the strictest of all tests may be applied, and are as strictly responded to.

The selection for analysis of an object of beauty unimpeached is, therefore, first required; measured or estimated quantities have then to be obtained, as accurately and exhaustively as the case admits, and ingenuity exercised in the institution of varied comparisons to discover which terms are required to be mutually dependent, as well as the relative proportions by which such dependence is effectuated. A prime reward of successful analysis will be the recognition of the rational principle on which certain terms are required to be brought into relation,—why it is that accurate proportion is of value as between certain two elements or divisions rather than between certain other two. With such a recognition a clue is gained which shortens up inquiry by directing at once to cardinal and critical comparisons. Architecture, fortunately, is rich in examples of beauty that are worthy of all study. For the furtherance of such study, the survey of the Parthenon by Mr. Penrose is particularly valuable, from its completeness, exactness, and then in virtue of the universally-admitted and ever-unimpeachable beauty of the example. Architecture naturally admits of precision, and we possess, most happily, a store of materials in measured surveys of other buildings, both Greek and Gothic, which illustrate and confirm a variety of important conclusions and principles. There is more difficulty to be encountered when we enter on the theory of the proportions of the human figure; it is not easy to obtain direct help from the living model; too seriously and too sadly is this brought home to the draughtsman from the life. A student more solicitous than Fuseli for truthful effect has reason enough to echo his complaint "that nature put him out." A perfectly beautiful, an unerringly characteristic, human form, is rare indeed—if, indeed, it ever exists; and vain were an endeavour to compound for truth by an average of conflicting errors. To one admirable, however qualified, example, when fortunately lighted on, must be assigned more value than to any multitude of variations; and if, after all, it only ministers a proximate coincidence, we may felicitate ourselves on our good fortune, though it does not extend beyond obtaining a hint or a confirmation of a clue.

The suggestion is obvious to resort to the finest of the statues which we have inherited from antiquity. Doubtless we have characteristic beauty embodied here most magnificently and gracefully; but the difficulties are all but insuperable of deriving from them a series of measurements which will be available for scientific comparisons. Symmetries are disarranged or disguised by attitude, and even by certain licences which were indulged in, if not imposed, for the sake of, and by the necessity of, sculptural effect. So it is that the reports of the most skilful of the scheme of proportion employed in the same statue, vary most perplexingly.

It will, therefore, be understood that the conclusions which we have rested in and must refer to in regard to human proportions are by no means verifiable by particular examples, and cannot be so in the nature of things; though they have been adopted, nevertheless, after more comparisons, for the sake of arriving at a theoretical norm, than the reader need be troubled with.

Two relations of equality in the distribution of the frame may be mentioned, though they concern us here but little, and they may be left for others to discuss. It may be asked what coincidence is there between any well-marked line of structural difference, and the line which equally divides the weight of a well formed and developed frame between the upper and lower portions? Then, again, another line of equal division may be taken, in this case vertically, upon the side view of the figure as erect. How far, it may be asked, will there be a coincidence of such a plumb-line with leading points of bearing and support, as the socket of the hip-joint, the heel, &c.? The normal curvature of the spinal column will probably be found to accommodate the exigencies of balance on either side of such a line.

The main value of proportionate adjustment is the conciliation, for a definite purpose, of elements which are naturally contrasted, but not incompatible. The problem of harmony, in other words, is to discover the elements which, for all their difference, are susceptible of combined efficiency, and then to educe the relative quantities on which this efficiency depends, even as the length and strength of the string to the bow, and of the arrow to both. But let the architecture of the Greeks supply a leading illustration. The façade of a Doric temple is divisible by one grand principle of contrast between vertical and horizontal members; that is, between the erect columns on the one hand, and on the other the steps or basement below, and the epistylia above, the entablature and pediment together. The horizontal members are thus occurrent in two groups; but by masterly insight into the arcana of harmonious combination, the Greek,—some individual Greek genius first,—struck the comparison between both conjoined as against the column which stood singly in the same relation to both, and thus decided the expression of unity by bringing all under a single proportionate relation.

In the Parthenon the proportion of the height of the column to the joint height of these hori-

* See p. 523, *ante*.

zontals is precisely as 10 to 9;—10 : 9 : : 34·253 : 30·87 (measured 30 932).

When we turn to the erect human frame, the leading contrast that we recognise is between the united and massive trunk on the one part, and the head and neck and limbs on the other. The arms do not enter into the comparison when we deal with the figure as erect, and the terms of our comparison in respect of proportion, therefore, are the height of the trunk alone, against the joint height of neck, head, and legs, between a single and a combined or composite term; precisely, we may say, as in the architectural examples.

The decision which we take on our own responsibility is, that the normal height of the trunk is one-third of the full stature; or, in other words, the height of the trunk to the joint height of legs and head is as 1 to 2. This proportion, it will be observed, agrees with that of the architecture in one important element of simplicity,—the difference between the terms being unity,—a single aliquot.

The propriety of the adoption of these particular terms for proportionate combination may be assumed perhaps to justify itself. That the exactness with which the proportion was executed was regarded as of importance may be established by comparison with other examples.

The comparatively small difference of the terms (one tenth) was dictated in the Parthenon by the dignity of its close order of columniation. In smaller temples, the difference, while still thrown on the same side, is considerably extended. In the Temple of Theseus the proportion is as 5 to 4,—the same as 10 to 8 as against 10 to 9 in the Parthenon,—the increased difference of an eighteenth of the total height instead of a nineteenth.

Intermediate proportions are,—Bassæ, 6 to 7, and Sunium, 7 to 8; in each case the terms still differing by unity.

We may thus construct the following series of ratios, any one of which might be available, as, in fact, almost all may be found adopted in Greek practice:—Commencing with the heavy Parthenon ratio, we have the sequence in the order of gradually increasing lightness of the column,—10 : 9, 9 : 8, 8 : 7, 7 : 6, 6 : 5, 5 : 4, 4 : 3, 3 : 2, 2 : 1. The principle finds its limit in the ratio 2 : 1, the adoption of which would give a column just double the height of the joint associated horizontals,—the steps, entablature, and pediment, or two-thirds of the total height of the front elevation. This proportion is adopted in some light Ionic façades; even so the desire to attain still greater lightness, yet without absolutely renouncing the cherished principle, induced some Greek architects to strain a point rather illicitly,—to throw the base and capital of the Ionic columns, as flat or horizontal members, into the general horizontal term, and make the shaft alone the double of this augmented measurement.

It will be observed that in all these instances the superior term of the ratio is given to the column; that is to say, the column always exceeds the half height of the façade by some exact and simple aliquot of the full height, &c.; the relative difference is least in the case of the close composition of the Parthenon, but even here tells quite effectively. How early this principle was arrived at it is impossible to say; among the cited examples, the Temple of Theseus was probably the earliest in date, but does not carry us back far. It is to be hoped that the excavators of the great hexastyle temple of Jupiter at Olympia will recover and record the details so completely as to enable us to determine whether it dated after the recognition of this rule, or not rather before it, as some considerations induce us to anticipate. When the Æginetan temple was built the principle was unknown or disregarded, and a primary disproportion was thus introduced which goes far to vitiate even the essential dignity of Doric ordination by the suggestion of clumsiness. It is probable that in this instance, as in so many others, the full perfection of the genius of Hellenism was reserved for Athens. The Sicilian temples without exception suffer under the same original defect as the Æginetan; in both there is a jar upon the sense in passing from the front elevation to the flank, where the vertical element is relatively so predominant.

The general effect of favouring the height of the vertical member in a Greek façade is of course to give an advantage to the void as against the solid. We discern the same tendency in the progressive changes of proportion in Gothic architecture. It is observed by Fergusson that the scheme of division of the side of a Gothic nave was originally into equal thirds; an example is furnished,—one of many available,—by the design of Winchester Cathedral before its transformation. The distribution of the three divisions was studiously varied, but still the monotony of a sequence of three equalities was invincible in the absence of any unequivocal predominance of a single member. William of Wykeham, following many a precedent, cut through the triforium and lifted the pier arch to a liberal half of the height of the bay, instead of a stinted third, and gave to his new triforium the appearance of a moulded basis of the clearstory. Thus he obtained a grand single member, predominant by its largeness of design in association with a group of combined elements, that between them occupy an equal height. In other instances, of which Westminster is one, the divisions were more marked in the upper half, and the sequence of heights from above downwards was very exactly in the order and proportion of two for clearstory, one for triforium, and three for pier arch. It is questionable whether these proportions were quite the best, but such is the value of variation by simple numbers that they were certainly compatible with noble and happy effects; one consequence of their adoption was that the ratio of one to two was established between the height of the pier arch and that of the central nave. The value of this in ultimate effect was dependent on many other adjustments, as the relative widths of pier and nave openings, and the relative acuteness of their arches. What we are now concerned to remark upon is the unity which is compassed when a definite proportion brings the several features or elements of a composition into a whole by a dependence on one of marked superiority.

This arrangement is most effective when so managed, as it is at Westminster, that the triforium attaches itself most intimately to the division of the pier arch; the special clearstory is then proportioned to the lower division as 1 to 2, and the mere trivial division into plain halves loses in importance.

But here again we are struck by more than an analogy,—by a correspondence with a proportionate division which is most important among those which confer the vigorous expression of unity upon the so complex human structure. The erect form is also approximately halved by a transverse line across the symphysis of the os pubis; but the entire figure is divisible into another pair of segments still more essentially antithetical from characteristic contrast of functions and dignity; the harmonious union of these by virtue of a definite proportionality at once subserves conjoint action and declares itself in expressive beauty. This capital association is between what may be called the nobler and the servile divisions of our structure; of these the upper comprises not only the head, but the great cavity of the abdomen that houses heart and lungs,—the great vital, sympathetic, and intelligent centres,—and limited by the intermediate diaphragm, is in immediate connexion with the most complicated activity of the arms and hands; the lower division comprises the inferior and, we may say, more ignoble portion of the trunk that subserves the ministry of animal sustenance and growth, together with the lower limbs,—the organs of the comparatively simple functions of locomotion. The proportionate height of the upper to the lower division in the developed and well-grown adult will be found, we believe, very accurately as 1 to 2,—the nobler segment being just half the height of that which, for convenience, we have called the servile.

Further illustration might be derived from the proportionate division of the face in beautiful examples, but enough has been adduced to set forth the principle which it is our present purpose to insist on,—the principle which is the very soul of that great quality,—which is generally referred to and well recognised, even by those who would be at a loss to define it,—as breadth. Breadth in an artistic composition is opposed to the scattered, the frittered, the disconnected, it implies a unity by which even an assemblage of multitudinous details is brought through whatever secondary groupings into one final, pointed, and forcible expression. Such is the characteristic of those works in which the marvellous energies of nature appear to culminate, the consummate embodiments of powers most varied and complicated for the noblest and most admirable purposes, in which at last the intimation of purpose seems to lose itself in effulgent beauty. Such harmonies only subsist in nature, and thence only in art also, for which nature gives the lead, in virtue of a truly hierarchical dependence in proportion of all parts among each other, and then of a progressive closing up of such dependence until all fall together into that single dominant and comprehensive proportion,—simple in any case, and accurate whatever its terms,—which is the last expression of definite truthfulness and exalted aim. Breadth in other arts,—as, for example in painting, where it depends on proportion of light to shade, of warm colour to cold, and so forth,—must be estimated by refined perception; it is in music and in architecture alone that it is amenable to a definite numerical test.

"THE RENAISSANCE IN ITALY."

THE third volume of the work in which Mr. Symonds is ably and brilliantly illustrating the great age of intellectual vigour in modern Italy which has been long known as the Renaissance is devoted to a consideration of that epoch in regard to the development of the fine arts.* It is this side of the Italian Renaissance epoch which is most popularly appreciated. For one person who is familiar with Politian and Ficino and their relation to the spirit of classic literature, there are twenty who are well acquainted with the styles and productions of the leading painters who take so great a place in the history of Italian culture, and with the new development which architecture received at the same time. Mr. Symonds does not, however, content himself with merely going over the facts of what is now a more than twice-told tale. He does not pretend to trace in detail the history of the Italian arts, but rather to define their relation to the main movement of Renaissance culture. "Keeping this, the chief object of my work, in view, I have tried to explain the dependence of the arts on Mediæval Christianity at their commencement, their gradual emancipation from ecclesiastical control, and their final attainment of freedom at the moment when the Classical revival culminated." The fulfilment of this scheme, as the author is careful to point out, involves some notice of the Mediæval period, out of which the Renaissance was evolved; and, in fact, the appearance, even in the midst of the Mediæval period, of a thought and sentiment distinctly allied to what was afterwards to develop into the full Renaissance, has been before made evident in Mr. Pater's thoughtful volume of Essays in the Study of the Renaissance,—a book which has influenced recent opinion on the subject very much, and the trace of which seems apparent in some of Mr. Symonds's pages.

In reference to this view of the relation of the art to the thought and feeling of the period, Mr. Symonds's first chapter, entitled "The Problem for the Fine Arts," forms in a sense the basis of the whole volume, and is very comprehensive in the survey of the subject. He dwells on the peculiarly æsthetic character by which Italian culture has been distinguished from the thirteenth to the seventeenth century, to a degree found in no other people since the Greeks. So much is this illustrated in the literature of Italy, for instance, that critics in whom sensibility to artistic form in expression is not predominant, find in the Italian poetry "a lack of substantial qualities," which might be supposed to argue a want of real depth of feeling. Here our author thinks that the plastic art of the period throws a light on its poetry, and it is by familiarity with the works of their artist contemporaries that we come to understand that the poets were not so much unable as unwilling to go beyond a certain circle of effects. Everything they treated was to be brought within the compass of certain confines or boundaries proper to literary form in poetry; and hence arises, to the critics and readers of a more impassioned and less æsthetic age, a feeling of coldness and limitation in the *genre* of Italian poetry of the Renaissance. The secret is, that the poetry of the epoch, like every form of expression, was that of a people with whom the artistic idea of life was always predominant.

In devoting himself principally to the consideration of painting, as the central and peculiarly characteristic art of the Italy of the Renaissance, the author has, however, undertaken to indicate some of the preliminary stages by which this peculiarly æsthetic principle, as mani-

* Renaissance in Italy: the Fine Arts. By John Addington Symonds, author of "An Introduction to the Study of Dante," &c. London: Smith, Elder, & Co. 1877.

sted in the works of the great painters, emerged
id developed itself from the more religious or
clesiastical aim which the earliest efforts of
ainting in Italy obviously show. The first
bject of the prè-Renaissance painters was to
nbody the ideas evolved by Christianity. But
so doing, through the medium of an art which
orks by imitation, more or less complete, of
man form, they almost involuntarily, and of
ecessity, helped to humanise religion.

"Christian and Pagan traditions came into close con-
ct, and contended for the empire of the newly-liberated
tellect. During this struggle the arts, true to their own
rinciples, eliminated from both traditions the more
rictly human elements, and expressed them in beautiful
rms to the imagination and the senses. The brush of
e same painter depicted Bacchus wedding Ariadne, and
ary fainting on the hill of Calvary. Careless of any
rif to dogmatic orthodoxy, and undeterred by the dread
encouraging pagan sensuality, the artists wrought out
eir modern ideal of beauty in the double field of
ristian and Hellenic legend. Before the force of paint-
g was exhausted, it had thus traversed the whole cycle
thoughts and feelings that form the content of the
uman mind. Throughout this performance, art proved
powerful co-agent in the emancipation of the intellect;
e impartiality wherewith its methods were applied to
bjects sacred and profane, the emphasis laid upon
ysical strength and beauty as things good and desirable,
e subordination of Classic and Mediæval myths to one
thetic law of loveliness, all tended to withdraw
ention from the differences between Paganism and
ristianity, and to fix it on the goodliness of that
manity wherein both find their harmony."

nd in time this bodily element in painting be-
me a sore trouble and bewilderment to the
clesiastical mind. The St. Sebastian of Fra
artolommeo, Mr. Symonds mentions, painted in
e cloister of S. Marco, became a snare and a
umbling-block to souls, as was discovered
rough the avowals of fair penitents in the con-
ssional. This twofold view of painting, from
e artistic and the religious side, and the
wilderment as to motive which it gave rise to,
humorously portrayed in the soliloquy poem
Filippo Lippi by Mr. Browning, the only con-
mporary poet in England who seems thoroughly
home in the spirit of Renaissance painting,
d has, indeed, done much to suggest to his
aders its true aims and intellectual character.
is Filippo Lippi complains grievously that he
as condemned by the brethren for painting
al people when he ought to have painted
ealised saints—that was not the way, they said,
"instigate to prayer"; and he goes on,—

"I painted a Saint Lawrence six months since,
At Prato, splash'd the fresco in fine style:
'How looks my painting, now the scaffold's down?'
I ask a brother. 'Hugely,' he returns.
'Already not one phiz of your three slaves,
Who turn the Deacon off his toasted side,
But's scratch'd and prodded to our heart's content,
The pious people have so eased their own,
With coming to say prayers there in a rage:
We get on fast to see the bricks beneath.
Expect another job this time next year,
For pity and religion grow i' the crowd—
Your painting serves its purpose!' Hang the fools!"

As the author remarks on a further page,
whatever painting touched became by that
ach human; piety, at the lure of art, folded
r soaring wings and rested on the genial
rth. This the Church had not foreseen."
it, on the other hand, Church feeling
termined the path of Renaissance art to a
gree which the great painters of the full
riod of the Renaissance were probably hardly
ware of. It was owing to the influence of the
hristian spirit that the calm and reserved ex-
ression of physical beauty which satisfied the
reek sculptor could not any longer be the full
d and aim of art. There were deeper feelings
portray, feelings which could not be realised
rough mere perfection of nude form, or in the
pose of expression which sculpture demands.
ey required a medium capable of more varied
d impassioned and pathetic expression of
untenance than sculpture could supply, and
nce it came to pass that those who gave the
itial direction to the art of the Renaissance
ere led to look to painting rather than to
ulpture to enable them to realise their aim,
d the former became the characteristic and
ominant art of Italy, the latter taking only a
condary place, and achieving remarkable and
questionable triumphs only in some more or
ss isolated instances.

But before tracing the course of Italian paint-
g in detail, our author devotes a chapter to
chitecture, as that one of the fine arts which
always "the first to emerge from barbarism
the service of religion and of civic life. A
use, as Hegel says, must be built for the god,
fore the image of the god, carved in stone or
ured in mosaic, can be placed there. Thus
ly, before the age of the Renaissance proper,
nd herself provided with churches and palaces
hich were destined in the fifteenth and six-
teenth centuries to be adorned with frescoes and statues." The attempt to generalise as to the development of architecture is beset with more difficulty in regard to Italy than in most other cases, from the variable nature of the style and aims of her architects. There is no one great central style like that of France and England in the Mediæval times; but rather tentative and half-formed styles, each bearing the partial impress of some manner of building which is to be found more completely developed elsewhere. Thus we have the Lombard Gothic of the towns of North Italy, the partially Orientalised style of Venice; "while at the other end of Italy, at Palermo, close beside the ruined colonnades of Segesta, Norman kings were embroidering their massive churches with Saracenic arabesques and Greek mosaics, interspersing delicate Arabian tracery with rope patterns and monsters of the deep, and linking Cuphic sentences with Scandinavian runes. Meanwhile, at Rome, tombs, baths, and theatres had been turned into fortresses. . . . No other style but that of the imperial people struck root near the Eternal City. Among her 300 churches, Rome can only show one Gothic building." Amidst this various tendency in point of style, Mr. Symonds thinks that we can regard as a fixed tendency throughout Italy, a bias towards the forms of Roman building, which became in the time of the Renaissance scientifically apprehended, and determined the taste of the whole nation. This is a somewhat lax, but certainly effective and comprehensive method of stating the case, and one which blends itself logically with the main argument and purpose of his book. More complete is his method of distinguishing between the genius of Northern and of Italian Gothic: the Northern Gothic church being, as he puts it, like a body with several members, the southern church an accretion of beautiful atoms; the former impresses us by its one presiding and architectonic idea, the latter by isolated details in which the mind and taste of individual artists appear. The connecting link between this rather aimless and multifarious period of Italian architecture, and the scholastic style with which the name of Palladio is associated, Mr. Symonds finds in such a manner as that of Sansovino at Venice; but this appears to us to have had too partial a sway to be put in so important a place: it is Venetian rather than Italian; and is in some respects a finer style than the more western architecture of Italy ever developed. The Palladian architecture appears to us to be much more closely connected with the literary movement of the later Renaissance epoch than with any immediately preceding developments of architecture on Italian soil. It sprang from the revived reverence for Classic antiquity, which led to the systematic study of Vitruvius and his precepts as the only safe guide in attaining to the corresponding spirit in architecture; and the parallel between architecture and literature might be traced in the defects as well as in the benefits arising from this study, as Mr. Symonds, indeed, seems to indicate when he says "in proportion as architects learned more about Vitruvius and scholars narrowed their taste to Virgil, the style of both became more cramped and formal." The cause why Palladio should have been chosen, in England especially, as the nominal representative name of the revived style, is suggested in the facility with which his principles could be assimilated. "Depending but little for effect upon the arts of decoration, his style was easily imitated in countries where painting and sculpture were unknown, and where a genius like Jean Goujon, the Sansovino of the French, has never been developed. To have rivalled the façade of the Certosa would have been impossible in London; yet here Wren produced a cathedral worthy of comparison with the proudest of the late Italian edifices." This is letting down both Palladio and Wren a little too much. We take it that Palladio impressed his manner and name on the period, because, with all his short-comings, he was a man of genius, though working, in some respects, in the wrong path; and that the London cathedral is a great thing, for a similar reason, that Wren was a genius. Why either he or Inigo Jones should be put in a category below Jean Goujon does not quite satisfactorily appear. The concluding sentence of the chapter on architecture is worth noting. The author places on record his adherence to the view, already sanctioned by leading names among our writers on architecture, that the architectural results of the Renaissance will have, and deserve to have, more permanence than its literary results, and that the Renaissance architects really created a new common style for Europe.

"With all its defects, it is not likely that the neo-Roman architecture, so profoundly studied by the Italians, and so anxiously refined by their chief masters, will ever wholly cease to be employed. In all cases where a grand and massive edifice, no less suited to purposes of practical utility than imposing by its splendour, is required, this style of building will be found the best. Changes of taste and fashion, local circumstances, and the personal proclivities of modern architects, may determine the choice of one type rather than another among the numerous examples furnished by Italian masters. But it is not possible that either Greek or Gothic should permanently take the place assigned to neo-Roman architecture in the public buildings of European capitals."

In that case, the "Tite bequest" for the study of Italian architecture may still be of practical use; but the writer is surely not looking very far ahead in his prophecy.

In the chapter on sculpture, which follows naturally upon architecture, we are asked to regard Niccola Pisano as the man who first breathed with the breath of genius into the dead forms of plastic art, who put the artist on the right track of combining the study of antiquity with the study of nature, and who must claim the credit of being the artistic progenitor of Michelangelo and Cellini. In a sense this is no doubt true; but the panegyric quoted from Lord Lindsay, and apparently endorsed by Mr. Symonds, to the effect that Pisano has had a wider and more lasting influence than ever Shakspere and Dante can boast, since whatever excellence has been achieved in modern sculpture throughout Europe is due to the influence which he primarily gave, is surely a wider and more comprehensive assertion than a carefully-balanced criticism would warrant. But the manner in which Christian feeling and moral significance were combined in the work of Pisano with a constant reminiscence of classic models, is very fully brought out, as illustrating not only the nature of Pisano's art, but the general tendency of Renaissance art, even in these its earlier days, to look back to the reminiscences of the art of a great past.

A subject is touched upon at page 126 which has a bearing on what has recently been said in our pages in reference to the relation of the goldsmith's to the sculptor's art. Speaking of Orcagna, who was educated as a goldsmith, and practised sculpture as an accessory, the author thinks that what the artists of Florence gained in delicacy and precision of design by their apprenticeship to the goldsmiths' trade was hardly sufficient to compensate for loss of training in a larger style. "It was difficult, we fancy, for men so educated to conceive the higher purposes of sculpture. Contented with elaborate workmanship and beauty of detail, they failed to attain to such independence of treatment as may be reached by sculptors who do not carry to their work the preconceptions of a narrower handicraft. Thus even Orcagna's masterpiece" (the tabernacle of Or Sanmichele) "may strike us not as the plaything of a Pheidian genius condescending for once to 'breathe through silver,' but of a consummate goldsmith taxing the resources of his craft to form a monumental jewel." The reference to "Pheidias" (since it seems we are to abandon the Latinised spelling) comes curiously *apropos* of what has recently been said as to the Mycenæ goldsmiths' work and its influence on the great sculptural art of Greece. At first sight Mr. Symonds's remarks would seem to be rather contradictory of our own, but they are not in reality. Our suggestion, which (largely adopted) has been oddly misunderstood in some quarters, referred to a goldsmiths' art practised for a long period previously to the arising of the art of sculpture in marble; Mr. Symonds refers rather to the influence on the individual artist of a previous habit of working in gold. We think he is right, and that traicing in gold and silver work must tend to lead to a minute and too delicate style, deficient in breadth and grandeur, when the same hands are turned to the treatment of marble on a large scale. Other remarks in the chapter on sculpture are so interesting and suggestive that we regret to have to pass them over hastily. A remark in regard to Brunelleschi's unsuccessful design for the Baptistery Gates is significant. The design is very deficient in repose: "each separate figure has an uneasy action"; and it is suggested that those who have attributed the unrest of sixteenth-century sculpture to changes in artistic feeling wrought by the Renaissance, might think, on examining this plate, that sufficient account had not been taken of the influence of individual artistic temperament. This in-

fluence of individual character is to be traced in higher and more satisfactory instances also; as in the effect which Donatello's powerful and unaffected style had in causing a reaction against the pictorial style of Ghiberti. It is impossible for any one writing of Renaissance sculpture not to be stirred into something like eloquence of expression in regard to the sculptor of "St. George"; and Mr. Symonds is no cold and calculating critic in reference to this noble artist, whom he happily defines as one bent on marking character, and determined to seize the very pith and kernel of his subject; "not one who, if a Magdalen were demanded of him, would consent to model a Venus and then place a skull beside her"; and it is this earnestness and integrity of purpose which is unquestionably the predominant attribute of the works of Donatello, in which the blending of the noblest side of the Gothic spirit with much of the purity of style belonging to Greek art is achieved, in some examples, with almost unequalled success.

In summing up the history of Renaissance sculpture, the author recognises three distinct stages—the architectural, the pictorial, and the neo-pagan; the latter division including the class of works by Bandinelli and others, which he dismisses as having nothing Greek about them but their names, their nakedness, and their association with myths, the significance of which was never felt by the sculptors. These be bitter words, by no means uncalled for; and this division of the subject is doubtless comprehensive up to a certain point,—only, under which of these heads is such an artist as Donatello to come? But let that pass; the chapter is a very interesting one, and full of not a little eloquence of expression which evidently is the offspring of genuine feeling. One passage in reference to the terra-cotta sculpture of Italy is so charmingly written that we may here quote it as a favourable specimen of the literary style of the writer. Terra cotta, he observes, has the charm of improvisation:—

"The hand, obedient to the brain, has made it in one moment what it is, and no slow hours of labour at the stone have dimmed the first caprice of the creative fancy. Work, therefore, which, if translated into marble, might have left our sympathy unstirred, affects us with keen pleasure in the mould of plastic clay. What prodigality of thought and invention has been lavished on the terra-cotta models of unknown Italian artists! What forms and faces, beautiful as shapes of dreams, and, like dreams, so airy that we think they will take flight and vanish, lean to greet us from cloister and palace fronts in Lombardy! To detail one this multitude would be impossible. It is enough to select one instance out of many; this shall be taken from the chapel of St. Peter Martyr in St. Eustorgio at Milan. High up around the cupola runs a frieze of angels, swinging together and dancing with joined hands, while bells composed of fruit and flowers hang down between them. Each angel is an individual shape of joy; the soul in each moves to its own deep melody, but the music made of all is one. Their raiment flutters, the bells chime; the chorus of their gladness falls like voices through a star-light heaven, half heard in dreams and everlastingly remembered."

It might have brought no little joy to the unknown artist of the work so vividly described could he have known that his creation would have called forth, more than four hundred years after, such a genuine outbreak of enthusiasm from a Northern visitor of these latter days. We must, however, take leave for this occasion of Mr. Symonds's volume; we have been naturally tempted to dwell a little on the subjects of Renaissance architecture and sculpture, less often handled than painting. We may have space to touch afterwards on what the author does in the way of throwing light on the history and method of the development of painting; but the subject, though so much has been already said about it, will hardly bear handling in a closing paragraph.

We may just add here what is a not unimportant point in regard to a work of this kind, that the writer's impressions of the works mentioned are all direct. "I am not aware," he says in his preface, "of having mentioned any important building, statue, or picture which I have not had the opportunity of studying." The style of the book itself goes to confirm this statement; and it is to this directness of personal observation that some of the pointed and picturesque character of the criticisms and descriptions it contains is doubtless owing.

Mr. Hankey's Buildings.—We are asked to mention that the whole of the girder work, fireproof floors, tanks, supply hydrants,—in fact, all the engineering work,—was designed and executed by Mr. Dawnay, in direct association with Mr. Hankey. The borings for the hydraulic lifts were by Messrs. Easton & Anderson, who are still at work.

THE DURHAM MINING DISTRICT.

WHILST there have been in the last half-century many developments of industry which have materially altered the course of trade, and given birth to new centres of industry, there is none in which during the whole of that period a more continued increase has been known than in the coal-mining district of Durham, and more especially the southern division of that county. It has not built up any one town of the magnitude of Middlesbrough, nor has it peopled perhaps a limited tract of country so fully as has been the case with the iron-mining district about Gainsborough in a much less space of time; but it has caused a wider tract of country to know a continuous growth of its great industry, and to witness an equally continuous upgrowth of its population, and an almost endless addition to its prosperity. Prior to the inauguration of the railway system, the coal trade of Durham was in an extremely limited condition; and that of the southern division of the county was of the most miniature description. The output of coal in the Auckland district, where it had been worked for hundreds of years, was then limited to about 200,000 tons, and the output formed the chief parts of that of the southern division of the county of Durham. Even nine years after the opening of that primeval railway which built up the trade of South Durham, the population, the trade, and the mining industry of that district was most limited. Bishop Auckland had a population of little more than 2,000, instead of four times that number shown by the last census. The mining industry had, it is true, attained the first stage of growth, but there were then under a score of coal-pits working in the district, and their individual output was one limited by the modes of working the coal, of bringing it to bank, and of despatching it. The old-fashioned "gin" supplied the motive power for raising the coal, "corves" were in use still, and the coal thus brought to bank was often despatched to the south on the one available conveyance of the backs of beasts of burden. There was then a limited choice of places for shipment: Middlesbrough had just begun to ship coal in quantity, and the exports of the older port of Stockton were beginning to feel the effect of the rivalry. The coke trade was scarcely in existence, where now it furnishes above 4,000,000 tons yearly. The iron trade had scarcely an existence in Durham,—none in the southern part of the country. The immense iron deposits in Cleveland were then commercially undiscovered, the Wilton Park and Consett works were unbegun, and thus for an immense output of coal there would have been no means of providing a mode of distribution. The few collieries,—largely "land-sale"—in the district employed comparatively few hands,—the number being probably under 10,000 for the whole county, and the seventy or eighty collieries in the county had not a total output much exceeding 3,000,000 tons. There was a little weaving carried on in some of the small towns and villages; West Auckland,—then decaying in importance,—had its few brass foundries; Durham kept its ancient repute, but had not the wealth its coally surroundings now give it; and the whole of the great district to the north-west of the county was then moorland or agricultural, except where the lead-mining industry preserved its old importance.

Perhaps the first cause of the development of the mining district of Durham was the growth of the export trade in coal. Several ports on the east coast and on the Tees began to export coals, and in quantity sufficient to widely influence the output of the county. Thus, Stockton, between 1833 and 1840, raised its shipments of coal from half a million tons to a million and a half, but after that period the upgrowth of trade at Middlesbrough and the two Hartlepools caused the export of coal at Stockton to dwindle, until they are now barely 5,000 tons annually. Middlesbrough also, though it had at one time a coal-shipment trade approaching half a million tons yearly, has found a use for its fuel so large locally that it now ships some 70,000 tons of coal and 32,000 tons of coke yearly only. But at the Hartlepools, there has been a large growth of the amount of coals shipped. Beginning with a few thousand tons, its exports of coal have known an irregular increase, and they are now at the rate of about a million and a half tons yearly. Next in order of time came that influence which has been the strongest, the great industrial development, of the iron trade more especially. Looking only to the county of Durham, where there were two blast furnaces there are no
seventy, and the proportion of these in bla
may be said in the dullest times to use tw
million tons of coal. With this growth the
has been one equally marked in the finish
iron trades, for the three small rolling-mills
the county in the early days of railways,
which there were under 100 puddling furnace
have been succeeded by twenty-four large one
using over 1,100 puddling furnaces, and ful
equipped with all needful auxiliaries. But
addition to finding fuel for the works of bo
classes within its older boundaries, Durham su
plies also the whole of that needed for the eve
larger number of works which in a yet short
time have arisen in the Cleveland district. A
there has been an equal growth in allied indu
tries. By progressive steps, with scarcely
break until now, the coal output of the coun
has gone on increasing. Year by year it h
been increasing, more especially in the southe
division, which is nearest to the great mass
the iron-works; and thus it arises that the outp
of the county, the slight nature of which in pr
railway days we have indicated, has now a
vanced until it produces yearly about twent
five million tons of coal. Of this about s
million tons are produced by North Durha
and the great bulk of the whole—over ninete
million tons—by the South Durham distri
which stands highest in the producing ranks
the world. And this great growth has be
without a diminution of other industries; for t
lead-mining industry of the county still hol
high rank; there has been the addition of t
quarrying of a large amount of limestone; a
the chemical works of the county have be
extended, whilst in place of the old wood
ship-building yards, more extensive and mo
productive iron ones have been placed.

As a consequence of this growth, the wh
face of the country has been changed. T
proofs of this prominently referred to have be
those on the east, but those in the centre of t
county and on the west fully equal the bet
known examples. Instead of a few isola
collieries of small productive extent, there
now in the county about three hundred collieri
and each of these may be said to have beco
the nucleus of a colliery village or of a town
some magnitude. Along the sides of the old
railways traversing the county, there are mi
of colliery roads, pit-heaps, coke-ovens, a
other tokens of the great industry; fr
eminences the view is one in which on hill a
in valley, mine-mouth machinery is visible, a
tall chimneys are projected into the murky s
After having largely developed the district rou
Auckland,—in a ratio which may be imagin
from the statement that one colliery alone, t
Adelaide Colliery, has an output as large as t
whole district in the days of which we ha
been speaking,—the remote region near Crc
was ventured into, the little valleys n
Durham were tapped, and after the inter
portion of the county was tolerably well dra
upon, and the demand, up to a year or two a
seemed to grow, the outer edge of the prow
coal-field was again ventured on, and now th
are large winnings in progress destined ultimat
to largely increase the yield of the county. T
reflection of the growth on the population of t
county may be judged from the fact that in t
decade from 1861 to 1871 the numbers r
from 516,184 to 700,567, but even these figu
do not show the ratio of the increase fully,
the lead-mining districts of Teesdale and We
dale were stationary, and the increase was co
paratively slight in the agricultural unions
Sedgefield and Chester-le-Street, the grow
occurring in the coal-mining and manufacturi
districts chiefly. In spite of this vast incre
of population, the prosperous state of the c
trade not only kept the pauperism from
creasing, but actually diminished it from 19,8
to 16,600; and the rateable value of most of t
unions has been swollen largely.

The one black spot in this prosperity is th
the sanitary condition of this great mini
district is far from what it should be. Many
the mining villages are poorly supplied w
water, the sanitary appliances are defectiv
the cottages are generally old, inconvenien
ugly, and devoid of the essential accommodati
whilst there has been, up to the present tir
little or no local governing oversight; and t
consequences have been seen in high dea
rates, and often in the prevalence of epide
diseases, which were aided, if not engender
by the crowded state of the house accommo
tion, owing to the intensity of the demand

coal, long known, and the consequential demand for labour. That period of prosperity, and of abnormal rates for wages and prices of coal, has passed away for the present; and in the quietude, and even depression, which prevails in the coal trade, earnest attempts are now being made to provide in some degree better local government, to secure something approaching to sanitary supervision, and to obtain that first of necessities for communities,—a plentiful supply of pure water. The process is necessarily slow, owing to the magnitude of the task, but a commencement has been made in earnest, and when returning prosperity revisits the great mining district of Durham, it will in all probability find a much better state of affairs than was known on the last occasion, when the high wages of the pitmen drew scores from other fields of labour to the collieries of Durham.

MEASURING AND WEIGHING THE GREAT PYRAMID.

IN the midst of Eastern questions and perplexities time has been found by those calm observers of human events, the archæologists, to solicit the attention of Europe once more to the subject of the Great Pyramid. In a memoir addressed to the Viceroy, certain learned Frenchmen have drawn his attention to the precision of the English Ordnance Survey, and declared that until the principles of this Survey are followed, and applied to the mightiest monument of Egypt, its exact dimensions will never be positively known. They even suggest that its largest stones, with others graduating down to the smallest, should be weighed to the last ounce, and the two calculations put together in order to solve a mystery of many ages, which the human intellect, after endless guess-work, has been content to leave in darkness. It is precisely ten years since Professor Piazzi Smyth imagined that he had dissipated all the difficulties, and constructed an impregnable theory, which was well received at the time; but ever since erudite critics have been burrowing beneath it, and at length their discontent has burst forth in a preliminary expostulation with the Viceroy, who, it may be feared, distresses himself very little about the matter. They represent that, in spite of modern mathematics, no two travellers, however scientific, have hitherto been agreed as to the measurement of its mysterious proportions; some being careless, others biased, not a few,—even among French *savants* themselves,—falling into palpable mistakes. Professor Smyth himself, indeed, never pretended to more than having measured a number of parts; he never presumed to assert that he had summed up the Great Pyramid as a whole. But the "Egyptian Memoir," as it is styled, asserts the necessity of settling these questions of the world's history at once and definitely, and although a season of political crisis may not be the best opportunity for giving a practical realisation to the demands of its authors, the points they raise, as they were of interest thousands of years ago, may be of still deeper interest now, since the obscurity in which they lie buried has, with every successive century, been increased. No doubt the French memorialists are ambitious of the glory which could not fail in attaching to such a final and crowning expedition; but they admit all the obstacles in their path, multiplied as these have been by every solution hypothetically offered within the last few hundred years. This object in discovering the true meaning of the pyramid is, be it remembered, notwithstanding the latest self-assertion made by the second half of the nineteenth century, by no means a new one; on the contrary, the plea before the Viceroy is based upon a lengthened record of failures. It opens, after generalities, with a recommendation of the French metrical system for the purpose, and proceeds to a disquisition upon metrology at large. A host of quadrators, trisectors, and perpetual-motionists are then dispersed, though what these last have to do with the points at issue could only have suggested itself to the mind of a Parisian mathematician. The *savants* next indicate some truths long acknowledged, namely, that the Great Pyramid differs essentially from all the various structures of a generally similar outward form, to be found in nearly every part of Egypt; that it is the most antique existing monument of its class; that its more modern companions were designed as gigantic regal tombs, or rather, mausolea, and that they were covered with hieroglyphics and representations of Egyptian animal gods. Now, in the Great Pyramid, not a trace, either of hieroglyphy or of idol-worship, is to be detected; nothing, indeed, except the exquisite masonry and the builders' marks. It stands, therefore, alone; without a clue to the dark labyrinth of its interior, or a key to the significance of its strange external proportions. This has been the problem of centuries; this is the problem of to-day; and this is the problem which, the French memorialists say, ought henceforth to be taken in hand, with a determination to solve it. The names, or the generations of its builders, will, in all likelihood, never be known; but it is declared that the meaning of it may be discovered, if specimen-hunters do not, in the meantime, reduce the whole of its mystic outlines to ruin. The casing of hard white limestone, akin to marble, which once covered the entire edifice, is gone, and the exterior stones have been carted away by thousands to build palaces for Pashas in the valley. Upon these, and other circumstances, the newest theorists base their rejection of the theory that the Pyramid was piled up as an astronomical observatory, or for any similar purpose. They rather incline to the belief,—which is an old one, by the way,—that it may have been designed as an almost imperishable record of metrological data, indicating standard units of length, area, and volume alone, or possibly of mass and temperature also, perhaps even approximate representations of the mass and dimensions of the earth itself. They have one thing certainly to say for themselves,—all the previous measurements contradicted each other,—even Professor Smyth's, which were no more than partial,—and they now aim at converting discrepancies into certainties, with or without the aid of philosophical investigators from other countries of Europe. One reason for previous failures, they affirm, is the almost absolute impossibility of procuring uniform scales for weighing the stones, or rods for measuring the distances from angle to angle. It was something like an endeavour to square the circle. The microscopic compass failed them also. But, urge the memorialists, there was a great deal of ignorance mixed up with these proceedings, and the expedition should not have broken down. But how are they, supposing the Egyptian Government to grant them the privileges they ask, to guarantee themselves against the complications which have baffled all previous efforts, the Cockney tourists, each dragged along by a couple of brawny Arabs, exactly where, and at the right time when, an observation might be favourably taken; the trampling down, by unscrupulous boors, of cameras and measuring apparatus; the grasping of an exquisite clinometer, whereby some intoxicated wanderer from a pic-nic party seeks to steady himself; the floors slippery with candle-grease, the roofs rendered invisible by lamp-black, the walls excoriated by English and American vulgarities? For themselves, they are confident that, if the Sultan's representative in Egypt will concede the necessary privileges, they can overcome all such obstacles, and pursue their path of science with perfect equanimity. It might be better, certainly, they add, had Egypt been a French province, though this remark was odd as an argument addressed to the Viceroy; but that is a political idea, apart from the principal topic of the Memorial. This, then, complains that even the most abstruse of existing accounts commence with mechanically describing the process of pyramid-building,—the hewing of a gallery and a subterranean chamber in the solid rock; the accumulating of huge square blocks above, with similar passages running between them, and so forth. But all of that regards the inferior, or imitative structures, and in no respect the Great Pyramid itself, which reared itself unique and undecipherable, amid all the immemorial monuments of Egypt. Nothing has ever been found in its few hollows, although they were frequently pierced for supposed hidden treasures, excepting, indeed, an empty sarcophagus, or chest, or coffer. There are vacant spaces, called at random King's and Queen's Chambers, corridors of singular proportions, relatively, and ceilings varying in size as though indicating a perfect system of measurement. Such, at any rate, is the latest theory; but the French memorialists concern themselves principally with the exterior. They declare that the dimensions on all four sides of the Great Pyramid vary; that its height differs as it faces the cardinal points; that all calculations based upon them are inconsistent with the figures employed in any living science; and that the chief questions bearing upon these points consequently remain unsettled. They enumerate the subtle instruments hitherto employed to obtain a correct determination; they summon astronomy to their assistance to decide whether the Pole-star could have had anything to do with these mystic arrangements; and, finally, they persist in hoping that what they term "the Pyramid standard" may yet be found, and that it divides the year into its proper days. The extent to which they push this belief argues at once a foregone conclusion, and an infinite faith in its reality. But they seem to be in some fear lest the Pyramid, upon being exhaustively interrogated, should decide on behalf of the English yard as against the French mètre; yet, for some time at least, they may spare themselves this anxiety. The Egyptian Government has weightier matters on its hands just now than the weighing of the Ghizeh stones, and a larger labour in charge, perhaps, than that of calculating pyramidal superficies.

THE STATE AND THE FINE ARTS IN BAVARIA.

IN none of the States of Europe has the effect of the individual efforts of the Sovereign to foster the spread of the fine arts been more apparent than in the kingdom of Bavaria. The hearty appreciation and the continuous efforts of the late King Ludwig I., even before his accession to the throne, immensely increased the growth of the fine arts in Bavaria, and gave an impetus to their cultivation, the effects of which, whether in the spread of actual buildings, statues, or pictures, or in the management and teaching of art, are apparent to this hour. Radiating from that notable centre of art, Munich, the fine arts have spread throughout the country; and in a town like Nürnberg, where the mind of the visitor is insensibly carried back for centuries, Mediæval and Modern art now meet face to face in rich abundance. The management of matters concerning art in the kingdom of Bavaria is one of the duties which belong to the Department of the Minister of Education, so far, at least, as any minister has to do with this matter. To what extent the duties of a high public official are involved in fostering art and managing its teachings will be sufficiently shown in touching on the various systems for its encouragement. Suffice it now to say that the Minister of Education is also, so to speak, the head of the art department.

Turning next to the teaching of art, the first and principal institution is the Bavarian Academy of Fine Arts, which was established in August, 1846. A sum of 147,000 marks is allotted annually from the State exchequer to the purposes of this academy; but Mr. Hill, the British Minister at Venice, in his interesting *resumé* of the attitude of the State to the arts in Bavaria, gives no details of its organisation. It is, however, devoted to the teaching of the arts so as to educate painters, sculptors, and architects. Subsidiary to this chief academy come the Royal School of Industrial Art in Munich, the School of Industrial Art at Nurnberg, that ancient city which is worth many miles of travel in itself. Longfellow has excellently described its character in one of his best and best known lyrics:—

"In the valley of the Pegnitz, where across broad meadow lands
Rise the blue Franconian mountains, Nuremberg, the ancient, stands:
Quaint old town of toil and traffic, quaint old town of art and song,
Memories haunt thy pointed gables like the rooks that round them throng.
Here, where art was still religion, with a simple, reverent heart,
Lived and labour'd Albrecht Dürer, the Evangelist of Art;
Everywhere men see around them rise the wondrous world of art,
Fountains wrought with richest sculpture standing in the common mart."

There is also in Munich an establishment well worthy of notice—a school of industrial art for girls, and in addition another institution of a wider character,—the Maximilian Institute. A short description of these establishments will be neither uninteresting to English readers nor without its lessons. The object of the Munich school, as mentioned in its statute of incorporation, is to teach the scholars to practise some one kind of useful or industrial art. Its object is thus twofold. It is primarily an institution for the benefit of trade apprentices and artisans, and also a preliminary school to the Academy. Thus the course of teaching comprises scientific lectures; studies and exercises in art and art technicalities; copying, drawing, colouring, and

sketches for all sorts of decorative ornaments, especially for woven fabrics, and for the colouring of tapestry and carpets; copying figures from the antique and from life; decorative drawing; modelling in clay and wax for decorative purposes; carving and making models for small articles of furniture; chasing, graving, and enamelling; the study of perspective and shading; and the history of art. In this latter department great attention is devoted to the study of architecture; for, in addition to lectures upon the subject of architecture and engineering generally, the higher branches of this art, the architectural styles of antiquity and the Middle Ages, are touched on, and facilities are given for acquiring a proficiency in planning large public and private buildings, and a knowledge of what in Germany is known as "monumental architecture." It will be evident, from this short *resumé* of the objects of the so-called industrial school, that it has a much wider range of teaching than would be implied from its name alone.

The working period of the year lasts from the 1st of October to the 31st of July, but no one is admitted under fifteen years of age. The cost of the education is almost nominal; one florin (1s. 8d.) is paid by way of entrance-fee, and an annual sum of five florins for the course, and even this fee is remitted if it can be shown that the applicant is unable to pay it. The school at Nürnberg is almost similar, except that the course is divided into two terms, and the annual payment for those who are not natives of Bavaria is ten florins, and 8d. a term is also paid for the use of drawing materials. Both these schools, in fact, much resemble the clock-makers' school in the Black Forest, which has done so much in recent years to retain the pre-eminence of that district in the delicate work for which that country has so long been celebrated. It would have added to the interest of this description if the report from which we take these details had given the number and social standing of the pupils attending these schools; for it is obvious that though the expenses are so small, they are intended by the wideness of their teaching to be used by all who wish to learn art, whether by the youth from the castle of the noble or from the woodman's cabin in the Alps, where the long winter's day is spent in wood-carving. These industrial schools are under the immediate control of the Minister of Education. The girls' school at Munich is similar in its objects and in its course of study, though this is not quite so wide as in the boys' schools. These industrial art schools, in addition to the sums obtained from the pupils' fees, receive from the State a sum of rather more than 150,000 marks.

The Maximilian Institute is subsidiary to the State schools, but differs from the Academy in being a private corporation. It was founded so recently as 1864 in memory of King Maximilian II. Its object is the promotion of those forms of industry which require a considerable degree of art-education for their proper execution. This object is sought to be obtained not only by ordinary teaching, but by giving scholarships, or rather stipends, for one year, to deserving students who are recommended to the Minister of Education by the masters of the school. These prizes are of a twofold character, travelling and school: the first of the value of 400 florins; the second, 200 florins. In the first case both the line of travel and the work are fixed by the director of the school. In all probability the chief value of these annuities is that capable students have the opportunity of studying for a year longer than they would ordinarily be able to do. But if these travelling stipends are much used by the artisan and operative class it must clearly have a large effect in liberalising and enlarging their ideas on art and industrial matters, and might be well imitated in this country, where insularity is in many respects an industrial evil.

We now come to what may be termed the indirect education of the nation. This is done by means of devoting sums of money to the encouragement of art and by means of galleries of art.

In the first of these classes, a sum of rather more than 2,000*l.* a year is devoted to the encouragement of art, which is appropriated to the purchase and erection of works, paintings, and sculpture of a monumental character. This object is practically carried out by inducing the parishes (*gemeinde*) to erect or purchase works of art, to which the State gives a large or a small contribution; by this means a general and wide-spread interest in artistic matters is created throughout the country. This fund is nominally under the control of the Minister of Education, but practically of a committee of experts, which consists of two painters, two sculptors, and one architect, and two "reserve" members. Of these persons the Academy of Fine Arts and the Munich Society of Artists choose each one of each class, whilst the architect is nominated by the Society of Architects and Engineers. It should be added here, that all plans proposed by the parishes (*gemeinde*) have to be submitted to this committee, who act for the Minister of Education. Much, of course, must depend on the manner in which this body execute their duties, but the supervision of such a committee, combining official responsibility with private intelligence and culture, must have a valuable influence in improving art in local places, where it would be exposed to the influences of ignorant enthusiasm or opposition. When one observes some of the so-called local improvements in this country, one could wish that some such body would superintend the proceedings of many local committees of selection. This committee also allots stipends and prizes to the Academy students, and pensions to those artists whose meritorious careers have been terminated by the creeping on of old age.

Another committee, of seven members, consisting of officials and private artists, under the control of the Director of the Royal Picture Galleries at Munich, superintend the Bavarian National Museum, and the other celebrated galleries of Munich, Nürnberg, and Augsberg. This committee, under the able lead of its present chief, Dr. von Refner-Alteneck, has been of invaluable service in spreading a knowledge of the fine arts, not only in Bavaria, but in other countries. For, however perfect the purely teaching system may be, its value is greatly minimised without a corresponding efficiency in the arrangements of examples of what has been taught. To a foreigner, it hardly seems to be wise to have two committees for the encouragement of art and the superintendence of the galleries, as it must be apt to engender jealousy, and tend to a want of system.

It is obvious that, from what has been said in this and in a preceding paper, both Bavaria and the Netherlands are in some respects superior to England in the systematic form in which the State and the arts are connected, and in the manner in which the growth of the fine arts is encouraged; and it is quite clear that the last fifty years have seen in both these countries a remarkable advance in the interest of the Government in the arts, which is a pleasant contrast to the equally great strides made during the same period in the warlike matters.

CONSTANTINOPLE: AN ART THOUGHT ABOUT IT.

It would be, perhaps, impossible to find a greater contrast between the past and present, and between old ways of work and artistic action, and those now in vogue, than is to be found in an antique and unimproved, or but partially improved, town or city. Nor can there be a greater difference between two things than between the plan of an antique town and that of a modern one, wherever it may happen to be. It will certainly not be necessary to go far for proof of this dictum, for but a slight glance about us is enough, and by going but a little farther and deeper into matters, it gets to be yet more and more convincing and striking, and full of instruction. We might cite not a few proofs of this by mere reference to the new and old in town building here and all about us; nay, in London itself—between its quite new and improved portions and the remains of what it at one time was. Compare the west with the east end of huge London town in the laying out and planning of its streets, and in methods of house planning and building. Improvement there doubtless is, and certainly ought to be, though there may be difficulties and doubts here and there; but of the differences between the two ways of work there can be no sort of doubt.

And if this can be seen with so much plainness even here where all things are new, and where all that is of the past is so rapidly disappearing, how much more so is it when we go to such a spot as Constantinople, wherein is so much that is veritably of the past, and all but elsewhere forgotten, but yet existing and living, not as mere antiques, but in daily and hourly use and want. Anything almost to be got at by curious search, or by accident, about so famous a spot must be now of more than usual interest, for who can tell, or guess even, at the final outcome of what is daily going on in relation to it. It is worth a few words, that is certain, even if but of somewhat doubtful aspect here and there for in the act of getting rid of so much that is needful to be got rid of, in the ways of the old world, there is danger of destroying not a little that is good, and that cannot, as things are, be in any way adequately replaced. Constantinople city is full of such, and the more it is examined in detail the more there is yet to be found in it that is of itself. Though the fact be familiar enough, it is as well to note that Constantinople is a sea-girt city. On the south there is the Sea of Marmora, and on the north the Golden Horn. No spot for a city could be more happily chosen. "I could hardly retain power to breathe," says the author of "Anastasius," when he first saw it, "and almost apprehended that in doing so I might dispel the glorious vision, and find its whole fabric only a delusive dream." But indeed, there is no fear of that, for the plan of its building, whatever its inconveniences, puts doubt out of the question; the accidents of building, if we may use the phrase, make common place in it, or about it, impossible. We would here give a few details. No two things can be more unlike than a map of a modern and "improved" town, and one of Constantinople. It is impossible to find a straight street in it. In an antique map of it which lies before us such a one cannot be found, a little bit only here and there. It would almost seem as though this strange city had been built, not street by street, but house by house, each house coming in, so to phrase it, separately, and put down just where the fancy of the owner guided it, and there left it, the pathway only being looked to and kept open! The oddest of all possible turnings and beginnings, and endings, are perpetually met with. These curious streets, too, have no names, for the most part, and the bye-lanes or ways none. A mosque, or the aqueduct, or the site of a great fire, may help to guide, but there is nought else.

It would, indeed, be difficult to understand how this magnificent site for an imperial city could have been missed, not only in its first beginnings as a human settlement, but by those who have successively occupied its ground; and it is hard to see how a regular system of house building could be made to suit it so well as that which has been thus accidentally adopted. The very waterway itself, dividing as it does the city into its three divisions,—Stamboul to the south, Pera to the north, with the Golden Horn between them—the harbour of Constantinople—and Scutari to the east, with the Bosphorus dividing it from the two first-named divisions,—these alone make this famous city unique, and give to it a character special to itself,—a world-famous city.

We do not here pretend to do more than to make note of a few matters not as yet, perhaps sufficiently dwelt on; for the time may, perhaps, come when this city, as it even now is, will give place to that course of improvement which is now-a-days so fast making all things and places alike, and copies of each other. This, it needs hardly be said, has been commenced even here, and is slowly, it may be, going on, especially in the immediate neighbourhoods of the Imperial Palace and the Government Offices and soldiers' quarters. The great and devastating fires, too, which every now and then occur, destroy whole neighbourhoods, and leave, as may be seen on any ordinary map, large spaces of vacant and waste ground. There is one such now to the north of the city, and a still larger one to the west,—indeed, stretching from one end of it to the other, leaving but a few narrow streets to connect the city itself with that part of it which abuts on the walls and fortifications. There is another, too, all but as large, to the east, between the Valideh Khan and the quarter in which the Seraglio and its gardens are situated. Very much that was noteworthy must have been destroyed here, and many a curious Byzantine remain and Turkish irregularity must have perished in the flames. Many of these huge and all-wasting fires would seem to have been caused purposely, and it is impossible to suspect otherwise here and there. A recent frightful conflagration all but touched the mosque of Santa Sophia, and the equally remarkable, though not so well known, mosque of Sultan Ahmed.

Nothing can be more expressive of the place itself, or more in harmony with the planning of the city, than the Constantinopolitan house architecture. We are speaking here of the genuine and purely native work, and not of the imported and "improved" ways of doing things. A gateway,—as to a mosque,—is as thoroughly

indigenous and Turkish a work as one of its minarets; and the narrow street in which it is built, and the houses in it, all harmonise together, and form a picture *per se*, unlike anything else in Europe. And then the style and planning of the houses are purely Eastern; every house is a distinct idea, and built apparently for some special and individual use and purpose. There are no rows of equally built and regularly disposed houses in the older quarters of the city. It is the Past in the Present! We are here referring, and it is necessary to note this, to the purely native work, as it yet exists in the city itself, in Scutari, on the opposite shore of the Bosphorus, and in a corner of Galata, and where the irregular street-planning, or rather absence of all planning, yet exists. To the north of Galata, or Pera, all is *new*, as is so much in and about the Royal Palace and gardens. For a mile round Pera all is modern, and of to-day, and the ground laid out and covered with "villas" and gardens, as are also the shores generally of the Golden Horn and the Bosphorus. It is in the purely *native* art and system of house building, and in "Turkish" art, that the interest lies, as we are here looking at it.

It would be difficult to characterise distinctly, without copious illustrations, the architecture of Constantinople, or to do anything like justice to it in so few words, but a little may be better than nothing. Turkish art, like so much else that comes of the past, and is special to a race, is fast disappearing, and giving place to that generalised idea of art which is fast spreading everywhere. In it, and we here confine ourselves to the inherently national work, we may see the rough wooden construction which makes up the architecture of the narrow ways and streets, and which, details differing, was common once on a time more or less over all Europe. This by a natural process of growth, and with added details, goes far to make up the more imposing architecture of the better and more important parts of the city. The growth from the one out of the other is here in Constantinople plainly enough visible. The Turkish builder has thought for himself, at least here. And next, and as a final outcome of it, there is the architecture of the mosques, and gateways, and other more especially public structures. Some of the entrance-gateways to the mosque precincts, such as that to the Santa Sophia, show special and individual characteristics, and are in idea thoroughly Eastern, and of the race who built them. Language, indeed, itself cannot more thoroughly and completely individualise and characterise a people than do their art and architecture, if they be but left to their own special course and growth. Evidence of this there is here, it is certain, but not so much as might be.

We have thus ventured to call a moment's attention to the individuality of the Turk as an artist and architect, and to hint that he has powers of his own, competent to produce work special to himself, and that this work is worth the looking at, if not the attentive study, of the student of art. We do not intend by this that Turkish art or architecture is to be copied and reproduced in other countries, and under other conditions, but that it should be looked at for its own special sake, and thus to show that those who have produced it have thought for themselves, at least here. What the fate of the Imperial city may be in the future who shall venture to say? But while it yet lasts in its at least partial integrity and individuality it is well worth the going through and the looking at; and it is a pity indeed that we know so very little about it in detail. We may look with some wonder on a map at the tortuous windings of its irregular and narrow streets, interrupted only by a mosque here and there, and may wish in vain to see a little more in and about the old Serai, and the more secluded and less known of the mosques round about it,—but little more of certainty is to be gained thus. An accurate map, even, is a desideratum, strange to say; and we have none of those elaborate measured drawings of its buildings which most other European cities have afforded. The City of the Sultan is well worth a little active painstaking at the hands of those who have opportunities and capacities for the work.

Testimonial to Sir John Steell, R.S.A.—On the 23rd ult., at a meeting of the acting committee of the proposed national testimonial to Sir John Steell, R.S.A., it was reported that the subscriptions promised to that date amounted to 1,930*l.*

PROPOSED GREAT IRRIGATION WORKS FOR THE RHONE VALLEY.

FOR some years the breeding of the silkworm and the cultivation of the vine and of the madder-plant in the valley of the Rhone have suffered from various causes. The result has been a loss in the three branches of industry of about 3,200,000*l.* yearly. It may be guessed what an amount of suffering such a reduction must be causing to thousands of families depending for their support upon them. M. Aristide Dumont, civil engineer, has proposed to cover this deficit by raising the cultivation of the soil and the breeding of cattle, as well as providing a remedy for restoring to health vines attacked by Phylloxera, by means of large irrigation works. His project, including the construction of an irrigation canal 310 miles long, is ably set forth in an article in the *Revue des Deux Mondes*, by M. F. Vidalin, of which we propose to give a short summary.

The importance of the project is evidenced by the facts that it has already been submitted to the Conseil des Ponts et Chaussées, that twenty-four local committees have been formed, instructed to collect data as to the consumption of water and its distribution, and that subscriptions have been received for the irrigation of 13,000 hectares (32,125 acres) of soil. It is pointed out that those most interested in the great undertaking are the railways, on account of the increased transport of agricultural produce; the landed proprietors, on account of the greater yield of forests, meadows, and vineyards; the different communes, by increasing the facilities for the supply of water; industry generally, by placing larger moving power at its disposal; trade and commerce, to both of which a new means of communication will be opened; and finally, the country as a whole, by larger receipts flowing into the public exchequer in the shape of increased tax-paying power.

The cost of construction of the principal canal and its feeders is estimated at 4,800,000*l.*, of which the State is to contribute 1,200,000*l.*, equal to a third of the outlay for constructing the principal canal. The remaining 3,600,000*l.* are to be raised by subscription, to be paid back in ninety years, in annual instalments of 54,000*l.*, with interest at 4½ per cent.

The canal is to branch off from the Rhone below Vienne, near the rocks of Condrieu, and thence to follow the left bank of the river, with a fall of 0·24 mètre per kilomètre (15·26 in. per mile). The fall of the Rhone exceeding this ratio, a considerable difference in the two levels would soon be established. The canal is to extend above Valence and Montbéliard, to cross at the defile of Mornas in large syphons to the right shore, and to draw on its further course towards the most important towns of Southern France, Nimes, Lunel, Montpellier, Beziers, and Narbonne. With a length of 310 miles, it would affect 220,000 hectares, or 543,650 acres, of soil to be irrigated, and offer a water supply to the 500,000 inhabitants of the above-named towns.

It is proposed to take from the Rhone 30 cubic mètres (6,600 gallons) per second, and the same quantity from other rivers met with by the canal in its course. It is shown that the flow of water of the Rhone is 400 cubic mètres (88,000 gallons) per second, that the Cavour Canal takes 110 cubic mètres (24,210 gallons) from the river Po, and that the canal constructed at the foot of the Himalayas takes from the Ganges seven-eighths of its volume, or 44,000 gallons per second, in order to irrigate the so-called Doab for a length of 372 miles. The whole consumption of the Rhone Canal during the summer months, from April 15 to September 15, is estimated to be 930,000,000 cubic mètres, and during the remainder of the year 700,000,000 cubic mètres, corresponding to the proportions of the flow of the Rhone, which, as is well known, is mainly fed by the glaciers sending their waters down valley during the hot season of the year. During summer the meadows, during winter the vineyards, are to be irrigated. The yearly closing of the canals would have to take place in winter.

If for a surface representing a hectare 10,000 cubic mètres of water are reckoned for irrigation, only 62,200 hectares could be watered in summer, and in case of more being required, the contents of the Rhone alone would have to be drawn upon, as it would not be advisable to withdraw more from its tributaries, on account of the works the power of which they supply. The requirement for a hectare of vineyard is estimated to be at least 6,000 cubic mètres.

The rate of payment per 10,000 square mètres to be irrigated is fixed at 63 francs, without regard to their mode of cultivation; in Upper Italy it is stated to be 75 francs. Irrigation would raise the yearly rent of a hectare of dry soil from 50 francs to from 150 to 200 francs. The power to be let out for industrial purposes for fifty years is estimated at 5,000 horse-power, a rent of 200 francs per year and power being expected. It is hoped that, in consequence of the great saving effected (a horse-power, if steam is applied, costing at least 500 francs), a large number of industrial undertakings will spring up between Vienne and Mornas, along the Paris-Marseilles line of railway. The new irrigation canal would offer to navigation between Condrieu and Mornas a way of transport, nearly 50 ft. wide and 10 ft. deep, which, with little extra cost, might be made one of the most perfect waterways in existence, and which it might be desirable to continue as far as Marseilles and the Mediterranean. Its execution would ensure to sea-going ships of not more than 300 tons burthen the traffic between Havre, Paris, and Marseilles, compete with the St. Gothard Railway, and be to France a peaceable revenge for Sedan.

Of the great works to be undertaken in connexion with the canal, the great syphon nearly two miles long, and to be constructed of sheet-iron, near Mornas, is especially mentioned. The inlet to the pipes is to be situate in a gigantic reservoir placed 230 ft. above the level of the valley; the pipes are to cross the Rhone on a bridge, and the water conducted in them is to be emptied into a large basin on the other side. The cost of the syphon is estimated at 280,000*l.*

WASTE OF WOOD.

CONTINUING our observations on the decrease of wood, recently commenced (p. 526, *ante*), we would say that a discussion of this economically important subject becomes all the more valuable if it is associated with the consideration of measures to be taken against it. There is no longer any doubt that the stock of wood in all countries has been steadily declining, nor that the conditions which have caused this decrease are still in operation, and that consequently also in the immediate future the consumption of wood will exceed the growth. It has been said that the price of a commodity is the best and safest regulator. If, for instance, the consumption of grain exceeds its production, a rise in prices is a natural consequence, which, on the one hand, tends to restrict consumption, while on the other production is stimulated, thus restoring the balance. But this comparison will not hold good in the case of wood. In the first place, a long space of time elapses before wood grows to such proportions as to make it available for the uses of life and industry; great difficulties have to be surmounted, moreover, and large sacrifices of time and money have to be made before tracts of land which have once been denuded of trees are rendered once more fit for the profitable production of wood. A very good example of this is the whole of southern Europe.

But the consumption of wood cannot be restricted by legislation or regulations. An attempt of this kind would probably land us at the point of the, to us, ludicrous laws of dress issued during the middle ages. As long as wood anywhere is the cheapest and most convenient material for building of any description, so long will it be so used; the only effective check to waste will be the normal rise in prices. A proof of the correctness of this view is supplied by the use of fir sleepers, in place of those of oak, the latter wood having become too dear; and the time is not far distant when, with more perfected methods of impregnation, other quicker-growing kinds of wood will be employed.

Although it is, therefore, impossible to operate against the waste of wood by legislative means, much may be effected by instruction and by a good example, and in this endeavour the press may render efficient aid. It should be the aim of every educated person, as one of our contemporaries remarks, to convince landholders and farmers that the spoliation of woods and forests by grazing cattle in them, and the use of leaves for litter, is an economical mistake, and is irreconcileable with a high state of agriculture. The following quotation from the well-known work of H. Settegast, "*Die Landwirthschaft und ihr Betrieb*," will show what enlightened agriculturists think on the subject:—"Where agriculture is not self-supporting, but, to be remunerative, is to be succoured by begging from woods and forests, or by waging open war against

them, we have to deal with an unsatisfactory condition, with a pinching poverty, devoid of intrinsic merit, and without claim to existence." It need not be further mentioned here, because too well known, what great hindrances the grazing of forests and the use of leaves for litter are to the production of wood. Agriculturists ought further to be made to understand that disafforesting and the conversion of the ground so gained into arable land, if the soil is at all poor, is also an economical mistake, because its strength, without manuring well, — manure being generally scarce in such districts,—is soon exhausted, and the arable land thus obtained in a very short time produces less than formerly the forest. We should further endeavour to enlighten agriculturists that they are advancing their own interests if they diligently plant with trees every eligible place, without deteriorating the arable land.

ROOM VENTILATION.

MOST persons admit that rooms should be ventilated, and yet in practice room-ventilation is neglected. There are a door, a window, and a fireplace to most rooms, but no special means to change the air at the level of the ceiling. Hence the oppressive condition of the internal atmosphere of a sitting-room or bed-room after occupation. It has over and over again been asserted that burning gas in rooms injures books, pictures, and furniture. A recent inquiry into this question has, however, shown that it is the excess of heat caused by want of ventilation, and not necessarily the burning of gas, which has caused the injury. The temperature in a room of 12 ft. vertical height will frequently vary 20°; that is, will be 60° at 5 ft. from the floor and 80° at the ceiling,—and in many instances, on special occasions, the ceiling temperature will rise to 100°. Libraries have been examined both in America and in England to ascertain the cause of rapid decay in the bindings, both where gas has been in use and where not, but where the ceiling temperature has been high for want of ventilation, and in both cases the injury is reported to have been due to the high temperature and baking effects of the heat rather than to the gas or to any of its products, as sulphur.

We shall some day arrive at the conviction that every room, public or private, must have means to change the air at the highest points of room, water-closet, or staircase, without causing a direct draft; and if proper openings are provided, protected, and attended to, there will be less of injury to books, pictures, and furniture, as also fewer headaches.

The question may be asked,—How shall the ventilation be effected? Well, this will depend upon local specialities and fancies. There are Sherringham's, Tobin's, and Watson's, as also many other modes, patented and not. For bedrooms an opening from the room to the corridor outside, protected by perforated zinc, will answer, and at the top of a staircase there may be means for permanent ventilation round the skylight, or an opening through the ceiling. For cloak-rooms, water-closets, and at the top of staircases, there may be fixed openings which cannot be closed. The writer and some of his personal friends in town and country have had such openings, winter and summer, for more than twenty years, direct to the open air, with nothing but permanent benefit. The inlet is so arranged as not to permit of a direct draught which shall inconvenience. Colds arise and are the result not so much from temperature as from injudicious and underclothing,—thin shoes, bare necks, and light dress,—when special protection to secure bodily warmth is required: low temperature in a bed-room better fits healthy people to endure low temperature out of doors. Ventilation, if a direct draught is avoided, seldom gives cold, and when it does underclothing is to blame,—a warm shawl would have been a safe protection. Our dwelling-house construction is too air-tight; plaster and paint make the top of a room an inverted hot-air receiver.

Royal Albert Hall. — Amongst various events fixed, the examination of the Cambridge Higher Examination of Women will be held in the rooms of the Royal Albert Hall, from June 16th to 23rd. The Sunday organ recitals, we are glad to hear, are to be resumed. Mr. H. H. Statham will give a short series, commencing on Sunday afternoon, the 17th. Tickets are easily obtainable from seat-owners.

THE KOLOWRAT-RING, VIENNA.

Of the nine Rings, or *boulevards*, forming the *Via triumphalis* of Vienna, reaching from the Augarten to the Aspern Bridge, and joined at their Danube ends by the Franz-Josephs-Quai or Embankment, the Kolowrat-Ring is the only one bearing the name of a family. The Börsen-, Schotten-, Burg-, Opern-, Kärntner, and Stuben-Ring have taken their names from the old quarters of Vienna bordering on them or from public buildings erected on them. The Franzens-Ring recalls the memory of the Emperor who created near it the Volksgarten, and erected the Theseustempel and the Burgthor. The sponsors of the Kolowrat-Ring are an old Bohemian (Sclav) family, able to make a respectable show of men celebrated in the Austrian annals of the army, the State, and the church, whose town mansion was situate not far from the Ring which bears its name, and which went down, like Northumberland House in London, before the exigencies of public improvements; in the case of the Kolowrat mansion at Vienna, its downfall was required for the enlargement of the city circle. The Kolowrats are reported to have arrived in Bohemia with Lech, the first prince of Poland, who is said to have come from Croatia as early as the sixth century A.D. They certainly are in the possession of authenticated documents in the family archives dating from the year 1000. In 1590 they were raised to the dignity of Barons of the Empire, and continued to flourish in two branches, the Kolowrats of Krakowsky and those of Liebsteinsky. The latter branch died out in 1861 with Count Franz Anton, the powerful Minister of State, and the rival of Metternich. This most eminent member of his stock conferred great benefits on Bohemia, as president of her estates, and enjoyed the reputation of an able organiser and administrator. He is the founder of the Bohemian National Museum, to which he also left his valuable library, containing 40,000 volumes. To his honour it ought to be recorded that, while Minister of State, he advised the Emperor Franz I. to exercise clemency towards the Italian Carbonari detained at Spielberg, the well-known rock fortress and state prison near Brünn, in Moravia. Assisted by such men as Hartig, Pillersdorf, Kübeck, and Ficquelmont, all of more or less advanced views, he pursued a liberal and progressive programme in his home policy during his administration, which he conducted from 1826 to 1848, when he was compelled to retire in consequence of the revolutionary movements. A Count Kolowrat-Krakowsky, who died a few years ago, was Grand Prior of the Bohemian Grand Priory (the name of Austro-Hungary in the official language of the order) of the Sovereign Order of Maltese Knights. His youthful nephew and heir was unfortunate enough to kill in duel a young Prince Auersperg, who had insulted him in a fit of jealousy.

The Kolowrat-Ring is one of the smallest links in the handsome cestus encompassing the waist of Vindobona like a glittering jewel. One side of it is formed by seven, the other by only five mansions, which are nearly palatial, as will be seen from our illustration of part of it. It takes up exactly one-sixteenth of the whole extent of the Ring streets; its two principal buildings being the Adelige Casino (Club of the Nobility), and the palace of Archduke Ludwig Victor, the principal façade of which, however, is turned towards the Schwarzenbergplatz. A severe critic may say of the remaining buildings in this Ring that they are simply four-storied Ring street houses, the erection of which falls into the first years of the enlargement of the city, and of which most bear unmistakably the stamp of insipidity characteristic of the architecture of that period. A display of columns, balconies, terracottas, caryatides, balustrades, oriels, and pediments, decorated with statuary, cannot deceive the beholder as to the tasteless and pattern-like character of those barracks built with a view of realising the highest rents. But the architecture of that period has one redeeming feature, compared with the latest creations of Vienna architects,—they rest upon their own walls, and not upon stilts reaching through two stories, between which goods are ostentatiously displayed in shop-windows. It need hardly be emphasised that the ground-stories of the Kolowrat-Ring do not serve as living-rooms. Shop follows upon shop, and *cafés* and *restaurants* alternate. But the brilliant Ring street (unlike the Paris boulevard) is not a favourable site for business. The best houses and firms who have moved their businesses to the Ring are mostly sorry for it. The finest shop in the Kolowrat ring is undoubtedly the depôt of the Société Commerciale Française, whose gorgeous furniture, bronzes, carpets, and upholstery stuffs give rise to many heart-burnings and vain desires. The most popular shop is that of Gudera, of Leipzig, whose rich selection of exotic animals is continually attracting crowds of the curious. The Kolowrat-Ring is finest where it ends, or, rather where it begins at the corner of the Schwarzenbergplatz, towards the city. From this point a view is obtained such as the Ring street, at present, until its completion, does not offer again. Here the Schwarzenbergplatz and its narrower continuation, the Schwarzenbergstrasse, leading into the interior of the city, crosses the Kolowrat-Ring and Kärntner Ring, which here meet at right angles. In front of the beholder is the harmonious square, with the equestrian statue, by Hähnel, of Prince Schwarzenberg, the general commanding the allied armies at the battle of Leipzig. To the right rise the mansions of Baron Werthheim, of notorious celebrity, and of the much talked of and still cleverer Ritter von Pont-Euxin (who, under his real name of Ofenheim, figured, about two years ago, unenviably in the celebrated bank swindle case, of almost Titchborne-trial dimensions). To the left are the building of the State Railway Company, the mansion of the banker Wiener, and the palace of Archduke Ludwig Victor. Towards the background, on a gently rising elevation, stands the summer residence of the Schwarzenbergs, at the foot of which, in the midst of a still young park, a fountain sends up, on fine summer evenings, a mighty crystal column 125 ft. high. This fountain is a present of the contractor for the Vienna waterworks, Mr. Gabrielli, to the city of Vienna. To the right of the square, next to the Werthheim mansion, in which the Turkish ambassador has taken up his residence, marking the beginning of the Kärntner Ring, rises grandly the Hôtel Impérial, formerly the Würtemberg Palace, as the coat of arms supported by two deer at the pediment shows, now the favourite hostelry of crowned heads, their heirs-apparent, and ambassadors. To the left of the beholder, at the palace of Archduke Ludwig Victor, the Kolowrat-Ring opens, which seems to be prolonged to the Danube by the Park-Ring and Stuben-Ring, extending in a straight line. On the right side of this portion of the Ring, the end of which disappears behind the far horizon, after the short extent of the Kolowrat-Ring, the green of the Stadtpark predominates, a refreshing oasis in the midst of the dusty metropolis. This spot is one of the most lively parts of the Ring street, for here the most frequented routes cross each other. During the last few years it has become the Corso of the Viennese. Especially on Sunday afternoons, and also in the evening hours of fine week days, crowds assemble which, at least for hours, assume the dimensions which one is wont to see on the Paris boulevards. If once the still numerous gaps on both sides of the Ring street between the city and its suburbs are filled up by houses, the traffic will be still greater, but still at present it lacks the conditions for the development of a lively intercourse. Any one wishing to form an idea of what the normal life in years to come will be in the Ringstrasse of Vienna should visit the Kolowrat-Ring on a fine spring or autumn day. The stranger especially, if under the guidance of a well-informed *cicerone*, will be rewarded with passing in review all the celebrities of Vienna, both of the male and the female sex.

AN INSTITUTION FOR MANCHESTER.

THE foundation-stone of an institution for the Adult Deaf and Dumb in course of erection in Grosvenor-street, Manchester, was laid on Saturday, the 2nd inst., by Mr. Hugh Birley, M.P., the president of the society. This building is being erected by Messrs. R. Neill & Sons, at a cost of about 3,500*l*., from the designs of Mr. J. Lowe, Manchester, which were selected in competition.

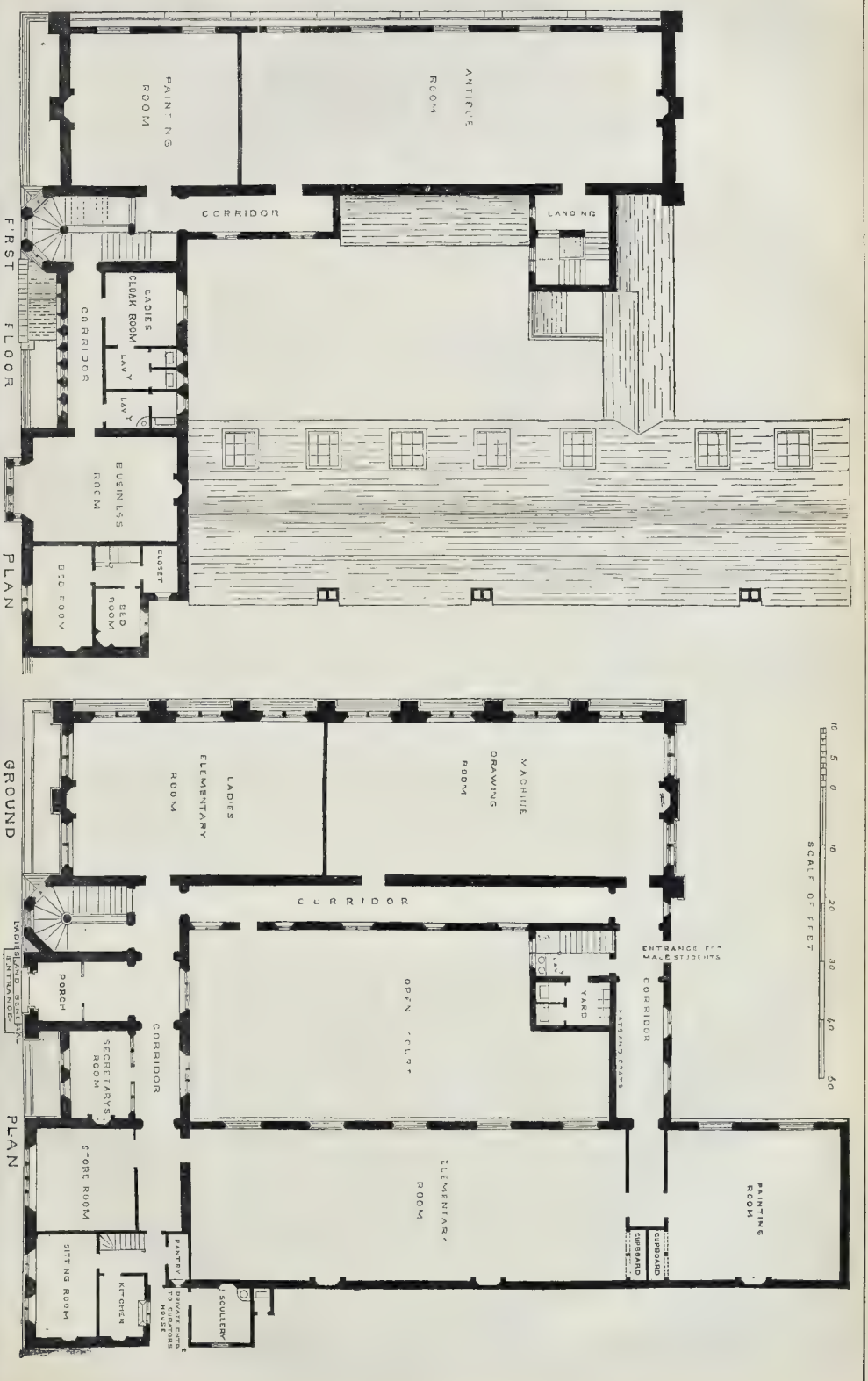
The principal elevation, fronting Grosvenor-street, is faced with Yorkshire stone, and is somewhat ornate. The building is designed in the First Pointed style of Gothic architecture, and internally is arranged in the basement as a gymnasium; on the ground-floor as a reading-room, coffee-room, secretary's office, class-room, and conveniences. The upper floor is devoted to a lecture-hall, with galleried floor. It is octagonal in plan, lighted from the roof, and has a vestry and other requirements.



PART OF THE KOLOWRAT-RING, VIENNA.



DERBY SCHOOL OF ART.—MESSRS. WALLER & SON, ARCHITECTS.



DERBY SCHOOL OF ART.

DERBY SCHOOL OF ART.

IN arranging the plan of this institution care was bestowed on those points which are essential for the special work to be carried on there, in obtaining the best possible light for all drawing-rooms, proper arrangement of the various rooms with regard to their several uses, and the access required to them, both under ordinary circumstances and at the time of any exhibition of works of art, in the separation of the sexes, and the warming and ventilation of the whole school.

The architects, Messrs. Waller & Son, of Gloucester, are understood to have made the arrangements of art and science schools a special study, and from previous experience in such work, and a careful examination of the various buildings erected for such purposes, they have endeavoured to combine the several requirements in the present edifice.

The entire building consists of two wings, having an open courtyard between them, so arranged as to obtain a north light for all the drawing-rooms. The wings are united at the east and west ends by corridors, connected with the necessary offices, staircases, and entrances. The elementary schools, devoted to the teaching of the younger students, are on the ground-floor, so that the more advanced pupils only need have access to the first-floor.

The several rooms are planned with a view to keep the sexes as distinct as possible, all rooms for the sole use of the ladies being in the front of the building, and near their entrance, and those used by males being at the back of the building, and near their entrance. The rooms used in common are accessible from both ends by separate doors, and those on the first floor by separate staircases also.

Only the wing on the north side is at present being built, the plan being so arranged that the buildings may be erected in sections, without impairing the usefulness of any one portion, either when first put up, or during any subsequent addition. This allows of additions being made as the requisite funds are collected.

The ground-floor consists of a porch and entrance-hall in the centre of the building, facing Green Hill, opening on the front corridor, but shut off from it by means of an inner glass screen. Communicating with the front corridor, on the north of the entrance, are the principal stairs, ladies' elementary room, and a passage to the machine-drawing room and back corridor. On the south side of the entrance are the secretary's room, storeroom, elementary room, and cottage for curator, this latter being so placed that the curator may have easy access to the front door, and all other parts of the building. The accommodation will consist of a living-room, kitchen, pantry, staircase, private entrance from the street, and a scullery, and w.c. placed in the yard outside the building.

The back corridor, in which is the male students' entrance, communicates on the north side with the machine-drawing room, and a passage to the front corridor, with the staircase to the first floor for the use of male students, and with their lavatory, &c., on the south side, with the elementary and painting rooms. In this corridor on the south side of the staircase is a recess for hanging male students' hats and coats.

The first-floor is approached from the front corridor by the principal stairs, on a level with the first landing of which, and at a lower level than the antique and painting rooms, are placed the ladies' cloak-rooms and lavatory; the business-room, with lavatory attached thereto. By placing the ladies' retiring-room on this floor it is effectually screened off from the main entrance, and also from all passages used by the general public or male students. From the upper landing of the principal stairs, the painting and antique rooms are reached. The back staircase gives access to the painting and antique rooms for the male students.

The upper floor of the curator's cottage consists of two bedrooms and a linen-closet, and is entirely shut off from the main building.

The wing containing elementary and painting rooms is only a one-story building.

In the basement provision is made under the front portion of the building for the warming apparatus, coal-store with shoot from the main street, and a cellar for the stowage of packing-cases.

The construction of the roof of the antique and painting rooms is peculiar, and especially arranged for the admission of uninterrupted light, as it partakes of one great curve from the height of the sills of the windows to the apex of the roof, the roof of these rooms and the windows being carried on curved iron principals to allow of this form of construction being adopted. The result is that in these windows the advantages of the ordinary skylight and perpendicular side light are obtained without the great disadvantage of the block caused by the wall plate at the junction of the two. This form of construction has been adopted by Messrs. Waller & Son in the Schools of Art at Gloucester, and has been found to answer well. It has also been approved by the Government authorities.

The front towards Greenhill and Degge-street will be of stone, as being most suitable for a public building, but the rest will be of brick. All the interior work will be substantial, but of the plainest description, with plastered walls and ceilings, which may be hereafter decorated with colour.

The system of warming adopted by Messrs. Haden, of Trowbridge, which has been found to answer extremely well in the Gloucester School of Art and Science, erected in 1871, will, it is considered, be found equally efficient for this institution.

The works are being executed by Messrs. John & E. Wood, of Derby.

ONE VIEW OF THE MANAGEMENT OF INDIA.*

THE position of Indian public works may be best understood by taking, as a starting-point of observation, the amount of surplus revenue available for the improvement of the country, after charges for the obligatory (civil and military buildings, and for the main and across-country roads, have been all defrayed. The surplus would appear to be 1,260 000*l.* It is acknowledged on all hands that India is taxed up to the utmost limits, so that no extension of this sum is obtainable from any farther imposts on the people. The only increase possible is through the guaranteed railways and canals, which now involve an immense annual disbursement under the head of "interest on loans," paying better, and from an improvement of the rate of exchange between gold and silver. Before, however, bringing under review, the classes of works undertaken on the strength of the surplus of 1,260,000*l.*, it is useful to recount the sums spent on the roads and buildings of the country out of current revenue. Lord Mayo introduced a system by which the Provincial Governments and minor Presidencies receive lump-sum grants in aid from the general exchequer of India. These had then to take the management of the roads, jails, and public buildings of all kinds, which were formerly treated as Imperial works, and conducted from the central Secretariat of Calcutta, the Governors of Madras and Bombay having had to refer there for annual grants, as well as the smaller provincial authorities. Local funds in India correspond very much with county rates in England, and are expended in a similar manner; except that there is no State poor-law, nor are there workhouses in India. Some of the money is derived from an extra cess on land over and above the regular taxation, some from tolls and octrois. The grant in aid for the current year is 1,400,000*l.*, and the outlay on works under the exclusive management of local as distinguished from the Imperial Government amounts at a guess to about 2,250,000*l.* annually. It may be noticed that although the apportionment of the grants is conceded to Local authorities, these have little or no power in appointing their engineers. The staff of engineers, as to composition and numbers, is now, just as heretofore, regulated by the Governor-General and Secretary of State; so that the provincial works are, in reality, a bran of the Indian Public Works Department, a local Governments cannot vary at pleasure eith the salaries or grading that have been fixed up a uniform plan for the whole of India. This a great protection to the interests of civil eng neers appointed in England; for if their a vancement were left to the discretion of t civil servants who administer the grants, th would probably receive a check whenever e penditure on other objects than public wor suited the exigencies or bent of the times. is, however, no doubt an obstacle in the way the free employment of the natives of t country in local engineering works. Only tho natives can at present be entertained in th upper grades of the service as civil enginee who are likely to be efficient in all the positio to which they may be transferred, who a willing to serve in any part of India, and forego local and social ties. These, in the actu condition of the population, must be few. consequence, though many of the provinci works are of a petty character, and exceeding well suited to the capacity of natives, sufficient paid to be honest, they are attended to highly scientific officers, whose training an experience would qualify them for the larg and more difficult works of a strictly Imperi character. Since 1872, most of the mil tary works of India have been separate from those of a civil class, and are co ducted in the Bengal Presidency by eng neers, forming a distinct list for promotio The accounts of the military works throughou India are combined, and the total expenditure the current year is expected to be 1,231,985*l.* of which 500,550*l.* will be devoted to new ba racks and other muniments; the rest of th money going to establishments and repairs. Th local and military works, though involving larg sums, are seen to be of an indispensable natur and so closely connected with the mechanism the Government as not to be any more option than in the various countries of Europe. Sligh savings may be made here and there, and larger employment of local native enginee may popularise a part of the Public Work system; but the burden on the revenues wi fall with much the same annual weight. Th surplus revenue is what remains after thes charges have been met, and has already bee put at a little above one million and a quarte sterling. It is this margin which furnishes th security for State-constructed railways, and th Indian irrigation works. Operations may b either confined to expending this sum ever year, or capital may be borrowed at 5 per cent in ordinary times, and laid out in much large sums, so as to produce a wider effect, and ad vance the works rapidly to completion. Bu whether one of these alternatives is adopted, o partly one mode and partly the other, the resul follows that, with present incomings of revenue progress in India is limited by the comparatively small surplus; and directly this is all absorbed Public Works can only bring the country int debt. Of course, if the works paid, the surplu would not be evanescent; and the period during which their construction could proceed would be the longer the more remunerative the works. Engineering enterprise in India has taken tw forms,—those of State-conducted and guaranteed works. It is worth investigating how far th latter class, or guaranteed railways and canals are secured by the revenues. The Minister o Public Works has just stated in Council at Cal cutta that up to the 31st of March, 1877, th capital expenditure on the guaranteed railways ha been 94,416,000*l.* The gross earnings of these railways are expected to be 8,553,300*l.*, and th working expenditure 4,937,000*l.* The guaranteed interest upon the capital amounts to 4,766,000*l.* so that the whole group of railways under guarantee are worked at an annual loss jus now of some 1,149,000*l.* The following table shows on what lines the deficiency chiefly occurs:—

Railways.	Cost per mile in rupees.	Guaranteed Interest per mile per week	Gross Earnings per ditto.	Working Expenses per ditto.	Net Profit per ditto.
		Rs.	Rs.	Rs.	Rs.
East Indian (Calcutta to Delhi, with offshoots)	232,402	223	541	172	318
Scinde, Punjab, and Delhi (Delhi to Lahore, and Lahore to Mooltan, Kurrachee to Kotri)	172,677	166	232	149	83
Great Indian Peninsula (Bombay to Jubbulpore, ditto to Raichore) ..	195,572	188	390	168	222
Madras (Madras to Raichore, ditto to Beypoor)	123,764	124	176	129	47

* See p. 536, *ante*.

It will be seen at a glance that the primary ost has had nothing to do with the unremuner-ive returns, as the cheapest lines are the ost speculative. The reason of the Scinde and adras railways being run at a heavy loss is, idently, sheer want of traffic. The Punjab has dry climate, and comparatively thin population, ith, however, a fairly productive soil. The reat distance to be traversed before a market r raw produce can be reached is against much rn being grown for export; while the situation the province in the most likely part of India become the theatre of war must deter capital om being freely invested in developing the untry. The Punjab has, however, had the ood fortune to be lightly assessed, which enefit conferred by Lord Lawrence was not for-otten by the people of the Punjab during the reat Indian Mutiny. The Madras Railway eems to have only about a third of the traffic of ne Calcutta Railway. This is due purely to ne Presidency being unproductive in that ratio. n Madras territory, the peasantry are yearly nants, paying rent directly to Government ficials; and are of course interfered with by ease in most of their daily concerns. The land taken up in very small lots by cultivators, who ave no capital but what they borrow at 24 per ent. interest; and the consequence cannot fail be that their mode of treatment exhausts the nd. Not particularly fertile in constitution, adras soils require careful tillage and ample anuring, which they do not receive. The native opulation is well-found, peaceable and indus-rious, but possessed of little means. Along the ourse of the railway the landscape is exceedingly are of profitable vegetation, and glares in a fiery unshine. The villages are assemblages of the oorest hovels; and there is a striking absence the exuberance that is to be looked for in a ophical peninsula. It is only on the west coast, here land is held by a fixed hereditary tenure nat the heights are crowned with forests, and ne lowlands are clothed with grass and wave ith palms. Over the greater part of the pre-dency the apparent phenomena are those of ackrent and agricultural neglect. Of course to ring forward crops in such adverse circum-ances, manures, natural and artificial, are re-uired to be rolled along by the railway, in all irections; yet scarcely a ton is moved, and no-ody appears to be aware of the want. The adras Irrigation and Canal Company had its ividend of 5 per cent. per annum guaranteed by ne Indian Government as an effort to remedy ne dismal state of the two worst districts of the residency, Kurnool, and Cuddapah. These are gually hot, miserable, and unhealthy. Much of heir surface is rocky, the deposits are of Cambrian eological formations, and inherently unproduc-ve; whilst almost all the trees there ever were the locality have been cut down for firewood, nd never replaced. There is, therefore, no ade, and the rainfall is scanty and fitful. The ompany have made a beautiful canal, from an ngineering point of view, fully 180 miles long; ut the population, it is found, will not buy the ater, which would cost them from 4s. to 12s. er acre yearly. The reason is that the soil is o poor that it wants other elements besides ater, which the people, if they knew their pro-erties and utility, could not readily obtain. he projectors of the canal seem never to have roubled their minds about the constitution of he land to which water was to be supplied; nt until an agricultural investigation has been arried out, and guidance afforded in raising fficient crops to pay the expenses and yield a rofit, and the use of manure is made popular, he works will be a drag on the finances. Though pen since 1871, it is estimated that the com-any's dues for the present year will only ggregate 12,500*l.*; which is less than must be bsorbed by the cost of management, leaving 0,000*l.* to be distributed amongst the share-olders out of the general taxes of India, as their ividend. The guaranteed works accordingly re now demanding altogether 1,199,000*l.* from he sum available for expenditure on meeting he interest on loans; and it is unlikely that his burden can materially decrease so long as he Punjab is exposed to the risks of invasion, nd Madras remains deforested and fallow.

It is desirable now to pass on to the systems of tate railways and irrigation. These constitute he extraordinary works for which, during the ast seven years, large loans have been con-racted. The chief State railways are:—Lahore o Peshawar; Khundwa to Neemuch, *vid* Indoor, r the Holkar railways; the Indus Valley Rail-ay, from Kotri to Mooltan; the Rajputana Railway, Agra to Ajmere; the Nizam's State Railway, ending at Hyderabad; and the Rangoon and Prome Railway, in Burmah. At the end of March, 1877, there were, it is stated, 800 miles of these State lines open to traffic, and 1,100 miles more were under construction. It is anticipated that by March, 1878, there will be 1,500 miles open and at work. To effect this it is proposed to expend 2,728,000*l.* on State railways during the current year. An idea of the financial result is to be gathered from the consideration that capital to the amount of 14,455,288*l.* has been sunk in construction; while it is estimated that this year, from 1,230 open miles, there will be gross earnings of 675,000*l.*, and net profits of 190,000*l.*; to be tabulated thus for comparison with the statistics of the guaranteed railways:—

	Cost per mile in rupees.	Interest on capital at 5 per cent. per mile per week.	Gross earnings ditto.	Working expenses ditto.	Net profit ditto.
	Rs.	Rs.	Rs.	Rs.	Rs.
State Railways	117,522	113	105	76	29

The aggregate mileage it is intended to construct is put down at 2,550 miles: so that the State railway scheme of India will then have cost 30,066,999*l.*, borrowed at 4½ per cent., returning on current data 395,200*l.* net profit, and leaving 957,810*l.* to be provided by taxation. Sir Andrew Clarke has just expressed before the Governor-General and his council at Calcutta the "wish to see no work of irrigation commenced till those who expected the benefit had either subscribed the capital or had given a guarantee for the interest of the work which has to be undertaken from the loan funds." It seems that up to March, 1877, the construction outlay upon Indian works of irrigation in actual operation has been 10,719,537*l.*, and the net profit for the current year is set down at only 134,867*l.*, or 1¼ per cent. The interest at 4½ per cent. amounts to 482,378*l.*; so that State irrigation involves a money loss yearly of 297,511*l.* It is true that credit is taken in official reports for increased land revenue; and that irrigation works can be made out much more advantageous to the country than this. However, if the Indian Government is unable to dissociate the accounts of irrigation from those of their ordinary rental of land, there will be always a question as to how far enhanced rents have been affected by irrigation; and there will be a suspicion that, as irrigation is now conducted, it is a palliative for radical defects in the Indian agricultural system, quite as much as an improvement standing upon its own engineering merits. Current revenue has, then, in India to defray the balance of interest on capital borrowed for public works, at the following figures, though the canals are flowing and railway-trains running:—

For Guaranteed Railways	£1,199,000
Ditto Madras Irrigation Company	50,000
State Railways	460,487
Ditto Works of Irrigation	297,511
	£2,006,998

The amount of revenue set aside for the interest charges on loans, and applicable to public works purposes, is about 1,777,000*l.*, so that the margin left as surplus is trenched upon, and deducting 229,998*l.* from 1,260,000*l.*, constituting this surplus, the annual public works fund is already reduced to a million, in round numbers, from a million and a quarter. So far, the country appears solvent, and has obtained solid value for the capital expended, although the returns are slow in coming in. Hindustan has been rendered permeable, and the more urgent needs of an exceedingly backward territory will have been fairly met when the schemes in hand are finished a few years hence. But the interesting point to engineers and architects is whether engineering service in India is an expansive or contracting sphere of labour for them personally. The guaranteed railways and canals gave much employment between 1856 and 1871, but upon their completion very small establishments sufficed to keep the works in order, and the surviving engineers had to find occupation where they could. Encouraged by the high price of cotton during the American war, the fixed Public Works establishments of India were enormously increased till from about 360 engineers before the war, the number has risen to about 900 in constant employment, of whom nearly four-fifths have received a training in Europe. The additional engineers were brought out to India mainly to manage the State railway and irrigation works, for which funds have been obtained by raising loans. The revenue assignable to meet the interest still amounts to a million sterling, which gives a run of perhaps seven or eight years at the existing rate of expenditure to the operations of an active and enlarged Public Works Department, supposing the railways and canals continue not to pay. But several causes may curtail the period within which the pace at which the Public Works Department is now working can be preserved. Of late years there have been famines in different parts of India, which have found immense numbers of the labouring classes of the population without any stock of provisions laid by. Money has had to be raised by the Indian Government, not only to keep these necessitous classes alive; but to make up for the loss of revenue that would have accrued by their labour. There being no other permanent resource than the annual surplus, much of the interest of Famine Loans will eventually fall upon funds hitherto available for the edifices of the builder and the constructions of the engineer. Another aspect of the question has to be noticed, quite apart from the occurrence of famines and the loans these entail. Public works have made considerable progress in India, and there are railways or good roads connecting almost all the principal marts. It is clear the majority of the works do not prove at all so remunerative as was to be expected; and that want of produce, with consequent stagnation in traffic and commerce, is the origin of this discomfiture. So that it may be necessary to take breath at an earlier stage than the exhaustion of funds, and turn a large proportion of the capital outlay into channels which will improve the face of the country, and stock the shiny wastes as well as the arable champaign. If engineers are to be fairly prosperous, and realise the anticipations of a career formed when the Indian Public Works Department was augmented, they will have before long to accommodate themselves to what they actually see about them; and address their attention to in many cases novel, but still essentially cognate, branches of practice. When the country is brought up to a condition of productiveness, by an adequate outlay on forest plantations, on manures, and agricultural implements and ameliorations, there will be a chance of carrying out a new series of railways and canals in India of first-rate paying capability.

BUILDING DISASTERS IN AMERICA.

THE failure of a truss in the roof of the New York Post Office, and the fall of the Court House at Rockford, have caused the death of a number of persons. We get the following particulars from the *American Architect*:—

The fall of the Rockford Court House is a serious warning of the dangers of irresponsible management. The building was an elaborate one of cut stone, and its principal feature was to be a square French dome rising above the roof and set on an attic of stone. This dome and its attic rested in front on the outer wall of the building, but the space beneath it was part of a large court-room; and in order to have it unobstructed the return walls and rear wall which should have carried the dome were omitted in the second and third stories, and two iron columns about 30 ft. high were set under the corners. They carried girders, bearing the brick walls in the story above on which the dome rested. The iron columns stood upon brick wall or piers, also 30 ft. high, in the first story. It was these piers apparently that gave way suddenly when the whole attic of the dome, almost ready for the superstructure, with the brick walls, girders, and columns under it, fell into the cellar with about two dozen men who were at work on it, and of whom one-half were killed. The immediate cause of the fall is not yet known; but the construction was evidently of a very venturesome kind, such as should only have been carried out with extreme care and under watchful and skilful superintendence. It resulted, too, it may be said, from a violation in the design of the received canons of good architecture by introducing a useless feature in a position where it was quite out of relation with the disposition of the plan of the building. The superintendence of the building was not given to the architect, Mr. Gay, of Chicago, who had only visited it at intervals as he had been called for in consultation. The building committee had appointed one of themselves as superintendent.

As to the New York Post-office disaster, it

seems pretty clear that however blame may be distributed for the disaster, there was sufficient cause for the fall of the truss in the way in which it was hung. It was not a Howe truss, as was said in the newspapers at the time of the accident, but a suspension truss of the simplest type, with both top and bottom chords of full length, vertical struts, and single oblique suspension-bars, in four panels. The outer end rested upon the upper plate of the mansard, and the inner upon the main partition wall. In such a truss all the strains are finally carried to the ends of the top chord, and the support must be applied there; the object of extending the bottom chord across the extreme panel being only to give opportunity for steadying the truss at the bottom, to keep it in a vertical plane. If the support is applied at the bottom of the truss, it must be transmitted directly to the top by stout struts, which serve not as integral parts of the truss, but merely as shores to prop the upper chord; and which need to be laterally braced at the top and bottom to prevent their being overturned. In the original trusses of the building the upper chord was bolted to the upper plate of the mansard with angle irons at the outer end. The end strut or shore here was carried down to the floor, resting on a bearer, and framed into a triangular brace with an 8-in. channel-bar serving for the contiguous rafter of the mansard, the end of the lower chord being bolted to it, so that the weight on the truss was divided between the strut and the rafter. The strut at the inner end was built solidly its whole height into the main partition wall which carried the floors and roof; and the roof-beams which rested on the top chord were framed and bolted to it. According to the testimony of Mr. Hill, and of Mr. Schumann, the engineer in charge of iron construction in his office, it was discovered after the fall of the new truss that the outer end of it had never been bolted to the roof-plate, that the roof-beams were not bolted to the truss, and that the 8-in. bar and the triangular bracing at that end had been omitted; so that the whole truss was poised upon the top of the end strut, which was 19 ft. long and without any lateral stiffening or support whatever.

There is considerable variation in the findings of the different juries which have investigated the disaster. The coroner's verdict seems to bear with unreasonable severity upon the former supervising architect, Mr. Mullett, under whom the Post-office was built. To turn away from the direct and conspicuous causes of the disaster in order to visit the chief condemnation on lesser preliminary faults takes away from the verdict the judicial character on which its value should rest. It says:—

"The immediate cause of the falling of the said portion of the roof was improper and insufficient construction; but the primary cause of the disaster is attributable to the incompetency of the agents of the Treasury Department charged with the erection and completion of the building. . . . . An excessive quantity of concrete was used in the covering of the roof, and the load thereby imposed upon the iron roof exceeded the weight for which the iron constructed was originally designed, by more than 300 per cent. All of this is owing to the incompetency on the part of A. B. Mullett, the supervising architect in charge at the time the roof was designed, and his local *employés*."

There is no mention of any person to whom the blame of the disaster belongs, excepting Mr. Mullett; yet the facts are, that so long as the building remained as Mr. Mullett designed it, no harm came to it. The verdict adds that,—

"It appears that on the removal of the wall on the fourth story the remainder of the wall on the sixth story was left standing by order of A. B. Mullett, supported, according to his direction, by two light 15-in. iron beams, competent to carry only one quarter of the weight imposed upon them; that this wall was recently taken out to be replaced by an iron truss, . . . but no special drawing was made for the new truss and its outer support. . . . . It appears that neither the local superintendent nor said iron firm had the necessary technical information to correctly understand the functions of the truss, or how such truss should be constructed, and that in consequence its support gave way as soon as the temporary props supporting the roof-beams were removed."

Mr. Mullett has testified that when he resigned his office at the time the original alteration was undertaken and the beams put in, he recommended that the upper portion of the altered wall should be removed with the rest, and a truss substituted; and that nearly two years later, when under a new appointment he inspected the building, he renewed his recommendation, which was then adopted.

Crippled Boys' Home.—The first stone of the additions is to be laid by the Princess Louise on Tuesday, the 26th inst., not the 20th, as was at first stated.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS

THE Home Counties Division of this society held a conference at Ipswich on the 1st inst., Mr. James Lemon, of Southampton, president, in the chair. From a long report in the *East Anglian Daily Times* we note that Mr. G. S. Elliston, medical officer of health, Ipswich, read a paper on "State Medicine and Sanitary Engineering," in which he said that,—"The Registrar-General, in his summary for 1876, says the steady decline in the fatal prevalence of fever in England affords the most satisfactory evidence of sanitary progress; but this improvement is more marked in the large towns, which looks as if the rural districts and small towns did not deal with sanitary defects with the same energy as the cities and boroughs. Although the appointment of health officer and inspector is compulsory in rural districts, there is no provision in the Public Health Act for securing the services of competent surveyors. The so-called parish surveyors are, as a rule, local tradesmen, and know nothing of engineering or the common rules of drainage. In the rural districts I am connected with, I have frequently felt the want of the advice and assistance of a skilled surveyor, and important works of drainage and water supply have been delayed and not carried out in consequence. The appointment of surveyors to combined country districts of large area is much needed, and until rural sanitary authorities can avail themselves of the professional advice of such gentlemen, the sanitary progress of country districts will not keep pace with the towns." The author then proceeded to discuss the various points involved in connexion with the site and construction of dwellings and the removal of sewage and refuse, especially in relation to Ipswich.

Mr. Buckham said that in consequence of the present arrangements for carrying out engineering works in small districts, places having from 1,000 to 3,000 inhabitants, which were supposed to be salubrious spots, were often sources of infectious diseases arising from defective sanitary arrangements. In the matter of medical officers, an inspector was appointed for a wide area at a good salary sufficient to secure the services of a good man; and he suggested that some such plan should be adopted for surveyors. As to the inspection of buildings, the bye-laws were only partially, and not wholly carried out, as Mr. Elliston had inferred in his paper. As to the question of the sewage of Ipswich, the opinions of himself and the medical officer had been almost identical on the subject, that the sewage matter should be turned into the estuary after undergoing some system of precipitation.

Mr. Lobley said he had expressed his surprise before that Ipswich, on a tidal estuary, should contemplate the pail system at all. He saw no difficulty, as a native of Liverpool, and having had ten years' experience in the borough surveyor's office there, in applying the water-closet to the smallest cottage in the town. As to the bye-law, mentioned by Mr. Elliston, allowing the space for a house to be at either side of the building or the back, he should be glad to see that altered so as to have the space at the back.

Other speakers took part in the discussion, amongst them Mr. Piper, who, in reference to the Artisans' Dwellings Act, said he was afraid that Act had brought about a state of things which might press hardly on the poorer portion of the working classes. In Ipswich, houses were being rapidly built, but not such a class of house as was required by the working classes. With the advance which had taken place in the price of bricks and timber it was impossible to build houses of such a class as workmen with their present wages could inhabit. He had hoped to hear some scheme by which this difficulty could be overcome; he thought the only way to do that was to erect the skeletons of a long range of cottages of concrete.

Mr. E. Buckham, C.E., the borough surveyor of Ipswich, then read the following paper on

COST AND SUITABILITY OF TAR PAVEMENTS FOR SUBURBAN PATHS.

To many of the members the construction of tar pavements is a familiar work, but there are others, perhaps, who have not as yet tested their suitability for suburban paths. In some counties, such as Lancashire and Yorkshire, tar pavement is not a matter that would receive much attention; but in the Eastern counties, and other districts not favoured in the same way, and where stone pavements cost seven times as much as tar pavement, the latter is o some importance to towns requiring a clean an economical footway. In Ipswich, the mileage o footways in proportion to the population is ver large, the population being 46,000, the distanc of streets and roads being about 75 miles. C this about 22 miles are town streets; and doubl this distance would represent about the lengt of paths. Formerly all the suburban paths, a well as the majority of those in third-rate street were made with gravel. These, however, wer always in a defective state. To prevent mu accumulating in winter, shingle was put on th surface. This shingle in summer-time was dir integrated, and laid on the surface as though i had been strewn with peas or beans. To avoi this, loamy gravel was put on. Then, again, i winter this worked up into mud, and again ha to be covered with shingle, and so on alternatel winter and summer. The defects gave rise t continuous complaints, and having had experi ence of tar pavement in other towns, I wa induced to recommend it as a substitute fo gravel. My suggestion was approved of b the authority, and specimens of the pavemen were laid, the first being done by contract a 1s. 3d. per superficial yard, and maintained i repair for five years. This was thought to b too much, and the Sanitary Authority decided t make their own. I have prepared the materia in different ways, sometimes using simply pur coal tar; at others, refined tar, and occasionall small portions of pitch, lias lime, and Portlan cement in the preparation of it. But in practic (although I use mainly refined tar) coal tar i all that is required, and will make as good a pat as with refined tar, or any other admixture.

have two ways of making tar pavements in thi borough. One is with shingle,—that is, fin gravel; and the other with slag, which i clinkers and refuse cinder-dirt from factor furnaces. The process of making with shingle i simple, and is as follows:—A fire is made o the ground and covered over with shingle; whe this first covering is heated through more i added from time to time, until there are about 1 or 15 tons. For convenience in sifting over th stuff after it has been heated through, it is de sirable that the fire should be of an oblong shape presenting a form something like the mound under which potatoes or mangold are stored in field. After the whole has been sufficientl heated to take out the natural moisture, it i sifted, the fine being placed in one heap and th coarse in another. When about one barrow-loa of each has been sifted, boiling tar is throw upon each of them while in a hot state; th whole is then turned over with shovels, an thoroughly mixed. The coarse forms the botto layer of the path, and the fine the top surface After a path has been made about ten days it i dressed over the surface with boiling tar an sharp sand or ashes left from the heap of stone after burning. The sand combines with the ta and fills up the small interstices and produces smooth surface. In making these pavement from slag it is not necessary either to heat th material or boil the tar. The material collected is turned over so that all the large clinkers ar broken into small pieces, after which the whol is sifted over to separate the large from th small, and is then mixed with cold tar (unles the weather is very cold, when it is warmed t make it mix more readily). The material mad in this way is laid down in the same manner a described for shingle, but is not dressed on th surface with boiling tar and sand, being bette without, but is covered with a copious sprinklin of white Derbyshire spar, which is well rolle into the top layer to relieve the dull, sombre ap pearance, and give it a pleasant effect. In lay ing the paths, care should be taken to roll th ground well, and bring it to a uniform surfac before the bottom layer is put on, to avoi uneven or soft places, which, if not provide against, would result in the path, after bein down for a time, having a series of undulation on the surface. In laying, each layer should b well rolled with a roller of about 7 cwt. Th bottom layer should be 1½ in. thick, and the to one 1 in. It is advisable to keep the prepare stuff a few weeks before it is laid down; an although the work can be done at almost any season, spring and autumn are the most suitable when it is dry, and not too hot. Shingle tar pavements require dressing over with boiling tar and covering with sharp sand, from time to time to preserve the surface, which, if not dealt wit in this way, would become rough, by reason o the softer material wearing from between th joints of the stones. The material does no

lways turn out equally well. Sometimes a path ill not consolidate, and at another time the urface will break up without any, as far as can e seen, apparent reason. The shingle tar pavements cost 9d. per superficial yard, laid complete, and that made from slag 11½d. Preference is given here to those made of slag, which re more costly in the first instance and less lurable than those made with shingle, which can easily be understood when the nature of the material is considered. In the first instance we sed shingle entirely, but from favourable reports of the Sheffield paths, and from a personal examination, and from the easier mode of preparation, I was induced to adopt their plan. I believe the Sheffield paths are better than those in this town, and I have no doubt it arises from the fact that the material is of a more durable character than can be procured in Ipswich. The cost of these pavements varies according to local circumstances, being as low, in the case of Sheffield, as 7d. per yard, and as high in London as 2s. 3d. From information obtained some time since, I found that the general price of this kind of pavements was about 1s. per yard, exclusive of the cost of preparing the foundation. The price I have given for Ipswich paths includes the foundation. Tar pavements are generally adopted as an improvement on gravel paths, and are not supposed to be regarded as a material to be taken in comparison with asphalte, although I think they bear favourable comparison to many of the more costly pavements, and are, in my opinion, much to be preferred to the common asphaltes prepared from pitch, to say nothing of the difference of cost, and which expands and contracts with variations of temperature. I have tried other materials for making cheap pavements for footways, such as bricks, earthenware tiles, and Portland cement concrete; but the cost, which is about 4s. 6d. per superficial yard, precludes their use for suburban paths, and their durability is not sufficient to allow them to be put in the place of York flagging for main streets. A path made from shingle, and repaired in the way I have described, would last with the ordinary traffic of a provincial town ten years. Paths laid under my directions as long since as this are still in fair condition. It is, however, difficult to say what the life of pavement would be without very careful observations extending over a considerable period, as the duration of any paved footway is simply determinable by the amount of traffic. Having regard to the economy of first construction, reduction of dust and scavenging, and the cleanliness of the path after rain, it appears to the writer that there is no better material for suburban footways than tar pavement. It may be objected that the dull appearance, and the difficulty of repairing them so as to bring the repaired part even with the old, and the disturbance of the paths caused by laying on gas and water, is against their adoption. The first objection can be avoided by using a good covering of Derbyshire spar, and the second applies more or less to any pavement, with the exception of York flagging. When I commenced to lay these paths ten years ago they were rather scarce, and had only been laid to a limited extent in a few towns, but during the last five years they have been very largely extended, and will in future occupy a permanent position among other paving materials for constructing footways in towns; this shows the suitability of the material for such footways as I have referred to in this paper. There are now about fifteen miles of these paths in Ipswich, taking the place of paths which would, if they had not been superseded with this material, have still been muddy in the winter, and so rough on the surface in summer as to make them always more or less unpleasant to walk upon, to say nothing of the indirect discomfort to the inhabitants by reason of additional dirt in winter and dust in summer. The cost of paving this length of footways with other materials would have been so considerable as to have prevented the possibility of doing it, and I look upon it as a great boon to the inhabitants of any town to get such good pavements for suburban paths at such a small cost.

Some discussion ensued, and the proceedings of the day were brought to a close with a dinner.

Witham.—St. Nicholas Church, Witham, Essex, is about to be restored, at a cost of about 1,700*l.*, from plans prepared by Mr. Joseph Clarke, the diocesan architect.

PURCHASED BY THE ART-UNION OF LONDON.

THE following are amongst the works already selected by prize-holders in the Art-Union of London:—

From the Royal Academy.—The Rescue, John Charlton, 200*l.*; Oranges, A. Hill, 150*l.*; The High Hall Garden, Ernest Parton, 100*l.*; Over the Bar, Edwin Hayes, 65*l.*; "Man goeth forth unto his work," &c., A. Stocks, 63*l.*; A Poser, J. H. Barnes, 52*l.* 10*s.*; In Pensive Thought, Jno. Scott, 52*l.* 10*s.*; "We don't want You," J. T. Nettleship, 50*l.*; Rochester, from a Sketch taken in 1857, G. A. Williams, 50*l.*; A Shot for the Golden Ring, A. Phillips, 45*l.*; On the River Brathay, Westmoreland, Wm. Hall, 45*l.*; "The very most interesting Part of the Story," Jno. Ballantyne; The Rabbit Family, T. Earl, 42*l.*; High-street, Ludlow, Louise Rayner, 40*l.*; Dutch River, C. Thornley, 40*l.*; On Duty, R. S. James, 35*l.*; Long Tout Jar, Portland, Alfred Mudge, 25*l.*; Sanbury, A. A. Glendening, 25*l.*; Left Behind, R. S. James, 21; Fishing-boats on the South Coast, A. Hodder, 2*l.*

From the Society of British Artists.—Returning from Market, E. J. Cobbett, 150*l.*; Harvest Time, near Dolgelly, North Wales, A. W. Williams, 100*l.*; Returning from Market, Granada, Robt. Kemm, 80*l.*; On the River Mole, W. H. Foster, 75*l.*; Highland Washing, J. Gow, 63*l.*; A Welsh Valley, James R. Peel, 50*l.*; "Buy, Lady," J. Morgan, 60*l.*; Herring Fishing Station on Loch Howrn, Inverness-shire, N. E. Green, 50*l.*; "Where the Green Leaves bud, and the Merry Birds sing," W. Luker, 45*l.*; A Derbyshire Stream, J. Peel, 45*l.*; Cader Idris, North Wales, S. R. Percy, 45*l.*; Last Autumn's Fall, R. Redgrave, R.A., 42*l.*; On the Llugwy, W. Bromley, 40*l.*; Llyn Givernan, North Wales, A. de Breanski, 36*l.* 15*s.*; The Church Pool, River Conway, E. H. Holder, 35*l.*; In the Glen, J. H. Cole, 35*l.*; "Come Along," W. Bromley, 35*l.*; Three Playmates, Miss Redgrave, 35*l.*; Cottage Interior at Kingston Lisle, Berks, A. Provis, 28*l.*; Work and Play, J. Cole, 25*l.*; Clytie (a marble bust), Mrs. Physick, 25*l.*; Widmouth Bay, Cornwall, A. B. Collier, 25*l.*; "You Wild Flowers, I love you right well," Mrs. J. F. Pasmore, 20*l.*; Going to the Fair, E. Fisher, 20*l.*; Valentine's Day, G. H. Barrable, 20*l.*; After Breakfast, A. M. Rossi, 20*l.*; Abinger Marsh, Surrey, W. F. Hulk, 20*l.*

From the Crystal Palace Picture Gallery.—Arrest of Poachers, M. Webb, 150*l.*; A Juggler in full Swing, J. Platteel, 60*l.*; Escape of Prince Charles Edward, McLeod, 50*l.*; The Undercliff near Bonchurch, J. Godet, 25*l.*; Lucerne, E. Myers, 25*l.*; Taking Sanctuary, T. Davidson, 22*l.*

From the Royal Scottish Academy.—Getting Ready, Jno. Charlton, 84*l.*; Coldingham Shore, Berwickshire, Samuel Edmonston, 50*l.*; Kincraig Point, Fife coast, D. Cameron, 35*l.*

From the Society of Painters in Water Colours.—The Plough, A. Hopkins, 100*l.*; Port Eynon, coast of Gower, South Wales, Edward Duncan, 75*l.*; Sunrise at Hastings, Collingwood Smith, 42*l.*; At Whitby, Yorks, C. Davidson, 35*l.*; A Street in Venice, E. A. Goodall, 35*l.*; Church of St. Sauveur, Caen, William Callow, 26*l.* 5*s.*; Earlswood Common, Surrey, C. Davidson, 20*l.*

From the Institute of Painters in Water Colours.—A November Noonday, Marian Chase, 25*l.*; Derwentwater, Cumberland, J. Fahey, 25*l.*; On Banstead Downs, J. H. Mole, 21*l.*; The Path to Idwal, J. C. Reed, 2*l.*

From the General Exhibition of Water Colours.—Early Morning on the Thames, H. Larvall, 40*l.*; On the Banks of the Usk, Henry Birtles, 35*l.*; A Frosty Day on the Tyne, Thos. M. Henry, 2*l.*

MYCENÆ.

AT the Society of Antiquaries, last week, Mr. C. T. Newton delivered a discourse on the antiquities discovered at Mycenæ by Dr. Schliemann. In the course of it Mr. Newton said that on coming fresh from an examination of Dr. Schliemann's antiquities at Athens and Mycenæ back to the British Museum, he had been struck with the resemblance between certain antiquities from tombs at Ialysos, in Rhodes, with certain antiquities found in the tombs on the Acropolis at Mycenæ. It was the object of the present lecture to draw attention to these resemblances, and so far as possible to demonstrate them by the aid of diagrams of objects in the British Museum and photographs lent for this occasion by Dr. Schliemann. The Mycenæ antiquities consisted principally of gold objects. There were also specimens of pottery, painted fictile ware, engraved gems, and a few objects in an opaque vitreous composition. The gold ornaments, again, consisted partly of personal ornaments and partly of cups and other objects of domestic use. It had not been possible on the present occasion to illustrate all the points of resemblance by diagrams, but only those which admitted of being drawn on a large scale. To make a complete comparison it would be necessary to place side by side a number of small objects from Mycenæ on the one hand and from the British Museum on the other. Thus we find that certain small ornaments, probably pendants of necklaces, executed in gold at Mycenæ, are very similar in character to certain antiquities from Ialysos, with this difference, that the Ialysian personal ornaments are made not in gold, but in an opaque vitreous paste. Again, at Mycenæ there were found an immense quantity of circular discs of thin beaten gold, on which was impressed from a mould some device, such as a butterfly, cuttlefish, or a flower. All these discs have been fastened on some surface underneath, as the holes for the pins remain. From Ialysos we have discs with flowers embossed on them, similar in all but scale; they are rather smaller. We have, too, from the same source, a winged monster embossed on a thin gold plate, very similar in style to the *repoussé* work in gold at Mycenæ. But to pass to resemblances which can be illustrated by diagrams,—the form of the gold cups at Mycenæ is peculiar. There are two dominant types. Both these types prevail in the fictile vases at Ialysos. Here the lecturer showed the forms of these two kinds of cups by diagrams and photographs. It should be noted that these two shapes which occur at Mycenæ and Ialysos do not occur, so far as the lecturer knew, in later Greek art at all, and one of them he has only seen at Ialysos, and in the neighbouring island of Kos. The type of this cup, which has a long stem rising from the foot, was probably originally a ceramic type, and was afterwards copied in metal. But the resemblance of the gold antiquities found at Mycenæ to the fictile ware of Ialysos is not limited to the forms of the cups. The pattern on one of the Ialysian cups shows dolphins running round it, and below a row of birds. Both these patterns occur on the Mycenæ gold cups. Again, one of the prevalent styles at Ialysos is a cuttlefish, as in the diagram before the society. This is a favourite on the gold-embossed discs at Mycenæ already alluded to. On surveying the gold objects of Ialysos, the characteristic of the ornaments generally is a tendency to spirals, not treated severely, as in the later Greek ark, but spread over the surface of the objects decorated with a certain vague lawlessness. The intercourse between Mycenæ and Egypt was proved by the occurrence among the antiquities from the tombs of ornaments of an Egyptian character in Egyptian porcelain. At Ialysos was found an ivory box with a peculiar lid, in the form of a duck, which was certainly Egyptian, also a porcelain scarab, with the cartouche of Amenoph III., whose date, according to Egyptologists, cannot be later than B.C. 1130. This comes very near the date generally assigned for the downfall of the dynasty of the Atridæ. Of course, it was quite possible that the remaining antiquities found by Dr. Schliemann might be of later date, but the indication is worthy of note. In the tombs at Camiros was found a scarab with the cartouche of Thothmes III., and one with the cartouche of Psammetichos I. Among General Cesnola's antiquities from Kurion, in Cyprus, were cylinders bearing the names of very early Assyrian kings.

SOCIETY OF ENGINEERS.

AT a meeting of this Society, on the 4th inst., in the Society's Hall, Victoria-street, Westminster, Mr. Thomas Cargill, C.E., president, in the chair, a paper was read by Mr. Ralph H. Tweddell, on "Direct-Acting Hydraulic Machinery." The author first described the cases in which gearing by shafting, wheels, and belts was used for driving machinery. He then alluded to the advantages of that mode of transmission, especially in large workshops where the machines were placed far apart. After considering the transmission of power by steam for driving small engines on each machine, he proceeded to describe his application of hydraulic pressure to the transmission of the power, and also to working the tools themselves. To illustrate this part of the subject, he described the differential accumulator, by the special construction of which the effect of a blow is obtained, as well as a steady pressure; and referred to the success which has attended the adoption of his hydraulic riveters to this combination.

Great Petroleum Fire in America.—Information of an immense fire is to hand from Petrolia, Butler County, Pa. On the 19th ult. a severe thunderstorm passed over the district, which is a great oil centre. A flash of lightning struck a large tank containing 22,000 barrels of oil, which ignited. Efforts were at once made to overcome the fire, but it caught two of the tanks, one holding 25,000 barrels of oil, which was completely destroyed. The other, however, was extinguished by the application of steam. The burning oil ran down the creek for about a mile, setting on fire and destroying everything it came in contact with. The total quantity of oil destroyed was 47,000 barrels belonging to the United Pipe Line, and twelve wells and tanks belonging to other companies. The town of Trantman itself suffered to the extent of $30,000.

BURY ST. EDMUNDS.

THE town surveyor, Mr. John Crofts, departed this life on the 20th ult., in the 69th year of his age. Mr. Crofts was brought up as a land surveyor, and was appointed by the council as borough surveyor nearly twenty years ago; and during that time extensive waterworks, and some sewer works, have been completed. According to a correspondent, these sewer and irrigation works are rather defective, as much of the sewage runs into the River Lark navigation. There is some talk of the county magistrates and the adjoining landowners entering an action against the Bury Urban Sanitary Board, in consequence of the dangerous and offensive smell from the sewage.

It is the general opinion of the ratepayers that the town council should advertise for some experienced man, one who understands the work, and who can take levels properly, and so on.

The paving and surveyor's rates at Bury are high, and there is universal dissatisfaction among the ratepayers in consequence.

LIABILITY OF LOCAL BOARD TO "QUANTITY SURVEYOR."

WAGHORN *v.* THE WIMBLEDON LOCAL BOARD.

THIS case (in the Queen's Bench Division, before Mr. Justice Manisty and a common jury) raised a question of considerable importance to architects and surveyors, and to those concerned in the building trade. We adopt the *Times* report. The plaintiff, Mr. Joseph Waghorn, is a "quantity-surveyor." The defendants are, by statute, the Burial Board, as well as the Local Board, for the district of Wimbledon. In 1875 they instructed their salaried surveyor, Mr. Rowell, to prepare plans and specifications, and to procure tenders, for the erection of a cemetery chapel. These instructions were embodied in a resolution passed at a meeting of the Board. When Mr. Rowell had prepared the plans, he instructed the plaintiff to take out the "quantities," and he advertised for tenders in the *Builder*. Several builders sent in tenders, having used the quantities taken out by the plaintiff in arriving at their estimates. The defendants did not accept any of the tenders, the amount of the lowest tender being higher than the sum which they intended to expend. The case for the defendants was that they never authorised Mr. Rowell to employ the plaintiff to take out the quantities.

Several architects and surveyors were called for the plaintiff, who stated that the business of a quantity surveyor was quite distinct from that of an architect, and that it was necessary that the quantities should be taken out to enable builders to tender. They also stated that the custom was for the builder, when sending in a tender, to add the charges of the quantity surveyor to his estimate, and that if the tender was accepted he paid the quantity surveyor. If, however, none of the tenders were accepted, the building owner was liable to pay the quantity surveyor's charges.

At the close of the plaintiff's case it was submitted that there was no evidence that the defendants had authorised Mr. Rowell to employ the plaintiff to take out the quantities.

His Lordship, however, ruled that, as they had instructed him to procure tenders, and as tenders could not be made without quantities, they had impliedly authorised him to get the quantities taken out.

It was then submitted that the defendants, being a corporation, could only contract under seal, and there being no contract under seal here, the plaintiff could not recover.

His Lordship ruled that as the defendants had by resolution impliedly authorised Mr. Rowell to get the quantities taken out, and had had the benefit of the work which had been done, their objection was not tenable.

Judgment was accordingly entered for the plaintiff for the amount claimed (170*l.* 10*s.* 1*d.*).

As the defendants were anxious to take the opinion of the Court, his Lordship stayed execution for four days, but said that it must not be supposed that he entertained any doubt on the matter.

Critical Condition of a Church at Kennington.—From the facts disclosed at a meeting held last week, the determination to rebuild the front of St. James's Church, Kennington Park-road, has not been arrived at a moment too soon. The Rev. B. Harris, the vicar, who occupied the chair at a meeting of the parishioners for the purpose of forming a committee for rebuilding the front of the church, stated that the rebuilding of this part of the edifice had become a matter of absolute necessity. A resolution was carried to the effect that, as the meeting recognised the necessity of building a new front to the church, a committee be appointed, with the object of carrying it out. Mr. Ewan Christian, architect, has furnished designs for the rebuilding of the church, which include a tower, with pinnacles, to the new frontage.

MASTERS AND MEN.

Aberdeen.—The Aberdeen masons have sought an advance of from 7½*d.* to 8*d.* per hour; and, as the masters have not granted the demand, a strike and lock-out have ensued, by which about 600 men are thrown out of work.

Huddersfield.—The strike of masons at Huddersfield, which commenced on the 1st ult., has been settled. The men had previously received about 32*s.* per week in summer and 29*s.* in winter, and struck for 36*s.* in summer and 33*s.* in winter. They have agreed to accept 34*s.* in summer and 31*s.* in winter,—the number of hours to remain as before.

Edinburgh.—On the 29th ult., at a meeting of the Master Painters' Association, it was resolved to dismiss the proposal, made by the men on strike, that a conference should be held with the view of settling the dispute. The masters have, it is stated, arranged for the employment of men from London and elsewhere in place of those now on strike.——On the 26th ult., the plasterers in the employment of Messrs. Stuart & Co., selenitic cement plasterers and artificial stone manufacturers, Thomas-street, Edinburgh, gave in their warnings. On the previous day, it appears, a representative of the Edinburgh Operative Plasterers' Association called upon the firm, and stated that they had violated one of the regulations of the Association, which provided that no master-plasterer should take on more than one apprentice each year. Messrs. Stuart & Co. replied that the Society's representative laboured under a misapprehension, and that the two boys in question were not plasterers' apprentices, the one being a message-lad and the other an artificial stone worker. A written statement to this effect was, we are told, communicated to the secretary of the Association, but no reply was received, and the next that was heard of the matter by Messrs. Stuart & Co. was the threatened strike of their plasterers.

Chorley.—After a strike lasting a month, the carpenters and joiners of Chorley have resumed work. The men have been, previously to the strike, receiving 8*d.* per hour, and they asked for an advance of 1*d.*, but the masters offered them ½*d.* for twelve months. The men refused this offer, but have now accepted it. They are not to ask for an advance until the twelve months expire, and then they will have to give six months' notice.

Fleetwood.—The joiners on strike at Fleetwood, having failed to get the increased wages they demanded, have tried to exact from the masters a promise that all non-society men who shall not join the trade-union within a month shall be discharged. The masters refused to agree to any such thing.

THE PROPOSED NEW COUNCIL CHAMBER, GUILDHALL.

THE Court of Common Council at their last meeting resumed the debate* on the report of the Coal and Corn and Finance Committee, on the reference of the 28th of January, 1875, to consider the means of carrying into effect the report for the construction of a new Council Chamber, and the re-arrangement and reconstruction of the committee-rooms and offices on the north side of Guildhall. The motion before the Court, moved by Mr. John Pound, was,—"To agree with the committee in their report," but when the subject was last discussed the following amendment was moved by Sir F. Truscott:—

"That the recommendation contained in the report relative to the continuance of the coal duties be agreed to, and that it be referred back to the committee to consider the whole subject, and to report thereon. That the City Lands Committee be instructed forthwith to advertise for tenders for the erection of the Council Chamber and offices, according to the plans approved by this Court, and that it be referred to the Coal and Corn and Finance Committee to provide the necessary amount out of any funds, or by any means they may consider most advisable."

After discussion, the Court divided, and the tellers announced the numbers as follows:—For the amendment, sixty-seven; against, fifty-one; majority in favour of the amendment, sixteen.

Mr. G. Shaw asked if this division bound the Court to the site, as well as to the plans.

The Town Clerk replied in the affirmative.

Some discussion then took place as to whether the original plan for the erection of a new Council Chamber should be carried out in its integrity, it being urged by some members that the new Chamber should be continued within the precincts of the old historic spot at Guildhall, which its predecessors had occupied for ages. In the end, however, Sir Francis Truscott's amendment was put and carried as a substantive motion.

* See p. 540, *ante*.

THE NEW BUILDINGS IN NORTHUMBERLAND AVENUE.

A LARGE number of workmen have been employed during the last few weeks in the excavations going forward on that portion of the site of Northumberland House situated between Northumberland-street and the Avenue, with its main frontage to Charing Cross, on which an extensive block of palatial buildings is about to be erected. The excavations are being carried to a depth of 20 ft. below the street line, considerably lower than the double basement vaults and cellars under Northumberland House, an enormous quantity of brickwork having been removed in the course of the excavations, which will amount to several thousand cubic yards. Trenches, 8 ft. in width, and about 9 ft. below the intended floor level of the basement of the buildings, are being made for concrete. The excavations and foundations for the structure are being carried out by Mr. E. Reddin.

CRITICAL RESTORATION.

SIR,—While Mr. J. J. Stevenson so grossly perverts facts as he has in his late paper read before the Institute, he cannot surely expect his dicta to be received with much respect; a person whose entirely misrepresents matters,—on points, too, in which the most superficial examination would have shown the real state of the case,—must not feel surprised if his hearers regard him as one of those who, whatever may be the fearlessness or earnestness of their language, are fighting not for the *truth*, but for the *mastery* of their own ideas and predilections.

It is very gratifying to find that Mr. Stevenson has been kindly taken in hand both by Mr. Hope and Sir Gilbert Scott; but, as regards the former, I rather fancy Mr. Stevenson may be tempted to cry, "*Et tu, Brute?*" for, unless I am very much mistaken, Mr. Hope's "English Cathedrals of the Nineteenth Century" has had not a little to do with the particular line of thought exhibited in the paper in question. In that book Mr. Hope has a fling both at the north-west tower and eastern screen of Canterbury Cathedral, although, so far as I remember, the throne itself was at that time kindly spared.

I most heartily agree with Mr. Hope that it is exceedingly wrong and unfair to mix up what was done forty-five years ago with the present phase of restoration or alteration at Canterbury, but must confess that it is news to me that the pulling down of the tower was received with "indignation." I myself have been in and about the cathedral,—non-officially,—from boyhood; I have at different times performed *con amore* every office in the building that a layman could do,—from helping the vergers with the seats and stools to accompanying "Boyce in C,"—and although the alleged deformation took place twelve years before I was born, I certainly think, had there been any outcry at the time, traditions of it must have reached down to date.

But I cannot see that Mr. Hope, in condemning the alteration of the tower, is any more consistent than the Mr. Stevenson he blames for the want of that very consistency; if it be permissible to insert Perpendicular tracery into Norman (or Romanesque, as Mr. Hope prefers calling it) windows for the purpose of breaking up and bringing them into proportion, it certainly must be lawful to remodel one of two towers of a western façade for the purpose of bringing them into harmony with each other.

The blunder into which Mr. Stevenson has fallen is visible enough: he is regarding our old buildings from one point of view only; it is solely in their historical, or, so to speak, *documentary* character, that he is considering the cathedrals of this and other countries,—a most important and excellent function truly, but certainly not their only one, nor even (by any means) the greatest. Mr. Stevenson forgets that, for at all events the last five or six hundred years, we have had abundant means, pictorial and otherwise, of recording the various changes through which any building whatever might, from various causes, be made to pass: thus, as in the case in point, the existence of Lanfranc's Tower, and consequent boundary of the Norman nave at this point, is a fact as well known to the Canterbury archæological student as the existence of the very nave itself; and the exact design,

ight, &c., of the Norman erection may be sily studied through the numerous plates still actual circulation.

With such examples before us as Vienna, rasburg, Antwerp, Chartres, Notre Dame de Épine,—to say nothing of glorious Amiens,—I truly marvel that any one should still be found defend the barbarism of unmatched west towers.

Mr. Stevenson really and truly considers that e evidence afforded by the retention of the rlier tower as to the original length of the orman nave more than counterbalanced the fect of the one-sidedness of the façade, then I have to say is that it is a matter for sincere ngratulation that he has not hitherto, as Sir ilbert said, "tried his hand at restoration."

Perhaps, as the discussion has been raised, a w details as to the particular features in uestion may not be unwelcome.

With regard to the present north-west tower, r. Hope remarks, in the work already adverted , that it is a tamer copy of a tame production. r. Stevenson says the earlier (companion) wer has been scraped and altered to look like e new one. Both are wrong; the tower could ot be a "copy," and at the same time "tamer" s regards design) than the original; nor could be "tamer" without ceasing to be a "copy"; re is Homer nodding with a vengeance. Mr. evenson's assertion is simply ridiculous. The sin truth is this. At the time the authorities emed it advisable to complete the design of e Perpendicular portion of the cathedral the hen) later or Oxford tower afforded a perfect ide except at three comparatively unimportant ints, viz., the terminal rods of the top pin- acles, the proper completion of the lowest nnacles, and the treatment of the central rtion of the groined ceiling of the tower-spring elf. As regards the first, Mr. Austin simply ked the length by judgment, and the dimension adopted has been adhered to in the recent storation of the Oxford tower. With reference the second point, the corresponding pinnacles the Perpendicular erection were weathered way to mere stumps. Mr. Austin was left nsequently to his own unaided imagina- on, and, as is not unusual in such cases, agination took a rather high flight and oduced half a dozen or so of very ambitious irelets, indeed, profusely crocketed. With spect to the third point, the Oxford tower uld obviously afford no exact guide, for this ing the steeple containing the bells, a circular ening had of course been left at the crown of e groining for their passage. In the new wer it was not contemplated to hang a single ll; there was, therefore, no necessity for an ening, and if there had been, the architect uld hardly have gained anything from the isting example, as the lid that covers the fice is of a flat and impure Late Elizabethan, something of that sort. Imagination, there- re, once more took the matter in hand, and the sult was a groined pendant of very elaborate nception. In the late restoration of the Oxford eeple, the lower pinnacles have been restored thfully from fragments recovered, and are of ich smaller size than in Mr. Austin's tower.

Thus, as regards Mr. Hope's assertion, it will seen that where the "copy" was departed om, it was in the direction of licence the very posite of tameness, and designed to remedy at very defect; and with reference to Mr. evenson's statement, it will be noted that the storers have deliberately and intentionally parted from the design of Mr. Austin's tower, far as regards a very important feature. It ay be added that the Oxford tower has not en "scraped," but "cased," and that its stone of an entirely different hue from that used in e northern tower.

When Mr. Hope regrets that Mr. Stevenson as not better informed as to the actual subject his criticism, he deserves we should repress r commiseration that he in his turn was ap- rently unable to make a careful examination of nterbury Minster before committing to the ess his "English Cathedrals of the Nineteenth ntury."

With regard to the stalls, I certainly think ey have been overpraised; the whole effect ist suffer through the bases of the little lumns being hidden, giving the latter a very ok-like appearance; and as they are of fairly haic Corinthian, the attenuated effect of the afts is the more aggravating. However, be at as it may, it does not follow that, if re- oved, they will be "lost to sight" any more an necessarily and inevitably "to memory ar." I would suggest that they be placed inside the chapter-house, so as to furnish an entrance-lobby or passage: this their form would just suit, and, being clear of the walls, nothing of the Gothic work would be hidden; they would be about (say) 6 ft. from the west wall of the chapter-house, and if conjoined at the middle, leave the requisite space round the ends, so as to pass that way into the room; or, if preferred, the ends might return. On "speech days" this would be a great convenience for keeping out the draught of the cloisters, the stalls forming suitable seats for the clergy, &c., presiding over the exhibition.

With reference to the east screen, which Mr. Hope calls "confectionery," I do not know why he should use such an expression as indicative of apparently the *summum bonum* of contempt, like Lord Chesterfield's wish with reference to the animal that attacked his august calves. The erection is certainly faulty in detail, and of a type very different from that we are accustomed to regard as correct; but, as regards the former, if we except the transoms, it requires very close inspection to discover the inaccuracies; and as respects the latter, it seems incredible that a person of Mr. Hope's experience and research should not see that a screen of the close conventional type would here, owing to the elevated position of the east portion of the choir, simply ruin that end of the building. The general design of the screen embraces a very enriched cornice or detached string of foliage, from which, in continuation of the series of slender supporting mullions, pinnacles rise at intervals. The elevation is broken by a series of graded transoms, also of delicate proportions, rising to the highest in the middle, in order to follow the curves of the cornice; the openings or panels thus formed are glazed. I cannot speak with the authority of a professional architect, but it seems to me a work of undoubted, and, indeed, very high genius. As to its intrinsic gracefulness, and the effect it imparts to the extreme east end of the cathedral, there can, I should imagine, be but one opinion.

The throne is, I believe, by the same hand; it is either octagonal or hexagonal on plan (I forget which), and has a very elaborate and most elegantly fancied canopy, surmounted by a spire formed of four moulded and crocketed segments of a large circle, so placed that their tops are conjoined, the termination of course being the usual finial. Its cuspings,—of long pear-shaped form,—have been found some fault with, and its hanging corbels (from which the front portion of the canopy vault springs) are of course a structural impossibility, but with Henry VII.'s Chapel before us, I think we need not be too clever on this point. Neither it nor the screen displaced, so far as I am aware, anything earlier than sixteenth century work.

In conclusion, allow me to say that I yield to no man in the recognition of the importance of thorough professional and technical study and supervision, and right thankful are we that the cathedral is now safe in the hands of those whose intimate knowledge of the archaisms of Gothic is sufficient guarantee for the future treatment of the fabric; but let us not throw stones at those who at a time of darkness and difficulty laboured their best to produce designs they considered in harmony with the old forms. Sir Gilbert himself has not, so far as I know, given public utterance to any adverse criticisms with reference to Canterbury, and till he does I think the secondary and tertiary lights of the architectural firmament might well restrain themselves.

As to Sir Gilbert's *catholicity* of feeling, I think his printed utterances with reference to Sta. Sophia's may be held conclusive on that point; for an architect who has become, as it were, identified with English Gothic, to acknowledge a *chef d'œuvre* of Byzantine as the world's masterpiece, conveys to us, in my opinion, a lesson of self-abnegation as elevated as it is instructing and, unfortunately, rare.

JOHN W. WARMAN.

Indian Ink.—The *Papier Zeitung* gives the following receipt for making a deep black Indian ink which will also give neutral tints in its half shades:—Rub thoroughly together eight parts of lampblack, sixty-four parts of water, and four parts of finely-pulverised indigo. Boil the mixture until most of the water has evaporated, then add five parts of gum arabic, two parts of glue, and one part of extract of chicory. Boil the mixture again, till it has thickened to a paste; then shape it in wooden moulds, which have been rubbed with olive or almond oil.

THE FACTORIES AND WORKSHOPS BILL.

MR. CROSS's new Factory Bill repeals sixteen Acts of various dates, from the 42nd of George III. to the Factory Act of 1874, and consolidates the law relating to factories and workshops, introducing also certain amendments. Part I. sets forth the general law, and consists of thirty clauses, relating to the sanitary condition of factories and workshops, safety of workers therein, hours of employment of children and young persons in factories, and of children and young persons in workshops, holidays, education, certificates of fitness for employment, and investigation into accidents. Part II. comprises thirty-one clauses, containing special provisions relating to various matters—health and cleanliness, with special mention of bakehouses, special restrictions as to employment of young persons and children in certain specified kinds of work, special relaxations of the general law in certain factories and workshops as regards hours of work and night work, exemption from certain provisions of the Bill (such as those for allowance of holidays) where the workshop is a dwelling-house in which the family only of the occupier carry on the handicraft. The clause providing that a child, young person, or woman shall not be employed on Sunday in a factory or workshop is not to apply to Jews employing Jews, and keeping Saturday as Sunday. People are "children" while under fourteen, and "young persons" from fourteen to eighteen years of age. Part III. of the Bill provides for the administration of the law by inspectors, certifying surgeons, and penalties. Part IV. contains definitions, and one or two special exceptions, and makes special provisions in regard to the application of the Bill to Scotland and Ireland, one being that during the first year under this Bill (1878) it shall apply to children under nine years old as if they were ten (the minimum age for employment fixed in the Bill), and that children under nine lawfully employed before the commencement of this Act (on the 1st of January, 1878) may continue employed. The Bill has several schedules. A "factory" is a place in which any manufacturing process is carried on with the aid of steam, water, or other mechanical power; "workshop" means any other place in which any handicraft is carried on by any persons, and to which and over which the employer of such persons has the right of access and control.

THE ARTISANS, LABOURERS, AND GENERAL DWELLINGS COMPANY.

ON Saturday last an extraordinary general meeting of the shareholders of this company was held at the Westminster Palace Hotel, in compliance with the requisition of which mention was made in the *Builder* three weeks ago (page 502).

The Chairman (Dr. Baxter Langley) urged shareholders not to go into allegations which had been published, and to reserve whatever they wished to say, because as a committee of investigation was to be proposed, that would be the proper tribunal at which such questions could be dealt with. The requisitionists had called the meeting for the purpose of considering a motion for the appointment of a committee of investigation, and he would say that the directors had no objection to the proposition. Indeed, they courted inquiry of the strictest character, and when the committee was appointed the Board proposed to place in their hands the resignation of the directors, so that if the committee's report should be adverse to them they would, of course, retire, and others would take their place. There was only one stipulation they would make, and that was that the committee should not be formed of those gentlemen who had shown hostility to the present Board. He moved that a committee should be appointed to inquire into the financial position of the company, the purchase of the estates, the cost and quantities of material used in building, the condition and prospects of each of the company's estates, and such other business relating to the general business of the company as they may deem necessary.

Mr. Ashley, M.P., said he was glad to find that the Board were agreeable to the motion of the requisitionists. The company was an excellent one, and one calculated to do a deal of good, and if anything was found to be wrong—he did not say there was—it would be very disastrous. The course the requisitionists had pursued in calling the meeting together, was only taken after all

other means had been exhausted. The arbitrators had prepared a report, and would have sent it to the shareholders, but for an intimation from the Board that if they did so it would be at their peril. They then asked the Board to send it out, but that had never been done. Through Mr. Pearce's pamphlet an investigation had taken place, but the result had never been made known to the shareholders, and therefore they had called this meeting. He seconded the resolution.

It was afterwards resolved that the following gentlemen should be asked to form the committee:—Mr. Samuel Morley, M.P.; Mr. W. H. Stone, ex-M.P. for Portsmouth; Mr. C. M. Palmer, M.P.; Mr. E. Noel, M.P.; Mr. F. D. Mocatta, Mr. J. Kempster, Mr. H. R. Droope, the Hon. E. A. Ashley, the Revs. A. M. Preston, H. G. Cutler, and J. M'Dougal, and Messrs. J. Dunnington, J. M. Bell, J. Buckell, S. Cozens, and H. Buckell, power being given them to employ professional assistance.

CHANCEL SCREENS: IMPORTANT JUDGMENT.

DR. TRISTRAM, chancellor of the diocese of London, has delivered judgment in the Consistory Court upon the petition of the vicar and churchwardens of St. Augustine's, Haggerstone, to issue a faculty authorising the erection between the chancel and the nave of a dwarf wall, with entrance-gates.

He said it had been the practice to refuse to issue faculties authorising the erection of gates to chancel-screens or of chancel-screens making an unusual and marked separation between the chancel and nave. In the present case the Court was asked to depart from that rule. The argument in favour of the gates was shortly this, that before the Reformation chancel-screens were a necessary adjunct to a parish church, being generally surmounted with a crucifix, called "the rood"; that gates were the proper appendages to chancel-screens; that though the rood was directed to be removed and the rood-loft altered, yet the then-existing screens were allowed to remain, and the Rubric required a screen of some sort or other in all our churches. That construction of the Rubric was not in accordance with contemporaneous or continuous usage; and it had never been deemed imperative, in the faculties issued since the date of the Rubric, to require the chancel to be so separated from the nave. The significancy of the screens in question could only be construed to be for the purpose of exclusion, and to show that the chancel was of a sacred character, distinguishable from that of the rest of the church. The introduction of gates with such a significancy might cause offence and be indicative of making the parish church the church of a party. In all the circumstances he saw no good reason for departing from the general rule established by Dr. Lushington, and he therefore rejected that part of the prayer of the petition which asked the Court to sanction the erection of gates attached to the wall. The faculty might go for the other alterations desired.

The Commissary-General has also delivered judgment on the petition of the Rev. Henry Lloyd Russell, vicar of the church of the Annunciation, Chislehurst, for a faculty authorising certain alterations or decorations in the chancel of the church, including the erection of a chancel screen of considerable height, with entrance-gates and a large cross.

He said the plans had been submitted to the archbishop for his approval, but his grace had declined to endorse them. As the vicar now said that he was content that the faculty should go without the gates and the cross, and as the screen was an open one and did not in any way impede the view, and having been informed by the registrar that the archbishop would not object to the plan as altered, the faculty might go for all the matters prayed, except the gates and cross.

BYRON MEMORIAL COMPETITION.

BY mere accident we learnt, at the moment of going to press, that the models for the Byron Memorial, sent in competition, were open to the public in the west crush-room of the Albert Hall. The fact that we were allowed to find this out for ourselves seems to us to explain why such ill-success has attended the endeavour to obtain good designs. The whole affair has been bungled by incompetent hands.

Thirty-nine designs are exhibited, mostly bad,—many of them, indeed, are simply awful.

The committee have selected for the first place No. 6 in the catalogue. In this, Byron is seated upon a rugged rock by the sea-shore. The head, inclined gently towards the right, is in pensive attitude, with the chin resting in the hollow of the right hand; on the left knee lies the open MS. book of "Childe Harold," in which the poet is presumed to have just inscribed the famous stanza, "To sit on rocks, to muse o'er flood and fell." His only companion is his favourite Newfoundland dog "Boatswain," who, crouching at his feet, looks up in his face with a truthful expression of canine fondness and fidelity. The pose of the poet's form is easy, and the countenance is spirited and thoughtful. The pedestal is very large, and not very successful. Mr. Richard Belt is given as the name of the designer.

The model placed second in merit by the committee is No. 13 in the catalogue, and involves much more design. The notion embodied is that Byron, as the Greek patriot, of whom a very characteristic figure is given, is watched over by Minerva, whose shield forms a nimbus to his head, and whose bust crowns a *Stele* behind him; and there are two side figures representing Poetry and Chivalry.

We are also able to add that the authors of this design are Mr. Mullins, sculptor, and Mr. H. H. Statham, architect.

FALL OF A BRIDGE AND LOSS OF LIFE.

THE celebration of the centenary of the Bath and West of England Society has been marred by a dreadful accident, owing to the fall, on Wednesday morning, of the Widcombe Suspension Bridge, leading from the Great Western Station at Bath across to Widcombe, in the direction of the showyard. The bridge, which seems to have been blocked with people at one end, owing to inadequate arrangements for taking tolls, is described by the *Times* as having been constructed some fifteen years ago as a foot-bridge, from the designs of Messrs. Hicks & Isaacs. It was of wood and iron, was about 12 ft. in width, and, though it was popularly known as the Widcombe "Suspension" Bridge, was really supported by an arch of woodwork stretched from buttress to buttress, either end of which was secured to piers by tie-bolts. The flooring of the bridge was braced to the over-arching woodwork by suspension-rods, the whole structure being thus of a light description; and though the massive beams of wood forming the girders of the flooring gave it an appearance of considerable strength, it was never intended to carry an enormous weight such as that to which it was now subjected. The span was about 180 ft. and the face of the buttress on a level with Chiverton-street was about 40 ft. above the bed of the river, the water in which was about 10ft. deep. It is computed that about 200 persons were on the bridge just before the time of its fracture. About fifty of them had passed the toll-keeper, when the flooring of the bridge was seen to be bending in the middle beneath the superincumbent weight, and in one moment a crash was heard, the ends of the tie-rods and girders resting on the south buttress were seen to separate from the masonry, and the holiday crowd previously standing on the bridge were suddenly shot, as it were, down two inclined planes into the very centre of the river. Several persons were killed, among them being Mr. John Thorne, surveyor, of Charminster. Some forty or fifty persons were seriously injured, and are inpatients of the Bath United Hospital. Who is to blame for the overloading of so comparatively fragile a structure?

NEW PARKS.

Paisley.—On the 26th ult. a new public park,—a gift to the town by a deceased citizen, Mr. Robert Brodie, accountant,—was opened with much ceremony. The park is situated at High Carriage-hill, in the southern part of the town, and extends to about twenty-two acres. Its value is estimated at 16,000*l.*, and during the past year or two the Town Council have expended about 2,800*l.* in laying it out and ornamenting it.

Gateshead.—Since the grounds of Mr. William Wailes, at Saltwell, were purchased by the Gateshead Corporation and converted into a park for the use of the inhabitants, who, at that time, had little or no place approaching to a recreation-ground, great improvements have been made by way of further beautifying the estate. For some time past the Park Committee have been pushing on the work of improvement with rapidity. One of the chief features will be the long promenade, which is at present under formation at the north end of the park. On either side of the promenade the ground has been laid out under the direction of Mr. Heath, of London, landscape gardener.

A Big Stone.—A stone of large dimensions has just been got from the quarry of Messrs. Charnock & Sons, Southowram, for Messrs. John Jennings & Son, stone merchants. The size of it was 15 ft. 10 in. by 10 ft. 4 in., in all 163½ superficial feet, and the weight seven tons.

DRYING PROCESS.

SIR,—I have only just had opportunity of seeing L Lascelles about the visit of the Architectural Association his works, as reported in your paper (p. 295, *ante*), and have been unable until now to communicate to you my ob tion to part of the report respecting our drying process. states, "The temperature is allowed to rise to from 1 to 150°, never exceeding the latter." This places matter in a different light from what we like to have and from what it really is. The temperature in this p cess must rise to 150° Fahr., at the very least, and we not recommend a trial of it at a lower temperature, for the more effectual working, *i. e.* a greater saving time, &c., the temperature should rise to 170°, —160° 170°.

S. G. DENNIS

Books Received.

Street Life in London. By J. THOMSON, F.R.G and ADOLPHE SMITH. Sampson Low & C Fleet-street.

ONE-HALF of the world does not know how t other half live. Those who, admitting this fa think it ought to be otherwise will welcom "Street Life in London," now publishing monthly parts. Each part contains three p manent photographic illustrations, taken fr life expressly for the publication, with lett press mostly by Mr. Adolphe Smith. Part for example, just now issued, consists of t "Dramatic Shoeblack"; "Tickets," the Ca dealer; and the "Old Clothes of St. Giles." So of the articles, treating of individual perso become biographies of the humble, and open view fresh phases of life. The photograp would be better if the faces were kept light The work when completed will make an structive as well as entertaining volume.

Miscellanea.

The Artisans' Institute. — The annu meeting of this Institute was held on the 2 inst., the Earl of Roseberry in the chair. T report, read by the principal, the Rev. Her Solly, states that, "Although the number members is not so large as at first, when t Institute was supposed to be more of a club th for educational purposes, yet, as the object is have real students, and not merely members w join without belonging to classes, we may c tainly be congratulated on, and be encourag by, our increased success. Taking the to number of students last session at 100, we fi an increase in our present numbers of nine three, the total number, including those of t Bricklayers' Class, now being 193. Of the several attend more than one class, so that t number actually enrolled in the class regist books exceeds 278.

A Projected Rival to the Royal Academ A London letter to a provincial journal says th a number of artists of position met a few wee ago to discuss the practicability of organisi an exhibition of paintings and sculpture London, on a large scale, following the gene plan of the Royal Academy, but adopting vario alterations in detail. The number of good wor sent in to the Royal Academy is so largely excess of the available space in the saloons that institution that every year a good deal disappointment and discouragement is given all ranks of artists outside the potent Corpo tion itself. The contemplated association is be called the "National Society of Artists," a one of the most noteworthy conditions will that when the number of members reaches certain maximum, a stated proportion shall reti annually, so as to cause a constant infusion new blood.

Jewish Almshouses for Liverpool.—Ne almshouses for Jewish ladies have been cons crated in Liverpool. They are situate in Nor Hill-street, Toxteth Park, and have been erect at the cost of the late Miss Eliza Jackson. T houses are intended for the reception of reduc ladies of the Jewish faith. The building h been constructed in the Elizabethan style. It understood that six ladies will reside in t houses, and for each a large living-room, bedroo and kitchen are provided, and there is a ve pretty garden in front of the main building. T space occupied by the institution covers an ar of about 1,000 square yards. The land a building have cost 3,500*l.*, and Mrs. Braham h invested 7,000*l.* in Consols so as to provide a su of 200*l.* per year for the maintenance of t inmates. The architects are Messrs. Hoult Wise, of Liverpool, and the builder is Mr. J. M'Gaul.

Doings at Montreal.—A letter from Canada the *Gloucestershire Chronicle* says:—"At ntreal the signs of progress and improvement evident on every hand. The new City Hall in every respect the grandest and most im-sing structure in Canada, with the single ex-otion of the Parliament Buildings at Ottawa e Windsor Hotel, now approaching completion a total cost of $750,000, is a gigantic cara-nseral on the American plan. It is six or seven ries high, faced with cut stone on the two ncipal fronts, and will probably prove about profitable an investment as the Great Eastern the Grand Trunk. But the most remarkable, ugh not the largest, building in Montreal is doubtedly the new Cathedral of St. Peter, an act model, it is said (of course on a reduced le), of St. Peter's at Rome. The walls are w about 50 ft. high, but for the present the rk is at a standstill. The custom among man Catholics here in building a new church o do the work on cash principles. As long as cash comes in the work goes on; when one ps the other stops also. The Protestant tem, on the other hand, is to run up the lding as if working for a wager, and then rtgage it to the last brick to pay the con-ctor. The main peculiarity developed by Peter's, so far, is the absence of windows, ing it rather a barn-like appearance."

Institution of Mechanical Engineers.—e annual general meeting of this society was d, on the 31st ult., in the hall of the Institu-n of Civil Engineers, Great George-street, . Thomas Hawksley, the president, in the ir. The president announced that, subject satisfactory arrangement being made in the ality, the next meeting of the Institution uld be held in Bristol, from July 24th to July h inclusive. The reason for the change in date was because that formerly appointed shed with the assizes, and there would not be ficient hotel accommodation in the town. He also to state that a committee of the council been appointed for the purpose of arranging ms for obtaining possession of premises in stminster, deemed by the committee to be table for the Institution. The business of session was then commenced by the renewed cussion on "Homogeneous Iron, and the gree of Homogeneity to be effected in Iron duced by various Systems of Puddling and sequent Working," by Mr. Henry Kirk, of rkington, the author of the paper, which was tinued by Mr. Siemens, Dr. Bell, and other tlemen.

Paper Houses.—A manufacturing company Wisconsin, according to the *New York Mail*, ps three mills constantly running on build-paper, having capacity for the making of een tons per day. As long ago as 1857 company began the manufacture of paper building-purposes. The paper is a thick, d pasteboard, wound in rolls of 25 lb. to lb. each, and usually 52 in. wide. While process of manufacture it is subject to a ssure of hundreds of tons, which compresses fibres together in one solid body, thus making absolutely air-tight sheet; and as paper is of the best non-conductors known, it resists action of both heat and cold, and so a build-lined with it is made warm in winter and in summer. It does not shrink like lumber, is not affected by frost, cold, heat, or damp-s; and it is known that it will not burn as lily as wood, on account of its hardness and dity, and by its use a house can be almost, if absolutely, tight."

The Opera House on the Embankment.—he meeting of the Metropolitan Board of ks on the 1st inst., the Works and General poses Committee submitted a report as to an lication by Mr. Mapleson for an extension of e until Lady-day next for the roofing-in of the Opera House on the Victoria Embankment, a further extension of six months from that for its entire completion, and recommending the application be granted, subject to an eement prepared by the solicitor of the Board, submitted with the report of the committee approval and sealing by the Board. Mr. he said the agreement well protected the rests of the Board, and simply extended the for roofing-in and completing the building, nt having been paid up to the present time. recommendation was agreed to.

Newgate.—The *City Press* is assured that rumours as to the removal of Newgate are correct.

Chinese Washermen.—It is stated that an experiment is shortly to be made in introducing "Chinese domestic labour" into England. Ship-loads of Chinese labourers are about to be im-ported by a London firm of shippers. They will be sent over by a Hong Kong house. John Chinaman offers his services as cook, houseman, and washerman; and, if accounts be true, he is in those capacities invaluable. As a laundry-man he is said to be unapproachable, and an opportunity for displaying his talents in that direction is shortly to be given by the erection of a Chinese laundry in Holland Park. The building, it is said, has already been begun.

The Marezza Marble Company.—The Patent Marezza Marble Company, whose works in Shenton-street, Old Kent-road, have been carried on during the last three or four years, have at length been brought to a stand, and the company is now in liquidation owing to want of adequate support. By order of the liquidators the patent rights of the company, together with the whole of the manufacturing plant, were offered for sale on the premises on Tuesday; but although several offers were made, we under-stand that no actual sale was effected, and that the lease of the premises also failed to command a purchaser.

A Chester Cocoa-house.—In order to obtain the accommodation required for the Nag's Head Cocoa-house, the premises are now undergoing considerable alteration. On the ground-floor will be a restaurant, 33 ft. long and 17 ft. wide, with a public entrance from Foregate-street. The front of the building will be entirely new, and substantially constructed with English oak framing and brick filling, in the style characteristic of the old houses of Chester. Messrs. Farrimond & Co. are the contractors for the work, which is being executed from the designs and under the direction of Mr. John Douglas, architect.

Rendle's Patent System of Glazing.—The spread of this system appears fully to justify the good opinion of it we have expressed. The roof of the proposed great railway station for the Caledonian Railway Company, in Gordon-street, Glasgow, which will have 130,000 square feet of glass, is to be executed according to "Rendle's Patent System," on the ground that it admits of a very liberal amount of ventilation, while it prevents all ingress of rain.

TENDERS.

For completing the tower of St. Mark's Church, West Hackney. Mr. E. L. Blackburne, architect:—

Stamp & Bowtle	£4,376	0	0
Cook	3,743	0	0
Sargeant	3,485	0	0
High & Co.	3,270	0	0
Forrest (in error)	2,296	0	0

For the erection of new Trinity Church, Gunnersbury, Middlesex, for the Rev. W. Frith. Messrs. R. Tomlinson & Byrne, architects. Quantities supplied by the architects:—

Gibson Bros.	£3,680	0	0
Admonson & Sons	2,991	0	0
Nye	2,970	0	0
Carless	2,890	0	0
Esden	2,800	0	0
Edymon	2,725	0	0
Brunden	2,640	0	0
Barnes (too late)	2,600	0	0

For Friends' schools, at Saffron Walden, Essex. Mr. Edward Burgess, architect:—

Brown	£19,226	0	0
Bayes, Bros., & Allen	18,188	0	0
Whitlen & Sons	18,150	0	0
Dove Bros.	17,672	0	0
Browne & Robinson	17,621	0	0
Kirk & Randell	17,479	0	0
Hill, Higgs, & Hill	17,440	0	0
Brass	17,397	0	0
Jerrard	17,383	0	0
Bell & Sons	16,545	0	0

For houses in St. Paul's-road, Birmingham, for Mr. Webb. Messrs. T. C. & J. P. Sharp, architects:—

Mountford	£1,593	0	0
Charley	1,590	0	0
Mills & Son	1,564	0	0
Dowse	1,548	0	0
Bowen (accepted)	1,545	0	0

For houses in Oxford-road, Moseley, Birmingham, for Mr. Potter. Messrs. T. C. & J. P. Sharp, architects:—

Mountford	£1,323	10	0
Hancox	1,322	0	0
Mills & Son	1,321	0	0
Bowen	1,305	0	0
Simons	1,277	0	0
Corbett	1,275	0	0
Loud	1,268	0	0
Dowse (accepted)	1,244	0	0

For the erection of two porters' houses, for Messrs. Huntley & Palmer, Reading. Messrs. Wm. & J. T. Brown & F. W. Albury, architects:—

Filewood	£1,245	10	0

For the erection of new shop, &c., Reading, for Mr. Wm. McIlroy. Messrs. Wm. & J. T. Brown & F. W. Albury, architects:—

Talbot	£980	0	0

For the erection of new warehouses and stabling, Reading, for Mr. James Holmes. Messrs. Wm. & J. T. Brown & F. W. Albury, architects:—

Searle	£1,350	0	0

For houses in Oxford-road, Moseley, Birmingham, for Mr. Fowler. Messrs. T. C. & J. P. Sharp, architects:—

Simmins	£2,950	0	0
Corbett	2,905	0	0
Mills & Son	2,868	0	0
Bowen	2,843	0	0
Hartley	2,797	0	0
Hancox	2,718	0	0
Mountford (accepted)	2,660	0	0

For a block of eight cottages, for the Bromley Cottage Improvement Company, Limited. Mr. George Truefitt, architect:—

Carter	£1,430	0	0
Payne & Balding	1,269	0	0
Copping (accepted)	1,200	0	0

For erecting a house on the Hendon Estate, Hampstead, for Mr. W. Ambrose. Mr. George Truefitt, architect:—

		Extra for red facings.		
Scrivener & White	£4,049	0	0	£40 0 0
Patrick & Son	3,948	0	0	34 0 0
Warce	3,800	0	0	20 0 0
Bird (accepted)	3,800	0	0	—

For alterations to the York and Albany, Regent's Park. Messrs. Bird & Walters, architects:—

Godden	£1,179	0	0
Newman & Mann	1,172	0	0
Hockly	1,135	0	0
Williams & Sons	1,120	0	0
Brown	1,079	0	0
Mark	987	0	0
Anley	940	0	0

For alterations at the Civet Cat, High-street, Kensington. Messrs. Bird & Walters, architects:—

Sykes	£543	0	0
Brown	480	0	0
Williams & Sons	430	0	0
Mark	422	0	0
Anley	380	0	0
Hockly	380	0	0

For alterations at the Lord Napier Tavern, Victoria Park, for Mr. Fredk. Day. Messrs. Ashby & Green, architects:—

Cole	£721	0	0
Charlton & Mansell	597	0	0
Smith	582	0	0
Lewis	570	0	0
Stamp & Bowtle (accepted)	475	0	0
Pewterers' Work.			
Warne (too late)	£58	0	0
Skinner (accepted)	36	15	0
Gasfitters' Work.			
Vaughan & Co.	£53	0	0
Winn	25	0	0
Dodson (accepted)	23	0	0
Plate Glass, Writing, and Embossing.			
Hollyer (accepted)	£165	14	4

For the Blundell-street Schools of the Kingston-upon-Hull School Board. Messrs. W. Botterill & Son, archi-tects. Quantities supplied:—

Stamp	£7,517	0	0
Skinner	7,480	0	0
Sergeant	7,470	0	0
Barry	7,400	0	0
Smith	7,288	0	0
Jackson & Son	7,245	0	0
Musgrave, jun.	7,150	0	0
Grassby	7,080	0	0
Brown	7,039	0	0
Drury & Harper	7,023	0	0
Habbershaw & Son	6,987	18	9
Hockney & Liggins (accepted)	6,804	14	0

For pulling down and rebuilding house and shop, 179, Green-street, Bethnal-green. Messrs. T. & W. Stone, architects. Quantities not supplied:—

Hughes	£379	0	0
Thomerson	372	0	0
Howard	365	0	0
Moore	350	0	0
Souster	297	0	0

Accepted for the enlargement and alteration of the Shustoke Industrial School:—

C. J. & G. Fox	£2,498	17	6

For north boundary-wall, Manor-park Cemetery, Little Ilford:—

Richardson	£640	0	0
Williams	610	0	0
Page	605	0	0
Warr	570	0	0
Stamp & Bowtle	548	0	0
Jackson	542	0	0
Webb (accepted)	525	0	0

For pair of villa residences, Avenue-road, Forest-gate. Mr. W. Smith, architect. Quantities supplied:—

Dyer	£993	0	0
Page	975	0	0
Noble	875	0	0

For house, Sebert-road, Forest-gate, for Mr. Williams. Mr. Peters, architect. No quantities:—

Page	£495	0	0
Ullett	475	0	0
Hoskins	415	0	0

For house, Sebert-road, Forest-gate, for Mr. Shunter. Mr. Peters, architect:—

Page	£600	0	0
Ullett	570	0	0
Hoskins	465	0	0

For the erection of five cottages in Raynham-road Edmonton. Mr. T. J. Hill, architect:—

Coote & Sayer	£895	0	0
Wilkins (accepted)	850	0	0

For new billiard-room and repairs and alterations, No. 23, Palace-gardens, Kensington, for Mr. Philip Falk. Messrs. Salomons & Wornum, architects. Quantities by Mr. Bagg :—

	Billiard-room.	Repairs, &c.
Dove Bros.	£2,585 0 0	£2,000 0 0
Shepherd	2,105 0 0	1,568 0 0
Nightingale	2,100 0 0	1,460 0 0
Kinninmont	2,249 15 0	1,245 15 0
Macey	1,950 0 0	1,543 0 0

For new school-rooms and alterations to Abney Congregational Church, Stoke Newington. Mr. T. F. Fife, architect :—

	Allow for old materials.
Bayes, Bros. & Allen	£2,718 0 0 ... £44 10 0
Hayworth	2,693 0 0 ... 30 0 0
Smith	2,673 0 0 ... —
Barber	2,521 0 0 ... 112 0 0
Groom	2,520 0 0 ... 100 0 0
Larter	2,480 0 0 ... 130 0 0
Staines & Son	2,478 0 0 ... 30 0 0
Linfield	2,026 0 0 ... 90 0 0

For works in restoration to stonework, &c., to Bloomsbury Chapel, Bloomsbury-street. Messrs. George & Peto, architects. Quantities supplied by Messrs. Stoner & Sons :—

Simpson & Son	£3,652 0 0
Peto Bros.	3,221 0 0
Hill, Higgs, & Hill	3,200 0 0
Brass	1,950 0 0
Dove Bros.	1,500 0 0

For schools, Tooley-street, Southwark, for Rev. J. C. Bamber. Mr. H. J. Hansom, architect :—

Smith	£1,895 0 0
Lathey Bros.	1,834 0 0
Gregory	1,817 0 0
Stimson & Co.	1,782 0 0
Turtle & Appleton	1,765 0 0

For warehouse, Felix-street, Westminster Bridge-road, for Mr. J. Ward. Mr. John Groom, architect :—

Patrick	£3,797 0 0
Downs	3,765 0 0
Marshall	3,680 0 0
Nightingale	3,475 0 0
Scrivener & White	3,466 0 0
Thompson	3,340 0 0
Stimpson & Co.	3,300 0 0
Smith	3,168 0 0

For additions to dwelling-house, Wilford-road, Nottingham. Mr. T. G. Alderson, architect :—

Cordon	£357 0 0
Parnall Bros.	340 0 0
Mason	335 19 0
Chester	278 8 4
Flinders	273 10 0
Tyers	257 10 0

For roads and sewers on the Estate of Mr. David Mitchell, at Sandown, Isle of Wight. Mr. Francis Newman, surveyor :—

Sibley	£720 0 0
Coker	640 0 0
Coker, jun.	636 0 0
Meader	630 0 0
Hayden	620 0 0

For the erection of school in Bath-road, Swindon, for Mr. S. Snell. Mr. W. H. Read, architect :—

Phillips	£287 10 0
Barrett	208 18 0
Wiltshire (accepted)	205 0 0

For alterations at No. 35, Wood-street, Swindon, for Mr. J. Chandler. Mr. W. H. Read, architect :—

Wiltshire (accepted)	£397 0 0

For the erection of six almshouses in Cricklade-street, Swindon, for the Vicar and Churchwardens of the parish. Mr. W. H. Read, architect :—

Phillips	£919 16 0
Thomas	905 10 0
Wiltshire	899 0 0
Barrett*	891 17 0

* Accepted subject to reduction in plan.

For laying service mains in connexion with the new Water Works, Ripley, Derby, for the Local Board. Mr. R. Argile, jun., engineer. Quantities supplied :—

Beardsley	£1,509 7 6
Helling	1,151 2 1
Knight	1,126 16 3
Coupe	1,007 14 0
Stevenson	684 10 0
Fretwell	575 8 2
Wain	566 4 0

For the erection of new warehouses at the corner of Crown-street and Sutton-street, Oxford-street, for Messrs. Crosse & Blackwell. Mr. R. L. Roumieu, architect. Quantities supplied by Messrs. Welch & Atkinson :—

Warne & Sons	£16,956 0 0
Longmire & Burge	15,048 0 0
Pritchard	14,998 0 0
Smith & Co.	14,765 0 0
Dove Brothers	14,125 0 0
Macey & Sons	13,670 0 0

TO CORRESPONDENTS.

T. B. (the existing law is doubtful; but we are disposed to think our correspondent has grounds for an action).—G. M. (the bow-window can be reinstated. Consult with the district surveyor previously).—Zero (must search for himself).—An Oddfellow (we cannot advise on private differences on *ex parte* statements. The sum named is greatly in excess under ordinary circumstances).—R. R.—C. T.—T. W.—G. T.—G. W.—Dr. P.—E. L. B.—C.—C. H.—T. S. W.—W. R. & Son.—J. W.—S. & J. S.—A. C.—S. J. J.—J. P.—G. M.—H. C. S.—E. A.—R. L. R.—G. & B.—H. P.—G. S. H.—H. H.—M. & S.—S. H.

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The Builder.

Vol. XXXV. No. 1793. Saturday, June 16, 1877.

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Sanitary Engineering.

HERE is an inconvenience attaching to the publication, within four years, by the same publisher, of two books, by different authors, bearing the same title. In 1873 Messrs. Spon published a work, by Mr. Baldwin Latham, which we noticed at the time, entitled "Sanitary Engineering: a Guide to the Construction of Works of Sewerage and House Drainage, with Tables for facilitating the Calculations of the Engineer." This month we have before us, from the same publishers, a

olume of 430 pages, called "Sanitary Engiering: a Series of Lectures given before the chool of Military Engineering at Chatham, 76," by Mr. Bailey Denton. It is necessary mention this fact, in order to prevent the nfusion which might otherwise arise from ferring to one or other of the volumes issued nder the same title.

Mr. Latham claimed that up to the time of the blication of his book, in April, 1873, "no work d been published which treats entirely on bjects relating to sanitary engineering; the erature of the subject being for the most part read over a vast number of Parliamentary pers." He apologised for the hurried compilation of a volume which laboured under the disadvantage of being without a table of contents. Mr. Denton's book, on the other hand, having probably had opportunities for revision nce the delivery of the lectures which it reproduces, is a model of good arrangement as to vision, indication of contents, and indexing. e have so recently had to speak of the loss of me which is involved by the too frequent ractice of engineers working on the same field ithout making proper reference to the labours their predecessors or contemporaries, that we ust now drop the question of the relative merits the two homonymous books on sanitary gineering, and proceed to a description of the lume before us.*

Mr. Bailey Denton's book is drawn up in five visions. These relate to air, water, the dwelg, the town and the village, and the disposal sewerage. In the first division the work disses the constituents of normal air; the attainable standard of purity in air; the quantity of air respired by human beings; the mean quantities of oxygen and of carbonic acid existing in the atmosphere; the foreign matter and various agencies polluting and counteracting the pollution of air; the subject of malaria; the effect on the air, and on the general health, of dry and wet soils; the effect of subsoil drainage on temperature; and the necessity of the maintenance of a certain standard of purity in the air surrounding and entering dwellings.

The ordinary proportions given for the constitution of atmospheric air are four-fifths, by volume, of nitrogen, and one-fifth of oxygen, mixed with a very small proportion of carbonic acid. On the authority of Dr. Angus Smith, it is stated that the purest air fitted for human respiration contains not less than 20·99 per cent. of oxygen, and not more than 0·3 per cent. of carbonic acid. The fair attainable standard of respirable air is stated by the same writer as 20·96 oxygen, 79·00 nitrogen, and ·04 carbonic acid, with a varying quantity of watery vapour. According to Professor Huxley, about 350 cubic feet of air pass through the lungs of an average individual per diem. In passing through the lungs this air loses from 4 to 6 per cent. of its volume of oxygen, and gives from 4 to 5 per cent. of carbonic acid. During twenty-four hours there will be consumed about 10,000 grains of oxygen and produced about 12,000 grains of carbonic acid, corresponding to 3,300 grains of carbon. During the same time, about 5,000 grains, or nine ounces, of water, are exhaled by the lungs. Having gone thus far into detail, it would have been better for the reader that the book should give a little more information. Thus, it is as well to add, in order to make the facts cited available for further use, the atomic equivalents of the gases mentioned. These are, hydrogen 1, oxygen 16, nitrogen 14, carbon 12. Carbonic acid consists of one equivalent of carbon plus two of oxygen, = 44; water consists of one equivalent of oxygen, plus two of hydrogen, = 18; and ammonia, which plays a very important part in the contamination of the air, as well as in the growth of plants, contains one equivalent of nitrogen, plus three of hydrogen, =17. Dr. De Chaumont says that each adult consumes in food from 3,500 to 4,000 grains of carbon in twenty-four hours. The dietary taken from the food-product investigations at South Kensington gives ten ounces of carbon, or 4,375 grains, for the force-producing elements of food. The carbonic acid exhaled, in the former case, to vitiate the atmosphere, is 17 cubic feet. In addition to this, a quantity of watery vapour is given off from the person. Dr. De Chaumont says that an assembly of 2,000 persons will give out in two hours seventeen gallons of water in vapour, and nearly as much carbon as would be extracted from a cwt. of coals. Dr. Parkes puts the carbonic acid exhaled from the lungs at from 12 to 16 cubic feet; to which has to be added an undetermined quantity from the skin. On Professor Huxley's estimate, an individual vitiates 1,750 ft. of pure air to the extent of one per cent. in twenty-four hours, or 17,500 ft. to the extent of one per *mille*. Taking the amount of carbonic acid in the air at three parts, and in expired air at 470 parts, in 10,000, such an individual would require a supply of more than 23,000 cubic feet per diem of ordinary air in order to maintain a purity of not more than one per 1,000 of carbonic acid,—beyond which proportion the presence of impurity becomes perceptible by the nose. This is enough to show the absolute impropriety of constructing sleeping apartments without some means of ventilation. A space of 500 cubic feet has been mentioned as that proper to allot to each individual. This capacity, we see, would be vitiated to a very injurious degree in the course of twelve hours, and the inference that a room without some means of ventilation ought never to be slept in is irresistible. Infants, of course, vitiate the air far less than adults. But the need of pure air may be thought to be more imperative the greater the delicacy of the frame.

The description of ozone which is quoted from Dr. De Chaumont is not altogether intelligible; "a modification of oxygen, in which more than the usual number of atoms are brought together." That ozone is an allotropic form of oxygen is not a perfectly satisfactory explanation, but it is the best with which we are acquainted. That it is, in fact, oxygen with a raised electric tension, is a hypothesis which will probably meet all the known facts of the case. Such natural actions as those of the waves on the coast, of the wind on the leaves and branches of trees, and possibly of the germination and growth of plants, and oxidation of metals, which produce electricity, are also favourable to the presence of ozone in the atmosphere. Whoever can go a step further in the inquiry will lay the basis of a scientific theory of the weather, including an explanation of the true theory of the barometer. The rise and fall of mercury in this instrument cannot be attributed with truth to the physical cause of the weight of the air alone. Gravity, on the surface of the earth, only varies slightly, and within known limits, due to the configuration of the mass of the planet. Barometric pressure, on the other hand, will vary as much as 10 per cent. in the same locality. There can be no doubt that the atmosphere clings more closely to the earth at one time than at another And that this increased attraction is due to the higher electric tension of the air, or to the presence of a larger proportion of ozone, will, we think, be found the most simple view of the case.

Mr. Denton refers to an experiment made in Italy for the purpose of arriving at the chemical nature of malaria, or marsh miasma. The moisture existing in the marsh air examined was found to contain nitrogenous substances, which putrified,

* Sanitary Engineering: a Course of Lectures given fore the School of Military Engineering at Chatham, 6, by J. Bailey Denton, F.G.S., M.Inst. C.E. London: on. 1877.

and soon produced animalculæ. The origin of disease from the evaporation of water containing organic emanations is thus explicable; and the extreme importance of under-drainage of the soil under and immediately adjoining buildings is strikingly illustrated. We have on former occasions called attention to the direct effect of damp subsoil in producing phthisis. Its effect on rheumatic and neuralgic affections is no less marked. Mr. Bailey Denton cites the case of Rochester, where the annual death-rate of the drier parts of the city, to the east of the Medway, is 12·49; while in the low-lying districts of Strood, to the west of the river,—a locality which is subject to inundation, this rate is as high as 23·80. At Salisbury, by under-drainage, the general death-rate is said to have been reduced by 9 per cent., and that due to phthisis by 49 per cent.

The reduction of temperature by evaporation from the surface of the earth is another point to which Mr. Denton calls attention. Every grain of water evaporated carries off with it heat sufficient to raise 960 grains 1° Fahrenheit. "Supposing 30 in. of rain to fall in a year on an acre of land, and its evaporation to be spread over the whole period, the daily weight of water evaporated would be rather more than 8½ tons, or 18,593 lb. An engineer will best realise the loss of heat, *i. e.* the reduction of temperature, resulting from the change of such a quantity of water into vapour, when he remembers that it would require the combustion of about 24 cwt. of coals, as ordinarily used under a steam boiler, to effect the object."

From the consideration of air Mr. Denton passes to that of water. As to this, it is well known that the allowance made per head for the supply of large towns and cities is enormously in excess of the requirements of the population for drinking and for culinary purposes, a fact which may probably hereafter be turned to economic account. From a report on the army and navy diet-scales, Mr. Denton finds that the estimated quantity of liquids of all kinds drunk in the two services averages 187½ gallons per head per annum, or about 2 quarts per day. This is, of course, for men alone, and is a higher allowance than that for all ages. Dr. Parkes says that an adult requires daily from 70 ounces to 100 ounces, or from 3½ to 5 pints of liquid for nutrition, but that from 20 to 30 ounces of the quantity are usually contained in the solid food. In addition to the water which is drunk, that used for cooking, for washing, and for the washing of culinary vessels, as well as of linen and clothes, has to be regarded. Pure water is essential for these purposes. The whole of this supply, however, including that which is drunk, is taken by Mr. Denton at not exceeding 8 gallons per head in towns, and at about half that quantity for rural districts. The allowance of from 30 to 40 gallons per head per diem, on which it is usual to calculate for the supply of large centres of population, is thus far in excess of what may be called the personal demand. The difference is to some extent made up by consumption of water for manufacturing purposes; but chiefly, no doubt, is due to the service of the water-closet system. Mr. Denton estimates that the total quantity necessary for every household purpose, including the closets, if there is no waste, will not exceed 15 gallons per head per diem. For public purposes he thinks 10 gallons per head per diem should suffice; making the ordinary rate for the supply of a town population 25 gallons, and for that of a rural population 15 gallons, per head per diem. These allowances respectively amount to about 25 tons and 41 tons of water per unit of population per annum. This is lower than we have been accustomed to estimate; a ton per head per week being nearer the actual experience of most returns. In this, however, no doubt, there is a great deal of waste.

Mr. Denton gives a valuable table illustrating the sources of supply, the quantity, the purity, and the cost, of water delivered in London and in twenty-five principal English towns. Of these the smallest is Bacup, with a population of 18,400. The gathering-ground is 350 acres of moorland; the service-reservoir will contain twenty-five million gallons. The daily delivery is 270,000 gallons. The charge for domestic use is 6½ per cent. on rentals. For public use it is cited with the wide margin of from 6d. to 1s. 2d. per thousand gallons. The lowest price given in this table for water is that delivered for public use at Plymouth (where 75,000 persons are supplied with water from the River Mew, on the borders of Dartmoor), which is rated at 2d. for 1,000 gallons. The highest charge (these figures are not supplied for the Metropolis) is at Birkenhead, where the private supply is from 5 to 7½ per cent. as a charge on rentals, and the price for public use is a shilling and a halfpenny per thousand gallons. Thus the price at Plymouth is 0·44d. per ton; at Birkenhead, 2·75 per ton. At London, we have formerly found that the price for all purposes comes a little under 1·4d. per ton, being twice as cheap as at Birkenhead.

As to quantity of rainfall, measurement of hardness, and of purity of water and sources of collection, there is much interesting information, for which we refer the reader to Mr. Denton's pages.

In the third division of his book, under the head "The Dwelling," the author considers the question of drainage, sewerage, and water supply. In entering on the architectural, rather than the engineering details of this part of our domestic economy, it is possible that Mr. Denton is somewhat too sweeping in his conclusions. There is no doubt that concrete may be employed as a material for foundations, and even for walls, in many cases, with great advantage. But we are hardly prepared to endorse the statement that "concrete floors, and areas to basements, and damp courses to walls, are essential to healthful dwellings," in all cases. It must be remembered that a serious expense would thus be added to the ordinary outlay of the builder. It is true that an outlay which secures health is a wise economy; but we must none the less be sure of our facts. On a rock foundation, for example, we should not be disposed to lay down a bed of concrete. On dry sand we should have considerable hesitation as to its employment over the whole area covered, though it might be of use as far as extending the area on which the footings of the walls rested. But in alluvial soils, valley bottoms, and sites where the damp naturally rises from the soil, and becomes visible as mist when the day grows cool—if it is necessary to build on such sites at all—a good bed of concrete spread over the whole plan of the building would no doubt be a valuable defence against insidious damp. Still we must hold this rather to be a question for the discretion of the architect than for the absolute prescription of the engineer. In fact the greater part of this division of the book must be taken as common ground for the members of the two professions, and no hard and fast line can be drawn as to the exclusive province of either. Mr. Denton adopts, from the full report of the Sewage Committee of the British Association, a definition of the word sewage, which is not usual, and as to which it is necessary to bear in mind the exceptional breadth. He calls it "any refuse from human habitation that may affect the public health." Of course the exact sense in which a technical term is to be applied is not so important as the condition that the sense in which it is used by an author must be clearly defined. But still, to include the contents of the dustbin, and the ashes of the grate, in the words by which we ordinarily denote liquid refuse alone, is liable to misconstruction.

"In order," Mr. Denton says, "to lay out the external sewerage of the dwelling, it is absolutely necessary to determine beforehand the mode of disposing of the liquid refuse." This sentence, perhaps, hardly expresses the real intent of the writer. But if we take it to mean that a preliminary to any house-building should be the consideration of the arrangement of drains and connexions with sewers, and that these should receive proper attention before the structure itself is carried on, we very thoroughly agree with him. Indeed, when he adds that "where an available system of sewers already exists, the liquid refuse of all dwellings should be discharged into the nearest common sewer by a private communicating sewer," all that is necessary to add is, that proper precaution must be taken to avoid the contamination of the dwelling by the escape of sewer-gas through such communications. But the reference to the 17th clause of the Public Health Act of 1875 points to something further than that provident arrangement of house-drainage which is all that comes properly within this part of the province of the builder; as it refers to the obligation of purifying such effluent matter before it makes its way into any watercourse. This is not a matter that naturally comes under this division of the book to discuss. Under the 45th section of the Public Health Act the use of cesspools for isolated dwellings is contemplated. The observations on this subject would be more in place under that division of the book which treats of the disposal of sewage, which is a perfectly different question from the drainage arrangements of the dwelling. As to this latter subject, Mr. Denton gives illustrated accounts of the appliances which he recommends. He then proceeds to inquire into the question of the water-supply; which, again, is matter of general interest, while that part of the case which relates to the supply of water within the dwelling itself, which naturally comes under the head "The Dwelling," is far more limited. Mr. Denton first speaks of wells of various depths, and gives some instances of the supplies derived from different wells, and of the apparatus employed to raise water for domestic use. Cisterns and filters are also discussed. The chapter closes with the good advice, "No country-house should be without a plan of its sewers, drains, and water-pipes . . . . Further, it is most desirable to leave as little as possible to rectify by the village plumber the only way of reducing his work to a minimum being simplicity of arrangement and accuracy of execution in the first instance, with a perfect record of pipes &c., for after-reference." While it may, perhaps, be expected that the village plumber himself will not give a very ready assent to the above remarks, which is not made expressly in the interest of what is "good for trade," its propriety and good sense are unquestionable.

In passing to division 4, "The Town and the Village," the writer remarks that as the object of the sanitary engineer in his treatment of a town is the attainment of pure air and pure water for its inhabitants, he must have regard to as much of the surrounding country as may have a direct or indirect influence on the object at which he aims. The chapter then travels over the field of the admission of surface water into, or its exclusion from, sewers; the influence of road detritus; the admission or exclusion of subsoil water; the quantity of sewage dependent on present and future populations, and on local trades and occupations; and the water supply of the district. He proceeds to consider the general arrangement of a system of sewerage; the sizes and inclinations proper to render sewers self-cleansing; the forms and materials of sewers; those of sewer appliances, as manholes, traps, penstocks, and the like, of which drawings as well as descriptions are given; and discusses sewer ventilation and scavenging. He then treats of urban water supply, and the distribution of water, whether by intermittent or by constant service. A comparison of twelve towns supplied on the latter with twelve supplied on the former system, gives an average number of 144 gallons per house per diem for the intermittent supply, and of 116 gallons per house for the constant supply. Twenty factories are included in the latter, and 206 factories in the former average. These figures seem to tell very strongly in favour of the superior economy of the constant system. It must be remarked, however, that the number of houses for which the average is taken is more than four times as much for the lower quantity of water per house than for the higher; the twelve towns with constant supply containing 183,000 houses, and the twelve towns with intermittent supply only 42,000 houses; a circumstance which may affect the averages.

The fifth division of the book deals with the treatment and disposal of liquid sewage. As to this, Mr. Denton premises that recourse to land, when attainable, is the surest mode of disinfecting water that has been contaminated with sewage. He states with candour that "although enormous crops have been frequently grown, and the money realised from them has been very great, and may very fairly be put forward as proof of the great productive powers of sewage, and although every one admits that there exists in liquid sewage a value which is not confined to its manurial elements, but extends to the water by which these elements are conveyed; yet so many drawbacks are experienced in the utilisation of sewage, and so little has been done to get rid of them by reference to facts in place of opinions, that we find ourselves as much at sea now as we were twenty years back as to the best way of setting to work to obtain the best returns." This remark so fully accords with those we have had occasion to make from time to time, that we are glad to call attention to it as the unbiased testimony of a writer who still holds to the idea that sewage ought to be "utilised," rather than "oxidised," by the most rapid and effective means possible.

This part of the case is well illustrated by what is, perhaps, the most valuable part of the whole volume,—namely, the description given

y the author of the intermittent downward fil-ation works constructed under his direction at erthyr Tydvil and at Kendal. This will repay tentive perusal. The report of Messrs. Raw-nson and Read was issued while Mr. B. enton's book was in the press, and notes are dded to the text in which some of the conclu-ons of that report are combated. The subject one of too much importance hastily to adjudge. Vhere the work before us has most positive value in those portions in which it gives definite evi-ence of the purifying power of soil. Mr. Denton an advocate of a system of intermittent down-ard filtration, combined with a wide surface rigation. The former part of the plan is called safety-valve, and is intended to act as a posi-ve protection under any circumstances; the atter is looked to as a means of reducing the ates by the profits of sewage farming. It is retty well admitted that such profits are only o be expected under unusual circumstances, and re not to be made by urban or rural sanitary uthorities directly, but only by lessors. A esult which would be of great value in this part f the subject we have failed to extract from Ir. Denton's volume so clearly as might be ished. That is, the maximum value of ewage crops taken over a sufficient duration of me; and compared with (1), the maximum alue of the crop which, under similar conditions, ould be produced by pure water irrigation; and 2) the quantity of sewage, per unit of popula-ion, applied to the production of the crops noted. The highest values given by Mr. enton, per acre, are,—for onions 104*l.*, for arsnips 52*l.*, for mangolds 44*l.*, for cabbages 5*l.*, and for rye grass 37*l.*,—all single and xceptional cases. What we want to know is 1), what are the maximum crops of each of hose kind of vegetables that can be produced y equally careful culture, with water irrigation; nd (2), what was the amount of sewage ctually supplied in the year to produce each of ese crops. At Kendal the sewage of 2,700 ersons was turned upon one acre, which was ultivated. We should like to have the particulars f the crops. If we assume that a net gain of *l.* per acre in crops could be shown in this nstance to be due to the chemical effect of the ontents of the sewage, we should still find the alue per unit of the population to be below d., instead of amounting to from 4s. to 8s., as laimed by the advocates of sewage farming. Ve may be in error,—but it seems to us that he general omission of writers on the subject of ewage cultivation to afford the means for a ready conomical test, on a broad extent, of this ature, can hardly be due to a want of the terary habit, or of due skill in marshalling the uling facts of the case. The utmost value that an be ascertained to have been actually ex-racted from sewage, per unit of population, is a act of paramount importance as regards any rocess of utilisation. We have never seen that gure plainly stated. And we have failed to xtract it even from a book containing so much, nd such valuable information as that which we ow commend to public attention.

SCIENTIFIC PHILANTHROPY (LIMITED).*

DICKENS, who could define a Montague Tigg to the life, lost himself in an attempt to describe Tigg Montague, esquire. The latter required Thackeray's delicacy and Jacob Omnium's strength. The commercial apostle whose programme is improvement of the species and social reform is an enlightened, a refined, and gentlemanlike person,—a lover of mankind after the example of Socrates, if you will, but, unlike the Greek philosopher, pre-eminently respectable in his habits and judicious in his discourse. It must have been a great advance on Pagan doctrine, when men were first persuaded, by the divine precepts of Christianity, that if they loved one another in this world they would have a spiritual reward in another; it was a still greater advance when Law confirmed the common advantages of Charity and Co-operation; it is the triumph of human intelligence, and the boast of actual society, to be enabled to love one another, not only with the certainty of future benediction, but at a pecuniary profit of almost immediate realisation. "My Lords, Ladies, and Gentlemen," cries the modern apostle, not in the wilderness, but in a metropolis of four million and odd souls, "come with me into the highways and byeways of this colossal city,—into the suffocating homes of the poor. See how the artisan is lodged,—how the sweating brow and horny hand of labour find no rest in comfortless tenements,—how the dwellings generally of working men are a reproach to their employers, who, nevertheless, pay them adequately and heavily. Will you not mend this state of things, especially if you can do so at no cost, and at no risk to yourselves? No money is required of you, my lords, ladies, and gentlemen; your practical assistance is neither desired nor desirable; permit me simply to place some of the best-known of your honoured names at the top of this circular, to let the world know that you are supposed to be watching over the conduct of my philanthropic efforts; and money will flow into my coffers,—money with which I can do anything and everything. I want only names—the pillars of limited liability—to raise my superstructure, which, even if it fall, will not fall on you; for, as your purses have not been opened, so their contents will remain intact, and as your honour is now above suspicion, so it will then be protected from reproach."

Thus the limited liability company starts into being without capital, without any promise from probable shareholders, and often without any defined intentions. One man not seldom conceives, promotes, and starts it; the same, or somebody he puts in, directs the board of direction. Their good names represent money even if their owners paid none; money makes money, and enough for immediate use can be obtained by paying for it. The managing director is absorbed in the gathering together of shareholders and the allotment of shares. The first efforts of the company are tentative, earnest, and profitable to the majority, even though perhaps unremunerative to those members who gave the general body co-operative life. Patrons, patronesses, accept an invitation to evince,—with their names,—love and sympathy for their less fortunate brethren. The thing gets talked about. An impecunious younger son of an historical house has made overtures to join the direction, which have been declined. Solicitors, engineers, architects, surveyors, valuers, and all kinds of specialists and inventors besiege the managing director. The company pays a dividend; the shareholders receive so much per cent. interest, not upon the trifle they have paid upon each share, but upon the whole value of the shares. Those "gentlemen of the press" who have shares, and others who would like to have some, are profuse in paragraph and puff; for undoubtedly the names of the distinguished patrons, of the arbitrators, of the capitalists on the board, of the chairman, afford a thrilling guarantee of profit and good faith. The satisfaction of every one is complete, and the work of the auditors a labour of love.

These auditors, even in the present condition of "limited" commerce, are not appointed on the same principle as the directors or the patrons of it—on the strength of inherited name or acquired position. The work is often greater than many who accept the office are previously aware; the responsible nature of it is unquestionable. Auditors may be deceived by clever misrepresentation or accidental error, but for them to wilfully pervert the state of the accounts they are asked to examine, and to the prejudice of the accountants, seems to us suicidal. If, therefore, three gentlemen who for years, upon successive nomination, have audited the books of a Limited Liability Company—two of whom were appointed by the shareholders and one by the board of directors—simultaneously decline to be renominated for the purpose; if one of them publishes a statement addressed to the shareholders of the Company lest further silence should render him "morally responsible, if not criminally culpable," in the proceedings of the direction, men of the world will inevitably deduce two things,—either that the auditor has said wilfully or accidentally what is not true; or that the state of the company's books, if it do not justify the publication of his statement, is such as to cause misconception or doubt.

This has actually happened in the case of a Company which has enjoyed a measure of apparently deserved success, and has provided cheap houses for some of the working classes, even if it has paid the shareholders their expected dividends out of capital, or, as it is called, out of "estimated profits." We have more than once lately noticed the proceedings of this Company, which at times is pleased to enlighten us upon the value of "co-operation," "associated labour," "industrial partnership," and all that sort of thing. Its shareholders,—lords, ladies, and gentlemen,—are just now in a flutter of anxiety, and are by no means certain that publicity is the best remedy for their disorder. We allude to the "Artisans, Labourers, and General Dwellings Company, Limited," into the affairs of which some sixteen gentlemen have been invited to make a serious inquiry. The unpleasant duties this special committee is called upon to perform are the result of an extraordinary statement made by Mr. Pearce, one of the auditors to whom we have referred; and it has been appointed upon the requisition of eight shareholders. These eight gentlemen are so distinguished, by birth and position, as to lead any one not conversant with scientific philanthropy to ask,—"Que diable allaient-ils faire dans cette galère?" For ourselves, we can only repeat the Hon. Evelyn Ashley's words, which we published last week, that "the Company was an excellent one, calculated to do a good deal of good, and if anything is wrong, it will be very disastrous." We may add, that since such a doubt is permitted to exist, the public should restrain their natural inclination to make money out of artisans' dwellings until the Company be proved the excellent association it was.

The statement made by Mr. Pearce before a meeting held on the 3rd of March last, from which the representatives of the press are said to have been conspicuously absent, has been amplified into a pamphlet; and as some time has elapsed since its publication to the shareholders, we are now making no premature revelations. Without going back to the time when the arbitrators challenged the policy of the Board in paying dividends out of estimated profits,—when the shareholders are said to have decided against the arbitrators, and when the latter honourably retired from office,—we may mention the thirteen suggestions or recommendations made on the 1st of March, 1876, to the manager and directors by the auditors, the Rev. Dawson Burns, M.A., Mr. John Pearce, and Mr. E. W. Fithian, who were dissatisfied, apparently, with what had been submitted to them. Some of these suggestions, which go into first principles in a way likely to astonish old-fashioned book-keepers, touch upon the necessity of entering full particulars of amounts received; the importance of ascertaining whether the share and deposit ledgers agree with the cash-book; the inadvisability of allowing the general ledger to get into arrear, and of losing vouchers. Among other things the auditors also suggested that the valuation of the building plant and stock be examined and endorsed by an independent person; that the salaries of the secretary and his staff be increased; that the agency commissions be reduced; and that the books be balanced daily.

These recommendations, it appears, were ignored, and an attempt to make the auditors responsible for estimating and distributing profits led Mr. Pearce to examine the sources of income and the expenses attending the same, with a result which "alarmed" him. The secretary and manager of the Company is Mr. Swindlehurst, and with him Mr. Pearce,—not always in a tone so calm as is perhaps desirable under similar circumstances,—has offered to do battle. Included in the Company's property are two well-known estates in London: the Shaftesbury Park Estate, for which we have never been able to manifest any admiration, and the Queen's Park Estate. At the end of 1873, the sum of 97,279*l.** had been expended upon the former; and its "estimated value" was then professionally placed at 118,922*l.* Thus a "profit" of 21,642*l.* was obtained, representing just over 22 per cent. on the expenditure. But at the end of 1876, the gross outlay expended upon the same estate amounted to 302,272*l.*; and the "estimated profits," which had been divided among the shareholders, amounted to 30,453*l.*, representing only 10 per cent. on the expenditure. The Queen's Park Estate, at the end of 1875, had cost the Company 71,094*l.*; and the sum of 23,424*l.* had been divided among the shareholders, representing 33¾ per cent. upon the expenditure. At the close of 1876, the gross outlay upon that estate had reached the sum of 195,843*l.*; and 42,903*l.* had been divided among the shareholders,—"estimated profits" representing 22 per cent. on the expenditure. On both these estates the expenditure continues; and Mr. Pearce contends "that the Queen's Park Estate is now relatively, in point of development, just where Shaftesbury Park was when the 'estimated profits' stood at 22 per cent.; and in view of the fact that when the Shaftesbury Park Estate is almost completed it only shows 10 per cent. of 'estimated

* These are Mr. Pearce's figures, from which we clip the shillings.

profit,' it is in the highest degree dangerous to divide more than 10 per cent. profit upon the company's building operations, unless that profit has been realised."

The mode of purchasing materials for these building operations is said to be defective, and Mr. Pearce attempts to show that considerably more than the market price has been paid for certain articles. He adds upon hearsay an important item of accusation: that the seller of a certain article has been compelled to put 15 per cent. additional charge upon it because that amount "is handed back to an official of the company." Here crops up the bugbear of "commissions," to which the public have lately devoted no little time and virulence; and we hold that the "joint proprietor" of the goods thus weighted, upon whose statement Mr. Pearce relies, is bound to be more explicit in his assertions than either Mr. Pearce or himself seems at present to be aware.

The purchase of the London estates formed also a subject of inquiry on the part of the dissatisfied auditors. They saw the Shaftesbury Park Estate deed. According to Mr. Pearce, "the purchase-money, as stated in the receipt appended thereto, was 25,000*l*. A second deed," he continues, "was shown to us, which represents an interest Mr. ——— [the name is not given] had in the estate, and which bears his receipt in respect of the same for 3,000*l*." The documents relating to the Queen's Park Estate were then examined. The cost of that estate was 57,512*l*., made up in this way:—the vendor of forty-eight acres received 22,000*l*., the vendor of the other twenty-four acres received 18,000*l*., while "the other interests, with the law-costs, amounted to 17,512*l*., about 13,000*l*. of which went to Mr. ——— " and if we understand Mr. Pearce, "Mr. ——— " is the same who was interested in the Shaftesbury Park Estate.

A question put to the chairman, at the meeting held on the 3rd of March last, by Mr. Mocatta, referred to the complicated relationship—the breeding "in and in" of servants and agents—which is said to take place in the offices of the Company. But we have no desire to pursue the matter further. We pause to express our admiration for the calmness of modern character in general, and of commercial honour in particular, whereby such a statement as that made by Mr. Pearce is permitted to remain comparatively unnoticed for a month and for even months.

When the Londoner who lived east of Temple Bar carried a sword, his honour was a quality more dangerous to assail than it is at present. Centuries ago, the traditions of that sign creaking over the goldsmith's door imparted a feeling of "*noblesse oblige*" that neither the entry at court nor the run of "good society" seems now to engender in the financial world. Byron, whose cynicism it is often pretended to deplore, gauged the English sentiment of his time with,—

"Kill a man's family and he will brook it,
But keep your hands out of his breeches' pocket."

The artisans and others who inhabit Shaftesbury Park were not unwilling to live in cheap and probably good houses; and to know that their houses returned a gigantic profit to the shareholders of the Company. But to raise their rents! It was only natural curiosity on the part of the tenants to ask why the rents of buildings, which in one year returned to the owners 22 per cent. interest on the money spent in their erection, were to be suddenly and mysteriously raised. The details of "limited" philanthropy are not uninstructive; experts have succeeded in reducing the injunction, "We are all members one of another" to scientific exactness. But, we fear, the sympathy and respect that the lower grades of the community ought to entertain for the upper classes will diminish when the former find that noble lords, ladies, and wealthy gentlemen combine to assist the artisan in the hope of an exorbitant return for the money they invest. Nor is the constitutional fabric of society likely to be preserved if the well-to-do members of society are to be bought by advertisement in eminently respectable journals. The *Army and Navy Gazette* is one of the "organs" of the "Services" whose officers pronounce the word "honour" with becoming and sometimes immoderate emphasis. The eighteenth volume of the *Army and Navy Gazette* is running; and on the 9th of June last it printed the following admired notifications:—

"To RETIRED OFFICERS of both Services, and Gentlemen of Means, &c.—The advertiser is in a position to introduce the above as directors of a first-class company, the fees and probable profits of which will yield a very good income.—Apply to ———."

"INCREASE OF INCOME.—Gentlemen having extensive connexions may add considerably (100*l*. to 500*l*. per annum) to their incomes without publicity or obligation, by introducing business to a professional firm.—For interview, write to ———."

"OFFICERS OF THE ARMY AND NAVY can obtain a very handsome commission by securing pupils for a thorough good German-French Protestant School in Paris.—For particulars, address ———."

We have not purposely singled out the *Army and Navy Gazette*; that and the *Guardian* were lying side by side when we accidentally tumbled upon the advertisements we quote. Having seen such unblushing offers in the former journal, we confess to have examined our clerical contemporary with a half-malicious expectation of finding,—what we did not find. The desire to add to one's income is natural and praiseworthy, and the gentleman has just as much right to attempt to do so as the gent. Society, indeed, at the present moment is rather proud of its commercial proclivities; and, to be just, it does not always perceive the sediment at the bottom of the water into which it is often determined to plunge. The dirt does not rise until a body of sufficient size is well immersed; then the unfortunate plunger comes to the surface, bedaubed and begrimed. By all means add to your incomes, lords judicial and temporal, wealthy ladies and gentlemen, if you can. If at the same time you can offer to your inferiors better and cheaper homes, God speed you in your work! But do not expect that a colossal interest upon building operations can be honestly realised, and do not believe that even a small return for your money paid out of "estimated profits,"—the very cost of estimating them being much greater than you probably imagine,—is either safe or business-like.

"ICI ON PARLE FRANÇAIS."

IT was on Friday, the 8th inst., that the French Academy met under the familiar cupola of the Palais Mazarin for the purpose of electing a successor to the late lamented Joseph Autran. A peculiar importance was attached to the election, and since the events of the 16th of last May, the interest of the struggle between the competitors has increased considerably. The two candidates were the Duc d'Audiffret-Pasquier, president of the Senate, and M. Victorien Sardou, the dramatic author, writer of *Rabagas*, and several other well-known pieces. The first to arrive, on the day of the election, was the Duc d'Aumale, little changed in appearance since the days of the Philobiblon Society of London, followed closely by the Comte d'Haussonville, after whom came M. Thiers accompanied by M. Dufaure, the Duc de Broglie, Alexandre Dumas fils, Charles Blanc, John Lemoinne, Jules Favre, and Jules Simon, and the rest of the distinguished "immortals," among whom let us not forget to mention the famous Victor Hugo, who appeared in a singularly-shaped straw hat, reminding us forcibly of our own equally-revered Carlyle. The nomination of M. Sardou carries to forty, the traditional figure, the number of living Academicians. It is long since the illustrious assembly has had its ranks complete.

The mode of election is historically interesting. When first the Academy was formed, in proceeding to the election of a new academician, twenty members had to be present, and the mode of decision was by the familiar white and black ball. Fourteen white balls were necessary for the election of the member. Later on, each academician brought a paper on which he wrote the name of the candidate he judged suitable for election; after an official examination of these by the director, the chancellor, the secretary, and an academician, the name of the candidate who had the most votes was read aloud. A further election by ballot was then necessary. To be excluded, it sufficed not only in the actual election, but for ever, to have a number of black balls equal to the third of the total number of voters, and few academicians but what have had their share of the obnoxious balls. La Bruyère had several; Fontenelle, one; La Fontaine had seven out of twenty-three; one ball more, or two voters less, would have excluded him for ever! In the present day the election is conducted in the following manner:—Each academician writes the name of his candidate on a paper, an attendant goes round the assembly holding in his hand an urn, in which each member deposes his paper. The president of the meeting (this year it was the eminent critic, Charles Blanc) reads aloud the names inscribed on these notes, and the candidate who has obtained the most votes is proclaimed academician.

The name of Rothschild, which is even mo conspicuous in Paris than at Frankfort or Londo is about to become still more familiar to us b splendid additions to the architectural featur of Paris. The mansion which the Rothschi family have built opposite the Elysée, in t Avenue Marigny, is now completely freed fro its scaffolding, and the architectural effect very fine. The principal façade looks upon t garden, and the *cœur d'honneur* has two entrie one on the Avenue and the other on the Rue d Cirque. The interior surpasses anything th one can imagine in splendour,—painted ceiling marble walls, and mosaic pavements. The ne mansion of the dowager Baroness James d Rothschild, situated on the Rue Beaujon, suffe nothing in comparison with the larger palac The owner in her taste has shown the feminin character of her art instincts. The principa entry is on the Rue des Ecuries d'Artois, an behind, towards the Boulevard Haussmann, is terraced garden of great beauty.

With the exception of a somewhat uncomfor able approach, which, however, will be remedie in a few years, the Baroness James de Roth child's new house may fairly be considered perfect urban residence; for here, in Paris, wh can find fault with the architecture of the be period of Louis XVI.'s reign, for grandio domesticity which seems to agree so perfect with our modern love of home luxury and wel kept finery?

Baron Rothschild's magnificent house, ove looking the Elysée, is not free from points f critical attack, and, for our part, whilst we we about it we would have employed Chafru Dubois to carve out the smiling heavy-ey nymphs above our doorway; but the whole hou and its surroundings will please for centuries th great of every part of the world, and if th owner should not care to defy, he may certain rest indifferent to the undetermined criticism of the day. The Hôtel Pontalba (whose splend lacquered walls old visitors to Paris will we remember), purchased by the Baron Edmund d Rothschild, will, it is said, undergo some importa modifications. We must also mention the res dences of the late Baron Nathaniel, in the Ru du Faubourg Saint Honoré, and of the Baro Alphonze, in the Rue Saint Florentin. There also the mansion in the Rue Laffite belonging t Baron Gustave, and the Château de Boulogn which carries to the number of eight the num ber of *hôtels* which the Rothschild family po sesses at Paris. In all the capitals of Europ they possess equally magnificent dwellings, i Frankfort, London, Naples, &c., without speakin of their country-houses in England and else where.

The opening of the annual congress of th architects here took place on the 11th o June.

Last week an interesting visit to the Champ de Mars and the Trocadero was made by a body of architects (forty in number) who minutely investigated the works of the Exhibition of 1878 *Paris*.

British Archæological Association.—The thirteenth and closing meeting of the session was held last Wednesday, Mr. H. Syer Cuming F.S.A.Scot., in the chair. After a number of interesting exhibitions, a paper, by Mr. Dymond C.E., was read, descriptive of some little-known stone circles and megaliths in Cumberland. Mr R. S. Ferguson, F.S.A., reported the discovery of Roman stockades around Carlisle; and Mr. Prigg described at length the Roman villa recently excavated by him at Icklington, Suffolk. Mr. Thompson read a paper upon an unpublished inventory of Robert de Morton,—a document of much interest of the fifteenth century, and relating to a kinsman of Bishop Morton, of Ely. Mr. J. Tom Burgess, F.S.A., described some remarkable earthworks close to Kenilworth Castle, which have been hitherto overlooked. They are of early date, and several pre-historic implements were exhibited. The Mediæval camp thrown up during the siege of the castle was also described. The concluding paper was by Messrs. Bramble & Reynolds, upon the recently discovered tile pavement on the site of the original refectory of old Cleeve Abbey, and was illustrated by drawings of the remarkable series of heraldic tiles, which are in perfect preservation. In course of the evening, Mr. Loftus Brock announced the discovery of Roman remains at Cirencester, and the investigation of early fortifications recently found at Tamworth was also reported.

DEFENCE OF MODERN RESTORERS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE discussion on Mr. Stevenson's paper* on Architectural Restorations was resumed and concluded at this Institute on Monday evening last, Mr. Charles Barry, president, in the chair. It previously, however, to the resumption of the discussion properly so-called, a reply in the form of a long paper was read by

Sir Gilbert Scott, who apologised for again addressing the Institute, after having spoken once on the paper, but, on consideration of the fact that the paper was viewed by many of the members as being especially directed against himself, he was not satisfied with the reply he was able to make on the spur of the moment, and craved the indulgence of being allowed to make a more deliberate reply. Why he, who had lain himself out to protest against the havoc which had been made through the length and breadth of the land under the name of restoration, should be singled out as the special butt of his yet stronger protest, it was not easy to say. In accepting the challenge, he claimed a sort of back-handed honour. When Napoleon III. was told that a prophetic authority had pronounced him to be Antichrist, he replied, "He does me too much honour!" Much the same was the honour intended to be conferred upon him (Sir Gilbert); yet, be it honour or affront, he felt incumbent on him, as its selected recipient, to state carefully how far he agreed with, and how far he differed from, the sentiments expressed in the paper, the more especially as, whether formally or not, it was actually the manifesto of the society recently formed for the prevention of restoration. It was but fair, at the outset, to say candidly that there had been every possible provocation to the line taken by the new society, and that up to a certain point he heartily sympathised with their views. So far, then, from objecting to the general aim of Mr. Stevenson's paper, if purged of certain excesses and overstatements, he would say that a vast number of the sentiments and remarks contained in it were simply reiterations of those which he had for not less than thirty-six years expressed, though so exaggerated, and pressed to such an extreme, as to destroy their practical value, and then adroitly turned against him (Sir Gilbert) and those who had similarly protested. It was a mere truism to say that, though he had protested against unfaithful and overdone and ignorant restoration, he had himself largely transgressed what Mr. Stevenson enunciated as the correct view, viz., that there should be no restoration at all! True he (Sir Gilbert) had used the words imputed to him that he could wish the name "restoration" were expunged and "reparation" substituted; but, whether called by one name or the other, he should have been but wasting his breath in attempting to suggest rules and limitations if no such thing at all were to be permitted. Having quoted from a letter written to the late Rev. J. L. Petit in 1841, with the view of showing that so far back as that date he was fully impressed with the conviction that all restoration should be conservative, he said that in 1848 he wrote a paper "On the Faithful Restoration of Ancient Churches," in which he entered an earnest protest against radical restoration, and urged the most conservative treatment, winding up with a quotation from a poetical friend of Mr. Petit's:—

> "'It were a pious work,' I hear you say,
> 'To prop a falling ruin, and to stay
> The work of desolation.' It may be
> That ye say right; but oh! work tenderly:
> Beware lest one worn feature ye efface;
> Seek not to add one touch of modern grace;
> Handle with reverence each crumbling stone;
> Respect its very lichens o'er it grown;
> And bid each ancient monument to stand
> Supported e'en as with a filial hand.
> 'Mid all the light a happier age has brought,
> We work not yet as our forefathers wrought."

In 1863 he read a paper before the Institute, from which Mr. Stevenson had largely quoted, and the spirit of which he had most ingeniously misinterpreted. Having quoted from his inaugural address as President of the Institute in 1873, and from his second and third addresses in 1874 and 1875, with the view of showing that his views were not such as had been attributed to him, Sir Gilbert went on to notice the Institute paper of suggestions as to ancient buildings, which was issued twelve years since, and which Mr. Stevenson had held up to ridicule and reprobation. This paper consisted, Sir Gilbert thought, of contributions from different members of a sub-committee, which would account for some trifling inconsistencies. He was himself a contributor to the paper, though, strange to say, he did not know that he had, till recently, examined it with care in its completed form. He really feared, from Mr. Stevenson's alarming description of it, that he should find it to be something which the Institute would have just cause to be ashamed of. The reverse was the case; for, subject to some few inadvertencies of which Mr. Stevenson had not failed to take advantage,—to the extent, not merely of misrepresenting, but of absolutely reversing its real tone,—he (Sir Gilbert) did not hesitate to say that he had never met with a document more creditable to the great society from which it had emanated, nor one more truthfully and more wisely advising the course to be taken by those to whom it was addressed. It was a plain, unvarnished, and unpretending document. Mr. Stevenson's paper, on the contrary, was graced with literary and rhetorical beauty; yet he (Sir Gilbert) was bold to say that the manifesto of the Institute was worth a thousand of that which held it up to ridicule and traduced its suggestions. The only point of importance which Mr. Stevenson had fairly made good against the document was that in its first clause it, strangely enough, left the clearing away of modern incumbrances which concealed ancient work to the employers instead of their architect. This was a manifest mistake, and ought to be at once corrected. Subject to the correction of such inadvertencies, and to a few verbal emendations, he could boldly aver that he had rarely read a document more characterised by experience and wisdom, or more diametrically the reverse in its tone of the colouring which its critic had laid upon it. As truthful would it be to attribute the defects in our constitution to Magna Charta, what still remained of the slave trade to Wilberforce, or small-pox to Jenner, as to saddle the guilt of the barbarisms committed on our old churches upon the admirable code of suggestions which was drawn out for the express purpose of arresting the tide of Vandalism. Having subjected several of Mr. Stevenson's statements as to the Institute paper to a searching criticism, Sir Gilbert went on to say that misrepresentation seemed, unhappily, to be essential to the anti-restoration movement. Now, what was the moral of all this exaggeration and false-colouring and *suppressio veri?* The *primâ facie* conclusion would be that it betrayed the consciousness of a weak cause, for why should truth need the aid of fallacy? Second thoughts, however, pointed to quite a contrary conclusion. To men of a high sense of truthfulness these aberrations were simply a self-inflicted torture, an immolation of one's moral self, which could only co-exist with an overwhelming sense of the sacredness of the end, so potent as to lead to the conviction that it would not only sanction, but sanctify the means. *Magna est veritas,* and so necessary was it that it should prevail that minor facts must vanish before it as the flicker of a rushlight before the rising sun. The question, however, was not the truthfulness of particular statements and criticisms (no doubt they were meant to be true, but things were sometimes seen through a distorting medium), but, rather, what was the true course to be followed? All were agreed as to the calamity which the country had suffered, but there were differences as to the remedy. They did not differ widely as to the premises, though they might as to the conclusions to be drawn from them. Mr. Stevenson's view had an unquestionable *primâ facie* advantage. It was certain that, if restoration were at once stopped, no new mischief would be done by it. He (Sir Gilbert) could almost wish that the "do-nothing" system could be applied to old buildings, if only as an experiment, and he confessed to having tried it in some degree himself, but was circumvented by the prejudices of his clients. Mr. Stevenson had sketched a charming picture of an unrestored church. His exquisite language and touchingly pathetic tone quite carried him (Sir Gilbert) away. Certainly such a church it would be sacrilege to touch, and if Mr. Stevenson would tell him of its whereabouts, he (Sir Gilbert) would take his oath not to restore it. Mr. Stevenson's picture was very different from what was usually found. Sordid neglect, barbarous mutilation, and ruinous dilapidation were the more frequent characteristics of an unrestored church, united, it was true, with the charms of its being in its traditional and unsophisticated condition. Among other examples of this, Sir Gilbert referred to Llandaff Cathedral, which had been allowed, from the Reformation downwards, to fall into a semi-ruinous state. In the middle of the last century, with just as good intentions as the man mentioned by old John Evelyn, they set to work to redeem it. Their system was as follows:—They sent for Mr. Wood, of Bath, who had just erected the Pump-room there. He seemed to have advised that so much of the eastern part as they thought needful should be cut out from the rest and internally converted, so far as might be, into a double of his Pump-room. He found the arcades, projecting strings, labels, &c., a *bore:* so he walled up the arches and chopped off projecting mouldings, and, as the old walls might prove to be damp, he battened them over, cutting the grounds to which his battens were nailed deep into the walls. By this clever device, he was able to shut out from view all that was Gothic, and an enthusiastic clergyman writes at the time: "The church, in the inside, as far as it is ceiled and plastered, looks exceedingly fine, and when finished, it will, in the judgment of most people who have seen it, be a very neat and elegant church." The rest he happily left a ruin, of which the architecture was as fine as anything in the country. Now when Messrs. Prichard & Seddon were called in to advise, what ought they to have said? An echo answered "Nothing"! They did not think so, however, but, following the dictates of commonsense, they did away with the Pump-room, re-roofed and repaired the church, and thus recovered a noble and most charming interior. He (Sir Gilbert) was not pledging himself to all that was done: his knowledge of it was insufficient, but he confidently asserted that they took the only right course. He offered no opinion on the added south-west tower, for he had not seen it; he spoke only of the manner in which Messrs. Prichard & Seddon rooted out the barbarisms of the eighteenth century and reinstated the beauty of the thirteenth. He was also tempted to refer to St. David's Cathedral, which he knew well long before he was professionally connected with it, and most truly sordid was its condition! Not to mention the eastern chapels, which were, and still remained, in ruins, the choir aisles were walled off and unroofed, the roofs throughout were dripping water into the church; the walls, pillars, arches, &c., were running down with wet, and everything evinced the most abject and contemptuous neglect. When called upon to advise, he found two out of four piers of the central tower crushed in the most fearful manner, so as to threaten destruction to the whole building. Was this a case for doing nothing? Having detailed several instances in which churches had been allowed to fall down through neglect, or had been cut up and divided by means of glass partitions, and other anachronisms, giving several amusing descriptions of the curious large pews set apart in some churches for squires and other magnates, Sir Gilbert said, in conclusion:—I have dwelt, all too lengthily, upon these instances, just to show how unavoidable it is that some restorations should take place. Mr. Petit, a strong anti-restorationist, used to say that, like the measles, restoration was inevitable, and, like children so visited, he could only wish the churches safe through it. Time would fail to tell of the necessities of enlargement, &c., to meet present needs. These, and the desire to reinstate lost features, are the great difficulties of the restorer, though sometimes compensated by the discovery of lost and beautiful features, such as the shrines at St. Alban's. In carrying out such works as I have been describing, the best of us often err. We are too apt to be led astray by siren voices, both from without and within. We are, it may be, weak, and open to intimidation; we are possibly obstinate, and adhere too much to our own fancies; we are perhaps insufficiently careful, and pass over things with too little thought; we are sometimes not sufficiently severe with destructive builders, clerks of works, and workmen, whose barbarisms,—found out when too late,—are often truly heart-breaking; and, one evil influence with another, we are guilty of all kinds of shortcomings and over-steppings, and it is most wholesome to have such papers as that under consideration to goad us into more careful dealing, and to bring our sins to remembrance; and if the new society were to abate somewhat of what I think the exaggeration of its views, I should welcome it as a court of appeal, which we so greatly need in difficult cases, and which I called out for as early as thirty-six

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* For abstract, see *Builder*, p. 552, *ante*; and for first part of discussion, see pp. 550-51, *ante*.

years back. I dare say our codes of rules are not of sufficient stringency, and should be stiffened. I know that whatever their defects, we do not always adhere to them as we ought; I do not, therefore, complain of our critics if their little finger proves thicker than our loins, nor, when we have chastised others with whips, they should chastise us with scorpions. In replying to a friend who recently sent me a savage attack which had appeared in a periodical, after telling him that I felt so deeply on the matter that "I am willing to be sacrificed by being made a victim in a cause I have so intensely at heart," I added, "I think Herodotus tells us that the Egyptians, while religiously imperative as to having the bodies of their relations embalmed, as soon as the process was over pursued the unhappy embalmer, and if they caught him, slew him. This is somewhat like the lot of the embalmers of ancient monuments, and if I suffer among those who deserve it, I only trust that it will impel me and them to take care *not* to deserve it." "I fear, however," I say in the same communication, "that these undiscriminating letters defeat their own object, for I observe they rarely attack any but the works of those who strive to act conscientiously, and most of all, attack me, who am bold to say am among the most scrupulously conservative of ancient remains. Thus, by attacking the architects who, more than others, have lifted up the standard of conservatism, and by sparing those (whose name is legion) who have filled the country with havoc and destruction, they encourage the increasing disposition to commit works to the hands, not of conservatives, but of destroyers." To hold up the most careful as being as bad as the most careless, simply holds out a premium to nepotism and favouritism in the choice of an architect. I will add one word: that while wishing success to the new society in all their reasonable endeavours, I would suggest to them a few most useful fields for their exertions,—(1) To press upon the proprietors of ruined buildings the duty of protecting them as much as possible from increasing decay, by securing the tops of the shattered walls from wet. (2) To find out and oppose, while there is time, contemplated destruction of ancient buildings, down even to those of the last century. The losses we are constantly sustaining by the actual destruction of old buildings is truly appalling. Of timber buildings, which are constantly being taken down as ruinous, I assert that timely and judicious reparation is the only possible means for their preservation. (3) To have measured drawings made systematically and constantly of all the unprotected architectural antiquities of our land, so that when, in the course of nature, their architecture perishes, authentic drawings may remain behind. (4) I am ready and willing to take my share in the protests against bad restoration, but I beg the Society to recollect that (as I have elsewhere said) the great majority of ancient buildings are committed to the mercy of a herd who trample them under their feet and rend all objectors. Let this herd at least have a share of censure, or their patrons will conclude that they have done rightly in casting their pearls before them. I will only add, as regards churches, that it will be useless to endeavour to persuade seriously-thinking people that it is wrong "to restore churches from motives of religion." They were *built* from such motives, and must ever be treated with like aim. It is equally useless to persuade them that it is wrong from "religious sanction" to redeem them from "their present state of mutilation"; that it is right to preserve the high pews which, added by the rich like "field to field till there be no place," have driven God's poor from their own churches. Mr. Stevenson talks of "dreary ranges of long benches," and truly they do often look dreary enough; but I do not know that they are more so than high pews which half-bury the pillars. Let us not, however, judge of churches only when empty. "Empty benches" are proverbially dreary. Let us rather see them when thronged by devout worshippers, and the dreariness of the seat-backs will not much trouble either eye or memory. Better see the people than have them buried to the neck in Georgian dozing-pews. Let the society make up their mind at once that any attempt to banish religious motives from the treatment of churches is suicidal; and let them rather aim,—this being taken for granted,—at making us do this necessary and religious work with the smallest possible sacrifice of history and antiquity. By the bye, I have good news for the society. A clergyman, whom I met the other day, and who confessed to the *malice prepense* of contemplated "restoration," told me that he had found his parishioners "too conservative to part with their money, too anti-ritualistic to part with their square pews!"

Mr. William White, F.S.A., said, that although he had not been personally attacked in the paper, he thought he had something to complain of. He had always been most conservative in the restoration of churches, and it was certainly hard that such conservatism should be described as destruction. He could only account for it by the fact that extremes meet. Mr. Stevenson, while confessing the most intense enthusiasm in favour of the conservative treatment of churches, was really preaching a gospel of destruction, because, if his views were acted upon we should very soon lose the greater number of our churches and old buildings through neglect.

Mr. G. E. Street, R.A., said that as Mr. Stevenson had done him the very great honour of putting his name in the front of this attack, and had made a very personal and unnecessary onslaught upon him ("No, no"),—at any rate, such was his feeling,—he felt bound to call attention to some of the statements made in the paper. Mr. Stevenson expressly stated that he founded his criticisms upon the practice of Sir Gilbert Scott and himself (Mr. Street), consequently many readers of the paper would be under the impression that they approved of all the things which Mr. Stevenson condemned. Mr. Stevenson held them responsible for things which they had been condemning all their lives, and described a perfectly imaginary old church which would be left by any conservative restorer almost in the state in which he found it, down to a certain point. It would seem, according to Mr. Stevenson, that the village mason might build his buttress against the church wherever he liked, so long, perhaps, as it was built of red brick, but that competent architects were to do nothing. As to Mr. Stevenson's remarks on the Institute paper of suggestions for the restoration of old buildings, he contradicted himself. In one paragraph he described the suggestions as being generally excellent; in another, as being founded mainly on a paper by Sir Gilbert Scott; and, in another place, he said that their destructiveness was appalling, and that they advised the destruction of Perpendicular work. He (Mr. Street) was charged with destroying old clearstories and flat roofs: all he could say was, that such statements were absolutely devoid of foundation. Mr. Stevenson spoke of architects as "self-conceited" men; of course, he excluded himself? It was true that the Institute's paper contained what was obviously a mistake in suggesting, as Mr. Stevenson put it, that old churches should be cleared out when restoration was contemplated, in order to save the architect trouble, and, presumably, before an architect was consulted; but as a matter of fact, he (Mr. Street) did not suppose the case ever happened of a church being cleared of its contents before an architect was sent for. Mr. Stevenson's statement that old churches were sometimes left to go to ruin because the parsons hoped to attract attention to them and get them thoroughly restored might go for what it was worth. The restoring architect was also called a "clever forger," and, finally, allusion was made to Perpendicular work, which Mr. Stevenson charged them with hating. On the contrary, many architects liked it extremely. "Every now and then," said Mr. Stevenson, "comes a cry for the removal of the porch of Peterborough Cathedral, because it is Perpendicular." He (Mr. Street) put it to the meeting, Did anyone ever hear of such a proposal being made? ("No, no.") He never did; and the supposition that if such a proposal were made Mr. Stevenson would be the only architect to protest against it, was amusing. Those who were so wantonly attacked by Mr. Stevenson had shown by their works and by their enthusiasm for old buildings that they could not possibly be guilty of the things they were charged with, and it was to him (Mr. Street) questionable whether the author of the paper was competent to speak with authority on such matters. Mr. Stevenson said that old buildings were now restored in such a way that it was difficult to tell what was new and what was old. That was a most astounding statement to him (Mr. Street), for he found he could always distinguish the modern work from the old, the restored from the original. The work of each age bore its own undefinable impress, readily recognisable by skilled observers, and it was possible to class the work of any thirty years before us with almost unerring precision. We had n arrived at that perfect blank in the history art which Mr. Stevenson assumed to exist, an posterity would be able to recognise our work b its own characteristics. He (Mr. Street) b lieved that in certain departments of wor it was lawful to do that work in the present da exactly in the way in which it was don in Mediæval times. The rebuilding of a b of wall or the making secure of a collapsin arch did not detract from the historic associa tions of a building; every stone might maintai its original position, its weather stains, and it lichens; the only difference would be that the wor was rendered secure, instead of being allowed t fall to pieces. There was certainly no falsity i such work. Another curious statement made b Mr. Stevenson was that in old days there was n copying, and as an illustration of this he selecte the west front of Westminster Abbey, which wa most distinctly a Perpendicular copy of thir teenth-century work. Did not Wren work i two styles, and in Spain were not the Moors an Christians building in two different styles, sid by side, during the best period of the Middl Ages? On the whole, he was utterly at a los to conceive what purpose Mr. Stevenson's pape was calculated to serve, except that of bringin its author into notoriety. It was a plea no merely against bad restoration, but against al restoration whatever, however good. It was a plea for anything and everything that could be done by the village workman, and against every thing that might be done by the direction of a competent architect. The only aspect of old buildings which seemed to strike Mr Stevenson was the historical one. He seemed to forget that in these old buildings there was more or less hidden from view by the muta tions of ages, an art which was of immense value, and an art to the study of which many of them had devoted their lives. He (Mr. Street) held that we of the present day were absolutely bound, as trustees for the future, to keep these buildings in perfect condition, and this it was impossible to do by merely letting them alone. The buildings needed attention: "restoration" or "reparation," whatever name it might be known by, no valid objection could be taken to it if it were done in a considerate manner. Where it was badly and inconsiderately done, he would go with Mr. Stevenson in condemning it. He (Mr. Street) was rather inclined to think that we were ultra-conservative in our treatment of ancient buildings. He could not see why a partially-ruined abbey should be allowed to get more ruinous simply for want of a roof. It had been said by Mr. Stevenson that where buildings were in danger of falling, they should be tied together and propped up; but take the case of a series of eleventh-century columns and arches—a type of work which frequently failed, for though the work was massive in appearance, it was deficient in bond. To carry out Mr. Stevenson's or Mr. Ruskin's suggestions in such a case would be to erect such a mass of cradling as to entirely hide the work altogether, and surely careful rebuilding, stone for stone, was far preferable? As to the plaster surfaces on walls, his (Mr. Street's) custom was that wherever he found the old surface of plaster to retain it, and where there was sufficient evidence to prove that it was not old, the plaster was removed. He did not agree with that kind of *finesse* in restoration which would restore every little bit of string-course that happened to be chipped or weather-worn; where, however, an essential feature was entirely gone, or nearly so, it should be restored from such data as remained. He made it a principle, however, never to attempt to restore work which, such as sculpture and painting, was more individualised than ordinary masons' work. The new society to which allusion had been made could not fail to excite much opposition if it sought to interfere with the restoration of old ritual arrangements. Surely, wherever screens and stalls were found, to put them in their places was the proper thing to do? As to St. Alban's Abbey, which had been referred to by Mr. Stevenson, he (Mr. Street) could only say that the work which had been done there under the direction of Sir Gilbert Scott was the opening to us of what was practically a sealed book, and he could hardly conceive that anybody who at all cared for Mediæval art could object to what had been done there. As to an architect's responsibilities in undertaking a work of restoration, he (Mr. Street) was fully impressed with them, and made notes and sketches with his own hands of all buildings which fell to his lot to restore, and he thought that every architect

ught to do this himself, and not by deputy; if he ould not do so, he ought to give the work up o some one else. Mr. Stevenson's paper to the ontrary, it was necessary to regard churches as laces of worship, and not as mere architectural pecimens. He (Mr. Street) did not in the least ndorse bad restoration, and he believed it would ecome less common than it was, seeing that there as a large number of young men now entering pon active professional life who had devoted a reat amount of study to Gothic architecture, aving had opportunities unknown to their fathers, nd he therefore felt assured that in their hands ur old buildings would be safe.

Mr. Gambier Parry, having said a few words,

The Right Hon. G. A. F. Cavendish-Bentinck, M.P., said he did not know that any remarks which he might offer would be accepted as of ny value in that room, seeing that, as he had aid more than once in the House of Commons, e was not "a man of taste," and should be orry to be so regarded. Notwithstanding this, owever, he had been appointed, by the instrumentality of his lamented friend Sir William Tite, a member of the committee for the decoration or completion of St. Paul's, and had, in conunction with others, happily succeeded in preventing any mischief being done there at present. He had paid some attention to the question under discussion, not as an architect or man of taste, but as one of the people,—and as one, moreover, who could pass a good examination in Gothic architecture,—and, as one of the public, his advice to restorers would be: Always try to keep a good thing which is original; do not sweep it away. As to the vexed question of the stalls in Canterbury Cathedral, they had always excited his admiration, and he for one should be sorry to see them taken away from their present position. At the time when Bishop Percy was Dean of Canterbury, it was proposed to remove these stalls, and it was then found that very little remained of the fourteenth century choir-screen, which it was now desired to expose to view. The way in which the archbishop's throne by Grinling Gibbons, given by Archbishop Tenison, had been relegated to some number-chamber in favour of a parcel of rubbish made by a Belgian stonemason, was not creditable to any one concerned in the matter. The original throne was sufficiently in consonance with the building to have been allowed to remain, to say nothing of its history and associations. It was no use disguising the fact that much modern restored work was mere manufacture, which could be bought wholesale at so much per yard, per pound, or per ton; and until this system of "art-manufacture" was done away with, no real progress would be made in art. There was a great tendency in restorations to have everything *en suite*; but this was the method of the upholsterer rather than that of the architect and artist.

Mr. J. H. Parker, C.B., said he had carefully read Mr. Stevenson's paper and the discussion which took place at the previous meeting, and it appeared to him that there was some amount of truth on both sides of the controversy. There was a very prevalent and well-founded impression that a great deal of harm had been done under the name of "restoration." What was really wanted was the faithful adhesion to such principles as those laid down by Sir Gilbert Scott, Mr. Street, and the Institute paper. He did not agree with Mr. Bentinck as to the stalls and choir-screen at Canterbury. The screen was a very beautiful piece of fourteenth-century work, while the stalls were certainly out of place in their present position. By all means preserve as much as possible of old work. Unfortunately, however excellent might be the rules and principles and methods of work adopted by the best restoring architects, a great deal of harm was done by careless clerks of works, foremen, and workmen. The modern restoration movement originated with the clergy, and the misfortune was that they pressed forward these restorations too soon,—before the workmen were competent to undertake them. Blore had to educate a school of workmen to do the work, without, however, any very good result.

Mr. Ewan Christian, architect to the Ecclesiastical Commissioners, said he cordially endorsed the remarks of Sir Gilbert Scott and Mr. Street, while, at the same time, he sympathised with a great deal Mr. Stevenson had said. A great deal of his (Mr. Christian's) practice consisted in restoring chancels, and if there was one part of the history of our country which was disgraceful, it was the history of the chancel. It was a common thing to find the chancels stripped of their lead roofs and denuded of their oak timbers by men to whom marble tablets had been erected on the walls. As to Sir Gilbert Scott's work at Chester, the restoration of the chapel which Mr. Stevenson had criticised was to his (Mr. Christian's) mind a striking and remarkable illustration of what a good restoration should be. Although he was an extreme conservative as regarded restoration, he was an ultra-revolutionist with reference to the pew system, than which nothing had had a greater tendency to alienate the people from the Church. He (Mr. Christian) had had the great satisfaction of re-restoring one church which was restored by a man whom all Churchmen reverenced, viz., good old George Herbert, who gave the most precise directions for the restoration of the church which belonged to his prebend in Huntingdonshire. In re-restoring that church he (Mr. Christian) had retained every one of George Herbert's arrangements. Herbert had particularly requested that the pulpit and the prayer-desk should be of the same height, in order, as he said, that preaching should not seem to be exalted above prayer. He (Mr. Christian) had left them precisely as he found them, except that he had made one just a *little* lower than the other. (Laughter.)

Mr. E. J. Poynter, A.R.A., said he could not help thinking that it was a great mistake, in restoring thirteenth or fourteenth century churches, to attempt to paint them as they were or would have been painted at that period, simply because it was impossible to reproduce in modern work the spirit of the Mediæval painters. A clever architect might succeed, perhaps, in making passable copies of such paintings, but they could not be made to look like the originals. He mentioned this because he saw on the walls of the Royal Academy the drawings of a somewhat ambitious scheme of decoration for a Mediæval chapel.

Sir Edmund Beckett, bart., Q.C., said he was afraid he should throw no new light on the question. He had read the short account of Mr. Stevenson's paper which appeared in last week's *Builder*, and from it he gathered that the author simply proposed to leave the churches alone. But if such a course were right now it was right fifty years ago. Would any one who knew what our churches were half a century ago say that the "let-alone" policy was one to be followed in every case? He apprehended not. The fact was, people seemed nowadays to run mad upon principles. They invented "principles" or maxims, and rode them to death. He was sorry to say that the older he got the more "*un*-principled" he became; he utterly disapproved of "principles." He did not agree with Mr. Bentinck in advocating the retention of Italian work in Gothic buildings. Mr. Bentinck said, "Keep everything that is good"; but then came the little question, "*What is good?*" It was upon this question that differences arose. As to the Institute paper of instructions and suggestions to restoring architects, it was pretty well known that he (Sir Edmund) was in the habit of criticising the papers of the Institute; but in this one he could see nothing to criticise. If he said anything about it he should be inclined to say that it erred on the side of being too conservative. In spite of these suggestions, however, a great deal of damage and injury was done to old buildings during their restoration. The objects of restoration should be, first of all, to make our churches useful; and, secondly, to make them look well. As to keeping the people out of a particular part of the church, because in Benedictine times it was reserved for the monks, he had no sympathy whatever with such notions. As to the "do-nothing" policy of the new society, it was no more worth arguing against than was the nostrum of the *Quarterly Reviewer*: that the "hope of architecture" was in the workingman.

Mr. Hebb suggested that the discussion should be adjourned, but the chairman said that would be impossible. A vote of thanks having been passed to Mr. Stevenson for his paper,

Mr. Stevenson, in reply, said he was afraid the vote of thanks was not so cordial as the one given to him for the paper which he read two years ago, and in which he endeavoured to show that Mr. Fergusson's opinion that the only hope of architecture was that architects should be abolished, was not tenable. But really the paper under discussion was only a sequel to that one, and, had space permitted, the first paper would have contained a great deal of what he had said in the paper read a fortnight ago. He disclaimed the imputation of speaking in the name of the new anti-restoration society; he spoke entirely on his own account, and he alone was answerable for what he had said. He was sorry that the matter should have been felt to be a personal one, and must disclaim all intention of being personal; he had expressly and clearly disclaimed such intention at the ontset of his paper. For the reason there stated, he had been compelled to refer to the works of restoration carried out by Sir Gilbert Scott and Mr. Street, but merely as the best typical examples of a system of work which he honestly thought was to be condemned. He was glad to have been the means of bringing out so clearly what had been done as to the chapel at Chester, but still he thought he was right in saying that the clearstory windows at Chester, Perpendicular before the restoration, had been replaced by earlier ones. However intolerable a "do-nothing" policy as to restoration would have been thirty years ago, the case was different now. Architects had had fair opportunities of trying their hands at restoration, and he pleaded that the few churches yet unrestored should be let alone. Mr. Hope had said he thanked God that church restorers had made blunders in their work, but this was not much to be thankful for. "*Fiat experimentum in corpore vile*" seemed to be Mr. Hope's motto as to old churches, so long as he was learning how to adapt them to modern ritual purposes. He (Mr. Stevenson) did not say that if a church fell down it was not to be rebuilt. It was not unwise to rebuild Chichester tower, but it would have been wiser not to let it fall down. In conclusion, Mr. Stevenson said that Talleyrand's advice to diplomatists abroad,—"When in doubt, do *nothing*,"—might be usefully borne in mind by all church-restoring architects, however eminent and experienced.

The meeting then terminated.

THE "BLACK AND WHITE" EXHIBITION.

THE collection of works in "Black and White" (the fifth of the series), which was opened to the public on Saturday last, in its usual quarters, at the Dudley Gallery, forms to our thinking the strongest exhibition of this interesting series since it was started. The proportion of merely showy sketches, splashed with white to produce a telling effect, of the predominance of which we complained two years ago, has become beautifully less during last year and the present, and but little of it is to be seen in the present collection. On the other hand, the amount of serious, thoughtful, and emphatically artists' work which is to be seen on the walls makes this one of the most interesting exhibitions of the season; we are almost disposed to say, the most interesting, to those who estimate a work of art by quality rather than quantity. The exhibition is not so strong, perhaps, in landscape, as it has been on some former occasions; but this may be because some of the landscapes has been unavoidably pushed out to make way for the large proportion of good figure-work.

Among the productions which stand in satisfactory contrast to that showy style of effect which we have deprecated, are the life-size studies of heads by Mr. F. W. Burton, who, if we remember rightly, has not hitherto been so prominent an exhibitor here. All these studies (Nos. 23, 260, 391) are distinguished by careful, solid, unpretending workmanship, and true feeling for expression. No. 260, a female head, called simply a study from life, is especially pleasing in its expression and the luminous quality of the eyes, a very calm but by no means inexpressive face; though No. 23 is, perhaps, the more powerful as a matter of drawing. The etched heads and some other contributions in the same medium by Mr. Legros are in themselves enough to make a reputation; a higher reputation, as we have before suggested, than the artist has as yet made by his paintings on a large scale, which, with very fine qualities, are curiously deficient in force of colour and composition. What is remarkable in the etched studies of heads sent by this artist is their grandeur and largeness of style, combined with such a free yet perfectly masterful use of the process of etching. We have always considered that this beautiful and characteristic form of art (so peculiarly a painter's art rather than an amateur's) should be used in regard to its special capabilities, the realisation of form and expression by comparatively few and free lines, that it should not be used so much as the mere rival of engraving in finish and richness of light and

shadow effect; though one may admit, of course, that even in this form it has special beauties of tone which engraving cannot emulate. But M. Legros's works represent that which is peculiar to etching, and which it alone can give. Of his heads, one of the most interesting is the study, No. 271; others are portraits, one or more of which have been published in the *Portfolio*. In the larger etching, "Les Bûcherons" (76), there is great force and vigour of action; as a question of detail, we should be disposed to suggest that the upper part of the arm of the man felling the tree is too long; it seems to extend very far before we come to the elbow. Among other etchings of figures is a marvellous little work, by Meissonier, "Le Fumeur" (254), which for power of drawing and expression on a minute scale is one of the finest things we have ever seen of his: it is worth while to notice the delicacy of expression of the mouth, and the drawing of the right hand, which hangs over the chair. Close to this is a characteristic etching by M. Tissot, of the lady in the furred dress whom he has taken to painting lately, and in which he is remarkably successful, though in this case the dress and attitude of the figure combine to produce a somewhat *bizarre* effect. His "dry-point," called "Portrait of Miss L——" (507), a lady whose figure in a painting by the artist is familiar, does not seem by any means so satisfactory; the expression is unpleasing, and the mouth awkward, and the whole would convey the impression that the artist was not sufficiently at home in this method of execution to do justice to his subject. The etchings of M. Montefiore, who, unlike his compatriot last-mentioned, hails from Paris, are very forcible and clever in the treatment of horses in action (166 and 557). With the kind of work we are speaking of may be classed M. de Neuville's fine little drawing of a "Garde Mobile" (83), which is a pen-drawing, realising, however, not a little of the effect and feeling of etching. Jules Jacquemart's "Armes Orientales" (127) is a fine specimen of his remarkable power of giving the texture and glitter of objects of this kind in an etching. One or two small etchings by Mr. Macbeth show considerable artistic power and feeling, especially "Ca' the Yowes to the Knowes" (418), a repetition in this form of one of his own paintings, improved in the repetition. Conteux's powerful and brilliant etching, after Regnault's portrait of General Prim, should be noticed (397); in this case the name of the original artist is given, which is not the case in regard to another work of great elaboration by Rajon (184), which is called simply "Portrait of H. D. Pochin, Esq.," with no mention of the original painter, Mr. Onless.

Among other figure subjects, Mr. Cave Thomas sends a very refined and carefully-studied group called "Feud 'twixt Guelph and Ghibelline" (52), a party of people bearing away a dead body from out of one of the frays common at the time alluded to. Near this is a very slight but truly charming study for a picture (which we hope will eventually appear) by Mr. W. Britten; a tender moment between two people who are supposed to be far from the haunts of men; the lady, seated with her back to the spectator, passing her right hand over to meet the hand of her companion, is a beautiful figure, full of feeling and showing admirable drawing. Mr. Hume's "O'er Stormy Seas" (62) is open to be called an echo of M. Lhermitte, but is very fine and pathetic; a charcoal drawing showing a group of peasant women on a windy hill overlooking the sea, painfully interested, evidently, in the fate of those who are out upon its waters. Mr. T. Graham has made a bold attempt to interest us in "A Mudlark" (90), but the thin frame and shoulders of the poor child do not seem to belong to her head, which is hardly of the mudlark type; still, there is power and a serious aim in the drawing. M. Lhermitte has scarcely done so much or so well as usual in this exhibition, but his "Pélerinage à la Vièrge de Kersaint" (409), the interior of a church with kneeling figures in those white caps which are so valuable for making out the effect of a drawing in this medium, reminds us of some of his best work. Among the more large and ambitious figure-subjects is the drawing which gained the Royal Academy medal for design this year; the subject is "Boadicea" (352), by Mr. Hamilton Jackson; a life-size stalwart figure holding a short broad-sword: there is certainly power in this; the head seems to us a little too large. Mr. Holiday's decorative designs representing Painting and Music (234) at the top of the room are very refined in feeling and execution, but fail to interest us otherwise. Beneath this Mr. Britton Riviere has an admirable study of dogs in violent action in a group called "Actæon" (233), in which the human figure too is more powerful and more important in the picture than is usual with him. But one of the finest among the larger figure-studies is Mr. J. W. B. Knight's "Seashore Shrimp Girl" (310), a very fine drawing of a girl with a face full of the freshness of the sea; and equally remarkable for the admirable drawing of the arms and modelling of the features. Among smaller things coming more directly under the denomination of studies a frame of small drawings of figures by Mr. F. Weekes should be looked at, as very admirable, especially the girl seated with her back against a wall and her feet towards the spectator. Mr. R. Lehmann's portraits of seven public men are very good: in the likeness of Barry Cornwall there is quite a history of character. M. Fantin's lithographs of half-allegorised subjects from Wagner's operas should be interesting just now; they contain the same rather melodramic force and effect which we have seen in former works by the same hand. The "Rheingold" (244) startles us a little by its other title "Souvenir de Bayreuth." Are we to take it that the three Rhine-maidens appeared in the costume as here represented? Among other drawings which make sets in a special style are the collection of "Reynard the Fox" drawings by M. Meyerheim (which we do not very much care for); the numerous original sketches for *Punch*, by M. du Maurier (which we do care for; there are a few also by Mr. Keene and Mr. Sambourne); some very pretty serial sketches for a child's play, in pen with brown ink, by "E. B. V."; and two sets of studies of sleeping children, by Mr. J. Clark, which are most interesting, and are among the best things in the room. The "In Memoriam" drawing of a sculptor's garden at Chelsea, by Mr. C. G. Lawson (348), a garden scene, with a bas-relief on the garden wall, and in the midst of the grass-plot a girl standing in an attitude of melancholy, is very interesting and effective.

In landscape, some of the most effective things, as usual, are the fine little charcoal studies of M. Achille Dieu,—things which represent the essential part of landscape effect in a remarkably concentrated manner. Mr. Bradley's two admirable etchings, "On the Way to Torcello" (14) and "On the Marshes near Pisa" (46), are models of true feeling for the treatment of landscape in etching; nothing of its kind could well be better than these. Mr. J. W. B. Knight contributes two important landscape studies. Mr. Edwin Edwards's etching of "The Thames at Rotherhithe" (154) is of less interest as a composition than some of his that we have seen, but is another specimen of truly artistic etching in regard to treatment. Mr. Aumonier is admirable in his beautifully-finished study of the simplest elements of landscape as seen by him "Near Overton, Hants" (369); an undulating common making an artificial horizon, over which a couple of cottages are half seen; the truth and atmospheric freshness of this are remarkable. Mr. Powell's two drawings of calm and stormy sea, "The Sea Belle" and "Staffa" (221, 243), are remarkably fine; the former, a repetition of a water-colour previously exhibited at the Water-colour Society, is even superior to the original in atmospheric effect and in the transparency and perspective of the sea-surface. M. Chauvel's etching of "Une Mare" (433), after Rousseau, is in a fine free style. Animal designs are sufficiently represented; among others, no one can pass, without stopping, Mr. Wolf's study of a lion over his prey,—"The Lion's Share" (425); the big brute, with his great bulk foreshortened, his mane shaken out widely, his lips drawn up into a snarl, is certainly a "caution"; the way in which the muscular build of the fore-leg which rests on the victim is given is remarkably powerful.

There are, as usual, curiosities and oddities in the exhibition; some disagreeable, such as the unconscionably vulgar sketches for *Fun* by some one, which have no business in such an exhibition at all. There are fancies in frames, as in Mr. Whall's very pleasing though slight "Portrait of Mrs. W. Britten" in dull red crayon, with plaited rushes let into the border of the frame as an ornament; and in Mr. Parson's red crayon figure called "Blackthorn" (30), where the frame is decorated with irregularly-placed little circular medallions of conventional foliage, which rather distract the eye from the drawing. Among other things we noticed are a carefully-worked drawing of St. Mark's "Steeds of Brass," under the title of "Venice" (24), by Mr. Shoulridge; two fine pen-drawings of architectural subjects, "An Ancient City" (279) and old "Nonesuch House" (540), by Mr. Brewer; a "Welsh Common" (349), by Mr. R. Thornewaite; "Sheep" (375), a slight sketch by Mdlle. Rosa Bonheur; "Trois Fenêtres" (379), a tolerably good piece of humour, by Mrs. (?) Hopkins; "Tramps," a chalk study by Mr. Canty; "Life's Decline" (328); and (67) "An Interesting Story," two small but meritorious drawings, by Mr. Gurth Godwin; small etchings in Wales, by Mr. Evershed (553,—and other etchings by the same hand). There is a great deal of opportunity for spending time both very pleasantly and profitably (for those who know how to profit by the study of such works) in the Black and White Exhibition.

LANDSCAPE AND OUT-DOOR PICTURES AT THE "SALON" OF 1877.

THE landscape and out-door pictures at this year's *Salon* amount to several hundred canvasses, many of which, most, in fact, display that mastery of the brush and palette that French, and indeed all Continental painters invariably exhibit in their work,—a mastery that is owing, in the first instance, to the early age at which they commence to use the painter's implements, and to their systematic faith in the teaching of their instructors, whose traditionary method is certain to possess the practice of much valuable experience.

In French landscape art we rarely find bad painting associated with good thinking, but we frequently meet with weak thought represented by strong manipulative powers; with French artists, all mechanical difficulties seem to disappear, and the received methods of representing the various episodes of outdoor life are thoroughly understood by almost the youngest practitioners.

The landscapes, usually said to be so strong, are certainly this year altogether deficient in the imaginative element, and it is with difficulty that we point to a single picture where out-door nature has been studied and invested with that peculiar charm that we find in the landscapes of famous painters.

The influence of Troyon and Diaz is observable in many pictures, and the old French admiration for Constable is strongly shown in M. Chabry's "Gorge in the Pyrenees," which, we are happy to see, the jury have recompensed. Turner appears to have had no sufficient charm with French painters to cause them in any degree to emulate his marvellous effects, and the grandeur of Titian's and Mantegna's landscape backgrounds or the heroic landscapes of Gaspard Poussin are no longer studied.

French painters appear to have taken too literally the excellent advice to beginners,—"Sit down anywhere, and paint whatever may be before you,"—and this they do exceedingly well. Occasionally one is impressed by a large landscape, like that of M. Pelouse, where a beautifully serene sky, after sunset, shows one the lovely western effect over which all of us have sentimentalised again and again; and we must admit that such a picture as this which M. Pelouse exhibits reminds us more of the noble work of Crome or Girtin, than of the less-refined labours of Creswick or Lee. We must despair of finding in this year's *Salon*, in our search for such works, landscape like those of De Wint, old John Varley, or David Cox, or the wide-stretching distances of Copley Fielding or Martin.

In such out-door painters as Stanfield, Roberts, or Müller, France and the whole Continent is rich enough. Their *maris magni* painters have caught exactly the smack of the sea air, and they represent faithfully the aspect of the ocean under many of its fitful changes. M. A. Guillemet's "Chalk Cliffs" and finely-painted low-water sea-side picture, remind one of many a pleasant day on the rocks, as the same painter's cottages, inland, are equally suggestive of rural happiness. M. Guillemet paints the sea-weed covered stones with even a freer brush than our own popular favourite Hook, but he makes no attempt to embellish his pictures, as Hook does so well, with carefully studied characteristic figures.

M. Dameron's edge of a wood in winter time leaves nothing to desire for those who love prosaic representations of a scene always interesting, but his picture is deficient in that mystery of the wood that Diaz has succeeded so well in

imparting to his lovely realisations of Fontainebleau; and the ever-present peasant, gathering wood in this picture, is too true in her ugliness, and too retiring in colour, to interest the spectator. But this landscape, like most of the large French landscapes, is painted with the simplicity and tone of colour that reminds one, as a picture should do, more of nature than of painting, even though we may have been all our lives familiar with the works of Ruysdael and Hobbema, Nasmyth Turner, and Troyon.

Artant's sea-shore and sky pictures are almost as agreeable, and are exceedingly like what we all remember seeing more than fifteen years since; and we like immensely M. Baau's picture, the simple treatment of the grey sky and the brown foreground harmonising most agreeably.

Of M. Leloir's "Robinson Crusoe's Look-out from the Rock," it is impossible to speak too warmly; never yet has that most famous of all castaways been brought more perfectly before us, and the man Friday as we see him here protecting the old flint muskets while Crusoe stealthily watches through his telescope the approach of some canoes, brings the memory of that earliest literary treat to the mind, in a way that no picture has ever before succeeded in doing. Almost as we write we see that the Queen has just granted to the three maiden lineal descendants of Defoe a pension sufficient for their humble wants, and if it were not that such a painter as M. Leloir can never require the help even of a thoughtful monarch, his name might be suggested as being deserving of remunerative association with all the honour due to a lineal descendant of the immortal narrator. Let Mr. Wallace or Mr. Maclean get hold of this picture, and induce some great architect to design and build them a gallery to exhibit M. Leloir's picture, and the world,—the English world,—might be advertised into paying dear old "Robinson Crusoe" a multitude of visits; and no nursery throughout the domiaions ought to be without a well-reproduced copy of this picture by M. Leloir.

Mr. Swift, the American painter, exhibits an out-door picture representing the Wreckers on the rocky coast of Brittany, in which he has well imagined a scene of villany that surpasses one's belief in human degradation. The subject reminds one of Mr. Prescott Knight's triptych picture painted many years ago, representing Cornish wreckers of about the same period of history, but this picture will live longer in one's memory than Mr. Swift's, but considering that Knight's "Wreckers" must always be regarded as one of the most famous efforts of the English school, Mr. Swift has reason to be congratulated that his work admits of being spoken of in connexion with such admirable art.

M. C. Onken's "Landscape," as he simply calls it, somewhat weakly reproduces a corner in the grandest of all villas, the Villa d'Este at Tivoli, and this landscape, and M. Leo Paul Robert's magnificent background in his picture of the "Zephyrs," with two or three other small pictures, alone represent the old mode of landscape composition"; the modern continental school of landscape is well shown in William de Gegerfelt's Dutch landscape, which in its simple truthful treatment reminds one greatly of the best work of David Cox.

Signor Pio Joris's picture recalls to our memory, as it will to all who remember Rome, a well-known piece of road,—the last mile into the Eternal City, the road leading to Michelangelo's Porto del Popolo. This picture is a delightful piece of truthful painting, and its atmospheric effect is well calculated to remind the many pilgrims who are now rushing to the Vatican that the sun is not always shining in Italy, and that rainy days are happily impartial in their wholesome efforts.

Again we are reminded of good English work, and of an old favourite, Frederick Taylor, in M. Goubie's "Hawking in the Olden Time," only that M. Goubie seeks to represent with more exactness than our water-colour painter the details of this ancient mode of hunting.

Of all the out-door paintings in this year's *Salon*, M. Butin's "Departure" appears to us the most interesting. The delightful effect of atmosphere that pervades the whole of this naturally-expressed picture, and the simple, unaffected manner in which the very serious figures are introduced, the fisherman kissing his wife's cheek, overladen as he is with several enormous brown loaves, and the paraphernalia of fishing-tackle, &c., is Gainsborough-like in its truthfulness and simplicity.

It gives us peculiar pleasure to point out the merits of the American artists who are now working so well in Paris. Mr. Bridgman, whose picture we have already mentioned, has since been recompensed with a medal of the third class. Mr. Coleman's remarkably accurate representation—a little too photographic perhaps—of the noble Greek horses of St. Mark's at Venice is a faithful transcript of the fine old gilded bronzes and their Byzantine surroundings. Nothing can be more worthy of commendation than the truth of this picture; so truthful is it that it disinclines us to quarrel with the uncomfortable composition of the background, or the way in which the picture has been put together. Another Venetian scene, that by Signor Vanutelli, representing a gale of wind, might have been painted by the most skilful of the eighteenth-century school of Canaletti, only that no artist but the old scene-painter himself could have depicted a Venetian view so well.

The many military pictures, which this year are not so numerous as in former exhibitions, represent scenes too near to our own times to please us, and notwithstanding that battle scenes and the incidents of war are better realised now on canvas than they have ever before been painted, we must confess we are fatigued by the painful truthfulness of this melancholy although bright school of art.

In comparing this year's catalogue of the *Salon* with the Burlington House catalogue, we find that the *Salon* exhibits 4,616 works of art, whilst the Royal Academy exposes this year 1,539; and that with the exception of the large pictures representing historical and classical events, the titles of the mass of the French pictures, are very similar to our own; both countries appear at least to have equally improved in their mode of designating their pictures, as we find in the earlier catalogues both of the *Salon* and of the Royal Academy the titles of pictures showing no research whatever, and the weakest possible sentimentality.

The landscape-painters appear to pass agreeable lives, four or five months with knapsacks on their back, collecting materials to paint up during the seven months at home; a growing *clientèle* who seem more and more less exacting of laborious work and still more anxious to pay enormous sums for hasty labour. Those artists who have large studios and who undertake to teach, and what artist in Paris does not feel capable of instructing the whole world,—finds a fresh crop year by year of eager foreigners, anxious to learn the art of combining attractive figures with alluring landscapes, so as to suit, when they get home, that complacent taste for the agreeable pictures in which the growing multitude of dealers find so large a trade.

Occasionally the true landscape-painter shows us that he is really at home when he is most out of doors, although it is impossible to point to a single instance in this year's *Salon* where we can detect the absence of that essential element in a painter's, as in all other men's lives,—an eye to the profitable.

Paris.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

POETIC, RHETORICAL, AND LITERARY INSCRIPTIONS AS A MURAL DECORATION.

THE works of the Moors in Spain, which, by the way, show how the art-instinct and religious feeling of that remarkable people blended into one sentiment, suggest to my mind that poetic and literary inscriptions, an element by which they amply indemnified themselves for the prohibition of their Prophet to carve human and animal figures, seeing that by it they could call up to the mental eye whatever images they pleased, has never had justice done to it by the architects of Christendom; which is the more surprising when we consider that its introduction into architecture would make poetry and eloquence, and literature generally, no less her handmaids than painting and sculpture; and that it could not fail to have an etherealising and ennobling effect on the art, chiefly through its elevating influence on the minds of architects, who would feel additional motive and inspiration to render their work worthy of its high relations. I feel sure that the advantages of this connexion would be mutual: by it the great and sublime images and scenes of history and poetry, and the wisdom and eloquence of ancients and moderns, would be brought from the shelves of the library, and framed and hung up to the admiration of all men, realising even the wish of Job,—"Oh that my words were graven, with an iron pen and lead, in the rock for ever!"; and join their influence with art's, to counteract or check the materialistic tendencies of the present age.

The literal application of poetry and eloquence to the adorning of architecture appears to me as legitimate a mode of doing it as any hitherto employed; and I can say that, in the few imperfect instances in which I have met with it, I have been more charmed by it than by any other, short of high-class sculpture and painting. I remember the appropriate words, "*Ex fumo dare lucem*," inscribed under a sculptured liver on the summit of the old gasworks in Liverpool, now no more, to me shed a gleam of poetic light over a very prosaic pile of building. Even the device 212°, painted, as the steam boiling-point of water, over the gate of an engineering establishment in the same town, had a very different effect to what the same figures would have produced if they merely represented the street-number of the premises. The inscription on the Hôtel of Invalids at Berlin, "*Læso et invicto Militi*," and that represented as occurring on a rural tomb in Arcadia in a celebrated picture of Poussin, and which is the burden of a beautiful poem of Mrs. Hemans, *Et in Arcadia ego* suggest something of the capability of such a feature in architecture.

In ecclesiastical edifices inscribed passages from the Bible would be an element of embellishment as appropriate to the advanced spirit and educational status of the present day, as sculptured scenes and persons from the Scriptures were to the educational condition of the Middle Ages. The sculptures were addressed to the outer eye of those who could not read; the inscriptions would be addressed to the inner eye of those who can, and cause them to think and feel; and would render a place of worship no less a book-temple or scroll for the written word of God, as St. Mark's Church at Venice has been called, than was a Mediæval structure.

In thus putting words into the mouths of our buildings, and giving to works otherwise perhaps epic or lyric in character a dramatic action and energy, a great point would be to select passages of strength and perspicuity, not so much to inform the mind as to present vivid and striking pictures to the imagination, or to interest the affections. Appeal to the reason should not be neglected; but inscriptions addressed to the heart and imagination would be the highest in character, and most generally required; and works in the English language alone, original or translated, are not wanting nor few that would yield both kinds,—utterances of truth and genius which were the two-edged sword that, in different ages, has slain prejudice and power,—viole e an fraud,—words that console sorrow and assuage pain, or that would nerve the heart against adversity and oppression, and have a powerful and beneficial moral influence. They are to be found in the volumes of the great masters of the lyre, and in eloquence, in history, in philosophy, romance, ballad, chronicle, and most in the Scriptures; which various sources might be all laid under contribution, as well as the best translations from the gorgeous literature of Athens, the well-spring or inspiration of the wisdom of the Western and modern world. From these perennial fountains of thought could be drawn sentences that would act like an incantation or words of enchantment, the effect of which, met with on the panel, band, or frieze, of some well-designed structure with which they were in unison, which itself must have a harmonising and soothing effect upon the mind, whether Classic or Gothic, would, to those in the least gifted by the enchantress Imagination, be truly magical. By their means a single panel may be more luminous than a niche filled with the statue of a saint or demi-god. There are Saracenic buildings in India adorned with precious stones; as there are in Venice and elsewhere with precious marbles. By means of inscriptions we may embellish our buildings with pearls and gems still more precious,—those of truth, the brilliancy of which would, to the inner eye, set the whole in a blaze.

I like to see a frieze charged with human or animal figures, or both, when it is wide enough to do justice to such objects; but I should prefer an inscription to most other of the usual elements of decoration. As an eye-ornament merely it must be infinitely before the monotonous Doric triglyph and alternating rosette, or the Greek fret, fluting, or reeding, or the row of consoles with which some friezes, as the upper one of St. Paul's, for instance, are crammed and smothered, as it

presents more variety of form, while, by its intellectual action, it rises above scrolled foliage, festoons, garlands, floral wreaths, or Gothic tracery of any kind.

Considered in this light, it is, I think, difficult to overestimate its value. What carved decoration, for instance, could give such power to a guild, or town-hall, or people's hall, over the hearts of the people, as passages alluding to or narrating the great soul-stirring events of English history, and deeds of renowned Englishmen and Scotchmen; or those that mark the progress of our civil and religious liberty, words at the sight or sound of which the heart burns and the cheeks glow—words that stir the blood and bring tears to our eyes? The more didactic and philosophic sentences would find their proper habitat on the walls of such buildings as public libraries and museums, which might literally be made to stand up for the truth in a degenerate age by being charged with the words of the wise and their sage counsels, gathered from Solomon and other Hebrew writers, as well as from the Ancient Greek, Oriental, and modern philosophy.

By their means Wisdom would be literally crying without; uttering her voice in the streets and high places of concourse; the openings of the gates of the city. By such inscriptions educational buildings,—colleges and schools,—might have their months filled with arguments in favour of early virtue, and made to give subtilty to the simple, and to the young man knowledge and discretion; and an ecclesiastical edifice, while it showed forth by its architectural and sculptural beauties the handiwork of man, might be constrained, by its literary mural adornments, to declare unto all the wisdom and glory of the Creator.

But the capability of this species of embellishment will be most apparent if we consider what virtue and power reside in single words. From the history of England and Scotland (I omit Ireland not from any want of interest in it) could readily be gathered a host of such words,—that each enshrines a spell of power over every thoughtful and virtuous Britain. I allude to such as Cressy, Bannockburn, Floddenfield, Blenheim, Trafalgar, Waterloo, or what probably are still more potent than the names of physical victories, those of the great moral ones, as Magna Charta, Trial by Jury, Habeas Corpus, Petition of Rights, Solemn League and Covenant. A similar spell is enshrined in the names of men,—the great, the brave, the good; especially the rare men who have been the undoubted benefactors of their species,—men who have proved themselves to be pure and disinterested lovers of their kind. The single words that represent such men,—the Alfreds, the Sidneys, the Russells, the Hampdens, and the Miltons,—have a refreshing and cheering effect on the mind. The patriot and philanthropist, or votary of liberty in any country, will know what charm resides in Leonidas, Cincinnatus, Wallace, Washington, Bolivar, Kosciosko, Wilberforce, Clarkson, Sharpe.

But all men who have left works of genius behind them, which have not been made the instrument of vice, the pander of bad passions, were, whether they intended it or not, benefactors of their species, and the glory of the human race, and their names, among all men who are alive to the influences of genius, are words to conjure with. To the scientific man, for instance, what power resides in Bacon, Newton, Galileo, Kepler, La Place, Herschel, Cuvier! To the votary of metaphysics and moral philosophy, in the names of Plato, Aristotle, Zeno, Epictetus, and of the master of them all—Socrates,

> "From whose mouth issued forth
> Mellifluous streams that water'd all the schools"!—

To the artist, in Apelles, Phidias, M. Angelo, Raffaelle, Giotto, Titian, Rembrandt! To all men, in Homer, Shakspeare, and Dante! I have said nothing of the Scripture names of prophets, apostles, fathers of the church, or of the names of the pioneers and leaders of the great religious revolutions or reformations, and founders of religious sects, as Luther, Calvin, George Fox, Wesley, Whitefield, each of which has probably been music in the ears of millions.

The effect would be enhanced of each name, when met with as a symbol in its proper place,—I mean inscribed on its most fitting architectural shrine,—where the spirit it represents would be most delighted to hover could it revisit the earth, as Michelangelo, for example, on a sculpture gallery or gallery of art; Socrates and Plato on a college or library.

The names of the works of these men, the great creations of the human mind in all departments of its domain,—the children of their brain,—would be as potent as their own, and in some cases more so, especially of works of imagination. They are the names of the bright denizens of the intellectual world,—a sleepless, deathless host, and are the hieroglyphics of civilisation, marking the stature of the human soul in each country and age. What, in our public parks and botanical and zoological or other gardens, or places of public recreation from the toils of business, inscribed on the surrounding walls, or on architectural features,—temples or monuments in honour of those who had shed an intellectual glory over the earth, would be so appropriate a decoration, or so crowd the place with images of grace and beauty, as a host of such words as the following, each wreathed with passages from the work it symbolises, some of which are worth sermons,—"Iliad," "Hamlet," "Jerusalem Delivered," "Paradise Lost," "Pilgrim's Progress," "Don Quixote," "Sorrows of Werter," "Pastor Fido," "Arabian Nights," "Tom Jones," "Roderick Random," "Tristram Shandy," "Robinson Crusoe," "Vicar of Wakefield," "Cotter's Saturday Night," "Death of Abel," "Gulliver's Travels," "Gertrude of Wyoming"? Such places, along with winter gardens, which are now happily growing more into use, would be the best possible for doing honour to the noble dead. And names like these, each inscribed on its proper panel, or on its proper shrine, would to the imagination be equivalent to a profusion of high-class sculpture, the expense of which would render unattainable; while they would give to those places an educational power and value greater, perhaps, than any amount of art embellishment could yield.

I have felt reluctance to occupy valuable space with what may seem a mere catalogue of names, yet I fancy that but a small class of readers will think it wasted. What Lord Macaulay avers of the writings of Milton apply with equal force, I think, to all such words. No sooner are they seen or heard than the past is present, and the distant near. New forms of beauty start at once into existence, and all the burial-places of the memory give up their dead. I must complete my observations on this subject, explanatory of the practical application of inscriptions, in another ramble or flight.

SAMUEL HUGGINS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

PRESENTATION OF ROYAL GOLD MEDAL AND PRIZES.

THE last ordinary general meeting of this Institute for Session 1876-77, was held on Monday evening last, Professor Donaldson presiding during the first portion of the proceedings. The room was exceedingly crowded, many members being unable to obtain seats, and the temperature was that of a vapour bath. The agenda contained sufficient business for at least two meetings, and, as an adjournment was said to be out of the question, it was not surprising that the meeting did not terminate until nearly half-past eleven p.m.

The following gentlemen were balloted for and duly elected, viz.,—As Fellow: Mr. Charles Clegg, of Manchester. As Associates: Mr. Alfred Bevan, of Forest-hill; and Mr. J. M. Ferguson, of Lincoln's-inn-fields.

Mr. Cockerell, hon. sec. for foreign correspondence, announced the death of M. Charles César Benvignat, of Lille, one of the honorary and corresponding members of the Institute. Mr. Cockerell also said he had received from the Dutch Government, through the Foreign Office, the programme of a competition for the erection of a new university at Leyden. The proposed outlay was a million florins (90,000*l.*), style at competitors' discretion. The first premium was five thousand florins (440*l.*), and the second premium was two thousand five hundred florins (220*l.*). Mr. Cockerell further announced that he had received particulars of a congress organised by the Burgomaster and Town Council of Antwerp, in honour of the tercentenary of the birth of Peter Paul Rubens. Mr. Cockerell added that he had received an important and valuable report from Brussels as to the warming and ventilation of the houses of Parliament there. This report it was proposed to lay on the table of the library, but Mr. Arthur Cates said that if the communication in question was so exceedingly interesting, would it not be desirable to have it printed and circulated in the "Transactions"? To relegate such a report to the table of the library was hardly to be considered co[m]plimentary to the author. It was ultimate[ly] understood that the matter be referred to t[he] Council for consideration, Professor Donalds[on] remarking that some interesting particulars h[ad] recently been published in the French archite[c]tural periodicals with reference to the ventil[a]tion of the legislative buildings at Versaill[es]. The Professor also commended to the notice [of] the members the proposed Rubens celebration [at] Antwerp, remarking that there was no city [so] hospitable as Antwerp, nor a greater lover a[nd] promoter of the arts.

Mr. Eastlake, the secretary, announced that, [in] accordance with the new regulations for t[he] admission of students to the library, the Coun[cil] had issued tickets, price 5*s.* each, admitting [to] the library any student of the architectur[al] classes of the Royal Academy or of King's a[nd] University Colleges, or any member of t[he] Architectural Association. Mr. Eastlake al[so] submitted the report of the Council as to t[he] result of the Architectural Examination of 187[7]. The Council reported that in the Preliminar[y] Class the following gentlemen had passed, viz[.] Messrs. R. E. Gruggen, H. Griffin, P. E. Ridg[e]; J. Bilson, J. Shillcock, and C. J. Smith; that [in] the Class of Proficiency, Mr. F. Baggalla[y] passed in both sections (viz., the artistic an[d] scientific), Mr. R. W. Gibson in the artist[ic] section, and Messrs. J. B. Gass, W. Jacques, an[d] J. J. Lough, in the scientific section. Th[e] Council also reported that on the recommend[a]tion of the examiners, they had determined t[o] award 10*l.* of the Ashpitel Prize to Mr. J. [J.] Lough, as the candidate who had distinguishe[d] himself most creditably in one section of th[e] Proficiency Class; 5*l.* to Mr. J. Bilson, who ha[d] distinguished himself most creditably in th[e] Preliminary Class; and 5*l.* to Mr. F. Baggallay, who passed in both sections.

The Chairman (Professor Donaldson) address[ed] ing the President (Mr. Charles Barry), tha[t] said:—I have been requested to assume [the] function which, under different circumstances, it is your office to discharge, and which would be much more efficiently carried out by you o[r] another member of the Council. But I fee[l] much pleasure in doing so from my reverence for the name of your distinguished father, and personal regard for yourself, whom I have known from your early boyhood. It was well observed by our Honorary Fellow, Mr. Beresford Hope, the other evening, that the name of Barry seem[s] likely, in yourself and brother, to be transmitted to posterity, for many generations, as inseparably connected with architecture. It was the case with the famous family of the San Galli, in Italy, many successive members of which race in no undistinguished period of Italian art erected very fine public buildings during one hundred years. You and your brother must remember that, if we praise the Barrys for the past, it is natural for us to expect still higher efforts for the future. It is our hope that you will adopt the watchwords, "Onward! Excelsior!" and that the Barry family may also for one hundred years leave monuments of their genius and taste nobler and nobler still, and worthy the descendants of him who built our Parliament Houses, the Reform Club, and numberless other fine buildings, private and public. Brought up in the office of such a man, witness of the studies made to carry out large works and the details necessary for their execution, and with the opportunities to visit them while erecting, you had every facility of imbibing the principles and imitating the proverbial love of hard work of your father. Under such instruction, and surrounded by his able pupils and assistants, men who have since risen to repute, you have had every advantage, and have wisely availed yourself of the privileges. Being appointed successor to your father by the Trustees of Dulwich College, you have been entrusted with the erection of that imposing mass of buildings which are the chief object in Dulwich. You have divided it into fine masses, and have happily introduced the use of terra-cotta, on which you have given an interesting paper in these rooms. And, most wisely, the Trustees compelled the directors of the several railways crossing the grounds of their estate to adopt the drawings you prepared for the lines of the viaducts which traverse them in every direction, and by the judicious use of coloured brick you have given a series of graceful arches and pleasing colouring, which render them an embellishment instead of a deformity in the landscape of which they form a part in the meadows and pleasure-grounds and plantations of this suburban district. A

part of my family reside in Dulwich, and thus I have often the opportunity of admiring your skill and taste. The building for the scientific societies, conjoined with the Royal Academy at Burlington House, offers a fine and imposing elevation in its frontage towards Piccadily. You have here reproduced the canons of the finest period of Italian art. You recal the genius of a Palladio, a Vignola, a Peruzzi, Inigo Jones, and Sir William Chambers. The details are well studied; the enrichments relieve it from dull monotony, and the sculptures of the triple-arched entrance into the court show refinement of taste and the determination not to neglect, even in inferior positions, propriety and elegance. I remember when, as a young man, I returned after four or five years' absence of student life in Italy, I passed by Somerset House. I felt proud of my country which possessed so fine a building, and exclaimed "I have seen nothing finer than that in the country of Palladio!" I trust that, when the smoke and dirt of London shall have picturesquely toned down and coloured your Burlington House façade, it will create in our sons the like emotion as did Somerset House in me. I believe that those present will likewise feel that your court is also well treated, and affords many a feature of architectural elegance, as not long ago was remarked to me by a French architect. You have also been called upon in Italy itself to advise in regard to the very important works carried out in Turin and Milan for the enlargement and embellishment of those towns. This confidence as to foreign works is a striking mark of respect to the supposed practical qualities of our profession in this country. I trust these works are being nearly carried out to completion and to your satisfaction, and that artistically as well as speculatively they will realise all the hopes and expectations of yourself and their promoters. I need not refer to your many other labours; but the culminating point, so satisfactory to your friends and family, is seeing you the President of this Institute. I had high hopes and thoughts as to the Royal Institute of British Architects when founded years ago; but our national advancement has been so great, the public edifices throughout the empire have so increased, and the importance of architecture and architects has made such rapid strides, that the advancement has outstripped all expectation, and you are the President of a professional society whose influence extends beyond the limits of Europe. In you the Council have recognised the man worthy to receive the highest honour that, with the sovereign's approval, can be conferred on one of our professional brethren. This has been proposed by the Council, has been confirmed with the unreserved concurrence of the members generally, and approved by her Majesty. I have therefore the honour of handing to you the Royal Gold Medal, the second one conferred on a Barry.

Mr. Barry, having received the medal amidst much applause, replied as follows:—Professor Donaldson and my good colleagues,—While I cannot doubt that there are many in the profession and in this room who would be far more worthy recipients than myself of the great honour the Institute has done me in recommending me to her Majesty as the recipient of the Royal Gold Medal for this year, I may say, with the deepest feeling of my heart, how very highly I value this mark of your regard. I can truly say that no labour or effort has ever been spared by me, so far as my abilities have permitted, to do my utmost in architecture, and to gain for myself a worthy name among the architects of England. I have felt all the obligation laid on me to follow up the fame of that great man amongst us whom it was my great privilege to call father, while feeling most deeply the difficulties of following in that path. If I have not had (as he had) to *create* a name honoured and illustrious, I have had the inspiriting inducement to try and be worthy of it so far as I might. I shall labour to the end of my days to be so. If I needed any additional inducement to do so, I have it now through your indulgent kindness in presenting to me this medal. If its intrinsic value could be enhanced, it has been so by its being tendered to me in your names by so able and valued a master of our art as my old and dearly-loved friend, Professor Donaldson. In his allusions to my architectural works, he has taken much too favourable a view, prompted, I fear, rather by his personal regard for me than by their merits. I should indeed feel proud if I could think that posterity would confirm, if only to a partial extent, the praise he has been pleased to award. Be sure that this day will never be out of my memory as long as I live; and long or short as that time may be, my earnest and increasing efforts and energies will be devoted all the more, in consequence of the honour you have done me, to the advancement of our art, and to the endeavour to aid in its increasing appreciation by our countrymen as well as by our foreign brethren.

Professor Donaldson then vacated the chair in favour of the President, who said he had been requested by his colleagues on the Council to tell the members the present position of that burning question, the treatment of Northumberland-avenue. He was happy to say that the relations between the Council and the Metropolitan Board of Works were of the most friendly character, and both bodies appreciated the difficulty of acting upon the words of the Act of Parliament. Correspondence had passed which would ere long become public, and would show the difficulties of the matter. That correspondence had only that day culminated in a very long interview which took place between a deputation of the Council of the Institute and some of the members of the Metropolitan Board of Works. That conference was of the same friendly character as the correspondence, and he hoped he could say that the conference had produced a very satisfactory result. He was betraying no confidence at all when he told the meeting that the principle which had actuated the Council was this: that while if they could they would use the powers conferred upon them by the Act to make Northumberlamd-avenue graced with beauty beyond all other streets, in saying which they knew they should be speaking in the name of the members of the Institute and the architects of England, they could not allow, for the sake of friendship or peace, that the position of the Institute should be misunderatood, nor accept a position which, while seeming to confer responsibility, gave it not. That defect could be cured by the Board of Works, and by no one else, and he hoped that the Board would see that it would be in every way the best policy for them to work according to the spirit rather than in accordance with the letter of the Act of Parliament.

The following medals and prizes were then presented by the President, viz.:—

The *Soane Medallion* (for a Design for a Free Library and Institute) to Mr. William Scott. In the same competition, a Medal of Merit was awarded to Mr. J. L. Ball.

Sir William Tite's Prize.—A certificate of honourable mention, for a Design for an Ambassador's Residence, submitted in competition for this prize, was awarded to Mr. Henry Tanner.

The Institute Medal and 5l. 5s., for measured drawings of Lavenham Church, Suffolk, were accorded to Mr. W. Gilbee Scott. In the same competition, a certificate of honourable mention (for drawings of Laon Cathedral) was accorded to Mr. W. S. Fraser, an American competitor, the President remarking that it was very gratifying that the prizes offered by or through the Institute should be striven for by students so far away.

The Institute Medal, for an essay on the "Constructive Ironwork," to Mr. Hugh Stannus.

A Medal of Merit, for an essay on the "Chronicles of Early English Art," to Mr. C. L. Bell.

The Pugin Studentship, for the best set of drawings, to Mr. W. Talbot Brown. In the same competition, a *Medal of Merit* to Mr. G. W. Browne, and certificates of honourable mention to Mr. S. Vacher and Mr. W. H. Wood.

As the prize-winners came forward to receive their rewards, they were severally addressed by the President in a few well-timed words of praise and encouragement. The presentation of prizes concluded,

Professor Donaldson read a somewhat long, but very interesting, communication from M. Lysandros Kaftangioglov, Hon. and Corr. Member, respecting Dr. Schliemann's recent excavations at Mycenæ, in which the author attested the genuineness of the various "finds." The best thanks of the Institute were voted to M. Kaftangioglov for his communication, and to Professor Donaldson for reading it.

The President announced that promises to the fund for the improvement of the Institute premises now amounted to 822*l.* out of the 1,000*l.* required. He was asked by Mr. Whichcord to say that he should be glad if all the gentlemen who had promised to subscribe would do so, as at present he had only received about 300*l.*

The meeting then proceeded to continue the discussion * on Mr. Stevenson's paper on Architectural Restorations. A report will be found on pp. 601-603, *ante*.

AS TO RECONSTRUCTING MANCHESTER INFIRMARY.

THE three architects who, by a resolution of the weekly board of the Infirmary, passed on the 19th February last, were invited to prepare plans showing "the best means of remedying the constructive defects of the present building, to provide for the necessary enlargement, and to estimate the probable cost," have just sent in their plans to the committee, accompanied by reports explaining in detail the alterations they propose to make. The three firms who were selected to report to the committee were all of high repute,—Messrs. Pennington & Bridgen, Messrs. Mills & Murgatroyd, and Mr. Thomas Worthington. The plans which they have prepared are exhibited in the library of the Infirmary. Messrs. Pennington & Bridgen put the cost at 26,060*l.* Mr. Worthington says from 40,000*l.* to 45,000*l.*; and Messrs. Mills & Murgatroyd supply no estimate. At the last meeting of the Board, Mr. Alderman King stated that the three architects who were invited to prepare plans showing how the present building might be utilised so as to provide accommodation for a larger number of patients had sent in their plans to the committee, who had considered them, but were not yet in a position to report to the Board.

The chairman asked if the plans were satisfactory?

Alderman King said they varied; some were very satisfactory.

The Chairman asked if there was anything they could work upon?

Alderman King: Oh, yes.

Mr. Maclure: That reply of Alderman King does not bind any one else.

THE COMMISSIONERS OF SEWERS' NEW DEPÔT AT LAMBETH.

THE new depôt at Letts's Wharf, Lambeth, immediately to the east of Waterloo Bridge, which has for some time been in course of erection for the Commissioners of Sewers, is now almost completed, and within the last few weeks the eastern portion of it has been opened for the business connected with the removal and disposal of the City dust and refuse. The new establishment covers an area of between four and five acres, and extends southwards from the river frontage to Commercial-road, from which it is entered. The buildings in connexion with the establishment consist of several separate and distinct blocks for each department, together with a huge and lofty chimney-shaft on the margin of the river, which has just been completed, and which is intended to be used in connexion with an immense oven and furnace for the consumption of useless refuse, after its separation from street dust and manure.

The extreme eastern block, designated the yard buildings, is 163 ft. in length from Commercial-road to the north frontage overlooking the river, and 40 ft. in width, and contains two floors, both the north and the south frontages terminating with gables. This block contains a mess-room for the scavengers, together with a kitchen for cooking purposes; an engine-house, containing an engine of four-horse-power, for chaff and hay cutting for the horses, and also for other purposes in connexion with the establishment; and a drying-room for the horses' and men's clothes. This apartment is heated with hot-water pipes from the engine. The block also contains a blacksmith's shop and forge; a hospital for the sick scavengers and others belonging to the Commissioners' service; lavatories and other conveniences; and, at the extreme north end of the block, facing the river, is a rag store.

Between the east block and the large central block there is a roadway, with entrance-gates from Commercial-road, 20 ft. in width. The central block, which is the most prominent building, is 82 ft. in width and 243 ft. in length, and consists of three bays, with gables to both the Commercial-road and the river frontage. The centre bay is 45 ft. in height, and is covered in with Rendle's patent glazed roof. It forms a roadway and entrance to the two bays, one on either side, which contain the stabling for the

* See pp. 550-51, *ante*.



FIG. 1.

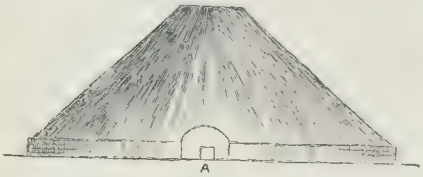
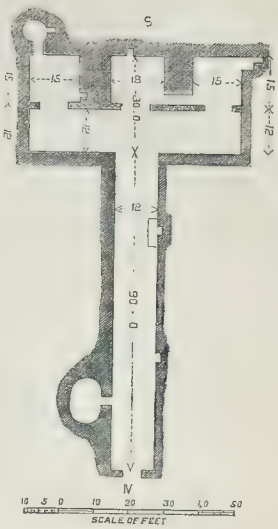


FIG. 2. ELEVATION.

A. Entrance, 2 ft. high.

From the hill being covered with full-grown grain the exact dimensions externally could not be obtained.



References to Fig. 1.

1, 1. Asserted position of funereal pile.
2, 2. Chambers and Galleries, 20 ft. high, in solid masonry.
3, 3. Large stones forming the cairn.
4, 4. External Plan of Mound as at present.

Elevation, Plan (semi-sectional), and Enlarged Plan of Chambers of the Great Tumulus, Maltepe, near Pergamus, Asia Minor.
(*The Scale applies only to the Enlarged Plan of Chambers*).

horses, the ground area of the centre bay being utilised for the washing and cleaning of the horses. Each of the two side bays contains ranges of stables for thirty-six horses, or seventy-two horses in all. Over the stables, in the west bay, is the harness-maker's room, stores, and wheelwright's shop, whilst the upper floor of the east bay contains corn-stores and hay-loft. The stables are ventilated by Hill & Hay's patent ventilators. The upper floors of the two side bays are connected by a bridge carried on four iron columns.

Immediately to the west of the central block is another entrance and gateway from Commercial-road, uniform in width with that on the east side, and again, to the west of this roadway, another block is now in course of erection, one portion of which forms a wagon-shed, 72 ft. in length, and 32 ft. in width, and covered in with an iron roof. Immediately to the north of the wagon-shed another building, two stories in height, is likewise in progress. The ground-floor of this building will contain another rag-store, and the upper story is intended for a mess-room for the women sorters in the employ of the Commissioners. Strong boundary-walls are also being built round the walls of the dock at the north-west boundary of the ground, on the margin of the river. This dock will be made use of by the barges employed by the Commissioners, and others engaged in the removal of the refuse.

The chimney-shaft at the north side of the depôt is one of the most prominent structures on the banks of the Thames, and quite as distinctive a feature as the adjoining shot-tower. It is 120 ft. in height to the top of a double stone coping, surmounted by an ornamental iron railing 7 ft. in height. It is octagonal in form, and 12 ft. wide at the base. The foundations of the chimney are 30 ft. below the surface of the ground, and consist of five tiers of iron cylinders, all bolted together, and filled in with concrete. In excavating for the foundations the London clay, to a depth of 5 ft., was cut through.

The oven and furnace at the bottom of the chimney-shaft, and connected with it by a long flue, is now in course of construction. It is 12 ft. long and 7 ft. wide. the walls of the oven being composed of fire-brick, 18 in. in thickness.

The whole of the buildings were designed by Mr. W. Haywood, the engineer to the Commissioners, the contractors being Messrs. Perry, of Bow. Mr. Seymour has acted as clerk of works, and Mr. March as foreman. Exclusive of the land the estimated cost of the depôt is about 20,000*l*.

THE GREAT TUMULUS, NEAR PERGAMUS, ASIA MINOR.

I FIND, from accounts from England, that the little plan I sent you of the tombs at Mycenæ was inserted in the *Builder*. I have now just returned from a difficult and dangerous tour in the interior of Asia Minor, having visited and carefully examined every district of the Seven Churches of Asia, and concluded my investigation by a visit to Patmos, in itself no easy matter, as there is no regular conveyance. Among the many unnoticed and little known monuments in these districts, perhaps the finest interior, of any of the prehistoric class, is the large mound near Pergamus, which has a very much more elaborate interior than anything my friend Mr. Simpson or I could discover in the vast mounds near Sardis, in Lydia. The particulars being given in the plan, and your space being valuable, your readers will judge of the interest from the illustration.

I may add that the remains at Pergamus embrace great intervals of time, and are on a stupendous scale. My visit here was induced by a letter from the Archbishop of Smyrna, who solicited in it that the contents of the valuable library, including the ancient manuscripts, should be open to my inspection, to which the Abbot has kindly consented. The grotto is still shown where, it is asserted, St. John wrote the Apocalypse,—a by no means incommodious rock residence, now protected by a chapel on the exterior.

Did time permit, I could give many details of great interest, but confine myself at present to the plan of this remarkable subterranean structure. The hill is called Maltepe, which means simply "the hill of wealth." Hence this was a treasury, like that of Atreus, near Mycenæ, though it might have been raised on the funeral pile of some great man, to render it sacred and secure from molestation by his people.

The whole of the district of the Seven Churches is full of deep interest and study for the archæologist as well as the theologian, and the many and various styles of the prehistoric monuments intimate that long before the Christian era these were places of ancient worship, apart from the refined, religious, and voluptuous ceremonies of the Greeks. The large remains of Roman work at Pergamus attest that it was an important place in their days. The Amphitheatre and triumphal arch are in a good state of preservation, and some fine engineering in subways takes one by surprise. The Greek temples must have been on a grand scale, as I counted, in one wall alone, sixty long shafts of fine marble columns built up in the solid masonry.

JOHN S. PRENÉ.

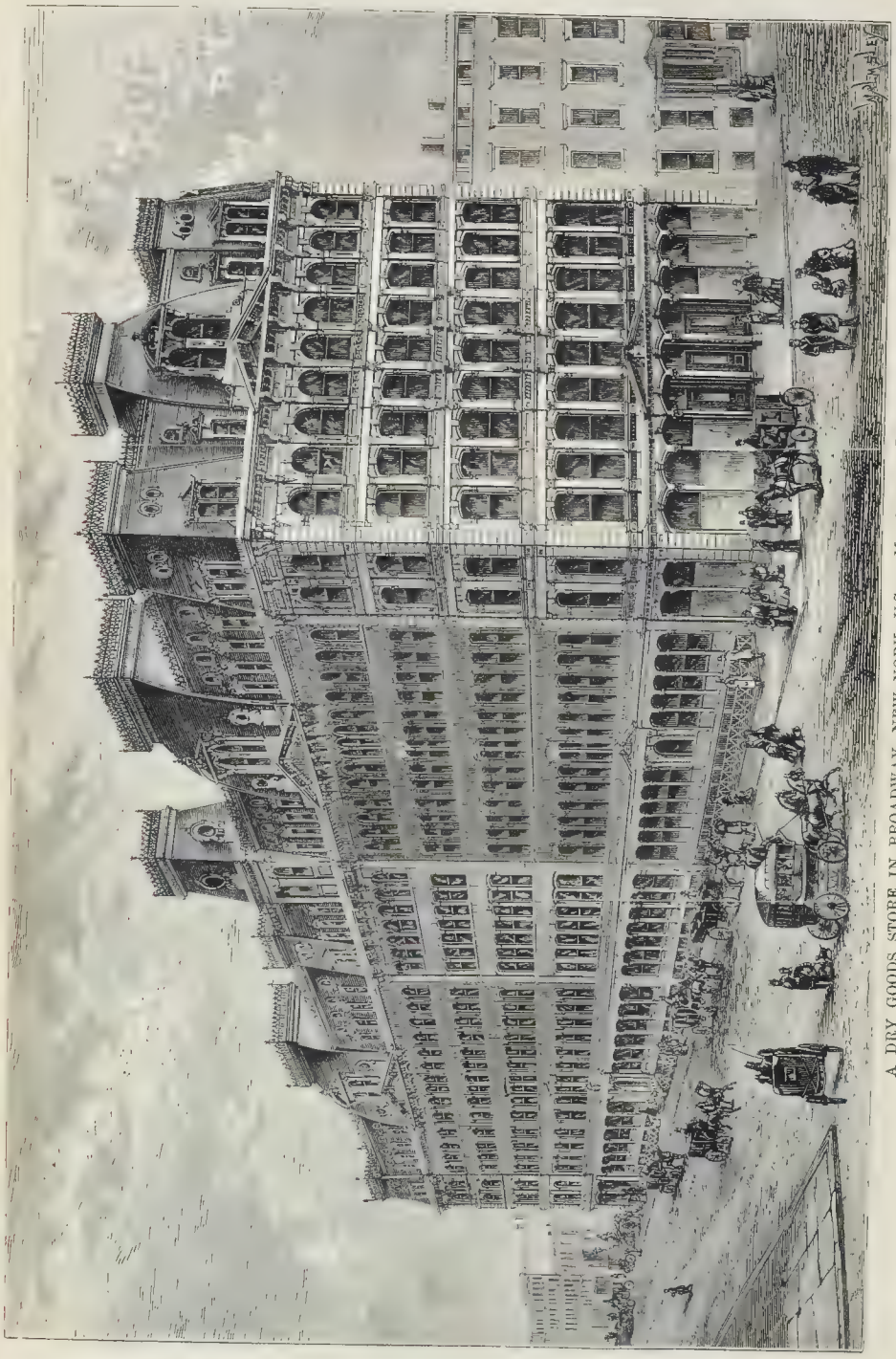
The Monastery, Isle of Patmos.

A DRY GOODS STORE IN NEW YORK.

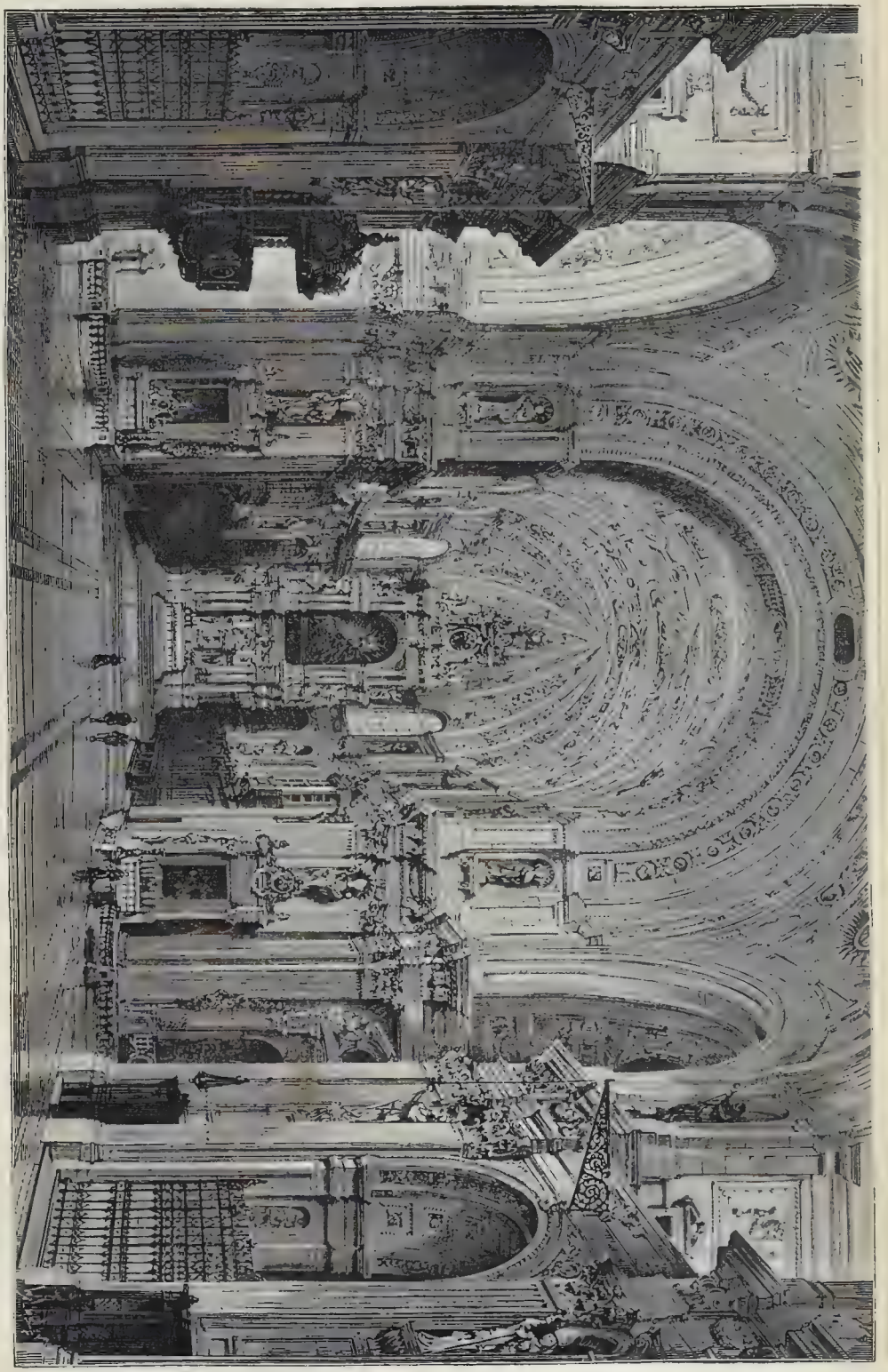
SOME of our readers may be glad to see how businesses grow at times in New York. The business now carried on by the firm of Arnold, Constable, & Co. is fifty years old. In 1869 they began to transfer part of their trade as drapers to Broadway and Nineteenth-street from a less important part of the city, and quite recently they have brought their whole business, adding a large carpeting and upholstering department. Of the huge building just now erected for their purposes, from the designs of Mr. Griffith Thomas, architect, we publish a view. It gives them a frontage of 84 ft. on Broadway, 84 ft. on Fifth Avenue, and 375 ft. of northern light on Nineteenth-street, thus rendering it one of the largest business establishments in the world. In the opinion of the firm the possession of a northern light is of great advantage to their customers, as it precludes the possibility of any dissatisfaction with goods after their purchase. The new building is described as fireproof. The elevators are run by three large boilers, 80 h.p. each.

All the windows of the building are furnished with Clark's patent noiseless steel shutters.

Livingstone Memorial.—On the 9th inst. the memorial-stone of the Livingstone Medical Missionary Memorial Training Institution was laid in the Cowgate, Edinburgh, by the Rev. Dr. Moffatt, the African Missionary, in presence of a large number of spectators. The buildings will cost 10,000*l*., of which from 6,000*l*. to 7,000*l*. have been raised.



A DRY GOODS STORE IN BROADWAY, NEW YORK, U.S.—MR. GRIFFITH THOMAS, ARCHITECT.



ST. MICHAEL'S CHURCH, MUNICH: COMMENCED A.D. 1538.

ST. MICHAEL'S CHURCH, MUNICH.

WE have from time to time given views and descriptive accounts of what are called "single-span" churches; that is to say, churches whose whole width is covered by one internal roof. Our observations hitherto have had reference, either to Mediæval buildings, Romanesque, and Gothic, or to modern Gothic churches: this week we present our readers with a drawing of a Renaissance example of the same class of buildings. The church of St. Michael, at Munich, is one of those sumptuous ecclesiastical buildings erected by the Jesuit order at the close of the sixteenth century, a period at which that remarkable order seems to have given the key-note, not only to the ecclesiastical literature of the part of Europe which remained in communion with the see of Rome, but even to architecture. At the present time, when Gothic architecture is looked upon as the only style for ecclesiastical buildings, those erected by this order receive less notice than they seem to us to deserve. It is quite impossible to study the Jesuit churches in Bruges, Louvain, Antwerp, the "Jesu" in Rome, or St. Michael's at Munich, without being struck by the dignity of their proportions, and the remarkable effect of grandeur and magnificence which they present. This is singularly the case with St. Michael's at Munich. The architect of this church must indeed have been a bold man to have contemplated, and carried out; a church 80 ft. in span, covered by a vast barrel-vault of brick. In fact, there is a tradition that his own boldness scared him, for the anxiety lest this vast structure should not fall to the ground caused his death upon the very day that the church was consecrated. Whether this story is true or not, it is easy to fancy what must have been the state of mind of a man who had the boldness to try such a grand experiment. The church of St. Michael was commenced in the year 1583 by the architect, Frederick Sustris. In plan it consists of a nave of five very wide bays, the most eastern of which is intersected by the transepts, the other bays are flanked by chapels separated from the nave by elaborate metal screens. One of these chapels has above its altar a very fine fifteenth-century Gothic shrine of copper gilt. In the south transept is Thorwaldsen's monument to Eugene Beauharnais, Duke of Leuchtenberg and Viceroy of Italy, who died in 1824. We must confess that this monument does not give a fair idea of the great genius of Thorwaldsen. There is a "theatrical" treatment about the figure, *standing at the gate of the tomb*, which is more suggestive of "foot-lights" than the surroundings of a Christian church.

The exterior of the church is very plain, and constructed chiefly of red brick. The great west gable which faces the street is, however, rather a noble elevation, and is adorned by bonze statues of six of the German emperors, and a fine colossal statue of St. Michael, by Peter de Witte (Candido).

THE STUDY OF NATURE APPLIED TO COLOURED DECORATION.

ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of this Association on Friday, the 8th inst., Mr. H. C. Boyes, president, in the chair,

Mr. J. D. Crace read the following paper "On the Study of Nature as applied to Coloured Decoration":—

About three years ago I had the privilege of addressing to this Association some remarks on "The Study of Coloured Decoration." The object of those remarks was to direct attention to the works of those men whose reputation has stood the test of time, and to point out the enormous advantages which the student of decoration may derive from thoughtful observation of those works; to point out also by what methods such observation should be carried on, and to what forms of analysis the works in question should be subjected in the mind of the student. My remarks this evening form the sequel to that discourse, and are, in fact, the fulfilment of a promise then made; for, in pointing to one field of study, I did not wish you to suppose that I ignored the other and greater source of knowledge,—greater, but for that reason the more difficult. It is because of this difficulty that I laid great stress on the necessity of a careful study of existing examples before appealing directly to nature for lessons in decoration. Until you have seen what others have done, and have considered why they did it,—have thought over the means by which effects have been obtained,—have observed to what extent these artists have borrowed from those who went before them, and how far they ventured to go directly to nature,—it will be useless for you to attempt to turn nature to your purposes. As well might you hope to learn the full and refined use of a language by the study of its dictionary. It is not by having access to an unlimited supply of words that men learn to talk or write sense, but by studying the sense of what other men have talked or written.

All coloured decoration is, in some sort, borrowed from nature. Sometimes the obligation is so direct, or so recent, that its recognition is simple, requiring no effort of thought. But this is less often the case with the general features of any decorative work than with special points of detail. The connexion between some of the most valuable forms of ornament and their prototypes in nature is often to be traced with difficulty, sometimes not to be traced at all; and the scheme of colouring followed out in any decorative work may often have been due to a passing impression on the artist's mind, produced by natural objects or natural phenomena, of the utilisation of which he has himself been probably but partly conscious. The result was none the less due to that habit of observation which every true artist is perpetually cultivating. Whilst, then, I have distinctly expressed my opinion that the study of examples of decoration must precede any attempt at making a direct use of nature for decorative purposes, I must not be supposed to advise a disregard of nature in the meantime. On the contrary, whatever be the end for which you are pursuing art, you cannot begin to observe and to study nature too soon. You will never acquire the habit of observation if you do not acquire it in youth; and it is only the habit of careful observation that will make your studies from nature of any value. But, before you attempt to utilise that inexhaustible treasure, seek to learn in what way, and within what limits, other and greater minds have used its resources, for by so doing you will save yourself endless and certain disappointment. Let me, however, now assume that you have followed the course which I have indicated,—that, availing yourselves of such means as may have lain within your reach, either by travel or otherwise, you have examined and made studies from many good examples, and, whilst doing so, have carefully endeavoured to satisfy yourselves in each case of the object of the artist, and the exact value of every part of the work studied. Not only this: I will further hope that you have had some opportunity of applying in practice some of the knowledge which you have thus attained. A little such practice, on however modest a scale, will be invaluable, for you will then, for the first time, become thoroughly aware how numerous are the difficulties in the use of colour, and how unsuspected are the illusions to which it is subject. What, then, are the lessons which the decorator may learn from nature? They are, of course, endless, and they are to be derived from every visible form of nature, whether it be in the domain of vegetable life, with all its wonderful resources of flowers and foliage, or in the animal kingdom, with its precious teachings from the most brilliant to the most subdued combinations of colour, and the most subtle adaptations of form; or the very soil we tread on, the pebbles at our feet, the rocks from which we build, and the water which reflects them all; or, lastly, from the atmosphere which we breathe, and which not only supplies us with a scale of the most exquisite delicacy of ever-varying tints, but with the phenomena upon which is based whatever knowledge we have of colour itself. From all these, something may be learned, and I shall endeavour to offer you a few hints as to what to do, and what *not* to do, when taking note of them.

Perhaps it may be well if I briefly summarise some of the principal heads under which these teachings from nature group themselves. I do so, not with the intention of dealing with each *seriatim* and systematically, but rather to bring concisely before you the extensive suggestions which the subject offers. They naturally fall into two main groups, one relating to *form*, and one to *colour*, and under these heads may be tabulated, more or less imperfectly, as follows:—

Form.	*Colour.*
1. Simple grace of line or contour.	1. Harmony and contrast.
2. Combinations of form.	2. Gradations of tone.
3. Adaptation of ornamental form to surface.	3. Adaptation of colour to surface.
4. Mutual influence of lines.	4. Relation of tone to sentiment.

You will probably assume, and perhaps correctly, that it is in the latter group that you will find the more interesting and valuable lessons. I wish, however, before we pass to colour, to detain you awhile that I may touch upon some questions of form which will enable me to illustrate the general intention of the present paper. I am, of course, perfectly aware that there can hardly be one of my audience who has not found delight in the beauties of form to be found in the vegetable world, nor one who, having visited an aquarium, has not been charmed by the exquisite lines of fish in motion. These are in themselves excellent training for the eye, and fair subjects for study as detail. Who could be satisfied with a bad curve immediately after watching the motion of the conger, or the lateral fringes of flat-fish as they rise and fall in the water? In these and a thousand other instances, the eye is trained by observation to avoid the ugly and prefer the beautiful; and the training is valuable in proportion as the student remembers the limits within which it is directly applicable.

If we turn to the direct teaching of form which nature supplies, it is simply inexhaustible, and the difficulty rather lies in the abundance. There is hardly a hedge-plant which does not teach form. The question is, "Do you know how to make use of the forms you find?" You perhaps say, "Oh, yes, we know what you mean, you are going to say, 'conventionalise.'" Now that is not what I mean. It is quite true that the decorator or ornamentist must constantly resort to conventional renderings of vegetable forms, but I shall come to that subject presently. What I want to insist on is that the forms you find in nature are suggestive of much more than conventional renderings of themselves. They constantly suggest form, for purposes and objects quite removed from such direct adaptations. The form of a flower or a leaf may suggest ornament or contours into which no representation of leaf or flower enters. The stem of a plant may suggest the section of a column or a device in metal work; its foliage and flowers have often suggested the form of a capital, or the contour of a vase. It is in the *suggestiveness* of nature that the value of the study really lies. I would draw your minds entirely away from the idea that a plant is an object to be conventionalised exclusively. To my mind, that is one of its values, but only one of them.

Let us turn for a moment to the conventional treatment of flowers and foliage, in itself a valuable and necessary process. I cannot help thinking that it has, among us moderns, become sadly misunderstood. Somehow or other our "conventional treatment" falls far short of the examples handed down to us by many schools of art. Why is this? It seems to me there is too much of the dissecting-table and skin-stuffer about most of our conventional floral ornament. Our conventional flowers remind one of badly-stuffed animals in awkward attitudes. There is the skin, and no mistake; but the bones lie bleaching elsewhere, and here are only very stiff iron wires. One expects to see the hay or cotton wool protruding.

This is not the result which the men of old produced. They either took a plant form, and, without attempting any sort of imitation of it, designed an ornament which the form had suggested; or they took the plant, accepted its leading features and most visible structural character, and simplified these as their material, or purpose, or space required. We therefore have open to us at least three forms of conventional treatment, irrespective of style.

1. The conventional ornament which has but a distant derivation from, and offers no imitation of, nature.

2. That which, without following any one natural type, is suggested by, and at once suggests, nature.

3. That which, following a special type, simplifies its representation to suit the exigencies of position, effect, or material.

The following may be taken as examples of each:—

1. The Greek honeysuckle; the volute scroll; the Gothic ball-flower.

2. Indian or Persian floral ornament; the Renaissance arabesque ornament; early Gothic scroll foliage.

3. The ivy-leaf or vine-leaf ornament of Greek vases, &c.; the representation of the rose or other plants in Mediæval heraldry and architecture.

Before leaving the subject of form, I will just for a moment call attention to the influence

of lines one on another,—an influence which may be frequently remarked, and with the laws of which it is desirable to familiarise the mind. Thus, whether in curved or straight lines, the stronger will always influence the weaker or more distant. This is especially the case where lines intersect or approach each other at small angles,—a fact the knowledge of which is often of great importance both to the architect and the decorator, examples being often produced unintententionally in the perspectives of buildings. The well-known effects of perpendicular or horizontal lines upon proportion hardly need dwelling upon. These and many more subtle phenomena of lines and form will be often noted by an observant eye, and remember that it is only the eye which has been trained to habitual observation of Nature that will have the delicate perception necessary to mark these phenomena. The refined entasis of the Greek column was developed upon traditional architectural forms by men whose observation of the natural human form had rendered their perception of all form more keen and more sensitive; and in all periods of art you will find architecture at its best when the observation of nature was most accurate, and the representation of natural objects most cared for. This was the case with the Egyptian art of Rameses II. and III.; Greek art under Pericles; our own Gothic of the thirteenth and fourteenth centuries; and with the Italian art of the earlier Renaissance.

Colour.

We will now turn to that other half of our subject, of which the charm and the teachings are more obvious, perhaps, although not more easy. For in studying colour we are, even more than in studying form, apt to overlook some important factor in the result, and even to be misled by imperfect observation into grave errors for which nature is not really responsible. It is, therefore, doubly necessary that in studying colours from nature we should carefully note all the circumstances which contribute to the harmonious result which affords us such keen delight, and that we should not run away with a few crude memoranda of some combination, forgetting to remark, possibly, those conditions,—extraneous to the object itself,—which have gone far towards producing that sense of pleasure and satisfaction which impresses us. It is in this way that we may often be charmed with some group of flowers, and attribute at once the pleasure experienced to the contrast or harmony of two, or perhaps three, prominent colours in the group; whereas it as often happens that the sense of satisfaction would have been far less complete but for some hardly observed sprig of white or yellow which has given purity of tone to both adjoining colours, or but for the vase in which they are, and which provides some unobtrusive but valuable contrast. The light in which they stand may again make or mar the result, according to which colours of the group are brought into prominence, or subdued in tone by shade,—and this is a branch of their art to which even our best flower-painters hardly give sufficient heed,—whereas such works as those charming studies by Fantin owe much to careful lighting. The student of colour cannot too often practise combining small groups of flowers and foliage, then lighting them to the best advantage, and finally making rapid studies of the results. He will often be astonished to find himself representing colours which he at first supposed to be, say, strong greens and bright reds, by tones into which such pigments as umber and French blue, or burnt sienna and madder-brown, largely enter. It is then that he begins to realise that what he might have written down scarlet is really (under the conditions in which it pleased him) more nearly a maroon; and that the green which, as "local colour," was somewhat vivid, has become, by its position, of a very low dark tone. Cast shadows, reflections, transmitted light, all play their part in the group, and it is for the student to note what are the results which actually reach his eye. To do this, careful and habitual observations are necessary, for it is only by habit and long practice that the eye is trained to recognise quickly the true results, and to seize at once the valuable points in the lesson. The same necessity for the careful observation of accessories exists whether the subject be a single plant, a flower-bed, a mass of foliage, or a stretch of landscape. Thus the concord between the foliage and the blossom is often largely dependent upon the colour of the stem or the very soil, or by the almost unnoticed point of colour afforded by the "anthers." Therefore, directly you become aware of an agreeable "passage of colour" in nature, seek to assure yourself that you have not omitted to take account of all that really contributes to it. It is only when you have thoroughly grasped the secret of the charm that you can possibly be in a position to turn it to account, and it will then probably be in some very indirect way. For as with form so with colour; it is in the general training and refining of the eye that lies the most valuable part of nature's teaching, Yet very valuable direct suggestions for decoration are often to be derived from the pure tones of flowers, although they will more often apply to detail than to large surfaces. As frequent and not less valuable are the suggestions offered by other forms of vegetable life in more sober tones of colour. Thus:—It is spring-time, and here is a noble beech-tree coming into leaf. The smooth bark of its trunk and branches is of a neutral grey, shading sometimes to creamy silver where the light falls. Patches of dark green moss, warm and juicy in tone, are dappled about it towards the roots. The earth, where exposed, is of a deep dun or purple tone, but it is for the most part concealed by a covering of last autumn's leaves and mast, which in the shade seem of deep rich browns varying to red, but which patches of sunlight convert, here and there, into the colour of burnished copper. Overhead the cold grey branches break into innumerable twigs of purple-brown from which spring the fresh leaflets of an exquisite pale-yellow green. Some of these leaflets have not yet escaped from the scales or cases which have protected them from winter frosts, and these vary from brownish red to a deep rose colour: one colour is wanted to make this a perfect harmony, and it is there in the pale blue of the May sky. And pray mark that this pale blue finds its way by a thousand small high-lights, more or less subdued, into leaves, twigs, branches, stem, and into the crisp dead leaves of last year. These almost insignificant high-lights have no small share in toning the whole and connecting part with part. Here is a complete scale or chord of secondary and tertiary colouring available for the decorator's use if he please. Only, let him beware how he uses the bright pale-green without due care, for every leaflet, bright as is its local colour, is half in shade, caught by the tiny furrows in its surface, and many are toned down by cast shadows. The general hue is therefore much subdued. Again, here is a bit of park-fencing, grey with age and weather; dry lichens of curious cold greys and pale yellows find a foothold on its surface, up which creeps closely a narrow stem with small sharp-cut ivy-leaves, chiefly of a dark, cold green, but with bright young leaves here and there, in which strive together pale green and a dark russet. Near the top the fence is held together by a strip of thin iron, which varies in colour from orange-red to a deep madder-brown. From the sandy bank on which the fence stands spring tall grass or ferns, under which hang down the broken stems and plumes of last year's bracken, now turned to golden brown. A tangled mass of bramble overhanging the ditch shows dark purple stems, to which the old leaves, of every shade of purple, maroon, or crimson, still cling; whilst the new shoots are of a brilliant fresh green. Behind the fence, and forming its background, is a thick cover or low copse of hazel, oak, young larch, and other trees, whose varied greens are as to their general effect toned by their grey and brown stems. We have here, therefore, another example of a similar scheme of colour in the same secondary and tertiary hues, which are those generally most available for the decoration of large surfaces. By way of explaining that such natural incidents as these may actually afford direct suggestions to the decorator, I have prepared a sketch of a simple decorative treatment of the wall of a room, in which the same scheme of colouring is applied. My young beech-leaves, or copse, are represented by the pale green, duly toned, of the wall-surface or panel. The grey of the stem or fence forms the ground of the pilaster, upon which the ivy actually climbs, though now reduced to symmetrical order and conventionally drawn. This grey is framed by a band of dull red, corresponding to the rusty iron band. The dark-green moss on stem and roots will be found in the dark-green panel, with its grey margin, under the pilaster, and again in the scroll-border which surmounts the dado; whilst this last feature, of a deep russet brown, recalls the colouring of the last year's leaves.

In the same way we might take suggestions i other scales of colour from many different scene or objects. Were you to step over this ver park-fence, you would probably find the groun at the roots of the saplings richly strewn wit the wild hyacinth, the primrose, the anemone and the violet, and a wonderful variety of fres greens breaking the brown and purple soil. Yo at once have a field of study in a different scal of colour. Gather a few of the flowers, an carefully take one egg,—only one, mind,—out o the thrush's nest close to you; place it with th violets and primroses, and you observe what delicate little chord of colours you have at once. In the same way, when summer advances, yo may learn from the cornfield, either lookin across it by the clump of trees, and the hedge rows in their heavy summer greens, to the grey and purple distances, and upwards to the summe sky with its velvety cumuli in every variety o soft and delicately-warm whites and greys, and its pure blue zenith; or, preferring its detail, yo may study its flora, and the colour relation o the flowers to their surroundings. Perhaps yo may feel some surprise at my referring you t "landscape" studies as a profitable training, bu I do so without hesitation, and for many reasons. In the first place, they form a very valuable test to the accuracy of your general observation and to your study of nature in detail.

Thus, when you have sketched some foliage, you begin to realise that the accumulated result of shadows, reflections, and transmitted lights is to make the green a very different colour to the eye, and in its relation to other objects, from what you know the leaves individually to present; and when you have grasped that fact (always difficult at first to sketchers) you will be less likely to commit errors in your observation of colour effects in other natural objects. Again, in landscape and sky you have a great variety of quiet tones of colour in large masses, and it is only when you begin to study them that you find out how these colours may have their relative value increased or diminished by conditions of light and shade,—that is to say, by a modification of relative tone,—and just as a landscape-painter has to make up his mind what portions of his subject shall be in light and what in shade, so the decorator must determine what features are to be made prominent and strongly expressed, and what are to be subdued or toned down. An interior which presents a monotonous regularity, whether of dull tones, of light tints, or of equally strong colours, will be just as unsatisfactory as a landscape picture without "effect of light." Similarly, the colourist will not fail to observe the close connexion between tone of colour, as exhibited in nature, and mental associations. The landscape, or scene, which in sunlight has produced a lively sense of pleasure and gratification, may often be regarded but a few minutes later with a sensation of something like sadness. The same scene lies before us, but the colours are no longer the same. Their relative value and intensity have been altered,—they are more monotonous. Surely the same effect can be, and often is, produced in decoration. A sense of the dismal comes over us as we enter a room uniformly dull in tone. I do not say uniformly *dark*, for that is not necessary to the result; a uniformly drab or grey room may look quite as melancholy as a monotonously green or brown room. It is the monotony in low tones which is depressing. I allude to this for reasons which I will explain:—

Within the last few years, an artist of wide attainments, and evidently a student of nature, designed some wall-papers well known to most of you. Among them were some in monotonous low tones which he was known to have used with painting of the same tones,—that is to say, the rooms in which they were so used were treated in uniformly dull tones. But this was only part of a well-thought-out scheme, in which pictures, china, and other objects were the most important features. The walls, doors, &c., were only background; that is to say, they represented the "shade" to which the pictures, china, and so forth, were the light. Then came other decorators, who had not thought out their scheme, and had not, I presume, studied nature. They admired the paper, and they admired the rooms, and as the paper could be bought and the colours matched, they made similar rooms, with only this difference, that they made no provision for the "sunshine." The pictures, and the china, and the Oriental carpets were not there. So melancholy supervened, and became the fashion, which still reigns, I am told, in some art-talking circles. Another lesson to be learnt from the

observation of landscape scenery is that of harmony of tone, which Nature teaches us on a grand scale with every season. It is almost needless to dwell at length upon the beautiful adjustment of tone in the colouring which Nature assumes at various periods of the year. In winter we have the many shades of browns, dull greys, and scanty low-toned greens of the woods and fields, harmonising with the murky greys and occasional pale-grey blues of the winter sky. In spring, as the sky becomes brighter, the clouds of warmer, clearer, and more lilac tones, a beautiful change comes over the trees, even before they actually put forth leaves. Who has not noticed the exquisite russet bloom which appears on the wooded hill-side in the first warm days of spring? As the sap ascends, the smaller twigs acquire a richer colour, and the red bud-cases swell until they distinctly affect the colouring of the scene. Then, more or less rapidly, appear the leaves, and of such wonderfully vivid greens that we should probably find them intolerable at first but for the fact that they are as yet neither numerous nor large enough to conceal the innumerable brown, grey, or purple stems which bear them. But a few days more, and the foliage is becoming dense, the pastures of richer emerald. Then Nature opens that wonderful treasury, and pours forth spring blossoms, sometimes in rich masses of colour, whether bright, as in the chestnut, the apple, the "May," or the laburnum, or merely the more sober catkin; and sometimes, scattered in more or less profusion through the pastures,—buttercup, daisy, hyacinth, cowslip, orchis,—their names are legion. This is Nature's provision against monotony of brilliant green. Shall we not be humbly grateful for all this beauty, and accept her teaching? It is in the late spring that Nature invites us to study her in detail. Her profusion almost sets us at defiance in her broader aspects. But the very birds and animals follow with the rest, and don their brightest plumage and sleekest coat. Summer advances. The foliage grows more dense; the greens darker and less bright. In the meadows the grasses also seem less green, for they are in bloom, and the delicate feathering blossom and the flowers of sorrel, clover, or vetch perceptibly affect the general hue. The various grain begins to ripen, and the more rapid evaporation and intense light give the distant hills a deeper blue. Autumn follows. On its brighter days the warm sunlight seems to touch everything with gold and crimson under the blue sky and warm grey clouds; but the skies darken, the sunlit gold is exchanged for russet-brown and grey, and the cycle of harmony closes again in winter.

Let me briefly sum up the gist of my remarks. I would have every student of decoration a close observer of nature, and the following conditions will, I think, rather assist than impede him in turning his habits of observation to account:—

1. Let him not attempt to apply what he has observed until he has thoroughly studied what others have applied, their methods, and the reasons of their success.

2. Let him not regard nature as a mere pattern-book, from which this or that detail may be gathered; but as a school in which the senses and perceptions are undergoing constant refinement, and in which the mind may receive daily suggestions of the most diverse nature and of endless variety.

3. When he borrows directly from Nature's inexhaustible forms and tints, let him treat her fairly, and seek to satisfy by adapting rather than distorting her creations. Aim at the beauty of the prototype, as the Greeks did, rather than at the quaintness of the accidental distortion, as the Chinese do; and if he alters let it be in the direction of simplicity.

Such is the advice I venture to offer, and I believe it to tend towards professional success. But we cannot all succeed, and I claim for my advice this further merit,—that it holds out hope of rewards which are beyond profit and beyond professional success: an extra zest to pleasure, consolation in misfortune, an unfailing delight in the life around us, which shall not dim with age. These are the priceless acquisitions to be counted on by him who diligently yet modestly sits at the feet of Nature.

Bells.—We are asked to add to the particulars we gave of the mansion in course of erection for Mr. Ellis Nanney, at Gwynfryn, that it will be furnished with electric bells and lightning conductor by Mr. J. Sax, of Great Russell-street, London.

THE MATHEMATICAL THEORY OF THE GREAT PYRAMID.

SIR,—Referring to the article in your last number on a proposition emanating from the French *savants* for a fresh survey of the Great Pyramid, will you allow me space to say that, having paid much attention to the mathematical design of the Pyramid, I have, by following in the wake of Sir Henry James, arrived at conclusions which, I respectfully submit, leave no doubt on the matter, and show that there is no need for the French investigators to spend their energies on a new survey.

Sir H. James, in his "Notes on the Great Pyramid," makes the great cubit equal to 20·7 in., the sacred cubit equal to six-fifths of this measure, or 24·84 in.; and the lesser cubit, 18·24 in., of which latter measure he makes the sides of the base of the pyramid equal to 500. He does not, however, attempt to establish any relation between the great and lesser cubits, but some must undoubtedly have existed; and it is on this assumption that my results depend.

The late Sir Gardner Wilkinson, in his "Popular Account of the Ancient Egyptians" (vol. ii., p. 256), states his opinion to be that the sides of the base were each 440 cubits (meaning great cubits), which conclusion was also arrived at by me by working directly on Sir H. James's results, and I was not aware at the time of Sir Gardner's surmise.

Now if we give the lesser cubit a value of $\frac{22}{25}$ of the great cubit, or 18·216 in., we shall have 500 of these measures exactly equal to 440 cubits of 20·7 inches, and for the length of each side of the base 9,108 inches, being only 2 inches short of the mean obtained by Mr. Inglis. (See Sir H. James's notes.)

The height of the pyramid was 280 great cubits, which gives for the inclination 51 degrees 50 minutes 26 seconds, corresponding almost exactly with the measured angle of Vyse, who made it 51 degrees 50 minutes. The height was, therefore, to a side of the base as 7 to 11. With regard to the sarcophagus in the King's Chamber, the interior length was 2 great cubits added to 2 lesser cubits, or 77·832 inches (almost identical with the measure of Greaves,—77·856 inches), and its exterior length 2 sacred cubits added to 2 great cubits, or 91·08 inches, equal to $\frac{1}{1000}$ part of a side of the base of the pyramid. By taking $\frac{1}{22}$, $\frac{1}{25}$, and $\frac{1}{55}$ of the three cubits respectively for the digit, we have ·828 of an inch for this measure, and this division of the cubits enables the other measures of the sarcophagus to be readily obtained, which agree very well with those of Vyse, considering that his measures are only roughly correct, and evidently partly obtained by calculation.

The sarcophagus was designed as follows:—

	Digits.		Inches.	Vyse's measures are Inches.
Exterior length...	110	=	91·08	..... 90 5
Interior ,, ...	94	=	77·832	..... 78·0
Exterior width...	48	=	39 744	..... 39 0
Interior ,,	32	=	26·496	..... 26·5
Exterior height...	50	=	41·400	..... 41·0
Interior ,,	42	=	34·776	..... 34·5

The interior measures and the exterior width only of Greaves need be referred to, as he does not appear to have troubled himself much about the others; they are the interior length given above, the width = 26·616 inches, the depth = 34·320 inches, and the exterior width 39·75 inches. These measures agree very well with those deduced, since there is no reason for giving the Egyptian workmen that mathematical precision which some writers claim for them.

The block of granite from which the sarcophagus was wrought was doubtless, when it left the quarry, of the following dimensions:—22 palms long, 10 palms wide, 10 palms high. As, however, the entrance to the pyramid was made two great cubits of ten palms in width, it became necessary to make some reduction in the width of the block, and this was done by taking off two digits. It is easy to see on this hypothesis that the interior dimensions and the exterior width would in all probability come nearer the theoretical measures than the others, and such turns out to be the case, as a comparison of the measures above will show.

There are many peculiarities of the digital numbers of the cubits: thus, the sides of the base, as well as the height of the pyramid, can be expressed in series of the 3 cubits, or of either two of them.

The pyramid was undoubtedly symbolical of the number 7, since it is found that the positions of the chambers in it were determined by sevenths of the whole length.

The number 7 was regarded by the Jews as a mystical number, as their religious observances in general depend upon this number, or a multiple of it, in some instances the square of 7 plus 1. The number 7 was also, according to Sir Gardner Wilkinson, regarded by the Egyptians in a mystical sense, and he gives several instances of the connexion of this number with their manners and customs,—notably their funeral ceremonies. This being so, it is not very surprising that the number 7 should be embodied, so to speak, in their sepulchral monuments.

I have adopted Sir H. James's value of the great cubit, and I think the results show that it is a very good approximation.

W. HAYDEN.

GERMS.

ON the 8th, at the Royal Institution, the last evening lecture for this season was given by Professor Tyndall. In the course of it he said,—Exposing, a year ago, both animal and vegetable infusions, boiled for five minutes, but eminently putrescible, to air proved by the beam to be free from floating matter, they were never found to putrefy or show the slightest inherent power to develope bacterial or fungoid life. By experiments long continued, he convinced himself that in his later inquiries the laboratory of the Royal Institution had become filled with a virulently infective atmosphere. He therefore removed his apparatus to the Jodrell laboratory, in Kew gardens, and exposed its infusions to its less infective air. The result was that liquids, which in Albemarle-street resisted three hours' boiling, filling themselves afterwards with putrefactive organisms, were completely sterilised by five minutes' boiling at Kew. Either, then, the infusions had lost in Kew gardens a generative energy which they possessed in the laboratory of the Royal Institution, or their deportment in the laboratory must be referred to the contagion of its air. With a view of making nearer home experiments similar to those made at Kew, a shed was erected on the roof of the Royal Institution. Chambers were prepared in the shed, and charged with infusions which had never been permitted to come near the laboratory. The first experiments failed utterly, the air of the shed proving sensibly as infective as that of the laboratory itself. The cause of this was not far to seek. Professor Tyndall's assistants had passed from the laboratory to the shed and from the shed to the laboratory, unconscious carriers of infection. The shed was subsequently disinfected, and uninfected clothes were employed for the preparation and exposure of the infusions. The result was that they remained pellucid and without any trace of bacterial life. Now a rod 30 ft. long would stretch from the infusions in the shed to those in the laboratory. At the end of this rod, five minutes' boiling rendered the infusions barren; at the other end the same infusions resisted 180 minutes' boiling. Shall we, then, infer that at one end the infusions possess the power of spontaneous generation, and at the other do not? Or that at one end we have obstinately infective and at the other end comparatively uninfective air? It is needless to dwell upon the absolute similarity of the spread of putrefaction, as here illustrated, to that of infectious disease. There is not a phenomenon of the one which does not find its parallel among the phenomena of the other. Where, then, are we to seek the contagium, which so copiously produced the organisms of putrefaction, after the ordeal to which the infusions in the laboratory had been exposed? Professor Tyndall rendered it visible. Placing a small truss of old and desiccated hay, obtained from Heathfield in Sussex, under a horizontal beam of light sent through the darkened theatre of the Royal Institution, on beating the hay clouds of fine dust rose into the beam. That was the contagium. Mingled with that dust were the desiccated germs which had spread a plague among the infusions, asserting their vitality after exposure for hours to a boiling heat. Washing these germs from the hay, we obtain an infective virus which, if communicated in the most minute quantity to a perfectly sterilised infusion of any kind, causes it in twenty hours to swarm with putrefactive organisms. It may be, for aught the Professor knew, the contagium of hay-fever. Certain it is that in the nostrils of persons affected by this catarrh,

vibrios similar to those developed from the hay germs are found in swarms when the fever is high. How would these obstinate germs act in the wards of a hospital? They cause both animal and vegetable infusions to putrefy. How would they affect the wounds and sores of living men? Would they succumb to ordinary disinfectants? These are questions of the gravest import, which the enlightened student of the antiseptic system will know how to answer for himself. The Professor concluded his discourse with these words:—"I hardly think it necessary to summarise what has been here brought before you. In fact, the whole discourse is but a summing-up of eight months of incessant labour. From the beginning to the end of the inquiry there is not, as you have seen, a shadow of evidence in favour of the doctrine of spontaneous generation. There is, on the contrary, overwhelming evidence against it; but do not carry away with you the notion sometimes erroneously ascribed to me, that I deem spontaneous generation 'impossible,' or that I wish to limit the power of matter in relation to life. My views on this subject ought to be well known. But possibility is one thing and proof is another, and when in our day I seek for experimental evidence of the transformation of the non-living into the living, I am led inexorably to the conclusion that no such evidence exists, and that in the lowest, as in the highest of organised creatures, the method of Nature is that life shall be the issue of antecedent life."

CONCERNING PORTLAND CEMENT.

A PAPER on this subject by Mr. George F. Deacon, C.E., read before the Liverpool Polytechnic Society some time ago, has been just now printed. We quote the concluding passages:—

Portland Cement Setting.—One of the qualities of both natural and artificial cements, as distinguished from limes, is their property of quick-setting. This peculiarity is valuable in some plasterer's work, and in pointing joints in running water where the mortar would otherwise be washed out; but there are probably few other circumstances in which any advantage is derived from the use of very quick-setting cement. On the contrary, it is exceedingly difficult to ensure its immediate application after gauging, and any remixing greatly weakens, if it does not altogether destroy, the cohesion.

The best Portland cement has most fortunately the property of setting much more slowly than any other, and it may therefore be used with far greater safety in situations where its application cannot be closely watched.

In certain classes of work it is extremely difficult to place mortar or concrete *in situ* immediately it is mixed. Take, for example, the case of a carriage-way foundation 25 ft. wide. The excavated materials must be removed from, and the concrete materials brought to, the face of the work by the same route; and if the concrete is to be immediately laid, the mixing apparatus, and the men employed in the work, must be accommodated on the narrow excavated ground, and must be moved back as the work proceeds.

The great advantage which would arise if the concrete or mortar could be brought to the ground ready mixed must be apparent to all. To ascertain if this was possible, without deteriorating the quality of the work, the author, in 1872, prepared twenty-four blocks of concrete of 1 cubic foot each, and allowed different periods to elapse between gauging the material and moulding it. These blocks were tested by crushing at the material-testing machine in Birkenhead, belonging to the Mersey Docks and Harbour Board, with the following results:—

It is unfortunate that the power of the machine was limited to fifty tons, and that out of twenty-four blocks, eleven were therefore not broken. But the result proved beyond doubt that on the average these blocks, the concrete of which had stood from twenty to thirty minutes before being placed in the moulds, were actually stronger than those in which the concrete was immediately moulded.

The author is only able to explain this on the assumption that even in this good and well-purged cement there was some free lime which began to slake on the application of water, thus producing numerous but invisible points of weakness in the blocks first moulded, while in those made with concrete, allowed to stand after gauging, the materials were not moulded until the slaking process was completed.

Since the date of those tests about 100,000 yards of concrete have been laid, after being mixed in and carted from the nearest available yard. The rate of progress of the work has been greatly increased, and the results have been in all respects satisfactory.

It is necessary to remark here that although this is a valuable quality of good Portland cement, it would be most dangerous to take advantage of it without making quite certain that the cement is good and not quick-setting.

Use of Portland Cement in Ironwork.—Until Portland cement of good quality was applied for the purpose of making joints between iron and stonework, there was no entirely satisfactory material for the purpose. The author has used it under a great variety of conditions, and when other conditions failed to keep the tar of a roadway from passing between buckled plates and the arched ribs of a wrought-iron bridge, caulking with Portland cement was perfectly successful. In preserving the bottoms of iron ships it has been long used with the greatest advantage, and in conjunction with iron girder work it is more easily and safely employed than any other material.

Conclusion.—In this paper the author's object has been to bring before the society certain facts concerning Portland cement, which have presented themselves in the course of his experience. Those who desire to obtain a complete knowledge of the subject as previously published cannot do better than read the two papers by Mr. Grant.

In conclusion, the author expresses a hope that the simple mode of testing by transverse strength will be adopted by those engineers and architects who require the use of Portland Cement only occasionally, and in small quantities. Those who do adopt it will find a material at command absolutely certain in its action, by which far the stongest, and, strength for strength, the cheapest concrete can be made, and which, when used for jointing brickwork or masonry, will in a few weeks give a strength greater than has been attained, even after indurating for 2,000 years, by the imperishable mortars of ancient Rome.

Results of Tests as to the Resistance to Crushing of Portland Cement Concrete Blocks. Each Block 1 ft. cube. Proportion of Gravel to Cement, five to one.

Intervals in minutes between gauging concrete and filling moulds.

	0	20	30	40	45	50	60	75	90
Resistance to crushing in tons after 28 days	48·1	> 50 0	> 50·0	> 50 0		47·15	42 15		
Ditto ditto 26 days	43·0	48 0	> 50 0	47·17		47 0	48·15		
Average	45·55	49 0	> 50·0	48 58		47 07	45·15		
24 days	49·15		> 50 0		> 50 0		49 12	43·1	37·1
21 days	> 50·0		> 50 0		> 50 0		46·0	> 5·00	> 50·0
Average	49·57		> 50 0		> 50·0		47·56	46·55	43·55

THE HIGH CULTURE OF THE GREEKS, THE AGENTS WHO CONTRIBUTED TO IT, AND THE CAUSES OF ITS DECAY.

THIS was the subject taken by Mrs. Schliemann for a paper read by her at a meeting of the Archæological Institute on the 8th, Lord Talbot de Malahide in the chair. Mrs. Schliemann said:—At a time when the rest of the world was still living in barbarism's dark night, my ancestors, the ancient Greeks, had in science and arts reached such a pitch of perfection as can never be surpassed by man. Of the hundred thousands of master-pieces of sculpture which once ornamented the public edifices, the Agoras, and the streets of our ancient cities, only a few have escaped the pious zeal of the early Christians, or the ignorance of the barbarians who turned them into lime, and those few now adorn the modern museums as precious relics of Greece's past glory, and as mournful monuments of the fragility of human things. Our political institutions, our statesmen, our orators, our philosophers, and our poets have in all later ages been objects of wonder and admiration to the world at large; they have for thousands of years been the ideals of perfection to those who aspired to culture; in fact, so much so, that even at the present day no one is considered to have a high education unless he be thoroughly acquainted with them. But, alas! Greek books have had a like fate with Greek works of art, and I make bold to say that not even one-thousandth part of our ancient classics has escaped destruction. But I must not forget that my ancestors have also distinguished themselves by their heroism and military skill, and that our Greek history is full of names such as Agamemnon, Achilles, Diomedes, Ulysses, Aristodemos, Miltiades, Themistocles, Phocion, Pericles, Epaminondas, Philip II., Alexander the Great, whom the mightiest of the mighty and the proudest of the proud warriors of later ages took as ideals of military virtue. But with their superior wisdom and all their other great qualities, my ancestors had a great vice, without which they would probably have subjugated the world by their arms in the same way as they in later ages subjugated it by their genius. That vice was "envy." The decay of Greece dates from that unfortunate day in 413 B.C. when some Athenians, who were envious of Alcibiades's past and coming glory, succeeded in persuading the people to send out a ship to Sicily to fetch him back as prisoner in order that he might be judged for his irreverence to the gods. Had this not happened, Sicily would, in a few weeks, have fallen into our hands, because Alcibiades's genius had already captured Catania, and was on the very eve of capturing Messina; and, when once in possession of Sicily, the Athenians would have had no trouble in conquering the whole of Italy, because Rome was at that time as yet weak and powerless. But it was our ill fate that it should be so. The fragile fingers of men cannot arrest the rotations of destiny's wheel. The question now arises how it came that, in the midst of nations which lingered in barbarism, Greek genius could lift its head to the heavens. I think that this could only be produced by the combination of a whole series of fortunate circumstances, of which I must first mention our beautiful sonorous language, the mere sound of which filled my husband with wild enthusiasm at a time when he did not yet know a word of Greek. Further, the quickness and vivacity of the Greek mind, the beautiful sky of Greece, from which the sun shines nearly always the whole day in full brilliancy; in fact, there is not a day in the year on which we do not see the sun, as there is seldom a night in which the starry heavens cannot be seen in all their splendour. Add the indescribable charm of the outlines and colours of the Greek mountains; then the marvellous beauty of the sea, studded as it is with magnificent islands, which, by the reverberation of the light, seem as if they were floating; hence the myth of the floating Greek islands. I further mention the infinite number of gods, and the firm faith people had in them. But this world of gods could only be engendered in the minds of Greeks and in an atmosphere like that of Greece. Thus the natural enthusiasm of my ancestors for the sublime was stimulated by their beautiful language, by the splendour of the sky by day and night, by the magnificence of the mountains, the sea, the seemingly floating islands, and by the firm belief in the supernatural power and beauty of their gods. But, in spite of all these stimulants, Greek genius could never have reached such a lofty height as can never again be attained by man had it not been for divine Homer, from whom orators and sculptors, statesmen and painters, wise men and poets, freely borrowed their grandest ideas. So, for instance, Phidias, when asked whence he had taken his idea for his Olympian Jupiter, answered with the verses of the "Iliad":—

> "He said, and nodded with his shadowy brows,
> Waved on the immortal head the ambrosial locks,
> And all Olympus trembled at his nod."

Alexander the Great never slept without having under his pillow a copy of "Homer," which he called the store of military virtue. To Dr. Schliemann's and my admiration for Homer are we indebted for the discoveries of Troy and the five royal tombs of Mycenæ with their treasures.

AN ARCHITECT'S VIEW OF THE RESTORATION QUESTION.

WE have received from Mr. Blomfield copy of a letter addressed by him to the reader of the paper at the Institute against Restcration, with request that we should publish it. We depart from our usual course and do so.

Not having had an opportunity last night of offering any remarks on your paper on "Restoration" I hope I shall not be deemed intrusive if I write briefly what I could have wished as briefly to say at the meeting. Allow me in the first place to disclaim for myself, and unreservedly to accept your disclaimer of, any personal feeling in the matter. While doing so, however, I cannot help thinking that had your illustration of a restored church been confined to an imaginary case (the natural antithesis to your purely imaginary unrestored one) your principle might have been made quite as clear, and we should have been spared a large mass of personal matter and experiences of individual practice, interesting no doubt in themselves, but at length somewhat tedious and confusing, and about which we might dispute till Doomsday.

On our side an element of confusion was introduced by some speakers who assumed a certain amount of agreement between us. It is true we have a common ground, but what is it? It is precisely analogous in nature and extent to that which exists between two diametrically opposite political parties. As they are each actuated (or supposed to be actuated) by the purest patriotism, so we are moved by pure love of art, affectionate reverence for our ancient buildings, respect for history, and the other stock phrases which are brought out and aired on these occasions. If any feelings of a lower grade exist we had much better say nothing about them, for we may be sure that an impartial spectator would pronounce one side quite as good (or quite as bad) as the other.

This, then, is our only common ground, but it is, of course, wide enough for the champions of either side fearlessly to rush forth and brandish such platitudes as "keep what is good and remove what is bad," an abstract principle over which, I suppose, even a Tory and a Radical might embrace. But, as Sir Edmund Beckett, in the course of his admirably clear and sensible remarks, asked, "What is good, and what is bad?" that is the whole question when we come to matters of detail, and then, *Quot homines tot sententiæ*.

Feeling this very strongly, I would have passed by all individual instances to meet your fundamental principle (as I understand it) with a direct denial. "You have no right," you say, "to alter or add to our old buildings to suit the passing requirements or changing fashion of the day." Why?

"Because they are national monuments, and by so doing you either injure, falsify, or obliterate their history."

This is simple, clear, and intelligible; and I answer, as simply and clearly, that we not only have the *right* to do precisely what you would forbid, but that we *must* do it, and that, unless the natural course of history is to be stopped, and a general stagnation of everything is to ensue, no power on earth can prevent it. I refer, of course, to old buildings still in use. What is their history? It is the impress left on them by the various alterations and additions made from time to time to suit the passing requirements or changing fashion of the day. In the case of our churches, the different religious feelings and aspirations of succeeding ages are clearly marked, sinking in the last century into a state of slumber and almost of inanition. No one, I suppose, will venture to deny that the Church is now, after this long period of lethargy and indifference, passing through a phase of renewed and daily-increasing vitality and energetic action. Such a period in her history *must* leave its mark, be it good or bad, on the material fabrics which belong to her. If it were not so, there would be a most lamentable gap, or, rather, a most unaccountable full stop, in the history of such of our old churches as might exist a hundred years hence. Fortunately we are assured by the experiences of all former times that such a full stop is impossible so long as churches are used as places of worship.

The arguments as to the non-existence of any national style, forged documents, and so forth, practically bring us back again to the old question, "What is good, and what is bad?" or, in other words, transfer the discussion from matters of fact to matters of opinion, on which it is notoriously useless to dispute. I only venture at this point (with considerable diffidence) to hint that in such matters my judgment may possibly be as good as yours, and (with more boldness) that that of any master in our art who has devoted his life and energies to the study of the subject is presumably more trustworthy than either.

ARTHUR W. BLOMFIELD.

THE WOOLWICH TUNNEL UNDER THE THAMES.

THE works at the new subway under the Thames, between Woolwich town, on the south side of the river, and North Woolwich, are actively proceeding, and it is confidently expected that the tunnel will be completed and opened for traffic by the close of the present year. It commences at North Woolwich, immediately adjoining the station of the Great Eastern Railway Company, which is directly connected with it, and terminates on the opposite side of the river, in the High-street, Woolwich, the entire length of the subway proper being 1,800 ft. The mode of entering the tunnel actually under the river is not as at the old Thames Tunnel or the Tower Subway, but by an enclosed road from the North Woolwich Station, which has an unusually steep gradient down to the tunnel roadway level. This enclosed roadway is 444 ft. in length, and has an incline of 1 in 8. When the company's Bill was before Parliament, the Thames Conservancy Board stipulated before the Committee, as a condition of their assenting to the tunnel being made, that the crown of it should not be less than 60 ft. below high-water level, and it is in order to meet this condition that the steep incline in the enclosed roadway just referred to has been rendered necessary. The new subway will be considerably deeper below the bed of the river than the old Thames Tunnel, its average depth below the river-bed being 25 ft., whilst for two-thirds of its length it is 35 ft., its shortest depth being on the north shore of the river, where it is not more than 15 ft. below the bed of the Thames. It will thus be seen that it is much deeper than the old Thames Tunnel, which in one part not far from the centre is said to be not more than 4 ft. below the water above it. On emerging from the tunnel on the south side, the terminus in High-street is reached by an inclined roadway somewhat similar to that on the north side. The tunnel itself has a roadway almost on a dead level, and consists of a circular tube of iron 9 ft. in diameter, and of great thickness and strength. It is about 12 ft. in height, and sufficiently wide to admit of four persons walking abreast. The extreme length between the two termini on the north and south sides respectively, including the roadway inclines, is a little more than half a mile. In addition to the convenience to pedestrians which the tunnel will afford, its peculiar mode of construction, with the roadway inclines on each side of the river, will admit of the transit of troops and artillery guns from Woolwich to the north side of the Thames, which at present have to be taken by a long and circuitous route *vid* London Bridge.

LIFTS.

THE lifts at Messrs. Maw & Thompson's in Aldersgate-street, whose premises we illustrated not long ago, are two in number. The large lift passes through all the floors; the cage, which is about 6 ft. by 4 ft., is raised by means of overhead gear, and properly balanced by a counter weight, the top gear being driven by an engine of the horizontal type and a 3-horse boiler full of tubes giving a very large heating surface, and in which the steam is generated by means of gas jets. The engine, boiler, and working parts of the lift are all well fitted, and the lift is so arranged that by simply pulling a rope at either floor, the cage ascends or descends as the case may be, and at the top and bottom (a very important feature) the lift is self-acting, so that in case of nonattendance, no accident can occur, as the cage stops itself. As to safety apparatus, many apparatuses fixed to lifts as being safety ones are really not so, but this, the makers (Messrs. R. Waygood & Co., of Newington) claim, cannot help acting. The arrangement consists of two cams on each side, distended by the action of the centre bar that supports the cage being raised, but directly the bar drops, which it must do on the rope breaking, the cams fall in and hold the cage fixed in its place. The lift is in constant use.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

At the annual meeting of this society, held on the 7th inst., the president, Mr. R. M. Bancroft in the chair, the following gentlemen were elected as officers for session 1877–8:—

President.—Henry Valpy, Mem.Inst.C.E.
Vice-Presidents.—Charles B. Driver, F.R.I.B.A.; William C. Street, Assoc.Inst.C.E.
Hon. Treasurer.—Henry Ellis Hill, Assoc.Inst.C.E.
Council.—Percy Burrell, Mem.Inst.C.E.; C. Kingsford; James Love, F.R.A.S., F.G.S.; Alex. Payne, Assoc. Inst.C.E.; Edward Perrett, Assoc.Inst.C.E.; Robert E. Pownall; R. Harkness Twigg, Assoc.Inst.C.E.; H. J. Worssam, Mem.I.M.E.
Auditors.—Joseph L. Anderson; James Hutt.
Hon. Solicitor.—Roger H. Willcocks, LL.B.

Arrangements will be made for the autumn visits to works, of which the members will be duly apprised.

COMPUTATION OF EARTHWORK.

LIVERPOOL ENGINEERING SOCIETY.

THIS Society held its usual fortnightly meeting on the 6th inst., at the Royal Institution, Mr. C. Graham Smith, C.E., president, in the chair. A paper on the "Computation of Earthwork" was read by Mr. H. O. Baldry, C.E. After giving a general demonstration of the prismoidal formula, which forms the basis of Mac Niel's, Bidder's, and other earthwork tables, he described, with the assistance of models, the manner in which this well-known expression is built up and calculated from prisms and pyramids. He pointed out two common but erroneous methods of taking out quantities, namely, by assuming the section of a prismoid at the middle as the average section, and by taking half the sum of the end areas as the mean cross section. He then described one of the most general methods of roughing out quantities for preliminary estimates from diagrams, and called attention to the similarity of the principle of their construction to that of the "land computing" scale. The paper was concluded by an investigation of the *side-long ground question*.

BELLS AND BELL-RINGING.

MESSRS. JOHN WARNER & SONS, of Cripplegate, have issued a new edition of their Bell Catalogue and Trade Book, which contains additional information, and will be found useful. When a previous issue took place, in 1872, we inserted a letter from the Rev. H. T. Ellacombe, complaining of plagiarism on the part of Messrs. Warner. This they never answered, but they now ask us to insert the following retractation, and as our old friend Mr. Ellacombe, the Nestor of bell-ringers, backs up the request, we comply. The incident reminds us of a little scene described to us by Douglas Jerrold long ago. Crossing Westminster Bridge one morning, he met Fitzball, the dramatist, and going by hastily, said, "How are you, Fitz?" More than two years after, accident brought them both to the self-same spot, and as they passed each other, Fitzball shouted, "Pretty well, thank ye: how are you?"

Reply of John Warner & Sons to Mr. Ellacombe's Letter of May 4th, 1872.

SIR,—When we first saw Mr. Ellacombe's letter in the *Builder* of May 4th, 1872, headed "Warner's Plagiarism," we were led to look into the facts therein alluded to, and we found it difficult for us to reply, because we had been misled by false representations made to us by persons whose names the public need not be told.

But we now wish the public to know, and we are glad of this opportunity, in issuing another edition of our Bell Catalogue, to say that we have cancelled a plate we never should have reproduced, nor called it our Improved Chiming Apparatus, had Mr. Ellacombe's former correspondent been in the firm when the new catalogue was compiled in 1872.

We hope that this will be considered by Mr. Ellacombe as ample amends for our involuntary errors.

We shall be ready to set up his hammers for any who may be pleased to give us the order.

JOHN WARNER & SONS.

THIRD CLASS BY ALL TRAINS.

PROPOSED NATIONAL TESTIMONIAL AND ADDRESS TO MR. ALLPORT.

SIR,—Your paper, being always foremost in any good proposition, I venture to ask you to consider the following:—

I think it may safely be said that the bulk of our population are more indebted to Mr. Allport, the general manager of the Midland Railway Company, than to any one living for the great reform he has wrought in railway fares, and conferring that inestimable boon on the third-class passengers by making all trains available for them.

I trust you will allow me to propose, through your columns, that some steps should be at once taken to carry out so laudable an object as the above, so that Mr. Allport may in his declining years know that his fellow-countrymen fully appreciate his acts of philanthropy, which, in spite of very great opposition, he has so ably carried out.

GRATITUDE.

TOWN SURVEYORSHIP, ALNWICK.

At the last meeting of the Alnwick Local Board of Health, the Board proceeded to elect a town surveyor and inspector of nuisances. There were eleven applicants, viz.: Mr. John Wm. Leithead, of Newcastle; Mr. J. T. Sedgwick, Washington, Co. Durham; Mr. George Bell, Newcastle; Mr. Henry Guy, Backworth; Mr. R. S. Turnbull, Gateshead; Mr. James Lawson, South Shields; Mr. J. Fenwick, Newcastle-on-Town; Mr. Michael Hunt, Middlesbrough; Mr. Burnett Grieve, Berwick-on-Tweed; Mr. Geoffrey Wilson, Alnwick; and Mr. James Craggs, Newcastle.

After some conversation, Mr. Geoffrey Wilson was elected to the office by general consent.

BURY ST. EDMUNDS.

THE Urban Sanitary Board for this ancient borough have appointed a young man, a son-in-law of one of their number, in place of their late town surveyor, deceased. When asked by the chairman if he understood taking levels and sewerage works, he replied, No; but he could soon learn, as he was married to the daughter of one of the Council. The salary is to be 225*l.* a year, which is not bad for learning a business.

There is universal dissatisfaction among the ratepayers of the town, who very reasonably say, appoint a properly-qualified man of some experience in drainage work by public competition. As it is, it is a cheap way of providing for a son-in-law at the ratepayers' expense, at the same time that the Town Council are applying to Government for leave to raise a loan.

The sewer works at the River Lack Navigation are in a very dangerous state to the public health. There are hundreds of tons of sewage matter in the river, which can be smelt nearly a mile off. The county magistrates and some of the adjoining landowners have written to the Town Council, and threaten legal proceedings to abate the nuisance, which is getting intolerable, and is a serious depreciation to adjoining property.

A. Z.

"THE POWERS OF AN ARCHITECT."

SIR,—The claims of Mr. C. Taylor, late architect to the Merthyr Tydfil School Board, for services rendered, was referred for arbitration to Mr. Robson, architect to the London School Board, who has just given his decision. The following letter was read at the last meeting of the Board from Messrs. Simons & Plew, solicitors, respecting the award recently given:—

"We have to-day had the first regular information with respect to Mr. Robson's award. He gives Mr. Taylor 328*l.* 16*s.*, in addition to the 181*l.* 11*s.* paid into court, and all costs of the action and reference. The interpretation of the award is that an architect can, at his own will, abandon plans of buildings adopted by his principals, and at his pleasure give unlimited directions for alterations of, deviations from, and additions to, approved designs, and may do this even in defiance of the express orders of his principals to the contrary."

If Mr. Robson's decision is to be considered binding, it will no doubt be read with interest in your columns.

WM. JONES.

CHURCH RESTORATION.

St. Mary's, Teddington.—A thorough repair has been effected in this church, which is a brick structure, having a south aisle containing the remains of four Perpendicular windows in Reigate Fire-stone, a comparatively new north aisle with circular-headed windows and outside pediment, and a west tower with circular-headed openings, and a nave divided from aisles by iron columns supporting gutter plates, a very poor chancel ending in a Batty Langley Gothic window (which remains at present). The church stands on the slope of an incline from west to east, and among the interments are those of Peg Woffington, Sir Orlando Bridgeman, and the late Mr. Walter, of the *Times*. The works at present executed comprise the removal of the west galleries, filling up of vaults and graves in the church, and concreting over them, the insertion of Bath stone windows copied from the old Perpendicular windows, in all the openings, the lowering of the general levels inside and out, so as to do away with the former dangerous steps, the re-seating of the church with stained deal open seats, and heating by hot water, the formation of a new organ-chamber and vestry next the chancel, in continuation of the north aisle, the substitution of stone columns for the iron ones, the erection of a new two-manual organ, by Bevington, and the insertion of one stained-glass window by Gibbs & Moore. The works have been carried out by Messrs. Adamson, of Putney, Mr. T. Goodchild being the architect employed, and Mr. Churchwarden Thynne devoting much time and energy to the general furtherance of the works. The improvement of the chancel, erection of the south chapel, and other works, are left for future execution.

SPANISH CHESTNUT.

SIR,—Mr. Blashill having, on the 2nd inst., revived in your columns the interesting question as to whether Spanish chestnut was in frequent use in Mediæval carpentry, respecting which much confident but inaccurate assertion has been made, I am desirous of pointing out that the microscope furnishes the only effective test whereby to arrive at an unerring decision.

The difference of structure between Spanish chestnut (*Castanea vesca*) and that variety of oak, the *Quercus sessiliflora*, which it the most closely resembles, may be seen exemplified microscopically by excellent woodcuts at page 8 in the treatise on Planting, published in the year 1832 by the Society for the Diffusion of Useful Knowledge.

The work referred to also contains the following remarks:—"The oak has two series of medullary rays; the primary ones are large and strongly marked, distant from each other, and are uninterrupted in their course from the pith to the bark. The secondary rays are numerous between the primary, but not crowded. . . . .

The wood of the Spanish or sweet chestnut has often been confounded with that of the oak; but its characters of distinction are very obvious. It agrees with the oak in having the secondary rays equally disposed, almost straight, and, though close to each other, yet not crowded as in the elm and beech; it differs in the primary rays being scarcely to be distinguished from the secondary, whilst in the oak these are prominent and obvious to the naked eye on the slightest inspection. The concentric layers are regularly curved, whilst in the oak they are strikingly waved. The mouths of the tubular vessels, which constitute so obvious a part of these annual rings or layers, are disposed in triangular masses in the oak; on the contrary, in the chestnut they are in regular order."

Any one interested who may be unable to obtain access to a copy of the treatise from which I have made the foregoing extracts may refer to mine at my office.

Of course, for examination under the microscope, authentic specimens would have to be sliced and prepared by one of the few skilled people who practise the art.

ALFRED E. ROBERTS.

SIR,—Mr. Thomas Blashill, whose interest in Mediæval carpentry and materials used therein is so well known, asks whether any readers of the *Builder* are acquainted with instances where this wood has been used in former times.

It may have escaped the notice of the gentleman in question that according to recent accounts in the papers, the roof of Metz cathedral, latterly destroyed by fire, was constructed almost wholly of chestnut. The roof in question dates from 1468.

HARRY HEMS.

THE EXTENSION OF THE MECHANICAL USES OF ELASTIC FLUIDS.

SIR,—The properties which water has of incompressibility, and of conveying pressure in all directions, led to the construction of the hydraulic press. Steam and air also have the property of conveying pressure in all directions. Has it ever occurred to machinists and inventors that air and steam might also be utilised in the construction of levers of the same order as that of the hydraulic press, and which might be of considerable practical use where the dead, unyielding pressure of hydraulic power would not? Could not the principle of leverage, as taken advantage of in the hydraulic press, also be turned to account in increasing the power of air and steam engines?

I am not sure that the hydraulic press is yet included in the list of the mechanical powers; but it is undoubtedly one of them, for the very same reason that the lever, the screw, &c., are so, viz., that by their means a small force, acting through a greater distance, is made to overcome a greater resistance acting through a less distance.

METER.

CHURCH-BUILDING NEWS.

Nether Cerne.—The little parish church of Nether Cerne, near Dorchester, has been recently restored, under the superintendence of Mr. Edmund B. Ferrey. In plan it consists of a nave and chancel, under one continuous roof (there being no chancel arch), a south transept, north porch, and west tower. The church had been in a dilapidated condition, the roofs absolutely unsafe; they possessed no archæological or architectural interest. New open roofs of stained pine timber have been constructed. An ancient window on the south side of the nave has been opened out, and tracery and mullions placed in it. New arched cusped heads to the north and south chancel windows replace the modern incongruous heads. The roofs externally are covered with local plain tiles. The whole of the interior has been re-seated with stained deal open benches, and the passages paved with Purbeck stone, except to the sanctuary, where Godwin's tiles have been laid. In the south transept is a very elegant traceried window, of Decorated character, illustrated in Parker's "Glossary." In the same transept, on its eastern side, is a plain English lancet, with beautiful nook-shaft and arch mouldings on the inner splay. The tower is a good specimen of Perpendicular work. Mr. John Wellspring, of Dorchester, was the builder.

Eastham.—Eastham Church, Chester, was opened on Sunday, May 20, after having undergone a thorough internal and external restoration, at a cost of about 2,000*l.*, under the superintendence of Mr. David Walker, architect, of Liverpool. The church possesses peculiar historic interest, having been the place of sepulture of the Stanley family for many generations. The external works now completed comprise the rebuilding of the north wall of the nave, the removal of the unsightly vestry on the south face of the tower, and the insertion of new aisle and west end windows; whilst the internal renovations include the lowering of the nave floor and flooring with wood block geometric paving, the chiselling of all internal stonework, and reseating with handsome oak benches the area of the nave. A new east window is in process of execution for the Stanley chancel, which, with the stained glass by Messrs. Heaton & Butler, of London, is being erected at the cost of Sir John Errington Stanley as a family memorial. The whole of the external work has been executed by Mr. M'Alister, of Eastham, and the oak seating by Messrs. Holme & Nicol, of Liverpool. Mr. John Torr, M.P., of Carlett-park, undertook the internal works, whilst the external works were executed by subscriptions raised in the parish.

Blakemere (Herefordshire).—This church is being rebuilt, all the old windows, doors, chancel arch, quoins, &c., being re-used as far as possible or reproduced. Mr. George Truefitt is the architect, and Messrs. Welsh & Son, of Hereford, are the builders.

Stretton Sugwas.—The foundation-stone of a new church at Stretton Sugwas was laid on Whit-Monday. The present church, which is said to be more than 700 years old, has long been in a very dilapidated condition. The church will consist of a nave, aisle, chancel, porch, vestry, and organ-chamber; the old wooden tower at Stretton old church being removed *pro tem.* to the new building. It will be built of native stone, with Hamhill (Somersetshire) stone dressings in the doorways, windows, arches, &c. The architect is Mr. W. Chick, of Hereford, and the contractor Mr. James Bowers, of Hereford. The cost will be about 3,000*l.* It will be built in the Decorated style, and is designed to accommodate 200 worshippers.

Ebbesborne.—The parish church at Ebbesborne was re-opened on the 16th ult., after having been almost entirely rebuilt. The church, which is dedicated to St. John the Baptist, and stands on an elevated position, commanding an extensive view of the vale from Fifield Bavant to Alvediston, replaces a structure built thirty-five years ago. The edifice being wholly unfit for public worship, it was determined to replace it by a more suitable building. The new church consists of a nave, chancel, and south porch with a tower at the west end, and a new vestry on the north side. The church was restored from designs by Mr. Ewan Christian, architect to the Ecclesiastical Commissioners, and Mr. Miles, of Shaftesbury, was the contractor.

Nayland.—Another stage in the work of restoring the church of St. Stephen, Nayland, has just been reached. The style of the build

ng is Perpendicular. It has north and south aisles, with fifteen large clearstory windows on each side. The sum expended on the latest improvements is about 550*l*. The benching and most of the other work were done by Mr. Robert Hawkins, builder, Monks Eleigh. The flooring, &c., was done by Mr. Deaves, of Nayland, and the gas-fittings were fixed by Mr. Nichols.

Uttoxeter.—The chancel of the parish church of Uttoxeter has been extended, so as to provide accommodation for the organ and choir. The alterations have been made in accordance with plans prepared by Mr. F. J. Robinson, of Derby, and included the building of an organ-chamber over the vestry-room and the lengthening of the chancel some 12 ft. The contractor for the work was Mr. G. F. Friar, of Derby. The balcony of the organ-chamber is of Gothic design, in carved oak. The reredos is composed of alabaster and Derbyshire marble, and is the gift of Mrs. Sneyd-Kynnersley, of High Fields, in memory of the late Mr. C. F. Sneyd-Kynnersley. The work has been executed by Messrs. Hall, of Derby, from a design by Mr. F. J. Robinson. The cost has been between 800*l*. and 900*l*.

Wilcot (*Wilts*).—Holy Cross Church has been re-opened for service, having been restored and partly rebuilt in consequence of the fire which occurred there in April last year, when the old roofs and fittings were utterly destroyed and the walls greatly damaged. Fortunately, the chancel arch and the south doorway, which are both thirteenth-century work, and the Perpendicular tower at the west end, were not so much injured as less interesting portions of the church. The cost of the work was about 2,400*l*., of which the greater part has been contributed by Admiral Montagu, who has also given a new burial-ground. The old building was insured for 1,000*l*., and the church-building societies have aided by grants amounting to 120*l*. Mr. A. E. Style was the architect; and the builder was Mr. Mullings, of Devizes. The metal work was supplied by Mr. Singer, and the heating apparatus by Messrs. Jones & Son.

Sevenoaks.—It is stated that in addition to the restoration of the parish church and enlargement of St. John's Church, Mr. W. J. Thompson, of Kippington Park, proposes to build and endow, at his own expense, a new church on a portion of his estate, to be called St. Mary's. The designs, &c., have been prepared by Mr. J. M. Hooker, architect, and the new building is to accommodate 400 persons.

Raunds.—St. Peter's Church, Raunds, the nave, north and south aisles, and chantry of which were restored in 1873–4 under the direction of Sir Gilbert Scott, needs its chancel to be taken in hand by the lay impropriator, unless it is to be allowed to fall down, as it is pronounced to be in a very unsafe state, according to a Northampton paper.

Portland.—The parish church of St. John's, Portland, has been re-opened, after renovation and enlargement, carried out under the direction of Mr. G. R. Crickmay, architect, by Mr. Patten, builder.

Creeksea.—The committee for the restoration of Creeksea Church, Essex, have accepted the tender of Mr. C. Read, of Burnham, for the carrying out of the work. The work will be confined to the nave; the walls, roof, turret, porch, and interior fittings, including pulpit, benches, &c., are to be constructed in accordance with designs prepared by Mr. Chancellor, architect.

Upton-on-Severn.—A vestry meeting has been held to consider the proposed site and new plans for the parish church, the rector in the chair. As the adoption of a new site had rendered it necessary to discard the first set of plans, sketches by Mr. Blomfield for a new set were exhibited and approved, and an executive committee was appointed, with full powers to proceed with the erection and completion of the church.

DISSENTING CHURCH BUILDING NEWS.

Eastwood.—A new Wesleyan chapel at Eastwood, Notts., was opened on the 14th ult. The structure has cost 3,000*l*. It is of brick, with front of stone. In the interior, the architect, Mr. S. Barber, of Eastwood, has chiefly aimed at utility. The building is calculated to accommodate about 450 persons. Beneath the chapel are schoolrooms estimated to hold some 500 children. The builders have been Messrs. Newton & Son, of Eastwood; while Mr. Smith, of Ilkeston, did the joinery work.

Northampton.—The foundation-stone of a new Wesleyan school chapel in the Kettering-road, Northampton, was laid on the 16th ult. The building will be Gothic in style, constructed of pressed bricks with stone dressings. The interior will have an open timber roof, and the dimensions are to be 50 ft. by 38 ft., including a range of three class-rooms along the side, which will be screened off by sliding doors when necessary. It will also accommodate about 320 adults. A temporary entrance will be provided in the front until the chapel is erected, when there will be a porch at the side, giving access to both chapel and school. The architect is Mr. Samuel J. Newman, and the builders are Messrs. Green Bros., Northampton.

Wattisfield (*Suffolk*).—The new Congregational chapel has been opened here. The building, which is Gothic in design, is of red brick with white bricks used ornamentally, and Bath stone for the tracery of windows. The accommodation is for 400 persons, and there is also a schoolroom for fifty children. The entire cost is 1,360*l*. Mr. Alfred Conder is the architect; and Mr. Daniel Day, of Eye, is the builder.

Dipton (*Co. Durham*).—A new chapel, with school and class-rooms, have been opened in this village, for the United Methodist Free Church. The chapel will accommodate about 250 persons, and the school-rooms are placed beneath it. The building is of simple early Gothic character, and owing to the very exposed situation, is designed with a low span roof over the main building, which is masked from the road (the only point of view) by a kind of transept containing the entrance lobbies and stairs, covered with a high-pitched roof, having hipped ends and a central gablet above the entrance-door. The cost, exclusive of site and boundary walls, will be about 1,300*l*. Messrs. Oswald & Son, of Newcastle-on-Tyne, were the architects, and the works have been carried out by separate contractors for each trade.

Blandford.—The memorial stones of a new Primitive Methodist Chapel have been laid at Blandford. Mr. H. Mayor has taken the contract for the erection of the chapel at 650*l*.

Newport.—A new Wesleyan chapel at Newport, Staffordshire, was opened on the 24th ult. The building is of Gothic design, and the block, which is 90 ft. by 32 ft. wide, comprises chapel, vestry, school, and class-rooms. Seats are provided for about 300 persons. Messrs. Bidlake & Fleeming, of Wolverhampton, are the architects.

Walsall.—On the 25th ult. a block of buildings in Corporation-street, Walsall, comprising a Wesleyan chapel and schools, was formerly opened. The plan of the building is cruciform, comprising nave, transepts, and choir, lower and upper schoolrooms, a class-room, and a minister's vestry, with the usual offices. The chapel is 80 ft. long, 42 ft. wide across the nave, and 66 ft. across the transepts, 35 ft. high from floor to ceiling in the nave, while the choir is 25 ft. wide and 21 ft. 6 in. deep, making the entire length of the chapel, from the front to the back of the orchestra, 101 ft. 6 in. In the transepts and at the front end of the chapel are galleries, the two former communicating with the upper schoolroom; and accommodation is provided for 960 sittings. The schoolrooms, which are situated in the rear,—the lower one being 60 ft. long and 20 ft. wide, and the upper one 37 ft. long and 20 ft. wide,—will accommodate 409 children. The style is Gothic, of the fourteenth century, the materials used being brick, with dressings of Hollington stone, much of the latter being moulded and carved, and at the northern angle of the front elevation is a stone spirelet springing from moulded shafts and rising to a height of 90 ft. The pulpit and font are of stone, enriched with marbles and carved work, and the font is the gift of the architect (Mr. S. Loxton, Walsall). The builders are Messrs. Rowley, jun., & Lynex, and the amount of the contract was 6,322*l*.

Tamworth.—On the 21st ult. memorial stones of a new Wesleyan Chapel at Tamworth were laid. The building, the site of which is on the north side of the Victoria-road, Bolehall, will be Classical in style, and built of brick, and is expected to accommodate about 600 persons. The cost is estimated at 3,400*l*.

Gainsborough.—Memorial stones of a new Primitive Methodist Chapel have been laid at Gainsborough. The building, which has already made some progress, has its principal frontage facing Trinity-street. The chapel will be in the Italian style, and capable of seating 1,000 persons. Two towers form a principal feature in the east front, giving access to the galleries and main floors by commodious entrances and lobbies. The chapel will be built of red brick, with Ancaster stone quoins and dressings, and granite shafts to the front entrances. The interior dimensions of the chapel are 70 ft. by 48 ft. There will be a large school-room, 52 ft. by 30 ft., and six class-rooms, averaging 14 ft. by 14 ft.; minister's vestry, with lavatory, and other conveniences. The entire cost of the building, inclusive of the heating apparatus, gasfittings, &c., will be 3,500*l*. Mr. Wm. Freeman, of Hull, is the architect; and Messrs. J. & W. Hill, of Gainsborough, are the sole contractors, with Mr. J. Whiteley, of Gainsborough, as stonemason, Messrs. Wm. Dawber & Son, of Hull, slaters, and Mr. Hawksworth, of Gainsborough, painter.

Halesworth.—The Primitive Methodists of Halesworth, Suffolk, have laid memorial stones of a new chapel. Mr. F. Woodward is the builder.

Tunbridge Wells.—The foundation-stones of a new Methodist chapel and schools have been laid in Camden-road, Tunbridge Wells. The architects are Messrs. Weeks & Hughes, and the builder is Mr. J. Peregoe.

Durham.—On the 21st ult. the foundation-stone of a church for the use of the Presbyterians of the city of Durham was laid by Sir Arthur E. Middleton, bart., M.P. The new church will be situated in Maddington-street, and is in the Gothic style of architecture, from plans furnished by Mr. J. Henry, architect, Durham. It will accommodate above 400 people. There is a large tower in front, 82 ft. high. The building is estimated to cost about 3,000*l*.

Wolviston.—On the 22nd ult. the foundation-stones of a new United Methodist Free Church were laid. The building is to seat between 300 and 400 people. Mr. George Fletcher, of Stockton, is the architect, and the cost is estimated at about 400*l*.

Maldon.—The Congregational chapel at Maldon has been re-opened, after undergoing enlargement from plans by Mr. Charles Pertwee, architect, Chelmsford. The building has been extended at the east end about 25 ft., providing a large vestry and minister's vestry below, with gallery for the choir and organ above, and two additional staircases. The portico entrances in front have also been taken down, and the building brought forward 15 ft., affording colonnade entrances, and staircases, with children's gallery. Accommodation has been thus obtained for nearly 1,100 worshippers,—an increase of 250. The works have been carried out by Mr. W. Letch, builder, of Braintree, at a cost of about 2,050*l*.

Mavis Enderby.—A new Wesleyan Chapel at Mavis Enderby, near Spilsby, has been opened. The building is Gothic in style, and has sittings for 100 people. Mr. Bell, of London, is the architect, and Mr. Lilley, of Bolingbroke, the builder. The cost has been about 300*l*.

Old Kent-road.—The new "Maze Pond" (Baptist) Chapel, situate at the corner of Albany-road, Old Kent-road, was opened on the 29th ult. The chapel is a transplanting, so to speak, of a congregation founded as far back as 1693, in the immediate neighbourhood of Guy's Hospital. The clearance of houses for the London Bridge termini, and the continually increasing encroachments of hop and other warehouses, so depopulated the neighbourhood as to leave the chapel with a very scanty congregation, and for several years past efforts have been made to secure a site and obtain funds for the new building, the corner-stone of which was laid in October last by Mr. Alderman Barran, M.P. The chapel is Gothic in style, and is divided into nave and side aisles by an arcade supporting a well-lighted clearstory. The adoption of wide bays,—about 24 ft. from centre to centre,—involves the use of but two columns on each side. Behind the pulpit is a gallery for the organ and choir. The roof of the organ-gallery is groined with pitch-pine ribs and boarding. The whole of the ceilings of the chapel are of the same materials. Externally the walling is of Yorkshire parpoints, with Bath stone dressings; internally the chapel is faced throughout with Bath stone, the entrance porches and staircases with red bricks, and the lecture and school and class rooms with white Burham bricks. The chapel provides sitting accommodation for 930 persons; with a lecture-hall below, 48 ft. by 49 ft.; minister's vestry; and two vestries for use at baptisms or for classrooms. In a separate building, three stories in height, is an infants' classroom, 20 ft. by 37 ft.; four class or committee rooms, and the library. On the upper floor will be the general schoolroom, extending the whole length of the building. Mr. Finch Hill

is the architect, the builders being Messrs. Hill, Higgs, & Co., of South Lambeth, the amount of whose contract was 9,834*l.*

Smethwick.—It is proposed to build a new Baptist chapel here. An eligible site has been secured in Regent-street, about fifty yards from the main road. The proposed chapel will accommodate 900 people, and the total outlay is estimated at about 4,000*l.*

SCHOOL BOARD SCHOOLS.

East Pennard (Somerset).—A School Board has been formed here, and new schools are erected. The buildings consist of school and class-rooms, a residence for the master, and the necessary offices and play-yards for the children. The walls are built of local lias stone, with Bath stone dressings, the roofs being covered with Bridgwater flat tiles relieved with ornamental bands and ridge crease. The architects were Messrs. C. & J. Wainwright, of Shepton Mallet. The contractor was Mr. Henry Hawkins, of Glastonbury. The cost of the work has been about 1,000*l.* Colonel Napier, of Pennard House, presented the site.

Tregoney.—The Tregoney School Board have accepted the tender of Messrs. William & Joseph Gerrans, of Tregoney, for a proposed school building and master's residence. The amount of tender is 1,051*l.* The works will be carried out under the supervision of the architect, Mr. James Hicks, Redruth.

Ballater.—The foundation-stone of new public (Board) schools at Ballater was laid on the 23rd ult., with Masonic ceremonial. The buildings when finished will contain accommodation for about 300 scholars, and two teachers' residences, and the cost will be between 2,500*l.* and 3,000*l.* Messrs. Duguid & Sons, Ballater, are the architects.

Far Cotton.—New Board schools have been opened at Far Cotton. They have been erected by Mr. Thomas Cosford, under the direction of Mr. W. Hull, architect, and have cost 1,300*l.*

Camberwell.—The School Board for London recently opened a new permanent school in Leipsic-road, Camberwell. The new building, which is intended to accommodate 747 children, is in the style known as that of "Queen Anne," and has cost, including the site, 11,281*l.* 10s. 6d. Mr. E. R. Robson was the architect.

Sevenoaks.—At a recent meeting of the Sevenoaks School Board, Mr. E. E. Cronk, architect, submitted plans for proposed new infant schools at St. John's, to accommodate 100 children, at an estimated cost of about 900*l.* The plans were accepted, and sent to the Educational Department for approval.

Mexborough.—New Board schools in Doncaster-road, Mexborough, have been opened. The buildings are Gothic in style, and the materials used are pressed bricks and stone dressings. The principal school is 61 ft. by 22 ft. 6 in., with two class-rooms, 17 ft. 6 in. by 17 ft. 6 in. each. There is also a large cloak-room with lavatories attached. The roof is open-timbered, the woodwork stained and varnished. Ventilation is secured by means of gablets in the roof, and the top portions of the windows are made to open as casements. The principal schoolroom is heated with hot water by Messrs. Bacon & Co.'s apparatus. Accommodation is provided for 200 children. Messrs. Tacon & Rawson, of Rotherham, are the architects, and Messrs. Saul & Jones, of Mexborough, the contractors.

Sheerness (Kent).—The second set of school buildings, erected by the Minster-in-Sheppey School Board, for the densely-populated Blue Town district of Sheerness, was formally opened on the 28th ult. They will accommodate 328 children, viz., 102 boys, 106 girls, and 120 infants in two blocks of buildings, the girls' department being above the boys', and the infants' forming a separate block. The contract was taken by Mr. M. Geere, of Sittingbourne, for 1,725*l.* 15s., and has been executed from the plans and under the superintendence of Mr. E. H. Lingen Barker, the Board's architect.

Competition: Board Schools, Wellgate, Rotherham.—A limited number of architects were invited to send in competition plans for the above. The Board, after consulting with Mr. Wood, of London, decided to award the first premium to Messrs. Tacon & Rawson, architects, 11, Westgate, Rotherham, who were also instructed to carry out the works. The above schools are to accommodate 225 boys, 225 girls, and 250 infants.

Books Received.

A Short Essay on the Age and Uses of the Brochs and the rude Stone Monuments of the Orkney Islands and the North of Scotland. By JAMES FERGUSSON, D.C.L., F.R.S., &c. London and Belfast: W. Mullan & Son. 1877.

ON this subject Mr. Jas. Fergusson has published, in the form of a small book, an essay which was originally intended to appear in the *Contemporary Review*, but was found too long for publication in that form, and did not seem to admit of cutting down without omitting essential points. The essay seems to have had a partially controversial origin, arising out of the treatment of recent theories on the subject by a reviewer whom Mr. Fergusson considers to have shown only a very limited knowledge of his subject.

We content ourselves at present with calling attention to the book and to its object, which is in the main to show that the rude stone monuments of the Orcadian group belong to the Norwegian period; that they were the work of the Norwegians who settled on the islands in or before the eighth century. The author takes this group of relics, which is easily got at and is comprised within a small extent of country, as a kind of test case in support of his view that many monuments usually regarded as prehistoric hardly merit such a distinction; and if the case were settled in regard to this group, the decision would have an important bearing on the conclusions with regard to other remains of a similar nature. "If it can be shown, with any reasonable degree of certainty, that all the rude stone monuments of the Orcadian group belong to the Norwegian period, all *à priori* improbability is removed from the theory that Stonehenge, Avebury, and the greater number of the English tumuli are of post-Roman origin. If, on the other hand, the evidence is not sufficient to establish the comparatively modern origin of the Orcadian monuments, it will be difficult to find any other group upon whose age or use we, at present at least, can bring the same amount of evidence to bear."

The remains referred to, called Brochs, are numerous, at least four hundred of them being known, and so similar that, says Mr. Fergusson,

"I once heard an eminent Scotch antiquary, very familiar personally with their appearance, gravely maintaining that they were all erected at one time, and from one plan and specification. . . . . They are all circular, about 60 ft. in diameter externally, and contain internally a courtyard 30 ft., more or less, in diameter. The walls of this inner court are practically perpendicular, while the external walls slope inwards at a considerable angle, so as to give the towers the form of truncated cones. The walls of the towers are, consequently, about 15 ft. in thickness at the base, and in them, on the ground floor, are generally found two or three large apartments following the curve of the walls, which were apparently the living-rooms of the inhabitants. Above these, still in the thickness of the walls, are generally to be found a series of low apartments, divided by horizontal slabs into berths like those in our passenger steamboats, and used apparently for the same purpose; but higher up, where the walls get thinner, they could only be used as store-places or cupboards for the custody of provisions or valuables. All these apartments were lighted from the interior by openings looking into the courtyard, which, at least originally, never appears to have been roofed. In addition to these there is always a staircase,—also in the thickness of the walls,—leading from the basement to the top of the building, and giving access to their various apartments. In none of the brochs is there any opening externally, except the doorway. That is always on the level of the ground, low and narrow, and leading by a passage of about the same section as the doorway, but 15 ft. long, to the interior court of the building. There were always apparently two doors in this passage, and between the outer and inner either one or two guard-chambers, which formed very efficient defence against any one trying to penetrate by this entrance to the interior. The height of these towers is the one element which is uncertain. None, unfortunately, are quite complete."

Such is Mr. Fergusson's description of a set of monuments which he has taken as the text upon which to expound his theory of an origin for these remains later in date than has been usually supposed. The book may be considered, he observes, as an appendix to his larger work on "Rude Stone Monuments," though the word "Brochs" does not occur there, as, at the time he was writing that work, he regarded the Brochs as castles properly belonging to the history of military architecture, which he had at one time intended to make a separate volume in his series of architectural histories.* We are not quite in accord with Mr. Fergusson as to the age of rude stone monuments, believing that he has a tendency to regard them as less ancient than they really are. We can, nevertheless, recommend this essay to the attention of our archæological readers, who need not be reminded that nothing Mr. Fergusson puts forth on the subject of architectural history is written without special knowledge and earnest study.

* It is not too late now, we may hope. Such a volume from Mr. Fergusson would be of the greatest interest.

Miscellanea.

Discoveries at Braunton Church, Devon. The *Exeter Gazette* says that some workmen, in taking down a mural monument from the north wall of the chancel of Braunton Church, for the purpose of erecting a window, were surprised to see the wall itself revealing, behind it, an old window, on the one side of which was the stencilled figure of a clergyman, in the act of reading from a book. The features were imperfect, but the other portions were in a good state of preservation, although the figure must have been there for several centuries. The name of Braunton itself is derived from St. Branock, after whom the church is named, and connected with the church are one or two curious legends. It is said that St. Branock himself caused the church to be erected, about the year 300, having been directed in a dream to build on wherever he should meet a sow and her family, and that after coming from Italy he met a sow and a litter of pigs at Braunton. There is at present a litter of pigs carved on the panel of one of the seats, and also in the roof of the building.

Factory Children and Early Rising.—Mr. Baker, inspector of factories, in his report, just issued, expresses his regret that in the commencement of the Act of 1874 the cotton operatives declined the proposal of their employers to begin in the winter months half an hour later in the morning and stay so much later in the evening. This would have saved the expense and risk consequent upon "lighting up" in the early morning, and enabled the children who are employed to have remained longer in bed, to the benefit of their health. Many children come from some distance to their employment, even in large towns, and supposing a child has to walk even one mile only to be at the mill by six o'clock, it must be up soon after five to have time to "get in" (for such children are often loiterers), and at a young age it must come shivering out of bed in all sorts of weather, that its weekly wages may not be "quartered." Mr. Baker concurs with the opinion expressed by an eminent medical writer that in the winter season it is much less prejudicial to health to sit up an hour or two later in the evening, and to rise as much later in the morning, and in summer it reverse it, than to rise summer and winter at the same time.

The Meter System of Lighting Public Lamps.—A report has lately been presented to the St. Pancras Vestry by the Lighting Committee, in which it is stated that the continuous success of the average meter system of lighting the public lamps of that parish puts beyond further debate the prudence and forethought of the Vestry in adopting it, and from the action which has been taken in many towns and parishes there is further proof, if such were required, that the course pursued by the Vestry in adopting the system was the proper one. Attention is called to the fact that it has only been necessary for the Vestry to levy a rate for the current half-year of 1d. in the pound for lighting, whereas heretofore there has never been a rate lower than 1½d. in the pound in any half-year. A table is given, which shows the saving effected during the past year in the cost of gas to the total, 2,868*l.* 14s. 1d.; in cost of lighting and extinguishing, repair, &c., of lamps, 304*l.* 1s. 4d.; total, 3,173*l.* 15s. 5d.; from which is to be deducted the annual proportion of cost of meters, meter-boxes, governors, cocks, &c., 320*l.*, and the cost of maintenance of meters, salaries of officers, &c., 583*l.* 15s. 9d.; total, 903*l.* 15s. 9d.; making the total saving for the year 2,268*l.* 19s. 10d.

Planing, Slotting, and Shaping Machines. American papers say that Messrs. Wm. Sellers & Co. have recently completed an immense machine combining in one all the movements of planing, slotting, and shaping machines. It is arranged with a stroke of 24 ft. when used as a planer, with a stroke of 12 ft. as a slotter, and of 6 ft. as a shaping machine. The motion of the machine in each of its capacities is independent of the other motions, and is provided with independent hand and automatic feeds in all directions, and automatic stop. All these are controlled by the workman, who is carried on a platform within easy reach of the cutting tool. The machine was designed to supply a means of dressing work too large to go on ordinary planing machines, and was built to supply an order from the Russian Government, and is to be placed in the navy-yard at Cronstadt.

The Duke of Brunswick's Monument.—The late Duke of Brunswick bequeathed property of immense value to the City of Geneva, and the municipality, after mature consideration of the most appropriate manner in which to record their gratitude, resolved to erect a mausoleum to the memory of their benefactor which shall be without a parallel in Europe. The monument is to be placed in the Jardin des Alpes, and it is to cost 1,400,000f., or 56,000*l*. The design includes a series of six statues representing ancestors of the deceased Duke. The first is to be Duke Henry "the Lion," and the last that of Duke Frederick William, who fell at the battle of Quatre Bras. On a pedestal of polished granite, 70 ft. in height, will rest the sarcophagus, on which will be a recumbent figure of the Prince, and over this will be a canopy, to be surmounted by an equestrian statue of the late Duke in modern civil costume. The canopy is to be supported by pillars of white marble sculptured. The artist selected for carrying out this design is M. Franc, a citizen of Geneva. The statue is to be be by M. Vella, and the animals are to be executed by M. Cave. The stated height of the pedestal seems enormous, and would place the sarcophagus and recumbent figure out of sight.

Tyne Shipbuilding.—The increasing superiority of the Tyne steamers is more marked than ever, being, for the period, from twice to three times the tonnage of the Clyde, and also a larger average size of steamer. The causes of this are, perhaps, not far to seek; and first, we must place the enterprise of the Newcastle owners. We have heard it said that were all the Newcastle-owned ships which are registered in London to be registered in the port where they are really held, the river would show itself to own the largest tonnage of any place in the world. Again, the greater part of the iron used on the Clyde comes from this district, so that the Clyde ship-builders have the difference in carriage to pay, and are therefore handicapped to the extent of from 10s. to 15s. a ton. In the statement below, the Newcastle district is taken to include the Wear and the Tees, and the Glasgow district includes the Leven, Port Glasgow, Greenock, &c. The tonnage is in all cases the gross tonnage:—

	Newcastle District. No. Tonnage.	Glasgow District. No. Tonnage.
Steamers built during the first four months of the year 1877	52 ... 53,287	30 ... 20,464
Sailing ships, ditto	10 ... 9,493	25 ... 24,112

Primitive Potting.—The Rev. A. Clarke, writing from Biarritz to a Staffordshire paper, says:—"I saw a very primitive sort of potting factory, a few days ago, in a valley among the Pyrenees. We had chartered a carriage for a tour in the mountains, round St. Jean Pied de Port, in the heart of the French Basque country. Starting on Monday, April 16, and passing through Cambo, a pretty bathing establishment on the Nive, at the entrance of a narrow valley, I saw, as I sat by the side of the driver, a number of low sheds open at the sides, which I was told were potting works. By a short cutting, driven for a few yards into the hill, and by a tramway, clay was brought to the works. Ventilation enough there was to satisfy the most scrupulous inspector, as all was done in the open air. No stoves were needed, as the sun dried the ware, until it was placed in the oven. The neighbouring brook gave the water, the woods on the mountains the fuel, and the ware was the rough red-water jugs and basins which supply the household wants of the cottagers among the Basque villages."

A Synagogue.—Mr. Leopold de Rothschild has laid the foundation-stone of a new Temple of the United Synagogue at St. Petersburg-place, Bayswater. It will be built in Greek Byzantine style by Mr. N. S. Joseph and Mr. Audsley, architects, at a cost of 18,000*l*. The Hebrew name of this new Temple in the west of London will be the "Western Wall," a title identical with the name of the only relic of the second Temple, the Wailing Place of Jerusalem. Mr. Samuel Montagu, on the part of the Building Committee, presented Mr. De Rothschild with a silver trowel. Mr. De Rothschild said it was now seven years since his father, Baron Lionel de Rothschild, laid the foundation-stone of the Central Synagogue, and since then seven of these sacred buildings had been consecrated. In erecting these edifices the Jews were only following out their traditions, that where their home was there should be their tabernacle.

The Engravings of Turner's Pictures.—An important decision was given in the Chancery Division of the High Court of Judicature on the 31st ult., by Vice-Chancellor Malins, in an action brought by the representatives and next of kin of J. M. W. Turner, R.A., against the executor of the late Mr. Jabez Tepper, who had acted as solicitor to the family when Turner's effects were disposed of. It was stated that Tepper induced them to sell to him, at the price of 2,500*l*., engravings and plates of the pictures of Turner, although a Mr. Gambart had before offered him 6,000*l*., which was gradually increased to 10,000*l*. The plates and engravings were kept by Mr. Tepper, and his executors recently sold them for 40,000*l*. The plaintiffs sought to set aside the sale on the ground of fraud; and the judge made an order to the effect that the engravings and plates were to be restored to the plaintiffs; Tepper's executors to be repaid the 2,500*l*. with interest, but to pay the costs in the present action.

Floating Baths.—A correspondent of the *York Herald* gives some particulars of the floating baths which are constructed on the Seine and the Lesser Danube. They are built on rafts from 60 ft. to 90 ft. in length, and about 20 ft. in breadth; the depth is from 2 ft. to 7 ft. They are divided into three sections; one is at the low charge of 1d; the second, 3d.; and the third, which is for ladies, is also 3d., 1d. extra for a towel. They are open in the centre, and on each side are the dressing-rooms. In each is a frosted glass window, and they are nicely painted, looking light and elegant. The expense of two such baths would not exceed 1,000*l*.——The new floating bath on the Dee, at Chester, were opened on the 14th ult. We have already given a description of the structure, and need only here say that it has been erected for the directors at a cost of 2,200*l*. by Messrs. Wainwright, shipbuilders, of Liverpool, from designs furnished by Messrs. Rae McKaig & Carlton Stitt, naval architects, of the same town.

Priestman's Patent Steam Crane.—By the invitation of Messrs. Priestman, Brothers, a number of gentlemen assembled at Hull on the 26th ult. to witness the trial of a self-acting bucket and fork, with double-barrelled crane or winch, which has just been brought out by that firm. The crane travels on rails, and has simple frictional gearing. The bucket is attached to the crane by two chains, on one of which it is lowered by means of a brake. It falls wide open into the material which requires lifting, and by hoisting the second chain it is drawn down by a simple arrangement of levers, and whilst filling gradually closed. The bucket is then raised to any height, and by throwing the weight again on the first chain is made to open again and discharge its contents. By this piece of mechanism a great saving is effected in time and labour. The self-acting bucket is stated to be available for lifting seed, grain, sand and gravel, mortar, coals, &c.

A Pleasant Way of doing Kindness.—We suggest to some of our readers who are playgoers that they should take places at the Gaiety Theatre for Wednesday morning next, June 20th. Mr. Chas. Lamb Kenney, who has claims on the public not merely for his own works as a writer and critic, but for the sake of his father and godfather, has suffered long under a serious malady which incapacitates him for work, at any rate for the present. Some of his friends have in consequence organised a testimonial to him in the shape of a morning performance on the date mentioned. Mr. Sims Reeves will play *Tom Tug* in "The Waterman"; Mr. Henry Irving will recite; Mr. Santley will sing; and "The School for Scandal" will be performed with an exceptionally strong cast. Those who adopt our suggestion will be sure, therefore, of a pleasant morning while paying a deserved tribute to an accomplished writer who has helped in his time to amuse them.

The Cabmen's Shelter Movement.—Mr. Wm. Hartley Lee, of Wakefield, has written to the Secretary of the Tradesmen's Association asking to be allowed the privilege of supplying a shelter for the Wakefield cabmen. It appears that Mr. Lee's wife, who died a short time ago, had taken a deep interest in the movement, and it would seem that Mr. Lee has undertaken to supply the shelter as a memorial to his wife. The shelter is to be erected shortly by Mr. C. Squires, joiner, of Wakefield, from plans prepared by Mr. Fred. Simpson, architect, Wakefield, at a cost of 111*l*.

Canal and River Population.—The following resolution of the Council of the Social Science Association has been presented to the Secretary of State for the Home Department, and by him transferred to the President of the Local Government Board, who has charge of the Bill on the subject:—"That in the opinion of this Council the condition of the canal and river population is such as to demand the early attention of the Legislature in order to prevent (1) Overcrowding; (2), the spread of infectious diseases; (3), the evasion of the Acts for the registration of births and deaths and vaccination; (4), the neglect of education, and the deterioration of morality, as necessarily prejudicial to health and social advancement." We may note that the Bill now before the House of Commons.

Death of Mr. W. E. Frost, R.A.—The death is announced of Mr. William Edward Frost, R.A., in his sixty-seventh year. He began his artistic career as a portrait-painter, but he subsequently abandoned portrait-painting for other branches of art. In 1839 he won the gold medal of the Royal Academy for his picture, "Prometheus Bound," and in the Westminster Hall competition of 1843 he gained a prize (in the third class, of 100*l*.) for his cartoon "Una alarmed by Fauns." He was elected an Associate of the Royal Academy in 1846, and a Royal Academician on December 30th, 1870.

Reconstruction of Northumberland Assize Courts.—Mr. William Crozier, M.I.C.E., engineer and architect for the county of Durham, who remodelled the Durham Assize Courts, has been entrusted by the magistrates of the county of Northumberland with the reconstruction of their Assize Courts, Moot Hall, Newcastle-on-Tyne, and the works are now in progress.

The Masons' Strike and Lock-out in Aberdeen.—The strike and lock-out in the Aberdeen mason trade appears to be more general than was at first supposed, it being estimated that 600 men were out of work through it. Both parties seem determined to hold out to the last, and the consequence is that a protracted strike may be expected.

St. Asaph.—The large east window of Sarn Church, St. Asaph, has just been filled with stained glass to the memory of Mr. John Moore. It represents in the upper portion the Ascension, and in the lower Christ blessing little children. Messrs. Mayer & Co. executed it.

Sheffield.—A new church and schools are to be erected in connexion with the Philadelphia Reform Church at Sheffield, from designs prepared by Messrs. Tacon & Rawson, architects, 11, Westgate, Rotherham. Building operations will be commenced shortly.

TENDERS.

For proposed lavatory and offices, at rear of Boardroom, Licensed Victuallers' Asylum, Old Kent-road. Mr. W. F. Potter, architect:—

Ward	£325 0 0
Hayworth	239 0 0
Hersee	268 0 0
Pritchard	249 10 0
Simpson & Annett (accepted)	220 0 0
Sanitary Fittings only.	
Jennings	£165 0 0

For the erection of Oxendon Presbyterian Church at Haverstock hill, Middlesex. Mr. T. Arnold, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Bangs & Co.	£8,012 0 0
Scrivener & White	7,998 0 0
Burford	7,993 0 0
Manley & Rogers	7,925 0 0
Ashby Brothers	7,899 0 0
Dove Brothers	7,775 0 0
Harris & Wardrop	7,497 0 0

For the erection of a Presbyterian Church, Crouch-hill, Middlesex. Mr. T. Arnold, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Simpson & Coulthard	£6,210 0 0
Morter	6,200 0 0
Ashby Brothers	6,100 0 0
Manley & Rogers	6,050 0 0
Colls & Sons	6,000 0 0
Dove Brothers	5,875 0 0
Bates	5,862 0 0
Williams & Son	5,580 0 0
Harris & Wardrop	5,385 0 0

For enlarging a furniture warehouse at 64 and 66, High-street, Kingsland, for Mr. Sidney Smith. Messrs. Waymouth & Son, architects:—

Yardley	£469 0 0
Dove Brothers	445 0 0
Sawyer	440 0 0
Shurmur	396 0 0
Prebble & Co.	390 0 0

For shops, offices, &c., at Stratford, for the Stratford Co-op-rative and Industrial Society, Limited. Mr. Henry Poston, architect. Quantities supplied :—

Knight & Dastow	£2,400	0	0
Hoskings Brothers	2,050	0	0
Morter	2,030	0	0
Mansfield	1,987	0	0
North Brothers (accepted)	1,995	0	0

For rebuilding King's Head public-house, for Mr. Frost. Mr. A. E. Hughes, architect. Quantities supplied by Messrs. Corderoy & Sandall :—

Hill, Higgs, & Hill	£4,620	0	0
Grover	4,273	0	0
Grimwood	4,198	0	0
Bywaters	4,127	0	0
Perkins	4,055	0	0
Nightingale	3,781	0	0

For villa residence, Wimbledon. Mr. Edward Clarke, architect. Quantities supplied :—

Macey & Sons	£1,861	0	0
Gammon & Sons	1,570	0	0
Perkins & Co.	1,469	0	0
Farmer & H. Cooks	1,335	0	0
	1,288	0	0
Nicholls (accepted)	1,240	0	0

For rebuilding Nos. 49, 49A, and 50, New Bond-street, for Mr. Thos. P. Chappell. Mr. F. S. Brereton, architect. Quantities supplied by Mr. James Barnett :—

Scrivener & White	£11,110	0	0
Bywaters	10,967	0	0
Lucas Brothers	10,843	0	0
Trollope & Sons (accepted)	10,490	0	0

For the erection of amusement hall, &c. at Hampton-wick, for Dr. Downs. Mr. Rowland Plumbe, architect :—

	Hall.	Covered way.
Collinson	£4,353	£588
Dove Brothers	4,275	430
Moore & Nixon	4,160	430
Adamson	4,018	439
Messon	4,022	422
Bayes Brothers	3,779	415
Ryder & Sons	3,728	430
Gregory	3,618	479
Goodman	3,678	367

For the erection of a twenty-five quarter malting and cottage attached, at Twyford, Berks. Messrs. Morris & Stallwood, architects :—

	Malthouse.	Cottage.
Goodchild	£1,510 0 0	£371 0 0
Follley	1,430 0 0	389 10 0
Silver & Son	1,446 0 0	369 0 0
Higgs	1,408 0 0	376 10 0
Sheppard	1,379 0 0	370 0 0
Wheeler Bros.	1,368 0 0	369 0 0
Simonds	1,365 0 0	337 0 0
Cordrey	1,350 0 0	329 0 0
Reavell	1,323 0 0	330 0 0
Woodbridge	1,312 0 0	325 0 0
Dodd	1,280 0 0	320 0 0
Weyman	1,254 18 7	316 3 2
Lawrence*	1,176 0 0	307 0 0

* Accepted.

For works at Baltic Wharf, Pimlico. Mr. Geo. Sparrow Harrison, architect :—

Cooke & Co. (accepted)	£2,000	0	0

For alterations and additions to 153, Newington Butts. Mr. George Fleetwood, architect :—

Thompson	£744	0	0
Nightingale	697	0	0
Roberts Brothers	667	0	0
Gammon	660	0	0
Gould & Brand (accepted)	629	0	0

For new conservatory and fernery, and alterations to and rebuilding of old vinery and hothouses, with hot-water pipes, &c., at 23, Palace-gardens, Kensington, for Mr. Philip Falk. Messrs. Salomons & Wornum, architects. Quantities by Mr. Bagg :—

Weeks	£2,381	0	0
Macey	2,010	0	0
Lascelles	1,962	0	0
Kinnimont	1,608	0	0

Accepted for sundry alterations at Nos. 402 and 404, Hackney-road, for Mr. Wright :—

Jarvis & Sons.

For the erection of a mortuary for the Burial Board of St. Paul, Deptford, in the parish churchyard. Mr. W. T. Hunt, jun., architect :—

Keen	£319	10	0
Allpress	288	0	0
Redman	287	0	0
Garlic	250	0	0
Holloway (accepted)	237	0	0

For alterations at the Lord Raglan, Camden-grove North, Peckham, for Messrs. G. & H. Chapman. Mr. John Viney, architect :—

Stamp & Bowtle	£295	0	0
Kingsman	287	0	0
Macey	268	0	0
Shapley	259	0	0
Beale	198	0	0

For Baptist Chapel and schoolroom, Erith, Kent :—

Miles	£1,076	0	0
Hills (accepted)	1,050	0	0

For the erection of stables at Purfleet Wharf, Black-friars, for Messrs. Cockerell & Sons. Mr. Alfred Bovill, architect. Quantities by Mr. Henry Knight :—

Browne & Robinson	£7,890	0	0
Hart	7,785	0	0
Little	7,777	0	0
Lathey Brothers	7,630	0	0
Peto Brothers	7,291	0	0

For alterations and additions to the Royal Rifleman tavern, Nine Elms, for Mr. Newnham. Mr. W. S. Payne, architect. Quantities not furnished :—

Rudkin	£886	0	0
Gill	797	0	0
Lathey Brothers	657	0	0
Hart	655	0	0

For the erection of a schoolhouse and residence for the Woolhope School Board. Mr. E. H. Lingen-Barker, architect :—

Ford	£1,107	10	0
Jones & Co.	1,060	0	0
Welsh	1,023	0	0
Morgan	1,000	0	0
Smeaton & Son	952	0	0

For alterations and additions to Stone House, West-hill, Putney. Mr. H. H. Collins, architect. Quantities supplied by Messrs. Batstone Brothers :—

Kirk & Randall	£3,532	0	0
Abraham	3,395	0	0
Mitchell	3,340	0	0
Waldram & Co.	3,130	0	0
Moreland & Nixon	3,080	0	0
Newman & Mann	3,020	0	0
Prebbles & Co.	2,923	0	0
Parsons	2,689	0	0

For the erection of new schools at Gaerwen, Anglesey. Mr. R. G. Thomas, architect :—

Hughes	£790	0	0
M. Pritchard (accepted)	772	0	0
J. Pritchard & Co.	753	0	0

For a house, Amhurst Park Estate, Stamford-hill. Mr. Page, architect :—

Rider & Son	£3,528	0	0
Philps & Bisiker	3,368	0	0
Browne & Robinson	3,220	0	0
Ashby Brothers	3,240	0	0
Smith	3,000	0	0

For constructing 400 yards of concrete sea wall and promenade at Owthorne, East Riding of Yorkshire, for the Withernsea Improvement Company. Quantities supplied by the engineers, Messrs. Clarke & Pickwell :—

Pickering	£6,541	0	0
Bayliss, Godfrey, & Annett	6,024	3	6
Simpson	5,370	13	1
Dawson	5,185	0	0
Pearson (accepted)	5,001	0	4

For constructing 500 yards of streets, drains, &c., at Owthorne, East Riding of Yorkshire. Quantities supplied by the engineers, Messrs. Clarke & Pickwell :—

Pickering	£1,729	8	0
Hudson	1,326	9	0
Bayliss, Godfrey, & Annett	1,109	5	0
Roberts	1,092	14	0
Dawson	1,050	0	0
Pearson	1,046	11	4
Hodgson & Harman	913	7	2
Foster and Smith	905	15	0
Kirkwood (accepted)	887	15	6

For alterations and additions to the Queen Elizabeth, Graham-road, Dalston, for Mr. C. Santer. Mr. J. Viney, architect :—

Stamp & Bowtle	£797	0	0
Outhwaite	795	0	0
Larter	764	10	0
Hanley	750	0	0
Shapley	645	0	0
Jackson & Todd	620	0	0
Mitchship	545	0	0

For alterations at the Fountain and Star, Coleman-street, for Messrs. Moore & Webb. Mr. John Viney, architect :—

Little	£360	0	0
Stamp & Bowtle	347	0	0
Jackson & Todd	275	0	0
Shapley	245	0	0
Outhwaite & Son	233	0	0

For manufacturing premises, Chapel-street. Messrs. Ford & Heaketh, architects :—

Merritt & Ashby	£6,905	0	0
Lawrence	6,358	0	0
Boyce	6,277	0	0
Shaw	5,983	0	0
Crabb	5,973	0	0
Mark	5,880	0	0
Peto Brothers	5,858	0	0
Scrivener & White	5,825	0	0
Brass	5,820	0	0
Newman & Mann	5,792	0	0
Browne & Robinson	5,720	0	0
Perry & Co. (accepted)	5,605	0	0

For Foord Church, Folkestone. Mr. A. E. Barl architect. Quantities by Mr. J. O. Abbott :—

		Extra if Shafts in Robin Hood stone.				Purbe ston	
Carter	£4,960	0	0	£30	0	0	£70 0
Paramor & Son	4,684	0	0	30	0	0	85 0
Prebble	4,638	0	0	27	0	0	90 0
Unwin	4,631	15	0	29	0	0	94 0
Adcock	4,400	0	0	15	6	0	85 3
Blake	4,289	0	0	18	0	0	100 0
Butler	3,993	0	0	33	0	0	70 0
Moody	3,710	0	0	35	0	0	195 0
Hoad	3,590	0	0	30	0	0	200 0
R. & D. Baker	3,369	10	9	35	0	0	52 14
Holdom	3,297	10	0	30	0	0	110 0

For rebuilding the Three Blackbirds tavern, Leyt Essex, for Messrs. Truman, Hanbury, Buxton, & Co. Edward Egan, architect. Quantities by Mr. Bagg :—

Hosking	£2,967	0	0
Egan	2,754	0	0
Morter	2,690	0	0
Downs	2,675	0	0
Sayer	2,561	0	0

For the erection of thirty semi-detached villas, a v residence, and the formation of roadways, sewers, &c., the Sutton Court Estate, Sutton, Surrey, for Mr. Char Ayles. Messrs. Taylor & Locke, architects. Quantiti by Mr. E. Overall :—

Peto Brothers	£43,459	0	0
Sewell & Sons	43,274	0	0
Brass	43,190	0	0
Colls & Sons	42,942	0	0
Deards	42,576	0	0
Shepherd	39,835	0	0
Morter	39,800	0	0

For the erection of a villa residence at St. Alban's, Mr. Edward Scott. Messrs. Taylor & Locke, architec Quantities by Mr. Birdseye :—

Miskin	£2,793	0	0
Shepherd	2,685	0	0
Waterman	2,684	0	0
Carter	2,570	0	0
Deards	2,567	0	0
Joscelyne	2,540	0	0
Conder	2,428	0	0

For building a parochial schoolroom, &c., for the par of St. Luke, Holloway. Messrs. Taylor & Locke, arc tects. Quantities by Mr. W. Birdseye :—

Ensum	£1,400	12	1
Warne	1,350	13	6
Deards	1,330	0	0
Pain	1,215	0	0
Carter	1,145	0	0
Beeton	1,045	0	0

The tender of the Brunswick Rock Asphalte Comps has been accepted for paving the floors of the Scotch Stor Oxford-street. Mr. J. B. Axford, builder. Also for pav the coachyard of Mr. C. Hull's, The Maples, Acton We with 1 in. of asphalte and 6 in. of concrete.

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M. T. (write to the Secretary of the Institute, France).—G. P. applying to the makers).—F. B. B. (if instructed by the Board obtain tenders, yes).—F. W.—C. & Son.—W. B. B.—S. H.—Mr. R. M. B.—W. S.—P.—R. C. R.—"Fireman."—W. H.—T. R.—R. J. J.—F. S. B.—T. G.—E. S. R.—B. P.—R. L. B.—O. P.—C. B. S. G. H. P.—S. C. H.—W. W. W.—J. V.—W. G. S.—J. & R.—R. G. —G. W.—C. & P.—A. R. B.—A. B. B.

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"THE BUILDER" is supplied *direct* from the Office, to resides in any part of the United Kingdom at the rate of 19s. per annu *Payable in Advance.*

All remittances should be by Money Order, payable at the Post-offi King street, Covent-garden, W.C. to DOUGLAS FOURDRINIE of 46, Catherine-street, W.C.

Advertisements cannot be received for the curre week's issue later than THREE o'clock p.m. *on THURSDAY.*

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The Builder.

VOL. XXXV. No. 1794. SATURDAY, JUNE 26, 1877.

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St. Helen's, Bishopsgate.

MOST nations are proud of their native saints, and the Londoners of old seem to have preferred to dedicate their churches to their countrymen rather than to foreigners. Many of these inhabitants of Britain are little known now, but St. Helena is an exception, for her name holds a high place in the Church calendar as the finder of the supposed cross of Christ, and her achievement is commemorated on the 3rd of May, or the feast of the Invention of the Cross.

Helen, daughter of a British prince named Coel, was born at Colchester in the year 242. She was considered the most beautiful woman of her time, and her charms captivated the Roman general Constantius (afterwards emperor). He married her, and she became the mother of the Emperor Constantine. The great event of St. Helen's life was not performed until she had reached the advanced age of eighty. She made a voyage to the Holy Land, in order to raise a church on the ground where Christ was crucified. In digging the foundations three crosses were found, deeply fixed in the earth, and the true cross is reported to have been selected from the crosses of the two thieves by the miraculous power which it possessed of bringing the dead back to life. As we are dealing with myths we may mention here that the church of St. Helen is reported to have been erected by Constantine, to the memory of his mother. The date of foundation is not known, but it was many years before the nunnery was commenced in 1212. The earliest year that is recorded in the history of St. Helen's is 1010, when Alwyne, Bishop of Helmeham, removed the remains of King Edmund the Martyr from Edmundsbury to London, and deposited them in this church for three years, until the depredations committed by the Danes in East Anglia ceased.

In the latter part of the reign of John, Alardus Dean of London, granted permission to William, son of William, the goldsmith, to found a nunnery, and attach it to the Church of St. Helen, of which he was the patron. The nuns were of the Benedictine order, and wore a black habit, with a cloak, cowl, and veil. In 1308 the buildings were enlarged, and the revenue of the nunnery largely increased through the liberality of William Basing, one of the sheriffs of London. For over three hundred years the establishment flourished, but in 1542 the blow of dissolution fell, and the prioress and nuns had to seek a home elsewhere. They were pensioned, and the site of their priory was given to Sir Richard Williams, *alias* Cromwell, from whom the nuns' hall and adjoining houses were purchased by the Leathersellers' Company, who converted the former into their common hall. The picturesque ruins remained until 1799, when they and Leathersellers' Hall were cleared away to make room for the present St. Helen's-place.

The parish of St. Helen was of old the most aristocratic in London, and it can boast of a long list of worthies amongst its inhabitants. One of the first of these was Sir John Crosby, the builder, of Crosby Hall, on land leased to him by Alice Ashfield, Prioress of St. Helen's, in the year 1466. Sir John attached himself to the Yorkist party, and was knighted by Edward IV., when, as alderman and sheriff of London, he, with the mayor, aldermen, and other citizens, went out to meet that prince between Shoreditch and Islington on his entry into London in 1471. Crosby Hall, which still ornaments Bishopsgate-street, was one of the most beautiful houses in London, as it was the highest. After Crosby's death it was inhabited by the Lord Protector Richard, Duke of Gloucester, and Shakspeare makes the latter address Lady Anne in the words,—

> "And presently repair to Crosby-place;
> Where, a'ter I have solemnly interr'd,
> At Chertsey Monastery, this noble king,
> And wet his grave with my repentant tears,
> I will with all expedient duty see you."

Lord Mayor Sir William Holles, who cleansed the Moor ditch, and entertained Henry VIII. and Anne of Cleves, kept his mayoralty at a "fayre house" in Bishopsgate-street. In this same house Sir Andrew Judde, who was in high favour with Philip and Mary, also kept his mayoralty. Sir John Spencer (usually, and with justice, called "Rich Spencer," for he died worth near a million of money) lived in great state at Crosby Hall, and kept his mayoralty there. His country house was at Canonbury; and from thence his only daughter and heiress, Elizabeth, was stolen away in a baker's basket by the contrivance of William, second Lord Compton. The young people were married, but the father would not forgive them until, after the birth of a child, he was reconciled by the gracious mediation of Queen Elizabeth, who promised to join him in the sponsorship of the boy, afterwards his grandfather's heir.

One of the most distinguished residents in the parish of St. Helen was the eminent Sir Thomas Gresham, who built for himself a spacious house, which extended from Bishopsgate-street on the one side to Broad-street on the other. It consisted of a square court or piazza, with extensive offices adjoining, and the whole was surrounded by pleasant gardens. In 1563 his agent, Richard Clough, a Welshman, who married Katherine Tudor, the great-granddaughter of Henry VII., wrote to him about the materials for the house,—"As touching the galary and the stones for the wyndose and walls, they are all shippyd in the shyppe of John Ryke, who departyth from hens within two or three days at the furthemost.' In 1571 Queen Elizabeth dined with Gresham in the completed house, before she visited the newly-erected "Burse," which she caused the herald to proclaim as the Royal Exchange. Eight years after, the great merchant, on coming home from the Exchange between six and seven o'clock in the evening, fell down in his kitchen, was taken up speechless, and presently died. He had elaborated a scheme for a college, which, properly managed, might have been a rival to the universities of Oxford and Cambridge. The London house was left by will for the purpose, and the revenues arising from the profits of the Royal Exchange were placed in the hands of trustees for the purpose of endowing the college. On the death of Lady Gresham, in 1596, professors were chosen, but public discontent at the action of the trustees was expressed from the first. The meetings of the Royal Society were held, with few interruptions, for many years in Gresham College. In 1658 it was turned into a garrison, and the philosophers were expelled. The soldiers left the place in such a nasty condition that Wren found the "smells infernal" when he and his fellows returned. The Royal Society left the College finally in 1710, and the house thus lost all the credit it had received from their tenancy. The professors let their rooms, the lectures were unattended, and the whole scheme fell into complete contempt. In 1768 the trustees sold Gresham College to the Crown for a perpetual rent of 500*l.* per annum, and the fine old buildings which were associated with Barrow, Wren, Boyle, Hooke, Evelyn, and Petty, were cleared away to make room for an Excise-office.

Sir Julius Cæsar, the friend and connexion by marriage of Bacon, was another of the distinguished householders of St. Helen's. He was Master of the Rolls and master of St. Katharine's Hospital, where he chiefly resided. The names he is usually known by were really his Christian names, for his surname of Adelmare he himself dropped. The character of this worthy appears to have been peculiarly amiable, for it was said of him that "he clothed his very denials in such robes of courtship as that it were not easy discernible whether the request or denial were most decent," and Walton states that he "was said to be kept alive beyond nature's course by the prayers of those many poor whom he relieved."

William Bird, or Byrd, the pupil of the celebrated Thomas Tallis, musical composer, and himself a father of music, was at one period an inhabitant of the parish of St. Helen, and resided in a house opposite to Crosby Hall, and adjoining the gardens of Gresham House. He was organist of Lincoln Cathedral in 1563, and in 1569 was appointed a gentleman of the Chapel Royal. He derived great pecuniary advantage from a patent granted by Queen Elizabeth to him and Tallis for the exclusive privilege of printing and vending music-paper. Upon the decease of Tallis the patent devolved upon Bird. Walter and Alice, two of Bird's children, were buried in the churchyard in 1587.

It is supposed that a greater than any of those already mentioned was an inhabitant of St.

Helen's; but it is not certain, although highly probable, that the William Shakspeare, whose name appears on an assessment roll for levying subsidies, dated Oct. 1 (40 Eliz.), 1598, as an inhabitant of the parish, was really the great poet. We shall close this list of the worthies of St. Helen's with "London's generous mayor," Sir John Lawrence, who nobly remained at his post during the whole time of the Great Plague of 1665, and, as Darwin wrote,—

> "With food and faith, with medicine and prayer,
> Raised the weak head and stayed the parting sigh,
> Or with new aliment relumed the swimming eye."

He supported the needy sick by expending his own fortune until subscriptions could be solicited and received from all parts of the nation; and that these poor persons were many may be judged from the fact that "the day after the disease was known with certainty to be the Plague, above 40,000 servants were dismissed and turned into the streets to perish, for no one would receive them into their houses, and the villagers near London drove them away with pitchforks and firearms." Sir John Lawrence lived in Great St. Helen's, and there he kept his mayoralty.

Having noticed some of the chief inhabitants of the parish of St. Helen, we will now pass on to give a short account of the church itself. This has long been famous as one of the most interesting churches in London, and the number and beauty of the monuments it contains has gained it the designation of the City Westminster Abbey. A history of St. Helen's has just been published by the Rev. Dr. Cox, vicar in charge, which is worthy of the renown of the parish.* It contains an account of the building, with engravings of the chief tombs; a notice of the worthies; extracts from the registers; and, what is, perhaps, the most valuable of all, a transcript of the vestry records. It would be well if more of such records in the various London churches were put into imperishable print. We have already in our notice of the worthies made use of Dr. Cox's book, and we shall again dip into its interesting pages for information on the portion of our subject that still remains to be dwelt on.

As already stated, there appears to have been a church on the present site before the year 1010, but the earliest portions of the existing one are of the thirteenth century, and then the floor must have been at least 4 ft. lower than now. Various alterations and restorations of the church have been made at different times, and Inigo Jones and Sir Christopher Wren were both engaged upon the repairs of two of the periods. The elaborately-carved pulpit, with its large sounding-board, is supposed to have been designed by Inigo Jones. The interior of the church was arranged upon a peculiar plan, owing to the necessity for separate accommodation for the nuns. The portion northward of the arches running along the centre of the church was formerly the Nuns' Choir, and the steps leading down to a door of entrance to the nunnery still exists. This choir was added to the parish church for the use of the inmates of the adjoining convent, probably about the year 1216, according to Dr. Cox, and was separated from it by a continuous screen until the dissolution of the convent at the Reformation, when this screen was taken down, and the whole space thrown into the parish church. To the south of the nave is a transept and two chapels, the northern dedicated to the Holy Ghost and the southern to the Virgin.

One of the earliest and most beautiful of the tombs is that to Sir John (1475) and Lady Crosby (1466); the most magnificent is unquestionably Sir William Pickering's (1574). This "consists of an altar-tomb panelled into compartments, sustaining on the ledger six Corinthian columns and two arches at the head and foot of the tomb, which jointly support a canopy formed of two arches. . . . . Within this canopy upon the altar-tomb is extended the effigy of the knight, the size of life, bareheaded, in complete armour with trunk breeches, his head resting on a rolled mat, and a ruff surrounding his neck." The marble altar-tomb of Sir Thomas Gresham was prepared by himself, and no inscription was placed upon it until 1736, when the few words from the parish register were cut by order of the churchwardens. It has lately been thoroughly cleaned and restored at the expense of the Gresham Committee and Mercers' Company. Upon Sir Julius Cæsar's altar-tomb is inscribed his epitaph in the form of a deed written by himself two years before his death. "I . . . . by this my act and deed, confirm with my full consent that by the Divine aid I will willingly pay the debt of nature as soon as it may please God." Among the curious and beautiful old tombs is an unsightly mass of masonry in memory of one who was not a "worthy," viz., Francis Bancroft. This man realised a large fortune as an informer in the Lord Mayor's Court, and was so unpopular that when he was buried the mob attempted to upset the coffin and ring the bells of the church.

The registers ought to be of great interest, but, unfortunately, the volume, or volumes, containing the entries from 1538, when they were first ordered, down to 1575, are hopelessly lost, and Dr. Cox has made a very small selection from the remaining volumes. We notice, under date October 18, 1714, the entry of the marriage of "Martin Folkes, of Nafferton, Yorkshire, gent., and Lucretia Bradshawe, of St. Andrew's, Holborn." Folkes was president of the Royal Society, and of the Society of Antiquaries, and Lucretia Bradshawe a celebrated actress of her day. This entry is interesting, because the marriage here recorded set the fashion, largely followed, of gentlemen of fortune and noblemen marrying actresses. Among the deaths in the year 1593 is that of a person bearing the curious name of Eightshilling. Dr. Jonathan Goddard was buried in the chancel, on March 27, 1675. This was the eminent Professor of Physic in Gresham College, a man who took an active part in public affairs. He was physician to Cromwell, and the Parliament appointed him Warden of Merton College, Oxford, in 1651, from which headship he was removed at the Restoration. He represented the University of Oxford in Parliament in 1653, and was one of the Council of State. When the Royal Society was founded, Goddard was one of the original Council appointed by the Charter. Although Dr. Cox has printed this entry, he does not notice that of the burial of a greater than Goddard,—the eminent Robert Hooke,—who died at Gresham College, on March 3, 1702, and was buried in the church.

The whole of the vestry records from 1558 to 1812 (with the exception of those between 1573 and 1676, which are lost) are printed, and they contain a mass of very curious matter. On the 6th of February, 1558 it was agreed that Thomas Parker, Parish Clerk, should have 13s. 4d. for washing "the clothes of the church," and for attending to the clock; but in June, 1563, a regular clockmaker was appointed to amend and look after the timekeeper. In 1575, 6s. 8d. was received from Sir Thomas Gresham for his licence to eat flesh, which sum was "put into the poor men's box, according to the statute." The churchwardens' accounts contain some curious entries during the Commonwealth: thus, in 1643 1s. 6d. was paid for taking down the cross upon the belfry, but on the other side 18s. 8d. was received for "200 of lead taken off the cross." The sum of 3s. was paid "for writing the names of those that tooke not the Covenant and carrying it to Westminster," and in the following year 1s. 6d. was "paid for the Covenant which hangs up in the church." In 1644 also a carver was paid 1l. 2s. "*for defacing the superstitious inscriptions*"! The parish stocks are mentioned in 1696, and in 1703 complaint is made that the parish pays more than its share of the expense of the watchmen of the ward of Bishopsgate Within, and that there is "a necessity for one watchman more at the east gate of St. Helen's for the better securing that part of the parish." Several of the entries in the vestry book relate to the beating of the bounds of the parish. In 1787 there was some correspondence on the subject between the parishes of St. Peter le Poor, Broad-street, and St. Helen's, and in 1798 the annual perambulation was discontinued, it being ordered that in future the boundaries should be visited only every three years. In 1798 it was resolved that the voluntary contributions of the inhabitants for the protection of the country should be received, and the resolution contained the following loyal preamble,—"That at the present awful crisis, when an inveterate and implacable foe has openly declared a determination, not only to subvert the civil and religious constitution of our country, but also to annihilate its very existence as an independent nation, it is the bounden duty of every Briton, whatever his rank or condition may be, to use his utmost efforts in order to frustrate the malevolent design of so determined an enemy; that the wages and subsistence of the servant, the earnings of the mechanic, the profits of the shopkeeper, the capital of the merchant, the funds of the stockholder, and the estate of the landed proprietor, are alike interested in the issue of the present contest; and that the exertions of all are due to their country, their families, and themselves."

In 1734 a very curious agreement was made by the parish with a Mr. Throckstone, by which he was to farm out the paupers for a given sum, and a bill of fare stipulating the food to be given to them is added. The Records are full of instances of that great abuse of the old poor law,—the giving of marriage portions to men as a bribe for them to marry women with illegitimate children, who were chargeable to the parish.

Much more might be added, but enough has been given to show what was the sort of business that came before a London vestry. Such authentic notes as these are of the greatest value as helps towards a knowledge of the various phases that public opinion has undergone at different periods.

* The Annals of St. Helen's, Bishopsgate, London. Edited by the Rev. John Edmund Cox, D.D. London: Tinsley Brothers. 1876.

ST. ALBAN'S CATHEDRAL.

THE members of the Church of England who call for a large increase in the number of her bishops will mark Tuesday, the 12th of June, 1877, in their calendars with satisfaction;—for then the strenuous efforts of years were crowned with success in the eyes of the world. Dr. Claughton, aforetime Bishop of Rochester, was installed as Bishop of St. Alban's,—with the charge of the counties of Hertford and Essex, and so much of the county of Kent as lies north of the Thames;—having parted with the rest of his former diocese under the Order in Council of the 30th of April last. Of course the town took to its new dignity kindly,—greeted its bishop with effusion, Venetian masts, banners, legends of welcome; with triumphal masses of greenery and flowers,—bands and bells. A bishop's throne,—designed by the late Mr. Cottingham, and executed evidently with much painstaking,—was set up in the choir on the north side of the south-west pier of the tower. It came to this place of honour from the crypt at Rochester,—whither it had been relegated by the revenges brought about by the whirligig of time. The demand for new stall-work and throne at Rochester has allowed the old throne to visit its third temporary resting-place;—by chance it may linger long enough to be considered a characteristic work of the early Gothic revival;—"a page in the records of English history, that no one has a right to destroy." After the bishop had been seated therein, the Mayor of the future city manifested the Christian, and specially civic, virtue of hospitality. The Church of the Benedictine Abbey, since 1553 only the church of St. Alban's parish,—"assigned, subject to the rights of the incumbent of such church, as a cathedral church to the bishopric,"—was thus, with some express and much tacit assent of parishioners, formally recognised as also the St. Alban's Cathedral.

When our hearty good wishes have been expressed, it becomes proper to state that the special appropriateness of the theme lies for us in the recent publication of a new Handbook for the cathedral.* As the twenty-three English and four Welsh cathedrals have all been dealt with in groups in the series, and this appears alone when completion had in some sort come; the book may possibly be looked on as a memorial of the changing time,—as marking a stage in the conflict with cathedrals that, "once begun, though baffled oft, was ever won." Dr. Nicholson's book, first published in 1851 (estimated in our number of May 12th, 1855), and carried to a third edition in 1869 by Mr. John Evans, has had hitherto suffrages as a pearl of guide-books,—full of most intimate knowledge of the buildings, and showing plenty of (undemonstrative) enthusiasm for the subject. Though it will not attempt to supersede the old Nicholson and Buckler, the new Murray's "Handbook" is entitled to rank well for printing, paper, pretty binding, illustrations, lucidity of arrangement, and modern posting up. The illustrations, it is true, are not on the sumptuous scale of earlier times,—seven plates, instead of the twenty-three of Mr. Jewitt's best woodcuts at Winchester. The cut,—view from the south-east,—will recall the point of view which has for sixty years been the resting-place of the camp-stools of sketchers;—since John

* Handbook to the Cathedrals of England. Southern Division. St. Alban's. With Illustrations. J. Murray, 1877.

Coney (not in his happiest mood, but with a loose and heavy touch) threw forcible black and white together after his manner for one of the large illustrations of Ellis's "Dugdale." The modern posting-up is our chief concern; slight slips may be left safely to the note-taking pens of readers. The frontispiece, the real "General View, North Side," was apparently destined to take the place of the present Plate vii., which looks startling under that title. This leads to other odd results; as, for instance, on page 66. Plate vi. might mislead. It could only apply to the *north* transept. It is quite a little history in itself, that there were once turrets only on the west sides of the transepts; and why, and when, and how there came to be octagons also on the east sides. On page 27, the great pier on the south side of the nave is described as,—"between the work of Abbot William [1214–1235] and that of Abbot Roger of Norton [1260–1290], which are brought close to it on either side." On the next page, the five easternmost bays are rightly described as, "begun by Hugh of Eversden (1308–1326)." This comes through Buckler (pp. 106–108) pretty evidently; and the mention of it may set others on their guard. The screen, which divides the nave from the choir of the monks, "has become generally known as the screen or chapel of St. Cuthbert, ... though there is no reason whatever for connecting it with the name of St. Cuthbert" (p. 34). Gough's "Carter" (1813), Clutterbuck's "Herts" (1815), Ellis's "Dugdale" (1819), Buckler (1847), with additional aggravations, Dr. Nicholson (1851), and of course, the works of his followers thereafter,—all are tainted by this dead fly; which might, after reading Carter carefully, be represented—by any one with sufficient temerity—as buzzing in the drowsy summers of the eighteenth century. But, considering the missionary fervour with which the facts,* about the altar and chapel of St. Cuthbert, have been urged on this generation, and considering that these facts are related (on p. 79), fixing the position for that chapel,—adjoining the dormitory, and separated by a slype from the chapter-house to the northward of it,—the allusion (p. 36) to the "(so-called) St. Cuthbert's screen," shows some declension from grace; and even the stanch Tory courage of a *Quarterly Reviewer* might have shrunk from "the fourth bay west of St. Cuthbert's screen" (on p. 30).

"There was an altar at the east [should be *west*] end . . . of the shrine, as was usual" (p. 53), might confuse a wayfarer looking at the beautiful base of St. Alban's shrine, beginning there his "pilgrimages to the shrines of England." The remains of the Norman cloister come in for notice on page 78, which cannot wholly be justified. The account of the 1323 catastrophe makes it clear that there was a Norman cloister on the site of the fourteenth-century cloister.

"The wall arcading along the south side of the nave shows very good Decorated tracery. But the third arch from the transept is circular, and contains within it, irregularly placed, a traceried arch resembling the others. The outer or circular arch is Norman":—

which it certainly is not, being moulded just as in the next bay westward. Still this bay of the cloister deserves attention on architectural grounds. Why does the semicircular arch occur at all? In other words, why is this bay so much wider than those to the westward? The Norman cloister may have ruled several points in the setting out:—the two bays to the east take up a narrower width again, and are very different in several ways from those west of them.

Matters of detail,—names and dates,—constitute so large a portion of working archæology, that no one ever wonders at eagerness shown by the indoctrinate,—to renew their youth by a plunge in the pellucid founts. Such a matter of names is assigning the chantry, under the arch immediately to the south-west of the great reredos, to Abbot William Wallingford (1476—1484) in place of Abbot John de Whethampstede (1420—1440, and again 1460) after the custom of at least 200 years. The argument, following Mr. R. Lloyd, is concisely put on p. 44. Though this reform has been so long in contemplation, one fears that the popular imagination will be shocked. Wheatears,—six times repeated in the aisle and six times in the nave,—have always hit that imagination in one of its penetrable points. "*Valles habundabunt*" (*frumento*—Ps. lxiv. 14, Vulgate; "the valleys also shall stand thick with corn," Ps. lxv. 14, of our Prayer-book version),—a piece of well-meant (and rather heavy) pleasantry,—may seem also to lose some of its ancient virtue,—even if it is looked on as chosen a generation after Abbot John's death by his successor, to show that he cherished the memory of "the worthy man whose history is the best picture of monastic manners among us."

When the Handbook was written the choir (between the rood-screen and the great tower) hardly called for notice,—beyond the pointing out of the almost unaltered bay of the Norman work, of the remains of the rood-loft in it, and of the decorative painting on the walls. But in the summer of 1875, the fourteenth-century painting of the ceiling was discovered. In February, 1876, Mr. R. Lloyd read the paper thereon, which was given in the *Builder* directly after. Such magnificent finds do not appear at every season. Hints as to vaultings to the aisles in the unaltered Norman portions of the nave, as to the pulling down of the abutting cottage at the south-west angle of the church, and the consequent exposure of the tower wall there for all its height, and other such little novelties, may be passed over lightly for the present.

Nor will we expound Bede's story of Alban, left here (pp. 88, 90, 91) in a state of contradiction that would have distressed Wordsworth wishing to prophesy:—

> "Nor shall his name forsake
> That hill, whose flowery platform seems to rise
> By Nature deck'd for holiest sacrifice."

Reprehension is not absolutely necessary for following Thomas Fuller in sceptical hints about Saint Amphibalus, so long as Fuller's condition of well-balanced doubt is maintained.

Mr. Freeman's motive for suggesting (Norman Conquest, vol. v., p. 628) that the balusters in the transepts may be of Paul's (1077—1093) time, is that this would help his theory that the "occasional recurrence of forms that might be assigned to an earlier time goes on to the end of the eleventh century." But these same balusters shall not beguile us into more than a softening of the decisive conclusiveness of p. 22. The absence of evidence of the completion of any Norman towers at the west end might be urged in opposition to p. 23; and no doubt for a good hundred other discussions the volume might supply the germ.

We will be satisfied with starting from p. 17, where allusion is made to the five thirteenth-century bays on the south of the nave, which are next to be taken in hand. These are of Abbot Trumpington's date (1214—1235). The three western bays were carried on with the four bays on the north side, and the two eastern bays somewhat after,—time enough after for changes in the mouldings and other details. The other seven bays had, at any rate, got up to the springing of the triforium arcade by the time that the great piers of these two bays were ready for their arches. The mouldings of the arches of the triforium arcade, in the seven bays, are not shaped for the vaulting-shafts to rise past them, as are the abaci just below. The intention to vault the nave had been abandoned when that level was reached; and consequently the south-east arches contain neither corbels nor vaulting-shafts. Trumpington has been credited, on rather thin evidence, with construction in the great piers of all his nine bays, which would almost certainly lead to future failure.

"He . . . . removed the clearstory and triforium stages, together with the arches of the main arcade, but he left the great piers standing, and only reduced them sufficiently to allow of their adaptation to the new design. The Norman tile-work is still visible at the bases of many of the piers. The piers themselves are cased with Totte[r]hoe stone. They are less bulky, and less evidently cased, than the Norman piers of Winchester Cathedral, since the tiles of which they are composed are more trustworthy than the rubble which forms the usual Norman core."—Page 24.

In 1870 such work would have been classed as "stingy scamping," if attributable to any date after 1650. But surely tile-work from the destroyed Norman walls and piers might be looked for under the bases of the stone-cased piers; and equally surely octagons, of little more than 4 ft. each way,* and over 19 ft. high, deserved new fairly-built cores, behind their ashlar faces. Messrs. Buckler, on whom this notion of the casing on Norman cores had come with such force, as to carry conviction in spite of all better senses, were obliged to confess:—

"The task of reducing the piers to the proper size and shape was also achieved. . . . . The sacrifice required . . . . was so considerable, and the reduction of those portions which were left standing an undertaking of so much labour, as to excite surprise that the example of John de Cella [who pulled down before commencing his new work] should not have been followed by his successors."—(Buckler, p. 100.)

This was wrung from them, while they believed that the coincidence of position, of the thirteenth-century work and the Norman piers, might have allowed a large portion of the mass of the great Norman spandrels to remain, as a reward for the risks run with the piers. They would have needed all the subtleties of language to express their surprise, if they had believed that the arches of the main arcade were removed. We are only able to talk of possibilities after all. As also in the matter of the absence of the vaulting, over the aisle, which might have steadied the main arcade; or at least struggled against its strong penchant for bending over southwards. On page 26 the author of the Handbook has made use of Messrs. Buckler's eyes, and endorsed the statement that "the remains of the springers of the original brick vaulting are to be seen,—reduced to their present irregular shape that they might be made as little unsightly as possible"; but only to repent in the next paragraph and contradict Messrs. Buckler flatly with,—"the aisles were vaulted by Trumpington as far as his work extended." This is very likely correct. When the plaster is off the spandrels of the main arcade, and the aisle wall is stripped, so that search can be made after piers and wall ribs,—something positive can be said even by those who are not prophetically minded. Everybody must agree, however, that some imperfect construction in the piers, and the absent vaulting, have done their part well; and that, as a result, we have very shaky work taking care of itself. Iron ties were put above the clearstory years ago, in order to enlist the help of the north wall in restraint of its perverse opposite neighbour. The heads of these,—some of them twisted strangely by the forces thrusting at them,—sprawl like the initials of an illiterate giant along the external cornices. But the whole south wall has insisted on keeping to its own course. A line,—touching the columns just above the floor, lifted upwards, and made to touch the wall above the clearstory windows at the western end of the five bays,—would be some 20 in. north of the middle spandrel and 9 in. to the north at the west wall. There the return wall of the south aisle acts as a buttress for some distance up, and the great end pier serves as a stiffener; but of course the slip of wall at the great west window is cracked severely.

This state of affairs having existed for some time; it was determined, in the autumn of 1875, that ruin might be looked for; and since then the wall has had powerful shores against it. Whole balks of timber act as great arms, reaching out to the aisle and nave walls. It has recently been resolved to attempt to restore the wall to its place, and to keep it there. All arches must be centred, the piers cased and braced together, and the walls shored all round. Screw jacks, under the southern shores, will take up permanently what is gained by right and left handed screws on the ends of iron tiers,—approaching one another inside great screw caps,—dragged round by levers, worked by hand from internal scaffolds. Sawn beds of the masonry, and other devices, may help the recovery of the upright without excessive dislocation. Perhaps to avert the risk of disturbance, through the suddenness and jerkiness of the action of the screws,—the old plan, of intense heat and expansion of the ties, may be adopted at some stages. The wrench on the walls, at the time of the contraction of the already tightened ties, may be spread by nature and art over some length of time. It is said that the contract is after Sir Edmund Beckett's own heart, and that the contractor is to do everything rightly, and make good all damage under all circumstances. Aisle vaulting will, no doubt, follow; and a high-pitched roof to the aisle, containing flying buttresses to strengthen the triforium stage. Buttresses, and other additions to the aisle walls, will give them power to lend a helping hand. Plenty of tying together should follow,—and, it may be, some changes in the forms of the piers in the clearstory and triforium,—in order to bring about "some systematic mode of connexion between the external and internal structures." By means of these passages through main piers,—which cause so much delighted gaping and gushing,—broken lights and bits of sharp shadow are obtained,—at the cost of setting aside reason and propriety, and at the peril of graver matters still. As another instance here,—the thin slab-like faces

* Every one should possess "The Account of the Altars, Monuments, and Tombs existing A.D. 1428 in St. Alban's Abbey" (Langley, St. Alban's, 1873); containing the fifteenth-century documents, Englished and annotated, and made into a fascinating little volume, by Mr. Ridgway Lloyd, one of the Honorary Secretaries of the St. Alban's Architectural and Archæological Society.

* Extreme dimension of piers in Trumpington's west bays of the nave, 6 ft. 3½ in.; size of octagon central portions in them, 4 ft. 3½ in.

of the piers in the clearstory of the presbytery seriously prejudice,—by the meagreness of the edges in the lower lengths,—the internal effect of that really noble design. Sir Gilbert Scott will find that no part of his promised lecture on this cathedral, before the Royal Institute of British architects, will be listened to with more interest than his description of the progress and results of the work in these five bays,—a piece of restoration, that it will tax the audacity of critics to describe as, "destroying the old art and obliterating the history of the country."

Some painstaking bibliographer should put together critical notices of the illustrations and descriptions of St. Alban's, which must by this time form a neat little library. In doing so he might make a page about the principal dimensions of the church. If well investigated, there would be found a curious story.

For instance: the editors of *Carter* (1813) gave the length, from the west door to the high altar, 411 ft., and from thence to the east end of the lady-chapel, 189 ft.,—in all, 600 ft. Clutterbuck and Ellis (Dugdale) naturally followed, and others followed them. As a consequence, these dimensions crop up now in newspapers and guide-books at intervals. Dr. Nicholson (1851) gave measurements "obligingly taken by a friend, an architect, for the purpose of this publication"; among them, the external length, 548 ft. 4 in. Mr. King, in the work before us, keeps in the same line, but, with more precision, states, "The length of St. Alban's, including the buttresses of the western porch, and those of the lady-chapel, is not more than 548 ft." (p. 86). Sir Edmund Beckett, who deserves an allusion in connexion with St. Alban's, not less on account of the practical exposition of his views on elegant Domestic architecture within sight of the Cathedral, than on account of his manifold activities there, has the following in his well-known tables:—

Total length (inside dimension)	532 feet.
Nave, Inside of west wall to east face of west wall of central tower	276 ,,

Let us take a little space, and put on record the true dimensions; making use of the comprehensive and thorough studies of Mr. Neale, which have won him so much honour,—and should win him more when his drawings are really published in the fall of this year:—

ST. ALBAN'S.

(Dimensions taken in the centre of the building: they differ when taken at the north and south walls, from these, and from each other):—

	Ft.	In.
From east face of plinth of buttress of east wall of lady-chapel to west end of buttress of west porch	550	11
Projection of plinth of buttress, lady-chapel		8½
From face of buttress to face of buttress ...	549	6
From east face of buttress of lady-chapel to east face of wall of lady-chapel	7 ft. 0 in.	
From west end of buttress of west porch to west face of porch wall.....	2 11	
	9	11
From east face of east wall of lady-chapel to west face of porch wall	539	6
Thickness of east wall of lady-chapel	4 ft. 1½ in.	
From west face of porch wall to west face of main west wall	10 4	
From west face of main west wall to east face of the jamb of great west window	4 4	
	18	9½
From west face of wall of lady-chapel to east face of jamb of great west window.....	520	8½

Nave.

Thickness of west wall of central tower	7	7
From west face of west wall of central tower to west face of rood-screen	70	1
From west face of rood-screen to east face of jamb of great west window	210	6½
From east face of wall of central tower to east face of jamb of great west window ...	237	8½

The east face of the jamb of west window is carried home to the north and south walls of the nave, so that these internal lengths apply to the apparent size of the space inclosed, for the larger portion of the height. The west porch projects inwards, so that they are not the lengths at the floor-level.

WINCHESTER.

Mr. Colson, the surveyor to the Dean and Chapter of Winchester, has kindly measured the lengths there with much care. We are thus enabled to make with confidence a comparison that has frequently been made on less sure data:—

	Ft.	In.
From plinth of buttress of east wall of lady-chapel to plinth of west porch	557	9
From west face of east wall of lady-chapel to east face of panelling under great west window	530	6

Winchester is the longest English cathedral.

It remains for us to thank the author who has supplied us with our texts; and to mention,—as one of the virtues of this new Handbook,—the fact that 100 pages, however well filled, cannot swell out covers beyond an elegant slimness, which suits well the book-carrying powers of the ordinary human pocket.

"ARCHITECTURE ET ARCHEOLOGIE."

WHILE the subject of restoration has just received special attention here on its theoretical side, we receive from Paris a pamphlet containing a somewhat curious example of a vexed point in practical restoration. This is the report presented by M. Chas. Lucas to the French Architectural Congress in 1875 (but apparently only now definitely published, according to the easy-going way which our neighbours have of doing these things), on the question of the restoration of the buttresses of the Cathedral at Evreux. There seems to have been a good deal of contention in regard to the matter, which really illustrates rather curiously some of the points raised in a recent discussion at the Institute of Architects in London, as well as in our own comments on the same subject pp. 572-4, *ante*.

The *casus belli* was this:—The Cathedral of Evreux was originally a structure of the thirteenth century, built on the lines, or on the ruins, of one of the preceding century. The vault, not of by any means a wide span, was buttressed by double flying buttresses, one over the other, affording apparently, as far as mass of material was concerned, an adequate resistance to the thrust of the vault. But the vault was thrusting out the walls and the buttresses, nevertheless. In the fifteenth century additional masonry had been planted on to the buttresses, very unscientifically, and with no regard to tying the work into the old masonry; so that the result was rather to make matters worse. It became obviously necessary to do something to save the church from ruin; and M. Viollet-le-Duc drew up a report on this and other matters connected with the building. His statement in regard to the buttresses was, that the failure arose from the lines of the arches not being correctly designed to meet the line of pressure of the vault; and from the upper flying buttress, the larger and more massive of the two, being wrongly placed, not really abutting against the vault at all, but against the wall screening the void between it and the outer roof. It is curious, one may observe in passing, what a completely unscientific and inconsiderate construction on the part of the Mediæval builders all this exhibits. However, the question was, what were the modern architects to do in restoring, or at all events repairing and making safe the structure. According to M. Viollet-le-Duc's recommendations, it was absolutely necessary (and the mere facts of the case show it to have been so) to take down and rebuild the buttresses, which, so far from supporting the vault, were actually drawing it out, and had become the chief source of danger instead of a protection. Now, he argued that there was no use, merely for the sake of restoring what was then there, in building up again a form of buttress which had been so very practically proved to be ineffective; accordingly, M. Darcy, the architect for the restoration, acting, as we gather, on M. Viollet-le-Duc's suggestion, designed a buttress with only one flying arch, springing from the main buttress at about the same point as the lower of the original arches, but meeting the vault at the proper point to take its thrust effectively. The new buttress is, in fact, such as the original builders might probably have made had they been more penetrated with a sense of the statics of construction.

But upon this the objectors among the French architects (and possibly amateurs also) have raised a protest, as against an act of immoral and false restoration. Something has been removed, they say, which was there, and was genuine, however bad and however dilapidated, and something imaginary and of modern invention has been put in its place. Now, even supposing this has been so, it is evident that in such an architectural feature as a buttress the question of statics is the first of all. If the buttress is not doing what it was theoretically intended to do, and the building is suffering in consequence, the first necessity of architecture, sound and scientific construction, is in abeyance, and must be provided for. But it is suggestive to notice what M. Viollet-le-Duc says further in regard to the archæological interest of the buttresses that have been removed. It is, he admits, a dangerous precedent, in restoring an old monument, to take any step in the direction of modifications, under the plea of improvement; but when it is a question of construction, it would be puerile to reproduce a construction obviously vicious. "Besides, even treating the question from this point of view, all the external portions of the cathedral of Evreux have been re-worked so many times, that in regard to the history of art they really have now scarcely any value. The flying buttresses, in particular, possibly have not a single stone of their original material, and there is nothing to prove that even their curvature is the same as that designed by the thirteenth century architect."

"I may add that this irrational badly-built structure, with no correct relation to its object, has a pitiable effect, and that proposed by M. Darcy is, on the contrary, satisfactory both to the reason and to the sight, and will involve no needless expenditure. I propose to the committee to adopt it."

The recommendation of M. Viollet-le-Duc was adopted, and the two states of the buttresses, original and rebuilt, are illustrated by geometrical drawings appended to the publication. One can easily believe that, as he tells us, the alteration has given rise to a great deal of censure, from persons especially who do not know the building; and we must be allowed to add emphasis to the feeling which he certainly expresses, that to make such a radical alteration in an ancient building might be a very dangerous precedent for inconsiderate and innovating restorers. Yet looking at the facts of the case as stated, how can we see any other rational conclusion? To rebuild a constructional feature which had to be altered solely on account of its weakness, in the same form from the conditions of which that very weakness partially arose, would seem, as M. Viollet-le-Duc says, puerile: and when it comes to the question of preserving what exists, he shows that very probably this includes scarcely any of the original work at all. The special case is not of so much interest to us here for its own sake, but it is certainly significant in its application to points which have been raised in England between restorers and anti-restorers recently; and it brings out in a pointed manner the principle that however important archæological considerations, they must yield finally to architectural, that is to say (in this view of the case), to constructional, requirements; and that to work in this spirit is, in fact, to work in the spirit of the Mediæval builders, who get so much reverence from archæologists from a sentimental point of view, yet who were themselves such hard-headed irreverent, practising architects.

HOUSE FOUNDATIONS AND DAIRIES IN LONDON.

MR. SCLATER-BOOTH'S Bill "to consolidate and amend the law relating to public health in the metropolis" has been printed. It consists of 106 clauses, and among its objects are, according to the preamble, the making better provision "for regulating the foundations of buildings and the sanitary arrangements of dairies within the metropolis."

The clauses on these subjects are as follow:—

"68. The Commissioners of Sewers within the city of London, and the Metropolitan Board of Works within the rest of the metropolis, may, with a view to the prevention of injury to health and of nuisance, make bye-laws, providing, with respect to dwelling-houses to be erected after the passing of this Act, that all offensive or unwholesome waste or refuse, and all soil that has been rendered offensive or unwholesome by the deposit thereon of such waste or refuse, or of fœcal matter, shall be removed from the sites of such dwelling-houses, or be rendered harmless before the foundations of any such dwelling-houses are commenced."

"69. The Commissioners of Sewers within the city of London, and the Metropolitan Board of Works within the rest of the metropolis, may, with a view to prevent the spread of disease, make bye-laws with respect to all or any of the following matters (that is to say):—(1) With respect to the water-supply, drainage, and ventilation of dairies and cow-sheds in the occupation of cowkeepers and dairymen; (2) with respect to the cleanliness of milkshops and of any vessels used for receiving or containing milk for sale; (3) with respect to precautions to be taken for protecting milk against infection or contamination; and (4) with respect to the situation and structure of dairies and cowsheds erected and intended to be occupied by cowkeepers or dairymen after the passing of this Act."

THE HOUSEHOLD AT DIFFERENT ERAS.*

THE MIDDLE AGES.

John.—Peace be to France; if France in peace permit
Our just and lineal entrance to our own!
If not, bleed France, and peace ascend to heaven!
Philippe Auguste.—Peace be to England; if that war return
From France to England there to live in peace!
England we love; and for that England's sake
With burthen of our armour here we sweat.—*Shakspeare.*

THE moral ruin which in remote portions of the Western Empire succeeded the fall of Roman power was alleviated to some small degree by the material legacy it left upon the face of the soil. The remnants of an entrenched camp, of a city-wall, of a villa, were successively occupied by the strongest if not the fittest survivor. Outside and between these oases of comparative civilisation, the people, few in numbers, lived in a condition of brutality and barbarism; inside, the class which is now called the people, in a state of absolute dependence or of aggravated slavery. The title to the land was one of right, doubtless, but it was equally one of might. In the countries which now compose France, the germs of Western polity sprang and developed; for the Gallic form of organisation, though barbarous, was still superior, in the opinion of Tacitus, to that of the Germans, and, by inference, to that of the British. Commerce with the home cities of the Empire had long ceased; the strongholds and houses of the Roman colonists were tumbling to pieces, and the country around was depopulated. The pioneers of feudality subscribed to the general law that "they shall take who have the power, and they shall keep who can." In the inevitable confusion the feudal seigneur rose. The strong man who had overcome his weaker neighbours died in possession of the land he had taken, or to which, by right of conquest, he had succeeded. His heirs saw, as far as the eye could reach, territory upon which they hunted; and upon which, from mere force of custom, they claimed the right to hunt, to apportion, and to enfeoff.

It is mere infatuation to suppose that the covered inclosures which at the beginning of the Mediæval era served to house a community of monks, or an army of soldiers, resembled the abbey and the fortress familiar to us from intricate and complicated ruins. Allowing the proper grain of salt to Gibbon's description of a Roman villa in the Theodosian age — albeit founded upon Classical authority, — we may assume that the outlines of the monastic household were traced from ancient precedent; but we cannot possibly assume that before A.D. 900 there were several houses as important as that of St. Gall, or that before A.D. 1000 there were several houses as important as that of Cluny. In like manner, though on the Continent the feudal system had reached a high, if not its highest, stage of advancement before the Conquest of England permitted its introduction to this island, it is not to be supposed that the castle of the seigneur was then an agglomeration of solidly-constructed buildings; nor that the houses of his fiefs or feudatory tenants were more substantial edifices than the trees and the loose stones upon their lands permitted. It was not till after the First Crusade that the castle took the form which in the thirteenth and fourteenth centuries received development and modification without undergoing any radical change. The Château Gaillard, erected by Cœur-de-Lion at the close of the twelfth century was the marvel of that age; but we doubt if Richard's "child of a year" grew in so short a space of time to the perfection which M. Viollet-le-Duc has been pleased to depict in his "Dictionnaire d'Architecture." Furthermore, we do not doubt, but we know, as far as it is possible to know from judgment by analogy and inference, that M. Viollet-le-Duc's picture of a "Chambre de 12e. siècle," in his "Dictionnaire de Mobilier," never formed any part of a fortress, a hall, an abbey, or, indeed, any sort of construction erected in France or England during the twelfth century.† The feudal castle only began at the end of that century to lose the aspect of an intrenched camp. It was only in the thirteenth century that the effect of the three Crusades began to be felt and appreciated in the introduction of carpet-hangings and stuffs of all kinds. It was only towards A.D. 1250 that the covered smoky inclosure within which the household lived in common was divided into apartments. Before then a slight distinction had existed between that part of the Hall reserved to the master, his wife and family, and that part common to all other followers. It consisted of a wooden platform raised a few steps above the earthen floor of the Hall; and this platform was ultimately enclosed by a partition more substantial than Saracenic tapestry had sometimes afforded.

Nor do all the MSS. of the time offer support to the evidence upon which M. Viollet-le-Duc doubtless founds his sketch of domestic privacy and luxury in the thirteenth century. A great deal of light is thrown upon the Mediæval household [A.D. 1228] in the story of the "Châtelain de Coucy."* An incident in it relates to an intrigue carried on between the Châtelain and the Dame de Fayel, a lady who resides with her husband at a short distance from Coucy. The husband, apprised of the affair, does what French husbands still do under similar circumstances. He pretends to go on a journey, and returns suddenly, in the hope of surprising the lovers. But he surprises only the Dame's maid in conversation with the Châtelain at the door of the Hall, while from her chamber the Dame de Fayel, who is ill and abed, hears all that passes. Another time the Châtelain, disguised as a pedlar, arrives at the Hall; the Dame, forewarned of the visit, has sent all her attendants, in fact the whole household, into the fields. Her husband is away, and she is thus alone with her lover; but a storm breaks, the attendants return for shelter, and the pedlar is discovered showing his wares to the Dame, who offers him supper and rest. He, however, is not hungry, only tired, and a bed is prepared for him at a corner of the Hall, in which he lies until supper is finished and the household is asleep, when he picks his way silently to the generous arms of the Dame de Fayel. This record of primitive manners,—we do not mean morals,—in a part of France comprised within the Royal Domain, and among the nobles, may be conveniently opposed to the elegance and refinement with which modern skill and learning have invested the private life of Mediæval France.

In Western Europe the traces of Roman manners were everywhere visible as late as the thirteenth century; on the eastern boundaries of the ancient domination they are still apparent. Without going back to the impenetrable period of fable, King Arthur's Round Table is only the semicircular *triclinium*, or at least two semicircular *triclinia* placed opposite each other. It has been the fashion to depict the knights seated with their legs under it; but they probably reclined upon it. In illuminated MSS. anterior to the thirteenth century, pictures of banquets show men and women lying in Roman fashion upon divans placed often in the open air. In the "Mule sans frain," a knight and the dame who is entertaining him take their places upon a silver-footed divan covered with rich stuffs and adorned with precious stones. The album of Villard de Honnecourt, supposed to be of the thirteenth century, is principally composed of drawings copied from early MSS., and his representations of saints are classical in form and even dress. In the year 1200 some English prisoners, taken by Philippe Auguste, were sent to the castle at Mantes, and it is recorded that Josselin graciously permitted them to lie in front of the table at which he ate. A chair was then the master's seat, or a seat of honour; his kinsmen sat upon forms and stools, and the free dependents of the household lay or squatted on the floor. The use of the garland at festivities continued throughout the Middle Ages. The cost of wreaths of flowers to present to the guests at a wedding formed a considerable item of expense, and it is noted in a French MS. of about A.D. 1400. The freedom of a citizen of London was conferred by placing a garland upon the head. A remnant of ancient manners is perceptible in the Mediæval custom of offering water to the members of the family and the guests in order of precedence before and during a meal. Froissart describes a visit paid by Edward III., during an invasion of Scotland, in 1342, to the castle of the Dame de Salisbury. The king leads the dame, hand in hand, through the Hall into her chamber. Her husband, Salisbury, is a prisoner among the Scots; she is, therefore, head of the household. The order for dinner is given, the tables are set out, the Hall is hung with tapestry. The dame, having seen everything prepared, returns to the king, and in Froissart's words, modernised, says:—"Sire, venez en la salle; les chevaliers vous attendent *pour laver*." The same writer describes an entertainment offered at the Court of France in A.D. 1390 to an embassy from England;* and a similar fashion then prevailed. Dinner at ten or eleven in the morning, and supper about six in the evening, were the two common meals. These were announced by sound of trumpet, just as a bell or gong now summons a household. Before each meal the hands were washed, and after the viands were despatched water was offered a second time. This occurred between the dinner and the dessert, when the cloths or napkins were removed, and the sweets, spices, and wines were introduced.† Ladies not only sat at the board; men and women sat in couples, ate off the same plate, drank from the same cup. In the "Châtelain de Coucy," a lady contrives to place herself next the Châtelain at a banquet, in order to "*manger ensemble*." At the same banquet, the hostess, the Dame de Fayel, sings during the meal, and the whole company join in the refrain. The tables are at length removed; the hostess, taking by the hand the knight and the lady who are nearest to her, begins the dance. But at that time the use of tables, of cloths and napkins, as well as the habit of washing at meals, was necessarily peculiar to the few. That even the Court of Philippe Auguste was rude, and his retinue small,—due, some have urged, to the king's simplicity,—is known from the accounts still preserved of his privy expenses, A.D. 1202-3. Therein it may be seen that the garments of the king and the princes were renewed three times a year, on the Feast of St. Andrew, at Christmas, and on Assumption Day.

We venture to think that of all the many books in France and England, the most valuable treatise upon Mediæval manners, because it is calmly written and trustworthy references are given in it, is due to an English author — the late Hudson Turner.‡ M. Viollet-le-Duc quotes him continually, and enlarges upon each quotation. We take the subjoined plan from Turner's book; and though he drew it from a survey of the foundation walls, which alone existed, it may be regarded as the type of signorial residence—that of the dominant

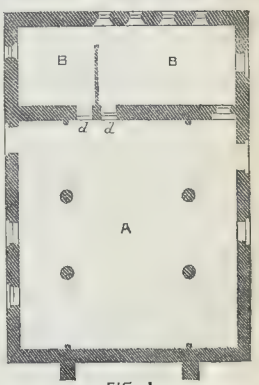


FIG 1

few—during the thirteenth century. A is the common Hall, B B are the chambers. The fact that Turner found a central pier in the doorway, *d d*, doubtless induced him to divide the privy part of the building into two rooms. It is situated in Hampshire, and is popularly known as King John's House. But in that king's time the distinction between A and B B was not

* See p. 488, *ante*.—Cluny.

† M. Viollet-le-Duc, under the head of "Château," says, at page 105 of his Dictionary:—"Il se fit, dans la construction des châteaux, au XIIIe siècle, une révolution notable. Jusqu'alors ces résidences ne consistaient que dans les enceintes plus ou moins étendues, au milieu desquelles s'élevaient le donjon, qui servait de demeure seigneurisle et la salle quelquefois comprise dans le donjon même. Les autres bâtiments n'étaient que *des appentis en bois* séparés les uns des autres, ayant plutôt l'apparence d'un cantonnement que d'une résidence fixe."

* "L'Histoire du Châtelain de Coucy." Crapelet. Paris, 1829.

* "Quand on eut dîné à grand loisir, lavé, et levé les tables et rendu grâces, menestrels de bouche et du bas mestier furent appareillés devant le roi. . . . Comme ils ont d'usage."—Froissart, iv., 18.

† Washing at dinner was absolutely indispensable. The first mention of a fork is said to occur in an inventory of the silver belonging to Charles V., A.D. 1379.

‡ "Some Account of Domestic Architecture in England." By T. Hudson Turner. J. H. Parker, Oxford and London. This book has been extensively quoted by Mr. E. M. Barry, R.A., in his recent lectures at the Royal Academy; but the Professor, in acknowledging the fact, alluded only to Mr. Parker. Mr. Turner died after the publication of the first volume, which, by-the-bye, is the only safe volume to quote. It was Mr. Turner's misfortune, not to die, but to leave his valuable notes in MS. to the editorship of Mr. Parker.

ordinarily maintained in so solid a manner as i shown in fig. 1. The Hall of the twelfth century was simply a covered inclosure, the floor of which resembled that of a modern barn in England, or a modern cellar in Paris. It was strewn with rushes. Dogs, and even horses, entered the Hall; they sometimes lay there, and necessarily in wet weather the surface was soft and muddy. At one end there was a flooring of rough planks, called a daïs; ultimately more than one dais was erected in different parts of the Hall. A daïs was afterwards hung with tapestry, and sometimes covered like a tent,—a fact which has led the word "daïs," in modern French, to signify a canopy, its English signification being the true and original acceptation of the term. A fire was kindled in the centre of the Hall, and the central opening in the roof, which developed into a lantern during the fourteenth and fifteenth centuries, was a necessary ventilator through which the smoke escaped. Doubtless each group of inmates sometimes kindled a fire in different corners. The difficulties encountered by a civilised modern to realise one vast apartment, in which men, women, and children of all conditions and ages are housed in common, is overcome by the slightest acquaintance with hotel-life east of the Red Sea, or, better still, with the unreserve habitual between the sexes in Japan at the present day.

At the beginning of the thirteenth century the Hall differed but slightly from that of the preceding century. It was larger, and was sometimes divided by columns and arches; between them tapestry was suspended, and at different times wood and plaster partitions were erected. It often formed the nucleus around which guests were sheltered in extemporised coverings, or the multitude squatted and encamped. Hudson Turner cites the visit of the Bishop of Laodicea to Henry III., when "an apartment with a chimney of plaster was built for him against one of the towers in Windsor Castle." There is a record also of Henry III. ordering the wood cellar at Clarendon "to be fitted up as a chamber for the knights in attendance on his person." Turner's words are clear enough when he says "The directions for the repairs and additions to royal manor-houses issued by Henry III. prove that no systematic plan was adopted with reference to those buildings. When a large extent of ground was enclosed, forming what was called a court (*curia*), in which the original building was of small extent, it was the custom to enlarge the accommodation as required by the erection from time to time of new edifices as chambers, chapels, kitchens, which in the first instance were dotted here and there within the enclosure. When a number of separate buildings had been thus created, they were gradually connected by covered passages (*aleiæ*) built of wood, sometimes open at the sides, but more frequently made quite weather-proof, so that the queen might walk from her chamber to chapel 'with a dry foot.'"* On the approach of a festival, or of some royal or knightly ceremonial, it was usual to erect "lodges" outside the walls of a large building. Inside, temporary partitions were constructed. At the coronation of Edward I. "all the vacant ground within the enclosure of the Palace of Westminster was entirely covered with houses and other offices." Sheds for cooks, with openings at the top to permit the escape of smoke, were built; places were railed off for the cauldrons and other kitchen utensils. Turner quotes, in support of his description, the records of Master Robert of Beverley, which are so minute that they give the price of the parchment and cords used in the measurement of both the large and the small Halls at Westminster. The agglomeration of "lodges" or huts and booths around a common centre is the origin of the collegiate town and the inn of court.† The Classical or Eastern bazaar, the street or quarter in Mediæval cities devoted to a particular trade, are due to the same cause. The different members of a company or corporation originally dwelt and worked around their Hall or common place of meeting.

In a citizen's will—a deed of A.D. 1326, preserved, in Hudson Turner's time, in the Chapter House at Westminster—occurs a passage descriptive of "two shops which are in front of the stone house. . . . . together with the cellar under the same stone house . . . . with the free light of the same cellar towards the south through the iron-barred window without any obstruction or hindrance of light"—part of a legacy bequeathed by the testator. Shops then often consisted of boards; they were sheds, with perhaps a sleeping-loft over, not unlike the "tabernæ" of Ancient Rome; and sometimes built like them against a substantial erection of brick or stone. In Paris at the time of the visit of Henry III. in A.D. 1254, the houses are said to have been three and even four stories in height; they may have been exceptions occurring in the most frequented quarter of the city. These "three-chambered houses"* of "four stories" or more—if "stationum" may be so translated—so astonished Henry III. and his retinue, that it may be concluded the English cities of the time offered nothing to compare with the size and relative beauty of the French capital. The fact, however, that as late as the fifteenth and sixteenth centuries, even in neighbourhoods abounding with stone and granite, the ordinary citizen's house was principally composed of wood and plaster, implies an equally rare use of stone in similar habitations erected at an earlier date. The few walls of the thirteenth and fourteenth centuries remaining in France and England show that the work was too well and strongly executed to fall hastily in ruin, or to invite destruction. It is more likely that the solid and substantial domestic edifices of the Middle Ages were few in number than that the majority were ruthlessly destroyed at the Reformation, and during the years of transition which preceded it. The diagram we append (fig. 2), is said by M. Viollet-le-Duc to be the type of house peculiar to a part of France in the thirteenth century. Remains of such habitations are said to exist at Avallon, Flavigny, Semur, and at Dijon. M. Viollet-le-Duc has designed a charming elevation† to this plan; it is of stone, and three stories in height, with a steep tiled roof. But we regard it with the deepest suspicion; and though we have seen a two-storied building in a street at Reims which was probably erected in the thirteenth century, we doubt whether it was a private habitation—at least it was not an ordinary one. It is quite impossible to suppose that the household of a burgess—manners being such as they were—could occupy nine rooms, especially in the obscurer parts of the country. We would, however, call attention to the circular stair-turret projecting over the entrance; the position of these stairs is in accordance with classical tradition. Thereby each story forms a distinct house of three rooms; three different households could have occupied the building. At *c* is the common entrance, at *d* the common external descent to the cellar, an arrangement usual in French residences of the fifteenth century. If a separate family inhabited a distinct story, the entrance to each of the two upper stories would be into the room A, which would thus become an ante-chamber or hall leading into the rooms B B on either side of it. In a building so arranged it was perfectly possible to add an extra story for the accommodation of another family without disturbing the autonomy of the other households. We are, however, by no means disposed to doubt that the men who in the thirteenth century built parts of Canterbury and Coutances cathedrals as we can see them now, were unable to construct a private habitation with equal science and propriety. We urge only that in those days the predominant principle of ancient government was only partially obliterated; what the State was in Rome the Community was in Western Europe,—the individual was still comparatively nothing. The diffusion of domestic economy, the advance towards the principle of individuality, progress during the fourteenth century. Froissart h emphasised his description of a "poor" woman dwelling at Bruges, A.D. 1382; and we take that the "poor" woman of Froissart must not b identified with the poor of the present da Bruges was then a rich city with a complete civ administration; the Count of Flanders is flyin through the streets from pursuers who are clo at his heels. He evades them, and enters th first house, the door of which is open. It w not "*hôtel de seigneur, de salles, de chambres,* *de palais.*"* But it was a poor little hous blackened with the smoke of peat burning in i and above was a poor chamber, to which a ladde of seven steps led, where a litter of childre belonging to the poor woman lay asleep. I such a city as Bruges, the houses of the burgesse at the end of the fourteenth century were ur doubtedly commodious, for they were filled wit a numerous household, by no means exclusivel composed of kinsmen; but the division of th house into private apartments was still partia and incomplete.†

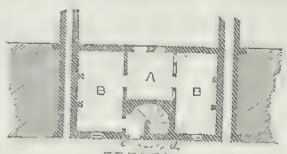


FIG 2

The difficult and obscure subject of feuds tenure need only be mentioned so far as i relates to the rise of the "commune" from th burgh, and the development of the burgess class The seigneur lent his land on lease just as h does now, but his tenants were vassals bound t their lords by indissoluble ties. On terms whic practically deprived the vassal of the right t dispose of his person, a domain was sometime apportioned up to the very walls of the castl which protected it. The vassal, besides doing homage, paid his lord in money and kind; the lease first made for his lifetime was continued i that of his son, grandson, and their heirs. The unsettled character of the times and the probable absence of written documents often left th vassal in absolute possession of the land It was often difficult, in the embarrassment o quantity to define the boundaries betwee separate domains. Stragglers had settled on the confines or on the waste lands; they dwelt in huts which, before the twelfth century, clung parasitically to the walls of an abbey or the slope of what was then little better than a camp In one a community of monks holding vassals male and female, surrounded by armed followers, artisans, and serfs, reigned over the country far and near. In the other a seigneur with a wife and concubines, with kinsmen and dependents, with a warlike clan ready to follow him wherever he chose to lead, governed in absolute fashion as much of the country as he could conveniently subdue. The two forces, distant neighbours, were never permanently hostile; they were always useful to each other. The tact and learning of the monks, the arm and weapon of the seigneur, were mutually indispensable. The seigneur even courted the chiefs of the monastic community; he sometimes gave them land and granted them a charter of privileges. Ultimately the religious house rose within sight of the castle wall. The two crowned a hill beneath which lay clusters of huts spreading slowly along the banks of a river or the beaten track of some main route. Then, only two out of the three estates in the future hierarchy of realms existed; the king at a distance, and with no constantly visible power; the nobility, scattered, suspicious of each other, and individually powerful. From the settlement of stragglers and outsiders, alike dependent upon the fortress and the abbey—upon the ecclesiastical and the military forces, of neither of which they formed part,—the third estate was to spring.

The establishment of the civil community, the rise of the burgess class, has been attributed by historians to political foresight and design. But what are now known as municipal rights were in the beginning privileges obtained by accident and chance. The researches of Augustin Thierry have rendered clear many moot points which before the publication of his "Lettres sur l'Histoire de France" were confused and obscure. A quarrel between a seigneur and an abbot about the homage of vassals was not unfrequent; the question as to whom the inhabitants of the settlement, lying between the abbey and the castle, owed allegiance, was not difficult to raise.

* Vol. i., p. 70, and the whole chapter.

† See FitzStephen's "Description of London," believed to be a work of the latter half of the twelfth century "The followers of the several trades, the vendors of the various commodities, and the labourers of every kind are easy to be found in their proper and distinct places according to their employments." In a description of the Hindus by John Huyghen van Linschoten, who visited Indostan in 1579, there is a similar passage:—"The heathens have a custom that no man may change trade, but must use his father's trade and exercise merely the daughters of the same trade, which is so nearly looked into that they are divided and set apart each occupation by itselfe, as countries and nations are."

* "Et mansiones tricamerales, et quatuor etiam stationum inveni plurimas."

† "Dictionnaire de l'Architecture Française,"—Maison,—p 289.

* Froissart, ii., 17.

† In Hallam's "Middle Ages" (State of Society, ch. ix., pt. ii.), it is said that "several testimonies to the flourishing condition of Flemish manufacturers occur in the twelfth century, and some *might perhaps be founde.en earlier.* A writer of the thirteenth century asserts that all the world was clothed from English wool wrought in Flanders." Such passages are of slight value as contributions to history, even when supported, as Hallam has not supported them, by due reference to authorities.

The insignificance, at first, of these settlers was their best protection from both. Vagabondage perhaps had given most of them freedom; their children were born free. In one instance, they had actually built a bridge of boats across the river; they had established a market for the sale of their produce and of the goods they manufactured; their doings were talked of in abbeys and fortresses many miles away; even the king had been told of them. The mutinous spirit they showed was precipitated rather by ecclesiastical ambition than military intolerance. The inhabitants of the Burgh, afterwards the 'Commune," of Cambrai were long in open war with ecclesiastical authority. They formed a league in their own defence about A.D. 957, and another in 1024; they effected a species of revolution in 1064, and twelve years afterwards they were recognised as an association of burgesses. Disputes with the clergy ending in bloodshed led to the formation of Noyon; and a quarrel with the Abbot of Vezelay, which was espoused by the Count of Nevers, led to the formation of Nevers. While aspiring burgesses invoked, as occasion offered or expediency demanded, the aid of the clerical or the military power, these chronic dissensions turned to the advantage of the Royal prerogative; the king was neither slow to use his opportunity, nor the civil community slow to accept the mediation or protection he was able to offer. A charter, similar to that conceded by the seigneur to a religious community, was demanded by the inhabitants of a burgh. The privileges early granted to a community of monks were confirmed by the Pope; the privileges afterwards granted to a community of citizens were confirmed by the king. More, the king himself conceded similar charters on the due and submissive petition of the burgesses. At the beginning of the twelfth century, the inhabitants of what is now Soissons received their first charter from Louis le Gros; towards the close of the same century the inhabitants of what is now Sens received theirs from Philippe Auguste. The tenor of both betrays the defensive character of the contract. The burgesses swear to give freely, according to their means, aid, and succour to each other; they swear never to allow anything to be taken forcibly from any one of them. In the assertion of independence and the maintenance of their rights, the Flemings appear to have been foremost. It is impossible to read the contemporary writings extant without perceiving that the lead in this revolution,—silent as far as ordinary history is concerned,—was taken by the inhabitants of Northern France and of Belgium.

To that revolution is mainly due the development which, on the Continent during the thirteenth century and in this island during the fourteenth century, marks the course of architecture and its subsidiary arts. The free community of burgesses based the discipline to which they subjected themselves upon the monastic model. A charter had been required to give freedom of organisation to the whole body; different members of it exercising the same calling claimed a charter to confirm their own freedom of organisation. The dependent artificers who at the beginning of the twelfth century pursued their various occupations within the privacy of the cloister, saw and inevitably envied those who, outside, exercised similar pursuits in the enjoyment of comparative liberty. Accustomed to discipline within, they were prepared to renew the same obligations without, the abbey boundary. Hence the trade corporation which, though it may mean monopoly now, meant freedom then. By a fluke of language two words of different origin are identical in practice; the Mediæval "corporation" was neither more nor less than absolute "co-operation." When a household, in the modern acceptation of the word, was the appanage of the few, the trade corporation was, so to speak, a co-operative household. In the thirteenth century some of the trades of Paris were accorded royal charters; in the fourteenth century all demanded them, and each obtained one. In England the charters granted by Edward III. imply that each corporation had existed and enjoyed the right to trade or work from immemorial antiquity. In France the corporations were dedicated to different saints; in London the city companies were placed under the charge of tutelar saints whose names are inscribed in existing charters. The "mystery" of a trade is a corrupt derivation of the word "mestier"—the modern "*métier*"—and a similar term, "*mistert*," was used in Venice during the fifteenth century. The word was carried to India by the Portuguese, and "*mistari*" is there the accepted name for a native master-artificer.

The Book of Estienne Boyleaux,* a work of the thirteenth century, contains the rules of several trade corporations. These rules, to which members of all grades submitted, related to the hours of work, number of apprentices and assistants, and the exemptions of duty which long service allowed. Most of the trades were forbidden to work by candle or torch light. A Parisian goldsmith could only take one "foreign" apprentice, but he might have as many of his own lineage or that of his wife as he chose; and these apprentices were compelled to serve ten years. A Parisian smith was permitted to take as many apprentices and assistants as he pleased. Anybody could be a mason in Paris if he understood the "mystery," and would work according to the usages and customs of the corporation. A mason could take only one apprentice for a term of not less than six years. If he took one for less, a fine had to be paid to the Chapel of St. Blaise,—the patron-saint of masons and carpenters,—unless such apprentices were his sons lawfully begotten. He could take a second apprentice as soon as the first had served five out of the six years. The same rules governed the masons, the stonecutters, the *morteliers*, and the plasterers; except that the masons and the plasterers were bound to take their part in the watch,—a duty from which certain free trades (*mestiers frans*) of the city of Paris were exempt, among others the "*paintres-ymagiers*" and the "*tailleurs de pierre*."

The Mediæval prefix of "free" to a particular trade has induced various hypotheses. In the thirteenth and fourteenth centuries, when slavery—at least servitude or serfdom—was still more or less rife, it had a serious and far from conventional signification. The freemasons—we do not confound the "free and accepted" brotherhood of to-day with the genuine fraternity—were pre-eminently free, for they were errant and gregarious. Gervase of Canterbury, writing in the thirteenth century, describes certain guilds or societies of Frenchmen and Englishmen skilled in works of wood and stone, who travelled from place to place. They probably had their head-quarters in some particular locality, both in France and England; but that they established themselves in lodges around the building upon which they were engaged is certain. The materials for a useful work on the freemasons, existing in the Transactions† of the Royal Institute of British Architects, were collected by Mr. Wyatt Papworth. He, however, came to the conclusion that the title of "free" was given to those who worked in free-stone—a conclusion perhaps tenable, perhaps untenable, from the fact that the mason of the Middle Ages was not specially a stone-cutter. But other trades besides the "mystery" of the masons were called "free." In the first Charter of Incorporation granted in A.D. 1364 by the king in counsel to the London Company of Drapers, there is the following passage:—"Further, that none having cloth to sell in the city or suburbs do sell it in the way of free drapers of the said mystery of drapery." The charter of Edward III. to the London Fishmongers' Company describes the "pessoners *enfranchisez* en lour ley-halmod." In the time of Henry VI. an ordinance of the cloth-workers, relating to apprentices is thus worded:—"None shall put out or lend forth any of his apprentices to work with any other, because it will hinder and take away the living of *free* journeymen."‡ In the fourteenth and fifteenth centuries every man who was not a freeman was described as an alien or a "forraigner" by the citizens of London. The records of the London companies, and of the Paris corporations, disclose the incontrovertible fact that in the Middle Ages, and even after the Reformation, there were bodies of men of different grades, working together in trained and mutual harmony. Their Halls were centres of education, political discipline, and social economy; but each "mystery" was a monopoly which rose, flourished, and decayed. The carcass still remains effete and corpulent; and that unwritten law which forbids mankind to retrace its steps—whereby "revival" of every phase has no endurance—renders its renascence possible only by development in accordance with living thought and actual practice. In modern trade the union of masters or the union of workmen, though each is made for purposes of defence, would in the Middle Ages have been deemed the division of a house against itself. In modern commerce a company, whether founded before or after the crude introduction of "Limited Liability," is undoubtedly co-operation even in the Mediæval sense of the word; but its life, so to speak, depends upon failure or success as a pecuniary speculation. What is now a luxury, often an abuse of commerce, or an amusement of society, was in the childhood of the Western nations a necessity of existence.

We do not pretend to enter upon an inquiry concerning the various forms of household which, with the development of civil communities and the gradual advance to personal and mental freedom, spread over France and England. The English, who before the fourteenth century were eminently inferior to their neighbours in many details of organisation, afterwards surpassed them. Froissart remarks with astonishment that the English seigneurs and rich men, who in A.D. 1360 descended upon the shores of France, carried with them cars, tents, pavilions, mills, baking ovens, as well as forges for their horses' shoes, and all other necessary things. But it would be rash to believe that the state of the middle classes in the time of Froissart, or even fifty years after his death, was such as M. Viollet-le-Duc has described.* He may be right in saying that the home-life of a rich burgess did not then differ materially from the home-life of a noble; but he is certainly deceived in assuming that the MS. upon which he has depended for many of his facts, is a description of contemporary manners written by a practical man—an opinion he shares with Lacroix, the well-known compiler of several fashionable books about the manners and customs of the Middle Ages.

That book, the "Ménagier de Paris," purports to be the advice of an elderly burgess residing in Paris to his young wife at the very close of the fourteenth century. But it bears abundant evidence of having been written by a priest more accustomed to northern cities like Valenciennes or Cambrai than the capital. It is largely founded upon the "Œconomicus" of Xenophon; it expatiates upon the seven virtues, and upon chapters of Genesis in the part devoted to "Être amoureuse de son mari." The burgess invariably addresses his presumed wife as "*chère seur*" or "*belle seur*"; he talks of her "*mary qui sera*" and of him "*qui sera vostre mary*." He qualifies allusion to her husband by "*soit moy ou autre*"; he adds to the household duties she has to perform injunctions relating to her conduct "*au village*," to Robin the shepherd, to the neatherd, the cowman, &c. The MS. is a theoretical and exhaustive treatise upon household management of different kinds, and it was probably regarded at the time by the few who could read as utterly utopian in character and aim. One thing, however, is certain from the descriptions, that although the wife was surrounded with attendants, although the house was large and consisted of many rooms, the windows were not glazed. Cloth or parchment was imperfectly strained upon the wooden frames, and they were closed at night with wooden shutters. The "Ménagier" holds in horror a house ill protected (*maucouverte*) and a smoky hearth. His directions how to treat a chamber infested with fleas, &c., give a lively idea of domestic comfort in those days; and those who have seen a deck-load of pilgrims on their way to or from the Holy Land can thoroughly appreciate the importance of the matter upon which he enlarges. The lady is advised to place her "*blanchet*," a camisole of rough cloth or of coarse flannel,—garment worn over the chemise,—upon the rushes of the room or upon the bed. The fleas will lodge themselves in it; and since their colour is brown or black they will be easily distinguished upon the white camisole and can then be killed. The "Ménagier" is also precise in his instructions concerning a light at night, which is apt to entice gnats and mosquitoes into the room, thereby showing that the idea of window-glass was absent even from his imagination. He calls the house, "*vostre hostel*"; and the housekeeper seems to have been one "*Dame Agnes, la Béguine*,"† whose duty it was to see that the chambermaids cleaned and set in order the hall and entrance early in the morning before the arrival of

* Règlements sur les Arts et Métiers de Paris, rédigés au XIIIe. Siècle.

† Session 1861-62, p. 37.

‡ See Herbert's "History."

* "Dictionnaire du Mobilier Français,"—Vie privée de la Haute Bourgeoisie,—vol. i., p. 403.

† The Béguines are still conspicuously at work in parts of Belgium. They were a community of females, half ecclesiastical, half lay; free to live within or without the cloister, but compelled always to wear their particular dress. In the fourteenth century it seems to have been the custom to employ them as duennas or governesses, and as housekeepers.

visitors. An "hôtel," which partly answers the description given in the "Ménagier de Paris," is shown at fig. 3.* It is, or was, a house† situated

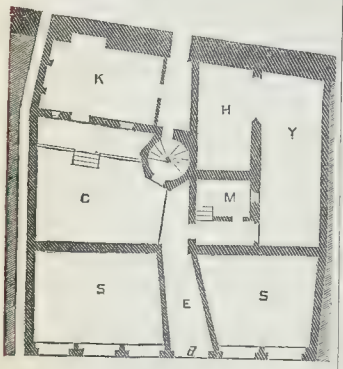


FIG 3

in the Grande Rue at Cordes (Tarn-et-Garonne), and M. Viollet-le-Duc says that it is the work of the fourteenth century. We are inclined to believe it of a later date, about the middle or the close of the fifteenth century. In plan it combines Classical and Mediæval characteristics. The two distinct shops SS and the entrance to the house behind through the long passage E and the door *d*, is Pompeian in arrangement. C is an open court, and K is a hall or kitchen. An enclosed yard open to the sky is at Y; the stores or cellars are at H and M. The shops were probably let separately; for the hall and chamber over them formed part of the private residence, and was totally unconnected with them. It is not unlikely that the burgess who lived in such an hôtel emulated in his household, the manners of his superiors. In the "Ménagier" mention is made of the esquires (*escuyers*), whose service consisted in carving at table, serving the meats, and in offering water to the guests for washing their hands. Thus the title originally belonging to the bearer of a shield (*escu*), which his master—a knight—used, was even then applied to the attendants of a burgess.

Much of the interest attached to the "Ménagier de Paris" is increased by the fact that it describes a time,—and it was probably written at that time,—which preceded the period of transition from the "heavy Sabbath" of the Middle Ages to the morn of modern civilisation. Even during the reign of Charles VII., at the beginning of the fifteenth century, there was a tendency to infringe upon the barriers of distinction which separated class from class. No nation was said to be so irregular as the French. Princes, nobles, burgesses, and tradesmen, were confounded in the general toleration of dress; it was impossible to distinguish a man's state or his calling by the habit he wore. A nobleman absent from Paris did not hesitate to lend his hôtel for a few days or weeks to any one who was able to pay for its hire. The house of a burgess of Paris was too small to hold all the guests invited to a wedding or a family feast; the vacant residence of some distinguished Parisian was hired for the occasion, and the porter in charge was permitted to let it, as well as the furniture it contained. Mention is made in the "Ménagier" of "Postel de Beauvais," for the use of which four francs were paid to the porter, and for the tables, forms, trestles, and such like things another four francs. This was for the celebration of a marriage feast, which lasted several days, a custom still frequent in the country districts of France. All the friends of the happy couple remain to keep them in countenance, jollity, and health. On the day itself the nuptial couch received ecclesiastical benediction,—a remnant of antique manners. In an illuminated MS. of the time a priest is depicted blessing a bed on which the Count of Artois and his newly-married spouse are already reclining. Nor was the fashion of hiring a large vacant house restricted to immediate neighbours, or to the inhabitants of the town. Foreigners and strangers announced their arrival by couriers, who solicited permission to use the hôtels of noblemen and probably of the richer burgesses. Hence, it may be assumed, the double application of the word "hôtel," which, in France, means both an hostelry and a nobleman's or a gentleman's private house. The same probability applies to the English word "inn," which meant originally a private house. After the fashion of hiring parts of a vacant dwelling obtained, the owners of certain houses profited commercially by their absence from home; their inns became places of public resort and entertainment. A stranger of distinction thus lodged,—billeted as his attendants sometimes were in the houses of the citizens,—would cause his standard to be hung from a window, a custom still prevalent in India and other Eastern countries, and recently practised by dusky potentates both in Paris and London.

* Scale of plans, 32nd of an inch to a foot.

† "Dictionnaire de l'Architecture Française,"—Maison, —p. 276.

"ROBA DI ROMA": THE CASTLE OF ST. ANGELO.

MOST of our readers know Mr. W. W. Story's pleasant discursive book upon the precincts and remains of the Eternal City, under the half-sarcastic title of "Roba di Roma." The present work* is a kind of supplement to that book, consisting of two distinct and unconnected essays, each running through a series of chapters: the first being a sketch of the history of the Castle of St. Angelo; the second, an account of the various forms of the superstition in regard to "the evil eye," or the supposed power of some persons to exercise a pernicious influence, willingly or unwillingly, upon others, by their mere look or presence, or address. In this latter essay is a good deal of really curious information on a very curious superstition, which is of very old date, and of great extent and influence. We can hardly, however, see its connexion with the general title of "Roba di Roma," as it is by no means specially a Roman, or even an Italian superstition, and it would perhaps almost have been better to have made separate publications of the two essays, as they hardly appeal to the interests of the same class of readers, except in the case of the comparatively few to whom all knowledge of any kind in regard to human history and customs is interesting.

However, the larger, and certainly more important portion of the volume, and that which more immediately concerns us, is the history of the Castle of St. Angelo. Much of the history would probably be new to more readers than might be at first supposed in regard to a building the name of which is in everybody's mouth. It is not improbable that a good many of those who frequently hear the name, and who are familiar with the appearance of the great shapeless pile, have only a very uncertain idea of its origin and history, or of the stages by which it came into its present state. They will find this put before them in an interesting and picturesque manner in Mr. Story's pages.

The aim of the author is to convey briefly an idea of the social and political changes with which the building has been connected, while touching at the same time on its architectural peculiarities and vicissitudes. And a strange, and in some respects rather awful, history it is. Those who go to see the annual display of fireworks from its ramparts (an incident which, by the way, has furnished Lord Houghton with matter for one of his finished and thoughtful sonnets) seldom reflect, probably, what scenes this ancient structure, now made the opportunity for such an innocent festival display, has witnessed; with what repeated dark scenes of violence and rapine, and revenge, it has been connected; nor, again, how different from its Mediæval associations and form were those of its commencement. Originating in the pride of the Roman emperor who desired a grand and sumptuous tomb, perhaps to rival that of Halicarnassus,—"This massive mausoleum, by turns a tomb and a fortress, a prison and a palace, a chapel and a treasure-chamber; now threatening the liberty of Rome, now defending its very existence; now the refuge of the Republic, now the hiding-place of Popes; through war and peace, from the Imperial days of Rome, through all the Gothic and Mediæval epochs down to the present hour,—has never ceased to be a living part of the history of Rome. Fully to write the history of this tomb and fortress would be to write the history of Rome."

Of the circumstances attending the original foundation and designing of the mausoleum by Hadrian in the second century the records s almost absolutely nothing, except in regard the mere statement as to its authorship. Story can cite only two statements from Sp tian and Dion Cassius, which simply amount saying that Hadrian built the bridge a sepulchre called by his name; and the fi account of its appearance is by Procopius the sixth century, but he also is very general his terms, speaking vaguely of "admirat statues of men and horses on the summit"; a further testimony at different periods seems establish the fact that the structure was te minated by a colossal chariot and horses, whi again seems to connect it closely with the Ha carnassian structure as its model.

What we can know about its original extern appearance and its construction amounts to th that it had a square base or podium about 340 each way, and 75 ft. high, and upon this circular tower somewhat over 230 ft. in diamete divided into two or three stories, and ornament with columns; between which columns we statues executed by the ablest artists of t period; and above the circular tower Mr. Sto supposes a probable dome, crowned by a colossa group of Hadrian in a chariot drawn by fo horses. There is another theory, favoured b the existence of the bronze *pigna* or cone now the Vatican gardens, and dug up near t mausoleum, which has been supposed to ha been the finial of the roof, which in that ca could not have carried a chariot and horse Mr. Story seems to favour this cone restoratio in his illustration (as a vignette) of the restor tion of the monument; while in the text h mentions plainly, and rather emphasises the fac that the chariot and horses are clearly describe by at least two writers who must have ha evidence which we have not. A colossal chario and horses, we may observe, can hardly b thought of as standing conveniently or suitabl on a dome; and probably we may take it th this theory of the dome would have to b modified considerably to acquire probability s to detail.

We must refer the reader to Mr. Story's page for the account of some of the more strikin phases in political and social history in which th Castle of St. Angelo played a part. The epoch of its architectural history are less prominentl dwelt upon by the author, and in regard to som of them there are but few data for the historia to go upon. The original construction was c brickwork and peperino stone, cased with marbl within and without. The marble has bee removed at various periods: the outer portio probably at a comparatively early date, the inne casing may be presumed to have been existing or partially existing, in the fourteenth century from the decree of Boniface IX. against th removal of "marmora saxa" from the building Thus the external splendour of its appearanc must have been early lost, and the appearanc of the mass in modern times, with scarcely trace of the original decorative treatment, an covered by the straggling masses of Mediæva fortification which tower ominously above th remains of the Roman builders' circular structure may excuse a poet who knew so little of archi tecture as Byron for not recognising its rea character. Mr. Story quotes his certainly very misleading language from "Childe Harold," in which he describes Hadrian as the

> "Imperial mimic of old Egypt's piles,
> Colossal copyist of deformity,"—

and asks whether Byron can possibly have mis taken the pyramid of Caius Sestius for the mole of Hadrian? But this is not likely. Byron considered the building as having the same object with the pyramids, the provision of a great royal sepulchre, and would not probably trouble himself to consider too curiously the difference of structure in the now somewhat shapeless mass. The destruction of the numerous statues with which the building was adorned has been ascribed to the time when, in the middle of the sixth century, the Goths attacked the place, already apparently used as a fortress, and the Roman defenders pushed the heavy marble statues upon the assailants endeavouring to ascend the walls; successfully in a strategical point of view, but ruinously as regards art. "Where the statues fell they were allowed to remain. None even of the fragments were ever replaced, or even rescued from the spot where they lay, until, centuries after, when the ditch was cleared in the time of Urban VIII., the Barberini Faun, now at Munich, was accidentally discovered and unearthed,—the sole representa-

* Castle of St. Angelo, and "The Evil Eye"; being additional chapters to "Roba di Roma." By William W. Story. London: Chapman & Hall, 1877.

ive of all that noble company that once adorned he massive mole."

The building took its Mediæval or Christian ame when Boniface IX. erected a chapel to t. Michael on the summit of the remains of the ncient building, in commemoration of the appa- ition of St. Michael to Pope Gregory the Great, s he was passing before the mausoleum in a me of pestilence, when this apparition was aken as a sign of the withdrawal of the ourge. The chapel was dedicated to "St. ngelo in Nubes," and hence the now well- nown name which connects the monument f imperial ambition with the history of Iediæval superstition. It is to be noticed, how- ver, that Mr. Story nowhere says a single word, s far as we can discover, about the date and rigin of the colossal statue of St. Michael, hich is so conspicuous an object on the building, hough he almost commences his volume by rawing particular attention to the grand effect this statue. A great deal of fortification as added by Boniface VIII.; but most of this ust have disappeared or been altered, as Mr. tory mentions a drawing by Sangallo, made ont 1465, in which the buildings have little semblance to their present appearance. lexander VI. (Borgia) was one of the alterers nd renovators of the works, after an explosion hich destroyed a great deal of the fortification, nd he also completed the passage leading to the atican. The records of these various changes, hen put together thus in one essay, convey a sson as to the mutability of buildings which and through many centuries, and suggest how utious we should be in such cases in coming any certain conclusion as to how much of the iginal structure we really have before us.

STOCKTON-ON-TEES.

HAVING its origin involved in obscurity, Stock- n yet dates back its history for centuries, and e of the most plausible of the conjectures in lation to its early history is that it belonged, out the days of the Conquest, to one of the rman barons, who gave the manor-house to the e of Durham; for in that manor-house, for long, e early bishops of Durham lived in lordly ate, and nearly six centuries ago it was rebuilt Bishop Kellow. The manor-house is sup- sed to have been fortified, and to have acquired e name of a castle, the degenerate remains of hich have not long been removed. Its in- rporation also is of doubtful date, but it extends ck over five centuries. The town had its fairs, artered by the bishops; it had its parks and sture-grounds; and it built, on some scale or ner, a ship, but from that day down to those the restoration its trade fell, and it declined in portance. In 1660 it had, according to its nals, become so "poor a place" that the best use in it could hardly boast of anything better an clay walls and a thatched roof, and the ole town only contained one hundred and enty houses, none of them built of brick, and ny years after this even the Mayor resided in ouse with a thatched roof." It began to vend ls from the port, but the rate was one of ten aldrons yearly; its castle was made untenable; d its manor sold for the use of Parliament, d decay seemed to begin to set its effacing gers on the town—one of its chief claims remembrance during the seventeenth century ng the persecutions it had to endure, and ich were passively protested against and mly recorded in Besse's "Records of Suffer- rs." When, however, the eighteenth century d commenced, there were some signs of revival life in the old town: a meeting-house was ilt for Dissenters, the old parish church was mmenced and more slowly finished, the Cor- ration ordered the paving of the streets, and erwards the building of a town-hall; and ship- lding began to take root, and there were several all additions to the industries of the town.

From the middle of the eighteenth century, progress of the town became more rapid and re settled; and thus the population began to rease, and its trade to feel the impulse which ter approaches to the town gave. Its position a navigable river attracted to it shipments, wide and fertile district around it began to ke it their market, and thus its trading foun- ions were based. Shipping companies were med; the tortuous and winding route on the er Tees to the sea was straightened by the mation of successive "cuts"; the coal export de commenced in earnest, and around it grew er older trades, which received with it an added impetus from the opening of the primal railway that was the outcome of the many schemes for connecting the eastern and western parts of the county of Durham. The opening of the primal line gave to Stockton the assurance of trade, which has continued and been extended during the half-century that has since elapsed. Before that date, although it was the only sea- port between Hartlepool and Whitby, it was a port owning only some sixty vessels, employed largely as goods carriers between the Tees and London,—more especially carrying lead, cheese, and other goods to the Thames; but though its population had grown from the five hundred of the seventeenth century, it was still very little above five thousand. After that opening, her trade underwent a change. The coal export trade grew to large dimensions, until the com- mencement of shipments nearer the mouth of the Tees, and the opening of docks first at Hartle- pool, and then at West Hartlepool, robbed Stockton of a large part of the export of coal, and thus caused her trade therein to dwindle until it has now become insignificant in com- parison with those of the ports named, or even in comparison with its own former extent. There has been, however, a growth of manufactories more than counterbalancing the loss, for the two small canvas factories and the two iron foundries which were once the only representatives of the manufacturing interest have been succeeded by a motley group of more varied and much more extensive character. The potteries which were commenced about the time of the opening of the railway have grown slowly, as have the bottle works; the engine-shops have been greatly enlarged; but though the ancient wooden ship- building yards are closed, their place is more than filled by others of the iron order, and the exten- sive ironworks which have been planted in and around the town within the last twenty years have totally changed the nature of the chief trade of the town.

Very soon after the "commercial discovery" of the Cleveland ironstone, iron shipbuilding was commenced on the Tees at Stockton, on a much more limited scale than is now known; for the two establishments which now exist at Stockton build, together, yearly, about sixteen iron vessels, of a gross tonnage approaching 19,000 tons, and requiring engines to the amount of possibly 1,200-horse power. Shortly after the opening of the first shipyard, the first blast- furnaces were established, in 1854. To these, later, and on the Yorkshire side of the river, have been added the Thornaby and Tees Bridge furnaces; and there have been large finishing ironworks also erected, in the North Yorkshire, the Rail Mill, the Malleable Ironworks, the West Stockton, and one or two smaller; so that, in addition to the blast-furnaces, the ironworks must be represented by nearly 300 puddling- furnaces, with the necessary mills. There are extensive engineering works, and a few smaller works such as forges, and the nut and bolt making industry has been planted, but it has not as yet attained large dimensions. The iron trade in Stockton has not known to the full the vicissitudes that it has in other parts of the north-eastern ironmaking district, probably be- cause it is more diversified in its nature, and depended less exclusively on the rail trade, which in the North seems almost to have col- lapsed. The plate-mills naturally feel the benefit of having two large shipyards close to them, and also must be beneficially affected by the adjacent engine works; and thus even in the deepest days of the depression, the works at Stockton have continued on in,—if not the even tenor of their way, at least without an entire stoppage of any works of great magnitude. It may indi- cate in some degree the extent and the growth of the town if it be added that at the present time its make of gas increases over last year at the rate of two million feet monthly; that one of the sets of works alone consumes fifty million gallons of water; that in its Union are included 37,897 acres, and a population approaching 36,000; that its paupers number a thousand; and that its death-rate is often an excessive one.

One of the conditions attaching to its recent growth has been the development of the ancient and adjacent village of Norton, and the new manufacturing suburb of South Stockton, on the opposite bank of the Tees. The latter is a modern offshoot, the growth in population, in size, and in the institutions of which has been tolerably rapid, whilst its manufactures are varied, im- portant, and extensive, although they are far from attaining the importance of those on the opposite side of the Tees. The older town cannot boast of the architectural appearance of its town-hall; its most ancient church dates back not two centuries, and has what the annalist of Stockton calls "a modest appear- ance." Other and later ecclesiastical structures lay claim to more pretensions, and include a costly Roman Catholic chapel, a commodious Congregational one, several for various sects of Methodists, and handsome erections of later date for the Presbyterians, Unitarians, Baptists, and others. Recent architectural additions have been new banks, an ornate exchange, a Free- masons' Hall, and a goodly number of villas, whilst two of the great wants of the town are better railway station accommodation, and some provision of warehouse room. Its Mechanics' Institute has passed its jubilee, and in the probably early future it must give place to the Free Library which has recently been in- augurated.

Owing to the diversified nature of its in- dustries the progress of Stockton has not been so much interrupted of recent years as has been the case with some of its younger neighbours. Its river trade is not so large as it was when it was the chief place of export on the river, but it is tolerably steady. Its iron industries are firmly planted, and as it is at a point between the supplies of fuel, ironstone, and flux, they should extend, the more so as, having these vast and contiguous stores of raw materials close at hand, it has also, from its position, ample facilities for transferring the manufactured goods cheaply to the great highway of commerce, so that it is in the condition necessary for success in the iron manufacture. That position on a broad navigable river has been materially improved by the energy, public spirit, and skill of its River Conservancy, which has expended vast sums in deepening the channel, in straightening its course, and in re- ducing a stream of varying and shallow channels to one deep, if not clear, well-defined by banks of slag, and made navigable for vessels of great burden. Its landward position attracts also to Stockton the agriculturists of a wide district, and causes trades of another class to flourish, whilst its shipyards are the progenitors of the demand for other goods. Based, therefore, on many industries, the future of Stockton seems secure, the more so that its destinies are under the oversight of capable and energetic as well as public-spirited men, who having laid the founda- tions of a diversified trade, now turn their atten- tion to the securing of better sanitary conditions for the ancient town of which they are citizens.

OLD CROSSES OF SOMERSET.

IN the preface to this book,* the author draws attention to the peculiar wealth of the county of Somerset in ancient crosses, as attributable to its having been presumably the seat of the earliest Christianity known in Britain. "To Glastonbury and its traditions we must look for that ecclesiastical influence which pervaded Somerset, and which has left to us a rich heritage in these ancient landmarks of our faith." This may account for the prevalence of early crosses in Somersetshire, but we can hardly, perhaps, take it as a special influence extending as late as the fourteenth and fifteenth centuries. Be that as it may, however, Mr. Pooley shows ample reason for selecting the county for special illustration in this particular, since he mentions and describes no less than 233 crosses. Most of these are illustrated by small woodcuts, and twenty by larger plates; and a map of the county is added marking the positions of each. It is sad to see, in the woodcuts, how many of the crosses are mere relics,—just the base and a fragment of the shaft left; doubtless from for- cible destruction, under the influence, probably, of religious zeal in most cases; though the author mentions the case of one of the crosses which stood within fifty years back at the junction of three roads at Wrington, on the steps of which old people now living can remember sitting, and for the removal of which they give as the reason that it "had become a meeting- place for idle boys, who played on the steps."

The variety and peculiarity of design in some of these crosses becomes noteworthy, when illus- trations of them, however slight, are thus brought together. That at Broomfield, described by the author as an irregular octagon, but which might be better called a square with a large chamfer,

* An Historical and Descriptive Account of the Old Stone Crosses of Somerset. By Charles Pooley, F.S.A., &c. With Map and Plates. London: Longmans, Green, & Co. 1877.

is ornamented with a shaft on each of the chamfered sides, terminating a little below the top of the main shaft in a small finial, which has a peculiar and pretty effect. This cross, no doubt, had a small tabernacle and figures at the top, in the same manner as we find in some others that have the original termination uninjured. In a good many cases these heads or sculptured finials have been found piecemeal, and some of these sculptured fragments are engraved here. Some of them, as for example the remains of the cross at Taunton, are so grotesque in the disproportion and rude character of the figures, that, though one must feel much interest in them historically, it seems odd to find the author indulging so much almost of rhapsody over such remains. Others again, such as those of Bishops Lydeard and Chewton Mendip, are fragments of very beautiful work, the latter especially, where the small figures stand each with a dark shadow behind them, and the cusping of the little arch making a framework for their heads. Some of the larger examples of built-up crosses which no longer stand are illustrated by engravings from drawings made when they were in existence, but which cannot be very much to be depended upon. Such a design as that of Bridgewater Cross (p. 72), with the angle pinnacles looking like gigantic thigh-bones, was certainly never built in the Middle Ages, and the "eccentric gentleman, known as Jack Chubb," who made this and other drawings of old structures in Bridgwater, must have been in a very eccentric humour when he made the drawing from which this is taken. In the case of Shepton Mallet Cross, also, the drawing cannot be a correct representation of the detail. Some of these views also are by no means in correct perspective, a matter which might very well have been set right. The stumbling-block seems to be in these cases the base of the centre part of the erection, seen through the surrounding arches, which is nearly always canted up too much, not sufficiently horizontal in perspective. This spoils the view of the former High Cross at Wells, otherwise a much more correct and probable illustration than the others we have mentioned: and in some cases the inaccuracy in this respect is still greater.

Indeed, we may say that this book rather shows, like a good many other very pretty and useful publications of this class, the need of the hand of the architect or draughtsman along with that of the archæologist. With a little more knowledge and attention in regard to drawing and details, the illustrations might have been made much more correct and characteristic with no more expense. Taken as it is, however, it is a very pretty book, and the information given is full and well put together.

DODONA.

THE ancient world is coming again to light. While Olympia is yielding up its treasures, and Delos is being again explored by French *savants*, the oldest nucleus of Hellenic ruins, sacred Dodona, the seat of the most ancient oracle in Greece, does not remain in darkness. For some years, M. Konstantinos Karapanos has been carrying on explorations in the valley of Tsarakobitza, where the town of Passaron has hitherto been placed, south-west of Joannina, which not only decide the topographical question, but have likewise resulted in bringing to light a number of very important antiquities. A preliminary report is published in the *Bulletin de l'École d'Athènes*, from which we obtain the chief part of the following information.

In the neighbourhood of the valley rich in springs, closed towards the south-west by the Olytzika (the ancient Tomaros), the peak of which dominates the surrounding mountains, a hill projects, crowned by a triple group of ruins. At the top are the ruins of a small town, the plan of which forms half a semicircle. The line connecting the corners jutting out towards the north and south is 1,067 ft. long, and is closed by a wall with seven towers. A gate, 13 ft. wide, forms the entrance between two gates.

South-west from the town is the theatre, built into the slope of the hill, with two well-constructed set-offs, one of the largest and best preserved theatres of European Greece, with which we have already become familiar by the description Mr. Martin Leake gives of it.

East from the theatre, south-east of the town, was situated the sanctuary. We notice at the foot of the hill a court of a temple 656 ft. long by 295 ft. wide. It enclosed the temple of Zeus, 131 ft. long, which, changed later into a church, still shows the tripartite division. Many old dedicatory offerings have been found. Two square buildings in the temple-court may also be recognised.

Lower down, in a south-eastern direction, lies a second inclosure, surrounded by old foundation-walls, 361 ft. long and 345 ft. broad, with several double rows of pedestals, which have supported offerings. They formed sacred ways to single sanctuaries. One was a temple of Aphrodite, as shown by the inscription on a metal wheel dedicated to her. The circular altar is still preserved. Outside of the great temple inclosure may be made out the foundation-walls of a building 472 ft. long by a breadth of 44 ft.

It will only be possible to judge of these buildings when fuller details are to hand. In the meantime, a great number of antiquities have been exposed; images of deities and reliefs of bronze; twenty-four vessels of pottery ware, with dedicatory inscriptions to Zeus Naïos, Dione, and Aphrodite; a number of bronze tablets with dedications, grants of honorary privileges and records of emancipation; over eighty leaden tablets, with questions and vows addressed to the sanctuary, also some with answers of the Oracle. Sometimes, three or four inscriptions of entirely different dates are contained on the same tablet. The contents of the tablets are said to present great difficulties in deciphering them. It seems as if we have to deal here with the remains of the archives of the Oracle. Finally, a number of utensils of all descriptions, of ornaments, arms, tools, &c., have been found. A publication on the discoveries at Dodona is being prepared in Paris, which is looked forward to with great interest.

A longer and especially curious inscription has already been published by the French Academician, M. Egger, in the *Bulletin de l'École d'Athènes*. On a bronze tablet is written, in characters belonging to the third century B.C., "Zeus, ruler of Dodona! I send this present to thee, I, Agathon, son of Echephylos, and my tribe, we, the guests of the Molossi, and their allies, descendants, in the thirtieth generation, of the Trojan Kassandra, living in Zakynthos." Assuming a computation of time agreeing nearly with that of Herodotus, this dedication, if we deduct 996 (= thirty generations) from 1270, would date from the year 280 B.C. Calculation by generations, from which the whole chronology of the Greeks has sprung, was practised especially at the sanctuaries, the oldest centres of historical information, and there must have existed a tradition, recognised at Dodona, with respect to Kassandra to which Agathon refers.

We shall yet learn a great deal from the antiquities of Dodona respecting the history of its temple and oracle. The Athenians also never relinquished their connexion with the original seat of the Greek prophetess. They addressed themselves to her if they did not trust Pythia, whose answers were generally laconic. A bronze tablet, now in the Aquarium of the Berlin Museum, points out a dedicatory gift at Dodona as having been founded of Peloponnesian booty. The expedition to Sicily was ascribed to a misunderstood oracle of Dodona; and in Demosthenes' time, the sayings of that oracle are repeatedly mentioned. Dodona flourished again under the Molossi, who showed the same preference for Dodona as the Macedonians for Delphi. The old sanctuary was finally overtaken by a catastrophe about the same time that Delphi rose to new splendour after the invasion by the Gauls, when the Ætolians destroyed the former in the war between King Philip of Macedonia and the Ætolian allies. Dorimanchos burnt the porticoes, destroyed the dedicatory offerings, and pulled down the sacred edifice (219 B.C.). What has remained of that destruction is now being brought to light by the laudable exertions of M. Karapanos.

Another Wallace Monument for Scotland.—A Scottish paper says that by the death of an elderly lady at Aberdeen, upwards of 4,000*l.*, bequeathed by Mr. John Steill, of Edinburgh, has been set free for the purpose of erecting a colossal bronze statue of Sir William Wallace. Mr. Steill, by disposition, directs that the statue is to represent William Wallace returning his defiant answer to the English ambassadors before the battle of Stirling Bridge. Instructions are given as to the form the memorial will take. A fee of 50 guineas is left for the architect whose design is accepted. The statue is to be erected at Aberdeen.

CHARLOTTE CORDAY AND THE BOULEVARD ST. GERMAIN.

AMONG the many famous incidents of t history of modern times, there is probably no which possesses a more vivid interest in t minds of most of us than the story of Charlo Corday's assassination of the sanguinary Mar The story, indeed, has become one of the leger of French history, and which has had a pecul fascination with all modern readers, some beli ing Charlotte Corday to have been a frightfu Republican murderess, and others investing with all the interesting romance of an enth siastic Royalist, and the uninformed regard her with the same kind of imperfect knowle that the world possesses respecting the "Cen

It is not until this moment that Parisi have been suddenly reminded that the house which Marat resided, and where Charlo Corday assassinated him on the 13th of Ju 1793 (for which she was executed two d later), is actually one of those that many them have passed every day of their lives, s within the last week or so a written announ ment has been placed on the door of the *po cochère* of the house, to the effect that the ro in which Marat was assassinated can be seen the public for the small charge of a franc, funds to be distributed in charity. The p vincials have flocked to the Rue de l'École Médecine, and among other distinguished individuals his Imperial Highness the Emperor Brazil, whose love of old Paris is only equal by his esteem for modern science.

The old house in the Rue de l'École Médecine (No. 20) which in a very few d will be levelled with the ground, was one of th substantially-built Parisian residences of latter days of Louis XIV.'s reign with familiar *porte-cochère* and small court, out which ran an open stone staircase ascending a very gradual slope, and, passing the *entre* reached the first floor, on which was pla Marat's apartment looking on to the court. this part of the house there appears to have b little or no change during the present century

In the valuable records and illustrations c nected with the history of Paris that Musée Carnavalet possesses, notwithstand the terrible destruction of the collection in fire of the Hôtel de Ville in 1871, the folios c tain several interesting etchings and ot artistic representations of this house, all mains of which will rapidly disappear, w its terrible associations, and will be al marked in the memory of the antiquary by corner house (No. 29) which stood exactly posite Marat's, and which, though of a m earlier period (as we can see by the fourte paned window-sashes) seems likely to escape ruthless march of improvements.

But with all its recollections, we cannot aff to feel any great sentiment at the loss of house where Marat was killed, although certainly possessed artistic merits such as ne appears absent from the productions of p days. It is impossible not to feel on visit this exceedingly interesting portion of Paris, s rounding the Boulevard Saint Germain, t there appears an unnecessary destruction of old work that can never be equalled or replac Still, so exceedingly well considered was architecture of the seventeenth century, in t portion of Paris, that let the improvers do w they may, it will yet be centuries before all t is old will cease to assert itself.

Much of the beauty of the outline of Germain des Près that has been lost by repea restoration peeps out notwithstanding, now, h pily, the church is better seen than it has b for years (in the seventeenth century it quite in the fields, as we see it represented in etchings of Sebastien Leclerc and others).

Within but a few steps of Marat's house e exists the Cour de Commerce, which, in antique picturesqueness, reminding one of old 'Change-alley of the South Sea Bub seems a worthy home for the revolutionary tr tions which lurk in its mysterious corners. Th dwelt Danton, one of the great movers of t awful page of history, along with many anot *conventionnel* whose heads fell before the blo struggle was over.

Within a stone's throw, again, of Mar house, is the Rue de l'ancienne Comédie, wh still remain some relics,—dear to the dram antiquary,—of the old French theatre of seventeenth and eighteenth centuries; not off, in the Rue de l'École de Médecine, is famous Musée Dupuytren established, in the

existing remains of the convent of the Cordeliers (during the Revolution, it was in this building that met the terrible "Club des Cordeliers"); above the houses may be seen towering the dome of the Classic Sorbonne, and within but a short distance, the Musée de Cluny, with its Roman remains, its fifteenth-century architecture, and its priceless contents.

Happily, the genius of improvement will never demand the demolition of these monuments of the past, but, if there is any excuse in such a subject, suggesting the recollection of anything funny, we are irresistibly reminded of John Leech's inimitable picture of the two butcher-boys, one of whom deplores, on hearing of the disappearance of Smithfield, that "all the old institutions are being bowled down."

ONE VIEW OF THE MANAGEMENT OF INDIA.*

SIR,—Under the above title you have printed two articles containing a great deal of information and many points of interest, which cannot fail to be useful to young men about to proceed to India, or preparing to pass an examination for that purpose. At this time some little extraordinary attention is usually given to Indian engineering matters, because the distribution of prizes at Coopers Hill College takes place at the beginning of next month, when my Lord Salisbury makes a speech, the *Times* has a leading article thereon, and the covenanted engineer is described by sanguine writers rather as the pioneer of progress he ought to be, than as the forlorn hope of Western civilisation he has been, and still is, in the East. The atmosphere of poetry which used to obscure the home knowledge of Indian affairs has been lately thickened by the appointment of a poet to the post of Viceroy,—and "post" is a strange word to use for power more despotic than that now wielded by any Christian sovereign, even the Emperor of Russia. The recent visit of the Prince of Wales, and the proceedings,—monstrous as Lord Lytton made them,—of the Delhi Proclamation, have increased the fog. The poetry and sentiment engendered in the minds of both old and young men by the perusal of descriptions, written in the seventeenth and eighteenth centuries, of the "Portuguese" Indies, the "French" Indies, and the "English" Indies, form, however, like the lover's staff, a defence against despairing thoughts; because, terrible as the disappointment always is on landing at either Calcutta, Madras, or Bombay, a man with anything in him is sure to perceive, after a short residence in the country, and perhaps a visit to Agra or Delhi,—over a thousand odd miles of hideous country, be it remembered,—the grandeur of the task taken in hand by the English Government. In a hundred years and a little more our countrymen have done a great work in India; but you, sir, who read history with critical acuteness, will admit how small is the work that can be accomplished in a century. Writers of architecture talk about the style of house peculiar to a particular nation in the thirteenth and fourteenth centuries, and they seem to be not unaware of the incongruous margin of possibilities which they leave; the study of past ages also makes perfectly clear the fact that change and progress, to be lasting, are very slowly effected, and result not alone from the labours of the few, but from combined efforts of the many. While this change and this progress are ripening, there is a sturdy opposition to both by the very individuals who,—or whose successors,—will be most benefited by them. There was surely a time not very far distant, when in England many excellent people dreaded the possible expansion of commerce, the popularising of the arts and of science. Were not "city people" once despised, and was not connexion with trade once voted "low"? I have even read of great literary men—not their minds, however—cabined in miserable hovels, and contemned by rich and poor; of painters whom all the English world kept at their proper distance. It cannot, therefore, be deemed extraordinary that the system by which India is what it is should be opposed to the spread of commerce, art, and science. An empire does not choose to be confounded with a colony, and the men who made it hate your settler,—the tea-planter, the indigo-planter, the speculating land-owner, the iron and coal-miner, the quarryman, the mere colonist, so to speak, whose presence unsettles the natives accustomed to a form of administration which has existed for centuries, and the traditions of which it is the English civilian's labour to continue unaltered, and perhaps unimproved. Nothing annoys your Indian civil servant more than intrusion in his concerns, which are vast, or upon any part of the land he rules, which is extended; and in spite of all that may be said to the contrary, the civil engineer, covenanted or uncovenanted by a despotic Government, is absolutely an intruder everywhere in India, except perhaps in the three capital cities.

No man ought to write, or even to talk publicly, about India, unless he have been there; and not only as a traveller, but as a worker, in at least some capacity, no matter how humble, of the administration. No man, I am fain to believe, has ever been able to recall to his mind what were the unspoken thoughts he harboured of the country before he set foot in it. The very circumstances attendant upon the careers of Clive and Warren Hastings prevent, even at this date, a dispassionate review of actualities in what to them was really "the Great Mogul's country." Let me take a few words from Lord Macaulay:—"As to Clive," he says, and he had been in office in Calcutta, "there was no limit to his acquisitions, but his own moderation. The treasury of Bengal was thrown open to him. There were piled up, after the usage of Indian princes, immense masses of coin, among which might not seldom be detected the florins and byzants with which, before any European ship had turned the Cape of Good Hope, the Venetians purchased the stuffs and spices of the East. Clive walked between heaps of gold and silver, crowned with rubies and diamonds, and was at liberty to help himself. He accepted between two and three hundred thousand pounds." Clive's name and that of Warren Hastings were infamous in the opinion of Englishmen of their time, but it was because they did their duty,—that is to say, they followed the orders of their masters at home. "Make money," said the directors in Leadenhall-street, "honestly if you can, but make money. You may keep a little for yourselves, provided only you send home a great deal for us." That money was made by oppression, falsehood, and murder, —Oriental vices of Government,—and though the directors and shareholders of the East India Company pocketed the former, and bequeathed it to those who are now enjoying it, the general honesty of England revolted against the latter. Things are changed now; the people enjoy a larger share in the voice of the nation than they did in those days, and though the Government of this country still ask for money from India, they are compelled to add,—"make it honestly, or we shall not be allowed to accept it."

The shibboleth of the moderns is, "Does this or that thing pay?" Progress is deemed Utopian unless it can be proved ready to "pay"; and in these days of "limited liability" commerce, to "pay" means a heavy and exorbitant rate of interest. True, there are grand and inconsistent exceptions. The carriage of an incomplete and untried monster gun from one part of the river Medway to another costs 1,000*l.*; and the people pay it without hardly a press murmur. The salary of the civil servants in India forms together an enormous total; the army of occupation costs almost twice as much as a similar army at home; even the worn-out ships which do service in Indian waters can hardly be said to return a decent percentage for the money expended or for the work they have to do. The answer that India herself remunerates England for these items of outlay is ostensibly true, and that answer can be made to apply to the conclusion of my argument. I maintain that the nation never stops to inquire whether the civil and military services of India return sufficient for the money they cost; but that when out of revenues of 48,000,000*l.* a ludicrously small amount is spent upon civil public works, the nation does fumble in its pockets, and it does inquire anxiously if Indian engineering "pay," and if the works of the Indian civil engineers be worth the money expended upon them?

Since I traversed a part of the peninsula, and inhabited its capital and other cities, I have always believed that India to-day and Western Europe of the thirteenth century,—making due allowance for the difference of climate,—possess strange and marked characteristics of identity. Your recent articles confirm this view. The Indian village is a community not dissimilar from the Mediæval burgh; the tenure of land and the return of the tenant in kind to the owner, as well as the nature of some of his obligations, savour of the customs of the Middle Ages. If that really be so, it is surely impolitic to treat India, in the finance of engineering, on exactly the same principles as England is now treated. Suppose Richard I., or Henry III., or Edward III. had hesitated to build or alter bridges, roads, and buildings because of the money they would cost, and the uncertainty of obtaining an adequate return for the outlay. Even at the present hour, when a cathedral or a church requires "restoration," the money for it is usually given, not invested; and though many people,—myself among the number,—believe that that money might be more profitably spent elsewhere, few care to fight the matter out on the question of good or bad investment. I hold that the condition of India precludes the application of any such test as "Will it pay?" to enterprisers of scientific, artistic, or even (and here I confess myself absolutely impracticable) commercial character. India has splendid stone, marble, and minerals concealed beneath her soil, and their enfranchisement would lessen the labour, cheapen the cost, and develop the power of Indian engineering. Are we to wait until some individual finds out that perhaps it may pay him to work a quarry or a mine? Or until the administration of the county shakes off its protectionist proclivities? Or until a commissioner or a collector favours rather than opposes the utilisation of the soil by European skill?

The writer of "One View of the Management of India" says that the empire "turns out not to be a colony or a free country, in any sense of the term, but a military despotism"; that "there is an irritation at the appearance and operations of the engineer"; that "there is little being done even in the large cities"; that the villages in which the natives live in the merest hovels "pursue the even tenour of an immemorial style,—their government, of a mechanical nature, going on like clock-work"; that the administration makes "beautiful canals," and "irrigates with water which the natives will not buy; and that "want of produce, with consequent stagnation in traffic and commerce," is one of the reasons why the majority of engineering works are not so remunerative as they ought to be; yet he adds, "Few branches of the public service of any country are so well equipped in many respects as the Indian Public Works Department."

Now, I know something about that department, and I can confidently declare the Calcutta office to have been, five years ago, inadequately equipped both in a scientific and an artistic sense. By equipment I imply the means of designing and drawing, and the means of carrying out designs, of surveying, and planting buildings. I have known an engineer-architect asked to make a geometrical drawing with a pair of parallel rulers, and I have seen T-squares made at a special Government manufactory so ludicrously clumsy as to escape even a trial of their accuracy. At the same time, the most elaborate equipment would often afford but small assistance to the perplexed, the heated, the often ill-placed functionary, whose duty has to be done without hope of distinction and fear of responsibility. No greater mistake can be made than to suppose that the surroundings necessary to an engineer or an architect in England await him, even in the chief cities of India. Undoubtedly a practitioner ought to be a good draughtsman, a quick inventor, a bold constructor, and an exact estimator; let the European engineer at work in India be all these, but in practice his chief duties will consist of superintendence, organisation, and correspondence with authority. It is more important for him to be a good horseman than a good draughtsman; and better for the power of England, and for his own fame, that he remain blind to petty larceny like a gentleman, than haggle over miserable subcontracts like a cad. Refinement of literary or artistic taste is of no use to him in the present undeveloped state of the country; and as fifty members of the different engineer grades will probably have to do, at some time or other, with any one bridge or building on which he is engaged, superior attainments of the kind, unless they are skilfully concealed, will do him more harm than good. The manners and feelings of a gentleman will assist the Indian civil engineer far more than genius or acquired talent. My impression is, that the Department of Public Works, when the military element is studiously and honestly separated from the civil staff, will grow into a powerful and useful machine, the drivers of which must be the European engineers.

* See pp. 536 and 588, *ante*.

The machine itself must be composed of native draughtsmen, measurers, artisans of all kinds, even native architects or chief workmen. For the present, works distinguished by rigid utilitarian principle are all that ought to be demanded or even permitted. Sham Gothic and Saracenic, or sham Classic and Hindoo accessories to *bonâ-fide* engineering skeletons are simply absurd; and if it is still more absurd to expect all works of engineering in a land of innumerable villages to return an orthodox profit, it is equally ungenerous for the civilian and the soldier,—both expensive importations—to taunt engineers with their inability to overcome what, for a long time, must remain impossible.

AN EX-SERVANT OF INDIAN PUBLIC WORKS.

NEW BUILDINGS FOR THE FIELD-LANE INSTITUTION.

IN consequence of the building in Little Saffron-hill, known as the Field-lane Institution and School for the Homeless Poor, being about to be taken down to make way for the new street from Oxford-street to Shoreditch, new premises are required for the purposes of the Institution, and the erection of these is now in progress on a site at the bottom of Vine-street, Liquorpond-street, which covers an area of about 9,000 superficial feet. The memorial stone of the new building has been laid this week by the Earl of Shaftesbury.

The structure is angular in form, shaped like the letter L, with two elevations at the foot of Vine-street, one facing the west and the other the south. The west elevation is the principal one, and has a frontage of 62 ft. in length. The central portion is 80 ft. in height, and terminates with a central tower. This part of the elevation contains five stories above the ground floor, each floor containing a range of three circular windows. It has a wide pediment entrance, and immediately under the tower are inscribed the words "Field-lane Institution." The north side of the elevation is 60 ft. high, and contains three stories above the ground floor. The main staircases to the upper portions of the structure are in this part of the frontage. The south end of the elevation forms the master and matron's residences. It is 48 ft. in height, and contains three floors, terminating with a steep gable. The south elevation is 32 ft. in height, and contains the ground-floor and three stories, the general architectural design being uniform with the west frontage. In addition to those portions of the structure above the street level, there is a deep and extensive basement, which contains the master's kitchen, a general kitchen, and all the domestic offices of the establishment, together with men's dormitories.

The main entrance leads into a spacious vestibule, and thence to a corridor, 5 ft. wide. On the right hand side of the corridor are women's dormitories, 32 ft. by 22 ft.; the secretary's office, and the committee-room, which is 20 ft. square. On the left-hand side of the corridor are the boys' day-room and dormitories, the former being 30 ft. by 20 ft., and the latter 40 ft. by 20 ft. On the right-hand side of the entrance-hall are the master's parlour and dining-room, together with attendant's room. On the first-floor, over the entrance-hall, are the matron's bedrooms and private apartments. The master's bedrooms and apartments, and the servants' day-rooms and dormitories, are also on the right-hand side of the corridor on this floor, whilst, on the opposite side of the corridor, are the children's schoolrooms. The second-floor contains a large hall, 70 ft. by 42 ft., intended to be made use of for lectures, religious services, and entertainments. This floor also contains the teachers' rooms and other apartments, together with laundry, lavatories, &c. The floors above contain a number of reserve apartments. The interior of the building is, to a great extent, strictly fire-proof.

It may be interesting to state that the site on which the building stands immediately adjoins the old Fleet-ditch, and in excavating for the foundations much difficulty was experienced, considerable volumes of water being met with, and constant pumping found necessary. Before a proper foundation could be obtained, the contractor had to go to a depth of 18 ft., when a clay bottom was at length come to. The foundations for the main walls were filled in with concrete.

Mr. Porter is the architect, and Mr. Macey is the builder, whose contract amounts to 11,284*l*. Mr. Brodie is the clerk of works.

THE NEW IMPERIAL BANK, BERLIN.

IN the place of the old building of the Prussian Bank, of modest appearance, and no longer answering the increased requirements of the time, the new architectural compound of the German Imperial Bank, which is the subject of illustration in our present number, is rising gradually, in the most frequented part of the German capital. Extending its two wings into the Oberwallstrasse and the Kurstrasse respectively, its principal façade, still in course of erection, faces the Jägerstrasse. The name of the latter will continue also for the future to remind us of the "Jägerhaus," which has now entirely disappeared, and which was built by the architect Naring at a time when the proud Hohenzollerns were yet modest Electors of Brandenburg. This building was enlarged at a later period, and the Prussian Bank located in it. Like its predecessor, the new buildings now constructing have changed their original destination, at least in name. While they were projected for the Prussian Bank, and commenced in 1868, the wonderful changes wrought since then have also affected them. They are to contain the newly-created Imperial German Bank.

Its designer is Baurath Friedrich Hitzig, the same accomplished architect to whom Berlin is already indebted for the new Exchange and a large number of private residences of excellent taste and varied design. The new bank buildings will, when completed, be one of the greatest architectural ornaments of the capital, not only on account of the beauty of their composition, but also, thanks to ample means liberally provided, for the quality of the material used and its clever employment. The base of the building is of black Belgian limestone, well known for its hardness; the friezes and entablatures, the columns and framings, as well as all other prominent decorative parts, are cut in grey Seeberg sandstone; while the fillings are in brick, dark horizontal bands crossing the yellowish surface of the ground-floor; the upper story being well set off by a diamond pattern of the same dark colouring. The effect thus produced is further enhanced by the uniform and excellent quality of the brickwork. This rich artistic ornamentation, however, is not intended to serve as a deceptive cover for interior defects; it rather enhances the properties principally distinguishing the great work of Hitzig,—its noble forms, its harmonious beauty, and the monumental dignity of the whole.

Kept in those Renaissance forms which, on account of having been created principally by a continual purification of the law and the spirit of the Classic, are styled Classic Renaissance at the present day, the building is divided in its front in two high stories resting upon a substantial basement of a characteristically varied formation. The lower story terminates in a rose frieze, with a fillet over it, a so-called cymatium, ornamented in the manner of an egged moulding; the upper story in the entablature, with a *cyma recta* running all round it, and formed of upright palm-leaves and lions' heads inserted between them. The ground-story is throughout treated in uniform simplicity, the continuous horizontal bands of its broad surface, the plain framing of the circular windows guarded by iron gratings, in connexion with the powerful base, impressing upon the building the character of its destination, that of a closed treasure-house.

The broadly disposed fronts of the whole building are effectively broken only by moderate projections. That of the western front is rendered prominent by two corner pilasters and six high imbedded columns, between which the windows have received a framing of pilasters, a deviation repeated also in the re-entering middle portion of the eastern front, where the window mouldings are supported by attached columns, employed throughout, only at the two otherwise quite plain projections.

The upper story of the central portion of the principal façade, projecting in greater breadth, which through its eight Corinthian columns placed before pilasters assumes the form of a loggia, characterises this part as the centre point of the whole building. This is also further signalised here by a superstructure framed by a triglyphic entablature, the triglyphs of which are of sandstone, the metopes of terra-cotta. Here, also, is the board-room, the seven high circular windows of which, encased by terra-cotta mouldings, open on to the loggia, while below is the principal entrance to the building.

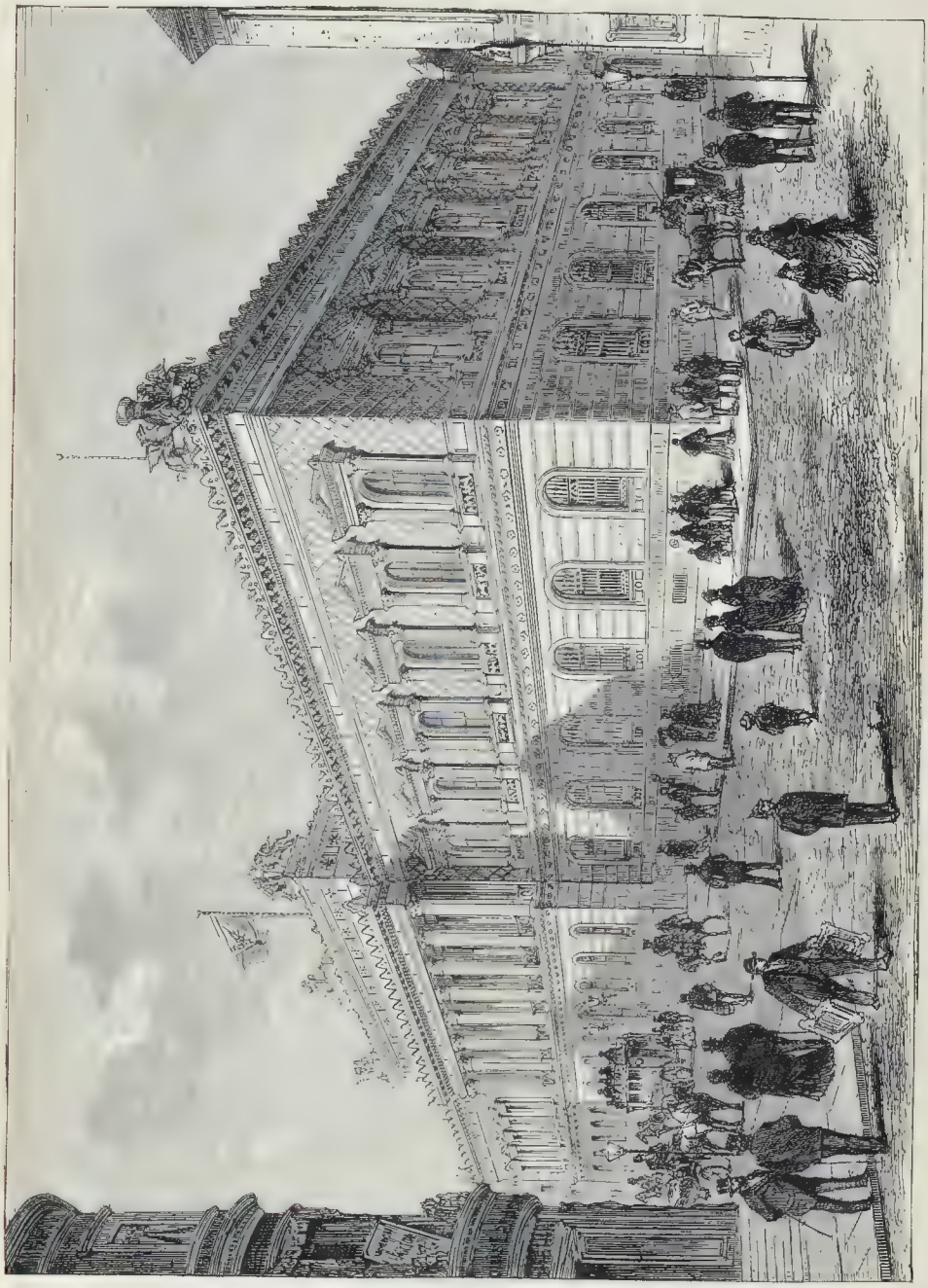
At entering, on crossing the spacious vestibule, a high entrance-hall, lighted by skylights, is reached. From here the broad granite stairs may be ascended, leading to the upper story, or keeping straight on, the different pay offices, united in one large room, are entered. The latter, of a length of 180 ft., extends parallel to the principal façade, and is rounded off in its principal part, which extends to the upper story, towards the courtyard, by an apse. The pay-office is connected by an hydraulic lift with the bullion-vaults below, occupying the same space as the public offices above them, built in cement, and protected against every possible danger. The remaining rooms used for the various purposes of the bank, and situate on both sides of the central room, are grouped respectively round two courtyards covered over with glass, of which the western one is destined to give accommodation to larger numbers of people on special occasions,—on subscription days for shares, &c.

The eastern wing will be entirely occupied by offices in connexion with the bank; the gateway situate at its end will, among other purposes, also serve as an entrance for parcels of gold and silver bars destined for the vaults. The greater part of the upper story of the western wing is destined for the official residence of the president of the bank, the rooms being grouped round a spacious vestibule. On the ground floor a floral hall opens towards the courtyard on to a considerably projecting terrace. On this side also the entrance has been placed at the end of the front, which, however, is connected with the adjoining building by a circular window, adorned by spandrel figures, opening in the upper story on to a balcony.

A circumstance which had to be taken into account by the architect from the beginning, and which increased not a little the difficulties attending the conduct and the uniform progress of building operations, has finally been the cause of rendering prominent, also outwardly, by suitable and generally understood emblems, the newly-created relations in which the building will stand to the German empire. The old Prussian Bank, situate about the middle of the present principal façade, had to be left standing while the walls were rising from the ground round it, until the new buildings had so far advanced as to furnish sufficient accommodation. Thus the great front had so little advanced towards completion,—the ornamentation of the wings having been finished in all but a few of its details,—that the decorations intended for it originally were supplanted only quite recently by new designs, doing full justice to the altered circumstances. The lions and eagles which, the former guarding urns, the latter tripods, alternately fill the panels of the window parapets, are now to be confined to the side fronts, and are to be supplanted on the principal façade by the arms of the federal states, to be executed in majolica, of which two and two each are destined for the breast-heights of each of the twelve windows. The bronze grating surrounding the loggia of the central projection is to be adorned with German eagles, and in the centre of the superstructure, in place of the arms at present indicated, an allegorical group, referring to the protection of trade and industry, with Germania as the principal figure, will be raised.

With the exception of the above changes, our illustration gives a pretty correct view of the new building, saving a few details. Thus the palm-leaves of the cyma of the entablature will, connected with each other, form a quieter line; and the group of the two griffins, which, like supporters, seem to guard the colossal candelabras provided with firepans, will be placed not only at the corners of the building and its superstructure, but also at those of the projections of the wings, and will, besides, by more slender form and less projecting lines, be more in harmony with the whole than seems to be the case in our illustration.

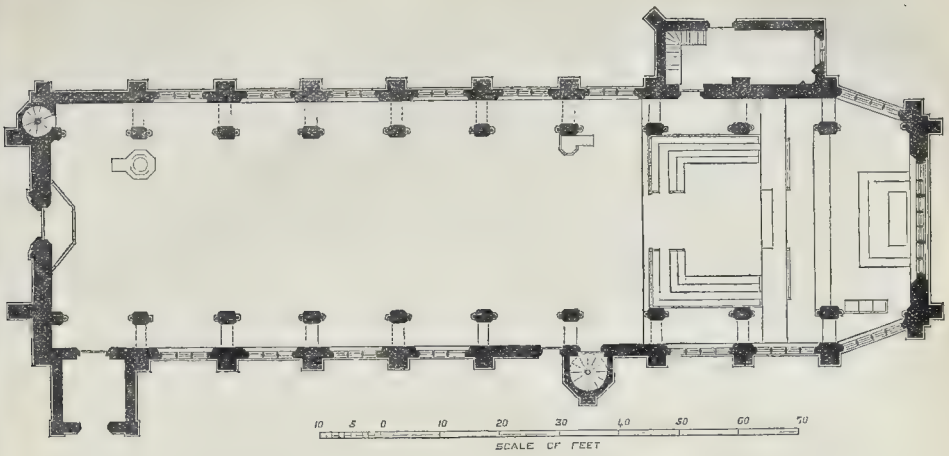
The Gold Casket containing the freedom of the city of London, presented by the Corporation to General Ulysses Grant, ex-President of the United States, was designed and executed by Mr. J. W. Benson, of Ludgate-hill. The obverse centre panel contains a view of the Capitol at Washington. On the reverse side of the casket is a view of the entrance to the Guildhall, and an appropriate inscription. At the ends are two figures, also in gold, representing the city of London and the United States of America, bearing their respective shields, the latter executed in enamel.



THE NEW IMPERIAL BANK, BERLIN.—HERR FRIEDRICH HITZIG, ARCHITECT.



ST. AUGUSTINE'S CHURCH, PENDLEBURY, MANCHESTER.—MESSRS. G. F. BODLEY & T. GARNER, ARCHITECTS.



ST. AUGUSTINE'S CHURCH, PENDLEBURY, MANCHESTER.—*Plan.*

ST. AUGUSTINE'S CHURCH, PENDLEBURY, MANCHESTER.

THE church is of brick, with Stourton stone arches and windows. It is of considerable height. The plan is a somewhat unusual one. There are no aisles, but the necessary abutments are inside the main walls,—internal buttresses, in fact,—and these are pierced with low arches. The recesses thus obtained are vaulted with stone. The windows are of four lights in the chancel, and of three lights in the nave. They are placed high up in the outer walls. The east and west windows are filled with excellent stained glass, and the other windows are being executed, and the panels of the reredos are being painted with figures. The nave is paved throughout, and has chairs, and the chancel has good oak stalls. There is a high screen of carved oak, and high side screens to form the chancel. The font has a high oak cover. The lectern is of brass, and stands in the chancel. The altar is raised nine steps above the nave. The east end is the richest part of the fabric, both externally and internally, and has niches with figures of the four Latin Doctors and others. There is a figure of St. Augustine over the west doorway, and of our Lord over the south entrance-porch. It is intended that the tower shall be detached at the south side of the church. The exterior of the building has been kept rather plain, with the exception of the east end, before mentioned. There were two reasons for this simple treatment: in the first place, there are large mills near the church, and it was advisable, by every means at the architect's disposal, to give an appearance of size and mass; and, in the second place, it was considered more judicious to spend money upon internal than external decoration.

The general effect, both of the interior and exterior, is one rather of size than elaboration, though considerable richness is given to the interior by the furniture and stained glass.

The style adopted is that of the latter end of the fourteenth century, the tracery of the windows of the flowing type, rather rich in character, and thoroughly English in treatment.

The churchyard is entered through an arched gateway, over which is the sexton's house, near to which are large schools.

The whole appearance of the buildings will be greatly improved by the erection of the tower of the church, round which they will make an exceedingly effective group.

The church was erected at the sole charge of Mr. E. S. Heywood, of Pendlebury. The architects were Messrs. G. F. Bodley & T. Garner, of Gray's-inn, London.

A "PRIX DE ROME" FOR LITERATURE.

SINCE the Ministry of the Fine Arts in Paris have distributed the *Grand Prix de Rome* and the *Prix du Salon*, both of which entitle the successful candidate to a three years' residence at the Villa Medici, on the Pincian Hill, at Rome, a happy suggestion has been made by a writer in the *Gaulois*, that the "Prix de Rome" should not be confined to painters, sculptors, architects, and musicians solely, but that literary men should be eligible to compete for the coveted and comfortable distinction.

Notwithstanding that the suggestion does not appear to meet with universal approbation, even among literary men themselves, there can be but little doubt that we shall very shortly hear of a *Grand Prix de Rome* for French literary merit, and we can imagine few prizes that the youthful man of letters would more assiduously read up for.

It is probable that such a prize would be more prolific of good results than experience has shown us artistic prizes have led to, but the literary man, we may suppose, would be less likely to be injured by the enervating influence of the traditionary teaching at the Villa Medici, which has had in too many cases a fatal influence on the majority of "Prix-de-Rome" men."

The ambitious, but mistaken, early teaching of Poussin and Lebrun still oppresses each succeeding newly-arrived embryo great man, and we see the works this year on the walls of the *Salon* of many a decorated but not decorative painter, with a feeling of surprise that such men could ever have deserved their early honours.

The literary prize-man would be less shackled: he has only to read and think, and the expressing form and colour of his mind will soon display itself and his work take its rank beside the famous statue or symphony picture, or noble façade.

The constitution of our Literary Fund, and our excellent Benevolent societies, which distribute so wisely and so humanely their carefully-managed funds, have overlooked in their desire to aid the necessitous and the afflicted, the power they possess, to encourage patient, studious, struggling merit. How much, for instance, would some literary men rejoice at the prospect and realisation of a three years' literary labour at Rome or Florence, Venice or Naples, and what great results might we not justly expect from an industrious literary search in the library of the Vatican or the more accessible Minerva? What treasures might not be found hidden in the hoarded MSS. of the old chests of the Palazzi of the Trastevere; how much unearthed history might be brought to light, how much nearer to accurate information on many undetermined points should we arrive, by the patient inquiry of a few years of laborious leisure?

It is a great error to suppose that, under the painful pressure of necessity, men produce their best work: necessity may, nay, it must, lead us to earn bread, but great works are created with a higher aim than even our own personal support. Thackeray represents, it is true, Addison writing his famous poem of the "Campaign" in a small lodging in the Haymarket, and eating a sixpenny dinner from the cookshop, but he makes him give his friends a good deal of Burgundy, and he was at the time not oppressed by debt. Byron was not exactly poor at any moment of his literary life. Hallam, Grote, Macaulay, were certainly never in want; Prescott and Ticknor were almost affluent before they ventured to publish, and poor Motley, whose death we have had so recently to deplore, had been Minister at Vienna before he became famous for his splendid histories. Sir Joshua painted his best pictures long after he must have acquired a pretty substantial embankment, and it is impossible to imagine the love of gain urging men of science to achieve greater triumphs than they have done. The conductors of at least two of our leading journals, certainly as they are, as *Vanity Fair* says, "in society," surely must be considered free from pecuniary difficulties; in point of fact, we may trace nearly all the bad work to haste and want of leisure owing to the want of money, and not the good work to the same misfortune, and those artists, in whatever line, who are spoilt by success will be found, ere their fifty years of trial, to be weak and more than uncommonly faulty.

Literary men and artists, as we grudgingly call those alone who paint or model, are more congenial than they are quite aware of, and their association at Rome, under circumstances so agreeable, would assuredly help to add a fresh charm and interest to our annual exhibitions. The painter's reading would take a wider field from his constant intimacy with literary friends, who would suggest their own happy thoughts more freely. Historical inaccuracy of costume and detail would be less frequent; in fact, it might disappear, under the critical eye of an unprejudiced literary man at the artist's elbow, and the literary man would gain something from the painter in acquiring a knowledge of the painter's jargon, that technical vocabulary of his art that is so often misused by the would-be critic, and by those whose knowledge is confined within a very limited circle. The "tone," in fact, of both artist and author might by this contact be improved, a more correct "form" established, and, on the whole, we might expect from the happy student who has passed his three years at Rome an ample return by which the world might be enriched at a cost certainly within the ability of our literary guilds.

Paris.

DWELLINGS OF THE WORKING CLASSES IN PRUSSIA.

It is almost impossible to describe in general terms the character of the houses occupied by the working-classes in Prussia, varying so widely as they do in different localities. What may be true of the houses in one place is altogether inapplicable to those of another, and even of others in the same locality or in the neighbourhood. In the large towns the artisan classes live almost exclusively in lodgings, and it is rarely that the independent artisan or small tradesman lives in a house of his own, whereas in the country, and in the small towns, the latter is more frequently the rule than the exception. The houses inhabited by the rural artisans, labourers, hand-loom weavers, &c., both as regard their structure and living arrangements, are generally of the poorest kind, especially in the eastern provinces. Labourers, factory operatives, miners, &c., are frequently obliged, even in the country, to live in lodgings, or else in buildings expressly constructed for working-men by the large landed proprietors in the eastern provinces, and by the mill-owners and proprietors of mines and iron-works and companies in the western provinces. In many districts in the west, joint-stock building companies and co-operative building societies have been established, with the object of supplying proper dwellings in particular localities for working-men and their families, these to become eventually, by a gradual course of payments, the property of the tenants; but the efforts made to improve the working-men's dwellings are on too small a scale to do more than reach the surface of the evil.

The provincial authorities of the eight provinces of which Prussia was composed previously to the late war have furnished the following particulars relating to the dwellings of the working-classes in their several departments:—

PROVINCE OF PRUSSIA.

(1.) *Circle of Memel.*—The dwellings of the workmen in the rural districts are poor and inadequate in the extreme. The houses are of one story, built of mud, and some even of grass; the windows are nailed up and never opened. The houses contain, in general, one dwelling-room and a sleeping-room, frequently unfloored.

(2.) *Circle of Konigsberg.*—The houses of the working classes are usually built for two families, and houses lately have been built for four families of labourers. In these each family has a dwelling-room with a stove for cooking, one bed-room and a loft, and either a stable or pig-stye.

(3.) In the *Circles of Gerdauen and Sudenburg* several families frequently live together in small dark and damp rooms.

PROVINCE OF SILESIA.

(1.) *Circle of Leignitz.*—In many of the rural communes the houses are thatched, of one story, and with small windows admitting little light and air. The interior is low, dark, and contracted, with close and bad air.

(2.) *Circle of Balkenhain.*—The weavers' houses usually contain from two to three living-rooms, and one or two bed-rooms. One room is only large enough to hold from one to three looms, and but little furniture. The rooms are barely sufficiently high to stand upright in, and the windows are not more than 2 ft. square.

(3.) In *Richenbach*, the houses in the more important manufacturing districts are over-crowded with weavers, and the rents are high. The number of houses does not increase in proportion to the growth of the population. In Pless, several labourers' families (from ten to fifteen persons, says Mr. Petre, of the British Embassy) frequently live in one room, in which there is no pretension to comfort and cleanliness, and the room costs from 18s. to 2*l.* 5s. a year.

PROVINCE OF WESTPHALIA.

(1.) *Circle of Minden.*—There is a great dearth of dwelling-houses in the country, and some of the communes have erected, in consequence what are called "communal houses" or houses for the poor. In the town of Minden itself this want is most severely felt, and a working-man's family has to pay from 6*l.* to 7*l.* 10s. for house-rent annually.

(2.) *Circle of Ahans.*—The dwellings of the labouring classes are confined within the smallest possible limits; they generally consist of a kitchen, a living room, place for a few beds, a cellar or a garret, and a stall for a cow, goat, or pig. The rooms are small and low, and frequently damp.

(3.) *Circle of Koesfeld.*—The dwelling-house of a working-man's family consists usually of a kitchen, living-room, one or two sleeping-rooms, and a cellar or loft, with a shed for a goat. The rooms are small and low. Rent in the towns is from 1*l.* 10s. to 2*l.* 8s. annually.

RHENISH PROVINCE.

(1.) *Circle of Essen.*—The workmen in the coal-mines form a colony in the vicinity of the mines, and occupy as many as 100 houses. House-rent in the towns is from 3*l.* to 3*l.* 15s., and in the country from 2*l.* 5s. to 3*l.* annually. The families of working men are often pinched for room, in consequence of their taking in other workmen as boarders. The latter sleep in the garret, but otherwise live with the family in one or two rooms.

(2.) *Circle of Daun.*—The houses of the day-labourers (Tagelöhner) are mostly bad, small, and so densely crowded that without great attention to ventilation and cleanliness sickness is sure to prevail.

(3.) *Circle of Ottweiler.*—In the mining colonies lately established here the houses of the miners are neat and cheerful. The three royal coal-mines of Keinitz have three large sleeping-houses belonging to them, to accommodate 800 men. The Rheden Mine has two of these, for the accommodation of 400 men. The miners pay 1s. 6d. per month, for which they have a bed and towels, and the use of half a press. To enable miners to settle in the neighbourhood, the Miners' Union ("Knappschaftsverein"), has purchased 1,350 acres of land for founding a mining colony. It sells at cost price, or leases at a moderate rent, one-sixth of an acre of land to any one who will build a house upon it, and one-sixth of an acre, on the same terms, for a garden. Money for building purposes is also advanced at 4 per cent. interest, to be deducted from the wages, with a present of from 22*l.* 10s. to 30*l.* as a premium for building.

Among the working classes of Prussia the miners and iron-workers occupy an exceptional position, inasmuch as their welfare and interests are attended to by the Government officials who are appointed to superintend all the mines, iron-works, and salt-works of the kingdom. This class of the labouring population is animated by an honourable *esprit de corps* dating from the earliest times, and forming a singular exception to the egotistical tendencies prevalent amongst the working-classes of the present day. The great importance naturally attached to the conservation of so able and staunch a race of workmen as these miners and iron-workers has induced both the State and the private owners of the larger works to provide suitable dwellings for them, and to make such general provision for their comfort and well-being as to make their lot an enviable one in comparison with many of their fellow labourers. They seldom, however, succeed in amassing any considerable savings, and some of them emigrate from time to time to other countries where the mining interest is on a smaller scale than in Prussia. The miners and iron workers of Upper Silesia are almost exclusively Poles, and contrast unfavourably with the German workmen in their addiction to debauchery and dissipation, so much so that in many of the works where they are employed measures have been adopted for paying the weekly wages due to them to their wives, to prevent them from squandering their earnings instead of supporting their families.

By far the greatest portion of textiles are manufactured by the weavers in their own houses, with the assistance of the members of their families or of journeymen for large commercial houses and manufacturers. The latter supply the materials, and buy up the textiles at certain prices previously fixed upon. The large silk manufactories on the left bank of the Rhine, for example, are able to give employment with the necessary materials to the handloom weavers for several months at a time. A direct communication being established between the manufacturer and the weaver, the services of a middleman are not required. The weaver, as soon as he has finished his work, takes it to the manufacturer, and brings back with him a fresh supply of material. This class of weavers is tolerably well off. They are in possession of good looms, and are generally considered as sure to earn a decent livelihood. When the linen industry received its death-blow fifty years ago, most of the weavers of Middle Silesia turned their attention to cotton-weaving; but as they could not afford to purchase the new looms, they had to work on credit; and being completely at the mercy of the large manufacturing and commercial establishments by whom they were employed, were obliged to accept the lowest possible wages. Attempts have been made, apparently with small success, to draft those Silesian handloom weavers into other branches of industry and other occupations. Of the more important groups which constitute the working classes of Prussia, these weavers, numbering about 30,000, are undoubtedly the poorest, the worst fed, and, from their weak physical constitutions, the least capable of raising themselves unassisted above their present condition.

Foremen of works in factories, managers of printing-offices, foremen of mines, and other such like head men and overseers, employed in industrial establishments, are considered more in the light of *employés* than of workmen, and in disputes between the masters and the men they generally side with the former. This intermediate class is certainly one of importance and influence in the social and economical questions which are constantly arising between the representatives of capital and labour, and yet it is by no means treated with the consideration which it deserves. The reason is that there is always an abundance of educated men in the country who are only too glad to be able to obtain employment of this kind. The salaries paid to persons of this class are just sufficient to provide them with the means of living in tolerable comfort, but they are considered lower than what are paid to a similar class in every other country.

Porters, loaders, packers, and such-like labourers, who are employed to do heavy work of all kinds, whether for commercial and industrial establishments, or in seaports and inland towns, generally earn good and even high wages, as the great physical strength required for this sort of labour is rare enough to prevent the labour market from being overstocked. These people soon save a sufficient sum of money to enable them to set up an independent business as carriers, small shopkeepers, &c.

As regards wages, whenever the character of the work rises above mere coarse manual labour and approximates more to that of the skilled labour of the artisan or manufacturer, the rates of wages rise to above 2s. 6d. a day. Miners employed on tunnel work are paid up to 3s. a day, and in the circle of Gorlitz a brickmaker and his wife can earn during the summer 3s. 9d. a day, and in the circle of Janir from 24s. to 30s. a week. For work coming within the category of skilled or art industry, and for work requiring more than common technical skill, wages rise to a progressively high standard, enabling the artisan to earn from 75*l.* to 90*l.* a year and upwards. The wages of modellers and enamellers in iron foundries, of smiths and carpenters in machine works, are from 3s. to 4s. 6d. a day.

Throughout nearly the whole of Prussia, artisans, journeymen, and apprentices work regularly in summer from 5 a.m. to 12, and from 1 p.m to 7, and even later, and in winter from daybreak sometimes from 6 a.m. to 8 or 9 in the evening. The hand-loom weaver frequently sits at his loom employed in monotonous labour for sixteen hours a day; and agricultural labourers have to work hard for twelve hours a day out of harvest time, and during harvest time fourteen hours.

Memorial of a Great Engineer.—Not till the church at Newchapel, North Staffordshire, is crumbling over the grave of James Brindley, has any disposition been manifested to worthily perpetuate the memory of the great engineer whose remains lie under an unpretending tomb-stone, inscribed, "In memory of James Brindley, of Turnhurst, engineer, who was interred here September 30th, 1772, aged 56." Many persons have thought, and with some reason, that the engineer's works constituted the most enduring monument of his fame. The North Staffordshire people are at length moving to secure a worthy monument to the fame of the great engineer. The old church at Newchapel is falling into ruin, besides being altogether too small for the demands made upon its resources, while the inhabitants of the district are principally of the mining class, and too poor to give much help towards the rebuilding of the edifice. A committee has therefore been formed to invite subscriptions.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

POETIC, RHETORICAL, AND LITERARY INSCRIPTIONS AS A MURAL DECORATION.*

IT would be in ecclesiastical, scholastic, and educational edifices, more especially the former, that the virtue and capability of this element of decoration would become most apparent. If the Koran furnished sentences worthy to embellish the beautiful halls of the Alhambra, and the Mahommetan palaces of Grenada and Seville, how much more would the Hebrew and Greek scriptures,—the divine utterances of which should blend well with those of art, which is essentially spiritual,—be found equal to the adornment of Christian places of worship? From these, passages could be drawn that would render the walls eloquent on the highest of all subjects, and call up the grandest and most affecting scenes, involving the "fate of worlds, the revolutions of heaven and of earth." In this class of edifice the most sacred branch of literature,—theology, the science of God,—may be made largely to contribute to the architectural excellence, both without and within; where its utterances would blend with and heighten the effect of the poetry and music of the service, of which they would seem an echo. Hitherto scarcely anything beyond the Decalogue,—a feature which, perhaps, attracts the eye more than any other, though already engraved on the memory of most people,—has found its way into Protestant places of worship. It is surely strange that texts, expressive of the peculiar genius and spirit of Christianity, should not have invariably accompanied it.

The aspiring character of a Gothic pile may be intensified by its being charged with passages striking in, as it were, with the aspiring principle,—words which by their pathos and solemnity, their sublimity and pregnancy, would wrap it in a cloud of glorious visions, and lend the wings of morning to the soul of the devout worshipper. They are to be found in the Psalms of David, in the Prophets, and New Testament, and even in the writings of Milton, in some parts of which are met with bursts of devotional and lyric rapture which, to use his own language, seem "a sevenfold chorus of hallelujahs and harping symphonies."

Among the future decorations bestowed on St. Paul's Cathedral, if the stone will bear the chisel, might be, I think, passages from the Greek Testament, occupying the entire of the lower frieze; which, to use a Scripture simile, would put a new song into its mouth. It would wed to the grand music of its architecture the most sacred melodies of mind, and shed a more holy influence around it. To both the eye and imagination, probably, Hebrew and Greek sentences would have a greater charm than English or Latin. They would have a greater air of mystery,—a legitimate object in art, and would form a loftier element of decoration from being in the original and more sacred languages. The objection of their not being readable by all might be obviated by the publication of translations, or by their being repeated in other parts of the edifice in the vernacular.

To come to ordinary street architecture: I conceive that even the necessary inscriptions of a shop front, as the name and profession of its keeper, might be rendered a more interesting feature than it usually is at present. Such inscriptions ought to be made the chief decorative feature; and to afford ample and proper space for them should be the guiding principle of the design; which would render it a means of diversity of character to the streets. How far inscriptive matter, beyond what is demanded by business, is applicable to shops or dwelling-houses, I will not say. But words there are lying mute in books which, in the dullest neighbourhoods of our large cities, would open up the bright realms of fancy and imagination to the inhabitants, or, what is better, awaken in some of them salutary reflection, mingle with their minds, and perhaps sweeten their temper. I remember seeing an inscription engraved over a private house, expressive of its master's trust in Providence, in allusion to a particular event in his life, which certainly did not seem out of place, and was, I doubt not, a word of comfort and in season to many.

Exchanges, markets, and other places of trade and commerce, would be none the worse, I fancy, if their walls were made didactic by some maxims of wisdom and common sense, or of prudence and honesty.

To render inscriptions effective, greater attention should be paid than has yet been paid to the beauty of the alphabetic characters employed, and to symmetrical arrangement and accompaniment. They should be so disposed in ornamental panels as not to interfere with, but rather enhance, any essential artistic quality, as harmony of form, unity and breadth of light and shade, which assuredly is not a difficult matter. All this can be done in England, because it has been done in Spain, by the Mahommedans, the study of whose works there and elsewhere by architects is perhaps the best suggestion that could be made on this head.

That people combined their beautiful inscriptions, in the Arabian and Cufic characters with their arabesque ornaments, and by them not only expressed their religious faith, and called up the romantic creations of "Araby the blest," but enhanced the beauty of their architecture. In their works they became features of immense value in an artistic point of view,—as were also the hieroglyphic inscriptions of the Egyptians.

The earnest introduction of inscriptions into architecture would give an impulse to the design and adaptation of ornamental alphabets. Their capability of pleasing the eye is not to be judged of by the effect of inscriptions on Roman buildings, where they are too often a disfigurement; because it is evident the Romans took no pains whatever to render them agreeable to the eye; and only designed them to convey information to posterity. They could probably be made as harmonious—as suitable to their place,—by their linear character, or direction of their lines, as the Contest of the Centaurs and Lapithæ on the metopes of the Parthenon.

Of the Sigean inscriptions, in the most ancient Greek characters, relating to the buildings of Athens, among the Elgin marbles, I have not sufficient recollection to speak; but they might possibly be suggestive on this subject.

It may be thought by some of the more practical readers of the *Builder* that I have given too much rein to my fancy in this essay, and been led by her into some extravagance of suggestion. But I have predicated nothing of inscriptions beyond what they were to the people just mentioned; and what they were in their hands they may become to us, who have a higher and purer source from which to draw them,—an almost boundless source, for it is an entire kingdom of the mind's empire, the whole realm of literature, by means of which the immortal accents of poesy become blended with the frozen music of architecture,—poesy one of the chief instruments for the refinement and exaltation of society. Any kind of literary matter so far intellectualises a piece of architecture; it puts more mind into it, and makes it speak more distinctly than it otherwise could. But, by means of poetry, we may leaven it with the effusions of the very highest minds, and thrill it with the spirit of the sublimest human productions.

By means of inscriptions can we not make stones "cry out," and preach sermons in a more literal and distinct manner than Shakspeare dreamt of, or meant by the words I allude to? Or would there be half as much hyperbole indulged in, in saying of a house, according to the character of its inscriptions, that it rejoiced or sorrowed, or that it was imbued with wisdom and learning, as we frequently find in the Oriental poets when speaking of inanimate objects of nature? The Hebrew writers, for example, make the little hills to "clap their hands."

They would give to a building a more interesting and intellectual air, even where, from some cause, they could not be read, and touch the imagination more than any decoration of unmeaning or geometrical form, as they must suggest the idea of something higher than the eye could perceive.

Let me ask the reader who may think these suggestions fanciful, just to look around him in London or any other of our large towns, and observe how many structures this luminous and inexpensive element of decoration would have improved or half redeemed from failure of due architectural effect; how it would have clothed the naked, filled the empty, varied the monotonous, given interest to the uninteresting, and additional life, expression and sentiment, and power over the imagination to all. It would, I think, have more or less benefited such edifices as Somerset House, St. Paul's Cathedral, the National Gallery, the Post Office, the British Museum, many of the Pall-mall club-houses, the Leeds Town Hall, the Liverpool St. George's Hall, Fitzwilliam Museum, Cambridge, Royal Institution, Manchester, and most buildings in Edinburgh, Liverpool, Manchester, &c., in the Neo-Classic style, in all of which naked pediments, friezes, and panels are a crying defect.

The British Museum it would half redeem from its magnificent monotony, and make sublimely vocal. Poetic, historic, and literary passages might be engraved on its long empty friezes, which would be like a zone of radiant light to it. By this means, though a new building, it might be invested with much of the interest which only attaches to old ones, and made almost equally potent with an old one to conjure to the mental eye the deeds of renowned men and events of history; and so be brought more into keeping and harmony with its rich historic contents,—the precious gems and pearls of antiquity within, which ought to give voice and eloquence to their architectural casket. St. George's Hall, which is greatly in want of sculpture, particularly over its large eastern portico, which, I fear, it will never get, could have words inscribed on its friezes, such as would kindle the imagination of the spectator to clothe it with more than sculpture could have bestowed, and wake around it visions of unseen and ideal being.

Some buildings in London could be pointed out of the triumphal-arch type, with features, such as attic order, panels, &c., that appear designed for inscription, and have no meaning whatever without them.

Passing by the pediment, which, as the brow or forehead of a building, ought to be its most intellectual feature,—that fullest of thought,—bare friezes give a naked, empty, unfinished look, which no building of any importance should wear. A naked frieze is almost as bad as a piece of bare canvas left in the middle of a picture.

Though I have chiefly referred, in illustration of my remarks, to trabeated edifices, yet I do not deem inscriptions more applicable to Classic structures than to Gothic ones, which generally present as many and suitable fields for them in the shape of panels, spandrels, gables, and gablets, and might have been designed for yielding more. Their adoption into modern Gothic design would assist the architects in giving increased interest and individuality to their works, which might be expected to present more diversity of character than they do, and less family likeness and resemblance to their Mediæval grandparents; on which, applied with earnestness and true artistic feeling, inscriptions would, I conceive, be a step in advance.

I have only to add that the objection that their more extensive use would be casting pearls before swine, and render literature and poetry too common, would apply equally against schemes for general education,—the diffusion of popular literature, and against printing itself.

SAMUEL HUGGINS.

* See p. 605, *ante*.

PROPOSED MUSEUM IN THE EAST END OF GLASGOW.

AT the last meeting of the Glasgow Town Council, Preceptor Macdonald, in moving the Parks Committee minutes, referred to a portion of them touching on the expansion and development of the Kelvin-grove Industrial Museum in the west end of the city, which was now very seriously impeded by want of accommodation for additional specimens. Unless the present exhibition space were largely increased there would soon be no alternative but to decline further gifts of articles and offers of loan collections, and he suggested that it should be remitted to the committee to prepare a report on the subject of accommodation at the Museum.

In the course of the discussion which followed, Lord Provost Bain asked whether it would not be a wise thing to have duplicates of the specimens for the purpose of starting an Industrial Museum in the east end of the city. Having alluded to the need of such a place in the busy and populous eastern district, his lordship said the Improvement Trust purchased some time ago what was known as the old Bridgeton Bleaching Green, and the money paid for it was the property of the feuars of Bridgeton. It was then lodged in the bank to be drawn by the parties interested, or by the authority of the Court of Session. The funds now amounted to 2,591*l.*, and he believed there was little doubt that the feuars would give that sum for the purpose of forming the nucleus of an Industrial Museum in the east end. Should this be agreed upon they could, when going to Parliament, perhaps, for a Bill to erect new municipal buildings,

as was proposed, or for some other purpose, get a clause inserted sanctioning the proceeding. For himself he should willingly give a subscription towards the object of equal amount to the one he gave for the establishment of the Museum in the west end, and he believed there were plenty of gentlemen in Glasgow who would gladly do the same.

Mr. Morrison, among other members, spoke in support of the Lord Provost's suggestion, which seemed to be heartily approved of, and the minutes were confirmed in the usual way.

THE MICROSCOPE AS A CERAMIC TEST.

At a recent meeting of the French Academy of Science, M. Daubrée communicated some particulars of an application of the microscope to archæological inquiry, which promises to prove of considerable utility in such investigations, and to afford a valuable method of detecting spurious antiques. The investigators were MM. Fouqué and De Cassac, and the problem to be solved was whether certain vases found in the Greek island of Santorin, in 1867, in some prehistoric dwellings, buried beneath the thick deposit of pumice, had been manufactured on the spot or were of foreign make. Very thin laminæ, cut from the vases, and placed under the microscope, revealed the following facts:—

1. That the material of the vases contained the elements of the terrass and trachytic lavas of submarine origin which are common in the south-western portion of the island of Santorin.

2. That it also contained fragments of labradorite and augite, which are very common in all three islands of the Santorin group.

3. Also, traces of obsidianic *débris*, which are common in the pumice-beds of the south part of Santorin.

4. Also, fragments of marble and micacious schist identical with those forming the mass of the Great St. Elie, in Santorin.

5. Also, minute grains of quartz, crystals of monoclinic and triclinic feldspar, augite, hornblende, &c., embedded in the terrass of which the vases were principally composed.

6. Also various foramenifera, diatoms, and sponges. The cavities of the foramenifera were filled with opal, calcite, or limonite.

These peculiarities were observable in the smallest lamina subjected to the microscope. They were equally characteristic of the coarser pottery, and of that of finer grain and texture. None of the vases showed any vestiges of anorthite, which is very common in the northern part of the island. The foramenifera, diatoms, and sponges in them were identical with those found in the terrass of the south side of the island; but much more abundant, and in better preservation.

From which facts the observers concluded:—

1. That the pottery in question, coarse and fine, without exception, was made in the island.

2. That it was made of earth, from a bottom to which the tide had access, and which was also open to a fresh-water deposit of *detritus* from the rocks of the south end of the island.

3. That the site of the manufacture must now be covered by the sea, as no spot in Santorin at present completely fulfils the above conditions. The bed was probably in a valley lying between the south coast of the island, and a large volcanic cone, occupying an area which now is covered by the remains of its base. There is independent geological evidence of the former existence of such a valley opening down to the westward, opposite the islet of Aspronisi. Here evidently was obtained the material of which the vases were made.

4. The pottery must have been sun-dried, and at a very moderate temperature, as the fragments of marble are in nowise altered.

It will be seen that MM. Fouqué and De Cassac have worked out the problem very completely. The important aid rendered by the microscope in the study of rocks is becoming daily more recognised, and there is no good reason why it should not prove equally valuable in archæological inquiries.

Victoria (Philosophical) Institute.—The Rev. Isaac Taylor read a paper on the History of Alphabets before this Society on Monday evening, at the Rooms of the Society of Arts. The paper was illustrated by numerous diagrams, and was followed by an interesting archæological discussion. Twenty-four new members were elected, after which refreshments were served in the museum.

TIMELY DISCOVERY OF A DANGEROUS CHURCH ROOF.

THE roof of St. Walburgh's Roman Catholic Church, at Preston, one of the largest ecclesiastical edifices in the town, with accommodation for upwards of 2,000 persons, has just been discovered to be in a very dangerous condition, and altogether unsafe. The church has only been built within the comparatively short period of twenty years, and almost up to the time when the discovery was made the church was believed to be in a perfectly substantial condition, but it now appears that when it was built some of the materials used were of a very inferior description, and never ought to have been sanctioned. Mr. Garlick, the borough engineer of Preston, states that on making an examination of the roof he found it in a very shaky condition indeed, and he could not imagine how it had stood so long, for it might have come down *en masse* at any moment. He states that the joints in the woodwork had become loose, as also the bolts, whilst the whole of the timber from beginning to end was unsound. The rafters were too weak for the weight they had to bear, and showed several signs of cracking. On going on to the roof outside he found all the slates had become loose, and that what ought to have been mortar or cement had originally been nothing but clay and soil, and was now going to dust. On looking at the principals he discovered that all the pieces of timber which ran from one principal to another had given way several inches, and from these several defects the roof had lost its rigidity, and was now altogether dangerous. On Mr. Garlick making his report, he was instructed to make immediate temporary repairs, and at a meeting held last week it was determined at once to reconstruct the entire roof at a cost of 4,000*l*. At the meeting it was observed that Mr. Garlick's discoveries proved that the congregation had had a narrow escape from what might have been a dreadful calamity.

A SHAMEFUL ASSERTION.

THE following letter recently received from Mr. Ruskin by a Liverpool gentleman has been sent to us. We have read it with sorrow and indignation:—

"Venice, 15th April, 1877.

My dear Sir,—It is impossible for any one to know the horror and contempt with which I regard modern restoration—but it is so great that it simply paralyses me in despair—and in the sense of such difference in all thought and feeling between me and the people I live in the midst of, almost makes it useless for me to talk to them. Of course, all restoration is accursed architects' jobbery, and will go on as long as they can get their filthy bread by such business.

But things are worse here than in England. You have little left there to lose: here, every hour is ruining buildings of inestimable beauty and historical value—simply to keep stone-lawyers at work. I am obliged to hide my face from it all, and work at other things, or I should die of mere indignation and disgust.—Ever truly yours, J. RUSKIN.

Mr. Ruskin is, of course, at liberty to regard modern restoration with "horror and contempt," but he has no shadow of right to say that "all restoration is accursed architects' jobbery"; nor has he any right whatever to designate the earnings of honourable men in the exercise of an arduous and honourable profession as "their filthy bread." The gentleman who sends us the letter describes it as "highly characteristic." We are most unwilling to think so. We would much rather regard it as an exceptional mistake.

ARCHÆOLOGICAL SOCIETIES.

Norfolk and Norwich.—The annual meeting of the subscribers to the Norfolk and Norwich Archæological Society was held at Norwich on the 6th inst. From the annual report and statement of accounts, we learn that the society has now completed thirty-one years of its work. The excursion of the past year was to Trowse Church; Kirby Bedon, with remains of two churches, one with an Early mixed tower; Framingham Pigot; Framingham Earl Church; Arminghall Church, and the old Hall, in the same parish; with some rich sculptures from different sources, and in different styles. The financial statement showed that the year commenced with 283*l*. 14*s*. in hand, that 88*l*. 17*s*. 6*d*. had been received by subscriptions, 17*l*. 16*s*. 9*d*. by the sale of publications, and 3*l*. 16*s*. 3*d*. interest, making a total of 399*l*. 5*s*. 2*d*. After paying expenses of publishing "Transactions," there remained a balance in hand of 324*l*. 0*s*. 3*d*. The president (the Dean of Norwich) having been re-elected, made some observations on the relation of archæology to history, and the Rev. C. R. Manning, hon. secretary, read a paper contributed by Mr. Mackenzie, on "The Composition of the Colour used in Mediæval Painting on Wood," illustrated by figures representing the Virgin and Child found in Shimpling Church.

Kent.—The Kent Archæological Society purpose opening their meeting on August 1st, at Ramsgate. The head-quarters will be at Margate, where the day's proceedings end on the first day. A museum will be opened in some large room at Margate, and the dinner will also take place in that town. It is expected that Earl Amherst (the president) will attend.

NEW BANKING PREMISES.

Barnard Castle.—Messrs. J. Backhouse & Co., bankers, of Darlington, are about to erect new banking premises at Barnard Castle, from the designs of Mr. G. G. Hoskins, whose buildings for the same firm at Sunderland, Bishop Auckland, Middlesbrough, and Thirsk we have already noticed. Besides the addition and improvement architecturally this building will make in the principal part of the town, it will effect a great improvement by widening the end of Newgate-street, one of the principal approaches to the main thoroughfare, and which, considering its direct course between the town and the museum just completed as a memorial to the late Mr. Bowes, will, it is thought, ultimately become only second in importance to the High-street itself.

Elgin.—New buildings for the Royal Bank of Scotland have just been completed in High-street, Elgin, opposite the Plainstones. Messrs. Peddie & Kinnear, of Edinburgh, are the architects. The front is of three lofty stories, with large windows and a projecting but comparatively flat roof, without gable-tops. The lower story is of masonry grooved into courses. The entrance to the bank in the centre of it has a pediment over it, the panel of which is richly carved. The second and third stories are of plain masonry. Each has a line of five large windows, those of the second story being surmounted by moulded canopies supported on consoles. The contractors were:—Mason, A. Allan; carpenter, J. Findlay; plasterer, D. Simpson; plumber, P. Mackenzie; slater, G. Ogilvie.

RUINOUS HOUSES.

At the Southwark Police-court, the South-Eastern Railway Company, as owners of several ruinous houses in Glasshouse-yard, Gravel-lane, Borough, were summoned before Mr. Partridge, by Mr. Napier, on behalf of the Metropolitan Board of Works, for refusing and neglecting to secure the walls and other portions of the buildings, which for some time past have been in a dangerous state.

Mr. Napier said that these and a number of other small houses in Glasshouse-yard were purchased by the South-Eastern Railway Company for an extension of their line to Cannon street and elsewhere. These houses were not required after the tenants had left, and the company left them to the mercy of any one who liked to take possession. The consequence was they were soon crowded, chiefly by a low class of persons, who tore up the joists, pulled down stairs, doors, and window-frames, which they burnt to cook their provisions. The walls became so insecure that most of the tenants were compelled to leave. The company, however, took no means to secure them, and a few months ago a lad named Evans was killed by the falling of one of the walls.

Mr. Partridge asked if any one appeared on behalf of the company.

Mr. Napier replied in the negative. He understood that the property was leasehold, and the company had completely abandoned the property. The locality was, however, densely populated, and immediate steps should be taken to prevent further loss of life.

Mr. Partridge made the necessary orders for the work to be done within seven days.

ASTWOOD BANK (WORCESTERSHIRE) SEWERAGE.

At the last meeting of the Alcester Burial Sanitary Authority, the Clerk read a communication which had been received from the Local Government Board approving of the scheme of sewerage which was prepared by Mr. E. Pritchard, C.E., of Warwick. There has been considerable opposition to the proposed works, and at an adjourned inquiry held by Mr. S. J. Smith, C.E., an alternative scheme (prepared by Mr. Morton, a contractor, of Nuneaton) was submitted, but was rejected by the inspector.

WATER COMPANIES: THEIR POWERS AS TO BREAKING UP ROADS.

EDGWARE HIGHWAY BOARD *v.* COLNE VALLEY WATER COMPANY.

IN this case an order was obtained by the plaintiffs from Vice-Chancellor Hall, restraining the defendants, their servants, or agents, until the 7th inst., from breaking up or opening roads, or portions of the roads, mentioned in a notice which had been given to the defendants, and within the power of the Board, for the purpose of laying down their pipes, &c., until they had delivered proper plans of the proposed works. The motion came on again on the 7th inst.

There was no question between the parties as to the facts, and the object of the suit was to obtain the construction by the court of the Act of Parliament which conferred its power on the company. The Act in question was the 10th & 11th Vict., cap. 17; and the principal sections in dispute were the 28th and following sections. The 28th section conferred on the "undertakers" (the company), under certain superintendence, powers to break up and open the roads, sewers, drains, and tunnels, and lay their pipes, conduits, &c., or for the purpose of repairing the same. The 30th section provided that, before the undertakers opened or broke up any street, bridge, sewer, drain, or tunnel, they should give to the persons under whose control and management the same might be, or to their clerk, surveyor, or other officer, notice in writing of their intention to open or break up the same not less than three clear days before beginning such work, except in a case of emergency arising from defects in the pipes or other works. Notice was given on the 30th of May. On the 31st of May there was an answer sent requiring them not to open the roads until the plans should be submitted to the plaintiffs. The question was whether the plaintiffs were right in requiring such plans, or whether, in fact, the defendants had complied with the requisition by giving a specification of the roads intended to be opened without showing in what particular part of the roads they proposed to lay the pipes.

The defendants contended that in the course of their proposed works they might come across other pipes or obstructions which might necessitate a deviation from their intended course, and that by the powers conferred on the company by the Act of Parliament they were authorised to deviate. They submitted that the requisition that a "plan" should be delivered, as provided by the Act of Parliament, was satisfied by the specification which had been given to the plaintiff.

The Vice-Chancellor granted the injunction, holding that the defendants were bound to submit for the approval of the plaintiffs a plan or description of the mode and manner in which they proposed to carry on their works. Although they had delivered a specification, they were required by the plaintiffs to deliver a plan, and their duty was then to have sent a plan. If the plaintiffs did not approve of such plan, the defendants were empowered by the Act to take the matter before the justices, who would have decided the case.

Injunction granted till further order.

DEFECTIVE WORK.

WOODIWISS *v.* SHARPE.

THE plaintiff in this case (heard in the Derby County Court the other day, before Mr. W. F. Woodforde, judge), Mr. George Woodiwiss, builder, of Derby, brought this action to recover 14*l.* 9*s.* 6*d.*, balance of account for work, labour, and materials of seven houses in Bateman-street, Litchurch.

Mr. Sharpe, builder, of Cross-street, Nottingham, was the defendant, and he brought a counter claim for 26*l.* 0*s.* 8*d.*

It was stated that the defendant contracted to do the work at seven houses in Bateman-street, at 9*l.* per house, but it was alleged to have been so badly done that the plaintiff had to take down a quantity of the woodwork which had been fixed, and to complete the job himself. For this work he charged 8*l.* 6*s.*, which was 2*l.* 6*s.* more than the original contract.

Mr. Sheffield, architect, a clerk of the works, and other persons, were called to describe the defective nature of the work performed by the plaintiff's men, and it was also shown that while it was proceeding a telegram was sent to the defendant, who was at Nottingham, requesting him to come over. He did so by the first train, and it was alleged that after he had had an interview with the plaintiff's clerk of the works, he suggested that the plaintiff should finish the job.

On behalf of the defendant, witnesses, including joiners who had done the work, were called. They alleged that a portion of timber supplied to them by the plaintiff was green, and that in consequence of the plastering not being done and the wind blowing upon it, the woodwork got out of plumb, and was considered unsatisfactory. No blame was to be attached to the workmanship, the whole of it being due to the timber not being properly seasoned.

After a long hearing, the Judge gave a verdict for the plaintiff.

Finsbury.—On the 9th inst., a new church was opened in Finsbury-avenue, close to Finsbury-square, at the rear of the Broad-street Terminus, and was declared by the Archdeacon of London, Bishop Piers Claughton, to be dedicated to St. Agatha. The church is in the Early English style, and has underneath it a set of schoolrooms, which raise it above the surrounding houses. It is capable of seating about 300, and is creditable to the architect, Mr. Hugh R. Gough. The cost of the new church and schools, including the purchase of the site (for which 1,000*l.* have still to be raised), is 6,000*l.*, and 500*l.* are still due on the fittings.

TOBIN'S PATENTS.

RUSTLEY *v.* TOBIN.

IN this case, recently, the defendant made application, before Vice-Chancellor Malins, that the statement of the claim of plaintiff might be struck out, as being vague.

The plaintiff's action was for setting aside an agreement to purchase the defendant's patent rights in an invention for ventilating rooms, on the ground of fraud and misrepresentation. The misrepresentation alleged against the defendant was the numerous infringements of the patent which have taken place in different parts of England, which the defendant must have known of, but did not communicate to the plaintiff; also that there had been patents of a similar nature to defendant's previously to his patent being taken out.

Defendant submitted that these statements were not specific, and therefore should be struck out.

The plaintiff contended that there was no necessity to specify the misrepresentation, as the defendant must know what representation he made.

His lordship directed the statements of the plaintiff to be amended by specifying the misrepresentation.

TRADE UNION DICTATION.

AN instance of dictation on the part of a trade union has just occurred at Chorley. A builder and joiner in that town was last week sued in the local County-court for refusing to carry out an agreement into which he had entered to teach an apprentice his trade. It appears that although the indenture of apprenticeship between the defendant and the lad had been mutually executed some time ago, the workmen in the defendant's employ demanded his discharge and the breaking of the agreement, on the plea that the apprentice was "above fifteen years of age." The men threatened to strike if their demands were not complied with, whereupon the defendant yielded, and broke the agreement with the apprentice by discharging him. At the trial the jury found a verdict for the plaintiff, with 10*l.* damages, but expressed their sympathy with the defendant, whose difficulty, they stated, had been caused by the threats of the workmen.

THE DECORATION OF ST. PAUL'S.

SIR,—It would appear that, after the lapse of some three years, the committee of taste now proposes to proceed with the decoration of St. Paul's by filling the dome of the cathedral with mosaics, after the fashion of that of St. Peter's, at Rome, and, as it is stated in the announcement of the committee's purpose, "according to the wishes of Wren." Now, sir, from all that I can gather, the wishes of Wren were vague on this point. The ornamental carvings of the cathedral show that his taste in decorative matters was defective. Sir Christopher, unfortunately, never visited Italy. But, *prima facie*, we have very decided grounds on which to rest our argument for not imitating the decorations in the dome of St. Peter's, in the most important fact, that as the architect himself did not desire to slavishly imitate the exterior of St. Peter's, neither would he have wished, if he were at all consistent, that the decorators to come after him should pursue a diametrically opposite course with regard to the interior. Wren meant his Protestant cathedral to be representative, and as such distinct from the Roman fane. I conceive, then, that to follow the decorations of the dome of St. Peter's would be inconsistent and contrary to Wren's wishes. Besides, all painters who have studied mural decoration know that the decoration of the dome of St. Peter's is one of the worst features, if not the very worst, of all the decorations in the interior of that edifice.

It does not appear to be generally known that there is extant a very large engraving of the interior of St. Paul's, which was executed by Wm. Emmett during Wren's life, and doubtless under that eminent architect's supervision. In this engraving there are actual indications of decorations. Figures of the Evangelists are etched in the spandrels below the dome. In two of these spandrels, in the cathedral, mosaics have been recently placed; and as no mural decorations whatever existed in St. Paul's at the time this engraving was executed, I think we may safely conclude that these "indications" must have been introduced either at the suggestion of, or by the permission of, Wren. But in the dome of the engraving there is not the slightest hint at mosaic decorations, unless some feeble arabesques be intended as such. The dome in this engraving is represented panelled, and as I suppose it originally existed, till the panelling was filled up and levelled to receive Sir James Thornhill's paintings.

The reaches above the eye in public building are doubtless those in which mosaic,—if thi imperfect method of art be used at all,—should be placed; but let us have designs well proportioned to the edifice, and not colossi like the saints in the dome of St. Peter's. The iconography of Thornhill is admirably adapted to the dome. It only requires better art in the figure subjects, with colour and the use of gold, to make it a fine piece of decoration, and this without disturbing to any considerable extent what has in a measure passed unchallenged for more than a century.

W. CAVE THOMAS.

CHELSEA HALL AND CLUB ASSOCIATION.

THE new premises of this institution in the Fulham-road were opened on the 13th of June by Mrs. M'Garell, a lady known for her exertions in promoting Working Men's Clubs. The site and a large hall were the gift of Mr. C. J. Freake, who has been a good friend to the Club, and the new rooms just added adjoin the hall, and consist of cellarage and kitchen accommodation in the basement; a large room, with private room attached, for letting to friendly societies, bar and caterer's rooms adjoining, on the ground-floor; a reading-room, 30 ft. square, a strangers' room and library, on the first-floor; and a billiard-room with two tables, and a bagatelle-table, on the second-floor. The roof is open-timbered, with a large lantern-light in the centre. Lavatory accommodation is provided on every floor; the soil-pipe is carried up above the roof, with ventilating-cowl. A lift is provided, with speaking-tubes attached throughout the whole height of the building, communicating with the kitchen in the basement, with the bar on the ground floor, and with the passages on the upper floors. The cost of the additions has been about 2,500*l.* The elevation towards Fulham-road is in the Italian style, with pressed red brick facings, cornices, and enrichments.

The architect was Mr. Alexander Payne, and the builder Mr. J. H. Brass.

The club was founded about seven years ago; there are about 600 members. The Association is registered as a limited liability company, with shares of 1*l.* each,—a great many of the members being shareholders; the shares are being rapidly taken up, and yielded a dividend last year of 7½ per cent.

The entrance-fee to the club is 2*s.* 6*d.*; and the annual subscription 5*s.* for shareholders and 10*s.* for non-shareholders.

SCHOOL BOARD FOR LONDON.

ON the 11th inst. the first school erected by the Board in the city of Westminster was publicly opened at a meeting presided over by the chairman, Sir Charles Reed, and at which were present the divisional members and other gentlemen. The building is situated in the Horseferry-road, near the Gaslight Company's office, and consists of a single block four stories in height, in the usual "Queen Anne" style of architecture, having entrances from the road and also from Romney-street. The basement is devoted to a covered playground and caretaker's rooms, the ground floor to the infants, first floor to girls, and top floor to boys, each department having school and two class rooms, with ample cloakrooms and lavatories, separate staircases, &c. There are ample playgrounds and good sanitary arrangements. The accommodation is for 192 boys, 192 girls, 247 infants = 631 in all, and the total cost of the building amounted to 6,930*l.* 1*s.* 1*d.* The purchase of the land amounted to 10,254*l.* 18*s.* 6*d.*, making a combined cost of 17,184*l.* 19*s.* 7*d.*, or a total cost per head of 27*l.* 1*s.* 7*d.* The architect was Mr. E. R. Robson, and the contractor Mr. Jerrard, of Lewisham, Mr. Jefferson being the clerk of works. At the conclusion of the meeting (by the kindness of the chairman of managers, Mr. G. T. Miller), a selection of sacred music was performed under the direction of Mr. E. Sibson, in which Miss Edith Wrenn, Miss Cattermole, Mr. W. H. Monk, Mr. F. A. Bridge, and other professional vocalists, took part, together with a choir of about thirty voices selected from the Board teachers.

The Victoria Dwellings Association.—Mr. Walter, M.P., as chairman, and the Earl of Beaconsfield, will open the first block of buildings completed by this Association, on this, Saturday, June 23rd, at five o'clock. The dwellings adjoin Battersea Park, next the Suspension Bridge.

SOME THEATRICAL COMPLAINTS.

SIR,—As all matters of art come within your scope, the art of amusing, probably, may be included. What I now particularly wish to show is, how the slave Fashion carries people thoughtlessly on, whether in dress or in amusements. It is rather distressing to Non-Fashion to see how Fashion is pleased, and laughs at such ridiculous verbiage as is constantly used for the delectation of the public. Take, for instance, the interview between *De Brass* and the lawyer in "A Regular Fix," now being performed at the Haymarket Theatre to crowded houses. The fashionable actor (against whom nothing can be said) has to give utterance to such idiotic sentences as never could be uttered by one who is supposed to be educated and have his senses about him, to get out of the fix he is in, and such as no person of sense could vociferously laugh at and enjoy. But Fashion thinks otherwise. Unless the teaching of the School Board schools, and other schools supposed to impart sense to the rising generation, be wasted, the present children will hereafter blush with shame when they learn what senseless rubbish tickled the risibilities of their parents.

It is as ridiculous and tiresome to listen to as it is difficult to conceive for one moment, that any sane person with ears and eyes open, could consider as one and the same person *Lesurques* and *Dubosc*, as placed upon the stage of the Lyceum. After many representations, some one has perceived this, for the *Graphic* of last Saturday says,—"Mr. Irving now represents the wicked *Dubosc* with the necessary shade more of resemblance to his amiable double." Goodness knows, none too soon! Why not have done so at first? No two persons could have been more distinct than those he first presented. My impression is that *Dubosc* was intended to be more of a *Claude Du Val* than the disreputable being shown on the stage.

Touching upon a previous note of mine as to scenery, permit me to ask,—Is there no one, even at the Haymarket, who is able to perceive the improbable position of the door and window in the scene used for "A Regular Fix"? If the characters made their entries and exits the reverse way to what they now do, it would partly remove the defect as well as the notion that they are about to take a header into the street and fall upon the bailiff who is supposed to be against the lamp-post watching for *De Brass*.

The discomfort of our theatres (which deserves more notice than at the end of a letter) is something remarkable. The misery the public has to submit to in the upper boxes at the Haymarket really requires the interference of some responsible party, especially if it be necessary to encourage people to keep their tempers as well as to keep the peace. Omnibuses and cabs are licensed to hold a certain number of bodies; why should not theatres, which are also licensed, be restricted in the same manner, according to the area appropriated to the public?

Y.

THE CORPORATION OF WOLVERHAMPTON AND THE GREAT WESTERN RAILWAY COMPANY.

REMOVAL OF THE COMPANY'S LOCOMOTIVE WORKS.

THE Great Western Railway Company are, it is stated, about to take a step which will in all probability have a very prejudicial effect upon the trade of Wolverhampton. For several years past the company have had extensive locomotive engine and carriage works at Wolverhampton, employing about 1,200 workmen, whose weekly wages amount to about 2,000*l*. It appears that the directors have resolved upon removing these works from Wolverhampton and transferring them to Swindon, owing chiefly to a misunderstanding which has recently taken place between themselves and the Wolverhampton Corporation. It seems that a few years ago the Great Western Railway Company gave to the Corporation a quantity of land, on a portion of which they constructed a street. This land, together with the street, the Corporation have just sold to the London and North Western Company for 10,000*l*., and on the land so purchased the North Western Company are about to erect works and buildings which it appears will materially interfere with the working of the Great Western Company's locomotive establishment, and they have in consequence determined to close the works, and extend their establishment at Swindon, where the manufacture of engines and carriages hitherto carried on at Wolverhampton will in future be continued. It is understood that the workmen who have been employed at the Wolverhampton establishment will as a body be transferred to Swindon. The Great Western Company consider that the Wolverhampton Corporation have treated them unfairly in selling to the London and North Western Company land which they (the Great Western Company) recently made them a present of.

ARCHITECTS' ACTIONS.

PHILLIPS *v.* JENNER.

SIR,—A report of the above case having appeared in your paper, I trust you will, in justice to myself, allow the enclosed also to appear in your next issue, and I can only add that a grosser case of injustice was never perpetrated towards an individual than the decision of the Judge of the County Court in my case.

HENRY PHILLIPS,
An Architect of Twenty-five years' Experience.

PHILLIPS *v.* JENNER.

It will be recollected that this was an action brought by me against Mr. Jenner to recover my fees as architect and surveyor in respect to his property in Wells-street, Camberwell, and that his Honour, Mr. Pitt Taylor, after hearing counsel, went off the bench and viewed the property himself, and on his return stated that he had come to the conclusion that I had not performed my duty in an efficient manner as an architect, consequently I had not earned my fees, and gave a verdict for the defendant.

At this time two actions were pending in the High Court of Justice,—one by Mr. William Everitt, the builder who did the work under my superintendence at Wells-street, for the amount of the balance due to him from Mr. Jenner, and also an action brought by Mr. Jenner against me for damages for negligence as architect. These two actions were referred by the Judge to Master Kaye, and I beg to enclose copies of the two certificates, showing the award, the matter having been placed in the hands of the surveyor of the court (Mr. Gardner).

Mr. Pitt Taylor, no doubt, is a good judge of law, but he does not appear to be so good a judge of 'bricks and mortar' as might be desired. Had the matter been referred by him to a competent man, I have no doubt the verdict would have been in my favour.

HENRY PHILLIPS.

In the High Court of Justice, Common Pleas Division.

EVERITT *v.* JENNER.

In pursuance of the order of reference made in this action by me, I certify that there is due in this action from the defendant to the plaintiff, the sum of 17*l*.

And I direct that the defendant do pay the costs of the reference.

Dated this 1st day of June, 1877.

(Signed) JOSEPH KAYE,
One of the Masters of the High Court of Justice.

In the High Court of Justice, Common Pleas Division.

JENNER *v.* PHILLIPS.

In pursuance of the order of reference made in this action by me, I certify that there is nothing due from the defendant to the plaintiff.

And I direct that the plaintiff do pay the costs of the reference.

Dated 1st day of June, 1877.

(Signed) JOSEPH KAYE,
One of the Masters of the High Court of Justice.

PATHWAY IN THE STRAND.

SIR,—Some short time since a letter in a daily contemporary noticed what is at present more or less of a general public inconvenience, and in the not far distant future will be an increasing one. There is a facility just at this moment of doing something in the matter which will not be the case afterwards. The allusion is to the foot pavement commencing at the crossing at the north end of what is left of Northumberland-street, and sweeping round the south side of Trafalgar-square till reaching the direct line of Northumberland avenue. The width is even now unsuitable to the comfort of foot-passengers, one may almost say restricting those passing in opposite directions to move in single file. The crowd or block of persons is also much increased by those intending to avail themselves of the many omnibuses incessantly passing, who wait about here as a sure place to hail them readily. Again, too, the vehicles of all descriptions in the road throw the liquid mud on to the foot pavement, and when of such a width as the one in question, there is no avoiding it, the footpath being sometimes coated over entirely pretty thickly,—a satisfaction, perhaps, to the shoeblack boys, but much the reverse to the pedestrian.

The public at large have to thank you for much, both "Utile" as well as "Dulce," and the obligation would be increased in the former case were you to obtain an increased latitude for the foot traffic at the particular point above mentioned. It should be gained from the unoccupied ground at the back, the great traffic of vehicles of every description now fully occupying the roadway

SPES.

AS TO TAKING OUT QUANTITIES.

AT the Marylebone County Court, last week the case of Brown *v.* Ellis was heard before Mr. Serjeant Wheeler, in which the plaintiff, a surveyor, carrying on business in St. John's Wood, sued the defendant, a private gentleman residing in the same locality, to recover the sum of 10*l*. odd for work and labour done under the following circumstances:—

Mr. George Rolfe, a builder, said that the defendant instructed him to carry out some alterations at his private residence in St. John's Wood, the quantities for which were taken out by the plaintiff. Subsequently, however, the defendant altered his mind, and the alterations were not carried out on the original plan. After much trouble witness recovered his charges, and now the present action was brought by the plaintiff to recover his from the defendant.

In reply to the learned Judge, witness said there was no written contract, but merely a verbal order to take out the quantities; but it was the invariable custom that although the builder instructed a surveyor to take out the quantities, the person employing the builder should pay the surveyor's charges, and he could prove the custom by two witnesses in court.

Mr. Willis, a builder, said it was the invariable custom that the surveyor's charges should be paid by the builder employers; or if the original plan was deviated from, or even the works were abandoned altogether, the surveyor's fees were always charged to whoever employed the builder. This being the case for the plaintiff,

Mr. Williams, who appeared as solicitor for the defendant, urged that his client could in no way be rendered liable, as he never knew the plaintiff, had never seen him till this day, had never been applied to for or agreed to pay any money, and he was only surprised to see the plaintiff's item in the builder's account.

After Mr. Williams had called the defendant, who corroborated his statements, the Judge considered the plaintiff clearly entitled to recover, as there was evidence before the Court that it was the custom in the building trade for surveyors' fees to be charged for in the builder's account. In this case the defendant would not pay them in the builder's account; and as the surveyor had thought fit to bring the matter to a law suit, he (the Judge) considered he was entitled to a verdict in his favour, more especially as the defendant had brought no professional witness to support his case.

*** We should be afraid to advise any surveyor in the same position as the plaintiff to take the course the plaintiff took.

PARK, GATESHEAD.

SIR,—In the *Builder* of June 9th I find a paragraph of the new public park at Gateshead; and it is there stated that "on either side of the principal entrance ground has been laid out under the direction of Mr. Heath, of London landscape gardener." Allow me to inform you that everything that has been done at this park has been from my plans or directions, and that no such gentleman as you name is known there. Mr. Bower, C.E., the Borough Engineer, has been good enough to take charge of the execution of my plans, and Mr. Lindsay, formerly gardener to Mr. Wailes, has continued the superintendence of the alterations and additions to the park.

Bath Hotel. EDWARD KEMP.

CHURCH-BUILDING NEWS.

Murton.—The new Church of the Holy Trinity, Dalton-le-Dale, near Murton, Durham, has been consecrated. It has been erected to supply the wants of the mining population of that part of the parish where Murton Colliery is situated, at a cost of 4,130*l*. The architect is Mr. Robinson Fowler, architect to the Dean and Chapter of Durham; and Messrs. Robson & Son, Durham have been the contractors.

Elvington.—The new Church of the Holy Trinity, Elvington, near York, was recently consecrated by the Archbishop of the diocese. It consists of a nave, with an arcade of four arches, a lean-to aisle on the north side, and a chancel with roof continuous with that of the nave, and terminating in a polygonal apse. On the north side of the chancel is a good-sized vestry, forming a transept. The tower forms a porch to the north aisle, and is finished with a wooden belfry stage, and a wooden-framed spire, covered with oak shingles. The arches of the nave are of brick, with caps and bases of Tadcaster stone and shafts of Dumfries red stone. The external walling is in random-coursed work of Bradford stone. The roof is covered with slates, with red ridges, and is open-timbered, ceiled between the rafters. Accommodation is made for about 300 persons. The church has been erected from plans by Mr. W. White, F.S.A.; and Messrs. J. Keswick & Son, York, have carried out the whole of the works, except the plumbing and glazing, which was done by Mr. M. Varvill, also of York.

Bradbourn.—Bradbourn parish church has been re-opened, after partial restoration. The church is remarkable for the breadth and massiveness of its tower, and the walls of the entire structure are of a corresponding thickness. It was found upon examination that the north wall of the chancel had become so much out of the perpendicular that it was actually coming away from the east end, and was in danger of falling. This necessitated the re-building of the wall. When, however, the workmen began to take it

own, although the upper part, which was aturated with damp, was easily removed, yet he lower part was found to be so well put ogether that it was determined to underbuild it, nd *only renew* the upper portion. A new organ hamber has been built out, and the whole of he interior walls of the church, with the exception of those of the south aisle, have been tripped of plaster, and, where necessary, enewed with fresh stone. The chancel has een re-fitted, and furnished with a stone reredos, laid with encaustic slabs. The lectern, lamptandards, and altar-cloth were supplied by Iessrs. Jones & Willis, of Birmingham. The ntire alterations, designed by Mr. Robinson, rchitect, of Derby, have been carried out by Ir. Smith, builder, of Tissington.

Bangor (Flintshire).—On the 18th ult. the arish church of Bangor Monachorum, Flintire, was re-opened, after restoration. The hurch is said to have been founded in the latter art of the second century. The present church ates from 1350, and having become dilapidated, as now been restored, at a cost of 3,100*l.*, exnsive of a new porch, pulpit, stained-glass indow, and the organ-screen, all of which have een given. Mr. Douglas, Chester, was architect, and Mr. T. Hughes, Aldford, the contractor.

Bulborough.—Bidborough parish church was tely re-opened, after restoration and enlargeent under the direction of Mr. Ewan Christian, a cost of nearly 3,000*l.* The work has been xecuted by Mr. H. B. Wilson, builder, of Canterury.

Skye.—The new parish church of Sleat, tuated at Kilmore, two miles from Armadale astle, has been opened. The church is modified othic in style, and is seated for 600 persons. he architect is Mr. John Mackenzie, Isle ornsay, under whose personal oversight the uilding was erected, and the contractors are r. John Nicholson, mason and slater; Mr. ngus Macpherson, carpenter; Mr. John ackintosh, plumber, all of Portree; and Mr. urdoch Mackenzie, plasterer, and Mr. D. raser, painter, both of Armadale. The old onumental slabs have been transferred from e old church to the new one.

Brigstock.—St. Andrew's Church, Brigstock, as re-opened on the 23rd ult., after restoration der the direction of Mr. R. Herbert Carpenter. he work done has embraced, as far as the terior is concerned, the renewing of portions the stonework and the repointing of it roughout, the repair of the roof, of the nave, d aisles, as well as of the parapets, most of hich have had to be refixed. In the interior e work done is even more apparent. The body the church has been re-seated with open ats of varnished pitch pine, on boarded floors, d some of the old seats have been cleaned and paired. The builder was Mr. Mace.

Haddenham.—Haddenham Church, near Ely, as re-opened on the 28th ult., after works of storation costing nearly 7,000*l.* Prior to the mmencement of the works the church had beme very dilapidated. The north aisle was too ngerous to be used at all. For some years rriers had been fixed to prevent the congregan using any seats in it, lest the roof (which s shored up with timber) should fall on their ads, whilst the walls, buttresses, and transepts, every part, were decayed and ruinous. The d covering the nave, transepts, and porch was worn and indented that the water came in ely in many places. The timbers of the long ve roof were in very bad condition. The fine rly English tower was seriously cracked and naged, and had little or no foundation but the l. As the work proceeded, the tower gave rming proof of settlement, and had to be taken wn. It has now, however, been carefully re-lt with good foundations, by the friends and ants of the late Earl of Hardwicke, to his dship's memory, its features and proportions ng preserved. The restoration of the shell of church, exclusive of the chancel, has been ompliished at a cost of 5,800*l.* Mr. R. Reynolds we, F.S.A., of Cambridge, was the architect all the works of restoration and reconstruction cept the chancel); Mr. William Elworthy, of well, being the contractor throughout.

Bloxwich.—Bloxwich Church has lately been pened, after rebuilding. The promoters of work have substituted for the old plain ice a church of the Gothic type of architecte, the materials used, as in the case of its decessor, being red brick, with stone dressings rnally. Internally the new church is divided nave and north and south aisles, an arcade ve arches, carried on pillars of Codsall stone, with foliated capitals of Caen stone, supporting the clearstory, and dividing the nave from the aisles. The walls are lined with moulded white bricks. An organ-chamber is placed on the south side of the chancel, and on the north side there are vestries for the clergy and choir. The pulpit is octagonal in form, and is of Caen stone, supported on a shaft of clustered alabaster columns with carved capitals. The reredos is of a design to match the pulpit, being arcaded in a similar fashion. The pulpit, the reredos, and the font were all the work of Mr. Roddis, of Birmingham. The architects are Messrs. Davis & Middleton, and the builders, Messrs. C. Jones & Son, also of Birmingham. The cost has been about 4,500*l.*

Millom.—The new church of St. George, Millom, has been consecrated by the Bishop of Carlisle. The Earl of Lonsdale gave the site, and the church, which with the vicarage has cost 12,000*l.*, has been built from the designs of Messrs. Paley & Austin, architects, Lancaster, and will accommodate 500 worshippers. The architecture is Early English in style.

DISSENTING CHURCH BUILDING NEWS.

Congleton.—The new Congregational Chapel in Antrobus-street, Congleton, was opened on the 6th inst. The chapel, which has cost about 6,000*l.*, is built in the Geometrical Gothic style, of a hard grey local stone, with Alderley Edge-stone dressings. At the rear is the infants' schoolroom, with classrooms and vestry above. The front elevation presents a simple gabled outline, relieved by projecting buttresses rising above the roof as pinnacles, the circular staircase being corbelled out into an octagonal tower about 70 ft. high. About 600 hearers can be accommodated in the chapel. Mr. Sugden, of Leek, is the architect, the builder being Mr. Stringer, of Sandbach.

Streatham.—Trinity Presbyterian Church, situated at the top of Angles-road, Streatham, has just been opened. The building, which is freely treated Geometrical Gothic in character, is built of light-coloured bricks interspersed with an occasional red band in the same material. The dressings are all of Bath stone, and the steep-pitched roofs are covered in with red tiles of warm tone. In plan the building consists principally of nave and north and south aisles. It is intended to have a tower in the north-west corner, and provision for this is made by strong buttresses, &c., being carried up as high as the present roof-line. Internally the nave and aisles are divided on either side by arcades of four bays. These are carried by circular columns surmounted by carved capitals in Corngrit stone. The arches are of moulded and cut brickwork, and the labels are stopped by carved corbels in the same material. All the internal walls are also of brickwork of a uniform warm red colour. The church has been designed and carried out under the immediate superintendence of Messrs. Ernest George & Peto, architects. The contractors were Messrs. Adamson & Sons, of Putney, and the stone-carving, and the carving generally in brick and wood, is by Mr. Harry Hems, of Exeter, and his assistants. The foreman of works was Mr. Newton.

Alford.—A new Congregational Chapel, in Hamilton-place, Alford, Lincolnshire, was opened on the 6th inst. The building is in the Middle Pointed style, adapted to the building material of the district, red brick, the window tracery and other dressings being of Bath stone. The roofs are covered with grey plain tiles, and ornamental red ridge crest. The contractors for the whole work were Messrs. Hasnip, of Alford. The ironwork, heating, and gaswork, the fittings to which are temporary, have been executed by Mr. E. B. Mason, of Alford. The architect is Mr. Tait, of Leicester, and the total cost will be about 1,200*l.*

Harlow.—Thresher's Bush Chapel, near Harlow, which has been built at a cost of 500*l.*, was opened on the 6th inst. The style is described as Rustic Gothic, half-timbered. The architect was Mr. Banks, and the builder was Mr. Burton, of Sawbridgeworth.

Braithwaite.—The memorial stones of a new Wesleyan Chapel at Braithwaite, near Doncaster, were laid on the 4th inst. The land and building will cost about 300*l.* The builder is Mr. Meggitt, of Thorne.

Little Sutton.—A new Wesleyan chapel, at Little Sutton, Cheshire, was opened on the 5th inst. It is built of red brick, with stone dressings, the woodwork being of pitch-pine, varnished. The plans were furnished by Mr. Mason, architect, and the work has been executed by Mr. R. Jones, both of Chester. The entire outlay has been 860*l.*

Croydon.—The memorial-stone of a new Congregational church and schools, at Croydon, has been laid. The builders are Messrs. Perry & Co., the amount of whose contract is 7,895*l.*

Perth.—The memorial-stones of a new Free Church have been laid in Perth. The architects are Messrs. John Young and Charles S. Robertson. The contractors for the work are,—Mr. John Moir, builder; Mr. Charles Whittet, joiner; Mr. Alex. Hay, slater; Mr. John Mackay, plasterer; Mr. James M'Leish, plumber; Messrs. John Bruce & Son, glaziers. The church is estimated to cost 4,000*l.*

Birmingham.—A new chapel has been opened in Great Francis-street, Birmingham. The chapel is 45 ft. long and 27 ft. 6 in. wide internally, having its main entrance at front through a vestibule. Modern open pews are provided, with accommodation for 230 persons. The front of the building is faced with stock bricks, relieved with mouldings, strings, &c., of ornamental bricks and terra-cotta ware with stone dressings. The style is Gothic. The architect is Mr. E. Harper, of Birmingham.

MASTERS AND MEN.

Dunfermline.—The plasterers in Dunfermline have received an advance of wages, the rate of pay prevailing in the West of Fife being 9d. per hour.

Newton Abbot.—The masons of Newton Abbot, numbering several hundreds, struck work on the 11th inst. for an increase of wages. Six months ago they submitted their terms to the master builders, demanding 6d. instead of 5½d. per hour; and, notwithstanding both masters and men have since held meetings with a view of effecting a compromise, no settlement has been arrived at.

Crieff.—The demand made some time ago by the Crieff operative joiners for an advance of wages from 6½d. to 7d. per hour, has been granted by some of the leading firms.

Aberdeen.—Recently a strike of the house carpenters and joiners in Aberdeen was averted by the masters conceding a rise of ½d. per hour, and consenting to the adoption of a code of bye-laws. The masters have now found that the code is unworkable, except at considerable loss to themselves, and they have given notice that at the end of November they will discard the bye-laws altogether.

Sheffield.—The painters' strike at Sheffield, which has lasted for eight weeks, has terminated. The workmen intimated to their employers that, taking into consideration the depressed state of the house-painting trade, they had resolved to withdraw their demands for the present.

Worcester.—The dispute between the master carpenters and joiners of Worcester and their workmen, which has lasted nearly five weeks, has terminated. The men claimed an additional penny per hour on their wages, and the masters have agreed to give them a halfpenny per hour at once, and the other halfpenny per hour on the 1st of March next. The wages of the men will now be 7½d. per hour.

Glasgow.—On the 11th inst. twenty-eight Dutch carpenters arrived in Glasgow to finish a Dutch vessel, the construction of which had been stopped in Inglis's yard in consequence of the general lock-out.

Bolton.—The dispute between the stonemasons of Bolton and their workmen has at length been settled. About six weeks ago the men, to the number of 400, struck work for an advance of 4s. per week in their wages, namely, from 36s. to 40s. Owing to the depression of trade, the masters declined to comply with the demand, but they subsequently offered terms equivalent to an advance of 2s. 4½d. per week. This, however, the men refused, and eventually the employers agreed to give 39s. per week. This was accepted, and the men resumed work.

Manchester.—The strike of Manchester and Salford carpenters and joiners still continues, and strong feeling appears to exist in the minds of some of the parties immediately concerned. An attempt has been made to bring about an understanding between the men on strike and their employers. The employers' executive committee, however, are determined not to depart from the position they have taken up, namely, 8½d. per hour, and the retention in their service of the whole of the men who have come to work during the strike.

THE LATEST STATUE.

DAY by day, if not week by week, a spectacle of swaddled woe is exposed to public reproach on a minute spot of earth in close proximity to the Temple Station of the District Railway. We have heard a whisper that the original man it represents was a genius not ranking himself, but ranked, with engineer princes. His monument belies his generous career. Its legs at this moment protrude above a hoarding which protects the spot from profane utilisation; and they are wrapped in homely bandages. The whole body, swollen, as far as it is possible to judge, with repeated twitches of the national distemper, offers an impersonation of gratuitous agony standing between the contortions of a volute on one side and of a volute on the other. These volutes form a termination to a sort of garden wall upon the top of which stands him whom the nation is attempting to honour. Many people stop in the cool of the evening to regard this,—the latest effort of the British sculptor—and we confess to have frequently gathered hints from the extemporal criticism of the public suddenly arrested by a work of art; but in this instance no one criticises. Laundresses at the Temple, schoolboys of King's College, the porters at the station, the members of the School Board, and the clerks at Somerset House, are said to have invented new lines of route to and from their respective homes.

> "Father Thames is heard to sigh
> And shudder as he hurries by."

Even lawyers in the neighbourhood, trained as they are to be discreet in conversation, forget their equanimity. While the subject, to use a medical phrase, is wrapped in mystery, we are obviously unable to perceive, or even understand, the beauty of the figure; but we are convinced there is no truth in the report that the voluted terminals to the garden wall were brought over,—with Therésa,—from France.

Books Received.

Words of Warning in Verse and Prose. Addressed to "Societies for Organising Charitable Relief and Suppressing Mendicity." By S. C. HALL, F.S.A. London: Hamilton, Adams, & Co.

MR. S. C. HALL has filed a strong bill of indictment against the "Charity Organization Society" while urging the claims of the poor on those who have the means to relieve. While reminding the world that,—

> "More blessed 'tis to give than to receive,"

he says to the Society,—

> "You teach us how to 'shirk' the beggar tribe:
> And tell us to give nothing; but—subscribe."

His own motto is,—

> "Better a score of times be 'taken in,'
> Than let one suffering sinner die in sin:
> Than hear the Coroner, to morrow, say
> 'Died starved' of one you might have saved to-day."

To prevent imposition and to check indiscriminate almsgiving, which pauperises and demoralises, are good objects, and, rightly pursued, would deserve praise; but to seek to quench all charitable feeling in a nation is quite another thing, and could tend but to ill. The question is, how is the Charity Organisation Society doing its work? Mr. Hall in the prose notes which follow his poem makes some statements that are not cheering. He analyses the Reports of some of the Branch Societies. The subscriptions for Woolwich, for example, in the year 1875-6 were 102*l.* 14s., exclusive of 10*l.* a donation; of this sum 105*l.* 18s. 4d. was spent in rent, salaries, printing, and so forth, independently of 3*l.* 15s. 10d. (!) for "bread given at office" during the year, leaving a balance of 6*l.* 15s. 8d. to be expended in charity. Next the report of the "Paddington Committee,"—its seventh annual report, 1875-6. It contains a list of nearly 600 subscribers, who subscribed 635*l.* 10s. 1d. The expenditure for rent, salaries, collectors' poundage, printing, postage, stationery, &c., amounted to 622*l.* 19s. 5d., leaving a balance of 12*l.* 10s. 8d. The Greenwich Report publishes a return of 149*l.* 0s. 6d. subscribed; the expenditure was 123*l.* 12s. The Chelsea Report gives a subscription list amounting to 176*l.* 4s. 6d.; the expenditure being 161*l.* 16s. The Sydenham and Forest-hill list is 182*l.* 2s. 6d.; the expenditure is 142*l.* 0s. 2d. But it has a large "balance in bank." In the wealthy suburb of Clapham 159*l.* 14s. 6d. was collected; the expenditure being only 110*l.* 11s. 6d.; but there also is a "balance in hand" of 64*l.* 3s. At Clapham, during the year, six persons were relieved by gifts, and five by loans. The balance-sheet of the City of London Committee, 1875-6, reports 104*l.* 0s. 6d. received as subscriptions, and 28*l.* 4s. as donations. Its expenditure for rent, printing, postage (with 215*l.* 9s. as "salaries"), amounted to 347*l.* 5s. 1d.—much more than its receipts. These few instances seem to show that an enormous sum has been spent merely in preventing charity. The moment has certainly come for inquiry into the working of the Society, and Mr. Hall's book is well timed. It is fully illustrated, and well calculated to arrest attention.

VARIORUM.

"SUBTLE BRAINS and Lissom Fingers," a well-known book of social essays, by the late Dr. Andrew Wynter, has long been out of print. A new edition, revised and usefully enlarged by Mr. Andrew Steinmetz, has just now been published by Messrs. Hardwicke & Bogue. It makes a very interesting little volume.——The following notes "On being a Clerk" (from Cassell's *Family Magazine*) have matter in them: "For the youth of plain education and no parts, a bank will be something of the 'Paradise of pen and ink' so much desiderated. If he can write well, cast a column of figures correctly, and copy accurately, he will be provided for until death divorces him from his pen or pension, and, considering worth in the labour market, well provided for. He will in time have a better income than the unbeneficed clergyman or many a struggling professional man, and will, in the mill-horse way, be happy. Again, a prosperous bank will be no bad place for the youth who, to the routine qualifications above indicated, adds business tact and memory, who always crops up as if by magic at the elbow of manager or partner, and whose every feature seems to express, 'Can I do anything?' 'Is there anything you want to know?' To him will come promotion and a fair position in life. But to the man of all round parts and culture it must be said of a bank, 'Pray you avoid it.' The work will be found monotonous beyond all description, and his painfully acquired knowledge will be useless. He will probably be both thin-skinned and diffident, and will stand no chance with the irrepressible bustling man of business. He will be in danger of vegetating in the bank, following some pursuit in an amateur sort of way, that properly conducted might have led 'on to fortune,' and he will hesitate to make a move in life because of the certainty of his income. He will only awake to the importance of change when it is too late, and he can neither afford nor risk a new venture, and will make his moan at the end of a wasted life like one who was once an indifferent clerk and a great genius,—'I had grown to my desk as it were, and the wood has entered into my soul.'"——From "Old and New London":—"Highgate, though now it has gradually come to be recognised as a parish, is the name of a district, or hamlet, embracing sundry outlying portions of Hornsey, Islington, and St. Pancras; and it is treated as such not only by older writers, but by Lysons in his 'Environs of London.' It must, however, have been an important hamlet of the parish, for the Parliamentary Return of the Population in 1801 assigns to Highgate no less than 299 out of the 429 inhabited houses in inhabited houses in Hornsey. It may well be styled one of the 'northern heights' of London, for its summit is about 350 ft. above the level of the Thames, or 25 ft. higher than Hampstead Heath; and,—passing into the region of poetry,—Garth has suggested that the heights of Highgate might put in a claim to rivalry with the mountain in Greece which was the fabled haunt of the Muses,—

> 'Or Highgate Hill with lofty Pindus vie.'

We have already seen that the old highway between London and Barnet ran from the east end of St. Pancras Church, and thence to Crouch End, leaving Highgate considerably to the left; but, in 1386, or thereabouts, the Bishop of London consented, on account of the 'deepnesse and dirtie' passage of that way, to allow a new road to be carried through his park at Highgate, at the same time imposing a toll on all carts, wagons, and pack-horses, and that for this purpose there was erected on the top of the hill the gate which for 500 years has given its name to the locality. In fact, until the fourteenth century there would seem to have been no public road at all over the top of Highgate-hill into the midland and northern counties."——The *Fireman* (Wyman & Sons) is a monthly journal, devo to the consideration and discussion of all matt concerning the extinction of fire, and the prot tion of life and property from its ravages. I supposed that it will circulate largely am public and private fire brigades throughout United Kingdom, the Continent, the Uni States, and the British dependencies.——' *Leisure Hour* gives "Rhymes upon Places, "Not a few of our towns and villages h curious traditionary rhymes attached to t names, illustrating some natural or other pe liarity. In many cases, although railway c munication has entirely altered the characte certain localities, yet these time-honoured rhy are still vigorously kept up by the inhabita chiefly, no doubt, on account of their long a ciation. Thus, in Gloucestershire, the follow rhyme is proudly repeated by the peasants :-

> 'Beggarly Bisley,
> Strutting Stroud,
> Hampton poor,
> And Painswick proud.'

The villages referred to are within four m of each other, and forty or fifty years ago adjectives exactly described the condition of people. Since, however, the introduction railways this is no longer the case, as they r possess the advantages of other places. Derbyshire we find existing a quaint couplet, not, too, of a very complimentary nature :—

> 'Derbyshire born, and Derbyshire bred,
> Strong in the arms, and weak in the head.'

There are some curious rhymes current in folk, of which the following is a specimen :—

> 'Rising was a seaport town,
> And Lynn it was a wash,
> But now Lynn is a seaport town,
> And Rising fares the worst.'

At Norwich, visitors are often told how—

> 'Caistor was a city ere Norwich was none,
> And Norwich was built of Caistor stone.'

The people of Kent pride themselves on w they consider the truth of the accompany saying :—

> 'English lord, German count, and French marquis
> A yeoman of Kent is worth them all three.'

A village in Essex, called Ugley, possesses unfortunate saying :—

> 'Ugly church, ugly steeple,
> Ugly parson, ugly people.'

Nertown, a village adjoining Taunton, in Som setshire, and lying to the north side of it, is described in an old couplet :—

> 'Nertown was a market town
> When Taunton was a fuzzy down.'"

Miscellanea.

The Handel Festival. — This import musical festival is about to be held at the Cry Palace as usual. The great rehearsal is fixed this Friday, June 22nd. The performances be :—"Messiah," Monday, June 25th; Select Wednesday, June 27th; "Israel in Egy Friday, June 29th. The programme will include four purely orchestral pieces, one them being a grand concerto for organ orchestra,—the solo organ by Mr. W. T. B of Liverpool. During the rest of the festi the post of accompanyist at the organ wil filled by the able organist of the Sacred H monic Society, Mr. C. E. Willing. The Han Festival if it were never to be held again, wc still be known in the history of music as grandest thing of the kind ever conceived. more remarkable even than the grandeur of conception is the perfection with which this c ception has been realised. It has taken twe years, and six separate experiments on the lar scale, to bring the Handel Festival to the p of excellence which it is now generally admit to have reached. The Handel Festival has been firmly established; and resting, as it d on the support, not only of London, but of England, it will, we may be sure, remain. can only be assured, however, by wide supp and those who admit its value should give it

Dr. Schliemann.—A correspondent of *Morning Post* writes to express his surprise among the names for honorary degrees at Oxford Commemoration last week that of Schliemann was not included. "He is the distinguished foreigner now present in Engl whose researches, conducted at his own expe from pure zeal and love of the subject, have exactly in the line which should have set name on high at a university which draws best inspiration from the past."

Decoration of St. Paul's Cathedral.—The executive committee for the completion of St Paul's, which had suspended all proceedings for nearly three years, met again on the 9th inst., when, after considerable discussion, the following resolution, proposed by Mr. Oldfield and seconded by Mr. James Fergusson, was passed unanimously:—"That it is desirable, with the funds now in hand, exceeding 40,000*l.*, to carry into effect as far as possible the wishes of Sir Christopher Wren, by decorating the dome of St. Paul's with mosaic, in a similar style to the dome of St. Peter's at Rome." A second resolution was then proposed by Mr. Gambier Parry, and seconded by Mr. Walter, M.P., in the following words:—"That a sub-committee be appointed to inquire and consider as to the best method of proceeding in the execution of the proposed scheme, and as to the artists and other persons most fit to be employed therein, with any other matters they may think essential, and to report fully their opinion thereon to this committee." To this the following amendment was moved by Mr. Beresford Hope, M.P., and seconded by the Rev. Benjamin Webb:—"That this committee communicate with the architect of the completion and the surveyor of the cathedral as to carrying out the above resolution." On a division the amendment was negatived by eight to two, and Mr. Gambier Parry's resolution was then carried by ten to two. Afterwards the undermentioned gentlemen were appointed to form the sub-committee:—Lord Alwyne Compton, Mr. Fergusson, Mr. Oldfield, Mr. Gambier Parry, and the Rev. St. John Tyrwhitt.

Newcastle-upon-Tyne.—The fine old church of St. Nicholas, Newcastle-upon-Tyne, which will probably become the cathedral church of a new diocese in the north, has been re-opened, after restoration. The original church was built by Edmund, one of William the Conqueror's bishops, in 1091. Destroyed by fire in 1216, the church was rebuilt in 1359, and the steeple was erected by a benefactor of the cathedral and churches of the Durham diocese, Robert Rhodes, about the middle of the fifteenth century. St. Nicholas Church is associated with many important historical incidents. It had, until the time of Henry VIII., nine chantries; and even after the spoliations of the Scots during the Civil Wars of the seventeenth century, it was rich in sepulchral monuments. But during the reckless alterations in the interior of the church, in 1793, many mural monuments and inscribed stones on the floor were ruthlessly destroyed. The first portion of the present renovation was begun in 1866 upon the well-known steeple and tower, which had shown signs of destruction, and was raised in 1871 at a cost of 8,500*l.* Soon after the steeple and tower had been thoroughly repaired, a committee, with Sir Wm. Armstrong, C.B., as president, was formed for the purpose of carrying out the thorough restoration of the entire church, which had sunk into a state of great dilapidation. Sir Gilbert Scott was chosen architect, and the work was begun in 1873. The entire cost has been about 22,000*l.*, of which 3,000*l.* are still required to provide reredos, chancel-screens, and communion-table. For a long period the nave had been entirely disused, and service was held only in the chancel and transepts, from which the nave was divided by a partition on which the organ stood. The church is now open from end to end. The nave and transepts have been fitted with oak seats. The chancel being unusually large, it has been cut off at the east end, and the first bay between the great east window and the reredos will be used as a morning chapel. The work of restoring the church was let by contract to Mr. Walter Scott, who has also carried out the works involved in the restoration of the tower and steeple.

Trumpington.—Trumpington parish church, Cambridgeshire, has been re-opened, after complete external restoration. The outer walls and tower have been entirely renewed in Bath stone, and also have the whole of the windows, and the roof has been raised to its original lofty pitch and recovered with lead. The work was entrusted to Mr. Butterfield, architect, whose designs were carried out by Mr. Gibbons, of Buntingford, as builder. The nave was completed early in the year, but the re-opening was deferred till the completion of the warming apparatus (by Messrs. Beales & Gibbons), and the restoration of the chancel by Trinity College, who have restated the stonework of the windows, and of various parts of the walls, retimbered and re-roofed the roof, and renewed the bosses of the interior. This work was entrusted to Messrs. Nettee & Kett, of Cambridge.

Metropolitan Association for Improving the Dwellings of the Industrial Classes.—The annual meeting of the shareholders in this company was held on the 14th inst. The thirty-third report stated that the profits for the past year amounted to 7,064*l.* 19*s.* 8*d.*, sufficient to pay a dividend of 5*l.* per cent. per annum, free of income tax, and leave a balance of 634*l.* 6*s.* 5*d.*, which the directors recommended should be carried to the guarantee fund as usual, which would then be increased to 7,066*l.* 1*s.* Since the last report the directors had entered into contracts for the erection of dwellings in Carrington-mews, Mayfair, and in Albert-street, Mile-end New-town. Application had been made to the Metropolitan Board of Works for sites taken under the Artisans' Dwellings Act, 1875; but that body were not yet in a position to offer any for building purposes. The deaths upon the property of the association had been 74 out of any average population of 5,171, showing a rate of mortality of only 15 per 1,000, whilst that of the whole of metropolis was 22 per 1,000. Mr. T. Baker moved a resolution to the effect "that the gratuitous services of the directors having been accepted for upwards of twenty years, and 5 per cent. dividend paid for three years past with a considerable sum carried to the guarantee fund, a payment of 200*l.* be allowed them for their services during the past year." The motion was ultimately withdrawn. The meeting was then made special, and a resolution adopted authorising the directors under the powers contained in the 41st clause of the chapter of incorporation of the association to borrow a further sum of 10,000*l.* from the Public Works Loan Commissioners.

Corporation Sanitary Depot, Nottingham.—A new sanitary depot, for the Corporation of Nottingham, is in course of construction at Eastcroft. It is situated in on, at present, quite open spot. The fœcal matter, under the old system, is collected from the box-closets in tubs, and delivered at the Leen-side, for shipment by barges to land where manure is required, and at the railway-station, for consignment by train. This work will in the future be carried on at the new depôt. To this end a cutting has been made from the Great Northern Canal, 420 ft. in length, by 36 ft. wide, to serve as a wharf, with dry-dock at the end furthest from the canal, for repairs. The walls are of Derbyshire stone, and to protect the men employed in the work, a brick shed, covering a sufficiently large area, has been errected, having an iron framework roof. A line of rail will be laid down from the north side of the depôt, communicating with the main line, and it is contemplated that the hide and skin markets, and the cattle market, will be removed to this neighbourhood, which will do away with a great deal of traffic of a disagreeable sort which now goes forward in the town. The work is being carried out from designs by Mr. Tarbotton, the borough engineer, under the superintendence of Mr. Gill, as clerk of the works. The ironwork has been supplied by Messrs. Goddard & Massey; the brickwork having been executed by Mr. Lawson, builder.

Bogus Cities.—An American paper says that the Austin (Texas) *Statesman* is engaged in an exposure of the "bogus cities" which "Northern confidence men,"—whoever and whatever they may be,—locate in Texas in order to dupe the unwary. A Canadian gentleman having written for advices as to whether he should invest in town lots in the "City of Oxford," the *Statesman* says the "City" does not exist. The fictitious place is represented to be situate in the county of Milan, and attractive circulars are sent broadcast over some of the Northern States and Canada, in which the "Texas Land and Colonisation Society," Cincinati, Ohio, propose to give away lots in the "City of Oxford." The giving away process consists in sending in return for each dollar sent by mail, one lot in the so-called city. This dollar, it is claimed, pays for drawing and recording the deed. To lead parties into the snare, it is stated that special rates have been made with railroads for those holding these deeds, who will be notified of a grand excursion to take place in the early future from points of rendezvous to the great "City of Oxford." There is no such place in Texas, and those who are practising such a swindle upon people deserve to go to the penitentiary for life. They are probably the same rascals who sold our "Empire City" and one or two other such cities in Texas.

Amalgamated Society of Engineers.—The twenty-sixth annual report of the Amalgamated Society of Engineers has just been issued. It states that 1876 was not a good industrial year, but the proportion of the unemployed in the Society only increased by insensible degrees from four per cent. in January to five per cent. in December. Bad, however, as the year had been, the society had improved its position in the face of all obstacles. The report of the secretary states that in December, 1875, there were 384 branches. During 1876 five new branches in England, and two in the United States, were opened. 2,844 new members were admitted, and, after deducting deaths and exclusions, there was a clear gain of 546. In 1875, the income from 44,032 members was 110,665*l.* 6*s.* 1*d.* In 1876 the income from 44,578 members was 110,724*l.* 8*s.* 3*d.* The total income for the two years respectively, from all sources, was 120,024*l.* 2*s.* 3*d.* and 120,206*l.* 10*s.* 1*d.* Under the head of bank interest, the society's income was higher than in any previous year, and realised the amount of 5,977*l.* 9*s.* 10½*d.* On the other hand, the outlay was enormously increased under almost every benefit, and reached the grand total of 109,701*l.* 11*s.* 5*d.*, the largest total expended in one year since 1868, when it nearly reached 110,000*l.* In 1868 the outlay amounted to 3*l.* 5*s.* 3½*d.* per member, while in 1876 it was only 2*l.* 9*s.* 2½*d.* The balance added to the accumulated fund last year was 10,504*l.* 18*s.* 8*d.* The total balance at the end of 1875 was 264,641*l.* 17*s.* 1*d.*, which is now increased to 275,146*l.* 15*s.* 9*d.*, or 6*l.* 3*s.* 5½*d.* per member.

New Almshouses in Ipswich.—In Ladylane, Ipswich, there have existed for generations a number of small and low cottages, which were left three centuries ago by one Edmund Daundry, as houses in which a few of the aged poor of the parish of St. Matthew might spend their declining days. They were lowly lath-and-plaster dwellings, and as they increased in age they became dilapidated. On the death of Mr. Joseph Hill, a former resident in St. Matthew-street, it was found that he had left an informal will, in which he bequeathed about 1,000*l.* for the rebuilding of these almshouses. In consequence of the informality in the will, there being no next of kin, the property would have lapsed to the Crown, but on application the right of the Crown was waived, and the intention of the would-be testator was allowed to be carried out. Mr. H. M. Eyton was engaged to furnish plans for new buildings, and the buildings have now been erected, Mr. R. Smith, Northgate-street, having contracted for the work at 999*l.* Twelve dwellings have been provided,—two more than the demolished cottages afforded,—four in the main two-storied building, and the others in two wings of a single story. The buildings are of red brick, relieved with bands of ornamental white and black bricks, the main building having likewise a few stone dressings, and the roofs are of red tiles.

Death of Sir Henry James, R.E.—We have to record the death, at his residence in Southampton, on the 14th inst., at the ripe age of seventy-four, of Lieut.-General Sir Henry James, late director-general of the Ordnance Survey of Great Britain. He entered the Royal Engineers, as a cadet, in 1825, and received the honour of knighthood in 1860. In 1844–6, he was director of the Geological Survey in Ireland, and in 1846–52, director of the Admiralty Engineering Works, at Portsmouth. In 1854, he was appointed director of the Ordnance Survey of Great Britain, a post which he held till his appointment to the command of a battalion in 1874. He was also head of the Topographical and Statistical Department of the War Office, till its disseverance from the Ordnance Survey, in May, 1870. The surveys of Jerusalem and Sinai were carried out under his direction, during which a large number of photographs and models made upon the ground were taken.

Building Societies.—A Bill to Amend the Building Societies Act, 1874, bearing the names of Mr. Dalrymple, Mr. Waddy, and Mr. Yeaman, has been printed. It proposes to enact that societies may change their chief offices or places of meeting on notice being sent to the registrar; that the funds and property of societies are to vest on incorporation; and that registration of the union of societies, or of transfer of their engagements, is to operate as an effectual conveyance of the funds and property of the uniting societies to the united society, and to the society to which the engagements are transferred.

A Gasholder.—The Phœnix Gas Company have just commenced the erection of what will be the most capacious gasholder at present erected, viz., that of some 3,100,000 cubic feet. The tank to contain it will be 218 ft. in diameter, and the holder will consist of two lifts, each rising 44 ft. The works are to be carried out to the designs of the company's engineer, Mr. C. Woodall, and the holder will, we understand, be on the non-trussed principle. Mr. Woodall has departed somewhat from the general type of guide-framing, he substituting standards formed principally of wrought-iron in place of the usual circular cast-iron columns. The contractors selected by the company to carry out these important works are:—For the tank, which is to be of brickwork, the firm of Messrs. J. Aird & Sons, of Lambeth; and for the gasholder and guide-framing, the firm of Messrs. S. Cutler & Sons, Millwall, both firms having already respectively built several tanks and gasholders for the same company.

St. Werburgh's Church, Bristol.—The proposed removal of St. Werburgh's Church is still causing some difficulty at Bristol. At a meeting of the Streets Improvement Committee on the 12th inst., it was suggested that a representation from the Corporation's point of view should be addressed to the Lord Chancellor, it being believed that if Lord Cairns had had the facts placed before him he would not have decided that the Corporation had not concluded the purchase of the church and site. Another suggestion was made that the Council should wash their hands of the whole matter, and leave the responsibility to the Vestry. A division being taken, it was found that the numbers were equal; and as the chairman declined to give a casting vote, no formal decision was arrived at by the committee.

Testimonial to Mr. Simon, C.B., F.R.S. A special meeting of the general committee for promoting a testimonial to Mr. John Simon, C.B., in recognition of his valuable services in sanitary science, was held at the rooms of the Social Science Association on the 13th inst., the Right Hon. Robert Lowe, M.P., in the chair. The chairman bore testimony to the long and valuable services that Mr. Simon had rendered to the State in the matter of sanitary science. The value of his long series of reports as medical officer of the Privy Council, he believed, was not at the present time properly estimated, and at some future period the nature of his services would be more publicly recognised.

Proposed Memorial to Izaak Walton.—According to the *Standard*, for some time past a movement has been on foot to raise a fitting memorial to Izaak Walton in his native town of Stafford, and very recently a more formal appeal has been made to the angling and general public for funds for this purpose. The gentle angler lies buried in Winchester Cathedral, where only a flat slab marks his resting-place. It is now proposed to erect a marble bust and tablet and a stained-glass window to his memory in the Church of St. Mary, Stafford, where he was baptised. The cost is estimated at about 1,000*l.*

Manchester Adult Deaf and Dumb Institute.—The memorial-stone of a new building for this Institute was laid on the 2nd inst. The site is in Grosvenor-street, Oxford-road end. The building, which is to be erected by Messrs. R. Neill & Sons, from plans prepared by Mr. John Lowe, of Manchester, is estimated to cost about 3,500*l.*, and to this must be added 2,227*l.* for the site, making in all 5,727*l.* The building will be Gothic in design, with a front elevation to Grosvenor-street.

New Municipal Buildings, Sunderland.—At a recent meeting of the Sunderland Town Council, it was decided to spend 22,000*l.* upon new municipal buildings, embracing council chamber, offices for town clerk, borough engineer and surveyor, borough accountant, medical officer, committee-rooms, &c. This was followed by a vote on the appointment of an architect, when Mr. G. G. Hoskins, of Darlington, was selected by a vote of thirty-six to four.

American "Fancies" in Building.—The *Burlington Hawkeye* says that when a San Franciscan gets to be immensely wealthy he builds a palace of a stable, with marble halls, Brussels carpets, and hot and cold water in every stall; a Chicago millionaire builds a hotel nine stories high; a New Yorker builds a hospital; a Bostonian builds a college; and a Burlington man builds another bay window to his house and paints his front fence.

Filey.—A new Wesleyan chapel was opened at Filey on the 25th ult. It is Gothic in style, with turret and spire, and has been designed by Mr. John Petch, of Scarborough. It will seat 600 persons on the ground-floor, and 100 children in the lobby-gallery. There is a large school-room, with four convenient class-rooms above it. The cost is estimated at 4,700*l.* The contracts were taken by Mr. T. Petch, builder, Scarborough; Mr. Thomas Craven, plumber, Scarborough; Mr. Thomas Cooper, joiner, Filey; Mr. J. Hardgrave, slater, Scarborough; and Mr. W. Waters, ironfounder, Scarborough.

Competition.—Thirty-six designs were sent in in answer to an advertisement calling for competitive sketches for drinking-fountain and lamp. The first premium has been awarded to "Practicus," representing the firm of Messrs. W. S. Allen & Co., art founders, Upper Thames-street; and the second premium to Mr. Thomas Machell, of Liverpool. A sketch by Mr. Lovegrove, Lower Clapton, was also commended.

Letts's "Sectional" Papers and Books.—The paper in "blocks" and books, ruled both ways with faint lines accurately spaced, as issued by Messrs. Letts & Co., would be even more used than it is if it were better known or more constantly remembered by those to whom it would be useful. Plans can be drawn to scale upon it without even rule or ruler.

The Worcester Guildhall.—At a meeting of the Worcester Guildhall Restoration Committee on the 14th inst., the tender of Mr. Thos. Dixon was accepted for restoring the Guildhall according to the plans and specifications of Sir Gilbert Scott and Mr. Henry Rowe. Mr. Dixon's was the lowest of nine tenders, and amounted to 11,543*l.* 4*s.*

Royal Academy.—Mr. H. W. B. Davis, A.R.A., has been elected an Academician, and Mr. J. B. Burgess and Mr. P. R. Morris Associates of the Royal Academy.

TENDERS.

For the first portion of hotel buildings, to be called The Manchester Hotel, Aldersgate-street. Messrs. Bateman & Corser, architects. Quantities supplied by Mr. Josiah Hunt:—

Lovatt	£45,783 0 0
Hill, Higgs, & Hill	45,303 0 0
Downs & Co.	44,690 0 0
Colls & Sons	43,797 0 0
Crabb	43,500 0 0
Kilby	43,089 0 0
Scrivener & White	42,937 0 0
Sewell & Son	42,825 0 0
Peto, Brothers	42,080 0 0
Browne & Robinson	41,343 0 0
Perry & Co.	41,300 0 0
Brass	40,747 0 0
Chappell	40,663 0 0
Longmire & Burge	38,993 0 0
Kirk & Randall	38,710 0 0

For excavation, drainage, and road-making, at Everton Cemetery, Liverpool. Messrs. T. D. Barry & Son, architects:—

Price (too late)	£22,950 0 0
Thomas	19,978 0 0
Ridal	14,518 17 0
Escott	13,999 0 0
Walkden & Co.	12,686 0 0
M'Kenzie	12,239 6 0
Rayner (too late)	11,378 0 0
Keating & Sons	10,467 14 4
Lawrenson	10,224 11 10
Bushell & Co.	9,247 15 7
Hickman & Doverner	9,215 0 0
Elias	9,039 0 0
Anwell (accepted)	8,783 0 0
Yates	7,950 7 7
Ladd	6,264 0 0

For the enlargement of premises in the Hampstead-road, for Mr. T. Boocock. Mr. Wagborn, architect. Quantities furnished by Mr. R. C. Gleed:—

Emery	£2,050 0 0
Scrivener & White	1,998 0 0
Langmead & Way	1,950 0 0
Longmire & Burge	1,939 0 0
Gould & Brand	1,833 0 0
Brown	1,824 0 0
Aitchison & Walker	1,777 0 0

For new stores, at brewery, Chiswick, for Messrs. Fuller, Smith, & Turner. Mr. W. Nunn, architect. Quantities not supplied:—

Bangs & Co.	£4,395 0 0
Nye	4,158 0 0
Henning	4,120 0 0
Adamson & Sons	3,996 0 0
Lamble (accepted)	3,9 3 0 0

For the erection of a detached residence, at Hungerford, Berks, for Mr. Morse Goulter. Mr. A. W. W. Goulter, architect:—

Elliott	£1,821 0 0
Walters & Crick	1,810 0 0
Crocker *	1,765 0 0

* Accepted, subject to slight modification.

For alterations to Masons' Arms public-house, Watl street, St. George-in-the-East, for Mr. N. Sykes. W. Bastker, architect:—

Roper	£575 0 0
Palmer	563 10 0
Moyle & Son (accepted)	485 0 0

For the erection of Board Schools, Manuden, E Messrs. G. Perry & Slater, architects. Quantitie Messrs. J. & A. E. Bull:—

Linfield	£1,410 0 0
Cornwell	1,190 0 0
Whiffin & Sons (accepted)	1,150 0 0

For the erection of auction mart and business prem in East-street, Chichester, for Messrs. Hobgen, Brot Mr. S. Denman, architect. Quantities supplied:—

Cheesman & Co.	£4,070 0 0
Barnes	3,700 0 0
Johnson & Son	3,632 0 0
Fielder	3,595 0 0
Budden (accepted)	3,200 0 0

For the re-erection of farm-buildings, Little Barrin Hall, Essex, for Mr. G. Alan Lowndes. Messrs. G. P & Slater, architects:—

Cornwell	£1,550 0 0
Glasscock	1,492 0 0
Brown (accepted)	1,289 0 0

For additions to Red Hill House, Castleford, for J. Austin, J.P. Mr. W. Lewis, architect. Quantitie the architect:—

Cresser	£1,503 0 0
Weatherley	1,421 15 0
Schofield	1,290 0 0

For additions to school, with class-room, master's dence, out-offices, and boundary-walls, at Hunting Mr. W. Lewis, architect. Quantities by the architect

Cresser	£1,000 0 0

For new stables, &c., at Ripon, for Mr. J. Bate Mr. W. Lewis, architect. Quantities by the architect

Webster & Mitchell	£490 0 0

For the erection of stabling and other buildings, for vestry of St. Mary, Islington. Mr. F. Wallen, ar tect:—

Williams & Son	£4,355 0 0
Mattock, Brothers	4,271 0 0
Howard & Co.	4,085 0 0
Judd & Hawkings	4,063 0 0
Hunt	4,036 0 0
Ennor	3,980 0 0
Johnson	3,959 0 0
Channing	3,750 0 0

For the erection of residence, at Gore Hill, Ashf Kent. Bricks found. Mr. B. Pyke, architect. Quant supplied:—

Jefferson	£1,895 0 0
Fowler	1,800 0 0
Bingham	1,736 0 0
Stiff	1,649 0 0
Butler	1,600 0 0
Wood (accepted)	1,593 0 0

For alterations at the Alfred Tavern, Roman-r Barnsbury, for Mr. E. T. Moore. Mr. W. Nunn, ar tect:—

Lamble (accepted)	£300 0 0

For the erection of additional rooms to St. Mi School, Windsor. Mr. S. Wyborn, architect:—

Reavell (accepted)	£350 0 0

For the erection of brick walls, &c., to land at Datc Mr. S. Wyborn, architect:—

Sears	£147 0 0
Reavell	139 0 0

For constructing river-wall, and completing Clarer Wharf, Wapping. Mr. W. S. E. Payne, architect, Q tities by Mr. E. Morfee:—

Outhwaite & Son (accepted)	£4,805 0 0

For alterations to Nos. 64 and 65, Tabernacle-walk, Messrs. Loader & Sons. Mr. C. Fowler, architect. Q not supplied:—

Stamp & Bowtle	£692 0 0
Waldram & Co.	685 0 0
Allen	660 0 0

For repairs to the Royal Caledonian Asylum. Alfred Williams, architect:—

Shaw	£395 0 0
Stimpson & Co.	385 0 0
Benstead & Sons (accepted)	387 0 0

For the erection of Tolmers-square Schools, Dr mond-street, Hampstead-road. Messrs. Tarring & kinson, architects:—

	Carcass.	Finishings.	If stock br for facin deduct
Richards	£1,935	£2,110	£10
Roberts, Brothers	4,796	2,247	20
Brass & Son	4,624	2,309	40
Browne & Robinson	4,762	2,122	50
Bywaters	4,617	2,208	51
Dove, Brothers	4,536	2,277	23
Perry & Co.	4,634	2,069	19
Tarrant & Son	4,664	1,987	35
Newman & Mann	4,478	2,181	19
Stephenson	4,578	1,623	15

For a pair of villas, proposed to be built at Up Norwood, for Mr. Henry Sotheran. Mr. S Dyball, ar tect. Quantities prepared by Mr. Ormes:—

Hobson	£2,865 0 0
Bowyer	2,8 0 0 0
Hall	2,716 0 0
Ramplin	2,599 0 0
Kirk	2,579 0 0
Perkins	2,577 0 0
Croaker	2,5 9 0 0
Niblett & Co.	2,497 0 0
Aitchison & Walker	2,477 0 0
Scowen	2,199 0 0

The Builder.

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The Rembrandt Etchings at the Burlington Club.



THE collection of etchings by Rembrandt now exhibited in the Gallery of the Burlington Fine Arts Club, and to which access is easily obtainable through the courtesy of members, has a special interest, to a certain extent, beyond that which must attach to any collection of the works of this great artist, from the fact that it has been made the occasion for endeavouring to establish a new theory in regard to the authenticity of many of these works. At the commencement of the long Introductory Essay to the Catalogue, it is remarked, in fact, that "the action of the Club in bringing together the present collection has been mainly utilitarian," and that object is thus briefly explained:—

"On the occasion of a former exhibition of the drawings of Rembrandt, in the old Club House in 1867, it was suggested to the Committee that the arrangement according to *subject*, then universally adopted, was fatal to the comprehensive study of such works, and that it might with advantage be discarded for the more rational order of *date of production*; that an arbitrary method, by which works of the latest were mixed up with works of the earliest period, confused the sense, perverted the judgment, and rendered critical examination impossible; and generally that such a system, though it might satisfy the cataloguer, was unworthy of the biographer and useless to the student. The art-work of a lifetime, it was contended, should not be looked at as a series of hap-hazard, disjointed efforts, but as the continuous expression of a prolonged chain of logical sequences depending for their coherence on the due maintenance of the order of their production, and only to be properly understood when studied in that order; and finally it was hinted—and that with considerable confidence—that if this unintelligent and incoherent classification were reversed, and a more consecutive method of arrangement substituted for it, new matter yet unsuspected in regard to the etched work of Rembrandt might be brought to light, and grave errors of attribution as to some of his large plates be both proved and rectified."

It may be presumed that the author of these various suggestions was mainly at least Mr. Seymour Haden, who exhibits his case in the introductory essay to the catalogue, prefacing the special subject with a few words in regard to etching generally. We concur with him in thinking (what we have, indeed, before urged) that English artists devote far too little attention to this beautiful and peculiarly characteristic art, though we scarcely think the essayist is correct in saying that there is a general idea prevalent in England that etching is fitted only for the amusement of amateurs, and that it requires no training; and perhaps we may think that the strongly-expressed comments on this point come rather oddly from an amateur etcher. But there are amateurs and amateurs; and provided that an amateur has a keen artistic sense, and a certain amount of time to give to his work, we opine that etching is an amateur's art in this sense,—that it does not require the space and the extent of paraphernalia which the painting of pictures on a larger scale demands, and that in its less finished and elaborate forms (which are not among its least beautiful or characteristic) success does depend rather upon artistic insight and feeling, than upon minute and recondite labour.

Some remarks on the precise meaning of the term the "state" of a plate (first, second, or third) will be useful to those visitors, not a few, probably, who go to see such a collection with a very inadequate idea of the sort of process implied in the term "etching"; and then we come to the real matter in hand, the new light that is thrown upon Rembrandt's etchings by this collection. In the first place, the grouping or chronological hanging of the drawings is carried out with remarkable completeness. The works follow in order, as nearly as dates can be ascertained or conjectured, round the room, and the approximate dates,—that is to say, the probable year of each set,—is marked over it in large figures. That this chronological order is in the main correct the evidence of the works themselves confirms, for the changes of style, from the early to the later and richer manner, are marked enough when we see the works thus collectively. This is a very valuable circumstance of the exhibition, and renders it unquestionably far more interesting and instructive than a combination of grouping based merely upon accidental similarities of subject, leaving chronology out of sight. But the special critical object of the exhibition, as conveyed in the Catalogue Essay, is to throw a new light on the authorship of some works which, as Mr. Haden considers, have long been erroneously regarded as Rembrandt's work, and are in reality either copies of his works by other hands, or etchings executed for the most part under his direction, and touched in, or finished in the more important parts by himself.

A strong presumption in favour of such a view, apart from special evidence, is brought forward in the remark, on page 42 of the introduction, that in 1633 there were done in Rembrandt's studio more etchings alone than would have occupied a professed engraver a year. "If Rembrandt did them, how, we would ask, did he manage to do thirty-three known pictures, and a number of signed drawings besides? The two large plates of the 'Descent from the Cross' would alone have occupied six months of the time." The amount of work seems extraordinary; but, so far as that goes, it must be remembered that the capacity for an almost superhuman rapidity of work has constantly been the characteristic of the highest artistic genius; so that this by itself might not be so unanswerable an argument; and, on the other hand, here are a number of etchings all signed "Rembrandt," and with no name of pupil or assistant appearing on any of them. It would seem that we are bound to accept the signature in the absence of internal evidence against the work. But this evidence Mr. Haden considers is existing,—indeed, in some cases palpable; and we think he makes out his case. The first piece of evidence is as to the record of Rembrandt's situation and habits of life at the commencement of his career:—

"In 1630, or thereabouts, we have seen Rembrandt, as yet with no practice, but with a reputation which had doubtless preceded him, taking a house on the Breedstraat of Amsterdam, of unreasonable dimensions for a bachelor of twenty-three, unless some ulterior object attached to the venture. What was that object? Houbraken tells us plainly that it was the formation of a School:—'He divided the whole of the upper part of the house,' he says, 'into cellules or small studios for the reception of pupils, who by this kind of segregation were to preserve their individuality; while Sandrart more specifically informs us who and what those pupils were, and what was the work they did there. To this testimony of Sandrart, whose knowledge of Rembrandt was confined to this portion of his career, we invite the particular attention of the reader, because in it we find the first germ of the solution for which we are looking. 'His house,' says Sandrart, 'was constantly full of pupils of good family, who paid him 100 florins annually, without counting the advantage he derived from their painting *and engraving*, which amounted to 2,000 or 2,500 florins more.' Who now, we ask, were these pupils—can they be shown to have been also etchers? Where are those engravings by which Rembrandt profited so largely, but which the catalogues make no allowance for?"

Among the names of the earlier pupils are known to be those of Van Vliet, Ferdinand Bol, Lievens, De Poorter, Savry, Koninck, Eckhart, Rodermondt, and Verbeecq,—all etchers, of whom the works of the first three, and o Koninck, are well known. And the next step is to inquire whether the known style of any of these etchers is exhibited in works here bearing the name of Rembrandt. Mr. Haden considers that this is indubitably the case; and even if we question his ascription of this or that plate to this or that special pupil, we think no one who follows his remarks with the etchings before his eyes can doubt that the negative side of the question at least,—that certain of these works are *not* by the hand of Rembrandt,—is fairly established. And it is interesting to notice what one or two of these works are, and what are the special reasons for discrediting them. The first comparison drawn is between the little head of "Rembrandt's Mother" (3) and the small one (three impressions) of Rembrandt himself (9), with that of an old man with wrinkled forehead and long beard (10). This latter is a very fine and effective thing, but on comparing it with the two others, any one with any perception of artistic style and feeling would see that it exhibits not only a certain dissimilarity of workmanship, but a difference which is much more marked and important in regard to the kind of effect aimed at. Effective and sparkling as it is, the effect is of that strongly-marked kind which belongs to the secondary order of art; that which is easily laid hold of by ordinary spectators,

and easily produced and reproduced by the aid of cleverness and brilliancy of handling rather than of high artistic insight. In the two other heads compared with it there is not a trace of that kind of "go" and that sort of lamp-light effect which, with many people, is principally associated with the name of Rembrandt. This view of the genius of Rembrandt, as especially melo-dramatic in its effects and tendencies, is one which an examination of the collection of drawings at the Club ought entirely to put to flight with any one of those who are possessed with it. The fact is that Rembrandt was far too really great and sound an artist to be contented with anything so comparatively easy of achievement as the creation of "striking" effects,—heads of which only one point catches the light, scenes in which nothing but an effect of "chiaroscuro" is realised. Let those who have not eradicated from their minds this notion of his genius, go round the collection we are writing of, and note how very small is the proportion of works of the type which it is a fashion to call "Rembrandtish"; how completely thorough, sincere, and totally above affectation is the work and the taste of this great and truly robust genius. This consideration has an important bearing upon the next disputed work we refer to, the "Raising of Lazarus." It will startle those, no doubt, who have long admired this as one of Rembrandt's masterpieces, and seen it engraved as a typical specimen of his power, to be told not only that it is probably not his, but that it is not worthy of him at his best. What says Mr. Haden? "There is no date on this print, and the signature is not Rembrandt's, nor is the *ordonnance* of the plate; nor its melodramatic action; nor is it at all like any of Rembrandt's work previous to 1633, when he was using the signature 'R. H.,' or, indeed, after it." Whose it is the essayist does not undertake to say, though pointing out great similarity in the design and workmanship, in the heads especially, to known work of Bol's, as well as to the heads in "The Good Samaritan," No. 19 in the collection, and which he holds to be certainly Bol's, and which we may probably all agree is not Rembrandt's. Certain points which Mr. Haden alludes to in this latter etching,—"the barrel in the right corner, without substance, rotundity, or containing-power; the straw above it like hair," and other details, seem conclusive against it being the work of the master-hand; and the evidence of this fact of the similarity of the heads to some of those in the "Raising of Lazarus," of course tells in turn against the latter. This doubt thrown, and, as we believe, with strong reason, on the authenticity of the "Raising of Lazarus," is really very important in its result on our estimate of Rembrandt. Over and over again we have seen or heard this design referred to in terms of high admiration, certainly, but as instancing also the theatrical nature of Rembrandt's manner of treating the event, and the presumed melo-dramatic character of his genius generally. Now, the fact is, that if there is one thing which Rembrandt in particular was *not* in his art, it is that he was essentially not theatrical, and the removal of this very decidedly theatrical production from among his accepted productions would clear away a puzzle which must often have perplexed those who have intelligently compared this work with others by the master, with the tone and feeling of which it contrasts, in a manner furnishing a strong *primâ facia* presumption in favour of the sceptical criticism here put forth in regard to it.

The evidence in regard to the large plate of the "Descent from the Cross" is more precise and detailed. There are two plates of the subject similar in size, of which the first failed in the biting and was abandoned. An impression of the first plate is in the British Museum; the other, the well-known one, is that of which an impression is exhibited at the Club. A photograph from the impression of the first plate is bound up in the catalogue, along with that of the same portion of the design on the second plate for comparison. Mr. Haden desires special comparison between them, especially between the folds of the cloak lying on the ground, and the lower portion of the ladder, which appear in each. In regard to the cloak especially we are entirely with him, on this evidence, in the conclusion that the second plate is a copy of the original design by another hand. It is simply impossible to suppose that the same artist who drew the cloak in the first plate drew that in the second, so weak and commonplace in comparison is the manipulation and shading is the latter. Our attention is next directed to another important work, the "Ecce Homo," of which the original painting has been lent by Lady Eastlake, along with which we are asked to study the finished proofs of the etching (two of which are exhibited); an unfinished proof of the etching in course of reproduction by the copyist; and certain undoubted works done by Rembrandt at the same time, the "Death of the Virgin," "The Presentation in the Vaulted Temple," and "Youth surprised by Death." "We have only to bring the whole of this evidence into juxtaposition,—picture, proof, copy, and Rembrandt's undoubted work,—to be assured that this popular, but coarse print, for which such large sums have been paid, and which the catalogues one and all go out of their way to extol, is no more than an able copy largely touched upon by Rembrandt, and published by him solely for commercial purposes. To make this clear we have had a reduced *fac-simile* made of a portion of the unfinished proof. It is worth observing: the handling of it; the weak heads in the left corner; and the glaring fact that the copyist—proceeding from the side of the plate towards the centre, in true mechanical fashion, finishing as he goes—has actually made the shadows projected by the legs of St. Peter's chair before making the legs themselves!" This fact is shown in the reproduction of this unfinished state which is appended to the catalogue; and if the comparison of this (as Mr. Haden truly styles it) "coarse print" with the undoubted works of the same period were not enough to invalidate the work, this fact at least must be conclusive: for who can believe that any great artist, even reproducing his own painting, would go to work in that way? Another curious hint is furnished by the two proofs of the "Gold-weigher"; in one of which the head of the principal figure has been left blank, a fact which serves to explain the distinction between the style of this head and of the rest of the work in the finished picture: the obvious deduction being that one of the master's scholars (Mr. Haden thinks it was Bol in this case) had instructions to execute the greater part of the plate, leaving the principal head to be put in by Rembrandt himself afterwards. We cannot here follow out further the subject of the authenticity of the etchings, but what we have commented on will convince our readers that the author of the introduction to the catalogue has brought forward facts, and suggested conclusions from them, which are of much interest, and which connoisseurs in Rembrandt's etched work cannot afford to overlook.

While recognising, however, the "utilitarian" character of this collection, and the real interest which attaches, in a critical point of view, to the suggestions in the introduction to the catalogue, it is impossible to look at such an exhibition of Rembrandt's etchings without indulging in a word of comment on these powerful and striking memorials of a genius so essentially removed from all that is commonplace or unhealthy in art. If we were asked to fix upon and point out some characteristic and pervading trait of the genius of the artist as here exhibited, we should be disposed to say that it lay in the power of seeing common incidents of life in their suggestive and artistic side. As we have observed, the unreal works in which the predominant aim is a striking chiaroscuro effect are rarities, and are specified in the catalogue as "in Rembrandt's dark manner." But we see the real bent of the artist's genius more in works which deal with real life on its picturesque side: such as the beautiful portrait of Burgomaster Six, and the portrait of the artist himself sketching at an open window, with a plain every-day hat on; nothing in the circumstances of the representation going beyond the realities of an unpretentious life; and yet the whole is full of genuine artistic effect and interest, arising out of the carefully studied expression of the head, and the manner in which a kind of natural frame-work is formed for it by the window, and an effect of light and shadow realised in the most unaffected manner. The very fine early work called "The Jewish Bride," pretty well known to be the portrait of his wife Saskia, affords a curious instance of Rembrandt's natural and unaffected way of working, as the first state of the plate represents the shadow in quite a different position from that in which it is shown in the finished drawing; this is, of course, a defect and oversight, as some portion of the effect of light in the finished state is obscured and interfered with by the shadows intended in the first scheme; but it, at least, shows how far the painter was from being an elaborate "cooker" of effects. In the "Burgomaster Six" we see how interesting a moment of ordinary life with its surroundings may be made, when looked at through the transfiguring medium of art. It is just the portrait of a man reading at the window, in an ordinarily-furnished room of the period: not an incident out of the common run is invented, yet how suggestive it is, in the character of the figure, his easy and natural yet thoughtful attitude, and the look of light and air through the open window. That Rembrandt could treat great ideal subjects with power and grandeur, of course every one knows, yet it is odd how the realistic intrudes itself, sometimes grotesquely, in these cases. One work of the ideal class, of which two or three impressions in different states are exhibited, is very interesting as illustrating Rembrandt's method of working when he intended to finish a drawing with a powerful effect, and with much of the composition kept in shadow. The last and very grand form of the design of the "Crucifixion" is a dark, portentous effect, in which only a few of the figures are made out at all, the object being the general impression rather than detail; and it is noticeable that, though the previous impressions differ entirely in effect from this, and are, in fact, white and scratchy in general appearance, it is rendered pretty certain by the way in which these figures are put in that the darkness was intended from the first, the figures being in consequence merely sketched, in some instances in a stiff and careless way, since they were eventually to be nearly obliterated by the effect. But this, however it would be called Rembrandtish by many casual observers, does not represent the predominant characteristics of his etched work. At his best, his work is remarkable rather for a peculiar delicacy of execution, a shading in very thin and irregular lines, which, however, are no hasty means of getting an effect, but are carefully disposed and designed so as to assist contour; and it is in the difference between these and the coarser and often unmeaning lines of Rembrandt's scholars or imitators that there lies one of the great distinctions between the genuine and the copied work. In Rembrandt's treatment of landscape, again, we discern the same faculty of seeing common things in their artistic meaning and force, and this especially in reference to the manipulation of the special art of etching, which, no doubt, presents remarkable capabilities for giving the essential interest of a scene apart from accidental incidents which might detract from its effect. It is in this light,—as a thoroughly sound, strong-minded artist, free from all false sentimentality,—that Rembrandt appears when we compare his etchings collectively; and all who are interested in him (which means all who are interested in art) should endeavour to see and study the fine collection of them now placed in convenient juxtaposition.

ULM CATHEDRAL.—A CENTENARY.

ALTHOUGH the celebration of centenaries has become more universal of late than it was in earlier times—owing partly to increased facility for intercourse bringing men more readily together, partly also, however, to the greater interest now taken in momentous events of the past, or the benefits which we are reaping from the beneficent activity of eminent historical personages—those of chief importance are always connected with such events as have resulted in lasting benefits being conferred on mankind generally, or which have left behind them permanent records. One of the latter class is that of the foundation of Ulm Cathedral, the fifth centenary celebration of which is now rapidly approaching. Ulm, the capital of the Danube government district of the kingdom of Würtemberg, though now a fortress of the first rank, and a chief bulwark of South Germany, was of still greater importance in former times. While it now hardly numbers 30,000 inhabitants, during the fifteenth century it counted 60,000; and at the time its cathedral was founded, in the fourteenth, it was one of those powerful free imperial cities of Germany which offered, happily for civilisation, such a valiant and successful resistance to the degenerate feudalism of the Middle Ages.

The foundation-stone of the cathedral of Ulm was laid 129 years after the first stone had been deposited upon which was reared the stately edifice of Cologne Cathedral, the only ecclesiastical building in Germany exceeding it in

ize. It was on the last day of June, 1377, at n early hour of the morning, that the Burgo- naster Ludwig Kraft performed the ceremony. The building probably had its origin in the inde- endent pride of the citizens of the imperial ierman free town, but the latter were also, o doubt, at the same time actuated by a spirit f precaution. The example of Switzerland, who ad been laying low one stronghold after another, ad not been without effect upon the Ulmers and he burghers of other free cities. They became nvolved in an almost continuous series of con- licts with the robber nobility of Germany, the onsequence of which was the taking of a number f strongholds. Thus, in one year, the citizens of Ulm took and utterly destroyed as many as nine astles. In the autumn of 1376, the city sus- ained a siege by the Emperor Karl IV., who had to withdraw baffled, although he ad at first expressed the contemptuous opinion hat he would make a breakfast of Ulm. In 377 the war of the imperial cities against that rch enemy of German towns, Count Eberhard f Würtemberg, raged with renewed fury. It vas then that the burghers of Ulm formed the dea of transferring the site of their principal hurch, which was located outside the town walls, nto the heart of the city. The new cathedral was o be on a vast scale; it was to serve as a jacket or that of Strassburg, to use a local expression. As has already been said, it is exceeded in size nly by the cathedral of Cologne; but it experi- nced the same fate as its rival. After far more han a century generations of architects, sculptors, nd painters had displayed a greater or less ctivity in the erection of the building, according s means were provided, the operations came at ast to a standstill for want of funds. With the Reformation, which made its entry into the un- inished building, many a source was closed which had hitherto yielded an ample revenue, nd all prospect of continuing its construction, nuch less of completing it, seemed to have anished for ever.

The cathedral remained in this unfinished state or four centuries and a half, and critical signs of gradual ruin began to make their appearance. The enthusiasm with which in 1824 the resumption of building operations at Cologne was welcomed, the earnest and substantial sympathy with which hat project was received in Germany, raised lso the spirit of the inhabitants of Ulm. Men full of art feeling and energy, at their head Professor Hassler, directed the movement, and hus it happened that the work of restoration of the cathedral was begun in 1840. Although it was not expected that means would flow in so plentifully as in the case of the Cologne edifice, less was required, since the cathedral of Ulm was much more advanced than the latter when its erection was abandoned four centuries ago, and its restoration could, therefore, be accomplished with more modest means. The work proceeded at first only slowly. When, however, as in the case of the Cologne Cathedral, a yearly lottery was established, funds began to flow in more regularly. The whole series of powerful arched buttresses for securing the walls of the nave were completed in quick suc- cession. The architects Thrän and Seebold successively directed the work, and when the latter died, at a very early age, the present archi- tect, Herr Schen, continued the great task with energy and industry. Thus, of the two bell- turrets, the southern one is rapidly nearing com- pletion, while the northern one has been begun, and will be completed in a few years. Should the sources of revenue be as yielding for the next ten years as they have hitherto been, the main tower will be taken in hand, and the work commenced 500 years ago be completed.

Inspired by this vision, the citizens of Ulm have been making preparations for celebrating this fifth centenary in a becoming manner. The royal family of Würtemberg, men of science and art, have promised to take part in it. The festivities are to last three days. Yesterday, June 29, Händel's "Messiah" was to be performed in the illuminated cathedral. Four-and-twenty "court" musicians from Stuttgart were to strengthen a powerful orchestra selected from the seven military bands stationed at Ulm, and the town band. The best singers from Stuttgart and München were to sing the solo parts. The chorus was to be 400 strong. This Saturday, June 30th, will be the great day, however. An historical procession, in which 800 natives of Ulm, both ladies and gentlemen, will take part, and which will be divided into three groups—representa- tive of the fourteenth, sixteenth, and eighteenth centuries—will parade the streets. The proces- sion will be closed by the fishers' guild of Ulm, who, on the same day, hold their annual matches on the Danube. The exhibition of the Ulm Academy will also be opened on that day. The third day will conclude with a representation in the Ulm theatre, consisting principally of *tableaux vivants* illustrating the history of the city.

RESTORATION.—REPARATION.—ADAPTATION.

RESTORATION is a subject which, like any other matter of practical application, may be treated in the abstract if it is worth while. General principles of no little value for guidance and re- gulation may be propounded, and even agreed upon without involving inconvenient reference to any particular instances of application; that is, without explicit reference, for he will be a cunning speculator indeed who shall find his way to any comprehensive principles worth having without being under obligation to any individual instances. Knowledge, says Lord Bacon, which is drawn from particulars entereth more easily into particulars again; and knowledge, we may say, that is not drawn from particulars is likely to be but knowledge of very questionable quality, and, no doubt, even if conscientiously drawn from particulars, it will not easily be carried back again into new applications, unless the route by which it is to travel is very care- fully and pointedly set out in illustrations. Nevertheless, in some cases, and it seems that the discussion of restoration architectural is one of them, it may be more prudent, especially at the height of summer, for all parties to the in- quiry to be left to supply illustrations for them- selves. So they may go peaceably hand in hand along the broad paths of generalities; so they may find experimentally how far they can keep together, and feel their way as cautiously as they please as they extend their definitions. Perhaps it will be found that by such a process, when the time comes that part they must, the issue is at least narrowed down to the merest question of matter of fact. Mere questions of matter of fact are difficult enough to settle,—the more reason, therefore, to preclude a complication by any disagreement about principles. No result of a prolonged discussion is more disgraceful than an indefinite adjournment of a difficulty which is clamorous for settlement. Those who are con- tent with such a mode of "shuffling off the coil" upon futurity must understand that reasonable men look on with no uncertainty except as to the proportion in which undisciplined tempers or limp logical faculties are responsible for so ignominious a conclusion. It is something at least for an understanding to have been arrived at that in deprecating abuse of restoration there is no intention to denounce the proprieties of reparation. No little will be gained if the question of the appropriateness of reparation has been narrowed to a question of matter-of- fact by foregone recognition of the conditions under which what may pass under the title of repair is in truth advisable and appropriate.

There is some firm ground denoted by main- taining or conservative repairs, upon which we should all be content to stand, as there is ground from which all would be glad to hurry away if the business of maintenance is indefinitely postponed. Salisbury spire, let us say, must, in any case, not be allowed to fall, and venerable masonry and beautiful detail must be ruthlessly cut away, and nineteenth-cen- tury cement and mechanical appliances of last year's invention be called in aid if need be, to complete the safety of what Wren took the best means at command to render certain some centuries ago. We are all agreed as to the necessary safety of the fabric,—of whatever fabric retains all its original beauty or original serviceableness. But what shall we say of conservative repairs as applied to an admitted ruin? In an extreme case it depends on the timely application of certain measures, that, palliate as we will with whatever tender titles, will ultimately be repairs, and nothing less, whether the ruined structure, even as a ruin, will not speedily cease to have a coherent ex- istence altogether.

It is a nice question where Reparation, whom all may agree to call in, shall be called upon to hold her hand. Some of her work we may be content to have executed in a manner that may possibly be mistaken,—and no great harm done,—for portion of the original work; the replacement of disintegrated or damaged masonry may follow the model of that of which it takes the abandoned place, without provoking any outcry about forgery that need trouble the conscience. Beyond this, certain supporting walls and but- tresses will speak for their own dates as they declare the secondary purposes, distinctly enough. No doubt, such help to decrepitude will often be eyesores,—be unhappily detrimental to the picturesque effect which has been dear to us from early years. But many decaying monu- ments there are of which it were selfish of us to indulge in watching the picturesque extinction, to the deprival of our successors of any enjoy- ment from them whatever. Our interest in these inherited remains, these national heirlooms, should be regarded as a life interest; we are trustees for our successors, and not to be released from the obligation because suffering severely from neglectful trusteeship of our predecessors. Therefore we have to make up our mind, not merely to endure, but be thankful for the enormous and unsightly buttress that has kept so much of the Colosseum standing that otherwise, to the great gain of the pictorial and sentimental effect, would be lying a mass of rubbish. The Arch of Titus will never again be such a subject for engraving as it presented to Piranesi; but, at least, it will continue to be,—which, but for conservative interference, could scarcely be hoped for by the sanguine. The elder English resi- dents at Rome look back with regret to the time when a botanist could accumulate a considerable *hortus siccus* of the plants that grew about the mould-encumbered rows of the Colosseum, and when exposed substructures and broken galleries, upon which the moon now streams down her light to exhibit them as destitute of the life of vegetation as of that of the ancient seething crowd of excited spectators of the arena, were dressed with stems and foliage that relieved the bold blankness of the desolation. If the clearance has been unnecessarily complete in this instance, the spirit of conservation is not exempt from excesses of its own in an opposite direction; we have seen the ruins of an English abbey where solicitude for picturesqueness took the form of forbidding any check to the encroach- ment of clustering ivy which had already con- cealed the most charming architectural mould- ings, and was making sure progress in gaining vantage-ground for their detachment and de- struction.

Where reparation only pleads for preserving an arch or supporting a wall, it may be antici- pated that its pretensions will be as readily admitted as any proposal to secure a decaying monument from wilful and wanton damage; the ground grows warmer beneath our feet, and we are warned of approaching a volcanic centre, when we take a position to survey the condition of more delicate details and truly artistic mem- bers. If we are unguarded enough to be en- meshed and entangled in the fallacy of the *sorites*, we may find ourselves here led gradually on till committed to a perplexity not slightly surprising. To refill a ruined window of a roof- less and unpillared chantry with tracery by guess, is not always very different from working by the indications of fractured trefoils, that seem impossible to some and merest delusion to others; even when the original design and much of the actual stonework are indeed recover- able infallibly, there will be a difference of opinion whether it is even so worth while, not to say desirable and praiseworthy, to undo what time has done, or, rather, do again what time has undone. Even in such a case there will not be wanting rigid denouncers of the casuistry of restorers. All will not equally be pleased that new mullions, however accurately modelled on the old that remain, should be associated with them; and rhetoric will be invoked to denounce the poor mechanical contract character of work- manship in a straight window-bar, as compared with the loving feeling of the Mediæval who wrought for hire only as a secondary consider- ation, — sometimes, however, in the grand Edwardian era scarcely for hire at all, if it was his chance to be impressed for the loving exercise of his faculty upon a chapel within royal precincts. And so it may be questioned at last whether the scrupulous and reverential architectural conscience can bring itself to take means to give security to tracery, which other- wise the next frost will certainly bring rattling to the ground.

No doubt it is difficult to arrest decay without introducing some incongruity between the inter- polated and the original; and the very con- sciousness which is thus suggested of the presence of watchful and even officious guardian-

ship impairs the especial charm of old associations. But here as ever we are confined to a choice of evils. Who would not be glad to be rid of the intrusive cicerone or verger, and take his own way alone among the tombs of Tudors and Plantagenets; but who has a right to claim such a privilege to the exclusion of the rest of the world of sightseers, more or less worthy, but all with equal rights? He has but little of the sentiment of antiquity whom it does not enable to abstract himself from far more incongruous accompaniments. Of a surety there is nothing for it in numerous instances of ruins that are always likely to remain ruins, but as far as possible to counterwork an insidious as resolutely as an open enemy,—to supplement precautions against wilful damage, by precautions against the progress of fatal decay, and even by reconstruction of some parts of which the design is recoverable and which have a character that renders them either historically valuable or beautiful in themselves. How far it is requisite that such reconstruction should be executed in a manner to declare themselves of secondary date, is a problem that may be solved very easily, and is scarcely worth dwelling upon longer here. The matter will frequently take care of itself; new work will not always be worse than old; it will often inevitably,—and sad as some may think it,—be better, and either way the limits of reparation become self-evident.

All these considerations apply equally to monuments that, not architectural, are the constant adjuncts of architecture; by all means let the decay of the effigy of a cross-legged knight be arrested; let the pollution of dirt, in the interest of everybody, be a thing of the past and impossible in the future; but as beauty is not here in question, but chiefly antiquity, of which the interest depends upon genuineness, and lives and dies with it, let us spare to replace either limbs or features, to re-paint or furbish up with the notion that we are recovering an original, which, when so elaborately reconstituted, only glares out the more incongruously upon the nineteenth century as an anachronism, if not as an imposture. The draughtsman and archæological illustrator may usefully employ his skill and sagacity in giving the best representation he can studiously make out of such a monument in its original state; in his book it will be welcome,—

"But leave us still our old nobility,"

in this monumental sense assuredly, whatever arts and laws and theories of restoration, we may be content to leave, in our sublime indifference, to die.

Some considerable steps further, and over ground still hotter, do we advance, when we deal with monuments in respect of which the interests of archæological association, and of architectural and other beauty, are combined, and which in some instances it may be contended are in conflict with those of present use and occupation.

Those with whom archæology, if not precisely supreme and in the unapproachable ascendant, is still so near the heart as to be secure from even neglect, and still more from injury, may have many an occasion nowadays to look back with fond regret to memorials which have been more or less deservedly cleared away as rubbish, by innovators whose sympathies are, at least not archæologically, catholic and comprehensive. We, who as Thackeray says, remember not merely "the consulship of Plancus, but even that of Priscus Plancus," do not find ourselves without a sigh in a scene transformed by removal of much that was odd, it may be,—was grotesque, was inconvenient, but that bore witness to the progressive superposition of the works of one century after another, very often much as the bodies of their authors were laid one above another in the vaults below the feet of the living generation. The comparison is only too suggestive, perhaps, of an undesirable accumulation; but even in taking away something which never ought to have had a place, we may be thought too ready to lay violent hands on what is archæologically sanctified, for are we not obliterating our historical voucher, albeit of bad taste or something worse? The line must clearly be drawn somewhere, but it will be hard when we have to traverse broken, if not heaving ground, to draw a line that shall be very rigidly straight. Shall we remove, and remove to destroy, the monuments and inscriptions in Westminster Abbey, which are associated with names that England will never let die, but that would scarcely be admitted for the first time nowadays, to make room for others that perhaps our successors will be ready to think quite as little entitled to such honourable place? If every generation, nay, if every alternating party within the same generation, is thus authorised to be iconoclast, what will remain of interest for the historical archæologist of a generation not very far remote? In many cases the accusing angel will have a too well-founded charge of hideousness to prefer; but then, if an advocate on the other side is allowed a hearing, he may plead that any offensiveness to the properly æsthetic sense is often more than compensated by the sentiment of old associations; a more serious charge may be that the hideousness abuses the most liberal concession of privilege, and, passing the bounds of the æsthetic, reveals itself in a form far too grotesque to harmonise with the solemnity appropriate to its general surroundings. Even so the inference for condemnation will not pass unchallenged. The ardent archæologist will object that he has a grounded mistrust of a truly reverential dignity being imported instead,—he will even aver that reverential feelings ought to be, and may be, superior to requirement of a stimulative scene, even supposing that he could rely upon such being effectively realised.

But then there is a division even within the camp of archæology. It is not merely that the assailants of the hideous join forces with the eager advocates of the congruous in sentiment and of the convenient; quite as ruthless may be the demand for clearance,—for all but reconstruction,—made by those who would bring a fabric into consistent harmony with a certain style, whatever the revival may regard as the one authentic style. What can the respondents bring forward in bar of such dealings?—dealings for which the centuries they most admire give such abundant warrant. If we are not like Sthenelus, prepared to brag that we are far better than our sires, may we not claim to be as good,—or, more modestly still, to be striving to be so,—by sedulous emulation of their ways? When did one generation of the builders whom we most admire scruple to pull down the work of their predecessors and substitute their own? Why should not we mete to them with their own measure? What claim to delicacy have the men who attached the "heavy lightness, cumbrous vanity," of Henry VII.'s chapel to Westminster Abbey?—nay, the men who altered the details of the nave for the worse as they finished it; who transformed the choir of Gloucester; who were only withheld from destroying the Norman nave of Peterborough to match the new façade by providential failure of funds? To come down later. If Wren transformed the tower of the Church of St. Sepulchre, saved from the Great Fire, to match the Italian church which he annexed to it, has he a right to complain,—we do not say he has not,—if the tower is now retransformed, and matches nothing at all?

The right and the wrong in these matters will always turn on what is most difficult, a nice estimate of degree,—of equivalents. Such an estimate is often utterly precarious when no great interest of association, of beauty, of propriety, or convenience is preponderant. Decision then goes with the preponderance of party among those with whom power ultimately rests to take what course is best in their eyes. With these the merest material considerations,—expense conspicuous above all,—will frequently give the casting vote; there is no fighting against intolerable inconvenience; and discomfort, from other causes as well as from hunger, will break down not only very strong stone walls, but a great deal else which might be thought far stronger. As to some other changes, the cause of these lies deeper, and in regions where it is not for us to venture; let this only be said, that as every century,—nay, every half-century,—stamps its character upon architecture, whether in what it builds or what it alters, so doubtless,—so necessarily,—will this our own. Do complaints arise,—does criticism, perhaps not always captious, aver that in some instances and directions, this impress is unsatisfactory? It may probably be so; our age were exceptional, indeed, if it were not so; but it is not the less,—it may be even on this account, if not urged extravagantly,—a true impress. If old associations are deprived of the objects they cling to, whence is it and can it be but because the interest of such associations has in some quarters at least declined? Impassioned archæology restores what was indefensibly hideous originally in painted mouldings and tawdry friezes because archæology ha may be, somewhat overgrown its strength in our time, and has neglected to come to a ri understanding with fine art; other offences due to the slowness of mankind in coming t common understanding on the greatest inte of all. Our generation is no more perfect t any other; the work it has to do is to st its utmost to be in some degree less imperf by pushing on enlightenment in every direct If this is in progress, we need not despair t our sons will not be without some endur architectural testimony to the fact.

THE CASTLE OF CHRISTCHURCH.

THE town, castle, and priory of Christchu are placed upon the south-eastern point and e of a tongue of moderately-high ground, wh intervenes between the Stour on the west the Avon on the east. The two rivers of Dor and Wilts, meander like their prototype,

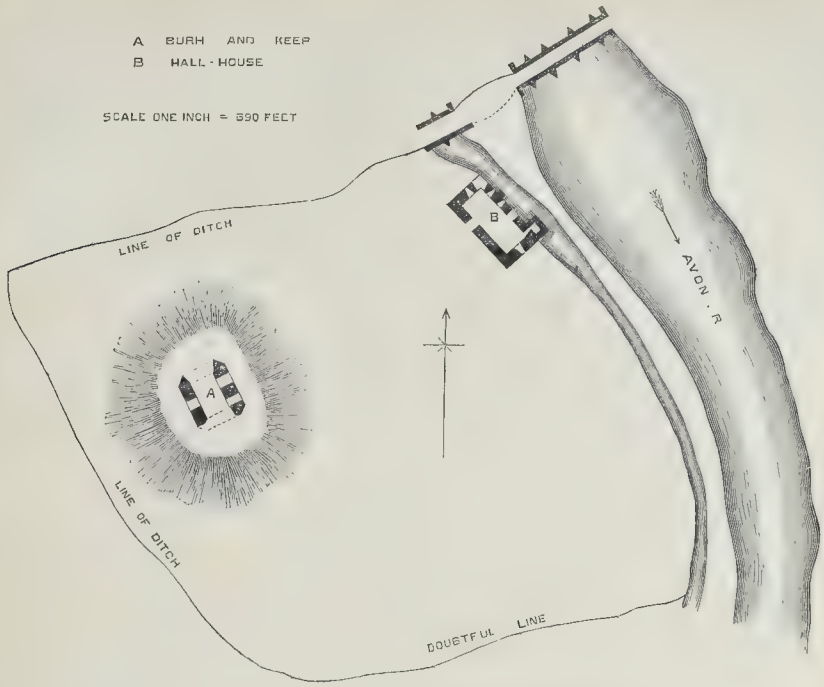
"... toties qui terris errat in isdem,"

and flow across broad and marshy tracts land to unite below Christchurch in a spaci inlet of the bay which is formed, and on south-east protected, by the headland bear the suggestive name of Hengistbury. The p tion is thus strong and convenient: unapproa able, by reason of the marshes, on the east west; presenting to the north a narrow defencible front, and placed upon a harbour former days very suitable for small vess sheltered from the prevailing west wind, having a narrow and easily-guarded entra from the adjacent channel. Such a position not likely to be neglected by any people, ev in the rudest age, and accordingly the Brit seem to have fortified the headland, and th who drove them out not only gave to that he land its present name, but, finding the in position better suited to their habits, fortified with bank and ditch, and within the area enclosed threw up the usual mound or burh, t ordinary indication of the residence of an ea English chieftain.

The remains of the British period are confin to the double banks and ditches, which still cro the headland, and to the names of the rive which there unite. Of a British town or churc Aberdour, as such would have probably be called, no traces are to be found.

The earliest mention of the place in Anglo-Sax records is in the Chronicle in A.D. 901, where is recorded that on the death of Alfred and t succession of Edward the Elder, Æthelwold, H uncle's son, seized the vill at "Winburne a that at Tweoxneam," but on Edward's marchi to Badbury, and threatening an attack on Wi burne, now Wimburne, he fled into the Nort This statement is repeated by Florence of Wo cester, with the additional information tha Tweoxneam was a royal vill. The place, und its better known name of Twyneham, occurs a charter by Athelstan, dated April 23rd, 939, i which, among other lands, he, the "king wieldin all Britain," gives to God and St. Mary, to S Michael, St. Sampson, and St. Branwaladr lands on Avene at Twynham. The character a royal vill was long sustained, and from Dome day it appears that it had belonged to the Cor fessor, and did then belong to King William Long before that time, however, a religiou house had been founded there, and the canon of Tuinham, or of the Holy Trinity of Thuinam appear in the survey as tenants-in-chief. Th foundation was probably an early one. Twyn burn, or Winburn, on the same Stour a few mile higher up, was founded before 705, and Ware ham before 876. In the Confessor's time ther were twenty-four canons and a dean; and in th reign of Rufus the latter post was filled by Ral Flambard, who is said to have rebuilt the college which was practically re-founded by Richard d Redvers, Earl of Devon, in the reign of Henry I. and whose son, Earl Baldwin, obtained the con version of the seculars into regular canons o the order of St. Augustin. The mill is recorded in Domesday. In all these transactions there is no mention of the castle.

The castle, however, though possibly not a structure in regular masonry until a century later than the Conquest, was certainly a burgh long before that event, and probably at least as early as the ninth century, preceding, no doubt, and being the cause of the vill, or collection of houses. It stands upon the right or west bank of the Avon river, immediately below the ancient bridge which carries the high road across it.



THE CASTLE OF CHRISTCHURCH.

s eastern front stands about sixteen yards om the river, and rises out of and forms e bank of the Mill Leat, which intervenes stween the castle and the Avon. The Leat ommences about three-quarters of a mile higher , and terminates at the ancient Priory Mill, ow called "Place Mill," 500 yards lower down, here, having started from the Avon, it falls to the Stour. As there seems to have been t one mill, it is to be supposed that the lay nd spiritual lords were in accord upon the very teresting topic of multures. At any rate, it y with the former to cut off the supply of ater.

The area of the castle was roughly rectangular, ont 110 yards north and south, or parallel to e river, and 150 yards east and west,—dimen- ons which include the ditch, now filled up, but which there are indications, with a breadth of yards, along the north and west fronts, now astle and Church streets. The line of the itch along the south, or Priory, side, is not raceable. The old Priory wall is wanting here, nd the ground has been levelled and cultivated s a garden for above a century. Probably the itch communicated at each end with the mill- ream, and was filled from it, involving at the eepest part not above 12 ft. to 15 ft. of excava- on. No doubt there was a bank within the itch, thrown up from it, and which has since een employed to fill it up. On the water front o earthworks were necessary. The leat is 25 ft. road, and the river expands suddenly below e bridge to 130 ft. in width.

In the highest and north-western quarter of e space thus enclosed is the burh, attributed y Norden, with great probability, to Edward e Elder, after the suppression of the rebellion f Æthelwald in 901. This is an oblong mound, holly artificial, and composed of chalk-gravel. t measures about 160 ft. north and south, by 50 ft. east and west, and has a table mmit about 120 ft. by 90 ft.; it is about 0 ft. high. This mound and base-court, ith the circumscribing bank and ditch, nd the watercourse, with, no doubt, a strong alisade, formed the original fortress, which, ide by side with the Priory, afforded to the ontiguous town temporal and spiritual protec- ion. Here, upon the old site, Richard de Redvers, having before obtained a grant of the manor from Henry I., erected a castle such as was then in use. He walled in the area, placing probably his curtain along the crest of the bank and upon the edge of the mill-leat. His keep he built upon the mound, and the hall and domestic buildings upon the line of the wall, along the edge of the water. He is said also to have walled the town. The masonry remaining is but scanty, and confined to some fragments of the keep and the hall-house, both which appear to be original.

The keep is peculiar, both in position and in its details. It is, or has been, rectangular, and it stands upon the summit of the mound. It is very unusual, for obvious reasons, to find rectangular keeps placed upon artificial earth- works. At Guildford, where this appears to be the case, it is only partially so, the tower being built on the slope of the mound so that at least one-half of it descends to the solid. It is no doubt possible that here, the mound being of but moderate height, the foundations may be laid below it; but more probably this is not the case, and the engineer trusted, and securely, to the immense breadth of his masonry to spread the weight, and thus avoid unequal settlement. Usually, when keeps are erected on artificial mounds, they are of the shell type, as at Arundel.

This keep is also peculiar in its details. It was a rectangular tower, 50 ft. north and south, by 46 ft. east and west. Its walls were fully 11 ft. thick. There are no traces of pilasters, and the angles are chamfered off, the face of the chamfer being about 6 ft. At present only the east and west sides are standing, to a height of nearly 30 ft., and it is difficult to make out from them what were the arrangements of the building. In the west wall is one opening, on the east are two, flat-sided, 8 ft. wide, about 18 ft. high, and descending to the ground-level. They are closed above by very flat segmental arches,—in fact, plat-bands,—relieved by obtusely-pointed, if not round-headed, arches of construction in the work immediately above such details, so far as they can be seen or inferred. The low and large openings, the chamfered angles, and the absence of pilasters, are utterly unlike what is usual in a Norman keep; though, from the great mass and general figure of the building it can scarcely be other than Norman. Mitford, in Northumber- land, though differing in detail from the present tower, differs quite as much from the ordinary type, and that certainly is of Norman date. The work of this keep is a sort of coarse ashlar, rough, but of good quality. Perhaps more details might be discovered but for a thick drapery of ivy, which, in this stage of its decay, serves to protect the building.

The hall, called the Constable's House, is a rectangular building, 80 ft. north and south, by 35 ft. east and west, placed on the margin of the leat, and rising out of it, so that its broadside forms a part of the outer line of defence towards the east. At present it is detached, and stands alone, but it probably ranged with the curtain wall, of which, however, there are now no traces. There seems to have been a building connected with its south-west angle.

The building was composed of a basement and a first-floor. At each end was a high-pitched gable, of which the southern only remains. The walls are 5 ft. thick, and the interior dimensions therefore 70 ft. by 25 ft. The basement is at the ground level, and about 1 ft. above the top water of the leat, the height of which is regu- lated by hatches. The entrance from the castle was in the west side, 16 ft. from the north end. The doorway, of 5 ft. opening, seems to have had a segmental head, but the ashlar has been roughly removed. In the two ends were loops: that to the south has long been closed; in the east side, towards its north end, are two loops; all these loops are mere rectangular slits, evidently intended for air, not defence. Each is placed in a splayed recess, 4 ft. 6 in. wide, with a segmental head. Also in the east wall, 4 ft. from the south end, is a similar recess, opening into a small door, which led into the garderobe turret. Next, north of this, 12 ft. from the south end, is a door opening on the water, 7 ft. wide, with a very flat arch, evidently original. The jambs are of ashlar, and they have capitals of a peculiar character. This was evidently the water-gate for the admission of stores from the river, here a few yards beyond the leat and a few feet below it. The garderobe turret is a projection, 12 ft. square, from the east wall at its south end, standing in the leat,

and pierced below by a round-headed arch, or culvert, 4 ft. broad, through which the water flows freely, and into which the garderobes discharged. This basement was evidently a store. It is said to have been crossed by a wall. Of this there is now no trace.

The first floor contained the hall, which occupied its whole area. The main entrance was at the south end, near the south-west corner, by a segmental-headed door; in the north wall is a window of two coupled lights, each under a segmental head, with exterior drips, and the whole placed within an exterior round-headed recess, the sides of which contain flanking shafts, nooked. Above, not quite over the centre, is a corbel carved as a human head. The arch-head and tympanum are highly enriched with varieties of the chevron moulding, and upon the chamfers of the lesser drips are rosettes, carved with great delicacy. Though heavily draped in ivy, enough is seen of this window to show that it is late Norman, and of great beauty. There are windows similar in type, but less rich in ornament, in the side walls, two in each, and probably there were three, indicated by notches in the ivy. In the east wall, 20 ft. from the north end, are the remains of a large fireplace, of which the convex back and the upper part of the circular tunnel remain, and above is a tall cylindical chimney-shaft, probably original. A door from the south end of this wall led into the garderobe turret, which had a loop to the east. There is also a round-headed window in the south gable, which opened into the roof. There was no vaulting; the floor and roof were of timber, the latter open.

The view in Grose, taken in 1783, shows the garderobe turret to the full height of the side wall, and the great chimney-shaft unincumbered with ivy. It also shows the north-east angle unbroken, within which was then contained a well-stair. This angle has now fallen away, or been removed, and its broken parts also encumbered with ivy and rubbish treat nothing has been ascertained as to what may remain; but no doubt the staircase ascended from the basement to the main floor, and thence to the roof or to the ramparts of the curtain. In Grose's time the north wall was encumbered by a cottage and some chimneys and other additions in brick; these have now been removed. The garderobe turret was wilfully pulled down when the castle changed hands towards the end of the last century. There is a letter in the *Gentleman's Magazine* complaining of this, and which possibly put a stop to further injuries.

It is remarkable that a building closely resembling this is found at Desmond's Castle, at Adare, near Limerick. That castle is late Norman, with a rectangular keep, though not on a mound, as the ground is naturally high; and just below the keep, upon the bank of the river, is placed the hall-house. It has a basement on the ground level, evidently a store, with a separate entrance, and above is the hall, with a boarded floor and open roof. The garderobe turret is built out into the stream, has a culvert below, and is nearly perfect. The keep, hall-house, and gate-house are there preserved, and if, as is probable, the entrance at Christchurch was near the river at the foot of the bridge, the relative position of the buildings would be the same. An excellent plan of Desmond's Castle will be found, with much else of a valuable character, in Lord Dunraven's "Memorials of Adare."

Christchurch Castle has not been the scene of any remarkable event, nor does its name occur with any prominence in the history of the country, or even of the county. The manor was first alienated from the Crown by Henry I. in favour of Richard de Redvers, whom he created Earl of Devon. In the "Monasticon" (vi., 304) is printed a grant or confirmation by this earl to the canons of Christchurch of the "Terram usque in aquam de Havene, quæ est inter cimeterium et fossatum castelli, messuagium supra ipsius castelli fossatum, quod habent ex dono Gaimerii." This is the first mention of the castle, and would make it earlier than 1137, in which year Earl Richard died. As the masonry of the castle looks twenty or thirty years later, the allusion may be to the earthworks, or older castle; and the present building may be the work of Baldwin, the second earl, who granted a charter to the same effect with that of his father, confirming lands between the churchyard and the ditch of the castle (*ibid.*, vi., 303). Earl Baldwin died 1155. In the rolls of Parliament mention is made of John Randolph, a former justice, as having been warder of the castle in the time of Henry I. Baldwin's son and successor was Earl Richard, who confirmed his gifts, and died 8 Henry II., 1161, leaving Baldwin, the fourth earl, who died childless, and was succeeded by his brother Richard, fifth earl, who also died childless. The heir was William, called de Vernon, sixth earl, brother of Richard, the third earl, and uncle to the two last earls. He flourished during the reigns of Richard I. and John. Probably during these transitions the Crown stepped in as "Custos," for in a plea before the Curia Regis, in 1194, a certain Roger Waspail affirms that seizin of certain lands was given to him by Earl John "in werra sua dum fuit in Castello de Cristescherche." A little later, when Earl William was in possession, the king (2 John) confirmed a settlement made by William de Vernon, Earl of Devon, by which Plympton Castle, the Caput of that Honour, was to pass to his elder daughter, and Christchurch and the Isle of Wight to Joan, the younger. John was at Christchurch, either the Priory or the Castle, December 13, 1201. Probably this deed was drawn up before the birth of Baldwin, the earl's son, or when it was supposed that Baldwin would die childless. As it was it did not take effect, for though Baldwin died before his father he left a son, Baldwin, seventh earl, who was also Earl of the Isle of Wight.

In 1210, 11 John, the king was again at Christchurch, on his way from Clarendon to Canford. Baldwin died 1245, leaving a son, another Baldwin, eighth and last earl of the House of Redvers. He died 47 Henry III. 1262-3, and is described as Baldwin de Lisle, Earl of Devon, and he died seized of the manor of Christchurch. It appears from the "Testa de Nevile" that he held that manor "de veteri feoffamento," by what service is not recorded.

The Earl's heir was his sister Isabel, who married William de Fortibus, Earl of Albemarle, who died in 1260. Isabel succeeded to the whole estate, with the reversion of Christchurch, which was held in dower by Countess Margaret. Countess Isabel died before 1269, leaving one child, Aveline, who married Edmund Crouchback, son of Henry III. She died childless, having inherited Christchurch on the death of the Countess Margaret in 20 Edw. I., in which year she also died, having granted or bequeathed Christchurch and some other parts of the earldom to the king, by whom, in 1299, 27 Edw. I., the "Castrum de Cristeschurche de Twynham cum burgo et Manerio de Westovre et Hundredo de Cristeschurche" were assigned as part of the dower of Queen Margaret. These possessions, as part of the Earldom of Devon, were claimed, in 1315, 8 & 9 Edward II., by Hugh de Courtenay, as heir general of Countess Isabel, but without success. The castle descended to Edward III., who placed Thomas West in it as custos.

In his third year the king granted to Sir William de Montacute, afterwards Earl of Salisbury, the castle and borough of Christchurch-Twynam, the Manor of Westovre, and the Hundred of Christchurch. The earl died so seized, and his will is dated at Christchurch-Twynam, 20th April, 1397. With the exception of a short forfeiture by Earl John to Henry IV., the castle remained in the Montacutes until Earl Thomas, who died 7 Hen. V., and left it to his daughter and heiress, Alice, who married Richard Nevile. Probably it was regarded as a male fief, for in 32 Henry VI. was a grant of a lease for twelve years of the Manor, Borough, and Hundred, to Richard, Earl of Salisbury, in right of the Lady Alice, his wife, at the rent of a red rose. The leasehold appears to have been extended, and eventually converted into a freehold, as the Christchurch estates were held by the son of Richard and Alice, the king-maker Warwick, and descended to his elder daughter and co-heir, Isabel, who married George, Duke of Clarence. Their son Edward, Earl of Warwick, held Christchurch till his forfeiture and death, after which (5 Henry VIII.) his estates and the title of Salisbury were allowed to his sister Margaret, executed 1541, and who at her death or forfeiture held the manor, castle, borough, and hundred of Christchurch, which then escheated to the Crown. It is by descent from Countess Margaret, through her granddaughter Catherine Pole, that the inheritors of the Hastings baronies are now claiming the chantry erected for their Plantagenet ancestress in the Priory church. They, no doubt, are the heirs general; the heir male is the Earl of Huntingdon.

From Henry to James, Christchurch remained in the Crown. The latter sovereign granted it to trustees for the benefit of Prince Char whence it passed by sale through various ha and finally was purchased by Sir George Ros 1790. It is now the property of Lord Stra nairn.

The Priory buildings stood to the south of church, and but scanty traces of them rem There are considerable fragments of the taining wall to the south and east, and fragments of two mural towers and the g way. On the low ground on the Stour to south-west, on the edge of the wet land ca "QUOMPS," are traces of a large fishpo Beyond the mill are the "convent meadow On the corbel shields terminating the drip-st of the west door of the tower, are, dexter, w appears to be a "cross patonce" for de Fortib and sinister, Montacute quartering Montherm

G. T. (

"ICI ON PARLE FRANÇAIS."

ON Monday, the 11th inst., as we announc opened at the Ecole des Beaux Arts in Paris, fifth annual congress of French architects. Ina tion to the various meetings that took place in course of the week, and at which were discus a number of purely technical questions, members have visited many of the new bu ings in Paris. On Tuesday the congress visi the works of the Exhibition, which were exami with great interest.

None but those who have watched the giga enterprise from the day that the first spad of earth was thrown up, can form any adequ idea of the extraordinary energy with which works of the Exhibition have been directed. is scarcely nine months since, in these pages, spoke of the traditional aspect of the Champ Mars, and the gaiety of the Trocadero. N the palaces on both sides of the Seine are in advanced a state that, notwithstanding the m croakers, nothing short of some dire catastro will prevent the Exhibition from being ope at the appointed time. It is to be remarked that the whole aspect of the work has chan within a very short period; not long sinc seemed impossible that out of the chaos o could be established in sufficient time. On Trocadero the great hall is rapidly rising, roofing of the wings is being posed, while the Champ de Mars the gigantic galleries progressing steadily. The term gigantic is exaggeration, as all will agree when the Exh tion is thrown open to the public. Paris, wh is famous for such features, has within the l few days been gifted with a new and beauti *rond-point*; the Place du Trocadero, which w be one of the attractions in 1878, is already l out with large trees and grassy slopes; inde when this portion of the Exhibition is complet the great Napoleon's idea will be fully carr out, that of having a Palace on the Trocade which is undoubtedly, with all due deference Sir Robert Peel's opinion concerning Charin cross, one of the finest sites in the world.

The ceremony of laying the first stone of t hospital erected at Levallois-Perret, near Pa at the cost of Sir Richard Wallace, is to ta place before long. The building will stand o piece of ground comprised between the Rues Villiers, de Beauchamp, de Catalogue, a Chaptal. On the façade, and towards the R de Villiers, there will be two lawns; in the re there will be a large garden for the use of t invalids. The number of beds will be abo forty, of which twenty-four will be for t patients. A consulting-room will be open the public, but English persons will be alo admitted to the hospital. The hospital will named *Hertford Hospital*. M. Sanson is t architect. This new gift, in addition to t numerous charities that Sir Richard Wallace h organised in Paris, amongst others a system public drinking-fountains, which, though answe ing admirably their purpose, are sadly deficie in that element of artistic beauty to which fountain so naturally lends itself, will increa the respect and gratitude which the Parisia bear for Sir Richard Wallace.

The demolitions rendered necessary by t piercing of the Boulevard St. Germain ha destroyed many important houses. We ha spoken of the house in which Marat was kille At the present moment a mansion is d appearing which saw the grandeur of t seventeenth century, the elegancies of t eighteenth century, and which felt the throes the Revolution. What remains of this house at No. 11, in the Rue St. Dominique St. Ge main. Built in 1634, the mansion, after havi

en the property of Marshal Montmorency and e Duc de Valentinois, came into the possession the unfortunate Princesse de Lamballe, the voted friend of Marie Antoinette; indeed, many time has the Queen stayed in the *hôtel*. Many the decorations which to the amateurs were nown were by their nature fixtures, and the esent owner has sold, for the sum of 4,000*l.*, to rich amateur, some beautiful Louis the xteenth wood-carvings. But the work of molition has laid bare a superbly-painted iling, probably the work of an Italian artist. is ceiling is oval, and at each corner of the om are groups of *amorini*, engarlanded with owers. In the next room, the ceiling of the ndoir is also ornamented with a number of upids, and in an *alcove* is a Venus asleep. The hole is an interesting relic of the "Grand ècle."

Paris.

THE STATE AND THE FINE ARTS IN PRUSSIA.

The modern history of Prussia,—the head and ntre of the new German Empire,—is essenlly military in its main features. The influence Europe has arisen chiefly from the strength its armies and the skill of its commanders, hich directly and indirectly have been felt all er the Continent. Thus, for example, the oumanian forces are organised purely on a erman system, and their military handbooks e those used in the Prussian army. But, eanwhile, as the report lately prepared by Mr. onsul-General Crowe shows, Prussia has not, hilst improving her system of warefare, neected to cultivate the peaceful arts, for uch progress has recently been made in this rection.

The first feature of a striking kind in relation Prussia is the close alliance which exists beeen the State and the arts, for their teaching d management are here, perhaps, more rely a duty of the Government than in any her European nation. At the same time, a mewhat stringent line is drawn between what ay be termed high art and industrial art. The rmer is under the control of the Ministry of ducation and Public Worship, the latter belongs the Department of the Ministry of Commerce, division which can scarcely be upheld in theory, d the practical advantages of which appear to e small, and which is radically wrong, since it as a distinct tendency to lower industrial art. ut even this division is not thoroughly upheld. gain, all the art establishments in Prussia are ite the creatures of the State, founded by it d supported by the Government funds; but ey nevertheless in law are regarded as cororate bodies which enjoy all the rights and are bject to the liabilities which belong to inviduals ("Rechte Einer juristischen Person"). hus they necessarily have some small measure self-control, but for all practical purposes are tate institutions.

Let us take the educational establishments nder the control of the Minister of Education id Public Worship, of which there are two ain divisions. There are, first of all, the hools of what may be called fine art, consisting the Academies of Berlin, Königsberg, Düsselorf, Cassel, and Hannau, where drawing and ainting are taught. On the other hand, design r industrial purposes is taught in the industrial rawing-schools at Berlin, Breslau, Königsberg, anzig, Magdeburg, and Erfurt; but no informaon of a more detailed kind is given to us, so that is impossible to state any particulars as to the ge of the pupils, the periods of education, and so rth. The function, so far as education goes, the Minister of Commerce are, on the other and, concerned with the Academy of Architecure ("Bau Akademie") at Berlin and the veral provincial schools of architecture; but e observation we have already made as to the surdity of the division of the duties of the o Government departments here applies again ith equal force. Passing to other institutions, ch as exhibitions and so forth, we may touch rst on those under the control of the Minister f Commerce. These consist of the Museum of ndustrial Art at Berlin, and of the branch hools, more or less connected with the central stitution, which are to be found in the various rovincial towns. This institution, says Mr. rowe, is "very similar in character to the hools of South Kensington and its dependeies." It is therefore, we perceive, at once an xhibiting and an educational body, so that it ould have added to the value of the information on the arts in Prussia if we had been told how it exists side by side with the industrial art schools under the Minister of Education. It seems to possess some private funds, and to receive an additional sum to aid it from the State, in virtue of which the Minister has a share in appointing the committee of management. Before touching further on the duties of the Minister of Education, it is well here to mention that in all the establishments,—nominally, at any rate, under his care,—he has the right to appoint the various professors, teachers, and officials. Coming now to those institutions over which he has merely the managing power, as distinguished from the educational as well as managing, we find that under his charge are the Royal Museums of Berlin and the National Gallery. The first of these establishments comprises eight distinct divisions,—the gallery of pictures, of sculpture, of casts; the antiquarian collection; the collection of vases; of prints and drawings; of ethnographical objects; and lastly of Egyptian antiquities. The actual management of this great national establishment appears singularly complicated. Nominally, as we have said, it belongs to the office of the Minister of Education; on the other hand, it is placed, since 1870, under what Mr. Crowe calls the "protectorate" of the Crown Prince, in place of that of the Emperor, whatever that may be, possibly an office akin to the "visitor" of our English schools and colleges, who is a more ornamental than useful personage, whilst the Emperor himself still possesses a right of veto where the expenditure on a single work of art is likely to exceed the sum of 15,000 marks. Here we have already three persons concerned, but the more immediate management is in the hands of a general director, who looks after the eight divisional directors; and this general director is bound, in case he desires to make a purchase exceeding the sum of 1,500 marks, to consult the Technical Commission of Five, who are chosen from the divisional directors and the general body of artists. This system seems one from which we shall not learn much in this country, for there can be no real sense of responsibility, and none of the credit which comes from responsible duties ably performed. It seems, indeed, that already a change is probable, and that the post of general director is likely shortly to be abolished. The National Gallery, the nucleus of which was formed from the Wagener bequest, is a collection of pictures chiefly by German artists, managed by a director whose purchasing powers are controlled by a commission of art-artists and persons well known for a knowledge of art. To this institution the State allots 300,000 marks per annum. The increase in the contents of these galleries during late years has been considerable. Without going into details, it is sufficient to mention, by way of example, that since 1870 no less than 130 works of the Dutch school have been added to the Picture Gallery,—three Vandyks, two Albert Durers, and three Sneyders, with many other works by equally celebrated painters have, during this period, enriched the National collection. Three hundred and twenty articles have been added to the collection of bronzes, and more than two thousand objects have increased the value of the department of antiquities. It is quite clear, therefore, that in spite of the clumsiness of existing arrangements in Prussia, art, both in the shape of education and of actual objects, is largely cultivated in this part of the German empire. But a careful consideration of the present system in Prussia seems to show that it is inferior in many respects to smaller and less influential countries. It is only fair, however, to bear in mind that the traditions of Prussia are essentially military, and that her European position has been gained by arms, and that her rulers are celebrated in history, and look for reward in the eyes of their countrymen first of all as soldiers. Frederick the Great was a general. The Emperor William is essentially a soldier. The arts are generally supposed to droop amidst the clash of arms and armed preparation, and though this has not been actually the case in Prussia, it seems that the fine arts have not flourished in the same manner as in less powerful nations where the rulers and the people have devoted more time to the arts of peace.

Manchester Society of Architects.—This Society has invited a competition by students in the offices of architects for prizes offered by the society. A list of the prizes has been issued.

ROMAN AMPHITHEATRES.*

No relics of the period which preceded the Gothic invasion affords us such an insight into the rough yet civilised manners and customs of the citizens of Rome, and of the vast multitudes who bowed to the imperial rule, as do the stately amphitheatres whose ruins still grace so many Italian towns, though earthquakes have levelled some, and tempests are gradually, but not less surely, destroying those which yet remain.

It is proposed to arrange the following remarks in three divisions:—First, briefly dwelling on the origin and history of the Roman amphitheatres; secondly, on the plan and general arrangement; and thirdly, on the construction and materials employed in their erection.

It can hardly be doubted that the Romans obtained their ideas of amphitheatres from the Etruscans, and the remains at Sutri are a strong argument in favour of this belief, where we see a natural amphitheatre formed on the sloping sides of a hill, with the seats hewn out of the solid tufa rock. The Greek amphitheatres were also constructed in the same manner; sometimes Nature herself formed the amphitheatre almost without the labour of man, and at other times an ancient stone quarry was converted by small trouble into an amphitheatre accommodating many thousands of spectators. Such amphitheatres as these can scarcely be said to have been erected, since they were chiefly formed by excavation, and it remained for the Romans under C. Scribonius Curio to erect the first building of this kind, in Rome itself; though history gives such strange accounts of this structure that they sound almost fabulous. It is supposed to have consisted of two wooden theatres placed back to back and made to revolve on pivots, so that by means of windlasses and machinery, detailed by Pliny, the *visorium* of each could be brought round face to face and united on the line of its diameter, or it could be used as two separate theatres. Pliny narrates that it was formed "of two large theatres of wood mortised together in a singular manner, and suspended so as to turn freely, on both sides of which were exhibited the afternoon shows of plays."

The name "amphitheatrum" was first given to the building in the Campus Martius, erected soon after this by Julius Cæsar, and which was also of wood; but both these were probably destroyed by fire, and Statilius Taurus, in B.C. 29, erected the first stone amphitheatre at the command of Augustus. This was also situated in the Campus Martius, but the seats and the whole of the interior being of wood, it met the same fate as its predecessors. The Romans at this period had grown enamoured of gladiatorial contests, the excitement of which became almost as necessary to them as food; and as the Imperial city was now left without any building of this class, Vespasian resolved to erect an amphitheatre which should eclipse all former ones, and the Colosseum, or the Flavian amphitheatre, was commenced. Situated between the Esquiline and the Cœlian hills, on the site of the great artificial lake which washed the walls of the Golden House of Nero, it stood almost centrally in ancient Rome. This enormous structure took only ten years and nine months in building, during which time 15,000 men are said to have been employed on it. Nevertheless, Vespasian did not live to see it completed, and Titus dedicated it in A.D. 80, although it was not fully completed till the reign of Domitian. The history of this building is perhaps more varied than that of any other, it having been used during the eleventh and twelfth centuries as a castle by the Frangipani family, in 1450 for a hospital, and in the seventeenth century for the representation of the Passion plays so much in vogue during the Middle Ages, and finally in the year 1700 a saltpetre manufactory was carried on within it. Wherever the Romans came with their conquering legions, we find traces of their amphitheatres; so that not only in Italy, as at Rome, Verona, Polo, Pozzuoli, Pompeii, and Capua, but also in France, at Nismes and Arles, and in England, at Cirencester, Silchester, Dorchester, and Old Sarum; and in many other countries have these interesting remains been discovered. But when we reflect on the gross butchery which these ancient buildings have witnessed, when the seats were filled, tier upon tier, with thousands of spectators crying out in the common language of the amphitheatre, "Kill him, tear him, burn him! Why is he so

* By Mr. W. Hilton Nash. Read before the Architectural Association on Friday, the 22nd inst.

fearful of death?" our thoughts are sobered, and we cease almost to regret that the buildings are in ruins.

Let us now consider the plan and arrangement of the Roman amphitheatre. There are three main features in all structures of this class:—the arena; the *gradus spectatorum*, or seats for the spectators, forming altogether what was termed the *visorium*; and the colonnades and vomitories, or staircases, by which access to the seats was obtained. The arena itself varies in size and proportion, but is usually about one-third of the shorter axis of the building; it was usually covered with sand, as its name denotes, but was sometimes boarded. A wall about 15 ft. high, termed the podium, surrounded the arena, for the purpose of protecting the spectators from the enraged lions or the bounding panther; and on this wall were rollers which turned in sockets, so that the animals could not climb it, the summit being frequently protected by network, as in the Colosseum, where Nero, in a fit of extravagance is said to have fastened the nets with amber-beads. In addition to this, ditches or *euripi* sometimes surrounded the arena as a further safeguard against any accident. On the summit of the podium in the Colosseum were the seats of distinction for the senators and the emperor himself; above this were the seats for the equestrian order, or, as we should say, the upper classes; above these, divided by a *præcinctio*, or landing, were the seats for the *popularia*, or middle classes; and the upper seats of all were occupied by the *pullati*, or lower orders. In the Colosseum a colonnade runs round above this, not usually met with in other buildings, which was appropriated to the women, and on the flat roof of this colonnade were stationed the sailors who were engaged in the management of the velarium. Each story was divided from the other by a præcinctio, and intersected at intervals by the passages leading to the various staircases. The oblong form of all amphitheatres, except the double theatre of Curio and Cæsar's wooden theatre, which were circular, is a feature which we may do well to consider. These buildings were frequently used, not only for combats between man and beast, but between small bodies of armed men, and by the elliptical form of the arena these gladiators were better able to extend their line, and appeared to more advantage than if they had been placed in the centre of a circular platform with little scope for diversity of movements. The Pompeian frescoes afford illustrations of this, for there we seldom see the combatants massed, but in a long extended line. The scorching rays of an Italian sun made it necessary to have some covering over the amphitheatre during the games, since the people sometimes sat for six or eight hours together, and often took their places over night to secure a good seat; on this account a large awning called the *velarium*, made of woollen cloth or silk, extended over the whole of the visorium. The difficulty of raising and maintaining in its position this vast awning must have been great, when we remember that the least diameter of the Colosseum is nearly equal to the length of the Menai Bridge, and, in fact, in boisterous weather, the awning could not be hoisted, and when this was the case the Romans came to the show in broad hats and with a kind of parasol called *umbella*. Fontana, in his interesting work, gives a curious illustration of the velarium, but no description. Gwilt, however, supposes it to have been arranged in the following manner:—A cable being placed round the edge, and following the curve of the podium, strong ropes were attached to it in the direction of the radiating walls on the plan, and passing through pulleys in the heads of the masts ranged round the building and resting on corbels; there were 240 of these masts in the Colosseum, each one passing through a hole in the cornice and socketing into the corbels below; these ropes were then brought through the heads of the masts and down to the ground, where numerous windlasses were fixed to receive them, and at a given signal every windlass commenced its work, and the immense tent moved slowly upwards till it arrived at the level of the upper cornice, and when fixed in its position, sloped gracefully towards the centre; the central part, viz., that over the arena, being left open to the sky. The cloth itself might have been moved on rings attached to the main ropes, and worked by persons stationed on the parapet. The hoisting of the velarium was in Rome always entrusted to sailors, many hundreds being employed, and encamping during the gladiatorial shows in the neighbourhood.

We now come to the third division of the subject; viz., the construction and materials employed. The construction of almost all amphitheatres was a succession of cross walls converging towards the centres of the different arcs, intersected by other walls of gradually increasing diameter, pierced by arches on which were bedded the seats for the spectators, and four principal gateways were placed at the extremities of the major and minor axes of the ellipse. The Colosseum at Rome, though not so skilfully or carefully built as some other examples, is, as it were, an epitome of all other amphitheatres. This vast structure had four corridors running entirely round it on the ground level, the two largest being on the exterior, and forming a sort of covered portico or ambulatory, each corridor being roofed by a continuous semi-circular vault supported on square piers. Between the second and third corridors is a large space occupied by staircases leading to the various seats; the entrances to the staircases being from the second and third corridors'; from the latter also are other entrances into staircases which are in another space between the third and fourth corridors. The third corridor, which must have been very dark, received a small amount of light by holes in the vault. We are apt to affirm that the ancients never built hurriedly, but in this vast structure, which some maintain only took ten years and nine months to build, we see striking evidences both in the work of Vespasian and Titus of the rapid way in which the works were pushed on. Carelessly-dressed stones,—many of the arcades being unequally spaced out,—no mouldings preserving the same level throughout the building, and the profiles of the mouldings themselves in some cases unfinished, all tend to strengthen this belief; and yet, in spite of all this loose detail, there is perhaps no building in the world which has called forth such universal admiration as the Colosseum. The general effect of the Colosseum would have been far finer without the upper or fourth story, which is so heavy and unmeaning that some have even doubted whether it was part of the original structure, and I believe this is the only amphitheatre which has this addition. The amphitheatre at Verona has only three stories, and the exterior elevation has consequently a more æsthetic proportion. Mr. Fergusson conjectures, in his "History of Architecture," that this upper story may have been added for the purpose of working the velarium, and this seems more probable, since to cover so vast a surface with an awning would be next to impossible without some space on which the sailors who worked the velarium could carry on their operations; and this would be provided by the flat roofing covering the colonnade. Mr. Parker is of opinion that this story is of the third century, and that there was originally one of wood of a somewhat similar design. The system of Roman vaulting has been so ably described by Mr. Phené Spiers in his paper on the "Roman Baths,"* that I only briefly dwell upon it; for, indeed, the vaulting which exists in the ruins of amphitheatres is of a most elementary character, its purpose being usually to roof the passages leading to the seats, and for supporting the substructures. The principal materials employed in the Colosseum are, stone, brick, concrete, and pumice stone. Tiburtine stone, or, as it is now called, Travertine (though the former is the more correct name as the original quarries were on the banks of the Tiber, near Tivoli), forms the facing of the outer walls, also the piers of the two outer corridors, the centres of the arches, and some bands in the inner walls. The stone is largely used at the present day in Rome, and forms an excellent facing stone, almost like marble. The stonework in many cases is not bonded with the brickwork, and in some instances has entirely separated from it, leaving a straight vertical joint. Large blocks of tufa are also used for the filling in, but the Roman architects did not consider the tufa walls, or even the tufa and brick combined, capable of sustaining the compression which the numerous rows of seats and the vast concourse of spectators who occupied them would necessarily subject them to: so at frequent intervals they cut away the brickwork and inserted piers of travertine to assist in carrying the weight. The stonework of the Colosseum was originally held together by iron cramps; these have rusted, and eventually split the stone, and have fallen out or been carried away, perhaps to be used again to cause more similar destruction. I know of no example of the *opus reticulatum* in the Colosseum; nevertheless, it was commo used in contemporary buildings. It consisted small pyramidal blocks of tufa, flat on one si and about 2½ in. by 2½ in. square on the fa and pressed into a bed of concrete while w and forming, as its name implies, an appeara like network. The main body of the work is brick, and some of the finest quality. The bri are tile-shaped, about 1 ft. by 1 ft. 6 in., were called by the Romans *lateras*, and form when bedded, the famous *opus lateritium*. T first century produced the finest brickwork world has ever seen, and in Nero's time we h ten courses to the foot of these tile-like bric laid with an almost imperceptible mortar joi but after the reign of Trajan, the bricks w made thicker and the mortar-joints also increas being often 1 in. thick, till, in the fourth c tury, and during the reign of Constantine, find the brickwork measuring four courses to foot, and by the knowledge of these facts it easy to ascertain the date of any Roman bri work with tolerable accuracy. The Colosse possesses good specimens of first-century bri work, and also the Amphitheatrum Castrense Rome, and also some contemporary brickw from the Palace of Nero, date A.D. 60. Here see the tile-work called *opus lateritium* bedd in mortar composed of [puzzolana and lime proportions of about three of the former to of the latter.

The earliest instance of the use of concr (*fartura*) at Rome is at the ruins of the E porium, B.C. 195. A vast amount of concr was used in the Colosseum, chiefly for filling the vaulting and internal walls; but finding t material too heavy, pumice-stone was employ for the vaults, as it could easily be obtained fr the neighbourhood, and is found at the pres day mixed with the Roman tufa in beds a f inches thick. All concrete is liable to fract by the shrinkage of the material, and in walls any great length the fractures occur at eq distances apart (as in the Roman walls of Ri borough Castle). Whether the Romans w aware of this fact or not is uncertain, but t frequently introduced layers of thin bricks intervals to tie the whole mass together, a perhaps more with the idea of bonding the wo than of counteracting its shrinkage. This t bonding may be seen in almost all Roman c crete walls in Europe, and in the Temple Minerva Medica at Rome.

Though not strictly within the province of architectural paper, it may be well to tou briefly on the sports and combats which to place on the arena. The gladiatorial encount were either between themselves or with w beasts, and special schools were institute where the gladiators underwent rigorous trai ing. Gladiators were first exhibited in Rome B.C. 488, by M. and D. Brutus; and th were all bound by a solemn oath,—"We swe after the dictation of Eumolpus, to suffer dea by fire, bonds, stripes, and the sword, and wha ever else Eumolpus may command, as true gladi tors we bind ourselves body and soul to o master's service."—(Petronius.) In the ear days of Rome, before the public taste becan degraded, the office of gladiator was confined the lowest classes; but the thirst for popul applause induced men of good family, and eve senators, to enter the lists; and hence we fi an edict forbidding persons of exalted rank fro entering the arena. Previously to the perform ance of any spectacle the walls were placarde and notices (*libelli*) issued by the editor showman, stating the nature of the exhibitio and the names of the combatants, and ther notices were frequently illustrated, after th manner of our nineteenth-century play-bills. O the appointed day, those who had not previous obtained tickets took up their positions at da break, and sometimes over-night. The *equite* the *popularia*, and *pullati* being seated, wer followed by the senators, who had previous sent their *biselli*, or chairs of state, to be place on the podium. Then a flourish of trumpets an a grand procession announced the arrival of th emperor, who, sitting at the *suggestus*, or roya box, gave the order for the sports to commence At first the combats are comparatively tame, bu as soon as the fiery blood of the gladiators i roused, they throw away the wooden staves wit which they have been fighting, and take to th sword and buckler, and the *retiarius*, with hi net and trident, seeks to entangle and despato the *secutor*, who follows him round and roun the arena with his deadly knife. The victor look up at the vast sea of heads, and awaits the fina signal of the up or down turned thumbs of th

* See pp. 316, 355, *ante*.

pectators before taking up his sword to despatch is victim. The death-signal is given, the sword escends, and the corpse is dragged off the arena y a large hook to the *spoliarium*, through the orta Libitinensis, or Gate of Death. And now the reat trap-doors on the surface of the arena are een to open, and vast wooden cages appear, ontaining the wild beasts, which "leap out of he earth," as an old writer has it. The cages pen spontaneously, then sink into the earth gain, and the ferocious animals let loose on he arena are slaughtered by the bloodthirsty ladiators. The apparatus for bringing the wild easts on to the arena in this manner only existed n some amphitheatres, but not at Pompeii or 'erona. The recent excavations at the Colosseum ave brought to light traces of the grooves in hich these lifts or *pegmata* worked, and also the hase for the counterpoises, and the sockets in hich turned the pivots of the capstans used for orking the apparatus. These lifts may also ave been used for bring up the ships which ere to take part in the *naumachia* or naval ngagement, and in the Colosseum a vast gulf eparated the arena into two parts, so that when he boards which covered it were removed any rge stage properties could be lifted on to the rena. These sub-arena buildings or sub-ructures were, perhaps, the most interesting ortion of the amphitheatres, and, as it is the mbition of many persons to see behind the enes of a modern theatre, so it must have een the desire of many a Roman citizen to see elow the arena and get an insight into the ysteries which caused wild beasts to spring t of the earth and ships to float on the surface the arena; for Seneca writes,—"The eyes of he silly people are astonished at all these sudden ovements, the causes of which they do not nderstand." This species of amusement gave name to the buildings which were specially evoted to them, and those at Rome were ry similar to excavated amphitheatres. The *aumachia* of Augustus was 1,800 ft. long by 200 ft. broad; and at the sea-fight held there uring the reign of Julius Cæsar 4,000 seamen nd 1,000 marines were engaged. These *nau-achia* were constructed of stone, as we ad that that of Domitian was pulled down to pair the Circus Maximus. No amphitheatre was apable of being used as a *naumachia* unless rovided with vast underground works and rainage on a large scale; the amphitheatres Verona and Pompeii, for this reason, could ver have been used for this purpose, but in ose of Rome, Capua, Pozzuoli, and Pola, these ntertainments were undoubtedly provided. epresentations of the chase were not wanting nong the amusements of the arena, and trees rn up by the roots were transplanted on its rface, and wild boar and stag hunts took place these temporary forests, as may be seen de-cted in the frescoes at Pompeii; and Calpurius escribes the visit of a country lad to Rome, who lates all the wonderful things he saw there. We saw the amphitheatre, with interwoven ams rising to heaven. . . . . I saw all kinds wild beasts, ... not only those carni-orous monsters of the forests, but sea monsters, gether with fighting bears." Sixty-two amphi-eatres are enumerated by Clerissean in his Antiquities of France," as still existing; but will hardly be necessary to mention all of ese, as the remains of some are scarcely trace-ble; however, we may consider a few of the ore important ones. The great amphitheatre Capua, which rivalled the Colosseum in size, said to have held 87,000 spectators, but only o of the seventy-four arcades that formed the wer story exist. It had three stories, of the oric order, and more pure in detail than the olosseum. The sub-arena structures are more rfect, although the general arrangement of the an is nearly identical. We see the same dens r the wild beasts, the sockets and grooves for orking the *pegmata* or lifts by which they were isted on to the arena; but the arena, instead being a boarded floor, is carried on vaulting, d pierced by openings for the lifts, and pro-bly each of these trap-doors had a water-tight vering, to enable the whole of the arena to be oded. If such was the intention, the surface uld not be covered with more than 2 ft. or ft. of water; while the boats or galleys for the val engagements would float in the deep nals, three in number, which run parallel with e major axis of the ellipse, the other water ing merely for creating an impression on the ectators that the whole surface was flooded an equal depth. The *opus reticulatum*, rrounded with a framework of brick, which is found in this structure, proves it to have been partly built in the time of the Emperor Hadrian, and it is probable that a greater part was executed in the second century. It stands on the site of the ancient city of Capua, now called Santa Maria di Capua Vetere, and three miles beyond the modern town of that name. It is not positively known by whom the amphitheatre of Verona was erected, yet some writers attribute it to the time of Augustus, and the good preservation of the interior is owing to its having been used for plays during the middle ages; and this practice is still continued, for when I visited this picturesque city in 1875, a stage was erected in the amphitheatre, and a play was acted one Sunday afternoon. Of the outer wall which supported the portico surrounding the building there remain only seven piers. At the two extremes are the principal entrances, the sides of which are parallel. I think the entrances at each end give great grandeur to the design, as they are more marked and architecturally treated than in most examples. On the interior over the two entrances are galleries inclosed on their front and sides by a balustrade, and the seat of distinction was situated here. It is later in date, says Fergusson, than the Colosseum, Capua, or Nismes, on account of its rustication: this, I think, is doubtful, especially as this rustication is said to have been unintentional, and simply caused by there not being time to complete the work as intended. The idea of rusticating piers and columns is said to have originated from this building. The amphitheatre at Pola, in Istria, is about the same age as that at Verona, but the arena is almost entirely destroyed, and only the outer walls remain. The interior may possibly have been of wood, and has either decayed or been burned; the dimensions are nearly the same as Nismes, viz., 436 ft. by 346 ft., and 97 ft. high. The two lower stories have pilasters, but the upper one has none, and was probably built so as to allow of the masts which carried the ropes of the velarium to come down and socket into the cornice of the second story; and there is an open kind of battlement terminating the attic story, which it is conjectured had some connexion with the working of the awning. There are here the usual canals for conducting water for the purposes of the *naumachia*, lined with water cement, but the substructures only go under part of the fabric, since the labour of excavating under the whole surface would have been enormous, as the building is situate on the slope of a rocky hill. Four rectangular towers are attached, which were probably provided with wooden stairs, as no remains of stone ones are discernible, but the use of these towers has puzzled the most learned antiquaries, and no satisfactory solution of the problem has yet been arrived at. The Amphitheatre of Puteoli or Pozzuoli, near Naples, has substructures as fine as any known amphitheatre, though in size it is inferior to the Colosseum or the Capuan amphitheatre. It is probable that it was used as a *naumachia*, since we find a large central channel deep enough to float a Roman galley, and constructed after the same manner as that at Capua, with small square holes all round the arena, which have evidently been fitted with water-tight coverings to prevent the escape of water when the whole arena was flooded; this would have been quite practicable here, but in the Colosseum it could not have been done without some modifications of its existing plan. This building was chiefly erected in the time of Hadrian, and exhibits beautiful specimens of the construction of his time. The amphitheatre of Pompeii accommodated about 10,000 or 11,000 spectators, and was constructed chiefly of rough masonry, called *opus incertum*, with quoins of squared stone, partly filled in with rubble, the whole originally having been covered with ashlar. The entrances are at each end of the ellipse. The podium was found to be richly ornamented with frescoes when first excavated, but this rapidly peeled off on exposure to the atmosphere. The amphitheatre at Ostricoli is small, measuring only 312 ft. on its major, and 230 ft. on its minor axis, and is two stories in height. It is in a very ruined condition, though one of the most modern works of this class; nevertheless its simplicity of design makes it a valuable specimen of Roman art.

In France there are two amphitheatres of considerable size, one at Nismes in Aquitaine and the other at Arles, the former capable of containing about 17,000 and the latter 20,000 spectators. At Nismes, a wooden floor with trap-doors in it still exists, though Mr. Parker is of opinion that this is not the ancient floor, but replaced one of the same character. The substructures, which differ from those of the large Italian amphitheatres, appear to have had no stone staircase for access. At Arles there were originally some subterranean arches, two stories of sixty arches each and an attic, well constructed of carefully-fitted stones of large size, the orders employed on the exterior being the Doric and Corinthian. The artistic effect of these buildings is mainly due to their mass, combined with an elegance of curve which is always found in buildings of an elliptical form; the circle does not give the same variety or gracefulness of curve which is found in an ellipse. Some buildings strike us by their beauty of detail, but it is evident that this is not the first impression produced by the Colosseum or any other amphitheatre which astonishes us by its vastness. The solid tufa walls of the substructures, the numerous tiers of vaults upon vaults rising with their rugged outline against the blue background of the clear Italian sky, inspire us with a sense of reverence towards the builders under the Imperial rule, conquerors of the world, and masters of the arts and sciences, which we, even in these latter ages, seem hardly to have equalled. It does one good to contemplate a block of tufa, such as we see in the substructures of the Colosseum, discarding the bondage of mortar and sufficiently secure by reason of its enormous size, and bedded with that care which the early builders knew so well the value of. These solid structures make our mean brick walls, which are measured by inches, look like a sheet of paper compared with an armour-plate.

Some modern structures have been erected which in many points are analogous to the Roman amphitheatres, but a more difficult problem than that which the Roman architects had to solve has been successfully mastered by our modern constructors. In the Roman amphitheatres, all that was required was that every one should be able to see the doings in the arena, but we have to provide buildings in which an assembly can see and hear also; it is not sufficient for them to be spectators, they must be an audience. This difficulty has been met in a fairly satisfactory manner in the Albert Hall. No wild beasts are let loose on this arena, so no podium is required, and no English tars fight on its surface in ships as in the ancient *naumachia*, therefore no substructures or great drainage works are necessary; but there are features in this building which carry out the Roman principles, though perhaps the staircases, owing to modern ideas, are not planned on the same simple and masterly manner: nevertheless, I should advise any one who wishes to obtain a faint idea of the grandeur of a Roman amphitheatre, and has not an opportunity of seeing the works themselves, to study this building. The shell of the Albert Hall or the "Kensington Amphitheatre" consists of two concentric walls, between which are contained the staircases, corridors, and general arrangements for the service of the central hall, and all the necessary offices, &c. The arrangement of the *cunei*, or wedges of seats, is amphitheatrical, and they are entered from spacious corridors and dormitories; but the simple and stately form of the inverted cone is broken by three tiers of boxes running round the building.

In considering all Roman works, it is well for us to understand as much as possible the sentiments which actuated the Romans in the construction of their edifices. Wealthy and proud, they delighted in showing their wealth in costliness of materials rather than in delicacy of form and thought,—to strike wonder into strangers' minds, not by their refinement of thought as expressed in their buildings, but by massiveness and apparent and frequently real solidity which has seldom been surpassed. The power of mass is the first thing which strikes an ordinary beholder, and the Romans, as has been justly observed, were an arch-building but not an architectural nation. The arch and the vault, grafted on the Greek models, soon subsidised the vertical and horizontal lines which were the ruling features of Greek design. The Corinthian order supplanted the manly Doric, and I believe the decline of Rome may be dated from the time when the simple Doric and the graceful Ionic were almost entirely discarded, and the meretricious Corinthian became the universal order in all buildings. This is noted in M. Viollet-le-Duc's "Lectures on Architecture," so admirably translated by Mr. Bucknall, where we read, in reference to the degeneracy of art and the looseness

of detail in Roman times in comparison with the Greek epoch, that Roman architects "had not leisure to study purity of line, the stone-dressers had not the time for these refinements; it is less trouble to describe a quarter circle with a compass than to find an indescribable curve," such as the Greek torus. In one important item the Romans far excelled the Greeks; they had the faculty of planning, and for my own part I never come away from studying a Roman plan, whether it be for a temple, a palace, a public bath, or an amphitheatre, without feeling braced and refreshed in mind, and strongly impressed with the skill of the Roman architects in this respect. We in the present day, and especially in this great capital, are in a position very similar to that of the Roman citizens, surrounded by wealth and comfort which borders on luxury; we live in an age as great in its way for building, if not for architectural, works, as any era of ancient Rome; and we architects in this busy nineteenth century are pushed and hurried on in our work like the Roman architects of the first century; we cannot afford to give a whole day to the finessing of a curve or the rounding of a torus. Art is too long, and life is too short; or, we might put it, the work is too great, and the percentage too small, for architects to work in this fashion; and an architect should not be obliged to look out anxiously for another building to occupy his attention as soon as one is completed, but should be able to give his heart and soul to his work, and be free from all anxiety, which is incompatible with that tranquillity of mind from which emanate all noble designs.

In conclusion, I must express my regret that the scope of this paper has not allowed me to treat of the great drainage works which supplied these vast structures with water, and afterwards conducted it to the Tiber; for the aqueducts which conveyed the water from the distant hills over the dreary tracks of the Campagna were among the clearest evidences of the grandeur of the empire. It was in this class of work, where the mechanical powers of mind and matter were brought into operation, that the Romans were *facile princeps*. The great drain of the Colosseum itself was a work of no small magnitude, and the small drains which ramify the soil of Rome like the veins and arteries of the human body make it impossible to dig down more than 15 ft. without coming upon some supply of running water. And now, as we draw near to the close, not only of these remarks but also of our session, I hope that some few of our members may become imbued with that enthusiasm which should accompany the contemplation of these noble works; for architecture must be studied with love or not at all; and when we separate, some to study the beauty of Gothic detail, and revel in the grandeur of the grey and solemn minster, and others to seek the shores of sunny Italy, there to ponder on the past glories of the Eternal City, where, as the poet says,—

> "The very dust we tread stirs as with life,
> And not a breath but from the ground sends up
> Something of human grandeur."—

let us look reverently on these structures, which from various causes have happily escaped the cruel hand of the restorer, and still go crumbling on in untouched solemnity, so that, as we traverse the arcaded Gothic cloister, or the deep, shady, vaulted corridors of the Colosseum, which we admire "as we admire the beautiful in death," our minds may haply be awakened to the spirit which actuated these early builders, who produced works which, as time rolls on, accumulate increased interest and veneration.

Roman Remains.—Whilst the contractor for the erection of the mortuary chapels for the new cemetery at Keynsham, Bristol, was last week superintending the digging of the foundations, an ancient Roman floor was discovered, about 2 ft. from the surface, intact; all the stones being of white lias formation, and nearly all inch cubes bedded in mortar. The architect, Mr. E. T. Boston, is of opinion that the floor formed part of an ecclesiastical Roman building of an earlier date than Keynsham Abbey, which was found some years since, the floor of which was tiled. The flooring is in small areas with foundations between, which appear to have been some kind of cells with walls dividing them; with the exception of a Bath stone skew-back and some small pieces of pottery nothing else has been found, although considerable search is being made.

THE HANDEL FESTIVAL.

THE great oratorio performances, which may be said to be in some sense peculiar to England, have been compared by a modern writer to the Olympic games, as holding somewhat the same place in relation to English society which those athletic celebrations held to Greek society. It is not very easy, in spite of classical dictionaries and antiquarian researches, to realise to ourselves what the Greek games really were to those who witnessed them; but, on the whole, it is difficult not to think that we have the best of it in the matter, and that our great festivals of this kind appeal to something more distinctly intellectual than the contests of men in feats of racing and wrestling and charioteering, even when glorified by a Pindar as their poet. It has become a kind of recognised order of things that such festivities with us should repeat themselves at intervals of three years; and though we can hardly undertake, in justice to subjects which call for our more immediate and fuller attention, to give notes of the musical festivals of the country in the ordinary run of things, the Handel festival is so great an affair, and so completely at present a thing *per se*, not to be met with out of England, that a word as to the one which has just passed over can hardly be considered out of place here.

Our experience, as recorded in this number, can, of course, only embrace two days of the festival, the last performance taking place on the Friday after these remarks will have gone to press. But of the first two days of the great gathering we can speak, and that in terms of very decided satisfaction and congratulation. Everything seemed to go well. In the first place there was, what is a great thing on such occasions, glorious weather: a trifle too hot, on Monday especially, for complete comfort; but still it is such a great thing, when people are out on an occasion of enjoyment, to have bright sunshine pervading everything,—an advantage the more to be prized by English holiday-makers in proportion to its rarity. As a mere spectacle, the area of the building devoted to the concert was a thing to see, with its vast parterres of gaily-dressed auditors (ladies, as far as we observed, greatly preponderating), and the great semicircle of performers rising in front of them, with the organ towering in their midst, and serving to give scale to the whole; for without something to refer the eye to in that sense it was not very easy to realise how great was the number of performers, the Crystal Palace not being a building of remarkably definite scale.

The first day's performance was devoted, as usual, to the "Messiah," the work which, for various reasons not very easy to analyse precisely, has fixed itself more deeply in the heart of the English public than any other great musical composition. And in regard to what, of course, constituted the great attraction both on this day and on the Wednesday, the chorus-singing, we are echoing the general opinion of those who were present in recording a very great and almost unbroken success. There were one or two occasions when the multitude of tenors on one side of the semicircle did not quite get along in company with the multitude of basses at the opposite side; but these unsteadinesses were of rare occurrence, and in every case were soon righted, thanks equally (perhaps) to the coolness and concentration of the conductor, and the attention and care of the masses who obeyed his bâton. Apart from such occasional hitches, almost inevitable under the circumstances, there remains the fact that in England singers can be got together, to the number of nearly 4,000, who are capable of going through the most intricate of Handel's choruses with almost the precision of a picked handful of voices, without any previous rehearsal all together, or in the place which they occupy at the performance; for the hitches mentioned did not occur in the most intricate movements, many of which went with mechanical accuracy. This is really something for English singers to "brag" of. As a contemporary has observed, we can hardly, perhaps, assert that they *cannot* do this in Germany; but it is certain that they have not done it so far, and that such a scene and such an effect can be witnessed and heard nowhere but in England. And even apart from the musical effect, one cannot but think that there must be a grand moral influence in a performance which brings together so many thousands of people periodically to listen to music, written in the noblest style and with the noblest intent, and which implies su steady and painstaking labour, and subordinati of personal caprice to a great end. As a natio we received and naturalised George Freder Handel, treating him in his lifetime, perha rather capriciously, yet recognising the gre ness that was in the man; and he has certain more than repaid his debt to the country of h adoption by leaving us such a legacy in t shape of these great choral works which ha taken such deep root in the national sympath and feeling.

The choruses are, of course, the great featu of the Handel festivals. It is not to be expect that solo voices, even the best, are to be hea with much effect in so vast a space; yet t solo performances presented one or two poin of special interest. One negative fact in t programme,—a sad one to many of us,—was t absence from the bills, for the first time sin the festivals were set on foot, of the name of t great tenor singer who has become so associat with Handel performances that to many of they have never seemed complete without hi but who did wisely in declining again to face t exertion of singing in so large an area. On t other hand, there were one or two new appea ances in which considerable interest was fe The German baritone, Herr Henschel, who success in London this year has been unmistak able, came forward to establish his claim to ra as an oratorio singer, and in spite of an almo ineradicable feeling on the part of Engli listeners that Continental singers "do not unde stand Handel" (a prejudice hardly groundless won a complete and well-merited success. St more to the surprise of many, probably, Madam Patti appeared to sing two well-known air "Let the bright Seraphim," and "From migh Kings," in the course of the miscellaneous sele tion on Wednesday. The favourite *prima don* met, of course, with an enthusiastic receptio and sang with her usual faultless vocalisatio but the performance lacked a something f which this could not quite atone, and the *enco* of the second air was rather perhaps an expre sion of popular enthusiasm than of artist feeling. Mr. Lloyd met with more than hear recognition for his very finished singing; M Santley the same; Mr. Cummings and Madam Patey (the latter especially) greatly distinguish themselves by their pure style and true feelin and Mdlle. Albani proved that she has mo varied powers of musical appreciation and exec tion than some of her sisters of the lyric stag in the full justice which she did to a style music so distinct from opera.

The programme of the miscellaneous selectio included a good many things less familiar lovers of Handel than the "Messiah" and "Judas &c.; in particular the chorus "Tyrants now r more shall dread," and the grand and almo colossal chorus which forms the conclusion of th "Ode for St. Cecilia's Day," "As from the powe of sacred lays," the effect of some portions which, towards the close, was something reall stupendous: one could not but wish that th composer could have heard it given on this scal with such immense resources of sound and wit such splendid effect.

We may have a word to say further s to some suggestions in regard to acoustics an planning in connexion with such large pe formances, on which the Handel Festiva forms a practical lesson.

Proposed New Government Offices.—Mr Mitford, of the Office of Works, giving evidenc on the 26th before the Select Committee ap pointed to consider the subject of the Publi Offices and Buildings in the Metropolis and th requirements of the Departments in this respect produced a plan he had prepared showing th public buildings which, he thought, should b constructed. He proposed to cover the whole o the west side of Parliament-street with Govern ment buildings, which would render it necessary to take the houses and shops running from th Admiralty to Charing-cross, including Drum mond's Bank. Charing-cross would be con siderably widened, and there would be a muc better approach to Pall-mall than at present At the end of the Mall the War Office would b situated, covering the present Admiralty site and occupying an area of 121,100 superficia feet. The total area of building according t the new plan would be 268,450 ft. It appears t be the revival of a plan promulgated some years ago.



THE ARNDT TOWER ON THE ISLAND OF RUGEN.



NATIONAL PROVINCIAL BANK OF ENGLAND, STOCKTON-ON-TEES.—Mr. JOHN GIBSON, ARCHITECT.

THE ARNDT TOWER ON THE ISLAND OF RÜGEN.

LIKE a rock from the sea, the striking figure of the noble and intrepid patriot Ernst Moritz Arndt towers above the dark and troubled period of Germany's greatest humiliation, in the time of the first Napoleon's zenith of power. Arndt was born on December 26th, 1769, at Schoritz, in the island of Rügen, the son of simple but educated parents, and died at Bonn, on January 29th, 1860, mourned by a grateful nation. His countrymen look upon him as a hero in citizen's garb, a true German, than whom can be found none more noble and disinterested, more willing of sacrifice and devoted, more bold and persevering. By nature gifted and industrious, he studied first at the University of Greifswald, and then at Jena, theology, history, geography wandered, impelled by an irresistible desire for roaming, nearly through the whole of Europe, in several travels, of which he afterwards published telling descriptions. He finally settled as private teacher in Greifswald, married, and was elected extraordinary professor. The sad condition of Germany weighed heavily upon him; his lucid mind foresaw the dangers threatening Germany from France, and he tried hard by his writings, especially his *Geist der Zeit* ("Spirit of the Time"), to rouse the German nation from its lethargy of indolent security, from which it was to be so soon and so terribly shaken. After the battle of Jena, this never-to-be-forgotten landmark of modern German history, Arndt was compelled to fly to Sweden to escape the persecutions of the French police. There he wrote the second part of his *Geist der Zeit*, in which he pointed out with true patriotic zeal the only ways by which Germany could be saved from her degradation. But the fall of the King of Sweden, in 1809, cost him his asylum, and either hidden or under a false name, he lived in his native home, or at Berlin, Prague, and St. Petersburg, whither Baron von Stein had called him. In the latter's service, he participated in the literary labours preparatory to the War of Liberation, and afterwards, by the side of Stein, in the struggle against the French. His patriotic and war songs especially contributed greatly towards rousing the enthusiasm of the youth of Germany for the war of liberation, and acted on the German national spirit of the people. The little gratitude shown him during the time of reaction which followed upon this period of national sacrifice and devotion, as well as his later fate and his share in the preparation for the resuscitation of the German Empire, which he was not destined to see accomplished, though he was firmly convinced of its final attainment, are well known. The German people, however, suitably honoured its hero; the Arndt monument in bronze, erected at Bonn in 1865, and the imposing "Arndt-Thurm," rising to a height of 284 ft., on the Rugard, in the island of Rügen (the subject of our illustration), prove this sufficiently. The tower was begun in 1873, and will, when completely finished, form an ornament and a beacon for the rocky cliffs of Rügen. But the noble work of the man during the time of greatest national distress will be a more secure and lasting record in the annals of German history than any perishable monument can be.

THE NATIONAL PROVINCIAL BANK OF ENGLAND, STOCKTON-ON-TEES.

THE widely-extending business of this company has necessitated the erection of more commodious premises in Stockton-on-Tees, which were recently completed from the designs and under the direction of Mr. John Gibson, of Westminster, and form the subject of illustration in our present number. The frontage is one of nearly 60 ft., and the elevation is 48 ft. high. Stainton stone was used for the external masonry.

The banking-room, entered through a mahogany framed lobby, is a lofty one, 43 ft. square, amply lighted by the large front windows, aided by lantern lights in the rear.

Beyond are spacious consulting and waiting rooms, conveniently fitted up; and contiguous are book and strong rooms, fitted up with a special view to the safe custody of the securities they contain. In the basement additional plate and book accommodation is provided, as well as clerks' luncheon-room, heating apparatus, and usual conveniences.

The first floor has been arranged as offices, with strong closets attached; and on the upper floors and in the rear part of the premises are the resident's and messengers' rooms, communicating with each other and with the several departments.

The banking-room has been conveniently fitted up with counters, desks, and other furniture for the requirements of the business and the staff. The public space has a Minton-tiled floor; the ceiling over the bank is of fireproof construction.

Mr. George Marshall, of Darlington, was the contractor for the building; Mr. Dewey acting as clerk of works.

SOME SCOTCH ARCHITECTS AND BUILDING CRAFTSMEN IN THE SEVENTEENTH CENTURY.

THE Scotch Mediæval architects or masonic craftsmen have certainly left us several good specimens of their art in their castles and ecclesiastical structures, but when we come down towards the seventeenth and the earlier part of the eighteenth century, we are somewhat amazed at the position and practice of architecture in Scotland. Caledonia has always been a land of stone and stone buildings, and it is unlikely that it will ever become a place of brick. True, within the last quarter of a century or upwards several brick dwellings of the speculative kind have been erected in the towns and suburban quarters of Scotch cities, yet the Scotch mind is adverse to the innovation, and the native building operatives of the masonic class look with a sort of contempt on brick mansions. The Scotch mason is a thorough believer in stone, even stone for flooring, roofing, and staircases, as common walling, frontages, columns, pilasters, entablatures, &c., thorough and general, and not merely used for dressings, as it is in brick-built domestic structures in England and Ireland. The Scotch mason, operative or master, who knows his business thoroughly, was always an important personage, and, like the monumental artist of our own day, he was always wont to put his *fecit* or some other distinguishing mason-mark upon his handiwork. If the client's armorial bearings were not cut by desire with date and initials upon some prominent stone, the builder or the mason was sure to perpetuate his name. Evidence of these characteristics may be seen in numerous Scotch towns and cities. In the seventeenth and earlier part of the eighteenth centuries there is apparent a great falling off in the character of the mason-work executed in many Scotch towns and cities. The architect as we know him in the present century was an unknown personage, and had no status in Scotland. He might call himself a projector, a planner, a plotter, as some of the members of the profession have called themselves, but down to a late date the nearest approach to the rightful name in Scotland was "Architector." In the minds of Scotch town councils of the seventeenth and earlier part of the eighteenth century, architectorie and masonrie appeared to be convertible terms. The following interesting entry from the minutes of the Glasgow Town Council for October 9th, 1678 (about the period when Sir Christopher Wren was busy in setting about his great work of rebuilding London and its churches) will edify the professional and general reader:—"The said day, in answer to the supplicationne given in by Alex. Thom, architector, upon severall considerationnes, the said Magestrates and Counsell hes given and grantit, and heirby gives and grants libertie and licence to the said Alex. Thom to reside within this burgh, and to exerce his employment and calling in architectorie and measonrie, and fra the dait heirof to the term of Candlemas, 1680." Six years later than the above date we find the above Alex. Thom in the city enjoying his freedom, and working in the service of the City Fathers. On the 26th of September, 1684, he furnishes his account for work done, which is thus entered in the minutes of the Town Council:—"The said Alex. Thom gave in ane compt of his cutting the king's armes upon stone, furnishing ane stone theirto, peynting and gilding theirof, and cutting the king's armes in timber for the king's seat in the High Kirk, conteyning the modells of the frontespiece of the lofts theirof, and for cutting severall thistles and crouns for the use of the said seat, and his haill panes and attendance theiron, and the taking down and putting up the said lofts, and for eight cedar tables and the pertinents belonging theirto, furntshed be him for the use of the toun, wherby the toun will be restored to him by ane attour what he hes receaved formerly, the soum of four hundred and fyve punds Scots, quhilk compt was allowed and proven." Alexander Thom's practice of "architectorie" consisted not only of drawing and modelling, but contracting, building, carving, painting, and decorating, and no doubt it was a profitable profession, considered in the light of his time. On the eve, therefore, of the eighteenth century it will show the low status occupied by the architect in Scotland, who, when he was not a working mason or a master workman, was otherwise a general builder or contractor. Some years previously, in 1659 or 1660, the house-painting trade must have been at a very low state, when we find licences granted to one to practise who evidenced special skill in his calling of "washing and pynting of houss."* Despite the existence of old trade guilds, the following entry must be read as a proof of an almost total eclipse of the efficient class of painting craftsmen at the time:—"The said day, in answer to the supplicationne given in be Robt. Marshell, pynter, showing that he has skill in washing and pynting houss, and given proof thereof in sundrie places within this burghe, and seeing that ther is but on [one] the lyk within the saymn burghe, and not ane other in all the west of Scotland desyring therfore licence to practise and occupy the same peaceablie hereafter within the said burghe (that occupationn being rather ane science nor ane craft), quhilk being weighed and considered by Provest, Bailleis, an Counsell, they, after considerationn had thereanent, do hereby grant licence and libertie to the said Robt. Marschell to was and pynt houss to any within this burghe or territorie theirof, who pleases to employ him for that effect, without any impediment to be made be him thairuntill." The seventeenth century "Provest, Bailleis, and Counsell," it is seen, regarded the art of Robt. Marschell rather as a science than a craft. The painter in question probably knew how to paint signs and do a little lettering and gilding, as well as washing. With only one painter in Glasgow like Marschell, in 1660, and not another in the whole west of Scotland, what are we to imagine of the mechanical destitution of the painting craft, supposing the City Fathers are telling the truth? The population of Glasgow in 1660 is returned at 14,678, but it is probable it was not so much. Making all reasonable reduction, there ought to be a sufficient constituency in Glasgow even 200 years ago to keep a dozen or two efficient house-painters in constant employment; but we must remember the stony country was not like England, a country of cities and towns, full of half-timbered and whole-timbered dwellings, and that stone was not painted, though timber generally was. Masons and smiths, millwrights and wheelwrights, were kept busy betimes in making and repairing; and weather-vanes, town "knoks" or clocks, and dials and bells, called often for adjustment. Glasgow had often to send messengers southward and to London for special craftsmen to attend to some of the above town wants, and betimes offered special privileges to some of the workmen that remained and settled down. Here is an inventory of the "toun's work implements" under the charge of the clerk or master of the works in Glasgow in 1661:—"The same day there was produced by Hendrie Craig, M^{r} of Wark, ane inventor of the toune's haill work lumes and others he has charge of, quhilk is appoynted here to be booked, and is as follows, viz.:—In the first three forlots lyand within the tolbuith of the said burgh, in the north end of the Meikle-hall. *Item.*—Ane uthir furlot, marked with Linlithgow measoure, with ane 4^{l} p^{k} cap, marked with the same mark, lyand there. *Item.*—Twentie ledders, quhairof fyve lyes in the Grammar Schoole-wynd, and uthir fyve in Fleshmercat, quhairof the Mr. of Wark has the keyes; and ten in Hutchesone's Hospitall, quhairof Hendrie Glen hes the keyes. *Item.*—Sex. shoffiles, twa spaids, and four mattocks, quhairof are sharpened in the end. *Item.*—Ane great iron querrel mell, and twa gavillocks, with three iron wadges, and twa hurlebarrows. *Item.*—Four silver coups in the

* The word "pointing" here certainly suggests itself, but the modern "restorative" process of pointing, tuckingg, wigging, and washing-down of buildings was unknown at the time, and when introduced at a recent date, was chiefly confined to brick buildings. Pointing and washing could not, in any sense, be considered a science, but painting and mixing of colours might.

mr. of wark's possessionne, having the toune's armes on them. *Item.*—Ane new coffer for keeping the toune's Commissioner's clothes when he goes abroad. *Item.*—Ane broad kist or burst [chest or box], for keeping the toune's foote mantle. *Item.* — There is lying in the Round at the north end of the platforme in the Tolbuith, thrie scoir twelfe muskits, and sex barrels of puider, quhairof twa casks ten inches—threttie pair pistolles and hustrelles, and ane hundreth and threttie twa ammunatioune blaids. *Item.*—There is standing in the south-west round of the heigh pyntit hall, ane dry stool with ane pan therin, and fyve chamber pots." The above inventory of town's work implements is modest in its dimensions compared with one of a corporation in the present day, which performs its own work without the aid of outside contracts. The magnates of Glasgow at the above date patronised a clerk of the weather as well as clerk of master of works, for we find the treasurer is ordered "to pay to James Corss Philomath, ten dollars, for dedecating his Almanack to the toune, and to ilk ane of the Clarks men sex pund for their bygane service." We may interpolate here in view of the Caxton Celebration the fact of the poor condition of the printing trade of Glasgow in 1661, as the following entry will show:—"The same day, for Robert Sanders, his better encuragement to hold his prenting-hous heir, within this burgh, in respect that Andrew Andersonne, last printer therin, is gone away, who had ane hundreth marks yearli fiell. It is concluded, therfor, that there be payit be the toune theasaurers yerilie, to the said Rot. Sanders, the soume of fourtie punds, at twa termes in the year, Mertimes and Whitsonday, so long as he keeps up his prenting-press within this burgh, and he to prent gratis anything that the toune sall imploy him to prent."

Liberal encouragement, that, to the disciple of Faust, Guttenburg, and Caxton in "the land of cakes and brither Scots." In 1683 we have some evidence that art was looking up a little, for the Town Council ordains that one Robert Fynneson have a warrant for the sum of twenty pounds sterling, "payed be him to the Provost quhilk he deburset for the portraiture of his Royal Highness, quhilk is put up in the tolboothe, in that rowme where the Toune Counsell sitts." Yankee handicraft for several years past is equal to the feat of transporting or removing a wall or house from one side of the street to another, but Scottish mechanical genius of the seventeenth century succeeded in translating a well. There is an entry, under the date of August, 1638, of 50*l.* being paid to one John Boyd, "for translaiting of the stock-wall of the Hie-street, and setting the saymn down in ane uthir place." The same contract and payment included the taking down of the wall at the Cross, covering the same and "translating" the "heid" that was thereon, and setting it on the said new wall in the Stockwell Gate. The above translation in the first instance, as it may be seen, refers rather to the removal of a public well than a wall. It is a moot point in the second instance whether the "heid" or head of the "wall" or well, which was carried from the Cross to decorate the new one at the Stockwell Gate, was the head of some rebel or Covenanter, that might in those days be seen stuck upon the iron spikes there, or merely an ornamental head. When the old Tolbooth of Glasgow (not the first) was built in 1626, owing to a defect in the original plan, it became necessary afterwards to erect a large outside stair. The platform of the stair was used for a place for pillory and the execution of criminals. The architect's or mason's mistakes gave rise to the following doggrel:—

> "In architecture there are mistakes for evermair,
> But seldom so great as a house without a stair.
> Nine windows in front, and three of them blin',
> But when the Council are met there's light aneuch within."

The rhymer is mistaken. The mistake or oversight of erecting a house without a stair occurred more than once, the subsequent provision being an afterthought. George Faulkner Swift's printer, in Dublin, built a house in Parliament-street, in that city, and it was nearly finished before the staircase was thought of. As the printer in this case had only one leg, the wits of the day remarked that Faulkner needed no stairs, as he could not climb. With this collision of Irish and Scotch architectural genius and wit we will conclude our present short outline of Scottish architectural practices and oddities in building and handicraft matters in the seventeenth century.

LOWESTOFT PORCELAIN.

THE object of the present paper is to furnish our readers with additional facts, carefully collected on the spot, to show that the Lowestoft China Manufactory,—producing soft-paste articles from 1756 to 1775, and hard-paste from 1775 to 1803,—never decorated Oriental porcelain, but that all examples were made and finished there. For this purpose we made diligent inquiries of residents whose ancestors knew the factory, and particularly of those whose relations had been in any way connected with it. Though many of the persons consulted had heard a great deal about the manufactory from their friends and relations, not one of them had ever heard a rumour respecting the painting of undecorated Oriental porcelain, though all agreed that had such a practice been pursued they must have been cognisant of it.

We took down the following statements as they were made by the respective persons, read them over to them, after which they were duly signed and witnessed:—

Ann Rone, of Lowestoft, 89 years of age.—Her aunt used to decorate the china, and she often used to see her paint. Considers it absurd to think that white china was ever painted there. If that had been the case she must have heard of it.

James Ibrooke, 87 years old, whose family has resided in Lowestoft 200 years.—His grandfather, James Richmond, had shares in the factory. The reason why the factory was given up was, that the high price of coals obliged the proprietors to reduce the wages of the decorators, who then went to Staffordshire, where they could obtain higher salaries. Never heard that any white porcelain was ever decorated at Lowestoft.

Martha Edwards, aged 82.—Her mother, Mary Redgrave (born Nov. 19, 1761), was a decorator in the factory. Has never heard (although she knew a great deal respecting the factory from her family and others) that any foreign porcelain was ever brought into Lowestoft to be decorated in the factory. Martha Edwards has three examples of Lowestoft delft,—small medallions, with the date of the birth of some member of her family on one side, and in one case a dove on the other. Knows that *a great many tiles* were made there, and chiefly decorated in blue. Thinks that one reason why the factory was closed was that one of the chief workmen ran away with 500*l.*

Susannah Edmunds, aged 79, says she often played at the factory when a girl, and her aunt, Margaret Edmunds, painted there, and decorated a great number of pieces. Never heard that any china was painted there except what was made in the factory.

Maria Sarah Johnson, aged 80, daughter of Mr. Robert Allen, who was the first to go to the works as a boy to do odd jobs, and the last to leave it as head man. M. S. J.'s grandfather, James Richmond, was a sleeping partner in the concern. She never heard that any white Oriental China was ever painted there. Some of the *tiles* were decorated in red and green, but chiefly in blue. Scriptural subjects were the most popular.

Ann Crow, 67 years of age.—Her two uncles, Jas. Redgrave and John Bly, were both painters in the factory. Has heard from them and others a great deal about the establishment, but never heard a word about the decoration of unfinished Chinese porcelain.

Lucy Ann Disney, aged 56.—Is a grandchild of Robert Allen, who painted and presented the window in the church, and one of the chief painters in the factory. Has never heard that any Oriental undecorated porcelain was ever finished at Lowestoft.

Lady Smith,* who died in February last, at the extraordinary age of 103, and was born at Lowestoft three years before hard-paste porcelain was made in the factory, in a conversation with the writer, stated that she did not for a moment believe that *Oriental body* was ever decorated at Lowestoft. A long residence in Lowestoft, and more than usual interest in its affairs, render her opinion of considerable importance.

We venture to think these eight statements conclusive. It may be said, however, that the proprietors would take care that the foreign white ware was smuggled into the manufactory, so that their process should not be known. To this we reply that all accounts agree in stating that the works were singularly open to inspection, and there seems to have been little of that secrecy so common in similar porcelain manufactories of that period.

Mr. Seago, who has collected Lowestoft china for many years, and has had unusual facilities for acquiring information on the subject, pointed out to us that the Lowestoft manufactory was started expressly as an *imitative* factory by Browne. At that time there was a great rage for Oriental porcelain, which was, however, expensive, in consequence of the heavy dues for carriage. Besides the important fact—which those who support the theory of the importation of undecorated porcelain appear to ignore—that it is totally contrary to the well-known feelings of the Celestials to supply Europeans with a means for competing with them in other markets, it is necessary to inquire if the cost of transit would have been prohibitory or not.

The East-India captains were only allowed to make three voyages each in the course of their lives; and as they looked upon these as a means of saving a comfortable competency, it was necessary for them only to carry such merchandise as would bear a heavy freightage. Suppose, for the sake of argument, that it was possible to induce the Chinese to sell their porcelain in an undecorated state on its arrival in London, its cost, by reason of the dues, would have been greatly increased. It then had to be conveyed to Lowestoft at an additional cost. It must not be forgotten that Lowestoft was not a port, and that East-Indiamen never even put into Yarmouth. Mr. Seago's opinion is, that supposing white porcelain to have been sold in Yarmouth at the same price as the Chinese would sell it—if they ever sold it at all,—it would not have answered the purpose of the proprietors of the Lowestoft works to have purchased it for re-decoration, as even the cost of the *nine-miles-and-a-half* carriage between the two places would have been too large to have allowed a sufficient margin of profit. How, then, could they have afforded the cost of the transit from China to London and from London to Lowestoft?

The very *motif* of the establishment of the factory was to save the cost of carriage by manufacture on the spot, imitate the Oriental, and then sell it cheaper than the imported examples. Why did they choose Lowestoft, in many ways an inaccessible spot at the time? For the first or soft-paste period the reason probably was that a good stratum of clay existed suitable for the purpose, which could be manipulated in a capital spring of water on Gunton Dene. The presence of pure silica on the beach in the form of white sand probably suggested to Browne the manufacture of hard paste or pseudo Oriental. When the Lowestoft works were closed about 1803, this valuable sand was sent to Worcester to be used in the porcelain manufactory there.

It will be noticed that in one or two of the "statements" printed above tiles are mentioned. On hearing this, we at once set to work to hear more about, and, if possible, to procure some of them. Mr. Seago had seen tiles in families with the date of the birth of a child upon them. They were placed at the sides of the fireplace, and so became a convenient family register. But the statements we had elicited pointed to a more general manufacture of the Dutch tile character. During our sojourn at Lowestoft a house was being pulled down near the site of the china manufactory. We hear that a whole barrowful of painted tiles for the fireplaces had been thrown away as rubbish. They had been offered to a painter, who refused them because they were not white, otherwise he would have used them as palettes! After some trouble, one of these was found. It was painted in blue, with a spirited representation of a ship. Mr. C. Bird, jun., afterwards very kindly procured for us five other tiles,* decorated with horse soldiers going through the various motions of their sword exercise. These were freely but artistically drawn, in a pale lilac colour. At the corner of the blue and the lilac tiles was a peculiar device: a kind of open flower. We were fortunate enough to purchase some time afterwards several dozens of these tiles, both blue and lilac, in a curiosity-shop at Colchester, all having the device in each of the four corners. These would have been sold as Dutch

* It is interesting to remember that Lady Smith was born two years before the outbreak of the American war, and sixteen before the fall of the Bastille. In 1796 she married Sir J. E. Smith, a young physician, of Norwich, who died in 1828. Lady Smith was a most intellectual woman, and throughout life had the friendship of a large circle of distinguished persons. She enjoyed almost perfect health.

* These did not come out of the house whence the blue tile was taken, but had been found before in another place.

tiles had we not made the discovery before, and we think it probable that a great many so-called Dutch tiles were really made at Lowestoft. There was a considerable trade between the latter place and Holland *viâ* Yarmouth, and many tiles were probably sent to that country.

Mr. Chaffers, who has done more than any one else to make known the true origin and history of the Lowestoft manufactory, gives in his invaluable work, "Marks and Monograms" (4th edition, 1874), an important statement made in 1866 by Abel Bly, then in his 84th year:—"I the undersigned, Abel Bly, of Lowestoft, formerly twine-spinner, am now in the 84th year of my age, was born in, and (with the exception of two years) have always lived at, Lowestoft; my father's name was Abel Bly, who was employed in various departments in the china factory at Lowestoft. He died when I was eleven years of age; my two uncles, John Bly and Philip Bly, also worked in the factory. The clay was made in the factory premises now known as Mr. W. Ball's Auction Mart, from whence it was taken to Gunton Ravine (where there is to this day a constant flow of the purest water, discharging many gallons per minute) and there ground by a large mill. From my father working at the factory, I was in the habit of going daily to the premises, and can most positively affirm that no manufactured articles were brought there to be painted, but that every article painted in the factory had been previously made there. I remember that the ware produced in the factory was deemed far superior to anything to be obtained in the country." On our visit to Lowestoft we ascertained that A. Bly died in 1872.

A certain unevenness of surface, and irregularities in spouts, handles, covers, &c., are characteristic of Lowestoft porcelain. The decoration is still more distinctive, and if specimens of undoubted Oriental and Lowestoft copies of it are placed side by side the difference is striking. When these peculiarities are once mastered, a collector has little difficulty in selecting the Lowestoft examples out of a large collection. Of course, there is a great variety in the pieces. Some are of coarse character, and were doubtless sold very cheap, while others are of great beauty, both of form and decoration. It must not be supposed that the Lowestoft decorators did nothing else but imitate the peculiarities of Oriental work; a great deal of ware turned out was decorated with hunting scenes, portraits of political characters, ships, &c., of distinctive English character. In our opinion, some of these are more interesting than the pseudo-Oriental specimens. Either for the Turkish market, or,—what we think more probable,—for competition with Worcester, examples are known to have been produced with the blue crescent marked upon them. The factory, we need hardly add, had no distinctive mark of its own. Had one been used, the imitative object of its establishment would have been neutralised.

It seems to be generally acknowledged that the reason why the rose appears so often upon Lowestoft china is, that one of the chief decorators was Thomas Rose, a French refugee. In many instances the rose appears to have been painted without a stalk. This was not invariably the case, and we have noticed that, on some examples which appear to have the stalkless rose, the brown colour used to delineate it has faded. Mr. Jewitt, in an interesting paper in the *Art-Journal* (1863) says, that Rose's eyesight failed him, and eventually he became very poor. A sum of money was raised in the town, and he was presented with a pair of donkeys to carry water about the town.

For forty-six years Robert Allen worked in the factory, and a great deal of very superior work in the way of decoration was executed by him. He appears to have had a natural talent for the work, for, in his leisure hours, both before and after the closing of the works, he directed his attention to painting on glass. In 1819 he painted the east window of the church, and presented it to the town. The parishioners, for this act of kindness, gave him a handsome silver cup, which he much prized. We have seen some specimens of his skill in this art still in the possession of Mrs. Disney, his granddaughter, whose statement respecting the Lowestoft manufactory we have given above. Mrs. Johnson, Allen's daughter, has an interesting relic of her father, viz., a set of fine vases painted by J. W. Brameld, of Rockingham, for his friend R. Allen, with flowers, which Mrs. Johnson gathered on the Denes at Lowestoft for the purpose.

We should mention that the Robert Browne who brought to perfection the manufacture of hard-paste porcelain at Lowestoft, introducing it in 1775, was the son of the Robert Browne, one of the original proprietors of the works. Like his father, he was a very clever practical chemist. Mr. Chaffers points out that he was successful in bringing the art of making true porcelain nearer to the Oriental than had been attained by any other individual. It is true that Richard Chaffers, of Liverpool, was working hard-paste porcelain at Liverpool in 1756, and in 1768 W. Cookworthy, of Plymouth, in conjunction with Lord Camelford, took out a patent for "a kind of porcelain, newly invented, composed of moorstone, or growan, and growan clay." In 1772, the latter was transferred to Richard Champion, of Bristol. Though both the Liverpool and Plymouth porcelain were *true* or hard paste manufactures, and the specimens would bear a heat sufficient to melt examples of other wares placed in them, they were by no means equal to the productions of the Lowestoft factory as imitations of the Oriental body.

It is quite certain that the Lowestoft manufactory was a most successful one. By great care and unremitting energy the proprietors brought it to a high pitch of perfection. The ware produced was so good in quality that connoisseurs have since been unable to believe that it could have been produced in England at the time, and have striven to account for it by the invention of the undecorated Oriental theory, which we have been at some pains to contradict.

This opinion respecting the extent of the factory is fully borne out by the Lowestoft historian, Gillingwater, who, in his history of the town, published in 1790, says:—"The only manufactory carried on at Lowestoft is that of making porcelain or china ware, where the proprietors have brought this ingenious art to a great degree of perfection, and from the prospect it affords, promises to be attended with much success. The origin of this manufactory is as follows:—In the year 1756, Hewlin Luson, Esq., of Gunton Hall, near Lowestoft, having discovered some fine clay or earth on his estate in that parish, sent a small quantity of it to one of the china manufacturers near London, with the view of discovering what kind of ware it was capable of producing, which, upon trial, proved to be finer than that called Delft ware. Mr. Luson was so far encouraged by this success as to resolve upon making another experiment of the goodness of its quality upon his own premises; accordingly, he immediately procured some workmen from London, and erected upon his estate at Gunton a temporary kiln and furnace, and all the other apparatus necessary for the undertaking; but the manufacturers in London being apprised of his intentions, and of the excellent quality of the earth, and apprehending also that if Mr. Luson succeeded he might rival them in the manufacture, it induced them to exercise every art in their power to render his scheme abortive; and they so far tampered with the workmen he had procured that they spoiled the ware, and thereby frustrated Mr. Luson's design. But notwithstanding this unhandsome treatment, the resolution of establishing a china manufactory at Lowestoft was not relinquished, but was revived again in the succeeding year (1757) by Messrs. Walker, Browne, Aldred, & Richmond, who, having purchased some houses on the south side of Bell-lane, converted the same to the uses of the manufactory. They have now enlarged their original plan, and by purchasing several adjoining houses and erecting additional buildings have made every necessary alteration requisite for the various purposes of the manufactory. They employ a considerable number of workmen, and supply with ware many of the principal towns in the adjacent counties, and keep a warehouse in London to execute the orders they receive both for the City and the adjoining town, and have brought the manufactory to such a degree of perfection as promises to be a credit to the town, useful to the inhabitants, and beneficial to themselves." Gillingwater, it must be remembered, could have had no possible reason for over-colouring the account. We trust what we have said will induce others to ascertain further particulars respecting a factory the history of which has so long remained shrouded in mystery.

A One Shilling Moist Colour Box, containing ten colours and three brushes, is sold by Lechertier, Barbe, & Co. They claim that the colours contained in this box are pure unadulterated pigments.

INDUSTRIAL CLASSES IN SOUTH AMERICA.

ROSARIO AND BAHIA.

IN the Argentine Confederation, with the exception of a few machinists, blacksmiths, masons, and carpenters, there are no really skilled artisans: the work is done by second and third rate hands, and is generally rough, unfinished, and of inferior quality. For instance, the dwelling-houses are neat, and in some cases elegant, both in external and internal appearance, yet during a heavy rainfall there will not perhaps be ten houses in the entire city where the rain has not penetrated either through the roof, doors, or windows; and rains of this character are not unfrequent. The artisan takes no pride in his work, nor does he put his character into it, the object of the employer generally being quantity, not quality. The artisan would not make a stand against doing bad work, but he certainly would against receiving bad wages. There are but few, if any, amongst the class of artisans whose work can be depended upon as good from the sense of honour they have in executing it, and when called upon to execute repairs, or perform an isolated piece of work, the price demanded is enormous. The skill and trustworthiness of workmen in any department of industry would doubtless exercise some influence upon their rate of wages, but less, probably, here than in any other part of the world. The great majority of masons, plasterers, and bricklayers are Italians, and their taste is particularly noticeable in the external and internal ornamentation of the houses, in the building of which they are almost exclusively employed. They are uncleanly and parsimonious, and their only ambition is to return to their native country when they have accumulated such a sum of money as will there raise them above the class from which they sprang. The French, German, and English workmen live and lodge better than the Italian or Spanish, and are less parsimonious; but this does not preclude those who are economical and sober from saving money. The mechanical engineers employed on the Central Argentine and Rio Quarto railways, and also a large majority of those engaged on the river steamers, are Englishmen, who receive salaries varying from 250*l.* to 300*l.* a year, and they are preferred to all other nationalities in consequence of their reliability, intelligence, and thoroughly practical knowledge of their business. English blacksmiths and carpenters are also preferred.

As regards food, there is little difference in artisans in the Confederation and those of the same class in England; and that difference is, that meat being proportionately so much cheaper than bread or vegetables, it is used more largely as an article of food. The quality of both beef and mutton is inferior to English, has a larger proportion of bone, and is less nutritious. Potatoes also are of inferior quality, small in size, and earthy in flavour; and for these reasons, as well as the greater cost, the edible pumpkin is largely used as a substitute for the potato. As a beverage, the French, Italian, and most foreign workmen use the common red wines of France and Spain, which cost about 9*d.* a quart, and, if taken in moderation, are wholesome; but the bane of the English and native workmen is Caña (the native rum), a most pernicious spirit; and its cheapness placing it within the reach of the poorest, the cost being about the same as the common red wine, its deleterious effects and demoralising influence are more apparent amongst the native and English workmen than amongst those of other nationalities.

For summer wear, light flannel shirts and trousers of tweed or flannel are most conducive to health. The summer heat is much greater and of longer duration than in England. From the middle of November to the middle of March, the mean temperature in the shade from noon to six p.m. is about 88° Fah., though the thermometer will frequently register as high as 98° to 100°. Those whose vocations compel them to work in the sun wear a soft felt hat, which is found the best protection for the head. For winter wear the same class of clothing as recommended for summer, but of a heavier material. There is no extreme cold. The mercury will not fall below freezing point perhaps more than two or three times during the winter, and then invariably at night. The weather by day is usually bright, genial, and bracing. There is no equal division of seasons as in England, spring and autumn being of very short duration. June, July, August, and September may be classed as winter months.

Workmen are able to find lodgings within a convenient distance from their work, but these only consist of a room or rooms in what are here called "conventillos" (literally small convents, but here applied to tenement-houses). These buildings consist of a number of small rooms, built generally on two sides of an oblong square, at one end of the entrance; at the other, the cesspool and well, common to all the tenants. The rooms are about 12 ft. to 15 ft. square, with brick floors, have one door, but neither window nor fireplace; consequently when the door is closed there is no ventilation. In conventillos of this class the native and a large majority of the Italian workmen and their families reside. The rent of these rooms varies from about 1*l.* to 1*l.* 5*s.* each per month. The English, French, and German workmen mostly occupy rooms in buildings of the same style, but of a better class, the rooms being larger, having a door communicating with each other, and also a window. Two rooms in buildings of this class rent for about 2*l.* to 2*l.* 10*s.* per month. Workmen are in a measure compelled to adopt this system of lodging, as the ordinary dwelling-houses are not adapted to accommodate more than one family, and the rent is much higher,—a small dwelling-house of three rooms and kitchen rents from 4*l.* 10*s.* to 5*l.* per month. That the conventillo system, especially in densely-populated cities, is prejudicial to health has been abundantly proved during the yellow-fever epidemic, the mortality in buildings of this character having been enormous. In addition to their defective ventilation, the close proximity of the cesspools to the wells, and the consequent percolation of deleterious matter from the former into the latter, renders the water, in many instances, highly injurious. The great risks to health are dysentery and fever, though there are other risks consequent on the utter want of all sanitary precautions. The hours of work are from sunrise to sunset, except in summer, when they are usually from six to six. An hour and a half is allowed for the mid-day meal.

In the province of Bahia, although gratuitous education is provided by the State, there is a great want of a skilled industrial class. All skilled labour is imported by the various national and foreign companies established in the country. Shoemakers are very inferior workmen, and, in consequence, foreign manufactured boots and shoes swamp the markets, and undersell the native artisan. Tailors are, in the majority, foreigners. Foreign engineers and mechanics are everywhere employed and preferred; so that with the exception of such trades as cabinet-makers, masons, blacksmiths, tinsmiths, &c., the requirements of skilled labour are furnished from abroad. Even with the advantages and privileges granted by the State to foster manufactures and other industries in the country, there is no disguising the fact that either the native Brazilian shows no aptitude or inclination for professions requiring manual exertion or skill, or else that the climate of the country, its exhausting nature on the constitution of man, added to the immense extent and fruitfulness of its soil, point to agriculture as the only basis of the present and future prosperity of any part of the empire. The agricultural labourers form as yet a separate and distinct part of the population; many of them are slaves employed exclusively on their masters' estates, as masons, blacksmiths, carpenters, coopers, sawyers, &c., and consequently their labour does not enter into competition with the free labourer or journeyman. But if this class is as yet not placed in competition in the labour market it must at no very distant date be brought to bear heavily to the disadvantage of the present free population, which earns its livelihood by daily labour.

The climate of this province favours the artisan in matters of dress. A common cotton shirt and trousers, sometimes accompanied with a jacket, and a pair of shoes, complete his equipment for his daily work. The food of the country is wholesome, but a European would not relish it at first. The commonest is jerked beef at 6d. per lb., dried cod fish at 4d. per lb., cassava flour or mandioca, the staple bread of the country, 6s. 8d. a bushel. Fresh butcher's meat, of a very indifferent quality, sells at 9d. per lb., and wheaten bread 6d. The habitations occupied by the majority of the industrial classes are bad. They are not sewered; ventilation there is none; and water, so necessary to a tropical climate, must be bought, and the quality is not good. The average rates of rent paid by the industrial classes is from 5s. to 30s. per month. The earnings of those classes who are employed in foundries are:—A moulder, 3*l.* 5*s.* to 4*l.* a week; boiler-maker about the same, and mechanical engineers from 4*l.* to 6*l.* Blacksmiths and carpenters in the cotton-mills receive with food and lodging from 1*s.* 8*d.* to 6*s.* a day. Shoemakers, coppersmiths, and tailors working for the public can earn from 2*s.* 3*d.* to 6*s.* 9*d.* a day; masons, coopers, and sawyers from 2*s.* 3*d.* to 4*s.* 6*d.*; and painters from 2*s.* 6*d.* to 7*s.* per diem. Carders and scutchers from 8*d.* to 2*s.* per diem, food and lodging found. Spinners, boys and men, from 10*d.* to 2*s.*, and girls and women from 4*d.* to 7*d.* a day; and weavers and sizers from 10*d.* to 3*s.* 3*d.* The girls and women receive each twice a year a present of eight yards of print, seven to eight yards of broadcloth, six cotton balls, one piece of broad tape, and three times a year a pair of slippers. The hours of labour all the year round from daylight to dark, average about 66 per week.

DR. SCHLIEMANN'S DISCOVERIES AT MYCENÆ.

THE second of a course of two lectures on this subject was delivered by Mr. C. T. Newton, C.B., at the Royal Institution on the 9th inst. The lecturer observed that the great and remarkable preponderance of objects of gold found at Mycenæ warranted the conclusion arrived at by Dr. Schliemann that the places where they were found were tombs of Greek persons of distinction. Having noticed in detail some of the objects found, the lecturer said his audience would, of course, expect him to give his opinion as to the character of the art of the objects found by Dr. Schliemann, as to its subject-matter, and also as to its probable date,—all three difficult questions to answer. As to the character of the art, he did not hesitate to say that it was, with one or two exceptions, very rude,—ruder than any art he had ever seen that came from an unquestionably Greek site, although not so rude as the objects found by Dr. Schliemann at Hissarlik (considered by many to be the site of Troy). As to its subject-matter, it contained a number of representations of animal life; and it was especially notable that what might be called the lower forms of animal life largely predominated. By the lower forms of animal life the lecturer meant such things as butterflies, cuttle-fish, &c., recalling the description in the "Hesiod" of the ornaments on the head-dress of Pandora, which was said to contain all the strange creatures that the sea and land produced. There was also, in the art found at Mycenæ, a certain sprinkling of the more ferocious animals, such as the lion preying on the stag. There was, however, a comparatively total absence of the mythological representations which appeared in later Greek art. In all the things found at Mycenæ, the lecturer did not suppose there were a dozen representations which could fairly be classed amongst mythological subjects. The general subject-matter consisted, then, almost entirely of objects of nature. This was an important point, because it was one of the criteria by which they could safely assign the objects found to a remote age. The jewellery found at Mycenæ was not like the earliest specimens of Greek or Etruscan jewellery that we knew of (and of which there is a really fine collection in the British Museum). He (Mr. Newton) had arranged that collection according to periods, beginning with the works which he believed might be ascribed to the Græco-Phœnician period. With one or two exceptions, the jewellery in that collection was considerably in advance, in point of art, of the jewellery found in the Mycenæan tombs. On the whole, the character of the art found at Mycenæ was so childish and feeble that it was not surprising that distinguished archæologists at first mistook it for Byzantine. He (Mr. Newton) had come to the conclusion, after visiting the site and comparing the antiquities, that not only was the art very rude, but that it was of a very remote antiquity. The sculpture of the lions on the gateway at Mycenæ was unlike anything else in Greek sculpture, and the column between them could not be connected either with the Doric or the Ionic orders,—it was *sui generis*. The same might be said of the ornaments on the half-columns of the Treasury of Atreus. The inference to be drawn from these architectural details? That they belonged to an age so remote that we had lost all the intermediate links between it and that of the later Greeks. On the lecturer's return from Mycenæ, with the forms of Dr. Schliemann's antiquities fresh in his mind, he looked about in his own department (that of Greek and Roman Antiquities) in the British Museum, to see if he could find anything which would remind him of the forms he had seen at Mycenæ. He found some resemblances to them in some pottery from the cities of Ialysus and Camirus, two of the three cities of Rhodes mentioned by Homer as furnishing contingents for the Trojan war. This pottery consisted of drinking-cups or goblets so closely approximating in form to the gold cups found at Mycenæ that the conclusion was irresistible that the pottery was copied from the goldsmith's work, especially when it was found that the peculiar ornamentation used on the pottery was in some cases exactly identical with that on the gold cups and vessels. Thus the antiquities of Mycenæ were not so absolutely disconnected from those of Greek art as might at first be supposed, because they were proved to be very nearly allied to the antiquities found at Ialysus and Camirus. Now with the antiquities found at Ialysus there was found a cartouche of Amenoph III., whose date was variously stated by Egyptologists as ranging from 1400 to 1130 B.C.,—certainly not later. In reply, then, to the question, "Of what age do you consider the things found at Mycenæ?" the reply was that they were before the Græco-Phœnician period,—by which, the lecturer said, he meant a period ranging from 800 B.C. to 550 B.C.,—not that he meant to assert that there were no Græco-Phœnician antiquities outside the limits of that chronology. As to the age of the Mycenæan tombs, if the tradition mentioned by Pausanias in the second century of the Christian era about events which happened 1200 years B.C. was worthy of credit, there could be no reason why archæologists should not ascribe so high an antiquity to the tombs. In conclusion, Mr. Newton said that when the antiquities of Mycenæ were properly arranged at Athens, and when people could go there and examine them with Homer in their hands, they would be struck, as he had been, with the marvellous resemblance of Homer's descriptions of works of art to the objects found at Mycenæ,—resemblances which could not possibly be merely accidental. But whereas Homer described objects full of dramatic interest, such as the shield of Achilles, there was nothing worthy of being called dramatic in the art found at Mycenæ,—nothing telling a story; therefore he (Mr. Newton) had always believed that the things which inspired Homer with his description of the shield were works of art very much in advance of those found at Mycenæ. Homer, he conceived, must have lived within the range of the Græco-Phœnician period. As to Dr. Schliemann, the lecturer expressed the hope that when events in the East permitted, he would again return to Asia Minor to pursue his investigations at Hissarlik with renewed vigour and increased success.

ARCHITECTURAL ASSOCIATION.

THE closing meeting of this Association for session 1876-77 was held on Friday, the 22nd inst., the President, Mr. H. C. Boyes, in the chair. Mr. H. A. Pelly was elected a member, and a vote of thanks was passed to Mr. James Cubitt, the architect of Union Chapel, Islington, for permitting the members to visit that building on the 16th inst.

Messrs. R. Phené Spiers, T. H. Watson, and H. H. Stannus, the judges appointed to award the prizes for the best series of drawings submitted as probationary work for the Architectural Examination, brought up a report stating that of the fifteen candidates who had come forward, only six had qualified themselves for the prizes by sending in drawings in both sections, and of these six competitors, one was, in the opinion of the judges, disqualified, from the circumstance that although his drawings had been executed and signed by himself, they were also signed by his father. From the remaining five competitors, the judges had selected the drawings of Mr. J. S. Gale and Mr. Samuel Wright as good in execution and design, and to which they awarded prizes of the value of 2½ guineas each, the candidates being bracketed equal. The judges expressed regret at the scanty response to the inducements offered to candidates, and hoped that if in future years the prizes were offered, there would be a larger number of competitors.

Mr. W. Hilton Nash then read a paper on "Roman Amphitheatres," which we print on page 655.

In the discussion which followed,

The President expressed the indebtedness of the Association to Mr. Hilton Nash for his paper, which formed a sequel to the paper read by Mr. Chenè Spiers on "Roman Baths" earlier in the session, and printed in the *Builder* at the time (pp. 316, 355, *ante*). He (the President) thought the general treatment of the Colosseum was exceedingly appropriate.

Mr. Florence proposed a vote of thanks to the author of the paper; and

Mr. Stannus, in seconding the motion, said that in all probability the Albert Hall was the last building of its type that would be erected in this country. He expressed the hope that on some future occasion Mr. Nash would read a paper on the old Roman engineering works, a subject of greater practical interest and more in accordance with modern requirements.

Mr. Scott said he had seen the amphitheatres at Arles and Niames, and had been greatly impressed with the mastery of the Roman builders over plan. The amphitheatre at Nismes was being restored in the modern fashion, but at Arles the restoration was more conservative.

Mr. H. W. Pratt, in the course of some observations, said he believed that 87,000 was generally stated as the number of persons that the Colosseum would contain, and he had read that even an Emperor (Commodus) engaged in the gladiatorial contests, receiving about 8,000*l.* for an exhibition.

Mr. W. F. Potter said there was much to be learnt from the practical way in which the Romans built as compared with the non-practical mode of modern building.

The vote of thanks having been carried,

Mr. Nash, in responding, said that notwithstanding opinions to the contrary, he was inclined to believe that amphitheatres were used for *naumachia*. He could not agree with Mr. Stannus in thinking that the subject of Roman amphitheatres was exclusively of archæological interest, because it possessed much practical interest, particularly in regard to the plan and arrangement of the staircases. It was impossible to manage staircases more satisfactorily, although such dark corridors as those of the Colosseum would not at all suit modern requirements as to light. He agreed with Mr. Potter in saying that it was melancholy to see the wretched materials used in modern buildings, although he believed that when we liked we could, with our modern appliances, build as well as, if not better than, the Romans.

The scrutineers appointed to examine the voting-papers for the election of officers for session 1877-78 reported that the result of the election was as follows:—

President, Mr. Bowes A. Paice.
Vice-Presidents, Mr. T. W. Cutler and Mr. John Sulman.
Members of Committee, Messrs. H. C. Boyes, S. F. Clarkson, E. B. Ferrey, H. L. Florence, E. I'Anson, jun., W. L. Spiers, H. H. Statham, Vinall, Aston Webb, and W. H. White.
Treasurer, Mr. J. Douglass Mathews.
Librarian, Mr. R. E. Pownall.
Hon. Secretaries, Messrs. E. G. Hayes and R. C. Page.
Hon. Solicitor, Mr. Francis Truefitt.
Assistant Librarians, Messrs. H. W. Pratt and V. Trubshawe.

On the motion of Mr. Paice, seconded by Mr. Pownall, the thanks of the Association were tendered to Mr. Boyes for the efficiency and courtesy with which he had filled the office of president during the past session; and

Mr. Boyes, in replying, expressed his indebtedness to the zeal and efficiency of the secretaries and other office-bearers in the Association.

It was announced that the sub-committee appointed to consider the subject of competitions had been in communication with several members of the profession, and it was suggested that the Institute should take up the question with the object of devising some satisfactory scheme, in which effort the co-operation of the Association might perhaps be of service.

Serious Charge against a Civil Engineer.—At the Berkeley Petty Sessions, on the 20th inst., William Fontaine Bruff, of Sharpness and Lydney, civil engineer, who has been engaged superintending the construction of the Severn Bridge Railway approaches, appeared in answer to a summons charging him with having, on the 16th of April, at Berkeley, stolen certain moneys to the amount of 120*l.*, and on the 19th of April certain other moneys to the amount of 20*l.*, and on the 21st of April certain other moneys to the amount of 17*l.* 10*s.*, the several moneys of John Brown. The case was adjourned until the 11th proximo.

WROUGHT-IRON GIRDERS.

LIVERPOOL ENGINEERING SOCIETY.

AT the usual fortnightly meeting, a paper on "Wrought-Iron Girder Work" was read by Mr. C. Graham Smith, A.I.C.E. After pointing out that, in ironwork, something more is necessary than a knowledge how to practically apply the principle of the lever and the triangle and polygon of forces, the author went on to state that an engineer must not too readily accept the fascinating theories of uniform stress, and proceeded to review the circumstances tending to vitiate theoretical calculations. He thought the first and principal requirement for designing complicated ironwork to be a proper sense of the limits of application to assign to theoretical deductions. American bridges came in for no small share of praise, and our Transatlantic brothers were said in the paper to be justly proud of their scientifically arranged iron structures, which, in point of strength and economy, compared more than favorably with our home productions.

The question of the limit of elasticity of iron was very fully considered, and the fact deduced that the life of bridges and structures subject to heavy strains is much governed by this to some extent abstract consideration.

Quite one-third of the paper was devoted to the question of extras in iron, a matter very well understood in the iron trade, but which does not receive that attention from engineers which its importance demands,—the economy of a design depending greatly on the size and arrangement of the iron.

The advantages of testing iron and how to test it were ably treated. In fact, the same may be said of the whole subject, the author's experience in designing railway and dock ironwork rendering him well qualified to deal with the subject.

SGRAFFITO.

HAVING had considerable experience in the practice of sgraffito in England, and having subsequently visited Italy, where I carefully examined the old as well as the modern specimens of that process, I have thought that my observations may perhaps be of use to those who wish to try this mode of decoration.

There are specimens of old work at Padua, Mantua, and Venice; but perhaps the most perfect is on the front of a house in the Piazza dei Cavalieri at Pisa, which is covered with it from top to bottom. In a small side street there are also two large panels, in which the subjects (Hercules and Atlas) are treated in a most vigorous style, and have the appearance of bold charcoal drawings. At Florence the sgraffito is less florid in style, being set out in panels with a few broad lines.

In many other Italian towns there are specimens of old sgraffito, some very elaborate, but they are generally so much mixed with fresco painting and stucco work that I will not now mention them in detail.

England is by no means the only country in which the value of this process is recognised; it is largely used in Germany. I noticed a very good example at Heidelberg. At Milan it is impossible not to be struck by the profuse and eminently successful use that is made of sgraffito in the decoration of the Galleria Vittoria Emanuele. The execution of this magnificent work seemed to me admirable (cold grey on black). At Rome its revival is firmly established, and good work is being done on many of the new houses which are springing up so fast around the city. On the Capitoline Hill the decoration of the exterior of a house was in progress which interested me very much. The outside of a tavern close to the southern portico of St. Peter's is a very effective piece of work (warm grey on rich brown).

I will now describe the method in which the sgraffito has been done at South Kensington Museum, Music School, &c. On a rendered surface a coat of coloured plaster of about ¼ in. in thickness is laid, and when the moisture is somewhat absorbed, a thin coat of light-coloured plaster is laid on with a trowel, and then "floated up" till an even surface is obtained; the drawing is now traced on the wet plaster with a point, and everything is ready for the work, which is *cut with a knife*.

The Italian work, old and new, is, my observations lead me to think, done in this way. The coloured ground is laid on as we do it, but the last coat is laid on with a *brush*, while the coloured coat is wet; this leaves a slight surface of white; when this is dry enough, a second coat is laid on, and if this is not sufficiently opaque, a third coat may be added. By this means a perfectly even coat, of whatever thickness is required, may be obtained; but the best thickness is that of cartridge-paper, and on this can be scratched (sgraffito) any design with half the labour of that where the work is laid on with a trowel and a knife is used. There is also this advantage of the brush-work over the trowel-work, that the surface is of an even thickness and an even hardness, so that the whole surface is good throughout, and drawing on any part may be done with uniform facility.

Sgraffito to be durable must be so managed that the white and the coloured coat shall become one body, without the least tendency to flake off; in brush-work there is but little fear of this, as the white is laid on while the coloured coat is wet, and the two are actually mixed by the fibres of the brush working them together. There is one thing that must be very carefully avoided in the preparation of the coloured coat, and that is too much "hand-floating" with water, as it is likely to bring the colour to the surface and leave the lime or cement behind; the white if laid on this would certainly flake off.

To Sir Henry Cole principally belongs the credit of reviving this process in our own country, some sixteen or seventeen years ago. Mr. MacCallum, now so well known as a landscape painter, executed several panels of sgraffito on the back of the Picture Galleries just then built at South Kensington Museum, and more recently the whole of the east side of the Science Schools (a space of 150 ft. long by 90 ft. high) was similarly decorated. This work was put into the hands of Mr. Moody, the instructor in decorative art at South Kensington Training School, who made the designs, and the work was executed by his pupils.

Since then sgraffito has been done in various places over England, the last large piece being that on the Music School, which was designed by Mr. Moody, and the work executed under his instructions.

OWEN GIBBONS.

DOMESTIC DECORATION.

THE xylographic process, of which we expressed a favourable opinion (*Builder*, October 28th, 1876), has attracted attention out of England, applications having been received from the former director of the Vienna Exhibition for specimens and details for art illustration in Austria, and steps having been taken, on application from the United States, to secure a patent in that country. The works are now being gradually extended. The head-quarters of Mr. Whitburn, the inventor, are at the large nursery-grounds of Mr. Maurice Young, near Godalming, and a London office has been established at 4, Ludgate-circus-buildings, London. We counsel those of our friends who wish to secure a style of decoration that is at once artistic, permanent, and cheap, to satisfy themselves by a visit to one of these places. With regard to art effect, the designs of Mr. Whitburn himself are those which naturally have been first employed. They are often quaint, always graceful, and as combined on panels, friezes, pilasters, and other architectural details, the effect is extremely happy. But any artist can have his own designs reproduced by the process. Could they not be executed on thicker wood than is now used?

OPENING OF BLACKPOOL PIER.

THE North Pier, after the completion of very considerable additions and improvements, has been opened. The pier was first projected about the year 1861, when a company was formed for the purpose of erecting it, the estimated cost being under 8,000*l.* In the following year the company was registered, with a capital of 12,000*l.* A design by Mr. E. Birch, C.E., was adopted, and the contract for the work was given to Messrs. Laidlaw, of Glasgow, the estimated amount being 11,540*l.* Two years after the completion of the pier the capital was increased to 20,000*l.*, and an extension of the pier on iron was carried out from Mr. Birch's design, at a cost of 4,000*l.* Handsome entrances were also constructed, the expenditure for this purpose being 2,700*l.* The question of enlarging the pier-head was afterwards considered, the number of visitors being frequently so great that it was inconveniently crowded. The heavy expenditure involved in the proposed enlargement caused the directors to hesitate; but in

1874, after considerable delay, the capital of the company was raised to 49,000*l.*, and Mr. Birch prepared plans for two wings, which Mr. Laidlaw contracted to erect for 14,000*l.* In 1875, the capital was further increased to 50,000*l.*, and Messrs. Neill & Sons, of Manchester, agreed to construct the pavilion, shops, and band-stand which now adorn either wing. By the extension the area of the pier-head is now nearly an acre and a half. It is 280 ft. wide from north to south, and 170 ft. from east to west. The Indian Pavilion occupies the north wing. It is 130 ft. by 90 ft., and is seated for 1,500. There is a central hall, 87 ft. long, 37 ft. wide, and 34 ft. high. On either side are corridors the same length as the hall, 19 ft. wide and 20 ft. high.

BRIDGES OVER THE LIFFEY AT DUBLIN.

Two new bridges are about to be erected over the river Liffey, at Dublin,—a stone bridge of three spans, to replace the present Carlisle Bridge, built in 1795. This bridge will be 150 ft. in width, or the full width of Sackville-street.

Another bridge, with stone piers and abutments, and two side arches of stone, is to be constructed lower down the river, near the Custom-house, with a central swing bridge of iron, 130 ft. long, to allow vessels to pass and repass.

The engineer for both bridges is Mr. B. B. Stoney, M.Inst. C.E., the engineer to the Dublin Port and Docks Board, for whom the work is being done. The contract for both structures has been undertaken by Mr. William J. Doherty, contractor, of Belfast and Dublin, who has completed, both at Dublin and Belfast, some very important Dock and Harbour Works. The amount of the contract is above 110,000*l.*

THE WATER SUPPLY OF LONDON.

SIR,—On Saturday morning last a lad came to my yard for a kettle of water, and, being of an inquiring turn of mind, I accompanied him to his home at Walton-street, Chelsea, and found there eighteen persons living without water, the closets stopped, and the house converted into a fever den, the water having been cut off five weeks. I learned that this lad's father, through depression of trade, had been unable to pay his parish rates, and had been committed to Holloway prison for sixty days; that his mother found the money for the rate, but the company's officer would not receive it without so much paid in advance on account of the arrear, which additional sum she could not raise. I fear, sir, that the present stagnation of trade has caused hundreds of families to be without water, and that they will long remain so unless the sanitary authorities intervene. If the water companies are to have the power to deprive a house or a neighbourhood of water at will, they hold the power of health and disease, of life and death; and, seeing how the water companies have been increasing their charges during the last ten years, I think it is becoming a very serious Governmental question as to where the sanitary authorities should step in and prevent the generation of disease by the arbitrary acts of legal violence committed by these over-chartered companies. It is bad enough when a principal happens to be from home, or, in case of great shortness of cash, which may occur to most business men some time or other, for a gas company to send in at a moment's notice to destroy his position by depriving him of light, and indeed, I say of all acts of legal violence, that they ought never to be committed by individuals or private companies, but that they should only be entrusted to the law. But with regard to the water supply, it ought never to be stopped without permission of the sanitary authorities, and even if the company obtained a magistrate's order to cut off the water, it should be subject to the correction of the sanitary authorities, who should in turn accept the responsibility of the situation, but not allow crowded houses to be left without the greatest sanitary necessity,—water. I commend these suggestions to all London vestries, but especially to that of Chelsea, which appears to me to think a great deal more about the profits of the water company than the interests of the public.

I find, in looking over the figures relating to the water supply of the City proper, that ten years ago the cost was 60,000*l.*; to-day it is 120,000*l.*; and what law is there to prevent its being 240,000*l.* next year? The water companies are doing what they like with the public, and giving what they like in return for it. I think it high time that the Metropolitan Board of Works, with its chairman and staff, who are paid thousands of public money annually, should propose something tangible as to a real metropolitan water supply. They have had 20,000,000*l.* of ratepayers' money, and yet we are cursed with private water and gas companies. O Lord, how long?

GEORGE MITCHELL.

Brompton-road.

P.S.—*June 26th.*—Just returned from the waterless house: I find matters worse than I have previously regarded them. The stench is awful, and almost knocks one backwards as the door is opened. I find, too, that there is something very strange about the levying of the rate, the water having been cut off on May 15th, though it was not due till June 24th. The first quarter's rate was proffered to the collector before several witnesses. The company appear to charge a very high rate to the poor.

PAINTINGS ON CHINA.

SINCE Messrs. Howell & James, of Regent-street, first opened a gallery for the reception of paintings on china, by artists and amateurs, and offered prizes for the best examples, the desire to contribute has grown immensely. On the present occasion, no fewer than 650 works are exhibited, and many of them display much merit. Mr. E. W. Cooke, R.A., and Mr. Fredk. Goodall, R.A., have acted as judges, and have awarded the prizes in the two classes. As regards amateurs, they have given, and very justly, the gold medal presented by her Imperial Highness the Crown Princess of Germany (Princess Royal of England) to Mrs. George Stapleton; the prize of ten guineas to Miss Christina M. Shepherd. For landscapes and subjects:—First prize to Miss Howard; second prize to Colonel Hope Crealock; and third prize to Louis Fagan. Extra prizes (terra-cotta bust of Portia, by Professor Miller), to Miss Pattison, Miss E. S. Hall, and La Comtesse de Villermont. For heads:—First prize to Miss Louisa Duff; second prize to Mrs. Barratt; and third prize to Charles Etheridge. Extra prizes (terra-cotta bust of Portia, by Professor Miller):—The Lady Augusta Cadogan, Lady Rawlinson, and J. D. Rochfort. For ornamental designs and flowers:—First prize to Miss Beatrice Talbot Airey; second prize to George Fletcher; and third prize to Miss Alice M. Grey. Extra prizes (terra-cotta bust of Portia, by Professor Miller), to A. H. Church, Mrs. A. H. Lee, and Miss Edith A. Angus.

In the class of professionals, the prize of fifteen guineas was jointly awarded to Miss Linnie Watt and A. De Mol. For landscapes and subjects:—first prize, to Samuel Jones; second prize, to Franz Dauge; and third prize, to Henry Watson. For ornamental designs and flowers:—first prize, to Miss Charlotte E. Spiers; second prize, to Sidney Smith; and third prize, to Thomas Kane. For heads:—first prize, to Henry Ryland; second prize, to Miss Ellen Welby; and third prize, to Ellen Ross (Mrs. Mallam). Many other contributors, amateurs and professional, were highly commended, including Mrs. Bishop Culpeper, Major North Crealock, the Hon. Mary Henniker, Mrs. Hoare, Miss H. S. Hartshorne, the Hon. Mrs. Wilbraham, Miss Tyrwhitt Drake, C. L. F. Broughton, and others.

We advise a visit; and more than that, we suggest to some of our fair readers to inquire whether they might not find in the pursuit of the art here illustrated much present pleasure and provision for a possible rainy day hereafter.

DISPUTE BETWEEN STONE CARVERS.

A QUESTION OF WAGES.

A BUILDING dispute, involving a question as to the custom respecting the payment of carvers in the stone-carving trade, was tried before the Lambeth County Court judge last week. The claim was for 2*l.* 7*s.*, the value of work done, at the rate of 1*s.* an hour, the disputed point being whether the plaintiff should receive 10½*d.* or 1*s.* an hour. The plaintiff, W. Matthews, is a stone-carver, and the defendant, W. Plows, of Shepherd's-lane, Brixton, is an architectural stone-sculptor. It was stated on behalf of the plaintiff that he had been a stone-carver for fourteen years, was a student in the Royal Academy, had been engaged on the Albert Memorial for six weeks, and on the Crewe town-hall. He had never accepted less than 1*s.* an hour for work of the description he was engaged on when the dispute arose, which consisted of stone-carving on Emanuel Church, Dulwich. At the time he was engaged by the defendant, there was no arrangement made as to payment, and at the end of the week he gave in his bill at 1*s.* an hour, but the defendant declined to give him more than 10½*d.* The plaintiff, in his evidence, stated that the work was to be carved in the Norman style. Whilst engaged on the work, defendant came to him and told him that he was taking too long over it, and that he was doing it "too well." In cross-examination he said he had been sent away from the service of Mr. Blomfield, but that was on account of a combination on the part of the men, which was unfair. For the plaintiff a number of witnesses were called, who said that he was a good workman, and never worked under 1*s.* an hour.

For the defendant it was contended that it was the custom of the trade to take men on trial, and that in the absence of any agreement defendant was entitled to give the plaintiff what he thought he was worth. The work plaintiff had been set to do was badly done, and much of it had to be altered. A piece of stone-carving wrought by the plaintiff was produced in Court, and the defendant stated that it had been condemned, along with more of the plaintiff's work, by the architect.

Mr. Blomfield, architectural sculptor, who had formerly employed the plaintiff, was called, and denied that he was an efficient workman. There was no form in the piece of stonework produced.

The Judge.—It is "without form and void."

After hearing all the evidence, the Judge gave a verdict for the defendant, in the absence of a special agreement.

BUILDERS' ACTIONS.

AYRE *v.* PAYNE.

THIS was a case in which the plaintiff, Thomas Ayre, a builder, of Hinckley, sued Daniel Payne, a hosier, also residing at Hinckley, for the sum of 290*l.* 1*s.* 7*d.*, the balance due upon two contracts, and for extras in the building of a factory and outbuildings at Hinckley. The defendant admitted the plaintiff's claim, but pleaded a counter claim by way of set-off, amounting to 470*l.* for penalties alleged to be due from the plaintiff, at the rate of 10*l.* per week, owing to the delay by the plaintiff in the completion of the work in accordance with the contracts. To this the plaintiff delivered his reply, alleging numerous acts on the part of the defendant and his architects accounting for the said delays. Upon this no less than fourteen or fifteen distinct issues were raised.

After Mr. Lawrance had opened the defendant's case, the Judge (Sir R. P. Amphlett) said the case was one of a very complicated nature, involving much detail, and he suggested that the case should be referred to a legal arbitrator. The parties, acting upon his Lordship's suggestion, agreed to refer the case to Mr. J. S. Dugdale, of the Midland Circuit, and a judge's order was drawn up accordingly. Mr. Dugdale sat at Westminster Hall on the 4th, 5th, and 11th days of May last, to hear the evidence of the numerous witnesses on both sides, and the arguments of counsel; and on the 1st of the present month the arbitrator published his award, by which he found a verdict for the plaintiff for the full amount of his claim, and directed the defendant to pay the costs of the award. By this the defendant will have to pay the plaintiff's costs of the action, and each party will have to pay his own costs of the reference.

DRAINAGE.

THE plans prepared by Mr. Longdin, surveyor to the Maldon Union Rural Sanitary Authority for the town portion of the parish of Burnham, Essex, have been accepted by the authority, and approved of by the Local Government Board, and will shortly be carried out. It is proposed to deal with the sewage by filtration-tanks. The probable cost will be about 2,000*l.*

The drainage of the parish of Tollesbury, Essex, has been augmented by the addition of new sewers and outfall-tanks, the works having been carried out by Mr. R. Banyard, contractor, from the plans and under the superintendence of Mr. Longdin.

Worthing.—We learn from a useful little Penny Guide to this favourite watering-place, just published by Mr. Paine, that the complaints of visitors as to having to change carriages at Brighton, *en route*, are on the eve of removal, as the loop-line between Preston and Hove is rapidly proceeding towards completion. This improvement will help on the development of this agreeable and well-known town.

THE VICTORIA DWELLINGS, BATTERSEA PARK.

THE first blocks of dwellings erected by the Victoria Dwellings Association (Limited) were opened by the Earl of Beaconsfield on Saturday last. The buildings, which are situated in the York-road, Battersea, overlooking the park, are of two classes, viz., those for "Artisans" and those for "Labourers." The artisans' block resembles in plan (with a difference) two capital Is placed side by side, thus II. The central space forms a courtyard, 84 ft. by 52 ft., paved with tar paving (which is also used in the side courts and footways), and lighted at night by a cluster of three lamps supported by a standard in the centre of the yard. The block forms a solid square of buildings, except that a cart-archway is provided at the point shown by the space left at the bottom between the two Is, this archway being high enough to permit of vans loaded with furniture being drawn into the quadrangle. On the opposite side, at the point shown by the space left at the top of the two Is, is another, but lower, archway, giving access to the laundries, which are placed in a kind of sunk area on that side of the block, and outside the square. At each of the four inner angles is a public footway, or passage, arched over, and leading from the quadrangle to the corners of the side areas or courts formed by the projecting top and bottom portions of the outer sides of the Is. It should be noted that the vertical and horizontal portions of the Is are about equal in length, each vertical portion and each horizontal portion forming a sort of sub-block by itself, detached on the ground-floor by the archways and passages mentioned. The staircases are situated, in the case of the four horizontal sub-blocks, in small open courts respectively approached from the four covered footways or passages in the angles, and each staircase occupies the centre of the sub-block which it serves. In the case of the two sub-blocks shown by the vertical portions of the Is, the staircases are each approached from square recesses corresponding in size with the small open courts before referred to, which recesses open out into the central courtyard. Each sub-block has thus its own staircase, centrally placed, and the six sub-blocks form, as we have said, an unbroken square, with the exception of the arched cartways and footways on the ground-floor. The artisans' block is somewhat superior to those provided for labourers. Each dwelling is self-contained. Most of the tenements consist of three rooms, viz., living-room, bed-room, and kitchen, and a few of them contain an extra bedroom. The buildings are four stories high, and each of the six sub-blocks contains about four tenements on each floor. The total number of tenements in the artisans' block (of which alone we are speaking) is 98, containing 304 rooms. The three-roomed tenements, we understand, will be let at 8s. per week, and the four-roomed tenements at 10s. per week, or more or less according to size. The living-rooms in this block are about 165 ft. super., and are provided with range, containing oven and boiler; also with a large and spacious cupboard, which will serve as cupboard and dresser or china-closet combined. The kitchens are each provided with Jennings's improved patent sink, which, besides answering all the requirements of an ordinary household sink, also forms (1) a trough for washing plates, dishes, and vegetables, (2) a convenient wash-tub for linen, &c., (3) a child's bath, and (4) a lavatory; it is also available as a sink for butlers' pantries, &c. It is simple in construction, and appears hardly likely to get out of order. It consists of a trough of about the same dimensions as an ordinary sink, except that it is twice as deep. At one end a small space is partitioned off, a slit being left at the bottom the whole length of the partition. Through this slit run all slops emptied into the sink, and thence down the pipe which opens into the bottom of the small space parted off. This small space is provided with a movable top resting on the partition, and in the centre of this movable top is an ingenious contrivance in the form of a plug, which can be let down into or raised from the pipe at will. When the plug is down, nothing from the bottom of the sink can run down the pipe. By turning on the water the sink can thus be used as a trough, but should the water from any cause be left running, the sink cannot overflow, except over the partition into the small space referred to, and thence down *through* the plug, which is made hollow, and of the same height as the partition. The whole thing is very useful and simple, though at the same time ingenious, and is well worth inspecting. It can of course be made in various materials, galvanised iron being used in the buildings under notice. There is a constant supply of water, so that the cisterns are always full, and over each sink is one of Jennings's patent self-closing balanced taps, so that the water cannot be inadvertently left running. The water-closets (of which there is one to each tenement) are fitted with Jennings's patent valve closet and trap, in one piece of earthenware. All the water-closets are cut off from the dwelling-rooms, and are approached through the open-air, though with a covered access. Each closet is provided with a separately-hinged extra seat or cover, which can be lifted up when it is desired to empty slops or to use the closet as a urinal. The bedrooms have an area of about 100 ft. super. Each dwelling has its own coal-bunker, and on each of the landings (common to about four dwellings) access can be had to a dust-shoot. The staircases are in each instance placed at the back of the blocks fronting to thoroughfares, in order to obtain front windows to as many rooms as possible. All passages and staircases are lighted by gas from lanterns so contrived in the thickness of the staircase wall as to light the stairs on both sides of the wall, while being, at the same time, out of the way during the carrying up or down of furniture, &c. Gas is not laid on to the rooms. All staircases and passages are wholly of firepoof material, consisting of a kind of artificial stone. The rooms are all rectangular, without projections or irregularities of shape, thus ensuring the advantage of the floor area of the rooms to the fullest extent. All drains are taken outside the buildings, but they are not directly connected with the sewer. They are intercepted, as we are told, by a specially-contrived earthenware cess-trap, patented by Mr. George Jennings, which is open to the air and admits of being easily inspected and cleaned out from the surface. There is no direct connexion between the waste-pipes from the sinks and drains, and all the soil-pipes of waterclosets are open to the air, being carried, it is stated, above the roofs of the buildings. The walls are of picked stocks, with artificial stone lintels, &c. The roofs are covered with the Broomhall Tile Company's patent tiles, glass tiles to match having been inserted where needed.

Adjoining the "Artisans'" dwellings are two blocks for "Labourers," with a total of 152 rooms, some tenements consisting of two rooms, and some of only one room. These blocks of "Labourers'" dwellings form two elongated parallelograms, divided by a street, or approach, 30 ft. wide, with gates opening out into the York-road. Each block is four stories high, and there are two staircases in each, placed nearly at each end of the blocks. Each floor contains about eight two-roomed tenements and four single-roomed tenements. The two-roomed tenements consist of living-room and bedroom, the living-room being provided with a bed recess, as also are each of the single-roomed tenements. Water-closets are provided to the number of four on each floor, or one to about every three families or tenants. These water-closets are approached from the common staircases and passages. Each of the floors above the ground-floors has a continuous balcony running the entire length of the frontage, and on to this balcony the staircases and passages leading to the various dwellings open. The construction is in all essential particulars the same as that of the "Artisans'" block, already described. The rents obtainable for these "Labourers'" dwellings (which are all let) vary from 6s. for a living-room and bedroom to 2s. 6d. for a single room. Dust-shoots, coal-bunkers, sinks, &c., are provided for all the tenements. Separate ranges of washhouses, for the sole use of tenants, and drying-grounds, are provided for each block of dwellings. The coppers are provided with water-supply, Tylor & Sons' patent screw-down taps being used. There are about twenty washing-troughs and twenty coppers provided for each block.

The whole of the works have been carried out at a cost of upwards of 33,000*l.*, from the designs of Mr. Charles Barry, the architect to the Association, by Messrs. William Downs & Co., of Union-street, Borough,—Mr. Newstead, a member of that firm, having taken an active part in the supervision of the works. The clerk of the works was Mr. Hogan, and the contractors' foreman was Mr. Long.

The undertaking is so well intentioned and so good, and the persons concerned in it are so earnest in their wishes for a good result, that we would willingly aid their endeavours to the utmost, and avoid all inimical criticism that did not seem imperatively called for. We should, however, be faithless to opinions often urged if we did not express a strong objection to the arrangement of the artisans' dwellings in the shape of a small quadrangle closed all round excepting the passage-ways on the ground floor.

Mr. Walter, M.P., opened the proceedings on the day of inauguration. After some appropriate and admirable observations on the state of things which rendered the establishment of such an association necessary, Mr. Walter proceeded:—Let me say a word with respect to the steps taken during the last twenty-five or thirty years to combat a growing evil. The metropolis is increasing at the rate of 40,000 a year, and within the last twenty years all that has been done by the various societies, including the Peabody Association, to provide improved dwellings for the poor has not yet housed more than that number—40,000. I believe the first association was the Metropolitan Association,—a very respectable and flourishing body. Then a great effort was made by Mr. Peabody, that most generous benefactor to London. The capital of the Peabody Association amounts now to 600,000*l.*, and there are something like 10,000 whose homes have been permanently improved through the generosity of that kind benefactor. Sir Sidney Waterlow's Company have a capital of between 300,000*l.* and 400,000*l.*, and they, I should think, provide for about half as many. Then there are other associations—I need not go through them—who have done good work; and last, but not least, comes the Association whose first completed work you have met this afternoon to inaugurate. There is this important point to be borne in mind in considering this question. Every year, almost, some encroachments are made on the available space of the London poor, either by driving new streets through the metropolis,—a most important and absolutely necessary work,—or by laying down fresh lines of railway, or building new stations, or even such objectionable buildings as the Law Courts, which alone dislodged 4,000 people in one of the most densely-crowded parts of the metropolis. How is that space to be made up? It is altogether a mistake to suppose that London is a densely-peopled capital. It is no such thing. In the densest part of the metropolis, in Westminster, there are under 300 persons per acre, and that is one of the most unhealthy parts. Now, it has been proved by ample trial that, by adopting a plan of construction like what you see before you, which is the same plan substantially as the Peabody and Sir Sidney Waterlow's Association have adopted, you may accommodate 1,600 per acre infinitely better than 300 can be accommodated under the old system. Instead of spreading London out, you must rear it upwards,—you must raise it to the clouds. There is no other way of meeting the difficulty, for, in spite of all the poetry attaching to suburban homes, of which you have an example at Penge, and in spite of cheap railway fares, it is an undeniable fact that the great mass of the metropolitan poor, artisans and labourers, must live near their work; it may be a most disagreeable fact to contemplate, but that is the only way to provide for it. Two years ago my right hon. friend the Home Secretary, Mr. Cross, introduced a most admirable Bill into Parliament for meeting this difficulty on a large scale by combining the purification of the Metropolis with the removal of unwholesome and noxious buildings, and at the same time providing a machinery for supplying their places with wholesome and improved buildings. I have not yet heard,—perhaps he will be good enough to tell us,—whether any result has followed from the adoption of that Act. These buildings have not been constructed in consequence of that Act. They have been built without the advantages which Mr. Cross's Act was intended to confer upon us. They have been built on vacant spaces, and therefore did not require the demolition of other buildings. The block you see before you is, of course, built on an exceptional site, and it is not to be supposed that the Society, should its work be largely extended, as I hope it may be, will often be able to secure such a site as I have already said is fit for a nobleman. But the next site on which we mean to build—of which we have got a lease of ninety-nine years—is the Stroud Vale site, near

the Great Northern Railway Station. There we shall build more of the class of dwellings for labourers, and those employed on railways. But the objects for which we have asked your attendance to-day are, first, to assist at the inauguration of these completed buildings; secondly, to invoke a blessing from Heaven on the success of the enterprise as one which we believe is eminently calculated to benefit mankind; and thirdly, to invite your co-operation by becoming shareholders in the Association, because these undertakings cannot be carried on without money. And now a word about the financial character of the Association. All these associations are what we in Parliament would call of a hybrid character—that is, they are based partly on philanthropic and partly on commercial considerations. They are philanthropic so far as they are intended exclusively for a certain class of the population, and that the humbler class, which have not the means of providing a good home for themselves. They are commercial so far as they are based on essentially economic considerations, and intended to yield a fair and proper return to their subscribers. I take the state of the case to be about this:—Suppose an ordinary building investment calculated to yield from 6 to 6½ or 7 per cent.; we consider if a building of this kind pay 5 per cent.—we hope it may not be less, and we do not desire more—the shareholders may take out the additional one and a-half or two per cent. from the comfortable feeling they will have that they could not spend their money better for the good of mankind. And when I consider how much money has been squandered in this country during the last twenty years in loans to foreign Governments, when I consider how that money has been spent in useless or mischievous enterprises, and when I think that one-fourth of that sum would have rebuilt the metropolis, I must say 50,000,000*l.* would have been more profitably applied in improving the dwellings of the poor than in enabling the Turks to build ironclads and useless palaces.

The Earl of Beaconsfield, who followed, said, in the course of his address,—I need not, ladies and gentlemen, impress upon you that the home is the unit of civilisation. From it spring all those influences which give a character to society either for good or for evil—either for a beneficent or of a disturbing character. A man who feels that his home is "Home, sweet Home," is proud of the community in which he dwells; but the man who feels that his home is a den of misery and crime immediately assails that society of which he believes he is the unjust victim. My hon. friend who has just addressed you, and who has given to this labour all the energy, experience, and sagacity which distinguish him, has touched on some of the statistics of the question. I refrain, as a general rule, on an occasion like the present, from entering into statistics, which are sometimes wearisome and not always clear; but the statistics of this case are so remarkable that I must for a moment advert to them, though I may limit my remarks almost to a sentence. My hon. friend has reminded us that actuaries, with ample and adequate facts before them, have come to the conclusion that the average death-rate in this great city is from 22 to 25 in a thousand. But statistics are "nothing unless they are critical." It is very true that the average death-rate in this city may be only 22 or 25 per thousand, but the fact is that if you go to St. Giles's or to any of those portions of the Metropolis which are infamous for their insalubrity, you will find that the death-rate there instantly rises from 40 to 60 per thousand, and that alone is a conclusive proof that if you are really anxious to increase and cherish the health of the people you must strike at the source of disease among the population, and that is their insufficient and inadequate dwellings. Some experiments have already been made, and upon no mean scale, towards this object; therefore we can consider it with the benefit of experience. What is now ascertained to be the death-rate in buildings raised by other societies, but similar in character to that the opening of which we inaugurate by your favour and assistance this afternoon? The death-rate is only 14 in a thousand; and I think these facts, which are indubitable, are results which ought to encourage you in the continued exertions which we have met this day to stimulate and to celebrate. Now, ladies and gentlemen, I have touched on the health of the people, and I know there are many who look upon that as an amiable and merely philanthropic expectation to dwell upon. But the truth is, the matter is much deeper than it appears upon the surface. The health of a people is really the foundation upon which all their happiness and all their power as a State depend.

MASTERS AND MEN.

Stratford-on-Avon.—The operative builders' strike at Stratford-on-Avon has terminated, the masters having agreed to give the additional ½d. per hour demanded. The men will now receive 7½d. per hour. The strike lasted six weeks.

Aberdeen.—A largely-attended meeting of the operative carpenters was held on the 22nd inst., to consider what action should be taken with regard to the resolution of the masters not to adhere to the by-laws after six months. A motion in favour of holding a conference with the masters on the subject was carried by a large majority.

Edinburgh.—At a large meeting of painters held in Buchanan's Hotel, the Chairman, Mr. M'Connochie, advised the men to leave Edinburgh, there being, he said, plenty of work to be had in other districts. After some discussion as to the men brought from England by the Masters' Association, the following resolutions were moved and carried unanimously:—

"(1.) That we adhere to our original demand,—viz., 8*d.* per hour: the same to be the standard wage winter and summer alike.

(2.) That we, the journeymen painters of Edinburgh, have no connexion with the Englishmen sent here by the agents of the Employers' Association, and that no men return to their employment until those men have deserted the establishments."

It was stated that the executive of the General Alliance had impressed upon the men the advisability of adhering to their demands, as they were determined to carry them through this struggle.

Manchester.—The strike of joiners at Manchester and Salford still continues. At a meeting of the masters, last week, it was stated that cases of intimidation and molestation by pickets had occurred. In reference to the attempts which had been made by several public men to bring the operatives and the employers together with a view to a settlement, it was unanimously resolved:—"That no good result could follow such an interview; that the shops were open at 8½d. per hour, and that no alteration be made from the position the employers have taken up."

Bromsgrove.—After a strike extending over five months, the effects of which on the fortunes of the men (says a Birmingham paper) will be felt for three times five months, the operative nailmakers of Bromsgrove have resumed work at the reduction of 10 per cent. insisted upon by the masters.

A FEW WORDS ON THE OTHER SIDE.

SIR,—Your reviewer of "Words of Warning in Verse and Prose," by Mr. S. C. Hall, says:—"These few instances show that an enormous sum has been spent merely in preventing charity." Here are two grave errors. In the first place, those societies are established, not to prevent charity, but to stay the morbid sympathy of those who would readily give to the professional mendicant; and in the second place, if, as I believe, and the statement can be vouched by the reports of the old Mendicity Society, ninety-nine out of every hundred of street beggars are impostors, considerable expense must be incurred in detecting these ninety-nine, and preventing their nefarious trade. In the parish in which I reside,—St. George's, Hanover-square,—the accounts will show, I think, much better results than those quoted. If not, I am satisfied to pay my subscription, for this reason: morning, noon, and night my street was besieged by the ragged and the halt, who traded on their sores and lived on the benevolent by the exposure of infirmities. Now, since the establishment of the Charity Organisation Society, we see little of this. Even the "clean dodge," with hired children, we do not witness. And when a beggar does appear, to tender a ticket of the society is sure to cause a retreat with a speed that, from his assumed distress and emaciation, you would hardly presume to be possible.

In Blackheath and other places where I have friends residing I know the result has been the same; and they say they are never troubled with beggars now. If this is the result, then I maintain that the object of these societies has been attained. In the suburbs the professional mendicant was often a ruffianly brute, and ladies that I have known have often given simply from the threatening character of th importunities.

Honest poverty does not expose itself in th market-place. That so few cases are in the re ports alluded to shows that few would bear th test of investigation, and proves still farther tha indiscriminate almsgiving only tends to encourag the idle, the dishonest, and the undeserving.

F. S. A.

VARIORUM.

MESSRS. CHAPMAN & HALL are about to publish a "Library of Contemporary Science," to in clude works on anthropology, biology, scienc of language, comparative mythology, astronomy prehistoric archæology, ethnography, geology hygiene, political economy, physical and com mercial geography, philosophy, architecture chemistry, education, general anatomy, zoology botany, meteorology, history, finance, mechanics statistics, &c. It will be founded on a Frenc series. The first volume has been published and is on the "Science of Language," by Abe Hovelacque, translated by A. H. Keane, B.A.— "The Merchant Shippers of London, Manchester Liverpool, Birmingham, Wolverhampton, an Walsall," with their respective trading ports and class of goods they ship, 1877, is publishe by Messrs. Dean & Son, Fleet-street. It supplie a great want.

Miscellanea.

Public Porters.—The *Labour News*, unde this heading, says, sensibly,—If a traveller, un burdened with luggage, start from his hous in Covent-garden to the railway terminus a Charing-cross, he is sure, in nine cases out o ten, to walk. If burdened with a small port manteau, he will take a cab, and that will cos him a shilling. It would surely be worth a poo man's while to earn a fourth, or even a fifth, of shilling in four or five minutes, by simply carry ing that portmanteau from Covent-garden t Charing-cross; and it would be agreeable t many travellers, not unwilling to use their legs to save nine or ten pence by so doing. Wha does this preamble mean? Are there not com missionnaires? There are; but no one ever sa a commissionnaire accepting two or three penc for a job. He is a "swell" who drives in Hanson cabs; stands at club-doors, at banks, at gold smiths' shops; he hands ladies and children t their carriages; he dines late, and spends th evening in society. He is often physically un able—from the effects of honourable service—to carry a portmanteau, or run on an errand He is not absolutely a "public porter," he i intuitively a commissionnaire. But we want dis ciplined public porters; for the loafer is no always a safe person to employ. We want som guarantee that the man to whom we offer portmanteau to carry, a letter to deliver, a purs of money to transmit, a message to bear, will d his work faithfully. He must wear some badg or distinguishing mark, so that we may be abl to go up to him boldly, and, with confidence, t offer him business. Here is work for a thousan unemployed men and youths, loafers in spite o themselves, and willing to work. We shoul like to see a petty trade, and honourable calling revived and practically re-started. Let us se a public porter, one of a fraternity wearing th livery of the order, and registered, standing a the corner of our street. He shall run on ou errands, and many of our neighbours will surel make use of him.

Royal Architectural Museum Sketchin Club.—With a view to increase the interest students and others in the extensive and vali able collection of casts and examples in th Royal Architectural Museum, Westminster, an to systematise the studies of those who use th Museum independently of the art classes no held there, it has been determined to form class, to be called the "Royal Architectur Museum Sketching Club." The sketches mad by the club are to consist chiefly of studies fro objects in the Museum, and drawings for th most part are to be executed in pen and ink, that a selection may be reproduced by phot lithography, and bound, in order that the Counc may present each member of the club who h contributed a certain number of drawings wit a copy of the collection of sketches thus pu lished. An annual exhibition of sketches w be held in the Museum, and a prize of 5*l.* t will be awarded for the best set of drawings.

he Albert Gallery, Edinburgh.—As
lon has now its Grosvenor Gallery, so
burgh has its Albert Gallery as a place for
display of art work, and, its promoters hope,
ntre of art influence, supplementary to
Royal Scottish Academy. The enterprise
rding to the *Scotsman*) had its origin in an
ition of paintings in oil and water-colour
h for two or three years followed in the
lemy's wake. Proposals were issued for the
ation of a fine-art institute, and the result
een the organisation of a society which now
bers some 250 members, by far the greater
ortion of them being professional or amateur
ts. In securing a local habitation the In-
te obtained the assistance of the Scottish
tages Company, who, having undertaken
ebuilding of an extensive block of property
he north side of Shadwick-place, provided
e interior a hall, with ample roof-light, ad-
bly adapted for the exhibition of pictures.
is hall, together with a commodious vestibule
ring from Shadwick-place, and an office on the
site side of the gallery, the Institute have be-
e tenants. The company, while appropriating
front portion of their buildings for ordinary
ness purposes, have formed at the back some
n or twenty rooms with a good north light,
h they propose to let as painters' or sculptors'
os. The gallery is a spacious room, measur-
82 ft. in length by 45 ft. in width, and
ng a height to the top of the walls of 16 ft.
exhibition was opened by the Lord Provost
e 16th inst.

he Ordnance Survey.—Major - General
eron's report of the progress of the Ordnance
ey to December 31st, 1876, states that the
area surveyed in England in 1876 has been
) square miles, in the following counties,
ely,—Derby, Stafford, Nottingham, Glamor-
Monmouth, Carmarthen, Brecknock, Hert-
Bucks, Berks, Bedford, Oxford, Wilts,
cester, and Cornwall. The force employed
been scattered in different parts of the
try, in order to give precedence to the
ral districts, but these are now nearly all
yed, except the Staffordshire, Shropshire,
Leicestershire, and the Bristol coal-fields,
all the survey divisions, except the one in
wall, will probably be concentrated at the
f the present year within the space roughly
ed by lines joining the towns of Shrews-
Nottingham, Bedford, and Bristol, which it
oposed to complete before taking up the
y of Wales and of the Eastern Counties.
cotland 451 square miles were surveyed
g the year, the survey having been almost
ely in the Orkney and Shetland Isles, where
work was much retarded by bad weather
the extraordinary length of the coast-line.
reland a portion of the 6-in. map of the
ty of Cavan, and some towns, including 231
re miles, have been revised, and maps of
estates, containing 157,548 acres, were com-
d during the year for the Landed Estates
t Commissioners.

ork Railway Station.—The new railway-
on at York, the largest in the world, is
ed. The new station is situated on a rising
from the banks of the Ouse. The main
ance, which looks upon the city-walls, is
the south side, through a portico 150 ft. by
, and this is approached by a broad drive,
r an archway, near the end of Lendal
ge. The length of the platform is to be
) ft., while the covered portion of the station
length 800 ft., and in breadth, 234 ft. The
ht is about 50 ft. The superficial area of the
orm at York is 171,951 ft., and that at St.
ras, London, 165,360 ft. The roof consists
ur semicircular spans, the largest of which
at in the north centre, which is 81 ft. wide,
covers four lines of rails. That springing
the north wall is 55 ft. wide, and embraces
tform and three sets of rails.

te for Cleopatra's Needle.—In the House
ommons on the 25th inst., Lord E. Bruce
d the First Commissioner of Works whether
site in the metropolis had as yet been
ted for the erection of Cleopatra's Needle,
whether there was not likely to be some
ulty as to land carriage in placing it at any
distance from the side of the river. Mr.
rd Noel, in reply, said, four important sites
been suggested for it; one on the Embank-
, opposite Northumberland-avenue; another
ne Westminster end of the Embankment,
site St. Stephen's Club; a third in the open
e south of Westminster Palace; and a
h in the centre of Parliament-square.

The Electric "Candle."—A few days ago a series of interesting experiments,—which possibly at some future period may have an important bearing in the illumination of public buildings, warehouses, docks, &c.,—took place at the West-India Docks. The apparatus used for the occasion consisted merely of an electro-magnetic machine worked by a small steam-engine, some insulated wires, and the electric "candles." These are the invention of M. Paul Jablochkoff, an officer in the Russian engineering service, and are composed of two carbons placed side by side with a slip of insulating substance between them, which burns away with the carbon exactly in the same way as the wax of a wax candle is consumed with the wick. The light thus obtained is stated to be unaccompanied by those irregularities which have hitherto formed part of the electric light, and which are the consequences of the constantly-varying length of the voltaic arc occasioned by the movement of the carbons and regulators. One of the principal features of Jablochkoff's invention is the divisibility of the light, it being possible to burn several lights with a single current of electricity. In lighting up a building with the electric candle instead of gas, a magneto-electric machine would take the place of the gas works, and telegraph wires would be substituted for gas-pipes. With regard to the question of cost, it was stated that it was considerably less expensive than gas.

The Channel Tunnel.—The engineers of the Channel Tunnel, MM. Polier and Lapparent, in a report upon the result of the numerous soundings which they have taken during the last eighteen months for the purpose of ascertaining the thickness and impermeability of the different strata in the Channel, state that "observation shows that the soil under the sea preserves the same characteristic as upon the French mainland," and that "there is no reason for anticipating that the work will encounter any geological difficulties, properly so called, if we bear in mind the information furnished by a study of the sea's bed and by the work done in the mines which run down into the chalk. The boring at Sangatte has not been carried far enough to admit of any definite opinion being given as to the jurassical development of the soil in that region, but it has confirmed the deductions drawn as to the progressive diminution in thickness of the strata below the chalk which runs from Boulogne towards Calais. These strata are formed of sand and clay, with an admixture of palæozoic pebbles, red calcareous and carboniferous marl, but without any rock of the coal order."

Royal Italian Opera.—The performance of "La Figlia del Reggimento," on the 22nd, in honour of General Grant, was a great success, and we have reason to know that the distinguished American was much vexed that other arrangements forced him away very early. Mdlle. Marimon, as the Vivandière, exhibited her most brilliant qualities both as singer and actress. The appearance of Gen. Grant was the signal for unanimous applause, the whole audience rising to greet him. Then the orchestra, directed by Signor Vianesi, struck up the well-known melody of "The Star-spangled Banner," the solo verses in which were given by Mdlle. Albani with genuine enthusiasm. At the conclusion of this, the applause was renewed with increased fervour, till, at length, General Grant resumed his seat, and the orchestral introduction to the opera was allowed to begin.

The Great Fire at St. John's, New Brunswick.—A telegram from St. John's says that the greater part of that town was destroyed by fire, on the 20th inst. The fire, which broke out at York Point, was fanned by a strong north-westerly wind, and swept over the entire business portion of the city, from King-street, south and east, to the water's edge, together with the shipping at the docks. It did not, however, extend north of King-street. The conflagration has devasted an area of 200 acres, and the buildings destroyed include the Custom-house, the Victoria and Royal Hotels, the Academy of Music, all the banks except one, the public schools, Trinity and St. Andrew's Churches, the Methodist Chapel, the City-hall, and all the newspaper and telegraph offices. The loss is estimated at from ten to fifteen million dollars.

Sanitary Trade Book—The trade-book issued by Messrs. J. G. Stidder & Co., of the Southwark Bridge-road, though not very large, refers to a considerable number of sanitary arrangements and materials, and will be found very useful by those who want such matters.

Public Statues.—A return has been issued of the number of public statues within the Metropolitan Police District which have been transferred to the charge of the Commissioners of Works and Public Buildings under the provisions of 17 & 18 Vic., c. 33, sec. 7, or erected under sec. 2, since the passing of that Act, with the description of the places where such statues have been placed, and the dates when they were so transferred. The following is the list:—Richard Cœur de Lion, Old Palace-yard, 1861; Sir James McGrigor, Chelsea Hospital ground, 1865; Sir John Franklin, Carlton-terrace-gardens, 1866; Lord Herbert of Lea, Pall-mall, 1868; the Guards' Memorial, Waterloo-place, 1873; the Earl of Derby, Parliament-square, 1874; Viscount Palmerston, Parliament-square, 1877; Sir Robert Peel, Parliament-square, 1877.

The West Front of Lichfield Cathedral.—The preparations for the restoration of the west front of Lichfield Cathedral have been begun. The work of providing masons' shedding has commenced in good earnest, and already a considerable portion of the cathedral yard has been enclosed. The work already contracted for by Mr. John Thompson, of Peterborough, includes the south half of the front, from the base to the battlements. The estimated cost of this section (without figures) is something over 11,000*l*. Tenders for the work were privately invited by Sir Gilbert Scott, who selected Mr. Thompson, he having, under the same architect's direction, executed the restorations of Ripon, Hereford, and Chester Cathedrals and other important works. The stone to be employed is Penkridge and Hazelstrine.

The Manchester Infirmary Reconstruction.—The *Manchester Courier* says:—"The Special Committee of the Weekly Board have not yet reported to the Board what they think of the three sets of plans which have been presented, showing how, in the opinion of the architects, the present infirmary building might, with additions, be made to meet the wants of the district it serves. We hear, however, that they intend to suggest that the matter should be left for decision to the newly-constituted governing body, which in a short time will enter into office. The result of the appeal for 'professional opinion' has, we believe, altogether come up to the anticipations of those members of the Weekly Board who are averse to changing the site of the infirmary."

Proposed New Vestry Hall for Wandsworth.—At a meeting of the Wandsworth Vestry on the 21st inst., the special committee appointed for the purpose recommended that a plot of freehold land in the High-street be purchased, at a cost of 2,000*l*., for the purpose of erecting thereon a vestry-hall and other public offices and buildings. Colonel Busk entirely dissented from the committee's report. He thought it utterly preposterous and ridiculous to pay 2,000*l*. for land which was let on a ninety-nine years' lease for only 48*l*. a year. Mr. Howick moved as an amendment that a public meeting of "direct ratepayers" be first called to consider the matter. The amendement was carried.

St. Paul's Cathedral.—It appears that the proposal, made some time ago on the part of some workmen in Paris, to place a pulpit in St. Paul's, as a proof of international sympathy, is not likely to be carried out. The Lord Mayor has lately received communications from Paris which show that the project was due to the friendly feeling of M. Mignot, who originally wrote to the Lord Mayor on behalf of the Association of Working Carpenters and Joiners in Paris, but who has since been disavowed by his colleagues. M. Mignot has made a second proposal to organise a general subscription in Paris for his original scheme. To this, however, the Dean and Chapter of St. Paul's felt an objection, which will be generally shared by their countrymen.

The Cobden Statue at Bradford.—The Cobden statue, which is to be unveiled by Mr. Bright early in July, has been erected in the Bradford Exchange. From its position at the lower end of the room, the statue, which is of white marble, forms a very conspicuous object. It stands on a polished granite pedestal, in the centre of which is carved in gilt letters, the word, "Cobden," and around it in a circle, "Free Trade," "Peace and goodwill among nations." At the back of the pedestal is an inscription, also in gilt letters, stating that the statue is the gift of the late Mr. G. H. Booth, a citizen of the United States.

Ancient Monuments. — The Bill for the preservation of ancient monuments and other historic antiquities throughout the United Kingdom, originally brought in by Sir John Lubbock, bart., and discussed in the Commons, was referred (it will be remembered) to a select committee, the Government suggesting such reference in order that the rights of the various proprietors, landed and otherwise, should not be unduly interfered with. The select committee appointed by the House of Commons for the purpose met for the first time this week, when Sir John Lubbock was unanimously chosen chairman. The committee then adjourned to Monday next, when evidence will be taken and proceedings further continued.

The Consumption of Lead.—The United States consume 60,000 tons of lead every year. Every pound of this can be produced at home. And yet with a bounty of two cents a pound in the shape of protection, we last year imported 7,000 tons of lead; producing at the same time 53,000 tons. Two countries only, Spain and Great Britain, are producing more lead than the United States. It would only require a slight increase of lead to give us a surplus for export; nor can any limit be placed on future production. Lead can be procured in this country as cheaply as in any other.—*New York Mercantile Journal.*

"The Howard Medal."—The Council of the Statistical Society has selected the following as the title of the Essay to which the "Howard" medal will be awarded in Nov. next:—"On the condition and Management—Past and Present—of the Workhouses and similar Pauper Institutions in England and Wales, and their Effect on the Health, Intelligence, and Morals of the Inmates." Mr. James Heywood, F.R.S., has given 20*l.* to be presented with the medal. The Essays must be sent in before the 30th of June.

"Sanitary Institute of Great Britain."—Dr. Richardson is to deliver an address at the Royal Institution on the 5th of July, "On the Future of Sanitary Science in Relation to Political, Medical, and Social Progress." Cards of admission, we are asked to say, may be obtained at No. 20, Spring-gardens.

Messrs. Chubb & Son have removed to extensive premises at 128, Queen Victoria-street, St. Paul's. It is exactly fifty years since the business was commenced at St. Paul's Churchyard, and the continuous growth of the lock and safe trade has rendered the change necessary.

Hull Cabmen's Shelters.—At a meeting of the subscribers to the Hull Cabmen's Shelter movement, held on the 22nd of June (Alderman Wells presiding), it was resolved that the gentlemen present should form themselves into a committee for the purpose of continuing the shelters for another year.

Pneumatic Bells.—An illustrated catalogue of pneumatic bells, manufactured by Mr. J. F. Clarke, and just now issued by him, should be looked at by those who are hesitating which system to adopt.

St. Pancras Gardens. — The opening of these gardens, which have been laid out by the vestry of St. Pancras, took place on Thursday, the 28th inst.

TENDERS.

For new schools, Flax Bourton, Messrs. Foster & Wood, architects. Quantities supplied:—

Forse & Ashley	£11,329	0	0
Veals	11,250	0	0
Hatherley	11,095	0	0
Broad	11,080	0	0
Stephens & Bastow	10,558	0	0
Boon	9,963	0	0
Church	9,930	0	0
Keans	9,830	0	0
Howell	9,509	0	0
Humphries	9,495	16	0
Cowley & Son	9,375	0	0
Green	9,040	0	0
Bennett	8,899	0	0
Brown	8,860	0	0

For the erection of twelve villa residences on the Fulford Grange estate, York. Mr. Wm. Lewis, architect. Quantities supplied:—

Brickwork and Joinery.

Weatherley	£3,752	7	0

Plasterer's and Slater's Work.

Rawling	1,066	0	0

Mason's Work.

Hebden	617	6	0

Plumbing and Painting.

Lyons	670	8	0

Ironmongery.

Hill	259	6	0

For the erection of cottages for Mr. Boswell, at Forestgate. Mr. C. B. Peters, architect:—

Weston (accepted)	£680	0	0

For the erection of new district church, Ponder's End, Middlesex. Mr. H. J. Paull, architect:—

Stamp & Bowtle	£4,788	0	0
Perry & Co.	4,620	0	0
Longmire & Burge	4,480	0	0
Bayes, Brothers, & Allen	4,215	0	0
Linzell & Son	4,133	0	0
Patman & Fotheringham	4,076	0	0
Bracher & Son	4,090	0	0
Staines & Son	4,090	15	0
Field & Son	4,044	0	0
Higgs & Hill*	3,934	0	0

* Accepted, subject to certain reduction in the plans.

For the erection of Board schools for infants, at Plummer's Hill, Bristol, for the St. George's Board. Mr. Stuart Colman, architect:—

Wilkins & Hill	£2,050	0	0
Box	1,985	0	0
Eastabrook & Sons	1,894	0	0
Cowlin & Son	1,889	0	0
Hatherley	1,829	0	0
Hill & Prior	1,757	0	0
Pugsley (accepted)	1,748	0	0

For the erection of fourteen houses and two villa residences in Osmaston-road, Derby, for the Derby Crown Porcelain Company, Limited. Mr. E. L. Maddock, architect. Quantities supplied by the architect:—

Matthews	£5,720	0	0
Woodiwiss	5,665	0	0
Bakewell (accepted)	5,630	0	0

For building six houses at Westgate-on-Sea. Mr. C. N. Bearley, architect:—

Oliver	£4,500	0	0
Holmes & Co.	4,440	0	0
Lockwood	4,416	0	0
Shrubsole (accepted)	4,380	0	0

For alterations and additions to the Macclesfield Arms, City-road, for Messrs. Whitbread. Mr. T. Palmer, architect. Quantities not supplied:—

Hockley	£2,580	0	0
Axford	2,510	0	0
Bridgman	2,478	0	0
Hayworth	2,233	10	0

For alterations to stabling, &c., 70 and 71, St. James-street, Brighton. Mr. Arthur Loader, architect:—

Newnham	£553	0	0
Coleman	529	0	0
Parsons, Brothers	477	10	0
Bruton (accepted)	419	0	0

For additions to No. 12, Marlborough-place, Brighton, Mr. Arthur Loader, architect:—

Barnes	£257	10	0
Reid (accepted)	195	0	0

For new front, &c., to No. 10, Temple-street, Brighton. Mr. Arthur Loader, architect:—

Wood & Co. (accepted)	£215	0	0

For new front to No. 4, Black Lion-street, Brighton. Mr. Arthur Loader, architect:—

Newnham (accepted)	£350	0	0

For new bays and other alterations at 29, Bloomsbury-place, Brighton. Mr. Arthur Loader, architect:—

Titcombe (accepted)	£282	10	0

For new school-building adjoining the church in West-street, Shoreham. Mr. Arthur Loader, architect:—

Willett (accepted)	£500	0	0

For repairing and painting Megg's Almhouses, White chapel-road. Mr. W. A. Longmore, architect:—

Horey	£225	0	0
Read & Son	218	0	0
S. & E. Jacobs	205	0	0

For the erection of a house at Lordship-lane. Mr. W. A. Longmore, architect:—

Little	£1,280	0	0
S. & E. Jacobs	1,234	0	0
Walker (accepted)	1,122	0	0

For the erection of a shop at 106, Rye-lane, Peckham, for Mr. Charles West. Mr. Walter Shoobert, architect:—

Crowhurst	£235	0	0
Perkins	208	0	0
Shapley	185	0	0
Colebrooke (accepted)	179	0	0

For works at Gwernyfed Hall, Breconshire. Mr. W. E. Nesfield, architect. Quantities supplied:—

King	£24,950	0	0
Nightingale	24,250	0	0
Brass	23,469	0	0
Wingate & Son	21,923	0	0
Lovatt	21,761	0	0
Stephens & Bastow	20,982	0	0
Baker & Sons	20,000	0	0
Tongue	19,761	0	0

For additional blocks to Cavendish College, Cambridge. Messrs. John Giles & Gough, architects. Quantities by Mr. C. H. Goode:—

Bell & Sons	£9,151	0	0
Hook & Olley	8,881	0	0
Bayes, Brothers, & Allen	8,765	0	0
Lovatt	8,245	0	0
Pattison, Brothers	8,189	0	0
Sharman	8,090	0	0

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ARCHITECTURE and ORNAMENTA TION.—T. PARENTS and GUARDIANS.—Dr DRESSE who has just returned from the far East, where he has been studyi Architecture and Ornamentation, has an opening in his Office f students of the above subjects.—Tower Crosby, Notting-hill, Londo

The Builder.

VOL. XXXV. No. 1798. SATURDAY, JULY 7, 1877

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The Function of the Imagination in Structural and Decorative Art.

THE influence of the imagination on the progress of structural art is a subject which has never yet received the attention which it deserves. The very word design, indeed, involves the idea of imaginative action. A perception of the special stamp which indicates, to the educated eye, not only the work of a great designer, but the work of an individual designer, is a tacit recognition of the imaginative power of the artist in question. But for a distinct analysis of the art of design, showing the office and function of the imagination in their proper light, we shall look in vain. Not only is this the case, as a fact, but it is possible to explain why it is the case. The outline of all human thought, in so far as it had been conceived by Grecian philosophy 2,000 years ago, was laid down by Aristotle. Those who are unacquainted with the works of that master of the domain of reason have little notion how thoroughly he did this work, once and for all. It is not too much to say that he impressed on all the subjects of which he treated the general form which they have since retained. Either directly or at second-hand succeeding teachers of mankind among European races have fallen into the grooves of thought marked out by Aristotle. There is, for this reason, a considerable difference between the form of those studies which were, more or less, in progress in the time of Alexander the Great, and those which have, if not altogether sprung up, yet first attained considerable proportions, since his time. This, also, has been the case, to a very great extent, with structural art. Architecture, indeed, had defined her classic orders at the period to which we refer. But her range was limited, both as to object of building and as to the adaptation to climate. And in that portion of the writings of Aristotle which may be thought rather to have misdirected the mind as to study of the imagination, architecture is not referred to. Music, together with the various species of poetry, and especially the drama, are described in the Poetics of Aristotle as imitations. "They differ as imitating, by instruments generically different, different things, in different manners." It has been most natural to extend this analytic definition to painting and to sculpture. And this being done, it is obvious that it would occur to few to exclude from the analysis the imaginative element of architecture. That imagination is another form for imitation has thus become tacitly admitted by most thinkers and writers on the subject. And if, it might be said, the action of the most purely poetic faculty, that of the bard or dramatist, who uses only the intellectual mechanism of language, is imitation, what higher rank can be assigned to material working in stone, in clay, or in metal?

This, we think, will be found to be a fair statement of the ordinary view of the elementary nature of art, whether fine or structural. It is clear that if this view be incorrect, the advance of art is likely to be impeded by the error. We absolutely challenge the truth of such a view. We consider it both false and mischievous. And it is, in the first instance, to the creations of the engineer rather than to that of the architect, the painter, the sculptor, or the poet, that we turn for proof. Let us regard, for a moment, what we may call the central mechanical invention, the wheel revolving on an axle. It is impossible to speak of this as, in the first instance, an imitative work. It is a means perfectly adapted to its end, but it resembles nothing in nature. If we seek for an illustration in the movement of the planets, we see at once how thoroughly distinct is the idea of a spheroidal body, circulating freely in space, in obedience to the unseen bonds of gravity, and the couple of mechanical elements, formed by human art out of unyielding materials, one of which is left free to move in one prescribed path, and in no other. Even if we were to allow,—which it would be fantastic to do,—that the man who first put wheels to a chariot sought to imitate the motion of the sun, it is incontestable that the method by which such slight resemblance as there may be was attained was altogether original. So far as we can speak, the wheel, revolving on the axle, is a creation of the human mind. When the master idea is carried out into a train of sequence, and when we have wheels driving wheels, by cogs, teeth, or bands, we advance in a complex organisation of which nature furnishes no pattern or example. It may at times be the case that the mechanic does imitate nature. He may derive the idea of a particular movement, or form a kinematic pair of elements, directly from some part of the animal structure. Or his own original design, intended, under certain conditions, to secure certain movements, may make use of arrangements almost identical with some of those which have been long since exemplified in the structure of the vertebrate skeleton. The hip joint is a favourite illustration. But though the round process by which this most important bone fits into its socket is a case of the connexion called the ball-and-socket joint, it is by no means true that a mechanical ball-and-socket joint is a direct imitation of the articulation found in a skeleton. It usually differs from it essentially, in as much as the ball is gripped by the socket, instead of being held in its place by any analogue of the *ligamentum teres*. In fact, a mechanical joint is as much better for an organisation of metal and of wood, than any copy of the animal articulation could be, as the latter is, for its own special service, if compared to a bored and turned joint of metal. Again, if we look at the hinge, in its simplest form; at the articulation of one lever to another; or, more striking than either, at the crank, we find expedients invented by the human imagination to answer distinct ends, which they perfectly fulfil, but of which no prototype or even hint can be pointed out in any natural object.

It is therefore the case that we find, within the province of structural art, certain human inventions that are at the same time absolutely original, and perfect as to the function they are designed to fulfil. In no respect is this more strikingly displayed than in the crank. A movement was attained by Watt, by means of this beautiful invention, without precedent or example. It is a movement regulated by mathematical laws peculiar to itself, of which no idea had been entertained prior to the investigation of this special form of connexion. It is well known that Watt's invention was pirated and patented against the inventor. Watt was then driven to employ a second invention for the purpose of converting reciprocal into circular movement, and he hit upon the equally original, though mechanically inferior arrangement, of the sun and planet wheels. In neither of these novel expedients can it be said that Watt imitated any existing form. Let us suppose that at some unknown distance of time an Egyptian Watt had invented an Egyptian crank, and that the researches of Mariette Bey, or some other famous explorer, should point it out on the sculptured walls of the tombs of Lower Egypt. Such a discovery would take nothing from the credit of Watt as the original inventor. It would only show that it was possible for different minds, by the force of their own inventive powers, to arrive at the same solution of a problem in practical mechanics. If this be the case with reference to an invention so perfectly *sui generis* as the crank, it is obvious that it may be more or less distinctly the case with regard to any form of mechanical ingenuity.

If such be the case, and we fearlessly challenge denial, it follows that we must acknowledge the presence of two distinct original principles which underlie all structural art. We must admit the exercise of the faculty of imitation. We prefer, however, to use the term guidance by experience. The mechanic or the artist who desires to produce a certain result will more readily and surely effect his object when he is fully aware of the methods by which his predecessors have attempted to secure the same ends. To him previous failure and previous success will be equally instructive. Of the former he will seek to avoid the recurrence, by improvements suggested by his own reflective faculties. Of the latter he will reap the full benefit, by a close adherence to the method proved to be true. The mechanic will thus cultivate his imaginative power by the best method. He will waste no labour in overcoming difficulties that have been smoothed from his path by his predecessors. He will imitate what is good in their work,—

not with the mimicry of a monkey, or the mechanical reflexion of a mirror, but with that same kind of mental action which enables us to do on a second or third attempt better than we did on the first. The more perfect his education in this respect—the more thoroughly he is acquainted with all that is wise to imitate, the loftier will be the standpoint from which his own imagination will be able to spring. So far, then, from the action of the artist in structural work being purely imitative, it is essentially and in the highest degree creative. Imitation bears much the same relation to intellectual creation that the grub bears to the butterfly.

It must not be thought that a complete analysis of the different faculties or powers which go to make up the great artist, architect, or engineer, tends to such a division of the subject of education as to prepare one man to design a structure and another to decorate it. It may be said, with some truth, that if there be an essential difference between the imitative and the creative powers or action of the mind, the latter applies chiefly to structures, the former to decoration. To some extent this is the case. With many persons decoration is nothing but imitation. In most cases there is much of direct and unmixed imitation in decorative work. But such is not the case with the highest type of excellence. In that, structure is in itself so perfect as to be self-decorative. We touch here on a point almost too abstruse for full discussion in our columns, and that is, the real essence of physiognomic character of beauty. To say that our ideas of beauty are simply due to association, and derived from some perception or recollection of utility, is grotesque. But this theory is not new. It was happily illustrated by the remark that, on that principle, a man would experience the same degree of pleasure from a glance at a pap-boat as from a glimpse of the bosom of a beautiful woman. To arrive at what we may call the *ratio entis* of beauty, we must use rigorous and exact analysis. It does not follow that we can construct what is beautiful by the reverse process. Still we must resolve a compound idea into its primary elements before we can wisely attempt reproduction. Thus, if we regard the structure of a bird, from that humble water-fowl, the auk, poised on one heavy paw, and unable to fly except under water, to the splendour of the most elaborate ornamental plumage of the peacock or the bird of paradise, we shall be able to some extent to divide structure from decoration anatomically; but we shall not find that structure is complete by itself, and that ornament is afterwards superadded. On the contrary, we find, from the largest bone to the most delicate filament of feathers, constant marks of unity of design. The bone, as exactly proportioned for its mechanical service as if the dimensions had been wrought out by the calculus, is not covered with a purple lustre or a nacreous reflection, because it has to be imbedded in the muscles, and a light-reflecting surface would be a positive inconvenience as regarded the general structure of the animal. But where the skeleton is exposed, as in the beak, or to some extent in the claws, the finish is at the same time mechanically admirable and decoratively elegant. If we take a feather by itself, we have an object of such decorative beauty that woman herself endeavours to heighten her own unrivalled and uncommunicable charms by borrowing the clothing of the bird. We may call such a feather as can be plucked from either of the birds we have named, or from almost every member of the aërial choir, the most ornamental object,—regarded as a simple element,—in nature. But if we look at it with the increased power of vision afforded by the microscope we find that the decorative effect is inseparably connected with perfection of scientific structure. Regarding the purposes for which birds require their exquisite clothing,—the strength to contend with the storm, the lightness which shall allow them to beat the paths of the air, the warmth that shall resist the terrors of winter, the sleekness that shall throw off rain and damp, we find that by no combination conceivable to man can their various purposes be attained so fully as by the structure of a feather. Even the purple glory or golden lustre with which the bird charms his mate, is an incident of the play of light on those minute facets, the excellence of which is desirable for one or another of the objects we have mentioned. Beauty of colouring is, so to speak, an inseparable accident of delicacy of structure; and delicacy of structure is only another name for the avoidance of waste of material. Thus the highest beauty is wedded to the highest utility. No work of the Great Artificer is like a board finished by the plane, and then bedaubed by another hand with a coating of paint. Structure and surface, strength and beauty, design and ornament, go hand-in-hand, or rather bear the same mutual relation as convex and concave. Owing to the limitation of our faculties we must study the two questions apart. But in the forms of nature their existence is absolute. And so it is in all the highest forms of art. The architect or the engineer who first rears his elevation, or builds up his trussed girder, and then proceeds to adorn it, as he thinks, with *appliqué* work, to patch on a useless console or cornice, to paint unmeaning circles or lines, or generally to ornament by incongruous addition, which has not even a conventional relation to structure, will never get far above the level of the detestable.

There is, no doubt, a question how far some of the main architectural forms are, in their origin, imitations of nature. The resemblance between an avenue of noble trees and the intersecting aisles and arcades of a lofty cathedral is one of these instances; that between the graceful spire of a church, and the heaven-pointing peaks which give a special character to the scenery of many parts of Christendom, is another. We feel it to be a question, however, whether the relation between these types is more than apparent. We can certainly trace the origin of the groin, which is the main feature in Gothic structures that most resembles the radiation and intersection of the branches of trees, to its *genesis* in the vault; and if we were called on to point out how the vault passed into the groined roof, we might say that it was in consequence of the adoption of the cruciform plan of building. Vaults are found in Roman and in Romanesque work, which suggest no idea but that of a prolonged arch. We recently gave an account of a theatre or reading-room discovered at Rome, in which the roof appears to have been a vault, partially glazed. In a building of rectangular plan the end of the vault would be hidden by a pediment, or even might appear, as in some of our Jacobean work, with a visibly rounded gable in the façade of the building. The introduction of a cruciform plan, there can be but little doubt, was symbolic. It was adopted as a characteristic of a Christian church, when first erected for the purposes of worship, as distinguished from the appropriation of the basilica to liturgic purposes. The question of dealing with the intersections of the roof directly arose. When vault was allowed to intersect vault, and form a natural groin, it became almost indispensable to give the best materials and the most careful workmanship to the lines of meeting. Thus originated the rib. That this was the case, in rude structures, there can be no doubt. The idea having originated in structural necessity, its decorative beauty soon became apparent. In the vigorous growth which characterised the history of Pointed structure, till it was smothered by the costly splendour of the later Perpendicular decoration, the free-masons and cathedral builders were not so wanting to themselves as to use the rib merely as a decoration. Even if it were not a necessity of structure, it was so handled as to appear to be so. It was by the introduction of various recesses and changes of plan, each perpendicular surface affording a springing for its own portion of vault, that groined intersections became multiplied. The effect was heightened by the multiplication of shafts. In these there is, indeed, a resemblance to vegetable structure; but it cannot be properly called an imitation. It was rather a refinement of true structural design, which, as evidently beautiful, became conventionalised, and wrought out into the most fantastic forms of tracery. We may now be content to copy a doorway from one building and a window from another. If we do so, we imitate,—no doubt of that. We may say that it is impossible to surpass the beauty of work done by the great Gothic artists. Perhaps it is. But none the less that is not only a lower but a generically different kind of work which consists in putting together imitated forms (like composition photographs), however noble in themselves, as compared with the execution of a design in which the artist, while starting from certain fixed requisites of plan, allows his fancy to indulge in quaint and graceful adornments,—as the musician wanders in his melodies around the central idea of some well-known air. It must certainly be admitted that during the healthy growth of the Gothic centuries, origination, not imitation, was the aim of the architect. Had it been otherwise, the history of architecture would have been altogether different. As soon as certain problems had been solved, let us say by the time that the Early English style had attained its zenith, the architect would have been content. A model church would have been taken as a type, and instead of a growth and variety of structural and decorative art which presents, in the course of centuries, somewhat of the same development which the researches of the palæontologist show to have been carried on in the structure of the animal skeleton for thousands of years, we should have had a growth of ecclesiastical and conventual buildings over Europe alike one to another as are trees of the same species in a forest.

It seems, then, to us, that one of the first requisites of healthy growth in the development of art, whether structural or decorative is to understand the very low place in the mental economy of the artist that is, or rather that ought to be, held by the imitative faculty. Exact imitation, indeed, can rarely be in any way admissible. For decorative purposes, imitation, in order to be admissible, must be scourged and fettered by a certain amount of conventionalism. As to the degree, we do not attempt to lay down a fixed rule. It must depend, in part, upon the object of the detail, but in the main, on the genius of the artist. Thus, let us take such an illustration as that of the introduction of sculptured foliage in architectural decoration. The general opinion is that the leaves and tendrils, and buds, employed, should not be exact copies of nature, but should be so modified in passing under the hand of the sculptor as to show that they are human work, and not petrified branches. As to this there is fair room for difference of opinion, especially as refers to different styles of general finish. But we apprehend that there will be no difference thus far. Absolute simulation is inadmissible. Thus, if we were to take the loveliest tress of ivy, and to produce a *fac simile* of it, colour and all, in gutta percha, it would be no more admissible as an architectural decoration than the wax-work of Madame Tussaud's exhibition can be called sculpture; or if we were to take the actual branch, and to immerse it in the dropping-well at Knaresborough, or in some of the travertine depositing streams of Southern Italy, we should have in a few weeks a real stone branch. Will any one say that this could be inserted in a building of any pretension to architectural merit, otherwise than as a blot and a fault? Thus, we see that, however closely such an artist as Gibbons might copy nature herself, the exigency of the material in which he wrought imposed a certain noble conventionalism on his work. His leaves, his buds, his singing boy-angels are not like wax-work. We can probably find no better example than in such work as that of Gibbons of the true influence of the conventional in art. Absolute imitation is possible, but it is admittedly odious. Imperfect imitation marks the infancy of art. It is highly improbable that the sculptors of the heads of kings and saints, and virgins, which are so grotesquely inhuman in some of our twelfth or thirteenth century work, attempted to conventionalise. They did their best. They came as near to nature as they could,—though they stayed a long way off. Between the rude imitation of the hieroglyphic, on the one hand, and the perfect and accurate imitation of the anatomical modeller, on the other, ranks the work of the true artist. This is at once natural and conventional. Its former quality it owes to the eye and to the hand of the artist; its second to the material in which he wrought, and to his true and instinctive appreciation of the capabilities of that material. The cherubs of Gibbons are not wooden imitations of real children. They are ideal conceptions of lovely children, clothed by the hand of a great master in bodies and robes of wood.

Kensington House.—Rumour says that the large mansion built at Kensington by Mr. Grant is likely to meet with a fate little contemplated at its origin. The building has been some time in the market without obtaining a purchaser. It is said that one of the most wealthy and enterprising metropolitan building firms has made a bid for the house and grounds, which stretch over some seven acres. The intention is to build a square upon the open space, with an entrance from the high road, the house itself to be brought down to more reasonable size by the removal (?) of both the wings.

N THE PRETENSION OF PHYSIOLOGY TO THE BASIS OF FINE ART.

We have recently taken occasion to dwell on e analogies which are traceable, and have been isted on from all time, between the noblest orks of Nature and of Art, and this in respect oth of the distributions which subserve the conmience of man, and no less of those which ppeal to his sense of beauty,—to his appreciaon of an æsthetic whole. Surely the architect, any artist, can sympathise with the admiraon which Hamlet expresses in the words, "What piece of work is man!" though it were but from e simple point of view of construction and ombination of parts for the most perfect serceableness in subordinate, or in the most uniersally combined, employment and exercise. The ffective prince pursues,—"In form and moving, ow express and admirable"; and though moveent assuredly is the very last thing welcome an architectural work, the expressiveness of rm, and the variety obtainable from alternate pects, are qualities that never fail to be seduusly courted and cultivated by every designer a structure which it is hoped may be worthy remaining fixed and steadfast for all time.

But it was no experience incident to the llowing forth of these analogies, that the ature of our æsthetic feelings,—our percepons, that is, of characteristic expression as eautiful or Sublime, as Graceful or Impressive, nd so forth,—must be doomed to remain a ystery unless we turn off to beg assistance om a physiological elucidation. This, howver, and nothing less, is the challenge which ose who would meddle with æsthetic study re now called upon to accept, and must do eir best to answer, at the peril of all they have itherto held æsthetically dear. It is averred ith no slight confidence, and argued, or rather roclaimed, with no moderate parade of that hilosophy which is called positive, that the ature of beauty can only be understood in rtue of accurate familiarity with the anatomy the organs of sense, and especially with e most recondite details,—at least, with onjectures more or less avowedly such,—as to e forms and functions of the tissues and erves and peripheral end-organs of the cerebroinal system generally. This view of the lation between mental recognitions or expeences and the material instruments of our onstitution, has been gradually spreading for ome time over the general field of intellectual peculation, and has even made no inconsiderable roads into those of properly imaginative otivity. Readers who are least given to novel eading, and in an ordinary way are unconcerned nough to "keep themselves abreast of the terature of the day" in this form, may easily ave been induced to bestow a trial upon a tory or two for which claims can be asserted belong not only to the present but to a far ature day; they have been fortunate if even ere, amidst all the frantic ardours of romantic assion, they have not found that if subtle nalysis of motives and sentiments were to be ollowed, they must endure the details of the issecting-room, and not be too much disturbed y an occasional stumble over the long words of he surgeon's *vade-mecum*. Whether physiology ay or may not be susceptible of being made oetical we are fortunately not called upon at resent to inquire; but, unfortunately, it is not oo soon to protest against poetry and poetic ction being merged in physiology; certainly, o some of the old school,—"to us of the right- and file,"—this process is distasteful enough; eems nothing less, indeed, than a degradation, nd we are disposed to connect with the same ensuous predisposition out of which it seems o be evolved, a tendency for even the most efined of all the passions to be dealt with too aressingly under a physiological aspect, to be resented as if rooting inextricably among nimal associations. Novel-readers nowadays ay find themselves like the surgical pupils of ir Astley Cooper, aware of the importance of is injunction, "Your first task, gentlemen, is to onquer your nose."

Again, if we take a long bound from the ealms of fiction to what ought to be those of trictest and verified fact, we have presently to ote the encroachments of the same self-assertion f physicism, and are confronted by the assurance, n an authority which has many better titles to espect, that "the science of morals is based on hat of biology." We rub our eyes and ask ourelves what science, if not that of morals, was it hich we have been in the habit of regarding and venerating as moral science, of which the teachers have attached the respect, and earned the gratitude and acknowledgments, of the best of our predecessors, generation after generation, long, long before our author would admit that the science named biology was studied in any form that he would recognise as biology, even in its rudiments. Far from us and from our friends be the conclusion that no verifiable theory of duty, not to say a sense of conscientious responsibility, can consist apart from knowledge, more or less certified, of "the laws of transmission and development of vegetative and animal life." Turn we to another of the "lights of the world and demigods of fame," and him we find credited, as with a discovery beyond price, with the announcement, that the training of the young, which by nature and necessity is in the charge of mothers and aunts, has hitherto all gone wrong, and that remedy is only to be expected from these earliest educators being thoroughly grounded in psychological and physiological science. There are some sections of moral science which philosophers who are bachelors,—if bachelors,—will be wise to let alone; the wisdom of such, when regardless of this caution, will be but foolishness in comparison with the practical faculty of those whom they despise. The wisest physician is the readiest to rebuke a prater about "the science of medicine"; and trusts for present success to traditional instruction combined with the experience which he has stored for himself at many a bedside; the profoundest psychologist will smile at his own deficiencies when he sees a child-nature which he is utterly unable to influence for good, become, under the influence of one who perhaps never heard of psychology, gradually susceptible of gratitude, amenable to discipline and reason, and capable of sustained attention and unswerving resolve. How far a course of recondite physiology would promote accomplishments which have so] supreme a function, may be investigated along with the desirableness of commencing a course of architectural drawing, with an anatomical demonstration of the nerves and muscles of the hand.

With all proper respect for physiology and physiologists, and for conscientious studies from the so-called positive point of view, be the conviction declared as that of students equally entitled to attention, and quite as likely in the long run to secure it, that sentiment and morals,—that whatever is most valuable in ethics and in æsthetics, and even in the drier theory of logical discourse, may be fairly mastered without incurring the slightest obligations to either scalpel or microscope. The obligation, in fact, lies clearly the other way, if mental philosophy thought the claim worth pressing. "The subject matter of our investigation," says the author of a recent work on a subject portentously designated Physiological æsthetics, "will be the feelings aroused in man by the beautiful in nature, and in the arts of architecture, painting, sculpture, music, and poetry." "The main principles upon which is to be based the proposed system of æsthetics, are chiefly these" and the like, "as briefly recapitulated." "The human organism—a highly complex machine,—differs," he observes, "from machines of human construction in possessing the mysterious attribute of consciousness. This consciousness is specially connected with and definitely related to a certain portion of the organism known as the cerebro-spinal nervous system, or rather with particular members of that system; every state of consciousness is a reflex or outcome of their physical states. The various sense-impressions are the reflex or outcome of their states viewed from the aspect of the various portions differentially affected." This, perhaps, of this will be enough. With some indulgence it may probably be understood to mean that we receive different sensations according to the particular organ of sense which happens to be affected; and that the effect which we experience has a definite relation to the kind and degree of the exciting cause thereof; only that there needs no philosopher rise from his retirement to tell us that. If he will tell us what changes in the organs he can attach as positively as befits a positive philosopher, to certain experiences in the way of sensation, there are may who will listen to him and justly value his communication; but even so he would not be entitled to call his knowledge physiological æsthetics,—more plausibly, it may be æsthethical physiology,—though even this would carry vain pretence to the verge of presumption and audacity.

Physiology, we are told by an authority well accepted, embraces the properties and functions of the tissues and organs,—the primary conditions of growth and development; and further, that as mental phenomena when observed in others,—although interpretable by our consciousness of what is passing in ourselves,—can only be objective phenomena of the vital organism; therefore an acquaintance with the general principles of structure and function is indispensable for the psychologist. We can but say, in Falstaff's words to the Chief Justice,—"We would your worship would take us with you."

Doubtless our cognisance of even the existence of other minds, not to say of the thoughts and feelings which occupy them, is due to our observation and interpretation of certain bodily and material manifestations,—"objective phenomena of the vital organism," if so please you;—but even for this no scientific knowledge of tissues and organs is requisite; and after the best of such knowledge is provided we have still to fall back, as is admitted, on psychological interpretation from our own experience,—experience which it is certain, though not admitted, because this is a matter quite overlooked, is in all the most important points independent of our consciousness of the properties, functions, and even existence of the cerebro-spinal nervous system at all. To speak of the expression of mental states as "only consisting of objective phenomena of vital organism," is as reasonable as to define the Venus of Melos as only a mass of carbonate of lime, and to demand from an expositor of its expression to begin with a chemical analysis. It is not in these columns that the designers of the Majestic and the Beautiful will be discouraged from giving attention to the properties and conditions of treatment and duration of either carbonate of lime or any other rock, whether crystalline or stratified; quite as little will they on their part be misled by this useful study to sympathise with the conviction "that in every æsthetic feeling, intellectual and complex, emotional factors are only contained incidentally; and that their ultimate,—nay their principal,—components, ideal or actual, are pleasures of sense, either tastes, smells, touches, sounds, forms, or colours."

That we have sensations before we have ideas of sensations,—pleasures of the senses earlier than pleasures of intellectual or imaginative excitements,—does not prove that these excitements are otherwise than susceptible naturally of greater delightfulness than any sensations whatever. Sensations are doubtless constantly the occasions of reviving and stimulating our liveliest currents of ideas, but our memories, reflections, imaginations, associations generally, have a value out of all proportion to the immediate stimulation of peripheral end-organs,—much more to the mere secondary reference to such enjoyment. To invert this scale of relative appreciation is to set the hodman above the mason, and the mason above the architect. Handel by this scheme is not supreme over, but the servant of, his organist; and the blower of the bellows is lord of all. Can it be that we are seriously called on to admit that dignity and grace are not essentially,—are not in origin, development, and culmination, indefeasibly attached to moral characteristics,—that they "only incidentally" involve an appeal to our sympathies with moral qualities and intellectual powers, but rest above all on reviving or promoting reminiscences of material impressions affecting organs of sensation? Have we then, indeed, to unlearn for a new æsthetic revelation the time-honoured doctrine that as moral culture advances with the refined appreciation of moral distinctions, an advance which is compatible with a very simple state of life and manners, so all that we prize as style in all the arts is due to a parallel and sympathetic progress? Is it a fact, which either experience or philosophy can substantiate, that æsthetics, and ethics, too, either speculative or practical, invariably and of necessity keep even step along a line which is measurable by the stages of our knowledge respecting afferent and efferent nerves, grey matter and protoplasm, and dependent on the delicacy of the experiences of the senses,—of the peripheral end-organs? What, in that case, must not be the perfection of physiology at once and of sensuous enjoyment, with which we have to credit the century that was ennobled by the conception of the spire of Salisbury,—by the admiration which secured the adoption of so daring a design, by the skill and resolution that effected its completion? Nay, sentiments surely were marvellously in advance of sensations, and not merely ancillary to them,

in the mind of that unnamed, unknown genius, of doubtful religion and disputed race and epoch, who governed the erection on Salisbury Plain of that other structure which, by most truly artistic gradation, leads us on through subordinated arrangements and magnitudes from enclosing and interlocked circle to larger and largest trilithons, and leads us upward to conceptions among which mere sensation is forgotten. In this master-work of all unhewn stone architecture,—a work to which, in respect of technical processes, the Cyclopean walls and Lion sculptures of Mycenæ are elaborately artificial,—the feelings are still addressed, and must have been originally recognised, which it has been the triumph of architecture in all the greatest ages of the world to excite and satisfy. This is no effect of the mere glamour of rudeness and ruin; but awe and admiration grow the longer we linger on the spot, and the more completely and definitely we recover the imagination of the original scenery and scheme. It is not by anatomy of the organs of sense,—it is by scrutiny of the most familiar laws of association,—of the manifestations that are at once noblest and most commonplace, the sentiments experienced by all mankind, that we must seek the clue to the suggestion of such a work, and the explanation of its effects upon ourselves.

Before physiology lays claim to æsthetics and ethics as its secondary development and subordinate provinces, it would be well that its professors should give proof of caution in their first and preliminary expositions while they are still within the limits of their own unquestioned territory. More than once we have had occasion to remark what we may find occasion to set forth in detail hereafter,—that the scientific treatment of architectural proportion is best approached through a well-understood study of that of music. The two theories diverge widely enough after a time, but up to a certain point,—a point which it is of the highest interest and of critical importance to determine,—the elements of harmony are the same for both. What will be the fate of architecture when this new school of æsthetic physiologists,—of positive philosophers,—finds time to fasten upon it, may be shrewdly forecast from what is now put forward as the solution of "the whole difficulty of harmony and discord."

With a word or two on this matter,—a warning by no means premature,—we will conclude. The difficulty itself is said to be to explain why it is that musical notes of which the vibrations do not stand to each other in numerical relations of frequency, should produce unpleasant sensations. This seems much like making a mystery of the unpleasantness of walking arm in arm with a friend who is always changing step,—of enduring the unconcerted trot of a horse with one leg lame,—of running up a flight of stairs with entirely irregular risers. However, what of the explanation? The explanation is an inference assumed by its positive expression to be a certainty, upon the warranty of a discovery which is all the while admitted to be problematical. Fallacy, in this form of illicit substitution, not unfrequently insinuates itself among our reasonings, but not usually with so little care in the adjustment of her mask as is evinced in enunciations like the following:—"In the human ear, it is told to us, Helmholtz has shown, with great probability, that Corti's organs in the cochlea are a series of elastic bodies, each with a different natural period, arranged in similar order so as to be severally excited by recurring undulations having different periods of vibration. Each of these organs is connected with a certain number of separate nerve-fibres. When the various stimulations *thus excited* are communicated to the auditory centre, they *are* there cognised as differences in pitch," &c. For consistency we should read,—"If so excited, and if so communicated, they possibly may be," &c. (Physiological Æsthetics, by Grant Allen, p. 108). As frank a confusion will be found, p. 106, where the "apparently" of one sentence appears in the next, as if by natural evolution, as an absolute assertion. Apparently, then, to express our own view with careful guardedness,—apparently and with great probability, we may congratulate the æsthetics of architecture on having been let alone, in some degree, by the physiologists so far, and trust devoutly to be let off as mercifully in future.

The Society of Arts' Conversazione took place at South Kensington Museum on the 27th of June, and passed off agreeably enough.

"PAINTERS' ARCHITECTURE."

UNTIL very recently, we suspect, painters' architecture has been regarded by professional architects with a feeling not entirely flattering to the less exact art, and in the present day of brotherly love and respectable tolerance, architects and painters have, we fear, been known to disagree. Even now, the painter's opinion on the beauty of the shop-front or the design of a cathedral is, we believe, as little regarded as, perhaps less than, the crossing-sweeper's estimate of his ability to raise the level of Piccadilly would be considered by one of our biggest contractors.

We remember many years ago, on walking through the Borghese gardens with a distinguished architect whose artistic fame comfortably reposed on having designed the Gothic stabling for a well-known royal palace not a hundred miles from London. On our admiring the picturesque outline of the so-called "Raffaelle's Villa," which then existed, overshadowed by the two beautiful stone-pines, "Ah!" remarked our friend, "*Painters' Architecture*," and we picked up the expression and reverently adopted it, and we regret to say we have ever since, in using the expression, found it difficult to avoid a slight intonation of contempt.

But how is it that painters' architecture never offends one, but, on the contrary, is invariably charming, as we find it represented in the illuminated missals of the earliest times down to the seventeenth century, and who can be so rash as to quarrel with the architecture in Paul Veronese's magnificent picture, the "Marriage of Cana"? He at least must have been at perfect accord with the architectural friend who helped him in his great undertaking.

After a careful inspection of the architectural designs at the *Salon* of this year, regarding them from a painter's point of view, we have nothing to complain of on pictorial grounds; but, as architectural creations, they simply seem hideous fallacies.

There appears on the part of all French and of all Continental architects just now an emulative desire to approach the overdone manner of M. Garnier's showy new Opera-house, which, by the way, gains little now that we are able to see it from the further end of the new Avenue de l'Opéra, at which distance we are still able to detect the coarseness of its details.

Painter-sculptors are just now showing an ability which sculptors are quite ready to recognise, and sculpture and architecture seem to have been so combined in the graceful minds of Jean Goujon and Jean Cousin of the sixteenth century that if it were not for the requisite bas-reliefs of the former, and the magnificent tomb of Admiral Chabot by the latter, it would be difficult to determine the exact position of these artists.

Had the municipality of Perugia, when they proposed to decorate their *Cambio* in the fifteenth century, allowed their time to be wasted by the uncertain views of critics, and the disputes of painters and architects, we should not have had, in the present day, that perfect specimen of a decorated apartment to guide us for the future.

Such drawings as M. Bruneau's "Château de Coucy," exhibited in this year's *Salon*, in which he represents with great exactness the actual state of that interesting specimen of a Gothic fortress, and which fully realises the painter's love of picturesque Mediævalism; or M. Darcy's restoration of the Hôtel de Ville of Dreux; leave us nothing to desire in the way of accuracy and perfection of manipulative excellence, of drawing or local colour. Indeed, whenever the teaching of that admirable artist, M. Viollet-le-Duc, has been carefully regarded, as in these drawings, the result is invariably satisfactory.

Many a Lancashire idler in France, this summer, as he extends his wanderings into the pleasant valley of the Department of the Seine-Inférieure, and probably looks covetously at the copious stream that waters it, will scarcely fail to gather a hint for his contemplated "big house" at home when he sees the magnificent piece of ancient brickwork, the Château d'Auffay, which M. Reboul proposes so skilfully to restore.

The admirable manner in which French architects represent the actual state of the building they may be about to restore, and the delicate way in which they mark the proposed additions, cannot too carefully be studied, and such drawings as we have named already, and all those executed for the archives and the publications of the Commission of Historic Monuments, will show for centuries to the cavillers in the much-vexed question of restoration how far the work has been mischievous or useful.

In 1830 the French Chambers, recognising that the restoration of the historic monuments of France was a subject of public interest, a commission was formed for the purpose, and a first instalment the sum of 80,000 francs (3,200*l.*) was voted. M. Vitet was named director, and in 1833 was succeeded by M. Merrimée, who, during his twenty years of office supplied in a series of reports information so valuable that the real interest of the question was thoroughly appreciated, and recently the sum voted for the restoration of the historic monuments of France was 1,360,000 francs (something more than 50,000*l.*). The smallness of this vote greatly restricts the field of operations, but, in addition to minor works of reparation, the Commission consecrates each year a considerable portion of its income to the restoration of some monument or monuments of importance. Each project has to be supported by photographs which exactly represent the actual state of the building, and permit the Commission to pronounce, after careful examination, its approval or the contrary of the restoration proposed. Might not this plan, if adopted in England, greatly simplify the much-vexed question of restoration? As may be easily understood, one of the most important services rendered by the Commission has been that it has assured the education of artists capable of restoring the old edifices of France. Each year among the architectural works exhibited at the *Salon*, the Commission chooses those works which denote the most serious study. The artists are then given some small piece of restoration to carry out, and according to their abilities are employed on more important works. It may be observed as a sensible proviso that each of these architects is more especially charged with works concerning the monuments of the same region, he being most likely thoroughly to understand them.

A continuous watch is exercised over all works in course of execution by the inspectors-general or the Commission, who visit the spot, and are called upon to give reports. This inspection is further completed by a controller charged with the verification of the accounts presented by the architects. Such is in its essential points the organisation of the service of the Historic Monuments of France,* and if such a system were carried out in England, it would hardly be in the power of Mr. Ruskin and others to speak of "accursed architects' jobbery."

There may be recondite or there may be very simple reasons why painters' ideas of architecture are but little regarded by architectural professors; but surely architects as artists must admit that fine art consists in transferring under a beautiful form the impressions received by the brain of the artist, and practically expressing satisfactorily his happy thoughts. The material way in which the impressions are treated matters little: the man who thinks and works will make use indifferently of pens and paper, brushes, the modelling tool, or the pencil and T-ruler; a beautiful symphony is at least as great a work of art as a beautiful statue, and a great work in prose or verse is even more enduring than a great picture. Dante, Michelangelo, Brunelleschi and Mozart must be content with the equality of their fame; their great thoughts have made mankind better and more thoughtful, and in the present day, when we have all so much to make us happy and contented, do not let painters and architects, whose duty it is to surround us with substantial well-decorated dwelling-places differ as to which is the better able to inform already instructed.

Co-operative Church Decoration.—According to the *Sherborne Journal*, a new development of the co-operative principle is projected in connexion with Church decoration. Some clergymen, it is said, are trying to form an association under Episcopal patronage for undertaking ecclesiastical decorative work, at what is called trade price. All members of this society would obtain church furniture and stained windows at a fraction above cost price; and if the scheme prove successful it will be extended to the building of churches and schools.

* The Commission possesses a collection of some 7,000 drawings, 3,000 engravings, 4,500 photographs, and 1,200 ancient and modern architectural works, a catalogue of which is at the disposal of any person who may wish to refer to the document, at the Office of the Monuments Historiques, 3, Rue de Valois, Paris. A valuable architectural map of France has also been published.

THE HANDEL FESTIVAL ARCHITECTURALLY CONSIDERED.

THE occurrence of a musical performance on great a scale as that of last week can hardly ass without suggesting one or two points in ference to the practical connexion which archi- cture has with such great celebrations, in gard both to effect and to convenience of aring: points which are certainly not here nsidered in these columns for the first time, t which are among the things which it is ecessary continually to bring forward anew om time to time to gain any attention to them all.

Perhaps nothing would have more struck a sitor from another country, who had neither eard the Handel Festival nor seen the Syden- m Palace before, than the apparently strangely cidental nature of the area in which the per- rmance was given, and its want of relation to e purpose of the gathering. Nothing about e place seems to be planned for the purpose, ve only the large tier of seats arranged theatre- se for the performers, and the concave ceiling er them for throwing forward and confining e sound. The orchestra is crossed and inter- cted by iron columns and girders, and the area which the audience are seated is not defined onstically in any way, but merely arbitrarily arked off by a temporary barrier; it extends nsiderably to right and left into the nave, hich is perfectly open, and in some places der galleries which greatly confine and nother the sound.

In fact, like a good many good things in art, e Handel Festival sprang up in a somewhat cidental manner, and the Sydenham building one afforded space for it, and was utilised cordingly; and, considering the nature of the ructure, and that nothing in its plan or con- ruction was originally designed in reference to ch a purpose, one may be surprised to find e result so satisfactory as it is; and perhaps it ay be a question whether, for a celebration hich takes place only once in three years, it uld be worth while to attempt any more orough and permanent provision in the way of hestra and auditorium. On the other hand, are is also the suggestion which arises, whether ch colossal performances might take place ener, or at all events be regarded sufficiently an established form of National festival to ake the provision of some permanent building,— ce for all,—an idea worth carrying out. And e consideration as to what results should be med at in such a building, in the light of the perience of the recent festival, may not be rown away, if only as matter for suggestion in gard to buildings erected for music.

Architecturally speaking, it is, of course, easy imagine the effect of the Handel Festival, to e eye, improved. The intrusion of the con- ructive supports of the building upon the hestra space, already alluded to, is unsightly a degree, and conveys at the same time the pression that it must be interfering with the ect more or less. But this is a matter which ly a reconstruction of that portion of the build- g could obviate. The design of the great gan, again, is exceedingly poor, and has the rious defect that it does not give the real scale the place, but rather lessens it than otherwise. ery person unaccustomed to the place is sur- sed to hear what is the real size of the organ, d the fact that the orchestra never looks its e is mainly due to the clumsy design of the gan-case. A new case, of better and less nmonplace design, is by no means an impossi- ity, without disturbing any essential part of e structure, though, of course, it would cost nething appreciable. Even a different scheme colour (if there can be said to be any such ng as a scheme of colour in it now) would ect a material improvement. There are other ngs more easily improved. It would be satis- tory to see some less commonplace ornament nd the margin of the orchestra arch than the rse painting of musical instruments and other rices in panels of blue and buff, and something re of a decorative effect in the great coved ling formed by the sound-board over the hestra. It might be possible, without very ch consideration or cost, to contrive a rather re effective ingress for the audience to the area n letting them find their way in at an odd ner, as if they were going where they had no ht to go, and wanted to get in unobserved. A ler entrance, and something like a temporary orative archway to pass under, would make the difference in the world in the appearance of things. Beyond that, it would not perhaps be easy to do very much; except that the painful ornamental features in front of the opera-theatre, which forms the back of the Handel audience area, might at a convenient season be ameliorated If a building were ever to be erected for the purpose, its architectural treatment would, of course, be a thing to be considered *de novo*, and in relation to site and other particulars.

But the arrangement of a great music-hall in regard to acoustical effect is a subject we may get some hints upon from the Handel Festival performances. The disappointment felt by many on first hearing the choruses at the Handel festivals is, that the effect does not seem by any means commensurate with the means employed, when we compare the numbers with those of an ordinary chorus. There are reasons for this apart from any consideration of the nature of the building, partly arising from the fact that the *timbre* and travelling power of the individual voices is unchanged, and the velocity of sound is a "constant" also, while the area to be filled is greatly increased; and, in consequence, the several "parts" do not strike the ear with that sharpness and precision which is felt with a smaller number in a smaller place, but seem by comparison muffled and confused. This is, and always will be, the case when we get to concert-rooms above a certain size; and, as a general rule, the building of very large rooms for music should be discouraged, as it is certain to lead to a good deal of disappointment, though it may be worth doing for certain special purposes. But so far as the shape and make of the building influences the effect, we find that observations of the effect at different parts of the Crystal Palace during the late festival are significant in confirming views which have been previously stated in these pages and elsewhere. The great difficulty at the Crystal Palace is in confining the sound to where it is wanted. The material of the building is completely against it, in the first place. Glass is not a reflector of sound to any great extent, nor does it, like wood, vibrate in sympathy with musical sounds, so as in any way to assist them. It was said, we remember, that at the first festival the Hallelujah chorus was heard half a mile from the building. All this, of course, is sound lost to the audience; and the conviction of this loss of sound led to the construction, after the first Festival, of the arched top or sound-board over the orchestra, which we have not a doubt has greatly improved the effect: not having been present at the first Festival we cannot make a direct comparison. At the last Festival, we remember that the openings into the long nave, on either side of the transept, were filled with a great canvas screen suspended from the roof, with the view of shutting in the sound more; this was not done on the present occasion, and perhaps the omission was right, for the fact is well known that all things of the nature of stuffs absorb sound, and it is very possible that the canvas screens swallowed more sound than they reflected. But it was remarkable how the sound got about the building, nevertheless. Standing in the end of the Egyptian colonnade while a chorus was being sung, we heard a well-known phrase for the high notes of the basses almost as loud, as it seemed, as we could have heard it in front, though the singers were not only shut out from view, but singing away from our position and towards another quarter of the compass. This, again, shows how much of the effect of the mass of voices escapes those who (to put it in a commercial way) have paid high for the said effect, but cannot have it all to themselves; and this is why, also, the Palace is thronged on the Festival days with crowds who do not purchase seats in the reserved area, but who have given sufficient practical attention to the matter to know that there are many parts of the building adjacent to the reserved area where they can hear just as well as a large number of those who have paid their guineas for seats within the barriers. On the other hand, while the sound thus finds its way about the open spaces of the building, far beyond the limits of the Concert-room, we have it on the testimony of some of those who sat within the area, but in the portion under the galleries, that here the effect was very much lost and confused; which was to be expected, in fact. In such a case, just as the floor overhead shuts out light and makes a gloom beneath, so it shuts out sound,—all the reflections of sounds which do not travel straight towards the low opening,—and produces "sound shadows"; for it may be taken as a general rule that whatever shuts out sight shuts out sound also. But the most marked result from our observation at the Handel Festival is as to the superiority of a raised position for hearing. In the second gallery, high above the orchestra, the effect of the chorus was tremendous in some instances, and in all cases there was an impression that everything reached the ear,—that one heard all that was to be heard. Sitting below, in one of the blocks in the level part of the area, the effect was weakened by one-half; it was quite feeble in comparison. The contrast was even more striking with the solos. These were perfectly well heard in the gallery, and that not merely in the front portion, which is comparatively near to the orchestra. From the cross-gallery, running behind the top of the opera-theatre, Mr. Santley could be heard quite clearly and effectively in "The trumpet shall sound," in the "Messiah"; whereas, from the level seats in block KK, some 50 ft. nearer to the orchestra, the same singer's voice sounded comparatively ineffective. But what is still more noticeable is that a change from the level seats to one of the raised seats in the rear of the area, only two or three steps higher than the floor-level, made quite a remarkable and disproportionate difference in the effect, which was at once greatly strengthened, and everything rendered clearer and more telling. These results must surely have been experienced and noted before, and yet people will go on building music-rooms with flat floors, deliberate contrivances for preventing audiences from hearing what they are intended and supposed to hear. The experience of observations from various parts of the building at the Handel Festival really ought to convince the architects of music-rooms that they are not on the right track in this respect.

If it should ever come to pass that a building should be erected purposely for such great festivals as these, it may be suggested that timber might well play a large part in its construction. There is no doubt that, with all the grandeur of the Handel Festival chorus even under existing circumstances, it is heard to great disadvantage, not only from the escape of sound, but from the unsympathetic nature of a glass and iron construction in regard to musical sound. The great advantage of timber in this respect is that it sympathises with and reinforces sound without sharply reflecting it. Apart from general observation on this head, we have (as was pointed out in a paper on the subject of buildings for music read at the Institute of Architects a few years ago) some special testimony on record in regard to the effect of timber constructions as musical. It was the testimony of the late Mr. Chorley that no building could well have been more satisfactory in its acoustic effects than the temporary *Fest-Halle* erected at Bonn for the Beethoven Festival, and made (under the superintendence of Zwirner, the architect at Cologne Cathedral) entirely of timber, with rough fir poles for columns. It was the testimony of General Scott, quoted in the same paper, that the resonance at the Albert Hall was never more perfect than when it was filled with a forest of scaffolding. As it is, the Albert Hall is a remarkably good building, acoustically, for its size; and that it is so is due to the wooden lining, which provides what we want in such a case,—resonance without echo, which cannot be obtained so well by any other material. Here, again, the experience of the Albert Hall confirms what the Crystal Palace forces upon our notice,—the bad effect of glass and iron musically; for the glass dome of the hall has been the great difficulty with it acoustically, until the *velarium* was introduced; and that is not a really satisfactory way out of the difficulty, as it not only destroys echo, but at the same time absorbs sound to a greater extent than is desirable. Still, the Albert Hall is, on the whole, a great success acoustically, and it is so owing to the right materials being used for the most part, and not by any means owing to its elliptical shape, which has, in reality, only a tendency to focus an echo, and which, as a matter of planning, is completely wrong, and an unfortunate instance of the adherence to precedent; the form of the Roman amphitheatre, an essentially spectacular form, having been, by the oddest system of reasoning, adopted for what was essentially intended as an auditorium; and it is only this fact, and the defective size and arrangement of the orchestra, which interferes with the complete success of the Hall as a place for a large musical entertainment.

What is required in such a case is to concentrate the sound in one direction; to get rid of

return echo without losing resonance; and to reduce to a comparatively small proportion the amount of vacant air-space in which sound will get dispersed and lost. If, following out this idea, we were to take the Handel Orchestra at Sydenham as it stands, as a starting-point, and in front of it place a properly closed-in area of the same width, rising with a regular curve from front to back, and with the back wall so contrived as to break up and disperse and return echo, it seems not unlikely that we might extend the area lengthways from the orchestra to nearly double its present dimensions, and yet enable those at the back to hear the choruses satisfactorily. At the Crystal Palace a great part of the sound is not driven forward at all, but escapes at each side into the nave, as well as permeating the glass roofs and walls. Confine it properly in one direction, and build with resonant material, and it might be heard by even a larger audience than now hear it, and with more satisfactory effect. There would be, for those at the extreme end of the room, an appreciable interval of time between the striking of the chord at the orchestra and the hearing of it at the other end, but this would be the same for all the instruments and voices, and each auditor would hear all the sounds simultaneously, though those at the back of the room would have them a trifle later than those in front.

A point worth notice, in regard to the effect of music in great areas, is that heavy percussion instruments, such as drums of all descriptions, tell very greatly in proportion to the other instruments and to voices. This was noticed in the *Builder* some time since, in some remarks on the musical performances in the Albert Hall on the occasion of the opening of the International Exhibition of 1871 (see *Builder* of May 6, 1871), and the experience of the Handel Festival confirms it. The abnormally large kettle-drums made (I suppose) for the occasion, and which caused the members of the chorus who were near them to put their hands to their ears, were really an overdose of "percussion," and seemed to dominate over every other sound, and might very well have been used with more of Christian moderation. This is perhaps a musical rather than an architectural point; but it is not unimportant, in reference to the objects of a building, to note what kind of sounds are most felt in a large area: and there can be little question that sounds in themselves harsh and violent tell proportionally more, in a large space, than those of a quieter and more sustained character.

H. H. STATHAM.

THE HOUSEHOLD AT DIFFERENT ERAS.*

THE "GREAT MOGULS."

Sir Thomas Roe said:—"One thing is remarkable in this Akbar Shah. When it was told at the Court that the Portuguese had hanged the Korán about an ass's neck, and so whipped him through the streets of Ormus in contempt of the Muhammadans; and the old Empress, his mother, came in great rage, and demanded of him that our Bible might be treated in like manner at Agra, the Prince replied, 'No; though the Portuguese had done very ill, yet religion must not suffer for their crime; and the Bible, being an innocent book, was not to be disgraced because the Korán had been so.'"

Embassy from James I. to Jahánghir, A.D. 1616-18.

ALTHOUGH the Crusaders brought home to Western Europe stories of wonderful lands situated far beyond the Holy Sepulchre, and although in 1322 Sir John Mandevil added to the chronicle of his travels fables about India current along the coasts of Syria and Arabia, trustworthy European descriptions of the peninsula, made from actual visits to its shores and interior, date only from the latter half of the sixteenth century. When, in December, 1576, John Huighen van Linschoten sailed for the Portuguese Indies,—so they were called in his time to distinguish them from the West or Spanish Indies,—the English people were hotly divided upon the great question of a national religion: Queen Mary had done her part to settle it in one fashion; Queen Elizabeth was doing her part to settle it in another. The Emperor Akbar, absolute master of Hindústán, from Lahore downwards to the mouths of the Indus and the Ganges, inculcated religious toleration among millions of different race and language, of hostile creeds, of various sects and castes who obeyed him. The spectacle of such power astonished those who penetrated to the Court of the Great Mogul; and the journals they carried home, the accounts which from many sources reached this country during the closing years of Elizabeth's life, and the beginning of the seventeenth century, justified Milton's extravagant allusion to "the wealth of Ormus or of Ind." Linschoten's "Voyages," printed in London in 1598, had already furnished Shakespeare with a humorous simile, for in "Twelfth Night," Maria, telling of her own tricks and Malvolio's wrinkles, says:—"He does smile his face into more lines than are in the new map with the augmentation of the Indies,"—the maps of the time being positive cobwebs of geography.

But before the death of Elizabeth very few Englishmen had passed along the route from Surat to Agra. The capital of the Portuguese Indies was Goa. Linschoten's account of it, about the year 1576, is as amusing as it is graphic and minute; and his evident astonishment at the Portuguese, the half-caste families of note, and the native "Christians," both wife and slave, who "keepe worshipfull and bountifull houses,"—who, when they go in the streets, "steppe very softly and slowly forwards with a great pride and vaineglorious majestie,"—is exactly the sort of description likely to have stirred the curiosity of our ancestors. Notes of travels in India, made a little time afterwards by people of different countries, have been preserved and collected.* One Thomas Stevens sailed thither from Lisbon in 1579, and in the next year one John Newberry started for India. In 1585 the latter left a party of Englishmen at Fatahpúr to go to Lahore; among them was "Mr. Leeds, the jeweller, being entered into the service of the Great Mogul, who gave him a house, horse, slaves, and, besides, a good salary." George Raymond and James Lancaster went to "divers parts of the East Indies" about the year 1591; and five years after, the Great Mogul,—the Emperor Akbar,—sent to Goa for the famous Jesuit, Xavierius, who spoke the Persian and the Hindús'áni tongues, on purpose to argue the doctrines of the Christian religion with the Muhammadan priests. He is said to have accomplished his part "like a Christian, and to the honour of the author of his religion."† The presence of a colony of Jesuits at Agra, where it still flourishes, was inimical to the success of a political mission from this country to the court of Akbar. One John Mildenhall, an informal ambassador, reached Lahore in 1603, and proceeded thence to Agra, for the purpose of obtaining the Emperor's consent to the English attacking the Spanish in Indian waters. Of course, the Portuguese priests opposed the envoy, and not until after six months' study, when the latter could talk to the Emperor without the aid of an interpreter, was that consent obtained. In 1615 the English who resided in Surat were under the protection of Jahánghir, Akbar's son and successor. In October, 1616, Master Thomas Coriat wrote to his mother from Agra, where he had been staying some fourteen months, during which time, to use his own words, "I abode in the house of the English merchants, my deare countrymen, not spending one little peece of money, either for diet, washing, lodging, or any other thing." In December of the previous year, Sir Thomas Roe's embassy started, bearing a letter from King James, which refers to articles concluded by one Captain Thomas Best. The Emperor Jahánghir's answer, permitting Englishmen to carry on trade within his dominions, terminates with the assurance that "if any in my country, not fearing God nor obeying their king, or any other, void of religion, should endeavour to break this league of friendship, I would send my son, a soldier approved in the wars, to cut him off." A few years before, one Captain Hawkins had been entertained by the said Emperor; and Mr. Salbank, who, in 1609, went from Surat to Agra, described Fatahpúr-Sikrí‡ to be "every whit as big as London." Near that time, William Finch, a merchant, took the same road, and continued his journey to Delhi and Lahore. John Albert de Mandelslo followed a similar route, about 1638, during the reign of Sháh Jahán, the soldier approved in the wars before mentioned; and Bernier, the wandering French physician, who wrote his account of Agra and Delhi at the latter capital in 1663, has left a vivid picture of the Court of Aurangzib in a book which, in 1672, was very badly "Englished out of French."

Bábar, the founder of the Mogul dynasty,—in what is assumed to be an autobiography, but which contains only a fragmentary portion of his life,—describes the country he has invaded and conquered as very extensive, rich, and populous, but extremely ugly. At Agra, but where or on which side of the river it is difficult to say, he wished to build a city; he "began making tanks, and wells, and a Hall of audience, and went on in the Indian manner without any plan." He had previously lamented, much Englishmen lamented some 300 years after, the impossibility of finding good musk melons, "the Hindús," he says, had neither "ice, bat colleges, candles, torches, nor even a candlestick." This last household utensil was supplied by men who held in the left hand a trip containing a wick, and in the right hand a gou containing oil, with which the wick was moisten as it burnt away. But in compensation the were innumerable workmen of every trade. obtained hundreds of stonecutters, to use Oriental method of indicating large number in Agra alone. His private house, or Hall, more correctly, his stone tents, being finish he built a bath, doubtless below the level the soil. It was an edifice paved and roo with red stone, within which it was possi to escape the three torments he enumera of Hindústán,—the heat, the wind, and the d In the garden he made around it, the rose the narcissus were planted. Others followed example or his commands; and "on that s of the river" there were soon so many garden quite novelties to the Hindús—and watercour that "the men of Hind gave the name of Ca to the place in which they were situated." Agra of Bábar, we suspect, was on the east bank of the Jumna; that of Akbar—the A of the present day—being on the western ba It was, however, a city of some consequen When Bábar went to a banquet at the house Sultan Muhammad Bakshi, on the 13th November, 1528, the streets were spread w rich carpets. A little more than two ye after this event he died.

His description of a Hindú town tallies w what may still be seen in the large villages, over the major portion of the native towns, the present day. It was built very quickly, the destruction was often equally rapid; houses consisted of reeds, bamboo ca and sometimes timber. "On the approach an enemy," he explains, "the inhabitants b their more cumbrous effects, and, each takin burthen of grain, they retire into some fort natural stronghold." The early Muhammad cities were not much better or stronger. nomadic character of the Mogul conquer prevented the development of the cities th founded. Of Bábar's "palaces" not a tra remains. The Palace of Akbar, at Fatahp Sikri, is really a camp in stone. Jahángi delighted in what Sir Thomas Roe called "Movable Court." The founding of a new c to which the Great Moguls, one after anoth aspired, was merely the planting of the Imper residence in the open country, or on a plain, a short distance from an old city. It was quic surrounded by the houses of the Empero immediate dependents, by the huts of ca followers and others, who were permitted to squ at a proper distance wherever they found it c venient or possible. What one man could complish in India by the force of absolute w and the wealth of plunder, at a time when l was the appanage of the strong, may be n inaptly illustrated by actual occurrences, und a refined system of government, by the pow of economy, and at a time when property secure.

Such a digression cannot fail to be profitable any attempt to describe the houses of the mass and the character of the indigenous populatic only slightly improved since the seventeenth ce tury. Imagine a wide expanse of river, lal jungle, and plain,—a famous pigsticking d trict,—about a hundred miles north of Calcut It is a broad, populated estate, belonging to English gentleman, and in the centre of it, the borders of a lake, is a big white house which he resides all the year round. He h made miles after miles of roadway, cutting do jungle, filling up morass, and spanning rivule The estate is divided into districts, each direct by a native overseer and inferior officers, w superintend, according to their master's wi the clearance of the land, be it jungle or was under their charge. The rumour runs, perha that a new road is being made, that it is opene and that fresh ground is ready to be occupie On each side of this new road, the land has be cleared, and stakes are fixed from distance distance. Amidst them, on a given day, stump of bamboo is planted, and the "ta

* See p. 627, *ante*.—The Middle Ages.

* Many of them will be found in Dr. Harris's "Voyages."
† Sir Thomas Roe and others.
‡ About eighteen miles from Agra.

* The Ganges is often described as entering the oce by a thousand mouths.

m" is beaten. Forthwith, from far and ear, come lean and miserable-looking crea-res, strong men and rough men, of several ades of blackness, of diversity of low ste and of none; and they are followed by eir wives and children. On condition that till and keep what is allotted to him, each an obtains a strip of land. The materials ith which to build a house,—bamboo sticks, eds, earth, and long grass,—are close at hand; ots to plant and seeds to sow are given to m; and for a fixed period no rent, in money kind, is exacted. In presence of the well-to-do ficials, men of their own religion and language, e incoming tenants are abject in their submis-on. At the sight of the English owner the en bend to the ground, and seek to touch his et; the women gather the children about them id hide their faces in their infants' arms. All tray a feeling that the some one before them removed from themselves by impenetrable d incomprehensible agency; and to such a feel-g, in the time of Jabánghir, was undoubtedly ded a sentiment of horror and dread.

This Emperor's "Movable Court" was ways followed by a vast multitude, and it oved rapidly from place to place. Sir homas Roe saw one "set up and finished four hours, though it was done with very eat order and exactness." The Emperor was id to "go a progress," which resembled e remove of a nation. The ministers, court notionaries, a part of the female establishment, reign ambassadors, artificers of every kind, re him company. His pavilion was placed in e centre, and isolated from all around. Every e knew what ground to take, and how far om the Emperor he must pitch his tent or raise me kind of shelter; every one knew where to go r the supply of his wants,—for special streets, to speak, were devoted to different trades-en, artificers, and others. Elephants, horses, d oxen were arranged in specified places; ey were always ready to start for some other mping-place. If any of his followers attempted, ter the command to move had been given, to ay in the quarters they had erected, Jabánghir uild order their tents or huts to be fired; for s idea seems to have been to raise a city at s nod, and to raze it with the same celerity.

these progresses the Emperor was perhaps rried on an elephant; but in 1638 Albert de andelslo told a story of "When the Mogul rs abroad;" he was then usually mounted on fine Persian horse, or seated in a coach drawn two white oxen, or carried in a chair.

The fact that Akbar possessed a councillor as le and wise as Abúl Fazl probably contributed no small degree to make the reputation for andeur and goodness with which the name of at Emperor is surrounded. The "Ayin kbari," a book written by Abúl Fazl, gives a inute but irregular account of persons and ings connected with the government of the untry, of a town, and of the Imperial house-ld, down even to the clothes and victuals of s Majesty. The minister describes Agra, the y of Akbar, as a large and magnificent y. On both sides of the river Jumna were lightful houses and gardens inhabited by ople of all nations. His Majesty erected fort of red stone, which contained within e walls "500 stone buildings." But William nch, who passed through the city about five or x years after Akbar's death, says that it was ly a village in the time of Akbar, who re-oved his court thither from Fatahpúr-Sikri. n Imperial city when Finch saw it, the houses its "considerable people" were built of brick d stone, with flat roofs. Those of the common ople were of mud, and thatched, "so that es once kindled made horrible work in those rts of the city." It is not unlikely that many the buildings, erected by Akbar and háughir, within the fort of Agra, were pulled wn in the time of Sháh Jahán, and their aterials used in the walls of his new marble lace. Even in Jabánghir's reign, Finch scribes Fatahpúr-Sikri as "an unfinished and rtly a ruinous city." This was about 1610; and hen he got to Delhi he found it like "many her noble cities of India," lying partly in ins. Further north at Lahore he remarked at the streets were well paved and the build-gs lofty; they were mostly of brickwork, and set out with all curiosities of carving about the ors and windows." He remarked also the ravanserais along the great routes, especially e between Agra and Allahabad, said to be able accommodate a thousand men, very well built d well contrived. The road from Agra to Lahore had been measured by order of Bábar; he had directed small minarets, or rather huge milestones, to be set up at certain distances, and two Englishmen who travelled over it in 1610 found every eight or nine miles a fine serai along a road 600 miles in length.

The rule observed in these buildings was never to open before daybreak. European travellers appear to have been astonished with the freedom and security enjoyed within the inclosure. Those who came first were first served, and "'tis in vain," said one, "for any other that comes after him to have a mind to the same apartment." The remains of a large serai are to be seen at Fatahpúr-Sikri, close to the celebrated Elephant Gateway; and there still exists a bridge carrying a closed gallery, through which the fair ladies of Akbar's Hindú establishment passed unobserved to a place in the caravanserai, where the embroideries, shawls, muslins, &c., brought from Persia, Cashmere, and elsewhere, were presented to their gaze. Bernier mentions another important one at Agra, close to the Táj Mahál. He says that city contained more and finer caravanserais than Delhi. One erected at Delhi, at the cost of Sháh Jahán's eldest daughter, was called the Caravanserai of the Princess. It was a large arcaded square, likened by Bernier to the Place Royale, then a novelty in Paris; but "with this difference, that each archway was separated from the other by a partition, and at the end of each archway was a little room closed by a door." An Indian inn, when the Great Moguls were masters of Hindústán, was simply a bazár, such as is still common, built round a hollow square, and approached through a single gateway.*

Our fig. 1† is a type of caravanserai with the entrance at *d*. The arcades, B, run all round, *b*, *b*, *b*, *b*, *b*. The plan of a portion, to a larger scale, is drawn in the middle of our diagram. A is the little room shut by a door, B the

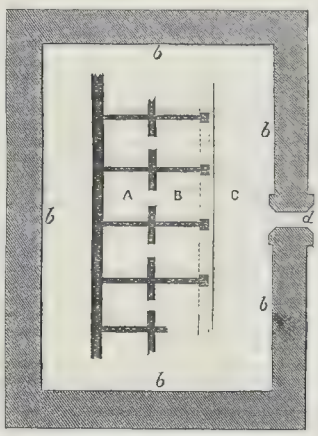


FIG. 1.

open archway separated from its fellow on either side by a partition, and C is the uncovered square open to the sky. A caravanserai was sometimes a two-storied building; and the flat roof, over the arches at B, formed an open terrace, from which the little rooms over A were entered. On arriving, a traveller took possession of one of the compartments B; he placed his goods, for security, in A, and he reckoned his women among his goods. He himself lay in B. If he chanced to get upon the terrace over, his wife and valuables were deposited in the closed cell while he lay in the open upon the terrace. He was within a walled inclosure, a place of security during the hours of the night, and he required little else. A common table or a common kitchen is opposed to the precepts of the Eastern religions. Each traveller had his own slaves and attendants to cook for him and to wait upon him.

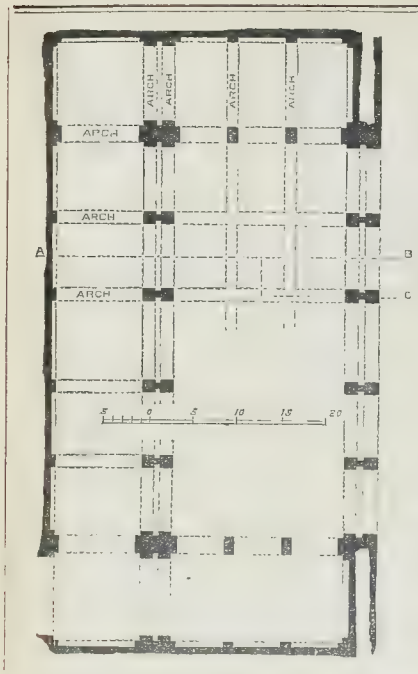
In the instructions drawn up by Akbar's minister, the police superintendents are enjoined to cause all travellers whose persons are not known to alight at a separate serai. They are also to be particularly attentive to the night patrols, and to keep a register of all the houses and frequented roads. This part of the "Ayin Akbari" is most valuable, for it is unspoilt by adulatory phrases and rose-coloured descriptions. The police superintendent in each town is deputed to ascertain the income and expenditure of every man. He is to compel every man who has no occupation to belong to some trade or calling, or to learn some art. He is to select out of each class or caste of artisans one to be at the head of the craft, and another to be the broker for buying and selling. He is to see that the market prices are moderate, that the weights are correct, that the streets are cleansed, that the lanes are kept free from obstructions, that no one enter another's house without the owner's consent, that no private person take forcible possession of another, that no one be bought or sold as a slave, that no woman be burnt with her husband's body against her will, that no one be impaled. It is further directed that the cemetery be outside the city gates on the western side; and that the robe of mourning consist not of blue but of red garments.*

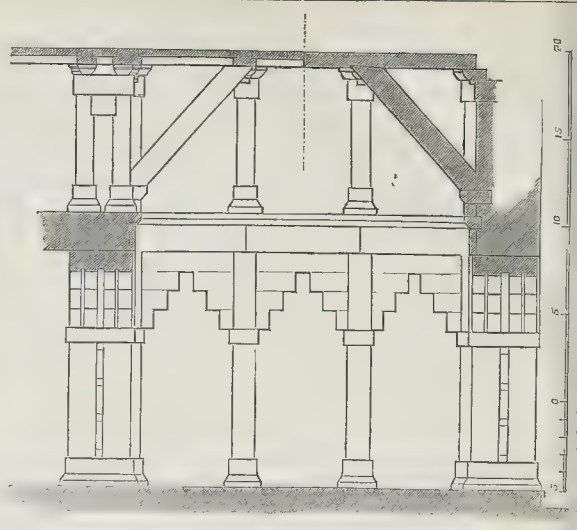
Some of the instructions to the officers of the Emperor's household are equally interesting. Like Louis XIV., Akbar alone sat at the dinner table; his attendants placed themselves around it in "a sitting posture," that is, they squatted on their haunches. Like Louis XIV., more than a hundred years after, Akbar gave his "denier à Dieu"; for first, says Abúl Fazl, "the share of the dervishes is set apart;" then his majesty begins with milk and curds, and after he has dined he says grace. A practice of the court was that the Emperor should be visible to the populace twice in twenty-four hours. At times he held a bar of justice. Then the kettle-drums were beaten; the royal family, the nobles, and the court officials attended in their respective places. Reports were delivered, disputes heard, quarrels adjusted; during the whole time an exhibition of gladiators, wrestlers, and musicians took place. The levee of the Emperor has been graphically described by an excellent writer. A sketch of it, more than twenty years old, though an imaginary, is by no means an unlikely, representation of the probable scene. Mr. H. G. Keene quotes it in his "Agra Guide." The words of Mr. Sherer, condensed, are:—"A roll of drums is heard. . . . . The Emperor is an early riser, and the moment of his rising is announced in this noisy fashion. . . . . Before the gateway a considerable crowd assembles, in front stand handsomely-dressed men . . . . no one with beards, except indeed such strangers . . . . whom neither interest nor necessity compels to conform to the etiquette of the court." Then the door opens, and an officer appears to proclaim in monotonous accents the titles of his master, who immediately afterwards shows himself. He is a broad-chested man, advanced in years, and simply dressed in white muslin with a little gold thread upon it. The appearance of the Emperor is the signal for a loud cry of "Allahu Akbar"—"God is great!" In the same story, very prettily written, there is a description of going to mosque, to what is called a deer-hunt, and to an afternoon discussion; and in the evening Akbar is seated listening to a book. These books are mentioned by Abúl Fazl; they were classed in sciences *according to their several prices*. A part of the library was kept in the quarters of the Imperial women; and this combination of intellectual and bodily delights in the household of the Great Mogul recalls a famous passage

* When, not long ago, the question of providing a building in Delhi for the accommodation of travellers, principally native, was discussed, an answer was afforded by the erection of the "Queen's Serai." It was carried out from the designs and under the superintendence of architects and engineers. As no structure was so suited to the wants of the travelling merchant, or even prince, as the original caravanserai, no modern building is more ludicrously unsuitable for the purpose than the Queen's serai. It is a pseudo-Gothic building, which cost 10,000*l.*, and it contains thirteen towers with pointed roofs, eight of these towers, representing nearly 30,000 cubical feet of construction, are mere waste space; there are neither windows to ventilate them, nor doors to enter them. Nothing in North-Western India can illustrate so miserably, not the genius, but the common sense of the modern builder, when his work is compared with even that of Aurangzib, as this neglect of preceding example in the erection of a Serai.

† Fig. 1 is perhaps a little difficult to understand, for it really consists of two diagrams. The caravanserai itself is simply a quadrangle surrounded by buildings which we have etched. The plan of a part of these buildings is inserted, for economy of our space, in the quadrangle. Neither plan is drawn to any scale.

* Abúl Fazl, in his references to the wardrobe, mentions the manufacture of shawls in Cashmeer; in Lahore, he says, there were "a thousand" manufacturers. "Formerly," to use the words of the translation, "shawls were but rarely brought from Cashmeer, and those who had them used to wear them over their shoulders in four folds, so that they lasted a long time. Now they are worn single by people of all degrees. His Majesty (Akbar) has introduced the custom of wearing two shawls, one under the other." He also says that clothes fabricated in Persia, Europe, and China "have become cheap and plentiful."





SECTION.
Through Line A . . . . B on the Ground Story.
Through Line A . . . . C on the Gallery Floor.

about the son of Gordianus. "Twenty-two acknowledged concubines and a library of 62,000 volumes attested," says Gibbon, "the variety of his inclinations; and from the productions which he left behind him it appears that the former as well as the latter were designed for use rather than ostentation." We suspect that the historian's figures have an Oriental taint, and our suspicion offers a double excuse for recording the parallel. Akbar, however, is said to have heard a book diligently from beginning to end, and to have paid the reader according to the number of pages.

If our readers will turn to Mr. Fergusson's "Indian and Eastern Architecture," they will see, at page 592, a plan of the Palace of Delhi as it was in the reign of Sháh Jahán, who built it, together with the best native buildings of the present city, then called Sháh-Jahánabád. The avenues and arcades in the plan respond to Bernier's description of them in the time of Aurangzib. One of the streets was covered by a long and wide vault, which had openings for light at the top; and on either side of the passage were shops. Artisans of all kinds were located within the walls of the fort during the day, in special bazárs divided among particular trades. There were the embroiderers in one part with the chief who superintended their work; in another were the goldsmiths, in another the painters. Carpenters, turners, tailors, bootmakers, workers in silk and brocade, and in cloth, were to be seen in their different quarters. They came at sunrise, worked the whole day, and returned at sunset to their homes in the city. Outside the castle walls, Bernier does not seem to have found good workmen, though he admits that many of them made "very pretty workmanship;" and that they imitated the European work well. The two principal streets of the city led in a straight line to the two gates of the castle. On both sides were arcades with a terrace over; while at the end of each archway was a little store, and a partition between the arches, as we have already described in the sketch of a caravanserai. Each archway was a shop, in which artisans worked, merchants exhibited their wares, and bankers piled their coins. During the night the different goods were locked up in the store. The shopmen lay coiled up in a thin covering, huddled together upon the empty benches; the master sometimes slept on the flat roof over the shops, and his dwelling-house was often built upon the walls of his store; though many of the merchants retired after business hours to houses in other parts of the city or in the suburbs. These arcaded shops were built of bricks, and probably plastered; but only a few of the private houses in Aurangzib's time were built entirely of brick and stone. Nevertheless, even those made of dry earth walls and covered with thatch had, according to Bernier, courts and gardens; and their walls internally were coated with a fine white plaster. The ceiling of the house was formed of bamboo canes laid horizontally, which effectually concealed the thatch; it was "hard, strong, and very pretty." The frequent fires that occurred, recalling the classical description of similar accidents in Ancient Rome, were due to the huts of bamboo, straw, and earth in which the common people were lodged. Thousands were destroyed from time to time; therein horses that could not be loosened; women that had never been out of their prison,* and who could not brave the open street, were burnt alive.

A house of the better class was arranged with some regard to position and distribution. To be properly placed in Delhi it must receive the wind principally from the north. That position varies in different parts of India, and in Calcutta all the best rooms of a modern dwelling are made open to a verandah facing the south. In the account by Sir Thomas Roe of the houses in the Mogul's country the rooms are described as "nowhere adorned with fine hangings" or encumbered with furniture. Painting on the plastered wall served instead of the tapestry with which, in the seventeenth century, rich Europeans were familiar. On the floor of an Indian house was spread a carpet, which was bed, table, chair, and stool to the inmates. Some of them used a hard quilt on which they lay, "or else a low thing like a bedstead, and bottomed with cotton cloth," which moved up and down with ropes, so that their servants could rock them to sleep. Fifty years after, Bernier found in houses he visited the pavement covered with a mattress of cotton, 4 in. thick, upon which was spread a fine white linen sheet in summer, and a silk carpet in winter. In one corner of the room, next the wall, were "one or two cotton quilts with fine flowered coverings, and set about with fine and small embroidery of silk, wrought with gold and silver for the master of the house, or persons of quality, to sit upon." Round t walls there were arranged several of these ma tresses, with pillows and bolsters laid loos upon them. Just above the height of a ma there were openings in the walls; these we filled with perforated panels cut in a hundr devices, similar, doubtless, to the stone a marble screens which surround many of t tombs. Nowhere was there any glass. Vas filled with flowers were placed in the opening the ceilings of the rooms were painted a gilded, and according to Bernier there we then several houses in Delhi of an equally orna description.

Many of the cities of North-Western India a striking from the bright colour of the red sto with which the larger buildings are constructe and both the red and white stones are wroug in an extraordinary manner. William Fin said it was remarkable that most of the Indi quarries, especially those about Fatahpúr-Sik "do afford a stone which may be wrought any wa by the workman, either cleft like logs, or sawn li planks, into vast great pieces, so as to ceil room or cover houses with, if they had a mind." Hall on one side of the quadrangle of what called Jahánghir's Palace, at Agra, is entire constructed of red sandstone; and Finch pe haps saw it erected, or in course of ere tion. Our fig. 2 consists of a plan and diagra section of it, from a sketch made on th spot; and it shows some of the openings they originally were, not as they are. Stairs the thickness of the front wall, on either side the five doorways, lead to the gallery; a seri of small arched window-openings over the doo ways, and arranged just under the projectin stone eaves, give light and air to the Hal Another building of a similar size, but differenti arranged, forms the opposite side of the qua rangle; and the whole is often said to be part the buildings originally built by Akbar. Litt direct evidence exists to show when they we built, except that it must have been anterior t Sháh Jehán, during whose reign the portio best known of the existing palace were co structed. Our diagram shows a remarkab curiosity of construction: the pillars, strut beams, panels, ceiling-planks, &c., are a of red sandstone, put together as a carpente joins wood. The whole surface of the stone elaborately carved, and the blocks of lintels an corbels, which we have shown with square edge are fantastically cut into delicate mouldings an ornaments. It is the work of Hindús whos building traditions were based upon the earl

* Bernier's mention of the inflammability of houses in the Mogul cities is remarkable, because, in his time, great fires were by no means rare in Paris and the provincial towns of France. But his notice of the women who feared the light is not remarkable. At the present hour many a petty clerk in a Government office in Calcutta keeps his women and children locked up in an outhouse behind iron bars

exclusive use of wood; and much of its uliarity is due to the novel demands made by Muhammadan conqueror upon the skill of workmen. The fact that the method emyed by the Hindús in the construction of ne buildings for the Muhammadans is cartry and not masonry, does not imply that y imitated the wood buildings they had eady erected, or the remains of which existed. t, however, wooden Halls, Temples, and lters of all kinds, were erected in India tury after century, no one will dispute. We not doubt the possibility of such a Hall, as t shown in fig. 2, having existed in Banáras ut the sixth or seventh century of our era, of its having been constructed entirely of od. At that time a Chinese traveller visited eternal city; he left a narrative of his journey, of the countries he saw, which has been nslated by a learned French scholar. Upon strength of a literal translation of this work, which the kingdom of Banáras is described 667 miles in circuit,—containing villages merously-populated which lay very near to h other, and in which resided families of t wealth, whose houses were stored with and precious things,—M. Viollet-le-Duc concocted a Hindú palace belonging to ich merchant, who respected the law of ddha and deprecated the heretical doctrines Hinduism. No chapter of "L'Habitation maine," or the "Habitations of Man in Ages," is more studiously replete with the rms of unalloyed fiction than that in which Viollet-le-Duc gravely describes "L'Inde dbique."

What had been only possible to Voltaire, in a ory which he intended to write of the quest of Bengal, has been actually accomhed by his countryman, the well-known ɔsɔologist and architect. Macaulay said of aire that he would probably have produced ook containing much lively narrative and y grotesque blunders about virtuous and osophical Brahmans. This feat has been essfully performed by M. Viollet-le-Duc in compass of a chapter. At page 261 of Habitation Humaine" is the plan, in black white, of a rich merchant's house of t the years of grace 550—650, and it covers rface of construction measuring 217 ft. 112 ft. There is also a sketch of the "Inté- r du Palais Hindou," one of its rooms being enormous Hall, three stories high, with gales and columns broader, larger, and loftier n the stone Hall at Agra, shown in fig. 2, s the residence of Kalanta, who encounters rgos and Doxi at a public meeting held to uss certain points of doctrine concerning law or religion of the country. A taint "Belleville" pervades the scene; Doxi and anta sympathise in their respective and ost identical convictions. They retire to anta's palace, prettily placed on the banks the Ganges; and Epergos roams all over house to learn a little of its architectural nties. In the uppermost story of the Hall, ch M. Viollet-le-Duc has imagined, the wind, t, and heat are admitted through wide and tall nings totally unprotected by any verandah, eens, or blinds. Openings in other parts of building are surmounted by a one-centred n, similar to the ordinary London brick arch. ceilings are supported by enormous beams of d carved and painted, partly in the Western hic style. The doorways are filled with estry hangings; the floors are paved with ie, alabaster, or marble. Almost every acces- of the modern habitation is introduced. re is a kitchen in the very house itself. s kitchen and a provision store, or perhaps a ler, are so placed that the Brahman,—if there e Brahmans in "L'Inde Boudhique" twelve hirteen centuries ago,—must rub shoulders h the uncleanest of his servants; with men n of no caste, if there were caste-prejudices he Banáras of M. Viollet-le-Duc. This "Palais dou" is surrounded by vast gardens,—a dú had no word for a garden, which was an stic luxury introduced by the Tartar settler,— these extend to the water's edge. Towards west, Epergos could see the Ganges lose itself a plain covered with brilliant vegetation; ards the east the city of Banáras; and northds appeared to him the first slopes of the malayas! All this, gravely strung together, upported with the audacity of fame and ie. If the author has not endowed his "Palais dou" with a w.c., similar to that which is wn in his suburban villas of Upper Egypt— ome 5,000 years ago—he has equally forgotten private apartments for the Indian women. At the same time we are disposed to make a consolatory admission. If M. Viollet-le-Duc has successfully brought the Himalayas within sight of Banáras, Shakspeare carried Birnam Wood to Dunsinane without rendering the legend ridiculous; and Sir Walter, from his Scottish coast, caused the sun to set in the German Ocean without losing the sympathy or respect of his readers.

A GREAT MINERAL RAILWAY.

Our great railways are becoming territorial lords, and no district has been given up so fully to one monopolising "common carrier," as has that which gives its name to the North-Eastern Railway. There are from Hull to Berwick one or two small separate lines, but their length is small, and most of them are controlled by the railway which is amongst the great lines the cue chiefly formed by combination. Whilst one of the four great railways of England has been "made," another has acquired its length largely by purchase, a third by leasing, and the fourth — the North-Eastern — chiefly by amalgamations. Formed by the union of three competing lines, each of which has swallowed up others, the North-Eastern of to-day is very largely increased from what it was when, two dozen years ago, the York, Newcastle, and Berwick, York and North Midland, and Leeds Northern Lines formed it. And a very large proportion of that increase has been due to the amalgamations that have taken place. Small agricultural lines like the Bedale and Leyburn, colliery branches such as the Dearness Valley, and mineral lines such as the North Yorkshire and Cleveland, have been included, whilst systems of railway of some extent such as the Stockton and Darlington and the Newcastle and Carlisle have been also taken into the wide maw; and the later additions of the Blyth and Tyne and the Whitby, Middlesbrough, and Redcar lines have given to the North-Eastern a practical monopoly of the great district it serves,—covering the bulk of Yorkshire, Durham, and Northumberland. With the Stockton and Darlington it acquired possession of the oldest railway, with the West Hartlepool line it became the owner of the port which on the north-east coast may be described in Mr. Gladstone's words as "the youngest born of England's greatness," and with these it has added the rich dower of the great Cleveland iron fields to its almost entire possession of the great northern coal-field, and has become the richest mineral railway in the world. Not only does it serve the most productive of our coal-fields, and that iron-field which has the largest output, but it is the only line entering into the great lead-mining district of the North; it serves the timber-importing ports of the North, and it has a varied and growing wealth of industries to serve, and though now its position is that of one feeling the great depression in trade, its prospects seem to brighten for the future.

When the North-Eastern Railway was constituted twenty-four years ago, its revenue was small, but even then the goods and mineral traffic gave greater receipts than those of passengers, and this continues. The capital of the company now approaches sixty millions; in exact figures, it was at the close of last year, 58,895,531*l.*, the bulk of which authorised capital has been also created, and the larger part received. It may be added that the expenditure of this sum has been in the following mode:—On lines and works open for traffic, 43,281,426*l.*; and on lines and works in course of construction, the balance, exclusive of 9,030,968*l.*, spent in the provision of rolling stock, and about a quarter of a million in subscriptions to other and allied railways. At the present time the company is committed to works in progress or in contemplation which entail an estimated expenditure of close upon three millions, and this expenditure is now proceeding at the rate of over a million and a half yearly. The return from this vast investment of capital is necessarily large: at the commencement of the North-Eastern, its revenue was 782,000*l.* in the six months, but it is now 3,339,000*l.* in the same period, and this large growth has been distributed, though unequally, amongst the various branches of traffic. In the last half-year the passenger, parcels, and mails traffic yielded within a few pounds of one million; the goods traffic realised 1,038,681*l.*; but the mineral traffic, though seriously depressed, returned 1,187,071*l.*, and subsidiary receipts made up the balance. Of passengers, there were carried on this vast system no fewer than 15,827,625 in the six months—691,237 only being first class; 1,023,033 being second class; and the great proportion of 14,113,355 being third class. Of the mineral traffic little more can be said, for the figures are self-explanatory, the great bulk being derived from the Cleveland iron trade, and the great coal trade of the North. Its vast growth has been previously dilated on, and it may be sufficient to indicate the growth in less than thirty years of the iron trade of Cleveland from one almost unknown, even locally, to the largest output of ironstone of any mining district in the world.

In mileage the railway has grown greatly; its length is now about 1,500 miles. Over these, in every half-year, the passenger trains run a little over four million miles, and the goods and mineral trains nearly seven million miles. The rolling stock is formed by close upon 80,000 pieces,—1,364 being engines, 2,589 coaching stock, 29,418 merchandise wagons, and 46,612 mineral wagons. Out of the gross revenue of over three millions, there is spent every half-year a little more than one-half. The chief cost is for locomotive power, for which item again the chief constituent charge is for wages, and next for coal and coke. The item of wages alone in the various departments claims close upon a million sterling yearly, and there is a further amount which is included with salaries. For coal and coke for locomotive purposes only, above a quarter of a million is now annually spent; for compensation for loss of goods and damage to goods and person the annual charge varies from 40,000*l.* to 50,000*l.*; for rates and taxes the company has to pay about 130,000*l.*; and for Government duty it pays above 40,000*l.* yearly. The length of line has been previously stated; but it may add to the idea just given of the extent of the company if it be added that of the miles maintained, 480 are single, and the great bulk of the line,—928 miles,—is laid with double or treble lines or more.

The bulk of the receipts, as has been shown, is derived from the mineral and goods traffics; but of late years the proportion which is derived from the passenger traffic has been increasing,—a fact which is the more noticeable inasmuch as the mineral traffic was at first stationary, and has recently shown a decline. The dulness in the coal trade, and the serious depression which has so long existed in one branch of the iron industries, have very greatly affected the receipts, insomuch that this half-year, when compared with the receipts for the corresponding period of last year, the receipts show a falling off of over 3,000*l.* weekly on the average. Probably depression and the consequential loss have reached their full extent, and their recovery may be looked upon as a question of time. For, although the mineral traffic is the preponderating one, it forms only a part of those giving the company its income. Traversing so extensive a district, and serving at once industries so varied, the loss of a portion of any traffic can only have a temporary effect on the whole. And, as in former periods of adversity, the receipts of the company have shown a fall, it has proved, and will again prove, a mere ebbing of the tide, which, when the flood sets in, will again flow past the highest mark it has previously made. And in the great industries whose dulness thus registers its effects on receipts and dividends, there cannot be any doubt that the period of improvement must shortly set in. During the years of what were deemed prosperous trade, there were engendered serious evils,—prices were forced up by intense demand to an abnormal pitch, and production was stimulated to an excessive extent. These evils are now being dealt with. Prices in the years of depression have been brought down to a level, and production has been very greatly kept below what the facilities exist for. In these modes, then, some of the evils are being met; there is a settling down to a more normal condition of trade, and an attempt to bring business into a more satisfactory condition is in progress, the effect of which will be that confidence will be re-established. Drawing its income from many industries and from many countries, the North-Eastern has felt the depression in that great industry, and may therefore long for its revival; for with that revival its own return to the state it knew three or four years ago will be assured. As it is, there are symptoms that its fall has known its full amount, and if so, the change to improvement is at hand.

THE LONDON OBELISK AND EGYPTIAN WORK.

GREAT London, it is certain, must in time be, if it is not now, as remarkable for the variety of art and architecture it possesses, as it is for its hugeness and extent, and the multitudes who inhabit it. It will in time, too, be as remarkable for the specimens it has every here and there of art foreign to itself, and its ancient remains. These are, indeed, already of all times and phases of art, and we are, as all know, to have in no long time another not a little remarkable specimen of antique art, and to be placed somewhere,—an Egyptian *obelisk*, Cleopatra's Needle, as it has been somewhat oddly called,—a remarkable monument of the past of things in this world, and indeed a history in itself. It may be, therefore, of some interest to hint at a few things to which this strange monument affords a sort of key; for could all things be told about it, and its origin, and its purposes in the place from which it comes, and all be brought to light, what a strange tale it would tell, and how deep into the old world's history would it lead. We can but hint here at a few things, and but glance at this monument, and read, may be, a little of the inscription on it, and of the things about it. In the first place, it is to be borne in mind that this solitary monolithic shaft is not complete in itself, and as standing alone, as it will do when it forms one of the many wonders of London; but it, like so many others in that strange land, Egypt, from which it comes, is but a part of a great system or whole. It was an item in a temple, or pile of buildings, devoted to the special worship of some pagan deity. Obelisks stood in pairs opposite each other, and must have formed *in situ* objects sufficiently remarkable and significant.

It would be difficult, without a somewhat elaborate plan, to make the position of the Egyptian obelisks quite plain. The temples, including the court-yard in which the obelisks stood, took up a large space of ground. The temples differed, according to their size and situation, in details and arrangement, but the main idea was the same, and in this main idea the most notable perhaps was the provision that was made for those long and imposing religious *processions* in which the men of Egypt took such delight, and which, indeed, went so far to make up their very religion itself. The successive gateways, the very walls of the temple, the long line of recumbent animal forms, the obelisks, the seated colossi, the pylons or gateways within the temple court or enclosure, the arcades, and the covered or roofed enclosure itself, in which the statue of the god was enshrined,—all seemed to be devised with the one object of giving effect and meaning to those imposing processions and shows. No small impulse, too, to the fine art of Egypt must have come from the sight of those world-notable displays.

All this went to make up the general plan and idea of the Egyptian temple, and all certainly had its material or symbolic use. Ornament, in one sense, and as mere ornament, there was none, for the whole temple and pile of buildings were simply written upon, both within and without, as on its four sides is this very obelisk. Even the capitals of the columns would appear to have been wrought out with a symbolic meaning, and the hieroglyphics to be seen everywhere, and on every otherwise vacant stone or granite surface, were there to be read by all who could read them. In short, an Egyptian Temple was an open book, and in passing through it you could but read what was written on its walls and ponderous blocks of stone or granite.

We have said that by going into details some very considerable space might be taken up, and it is difficult to know what best to select, there being so much that is noteworthy. But perhaps the most striking thing to be noted first in Egyptian undertakings was the enormous size and consequent weight of the blocks of stone which they quarried, and moved from place to place, and lifted into such all but impossible places, and all, too, with such truth and accuracy of fitting and fixing. Sir G. Wilkinson notes not only the immense size of the quarried blocks, but the confined and awkward places from which it was necessary at times to move them. The obelisk, to cite but a single example, transported from the quarries to Thebes, measured no less than 90 ft. in length of one single stone. Nothing seems to have broken the heart, or the "lifting" courage and patient strength of the old Egyptian. Sir Gardner calculated the weight of one single block at Karnak,—the "mighty" Karnak, as well called,—at no less than 297 tons; and this had to be moved to no less a distance than,—incredible as it seems,—138 miles! And even this, great as it is, is by no means the largest or the weightiest of the ponderous masses which the old Egyptian mechanics and workmen contrived to move and lift into place by mere force of multiplied manual labour.

But, perhaps, even more surprising than the lifting and moving of these ponderous blocks are the wonderful artistic precision and accuracy with which they have been placed and fitted together. There are no broken joints, edges, or corners, and the lines are as straight and true as a straight-edge. We are here noting the simple masons' work only, for the practical difficulties to be encountered and mastered here, though the work may seem to be simple, can hardly be overestimated. Doubtless this obelisk, which is to add to the curiosities of London, will evidence a little of this. Not far from the banks of the river, on which it will be floated here, can it be taken, say the authorities; but, wherever it may be, its workmanship, as workmanship, may be then compared either with that of the granite-work of the Embankment or with any other mason's work near it. Much more in detail might be noted on the subject of this work of the old Egyptian mason; but there is in the Egyptian sculpture and deep-cut carving room perhaps for even greater wonder at the skill displayed, and at the accuracy of eye and hand. Obelisks are covered on all sides with hieroglyphics, and the cutting of these was among the many other masterly things which the Egyptian workman of old could do so well. In the obelisk that is coming here we shall find evidence of this skill; but even without it, this may be seen in the British Museum, where are a number of examples of it, admirable alike for executive skill and inventive and imitative power in the rendering of animal and other forms. Indeed, there may be found marvels of executive skill The hardest black marble has been incised with a truth and finish not to be surpassed. No one, says a practical judge of such matters, who has ever tried to perforate or cut into a block of Egyptian granite will scruple to acknowledge that our best steel tools are turned in a very short time, and require to be retempered. This the French engineers found when the Luxor obelisk was moved from Thebes; and even, it is added, with the best of modern tools, we find considerable difficulty in doing what to the Egyptians would have been one of the least of their arduous tasks. The more this work of antique Egypt is looked at and attentively studied, the more will it become evident how much there is to be learnt from the study of Egyptian monuments.

Whereabouts in London this fine work of Egypt's artists is to be placed is at present uncertain, and how and in what manner it is to be treated is equally so, but let us hope that no attempt will be made to tamper with it in any way, or to do otherwise than place it as obelisks are usually placed when *in situ*, so that nothing may be visible to distract the impression which such an art work is calculated to make on the thoughtful student and observer. We deprecate, as others have done, the plan sometimes adopted of adding to the pyramidal top of an obelisk, as the French have done at times, and as the old Romans did, thus destroying that harmony of lines and simplicity of form which make of the obelisk what it is, and what the Egyptian meant it to be. Its beauty lies in the very simplicity of its outline.

Among many other points to be noted, and for which we have not space, there is one out of which some good ought to come, and it is most instructive. It is the admirable way in which the Egyptian artists contrived to treat the surface of their hard granite. It is admirably polished, yet is the colour of it not in any way destroyed or marred; and though so polished and smooth, it does not reflect light, like an imperfect mirror. In proof of this the colossal heads in the British Museum galleries should be looked at and studied, and then compared with reference to the injudicious way,—as we take it to be,—in which the granite bases or pedestals, on which they stand, have been treated. These, all of bright red granite, are polished like looking-glasses, and quite kill the heads above them by the violence of the contrast. The best way to polish granite is a problem. We trust that in any attempt (if there be one) to repolish the obelisk, this useful and patent fact may be taken note of, for the incised hieroglyphic all but disappears if care be not taken.

One more thought, out of many, and we co mend it to engineers. It will depend a good d on the position in London town of this hu monolith as to how it looks, and what impressi it makes, and the Thames Embankment has be suggested as the most appropriate of spots it, looking at the immense difficulty, if not i possibility, of moving the granite block far fr the river. Surely the moving of it ought not appal modern engineering! It may be a questi indeed, as to what site in London is the best such an isolated and foreign fragment of art this, but it may usefully be borne in mind th a very great deal of the impressiveness of t obelisk, when on its own native ground, depen on its close proximity to a building, which it th emphasises and helps to make complete. In court-yard would seem to be its appropria place, and in front of the main entrance to sor building. The court-yard of the British Muse would be an appropriate site for this gre obelisk; but we rather incline to the Emban ment, if a fitting spot with appropriate surroun ings can be obtained.

SOME FAMOUS FRENCH ARCHITECTS

PHILIBERT DE L'ORME.

IT has often been the subject of remark th painters have attracted more attention th architects, whose work the general public a utterly incapable of appreciating. Even in t present day the names of the most distinguish architects are almost unknown to us, whilst considerable number of painters possess gre popular renown.

With few subjects is the public, even France, less acquainted than with the lives the great French architects whose birth precede the reign of Louis XIV. It is easy to unde stand how in the Middle Ages, when the arti and the artisan worked so intimately togethe and when few people were distinguished exce in politics or religion, the constructors of t cathedrals of Rheims or of Paris found no bi grapher; but when we arrive at the period the Renaissance, when the arts were cultivate with passion, it is somewhat strange that m as famous as Philibert de l'Orme, Pierre Lesco or Jean Goujon, should have shared the sam fate as Pierre Montereau, Jean de Chelles, Robert de Coucy, some 300 years previously h suffered. Not that Lescot and his profession contemporaries did not enjoy during their lif time the renown which their merit entitled the to; the recompenses they obtained from the patrons, the warm terms in which they a spoken of by authors of their time, and th general admiration their works inspired, mak it additionally strange that no one at the tim should have thought of consigning to writing th date even of their birth; and little did the poe Ronsard, in addressing some verses to the "Abb de Clagny" (Pierre Lescot) think that in s doing he left to posterity an invaluable monu ment in the recital of the life and some of th works of his esteemed friend.

From the utter meagreness of details, it woul be rash and unprofitable to enter into any length account of the lives of the famous architects wh came before the great Revival.

All that is known of Jean de Chelles is that h commenced to rebuild, in 1230, Notre Dame a Paris; of Pierre de Montereau, that at the sam period he built the beautiful Sainte Chapelle of Robert de Coucy, that he worked at the cathe dral of Rheims at the commencement of the four teenth century; of Robert de Lusarche, that i the thirteenth century he commenced the cathe dral of Amiens; of Guillaume de la Brouss that under his episcopate, about 1314, the cathe dral of Bourges was rendered one of the mos magnificent buildings in the world; and thu might we continue through many names an centuries. But all is doubt and uncertainty, and even with the architects of the sixteenth century there exist obstacles in obtaining information o their lives.

Thus it is that we commence with some of the most famous architects of the Renaissance, i whom we are all interested, and whose names i the present day come constantly under our eyes

Foremost among the architects of that perio stands Philibert de l'Orme,* who was born a Lyons about the year 1515. Early fired by the desire to visit the land the fame of whose classic monuments, together with that of Bramante Leonardo, and Raffaelle, had spread far an

* Such, M. Berty tells us, in his interesting life of the architect, is the true orthography of the name.

e; fired also by the desire to see more of a ple who had left such vestiges as those that ered the south of France, young De l'Orme ourteen sets out for Rome, where, in spite of youth, he immediately, with incredible in- try, proceeded to measure, personally and h great care, many of the public buildings of classic times. Associating not only with se learned in architecture, but in all the nces connected with it, he specially inte- ted himself in the imaginary restoration of ient buildings; and in pursuit of this object chose the most complicated problems, and, plying by his genius those data wanting, he ceeded in reproducing monuments of which tory had left but vague or imperfect descrip- ns.

Thus it was that he proved the existence of ius Scribonius Curio's construction, consisting two theatres built of wood, sufficiently distant m each other to allow of two different repre- tations taking place at the same time; at a nal these two semicircles (with all their ts) moving on a pivot closed together, and s was formed a vast circular amphitheatre, in ich gladiatorial shows took place, and all before the same spectators, who had s changed their spectacle without having nged their places. De l'Orme made a model the theatre, and by this fact we can recognise e early strength of his inventive genius.

Passing rapidly over that period of his life in ich he was employed by Alexander Farnese, pe Paul III., in 1536, we find De l'Orme back ain in his natal town. Why he left Rome would ve been difficult to say, had it not been that he ls us himself that his brother, Jean de l'Orme, d Guillaume du Bellay, the cardinal, allured n from the Pontifical service, and caused him return to Lyons, where he appears to have rked for some years. In 1542, Cardinal du llay induces him to come to Paris, where he shes to confide to him the construction of his âteau de Saint Maur. It was undoubtedly rough the same influence that not long after was introduced among the king's officers, and eived an important post as inspector of the ast of Brittany, and in 1546 we find that he ved the port of Brest from being seized by our et.

On the accession of Henry II., in 1547, De Orme henceforth became the king's architect *rchitecte du roi*), and thus he is styled in veral of the *Comptes des Bâtiments royaux*. rom this moment De l'Orme is the favourite of enry and Diana of Poitiers, for whom he exe- ted some important works. Notably among ese stands the château of Anet, which Henry rposed as a present to his famous mistress.

In 1552, the king ordered the old manor-house be destroyed, and charged De l'Orme with its construction. Left entirely free as to cost and sign, and desirous to please his royal master, e architect worked at the château with extra- dinary zeal for several years, beautifying, in ery possible way, each portion of the building. he chapel still exists to attest the luxuriance of e decorations.

The château of Anet, from the fact that the ileries have been so greatly transformed, will main, notwithstanding that most of it was estroyed at the end of the last century, the ost important work which exists that can be tributed to Philibert De l'Orme. Thanks to e energy of the never-to-be-too-highly praised . Leucir, the principal gate of the château was ved from the revolutionary vandalism, and ow forms a conspicuously beautiful feature in e court-yard of the Ecole des Beaux Arts at aris.

In addition to the château de Saint Maur, uilt for the Cardinal Du Bellay, and the hâteau de la Muette, near Passy (the site of hich, for the original building was destroyed in e Revolution, forms now so conspicuously eautiful a feature of the Bois de Boulogne), we nd that it was also about this period that De Orme erected the portal of the chapel of the ark at Villers Cotteret, in which he tried to ealise that he first conceived the idea of reating a French order. The columns of the ortico, not being able to have them monolithic, om the difficulty of bringing the blocks from the uarries, De l'Orme determined to compose of four r five drums superposed, the joints of which he overed by bands of moulding, in such a way hat, says he, they seemed "entirely of one iece, looking very charming and graceful." He ppears to have liked the combination exceed- ngly, and he calls it the *colonne française*. Be this s it may, questions have been raised about the principle, from the fact that the rings placed at different portions of the shaft give the idea of feebleness, at the same time that they take away from the grace. The invention was, however, ingenious in meeting a difficulty satisfactorily.

But it was in 1564 that De l'Orme commenced to build his most famous work. Catherine de Medicis, regent of the kingdom, desiring to raise a palace which should surpass everything that had yet been built in France, chose a spot of ground on the banks of the Seine, near the Louvre, occupied at the time by a tile-kiln (*tuilerie*), and here, in due course of time, rose from the plans of Philibert de l'Orme (to whom the queen had confided the task), the celebrated palace of the Tuileries.

The architect's original project, which Du Cerceau has preserved for us in the second volume of his well-known work "Les plus excellents Bâtiments de la France," was much more important and imposing than that which has since been carried out. Of his gigantic plan, De l'Orme was only able to realise a small portion, the half, in reality, nearly the whole, of one of the large blocks of building represented by the central pavilion and the adjacent wings, so miserably disfigured later on by the successive additions and changes executed under Henry IV., Louis XIII., Louis XIV., and in this century. Indeed, the central pavilion has alone preserved of De l'Orme's design the lower order, composed of Ionic columns, each with five sculptured bands in marble. It can never be too much regretted that the superstitious belief in astrology, which the queen participated in, caused the work of the Tuileries to be abandoned, and it is more curious as she appears to have taken an extraordinary interest in the progress of the work, for De l'Orme tells us that "she was the principal architect, only having left to him the decoration."

Not only Governor of the Tuileries, but *ordonnateur* of the buildings and manufactures of France, councillor of the king and almoner, De l'Orme was also presented with the revenues of several abbeys. It was this profusion of royal favours that undoubtedly raised the self-esteem of the artist, and excited the jealousy of his contemporaries. Among the stories told of the effects of this feeling, one is famous. Ronsard, the poet, having published a satire, "*La Truelle crossé*," blaming the king for the sums he gave to his masons, De l'Orme on one occasion revenged himself by refusing to the poet, who was following the queen, the entrance to the garden of the Tuileries. Ronsard, justly irritated, immediately wrote on the gate, in capital letters, the following words, "FORT · REVERENT · HABE." Not long after the Queen, having seen these, demanded, in the presence of the two, the meaning of the words. Ronsard took upon himself to translate them, on which it proved that they were the first words of some lines by Ausonius, councilling modesty to the man whom fortune has suddenly raised.

> "Fortunam reverenter habe, quicunque repente,
> Dives ab exili progrediere loco."

The Queen, it appears, found the lesson a good one, and even reprimanded the proud artist, informing him that the Tuileries were dedicated to the Muses.

Before concluding the notice of the principal buildings which Philibert de l'Orme was employed to build, let us not forget to mention among his numerous mechanical inventions the construction of a timber-roof which deserves something more than passing notice.

The enormous pieces of timber found necessary in the building of the roofs of the royal mansions having been difficult to procure, the forests having been already exhausted of their finest trees, De l'Orme, to remedy this inconvenience, imagined a new system of timber work. The first mention of his idea at court was met with some ridicule, but Catherine de Medicis having on one occasion expressed her astonishment at the price of a roofing of a tennis-court to be erected at Monceaux, De l'Orme judged the opportunity favourable, and proposed his system. The trial of it was made at the château de la Muette, near Passy, and it was found to be successful. Without entering into a technical description of the process he employed, we may state that in De l'Orme's invention we have clearly the Mansarde roof, which bears the name of an architect who was not its inventor. The true discoverer has, however, left his name to the system, which is sometimes called in France the "*couverture à la Philibert De l'Orme.*"

In order to propagate his new principles, the knowledge of which would serve the public, Henry II. had charged the author with establishing the rules in a special work, which has for title, "Nouvelles Inventions pour bien bâtir et à petits Frais," composed of two books, a sequel, indeed, to another work in nine books, entitled, "De l'Architecture." Principally recommendable by the precepts relative to the shape of stones and the direction of buildings "in which the author was more consummate," as Chambrai says, "than in the composition of orders," this treatise contains in addition, on the moral part of the art, excellent counsels to which the authority of his talent and experience give the character of aphorisms. Throughout the work, indeed in all he wrote, reigns a strongly religious sentiment, simply expressed, and when his thoughts rise towards the great and supernatural architect, his style rises with them.

Having issued the first volume, he was preparing to bring out a second, in which were to have been treated many new notions on the cutting and dressing of stones, a general theory on the proportions of the orders, different treatises concerning perspective, the construction of seaports, that of bridges of a single arch over large rivers, &c. A detailed examination of the Pantheon at Rome, and several other antique buildings; a description, or, rather, a history of the Palace of the Tuileries; an account of the house which he was building for himself in the Rue de la Cerisaie.* Death, however, struck him down whilst he was putting in order these materials thus lost for ever to science and art. His great career terminated at Paris in 1570.

In attempting to form a critical opinion of De l'Orme's architectural abilities, we in the present day have little of his work left us to judge by. Unhappily, the great part of his conceptions have been destroyed, and in those which remain so many modifications have been introduced that it is with difficulty that one can form a just opinion of the artistic merit of the architect. Undoubtedly he cannot be compared with Jacques Androuet in imagination, or with Pierre Lescot in purity of style, or again with Jean Bullant in the distribution of his plans.

According to the opinion of M. Berty, a most able writer and critic, De l'Orme, from having broken entirely with the Gothic, and always filled with recollections of the monuments he had studied in Italy, and aiming unceasingly at being majestic, often only attains heaviness. On the other hand, too much occupied in search of a rational beauty which he attempted to draw from calculation rather than from sentiment (a pernicious process, which is certain to lead one astray), he could not avoid phantasy, and even awkwardness, in his conceptions.

Let it not, however, be understood that De l'Orme is unworthy of the celebrity attached to his name. In the opinion of a most illustrious judge, Jean Goujon, his contemporary, De l'Orme was regarded during his lifetime as an eminent architect,† and indeed as such he will be always considered, whatever may be the variations of taste, because, in addition to his studies on style and form, he has made profound researches into the art of construction, which he was the first to publicly reveal in France.

Great progress realised in technology, that is the most sparkling gem in De l'Orme's crown, and it is on that scientific ground that he truly surpasses all his rivals, and thus acquires an incontestable right to the gratitude of posterity.

THE CAXTON EXHIBITION.

THE exhibition of antiquities and curiosities connected with the art of printing, opened last Saturday (June 30) by Mr. Gladstone, in the presence of a numerous company, is a healthy sign of the lively interest taken by a large class of persons in the history of the art of printing, and as such may be considered a most fitting celebration of the fourth centenary of the introduction of printing into this country.

In fixing upon this year for the anniversary, the committee have been guided by the date of the "Dictes and Sayinges of the Philosophers," the first book we can be certain was printed in England. Although "The Game and Playe of the Chesse" bears the date of 1474 (which according to modern reckoning is 1475), and it is generally assumed that "The Recuyell of the Historyes of Troye," issued without any date, appeared before that year, those two books, acknowledged to be the first in the English language, may have been printed by Caxton at Bruges. The determination

† See *Builder*, vol. xxxiv., p. 871.

* See an epistle, by Jean Goujon, attached to a translation of Vitruvius, by Jehan Martin. Paris. 1577. Folio.

of the committee, consequently, to hold the celebration this year is justified by historical evidence, though it is difficult with our present information to fix the exact date when Caxton introduced the art in England. As regards the early history of the typographical art in this country, we are at present confined to such remarks of Caxton himself as appear in the form of prologues and epilogues to his printed books.

At the outset it may be said that the Caxton committee have been true to their programme, having been greatly assisted in their aim by the authorities at South Kensington Museum, who have placed ample space at their disposal. But the committee would have been unable to achieve so much as they have done had not owners and custodians of rare specimens of printing come forward most generously, and permitted the treasures in their possession to be exhibited. They have lent a willing ear to the request of the committee for loans, and the exhibition, on that account alone, must be pronounced a success. Especially strong is the exhibition in biographical illustrations having especial reference to Caxton.

Beginning with Class A, Printed Books, we notice first those from the press of William Caxton—as many as 151 copies of books printed by Caxton having been contributed—classified under their order of production. They probably represent the greatest number of them ever seen together, having been lent by the Queen, Earl Spencer, the Duke of Devonshire, and others. To these are added the books of Colard Mansion, of Bruges (of whom Caxton acquired the art), books printed in the fifteenth century by Caxton's contemporaries and successors, and books illustrating special developments of the art. Among these are block-books, the Mainz Psalter, valued at 3,000*l.*, the property of the Queen; the Mazarine Bible, and other invaluable early works, in which the exhibition is especially rich.

Class B, Specimens of Printing, especially is one of the most complete, and will probably be one of the greatest attractions of the exhibition. It illustrates the typographical history of the Bible; the series being continued down to the present time, and including all the rarities known, as well as the many editions in all languages of the British and Foreign Bible Society. There are next, in the same class, early specimens of printing from stereotype plates, also of printing by steam (1814); printing in colours from raised blocks; specimens noticeable for beauty and excellence of typography; commercial printing, and newspaper printing.

The latter section is displayed at the Queen's Gate entrance, at the bottom of the staircase, and well deserves a close attention. We find here early specimens of the *Morning Post* (September 20, 1781), No. 88, vol. xiii. of *The Public Register, or Freeman's Journal*, of March 16, 1776; No. xx. of the *Guardian*, April 3, 1713, the *Spectator*, July 31, 1711; the *Tatler*, November 4, 1710; an early number of the *New York Gazetteer* (1775); No. 1,791 of the *Times*, dated Friday, November 5, 1790, in close proximity to its then rival, *The New Times*, which has under its title in brackets "[not connected with the paper called *The Times*]." When the *Times* at the beginning of the year brought out its weekly edition, very few people probably were aware that the idea is not so original after all, for as recently as 1821 there appeared *The Observer of "The Times,"* a Monday edition of the Thunderer, printed especially for country circulation. A copy of the first newspaper ever printed in England, *The Continuation of our Weekly Avisoes*, No. 32, July 6, 1632, may also be seen here; and probably the first technical journal, *The Craftsman, or Say's Weekly Journal*, August 15, 1789.

Mention may at the same time be made of several old books of a germane nature on architecture, &c., exhibited in Room N. There are "Directions to the Surveyors of Highways of the County of Westmorland" (1733); "Dissertation in vindication of the Antiquities of Stone Henge" (1730); "Durham Cathedral," containing, among many other matters, a description of the "Histories painted in the Windows" (1733); and "A Description of the Gardens and Buildings at Kew" (no date).

After this digression, we may return to the order of the catalogue, to Class B B, containing specimens of music-printing, from the printed staff upon which the notes were inserted by hand down to the best productions of the present day.

In Class C, Book Illustrations, it has been found possible to arrange a complete history of wood-engraving, from its appearance in Europe in the fifteenth century down to modern times. In close connexion with this is the art of colour-printing, including that known as chiaroscuro. Printing in colours was first introduced in the sixteenth century, and it has now reached a perfection amply illustrated in the specimens exhibited.

In Class D, ancient and modern type and other printing materials are shown. This mechanical display of the art of printing is perhaps one of the most interesting features of the whole exhibition. There are three old wooden presses, in a fair state of preservation, one of which is being worked in the old laborious style with balls, worked by perhaps the most antique-looking pressman it has ever been our fortune to behold. The man in himself is a study. Close by is a compositor's case, filled with a fount of Caxton's smallest type; only the ancient compositor is wanting to complete the picture. The display of these by the side of the appliances of modern printing, several very noisy machines being kept in motion,—much to the annoyance, no doubt, of exhibitors of composing and other ingenious machines, who have almost to shout at the top of their voices to make themselves understood by curious inquirers—is an instructive illustration of the vast stride since the days of Gutenberg and Caxton. To the great comfort of visitors, stereotyping and electrotyping are carried on in an out-house. It would be well to relegate the type-casting machine exhibited to the same region.

Under Class F, copperplate printing, lithography, and photography are shown. An awkward-looking, cumbersome litho-press is being worked by a printer of the old school, not much in love with the modern litho-machine, close by, also in motion. The art of lithography, invented by Theobald Senefelder, of Germany, of whom a good portrait is exhibited, was first introduced in this country in 1801, under the name of polyautography, by the Brothers André, and their successor, Vollweiler.

Antique printing and writing papers, with water-marks, form Class G.

Class H includes portraits of printers and celebrated authors. It is only right to draw here especial attention to a work of art, demonstrating in a marked manner what patience and skill are able to achieve, but showing at the same time how little those qualities are appreciated, unless applied with judgment. It is a portrait of Gutenberg, set up in movable type, each type having on its face a number of dots of all sizes, by means of which the laborious workman,—or, rather, artist,—is able to express all the various shades necessary for the delineation of the features. The effect is most surprising. Herr Carl Fasol is the painstaking compositor who has thus successfully overcome the angular difficulties of types, but, we believe, has never been recompensed for his labour. He visited this country several years ago, trying to sell his pictures, but soon left it again, disappointed.

Having thus briefly touched upon the principal features of an exhibition which is creditable to the gentlemen who have undertaken its management, we are forced to refer to a serious mistake, possibly unintentional, committed in its organisation. On looking down the list of names forming the committee, the entire absence of the working printer's element in that body cannot escape attention. This omission may, perhaps, appear trifling when the success of the celebration will come to be counted up, but it is somewhat in contradiction with the avowed object of the exhibition that the important factor,—the toiling printer,—should have thus been entirely overlooked, not to say unceremoniously elbowed out. This is all the more unfortunate as the benefit which it is hoped will be derived from the exhibition for the Printers' Pension Fund will in a great measure depend on the aid given to it by the trade. It is just possible that the neglect experienced at the hands of their betters by the printers will be resented, a feeling of apathy may take the place of any small interest that may have been felt in the matter, and an important object of the exhibition, an increase in the funds of the Printers' Pension Corporation, may suffer by it.

It is to be hoped that those fears may be falsified by the result of the exhibition, and that the printers will look over the slight thus put upon them. For our own part, we will at present do no more than echo the words pronounced by Mr. Gladstone,—"The exhibition is open. May it prosper!"

ST. AGNES, KENNINGTON PARK.

THE church we have illustrated was consecrated at the beginning of the year by the Lo Bishop of London. The group of buildings which it forms part occupies a very advantageo position, fronting the central avenues of Ke nington Park. The site has frontages towar the Farmer's-road, and the street now in pr gress to be named Kennington Park Garde The western frontage, facing the park, is occ pied by the vicarage-house.

Immediately behind the vicarage rises t west front of the church. A spacious arch passage through the house gives a view of t great west doorway of the church, and affor an approach to it, suitable for use upon occ sions of ceremony. The church itself is capab of seating 1,200 persons, and it has been erecte at a cost of about 13,000*l.* (exclusive of the su paid for the site; the east window, which co 1,000*l.*; and the font, altar, bell, heating app ratus, chairs, kneelers, &c., provided at an add tional expense, in all, of about 400*l.*). I internal length is about 140 ft., and its cle breadth, 63 ft. The aisle walls are 32 ft. height, and the nave walls, 50 ft. The nav ceiling, which is boarded and painted, rises to height of 65 ft. above the floor, and the extern ridge is about 75 ft. above the pavement. Th chancel roof is of the same height. The cle width of the nave is 24 ft. 6 in. Following th contour of the site, the chancel is deflecte several feet to the south of the central line the nave, as in many ancient churches. Th aisles are continued almost to the east end of th chancel, but narrow transepts mark the separa tion of the nave and the choir. The main roof continuous from end to end externally; a ston bell-cot rises from it over the chancel arch.

The church depends for effect upon its pro portions and large dimensions, and not upo delicate details. The materials are red bric from Suffolk and Hampshire, with Bath ston dressings. The aisle roofs are covered wit zinc, the main roof with Staffordshire tile Internally, the effect is that of spaciousness an height. The walls are plastered. It is intende to build at the west end a stone gallery, th centre pillar of which is to be carried up to sup port wooden groining, above the heads of th two lofty west windows, above which will b placed the bell-chamber. This gallery will in crease the accommodation by about 200 si tings.

The style of building is English Middle Pointe of the fourteenth century, and the traceries o the windows form a principal ornament of th interior. The east end is occupied by a loft window of six lights. This is filled with staine glass, designed to illustrate the doctrines of th Incarnation and of the Atonement. It has bee executed by Mr. C. E. Kempe, of Beaumont street, Cavendish-square, and forms a memoria of a lady, now deceased, who has been th principal benefactress of the church.

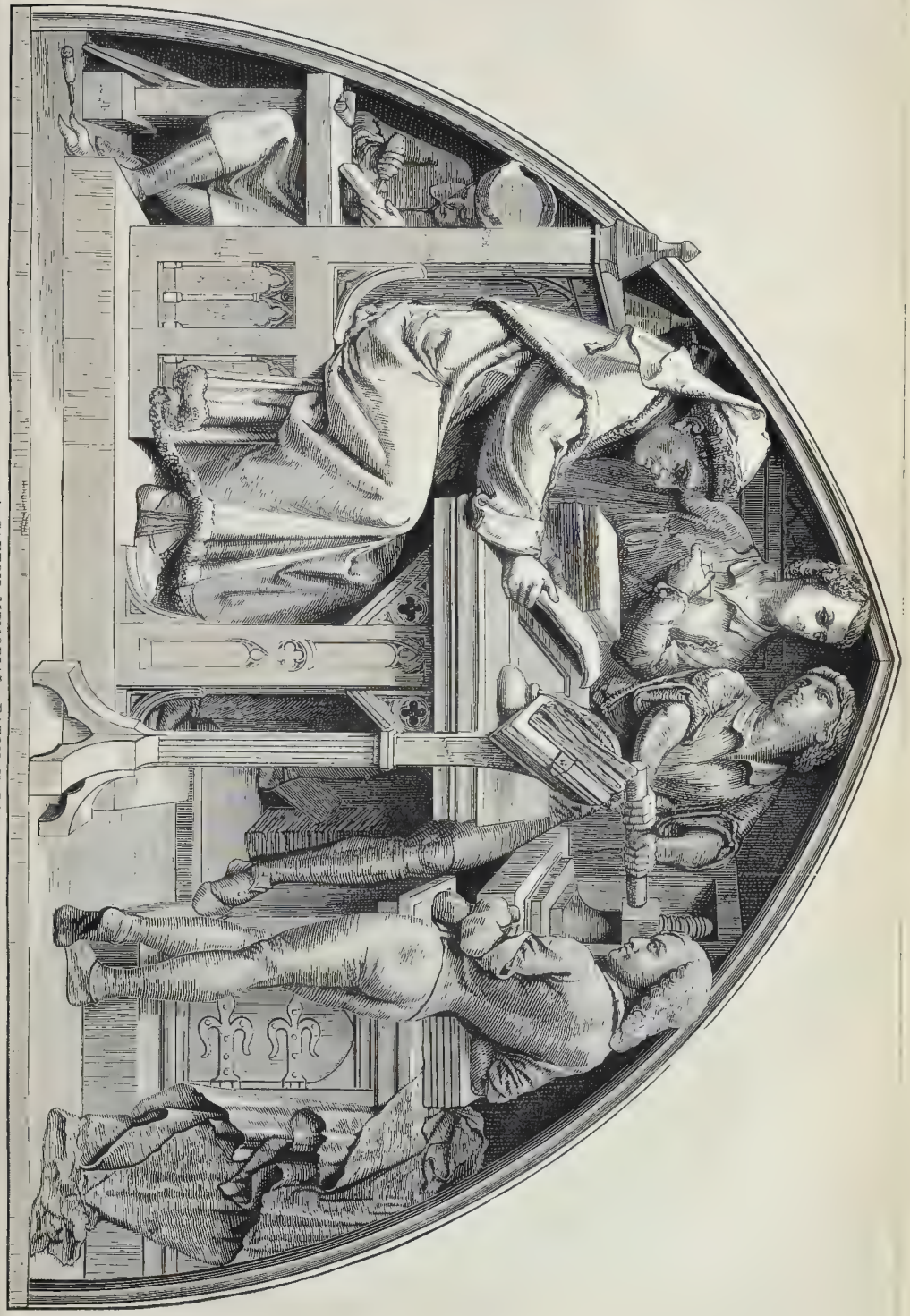
The altar-table stands in advance of the eas end, against a screen wall which is pierced b two small doorways; behind this wall is passage which connects the clergy and choi vestries.

The chancel is separated from the nave by a open screen of which only the constructiona portion (upon which the decorative detail is t be built up) is at present erected. Across th top of the screen runs the organ-loft. The orga (the case of which is merely temporary) occupie the north end of this gallery, standing under th arch which opens into the north transept. A similar arch upon the south side may be mad use of hereafter for an extension of the instru ment, the trackers being carried under the floo of the organ-gallery. The loft itself is t afford convenient space for an orchestra whe required.

The walls and pillars of the nave are covered to a height of 8 ft. by wooden panelling, th decoration of which is not yet completed. Thi treatment will add to the comfort of the congre gation. The floor is laid with Portland cemen divided into panels by narrow bands of stone and chairs are used throughout. The warmin is by hot-water coils placed above the floo against the side walls, no floor gratings what ever being used. It has been carried out b Messrs. Berry, of Regent-street, Westminster who have also executed the gaswork. The font stands in the centre of the western part of th church upon steps of red Mansfield stone. I addition to three large entrances placed at thi end of the church, doors are provided in each



THE CHURCH OF ST. AGNES, KENNINGTON PARK.—MR. G. GILBERT SCOTT, JUN., ARCHITECT.



A CAXTON MEMORIAL: EATON HALL.

ransept for exit in case of any emergency. The whole of the sittings are free and unappropriated.

To the east of the church are the schools, forming part of the group. They will accommodate 360 children, and have been erected at a cost of 3,076*l.* This is at the rate, excluding the purchase of the site, of about 8*l.* 11*s.* per child.

The foundations of the church were put in by Messrs. Dove, of Islington. The schools and carcass of the church have been carried out by Messrs. Niblett, of Holloway; the finishing of the church and the vicarage-house by Messrs. Hill, Higgs, & Hill, of South Lambeth. Messrs. Holden, of Wood-street, Westminster, have executed the zinc work; and the organ is by Messrs. Walker, of Francis-street, Tottenham Court-road. Mr. Kaberry has acted as clerk of the works throughout.

The architect is Mr. G. Gilbert Scott, jun., F.S.A., of Duke-street, Portland-place.

A CAXTON MEMORIAL.

THE accompanying engraving represents Caxton sitting at his printing-press, Westminster, in the act of printing "The Game and Playe of the Chesse," an illustrated book published in 1474 with solid type blocks. The details are taken from a cut in Wynkyn de Worde's work. This engraving is from a panel of sculpture executed by Messrs. Farmer & Brindley for his Grace the Duke of Westminster, for the door-head of the new library at Eaton Hall, now being executed from the designs of Mr. Alfred Waterhouse.

INTERESTING ENGINEERING EVIDENCE ON THE THAMES PREVENTION OF FLOODS BILL.

THE evidence given by several engineers of eminence on the Thames River (Prevention of Floods) Bill, which was under investigation before the Parliamentary Committee for nine days, and which has just been withdrawn by the Metropolitan Board of Works for the present in consequence of the decision as to the payment of the cost of the proposed works, is of a highly interesting character, when viewed from a scientific point, and as bearing upon tidal action in the Thames, in connexion with the Victoria and the two other embankments.

Sir Joseph Bazalgette, engineer to the Metropolitan Board, was three days under examination, in the course of which he gave some remarkable facts in connexion with extraordinary high tides which had taken place in the Thames so far back as nearly 800 years ago. In the year 1099 there was a very high tide, when the river banks overflowed. In 1235 the tide rose so high at Westminster that the lawyers were brought out of the Hall in boats. In 1238 Westminster Palace was flooded. In 1242 the banks burst, and the country was under water for six miles. In 1555 Westminster Hall was again flooded. In 1663 was recorded the greatest tide that was ever then remembered in England, all Whitehall having been drowned; and taking the levels of the lowest parts of Whitehall, this appears to have been 3 ft. to 4 ft. above Trinity standard. In 1732 a high tide overflowed Wapping and Tooley-street. In 1762 the tide flowed into Westminster Hall, covering the floor to the depth of 4 ft. Subsequently there were various high tides until they came to 1791, when a high flood overflowed the banks above Westminster Bridge. In Palace-yard it was 2 ft. deep. The *Star* newspaper of the 3rd of February, 1791, recorded that "boats came through the passage of Old Palace-yard from the Thames, and round up to Westminster Hall gate. The two Scotland Yards, Privy-gardens, Whitehall, were under water, and many parts rendered impassable for two hours. Westminster Hall suffered much; the water ran in at the great door for upwards of an hour, and was up to the second step leading to the Court of King's Bench." On the 28th of December, 1821, a high spring tide flowed over the banks and wharfs between Westminster and Chelsea Hospital, causing great destruction of property. In Millbank the water was so high that it ran in at the carriage-doors of such vehicles as persisted in passing that way, and boats were used, passing to and fro, and carrying the inhabitants to and from their homes. Near Vauxhall Bridge it burst the bank, and the water dashed along with a cataract fury and overwhelming quantity, laying under water the market-gardens and fields, and the lower portions of the houses in the district. In all he had a record of between sixty and seventy extraordinary high tides. In January, 1850, the tide rose to 3·66 above Trinity high-water level. In November, 1852, it rose to 3·75; in 1854 to 3½ above Trinity. Then, in 1863, it rose to 3·17. In February, 1868, it rose to 3·58, and in March, 1869, to a similar height. On the 20th of March, 1874, it rose to 4·25. On the 15th of November, 1875, it rose to 4·54, which was the highest tide on record; and on the 2nd of January last it rose to 4·12; and on four occasions since it had risen over 3 ft. above Trinity high-water mark. It therefore appeared that, extending from the year 1099 up to January of the present year, the low districts abutting upon the Thames had periodically been subject to a flooding caused by an overflow. The next points upon which Sir Joseph was examined were the completion of the intercepting main-drainage system, and the effect of the three embankments on the tides. With respect to the first point, he stated that by the year 1866 the Metropolitan Board had completed their intercepting main-drainage system, and the effect of that as regarded the river Thames was that a very large body of sewage-water which formerly flowed into the Thames above London, amounting to 607,000 tons per diem, was diverted to a point below London, and discharged upon the ebbing tide, so that to this extent the tendency to flooding was reduced by those works. That amount of sewage-water which formerly came into the Thames above London was larger in volume than the amount of water which formerly found position on the sites of the three embankments which had been executed by the Metropolitan Board. Taking the total area of the embankments up to the height of Trinity high-water mark, and reducing it to tons, it would be 587,000, or somewhat less than the quantity removed from the upper reaches of the Thames by the Metropolitan Main Drainage, and pumped into the Thames at a lower point. The total area which had been reclaimed by the three embankments was fifty-one acres, viz., thirty-five acres by the Victoria Embankment, seven acres by the Albert Embankment, and nine acres by the Chelsea Embankment. During the last few years there had been a gradual rising and a gradual depression of the tides within the metropolitan area, but that rising and depression could not be in any way attributable to the construction of the Thames embankments. The momentum of the tidal wave was checked by the friction of the river-bed, by obstructions placed across the river, and by the laws of gravity, and removing any one of those obstructions would cause a greater volume of tide to pass up the river. He was of opinion that the removal of old London Bridge, old Blackfriars Bridge, and old Westminster Bridge, all of which were obstructions, had caused a very much larger volume of tidal water to pass up the river than passed up formerly. He did not think that the effect of the construction of the embankments had been to introduce a new obstruction to the tidal range. The prevalent idea seemed to have been that the embankments, by narrowing the channel, pushed over the water, or something of that kind, to the south side, but that could not be so, because taking that view of it, supposing it were possible that it could be pushed over in that way, by being put into a narrower space, it would be found that at Southwark Bridge, at the present time, which was below the Victoria Embankment, there was only a waterway of 14,200 superficial feet, whereas opposite to the Embankment, which was at a higher point than Southwark Bridge, that tide which had passed through an area of 14,000 ft., had there to expand itself into areas varying from 19,000 ft. to 20,000 ft., taking the narrowest to the widest point. The examination of the witness was next directed to the remedies against future floodings, when he stated that they lay in the raising of the walls of the different wharfs and river frontages by the owners and different parishes, which was a simple matter. Several owners had already done the work, including the London and South Western Railway Company, the London and Brighton Company, and others; and he was informed that the Admiralty proposed to raise the Royal Victualling Yard at Deptford to a proper height, and also that the Corporation intended to do the same thing as to the Foreign Cattle Market. Bearing in mind the inundations, and the remedy which he had suggested to provide against them in future, he was of opinion that such a Bill as that before the Committee should be passed.

The witness was examined at great length be no less than nine counsel, and here it may by stated that there were no fewer than sixteen petitions against the Bill, including eight from the vestries and district boards of works; also from the Millwall Dock Company, the Surrey Commercial Dock Company, the London and St. Katharine's Dock Company, the Conservators of the Thames, and several private firms. Fourteen of the petitioners were represented by counsel, and altogether twenty counsel were engaged in the case, in addition to fourteen agents. The opposition to the Bill was upon the double grounds that the embankments had contributed to the flooding, and that the cost of works to prevent farther inundations ought not to fall upon the parishes and individuals, but on the metropolis generally.

In the course of his cross-examination by the various counsel, Sir Joseph Bazalgette denied that the Thames Embankments had had the effect of raising the tides. They had increased the velocity of the stream, but had decreased the volume of water. When he designed the Victoria Embankment it was done in view of past experience as to tides. The embankment was constructed at such a level as was considered necessary to keep out the tides, but since it had been completed recent experience of tides had shown that they rose higher, and subjected the district to more risk of flooding than they had reason to expect. The Victoria Embankment cost 1,249,619*l.*; the Albert Embankment 1,020,000*l.*; and the Chelsea Embankment 33,000*l.*, out of which several sums there was to be a return for lands let. He thought it was perfectly fair that the owners of wharfs should pay for the requisite works. The wharfingers obtained special advantages by being on the banks of the river. No doubt there were many persons living behind the wharfingers who would benefit by the construction of the works necessary to stop the floods. He had suggested three schemes to the Metropolitan Board of Works, one being the construction of a long embankment, which would cost 4,000,000*l.* or 5,000,000*l.*; another being a system of embankment which would cost only a tenth of that sum; and the third being a system of patch-work, which would be effectual, but somewhat unsightly.

Mr. Henry Law, C.E., Memb. Inst. C.E., was next examined, and stated that his acquaintance with the river Thames commenced in 1837, when he became a pupil of Sir Mark Isambard Brunel, and assisted in the formation of the Thames Tunnel, of which he was subsequently one of the assistant engineers. In the years 1843, 1844 and 1845 he was engaged, under the directions of the late Mr. Thomas Page, in taking soundings of the river, and under Mr. Page's direction he prepared and made the surveys for the first Thames Embankment prepared by the Metropolitan Improvement Commissioners, who sat in connexion with the Woods and Forests. He also prepared the designs for the Chelsea Suspension Bridge, and the new bridge at Westminster, under Mr. Page's direction. Nearly the whole of his time had been spent upon works in connexion with the river Thames. He considered that the causes of flooding in the Thames were produced, first, by the friction of the bed having decreased; also by local obstructions having been removed; by vessels which formerly lay between Deptford and London Bridge having been taken away; by the increased amount of upland water sent down, and by the improvement of the drainage of the valley of the Thames. In his opinion the Thames Embankment had certainly not in any way contributed to the overflow of the river, nor had the substitution of solid ground for water, in the case of Victoria, Albert, and Chelsea Embankments, produced that result. The effect of the construction of the Embankment had not been to deflect the tidal current to the opposite side of the river. A stream always endeavoured to run in a straight line, and if the river bends it keeps impinging against the concave side in its efforts to produce a straight line; it always flows along the concave side of the river. Before the embankment was made the wharfs projected, and barges occupied the space, both of which did tend to deflect the water into the middle of the stream; but now that a smooth wall had been put in, the stream ran along the smooth wall, and there could be no influence tending to deflect it across. Direct calculation showed that the effect of the construction of the Thames Embankment had been to reduce the level of the water both above and below the

embanked portion. He had come to the conclusion that without some such power as the Bill contemplated it would be impossible to compel the whole of the wharfingers and owners of property to raise their banks, and that if at certain points there were defaulters, the work done by the others would be very much vitiated, and the good effect resulting diminished. He thought the construction of a general and uniform embankment to effect the objects contemplated by the Bill simply impossible, considering the conditions of the river and the purpose it now served as a great highway for the commerce of the port. The carrying out of such an embankment would take away all the waterside premises and convert them into a roadway, they could not be used for the purposes of trade, because a road would intervene between the river and the warehouses. It would destroy all the trade interests in the Port of London, and the amount of compensation to be paid alone would make it quite prohibitory.

In cross-examination by Mr. Bidder, Q.C., the witness stated that it might be that might not be just to cast upon an individual the necessity and cost of executing protective works upon his own property for the improvement of the metropolis generally. It must depend entirely upon the proportionate good which he, in common with all the rest of the metropolis, would derive from a public improvement, and the particular injury he sustained.

Mr. James Abernethy, C.E., and at present a vice-president of the Institution of Civil Engineers, was next examined, and stated that for thirty years past he had had great experience in the regulation of tidal waters, and had for a long period been acquainted with the River Thames. He agreed with the last two witnesses as to the causes which had increased floods in the Thames, namely, the removal of obstructions from the bed of the river. These causes were all entirely independent of any embankment that had been made. The effects of the embankment would not at all add to those causes. Setting aside scientific questions as to the increase of floods, he would simply point out one or two facts. The high tide which occurred in June, 1875, rose 4 ft. 6 in. at the entrance to the Millwall Docks, and although no embankment similar to the Toames Embankment existed at that part of the river, the tide rose over the quays of that dock, and that had necessitated the raising of the quays to the height of 15 in. above the original level, that dock being between three and four miles below the Thames embankments. Again, at the Victoria Dock, below Blackwall, or eight miles below the embankments, the tide also rose above the level of the quay of the outer basin, and inundated the adjoining buildings and lands, and they had also been obliged to raise the level of their quays at that point from 18 in. to 2 ft. All that tended to show that the increased level of the Thames was general, and not confined to the section occupied by the Thames embankments. There was a general cause, followed by a general effect. The vertical walls of the embankments were no cause for increasing the flooding. The effect of these vertical walls had been to increase the hydraulic mean depth, and to give an acceleration to the current, but inasmuch as the area had been lessened the increased velocity of the current, due to the diminished area, did not pass such a quantity of water into the upper reaches of the river as passed up the channel previously to the Thames Embankment being formed, when the velocity was less and the sectional area more.

Mr. William Henry Barlow, C.E., and vice-president of the Institution of Civil Engineers, was next called, and said that his special experience of the Thames dated back to 1830. He also agreed with the other scientific witnesses that the removal of such important obstructions as the old London, Blackfriars, and Westminster bridges had been to give a much greater impetus to the tidal way up the river. In the case of the Thames he had had a very ancient acquaintance with it. He accompanied his father upon the occasion of the experiment made for the removal of old London Bridge, having regard to the possible effects of its removal. He agreed with the views previously expressed, that the effect of the construction of the main drainage system had been to abstract a larger quantity of water discharged at another point than had been absorbed by the formation of the three embankments. The increased level in the height of the tide which had taken place since the formation of the embankments was not confined to the particular section of the river where the embankments existed. He had noticed the effect of the floods throughout the whole distance from Fulham to Woolwich, which would be eight miles below the lowest point of the Thames Embankment, and bearing in mind those distances, the construction of the embankment could have had nothing to do with the raising the level of the river at those points. He did not consider that the causes which had contributed to produce flooding in the metropolis had come to an end. As improvements in drainage and other works were carried on in the upland districts, he had not the slightest doubt that the severity of floods would increase.

In consequence of the Parliamentary committee having passed a resolution to the effect that the Metropolitan Board of Works ought to carry out the necessary works at the cost of the Metropolitan Board's area, no further scientific evidence was taken on either side, and the Bill is withdrawn for the session.

THE ROYAL FUNERAL EFFIGIES IN WESTMINSTER ABBEY.

THERE is still a nook in Westminster Abbey which is not thrown open to the public, and is, consequently, but little known, though it contains relics of exceeding interest. We allude to the small chantry, or upper chapel, in which are now preserved the wax and wooden effigies of several of our kings and queens that have been used in the royal funerals in former ages. The sight-seers of the present day are not aware of the existence of these memorials, though country visitors to London, in old times, placed them in the same rank of wonders as that they assigned to the lions in the Tower. Goldsmith's Chinese philosopher alluded to them vaguely when he wrote, referring to an iron gate in the sacred edifice where threepence were demanded of him,—"I expected, upon paying here, to see something extraordinary, since what I had seen for nothing filled me with so much surprise. But in this I was disappointed: there was little more within than black coffins, rusty armour, tattered standards, and some few slovenly figures in wax." These figures are now, as we have indicated, separated from this companionship, and placed in their glass cases and cupboards in Abbot Islip's chantry. This chapel is in the north aisle of the choir. It is approached by a low door, which gives access to a winding stair that leads up to it.

One side of the chantry consists of open arches, from which the abbey can be viewed. The cases are ranged round the four sides, however, and one, raised on a stand, containing an effigy of the Duke of Buckingham, occupies the centre of the floor. As we enter, we stand before the effigy of Queen Anne. A cloud of remembrances come to mind as we gaze upon the kindly pale face and somewhat homely form, set out with its brocaded silk robes, and pearl ornaments. We know that this is the figure that lay upon the funeral car of the royal lady, and that the dress is such as she was known to wear, and would be recognised as part of her presentment by the silent crowds that gazed upon the solemn procession; the same, too, that her numerous little children, all lying in a vault close by, would have recognised had they lived to grow to the age of recognition. We cannot look upon it with the same immovability as did the Chinese philosopher. We think of the Augustan age over which she presided, her friendships, her tenderness, her bounty, with peculiar interest, and turn from it with lingering regret.

Close by is the effigy of Queen Elizabeth. It does not represent the beautiful being we might picture as the "fair vestal throned in the west," but the aged lady she became at the close of her long reign, wrinkled and thin, dressed too in brocaded silk, with jewels round her withered neck, and with rosettes on her high-heeled shoes; again, we may be sure, the veritable image of the presence to which her loving lords and commons knelt. Surely, we have few personal relics, in the land, of greater interest.

Effigies of the Duchess of Buckingham and her son are also preserved here, dressed as magnificently as the royal ladies, mute evidences of the consideration enjoyed by them. Standing near the recumbent effigy of the Duke of Buckingham is the effigy of King Charles II. It is erect and life-like; more dusty, perhaps, than the rest, but enabling us to realise exactly and vividly the popular monarch as he walked about St. James's Park feeding the ducks at the decoy or sauntered down the Mall, or round Rosamond's Pond. "No kind of danger, James," he might be saying, "no kind of danger, James, for I am sure no man in England will take away my life to make you king."

Near to King Charles is a figure representing Nelson, somewhat short of stature, sunburnt, and in a naval uniform. It appears that the abbey was comparatively deserted by sightseers after the burial of this hero in St. Paul's, and to attract them back again, the officials caused this figure to be made and dressed in clothes that he had worn. This is the only figure belonging to this century.

In a closet, by the side of the case that contains the effigy of Queen Anne, are placed several unidentified figures made of wood, stripped, for the most part, of their coverings, though in two or more instances still possessing a fragment of the garments with which they were originally clothed. In one of these instances the fragment in question, however, is but an indication of a gilded crown. It has been suggested that this effigy may have represented Queen Philippa, and a slight research may possibly establish this supposition as a fact, though it is believed that effigies were first used at the burial of Henry V. Previously, the kings themselves were shown to the people in their royal attire; but as that monarch died at Vincennes, this custom was necessarily abandoned, and on the arrival of the procession that accompanied his remains from Paris, an effigy was placed on the funeral car, which was followed by his three chargers up to the altar. This effigy is, probably, among the little gathering thus unceremoniously stowed away. The absence of finish to the features of those that are visible in the dusk of their recess suggests that the faces may have been once covered with wax like those in the excellent preservation we have mentioned.

Altogether the collection has a singular charm. It brings the past before us as vividly as any enchantment could do, and with greater reality, for these figures, we know, belong to their own time, and were robed in their own time, and are no counterfeits as far as costumes and accessories are concerned. In the lifetime of the originals, we call to mind, the abbey was but a speck on the vastness of their possessions, and now these semblances are but specks on the vastness of the abbey, occupying, indeed, but a small portion of the space dedicated to one of its abbots, but still worthy that some account should be taken of them, and care exercised that their condition should not suffer from neglect.

THE GENTILI MEMORIAL.

A GATHERING is about to be held in the Church of St. Helen, Bishopsgate, of persons interested in International Law, for the purpose of unveiling a mural monument recently placed in that church in memory of Alberico Gentili, whose claim to be at least one of the founders of the science is coming now to be generally admitted. Attention was recalled to the life and writings of this remarkable man by an inaugural lecture delivered in 1874 by Dr. Holland, professor of International Law at Oxford; and committees were soon afterwards formed to do honour to the great Italian, not only in his own country, but also in Holland and in England. The English committee, of which H.R.H. Prince Leopold is president; the Right Hon. Sir Robert Phillimore, D.C.L., Judge of the Court of Admiralty, chairman; and Signor V. de Tivoli, honorary secretary, determined a year ago to commemorate Gentili by placing a monument in the church where he was buried, and by procuring the publication at Oxford, and under the editorship of Professor Holland, of the principal work of Gentili, the "De Jure Belli."

Alberico Gentili was born at San Ginesio in the year 1550, and graduated D.C.L. at the University of Perugia. Obliged to fly from his own country on account of his Protestant opinions, he arrived, in 1579, in England, where his profound legal knowledge procured for him the notice of the great and learned in London, and at Oxford, where he became, in 1587, Regius Professor of Civil Law. In the following year he began the publication of the "De Jure Belli." In 1605 he died in London, and was buried in the churchyard of St. Helen's, at a spot now covered by the buildings of St. Helen's-place.

The monument stands next to the altar-tomb of Sir Thomas Gresham, at the eastern end of the wall of the nuns' choir, where space for it

has been freely and handsomely accorded by the rector of the "Westminster Abbey of the City of London."

It is chiefly of veined and coloured alabaster and black marble, and is partly an imitation of a smaller one now in the chancel of the church, to the memory of Sir William Pickering and his son, in the Palladian style, which was new in England at the date of its erection in 1574. This style, which is also that of many other monuments of about the same date at St. Helen's, is thus suitable to the nationality of Gentili, and to the epoch of his decease. The heraldry consists of the shields of the ancient and honourable family of Gentili, of the town of San Genesio, and of the Universities of Perugia and Oxford. The inscription, in Latin, was, for the most part, composed soon after the death of Gentili as an epitaph, and may, indeed, have been actually placed upon the slab which covered the grave, of which, however, all trace has long been lost. The concluding lines were added by Sir Robert Phillimore.

The appearance of the monument is pleasing, from the combination of the materials,—coloured alabaster, black marble, and rosso-antico. Their effect is heightened by the gilding and emblazonry.

The whole work reflects great credit upon the well-known sculptors, Messrs. Henry Poole & Sons, of Millbank, Westminster.

THE LATE MR. R. L. ROUMIEU, ARCHITECT.

On the 28th ult., at The Cedars, Harrow Weald, the residence of his brother-in-law, died Mr. Robert Lewis Roumieu, of 10, Lancaster-place, Strand, and 7, St. George's-terrace, Regent's Park, aged sixty-two. So runs an announcement which we have read with much regret. Mr. Roumieu was a pupil of the late Benjamin Wyatt, and has steadily pursued his profession for a number of years, for a time in partnership, but mostly in his own name alone. His works have been numerous. They comprise:—restoration and additions to "Franks," Kent; restoration of Kensworth Church, Herts; St. Mark's Church and Parsonage, Tunbridge Wells; Manor Park Estate, Streatham; Victoria Ironworks, Isle of Dogs; the French Hospital, Victoria Park; St. Michael's Church, Islington; the Prudential Assurance Office, Ludgate-hill; Chambers, 10, Old Broad-street; Victoria Wharf, Upper Thames-street; Messrs. Woodall's Carriage Factory, Orchard-street; East St. Pancras Schools; Boarshead Chambers, 34, Eastcheap; additions to Brookshill Harrow Weald; additions to Itchel Manor House, Itchel, Hants; 48 and 49, Cheapside; additions to Whitbourne Hall, near Worcester; "The Lymes," Stanmore, Middlesex; 'The Cedars," Harrow Weald, Middlesex; additions to "The Priory" (Sir James Knight Bruce) Roehampton; and "The Priory," Wimbledon. Mr. Roumieu also built several warehouses for Messrs. Crosse & Blackwell, and also stables for the same firm in Crown-street, Soho; and had in course of erection a warehouse for them in Crown-street; and a warehouse for Messrs. Petty, Wood, & Co., Southwark Bridge-road, Southwark. The stables in Crown-street, and other of his works, have been illustrated in our pages. We may add that Mr. Roumieu was surveyor to the Gas Light and Coke Company's Estate at Beckton; the French Hospital Estate, St. Luke's; and several other estates in and near London.

His son, Mr. Reginald St. Aubyn Roumieu succeeds him, and has our good wishes for a prosperous career.

AIREDALE COLLEGE, BRADFORD.

The new Airedale College for the training of Independent ministers was formally opened on the 20th ult. The foundation-stone of the building was laid in October, 1874, and the structure was completed, so far as to admit of collegiate duties being undertaken, in September last. Since that time the furnishing of the college has been carried forward and completed. The site has been well chosen. Standing well up above the Shipley Valley, the college and its grounds are protected in great measure from the strong westerly winds which so freely played upon the old building at Undercliffe. The site has also another advantage, inasmuch as the building has a direct outlook upon the richly-wooded slopes of Lister Park. About six acres were purchased, at a cost of about 9,000*l.*; but it is intended to dispose of nearly one-half of the land fronting to Emma-lane as sites for villa residences. The principal front of the college is to the south, or towards Lister Park, the extent of the façade being about 200 ft. The style is Geometrical Gothic. Entering by the principal doorway, which is in the centre of the building, and is surmounted by an oriel window, the visitor is admitted to the vestibule, which is divided from the hall by an oak screen and folding-doors. The hall is spacious, and crossed by corridors right and left, while the grand staircase is thrown well to the rear of the hall. Occupying the eastern end of the building, and approached by the right corridor, is the assembly-room, 60 ft. by 30 ft., with an extreme height of nearly 80 ft. This room is lighted by a large oriel window in the south front, several two-light windows on the east, and a rose-window in the northern gable. The Principal's residence, although immediately connected with the College, has separate entrances, and some distinctness is also given to this part of the building in its architectural treatment. The house is surmounted by a tower, with ornamental iron cresting and finials. Class-rooms, council-room, library, and numerous other apartments are provided.

The floors, doors, and casings are of pitch pine, which has been extensively used throughout, and has generally been well selected. The fittings and furniture have been supplied by Messrs. Mills & Co., Bradford. The decorative work is of the simplest character, the prevailing colours used being a neutral tint approaching to grey green for the upper portions of the walls, with dados of Pompeian red. The painter and decorator was Mr. E. Harland, of Bradford. Ventilation is secured by independent shafts, conducting the foul air through brass gratings in the walls, and the heating is effected by Haden's combined hot-air and water apparatus. The laying out of the College grounds has been done by Mr. T. Clough. The principal contractors for the building were Messrs. Murgatroyd, masons, Idle; Messrs. W. & J. Beanland, joiners, Bradford; Mr. Rushworth, plumber, Shipley; Mr. B. Dixon, plasterer, Bradford; Mr. R. Hird, iron-founder, Shipley; and Mr. Smithies, slater, Bradford. Messrs. Lockwood & Mawson, of Bradford, were the architects. The cost of the building, the furnishing, the laying out of the grounds, &c., is stated at 18,000*l.*

NATIONAL TRAINING SCHOOL OF COOKERY.

The annual meeting in connexion with the above school was held on Monday afternoon, at the school, in Exhibition-road, South Kensington, under the presidency of the Duke of Westminster. The Report of the executive Committee stated that the school had now become self-supporting, the donations being only 62*l.* 11*s.* Her Majesty's Commissioners for 1851 had kindly advanced 500*l.* to the school without interest. With the aid of this sum, the fees for local teaching, and, with reduced expenditure, the debts of the school had all been paid off, and there was a working balance at the banker's. The schemes for the gradual spread of the teaching, as well as the better training of teachers, would be supported by the Committee, as they were aware that these points must be well attended to if the school was to maintain its place in the estimation of the public. The receipts for the years ending the 31st day of March, 1875, 1876, and 1877 were 2,671*l.* 5*s.*, 3,018*l.* 9*s.*, and 3,698*l.* 7*s.* respectively; and the payments were 2,479*l.* 18*s.* in 1875, 3,292*l.* in 1876, and 3,010*l.* in 1877. The noble president, in opening the proceedings, said the financial position of the association, as shown in the report, was satisfactory.

The Hon. F. Leveson-Gower, M.P., the chairman of the Executive Committee, in moving the adoption of the report, referred to the great advantages of the Association.

Sir Daniel Cooper, the treasurer, seconded the adoption of the report, which was carried unanimously.

A vote of thanks to the chairman, on the motion of Sir Henry Cole, was carried by acclamation.

Mr. Godwin, from the body of the meeting, called attention to the want of proper arrangements for the comfort of the ladies who attended the classes; and it was stated on the part of the Council that the subject should not be lost sight of.

CONFERENCE ON TRADE UNIONISM.

On Saturday afternoon last a conference on "Trade Unions and the Church," was held at the Chapter-house, St. Paul's Cathedral, in continuation of a series of conferences that have taken place between clergymen and members of trade unions and others, with the ostensible object of enabling the clergy to act as mediators in trade disputes or otherwise. The Rev. J. Oakley, of St. Saviour's, Hoxton, presided. The subjects indicated for discussion were "The objections and difficulties of employers in dealing with trade unions; especially the practice of unionist workmen striking against non-unionist workmen, the alleged deterioration of work, and the emigration of English trade, considered as due to trade conflicts, and the alleged restraint of individual liberty. A system of arbitration and conciliation, considered as an end to which all efforts for the organisation of labour shall tend. Co-operation considered as a solution of the labour question."

The Chairman, in opening the proceedings, alluded to the prejudice existing when it was thought that the clergy were apathetic in such matters, or sympathised rather with the employer than with the employed—with the rich rather than the poor. The desire to take up a right attitude was the main motive of the conference, and to learn from both sides the exact state of affairs was the secondary motive.

Mr. Doulton then opened the discussion, as an employer of labour. He commenced by stating that those who came forward to interfere generally ignored the laws of political economy, and were disposed to look at the mere sentimental side of the question. He inclined to the belief that the rise in wages was due much more to natural causes than to trade-unions; and in saying this he was not saying one word against them. Referring to the great prevalence of strikes in the "Black Country" and in other places, he said that the state of affairs was both injurious to the employers and the employed; and alluding to his own case, where a dispute occurred owing to his refusing to discharge two men employed in a particular class of work, he held that the principle of individual liberty was there assailed. The circumstances were unjustifiable, for who would like to have premises picketed for days together for daring to do what he did? All this occurred through his declining to discharge two men specially skilled for the class of work they were employed upon, and he thought the law ought not to allow premises to be infested as his were, being nothing less than intimidation. With reference to the alleged deterioration of work, workmen were unfairly blamed, and he did not think that there was any deterioration in the character of work.

Mr. Mundella, M.P., felt that the clergy might do great service in promoting arrangements between employers and employed. He had recognised long ago the state of things, as regards strikes, referred to by the previous speaker. Speaking of Mr. Doulton's experience of the "Black Country," he asked what was the condition of nail-makers there. Read, he said, the report of Mr. Baker, the Government inspector, and say if they ought not to be ashamed that in a Christian country such a state of things could exist, such suffering, such poverty, such degradation, little girls from eight to ten years of age beginning to work. The building trade was behind others in the state of feeling existing between employers and employed, for, in the first place, it did not feel the effects of foreign competition. Dealing next with the subject of piece-work, Mr. Mundella agreed that it was the best for both parties. But was it true that trade-unions were opposed to piece-work? There were some solitary cases, but 90 per cent. of the industrial exports of the country were paid for by the piece. As to the deterioration of work, he believed British manufactures never were turned out so good as at present; while, at the same time, there never was so much rubbish turned out. But the latter was not the fault of the workmen, for the British manufacturer was only too ready to turn out what there was a demand for. In conclusion, Mr. Mundella said the remedy in trade disputes was for employers to meet their workmen face to face, and to try to understand each other. He referred to how the Sheffield manufacturers and their workmen thus first discussed their grievances, getting to a good understanding,—a principle which had extended with good results.

Mr. Cremer said that trade-unions were at variance on the subject of piece-work, the objec-

tion not being to the system, but the right of employers to fix the price. He denied that the trade-unions had not raised wages, for when did employers when doing well involuntarily increase workmen's wages? But employers, when trade was bad, with a falling market, did not hesitate to lower the wages.

Mr. Rodwell, Q.C., M.P., protested against the particular form in which some of the unions were conducted,—all in favour of the employed, and against the interest of the employer. There were unions and unions, some deserving of support and others not. He thought the greatest misfortune that had befallen the country at the present time was that Mr. Mundella and others of influence should indulge in the feeling of self-satisfaction and optimism, saying, "We can beat all the world. English workmen can take care of themselves." It was misleading, as he believed that, by some means or other, a considerable amount of trade had been driven out of this country. It would be better to drop that feeling of self-satisfaction, and tell the people that they must be careful to do nothing that would put them in a worse position as regards foreign countries, and that if they wished to hold their own they must not introduce any artificial system which would interfere with what had been properly called the inevitable laws of supply and demand. The reason why this optimism should not be indulged in was that the working classes were not doing their duty to themselves. He complained that trade-unions reduced all to one low level, not allowing any workman freedom of action to do so much work as he felt inclined, if the occasion presented itself. Arbitration was a principle no employer of labour should ever admit; in a question between man and man no one should interfere.

After some remarks from Mr. Young, Mr. Howard addressed the meeting, stating that he knew some instances of wages being raised without asking, and his principle was to pick men and pay them well.

Mr. Hazell thought the limitation by trade-unions of the number of apprentices was not right.

Mr. Hughes, Q.C., M.P., said he looked on a trade-union as a fighting body,—as an army not to be always fighting, but watching the interests of their own side, and fighting for those interests when the occasion arose. It was a sad state of things, no doubt; and he looked forward to the time when it would not be,—when employers and men would work thoroughly together. He thought in the meantime there was no other method of making things tolerable but a system of arbitration and conciliation.

Mr. Ludlow, Q.C., and Mr. King afterwards briefly addressed the conference.

FINE ART EXHIBITION AT DERBY.

THE new buildings for the Derby School of Art (which were illustrated and described in the *Builder* for the 9th ult., pp. 585-88) were opened on the 27th ult. with an exhibition of works of art lent by various friends. The exhibition is said to be a very successful one. In the North Gallery is hung a collection of paintings by Rubens, Rembrandt, Teniers, Jan Steen, Gainsborough, Sir Joshua Reynolds, Vandyke, Wright (a local artist), Sir Peter Lely, Frank Hals, &c. The pictures in this, and in the other galleries also, have been hung by Messrs. Agnew, of London and Manchester.

The Duke of Devonshire, who presided at the opening of the exhibition, said:—Art holds so high a place among the subjects to which the powers of the mind can be directed, that any nation which is indifferent to art must so far lay itself open to the taunt of being content to occupy an inferior position in the progress of civilisation. Independently of such considerations as this, and looking at the subject from the more prosaic and matter-of-fact point of view, I believe that the cultivation of art is of essential importance to us, as one of the necessary elements and conditions on which we can hope to maintain the eminence we desire to hold among the great manufacturing nations of the world. Art embraces a very wide range of subjects. It embraces elementary drawing as well as mechanical and architectural drawing, and designing, modelling, and painting. I believe it is unquestionable that in one form or another instruction in art is of the highest importance towards the successful prosecution of almost every branch of national industry. In some, no doubt, the necessity is more obvious than in others, but to a greater or less degree instruction in art comes into operation in, I may say, almost every branch of national industry and manufacture. I have, therefore, viewed with very great satisfaction the measures that have been taken of recent years by the Government. The promotion of instruction in art, as you are aware, forms a prominent part of the measures of an educational character instituted by the Government, and it is satisfactory to know that those measures have been attended with such great success. I see, from the last report presented to Parliament by the Science and Art Department, that the number of students in this country who are receiving instruction in one form or another exceeds 450,000. Of course a large proportion of those are only being taught the primary elements of drawing; but not only is this large number receiving art instruction in one form or another, but the number is continually increasing, and it is expressly stated that the merits of the students are most decidedly advancing. Passing from the general subject, it will be my duty to say a few words with reference to the subject with which we are more especially concerned this morning,—the Derby School of Art and the Exhibition which I am commissioned to open. I am glad to say, from the reports presented at the last annual meeting of the School of Art, both by the committee and the head-master, as well as judging from what may be collected from the Government report, to which I just now alluded, that the Derby School of Art holds a very satisfactory position among other institutions of a similar character, and is really doing very good work. This is the more satisfactory, inasmuch as the work has hitherto been carried on under disadvantages, but now these disadvantages have been removed by the construction of this building, and I think we may look forward with confidence to a very large and important measure of success. I am very glad to find that although only six or seven years have elapsed since you had a Fine Art Exhibition in Derby, you have again succeeded in obtaining a satisfactory and important collection both of pictures and other works of art. The promoters of the last exhibition, and, I believe, of the present, have very naturally considered it desirable to a certain extent, at least, to give the collection a Derbyshire character, and to make it illustrative of those branches of art in which the county has been distinguished. I have not had an opportunity of learning how far that object has been attained on the present occasion, but if I remember rightly the exhibition on the last occasion was a marked success as a Derbyshire exhibition. At that time, unfortunately, it was notorious that in one respect, namely, the manufacture of porcelain, the neighbourhood had lost the celebrity which at one time it held. I was reminded the other day of what fell from me on the last occasion, when I referred to the fact, at the same time expressing a hope that the exhibition then about to be opened might have some effect in leading to a revival of that manufacture. Now I have been told within the last day or two that there is at present a good prospect, or, I may say, more than a prospect, of the re-establishment of the porcelain manufacture amongst us. I understand it is a fact that works on a considerable scale either have been already established in the town, or are likely to be so immediately, and I am sure it will not be too much to say that we all hope the enterprise will be rewarded with complete success.

A DOMESTIC ECONOMY CONGRESS.

UNDER the auspices of the Society of Arts, and in connexion with the educational institutions of Warwickshire, Worcestershire, and Staffordshire, a congress will be held in Birmingham on the 18th and 19th inst. with a view to the introduction of domestic economy and cookery as a branch of general education, especially in the public elementary schools throughout the country. The subjects to be discussed at the coming congress are food and cookery, household management, cleanliness, health, thrift, needlework, health and sickness, warming, ventilation, &c. Papers have been prepared by Miss Kenrick, on "Results of Needlework in some Elementary Schools"; by Miss Mary Wills, Society of Arts Examiner in Domestic Economy, on "Needlework"; by Mr. Joseph Pope on, "Clothing and its Materials"; by Mr. Edwin Chadwick, C.B., on "Head to Foot Washing"; by Mrs. Watson, on "The Methods of Training Young Servants in Habits of Cleanliness"; by the Rev. Newton Price, of Watford, on "Cooking in Elementary Schools" by Mr. R. Brown Clayton, on "Experiences of Cookery as taught in Schools"; by Mr. S Mitchell, M.A., on "The Uses of the Food Collection at South Kensington"; by Mrs. Charles Clarke, on "The National Training School of Cookery"; by Miss Guthrie Wright, on "The Art of Preparing Food"; by Dr. Wilson, on "Errors of Diet"; by Mr. G. C. T. Bartley, on "School Savings Banks"; and by Dr. Langford, on "A Birmingham Board School Bank."

In Section B, Professor Huxley has a paper on "Elementary Instruction to Children in Physiology"; Mrs. W. E. Gladstone one on "Nursing"; Miss Helen Taylor, of the London School Board, one on "Nursing in connexion with Education"; and Mr. Lawson Tait a paper on "Sickness, and how to provide for it." Mr. Rawlinson, C.B., will have a paper on "Buildings for Working Men"; Dr. Alfred Hill, on "House Drains in relation to Health"; Mr. Frank Curson, on "The Appointments and Appearance of the Workman's Home"; and Captain Galton, C.B., F.R.S., on "Warming and Ventilation."

In section C papers will be read by Sir Henry Cole, K.C.B., on "The Practical Development of Elementary Education through Domestic Economy"; by Mrs. Fenwick, of Leeds, "On the Teaching of Domestic Economy in conjunction with Cookery in Elementary and Secondary Schools"; by the Rev. J. P. Fawnthorpe, on "Text-books"; by the Rev. E. F. M. MacCarthy, on "Government Grants"; by Miss Synnot, on "Female Inspectors"; and by Mr. Charles Critchett, B.A., on "The Working of the Examinations of the Society of Arts in Domestic Economy."

SOCIETY FOR IMPROVING THE CONDITION OF THE LABOURING CLASSES.

THE annual meeting of this society was held, June 29th, at Willis's Rooms, St. James's, under the presidency of the Earl of Shaftesbury.

The report, which was read by the secretary, Mr. Charles Payne, stated that the Streatham-street, Bloomsbury, property, comprising fifty-four dwellings for families, had been fully tenanted; Portpool-lane, accommodating 20 families and 128 single women, had maintained satisfactory occupation,—the public washhouse in connexion was reported as largely resorted to and useful; Wild-court, Drury-lane, with accommodation for 102 families, had been well tenanted; Tyndall's-buildings, Gray's-inn-road, renovated for 87 families and lodging-house for 36 single men, had had a full average tenancy; Clarke's-buildings, St. Giles-in-the-Fields, renovated for 78 families, had also been fully tenanted; George-street, Bloomsbury, Model Lodging-house, for 104 single men, gave an average of 102; Charles-street, Drury-lane, lodging-house for 72 single men, had averaged 69 tenants; Great St. Andrew's-street, St. Giles's, renovated houses, for families, reported generally good occupation. The society's annual summary of the deaths and their causes placed the rate of mortality throughout the houses at less than 21. The receipts from all sources during the year were 5,923*l.* 1*s.* 4*d.*, which, with a balance in hand at the beginning of the year of 544*l.* 3*s.* 2*d.*, made a total of 6,467*l.* 4*s.* 6*d.* The total expenditure amounted to 5,940*l.* 18*s.* 10*d.*, leaving a cash balance of 526*l.* 5*s.* 8*d.* The property belonging to the society was estimated as worth 34,210*l.* 4*s.* 11*d.* And the general liabilities amounted to 22,751*l.* 19*s.*, leaving assets to the amount of 12,158*l.* 5*s.* 11*d.*

Mr. Cowper-Temple, the Marquis of Hertford, Mr. Smithies, Prebendary Auriol, and the Earl of Shaftesbury, took part in the proceedings which followed.

OPTICAL PROGRESSION.

SIR,—Can any of your correspondents inform me whether there is any scale ascertainable for optical progression to express the diminution of equal bays of a building in perspective? The annexed formula fulfils the necessary condition of approaching equality without ever arriving at it:—

Multiply a by x to n terms,
by $1-x$ to n terms.

Then add, so we have,—$ax+a(1-n) : ax^2+a(1-n)^2$, $ax^3+a(1-n)^3$, &c.

When x and $1-x = \cdot6$ and $\cdot4$, we have 250 : 125 : 80 : 56, &c.; $\cdot2$ and $\cdot8$ give 250 : 125 : 85 : 65, &c.; $\cdot6$ and $\cdot3$ give 162 : 81 : 45 : 27 17 : 11, &c.

W. SCARGILL.

PUBLIC BATHS AND WASH-HOUSES.

Mr. E. T. Bellhouse read a paper on this subject on the 27th ult., before the Manchester Statistical Society. In the course of his remarks he said:—Astudious perusal and careful examination of the twenty-one reports of the Manchester and Salford Baths and Laundries Company, and a personal visit to the establishments at Mayfield, Stretford-road, and Greengate, enable me to furnish some account of the pecuniary outlay which has been incurred, and of the results realised by such outlay; also to deduct useful hints for future guidance from the experience of the past twenty-one years. Firstly, then, as to the outlay incurred. This may be taken as equal to the actual largest amount of subscribed capital, namely, 41,150*l.* Secondly, the results realised by the advance on the part of the shareholders of this 41,150*l.* may be summed up in the following manner:—3,733,293 baths, hot and cold, private and swimming, have been provided, and 617,226 washers have been accommodated, and a profit of 13,627*l.* has been made, which has been paid to the shareholders in dividends averaging about 1·6 per cent. per annum. If we take these profits or dividends, 13,627*l.*, from the actual capital paid up, 41,150*l.*, it leaves 27,523*l.* as the net amount of expenditure incurred by the company.

With these figures before us, it is curious and interesting as a general deduction to apportion the number of bathers and washers at such prices as will, in the sum total, be about equal to the net expenditure, and the following seems to me to supply a just summary of the twenty-one years' work accomplished by the Manchester and Salford Baths and Laundries Company:—3,733,293 baths, at 1·7d. per bath, equal 26,444*l.*; and 617,266 washers, at ½d., equal 1,286*l.*; making a total of 27,720*l.* At a cost to themselves of 1·7d. per bath, and ½d. per washer, they have provided for the people first-rate bathing and washing accommodation, leaving as their property the land and establishments at Mayfield, Stretford-road, and Greengate: so I think it is right to conclude that their efforts and proceedings had been eminently successful in result. The baths and washhouses provided at Miles Platting by Sir Benjamin Heywood were taken by the company in 1864, but the occupancy was discontinued in 1869, as actual expenditure was not covered by receipts, and commensurate advantage did not seem to accrue to the neighbourhood. Having been associated as joint secretary with Mr. James Dunn in the establishment and planning of the small experimental baths and washhouses in Miller-street, I feel naturally interested in noting the history of that establishment. It was carried on for fourteen years under the original committee, and for fifteen years under the control of the company, its career of usefulness extending from September, 1846, until September, 1875. There has every year been a small profit in working, but the company received notice to quit from the owners of the property, who at the time expected to require land for building purposes. As an experimental forerunner to future progress, this small establishment, limited in extent, only affording the accommodation of sixteen private baths and twenty-six washing compartments, has been highly successful. I find from the books that half a million of private baths have been taken at Miller-street during twenty-seven and three-fourths years, and there were 132,250 washers. A boys' penny swimming-bath was opened at Mayfield in the summer of 1860, as the directors of the company believed that the provision of a cheap bath would prove a great boon to the juvenile portion of the population. This was given up in 1866 for various reasons; the boys did not avail themselves of the advantage as it was expected, and, besides, penny bathers became penny beggars, and it is to be feared that many street Arabs imposed on benevolent passers-by on the plea of wanting a bath. The conversion into a gentlemen's subscription swimming-bath has been attended with tolerably satisfactory results. The annexed figures show the profits of working, after paying all expenses, except interest, during the last three years; also the number of bathers and washers who have been accommodated:—1874: Profits, 652*l.*; bathers, 176,091; washers, 22,477. 1875: Profits, 1,318*l.* 11s. 1d.; bathers, 227,893; washers, 17,458. 1876: Profits, 882*l.* 17s. 6d.; bathers, 208,807; washers, 14,136. Here the vicissitudes of different seasons and circumstances are strikingly illustrated, and the addition of 1866 makes the illustration more striking:—Profits, 843*l.* 3s. 4d.; bathers, 213,114; washers, 48,295. In regard to bathing, it appears that the number of bathers in 1876 is nearly equal to the number in 1866, although two establishments at Miles Platting and Miller-street had been closed before 1876. It may be taken as evidence of increasing bathing habits among the people that in 1876, with three establishments, nearly as many baths were taken as with the five establishments in 1867.

Turning now to the important subject of public laundries, it may be noted that the advantage of combining bathing the person and washing of clothes in one establishment arises from the economy of having the same apparatus for heating water for baths and for laundries. Manchester had far better public washing accommodation in 1866 than in 1876. Ten years ago there were five public laundries connected with the company in Manchester and Salford, with an aggregate of 174 compartments, and the number was 48,295 in the year. In 1876 there were only three laundries, with an aggregate of 100 compartments, and the number was only 14,136 in the year. The corporation of Manchester has adopted the opinion that a reasonable expenditure in providing baths and washhouses in the various districts of the city would be a wise policy, and would meet with the general approval of the ratepayers. As a commencement, the two establishments at Mayfield and Stretford-road have been purchased for the citizens, the land, buildings, and other property having been obtained for the sum of 19,000*l.*, subject to existing chiefs. It is probable that the corporation will take possession about next October, and that a brief period will be devoted to making such alterations and improvements as may be deemed advisable. The corporation will proceed, step by step, in providing baths and washhouses in the populous districts of the city, and already negotiations have been entered into for the purchase of an eligible plot of land, 2,200 yards in extent, in New Islington, Ancoats; and another site is being looked out for in the neighbourhood of Rochdale-road. It is to be hoped that ere long a comprehensive scheme for providing the city efficiently with these valuable institutions will be realised. Opinions differ as to whether public baths and washhouses can be worked by the Manchester corporation so as to secure a profit, or whether a deficit will be a necessary condition. To the Corporation of Liverpool is due the credit of originating and developing for the poorer inhabitants a system of baths and washhouses, and it is worthy of remembrance that the first institution in Frederick-street was opened by the Council in May, 1842, three years before operations were commenced in the first London establishment. The precedence taken by Liverpool at so early a period is well maintained by the continuous progress which is being made. There are now seven Corporation establishments in efficient operation, and in a short time the number will be increased to nine. Spacious swimming-baths and convenient private hot and cold baths of three classes are provided in abundance, and the important department of washing and drying convenience is supplied with a liberality which is worthy of imitation. There are at this time 202 washing compartments available, and when the two establishments now being erected are completed, there will be a total of 359 compartments, Although general experience seems to show that public laundries cannot be made remunerative in a pecuniary sense, the advantages arising from their habitual use so greatly affect the sanitary condition and social comfort of the people that expenditure in this direction is a judicious outlay, and it is to be hoped that the Manchester Corporation will follow the liberal and enlightened example of Liverpool.

In the course of the discussion which followed, the chairman (Mr. T. R. Wilkinson) said that Mr. Bellhouse had shown that baths and washhouses did not pay, but, at the same time, he had shown with equal force that it was most desirable that they should not only exist, but increase in number, and that they should be taken in hand by the Corporation. Manchester was about to take the matter in hand, and if it cost 10,000*l.* a year, which he dared say it would, it would be money well laid out.

Mr. Fowler (the borough engineer of Salford) said personally he went a little further than Mr. Bellhouse did in his paper. He thought every working man should have a hot and cold bath in his own house, and he had already got out designs with that view. He did not think that the children and women of the working classes were in the habit of attending the public baths, and if they could get the town's water at a reasonable price, and not be under such heavy restrictions, and agitated so much as to waste water as they were at present, a great stride would be made in the improvement of the health of the people.

Mr. J. G. Lynde (surveyor to the Manchester Corporation) said the question of baths was in the hands of an active committee of the City Council, and he had every confidence that the baths and washhouses would be self-supporting, and not be a cost to the ratepayers.

ST. COLUMBA'S CHURCH, LARGS.

On the 2nd of August last the foundation-stone of this new church was laid with befitting ceremony, and last week it was consecrated by the Bishop of Glasgow. The church is built in the English Gothic style, and is seated to accommodate 250 worshippers. The building runs east and west, and is entered by a door at the south-west corner. On the west end there are two two-light windows filled with stained glass, each having full-sized figures representing respectively St. Ninian, St. Columba (to whom the church is dedicated), St. Kentegern, and St. Margaret (of Scotland). At the other end of the church, behind the table, there is also a three-light window, which is likewise filled in with stained glass. The windows are the production of Messrs. Heaton, Butler, & Bayne. The next object that attracts the visitor's attention is the reredos, which extends the whole width of the altar, and rises to a height of 6 ft. 4 in. It is composed generally of alabaster. In the centre is a cross of white statuary marble, bosses of Rosso-antico, and pale Connemara green marble; on either side are the letters Alpha and Omega in *lapis lazuli* with white border. The background of the cross of Sicilian marble is carved with passion-flower foliage in low relief and gold ground. The retable is of deep red Devonshire marble, having columns of the same material. To the outside of the cross the Agnus and Evangelistic emblems are carved in light alabaster, in quatrefoil plants, with gold ground. This erection is the gift of the Earl of Glasgow, and is the workmanship of Messrs. Henry Poole & Sons, London. Mr. Alexander Ross, of Inverness, is the architect.

PUBLIC WORKS IN SALFORD.

On the 27th ult. the members of the Manchester Scientific and Mechanics' Society visited some of the works of the Salford Corporation now in progress of execution. The members first proceeded to Sussex-street for the purpose of inspecting the intercepting sewer in course of construction there. They were accompanied by Mr. Fowler, the Salford borough engineer, who described the works. The work in course of construction in Sussex-street forms part of the intercepting sewer which extends from the west end of Sussex-street to the north end of Montague-street, including the iron culvert underneath the river at the latter point. The intercepting sewer is already constructed through the town for a distance of 3¾ miles, and for the greater part of its length is from 30 ft. to 40 ft. in depth below the surface, and the size of the sewer is, at the outlet, 8 ft. 6 in. diameter, and at this part it is 5 ft. diameter. There are forty-nine sewers now discharging into the River Irwell. The main sewer up to this point will admit of thirty-nine of these being intercepted, and the contents discharged at Mode Wheel, where extensive works are now in course of being designed for dealing with the sewage. The cost of the main trunk sewer, when completed, will be about 72,000*l.*, and will admit of draining every portion of the borough to one outlet about a mile below the town. The special features in the scheme are the facilities obtained for passing off the flood waters from the low lands of the borough, as in Lower Broughton, Ordsall, and Greengate, and the provision made for passing off storm-water (by means of self-acting weirs), direct into the river instead of through the main sewer. Special means have been adopted in crossing under the river by flattening the upper surface of the pipes, and, by shortening the line as much as possible so as to obtain the necessary fall, difficulties have been overcome in carrying out the work, as a great deal of private property and buildings have been passed under, including two crossings under the river, the canal, and a large area covered by railways. The portion in Sussex-street varies in depth from

20 ft. to 22 ft. below the surface. A great portion of the ground is artificially formed, the bottom portion being composed of quicksand and gravel. A cast-iron culvert, in course of construction under the bed of the river, is being laid by means of cofferdams, one-half being laid at one time. At this point an outlet will be obtained for the drainage of the whole of the land situate between the canal and the river at a depth of 15 ft. below the surface of the ground, and will be continued along the valley to suit the new roads now in course of construction by the Corporation.

The party next proceeded to Camp-street, and inspected the Irwell-road Bridge. This bridge is intended to form a better means of communication between the townships of Pendleton and Broughton. The new and widened road will extend from Broad-street to Lower Broughton-road, and will be about 1,250 yards in length, and 54 ft. wide. The bridge is on the lattice-girder principle, 140 ft. span, and the same width as the new road; and the soffit of the bridge will be 6 in. above the great flood of 1866, and 14 ft. 6 in. above the ordinary water level. The foundations are constructed on a bed of concrete, placed on gravel, secured by piling 30 ft. deep. The construction of the abutments has been contracted for by Mr. Pilling, of Bolton, for the sum of 14,756*l*. The masonry is of red sandstone, from the Runcorn quarries; the bedstones for the girders, string-courses, and caps for pilasters, are of grey granite. The acceptance of the tender for ironwork is under consideration, and the cost will be about 10,000*l*. There will be about 312 tons of iron in the two main girders, and 330 tons in other parts of the bridge, making a total of about 642 tons of metal, including the ornamental work. The bridge is calculated to carry a live load of 1½ cwt. to the square foot.

The members were then taken to the mouth of Salford main sewer in Mode Wheel-lane. Here an opening was pointed out by Mr. Fowler, who explained that it is intended to fix in it the necessary pumps to raise the sewage in the tanks for deodorisation before it is passed into the river. In the brook is one of the leaping weirs before mentioned for passing off flood waters. There are thirty-six acres of land purchased for this purpose, and the road in course of construction is intended to form the approach to the proposed works.

Throstle-nest Bridge and Road were next visited. This bridge and road are intended to form a means of communication between Old Trafford and the south-west portion of Salford. The road is 60 ft. in width and one mile in length. The abutments are to be of red sandstone, from the Runcorn Quarries. The string-courses and bed-stones are from the Horsforth Wood Quarries, Yorkshire. The foundations are on solid rock, about 14 ft. below the surface of the ground, and the soffit of the bridge is 19 ft. above the surface. The contract has been let to Mr. A. Pilling, of Bolton, for the sum of 13,147*l*. The span of the bridge is 140 ft., and the width the same as the road, viz., 60 ft. The bridge is formed of two bowstring girders, of 152 ft. in length over all, and 17 ft. 9¾ in. deep in the centre, with transverse girders placed 5 ft. apart, centre to centre, 4 ft. deep. The total weight of metal, including that for ornamentation, is about 700 tons. It is calculated to carry 1½ cwt. to the square foot. The test for the rolled iron is that it be capable of being bent to a right angle, when cold, without fracture, and to bear a strain of 10 tons per square inch without permanent set, and 21 tons per square inch before fracture.

STEAM-ROLLERS *v.* COAL VAULTS.

AT a meeting of the Chelsea Vestry on the 26th ult., the following report was read by Mr. G. H. Stayton, the surveyor:—

"I regret to have to report that an accident occurred yesterday afternoon in Smith-street, in consequence of the arches of the coal-vaults in front of Waldegrave House and No. 25 falling in at the time the steam-roller (weighing fifteen tons) was working upon the roadway above, but although the conditions were alarming, and the roller was placed in imminent danger of being capsized and bursting the boiler, happily no further harm was done. I took immediate steps for temporarily shoring up the roller and effecting its removal, which was safely executed soon after midnight. Upon a careful examination this (Tuesday) morning, I find that the vaults extend under the roadway *to a distance of nearly 6 ft. from the kerb*, and from the channel outwards the mortar of the arch is very defective, being nearly as soft as putty. I have, therefore, to request your immediate instructions with regard to the restoration of the damaged vaults, and whether they are again to be built out under the highway, or not carried further than the kerb; and I would also suggest that the question of the existence of similar vaults under the roadway in other parts of the parish (which I believe may be regarded as 'dangerous') be referred to the committee of works for consideration and report, and that such reference should comprise the desirability of a standing order being passed limiting the extent of all vaults hereafter to be constructed."

After some discussion it was resolved:—

"That the surveyor be instructed to act in accordance with the 102nd section of the 18th and 19th Vict., viz., that he put the vaults in repair, setting the same back, and that the subject generally be referred to the committee of works."

THE MARLBOROUGH MONUMENT, BLENHEIM PARK.

SOME years ago it was contemplated to restore the fluted column erected to "Marlborough's glory" in Blenheim Park, Woodstock, but, according to the *Oxford Journal*, the enormous expense of erecting scaffolding caused the project to be abandoned. A few days ago, however, a "steeple jack" hailing from Nottingham came and inspected the monument, and soon decided that a thorough restoration could easily be effected without scaffolding. The monument is 130 ft. high. The first operation consisted in flying a kite over the top of the monument, and when well in position suddenly running out a quantity of the string, thus causing the kite to drop on one side of the monument, and forming, as it were, a communication right over the monument from one side to the other. A slightly thicker string was now attached, and drawn over; then a still thicker one, till at last a strong rope, about an inch in diameter, with a pulley fastened in its centre, is pulled over till the pulley reaches the parapet; around this pulley is a smaller rope, called the "endless" one; to this rope a seat is affixed at one part, and at another two weights of about equal balance to the man who is to ascend. A man named Elliott then took his post on the seat, and with but little effort gradually pulled himself upwards. After reaching the figure of John, first Duke of Marlborough, he made his survey, and found that the statue was about 11 ft. high, and made of lead, filled in with concrete, as were the eagles at his feet, and the scroll in his hand. The figure of "Victory," which he formerly held in his right hand, but which some time back mysteriously disappeared, was lying on the parapet. This figure of "Victory" is in the shape of an angel, and is also made of lead, and weighs about three-quarters of a cwt. It was generally supposed that, at one time, a helmet covered the head of the statue, but such appears not to have been the case, as the curls around the head are perfect. On the left shoulder of the statue there is the following inscription, cut with a pen-knife:—"June 8, 1781, G. Austin." This was evidently done by a workman, after the erection of the monument. It is the opinion of those engaged in this restoration that at some time or other the statue has been struck by lightning, as the figure is somewhat "fused," and the pedestal on which it stands is much broken. It is now intended to protect the monument by a lightning conductor, and the whole structure is to be thoroughly repaired. The work is under the superintendence of Mr. Joseph Blackburn, who has been engaged in various parts of England upon similar restorations.

National Industrial Home for Crippled Boys.—The present Home and Refuge for Crippled Boys, situated in Wright's-lane, High-street, Kensington, wherein some fifty maimed lads are now engaged in industrial employment, proving inadequate to meet the increasing demands for admission, the movement of the committee for an extension of accommodation has resulted in the foundation-stone of a new building in proximity to the existing one being laid by the Princess Louise. The new building will contain school-rooms, lavatories, and dormitories, the old building being retained as a residence for the master, &c. The estimated cost for the accommodation of 100 boys is about 8,000*l*., towards which something over 4,000*l*. has been given or promised. Mr. E. C. Robins is the architect.

PROPOSED SOUTH KENSINGTON PNEUMATIC RAILWAY.

THOSE who visit the South Kensington Museum, the Albert Hall, or the Horticultural Gardens know that certain difficulties stand in the way. The Metropolitan District Railway is very largely used for the purpose, but it is a quarter of a mile from the gardens, nearly as much from the museum, and half a mile from the Albert Hall.

A company is now being formed to construct a pneumatic railway between the South Kensington Station of the District Railway and the Albert Hall. The line will rise the whole way to the Albert Hall, the ruling gradient being 1 in 48. The train will be blown through the tube by an ejector; in other words, a great centrifugal pump, 24 ft. in diameter, fixed close to the District station, and worked by a pair of condensing engines exerting about 170 indicated horse-power. The tunnel will be of brick, and the floor will be paved, and under certain circumstances it will be opened to the public as a dry, well-lighted foot-way, between the Albert Hall and the railway station. Its cross-sectional area will be 105·5 square feet; at the end of the train is fixed a screen or piston with an area of 104 square feet, the difference being allowed for windage. The train will consist of six carriages of very light build, the rail gauge being 4 ft. The train will hold 200 passengers, and the total load will be 32 tons, or ten tons less than the weight of a single engine on the Metropolitan Railway. The maximum resistance at twenty miles an hour will be about 2,420 lb., requiring to overcome it a pneumatic pressure of 2·6 ounces per square inch, and 162-horse power, assuming the useful effect to be 60 per cent.

It is beyond our province to deal with the commercial success or failure of a railway company, but we may say that the scheme has so far advanced that Mr. Rammell has got together a good board of directors for his company. The capital required is 60,000*l*., and the Metropolitan and District railway companies are supporting the scheme in a very practical way by guaranteeing a 4½ per cent. dividend.

THE KNOX MEMORIAL INSTITUTE, HADDINGTON.

THESE buildings, which are intended to serve as a memorial of John Knox, are about to be erected from plans prepared by Mr. Starforth, architect, Edinburgh, and will cost 7,000*l*. They will comprise an elementary school, in addition to the proposed Knox Institute. The site covers an area of nearly two acres. The ground-plan of the schools forms a parallelogram, the Institute being on the north and fronting the road, and the elementary school buildings to the south. The memorial school provides accommodation for 200 boys and 100 girls. While the necessary class-rooms, teachers' rooms, lavatories, cloak-rooms, &c., occupy the ground-floor, there is provided in the upper story a lecture-hall, having a floor area of about 2,000 superficial feet, and capable of seating about 400 children. Covered play-courts extend east and west from the main building, forming partitions between the playgrounds. The elementary schools provide accommodation for 150 boys, 150 girls, and 100 infants. The principal frontage (being that to the main road) extends to about 90 ft., having the entrances to the schools recessed back on the east and west sides. The style adopted is a modification of Early English. In the centre of the frontage a tower 14 ft. square rises to the height of about 80 ft., having a canopied niche in which is placed a full-sized statue of John Knox, and affording in its upper stage accommodation for a clock and bell. The principal gables have three-light windows, with single side-lights, separated by broad piers, at each end of the hall; and beneath the side-lights are niches, while in the centre beneath each of the three-light windows are large panels for sculpture, representing incidents in Knox's life.

THE DECORATION OF ST. PAUL'S.

SIR,—In Harrison's "History of London" is the following statement. He has not given his authority for it:—

"As Sir Christopher was sensible that paintings, though ever so excellent, are liable to decay, he intended to have beautified the inside of the cupola with mosaic work, which strikes the eye of the beholder, and, without the least fading of colours, is as durable as the building itself; but in this he was unhappily overruled, though he had undertaken to procure four of the most eminent artists in that profession from Italy."

B. S.

FACULTY FOR A TOWER AND BELL.

AT the Consistory Court on the 2nd inst., before Dr. Tristram, the Rev. R. W. Forrest, the vicar, the Hon. C. J. Keith-Falconer, and Mr. H. Clifford, the churchwardens of St. Jude's, West Brompton, applied for a faculty to erect a tower and spire to the church, from the designs of Mr. Henry Godwin, architect. The expense would be about 4,000*l.*, and 2,400*l.* had been contributed.

Dr. Topham, M.D., who lived opposite the church, attended, and asked that the order should be for one bell, and not for a peal, as it would cause a great annoyance, and depreciate the property.

The Hon. Major Falconer said he should certainly object to a peal of bells; and in a discussion before the Court it was stated that no order could be made to "bind posterity."

Mr. Moore applied for the faculty.

The Court allowed a faculty for the works, and for one bell only, as there was no power to bind posterity as to additional bells, but the record would show the objection made to a peal.

The Chancellor gave permission for the works to be commenced at once.

THE STUDENTS OF THE ARTISANS' INSTITUTE AT DULWICH COLLEGE.

A PARTY of students connected with the Artisans' Institute, accompanied by the Rev. Henry Solly, the principal, on the invitation of Dr. Carver, head-master, paid a visit to the "New College of God's Gift," Dulwich, on Saturday. Dr. Carver conducted the party over the principal parts of the college, pointing out the various objects of historical and educational interest, ancient and modern, including the old oaken treasure-chest, with its three different locks, bolts, and keys, as held by the master, wardens, and first fellow, under the original foundation of Edward Alleyn, the actor, as founded by him under letters patent, James I., 1619; the safe-door, and its three locks and key, with strong bolts; "The Diary and Book of Mixed Records," as kept by the founder; and the portraits of Alleyn, and James Allen, one of the early masters under the old corporation. The picture gallery was also visited, the party being shown through the collection by Mr. Hoskyns, the custodian. A visit was likewise paid to the Old College, the chapel grounds, the class-rooms of the Lower School, and the almshouses. During the proceedings an address of congratulation was presented to the Rev. Dr. Carver, the head-master, on the results of his nineteen years' mastership.

PROPOSED BRIDGE OVER THE THAMES.

AT the last meeting of the Court of Common Council, the Lord Mayor presiding, Mr. H. K. Isaacs, in proposing the adoption of a report by the Special Bridge or Subway Committee, recommending the erection of a low-level bridge east of London Bridge, said such a bridge, with mechanical openings for the passage of ships would cost only 750,000*l.*, against two millions the cost of a high-level bridge, and 1,500,000*l.*, which would be required for the construction of a subway. The advantages of a low-level bridge were many. The approaches would be shorter, and as a consequence better, while they would thus be enabled to divert most of the heavy traffic of the City. Under these circumstances he hoped the court would agree to the opinion of the committee, and refer the report back to them for them to consider where the cost was to come from, and to consult with the Government and other bodies in reference to it. Mr. Davies moved as an amendment that the report should be sent back to the committee for reconsideration. He thought that the openings for the passage of shipping in the proposed bridge would cause most serious inconvenience to the traffic. Other members objected to the court being bound to adopt the plan for a low-level bridge; but the original motion was carried by a large majority.

Wandsworth Board of Works' Surveyor. At the last meeting of the Wandsworth District Board of Works, the salary of the surveyor, Mr. T. C. Radford, C.E., was increased to the extent of 50*l.* per annum, with complimentary expressions.

KENSINGTON PALACE.

SIR,—Sinking fast into decay, this ancient structure is now in such a wrecked condition that it must soon be repaired thoroughly, or rebuilt. It is many years since it was used as the abode of royalty, George II. being the last monarch who, with Queen Caroline, made it a home and a solace until the year 1760.

When purchased by William III. of Sir Heneage Finch, most of the old buildings were abated, but a portion of the then suburban villa was incorporated with the structure, modernised, and adapted for a royal palace; and the grounds, to the extent of about 250 acres, were afterwards planted and laid out by Repton, with vistas through ranges of forest-trees, now grown to maturity. The site of the palace itself, together with gardens, outer grounds, and meadows, occupies, however, 50 acres more in an elongated parallelogram, extending along the west boundary from Kensington-road to Bayswater: the whole of this space is uninclosed, and might be added integrally to the gardens and park, if the old fabric were cleared away, and a suitable palace for the urban abode of royalty erected on an appropriate position, for which ample provision has been made in the design of the great landscape gardener who first laid it out.

The juxtaposition of Hyde Park, which in its present aspect of hortulan improvements transcends all other open urban spaces, doubles the area of the gardens, and makes the eastern end of Kensington Gardens the most eligible position for a royal palace, being the highest, the most open and healthy, spot of the whole *enceinte*. Here the great public thoroughfares from Queen's Gate across the Serpentine Bridge and the circuit of park-drives all converge; besides that, from the spot indicated the great open central glade discloses a view of the old Palace, across the waters of the Upper Serpentine and the Round Pond.

On a site in line continuous north from Serpentine Bridge, and about 300 yards distant from it, being say 100 yards from the boundary-wall and fosse, standing on the highest elevation, above the Serpentine, and commanding uninterrupted views of both park and gardens, a royal palace might be erected, adequate to the requirements of the British Sovereign, and equally eligible for the reception of levees and drawing-rooms, the position being even more convenient for the aristocracy, and much preferable in most respects to the sleepy hollow of Buckingham Palace.

This section of the gardens commands the two portions of the Serpentine and its fountains, with views from Kensington and Notting-hill to Park-lane; and the palace would be easy of access from Belgravia, with its western extension, as from the Grosvenor, Portman, and Tyburnian districts; while the unequalled aspect of a splendid park of altogether 600 acres, in the centre whereof the palace might be interned, together with the salubrity of position, makes it appear strange that this site has never been mentioned before.

For the public, the great inducement would be the gain of fifty acres on the western end, and an extension of the walks and shrubberies throughout the circuit; besides the inestimable benefit of a grand open thoroughfare from Kensington to Bayswater, which have now no practicable line open between Park-lane and Church-street, Kensington,—exceeding a mile on both roads! The road here suggested might commence at the old Palace gates and terminate at Bayswater. One great advantage of this site for a palace is that Exhibition-road leads direct across the bridge in a straight line, and this, if continued, would strike into the Westbourne-terrace traverse at a point only a few feet from the fosse and wall in Hyde Park. At present there is, however, a very awkward descent of 15 ft., and long curve round the powder-magazine, which might be corrected and avoided by making the public road continuous in a straight line, leaving the present carriage-drive unaltered. The utility of the traverse route lately opened across the park is proved by the vast numbers of private and hackney carriages which use it; in fact, it is crowded by the incessant roll of vehicles from the hour of opening until that of closing the Park-gates, so that no greater boon of thoroughfare could be conceded to the public, many thousands passing daily through this, the only medium of intercourse between the two great north and south aristocratic suburbs, which are severed by the Park and Gardens.

T. H. H.

TEMPORARY BUILDINGS.

AT the weekly meeting of the Metropolitan Board of Works on the 29th ult., the Building Act Committee submitted the following regulations relative to the inspection of temporary buildings, when an extension of the period for use is applied for, and recommended that the same be approved and adopted by the Board:—

1. On the application from the trustees or owners of any temporary church or school, or any iron building, for an extension of the period allowed for its use by approval of the Board, the district surveyor shall be requested to inspect the structure, and to certify as to its condition and stability for use for such a period of years as may be requested, and as to any necessary repairs for additional strength.
2. If the structure has existed from two to five years, a special service fee of 2*l.* 2*s.* may be demanded and received for the certificate regarding structural stability.
3. If the inspection is merely to ascertain that the structure is not altered as to condition or position, and to certify that an extension of time might be allowed, a special service fee of 10*s.* may be demanded and received.

This report was adopted.

VALUE OF CITY PROPERTY.

THE following important sites have recently been let by Messrs. Harvey & Davids:—

Moorgate-street, at the Corner of London-wall, the original site of Albion Chapel, with extensive frontages covering an area of 5,400 ft., was let at 2,350*l.* per annum.

Cheapside.—A plot of land having important frontage to Cheapside and extending through to Queen-street, covering an area of about 4,200 ft., was let at 2,300*l.* per annum. It may be stated that on all these sites new buildings comprising shops and offices are in course of erection.

If we suppose the ground-rent of the Cheapside plot sold to pay the buyer 4 per cent., we get about 600,000*l.* as the price of the land per acre. If bought to pay 3 per cent., and when the new houses are finished it might not be difficult to get a purchaser at this, the price per acre would become about 800,000*l.*

CASES UNDER METROPOLITAN BUILDING ACT.

CONCRETE WALLS.

THE District Surveyor of Bromley, Middlesex, summoned a builder before the magistrate at the Thames Police-court for partially constructing the party walls of three houses with blocks of concrete without obtaining the special sanction of the Metropolitan Board of Works.

This case was of importance, inasmuch as it was contended by Mr. May, who appeared for the defendant (Mr. Wm. Harris, of East India-road):—(1). That the concrete used by his client was a "hard and incombustible substance" within the meaning of the Building Act; and (2) that the Metropolitan Board of Works had no power to grant licences nor to enforce rules for the composition of concrete.

Evidence was given by the District Surveyor to prove the use of concrete in the construction of the walls as alleged in the summons, and the chief clerk of the Superintending Architect's department of the Board of Works was called, who stated no application to the Board had been made by the defendant for the construction of the walls in concrete.

Both these witnesses concurred in stating that the concrete used by the defendant,—a sample of which was produced in court,—was of a friable nature, and very inferior to such concrete as would be made if the rules contained in the licences granted by the Board had been properly acted upon.

Two surveyors were called for the defence, and, although one of them confessed that the concrete used by the defendant was "rather brittle," they, nevertheless, stated that in their opinion it was a suitable material for walls of small two-story houses, and, as it was "hard and incombustible," it appeared to them to literally fulfil the requirements of the Building Act. Mr. Wicks, a builder, was also called by the defendant, and stated that some years ago he built a lot of houses in Poplar entirely of concrete, and of a description certainly inferior to that used by the defendant, but no objection was raised to the employment of it.

The magistrate (Mr. De Rutzen), having taken time to consider the matter, delivered judgment to the following effect:—

"I do not intend to enter into the question as to whether the concrete used by the defendant is

a 'hard and incombustible' material within the meaning of the statute; but I purpose confining myself to the issue raised by the district surveyor, which is simply,—Is a person who wishes to build the walls of a building with concrete required to obtain the special sanction of the Metropolitan Board of Works for the use of such material? On referring to the 1st Schedule Preliminary of the Building Act, I find it laid down in the 2nd rule that every wall shall be 'properly bonded,' and I hold that this is not applicable to a concrete wall, and I am of opinion that buildings constructed of concrete are buildings to which the rules of the Building Act are inapplicable, and that, therefore, the special sanction of the Metropolitan Board of Works to the erection of such buildings is required to be obtained in accordance with the 3rd rule Miscellaneous, 1st Schedule Preliminary of the Building Act. It appears to me most essential that proper control should be exercised over the composition of concrete intended to be used for walls of buildings; otherwise friable, and therefore unfit, material might be used for that purpose under the name of concrete, and there would be danger of such buildings falling. In the case now before me it appears that only a small portion of the walls has been built in concrete: I therefore do not propose to make an order to pull them down, unless the Metropolitan Board of Works consider such a step necessary."

AN ARCHITECT'S CLAIM.

FISHER *v.* SIMPSON.

IN this case (heard at Northallerton County Court on the 16th ult., before Mr. E. R. Turner, judge), Charles Fisher, architect, of Sand Hutton, near Thirsk, sued Isaac Simpson, of Brompton, farmer, for the amount of 8*l*.

Mr. Fisher stated that he had several interviews with the defendant about erecting a dwelling-house and outbuildings. At one of those interviews they came to terms, that he was to draw plans and make out specifications, and superintend the erection of those buildings, and that he should receive from the defendant as recompense 2½ per cent. upon the contract price. About two months after the building had been going on, he met defendant upon Darlington-road, and told him that unless the buildings were built according to contract he would not be answerable for the work done. At that time he had attended about seven or eight times and inspected the works.

Mr. Isaac Ward, of Brompton, builder, stated that he was present when plaintiff and defendant arranged the terms.

At this point the judge remarked that the plaintiff had not fulfilled his agreement by not attending three times a week to inspect the work. He gave a verdict for the defendant, without costs.

WEST KENT SEWERAGE WORKS.

IN 1874 the Bromley Rural Sanitary Authority instructed Sir Joseph Bazalgette to prepare plans for the drainage of their district, which resulted in the necessary powers being obtained for the construction of the main intercepting sewer of the present undertaking. The Cray Valley Sewer Scheme of 1868, having since been sanctioned by Parliament, forms a branch to the main sewer which it joins at Bexley.

The West Kent Main Sewerage is entirely a gravitation scheme, and is designed for the accommodation of the parishes in the Bromley Union. The works consist of the main line of intercepting sewer, fifteen miles in length, and the branch, which is six miles and a half in length. Some portions of the main sewer will be in tunnel, and there,—as also in deep cuttings,—the sewer will be egg-shaped in section, 6 ft. high by 4 ft. wide internally, and 9 in. thick. It will be built with blocks of Portland cement concrete to a height of 4 ft.—that is to the springing of the arched roof, which will be constructed of brickwork in cement. Where the sewer is carried through open cuttings, or in embankments, it will be circular in section, 5 ft. 6 in. in diameter, and 9 in. thick, and will be built in solid concrete. At one point in its course the sewer will pass under the River Cray, and there a piece of special construction occurs. The sewer is divided into two iron tubes on one side of the stream, each 4 ft. in diameter, set in concrete, and united again on the other side. The sewer will be carried under Dartford Creek by a syphon arrangement consisting of two iron tubes with penstock chambers at each end.

At Dartford Marshes, near the outfall, there will be a reservoir 500 ft. long and 120 ft. wide, which will be used for filtering the sewage prior to its being discharged into the River Thames at ebb tide and below low water. The reservoir will be constructed of concrete, and divided into several compartments, or bays, with the view of enabling the filtering operation to be carried on continuously.

The Cray Valley branch commences at Orpington by a pipe-sewer, which gradually increases in size until the diameter is 2 ft. 6 in. at its junction with the main sewer at Bexley. The levels throughout the main sewer are variable, the flattest fall being 3 ft. in a mile. On the Cray Valley branch the levels are also variable, and, generally speaking, steep, the flattest fall there being 1 in 1,000. The works of the main sewer were commenced about four months since at a point in the route called Halfway-street, near Sidcup, and they are being vigorously prosecuted over a length of two miles.

Considering the adverse nature of the weather since the works were started, very good progress has been made by the contractors, Messrs. John Neave & Son, the work done being of good quality. At the present time eight shafts have been sunk down to the level of the sewer at a depth of from 40 ft. to 50 ft. from the surface, and three other shafts are being sunk and will shortly reach the sewer level. About 800 ft. of sewer in tunnel have been executed, and a further length of about 1,650 ft. has been constructed eastward of Penhill Bridge in open cutting. It is anticipated that the works will be completed out of hand in a little more than two years from the present time. The concrete in the sewer in tunnel is in the form of blocks, which are moulded at surface and set in cement. By adopting the concrete system of construction a considerable saving is effected in the cost of the works.

CHURCH RESTORATION.

SIR,—I read with much interest the remarks made by Sir G. Scott and others upon the above subject in your recent numbers, but it seems to me they have not got at the root of the evil.

I restored a church about five years ago, under a good architect. Immediately I commenced the work the vicar took upon himself to order things to be done without the architect's consent,—mark you, he had the power, according to the contract, to do so. Well, the first thing he ordered to be done was to re-dress the old east window, then the south windows, and last, the arch and label of the old porch, which was the most beautiful feature of the church. I need not tell you how angry the architect was when he saw it.

Sir G. Scott blames the builder, clerk of works, &c., but the difficulty will not be stopped until the architect in all cases reserves to himself the right to order all things to be done in connexion with the work. How can the builder help himself when he has to take his orders from the architect's client instead of from the architect? What architects should do is this,—see all agreements before they are signed, and oppose any infringement of their rights by their client. I know the rule is and has been for the architect to do all this, but I assure you there are a great many exceptions to that rule in Monmouthshire and other districts not far off.

Until the course I have suggested is taken, you may be sure that the Institute will not stop the destruction of the ancient work that true restorers so much cherish. J. M. L.

THE BEDFORD ESTATE.

SIR,—I hope the Duke of Bedford, when he appoints a new steward, will do as the writer of a letter in the *Builder* of May 5 suggested, viz., appoint an architect to the post; and when the new steward is appointed, I hope he will not act in the same manner towards the tenants as the late one did.

But pending such appointment,* I beg to call the attention of his Grace to some evils that exist in Covent-garden Market. The dangerous state of the footpaths at the western end of the market is a matter of every-day comment; while the raised platform, some 6 in. high, in front of D. & D. Pankhurst's shop, is alike dangerous to life and limb, for people are constantly falling over it, more especially on a Sunday, and some very ugly falls indeed have taken place there.

Then there is the nuisance of the Sunday-morning markets, which are held in direct contravention of the Act of Parliament. Bye-law viii. enacts that,—"No fruit, flowers, vegetables, roots, herbs, or other things, shall be placed, pitched, exposed for sale, or sold in any part of the said market on a Sunday." I can scarcely believe that his Grace is aware of this open violation of the Act every Sunday at this season of the year. But there is one more evil I have to complain of, and that is, that the market is now watched by the metropolitan police instead of the beadles, as formerly, who were under the direction of the market authorities, whereas the police are not.

Formerly, if we were annoyed or abused in any way, and bad language were used, the beadle would take the man or men into custody: now we are told by the police that we must take out a summons in such cases. So we are under two authorities instead of one. The metropolitan police act in direct antagonism to the Act of Parliament for the control and management of Covent-garden Market. I venture to ask his Grace, who is one of our hereditary legislators, if this is a satisfactory state of things anywhere or in any place, but more particularly in such a place as Covent-garden Market.' A SALESMAN.

* The appointment has been made, and an architect has not been selected.—ED.

CLEOPATRA'S NEEDLE.

SIR,—Not being in a position to question the merits of the different sites suggested for the Egyptian obelisk, I can only hope that the same mistake may not be made in London as in Paris where, despite its plinth or pedestal, which does not belong to it, and certainly seems out of place, the size and proportions of the Luxor monolith are entirely lost, owing to the immense area of the Place de la Concorde.

In Egypt, these obelisks were generally,—if not always,—placed immediately in front of the pylons, or other solid masonry of the temples as at Luxor, and no doubt an equally appropriate position might be selected in London for "Cleopatra's Needle." G.

PIECE-WORK A PANACEA.

SIR,—I have lately read your leading article headed "Strikes, Lock-outs, and Arbitration," and venture to make a few remarks thereon.

First and foremost, are the employers of labour the best possible advocates for arbitration Secondly, who is to blame for this civil warfare betwixt capital and labour? I may justly answer the armed capitalist. He holds the sinews of this bloody conflict.

I am a workman, and am an advocate of the reforms which you propose. If we want a healthy tone in trade, piece-work is the best remedy While I write you I have by me an old book of the laws 150 years ago, which state day-work and piece-work prices, and no one at his peril dared to trespass against the law. Why not let history repeat itself, and return to some of its old customs? But the liberty of the subject depends on his good behaviour for the most who are concerned, which all sound undertakings should make their motto. Why should the employers make such haste to be rich, and why should the workman dictate to his superior, so-called? Simply because man is a creature of progress, and no fixed law will meet his desires;

> Therefore let piece-work prevail,
> Since warring and strife are of no avail.

Make one good sound beginning in some large firm, and the time has come that all men and good employers will gladly follow the lead.

George Potter, like myself, years ago, would gladly have come to terms of arbitration universally; but he was overruled by the less intelligent of his trade. He counted the noses and did not forget to protect his own by so doing.

I am quite sure piece-work would act with better results even than arbitration; in fact, it would strengthen the back-bone of every trade in England. Nothing can surpass a free sale. All artificial attempts to monopolise bring ruin wherever they are fostered.

WM. WEATHERILL.

The Proposed Bridge at the end of Northumberland Avenue.—At the last meeting of the Metropolitan Board of Works, it was resolved, on the recommendation of the Works Committee, that Messrs. Burrell & Valpy be informed, in reply to a letter suggesting the construction of a bridge over the Thames, in continuation of Northumberland Avenue, and transmitting designs and plans showing its position and approaches, with an estimate of the cost, that the Board is not at present in a position to take any steps in regard to the matter.

HINDLEY CEMETERY COMPETITION.

SIR,—In the competition for Hindley Cemetery, recently cided, the surveyor to the Board, to whom the competing chitects had to apply, and by whom particulars were rnished, was allowed to submit designs. They were lected, and the first prize awarded for them.

Will you express your opinion as to the fairness or herwise of this course? The Board maintain that they d a perfect right to receive and select his plans. I and ner competitors contend that any one connected officially th the Board was debarred in honour, if not in law, from mpeting. R. KNILL FREEMAN.

* * We fully agree with our correspondent. The Board ecessarily expose themselves to suspicions of unfairness the improper course pursued.

Miscellanea.

The Metropolitan Drinking Fountains ssociation held its annual meeting on the 0th ult., the Duke of Westminster in the chair. he report, read by Mr. John Lee, the secretary, ated that 33 drinking-fountains for human ings and 58 troughs for animals had been ected during the last twelve months, making a al number in London at the present time of 4 drinking-fountains and 342 troughs. In ccomplishing this they had expended all the nds at their disposal, and had also rendered an nual increase of income necessary for the rmanent supply, supervision, and repair of the stropolitan fountains and troughs. Notwithanding the extraordinary progress made, there re still hundreds of miles of streets in London here neither man nor beast had the remotest ance of obtaining a drop of water to quench irst. The operations of the society extended er a district covering more than 800 square les. After referring to the earnest support at the association received from the various stries and district boards of the metropolis, d to the fact that the Queen was a donor of 0*l.*, the report stated that the donations during e year amounted to 1,769*l.*, the subscriptions 1,528*l.*, and legacies to 2,000*l.* The Hon. A. nnaird, in seconding the adoption of the report, ggested that an attempt should be made to 1,000 subscriptions of 5*l.* and 500 of 10*l.*, so to raise a sum of 10,000*l.* within the next five six months, and at once largely extend the pe of the work of the society.

Recreation Gardens, St. Pancras.—On ursday in last week the disused burial-grounds Old St. Pancras and of St. Giles's-in-the-lds, were opened as public recreation gardens. e grounds, which have historic interest, are in Old St. Pancras-road, and the church in the ntre of one is stated to be the last in England which the ceremonies of the Romish Church re performed before the Reformation. Part the grounds is the spot formerly known as burial-ground of St. Giles's-in-the-Fields. few years ago the St. Pancras authorities ccessfully opposed the endeavours of certain lway companies to convert these burial-unds into a railway depôt. Walker, the thor of the Pronouncing Dictionary; Flaxman, sculptor; Sir John Soane, the founder of Museum bearing his name; Woollett, the graver; William Godwin, the author of "Political Justice"; and Mary Wollstonecraft dwin, were buried here; while among the signers—most of whom were interred soon er the first French revolution—were De glie, the Marquis de Tourville, the Marquis Breffevent, the Marquis de Bonneval, the ntesse de Chateaubrun, the Comte de Front, Comtesse de Montant, the Comte d'Herville, ld-Marshal of Russia. In the naming of the ious avenues, historic names have been preved. At one spot in the Old St. Giles's und Lady Burdett-Coutts laid a memorialne to the dead who lie buried there. A morial tree was also planted and an obelisk overed. The authorities of St. Pancras erve praise.

Surveyorship.—At a meeting of the Wolverapton Town Council, Mr. G. Eastlake Thoms, . (Great Crosby Local Board), was appointed, a large majority, engineer and surveyor for borough of Wolverhampton, at a salary of . per annum, in place of the late Mr. A. rgan, C.E., brother of the Government inptor. There were fifty-two applicants for vacant office, and of these, three were selected the consideration of the Council. It may be ntioned in connexion with the appointment a large scheme, under the Artisans' llings Act, which will involve an expenditure 62,000*l.*, is about to be carried out in Wolverpton.

Church Restoration.—When the Archbishop of Canterbury consecrated the new church of St. Luke, Ramsgate, he said:—The most rigorous adherent of simple worship will, I think, look upon it as a bad sign in a Christian nation when houses are exquisitely furnished and churches present a mean appearance, as if they were little cared for. I am quite prepared to grant that, in the age in which we live, it is a very happy circumstance that so very much has been done for the building and restoration of churches in good taste; that in the last forty years thirty millions of money or thereabouts have been spent by members of the Church of England in the restoration of old churches and on the building of new ones; and I trust we shall not go backwards in this respect, but that, as the population of these islands is marvellously increasing, so we shall keep pace with the population by the erection of new churches. But it is not desirable that our minds should be altogether taken up with thankfulness that so much has been done for the outward decency and beauty of worship; if there be a real love for this in the hearts of Christian men, it will be because we believe that, through the grace of God, our churches are real centres of Christian life.

Domestic Economy.—The report of the Educational Officer of the Society of Arts gives the results of the recently-held examination in domestic economy. The subject was introduced for examination for the first time last year. The examiners appointed for this year were Miss E. Shaw-Lefevre for "Housekeeping and Thrift," Miss Mary Willis for "Clothing and its Materials," Dr. Ogle for "Health," and the National Training School for "Cookery." Though the number of candidates was small, it was larger than last year. The numbers last year and this year were as follow:—Clothing, 10—16; Cookery, 10—26; Health, 8—35; Housekeeping, 9—17. In Cookery all the candidates passed (fifteen first and eleven second class); in Health twenty-six failed, and only three passed in the first class. In Housekeeping eight failed, and six passed in the first class. Among the successful candidates are several young men, five of them taking first-class honours in Cookery. The first prize in Cookery, with the added Council prize of ten guineas (for females), was carried off by Mary S. Mugeam, of the Birkbeck Literary and Scientific Institution.

Exhibition of Trade Marks.—A permanent exhibition of the trade-marks sent in to the official registrar for registration under the Trade Marks Registration Act opened on Monday last at Castle-street, Holborn. Registration is required before the proprietor of a new trade-mark can take any proceedings for its protection, and the applications for registration are published periodically in an official journal. The marks are divided into fifty classes, and a new mark cannot be registered in any one of them unless it is essentially different from the other marks registered in the same class. Hence, to manufacturers and merchants desirous of registering, a classified representation of the trade-marks already applied for will be invaluable, as obviating the delay and difficulty attending a search of the official records. In the Trade-Marks Exhibition, Mr. E. Johnson, who has devoted much attention to the subject of trade-marks, and is a warm advocate of a system of international registration, has provided such a representation.

The Curatorship of the Walker Art Gallery.—A meeting of the Library and Museum Committee of the Corporation of Liverpool was held on the 25th ult. for the purpose of selecting a candidate for recommendation to the Town Council to fill the position of curator of the new Art Gallery. The committee had previously selected eight candidates, all of whom were in attendance. The majority of the committee were, it is understood, after a long discussion, in favour of recommending for the appointment Mr. Wallis, of the South Kensington Museum. The next in favour was Mr. C. Dyall, secretary of the Liverpool Lyceum. The recommendation of the committee will be brought forward at the next Town Council.

Dry Rot.—The best preservative against dry rot, says the *American Journal of Pharmacy*, is the following of Mr. Schwartze, by whose death the secret is revealed: 1 part of oil of cassia, 1 part wood tar, and 1 part train oil; apply three coats on the reverse sides and on the ends of planks, floors, &c.

St. George's Hall.—A merry sketch, entitled "A Happy Bungalow," from the pen of Mr. Arthur Law, has been produced here, and forms a most acceptable feature in Mr. and Mrs. German Reed's Entertainment. From the title of the piece it may well be supposed that the scene is laid in India. The principal parts were very well sustained by Miss Holland, Mrs. German Reed, Mr. Law, and Mr. Corney Grain, while Miss Leonora Braham and Mr. Alfred Reed as the *Ayah* and the *Bhoy* represented those characters in most amusing fashion. Mr. Corney Grain's "Edwin and Angelina," and Mr. Burnand's "No. 204," followed, and afforded additional satisfaction to the audience. Mr. Grain in his last sketch is particularly happy, and makes his audience so too. A very prosperous season will close on Saturday next, the 14th inst., and after a short tour in the southern provinces, Mr. and Mrs. German Reed will open the St. George's Hall again on the 1st of October.

"Morocco Tiles."—Messrs. Mintons, Stoke-on-Trent, have recently produced some new tiles, by a process patented by them. The improvement on the ordinary method consists, in the first place, of a process by which the tiles are covered with a granular semi-vitreous surface that will, while retaining its hard and impervious quality, prevent the reflection of light which is given from smooth glazed surfaces, and which is sometimes objectionable. This surface is capable of being either painted or printed on, the *modus operandi* differing from the usual method, and this constitutes the second part of Messrs. Mintons' patent. The effect produced is very similar to morocco leather, after which the process has been named.

Failure of a Bridge.—At Saltash, on the 27th, it being Coronation-day and Saltash regatta, the steamers plying between Devonport and Saltash were crowded, and when the last steamer arrived alongside the landing-stage some hundreds of persons rushed towards it, crowding upon the narrow wooden bridge connecting the stage with the shore. Suddenly a crack was heard, and the bridge burst in two, precipitating the struggling crowd upon it into the water. Although it was high tide and a strong stream was running in the Tamar, the water was not deep, and all were got out alive.

The Drainage of Lincolnshire.—Sir J. Hawkshaw, C.E., has prepared a report with a view to the improvement of the drainage of Lincolnshire. The works proposed will, if carried out, involve an estimated outlay of 567,820*l.*, irrespective of Parliamentary and engineering expenses. The most important works proposed are the following:—Widening and deepening the Witham from Horsley Deeps to the Grand Sluice, 197,000*l.*; new sluice and bridges at Boston, 80,000*l.*; and low level drain to Chapel-hill, including a pumping-engine of 500 horse-power, 72,000*l.*

Royal Academy.—The following gentlemen have been admitted as students of the Lower School of the Royal Academy:—James M. Brooks, E. L. Drew, S. W. Grant, P. P. Green, A. Gillespie, W. G. B. Lewis, W. Murray, W. H. Peck, H. O. Pinchin, G. H. Shackle, E. S. Shearman, and H. W. Stook. As probationers:—G. H. Coldwell, R. W. Collier, J. A. T. Johnson, and T. L. Moore.

The Mayor of Pontefract (Mr. R. Moxon), at a meeting of the town council on the 28th ult., submitted a thorough scheme of drainage for the borough. The council voted, and decided that the question should be again deferred, whereupon the mayor said that the drainage of the town had long been his study, and not having the confidence of the council he should resign the office of mayor, and pay the fine of 50*l.*

Domestic Decoration.—Sir: Permit me to thank you for the favourable notice of my invention, "Xylography," and to state in reply to the question concerning the designs, "Could they not be executed on thicker wood than is now used?" that they can be as readily produced on thick wood as on thin, all that is requisite being a slight modification of the machinery for the purpose.—THOMAS WHITBURN.

Great Malvern.—A new Roman Catholic Church was consecrated at Blackmore Park, the seat of Mr. J. V. Hornyold, a few days ago. Mr. Purday was the architect engaged. The reredos, a work 15 ft. high, was executed by Mr. Roddis, of Birmingham; the metal-work by Messrs. Hardman & Co.

TENDERS.

For alterations and additions to the Acton Baptist Chapel. Mr. Edward Monson, jun., architect. Quantities supplied:—

Nye	£1,047 0 0
Waters	998 0 0
Baker	950 0 0
Haynes	945 0 0
Keyes & Head (accepted)	920 0 0
Eydmann	910 0 0

For the erection of four villa residences in Earlhamgrove, Forest-gate. Mr. Edward Brown, architect:—

Maryon (accepted)	£1,534 0 0

For farm offices at Kyle Court, co. Wexford. Mr. W. Fogerty, architect:—

Ryan & Son	£2,975 0 0
Gaban	2,900 0 0
Jackson	2,350 0 0
Wilkinson	2,250 0 0
Redmond*	2,165 0 0

* Accepted, with some modifications.

For alterations and additions, including new chapel to the infirmary, Hertford. Mr. T. T. Smith, and Messrs. Smith & Austin, architects. Quantities supplied:—

	Additions.	Chapel.
Prout	£2,306	£610
Groome	1,763	570
Cook	1,748	532
Ginn	1,714	475
Ekin & Son (accepted)	1,663	472
Hampton, jun.	1,612	525

For the erection of coach-house, stables, &c., St. Helen's-road, Kite's Nest, Ore, near Hastings, for Mr. Thomas John Hughes, M.D. Messrs. Wm. Gosling & Son, architects. Quantities by the architects:—

Gilson & Guthrie	£450 0 0
Philipps & Co.*	389 0 0
Stubberfield	385 0 0
Prior & Barker	350 15 0

* Accepted, subject to alterations.

For finishing joiners' work, building vestibule, &c., to the mansion:—

Philipps & Co. (accepted)	£393 16 0

For the erection of a block of twelve houses in Trevor-street, Hirder Estate, Wrexham. Mr. John Cox Dear, architect:—

Lamble	£4,243 0 0
Samuel	3,978 0 0
Huxley	3,781 0 0

For the erection of new wing to the Blind School, St. John's Wood. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Tavenor & Sons	£3,732 0 0
Burford	3,570 0 0
Nightingale	3,513 0 0
Tarrant & Sons	3,400 0 0
Scrivener & White	3,399 0 0
Woodward	3,387 0 0
Bywater	3,379 0 0
Aitchison & Walker	3,028 0 0

For the erection of house at Lincoln for Mrs. Whelpton. Mr. Chas. Bell, architect. Quantities by Mr. Henry Lovegrove:—

Martin & Son	£1,260 0 0
Young	1,102 0 0
Brooks	1,069 0 0
Cohen & Thompson	990 0 0

For the erection of Board schools, with master's residence, for the Whaplode School Board, Lincolnshire. Mr. Chas. Bell, architect. Quantities by Mr. Henry Lovegrove:—

Fawn	£1,633 0 0
Stanger & Watson	1,565 0 0
Sharp & Birchfield	1,525 0 0
Everson	1,503 0 0
Gilder	1,432 0 0
Hobson & Taylor	1,423 0 0
Priest, Bros.	1,420 0 0
Dawson	1,407 0 0

Three of the lowest submitted amended tenders:—

Gilder	£1,223 17 0
Dawson	1,203 7 0
Hobson & Taylor (accepted)	1,197 0 0

For decorations and repairs to the Wesleyan Chapel, Long-lane, Southwark. Mr. Chas. Bell, architect:—

Colls & Son	£777 0 0
Tarrant & Son	744 0 0
Woodward	750 0 0
Aitchison & Walker	550 0 0
Pontio	524 0 0

For new infirmary at Consett (co. Durham), for the Consett Iron Company (Limited). Messrs. John Smith & Son, architects:—

Westgairth (accepted)	£2,571 0 0
Heating, &c.	
Dinning & Cooke	115 0 0

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Gibson & Mordue (accepted)	5,336 13 0

For additions to a warehouse in Little Alie-street, Whitechapel, for Messrs. Hewlett & Son. Messrs. E. Habershon & Brock, architects:—

Sabey & Son	£1,300 0 0
Brass	1,261 14 6
Browne & Robinson	1,193 0 0
Mattock, Bros.	1,190 0 0
Lost & Co.	1,150 0 0
Newman & Mann	1,091 0 0
Bowman	1,079 0 0
Ennor, Julian, & Co.	1,030 0 0

For the erection of a stock exchange, for the Liverpool Stockbrokers' Association. Mr. Henry Summers, architect. Quantities supplied. The tenders to state time of completion under a penalty:—

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Morrison & Son	21,560 0 0
Holme & Nichol	21,436 0 0
Roberts & Robinson	21,380 0 0
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Ridehalgh*	21,260 0 0
Leslie	21,143 0 0
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Brown & Backhouse*	20,910 0 0
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Urmson	20,766 0 0

Only the tenders marked * complied with the stipulation as to stating time, and that of Haigh & Co. was accepted,—time, fifteen months.

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Lyons	8,050 0 0
Cooke	7,923 0 0
Webb & Co.	7,870 0 0
Judd & Hawkings	7,777 0 0
Palmer	7,734 0 0
Dover, Sons, & Co.	7,110 0 0
Moyle & Son	7,050 0 0

For the erection of premises at No. 242, Tottenham-court-road. Mr. John Hudson, architect:—

Patrick & Son	£5,180 0 0
Holland & Hannen (too late)	4,987 0 0
Scrivener & White	4,874 0 0
Little	4,872 0 0
G. H. & A. Bywaters	4,695 0 0
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For the erection of a store and for alterations to stables at Bromley-by-Bow, for the Safety Oil Company (Limited). Mr. John Hudson, architect:—

	Store.	Stables.
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Morter	1,256	198
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For the whole of the works to new relief stations, Lee-green, Lee, and Exchequer-place, Lewisham, for the Lewisham Board of Guardians:—
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For the restoration of Woodbastwick Church, Norfolk. Sir Gilbert Scott, architect. Quantities not supplied:—

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The Builder.

VOL. XXXV. No. 1797. SATURDAY, JULY 14, 1877.

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Parisian Household Taste.

THE household taste displayed in Parisian homes, whatever may be its demerits, is free at least from that assumption of "correctness" that is so often, too often, to be met with in England and in America. A Parisian art-expert is in every way a much more tolerant, if not, a more adroit person than a London professional art-critic, and does not so determinedly appear to pin his faith on any special period of art, although just now the rage for Louis XV. and Louis XVI. furniture and surroundings seems rather to monopolise the antiquarian affections, and mediævalism is sadly at a discount.

In no city of the world, we may safely affirm, are there to be seen so many perfectly decorated apartments or so large a number of hideously adorned households. In a city where every individual believes in his or her ability to embellish, the result, in the majority of cases, must, as a matter of course, lead to the utter absence of beauty, and with an enormous branch of industry devoted to the production of ornamental objects suited to the taste of the multitude, and treacherously designed, we believe, to attract the uncultivated, it is not difficult to form a perfectly correct opinion of the ugliness that surrounds the mass of people who reside side by side, and above and below each other, in the miles and miles of six-storied houses that now exist, and that are rising rapidly in every quarter of Paris.

Haussmann was not fortunate in the selection of his architect, but since the war there has been scarcely any repetition of the characterless architecture of the Second Empire, and the builders just now are so active that ere long the new art spirit and the agreeable variety of design that one meets with in all directions, will neutralise the monotony of the flat shadowless surfaces of such streets as the Rue du Quatre Septembre and the Boulevard Sebastopol.

The pretentious houses that are rapidly springing up in the neighbourhood of the beautiful Parc Monceaux will satisfy all those who are willing to limit their architectural tastes within the period of recent centuries, and forego entirely all idea of thirteenth-century art and its beautiful propriety and simplicity. Indeed, the most perfect specimen of a magnificent comfortable-looking house that has just been erected for the Dowager Baroness James de Rothschild in the Rue du Faubourg St. Honoré, is, in style and every detail, a profound reproduction of the best period of Louis XVI., a style that so completely harmonises with so much of Paris of the past, that we are constrained to admit the wisdom and good taste of the architects who persevere in their loyalty to this typical French period.

Fashion, that ever-varying coalition, is unanimous only when change is proposed, but fashion, mysteriously as it operates in exercising its hideously-concealed methods on different degrees of civilisation, is in Paris profoundly conservative, compared to what is vulgarly called "fashion" in other countries, and in Paris at least there exist certain tenets connected with taste, which not to hold is simply to be altogether uninformed.

Artistic precedents can be compared in Paris, and correct principles discussed, with greater clearness than in any other city of the world; long-respected and well-understood authority is here most reverently looked up to; and the civilisation of taste in each succeeding age acknowledges the perfection of the oldest known plastic art, and the unerring principles that regulate the harmony and contrast of colour.

Commercially, the French must have been enormous gainers by the confidence they have secured throughout the world in their ability to be leaders of taste and fashion; and if it could be in any way shown satisfactorily that taste and fashion were ever happily associated, the French might have substantial reasons for pride in the influence they have exercised. But time will probably show in the main, as it has already done in detail, that France is not pre-eminent in all things that conduce to our comfort or well-being, and to their credit, be it said, they do not themselves take too kindly to many an enriching article that they send abroad as profitable objects for exchange; to give them all due praise they look very suspiciously on many of their own products, and the well-informed purchaser or collector, be he a *chiffonier* or *savant*, entertains a holy horror, for his own use, of objects in galvanoplastic or of any modern reproduction.

The truth is that the French, and Parisians particularly, in bygone days have taken more trouble than other nations to acquire a knowledge of things relating to the science of how to live easily if not well; but the professors of this comfortable art have not sufficiently acknowledged the great principle involved in the results of persistent inquiry, and their movement, therefore, is probably retrograde, they admitting themselves that their great art of cookery has undoubtedly declined, and that the exquisite taste that the world has long given them credit for may, however slowly,—and the more slowly the more surely,—have taken root elsewhere, to blossom some day into order and symmetry, to ennoble and enrich some happier and less self-confident nation.

In all their old traditions of taste, in those that are oldest the more certain are we to find beautiful arrangements of form and colour; so beautiful as to completely baffle antiquaries to trace their origin; not a peasant's cap or handkerchief but is either beautiful or characteristic; not a home-made stuff, grey or orange, purple or blue, that does not admirably set off the well-designed old ornaments that serve as useful fastenings, or as emblems of faith and devotion; and whenever we see, as we do frequently in Paris, the peasant-servant in her village costume, the household is adorned at least with one evidence of taste, one recollection of the past, that is likely to linger on for a generation or two.

In certain household arrangements, it is almost impossible to dream of a more advanced taste, or more complete comfort, than is to be met with in Paris in a well-arranged Parisian kitchen; for instance, in all that perfection of utensils, which, goodness knows, are sufficiently varied, there surely can be nothing left to desire. The perfect beauty of cleanliness and usefulness is here seen in all its splendour, and scarcely could the *culinæ* of Pompeii and Herculaneum exceed in beauty a modern French kitchen; but in the design of a magnifico's kitchen of the present day, there seems yet room for convenience and beauty associated with the means for "washing up," and we have not seen, although there may exist, a perfect receptacle for the refuse of the cookery, and harmless, in fact sanitary, as pulverised charcoal may be, it has a way, without the utmost care, of projecting itself to a dangerous distance from its basket; in fact, the old coal-scuttle difficulty comes up here also.

Absolute perfection appears arrived at in the management of their well-waxed oak floors, although perhaps the Belgian practice of painting the boards involves much less trouble, and admits of the English and Dutch indulgence in the habit of scouring or damping; but both in Paris and Brussels the clean floors, partially carpeted or covered with rugs and Indian matting, secure to us the utmost amount of comfort with the smallest quantity of accumulated dust and dirt; but both France and Belgium,—indeed, all Continental countries,—make much more and much better use of the hairy skins of wild animals than we do in England, some self-indulgers covering their whole bedrooms with a carpet composed of various coloured skins, sewn together, and forming geometrical patterns and borders.

It is curious to remark that, at an epoch when silver abounds, silver-plate is disappearing. Day by day, those great houses that were formerly proud of their side-board adornments, are rapidly diminishing; fine services of plate are rare in France, and the few families that still possess an *argentier*,—specially charged with the care of the family silver,—may be easily counted. It is not here as it is in England, where there exist showy and sumptuous side-boards, heavily laden with tankards and old silver of Queen Anne's time, and of the reigns of the Georges, pieces, if sometimes a little massive, still always characteristic; nor have the French, like ourselves, great regimental services of plate. The use of silver is a luxury to be imported into France, where among the French, essentially a people fond of outward display, electro-plate has taken the place of solid silver. Indeed, we may say of our neighbours that, to appear without being (*paraître sans être*) is their motto.

With all the absurd confidence of the Parisian

in their superiority to other nations in the matter of taste, and the innocently-blind belief that the world has shown, in following their teaching, there must exist in the minds of many well-informed individuals, to say the least, a lurking belief that they may yet have something to acquire.

Must not the expectant princes blush at the sight of their own effigies as they rush through the picture-galleries at Versailles, and hurry away almost guiltily, as they endeavour not to see the horrors exhibited at the new manufactory at Sèvres? Must not those Frenchmen who know other countries well, and who so often show the highest degree of intelligence, smile when they hear their friends, on their return from abroad, speak as though Paris alone could satisfy the civilised mind? Are French people, indeed, so vain and weak as we are told, as to suppose that they alone know how to dress themselves, their wives, or their children? Why, regarding that subject from the beginning, and from the proper point of view, they have positively everything to learn in relation to the true methods of making themselves more attractive; for now that the merest tyro in theatrical matters is acquainted with the miserably meretricious arts of the stage, its elaborated laws and uses, with its legitimate enrichments, we must no longer allow ourselves to be beguiled into admiration for a figure obliged to fit a machine-made pair of stays, or a portion of a foot pressed out of shape and into a badly-copied, machine-made again, shoe grossly imitating a ridiculous *bottine* of the period of Louis XV.

To that very numerous class of people who are pleased with the palatial, or the imitation palatial, style of household surrounding, Paris, of course, is the field that supplies the largest crop of splendours. On any day one may choose one can see and purchase superb Eastern and Venetian hangings and draperies, Gobelins, Brussels, Beauvais, Aubusson, and other tapestries, services of Sèvres, Dresden, Delft, Grès de Flandre, Moorish tiles, Murano and Bohemian glass, Urbino ware, Etruscan vases, Roman marbles, painted glass, stamped leather, Smyrna carpets, lacquered cabinets, Indian, African, Spanish, Italian, and Persian arms, coffers, Japanese and Chinese work, engravings, etchings, rare books and pictures of every imaginable school.

All these fine things may be easily obtained any day in Paris, and houses and homes are now springing up in all quarters of the world that demand such questionable additions to happiness. The Parisian *boursier* especially seems to covet the most magnificent and gorgeous paraphernalia to complete his domestic bliss. He appears to consider that no luxury at home can be too elaborate to compensate him for the noisy hour or two passed in the course of the day in the midst of that veritable Pandemonium in the Rue Vivienne. But the household taste of the famous *boursiers* of Paris, the historical names that go back to the remote period of the early part of the present century, passing carelessly over two or three thousand less profitable years, becomes embarrassing to quarrel with; the traditionary treasures that most of these gifted people possess, and the expensive comfort that fifty or sixty years of monstrously accumulating wealth, and other exceptional advantages, have secured to all of them the wherewithal to make their homes a kind of domestic South Kensington Museum, only that here the arrangements are generally a little more systematic, leaving, however, sufficient to complain of, to suggest the wonderment on the part of more humble but still orderly people, that the fortunate possessors of so much splendid material can so far neglect that immense aid to happiness, a place for everything, and everything in its place.

That some household arrangements in Paris,—always, however, of the gorgeous description,—approach as nearly to perfection as can be expected or desired, it is simply fair to admit; but in such houses or apartments the owners have freely availed themselves of comforts and modes of decoration having no special or exclusive origin in the minds of Frenchmen, and, indeed, wherever modern French art takes a conspicuous place in the decoration and adornment of the rooms, the taste is invariably furthest from correct. Whenever Oriental and Italian art predominates; when, as in some shops, chocolate or gloves form the chief objects of decoration: when eating and drinking are concerned, or washing and ironing, the taste displayed is fully up to a highly advanced but not yet perfect standard. Those who know what is right, and whose taste is correct, and who are fortunately already supplied with ample material, and are so well surrounded with long-cherished objects of household beauty, have very little to do with the modern dealers and decorators, who, indeed, seek a means of living in another direction, and much prefer the less fastidious and more profuse novice in the art of getting up antique town and country ancestral residences.

An impression exists, which is not altogether without foundation, that the acquisition of quickly-realised wealth, or liberty to do as one pleases, leads in many cases to a speedy visit to Paris. Paris has, irreverently, been called the desired heaven of a whole nation of good people, and certainly wealthy Orientals and substantial Westerns have done their worst to establish a marked character to many a Parisian feature, and it has been said, with some probability of truth, that France will not return to the true paths of slow but effectual artistic progress until America and Russia either make for themselves the monstrosities they covet and secure, or, when they in happier times have found out that in the tinsel they have purchased they have made a bad exchange for their glittering but genuine gold.

While there is thus much to be said against the ordinary means adopted by Parisians to decorate their houses, they, more than any other city, make a greater use of floral ornamentation, both inside and outside their homes; flowers and ornamental plants are, without doubt, amongst the products and objects which give luxury its chief resources, and life some of its most cherished enjoyments.

Household taste, dress, decoration, and finery, generally regarded from a Parisian point of view, are questions about which they have evidently made up their minds a great deal too early in their playful history, to secure the right they assume to dictate to the world; to niggers, we do not wish to speak disrespectfully of coloured gentlemen, but to uninformed dark people, the teaching of the Parisian is peculiarly welcome, and the avidity with which the darkest nation in the world assimilates with the Parisians in all their ways and manners, is, when we consider the advanced theories that exist, or the foolish prejudices that have long existed, in connexion with the African races, not altogether flattering to the descendant of the Gaul.

Like all other showy people, the French overdo immensely their arrangement of hanging curtains, not only in their bedrooms, but in all their other apartments; and in Paris this fault is carried so far, and to so great an extent, as to leave no excuse for such mistaken luxury than that of affording for the manufacture of such gear, and for upholsterers, an extravagant exercise of their expensive industry.

Within the last few years the manufacturers of fringes for upholsterer's work have succeeded in admirably imitating the beautiful hand-made trimmings of the sixteenth and seventeenth centuries, but, within the last year, this branch of trade has been so overdone, that already those who are even slightly fastidious must shrink from the sight of so much vulgarised finery, and the well-informed know that fringe as a decoration is but the unravelled edge of the warp more or less twisted and knotted, and that the woof sides of a rug overhanging should never be abused by the addition of a fringe.

The workmen in Paris no longer possess that *esprit de corps* that existed before the abolition of the guilds of various trades; showy work brings a more immediate return than the refined slowly-produced work of older days, and it is naturally a great deal easier to find employment under masters partly instructed, who sell to the multitude even less informed, than to find a market for elaborated well-considered work, that even the most conscientious tradesman, with the best possible clients, finds it hard to dispose of. We are all in the present day too easily contented with objects that look substantial, and are so much cheaper than those which we are told are "the best," but so much more costly.

If the number of connoisseurs is so limited, it evidently arises from the degeneracy operated on our minds by the sight of the numerous deformed and hideous objects that everywhere surround us; a signal service would be rendered to the world were it, for ever, to be rid of most of these so-called artistic decorations, disgraceful lares, horrible penates, which we ought at once to make up our mind to put away, for their continual presence will inevitably end by entirely extinguishing in us the sentiment of the beautiful, which it ought to be our constant duty to draw from our museums to introduce into daily life.

Modern French furniture is of desperate poverty. For more than fifty years past bad taste has piled up in our neighbours' apartments, beds, arm-chairs, tables, *armoires*, and *secrétaires* of common and incommodious forms, which pride themselves on surpassing in grace and perfection antique furniture; and so true is this that every rich person who dreams of luxury is obliged to return to the eighteenth-century productions, or have them severely imitated. This pretended progress, which short-sighted optimists persist in seeing in every direction, is, in reality, but a decadence. The present generation has been able to invent nothing. All the models go back to the time of our grandfathers. The present epoch, indeed, considered from this point of view, is really inferior to all those that have preceded it. They know how to repair intelligently the marvels of the past, but we create nothing new, nothing original. Their precious objects are but servile imitations of the models of preceding centuries. Their time-pieces, bronzes, tables, furniture, cabinets, and coffers are exactly traced from those produced in England and in France in the seventeenth and eighteenth centuries. One will be told that the cleverest artists have given up the idea of seeking a new ornamentation. They prefer to imitate these useless beauties, and have no other ambition than that of copying them faithfully.

Still, it may be said Paris artists and Paris workmen are conscientiously laborious and painstaking. "It is certain that there is in France,—and especially in Paris,—a large body of men given to skilled labours of various kinds in art and science, who are less dependent on material comforts, luxuries, and the satisfaction of social position than the same class among us,—men whose hearts are in their work, and who are content with its daily pursuit as the chief enjoyment of life, if it will but give them a moderate sustenance."*

HOW THE PAINTERS TREAT ARCHITECTURE.

A CONSIDERABLE proportion of the pictures that are painted include a representation of buildings or architectural detail in the nature of accessories or background. It may be worth while to take some notes as to the manner in which architecture is treated by painters when thus introduced as an accessory of pictorial effect.

Painters are usually credited with having a quicker eye than others for what is picturesque, as well as a habit of minute observation of the facts of various objects; and that they may claim this superiority of observing power in a general way is unquestionable. Yet we sometimes find that even very able artists seem curiously indifferent in their representations of objects which do not claim the first attention in their works. Whether this is so in regard to all classes of objects we do not here undertake to say. Perhaps the florist, the naturalist, the upholsterer even, might all have their particular charge against the painters for neglect of truth in detail. It would seem not improbable, for it is certain that the architect may pick a good many holes in their representations of architecture, while it is not very often that they offer him a new suggestion, whether practical or unpractical. We remember in last year's Academy such a student of Greek art as Mr. Poynter placing late Greek details, in very questionable combination, as the background to his early mythical scene of Atalanta's race; and we have seen a large drawing by so generally accurate an antiquary as Mr. Cattermole, in which a group of armoured and helmeted Mediæval warriors stood near a stone staircase of which the balustrade terminated with the pedestal and round ball of the Jacobean era, such as could not have been in existence till long after the figures had been mouldering beneath the earth: so that a little observation on the subject is hardly superfluous.

In this year's Academy one of the first paintings we come to is one in which the whole background or setting of the scene consists of the interior of a Mediæval cathedral; the "Sanctuary," namely, of Mr. Eyre Crowe, who is a painstaking and accurate artist in such matters generally. We remember the realism with which

* "Edinburgh Review," vol. cclxxxv., p. 227.

he painted a piece of a London street in his clever little work called "Brothers of the Brush." But his cathedral seems hardly to be painted in a kindred spirit. He has made, in the first place, the extraordinary oversight, which artists who paint Mediæval subjects continually and most inexplicably make, of forgetting that at the period which he represents, the cathedrals were not old buildings, but new ones. He gives us the figures in their Mediæval costume, and yet he paints the cathedral (in a late style of Gothic, too) as it would look in the present day, the joints chipped and opening, the stone worn, the brass in the floor with all its lustre gone. No doubt cathedrals may be said to be more picturesque under an appearance of age; but painters seem persistently to forget that they ever were or could have been new. This oversight Mr. Crowe shares with nearly all his brethren, though he is just one of those painters whom we might have expected to be more precise in such a matter. But there is another still more singular error in the picture. The piers and the vault, the architecture generally, are of Late Gothic type, but in this late architecture we see in the background windows of Early Geometrical tracery inserted. It is needless to remark that early windows could not be found inserted in a building of a late style, and the combination appears absolutely absurd to those who are accustomed to study buildings.

In Mr. Dicksee's picture called "Harmony" we see that, although the work is evidently intended to represent a past period, the organ-case is a production of the present day. Its details are, indeed, quite out of keeping, for the upper part, with the battlemented finish, belongs to quite a different style from the shafts and brackets adjoining the key-board; but these latter portions are like no real Mediæval work, but are obviously taken from the patterns of a modern Mediæval furniture magazine. This, to those whose archæological perceptions are lively, just takes away the reality of the scene, and gives an idea that it is all a masquerade, and that the two young people have merely dressed themselves up to play at Mediævalism. Mr. Gow's picture of the tumult in the House of Commons shows, on the other hand, an unusual attention to truthfulness in these matters; the room is in its main features a late Tudor or Elizabethan one, and the main portion (the high wainscot and the window, &c.) is represented with just the proper degree of rustiness for the time which it would have been in existence; while the canopy of the Speaker's chair, in the centre of the picture, is a piece of new work of the then novel Renaissance taste. The correctness of the picture in these particulars certainly aids in giving the scene that effect of reality for which it has been praised. Not far from this, a small painting by Mr. W. Bright Morris, of the "Courtyard of an Old Moorish House at Granada," exhibits a thorough understanding of architectural detail and construction; in the half-indicated line marking the spandrels of the arches we see the evidence that the arches are merely ornamental features under a lintel construction; the drawing of the ends of the roof tiles on the right is also practically correct; the whole work shows that the painter has brought some knowledge of the practical basis of architecture, or at least very close observation of constructional appearances to his aid, as well as a perception of the mere picturesque result. This, it may be said, is distinctively an architectural picture; but there are others which are more pronouncedly so, such as the cathedral interior under the title of "His Last Vespers," by Mr. Logsdail, in which we do not find the same truthfulness of observation, though there is very minute painting of detail in a rather hard "architectural draughtsman" style. This artist's other work, "the South Door of Lincoln," is more true in feeling, though here the texture and tone of the stone-work seems artificial; nor can we see any reason why these two works should claim a place among the pictures proper, rather than in the room specially devoted to architectural drawing, unless on the plea that they are executed in oil; but that seems rather putting accidents before essentials in the grouping of pictures.

To return to our look round in the order of numbers, we notice an admirably studied representation of Renaissance detail in the elaborate chimney-piece in Mr. Marcus Stone's picture, "Sacrifice"; and in Mr. Long's large work, the reproduction of Egyptian architecture, so far as we can judge from existing remains and representations, seems as perfect as study and labour can make it: every detail is carefully finished, and with an aim at truthfulness both of form and colour. In a spirit somewhat akin to this revival of Egyptian architecture may be reckoned Mr. Tadema's revivals of Roman detail, which, however, in "The Four Seasons," leave something open to criticism. The mosaic ornament in "Summer" is admirable, and is noticeable for its studied irregularity in the lines and in the jointing and putting together of the mosaic, showing that the painter had clearly before him the nature of the process, and its precise results. But the base of the column, which fills up so much of the space in "Winter," is not so satisfactory: the curves are carelessly drawn, and the upper and lower torus of the base are out of proportion to one another, and the fillet which forms the finish of the granite shaft just above the base is too large for the scale of the base-mouldings. All these niceties would have been worth considering, where the feature alluded to is so prominent in the composition.

Mr. Hodgson's "Commercial Activity in the East" is very deficient in the representation of texture in the wood and brick work; the colour is, we have no doubt, a correct representation of what the painter saw, but for texture the buildings might be all the same material artificially tinted. This is a serious defect when the whole background or setting of the figures is an architectural one; it gives a vagueness and woolliness of effect to the whole. We had to allude to the same sort of short-coming in the case of Mr. Crowe's picture of the "Red-maid's School at Bristol" last year, in which the whole of the canvas behind the figures was filled up by the outer wall of the building, and yet hardly a feature of texture, or surface, or jointing was shown; only the colour was given. In Mr. Donaldson's picture of the presentation of the fish on the consecration of the first Westminster Abbey, we see due recognition of the architecture of the period, so far as anything is known of it, in the representation, on the porch in the distance, of the rude Saxon capital with its horizontal striations, as it may still be seen existing in Barnack Church and elsewhere; though some of the other details, so far as we can make them out, seem a little arbitrary, and the perspective of the receding arches in the doorway is surely a little faulty. In Mr. Armitage's large picture of the Saxon Baron "manumitting" his slaves, this rude form of capital peculiar to Saxon England is not recognised, and the capitals of the shafts in the doorway are of the simplest form of the Norman (as it is usually considered) capital; whether this is oversight, or whether the painter has settled to his own satisfaction the rather vexed question as to the date of origin of this form of capital, and has decided that it is pre-Norman, we cannot, of course, say. The painting, however, gives the impression that the architectural portions of it have been executed with thought, and an aim at correctness; the small triangular-headed windows are characteristic; but we must confess that the overhanging roof on the right, with its struts springing from small corbels in the wall, looks exceedingly like a bit of modern Gothic farmstead building.

By the way, the large gallery reminds us how awkward it is to see a screen set across the angles of the room to cut off the corner and enable the pictures in the angles of the room to be hung obliquely to better advantage. This is always a desideratum in an exhibition-room. No picture should be put actually in a corner; but this being so, surely the rooms should be planned so from the first, and not left to be manipulated afterwards in a temporary manner. It would be easy to utilise the space at the intersections of rooms for ventilating shafts, &c. All the rooms at Burlington House ought to have the corners canted; if we remember rightly, however, none of them are so arranged except the large room, and very awkward it is to get to see the pictures in the angles, especially when the rooms are full,—when there is a perpetual block at these points,—all for want of arranging the rooms in a common-sense manner to begin with.

This, however, is a digression, and we proceed to note that Mr. Orchardson does very little justice to the fine effect of the interior of an old wainscoted room by his sloppy kind of execution, ignoring both texture and local colour for a general vague effect. The buildings in the background of Mr. Ward's "William III. at Windsor," are also very sketchy, which would pass better if the perspective in some points (the buttresses, for instance) were not somewhat questionable. Then we come to Mr. Leighton's "Music Lesson," where there is architectural finish enough, a brilliant and careful representation of marble and other surfaces and tones; but we confess to have been puzzled, ever since seeing the work, with the object on the right, which appears like one drum of a clustered marble pier standing there unfinished, and which is certainly not very beautiful in itself. Mr. Crowe is certainly not fortunate in his architecture in the present exhibition; for in the small picture, "Reduced Three per Cents," in which a portion of the Bank of England forms the background, the fluted column is really not drawn or modelled at all, and there is no indication to what feature the other flutings seen above the iron grille belong; they appear as if they were an added thickness to the same column. The architecture in this case comes close up to the spectator, as there is no distance in the drawing; and its details should really have been treated with more care. In his other picture, "A Bridal Procession at St. Maclow, Rouen," the details and texture of the interior architecture are given with much more care and finish. We presume the painter is representing a fact in drawing the square base and capital, in the column flanking the door, lozenge-wise, with their angles towards the wall-plane; it is an unusual arrangement, certainly. Miss Kate Thompson reads some of her brother artists a good lesson in the painting of architecture, in her small view of the "Entrance to the Hall of Las dos Hermanas," at the Alhambra: this is an admirable piece of painting of the kind, having all the precision of an architectural drawing, as to line and colour, with an artist's feeling for tone and effect.

In Mr. Wells's portrait of "The Hon. Constance Lawley," passing through a vestibule, the lower portions of two columns form the prominent adjuncts. These are very badly designed, in a way in which no architect ever drew the base of a column; the upper torus a mere beading, the lower disproportionately large. They are either painted from a very bad example, or (more probably) evolved from the inner consciousness of the painter. In Mr. Hodgson's "Relatives in Bond" the texture of the architecture is much better than in "Commercial Activity." The same artist has painted a large view of a town and harbour, in which the houses seem sadly wanting in character, and the church tower which forms the central object is one of the most wretched pieces of builder's Gothic conceivable. It may be painted from an actual example; but why select such a weak miserable-looking tower, when there are so many fine ones all over the country to paint from? In Mr. Vicat Cole's "Arundel" there is an old building on the right in the foreground which puzzles us exceedingly as to scale. It has Classic pilasters on its walls, which appear to be put in for the sake of a bit of detail, for otherwise the building looks like a barn; but what strikes us more is the proportion between these pilasters and the size of the man and horses near. If the figures are to be taken as correct, the "order" of the building must be on a scale something like that of St. Peter's. A painting which shows much more correct observation in regard to architectural detail than usual is Mr. Waller's "Home?" where the picture mainly consists of the study of a portion of an old Tudor mansion with a Jacobean entrance-door inserted. The mouldings are all drawn and modelled with a correct appreciation of their characteristic contours; the only bit that looks at all careless is the ornament round the panel containing the sun-dial, the design and style of which cannot be made out. Whether the painter has been awake to the fact that the doorway in his house must from its style be a later insertion, is not quite clear; there does not seem to be any distinction in the tone of the masonry. But this is a very good study of building; perhaps, considered in relation to pictorial effect and sentiment, the best in the Academy; or the best finished picture, let us say, for we just remember that next to it stands the late Mr. Lewis's unfinished picture of a Cairo scene, with bricks and timber, in the buildings opposite, which look absolutely real.

Mr. Wynfield's "Harvest Decorations" ought to delight the "anti-restoration" Society, showing, as it does, the interior of a church of the old type familiar in our childish days; plastered walls, wonderful nondescript capitals, and high pews with the swing doors. The style of the thing is very correctly represented, and perhaps an artist of the present day deserves some credit for independence of taste in taking such a building for the scene of operations, instead of painting modern-Gothic "shop" furniture. In

the same room is Mr. Poynter's "Fortune-teller," with a classical architectural background which compares favourably, in design and drawing, with any other in the rooms, not excepting Mr. Tadema's; the texture and reflections of marble are not, indeed, given with the latter artist's wonderful truth and apparent facility but the drawing is better, and the painting may be said to be the only one in the rooms in which a Classic base is correctly designed, if we except Mr. Keeley Halswelle's "Non Angli, sed Angeli," where the architectural detail has been carefully and conscientiously studied, and the curves of the base-lines are carefully drawn in correct perspective, a matter in which we must confess that not a few architects are careless, let alone painters. The difficulty in regard to Mr. Halswelle's picture is to understand where such detail could be seen in the time of Pope Gregory: the Renaissance was still far off, and the original Roman architecture, on the other hand, was too far behind to have left any buildings of the style looking so fresh and new as these columns appear to be.

In Mr. Britton Rivière's "Lazarus," the architectural background is exceedingly well drawn, and has evidently been the subject of a good deal of consideration. The painter has adopted details more or less Saracenic, which is perhaps as near as one can get to an architectural local colour for an Eastern scene of undefined time and place; it is, at all events, quite in keeping with the subject, and shows some originality in the application of the ornament. In Mr. Goodall's "Water-carriers," the row of buildings in the middle distance is probably taken more or less from some actual Eastern village or town, but the character of the architecture is but feebly rendered, and gives too much the impression of a sort of conventional Sunday picture-book scene. The old fountain with the three lions' heads in Mr. Topham's Roman scene called "Idlers" is good, its general character being very well given, though here we should have liked to see a little more evidence that the painter had considered the precise meaning of the shadows and touches which he knows how to put in so effectively. He contrives to make it look right, however, which is more than Mr. Fulleylove does, who sends a water-colour of the "Pantheon at Rome," in which the curves are not in true perspective, and the capitals of the columns are like nothing in the world; the general effect of the drawing is unquestionably pleasing, but if artists take a *bonâ fide* architectural subject they should really see that they understand what they are drawing. Mr. Griffiths's "Street Scene in Bombay," also among the water-colours, errs perhaps in another direction, regarded as a picture, for the architecture is almost too hard and minute, but the drawing is an exceedingly able one, and the artist in this case does understand distinctly what he means to show. Miss Thornycroft's design for an illustration of "the Parable of the Great Supper" would have been the better for more sympathetic study of the Ionic architecture which forms the background; it is correct in the main, but is very feebly designed, and the abacus is too thin, giving a very weak look to the capitals. Painters who want to draw Ionic architecture could not do better than take their inspiration from the grand fragments of the Ephesus temple now in the British Museum; a little study of such details, and an appreciation of their *scale* and spirit, would cure artists of being content with backgrounds of what may be termed "toy architecture" for their pictures. In Mr. Waterhouse's Classic interior in the "Temple of Æsculapius," the architectural details are very carefully drawn and modelled: the profiles of the mouldings on the altar, for instance, might have been furnished by an architect; the fluted wall pilasters without bases seem, however, to clash a little with the antique spirit which should pervade the whole, reminding one rather too much of Jacobean detail. In Mr. Wallis's fine picture of "The Physician," care has been bestowed on the painting of the building, and a characteristic simple form of Early Gothic capital is faithfully represented in the doorway on the right; but here, as in Mr. Crowe's "Sanctuary" picture, the mistake seems to have been made of painting the building as it would look if preserved in the present day, battered and time-defaced, while the figures belong to a long past age.

It is certainly remarkable how comparatively few painters represent architecture correctly, and we could wish that those artists who bring architectural detail conspicuously into their paintings would recognise the fact that its effect depends often on very delicate *nuances* of design, and that if introduced at all, it is worth more study than they seem to give to it.

"ICI ON PARLE FRANÇAIS."

THE Académie des Beaux-Arts are at present exhibiting the works of the Prix de Rome men, the *pensionnaires* of the Villa Medici. There appears to be but one opinion, which is, indeed, this year amply supported by unhappy illustration, that, year by year, the French Académie system of rewards, whatever good may have been done by it in the past, no longer brings forth satisfactory results. Of the four pictures now on view, two only call for any special remarks. All suffer from their undisguised imitation of the lamented Regnault's admirable method of work, but these pictures have so little, indeed are so utterly without any fresh thought or older traditionary charms, that all that can be said of such productions is that their painters are still very young men, who have yet many laborious years before them, and that nothing is denied to labour if properly directed.

The ingenuity that modern French painters exercise in their endeavour to exhibit their misplaced belief in their ability to represent the naked form, has surely long since culminated, as far as decency will admit, with the works of some very recent painters. Ingres, we think, was the first Frenchman who indulged the public with the sight of an *Odalisque* at her bath, and, since then, how many undraped figures have we not seen at French exhibitions? Surely a check, or a hint at least, should be strongly suggested on this subject to our young painters, or picture exhibitions will become unfit places for any but professional men.

The architectural drawings sent home are precisely similar to the many perfectly-executed mechanical designs that all young architects seem capable of producing. Now and then some architect appears to take a pictorial view of his subject, as M. Lambert has done in his charming representation of the interior of that most perfectly decorated apartment, the Library at Sienna, and the same artist's drawing of the façade of the Communal Palace at Brescia are equally good, although more strictly architectural. The sculptors send home positively nothing worth notice, and the engravers and medallists are just as commonplace as usual.

There seems every probability, from what we hear of the resolutions that the Fine Art jury of the French section of the Exhibition have just made known, that the Parisian painters, in their desire to show the world that they are the only artists, may fall into grievous, and what may prove to be humiliating, error; for ourselves, we believe that the French pictorial display next year on the Champ de Mars will be a failure, and that it will be but poorly redeemed by the works of the jury, who, with a patriotic ambition to maintain the artistic honour of their country, have determined to send each an unlimited number of their own works, executed, of course, since 1867.

The French artists have every reason to feel nervous as to the show they are likely to make next year; but their failure will not be owing to apathy or want of interest in the subject,—a cause of failure that is very likely to be the case with countries near to them, although Belgium is certain to distinguish itself; England is likely, we fear, to be too indifferent or too well satisfied with its abundantly remunerative home admirers, to care much for the opinion of the profane vulgar or the sight-seeing crowd of pleasure-seekers.

It is now almost certain that the Great Exhibition of 1878 will be lighted by electricity. Before this year's *Salon* closed, several successful electric experiments were made in presence of the Minister of Fine Arts, and within the last few days these have been repeated. The interior of the Palais de l'Industrie has been lighted by two electric chandeliers. Every day these experiments have been repeated, in order to discover the best means of lighting the immense building. It has been calculated that at least ten thousand candles would have been necessary to give the same light as that given by the electric chandelier. The experiments apparently have been most satisfactory with the statuary, though, as regards the pictures, great doubts exist.

At the first meeting of the Société de Médecine Publique, held on the 27th ult., among several interesting papers, M. Trelat, the director of the École d'Architecture, pointed out how defecti were the greater part of the scholastic establi ments, with regard to the way in which th were lighted. He showed that the habit making the light come from every or any si fatigued the eyes, developed short-sightedne &c., and that, in addition, this exclusive case having too much light from the place whence comes has for result that objects are lighted round, the relief thus being destroyed, and t plastic sense destroyed with the children.

At length the new street across the Tuileri gardens, to which we have already referred, h been thrown open to public thoroughfare heavily-laden wagons, however, are not allowe to pass through. On one side of the new stre stand the ruins of the palace of the Tuileri while on the other has been laid out with incor parable taste a beautiful garden, in which son of the best statues of the old private garde have been placed, skilfully relieved by a dar green back-ground of foliage. Indeed, seen the proper hour of the day, the new garde cannot fail strongly to recal to those who ha crossed the Alps many a delightful memory Italy. Placed as the new street is, in the quart visited by all the strangers, the Rue de Tuileri will soon, beyond a doubt, become famous.

Paris.

THE FUTURE FLOODING OF THE THAMES AND THE METROPOLITAN BOARD O WORKS.

THE course which the Metropolitan Board Works has taken in withdrawing the Thame Prevention of Floods Bill has caused the unite committees, belonging to the several vestri who opposed the Bill, to adopt a certain line proceeding with the view of freeing themselve from being held liable for the consequences any future inundations. During an interview which a deputation from the committees had wit the Home Secretary last week, they stated tha although the Metropolitan Board had abandone the Bill, the riparian parishes were willing t assist in carrying out an equitable scheme; an that as to any future floodings, the Central Boar must be held responsible; on which the Hom Secretary observed that both himself and th Government were anxious to assist the deputa tion, but that if Sir James Hogg, the chairma of the Metropolitan Board, availed himself, a he threatened to do, of the forms of the House the session was too far advanced for even th Government to secure legislation, but that not withstanding they would do what they could b influence. It was stated at the meeting of th Lambeth Vestry last week that it had come t the knowledge of the committee that it was i contemplation by a section of the Metropolita Board to avail themselves of the first overflow o the Thames, in any parish, to get the Board t apply for a mandamus in the Court of Queen' Bench, to compel that particular parish t do the necessary work at its own expense and that a resolution had been agreed to by the riparian representatives that th selected parish for prosecution should be assisted by the others. Notwithstanding the course which the majority of the Metropolitan Board have taken on this subject, there are other members who hold they ought to adopt some further steps to prevent future flooding disasters and with this view Mr. Dresser Rogers proposed the following resolution at a late meeting of the Board:—"That the engineer be instructed to report to the Board the places on the River Thames, within the Metropolis, where inundations are likely to occur from high tides, and also to supply the Board with an estimate of the expense requisite to make such alterations as will prevent future damage to property from overflow of water, and that the question be referred to the Works and General Purposes Committee to consider and report." Mr. Rogers said his object in proposing the resolution was to show the public that the Board desired to prevent inundations, about which many persons appeared to think they were indifferent. The Board, however, considered the object of the resolution unnecessary, and rejected it by a large majority

Wood-Working Machinery.—We are informed that the only gold prize medal for wood-working machinery at the South African Intercolonial and International Exhibition at Cape Town, has been awarded to Messrs. F. W. Reynolds & Co., of Southwark.

ART AT TROY AND MYCENÆ:

AS MATTER OF POETRY AND MATTER OF FACT.

It appears too certain that the interest which has been excited in Dr. Schliemann's discoveries at Hissarlik will have to dwell for an indefinite time longer on what he has told and is presently about to tell us. We must make the best of the knowledge which has been already secured, and of which we are soon to be more fully in possession, as to walls, gates, towers, foundations, and other antiquities of that ancient city, to the prosperity and ruin of which there can be no reasonable doubt that the world is indebted for the tale of Troy divine." The study of ancient history in Asia Minor has to be postponed while the country is disturbed by its modern history in the process of making. Fugitives from the conscription are seeking refuge in Mount Ida, and make the peace of a neighbourhood far too precarious for an archæologist; especially for one whose explorations have had results so intelligible to a brigand as a treasure of golden utensils and ornaments. So the palace of the lords of Troy and the state of the arts at their court must still be chiefly represented to us by the descriptions of Homer; these are very general in their terms at best,—and, even so, they are subject to a double deduction. Allowance has to be made in the first place for the liability of a poet to more or less consciously transfer refinements of his own age to a far earlier and ruder date; and then for the tendency of pure poetic imagination to add developments of what may be some day, but are not, even at his own date, more than art in rudiments. Homeric poetry is imbued with a spirit of that universal enhancement of all expressive effect which, as attempted by the rash ambition of the incompetent, lapses into the offensiveness of gross exaggeration, but when so victoriously successful, is glorified as idealization. To such a height does Homer press this tendency that some strength of pinion is demanded of those who would even watch and wonder at his eagle-flight; the weaker lose heart prematurely and accuse the poet as readily as the clumsy criticism of Johnson charged the "serious swelling" of Shakspeare with degenerating into "bombast." The worthier become insensibly acclimatised and breathe with delight in the rarified air of the regions which poetic genius demands for the support of its inventions. If Homer requires a flood in the plain of Troy to wash away the evidence of his walls and trenches in defence of the Greek position, he does not scruple,—and they are prosaic, indeed, who cavil at the liberty,—to reverse the watershed of Mount Ida, and turn the Granicus and the Æsepus into the Hellespont for the nonce; he deals with the stream of time quite as unceremoniously,—antedates graces of arts which are appropriate to a far later period, and not only exhausts the resources of his own time to fill out his picture,—but, as in the description of the shield of Achilles, takes a draught by anticipation upon all the perfections that art was ever to achieve to the termination of its Hellenic career.

Temptations to enhance splendour and refinement did not present themselves to the poet of the "Iliad," and invite him to such liberality as he indulges in describing the palaces of Alcinous and Menelaus in the "Odyssey"; but the opportunity for such indulgence was by no means precluded altogether.

The buildings which Homer specifies on the Acropolis of Troy,—that is, within the precinct of the distinctly fortified citadel,—are the temple of Athene, which contained her seated statue, and the palaces of Priam and his sons. So at Athens we find the chief sanctities of the city on the Acropolis with the house of Erechtheus, the mythical King of Athens; the instinct of monarchical rule in early ages,—and it is not obsolete in all countries yet,—was not more constantly to lean on the security of a central fortress, than to make the assurance of a citadel doubly sure by as close association as possible with objects and sites of religious veneration. It would be of the highest historical interest to know whether a complete exploration of the Acropolis of Mycenæ would bring to light the traces of any properly sacred structure as well as of a royal dwelling and royal tomb. The presence or the utter absence of any such traces, or if the absence could be made out as certainly not due to demolition,—would be equally significant,—though contrasted in significance.

When Hector coming in from the field and entering the city by the Scæan gates, approaches "the very beautiful house of Priam," what we first learn is that it was furnished with smoothed or polished porticos,—*aithousai*,—as if some at least were external. Within, upon one side of a court (*aule*), there were fifty sleeping-chambers of dressed stone contiguous to each other, in occupation of the married sons of Priam; apart and opposite there were chambers similarly constructed and contiguous, for the residence of his married daughters and their husbands; these, however, are only twelve in number, and symmetry limps accordingly. The latter chambers are qualified as roofed (*tegeoi*), or in some obscure relation to a roof, which has never been explained in a way to account for the difference. It has been suggested that by striking out two lines from the text as spurious, these chambers would be left in occupation of unmarried daughters; but it is just at the entrance that Hector meets his mother Hecuba, taking in the most beautiful of all her daughters, Laodice,—and Laodice is married to Helicaon, the son of Antenor (3. 122).

The two most important sons of Priam,—Hector and Paris,—have dwellings,—palaces, apart, but in proximity to their father's, and therefore also on the Acropolis; that of Paris is said to consist of "Thalamus, Doma, and Aule," that is, of chambers for sleeping or retirement of the larger apartment for common assembly, or for meals, the dining-hall, and the open forecourt,—divisions with which we become acquainted very definitely in the descriptions of the palace of Ulysses in the "Odyssey." It is quite in harmony with the general habits and disposition of Paris that he should be studious of the beauty of his dwelling. The lover of Helen, who is seldom mentioned without an epithet referring to his personal beauty, makes his first appearance in the poem in the forefront of the battle, gay with a leopard-skin about his shoulders, and now when Hector finds him at home it is in a mind that shows him by no means alert to respond to Helen's very pointed suggestion that his right place is with the fighters, before he has had time to burnish his shield and cuirass, and arms one after the other, that when he does go, he may make an appearance worthy of,—

"Paris Alexander, the consort of fair-hair'd Helen."

It is in accordance with these tendencies that he should have bestowed his own personal care on the design of the beautiful palace which he built with the aid of the best artificers that Troy could then supply,—

"But Hector went on forthwith to the palace of Alexander,
The beautiful; this he had builded himself with the men who at that time
Of all in the realms of Troy were workmen the most skilful."

Paris so employed reminds us of an Italian prince of the Revival, fastidiously exacting of most perfect finish and accurate design, whether in a jewel, an armour, or the plan or elevation of a villa, and qualified to critioise and control the skilled in every art. And there is something particularly modern in the phrase, "the men who were the best artists of the time"; it marks a strong sense, for the poet at least, not merely of the differences in ordinary skill between one man and another, but how every time has its few men who stand forth far beyond the rest, and how thus one time, one epoch, falls into comparison with others in a series, as better or worse, by the standard of the genius of individuals.

Other suggestions occur of the familiarity of the poet with the atmosphere of an age of art. How distinctly, in the conclusion of the description of the baldric of Heracles, does he express the feelings with which an artist of due enthusiasm, of any age, regards a work to the execution of which he has bent the whole power of his faculties. It was formed of gold, inwrought with marvellous workmanship; the subjects are described in two lines, which very plainly indicate two rows of contrasted subjects, and precisely such as we find contrasted on some of the earliest preserved Greek works of art, on bands one above and one within the other:—

"Bears were thereon, and fierce wild boars, and glaring lions;
Conflicts there were, and fights and slaughter, and deeds homicidal."

Museums supply abundant illustrations, on pottery and bronze, of a row of confronting wild animals on one hand, and on another a row of human conflicts. The work, it is said, was such that the artist by whom it was wrought would not easily in another add anything to his invention; he had, in fact, exhausted his resources,—thrown all himself into the work.

When Homer thinks it worth while to specify the chair of Penelope, inlaid around with ivory and silver, as a work of Icmalius, we seem to be aware of the echo of an age which might have its collectors, and parallel with that which is recklessly competitive for possession of a superior piece of Chippendale. At least, we apprehend the indication in germ of that same feeling which caused Greek artists,—moulders and painters of vases, and Sicilian die-sinkers,—to name no others, to sign their works. The Sicilian signed coins are late; but very early pottery is signed, and self-assertion in this quarter is the more noteworthy, because ancient literature entirely neglected to put on record the progress and the masters of the Ceramic art which reached such high perfection. The François vase at Florence,—a vase of which the associated subjects might be shown to form a whole as coherent, though far from as deeply significant, as those of the Sistine Chapel, if the world cared to listen to the exposition thereof,—the François vase which, in many respects, is perhaps the most interesting of all that have been recovered, is of very Archaic style, and inscribed in more than one place,—

"Ergotimus made me—Cleitias painted me."

Homer, it must be said, while he shows every disposition to magnify his own art of poetry, is no less earnest in asserting,—or rather let us say, no less naturally and as matter of course takes for granted,—the dignity of excellence in all the arts. Manual skill is, with him, a direct endowment from Pallas Athene; it is by her favour that Phereclus,—descendant of a line of artists, for as much is implied in his father's name Harmonides,—was not only a shipbuilder, but, with the universality usual at some periods, could execute "dædal works of all kinds with his hands." Among the guests who, by the admission of all, may be worthily invited from afar, and entertained by princes, are not only the diviner, the leech or assuager of disorders, and the bard, but also the fashioner of spars, be the title limited to shipwrights or inclusive of all workers in wood (Odyssey, 17. 384). The social line so drawn is quite as defensible, mayhap, as any that in military states is the barrier of a caste, and defines the privileges of the *hoffähig* by more grotesque qualifications.

The constantly repeated phrase by which Homer qualifies good workmanship,—be it but of simplest carpentry,—is, "well and understandingly"; no mere manual dexterity is sufficient, unless reflection concentrated upon definite means and purposes co-operate; the skilled or trained workman is clearly in Homer's appreciation but a poor creature, unless he is competent to use his wits independently. Here we have the secret of that primary start of Greek art upon a course of development which involved an energetic progress towards highest development.

But, after we have made the most liberal deductions from the Homeric descriptions on the score of poetic invention and poetic embellishment, it comes out clearly and positively that the actual works of art with which the poet himself was familiar, whatever his date, and on which these enhancements were so lavishly superinduced, must have been different indeed in style and value from the ornamental objects, rude rather than even crude in both workmanship and design, that have been found near the virgin soil at Troy and Mycenæ. Our inferences will, indeed, touch the very verge of the adventurous if we dare confidently propound that the primæval art revealed by Dr. Schliemann displays enough of the healthy vigour of a wild stock to make probable its reception of a later graft of a truly refined strain. Yet to this length we confess that we are inclined to go.

The interval between such art as Homer may have known and that of Dr. Schliemann's collections, can scarcely be so great as that between the art of his descriptions and of his experience. A certain sympathy with natural forms, however simple, combined with a disposition to conventionalise them, represents no unpromising starting-point for unfettered development. Legend, which we are learning to listen to with more respect than formerly, however our respect is still qualified by caution, distributes a broad substratum of Pelasgianism over Greece at large and all its border countries; and Herodotus believed, and plausibly enough, that certain tribes which shared the appellation had such susceptibility of culture as to respond kindly to stimulant contact with Phœnicia, with Egypt, with Lydians, or Phrygians, and so assumed the characteristics of the historic Greeks, — the Hellenes. The historian particularly declares that the religion of these primæval occupants of

the soil was at first the simplest recognition of divine powers,—the orderers of nature, to which they only later adapted foreign names and attributes. There is much in the aspect of the antiquities of Mycenæ that carries us back to this period of naïve sincerity and simplicity; a period long, long anterior no doubt to that in which the poet was witness of the settled application of native artisans working,—"well and understandingly"—in a great variety of materials, and an equal variety of arts, but a period which at least was not cramped and overlaid by unredeemable formalism.

It is in the indication of a geographical extension, comprised under this period, that there is especial significance in Mr. Newton's palmary recognition of the relation of the forms and ornaments of Ialysus in Rhodes and Mycenæ; the relation is certified, is clenched, by agreements which are as infallible as the matched halves of a torn printed page; and we are thus enabled to mark as "founded on fact" the legend, not only of the connexion of Rhodes and Mycenæ, but their connexion at a period as early as the crude art in question requires;—early, in fact, as the legend implies, which refers it to the age of Hercules.

Besides agreement in quite peculiar forms of drinking and other vessels, and of some marvellously uncouth models of the human figure, there is an agreement in the very restricted types of ornament; one of these started from the sepia,—if not possibly the octopus,—the polypus of Homer,—perfectly recognisable, but variously conventionalised into an ornament, and sometimes almost or even quite carried away from any natural form whatever,—a mere pattern. Besides this type there is another which has caused more debate, and on this we have to vent an opinion of our own; it usually appears as an open but diminishing spiral, extended at last to a straight line. Several examples, variously modified, may be seen on the Ialysus pottery in the case at the British Museum. One example seems to betray the secret,—that the spiral is what very free-hand drawing indeed, has adopted to represent the whirls of the spire of a univalve shell. The suggestion is then obvious that the true model was the purple shell,—the exuviæ of the murex, the source of the Tyrian dye. Whether the figure will suit better the murex *trunculus* of the Tyrian shore, or the murex *brandaris* of that of the Morea (see Woodward, p. 106), it must be left to the naturalists to decide. In any case, we doubt not that the type represents a shell, albeit different opinions may interchange vertex and canal. If the shell really be that of the purple-yielding mollusk, it brings us back in conclusion, and agreeably, to an Homeric text. It is a purple web which Helen, with the serenity befitting a princess who is conscious of the privileges conferred by her divine descent, embroiders picturesquely with the disastrous conflicts that Greek and Trojan are condemned while she works through her own light life and misbehaviour. Where Helen may have laid in a stock of purple material, we may infer when we read that Paris went round by Sidon as he brought her home to Troy,—to Sidon, whence the gaudy pair did not also fail to bring chests full of robes elaborately worked and variegated, and beaming star-like (Iliad, 6. 290). Such is the indication of one main track by which the simple,—to borrow a word,—"the child-like" attempts at art which were native at Mycenæ received a stimulative impulse, and derived the types and models of ornamental combinations which are preserved to us in the pottery of the so-called Græco-Phœnician style, and doubtless were displayed more elaborately on more perishable materials.

MODERN BRIDGES.

SINCE the development of railway communication first gave an importance to bridges greater than they had hitherto possessed, but more especially within the last quarter of a century, bridge construction has undergone such thorough changes that it will well repay the trouble, in speaking on modern bridges, to shortly trace the various stages through which that branch of architecture has passed since bridges were first used in the remote past. The necessity for connecting opposite banks of rivers by permanent structures must have made itself felt very early, for our most early informants on the subject, the Greek historians, mention the erection of bridges by Semiramis, Darius, Xerxes, Pyrrhus. It is almost certain that they were known also to the ancient Egyptians, though no records respecting them are, as far as we know at present, in existence. Of course, bridges at that early stage of history must have been of the most primitive nature, and the material first employed was undoubtedly wood, for we meet with them already in the lake dwellings, and in a more perfected state among the Romans and in the Middle Ages. By simply laying down timber beams on fixed supports, an opening of at most 50 ft. was bridged over. By constructing piers, and using lateral trusses, larger distances were spanned. When the introduction of railways gradually brought about a complete revolution in the construction of bridges, iron bridges became the rule in Europe; in America, however, the abundance of wood enabled engineers to construct even the largest bridges of that material. Howe and Long succeeded, by the combination of different systems, to span openings of a width of 177, 207, and even 328 feet. Stone bridges were built somewhat later, though they were brought to a state of high perfection already by the Romans. They are, from the nature of the material employed, which offers resistance only to pressure, not to tension, all of the arched form. The Roman bridge over the Adda at Prezzo, now destroyed, was the longest known of Roman bridges; it had a span of 246 ft. The next widest, spanning the River Dee, has a width of only 200 ft. The bridges most celebrated for their architectural beauty, if not for their size and span, are those over the Thames in London, the Seine bridges in Paris, the bridges crossing the Elbe at Dresden and Prag, and the bridge over the Danube at Regensburg. Stone bridges are little adapted for railways, as the changing weights require a greater resistance to pressure and tension than it is possible to attain with the material. But it is extremely valuable in the construction of aqueducts and viaducts, which have to support a more uniform burden. Thus, irrespective of its use for the wonderful water conduits of the Romans which surround Rome for miles, stone has been employed, in modern times, for the beautiful aqueduct of Marseilles, 1,277 ft. long, the Göltzschthal viaduct in Saxony, four stories high, and the Neisse viaduct at Görlitz, 1,548 ft. long, of which the first required an outlay of 335,000*l.*, and the latter of 95,000*l.*

Iron bridges, the introduction of which belongs to the last decades, are either girder, arched, or suspension bridges, the latter being the oldest. Suspension bridges, with hempen ropes or leather straps as bearers, are of very old origin, bridges of that description having been met with in China and Thibet when those countries were first visited by Europeans. The Swiss crossed the Po in 1515 on a bridge of ropes, and the Electoral Saxon army, in 1734, threw a chain bridge over the Oder. Wire ropes were first used in America in place of chains. The largest suspension-bridges of the world are found there, examples of which are the railway bridge over the Niagara (820 ft. wide), the road bridge over the Ohio bridge at Cincinnati (984 ft. wide), and finally the largest bridge of the globe, viz., the East River railway bridge between New York and Brooklyn, now building, constructed on Röbling's system, of a width of 1,575 ft., and of such a height as to enable the largest seagoing ships to pass under it without difficulty. Suspension-bridges are extremely useful for street traffic; but their being exposed to great oscillations has prevented their application for railways, an evil which it has been endeavoured to obviate by stiffening the ropes and using links in the centre, as this has been done in the case of the foot-bridge at Frankfurt. These experiments, however, were made quite recently, and have not yet given quite satisfactory results, in consequence of the difficulty of making exact calculations.

Arched bridges of iron are imitations of those of stone, and have hitherto been constructed of cast iron, as has been the case with the great Rhone bridge of Tarcascon, of a span of 197 ft. The latter has been made at little expense, and has a neat appearance. One defect, however, soon showed itself in the use of cast iron for bridges, viz., its little resistance to tension, an evil which it has been sought to remedy by partial, and finally by total, replacement of cast iron by the wrought material. The arched bridge of wrought iron was first rationally applied by Sternberg over the Rhine at Coblenz, which remains a pattern up to the present time. The Rhine bridge at Grieshausen and the Mississippi bridge in America (515 ft. span) are faithful imitations of t former.

Most of the iron bridges are girder-bridg where the principal iron bearers are fre supported by stone piers. According to theo the resistance of the girder increases the farth the material is distributed from the horizon axis of the cross-section. The principal beare of the girder-bridge consist of two separa parts, the horizontal ties, which, in the case the first bridge of this description, built Stephenson, were connected by solid sheet-ir plates. As theory advanced, this screen w replaced by a narrow-meshed network, as find it in the bridges over the Rhine at Colog and Kehl, which have openings of about 320 f it was finally changed to a still more open fram work. At first,—for instance, in the case of t Cologne bridge,—both horizontal ties were ma parallel. In the later constructions, over t Rhine at Mannheim and over the Elbe Hamburg, they were curved like a parabo so that the two ends met at one point; only the upper tie was curved, as is t case with the new bridge of the Maas at Rott dam; or else the upper tie was curved in such manner as to form only half a parabola, so th its ends do not strike the lower tie, as is done the cases of the Düsseldorf Rhine bridge a the bridge over the Dutch Leek at Kuylenbur The judicious employment of these differe styles of construction may best be defined saying that the bridges with parallel girder-ti are most easily constructed, while the curv girders require the least material, and the girde of the form of a semi-parabola are most suitat for very large spans. The girders resting up piers may either consist of one beam for ea opening, or may span continuously several ope ings; as, for instance, in the Rhine bridge Cologne, which has four openings, but only t continuous girders. With uninterrupted beam which are employed mostly for parallel girde but also, as at Aussig and Tetschen, in Bohemi Switzerland, for parabolic girders, a saving material is effected; but they are so difficult calculation that a mistake of a few millimètr made in their execution may considerably affe their practical capacity. The system of link girders is still more modern, the girders of whi do not unite on a pier, but in the middle betwe two piers by means of a joint. The first bridg built on that system is that over the Danube Vilshofen, erected in 1872, another one beit constructed later over the Main at Hassfurt.

Formerly, as has been remarked, iron bridg were principally constructed of cast iron; present they are mostly made of wrought iro in the future, steel will, no doubt, play the prin cipal part in their construction, as the followin remarks may tend to show. The bridging of span, say, 60 ft. wide, does not require doubl but from two to three times, the amount material used for an opening of 30 ft.; an this proportion increases so rapidly that, for wrought-iron bridge the sides of which are of height a tenth part the width of the opening t be spanned, the limit at which a bridge woul support itself would be reached at 1,180 ft. steel bridge of a span of 300 ft., however, weigh only half what a wrought-iron one would, an yet would be able to carry the same loads. Th proportion is still more favourable in large spans, so that the introduction of steel bridge considering the high perfection at which th manufacture of steel has arrived, and the poss bility of producing the material in all desire qualities, can only be a question of time. present, however, only one steel bridge has bee constructed, that over the Söta Canal, in Swede while for the Maas bridge, at Rotterdam, wrough iron only has been employed.

A question, also belonging to the present tim is the durability of iron bridges. Formerly it wa assumed to be illimitable, supposing, of cours the bridges to be equal to a maximum load; bu recent experiments by Wöhler and Spangenber have demonstrated that iron is first change and then destroyed in its structure, by changin loads, if ever so small, especially if tension an pressure alternate; this is effected all the mo quickly the greater the difference is between th tensions produced by the various loads. Th necessity will arise of gradually replacing th parts mostly exposed to wear and tear by ne ones. These most recent experiences ha hitherto been taken into consideration in bu few instances of bridge-building, but trial sta tions have been established, especially Germany, to complete the information alread obtained. The whole theory of constructin

iron bridges is an offspring of modern times, but the above remarks will show that, though it has passed the first stages of its development, it has not yet reached by far its greater perfection.

STREET BUILDINGS AND THE PUBLIC HEALTH ACT.

FIRST decisions upon new Acts of Parliament are always of considerable interest and importance to the general classes of persons whose interests they may in any way affect, with the exception that the persons who take part as actual litigants in these new and leading cases would probably prefer that the legal experiment should have been made at anybody else's expense than their own. It is a small consolation for their expenditure of money and time to know that society generally is benefited by the trouble of the particular individual. Mr. Kerr, of Preston, the plaintiff in the recently reported case of Kerr *v.* The Corporation of Preston, which will be found at p. 409 of vol. 46 of the *Law Journal* Reports (Chancery) may therefore be regarded somewhat in the light of a legal martyr. It appears that this gentleman had recently brought the frontage of his house into the street beyond the line of the surrounding houses. Unfortunately for him, the Public Health Act, 1875, is now in full force, and the Corporation of Preston, desirous of trying their new broom, determined to test its efficacy on Mr. Kerr. The hundred and fifty-sixth section of the Act in question declares that it shall not be lawful in any urban district without the written consent of the Urban Authority to bring forward any house or building forming part of any street beyond the front wall of the house or building on either side thereof, nor to build any addition to it beyond the front of the house or building on either side. Now this was exactly what Mr. Kerr had done. He had put his house forward, and he had not received the consent in writing of the Urban Authority. Accordingly, as we have said, the Urban Authority set to work to take proceedings against the offender before the magistrate; if the offence was proved he would be liable to pay two pounds for every day during which the offence was continued after written notice from the Urban Authority. Accordingly, Mr. Kerr came to the High Court of Justice to obtain an injunction to prevent the Corporation from continuing their proceedings on several grounds, the main one being that the Corporation were aware of his proceedings, and therefore acquiesced in his extended building. But the Master of the Rolls found an initial difficulty as regarded Mr. Kerr's experiment, namely, that the Court of Chancery has no power at all to interfere to prevent the Urban Authority from proceeding to exercise in a lawful manner those rights with which the law has entrusted them; and as regards the question of acquiesence he decided that since the written consent of the Urban Authority was required to enable any buildings to be projected beyond the fronts of the neighbouring houses, the mere tacit acquiescence, whether it tended as an acquiescence in Mr. Kerr's doings or not, was, as a consent, simply null and void in law. This latter point should not be passed over without notice, because otherwise it is quite possible that others than Mr. Kerr will suppose if the Urban Authority hold their hand that they are therefore consenting to doings to which, except in a certain specified manner, they cannot consent. The remedy, too, of the Urban Authority in these cases is in its nature a criminal proceeding, and unless criminal are inextricably entangled with civil matters arising from the same subject, the Chancery Division of the High Court of Justice will never interfere; therefore, again, it is hopeless to expect that this decision of the Master of the Rolls would be reversed on appeal. But, of course, there are numerous defences which may be well and safely taken before the magistrates. Thus, if the information is not laid within six months from the time when the offence was committed, it will, from the tenor of succeeding sections of the Public Health Act, probably be bad in law; for it is against public policy to permit the authorities not to take the earliest possible steps in a matter such as this, which involves considerable expenditure and cost. On the other hand, the offence is one of what may be termed a continuing character, which may extend over some space of time, and therefore we have very little doubt that some other person at some no very distant day will have the pleasure of trying from what date the limitation period of six months is supposed to run,—that is to say, must the complaint be laid within six months from the time of the actual commencement of the building, or from the time at which it first gets beyond the regular line of houses, or from the day on which it is completed and finished?

But the case to which we have referred, and the facts of which we have set out at some little length, as being of considerable interest to the readers of the *Builder*, show clearly enough (1) that the Court of Chancery will not interfere to prevent legal proceedings under what may be called the building sections of the Public Health Act; (2) that tacit acquiescence, in illegal enlargement of buildings, by the Urban Authority gives no consent; and (3) that there may be good defences before the magistrates to informations laid by the Urban Authority into which the Court of Chancery will not enter. But this case is also a pretty good example of the rashness with which people trust to good luck to get themselves out of difficulties which a little care at the beginning would wholly have prevented; for it must be assumed that the plaintiff never took the trouble to find out whether he was within his legal rights in building beyond the line of the neighbouring houses. At the same time it seems to us very reprehensible that the Urban Sanitary Authority should stand by until the eleventh hour without taking proceedings, and then all at once set the law in motion. It may sometimes happen that persons with the best intentions begin unknowingly to infringe the law in such cases as these, and therefore those in authority should take the speediest means to enlighten their ignorance. All things considered, this new clause may well be pondered over by builders and sanitary authorities.

"THE RENAISSANCE."

JUST after noticing Mr. Symonds's elaborate history of the Renaissance, we have before us another volume touching upon the same theme in quite a different manner. The object of Mr. Walter Pater's work, the second edition of which is just published,* is not to give any detailed history of the facts of that extraordinary period, but to pierce to its inner meaning, to show the origin and motive of the spirit which moved some of its leading minds in art, and also to trace some of the beginnings of the Renaissance spirit in art and literature, at a time when the Mediæval feeling was still the prevalent and prominent one. This latter point, the interest of which is rather literary than strictly artistic, is especially brought out in the essay on "Two Early French Stories," which takes us over curious and little known ground, and is well worth reading. The essay on Sandro Botticelli is likely to have a special interest for some readers at a time when this painter's works are being placed on a pedestal higher than at one time would ever have been imagined possible. Indeed, the author seems quite alive to the rather disproportionate extent of Botticelli's modern reputation, explaining it, to a certain extent, by classing him with "a certain number of artists who have a distinct faculty of their own by which they convey to us a peculiar quality of pleasure which we cannot get elsewhere; and these too have their places in general culture, and have to be interpreted to it by those who have felt their charm strongly, and are often the objects of a special diligence and a consideration wholly affectionate, just because there is not about them the stress of a great name and authority. Of this select number Botticelli is one," &c., in which remarks the author may be taken to have expressed frankly what many probably know, but do not express, that the recent veneration for Botticelli, and frequent imitation, or attempt at imitation, of his manner, are to be traced to an arbitrary and conscious fashion rather than to unconscious and healthy admiration. Leonardo da Vinci and Michelangelo are the subjects of separate essays, the latter in regard especially to his sonnets. The most interesting essay, perhaps, in the book, and that which bears most directly on Art, is the one on Winckelmann, which originally appeared, if our memory is correct, in the *Westminster Review*, a good many years back, and attracted some attention at the time; we are glad to meet with it in a more permanent literary form. The general aim of this essay, besides estimating the special characteristics of Winckelmann as a critic, and the special value of his works, is to bring into prominence the qualities peculiar to the spirit of Greek art, or, as the author phrases it, to give "the key to the understanding of the Greek spirit." For the general treatment of this subject we must refer the reader to the book itself; those who are given to regarding questions of art criticism in a thoughtful spirit will find in it much to interest them. As a specimen of the abstract way in which the author looks at his subjects, and his unusual method of expression, we may quote the few words in which, in this last-named essay, he touches upon architecture as contrasted with sculpture and painting. The arts, he observes, "may be ranged in a series, which corresponds to a series of developments in the human mind itself. Architecture, which begins in a practical need, can only express by vague hint or symbol the spirit or mind of the artist. He closes his sadness over him, or wanders in the perplexed intricacies of things, or projects his purpose from him clean-cut and sincere, or bares himself to the sunlight. But these spiritualities, felt rather than seen, can but lurk about architectural form as volatile effects, to be gathered from it by reflexion; their expression is not really sensuous at all. As human form is not the subject with which it deals, architecture is the mode in which the artistic effort centres, when the thoughts of man concerning himself are still indistinct, when he is still little pre-occupied by those harmonies, storms, victories of the unseen world, which, wrought out into the bodily form, give it an interest and significance communicable to it alone. The art of Egypt, with its supreme architectural effects, is, according to Hegel's beautiful comparison, a Memnon waiting for the day, the day of the Greek spirit, the humanistic spirit, with its power of speech." And this power of speech, or (as it has otherwise been called) phonetic art, is supplied in its completed form by painting, between which and architecture comes sculpture as the intermediate link. Into his disquisitions upon the reason for this intermediate place of sculpture, as the art of form but not of colour, and for its special suitability to the expression of the Greek spirit in Art, we cannot here follow Mr. Pater, but we recommend his book, with its eloquent and glowing, though at times somewhat affected, style, to the attention of our readers.

* The Renaissance: Studies in Art and Poetry. By Walter H. Pater. Second edition, revised. London: Macmillan & Co. 1877.

THE RUINED CITIES OF CAMBODIA.

THE archæology of the East is of the highest interest to Europe, and particularly so when it becomes more and more remote in the perspective of our knowledge. Gradually, however, although only within recent years, a great development has taken place even in the little known regions of South-Eastern Asia, and especially so in the kingdom, long regarded as a mere barbarity, without history or antiquities, of Cambodia, which has lost its very title among political communities. But, less than twelve years ago, Oriental travellers began to bring home strange stories about the signs of an ancient civilisation in that country, at which, indeed, previous explorers had guessed, on account of the remains, sculptured all over with undecipherable inscriptions, which were continually being discovered scattered through the forests. Soon afterwards, however, it was demonstrated that all this splendour could not have arisen in an age of pure priesthood, but that a system of civil society, more or less magnificent, must have existed also. The first example was identified in the traces of an extensive palace, royal in its ornamentation, and situated far in the interior. Next, the remains of a mountain high road, with all its gaps filled up by Cyclopean masonry, and divided into distances by huge monumental columns of stone, were discovered, with bridges of bold outline, and scientific architecture. By degrees the whole land burst into a crowd of ruins, indicating former cities which, in their day, must have been prosperous, splendid, and wealthy. The first traveller attracted along this clue to the secrets of a mysterious history was suddenly startled, when he imagined himself to be in the midst of a primæval wilderness, by the sight of a colossal bridge, 400 ft. long and 50 ft. broad, carried upon thirty arches across a furious and high-banked stream. That was about twelve years ago. Since then the edifice has been examined, and recognised as being constructed of freestone, with the exception of a hard conglomerate used

n the lower parts of the pillars wherever they are exposed to the continuous action of the water. The artificial, so to speak, joins, and is fixedly riveted to, the natural foundation, consisting in a ledge of rocks extending across the bed of the river. The masonry of the columns, which stand in pairs, is of a peculiar form, arching in opposite directions, as one traveller has said. A more complete form of structure, architects have admitted, considering the purpose to which it was to be applied, could scarcely be conceived, rude though its outline might be. The body of the bridge, again, is a marvel of solidity, being composed of enormous blocks, placed in layers, one above another, until an apparently superfluous thickness is attained. The balustrade, however, upheld by Caryatidean images, is nearly gone, as being the lightest part of the building. Traces of a temple are visible in the near neighbourhood, with groups of idols, both Buddhist and Brahminical in character, but we have come to none of the cities as yet. But, both up and down the river, other bridges are found, which must have outlived the wear and tear of many centuries; and close by are the ruins of gigantic shrines, around which populations must have thriven, although their inferior habitations have perished out of memory. In fact, the sculptures on those vast walls assign to them, as it were, a popular character, precisely such as, at all events, we should not expect to meet with in a desert. We are thus at the disadvantage of not being enabled, as at Pompeii or Herculaneum, to gain any glimpse of the people who probably crowded this region at that time, of their manners, of their arts,—except in so far as the architecture and sculpture go,—of the utensils they used, of their domestic life, or the general condition of their industry. Nearly all has been overwhelmed, and buried in the darkness of ages, except these trophies of a strange and powerful idolatry. True, we have illustrations of costumes, and of head-ornaments especially, but they are chiefly associated with the royal or sacerdotal classes, and do not appear to belong to the fashions of private life. Elsewhere, however, quays built on lakes, relics of mouldings, pavilions, graphics on stone, and so forth, relate, as it were, the games and amusements of an antique race, whose prosperity must have attained a high degree. But, although abundant collateral evidence exists of the life generally led by that nation which has scarcely left a name, the distinct testimony fails at the point where we are most interested in seeking for it, though beneath the surface are manifest traces of domestic abodes, private dwellings, and monasteries, so to call them, which were originally divided into long ranges of cells. In one place the outlines of an entire town can be drawn, with its fortifications, palaces, temples, ornamental waters, houses, and streets, all built, at first, with stone, though often repaired with brick. Dr. Bastian asserts that sometimes, to strengthen the structures, beams of a hard kind of iron-wood are fixed into the masonry, but in such a way as only to become visible after the outer stones had fallen down, through some accident; but certain of the native archæologists go further, (and affirm,—though upon what authority beyond that of a very impalpable tradition, it is impossible to say,—that some of the great slabs were, not natural, but manufactured on the spot. Legends, certainly, of soft-built architecture, subsequently hardened by a forgotten process, are prevalent throughout that region of the East, and, if true, might account, in a degree, for the stupendous scale upon which some of the South-Eastern Asiatic edifices were planned and raised. In spite of this colossal character, however, the latest travellers tell us that these Cambodian ruins, seen from a distance, assume aërial forms, and appear altogether to lose their solid and substantial reality. It is possible, nevertheless, that a mirage may recur, at intervals, throwing them out of their real aspects, transplanting them, in the sight of the explorer on the plains, to imaginary positions on the hills, and otherealising them to his eye. This much, however, is true: that vast treasures, or relics, of a past-and-gone civilisation may yet have to be exhumed in that remote and isolated region of Asia, where the earth may still be wealthy with monumental fragments; but the difficulty exists in evoking a sympathy that shall stimulate to future discovery. Egypt and Assyria belong, through the holy records, to our history; Herculaneum and Pompeii, by right of kinsmanship and the universal chronicles of Europe, are connected with us also; but, although we took an interest in the monuments and antiquities of America and Central Asia, it is not easy to excite any enthusiasm concerning the past life and achievements of foreign nations in the far East.

INDUSTRIAL CLASSES IN CRETE.

CRETE, with three smaller islands in the Grecian Archipelago, forms a pashalic of Turkey which has been so neglected and misgoverned, first by the Egyptians and then by the Turks, that it would be a matter of no surprise, in the event of further Eastern complications, to hear of a Cretan revolt against the Sultan's Government. This unhappy island has not known what prosperity means for upwards of two centuries. For that long period, dating from the Turkish conquest, the deadly blight of oppression and warfare has rested upon the land. It had flourished as a province of the Eastern empire when the Greek emperors of Constantinople were popular and vigorous rulers, and became still more prosperous under the Venetian republic. At that time there were reckoned to be a million inhabitants in Crete; now there are little more than a quarter of that number.

The population is mainly agricultural; there are no mines on the island, and the fabrics which are worn are chiefly made at home. Wine-making, and the extracting of oil from olives, are also operations confined to the family circle, and cannot be considered as industries open to competition. Indeed, soap-boiling is the only industry carried on in Candia, Canea, and Retimo, on anything approaching a large scale. In order to understand the condition of the artisan class, it will be necessary to convey some idea of the state of society whose wants their labour supplies. The well-to-do classes are Mussulman landed proprietors, who retain all the simple habits which distinguished their ancestors, and the older generations of whom give little encouragement to the arts which minister to the ease and luxury of existence. Their wants are modest and easily satisfied, and if they are ever lavish in expenditure it is in the multiplication of servants and dependents. If you visit them the only articles to be seen are the few carpets, divans stuffed with cotton, and a low stool, on which is placed the circular brass tray for serving up the repast round which the family squats on the floor. In some houses a table and a few chairs are a recent innovation. Their mattresses are spread on carpets at night, to be stowed away in closets during the day, and the few pots and pans and the indispensable pipes complete the furniture of the establishment. This is the style in which are content to live the entire Mussulman population, who comprise 30,000 out of the 45,000 inhabitants of the towns. The country population, Greek and Mahometan, live in similar fashion, and out of the remaining 15,000 Christian urban population, 10,000 may be set down as either very poor or in humble circumstances. Of the residue of well-to-do people the merchants are the most prosperous; but they, with few exceptions, possess no capital, but buy and sell on commission, the average gains of the richest of them seldom exceeding 400*l.* a year. The frequent insurrections in Crete have contributed to bring about this general penury, no intervals of security occurring of sufficient duration to allow of that accumulation of wealth which never fails to be attracted to more settled communities. In the absence of local manufactures, there exists no class in Crete possessed of the means requisite for fostering the arts of skilled industry.

Although the Greek Christians are in a considerable minority in the towns, they form the most numerous class of artisans, the Greek Mussulman taking to the less active occupation of shopkeeping. The system of guilds which prevails so largely at Constantinople is unknown in Crete, all trades being thrown open to competition. The labour of masons and carpenters is paid for by the day, not by piecework. A first-class workman is paid from 3*s.* 7*d.* to 5*s.* a day, but this does not convey a just idea of the annual earnings, inasmuch as there is less demand for their labour in winter than in summer, owing to the disinclination of employers to engage workmen when the days are short. An average loss of sixty days in the working year may fairly be set down to this circumstance, and if another thirty days are added for fête days in the Greek calendar, we shall find, not counting Sundays, that the working year is worth to the artisan only 220 days instead of 313, representing an annual loss of 25 per cent. on the annual value of his labour. The average quality of t work turned out by the native artisans is slovenl but it by no means follows that they are n proud of their work. The standard of excellenc however, being low, the artisan is not so easi put out of conceit with his work as if he we able to compare it with the more highly-finish productions of the English artisan. There a few native joiners, for example, who are equal putting in a window-frame capable of keepi out wind and rain, and no care is taken that t wood be well seasoned, hence it quickly warps hot weather. Residents in the towns who bui their own houses have procured all the doo shutters, and window-frames, ready-made, fro Marseilles, and they cost less, freight include than if made on the spot, besides being of f better workmanship. The explanation of this that a good French or foreign mechanic will tu out more work than a native would; for t Cretans are not only idle, but are invariably be seen at work with a cigarette in their mout The neatest masons, stone-cutters, and carpe ters come over from the neighbouring islands Cerigo and Cerigotto, remaining during the s months of summer, and returning to spend hoard their earnings at home. These men a quicker and defter at a job than the Cretans, a consequently seldom unemployed. When wo can be found, masons earn about 2*s.* 6*d.* a da carpenters, 3*s.*; common labourers and porte 1*s.* 2*d.* With the exception of these and soap-makers, the other artisans and other indu trial men keep shops, and, with the aid of the apprentices, work on their own account, and s the products of their industries. The daily wag of common soap-makers are 1*s.* 9*d.*, and those masters, 2*s.* 6*d.* to 3*s.* Generally speaking, t hours of labour are ten daily. Apprentices all classes are not paid at first, but are clothe and fed, and, when proficient in their respecti callings, receive in addition from 7*d.* to 1*s.* 1 per day. In the towns women are engaged spinning and weaving cotton, woollen, and si stuffs, and rearing silkworms.

In estimating the purchase-power of money, must be borne in mind that although meat a vegetables are cheaper than in England, yet pound of stringy, poorly-fed mutton, such as Cre produces, does not go as far as the same amou of English-fed beef and mutton. Bread is abo the same price in both countries, most of t flour consumed is imported from the Black Se House-rent is no cheaper than in English man facturing towns, and clothing is considerat dearer. The opinions of certain Scotch engine in the employ of the Turkish Government, w receive from 20*l.* to 22*l.* a month, lead to t conclusion that the cost of living is 50 per cen more than it is at home. The British artis would starve on the spare diet which forms t nourishment of the natives. Indulgence eating is a sin the Greek workmen is usually fr from. His ordinary diet consists of coarse bre seasoned by a few olives, salt fish, or chees This he washes down with a pint of wine, stron but wholesome, and during a summer's day w swallow more water than the English workma would drink in a week. He is also a large co sumer of vegetables cooked in oil, which Crete is the substitute for butter, and in summ he varies this diet by a plentiful use of grape figs, and melons, which are extremely chea He seldom tastes meat, and during the season of fasting prescribed by his Church, the use fish, fresh meat, and eggs, is forbidden hi The English workman would not thrive on th fare. He would loathe the oil, nor would he first relish the wine. But as he could not bu beer, which he is better without, he would soo take to wine, a moderate use of which is whole some. Mutton would take the place of the oi and such little luxuries as butter, bacon, or te he would have to go without or procure fro abroad. The natives wear warm woolle clothing at all seasons of the year.

As regards accommodation, the native work men in towns are decently lodged, a famil generally occupying two rooms and a kitche (not usually a self-contained house), the rent f which is about 15*l.* a year. All the three town of Candia, Canea, and Retimo are considere healthy, the Venetians having bequeathed thei conquerors solidly-constructed main drains, whic empty their contents into the harbours, wher they are sufficiently diluted with sea-water to b innocuous. While, however, these sewers carr off the drainage of the principal streets and th contiguous houses, the dwellings where resid the artisans are provided with cesspools, whic are too often offensive. In the upland plains th

houses are low and large compared to many others, but irregularly built, and consisting of two apartments, one for general use, and the other for lumber, or a cow, if the owner is possessed of one. But the part inhabited is a specimen of primitive contentment. A mud floor full of pits; a long bench on the inner side, half mud, half masonry, as the bedstead or couch; a fireplace in a niche, and a chimney just through the roof, with a broken water-jar as the chimney-pot; one low door, and a small window like a scuttle in the innermost part, serve for ingress and light to the dwelling. As the room is low and wide, its roof is supported along the centre by two crooked trees, ornamented with sacks, seeds, lamps, and earthenware, either stuck upon nails or branches, but all black like the roof above. This is the kind of house in which live well-to-do Cretan peasants, and a more comfortless hovel it is difficult to conceive. Although there is plenty of stone to be found for lime, and abundance of fuel to make it, the peasant takes no pains to render his habitation much better than the compartment appropriated to his beast. The idea of order and arrangement of the various utensils is wholly wanting. No whitewash is used,—dirt is hidden by darkness, and discomfort by apathy.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

ARCHITECTURAL CHIAROSCURO.*

LIGHTS and shadows, the judicious management of which in painting is the art of chiaroscuro, which is a part of composition, and along with composition a constituent part of design, are the life and soul of architecture. Without them the masses of a building, however cunningly disposed or richly sculptured, would be as dead matter. But porticos, porches, buttresses, cornices, water-tables, &c., besides their primary structural purposes of shelter and the rest, have another use,—the production of a play of light and shade. The importance of this must strike the most unthinking student, when he witnesses the magical effect of shadow on a line-drawing which previously seemed to represent the mere skeleton of a building, and when he reflects that an engraving representing, perhaps, the grandest scene in nature or history, is nothing more than a fine marriage between light and shade. By means of it alone Rembrandt attained sublimity; and in his paintings and etchings could make us heedless of coarseness of conception and meanness of form. It is as magical in architecture as it is in painting and engraving. If a piece of architecture is music of the eye, it is the sun or daylight that plays on it and makes the music which charms us; like the wind on an Æolian harp, or the rays of the morning sun on the statue of Memnon. Indeed, an edifice properly designed, that is, rightly endowed with the organs of light and shade, is like a grand musical instrument,—harp or organ,—prepared for the hand of the performer. It is an instrument on which the god of day, appropriately identified with Apollo, the inventor of the fine arts, is to play an infinity of tunes. The endless variety of fine effects of light and shade, of which a well-designed building is susceptible, and to which it wakes up every twenty-four hours, is thought of by few architectural designers. It would seem as if beauty, previously sleeping beneath its projections, was roused by the daylight from her slumber.

Any building that has windows and doors, and cornices, and so forth, will of necessity receive light and shade: the architect's task is so to design his building that it will have the best possible effect consistent with its fulfilment of its practical purpose, viz., breadth. That unifying disposition of light and shade which the painter puts at once into his picture, and by which it strikes the spectator as a whole, the architect provides for in his building by the wise arrangement of its projections and recessions. This is the most poetic quality a building can have; the one that shows the hand of a master, and which more than any other renders it pleasing to the cultivated eye. A brilliant concentration of light by contrast with deep shade has a charm that nothing else,—no detail or beauty of form or composition,—can impart; and a comparatively barbarous piece of architecture is more striking to the imagination where this is obtained than the most refined where it is wanting. The principle applies to all styles, and is equally binding upon all,—western or eastern,—trabeated or arcuated; and has been obeyed, consciously or unconsciously, by the designer of every truly great building in every age and country, whatever its material or constructive mode. When the author of the otherwise able article in the *Builder* entitled "Art in Architecture,"* says, in treating of Gothic, that a principle the opposite of what is expressed by the term breadth is to be contended with in that style, he mistakes the meaning of the term, which is not identical with literal width in proportion to height, or what the late Mr. Cockerell, if I remember rightly, used to call the "broad gauge." Breadth is a more recondite and more difficult quality to obtain than that, and a quality the opposite of it is spottiness or obtrusiveness of points of minor interest.

To obtain breadth of chiaroscuro there must be no sacrifice of any necessary element. It will not atone for emptiness or the absence of any other quality, being nothing in itself, only a principle of arrangement which a building may exhibit, and yet be worthless. The architect's task is to combine all needful features of his design and every element of beauty so as to enable the eye to take in at one glance, and the intellect to comprehend in one idea, the whole mass or totality of the composition. It is most easily performed in the case of those monumental erections, the form of which is not governed, or is the least governed by considerations of utility. Places of worship, for example, should always have breadth of light and shade in its full measure, there being in such edifices less excuse for its deficiency than in domestic—commercial or scholastic—buildings, the peculiar requirements of which might in a more or less degree interfere with it. But there is scarcely any purpose for which edifices exist that will entirely prohibit attention being paid to it; and every building of importance, or designed to lay claim to rank as architecture, must be designed with some reference to it.

Though, strange to say, but little attention has been given to the subject of chiaroscuro by architectural writers and critics, nothing is more clearly taught by nature, whose works, undisturbed by accident, are always broad. It is more important in architecture than in painting, at least in the higher walks of painting, because there is more in the latter to atone for its absence than there is in the former, which is simply saying that columns and entablatures, arches and piers, are not so interesting and beautiful as human and animal figures. Its importance as a source of beauty in the works of God suggests that attention should be paid to it in those works of man which are to be associated with them, which are additions to the natural features of the earth, and complete, so to speak, the furniture of the globe.

Each façade of a detached building, I conceive, should in itself be made as satisfactory as possible with reference to light and shade, and all the façades should be so designed that when seen in connexion in a view of the whole building breadth, will not be disturbed, but rather enhanced, a result which nature's perspective will greatly aid, as a building always comes broader where the two sides are seen, one in light and the other in shade. My remarks will generally refer to the principal façade.

As in an historical painting the principal light is generally so disposed as to give the greatest lustre to that part where the action and personages are of the greatest consequence, so in architecture, the highest light will be generally about the chief entrance, be it portico or porch, and fall on its entablature, columns, or archivolts; while the deepest shade will be brought up to enhance its value, and throw out these chief forms in the design. To secure this result I should, by tracery, diaper-work, or rustication, reduce the light to middle tint elsewhere; which is suggested to my mind by the frequent effect of accidental shadows on buildings, from our cloudy sky and misty atmosphere, in producing all the tints that float between sunshine and shadow, and which give our buildings an immense advantage over those of sunnier climates. Rustication has been much used of late, but has not been made as useful an element of design as it might be.

In every building aspiring to architectural character, I think there should be one commanding mass of shadow, generally in the centre, made by the main entrance. If the chief façade be parallel to the longitudinal axis, there will be more than one mass,—subordinate ones on each side. If it be parallel to the transverse axis, as a church, it may have but one mass; and, so provided with unpierced flanking masses of wall, no façade can look mean.

The west fronts of the Mediæval cathedrals owe their grandeur mainly to the broad and deep masses of shadow of their central entrance, continued upward by the great west window, between masses of solid tower. If the buttresses of some of them had been less scooped by niches, they would, I humbly think, have been the better for it; but the gradual increase upwards of carved or sculptural enrichment in the flanking towers, as it gradually increases the darkness, through the scale of tints, to shadow, relieved only by glittering lines or points of light, gives brilliancy to the smooth parts below, which reflects the light, and produces general breadth; an effect which, in similar modern compositions, is often lost by too much lateral piercing for doorways, which might have been confined to one broad expansive group in the centre. But I believe that a satisfactory effect is generally best obtainable by having the principal entrance feature, whatever it may be, partly recessed and partly projecting. If it include cylindrical forms as columns, all the better for brilliancy, as such forms must receive a line of the highest light.

To secure the highest light, and give brilliancy to important features, is, I conceive, the best use to which polished marble and granite could be applied. The lighter polished materials might be made to give high lights, while the darker and unpolished ones would aid the shadows. The reflecting power of polished materials enables them to play a distinguished part in reference to the quality in question. A broad opening into an inner porch, or broad doors of dark colour,—oak or mahogany,—in the background of the portico or loggia will, by deepening the shadow, increase breadth; panels of dark granite in the background would have the same effect. But coloured materials might be otherwise and variously made use of. In the works of Rembrandt, and most of the Dutch and Flemish painters, a rich and brilliant colouring and mastery of chiaroscuro were combined to produce breadth of effect. They brought a great mass of warm colours pretty closely related to each other, and opposed them to a small mass of the cooler compensating colours; and I think that in architecture dark and cold-coloured stone might be used to deepen the darkest shadows; and light and warm and bright stone, approaching gold colour, to intensify and enrich the brilliant lights. White marble statues, or groups of statues, placed over the centre of a building, or bas-reliefs in pediments or gables of lighter-coloured stone, might be made to play a part in chiaroscuro by furnishing the highest light.

Breadth may be obtained in architecture as in painting either with a large quantity of light and middle tint and very little dark, or with the reverse conditions; but a Rembrandt-like breadth and depth of shadow, and concentration of high light, is the grandest.

The colonnade or columnar portico, though in itself a poetic feature, is not favourable to breadth, as it yields divided shade; and the lavish application of it to modern buildings during the Greek mania, in excluding a broad, deep entrance, has interfered with breadth. It has done so in the Paris Bourse and the Church of St. Madeleine; in the British Museum, the Leeds Town-hall, the Birmingham Town-hall, the Picture Galleries, Edinburgh, which all have, more or less, a liny, if not spotty, appearance. In the Church of St. Madeleine the eye is only drawn to the front by the important sculpture of the pediment. Square detached pilasters cut up the shadow more decidedly than the round column. Coupling in some measure mends the matter, though Wren and Perrault have been found fault with for doing it, as, by coupling, broader openings can be obtained with the same columnar richness. Fluting the column, also, or having a darker material, in a considerable degree corrects the defect. Wherever long colonnades are introduced, they should be flanked at each end by a proportionately long mass of unpierced, or but little pierced, wall. The plain wall on either side of the portico of the Pantheon at Paris gives a grandeur to the front that probably no statued niches or bas-reliefs could have secured.

What I have said against the colonnade will be considered a reflection on the Greek temple; and, indeed, I humbly think the peripteral temple, though it exhibited deep and powerful shadow at front and back, giving great brilliancy

* See a former paper on the same subject by the author, *Builder*, vol. xxviii., p. 342.

* Vol. xv., p. 761.

to the entablature and columns,—an inferior architectural object to what the Greeks could have created by a combination of their refined and matchless colonnade with unpierced masonry. The fronts of the temples in antis, or with antæ at the angles instead of columns, and such compositions as the Erechtheum, were better, but the peripteral temples present more parallelism of line and less variety of form than consist with the important quality, breadth. The introduction of the arch into architectural design gave the Romans an opportunity of remedying this. But they did not do so; and it was left for the Lombard and Gothic architects to make the really artistic and most important application of arcuation. Perhaps nowhere is the light and shade more satisfactory than in the west front and transept ends of our cathedrals. What can be broader than the fronts of those of Peterborough, Lincoln, York, Wells, Notre Dame, at Paris, the great deep entrance-doors of which, and the east windows, are especially favourable to breadth? But the sides of most of these buildings are as broad as constructive exigencies would allow. The wide windows, with nothing but buttresses between, dividing one vast wall of glass, have a powerful effect, which might probably be emulated in Classic pilastered buildings by having the windows to extend the whole intervening space.

But the acknowledgment of the arch as an architectural feature gave means to architects in the neo-Classic style, also possessed of any imagination,—an essential quality in an architect, of combining columnar richness with the widest and deepest openings, and producing any amount of breadth and power. But the architects of the Revival were slow to avail themselves of all the advantages which the arch held out in respect of architectural design. In the great Italian and French palaces, broad, deep, and lofty openings, for unity and breadth of light and shade, were too often wanting. In fact, in these, and in a multitude of important buildings which might be cited, such provision seems to have been absent from the minds of the architects, by which it comes to pass that the Louvre and the Tuileries are exceeded in power by some of the inferior French palaces. The grand front, as well as all other façades, of the costliest church in the world, St. Peter's at Rome, is as strikingly deficient in this quality as it is remarkable for the treasures of art bestowed on its interior. The knocking of its three central doors into one opening, and formation of a loggia, or portico *in antis*, would be the redemption of at least the chief façade. Indeed, such a cut into the central entrance-hall would give life to many a square-blockish building. I must reserve farther remarks on this subject for a second essay. SAMUEL HUGGINS.

THE LATE MR. JOHN WIMBLE, ARCHITECT.

MANY will bear with regret of the death of Mr. John Wimble, which took place on the 20th ult., at his residence, Surbiton-hill, at the early age of 39.

In consequence of declining health Mr. Wimble had been obliged for several months past to absent himself from business, but the attack which proved fatal came on within forty-eight hours of his death.

The deceased gentleman was born at Maidstone, and after receiving his education at Tunbridge School, was articled to Messrs. Whichcord & Son, of the former town. Coming to London shortly after the expiration of his articles, he commenced independent work, which soon developed itself into an extensive practice.

It will be seen from the list we append below, that the more important portion of his practice was carried on in the metropolis, and especially in the city. Indeed, it was the thorough knowledge of the requirements of city properties, and the careful calculation and accurate foresight necessary for their profitable development, that, together with his ingenuous and straightforward character, secured to the deceased architect that confidence which was given to him.

In the more recent years of his practice he was much engaged upon compensation cases for the Metropolitan Board of Works, particularly in those arising from the formation of the Northumberland-avenue; for the City Commission of Sewers; and the School Board for London.

Of Mr. Wimble's architectural works the following may be mentioned:—

The head station for the London Salvage Corps, Watling-street and Queen-street, and their branch station in Commercial-road; the extensive buildings covering the site of the Old Four Swans Tavern, Bishopsgate-street; the Albert Wing of and other additions to the Royal Asylum of St. Anne's Society, Streatham-hill; Nos. 59, 60, and 61, Haymarket; Messrs. Boosey's premises, Regent-street; new building at the corner of Ludgate-hill and the Old Bailey; the south-west quadrant of Ludgate-circus; Messrs. Mather's premises, Farringdon-road; the entire block of warehouses at the junction of Leadenhall-street and Fenchurch-street; the Peninsular and Oriental Steam Company's Offices, Cockspur-street; North-street Church, Brighton; warehouses and other buildings, occupying altogether about one-third of the entire frontage of the lower portion of Queen Victoria-street, and about one-third of Southwark-street.

His death is a great loss as well to his family as to a large circle of friends.

The practice will be continued by Mr. William Wimble, who was lately admitted by his brother into partnership.

OLD HOUSES AND THEIR STORIES.

REMBRANDT'S MILL.

BETWEEN the villages of Leyendorp and Konkerth, near the city of Leyden, in Holland, there stood, at the close of the seventeenth century, a large old-fashioned corn-mill. Close beside it, divided and dwindled into shallowness and narrowness, the river Rhine, so noble in Germany, crept reluctantly onward to presently stagnate into miserable ponds and puddles, amongst low-lying, far-stretching beds of ocean sand. The mill stood on that luxurious novelty in Holland, a slight eminence, and had, moreover, the good fortune to exist where the flatness and monotony of the surrounding well-cultivated and fertile country was agreeably varied by stretches of woodland. It was the property of a well-to-do miller, who resided in a low, high-roofed thatched house standing beside it. His name was Herman Gerritszoon, but from his long ownership of the old mill by the river-side he was generally known amongst the neighbouring villagers and citizens as Herman of the Rhine (Herman van Rhyn).

Herman Gerritszoon's time had been one of wild and fierce excitement. For forty years the united states, or provinces, of Holland had been waging the great fight against Spain for liberty and independence. Battles by sea and land had been fought with terrible savageness and fury; deeds of courageous heroism had been done which fired the blood of all Europe; religious bigotry had assumed its most frightful shapes, and the horrible atrocities it instigated had maddened the weak with terror and the strong with rage. Towns had endured the longest sieges ever heard of, with famine almost as merciless within as human foes were without their gates; new instruments for destroying had been devised, justly named Infernal. Even the dykes had been thrown down, and the country inundated, to sweep away the sanguinary detested Spaniards. Ruffians and thieves, called Picaroons, had banded together in large bodies to war against the weakened law, and cold-blooded acts of revolting cruelty made their name terrible in every household. Assassination had been recognised with honour in high places. Art, science, and literature had withered in the awful tempest of civil war, and Antwerp, the queenly home of art, wealth, and commerce, with its great fairs, to which all the merchants in Christendom had flocked in such vast numbers to purchase manufactured goods and choice works of art, had been reduced to slavery, poverty, and ruin.

But Herman of the Rhine, otherwise Herman Gerritszoon, had seen also another face of things. Although at that time the brave and sturdy Dutchmen had no settlement in the Cape of Good Hope; had not yet won Cochin and its dependencies, nor Malacca; did not yet trade directly with China; were excluded from Japan; and although the war still raged and their land alone could not support a twentieth of their number; yet the frugal freedom-loving Dutchmen, brave, industrious, sober, patriotic, and self-denying, contrived to support all the burden of their desperate struggle with Spain and yet grow amazingly in strength and riches.

Amsterdam, the capital of the new republic, notwithstanding the inconveniency of its port, was rapidly assuming its position as the successor o Antwerp, the magazine of the world. Ever part of Holland was in the act of being enriche and improved. On the seas the United States o Provinces were soon without a rival. Thei commercial marine consisted of ten thousan sail and one hundred and sixty-eight thousan seamen. In Europe alone their merchant-vessel numbered over twelve hundred, and these were being added to considerably at the rate of two hundred a year. New outlets for their commerce and navigation were being sought and found In 1598 eighty vessels left Holland laden with goods for America and the Indies. Gold dust from the coast of Guinea was an extensive trade and the herring fishery alone gave employment to six hundred and forty vessels, with one hundred and twelve thousand seamen. Holland was the grand entrepôt for the corn-producing countries of the Baltic. Sir Walter Raleigh said "a dearth of corn of only one year in any part o Europe enriches Holland for seven years." Thus while commerce flourished, money gave strength to endure and carry on a war which was fast impoverishing and exhausting even Spain, richest and strongest of nations, but one in which commerce had been neglected in the rage of tyranny and religious persecution. Yet it seemed to Europe altogether incredible and miraculous that a country like Spain should be held at arm's length by such a seemingly puny antagonist. Even the brilliant general and brave soldier the Genoese nobleman Spinola, wondered at it until one day, perhaps, when he was on his way to the Hague, with President Richardot, to negotiate Spain's first truce with the Dutch. On this occasion seeing some eight or nine persons sitting together on the grass to a dinner of bread and cheese, he was told that they were the sovereign lords of the Dutch Republic, deputies of the States, and said thoughtfully, "We had better make peace with these people, we shall never conquer them!"

Sir Walter Temple, some years later, said of Holland,—"Never any country traded so much and consumed so little. They buy infinitely, but it is to sell again," and he added, "The Dutch are the great masters of the Indian spices and of the Indian silks, but wear woollen, and feed upon their own fish and roots. Nay, they sell the finest of their own cloth to France, and buy coarse out of England for their own wear. They send abroad the best part of their own butter into all parts, and buy the cheapest out of Ireland and the north of England for their own use. In short, they furnish infinite luxury which they never practise, and traffic in pleasures which they never taste."

Such was the state of Holland, and such its people, when Herman Gerritszoon, wandering from his residence at Weddesteeg, stood one day before the solitary old mill, in contemplative mood, inwardly debating in his thrifty mind the prudence of making an entire alteration in its interior fittings and general arrangements. During the war it had been used as a magazine for gunpowder, and now that peace was confidently expected, and security fairly won, Herman deemed it wise that it should be restored to its original use, and help to perpetuate rather than destroy human life. And, so in good time, it came to pass that the old mill's huge sails, once more in action, went whirling clumsily round to the creaking music of their own motion, and in the little heavy dormer windows of the adjoining cottage lights once more gleamed through the chilly grey mists which closed around it with the evening gloom.

On the 15th of December, in the year 1606, when the exhalations of the damp Dutch climate were heaviest and coldest, and the short wintry days at their darkest and gloomiest, when the lonely old mill loomed out grim and melancholy enough in the dim light, Herman van Rhyn was in a state of no small excitement. The ladylike woman whose refined intellectual expression you may have noted recently in the exhibition of Rembrandt's etchings at the Burlington Fine Arts Club, on that day presented her husband, this same Herman Gerritszoon, with a first-born son, who was named Paul Rembrandt, and thus gave the old mill-house of our sketch a lease of immortality as the birthplace of a truly great painter, with whose name in years to come it was to be indelibly associated.*

* It is right to say that Mr. Seymour Haden, in his admirable essay, "The Etched Work of Rembrandt," denies that Rembrandt was born in the Mill. Mr. Haden, moreover, adopts July 15th as the day of his birth, but the reference made to Rembrandt's dated picture does not establish this.

As Paul Rembrandt Gerritszoon grew up, tted and spoiled, more or less, as the only ild usually is, two ideas became associated in mind, inseparably and kindly, namely, home d gloom. The old thatched house, with its v walls, and its steep roof partly overgrown th rank herbage and parasitical plants, if we y judge by the etching Rembrandt made of in 1641, when he was thirty-five years of age, mitted but little light. It was snug and warm ough in winter, when lighted up with firelight d lamplight, although a poor place at best, but an in the brightest days of summer it must ve been decidedly in gloom. And in the mill elf,—Rembrandt's first studio,—even sunlight reaming in through loophole windows and ershadowed wickets, merely lighted up small aces here and there, giving gem-like patches light in the midst of huge masses of shadow, scurely traversed by faintly and mysteriously flected lights which made the darkness visible, d dimly revealed the clumsy, heavy machinery, e rudely-constructed ladders, the piled sacks, d the dusky forms moving about in the old ll's gloomy interior. These scenes becoming miliar to Rembrandt at a time when young sitive minds are most deeply impressed by ible objects, and, being dear to him from their sociations, had their influence in after years, d found forcible expression in the production hose wonderful paintings wherein Rembrandt's pours of love did for shadow what Turner's erwards did for sunlight.

As the baby Paul grew into boyhood, those avings of curiosity which are common to all ung minds surely sent him a wandering. e mill and its old house stood alone; there re no playmates for the only child; his rents were busy, hard-working people. We n imagine him, left much to himself, following e river he was born beside out and away wards the sea-shore, where the great bare ndy downs shutting out the sea, gave him a w sensation, as, laboriously mounting them, sank ankle deep into their yellow heights, and, aching their tops, saw with awe the German ean outstretched beneath him, far away to the n horizon higher than the land. A grand sight! hen the salt sea wind arose and drove the sand fore it into great drifts, and carried its clinging rticles with clouds of spray far away inland, was doubtless soon dislodged; but when older d bolder, when the wind was down and the a calm, he ventured further along the sands d saw the fisher folks—barelegged men, women, d children, all busy landing prodigious cargoes fish from their fleets of stout, clumsy boats, en new sensations were experienced,—wonrful glimpses into the mysteries and delights colour, as he watched the prismatic glories of e dying fish, or marvelled at the changeful hues the sunlighted ocean restlessly heaving beneath ear and sunny or partially clouded skies. The g-carts which brought the fish to market, or to ad the canal-boats, were probably attractive to e little wondering wanderer, for all boys love gs. When the sea and its tawny ridges of nd were less attractive, the fresh green fields d rich pasture lands had charms, or for the ban of the restless ocean Paul exchanged the elodious warblings and merry outbursts of song om small birds in the forest depths amidst the tches of gloom and sunlight, where the flickerg shadows of dancing leaves were, and myriad anties of form and colour in leaf and flower, ibtle ministers of delight to the artistic mind, achers of lessons to be imbibed unconsciously d in silence, but never to be forgotten. Then ere were other boyish resorts, the open glades ith clumps of oak and hazel, and flat green eadow lands with their groups of cattle basking the sun. He had occasional playfellows in e peasant children who came with their parents his father's mill, and in his boyish wanderings ound his way to the surrounding villages, and at eyendrop saw, probably for the first time, certain peasant girl, who was afterwards his vourite model, and who, when he had started life as a teacher of painting in that big house the Breedstaat of Amsterdam, became his ife.

Holland was then famous all over Europe for s great picture fairs or markets, to which came l sorts and conditions of people, with great atherings of foreign merchants and noble artvers, to buy pictures. The Dutch themselves ere great buyers of such things, and had mongst them native artists of all kinds, and in very degree of merit. They bought, however, ainly, as dealers do, to sell again, and selected ch subjects as pleased their customers rather than such as pleased themselves. Their great republican cities and towns boasted regularly-established guilds for the proper regulation of all trades, amongst which, although as the highest and noblest, was, in their estimation, the artist's.

The painters' guilds, like the others, were regularly chartered bodies of associated members, living by their arts, whose business it was to guard carefully the interests of their trade. And their duly-elected Masters were men chosen for practical ability and eminence,—a keenly-wakeful brotherhood, sternly resolute in supporting their chartered rights, as many a long record of law survives to show. Evelyn, in the diary he kept in 1643, describes the fair at Rotterdam as "so furnished with pictures, especially landskips and drolleries, as they call these clownish representations," that their number amazed him. He adds—"The reason of this store of pictures, and their cheapness, proceeds from the want of land to employ stock; so that it was an ordinary thing to find a common farmer lay out two or three hundred pounds in this commodity. Their houses are full of them, and they vend them at their fairs to very greate gaines." That which common farmers did, a prosperous miller may have done, and Herman of the Rhine's evidently flourishing position may have been as largely due to dealing in pictures as to grinding corn, the more particularly as he must have known the importance of such trading through a flourishing relative of his own, one James van Svaanenberg, who lived close by at Leyden,—a prosperous painter of pictures well known at the annual fairs of the Hague and Amsterdam, although nowadays we can find no relic or record of his works. It is not hard to imagine the boy Rembrandt standing open-mouthed and open-eyed beside the easel of this famous relative, watching him while at work, or talking about art with his apprentices in the painting-school, secretly longing, perhaps, to join a fraternity in such high esteem by whom honour and riches appeared to be won in so pleasant a path.

But Herman van Rhyn had his own views about the future of his only son. It was his ambition to make Paul a great scholar, and so in due time the boy was sent to Leyden, the Oxford of Holland, a city famous for its college, schools, and other institutions for learning, where, for aught we know to the contrary, he may have resided in the house of his relatives the Svaanenbergs. It is very probable that he did, for the scholars all had lodgings in the fair city.

A pleasant picturesque place was Leyden when the boy Rembrandt crossed its moat, and passed into it under the ancient gate. Belted round with a double avenue of fine trees, forming a delightful summer walk for its citizens, protected with strong outer walls, with water running slowly through the middle of its clean quiet, brick-paved streets in the shadow of the trimly-kept, old-fashioned houses with pointed gables, and painted windows, it must have seemed strangely in contrast with the old tumble-down ex-powder-magazine, and the humble villages contiguous to it. The Stadhouse in the Breed Straat, blazoned with carved inscriptions commemorating the heroism and awful sufferings of the starving citizens of 1573-4, who sent word in reply to the Spaniard's summons to surrender that they would take their left hands for food, reserving their right hands for fight, to live and die free men, must have stirred the heart of a boy whose father had seen and told him so much of the great war for independence. The ancient tower, which Hengist the Saxon built after his return from England, the ancient portion of the University standing old and grey amongst the more modern erections, and its famous botanical gardens, the museums of natural history and antiquities, were all existing, and were, doubtless, all visited by young Paul Rembrandt at this time.

Rembrandt may have been well educated at Leyden, but, in accordance with republican principles, in that education religion had no part. Joining his college, he was for six weeks drudge or fag to the older students, subjected to insults and ill treatment according to custom. He listened to the Latin lectures when at college, and puzzled over the Latin announcements of the curriculum, dreaded the grave thirty-three professors of literature, philosophy, medicine, law, theology, mathematics, and physics; looked shame-faced, or sulky, or careless, when questioned at home as to the progress he was making at Leyden; shared perhaps the rollicking dissipation from which the Leyden collegians were not free; may have been concerned, as most of the students were, in a duel or two, and at last thoroughly convinced his parents that in him there was the making of no member of a learned profession,—scholarship was not at all in his way; they must make him a tradesman, as his father was before him; and James van Svaanenberg being consulted, advised that young Paul should become a painter. So, presently, in the Hall of the Painters' Guild, Paul Rembrandt Gerritszoon van Rhyn was duly registered as the apprentice of James van Svaanenberg, of Leyden, for a term of three or more years. And now came a change indeed. The indolent, careless dunce who had filled his teachers with despair, and his parents' hearts with grief, went to work with a will, made wonderful progress, astonished his master, and filled rival pupils with envy. It was a sudden revelation of power, developed with such energy, perseverance, and industry, that the old mill on the Rhine bank seemed lighted up with a fresh bright glory and delight in the eyes of his parents while, filled with hope and pride, they thought of it! Portraits of the aforesaid peasant girl were the talk of the village of Leyendrop, and the walls of that dull little home by the mill began to exhibit specimens of young Paul's ability, which no one could praise too warmly or too often.

Rembrandt remained three years with his relative the painter, and then went to a new master, Peter Lastman, in whose studio he had practised about three months, when he was seized with a desire to receive lessons of Jacob Pinas, the works of this painter being famous for his management of light and shadow, and therefore peculiarly attractive to Rembrandt. Paul remained with Jacob another three months, and then, impatient to be untrammelled and alone, he returned to his father's mill, where he fitted up a studio, and in that modest retreat devoted himself untiringly to practice. At last he matured the dominant idea of his art-life so far that it stood before him on the canvas, fairly, if not perfectly, realised. The weird mystery of gloom was there just as it was when he peered into it in the old mill, as it had awed him into pensive silence in the forest depths, as it had haunted him in long winter nights when the dim oil lamp was lighted and the fire flickered redly on the low hearthstone, casting gigantic shadows upwards, to lose themselves amongst the dusky beams and rafters. This was now mastered: he had grasped the very heart of it, could reproduce it at will. It was there before him on a flat surface, which he could peer into as if it was so many square feet of space into which the sunbeams, penetrating from some lofty loop-hole, became merged and lost in all enshrouding gloom. He was delighted and happy. It was there! It was there! Yes, there, but then, would others see it? or seeing it, would they appreciate it? Would it sell? One of his masters, or one of his fellow pupils, or some other artist friend, came to the mill studio, recognised the triumph, and strongly advised Paul to go with it to a certain picture-dealer residing at the Hague, some twelve miles or so distant. Tremblingly anxious to know his fate, Paul took the advice, and went to that stately city, carrying his picture with him, full of doubts, full of fears. The treatment he had made so peculiarly his own was so new and strange; friends saw with impartial eyes—what would the stranger experienced in his knowledge of pictures that sell say?

It was a long walk, but how much longer and more wearisome would the walk back seem if the painting was with him then? Imagine how he thought of these things when leaving the open country behind him he sat down to rest under some spreading tree on the verge of that famous beautiful park and forest of the Bosch, which was just outside the city, the birds singing cheerily to his deaf ears, his anxious mind blinding him to the sylvan beauties of the enchanting solitude, the greed of fame and money absorbing every thought and feeling.

Reaching the town at last, dusty, wayworn, and still fearful and anxious, he found himself amongst the old brick houses pacing the brick pavement, with straight rows of leafy trees overshadowing him, and the ever-present canals running straightly and lazily through some of the principal streets. He found the houses loftier, the general effect more bright, and, as became the seat of government, more stately, but without pausing to note anything,—as we can well imagine,—he hurried to the dealer, found him in, assumed an air of careless indifference with difficulty, and, with hands trembling, despite himself, uncovered the precious canvas. How his heart beat as the connoissieur proceeded



Rembrandt's Mill.

to his critical examination, and with what a wild, quick throb of delight it leaped up as the dealer, turning from the picture, asked,—"Will you take a hundred florins for it?" What a different youth he was when with that seeming fortune of a hundred florins in his pocket he came out into the brick-paved streets, bright of eye, light of heart, full of the joyous triumph, fancying all sorts of ambitious dreams realised, thinking tenderly of that pretty peasant girl who was one of his first models, desperately eager to pour out the glorious news into his parents' hearts and hers, and tell his friends in Leyden all about it. His impatience must be gratified. The distance from home was too great for him to run all the way, and walk he could not. Despite the expense, which was serious, he would startle the quiet folks beside the Rhine,—how happy and how proud of him they would be, to be sure!—by actually hiring a chariot,—ha, ha, ha!—and driving up to the dear old mill in solitary grandeur, like a nobleman, or a prince, or a burgomaster. What fun it would be! And what fun it was, for, as we have said, so Rembrandt did. But we strongly suspect that when the excitement was over, and the remaining coins were counted out into some secure hiding-place for saving, Paul hungered ruefully after the money spent on that gleeful ride, and was bitterly severe on the folly which conceived it. Whatever could have induced him to indulge in such a reckless piece of extravagance? It was worse than folly, it was wickedness!

That was the turning-point in young Paul Rembrandt's career. His first picture was rapidly succeeded by a second, a third, and a long series. The money he so carefully hoarded was as rapidly accumulating. His fame steadily increased. The Amsterdam dealers heard of him, and sent him commissions. Burgomaster Six was anxious to know him, and the demands for his works at length became so numerous that he resolved to settle and open, like other masters, a school for young painters. So to Amsterdam, in the year 1630, he went, and there his great patron, the Burgomaster Six, gave him a hearty welcome, and became his firmest and dearest friend; and there he took a large house on the Breedstaat, where pupils flocked to him from the best and wealthiest families in Holland,—where the demand for his productions defied his most desperate efforts to overtake it,—where he married, and made the most eminent men of the day his friends,—where Vandyke talked with him, and Prince Frederick Henry of Orange solicited his services, and Jeremiah Decker and Constantine Huygens held cheery converse,—and where sorrows and troubles succeeded joys and triumphs,—with all of which we have nothing to do, because they are things altogether separate and apart from the purpose of this paper on that long-since departed old house, Rembrandt's Mill.

THE NEW SPEECH-ROOM AT HARROW.

THE new "Speecher," as the Harrow people call it, on the same ground that they call the Duck Puddle the "Ducker," was opened on the 5th inst., a goodly company being present. It was built from the design of Mr. W. Burges, and has cost about 17,000*l.*, exclusive of land, and with a portion of the exterior incomplete. It is mainly of yellow brick, with red brick and freestone dressings. The building occupies a site which was formerly a garden, on the north side of the main street of Harrow, nearly opposite to the Vaughan Chapel and Library. It stands on the side of a very steep slope, and from one point of view seems to project disagreeably into the road. In plan, it is amphitheatrical, the platform occupying the chord line, and the seats (chairs), about 700 in number, are ranged round the semicircular portion on ascending *gradus*. The ceiling over the main portion is flat, wholly of wood, but round the walls a sort of narrow aisle is formed by stone columns carrying imitation groined vaulting, so to speak, also of wood. Purists would probably object to the use of wood for such forms. However, it is a spacious, handsome apartment, apparently well suited for its purpose. It is to be hoped we were incorrectly informed that no "retiring-room" is provided. If not, the want should at once be supplied in duplicate. There is a very good organ ingeniously put away against the straight wall at the back of the platform, the keyboard, small and quite low down, standing in front of the centre of the platform, which is faced by the performer. Mr. Farmer, who rules over the instrument here, has done much to put music into the souls of the present generation of Harrow boys, and deserves thanks for so doing.

THE HOLLOWAY SANATORIUM, VIRGINIA WATER.

THIS building, now approaching completion, is intended for patients of the middle class afflicted with mental disease. Beyond the usual day-rooms, dormitories, and single rooms, the building includes a recreation-hall, 84 ft. by 38 ft., and 50 ft. high, dining-hall, 54 ft. by 30 ft., and billiard-room.

The cost of the building, exclusive of site, decorations, and furniture, will be about 150,000*l.* The architect is Mr. W. H. Crossland. The works have been executed by Messrs. Sharpington & Cole and Mr. Lascelles.

The following is a statement of the dimensions of the principal rooms:—

	Length.	Width.	Height.
	ft. in.	ft. in.	ft.
Recreation-hall	84 0	38 0	50 to ridge.
Dining-hall	54 0	30 0	38 "
Entrance-hall	28 0	23 0	15
Grand Staircase	22 6	22 6	41
Billiard-room	34 0	23 0	20
Kitchen	58 0	28 0	35
Day-rooms	30 0	20 0	12
Single-rooms	12 0	10 0	12
Libraries	21 0	12 0	12
Dormitories	30 0	20 0	12
Tower	30 0	30 0	120 to parapet. 160 to vane.

Number of Day-rooms for each sex	.....	13
" Dormitories	"	.....	12
" Single rooms	"	.....	50
" Libraries	"	.....	4

In our volume for 1875* will be found a plan of the building, together with a view of the central portion of the design, on a somewhat larger scale than that of the present more general view.

It will be remembered that this building has been erected for the benefit of the public at the cost of Mr. Holloway.

* Vol. xxxiii., pp. 645—647.



THE HOLLOWAY SANATORIUM, VIRGINIA WA



SOR. —Mr. W. H. Crossland, Architect.

ANCIENT ROME.

MR. J. H. PARKER, C.B., Keeper of the Ashmolean Museum, Oxford, &c., has this week given three lectures on Ancient Rome, in the rooms of the Royal Institute of British Architects, 9 Conduit-street, for the benefit of the Roman Exploration Fund. The lectures were illustrated by photographs shown by means of the magic lantern and the oxy-hydrogen lime-light, and the darkness of the room precluded noting, we quote from the summaries which were prepared by the lecturer for the use of his audience. The first (Tuesday's) lecture was on

THE FOUR WALLS AND THIRTY-SEVEN GATES OF ROME.

The first wall (said the lecturer) is that of Roma Quadrata, an oblong space at the north end of the Palatine Hill; the length, from east to west, occupying about one-third of the level platform on the summit of the hill. It was originally fortified with wooden palings (*pales*—hence the name); but walls built of large blocks of tufa were soon found necessary, and were built against the cliffs, which were originally the chief defence. These walls are of the earliest character of any in Rome, and are of the same kind as those of other early cities on the hills of Italy, whether in Etruria, or in Magna Grecia (where the same kind of building material is found). Each block is 4 ft. long, 2 ft. wide, and 2 ft. deep; that is, each block is two squares, or *oblong*, or *quadrata*, and each is a ton weight, or a load for a cart, as Dionysius says. There are remains of these walls on three sides, more perfect on the north, but with parts visible on the west and the south; on the east they are concealed by the palaces of the Cæsars, built upon them and against them. The joints between the blocks are wide enough to put a knife or finger between them, because at this early period they were split off the rocks or blocks of tufa with wedges, and not cut with any iron tool. The walls here were originally 50 ft. high and 12 ft. thick, and they rest upon a ledge of the rock cut for the purpose, and forming a lower platform, called the Germalus. Below that platform there was a second cliff, and at the foot of that the great fossa, which was an important part of all early fortifications; and in these fosses of the time of the kings, the streets of the republic and the early empire were made. But on the northern side of the Roma Quadrata the great wall belongs to the upper wall only, and is cut across the middle of the hill; and the wall that remains on this side is of rather later character than on the other. The earthworks of this early period in the history of the world are on a gigantic scale, and are constantly taken for the works of nature everywhere. In Rome the hand of man is more clearly visible than usual elsewhere. The great foss across the hill was 70 ft. wide and 40 ft. deep, and it is not surprising that Signor Rosa thought it a natural valley; but there is no stream of water through it; and at the end of the first century of the empire, when the Roman senate and the emperors wished to have a magnificent palace on the Palatine, for use on State occasions, they filled up this great foss by building rude walls of foundation across it, and throwing vaults from cross-wall to the other, in order to make a level platform on the top sufficiently large for their ideas of what the State palace should be. No architect could have proposed to fill up a natural valley by building walls across it, nor is it likely that the two sides of the hill could have been on the same level; whereas the tufa rock near to that level on both sides, and the great fossa has been cut out of it. Roma Quadrata was the original settlement of the colony from Alba Longa, who were called Romans, and it afterwards became their arx, or citadel, for a time, until the union with the Sabines, when the hill of Saturn was made the Capitol of the united people.

II. The Second Wall of Rome was that which enclosed the two hills (Palatine and Capitoline) in one city (as Dionysius says), under the two kings, Romulus and Tatius, who were called Quirites (as we are told by Festus). This wall was only recently been understood, but it now can be clearly traced along the whole line, as there are considerable remains of it at intervals. The most perfect part has been used as the western wall of the Forum of Augustus, but it was not built by him, and no such lofty wall was required to enclose a market-place. The temple of Mars Ultor, built by Augustus in this Forum, is evidently built up against this wall, because it stood there. Some excavations which were made for me in the Via di Marforio, at the foot of the Capitoline Hill, at the east end, showed the starting-point of this Second Wall; and there are some curious early remains of it behind the houses, not used by Augustus. The wall of his Forum, built of travertine, with niches for statues in it, is built up against the remains of a much older tower; and the wall of a temple in the Forum Transitorium of Nerva, between these two Forums, is built into the wall of the old tower of tufa, at one-third of its height and of its thickness. On the outside of this Second Wall of Rome the remains of the wide and deep foss can be clearly traced; the tops of the arches, through the foot of the wall from the fossway to the Forum, are visible. The pavement of the existing street, made over the foss, cuts them off in such a manner as to show that the level has been raised about 15 ft. A little further to the south this great foss cuts off the Velia from the Esquiline Hill, from which it was originally a promontory; but a fort on that promontory would have commanded the approach to the principal gate of the Palatine fortress: it was therefore necessary to take possession of it, and cut it off from the other hill, and from that time the Velia was reckoned as part of the Palatine, being a necessary part of the fortifications. This part of the great foss is now called the Via del Colosseo. The great foss then turns to the west, in front of the north-west end of the Colosseum, and this part of the wall supported the platform of the Summa Sacra Via at its lower end; the tufa blocks have been carried away and used for the foundations of the Colosseum, but the marks of them remain distinctly visible in the mortar with which the concrete wall was covered that had been built up against it. The wall then passed under the south end of the Palatine Hill, where it has also been removed for the same purpose. It then turns north, and along the west side of the Palatine, and in that part there are remains of it against the lower cliff, behind the modern houses, and of two towers of it at the north-west angle, now under the church of S. Anastasia; it then went across the south side of the Forum Boarium to the Tiber, and on the bank of the river it was continued, and bears the name of the Pulchrum Littus, as far as the west end of the Capitoline Hill, and a branch connected it, now destroyed to make room for modern houses; this completes the circuit. The great fossæ just described round the city of the two hills were, in all probability, called the Fossæ Quiritium, after the Quirites, Romulus and Tatius. Festus is the authority for both of these names.

III. The third wall of Rome was that of Servius Tullius, which enclosed the seven hills in one city, and this continued to be the city of Rome until the time of Aurelian in the third century of the empire, or for about seven hundred years. The city of Rome was as distinct from Rome as the city of London is distinct from London. But Servius Tullius did not build a continuous wall, as is commonly said; he made use of the previously existing fortifications on the seven hills, and combined them into one city, by making a short agger (that is, a high bank of earth faced by a wall, and with a foss on each side of it) as high up the valleys as he could, in order that the old fortified promontories on the hills might defend the approaches to the gates of his city. I ascertained this in the first instance in 1869, by finding the remains of the Porta Capena, the great southern gate of the city, quite at the top of the valley, between the Aventine and the Cœlian. I have re-opened this in 1877, and propose to take a lease of it for four years, to keep it open for that time. It is in a line with the northern cliff of the Pseudo-Aventine, which had the wall built against it. All the modern plans of Rome put these connecting *aggeres* at the mouths of the valleys, but there is no trace of one in that situation in any instance. On the eastern side of Rome, the three *colles*, as they were called, to distinguish them from the *Montes*, were only promontories from the high table-land on that side, which is level with the tops of the hills; therefore, as they afforded no natural cliffs for defence, he made his great *agger* or bank nearly a mile long, 50 ft. high, and perhaps 100 ft. wide at the base, faced by a wall 50 ft. high and 12 ft. thick, the bank making a sort of artificial cliff,—the usual defence of the period. A great part of this bank and wall has been carried away to make room for the railway station, and part of the additional lines for the goods traffic, and for the square blocks of the new city of Rome, according to the plans of Baron Haussmann. I have preserved photographs of the most important parts of it. The Quirinal, the Cœlian, and the Aventine had each been separately fortified, between the time of the city of the two hills and that of Servius Tullius; some of the old tufa walls still remaining are not in the line of his wall, one of them, on the Cœlian, is in the garden of the monks of S. Gregory, opposite to the Palatine, and one of them on the Aventine is also within that line. On the Quirinal also a considerable piece of the tufa wall of the kings was made visible in 1869 in making the new road up to the Quirinal Palace, which is probably on the site of the Capitolium Vetus. The old wall is now concealed by a brick wall with niches in it. This is far within the line of Servius Tullius. There are two remarkable forts, or promontories, to defend the gate in the valley between the Aventine proper near S. Prisca, and the Pseudo-Aventine near S. Sabba, which do not belong to the time of Servius Tullius, but are earlier; this is called the wall of the Latins, who were settled on that hill after the conquest of Alba Longa. There was no outer wall to the Aventine, and therefore no *pomœrium* to it; but there was an important outer wall of *enceinte* on the eastern side of Rome, commenced by the Tarquins, with the Prætorian Camp to the north, and the Sessorium at the south end. This great wall was left incomplete, in consequence of the popular rebellion against the enormous labour required of the people. The city of Servius Tullius was seven miles round, and the outer wall would have been thirteen.

IV. The Fourth Wall of Rome was that of the Emperor Aurelian, begun A.D. 275, but not completed in his time. This truly magnificent wall was thirteen miles long, and had bastions or towers at short intervals, with corridors for the sentinels' path within the wall from one tower to the other. On these bastions the catapults and the balistæ were placed; and there are stone steps for the sentinels to go up to the top of each, which would enable a comparatively small number of men to defend the point attacked; they could pass in perfect safety from one point to another. There is only one of the gates of the time of Aurelian remaining, the Porta Asinaria; many of the gates were very strongly fortified by Stilicho, the great general under the Emperor Honorius, about the year 400, and several of these remain perfect; one of the most complete is the Porta Pinciana, which belongs to the French Academy, and is not in use. It is at the west end of a long piece of the wall, nearly half a mile, which also belongs to them, with their garden inside of it, upon the bank and on the Pincian Hill, which formed part of the defence, with the Muro Torto at the north-east corner.

That there were thirty-seven gates to Rome in the time of Pliny is clear, and his account explains how they were arranged. He says, there are twelve gates only to be counted once, although in measuring the distance from the Milliarium Aureum in the middle of the city and in the Forum, they were to be passed through twice; there are eighteen in the outer wall, of which four remain still, earlier than the time of Pliny. This makes thirty, and the remaining seven were in the old hill fortresses not in use in his time, as he says. The same number of thirty-seven gates is given in the Regionary Catalogue of the fourth century, and can only be explained in the same manner.

The subject of the second lecture, delivered on Wednesday, was

THE FORUM ROMANUM, VIA SACRA, AND COLOSSEUM.

To understand properly the existing remains on the site of the Forum Romanum, it is necessary to begin with the great public building which forms the north end of it, by whatever name it may have been called in early times; it was equivalent to the town-hall and mansion-house of other cities, and contained all the public offices in the time of the kings and of the Republic. In the time of the Early Empire a change was begun, and some of them were transferred to the Palatine, but this is not to our present purpose. This great building is now called the Municipium, because it contains nearly all the public offices of the municipality in the upper part, and always did so; but under them it contained also the Ærarium, or Treasury; the Tabularium, or Record Office; and behind that the Senaculum, or Senate-house, at the east end.

This great building is not quite due north of the Forum, but nearly so; the north point is at the south-eastern corner of it.

The Capitolium.—To Londoners who do not know Rome, perhaps some idea of this great building and its history may be given, by comparing it with Somerset House, which was also originally a palace turned into public offices. Both are built upon a steep slope, and both are massive square buildings of several stories, and containing many different offices. Suppose that the principal market-place of London was called the Forum, and was held on the level ground between the south front of this building and the Thames; that close to the ground, at the lowest level, were two doorways, one towards either end, actually made through the foundations, and opening to steps under the lowest floor of the building; that these steps are continued at the back of the first and second floor, and both ascend to the same level on the third floor; but one goes up straight to it, and has no doorway into it until it arrives there, and these steps are unusually steep, and go straight up to the top; the other steps, on the contrary, are remarkably easy, and provided with several landing-places, in order to make the ascent as easy as possible for old people. This one, which is at the east end (towards Strand-lane), also has another doorway and passage into it on the ground-floor (but this is one story above the doorways); this floor was under the terrace, and divided into a number of small square chambers, which were the bank vaults, the place where the money was kept—in Rome, the *Ærarium*, or Treasury. On this terrace also would be an arcade, and against the back wall would be placed a series of bronze *tablets*, on which were recorded the names of the lord mayors and the chief public officers of each year, from the foundation of the building, forming the Records of the City. This corresponds exactly to the Tabularium at Rome. At the west end of this is the entrance to all the offices on that level or above it, but not to the bank vaults. At the east end the entrance is on that lower level, and leads by a passage to the first landing-place in the stairs of the senate-house or *curia*, which is on the level of the third floor, behind and above the level of the Tabularium, but with no communication. The clerks of the Treasury, who had to go up the steep steps to their office, and kept all the accounts, might write cheques, but could not get at the actual money without going through the senate-house, or at least the vestibule of it, through which the stairs pass; so that the Senate had complete control over the actual money,—the bronze coin with which the army was paid. The doorway of the Senate-house or Curia was at the south-east corner of the building, 20 ft. above the level of the market-place, and at that point a herald stood to make proclamations to the people below on certain occasions, especially to proclaim midday, as there were no clocks in those days, and he could be distinctly seen and heard from that point, which is exactly the north part of the Forum. Immediately in front of this door was another flight of steps going straight down to the great prison (which would in London be at the bottom of Strand-lane); these steps were visible from the Forum, and were called the Gemonian steps. The prisoners were exhibited there when condemned to death, and sometimes their dead bodies also. At the opposite corner (where Waterloo Bridge now stands) would be another flight of steps, but rather higher, as it extended to the level of the Tabularium and over the Ærarium, whereas the doorway of the Senate-house or Curia was on the level of the floor of the Ærarium. These steps had to go up at least 30 ft., passing over the level of the doorways first, then that of the Ærarium. Perhaps it went higher, as that was called the *hundred steps*, they may have gone to the Area-Capitolina (corresponding to the Strand, which is considerably above the level of the terrace). An orator could stand on the upper steps near the door of the Tabularium, and speak to the people in the market-place below. The upper part of the building above the arcade on the terrace was entirely of wood, but the arcades were continued along the west side on that level, or ascending according to the level of the ground, and there are remains of both these arcades of very early character. Translators have misled English people by translating the word *porticus* as *colonnade*: it may be translated either arcade or colonnade, but in this case it must have meant arcades, by the remains.

The Temple of Concord is at the north-east corner of what is now called the Forum, but was originally within the wall of the Capitoline fortress, and was not reckoned as part of the Forum until that wall was destroyed by Tiberius; of this the basement or *podium* remains, with constructions of three periods in it; on the surface there are remains of the veneer of marble of the time of Tiberius, who rebuilt it. The foundations of the upper walls remain on all sides; in front, on the top of the steps, which were a triple flight, is the marble sill of the doorway, with the sockets for the pivots in which the bronze door worked (for that door had no hinges, but worked on pivots, as the great heavy bronze doors of the Pantheon still do). The back wall is built against that of the Tabularium; on the right or east there are remains of the wall, extending nearly to the sloping path of Michelangelo, but not quite; there is an interval of a yard or two on the platform on the same level with the top of the steps. This is the site of the Græcostasis, which is almost covered by the modern sloping pathway. On the western side, the platform is about 20 ft. above the pavement of the Clivus Capitolinus, which passes in front of it. A passage passes under this basement near the west end; the wall of the passage is faced with *opus incertum* of the time of Sylla. This passage led to a doorway now closed, cut in the tufa wall under the Ærarium. There is a deep narrow interval on the west side, between the basements of the temples of Concord and of Saturn. The temple of Concord was often called the Senate-house, because it was the vestibule of it, and the senators assembled there; and despatched ordinary business there; but when they assembled in any large number, they adjourned to the Senate-house, or *curia*, behind it, in the great building. In the same manner the temple of Saturn was often called the Ærarium or Treasury, because a doorway at the back of it in the wall of the great building, the head of which is still visible, led to the steep flight of steps for the treasury clerks to go up to their office on the third floor of the building. To the left, or west of the temple of Saturn, there is also a deep narrow interval below the level of the platform of this temple; and on the opposite side a series of square shops of brick, called the Schola Xanthi, the place where the scribes sat to write for the people (named from the person who built them, which was preserved upon an inscription at the time they were found); these brick walls were originally cased with marble or bronze. Over this, on the platform, is the elegant light colonnade of the Dii Consentes, or household gods of Rome, whose statues were placed between the columns. These columns were found in fragments, and were cleverly put together by Canina about 1830, on the old bases; but they had evidently extended farther to the west, under the modern bank of earth on which the road passes from the Forum to the Piazza del Campidoglio, on the higher level. In front of this light colonnade is the temple of the seven Ionic columns, which I call the temple of Vespasian, others that of Saturn; both were rebuilt in the third century, but the old names were retained. There is no place for the money under that temple, and it is outside of the wall of the old Capitoline fortress. The temples of Concord and Saturn were within that line, and were called in the Capitol in the time of the Republic, before the wall was destroyed. It was standing in the time of Varro, with the gate of Saturn in it; this was a double gate where two roads met, as was frequently the case with the gates of Rome, and the foundation of the wall between the two gates remains visible, with pavements of the time of the Republic on one side, and of the Empire on the other. One was the Via Nova, a new road in the time of Sylla, of which the pavement is flat and little worn, the other has the stones rounded, and in the time of the Empire, in the third century, it had to be renewed and raised; it is the Via Sacra, and the end of it. In going towards the Comitium, some remains of one of the three rostra, and of the base of the Milliarium Aureum, are visible, just to the west of the fine arch of Septimius Severus. The sculptures on this fine arch are too much decayed to be made out, but they can be seen to represent some battles and a triumphal procession. From this arch we pass under the modern road, supported by a brick-vaulted passage, and in this passage is part of a gigantic marble column, lying horizontally, probably where it fell, or nearly so. We then emerge into the open space of the Comitium, close to the column of the Emperor Phocas, placed there in the seve century, but really taken from the temple Saturn; it is identical with the other three t remain in their places. This was the namel column of Byron; the inscription on the b was buried when he wrote. The pavement the Via Nova, down the middle of the Fort remains nearly perfect; it goes straight to temple of Vesta, the basement of which is visi just beyond the limits of the Forum, and at back of that some of the steps that led up the Porta Romana were visible when this exca tion was first made, but were destroyed or c cealed by Signor Rosa, perhaps because they not fit his theories (?). Other steps at the t close to the gate, were also destroyed by h about 1868, when the excavations were made that part. The Via Nova was a zig-zag road the chariots from that gate to the Foru through the arch of Janus, and therefore long way round, and for that reason ste for foot-passengers were made descendi direct from the gate to the Forum. The Sacra continued down to the western si of the Forum in a straight line from the ga of Saturn, the entrance from the Capitoli fortress, passed under the arch of Septimi Severus and the modern bank of earth, to t steps of the temple of Antoninus and Faustir where it is now visible. Turning to the rig or west, from the column of Phocas, we have fi the pavement of the street down the middle the Forum, and on the further side of th three steps up to the level of the platform the great Basilica Julia, which occupies all th side of the *comitium*, or open place for meetin We also see a long series of brick bases entire modern, erected by Signor Rosa about 1870, a he even had in many places to cut through t marble pavement of the third century to inse these bases, as can still be seen by the mode stucco pavement which is used where the marb has been taken away. No doubt these bases a believed by Signor Rosa to be exactly placed show the plan of the old basilica; but this entirely conjecture, and may be right or mi not. We have no real authority whatever the subject,—no ancient plan or view of th great building. A fragment of the marble pla of Rome was supposed by Canina, followed Rosa, to fit this site; but, as he put togeth two pieces on two different scales, this is st doubtful authority for such an enormo restoration. The site is, however, prov beyond all doubt, by the words of Augustu in his will (called the *Monumtum Ancyranum* because the only copy that has been pr served is at Ancyra). In this he says, " have enlarged the Basilica Julia so much, th what was the length is now the breadth." A the north-west corner of this great platform w have fragments of some walls and arches travertine, of the time of Julius Cæsar, pointin across the north end of the platform, that is fro west to east, the direction of the platform bein from north to south, and this again agrees wit the words of Augustus: he says, "it now e tends from the temple of Saturn at one end, t that of Castor and Pollux at the other." W know that the one was close under the Tabularium the other must therefore be the one with th celebrated three columns, so long an object dispute and discussion. We have no represen tation of the building, and Signor Rosa studious destroyed the ruins of the vaults of the uppe story, which were lying on the pavemen when it was first excavated. He has, how ever, put together one pier probably co rectly, and this shows that there was a doubl arcade, the upper one serving as a gallery probably with shops, and places for the peopl to see what was going on below in th Comitium. The fixing the site of this gres basilica settles several other points. Suetoniu tells us that Caligula used the temple of Castc and Pollux, or the Dioscuri, for the vestibule o his palace. The fine ruins of a great palace o his time (the lower part concealed and disguise by modern buildings erected against them) a the foot of the Palatine, and within the boundary line of that fortress, but on a level with th Forum, at the west end of the palace of Caligul are remains of his bridge. The podium, or base ment of this temple, is of the time of the late kings; part of the original building, the templ has been rebuilt from the foundations, but th foundations themselves were not rebuilt, an the whole of this massive base was considere as foundations only. This site plays an importan part in Roman history.

The concluding portion of this lecture wa

ted to a minute description of the arrange-
t and construction of the Colosseum.
he third and concluding lecture of the course,
vered on Thursday, was on "Tombs in and
Rome, and Catacombs." Of this lecture
will give the substance next week.

LETTERED IGNORANCE.

HERE is nothing in the present day which
e imperils the destinies of England than
ered ignorance. By *lettered ignorance* is
ified the intellectual condition of a large sec-
of the British public which has passed through
er private school, public school, or college,
the mechanical process of a liberal education,
process which, for anything but automatic
s, is utterly useless. The lettered ignorant
class which will go on through the whole
rse of its clock-work demonstration repeating
shuffling the notions to which it has been
without having the slightest power of think-
for itself, of discovering, of originating, or,
short, of in any way assisting the common
l. Its place in nature would rather seem
e that of embarrassing and impeding, by
overwhelming force of its numbers, the
of thought and action who could really
der the State some service, and place it in the
llectual van of the nations. The lettered
rant are gregarious in their nature, and
w the bell-wether, ba-shing with a persistent
irritating sameness here, there, and every-
re. The lettered ignorant swarm in every
fession, betray progress, science and art, and
rectly the nation itself.
he true intellectual chiefs of all the professions
more or less the incubus of their lettered
rant. But of all the professions, none experi-
s to a greater extent the swarming and the
hting of this Colorado genus more than that of
fine arts. Lettered ignorance has itself pro-
gated the notion that the principles of art
e no solid foundations, no exactitude, and
therefore art is the subject of all others
n which it is specially qualified to discourse.
art-criticism of the day is, to a great extent,
plied by this class. Crammed with technical
ns, which he scarcely understands, a member
his class will enter some one of the many
ibitions for the purpose of reviewing it, and
, in all probability, commence his notice with
ament on the degeneracy of art. He will
plain of the absence of any works of a high
er, and will inevitably pass unnoticed the few
imens of that class which adorn the walls,
will as inevitably praise, with extravagant
ise, works of an inferior kind, of an order
ch in his prefatory and general remarks he
condemned. How should lettered ignorance
otherwise? It has no real perception of the
erence between good and bad, between the
t and the wrong in art; it only mechanically
dies the set phrases with which it has been
med. It will gather round, belaud, bolster
and foist upon the public, to the disparage-
nt of true artists, some quack who parades
e eccentric phase of art, some mannerism,
ch, from its peculiarity, lettered ignorance
essarily concludes must be the true and
beautiful. This class has not the slightest
ion that the study of the principles of art is
ll studies the most difficult,—the one of all
ers which requires the most subtle power of
lysis, the keenest logical acumen; and that
hese qualities are either entirely deficient, or
only manifested in their lowest degree in the
ered ignorant, it is a subject entirely beyond
l out of their reach.
As this large class really knows nothing about
its interest is concentrated on the painters
sculptors of its own kind; its tenacity is
oted to the promotion of a clique, and at the
ne time to do its little best to undermine and
n English art, and to render it ridiculous in
eyes of Europe. The few amongst us who
lly think, survey this existing state of things
h dismay. "Where," they ask, "are the
glish painters who exhibit any grandeur of
ught, any intellectual purpose in their
ks?" If there be some few of this order
y know very well that these receive no en-
ragement, and that the condition of the fine
s, failing this intellectual vitalising power, is
king day by day lower into the depths of
m, incompleteness, and instability.
But this condition of lettered ignorance does
, as we have said, affect art only. The para-
s which benumbs the extremities of the
ional life also affects it to its very heart and
tre. If, indeed, there were full life and vigour at the fountain-head of affairs, the state of art at which we are railing would not exist. But just as in politics the interests of party override national interests, so in the professions of painting and sculpture the interests of cliques override the interests of art. The inevitable result of pushing minor interests before those of far higher importance is decadence at every point.

Unfortunately, lettered ignorance does not diminish either vanity or ambition; but, on the contrary, seems to increase them. We have, therefore, constantly before our eyes the dread spectacle of men who, having nothing to recommend them but either their position or wealth, assuming to lead in public affairs, or taking up matters which they do not understand, only to mislead those whose lettered ignorance is on a level with their own, and who not only mislead, but also misapply and waste the national resources; whilst men who really understand the subject shall utterly fail to get a hearing.

Position, in the eyes of *lettered ignorance*, is everything. Lettered ignorance worships it and takes it to be the real thing, to be true greatness,—the outward and visible sign of immortal fame; whereas the thoughtful full well know that by far the larger number of men whose names are emblazoned with an array of letters, have been thus arrayed by the lettered ignorant themselves, and that therefore they are no abiding criterion of excellence, and that probably by far the greater portion of those who bear these affixes are doomed to utter forgetfulness, whilst men who now hold no position, are scarcely recognised, and who may be poor and neglected, will have their names fully inscribed on the muster-roll of fame. How often must men of this stamp exclaim in *sotto voce*, as they see the lettered ignorant passing in procession, in all the pageantry of life, bearing their titles, their diplomas,—the everything, in short, but the essential qualifications for greatness,—how often, I say, must they exclaim, "Poor fools!"

The wealth of the country may bridge over the disasters caused by her lettered ignorance if men will but wake to the necessity of inaugurating a new state of things; if they will but learn what the word "education" should mean, and not mistake a shadow for the substance; if they will but resolve to place lettered wisdom where they now almost invariably instal lettered ignorance.

W. CAVE THOMAS.

INSCRIPTIONS AS MURAL DECORATIONS.

SIR,—The enthusiastic writer of "Wanderings and Questionings in Architecture and Art" has devoted a recent essay chiefly to a consideration of the above subject. Although, as he admits, he has allowed considerable "rein to his fancy," there is, notwithstanding, much to be advanced in favour of such a scheme of decoration.

There is only one observation, so far as I am capable of judging, to which exception can be taken; and as upon the issue will depend in a considerable degree the success or failure of the proposition, I may be pardoned for attempting to criticise that which in other respects is highly commendable and worthy of every consideration. The writer observes that,—"To both the eye and imagination, probably, Hebrew and Greek sentences would have a greater charm than English or Latin. They would have a greater air of mystery,—a legitimate object in art, and would form a loftier element in decoration from being in the original and more sacred languages."

This raises a question which has been but recently discussed with considerable warmth in connexion with the subject of restoration. I refer to the non-desirability of introducing such matters and things into a building as shall tend to obliterate evidence which constitutes the building an historical record. Now, I contend that the historical date of a building should be discoverable as much from its inscriptions as from the peculiar characteristics of architectural style. Nations of antiquity when placing inscriptions upon their palaces and public buildings invariably adopted the vernacular tongue. Why should we not, therefore, act in the same public spirit, without degenerating into mere servile copyists of either the Assyrians, Egyptians, Grecians, or Romans? Is not our so-called *vulgar tongue* capable of conveying ideas with a sublimity, grandeur, and form equal to the classical languages? It will probably be asserted that during the zenith of Gothic art Latin inscriptions were the rule and not the exception. It must be remembered that during that period the Bible itself was a sealed book, and therefore it is not to be supposed extracts would be rendered in the vernacular. The same arguments which were levelled against the Latin Bible may now be turned against mural inscription in an unknown tongue.

The writer of the article objects to symbols, believing that inscriptions are preferable. So they are, provided they are rendered intelligible. Symbols are invariably ornamental, and continue so after their symbolical utility is lost; but this is not the case with an inscription. Its power of giving pleasure and stirring up the finer feeling and emotions does not rest with the inscription, but with the capability of the individual to understand it. Byron says,—

> "Words are things;—and a small drop of ink
> Falling, like dew, upon a thought, produces
> That which makes thousands, perhaps millions, think."

These words convey the very intent and purpose of mural inscriptions. A wrong application of ink or colour will result in confusion and mystification, but not enlightenment.

The walls of a cathedral incised with Greek or Latin inscriptions, although very agreeable to the *savant*, would be incomprehensible to the majority of people. Words, pregnant with importance, which ought to appeal to our noblest sympathies, would be unheeded, not being understood. If we are to have inscriptions, let them be such as can be read by the millions, and not only by a favoured few.

The adoption of such a method of decoration would truly constitute *sermons in stones*, and be conducive to mental refinement and elevation of thought. Theological, scientific, and philosophical truisms might thus be fixed permanently before the public, and such a system might develop into no mean auxiliary to the educational schemes which have marked the nineteenth century.

In arts, we should do well to imitate as far as lies in our power the divine example shown to us in Nature, where all the marvellous beauties are lavishly displayed, equally for the gratification of the learned and unlearned. Does the fresh and balmy air of heaven blow upon the Hebrew scholar and refuse to cool the "sweating brow" of the labourer? Does the rose store up its perfume for the botanist alone, and deny its grateful fragrance to the poor and wretched; or the sun to shine alike upon the rich and the poor, the happy and the discontented? Whilst fully conscious of the many advantages of mural inscriptions, I fail to discover what desirable result would follow from wrapping in a mysterious and impenetrable shroud the sublime utterances of Scripture, the glorious precepts of philosophy, and the grand scientific results of human enterprise.

A good selection of mural inscriptions, suitable to the buildings in which they are placed, would be a worthy concession to the public, and at the same time would stamp architecture with the characteristics of the age in which we live.

JAMES GEO. BUCKLE.

Canterbury Cathedral. — Mr. William Morris, as hon. secretary to the Society for the Protection of Ancient Buildings, has addressed to the Dean and Chapter of Canterbury Cathedral a protest from the committee of his Society against the reported intention of the Dean and Chapter to remove from the choir the ancient stalls. The Society considers such a course of action injurious to the history and art of the country. The memorial proceeds:—"The Society begs to point out that this woodwork is remarkable for its intrinsic beauty, and although of comparatively late date, is a noble example of the art of its period, and in no way interferes with, but rather adds to, the architectural effect of the building. It is stated that these stalls conceal portions of more ancient work, part of the fittings of Prior Eastry; but as the work of that eminent architect is left in a very fragmentary condition, and any restoration must be, on the whole, conjectural as to design, and modern as to workmanship, the Society feels that it would be a loss, rather than a gain, to remove, for the purpose of such restoration, a beautiful and untouched work of a former age. The Society takes this opportunity of deprecating any attempt at imitating the supposed condition of the choir at any past period of its history, being convinced that, however lamentable former destruction of ancient fittings and decorations may have been, the restoration of them is impossible, and can only lead to a condition of things still more grievous to all lovers of art, and still more destructive of the history and dignity of the cathedral."

ROYAL ALBERT HALL.

THE annual general meeting of this Corporation was held on Tuesday last, the Hon. Lyon Playfair in the chair. The following report of the Council having been printed and circulated, was taken as read: —

The Act to make better provision for the maintenance of the Hall (39 & 40 Vict., Sess. 1876) came into operation on the 23rd Feb. last, and will exercise a very important influence on the prosperity of the undertaking.

At the general meeting provided for by the Act, held in February last, for the purpose of bringing before the Corporation the estimates for the current year, the council considered it desirable to recommend for the year 1877-8 the maximum rate of 2*l.* per seat fixed by the Act, and an appeal was made to the general meeting for that amount. The meeting passed the vote without a division, and the whole of the rate due from the seat-holders has now been collected, with the exception of about 12*l.*, which is partly due on seats held by trustees and proprietors who are at present absent from England.

The accounts are not yet materially affected by this levy, the larger portion of the amount collected being still in the hands of the trustees appointed for its expenditure under the Act.

Since the 30th of June, 1876, thirty-eight important concerts and oratorios have been held in the Hall: eleven of the oratorios were given by the Royal Albert Hall Choral Society, which, for the first time since its formation in 1871, has proved itself to be self-supporting. In order to secure these performances, a guarantee fund, promoted by certain members of your council and others, was provided to hold the Choral Society harmless. So far, however, from a resort to this fund being necessary, a profit was realised, which has been devoted by the guarantors towards the formation of a new library.

The most noteworthy musical event during the year in connexion with the Hall, and indeed in this country, has been the Wagner Festival, which took place in May last. Eight concerts, at which music composed exclusively by Herr Wagner was performed, and conducted by the distinguished composer himself, were given. The result has been considered brilliantly successful from a musical point of view, and was satisfactory to all the parties concerned in it.

Efforts have been made to utilise different parts of the building since the last annual meeting.

Two bazaars for charitable purposes, and an exhibition of elementary needlework, have been held in the east lecture theatre and the crush-rooms. The competitive models for the Byron national testimonial have been exhibited in the west crush-rooms, and a grand bazaar has been held in the arena of the Hall.

The Cambridge higher local examination for women, at which 235 candidates entered for examination, was held in the lecture theatres of the Hall at the same time that a bazaar was being carried on in the arena, and served to show that independent use of different parts of the building may be made at the same time without inconvenience.

It is to the extended use of the Hall, and the apartments and spacious galleries attached, that your council direct their continuous attention, and with regard to which they invite the earnest co-operation of members of the corporation. The various directions in which the building might be made available to the great advantage of the public and the corporation have been pointed out in previous reports, and should be borne in mind by those who are interested in the welfare of the institution.

One of the most satisfactory subjects on which the council have to report is the establishment of the fact that the Hall can be used, with singular advantage, for the purpose of large meetings for lectures and addresses. An experimental sounding-board, on the principle of the one now in use at St. Paul's Cathedral, was made at the suggestion of a member of your council, and with the valuable assistance of Mr. Penrose, surveyor to the Dean and Chapter of St. Paul's, who generously gave time and attention to the work. At a gathering, held in aid of the Home for Little Boys at Farningham, in Kent, speeches of considerable length were made. The result proved that speakers can use their voices in the Hall without fatigue, and that an audience of from 7,000 to 8,000 persons can be satisfactorily addressed.

The council are ready to afford facilities to any competent lecturers on science, literature, or art, who may desire to avail themselves of the capabilities of the Hall.

A Kindergarten class, on the model of those in vogue in Germany, has been established in one of the crush-rooms on the balcony floor.

Negotiations are in progress for the use, as an art studio and class-room, of rooms on the balcony floor, and it is confidently hoped that the time has come for the permanent general utilisation of all available space in the building for the legitimate purposes for which the Hall was built.

In conjunction with the Royal Horticultural Society, Saturday organ recitals, under the direction of Dr. Stainer, were given, but have been temporarily discontinued, in consequence of the Hall being engaged for concerts on Saturdays. It is intended to give recitals on Mondays.

A series of Sunday organ performances, by Mr. H. H. Statham, who generously offered his services, has been commenced, and will be continued through July.

Hereafter agreeable performances may doubtless be looked for in connexion with the National Training School for Music, which is intimately connected with this corporation.

One great need for the collection and dispersion of such large audiences as the Albert Hall will contain, is the provision of some improved means of communication between the Hall and the present underground railways. The council are glad, therefore, to find that a scheme for conecting the two by a branch line has taken a precise shape, and will be facilitated by her Majesty's Commissioners for the Exhibition of 1851. Such aid as the council can properly give, after careful examination of the scheme, they will consider it their duty to afford.

[The balance-sheet, made up and audited to the 30th of June, showed that a certain amount of outstanding liabilities had been paid off during the year.]

Public complaints are sometimes made that there are as yet no financial returns on the credit side of the account. If the Hall had been built at the expense of the tax-payers the public might have reason to complain, but it must be remembered that the Albert Hall was built by a body of subscribers (in co-operation with her Majesty's Commissioners of 1851), who participated in the wish of his Royal Highness the late Prince Consort, that South Kensington should be the site of a group of buildings devoted to the purposes of science and art. The majority of those who became proprietors, it may be safely asserted, scarcely looked for any personal return, their sole object was to erect, as they have done, a noble building fitted for State receptions, for the gathering together of large audiences for purposes connected with science and art, and for affording to the people increased means of healthful and elevating gratification; while at the same time it might be as safely said that the proprietors have received a full and complete return for the money invested.

The council will not relax their efforts to increase the opportunities for enjoyment and to make the usefulness and importance of the Hall more and more felt, and they again earnestly invite the cordial co-operation of the proprietors and the public.

On the motion of the Chairman, who briefly addressed the meeting, the Report was received.

Mr. Edgar Bowring, C.B., moved, and it was ultimately resolved,—

"That, by virtue of the power given to the Corporation by clause 20 of the Constitution to alter the day of the ordinary annual general meeting, that meeting shall henceforward be held on the same day as the annual meeting for the assessment of the seat-rate provided for by Clause 4 of the Royal Albert Hall Act, 1876, viz., 'at some time in the month of February,'—the first of such altered ordinary annual general meetings being held in February, 1878."

On the motion of Mr. Godwin, seconded by Mr. Warren De la Rue, H.R.H. the Prince of Wales was unanimously re-elected President. Sir H. A. Hunt, C.B., and Mr. Reed, C.B., were elected to fill vacancies in the Council; and a vote of thanks to the Chairman, moved by Dr. Mouat, closed the proceedings.

COMPLETION OF A NEW DOCK AT FLEETWOOD.

THE port of Fleetwood, in Lancashire, is about to be placed in a much more favourable position for both foreign and coastwise shipping than it has hitherto enjoyed. Although vessels of the largest burthen can enter the harbour,—the channel at Fleetwood being deeper than that of the Mersey at Liverpool,—the shipping trade between foreign ports and Fleetwood has, up to the present time, been of a limited character, owing to the want of dock accommodation. This has, at length, been supplied by the Lancashire and Yorkshire Railway Company, who, in conjunction with the London and North-Western Company, are the lessees of the railway between Preston and Fleetwood. During the last four years the Lancashire and Yorkshire Company have been engaged in constructing a new dock and warehouses at Fleetwood, and the works have just been finished, water having been admitted into the dock within the last few days, and it is expected that it will be opened for general shipping purposes about the close of the present month. The dock is 1,000 ft. in length, and 400 ft. in width, and contains a water area 10 acres in extent. The dock is 34 ft. 9 inches in depth, and the walls are of great strength, being 14 ft. in thickness at the base, gradually diminishing to 5 ft., which is the width of the coping. At the south end there is an outlet communicating with a timber-pond 15 acres in extent. The wharfage in connexion with the dock is very extensive, being 2,600 ft. in length, and on the west side of the dock large warehouses in three blocks have been erected, each block being 320 ft. long and 60 ft. wide. Double lines of railway encircle the dock, which are likewise extended to the back of the warehouses, and connected with the main line from Fleetwood to Preston and the principal towns in Lancashire and Yorkshire. The entire length of these several lines of railway, with their sidings, around the dock, is upwards of eight miles. There is also a lock 250 ft. in length and 60 ft. in width, connecting the dock with the estuary of the river Wyre. The ordinary water-level of the spring tides will give a depth of 24 ft. on the lock-sills; but, as the tides frequently rise to 30 ft., the depth will be sometimes as much as 26 ft. on the sills. About 400 artisans have been employed during the progress of the works, which will cost upwards of 200,000*l.* It is fully expected that the opening of this new dock will be followed by the establishment of an important shipping trade between Fleetwood and the American and Canadian ports, and that cotton and timber for the manufacturing districts will be largely imported from America *viâ* Fleetwood.

Builders' Benevolent Institution.—The general annual meeting of the subscribers and donors of this charity will be held at Willis's Rooms on the 26th July, to receive the report for the past year, and to elect president, treasurer, directors, and auditors for next year.

THE SANITARY INSTITUTE.

AT a meeting of this Institute, in the th
of the Royal Institution last week, an ad
was delivered, by Dr. Richardson, on '
Political, Medical, and Social Aspects of F
Sanitary Science," and also to give a wel
to Professor M. A. Chevallier, President o
Société Française d'Hygiène, and several m
bers of that society who had been ele
members of this Institute. In the course o
Dr. Richardson urged the necessity for a h
department of the State exclusively devote
the health of the people, and another poin
pressed was the necessity of having a diges
all practical sanitary laws, so prepared that
person of intelligence could understand th
Then, in the future of sanitary science,
politician must come forward more resolu
than he had yet done, in order to secure for t
he governs three requisites,—pure water,
food, pure air. It was utterly hopeless to t
to companies in a matter of such vital mon
as the supply of water. It was equally hope
to trust to the undirected action of local au
rities. If we trusted to such agencies for
collection and delivery of letters by post,
any one suppose that the results of our pre
postage system would be attained? Yet,
portant as intercommunication by letter is
was less important than the supply in
quantity and pure quality of that vital f
which makes up three parts out of four of ev
human organism, and which was wanted
much by the millions who never receive a le
as by the millions who do. In this polit
part of "sanitation," the Government must
one of two things. It must either produc
process or processes for pure water supply,
insist on every local authority carrying out
proper method; or it must,—and this would
far better,—take the whole matter into its c
hands, so that under its supreme direction ev
living creature should, without fail, receive
first necessity of healthy life in the conditi
fitted for the necessities of all who live. A
pure air, there was no practical legislation
any kind. The air of our large towns
charged with smoke and impurity. The air
our great factories was charged with dusts wh
destroy life with the precision of a deadly a
Dr. Pardon, one of the certifying surgeons un
the Factory Acts, reports that in flax-work
factories under his care the carders, who are
females, if they get a carding-machine at sixte
years, generally die at thirty years. Could a
fact be more terrible than such a fact, that a g
of sixteen should have to live by an occupat
that will bring her existence to an end in fourte
years, and to that end with all the prolong
wasting, sleeplessness, suffering, incident to t
disease consumption of the lungs? If it we
the fate of these doomed workers that at t
close of fourteen years' work the majority
them were taken forth and shot dead in
instant, their fate were infinitely better than
is. The heart of the nation would thus
aroused, and the law in all its majesty would
put in operation to arrest the progress of t
crime and to punish the offenders. Yet, ye
after year as terrible an offence goes on, a
because the result of it is hidden in the sic
room there is no arrest of its progress, no punis
ment for its commission.

THE INSTITUTION OF CIVIL ENGINEER

FOR some of the original communications re
and discussed at the ordinary meetings and
the students' meetings, and for other pape
selected for publication without reading, durir
the past twelve months, the Council have award
the following premiums:—Watt Medals a
Telford Premiums to Mr. W. W. Beaumont a
Mr. W. C. Unwin, for papers on "The Fractu
of Railway Tires" and "The Resistance
Boiler Flues to Collapse"; Telford Premiun
for papers on "Street Tramways," by M
Robinson Souttar; "The Testing of Portlar
Cement," by Mr. I. J. Mann; "The Emission
Heat by Hot-water Pipes," by Mr. W. Anderson
"The River Thames," by Mr. J. B. Redman
"The Transmission of Power," by Mr. I
Robinson; "The Repairs and Renewals of Loco
motives," by Mr. A. McDonnell; and on "Th
Japan Lights," by Mr. R. H. Brunton; whil
the Manby Premium has been adjudged to M
C. Norman Bazalgette for his paper on "Th
Sewage Question." A Miller Scholarship
40*l.* a year, tenable for three years, has bee

owed upon Mr. Percy R. Allen, for his com-
ication on "Machine Tools," and Miller
es have been given to the following
lents:—Messrs. Arthur Cameron Hurtzig,
rles Graham Smith, Richard John Gifford
d, Nicholas Watts, William James Chalk,
John Charles Mackay.

WROUGHT-IRON GIRDER WORK.

We recently mentioned an interesting paper
wrought-iron girder work which was read
Mr. C. Graham Smith, president of the Liver-
l Engineering Society, at a meeting of that
ociation on the 20th ult. In the course of
discussion which followed,

Mr. Hudleston wished to know on what
hority the author spoke so favourably of
erican bridges; for, from the descriptions
t reached us of their failure, he would infer
t a greater strain was put upon them than
s usually allowed in this country.

Mr. Vernon Petherick thought one point of
at importance in the design of wrought-
n girders had not been mentioned in Mr.
ham Smith's paper: that was, so arranging
riveting that the whole or greater part
ld be done by machine-riveting, thus en-
ing not only better work, but a great saving
cost.

Mr. Clanchy said that as regarded the com-
ative advantages of pin and riveted joints,
was decidedly in favour of the former in
v countries and remote situations, where the
curing and transport of cumbersome ma-
nery was a matter of serious consideration
l expense.

Mr. Wilkinson Squire quite agreed with what
author had said in regard to having an
pector to look after the construction of iron-
rk. He had had some experience in ironwork,
l was fully of opinion that the imperfections
workmanship could alone be detected and
nedied by a working inspector being always
the ground.

Mr. Maginnis was of opinion that the question
piece-work mentioned in the paper was
serving of special attention in all riveted iron-
rk. He thought it should, if possible, be
irely abolished, as although adopted by con-
ctors on purely economical grounds, it in most
ses turned out to be eventually the most ex-
nsive. He instanced a case of an iron vessel
about 500 tons register. This vessel made
s coasting voyage, and the iron deck was
nd to be sagging down with the deck-load of
l which she was carrying, and she was also
nd to be making water to a serious extent.
entering the hold to make an examination
saw daylight through one of the rivet holes
the side of the vessel under the stringer plate;
rivet was there, but daylight was there also.
w of the other rivets were found to be pro-
ly up at the head, and in several cases the
ads were upwards of a quarter of an inch from
e plate. This vessel was plated, riveted, and
irely built by piece-work, and after the report
the survey it cost upwards of 3,000*l.* to put
r in a seaworthy state. Another instance of
e serious and false economy of the system had
cently been found in two of the largest steamers
ding to this port, they having after a few
yages to be put into dry dock and have ex-
nsive repairs done to them at a cost of some
ousands of pounds. One firm of shipbuilders
no rank very high for the strength of their
ssels, knowing the defective work done by
ece-work, entirely ignore it in riveting the
ells of ships. These facts he thought sufficient
fully prove how much piece-work should be
ndemned, as even under the most minute
spection the dangers of the system are scarcely
be avoided.

Mr. Henry Turner said that during his expe-
ence of riveted work for boilers, ships, and
rders, he had found very little difference in the
ality of riveting done by piece-work as com-
red with that paid by the day. He thought a
orkman inclined to be careless would be so,
wever he might be paid. In piece-work the
orkman outs out and makes good all bad
veting at his own expense; in day-work he
es this at the master's cost. This, in his
inion, quite counterbalanced the extra care and
ger time that might be spent upon day-work.
his opinion the great secret for producing
od work was supervision. Manufacturers pay
eir men for sound work, and are anxious to
pply their customers with the same for their
wn sake, as they have a great deal to lose and
nothing to gain by sending out bad work.
Referring to the remarks made by the last
speaker about the bad quality of riveting in the
hull of a steamer, which was found to be in a
very leaky condition after a few voyages, and
requiring extensive and costly repairs before
she could be placed on her station, he could
endorse this statement, for he happened to have
been with the firm who executed the repairs;
but he considered this state of things to be more
due to faulty design than workmanship. The
weakness was in the ship herself, as she
had been built with the frames and deck-beams
continuous, and with a large radius, say between
5 ft. and 6 ft., at their junction, and without the
strengthening courses and gussets.

Mr. Alexander Ross complimented the author
on the very practical and instructive paper he
had just read. Alluding to his remarks on the
effects of temperature on ironwork and the
cambering of bridges under a hot sun, he
believed that at the testing of one of the tubular
bridges on the Chester and Holyhead Railway a
similar effect had been observed. The loading
of the bridge had been commenced early in the
morning and occupied the first part of the day.
The depression of the girder was eagerly watched
for, but, to the surprise of all, instead of being
depressed the girder was actually rising in the
centre as the load increased. This was very
puzzling, but the explanation was arrived at that
the temperature was low when the loading
commenced, and there being at noon a bright
sun it increased considerably. The top flange
being exposed to the sun's rays expanded more
than the underside, which was shaded by itself,
thus having the effect of cambering the bridge.
He thought, from his experience in railway work,
that iron oxide paint formed a reliable and cheap
substitute for red lead.

Mr. Graham Smith, in reply, said he thought
the few failures of bridges which took place in
America should by no means be taken as ground
on which to condemn the whole system of bridge-
building in that country. It usually happened
that, when the break-downs came to be inquired
into, it was found such structures departed very
considerably from recognised American practice.
As to factors of safety being less in America
than in England, he was under the impression
that they were greater, 10,000 per square inch
in tension and 8,000 (varying slightly with
design) per square inch in compression being,
so far as he was aware, the usual strains calcu-
lated to be put upon wrought iron in the United
States. With reference to Mr. Petherick's
remarks, his only reason for not touching on
machine-riveting, and speaking more fully on
the question of punched and drilled work, was
that time would not permit of his doing so. He,
nevertheless, fully appreciated the value of
machine-riveting as not only giving more econo-
mical, but very much better, work than hand-
riveting, and he looked forward to the day when
such machines as Tweddell's portable hydraulic
riveter should supersede, to a great extent,
manual labour. As regarded the economy to
be effected by the use of machines, a short
time since he saw 130 rivets, $\frac{3}{4}$ in. diameter,
put in an angle-iron beam, in ordinary work, in
half an hour by one machine; the labour em-
ployed to do this was that of two men conducting
the riveting, one nipper working the machine,
one carrying rivets and drifting, and one heating
rivets. The whole of their wages would amount
to about the same as the wages paid to a gang
of riveters, who would be restricted by their
club rules to 180 rivets of the same diameter for
a day's work.

Burning of a Theatre.—A fire broke out on Monday morning on the premises of the Rotunda Theatre, at the north end of Liverpool. Soon after it was discovered the fire assumed large proportions, and in the course of about four hours the theatre was completely destroyed. The fire seems to have originated near the stage, whence it spread to the boxes, galleries, pit, and roof, which were all in flames when the firemen arrived. The bar-room, billiard-rooms, and a bed room were saved, but the only portions of the theatre proper that remain are the outer walls. The fire was fortunately confined to the theatre, and was extinguished about ten o'clock. The building is to a great extent insured in the Liverpool, London, and Globe, the Northern Insurance Company, and the Atlas Company. The Rotunda, which was the only theatre at the north end of the town, had only recently been renovated.

ATTEMPTED SALE OF KENSINGTON HOUSE.

Mr. Albert Grant's House, described in our pages some time ago, was put up for sale at the Mart, on Friday, the 6th inst., by Mr. R. C. Driver, and was ultimately bought in at 165,000*l.* The auctioneer said nearly 200,000*l.* had been expended on the building, and the land had cost 100,000*l.* more, about seven acres, freehold. He said he had sold some neighbouring land, near Mr. Millais's house, at 100,000*l.* an acre, and the Commissioners for the Exhibition of 1851 had let one piece of land with 70 ft. frontage to Mr. Samuel for 700*l.* a year, while half an acre opposite was let at a rent which, capitalised, would give the price of 100,000*l.* an acre. That would give some idea of the value of land in South Kensington.

THE CRYSTAL PALACE AND THE TECHNICAL COLLEGE SCHEME.

A circular has just been issued by the chairman of the Crystal Palace Company in reference to the proposal of the City Companies to establish a technical college within the Palace grounds. In this circular he states that if such an institution for the promotion of technical education as is contemplated by the City Companies is to be of any practical use, there must not only be a central college for instruction, but extensive museums and workshops. To provide a site large enough for these purposes within the City bounds, either as had been suggested on the Thames Embankment or elsewhere, would be scarcely possible, or, if possible, would require an Act of Parliament, and be enormously expensive. In any case, it would be years before such a site could be found and purchased, and the necessary buildings erected upon it. He then adds that the Crystal Palace Company have already begun this work, and with considerable success. They have a school of practical engineering, in which youths are prepared for the workshops and offices of our great firms. There is also an excellent school of art and science, and it is a centre for the Oxford and Cambridge local examinations. There is, too, an extensive technological museum, under the superintendence of, and chiefly collected by, Dr. David Simpson Price. The collection is housed in the galleries of the Palace, and the company has a very large space in the adjoining galleries, which they could offer to the City Companies for their proposed collections, while, in the basement, they could provide space for the collections of machinery and heavy articles, and for workshops. With these facilities, each guild might secure its own separate portion of space, and they would, at the same time, be all under the same roof, and side by side.

ST. JOHN'S CHURCHYARD, WATERLOO-ROAD.

ITS SANITARY CONDITION.

A novel objection, on sanitary grounds, was urged at the meeting of the Lambeth Vestry last week, to the conversion of St. John's Churchyard, Waterloo-road, into a garden. A petition was read from the vicar, churchwardens, and parishioners, soliciting the assistance of the Vestry in providing the amount necessary for the completion of improvements in converting the disused burial-ground into a public garden for the quiet recreation of the inhabitants of the district. Mr. Duncan said he had relations buried in the ground, and decidedly objected to the grave-stones being interfered with. On sanitary grounds he was opposed to such a ground being converted into a garden. Mr. Charles White, on the other hand, thought that a neglected churchyard was more disrespectful to the relatives of persons buried there than it could possibly be to know that the place had been made into a decent garden. He had often wondered why churchyards in the metropolis should have been allowed to get into that dreadful condition in which some had, including this one of St. John's, which some time ago was little better than a receptacle for dead cats and dogs, and refuse of all kinds. Mr. Mills observed that he could not understand Mr. Duncan objecting to the conversion of the churchyard on sanitary grounds. The planting of trees in the place surely was not objectionable from a sanitary point of view; and he instanced the improvements of this character which had

been effected in St. Pancras and other parishes in the metropolis. The vestry as a body was in favour of complying with the request, and it was agreed to refer the petition to the General Purposes Committee to take into consideration the best method of carrying out the wishes of the vicar and parishioners.

A HIGH-LEVEL BRIDGE IMPROVEMENT IN LIVERPOOL.

THE corporation of Liverpool have just resolved upon a very important street improvement. At their meeting last week the improvement committee recommended that the council should approve the continuation of William Brown-street upon the high level to the junction of Manchester-street and Dale-street, and the widening of Dale-street on the south side between Manchester-street and Crosshall-street. William Brown-street is situated between St. George's Hall and the Free Library and new Art Gallery, and leads on, by way of Dale-street, direct to the town-hall, the Exchange, and the river, the passenger cross traffic of which is enormous. Mr. Alderman Hubback, in moving the adoption of the recommendation, said that no more important improvement could be brought before the council than the erection of this high-level bridge, which would be not only an ornament to the town, but a great benefit to the masses who had to come from the eastern part of the town to its business parts and the river. Mr. Picton, in supporting the recommendation, said that the proposed high-level bridge would supply a want which had long been felt in Liverpool,—facility of communication, or means to pass from one part of the town to another. It would give access from the eastward part of the town, and would equal anything of the kind in any town in the kingdom, and would be to Liverpool what the Holborn Viaduct was to London. Mr. Whitby (formerly mayor) observed that while not opposing the proposal, it must be evident to all that the carrying out of the high-level bridge would be attended with an enormous expense, as there would be immense claims for compensation. The question was, whether it was not more of an ornamental character, though he admitted it would be useful to a great extent in bringing people from the east end of the town. The recommendation was adopted, and the engineer and surveyor was directed to prepare plans and estimates.

IRON PAVING.

BY permission of the Commissioners of Sewers of the city of London, a portion of the new wood paving in Beech-street has been charged with iron (3 cwt. to the square yard), by way of experiment, to increase the durability of wood and preserve and protect it from heavy racking traffic, and to test the practicability of securing small blocks of iron without framework, and so as to deaden the noise and counteract the other disadvantages of metal as hitherto applied.

The ordinary wood-paving blocks are bevelled by machinery on the upper and lower edges, and between each row is laid a row of cast-iron blocks of double-wedged section, thicker at the upper and lower surfaces than in the centre, so as to fit mechanically between the bevelled wood blocks which, on section, are thicker in the centre than at the upper and lower surfaces. The iron blocks weigh 16lb. each, are rounded and serrated on surface for foothold, and perforated for grouting material, and are bedded in sand on the ordinary concrete bed.

The designer and patentee (Mr. Dennison, architect) maintains that the cost, though heavy at first, will not, in the long run, exceed either granite, wood, or asphalte.

THE BRITISH MUSEUM.

SIR,—You are always ready to give due publicity to a public grievance; may I ask you to note one of mine and others? It is this,—that in the British Museum "antiquity" galleries there are but a very few seats, and they are *immovable*, so that there is no possibility of getting from them just the *point of sight* you need when drawing from or studying an antique object. May I therefore suggest through you that a *few* light cane chairs should be placed in these galleries, so that,—*being movable*,—they could be so placed as to catch the point of sight needed? It would be a great boon to students.

A STUDENT OF ANTIQUITY.

RAMSGATE IMPROVEMENTS.

IN our volume for 1869 we suggested some improvements desirable for Ramsgate.* We pointed out, *inter alia*, the great want there was of a road from the sands to the top of East Cliff. Such a road has now been completed, and was opened last week. The improvements in question have been designed and carried out by Mr. Edmund F. Davis, who has recently purchased the Conits Estate at Ramsgate, which includes the cliffs lying between the Granville Hotel and the sea. Until now, the only direct access from the beach to the Granville has been by a wooden staircase, and persons coming from the railway have been compelled to drive by a circuitous route; but Mr. Davis has cut a winding carriage-road from the railway station to the hotel, and has converted the space between the two chief bends of this road into a garden and pleasure-ground. At one end of this pleasure-ground a hall has been built, suitable for a reading-room, or for concerts or other entertainments; and the face of the cliff has been excavated to form shops. Above each shop are dwelling-rooms sufficient for the accommodation of a small family; and the appearance of the row thus built is extremely picturesque. The former proprietors had already commenced a sea-wall, which has now been completed; and the general effect of the works has been to give Ramsgate a new and sheltered promenade, partly gravelled and partly covered with asphalt, protected from the waves by an effectual barrier, and well provided with places of shelter by the hall and by the shops, some of which have been taken by a *restaurateur*. The engineering difficulties which have been overcome have been considerable, the soft chalk requiring to be supported with great care.

SCHOOLS FOR ST. GEORGE THE MARTYR, MIDDLESEX.

THE corner-stone of the new boys' school, residences, &c., for this parish, was laid on the 5th inst. The site is immediately to the south of the church in Queen-square, Bloomsbury. The building is in place of that erected in 1859, in Theobald's-road, and taken down recently by the Metropolitan Board of Works, in the formation of the new main communication from Oxford-street (*vid* Hart-street, Bloomsbury) to Old-street, St. Luke's. Compensation having been obtained for the removal, the opportunity has been taken to advance another step the scheme of forming a complete group of parish buildings,—long in contemplation, but only partially carried out. The parish church, the schools for girls and infants, erected in 1864, and the new schools for boys, bearing a general resemblance to them, will be close together. To these, and the different residences adjoining, it is proposed to add hereafter public vestry buildings on the south-west of the church. There will be desks for 200 children in the schoolroom, which will also be the public hall of the parish, 60 ft. by 34 ft. on the floor, 31 ft. high in the middle, and 21 ft. at the eaves, covered with a boarded and panelled hammer-beam roof. A large storeroom, 47 ft. by 34 ft., in the basement, will receive the platforms as well as the seats for some 350 persons, from the schoolroom above it. Caretaker's, master's, and assistant master's residences will be placed in the tall front building next Queen-square. Mr. John Wells is the builder executing the works, under Messrs. J & S. F. Clarkson, architects, of Great Ormond-street; the contract price being 4,700*l*.

The Royal Dramatic College. — The *Theatre*, a newly-established and well-conducted weekly critical journal, says,—"The determination to carry on the Royal Dramatic College had scarcely been come to when the members of the Council began to quarrel among themselves. Mr. Webster, Mr. Chatterton, Mr. Anson, Mr. Churchill, and Mr. Lye recently met, and resolved to take 500*l*. from the Cooke bequest, and give it to the institution at Maybury. Colonel Cochrane, Mr. Vernon, Mr. Swanborough, Mr. Ledger, Mr. Burgess, and Mr. Waddell thereupon resigned their seats as members of the council." This is an odd state of things, the majority resigning to the minority. Can nothing be done to save this ill-starred institution? Would not Chancery interfere if properly appealed to?

* Vol. xxvii., p. 902.

THE DECORATION OF ST. PAUL

SIR,—If Emmett's engraving of the i of St. Paul's be any criterion of Sir Chris Wren's intentions,—as I think it will be rally admitted that it is,—then we may t it to what extent mosaic could have been a to the dome, which was ornamented in its gr extent with deep panels, having in their c sculptured rosettes; it was ornamented, i in its chief extent, precisely as the soffits the other arches in the building. In the tural framing or grand divisions of this pan now represented by the dividing frame of T hill's designs, there are, however, indicati arabesque decoration, and it could have be these narrow spaces alone that Wren could contemplated employing mosaic. Mor there were originally four oval lights in th cavity of the dome. There was also a space girthing the base of the dome which have been filled with mosaic, but in the engr there is not the slightest indication of embe ment being there intended. This plain was above the cornice of the lights in the of the dome. But Wren was not of suff authority in matters of decoration to be impl trusted. We can rely, however, upon motives,—the spirit in which the great Prote cathedral was designed. It was to riva Peter's at Rome, but not to be a copy o Peter's, either externally or internally,—that the leading idea of Wren, and therefore w ever is now done in the way of decoration be in conformity with that idea, or W primary or fundamental purpose will be trayed.

W. C.

MASTERS AND MEN.

Gravesend.—The carpenters and joiners i employ of Mr. Blake, builder and contra having memorialised their employer for an vance of wages and a reduction in the hou labour, Mr. Blake, after interviewing a dep tion on behalf of the men, acceded to demands, the result being that after the se Saturday in July the rate of wages will be per hour for 56½ hours per week, with half day on Saturday.

Manchester.—At a meeting of master buil held at the Palatine Hotel on the 10th inst was reported that the number of men at w was steadily and satisfactorily increasing, that not more than 8½d. per hour was b paid. In reply to a letter from one of the lar lodges of operatives, asking the masters to rec another deputation, the meeting resolved ths was undesirable to do so, "inasmuch as it mi lead to a belief that the employers were co tentencing an attempt to compromise the disp The shops are open at 8½d. per hour, and employers see nothing to induce them to dep from the position they have taken up."

Cardiff.—After a protracted strike of tw weeks' duration, the Cardiff Master Build Association have conceded to the operat stonemasons the halfpenny per hour deman by them, thus making their wages 8d. per ho Work has now been generally resumed throu out the district.

Rugby.—In accordance with a notice gi some time since, the stonemasons of this pl came out on strike on the 25th ult. They w getting 7½d. per hour, and they now demand 8 which the masters refuse. The bricklayers, w came out about two months ago for an ex penny per hour, are still on strike.

EMBEZZLEMENT BY THE LATE FOREMAN AT THE NEWBURY MUNICIPA BUILDINGS.

AT the Berkshire Assize, before Baron Hudd ston, Charles Dickinson, 34, was charged wi embezzling several amounts, the moneys of employer, Mr. Crook, of Southampton, contract for the erection of the new Municipal Buildin at Newbury.

Mr. Gough prosecuted, and Mr. Bull defended.

Prisoner had more than once obtained fro Mr. Crook money for the payment of the carria of the same lot of lime, and also for the amou of other accounts, which he had represented had paid. He also falsified his accounts, char ing Mr. Crook with wages of men alleged have been employed on the works, who, howeve were not working there at the time for which th prisoner had charged.

The jury found the prisoner guilty, upon which made a long statement, making certain allega- ns reflecting upon the credit of Mr. Crook. Baron Huddleston told him that instead of h allegations coming to his assistance, they re very much against him. The sentence of Court was that he be imprisoned for nine nths, with hard labour.

WHAT COMES WITHIN THE TERM A PRIVATE RESIDENCE?

GERMAN *v.* CHAPMAN.

In this case, tried in the Chancery Division, ore Vice-Chancellor Sir J. Bacon, the plain- s were owners of the Bradbourne Estate, ar Sevenoaks, and had sold portions of it for ilding purposes. One of such portions was ught by the defendant in 1872, who then ered into a covenant that any building erected the land should be used as a private residence y. The defendant now intended to sell his d to the trustees of an institution for the ucation of missionaries, who intended to build it a house capable of holding 100 girl boarders. is action was brought to restrain the use of land for this purpose on the ground that such uilding would not be a private residence. Vice-Chancellor Bacon held that a home for ssionaries' daughters was a private residence, l the number of children to reside there uld make no difference. The action must be missed.

ARCHÆOLOGICAL SOCIETIES.

Wiltshire.—The annual meeting of the Wilt- re Archæological and Natural History Society been fixed for August 22nd, 23rd, and 24th, Warminster.

Somersetshire.—A meeting of the local mem- s of the Somersetshire Archæological and tural History Society was recently held at dgwater, under the presidency of Bishop fford, the president for the year. The meet- in Bridgewater was fixed to take place on esday, August 7th, and two following days. e annual meeting will be opened by an address m the president, after which points of local erest in the town will be visited and discussed. the afternoon it is proposed to visit Sydenham use and Chedzoy Church; and at an evening eting papers will be read on several local sub- ts. On the second day it is proposed to make excursion to Athelney, returning by way of rough Bridge, Othery, Middlezoy, and Weston- y-land. On the third day an excursion will be ade by way of Cannington Park and Holford to nesborough, returning through Stogursey. uring the meeting a local museum will be rmed.

Kent.—The members of this society will have eir annual gathering in Thanet this year, on e 1st and 2nd of August. The opening meet- g will take place at Ramsgate, and the dinner the Foresters' Hall, Margate. A temporary useum will be formed in a large room in wley-square, Margate, kindly placed at the sposal of the society by the directors of the aterworks Company; and the principal points interest in the excursion will be the fine old urch and the Abbey at Minster, containing ecimens of Saxon and Norman work. Papers these will be read by the Rev. Canon Jenkins. earer Margate are Salmstone Grange and andelion. On the second day the Roman mains of Reculver will be visited. The hon. oretary, the Rev. Canon Robertson, has paid veral visits to Thanet to perfect arrangements.

Birmingham and Midland Institute.—On the 9th ult. the members of the Archæological ction of this Institute made their first walking cursion this season to Packington, Maxstoke, d Coleshill. The party, numbering between rty and fifty, left the Institute in carriages. he route chosen was by way of the Coventry- ad as far as Stonebridge. Passing through e long and straggling parish of Yardley, a easant drive of over an hour and a half brought e party to Stonebridge. The way then lay ong the banks of the Blythe to the church at ittle Packington, which is a mean structure, ough boasting a Norman, if not a Saxon origin. he only interesting point about the church is a blet to the memory of one of the Shakespeares. he party were not permitted by the Earl of ylesford to pass through Packington Park. assing the Hermitage Farm, a walk through easant Warwickshire fields and lanes brought e party to Maxstoke Priory. The particulars and parts of interest were pointed out by Mr. Holliday, who exhibited a plan of the buildings and described what had been done by the Archæological Section by excavating towards obtaining more precise details of the old ruins than the parts above-ground showed. The plans of the church, the cloisters, and other buildings had been traced in the recent excavations, and drawings of these, with what was known of the history of the Priory, he said, would be given to the members in the forthcoming volume of "Transactions" now in the press. A walk of between two and three miles brought the party to Coleshill, where tea awaited them. After tea the church was visited. It is a fine example of the Decorated Gothic of the fifteenth century. In 1591 the tall and beautiful steeple "suffered much hurt by lightning and *thunder*, which crackt the west side of the tower, and shattered the upper part of the spire; for repairing whereof, though the inhabitants sold one of their bells, yet did they shorten it by XV foot at the least." Coleshill is one of the very few places in which is to be found the old-fashioned pillory. The party returned home through Castle Bromwich and Washwood Heath.

WANTAGE.

The inauguration of King Alfred's statue, which is to take place at Wantage on (this) Saturday, is not the only thing in which Lord Overstone and Col. Lloyd-Lindsay are concerned at Wantage. The hideous town-hall is razed to the ground, and a new town-hall is being built at the corner of the Market-place, at their expense, from the designs of Mr. Tasker.

Lord Overstone has also given 1,500*l.* towards the enlargement of King Alfred's Grammar School, of which Mr. Henry Cook is the master, and Mr. E. C. Robins is the architect. The works are nearly completed.

He is also about to assist the vicar, Mr. Butler, in the enlargement of the old church, which was restored by Mr. Street many years ago. Mr. Butterfield is the architect for the proposed enlargement.

At the school buildings there is an old Norman doorway, the only remains of the ancient school buildings, built into the wall as an entrance to the boys' large class-room.

CHURCH-BUILDING NEWS.

Leytonstone.—On the 27th ult. the foundation-stone of the new Church of the Holy Trinity, Harrow-green, Leytonstone, was laid by Miss Brady, daughter of Sir Antonio Brady. The church is to be entirely free and open, is to hold 700 people, and will cost at least 6,000*l.* Mr. J. T. Bressey, of Wanstead, is the architect; and Mr. J. Brown, of London, the builder. It is to be a spacious red brick building suited to the requirements of the neighbourhood.

Sheffield.—With reference to the proposed enlargement of Sheffield parish church, the *Sheffield Independent* understands that Mr. Mark Firth, with his customary generosity, has undertaken the entire cost of the new porch, which forms a portion of the work comprised in the plans for the enlargement of the parish church. It has for some time past been known that Mrs. Samuel Parker intends to defray the whole of the expenses incurred in the restoration and alteration of the chancel; and more recently it has been stated that the members of the local Masonic lodges will present the new font, and thus the cost of much of the work necessary to be done in carrying out the enlargement of the church will not have to come out of the 10,000*l.* given by Mrs. Thornhill Gell, the late patroness of the living. Large as that sum is, it is not sufficient to do all that is contemplated, or indeed absolutely required. It will be entirely spent in the actual enlargement of the church. The *Independent* understands that the plans prepared by Messrs. Flockton & Abbott, and sanctioned by Sir Gilbert Scott, have been finally approved of, and that as the faculty has arrived, a part of the work will be proceeded with at once.

Moxley.—On the 27th ult. the small township of Moxley was astir with the proceedings connected with the "inauguration" of the parish church spire and clock and chancel window, which have been erected and placed there by the Wells family in memory of the late Mr. Thomas Wells, of Moxley. The tower and spire, the gift of Mr. Thomas and Mr. Charles Wells (sons of the late Mr. Wells) are in character with the Early English style of the church. The spire is 120 ft. high, and is built of Codsall stone, having a pinnacle at each of the four angles of the tower. It has also angle buttresses, which are sunk and wrought. Room is provided for a peal of bells, but at present there is only one, upon which the clock strikes. Mr. A. P. Brevitt, of Darlaston, is the architect. The clock has been supplied by Mr. Smith, of the Midland Works, Derby, and is the present of Mr. S. J. Wells and his sisters. The chancel window, presented by Mrs. Wells, and executed by Messrs. Hardman & Co., represents subjects chosen from the lives of various saints to whom the church is dedicated. The cost of the entire additions amounts to about 1,500*l.*

Nelson-in-Marsden.—On the 16th ult. the corner stone of a new church was laid at Nelson-in Marsden, near Burnley, by Mr. Wm. Farrer Ecroyd, J.P. The church is to accommodate about 500, and will be a chapel of ease to St. Paul's. Mr. W. F. Ecroyd has given the land, and he and his brother, Mr. Ed. Ecroyd, have promised 4,000*l.* towards the cost, which will probably be about 8,000*l.* The designs have been prepared by, and the church will be erected under the superintendence of, Messrs. Waddington & Sons, architects, Burnley.

Rugby.—The Bishop of Exeter has laid the foundation-stone in connexion with the rebuilding of the parish church of St. Andrew, Rugby. The old church had long been felt unsuited to the requirements of a growing town like Rugby. Of the old church the tower and four bays in the south aisle remain standing; and it is intended to build a new nave with a high-pitched roof, to rebuild the north aisle, and, in a measure, the old nave, which will be finished as a memorial of the late rector, the Rev. John Moultrie. The new buildings will occupy a much larger area than the old, as accommodation will be provided for between 800 and 1,000 persons. Entrance will be afforded by two porches on the north and south sides of the western front. The east end will not be finished in a permanent manner, as about 2,000*l.* are wanted to complete the chancel, and 3,000*l.* for a new tower-spire at the north-east angle, and which, for want of funds, will only be carried up about 30 ft. The new portions will be of Bath stone, and in harmony with the old. Mr. Butterfield, of London, is the architect, and Messrs. Parnell & Son are the contractors.

Maida Vale.—It having been determined to enlarge St. Mark's Church, Maida Vale, the memorial stone of the additional structure was laid on the 23rd ult., by Prince Leopold. Mr. Ferrey, the architect, presented the Prince with a silver trowel, and his Royal Highness proceeded to lay the stone with the usual ceremony.

DISSENTING CHURCH BUILDING NEWS.

Rievaulx.—A new Wesleyan chapel has been opened at Rievaulx. The structure, erected on land granted by the Earl of Feversham, is in the Early English style. The internal fittings have been done by Mr. Lawn, the village joiner. The cost is 300*l.*

East Molesey.—A new Wesleyan chapel has been opened in this suburban village. The site was generously given by Mr. Chubb, of St. Paul's Churchyard, and the architect was Mr. Lander, of Barnstaple. Mr. Higinbotham, of Sunbury, has carried out the work. The cost of the whole will be about 1,400*l.*

Hornsey.—On the 20th ult. the Lord Mayor of London laid the foundation stone of a new Presbyterian Church at Wood Green, Hornsey, the site being in Southgate-road. The cost of the new church, which will be known as St. James's Presbyterian Church, is estimated, including the freehold land, at 5,500*l.* The church will seat 400, without galleries, the contractors being Messrs. Harris & Wardrop, and the architect is Mr. Thomas Arnold.

Uttoxeter.—A new Wesleyan chapel at Gorsty-hill, near Uttoxeter, has just been opened. The building is of brick, with stone dressings. It has been erected by Mr. Vernon, of Thurvaston, and the cost of it amounts to about 270*l.*

Kirkdale.—On the 28th ult. the memorial stone of a new Wesleyan Mission chapel was laid in Rosalind-street, Stanley-road, Kirkdale, by Mr. James Wood, LL.B., of Southport. The building is to be of corrugated iron, and its length will be 78 ft. by 32 ft. In addition to the chapel, there will be vestries and an infant school, and the cost of the whole erection will be about 1,400*l.* The builders are Messrs. Dyer & Co., of Barrow.

SCHOOL BOARD SCHOOLS.

London.—It appears, from a report of the Statistical Committee of the School Board for London, recently presented, that a large amount of accommodation has yet to be provided, in order to meet the requirements of the population. The first district whose wants will be considered is Chelsea. The group of sub-divisions T, S, and Q of Chelsea lies to the west of the West London Junction Railway,—between the river and Hammersmith-road. In the northern sub-division, T, the Board have taken steps to secure a site for the erection of a school for 828 children. In the southern sub-division, Q, they have built a school in Harwood-road for 722 children, and the department have recently sanctioned its enlargement by 382 places. Although building operations are being actively carried on throughout the entire length of the North End-road, which runs through the eastern ends of the two sub-divisions from Hammersmith to Fulham, the Board have not hitherto decided to provide accommodation in the central sub-division, S. They now concur with the Chelsea members in thinking that it will be better to provide accommodation for 620 children in this sub-division rather than at once to enlarge the Harwood-road school, and they accordingly recommend that application be made to the Education Department for authority to provide additional accommodation for 238 children in the said sub-divisions, and that the Works Committee be instructed to secure a site in the eastern part of sub-division S, and to erect a school thereon for 620 children, instead of enlarging the Harwood-road school by 382 places. On the 9th May the Board had under consideration the requirements of the Queen's-park estate, which lies adjacent to the Harrow-road, and determined to enlarge the school which they are building in D block from 828 to 1,104 school places. A second site has been secured in this locality in Beethoven-street, and in view of the rapid progress which is being made, and the probability that nearly 40 acres of land will be covered with working-men's houses, the committee recommend that application be made for authority to provide accommodation for 1,104 children on this site. The projected Fox School in Silver-street, Notting-hill, is recommended to be extended so as to provide for seventy more children, there being already more boys on the roll of the temporary school than could be accommodated in the new school as originally authorised. The committee still adhere to their opinion that a school for 500 children will not meet the requirements of the district of subdivision E of Chelsea, and therefore consider that the opening of the St. Simon's Girls' school may be authorised independently of the proposed enlargement of the Queen's-gardens Schools. Two schools upon the separate class-room system have been built, one in Ben Jonson-street, Tower Hamlets, and another in Haverstock-hill, Marylebone. The Hackney members are desirous to have a school of this description in their division. It has recently been determined to build a school for 1,104 children in Homerton, and the committee recommend that the Works Committee be instructed to plan the new school upon the separate class-room system. The committee also recommend that application be made for authority to provide 276 additional places in subdivision U of Lambeth, and that the Works Committee be instructed to build the Boundary-lane School for 1,104 instead of 828 children; and they recommend further that application be made to the Education Department for authority to provide additional accommodation for 300 places in subdivision N of the Tower Hamlets by utilising the central hall of the Ben Jonson-street School for that number of children.

High Felling (Durham).—The foundation-stone of the first school erected by the Heworth School Board since its formation was laid on Friday, the 22nd ult., by the chairman of the Board (Mr. W. W. Pattinson) at High Felling. There was a large attendance, and the children from the various schools under the Board were present. The schools are arranged on the mixed principle, the boys and girls being taught in one department, and separate provision being made for the infants. The mixed school accommodates 500 children, and consists of one large room, with four class-rooms. The infants' school accommodates 250 children, and consists of one large room, and two class-rooms. Covered sheds and latrines, and separate playgrounds, are provided. A caretaker's house, consisting of four rooms and the necessary out-offices, is also to be erected upon a portion of the site set apart for this purpose. The warming will be by means of hot water in pipes and coils. Messrs. White & Sproat, of Blyth, are the contractors. The works are being carried out, at a cost of 5,970*l.*, from the designs and under the superintendence of Mr. Thomas Oliver, of Newcastle-on-Tyne, architect. Another group of school buildings, from the designs of the same architect, and for the same Board, is about to be commenced at Bill Quay. Mr. Lowes has been appointed to act in the capacity of clerk of the works to both buildings.

Harmondsworth (Middlesex). — New Board Schools, erected by Mr. G. Gibson, of Southall, from the designs of Mr. E. H. Lingen-Barker, architect, have been opened by Viscount Enfield. They occupy a commanding site, given by the Earl of Strafford, on the high road from London to Bath, and comprise the following rooms:—Infants' school-room, 32 ft. by 20 ft.; boys' and girls' school-rooms and classrooms, 27 ft. by 20 ft., and 14 ft. 6 in. by 14 ft. respectively. There is also a commodious teacher's residence detached from the school buildings. The number of children provided for is 248 (or 328 calculating 8 superficial feet for each child); the contract cost of buildings, offices, and fences (exclusive of fittings) being exactly 4*l.* 15*s.* per head.

Forres. — The new Board schools at Dyke, Forres, N.B., have been opened. They have been erected, at a cost of over 1,500*l.*, in the Elizabethan style, with belfry and clock-tower, after plans by Mr. Mackintosh, architect, Inverness, and are situated on a rising ground at the north end of the village.

Books Received.

Early Exhibitions of Art in Liverpool: with some Notes for a Memoir of George Stubbs, R.A. Privately Printed. Liverpool. 1876.

THIS is a very interesting, and in its way almost unique, little book, by Mr. J. Mayer, of Liverpool, well known in that town and its neighbourhood as a gentleman who has turned his well-acquired means towards the practice of an enlightened philanthropy as well as to the collection, with an equally enlightened æsthetic taste, of objects of art and archæology. Recent revivals of art enthusiasm in Liverpool seem to have suggested to him the compilation of a small book giving some account of the first efforts in the way of the encouragement of art and artistic exhibitions in the town on the banks of the Mersey. Liverpool was peculiarly an "aristocratic" neighbourhood at that period, but (as Mr. Mayer notes) it was from the lower rather than the upper stratum of old Liverpool society that the first impulses in favour of the cultivation of artistic taste arose. The promoters of the first exhibitions were not titled persons, or representatives of old families, in the main at least, though the names of one or two old houses appear in his list of exhibitors, and the first beginnings of art in Liverpool were humble enough, yet they were set on foot with the evident intention of following the lead of the capital with as little delay as might be. Mr. Mayer notes that within twelve months of the incorporation of the Royal Academy, there followed the effort in the same direction by certain gentlemen in Liverpool, who formed a society, and took an "Academy Room" at No. 30, John-street. "The movement as yet was almost confined to drawing-masters and those who had a business interest in the arts." This was in 1769; but no attempt at anything like an exhibition seems to have been made till 1774, when there was held what Mr. Mayer calls (as it very probably was) "The first provincial exhibition ever held in Europe." The catalogue contained only eighty-five items, including designs for bedsteads in the Chinese, Palmyrean (!), and Gothic "tastes," and a head of the Marquis of Granby, executed in human hair. Among the most active of the promoters was Roscoe, the once eminent literary lion of old Liverpool, whose fame seems to be following the fate of all literary reputations based upon mere "elegant accomplishment" without genius. Mr. Mayer, who admits that it is hopeless to think of reviving Roscoe's fame, gives some account of him, and reprints his "Ode" on the occasion of the exhibition, which is historically instructive, as showing the sort of thing which could at one time be supposed to add an interest to an artistic celebration. Some of the old catalogues are reprin with information in reference to some of now unknown or forgotten names. A portic one of the lectures given under the auspices o Society (the manuscripts of which are prese in Mr. Mayer's collection), upon the subje picture-cleaning, is amusing. The lecturer name is not preserved), commenting on Joshua's reported practice of scraping off c and glazings from paintings of the Vene school, to find their system of manipulat says:—

"I had a better opportunity. Good comes out of ev thing. I, by looking over the intelligent being" (i.e. picture-cleaner) "when it was scouring-day, had pleasure of seeing all the different coats or strata variety of pictures vanish one after the other, from epidermis, or last transparent finishing, down to the dead colouring, beyond which he seldom ventured. E am under the greatest obligations to my dear old parted friend, John Evans, for going still further. certainly was, in his time, the best of all possible g bers; though I believe in the present day we do not w five hundred as good as he. He, by means of a brie delicate malmstock, observe) and water only, used t me see on what coloured *grounds* the ancients painted fetched off everything, except here and there a stubb bit of heightening."

Mr. Mayer adds to his little volume a sh sketch of the artistic career of George Stub R.A., who was a native of Liverpool, and enjoy great repute as a painter of horses; a rep which some of his works which have appea at the Burlington House Loan Exhibitions do fully explain; but he probably did better thi than these, and was an indefatigable student anatomy, and published, at the cost of mu labour and time, a series of plates illustra minutely the anatomy of the horse. A singu story is related in testimony to the fidelity s life-like appearance of his portraits of horse having executed one, life-size, of a horse belo ing to the Marquis of Rockingham, the hor who was of a savage temper, on catching sig of the picture as the artist turned it round the light after the last "sitting," attempted attack the double of himself, and was w difficulty held in by the artist and the groom.

We have read with much interest Mr. Maye short record of an early chapter in provinc art history; which, besides giving curious formation, is admirably written, and without superfluous word.

VARIORUM.

CHARLES KNIGHT'S "Old Printer" has be reissued under the title "William Caxton" (Ha wicke & Bogue), as appropriate to the celebrati of the quar-centenary of the Introduction Printing in England, now going on. It is a ve agreeable and instructive shilling's worth.—— honour of the same great printer a "Citizen a Goldsmith," dating from Rousdon, reproduces a pamphlet for gratuitous circulation the exc lent "Rules for the Conduct of Life" which t Corporation of London present to every appre tice on whom the freedom of the City is co ferred.——The July number of *Belgravia* contai with its usual number of stories an interesti account of Henry Schliemann, by Miss Ka Field. A Holiday Number of this magazine, f Midsummer, has been published, with an engrav frontispiece worth the cost of the number.

ACCIDENTS.

A STEAM-ENGINE at the new railway static works, Preston, near Brighton, has fallen in an excavation where several men were at work One man was got out soon after, but life wa extinct.

The other night an accident happened at th Tay Bridge, the result of which was that a ma named James Bain lost his life and a girder fe into the river. It appears that a number of me were engaged raising the eastern half of 148-ft. girder, weighing 24 tons, to its positio on the top of the iron columns, when one of th chains by which it was being drawn up snappe and the other chain giving way almost simu taneously, the girder fell from a height of 50 f into the river. Bain was standing on one of th piers beside a heavy box, which was used in lif ing the girder when the accident occurred, and o the first chain breaking, the jerk that the othe received caused it to draw over the box, whic weighed 30 cwt., on the top of Bain, crushin him between it and the wooden block, and killin him instantaneously. Deceased leaves a widow and family. The engineers state that the finan cial loss incurred by this accident will not exceed 200*l.*, and that the completion of the undertakin will not be the least retarded.

n accident occurred on Saturday morning ough the fall of part of an additional bridge nning the Seven Sisters-road, close to the sbury Park Station of the Great Northern lway. All Friday night men had been work- to place in position a girder weighing some or 60 tons, and about half-past nine on rday morning, when the task was almost pleted, one end of the girder, which was posed to be safely settled on its masonry ports, suddenly swayed and fell with a ful crash on to the roadway, tearing huge ns in the wall and shivering the pavement eath into splinters. Unfortunately just a moment a man was passing the spot and instantaneously crushed to death. The cause the accident is accounted for in various 's. By some it is supposed that it was sed through the vibration of a passing n, whilst others assert that the disaster rred through one of the working men king away, without instructions, one of the ber supports.

While a dozen men were engaged in com- ing the roof of a new church, on Ayres y, Sunderland, a sudden squall of wind drove couplings together, and carried them into church beneath. Nearly all the men were ied down amongst the timber, and half a en were seriously injured. The chancel arch completely broken through.

Miscellanea.

The Restoration of Worcester Guild-l.—At a meeting of the Worcester Town ncil, on the 3rd inst., the Sheriff brought ward the recommendation of the Guildhall toration Committee, to accept the tender of Thomas Dixon to execute the several works he restoration of the Guildhall, according to plans and specifications prepared by Sir rge Gilbert Scott and Mr. Rowe, and with fittings of oak, at the sum of 11,513*l.* 4s., ect to himself and sureties entering into a ract containing such provisions as the town k might deem necessary. This, the Sheriff erved, was a necessary sequence of what the ncil had already done in sanctioning recon- otion of the hall, the plans for that work, &c. recommendation was adopted, notwithstand- the protest of Alderman Woodward, who said ppeared to him that the Council had gone too to recede, but he still maintained the opinion had represented to the Council over and again, that a more wasteful expenditure and less profitable to the city than that proposed never taken place since he had been in the ncil. He was quite satisfied that the city would be free of this contract for much less than 000*l.* If they had done as they ought to have e, they would have had a new building, which ld be a credit and an ornament to the city, of far greater utility, for that amount.

The Bridge Failure at Bath.—At the iry into this calamity, on Wednesday, Colonel land, in his evidence, said the failure of the ge was not due to the inferior quality of the erials of which it was constructed. With a ing load of 160 persons, he had little doubt bridge would still have been standing, but it faulty in its original construction. There no continuity in the bows, and no arrange- t for keeping the bows perfectly straight, on ch its stability mainly depended, although proprietors thought it necessary before the ge was placed on the abutments to make some itions. Through defects in the construction the tie-rods had to bear a strain nearly double t the officers of the Board of Trade usually w in structures for railway purposes. He ught it likely that this bridge would have stood pressure of 300 people when it was opened, ming the bows were perfectly straight. He eved the accident was entirely due to the king of the bows, and the failure to keep a d of persons from rushing on to the bridge. alterations made were not improvements, the wire guy-ropes were misplaced. The uest was adjourned.

Carlisle Fever Hospital Competition.—design submitted under the motto "Nightin- " has been accepted in the open competition this building. The authors are Messrs. H. W. Roper, of Adam-street, Adelphi, and es Murshie, of Carlisle and Barrow, joint itects.

Westgate-on-Sea,—says the *Investors' Guardian*,—is the Belgravia and Tyburnia of the Isle of Thanet. A gentle walk or short railway ride will bring you into the animation, the bustle, and the amusements of Ramsgate and Margate, and though so near all the attractions of the sister towns, you can yet secure the opportunity of enjoying the *dolce far niente*, the cheerful repose, which next to heaven and a wedding-day may be presumed to be the *summum bonum* of happiness. Westgate-on-Sea has its comfortable lodgings, at reasonable prices, its accommodating tradesmen, its bathing-machines, a most delightful and well-administered hotel, and all other advantages essential to a thoroughly enjoyable watering-place. The houses are newly-built, handsome, and convenient; and the greatest care has been exercised to secure by the water supply and drainage complete efficiency in these most important of sanitary arrangements. Moreover, the walks around the place will be found exceedingly agreeable and healthful."

Defective Ventilation in a Government Factory.—A Devonport jury, after a two days' sitting, returned a verdict of "Accidental poisoning," in the case of an ironfounder in the Government employ at Keyham Factory, Devonport. It was shown that deceased, without orders, went into a house where moulds are dried, and was there found dead. The medical evidence proved that death resulted from poisoning by noxious gases, and some of the jury, who had evidently been in Admiralty employ, elicited from a witness that the ventilation of the whole factory was lamentably defective, and that strong complaint had been made, as yet with no result. The jury requested the coroner to impress upon the Admiralty the need of at once improving the ventilation of the factory, which was dangerous to the health of the operatives, and injurious to the public service.

A Foreign Competition. — At the last meeting of the Institute, Mr. Fred. P. Cockerell, stated that he had received an official communication from the Privy Council Office, transmitting particulars of a competition invited by the Dutch Government for a new University Building at Leiden. The sum proposed to be spent on the building is 1,000,000 florins (about 90,000*l.*). The style of architecture is left to the discretion of competitors. The author of the selected design will be employed to carry out the work, or be awarded a premium of 5,000 florins (440*l.*). The second premium is 220*l.* Designs must be sent in on or before the 1st of October.

New Parade at St. Leonards.—The construction of the sea-wall and parade at West Marina, St. Leonards-on-Sea, is making very satisfactory progress. The laying of the massive blocks of concrete, which form the foundation of the wall, having been completed on Saturday last, the Rev. J. A. Hatchard provided the men with a substantial supper, at the coach-house in the rear of 107, Marina. When completed, the new wall and parade, which is nearly 2,000 ft. in length, will prove a great public improvement to the western part of Hastings.

Buildings adjoining Albert Hall.—In the House of Commons Mr. Baillie Cochrane asked the Chancellor of the Exchequer whether it was true, as stated in the papers, that the Commissioners of the Exhibition of 1851 had sold ground on which it was proposed to erect a building so lofty that it would greatly injure the effect of the Albert Memorial. The Chancellor of the Exchequer said the Commissioners of 1851 would not allow buildings to be erected so as to obscure the view of the Albert Monument.

Admission to the Institute Library.—The Council have made arrangements for admitting to the Institute Library, under new regulations, architectural students of the Royal Academy, University College, and King's College, as well as Members of the Architectural Association. Cards of admission have been prepared, which may be had on application, in accordance with a form to be previously obtained from the librarian, and on payment of a nominal fee.

The Sunday Shakspeare Society. — By permission of his Grace the Duke of Westminster, the members of this society visited "Cliveden" on Sunday last, and during the afternoon read Shakspeare's "Tempest." After tea the party returned to town, highly gratified with the privilege which had been accorded to them of spending a day amidst the delightful scenery which surrounds this mansion.

Work at St. Bartholomew's Hospital.—A meeting of this hospital was held last week, for the purpose of considering, among other matters, the rebuilding of the medical school, adjoining the hospital at Smithfield. It is intended to reconstruct the theatre, museum, and library, and as the hospital has a larger number of students on its rolls than any other in the kingdom, to provide, at the same time, accommodation for their education and instruction. The proposal will involve an expenditure of nearly 50,000*l.* The governors gave their unanimous consent to the proposal. Mr. I'Anson is the architect.

Fire at a Builder's.—A fire occurred last week at the Albert Works, Albert Embankment, belonging to Mr. B. E. Nightingale, builder. Captain Shaw states that a building of one and two floors, about 45 ft. by 25 ft. (used as engine and boiler-house, drying-room, and workshops), was nearly burnt out and roof off; some stock in the open yard and the roof of the workshops adjoining were damaged by fire, and the contents in the office, dwelling, and stores by removal.

TENDERS.

For Baptist chapel and schools, Smethwick. Mr. Thos. Hewett, architect. Quantities by Mr. J. S. Davis:—

	Chapel and Schools.	Chapel only.
Wilson	£6,692	£5,139
Webb	6,948	5,148
Harley	6,616	4,940
Marfell	6,488	4,849
Nelson	6 304	4,479
Lovatt	6,095	4,5?0
Robinson	5,890	4,287
Sapcoate & Son	5,520	4,113
Clulee & Birchill	5,300	—

For the enlargement of the present boys' schools, and the additions of class-rooms; also the erection of new schools for girls, with senior class-rooms, for the Camberwell-green Congregational Chapel Sunday School Extension Committee. Mr. W. Howard, architect. Quantities by Mr. W. F. Meakin:—

	Kentish Rag and Bath stone dressings.	Less if side and back of boys' schools are faced with stocks.
Hobson	£3,487 0 0	£78 0 6
Newman & Mann	3,423 0 0	220 0 0
Dove, Brothers	3,230 0 0	75 0 0
Colls & Sons	3,172 0 0	75 0
Hill, Higgs, & Hill	3,097 0 0	50 0 0
Thompson*	2,980 0 0	100 0 0

* Accepted.

For the erection of a malting, &c., for Messrs. Stretton, Brothers, Derby. Mr. Geo. Seamell, architect. Quantities by Messrs. Curtis & Son:—

Builder's Work.

Woods	£6,000	0	0
Dakin	5,207	0	0
Garlick	5,176	0	0
Lovatt (accepted)	5,014	0	0

Ironwork.

Thornewill & Warham	£235	0	0
Atha Ironworks	219	10	0
Abells	211	14	0
Stacey, Davis, & Co. (accepted)	211	0	0
Williams	210	0	0

For two warehouses, Jewin-street. Messrs. Ford & Hesketh, architects:—

Scrivener & White	£6,402	0	0
Downs & Co.	6,390	0	0
Browne & Robinson	6,354	0	0
Brass	6,129	0	0
Boyce	6,029	0	0
Lawrence	5,824	0	0
Peto, Brothers	5,769	0	0
Shaw	5,755	0	0
Newman & Mann	5,708	0	0
Crabb	5,693	0	0
Perry & Co.	5,557	0	0
Mark (accepted)	5,378	0	0

For repairs and decorative works to be done for Mr. W. C. Birch, at 13, Vanbrugh Park, Blackheath. Mr. W. Coats, architect:—

Hockley & Co.	£502	0	0
Pitman & Cuthbertson	475	0	0
Adams & Son (accepted)	445	0	0

For pipe-laying for the Hungerford Gas Company:—Chandler & Sons (accepted).

For iron roof, &c., for the Leatherhead Gas Company:—Chandler & Sons (accepted).

For St. George's sewers. Messrs. G. C. Ashmead & Son, engineers:—

Britton	£8,991	5	0
Bennett	6,547	15	8
Brock & Bruce	5,3 8	8	7
Haynes	4,997	15	0
Krauss (accepted)	4,899	5	8
Neave & Son	4,884	8	6

For alterations to the Anerley Railway Hotel, and two shops adjoining. Messrs. Bird & Walters, architects:—

Downs	£2,755	0	0
Nightingale	2,740	0	0
McLachlan	2,684	0	0
Smith	2,514	0	0
Taylor	2,437	0	0

For new sewers, West End, Hampstead, for vestry of St. John, Hampstead. Mr. C. H. Lowe, surveyor:—

Pearson	£2,375	0	0
Mowlem & Co.	2,300	0	0
Culverhouse	2,155	0	0
Crisp	2,085	0	0
Meston	2,040	0	0
A. & F. Culverhouse	2,019	0	0
Watts	2,007	10	8
Killingback	1,967	0	0
Nowell & Robson	1,899	0	0

For new livery hall, &c., for the Worshipful Company of Leathersellers. Mr. G. Andrew Wilson (surveyor to the company), architect. Quantities supplied by Mr. Thos. Nixon:—

Downs & Co.	£19,390	0	0
Kilby	18,859	0	0
Higgs & Hill	18,460	0	0
Browne & Robinson	18,420	0	0
Brass	17,866	0	0
Bangs & Co.	17,856	0	0
Ashby, Brothers	17,694	0	0
Ashby & Horner (accepted)	16,900	0	0

For rebuilding No. 55, Gracechurch-street, City. Mr. W. S. E. Payne, architect. Quantities by Mr. E. Morfee:—

Outhwaite & Son	£4,160	0	0
Ashby, Brothers	4,126	0	0
Conder	4,082	0	0
Lawrance	3,992	0	0
Colls & Sons	3,987	0	0
Lathey, Brothers (accepted)	3,926	0	0

For rebuilding No. 24, Haymarket, for Mr. G. M. Hughes. Messrs. J. & W. Wimble, architects:—

Ashby & Horner	£8,315	0	0
McLachlan	8,280	0	0
Scrivener & White	8,197	0	0
Brass	8,034	0	0
Croaker	8,010	0	0
Falkner	7,697	0	0
Dove	7,575	0	0
Newman & Mann	7,333	0	0

For rebuilding No. 41, Cheapside, for the Investment Company, Limited. Messrs. J. & W. Wimble, architects:—

Fish	£9,970	0	0
Croaker	8,722	0	0
Lawrance	8,715	0	0
Newman & Mann	8,639	0	0
Ashby & Horner	8,432	0	0
Dove	8,370	0	0
Scrivener	8,223	0	0
Brass	8,046	0	0

For new schools and teacher's house, Fillongley, near Coventry. Mr. John Cotton, architect. Quantities supplied:—

Matthews	£2,100	0	0
Thomas & Baxter	2,075	0	0
Marriott	2,015	0	0
Nelson	1,994	0	0
Nightingale & Downes*	1,826	0	0

* Accepted.

For farm buildings at Helpridge Farm, Wyehbold, Bromsgrove, for Mr. John Blick. Mr. John Cotton, architect:—

Brazier & Weaver	£397	0	0
Harris & Cook	371	0	0
Bourne	370	0	0
Stokes (accepted)	349	0	0

For additions to Christ Church, Great Warley, Essex. Mr. John Young, architect. Quantities supplied by Mr. Sidney Young:—

Jacobs	£1,563	0	0
Everett & Son	1,495	0	0
Gregory	1,449	0	0
Cross	1,390	0	0
J. S. Hammond	1,370	0	0
J. Hammond	1,358	0	0

For additions to Church of All Saint's, Hockerill, near Bishop's Stortford. Mr. J. Clarke, architect. Quantities supplied by Mr. Sidney Young:—

Hill & Higgs	£6,960	0	0
Dove, Brothers	6,900	0	0
Roberts, Brothers	6,687	0	0
Bell & Sons	6,356	0	0
Gibbons	6,290	0	0
Parmenter	6,200	0	0
Glasscock	6,180	0	0
Gregory	6,145	0	0

For additions to Schools at Friern Barnet, for the Rev. R. Morris. Messrs. E. Habershon & Brock, architects:—

Woodhall (accepted)	£555	0	0

For Saint Bartholomew's Church, Charlton in Dover. Mr. J. Clarke, architect. Quantities supplied by Mr. Sidney Young:—

Stiff	£7,255	0	0
N. Flor	6,982	0	0
Humphreys	6,071	0	0
Dove, Brothers	6,940	0	0
Gregory	6,929	0	0
Roberts, Brothers	6,798	0	0
Gasken	6,768	0	0
Horne	6,662	0	0
Denne	6,586	0	0
Wilson	6,450	0	0
Adcock	6,730	0	0

For four cottages at Leatherhead, Surrey, for Mr. W. Edwards. Mr. Dibble, architect:—

Heselgrave	£1,155	0	0
Batchelar	1,025	0	0
Walker	889	0	0
Edsar (accepted)	870	0	0

For additions to North Holmwood Schools, Dorking, Surrey. Mr. Dibble, architect:—

Heselgrave	£410	0	0
English	366	0	0
Pierce	313	0	0
Pledge	298	19	
Edsar (accepted)	280	0	0

For chaise-house, stable, & small conservatory, on the Holloway Estate, Dorking, for Mr. A. Chabot. Mr. Dibble, architect:—

Hamblin, Brothers	£540	0	0
Edsar	450	0	0
Heselgrave (accepted)	425	10	0

For a new branch bank at Croydon, for the London & South-Western Bank, Limited. Messrs. J. J. & S. Edmeston, architects. Quantities by C. N. McIntyre North:—

Philipson	£6,079	0	0
Hyde	5,986	0	0
Cowland	5,984	0	0
Nye	5,980	0	0
Marriage	5,910	0	0
Coles	5,834	0	0
Williams	5,802	0	0
Legg	5,675	0	0
Adamson	5,569	0	0
Taylor	5,475	0	0
Clarke & Bracey	5,397	0	0
Jarrett	5,330	0	0
Smith (accepted)	5,276	0	0

For temporary church, Orange-street, Southwark, for the Rev. G. W. Berkeley. Mr. C. N. McIntyre North, architect:—

Greenwood & Sons	£821	0	0
Richardson, Brothers	770	0	0
Baguley	698	0	0

For repairs to United Methodist Free Church, Willow-street, Finsbury, for the trustees. Mr. C. N. McIntyre North, architect:—

Pitman & Cuthbertson	£137	0	0
Allen & Son	135	0	0
White	126	0	0

Asphalte Paving.—The tender of the Brunswick Rock Asphalte Company has been accepted to pave the whole of the playgrounds in front of St. Luke's Hall, Kenton-street, Hackney.

Shops and Houses, St. George's-in-the-East.—Messrs. Dover, Son, & Co., say their tender was 6,967*l.*, instead of 7,110*l.*, as printed.

TO CORRESPONDENTS.

N. W. (we prefer the Embankment).—C. M. (details not needed).—Dr. P.—F.—S. C.—T. B. & Co.—A. R.—S. & R.—C. Mc I. N.—S. Y.—J. D.—G. S.—J. W. S.—Messrs. C.—W. W.—G. A. W.—W. D.—W. H.—E. C. R.—W. S. R. P.—F. W. S.—G. T.—G. H. C.—F. W. R.—B. & Son.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

VOL. XXXV. No. 1798 SATURDAY, JULY 21, 1877.

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The Pressure of Population on the Means of Support.

PUBLIC attention has, within the last few days, been so pointedly called to the grave question of the pressure of population on the means of support, that we think good service may be done by brushing away some of the cobwebs that have been allowed to gather over the main principles involved in the inquiry. It is not, indeed, long since we saw in the columns of a periodical which addresses a class of readers not dissimilar to our own, the statement,—made, indeed, by a correspondent, but printed without comment or correction,—that the population of the United Kingdom doubles within forty years! So monstrous a misstatement, on the part of a volunteer instructor of the public, is enough to show that there is room for a little careful examination of the nature we propose to institute.

It is not, of course, in these columns that the physiological part of the question has to be discussed. We look at the relation between mouths and food, from the social point of view, as a matter of industrial, rather than of anthropological, science. It is always unsafe to quote an author, except with his books in hand; and as the works of Mr. Malthus do not happen to be on our shelves, we desire to guard ourselves against the danger of attributing to that author any statement for which we do not quote his own words; but we shall not be wrong in urging that it is commonly stated to be the doctrine of Mr. Malthus that, while population increases in a geometrical ratio, the means of supporting population only increase in an arithmetical ratio. A reference to this view may be found in the recently-published autobiography of Miss Martineau, and we think there is little doubt that the latter writer assumed the statement, as we have put it, to be one of undeniable truth.

We deny that statement altogether. We hold it to be, not only impossible of proof, but inconsistent with known fact. The means of human support, of course, are found in the species of either the animal or the vegetable kingdom. No animal is used for human food of which the natural increase is not enormously more rapid than that of man. If children are born, at times, of parents in their teens, it is the exception, rather than the rule. But at what age does a cow calve? At what age does a ewe lamb? At what age does a fowl begin to lay eggs? It is unnecessary to go into mathematical, or even into arithmetical, calculations, to show how immeasurably more rapid is the natural increase of animal food, than of mankind, as a consumer of animal food.

If we turn to the vegetable kingdom, the comparison is still more striking. A thirty-fold increase is not out of the way for the most important vegetables that are eaten by man,—the cereals. In most cases the multiplication of seed is very much greater; in some cases, if not innumerable, at least it is unnumbered. Who has counted the seeds in a poppy capsule? and how many poppy flowers spring from a single seed? In that case, too, the time required for reproduction never exceeds,—unless we store the seed for some other object than that of sowing,—a single year. A grain of corn sown in the spring of one year might, under favourable circumstances, within two years have produced 10,000 grains.

But the arithmetical ratio may be said to apply, not to the organic species themselves, but to the area of land on which they are reared. There is, however, no arithmetical ratio in the matter. There is no shifting ratio to be fixed. There is, if we take the matter in its most abstract form, a certain area of land on the surface of the entire globe, on which, together with the surface of the water, all terrestrial life has its *habitat*. It is a conceivable idea, in the abstract, that the whole world should become so full of human beings as to be converted into one vast city, and that houses and streets should so invade pastures and cornfields that the space for feeding animals, or for growing vegetables, should be restricted. But if we admit that as a conceivable idea, it is not what we can describe as a practical idea. History gives but little support to the view that such a state of things is possible, even at any immense distance of time to which we may hypothetically defer the event. On the contrary, we have quite as much evidence of depopulation as of increase of population. In China the density of the population is calculated at 267 units per square mile. In British India it is 204 units per square mile. In Middlesex it is 40 per acre. But what do we find if we turn to the ancient heart of Empire, and cradle of the human race? What have become of the millions of Babylonia, of Assyria, of the Mesopotamia Valley?—of the countless cistern-builders of Western Palestine? How far are Italy, Sicily, parts of France, Egypt, Turkey, and many other regions from containing the population which they held in imperial or pre-imperial times? Exact statistics fail; but if we regard the inhabited earth as a whole, the evidence is rather to the effect that the numbers of its inhabitants, at all events in the Old World, are now less, rather than more, than they were a thousand or two thousand years ago.

The question, then, of the possible pressure of the population of the world, as a whole, or the means of subsistence, is one of those the useful investigation of which may certainly be deferred for an indefinite period of time. Whether it may assume a practical aspect 500, 1,000, or 2,000 years hence, we need not now pause to guess. In the abstract the inquiry is utterly unpractical, untimely, unphilosophical. There may, however, arise a case of the general question which deserves more serious attention. It may be said that if the question is not a cosmical, or a general human question, it may be an Irish, or a French, or an English question. Earth can feed her children for as long a series of years as the wildest dreamer needs to count. But can the Isle of Dogs feed its own population? Can London? Can Ireland? Can the United Kingdom? These questions are, at all events, near home.

In seeking a reply to these questions we must remember, in the first place, that the fiscal and economical legislation of the present day is something totally different from that which had force when Malthus, and when the great pioneer of economic inquiry, Adam Smith, lived and wrote. The idea of self-contained supply was formerly held to be an essential condition of national safety. So long as we had to look to our own forests alone for the oak, on the growth of which the construction of our navy, and therefore the means of maintaining our maritime supremacy, and of defending our coasts from insult, depended, the maintenance and regulation of our forests was a matter claiming the attention of the Government and of the Legislature. In the same way, when we were dependent on the area of our own island for the supply of the corn we ate, it was needful for the rulers of the State to see that the Commonwealth suffered no damage from the neglect of this essential provision. But the present century has witnessed a total change in these matters: a change, let it be remembered, that does not spring so much from change of opinion as to economic law, as from the change of circumstances produced by the progress of invention. If we were now as dependent as we were in 1815 on the winds and the waves, we could as ill afford as we then could do to depend on the arrival of the food of our population from the Mississippi or from the Danube. If a long-continued wind bound a fleet of 300 vessels under the shelter of the Rock of Gibraltar, as used often to be the case when navigation depended on sails, it would have little effect on the price of bread in London to tell us that there were so many thousand tons of corn shipped for that port. For gold, for cotton, for machinery, people might wait. For food they could not. Thus, the command of ocean navigation which is secured by the invention of Watt has so far stretched our insular boundary, that we can count on the harvests of Russia, of America, and of India, with more certitude, by a very long way, than our grandfathers felt in looking forward to any coming harvest in our own island.

Nor is it a question of navigation alone. Long distances by land are even more formidable obstacles to the economic exchange of products than long distances by sea. The reason is, that land carriage, however we may effect it, is essentially more costly than water carriage. The limit of economical possibility of transport is, therefore, soon attained. Thus, in India, where cost of labour of all kinds is far lower than in Europe, we learn from the July number of the

Edinburgh Review that the ordinary rate of transport by native carts over earthen unmetalled roads is 3d. per ton per mile. This rate comes to something like 5s. 6d. per quarter for a transport of 100 miles. For a carriage of 400 miles the cost would come to the prohibitory amount of 22s. per quarter. It is thus very intelligible how it may be the case that corn should be rotting on the ground in one district of India while people were starving from total absence of food in another. During the Orissa famine, in 1860, when the Government were straining their energies to throw grain into the suffering district, not only did this question of cost arise, but the roads were so cut up by the transport of a quantity of traffic not exceeding 360 tons per diem, that utter disorganisation ensued. No outlay of money could overcome the physical difficulties that attended the conveyance of food to a starving people when once the famine had attained a certain intensity. At the present time, by the means of the East-Indian Railway and the Ganges navigation, rice is sent from Patna to Calcutta, a distance of 333 miles, for the rate of 2s. 11d. per quarter; and wheat is sent from Cawnpore, a distance of 684 miles, for the charge of 6s. 4d. per quarter. In the rich corn-growing valley of the Upper Ganges, corn to almost any requisite amount can be grown and sold for the price of 16s. per quarter, with good profit to the agriculturist. Allowing for purchase, profit, railway carriage, shipping dues, freight by way of the Suez Canal, and all other charges, it is stated by a writer in the April number of the *British Quarterly Review*, that wheat from Cawnpore can be delivered in London at the price of 33s. 4d. per quarter. The average price of wheat in London in January of the present year was 51s. 7d. per quarter, giving a margin of 17s. 6d. per quarter against a shipment from Calcutta, three months previously. It is thus evident that, so far from feeling the pressure of our population on the means of supplying food to be on the increase, mercantile enterprise is not even yet fully awake to the value of the supplies of food that are readily attainable, and that are to be drawn, with little cost and great certitude, from the most fertile districts of the world.

The only needful provision for the equalising of the price of food in different and widely distant markets, for which our improved means of transit have not yet found the means, is that of butchers' meat. Even here, however, enterprise is not to be damped. We owe to the genius and patient toil of the great chemist, Liebig, a permanent addition to the quantity of animal food obtainable in this country, which, though not equal in its food-value to fresh meat or newly-made broth, is yet a real and important addition to our means of sustenance. The importation of meat, not frozen, but kept at a temperature only two or three degrees above freezing, is another method of supply which has attained a certain degree of success. The best opinion that we can form on this subject is to the effect that if this meat be cooked immediately it is removed from the refrigerator, it is very excellent food. The progress of science is now directed to the abatement of the price of human food in the centres of population. We think there is reason to believe that as yet we are only at the A B C of the process. At all events, we know very well that food of all kind is to be obtained as plentifully, as good, and almost or altogether as cheap, in the great brick-and-mortar province of London, as it is in places where cornfields surround the town, and mutton grazes close by on the hills. When we are able to telegraph half round the earth for a cargo of corn, we enrich the producer, while at the same time we diminish the cost of the consumer. The 16s. per quarter given to the Cawnpore corn-grower represents a direct fertilisation, by English money, of land that would otherwise be profitless, and labour that would otherwise be idle. And the London consumer saves 30 per cent. of his outlay by going thus far afield into the world.

It is thus, we think, fully evident that any causes which might, when Mr. Malthus wrote, have justified, to some extent, the statistician in the fear that a growing population might eat itself out of house and home, cannot now be intelligently feared. The price of subsistence, as far as the purchase of food is concerned, so far from being raised by the growth of population (which would be the first sign of the approach of the predicted evil) may be, there is good reason to suppose, hereafter considerably reduced. And it is just where the pressure (in Mr. Malthus's view) ought to be most felt that it will be least felt. It is for the supply of food to the great centres of population that it is best worth the while of all who are engaged in the production or transport of food most strenuously to exert themselves. For the supply of a village it would not be worth while to send corn from the valley of the Ganges. For the supply of a large town it might be desirable. But for the supply of a city or a province, the inducement of profit would be so strong that competition would come into play, and the market would soon fall to such a price as should be commercially, agriculturally, and economically just.

We may, therefore, be perfectly resigned to contemplate any imaginable growth of the human race,—we will not say for the time of our children or our children's children only, but for the next thousand or few thousands of years. The most conscientious man need not disquiet himself by looking farther. If, indeed, he looks at every grain of wheat which he is about to send to the mill, and apostrophising it individually should say,—"If I grind you and eat you to-day, you will be gone,—passed away into tissue,—liberated as heat—to-morrow. If I keep you, and sow you, in two years you will have ten thousand grand-children. I cannot eat you!" We must leave so prudent an economist to settle matters with his own hunger. But he will preach in vain to others. The grain of wheat, indeed, had it such a voice as Esop would have given it, might reply,—"For that very end I came into existence. It is that very prolificness of fruit, common to me and to other articles of food,—such, for instance, as the heavy shoals of the herring,—which justifies you in eating me. You cannot eat us all, do your best. Consume what you can, the corn of a single year would produce plenty for all possible consumers for a longer time than were required to provide against the seven menaced evil years of Pharaoh." Human food, and all supplies of human want, ask from man not abstention,—not even temperance, in their use,—all that they require is the return of wise and well-directed labour.

If we look at man as an economical product, he is, no doubt, a costly one. If, however, we take a youth of sixteen, from the working classes, fit to earn his own bread, used to aid in gaining comforts for his parents, we can hardly set down his cost, up to that time, whether borne by his parents, or in any way aided by the State, at more than from 150*l.* to 180*l.* We cannot put his earnings, even at the most unskilled labour, at less than 18*l.* per year, of which we may allow half for his maintenance. Even at these lowest resistance prices, he is paying 4 per cent. on his cost from infancy. But his powers of earning are daily increasing. Soon he will be able to earn 10s., 20s., 30s. a week. And whoever gains the profit of that work, whether it be the workman himself, his employer, or any group or combination of individuals, all the excess of product above consumption is so much clear gain to the nation. Then let us compare the earning powers of the apter and more gifted men. Who shall estimate them? If a statesman be paid 5,000*l.* per annum, or an archbishop 20,000*l.*, what would be the annual value to England of Brunel, Fairbairn, Whitworth? Thus while the humblest and the poorest child, supposing it to be healthy, becomes self-supporting at an early age, and not only repays by his labour the cost advanced for his support in infancy, but is a positive source of national wealth, at the other end of the scale the economic value of the unit,—the highest production of human growth,—is simply incalculable.

We have seen that there is no fear that Earth will fail to feed her sons. We have seen that there is no fear that England is becoming over-populated. We have seen that each additional unit of the population (if healthy, industrious, and moral) is an addition to the living spring of national wealth. What remains to be said on the other side?

There is this. No doubt the maintenance of an infant is a direct, and, for the time, unremunerative charge on the parents. Let us leave natural affection, and the charms of the home-life out of the question. A poor man and his wife, with a young and increasing family, will be pinched in proportion to the number of mouths that they have to feed, and that are not provided for by the hands of the owners. This, no doubt, is a hardship. But what follows? To discourage the increase of families, for this reason, while selfish as far as the individuals are concerned, would be disastrous to the State. Very soon,—too soon, indeed,—the little hands become able to earn. The maturer and later life of the good parents will afford a recompense for the self-denial of their youth. Even their own hard earnings will have been laid out to good interest, in the physical condition of their children. But the point we have now in view is not to interfere with the regulation of the family, but to point out that the statistician or the public writer who does what he can to discourage the growth of population, is working in diametrically the wrong direction. He is anti-patriotic. Let us do what we can for the right direction of industry, for the physical and industrial education of the working classes, to make each unit more productive. But if writers must indulge in hobbies, and propose reforms that would crush out a large portion of human life in their enforcement, let them look in the opposite direction. Let them see how the State, or the parish, or the rich man, or the charitable man can give that degree of aid to the healthy, hard-working, honest parent, during the ten or twelve years in which a rising family demands rather more food than they can ordinarily earn, that shall ensure the supply to the infant of food, clothing, and tendance. Let us look, as a matter of public justice and public duty, to the careful upbringing of those units of national wealth on whom the future of the country depends, and as to whom it may now be said, with some justice, that we look to the poor man, at his own expense, to provide the very sap and nutriment for the England of the future.

ANNALS OF WINCHCOMBE AND SUDELEY.

THE large quarto under this title which is before us is a production of some interest in its class, in regard to the feeling and intent under which the book* has been brought out. It is the attempt of the lady of the household who now hold Sudeley Castle to give an account, as full and connected as possible, of the past history of the manor and its neighbourhood; an idea apparently inspired not by a mere antiquarian spirit, but by a real love for the place which has become her home, and a desire to place on record the vicissitudes of its past history. Mrs. Dent says in her preface (addressed "To my Husband") that she has endeavoured "to bind up into one harmonious whole the interesting facts which cluster so thickly around Winchcombe, once the capital of Mercia, and the thousand historic associations with which Sudeley Castle, our beautiful home, abounds." There is something very pleasing in the feeling of love of the home, together with desire to impart to others the interest of its history, which seems to have prompted the production of the book; and apparently no pains have been spared in making it, in a literary and archæological point of view, as complete as possible, by researches wherever any information could be gleaned, and by the addition of numerous and mostly well-executed illustrations of the buildings and other remains connected with the history; while the appearance of the book, a large quarto printed on fine paper, is such as to make it an attractive addition to any library or drawing-room table.

The records of antiquity connected with the small town of Winchcombe, now a decayed borough near the Cotswold Hills, commence from the year 787, when King Offa, of Mercia, built a nunnery at "Winceleumbe," as the name stands in the Domesday Book. The ancient history of Winchcombe naturally brings forward that of Sudeley, its near neighbour, and closely connected with it in after times. But though this is the earliest authenticated date referred to, remains found within late years at Sudeley connect it with the pre-Roman period; the discovery of the British barrow called Belas Knap, or Beller's Nap, having been the subject of the attention of the Society of Antiquaries in April, 1866, and described in their proceedings of that date. The district was subsequently, as is well known, a great centre of Roman occupation, and the plan is given of a Roman villa, discovered in 1863, on the Wadfield Farm connected with the estate. An interesting and very characteristic tesselated pavement was found absolutely complete, and is now preserved carefully in the Sudeley greenhouse, with only the loss of the pieces abstracted during one Sunday afternoon's relic-seeking on the part of the Winchcombe public, before the pavement could be removed to a place of secu-

* Annals of Winchcombe and Sudeley. By Emma Dent. London: John Murray. 1877.

r. A coloured drawing of this pavement is given, as well as a plate representing many all articles of Roman workmanship, including foot of a well-executed statue, found about neighbourhood.

A good deal of curious history is got together cerning the Saxon kings of Mercia, including translation of a Saxon MS. in the Bodleian rary, unpublished, giving the life of St. nelm; but the sketches engraved of Kenelm's pel, &c., before demolition, though interesting representations of bits of old building, have hing really to do with this period of history, the authoress is probably aware. It is otherwise with the illustrations of the Norman chapel Postlip, and its doorway, given at page 79. e ornamentation of the doorway, which we not remember to have seen published, is rich interesting (transitional Norman), and the spective sketch of the chapel shows an exdingly picturesque little building, considerly altered from its original form, but still aining a good deal of its old work, and a great l of Old-world character. It was built in reign of Stephen, by William de Somers.

n the course of the history of Sudeley we et with passing mention of little practical ts which are almost more interesting to us n the larger facts of the contentions and tisanships of barons for and against the narchical power or the privileges of the order. the reign of John we find mention of the t that "Ralph de Sudeley granted the nks leave to make a ditch, which brought the ter to their mill in a straight course, and John ndell had 8d. given him for damage to his ing-mill thereby sustained. The abbey was plied with water by charter from Postlip and deley. These facts show that even in those ly times it was necessary to protect the nts of water, and that damage done by cutting the course of a stream demanded comsation." Winchcombe was at this time so ensive as to possess eleven large streets, h a booth-hall and a guildhall. Among the tches of churches belonging to this date that Stanley Pontlarge Church, and its interior rman arch, with one jamb completely out of perpendicular, is interesting, as also that of ttun Church, "disused June, 1868"; and h time, too, one would say, looking at the te of the barn-like edifice; though there is in the sketch any evidence as to the date and le, and probably the little building, as it sted at that date, was of much less antiquity n some village churches that are still in use. At the time of the dissolution of the monastes under Henry VIII., Winchcombe Abbey was e of the most prosperous of all, and its last bot but one, Richard Kyderminster, was said have been the ablest man who had ever ruled ere, though by his arrogant pretensions he was ong those who aroused in the laity "misrings of the Church," and the idea of the cessity of a Reformation. In connexion with s name comes one of the most picturesque chitectural remains illustrated in the book, the l house in High-street, Winchcombe, bearing s initials, R. K., as an ornament in the perfoted barge-board. In a simple way it is one of e most picturesque specimens we have ever ted of the old-fashioned English Mediæval use, with overhanging upper story on heavy ackets, and we owe thanks to "E. T. rowne, esq.," who made the drawing of the ouse, before its demolition in 1830, from which rs. Dent's illustration is taken; and who ust have done good service in this way an illustrator of the old buildings of the ighbourhood, since his name appears to sundry her drawings of the same kind of value, also ustrating houses that are now defunct. The bbey doorway, illustrated page 145, "now anding in the Abbey grounds," must have been very late addition to the architectural embellishents of the place, since it is completely in the ew Classic or what is generally called Jacobean yle, and could at the earliest only have been rected just in time to furnish convenient and gnified egress to the ejected monks, unless the uilding survived, by some accident, considerably eyond the close of the reign of Henry VIII. To he same industrious sketcher, Mr. E. T. Browne, e owe drawings of the Abbot's House, demolished 1815, having been previously used as a workouse; and it is on record that he used all his forts to save the house from destruction at the ands of its then owner, Mr. Williams. Engravings om his two sketches are given, showing a picturesque late Gothic house, with octagon bay indows carried up the whole height. This same demolishing Mr. Williams then commenced a search on the site of the Abbey for "materials and antiquities," whether with a view of destroying these also does not appear: but this is the account given by the praiseworthy and conservative E. T. Browne of part of the results:—

"The deep and massive foundations of the church were clearly traced, and several ponderous stone coffins, containing remains of human skeletons, were discovered; but the circumstance which attracted most particular attention arose from the examination of a small stone coffin, which was found at the east end of the interior of the church, close by the side of another, of the usual size. Upon the removal of the flagstones which covered it (and which took place in the presence of the writer), there appeared a skull, with a few of the other larger bones, and a very long-bladed knife, which had become a mass of rust, and fell to pieces on being handled. The bones also vanished, like a vision, from their sight, the moment they were exposed to the air. Speed says, as before observed, that 'Keneim was interred in the monastery, near to his father,' and no two coffins, except those before mentioned, were found near together. This circumstance, therefore, combined with that of the knife, which it is possible the murderer left with the body, and which might have been removed and deposited with it, induces a celebrated antiquary to form the conclusion that the largest coffin was Kenulph's, and the smaller one Kenelm's."

The celebrated antiquary was Fosbroke, who was also present; and if his conjecture was correct, and this was really the knife with which St. Kenelm, whose departure to a better world was artificially hastened, was put to death, this is certainly a striking example of the truth of the proverb that "Murder will out," even after the lapse of indefinitely long periods. But this we can but regard, after so long a time, as simply a conjecture within the bounds of possible truth. Murders were even more common then than now, and there might be many as probable claimants, for all we know, for the honours of the coffin and the "long-bladed knife."

Following upon these particulars as to recently discovered traces of the Abbey come some chapters of considerable interest from the point of view of social history, in regard to some noted people whose names and history have been connected with Sudeley and Winchcombe. Among these is Catherine Parr, the fortunate surviving queen of Henry VIII., and who married Lord High Admiral Seymour, of Sudeley, after he had first prudently attempted to win the hand of Princess Elizabeth, and been by her repulsed; and the fac-simile of the dowager Queen's letter accepting him is engraved, from the original formerly in the collection at Strawberry Hill,—a letter in a stiff, picturesque, but to the modern reader very illegible hand, looking like a kind of informal and obscure copper-plate engraving. During her residence at Sudeley the place became also to some extent a kind of headquarters of the new learning, where Miles Coverdale, the Protestant Bishop of Exeter, projected and perhaps partly carried out his revised translation of the Bible; and young Lady Jane Grey was also a constant inmate of the place.

But we have not space to continue our memoranda, even in so brief and discursive a manner, from Mrs. Dent's three hundred and odd large and well-filled pages. There is much interesting matter in regard to the history of the Chandos family, who acquired Sudeley under the Stuarts, and of the fortunes of the place under their inhabitation; and some further illustrations, one in particular showing the old oak bedstead which came from Cumnor Place to Sudeley, containing in the woodwork, just above the head of the occupant, a small false panel, which could be taken out, and revealed a concealed crucifix between them, telling a strange and pathetic story of an effort to keep up secretly the old ritual and the old faith after it had publicly been pushed from its throne. The plan is given (p. 207) of the old "Pleasaunce" of the castle, with remains of circular hedges and pebbled walks in rings one within another; a feature of which the very name, "Pleasance," as well as the formal and symmetrical arrangement of the whole, takes us back to long-forgotten days of stately merry-making among those whose names and titles have long passed away, and whose place knows them no more. The present state of Sudeley is shown in a lithograph from a drawing made in 1856, showing the remains of Gothic buildings of Perpendicular date in the foreground, and a quiet-looking modern Domestic Gothic house surrounding three sides of a quadrangle beyond; the drawing is not, unfortunately, a very effective one. The Dukedom of Chandos became extinct in 1789, with the grandson of that Duke who figured as "Timon" in Pope's satire, but it was revived in favour of his son-in-law, the late Duke of Buckingham. But in the time of Cromwell the castle, as a building, had been deliberately "slighted," *i.e.*, demolished so as to be untenable as a military post, and from that time till 1830, when the property passed into the hands of John and William Dent (uncles of the present owner), Sudeley Castle appears to have been almost a neglected ruin. At the time they purchased the castle "the Wynns were the tenants and resided there; before them, a man of the name of Attwood; it was then a public-house (the Castle Arms). . . . . So careless were the owners, that Attwood pulled down a great deal, and sold oak, beams, and lead, and other materials, which were used freely in the neighbourhood." The Sudeley estate has now, however, passed into the hands of owners who can appreciate the historical and archæological interest of its surroundings, of which appreciation solid practical evidence is afforded by the elaborate and interesting volume of which we have mentioned a few points only.

THE VICTORIA DOCK EXTENSION.

VISIT OF THE SOCIETY OF ENGINEERS.

THE notable and interesting works now in progress for the extension of the Victoria Dock, to which we made reference a year ago;* were on Tuesday last (by permission of the London and St. Katharine's Dock Company, and of the engineer, Mr. A. M. Rendel, M.A.) visited by a large number of the members of the Society of Engineers, headed by Mr. Thomas Cargill (President) and Mr. Perry F. Nursey (secretary). Leaving Fenchurch-street Station shortly before one o'clock, the visitors were conveyed to the Custom House Station, Victoria Docks, where they were received by the resident engineer, Mr. A. C. Andros, M.I.C.E., and the contractors' agent, Mr. W. Colson. Passing along the quays of the existing dock basin, the visitors proceeded to the easternmost point of the present dock, or rather to the easternmost end of that portion of the present dock known as the "canal." Just beyond this point the works are exceptionally heavy. The extension will be approached from the old portion of the dock by a cut or passage about 200 ft. long and 80 ft. wide, and as the Woolwich branch of the Great Eastern Railway crosses this part of the district, it has been necessary to temporarily divert it some distance further eastwards during the construction of the tunnel which will eventually carry the railway beneath the water in the cut or passage referred to, on about the same course as the line took before, although at a much lower level, the rails being 43 ft. 6 in. below Trinity high-water mark. To carry the railway under the dock works at this level of course entails very heavy works in the shape of approaches on either side. The railway will be carried under the water by means of a double tunnel, resembling Brunel's tunnel under the Thames, one side being used for the up line and the other for the down line. The object of this double tunnel is, of course, to diminish the height, so as to get a sufficient depth of water over the tunnel without going unnecessarily deep down. Each of these double tunnels will be 350 ft. long, 14 ft. wide, and about 16 ft. high. The double tunnel opens out at either end into a single span bell-mouth or tunnel 33 ft. wide, and 24 ft. high from the rails to the crown of the arch, the additional height rendered necessary for a single arch being attainable where the railway passes under dry land. At the points of junction of the double tunnel with the bell-mouth or single-span tunnel at either end, capacious ventilating shafts are provided. The tunnels are 6 ft. thick, constructed in gault bricks set in Portland cement mortar composed of two of sand to one of Portland cement, so as to ensure rapid setting, and backed by Portland cement concrete made of six of ballast to one of cement. The brickwork at the crown of the double arch underneath the water will be 4 ft. thick. The depth of water over the tunnel will be 25 ft. 6 in. Near this portion of the dock it is proposed to construct two graving docks capable of taking vessels 450 ft. long.

Having inspected this portion of the works, both above and below ground,—the greater part of the tunnels being completed,—the visitors proceeded to the office of the contractors (Messrs. Lucas & Aird), where a cold collation awaited them,—a very acceptable preparation for the fatigues of the subsequent four or five hours. The party was then conveyed by locomotive in three carriages along the entire length of the south side of what is to be the new ninety-acre dock, alighting at the extreme easterly point of the works, where the new entrance from the Thames is being constructed. The total length of the works

* *Builder*, vol. xxxiv., p. 692.

from end to end, including jetties, is one mile and three-quarters. The entrance to the dock is admirably placed, facing down the river at the lower end of Galleon's Reach, where the Thames is one-third wider than at the present entrance to the docks three miles further up the river. Vessels which will enter the Victoria Docks will thus avoid three miles of dangerous navigation through Galleon's, Woolwich, Bugsby's, and Blackwall Reaches. It was at first intended merely to make a narrow "gut" or canal from the existing docks to the point chosen as the entrance to the docks; but the dock company thought that while they were about it they might as well excavate sufficient material to make a good commodious dock. Open-timbered jetties, constructed of creosoted piles, 14 in. square, project into the river on either side for a distance of 250 ft., and form a sort of trumpet-mouth entrance to the lock-gates. The temporary coffer-dam which is to keep out the tidal water during the construction of the lock-gates and approaches is all but closed in, only a few more piles requiring to be driven to exclude the water. It is constructed entirely of two rows of piles 14 in. square, all the joints being caulked, the space between the inner and outer row being filled in with Medway puddle, well rammed. Between the lock and the extension a temporary safety-bank, hearted with puddle, has been thrown up, with the view of preventing the dock works and the surrounding marshy country from being inundated, in the event of any accident happening to the coffer-dam,—a contingency not very likely to arise. We may note here that a temporary puddle-wall, 12 ft. high and 8 ft. thick, backed by an ample quantity of earth, runs down the entire south side of the great dock. This also is for purposes of safety. Mr. Andros pointed out to the visitors how this portion of the Essex coast was protected from flooding by banks of earth, supposed to date from the time of King Alfred. The new entrance-lock, when finished, will be probably the largest in the world, being nearly 800 ft. long over all. The distance between the outer and inner gates will be 550 ft., so that a vessel upwards of 500 ft. long could ride between them. There is also an intermediate pair of gates. The lock-walls are of concrete, varying in thickness according to requirement at different points, faced with gault brickwork, 2 ft. 3 in. thick. This is the only portion of the work executed in brickwork, the only reason for preferring brick to concrete being that it is thought it will better stand the heavy rubbing and attrition of passing barges and vessels, and the prods of lightermen's boat-hooks, &c., than new concrete. The culverts to allow of the passage of water from one side of the lock-gates to the other are unusually large, in order that a vessel passing into or out of the lock at low water may be rapidly raised or lowered to the level of water in dock or river. The culverts are provided with grooves cut in Penrhyn granite. In these grooves, which will be polished, heavy doors of greenheart timber will slide up and down by means of hydraulic power, and through these doorways the water will rush with great force. The doors and grooves will be provided in duplicate on each side of the lock, as a precaution against accident. The walls of the culverts are 7 ft. thick, and are built of gault bricks set in cement and faced with the hardest and best Staffordshire blue bricks pointed in cement mortar composed of 1 of sand to 1 of cement. The masonry of culverts is all in Penrhyn granite and Bramley Fall stone, and these materials are also used for the quoins, &c. For so extensive a work, so small a "stone-field" is seldom seen. Staffordshire blue bricks are used for facing where the wing-walls join the main walls of the lock, at which points there is likely to be considerable friction and rubbing by vessels entering or leaving the dock. Just above the lock-gates double grooves are provided, for taking a 14-in. pile coffer-dam, should such be needed while effecting repairs to lock-gates. Near the before-mentioned culverts two low-level sewers, 4 ft. diameter, have been constructed beneath the lock, to meet the requirements of the Metropolitan Board of Works. These sewers will not be used at present, but they have been constructed in order to provide for future contingencies in connexion with the main drainage of the metropolis. A small portion of the works here, such as the penstock-chambers connected with the sewers, has been constructed in blue lias lime mortar. This small portion of the works is the only part where lime-mortar is used, and there is no lime-concrete whatever used, all concrete being made with Portland cement. The new entrance from the Thames, of which we have given some particulars, leads into a 9 acre basin (as large as the entire area of the St. Katharine Docks), serving as a sort of ante-chamber or vestibule to the great 90-acre dock. This great dock is 540 ft. wide for its entire length, with a minimum depth of 27 ft. below Trinity high-water mark.

One of the most interesting of the many features of note connected with these works is the fact that they furnish almost the first instance on record of any large dock-wall being made entirely of concrete. A considerable extent of the wall of the great dock is nearly completed. The aggregate length of walling will be 2½ miles. The wall will be 38 ft. 6 in. high from foundations to coping, 18 ft. thick at the base, and 7 ft. thick at the top, supported at intervals of 50 ft. by huge counterforts of the same material. The wall diminishes at the back by steps, and batters in front 2 ft. from bottom to top. The coping is also of concrete, neither brick nor stone entering into the construction of the wall. Iron "bollards," for attaching ships' cables and hawsers, are fixed at intervals of 100 ft. apart, being tied down by iron rods built into the counterforts. The concrete is composed of three bushels of cement to one cubic yard of gravel and sand. The portion of the wall completed is as fine a specimen of concrete work as was ever completed, and reflects great credit upon the contractors, Messrs. Lucas & Aird. The cost of the works in hand, under the present contract, which does not include lock-gates, machinery, sheds, &c., will be upwards of 520,000*l.*

The magnitude and importance of the extension will be more readily appreciated when we say that the works, which the contractors have undertaken to execute in three years, involve the excavation of three million cubic yards of earth, the whole of which has to be lifted an average height of 17 ft. Of this excavation, about two-thirds have been already done, partly by machinery, as hereafter detailed. Eighteen millions of gault bricks from the Medway (supplied by the Aylesford Pottery Company) are required for the tunnels, lock walls, culverts, &c.; and 45,000 tons of Portland cement (supplied by the Burham Company) will be used on the entire work. Fifty steam-engines are employed on the works every day, together with 1,800 men, 48 horses, 14 locomotives, and 600 contractors' railway-wagons; and there are twelve miles of temporary railway laid down. Six hundred tons of cement are used every week, and in the same period 3,000 tons of concrete are got in. The contractors are to be highly commended for their foresight and enterprise in recognising that to lay down plenty of good plant,—the best of its kind,—for such an extensive work as this, is the truest economy in the long run, as breakdowns and hindrances are avoided, and contingencies provided against. Messrs. Lucas & Aird have upwards of 100,000*l.* worth of plant in use on the works, most of which was made for the occasion. Amongst the plant which attracted most attention were three of Messrs. Clayton & Shuttleworth's 40-horse power expansive engines, each working a pair of 24 in. barrel-pumps, made by Messrs. Simpson, of Pimlico. Each of these pumps has a lift of 56 ft., and is capable of raising 2,000 gallons of water per minute, or 25,000 tons in twenty-four hours. The smoothness and ease with which these engines work, notwithstanding the power they exert, is marvellous. Since the Society of Engineers visited the works, in July last year, the pumps at the tunnel only have lifted 3,520,000 tons of water. Great as this quantity is, there is nothing like so much water as might have been expected, considering the close propinquity to the works in progress of the river and of the existing docks. Besides these there are four 18-in. pumps worked by 16-horse power engines, with an average lift of 38 ft. All these engines and pumps are bedded on concrete foundations.

One of the greatest attractions of the new works is the "steam-navvy," of which there are three in use. We believe it is the first time this ingenious machine has been used on so large a scale. It will excavate from 450 to 500 cubic yards per day. It somewhat resembles, and in fact is partly composed of, a large travelling steam-crane, revolving on a pivot, the projecting arm or boom of the crane being crossed at right-angles, or nearly so, by a beam which forms what may be likened to a handle of a punch-ladle, the bowl of the ladle, so to speak, being suspended from above by chains passing o pulleys at the top of the crane-arm in the us way. The bowl of the ladle, if we may conti so to call it, is a huge scoop, capable of hold three-quarters of a ton of earth. The way which it works is as follows:—The machine be already placed in a cutting, or against a cliff bank of any sufficiently soft material, the sc or bowl is lowered to the base of the cliff bank, and by means of the chains is rapi pulled up by the steam-engine, the arm or han of the ladle being used to press the scoop bowl (which has a somewhat sharp cutting-ed or lip) well against the perpendicular surface the cliff or bank. As it rises it fills with ear and when it has been pulled up to the requi height, or, in other words, when it is full, t whole machine swerves on its pivot to rig or left, and a door in the bottom of the scoop ladle is instantly released, and the contents f into a wagon below. This ingenious machi has been perfected by Mr. Dunbar, and made by Messrs. Ruston & Proctor, of Linco It will do as much work in a day as forty m but requires a driver, stoker, and steersman work it, besides seven or eight men to bring empty trucks and arrange them in position they are needed. About four scoopfuls of ear will fill a railway truck. The "steam navvy makes a cutting about 30 ft. wide,—wide enou to allow of a line of trucks being placed on eith side of it.

Another interesting adaptation of machine to works of this kind was witnessed in the stea dredger. This is nothing more than the app cation of the ordinary floating or river dredg (the hull being, of course, replaced by travelli staging) to land excavation. The steam dredgi machine has been here applied to land-work f the first time, at the suggestion of Mr. Aird, o of the contractors, for the machine used for similar purpose on the Suez Canal works w somewhat different. This land dredging-machi has been constructed by Messrs. Hunter English, who have made dredges their speciali When in full work it is capable of excavatin 4,000 cubic yards a week. It is a more cum brous and expensive machine than the "stea navvy," and it is more liable to get out of orde but for certain work it possesses the advanta of not mixing the materials of the differe strata in which it may be working. In the "steam navvy," as we hope we have made clear, th scoop is drawn up from bottom to top of th perpendicular face of a cutting, consequently th scoop will take up some of the material of eac stratum which it scrapes or scoops. The steam dredger, on the contrary, clears away the groun horizontally, and in the case under notice (wher the top layer was of clay, beneath which was a layer of peat, and then a bed of gravel) it wa used to scrape off the clay first, then the peat and then the gravel to the extent desired, keep ing each material distinct. The ground, Mr Andros remarked, was all that could be desire for the purpose of the works. The top stratum of clay was available for puddle, the peaty soi served for raising the embankments, forming quays, and backing walls, while the fine bed o gravel,—a veritable mine of wealth,—afforded abundance of material for the immense quantity of concrete required, amounting to no less than 250,000 cubic yards. Indeed, but for this abundance of gravel the new dock works would probably never have been carried out, a dock wall of such magnitude and extent in brickwork being too costly. Among other machines in use is a large concrete-mixing machine, in which the materials are shot into large iron cylinders having a circular motion. Twenty-five turns of the cylinder suffice to thoroughly mix the concrete, when it is shot out on the spot where it is required, and then rammed. As the wall progresses the machine is moved farther forward.

Before leaving the works, Mr. Thomas Cargill, the president of the Society, proposed votes of thanks (1) to the London and St. Katharine Dock Company, and to Mr. A. M. Rendel, M.As, engineer-in-chief, for their kindness in permitting a visit to the works; (2) to Mr. A. C. Andros, resident engineer, and Mr. W. Colson, contractors' agent, for their kindness in conducting the visitors over the works, and giving so much information; and (3) to Messrs. Lucas & Aird, the contractors, for their permission to visit the works, and for their hospitality. Mr. Andros having acknowledged the compliment, the party returned to town shortly after six o'clock, highly satisfied with their arduous day's work.

THE ROMAN FORUM AGAIN.

ve do not eventually arrive at definite sions in regard to the archæology of the Forum, this will not be for want of writing about it. Only a few months we noticed, as the most recent of a long disquisitions on the subject, Mr. Parker's le, though confused and rather eccentric of the Forum (see *Builder* for October 28, last week his lecture on the same subject; eady another volume appeals for our recog- of conclusions in some respect opposed to In the preface to the latter book,* the , Mr. Nicholls, remarks on what is also lly dwelt on by Mr. Parker, the different n in which the problems of the topography Forum have been placed by the excava- of late years; so that instead of the y, Where shall we find such a monument? estion is more frequent, What is the monu- the ruins of which have been found?—a n which, as he observes, is open to a far certain and definite solution than the one. The object of his work is, in his ords, "in the first place, to describe and y the ruins which exist in the area of the which has been cleared: this will occupy st three chapters. The three following rs are devoted to the discussion of sub- connected with the history of the Forum, ly indirectly illustrated by the late excava- uch as the site of the Comitium and the the history of the Rostra, and the topo- of that side of the Forum which has not en disinterred. In the three remaining rs, the attention of the reader is with- from the Roman Forum itself to the l Fora, the Sacra Via, the Velia, the Via, and the gates of the Palatine or al Rome."

is first chapter Mr. Nicholls proceeds to e the buildings at the upper or Capitoline the Forum, in regard to which he offers radiction, as may be supposed, of the now universally accepted positions of the s of Concord and the Tabularium; and disposed of these, we trench on the much- question of the two temples which are nerally admitted to be those of Saturn spasian, but with strong opposition of as to which is which. To our own g, the question is settled with, at least, approach to positive certainty; and Mr. s seems to be of much the same opinion. ngs forward the strong points in favour conclusion that the temple with its rear Tabularium, and facing to the end of the is that of Vespasian, and in doing so re- ates the same arguments, sometimes in the same words, which were stated emarks last year, referred to above; and rticular stress on what we then remarked ery strong point, viz., the clear and un- able statement of the *Monumentum Ancy- inscription, to the effect that the Basilica ood between the temples of Castor and of , a description which is quite incorrect and ligible if we suppose the temple of Saturn e farthest of these two from the Basilica, of the nearest. We regret to see, how- at a little farther on (p. 43) the author nto just the same arguing in a circle which Roman archæologists have shown such a cy to, and having quoted the *Monumentum num* to prove the position of the temple of , as being that of one of the temples flanking ilica Julia, quotes the same passage again e the position of the Basilica Julia as being hich the temple of Saturn immediately d. Mr. Nicholls, as we have observed, is neans alone in this sort of thing; but as rticular in insisting, in his preface, on the ty of a knowledge of ancient literature in g Roman remains, we are really inclined a step further, and suggest to him and rchæologists the necessity for more con- ion of the simplest rules of logic, and a ition of the fact that you cannot assume rove B, and then use B to prove A. The not of so much consequence in this case, osition of the Basilica Julia is sufficiently other means, and can hardly be said to ntroverted point at all.

e main, however, Mr. Nicholls's book ap- o be carefully and systematically written, tes very fully and impartially the reasons various opinions which are discussed or supported. The book is accompanied by well-engraved plans of the present state and the supposed former state of the site of the Forum and its surroundings at various epochs; and also by views showing the supposed aspect of the Forum and its buildings as restored. These latter, however, are somewhat tame in style, and serve rather to explain the author's meaning than to give any vivid realisation of architectural effect. But these few drawbacks allowed for, the book is a very useful addition to the literature of the subject, the rather as it gives, in a small compass, a great deal of the evidence from ancient literature bearing upon the topography of Rome.

* Forum Romanum: a topographical Study. By Morgan Nicholls, M.A., F.S.A. London: Long- Co. Rome: Spithöver. 1877.

EXHIBITION AT NAPLES.

THE Exhibition of Antiquities here has been succeeded by a Fine-Art show. I would have sent you some account of the former, but the fact is, antiquities by the side of the national museum, or, as I knew it in former days, the *Real Museo Borbonico*, do not tell to advantage, especially in the face of some delicious additions that have been made since my long-ago visits; whereas modern Italian sculpture is so different to the *antique* that it bears with its undoubted beauty a sweet freshness, as of the flowers of a new year. Italy is undoubtedly entitled to the palm for sculpture in the modern art world. The Romans never equalled the highest class of Greek art, but the Italians have not their masters in any modern school. The eye is arrested at once on entering by an allegorical figure of delicate proportions, but with pinions of such a size, yet so easily disposed, that the human figure for once really looks made for wings. Near it is a much larger and somewhat ambitious group of two angels kissing in mid air, in which the artist has wisely avoided the flying attitude, and given a simple poise scarcely implying a necessity to overcome a gravity which does not exist. The enormous weight of these two figures is so easily disposed of that the effect is almost delusive. The effect is highly Miltonian; the drapery is as of thin cloud, in which stars are dimly seen; one figure leans from an elevation over the shoulder of the other that the lips may come in contact,—the positions are difficult, but remarkably well rendered; its price, 1,000*l.*, is none too much. One wishes, on seeing it, to be either poorer or richer, to be able to purchase or be out of the reach of temptation. There are numerous works of great merit,—among them a striking figure of Camila,—but they are of the usual class, and bear no comparison with the orginality of the two I have described. Some sweet subjects of children in various conditions of joy and grief are sure to be popular.

In the school of painting, Italy is not on a par with that of England; the tone, except in some large pictures quite out of our sizes, is merely good, and some pictures placed inside rooms cannot even be called that. The pose of the figure-subjects is easy, as it would be sure to be under Italian placing, but the execution is wanting. In the landscapes, after making every allowance for a more southern sun, the lights are too sudden; the red of the sunsets is too deep for reflected light, though very well for the sunset itself, hence the distant hills are brought too near. I have lately returned from viewing the most intense effects in Greece and Asia, but there was no colouring so sharp as that in some of these pictures. Vesuvius and the Apennines are, while I write, reflecting a ruddy sunset, and, having just come from the pictures, I feel clear in my remarks. There are a few good etchings, water-colours, and other works of art, and the exhibition is well worth a visit. I notice some etchings by an English hand, J. E. Bradley, of home views in England.

Naples.

Leonardo da Vinci's "Last Supper."—M. Viollet-le-Duc writes from Milan to the *Journal des Débats*:—"I have been distressed at my visit to Santa Maria delle Grazie to see the fresco by Leonardo da Vinci, of 'The Last Supper,' completely disfigured by restorations. The three apostles at the end of the table, to the right of Christ, have been entirely repainted. And then this fine painting is in its last stage of decay. The wall is incurably damp, and the plaster flakes off in small pieces, which gradually become larger. It is many years since I saw the Cenacolo, but from what remains, it appears to me that Morghen's engraving is singularly wanting in the greatness, action, and expression of the original."

THE CAXTON MEMORIALS AND THEIR ART TEACHINGS.

THE not-a-little remarkable exhibition of the work done in his day by William Caxton, the first English printer, has called forth, as it certainly should do, a very great amount of public and professional interest. Many are the comments that have been made upon it, and upon the wide-spread influence such exceptional work had in the world. It would, indeed, hardly be possible to overrate the importance and interest of it, or the vast influence it has had on the movement and progress of the world of humanity. Had there been no printing at all, what now would have been the state and position of the world? What, if there were no printed books, and nought but MS. copies of original writings? Few in number they must need have been, and far too costly for the many ever to get at. It is impossible nowadays even to imagine such a state of things. Much, as we say, has been written about all this, but there is wide room for more; and there is one item in "Printing," to use a general term, which may well interest the artist and the architect, and that is the strictly artistic character of the work of the earliest and first printers, looking, as so much of it does, like hand-work. Of the marvellous mechanism, and power of divided and duly-apportioned labour, which the modern system of printing exhibits, no one needs even to be so much as told; and most surely, could but Caxton rise from his quiet grave to look at it all, he would and could never believe his own eyesight. It is little short of a magical process the result of a modern printing-press in full work! It is the very triumph of mechanical ingenuity and the power of mechanism! And there is yet more of it in the air to come.

But in one thing old Caxton, the first printer, and with him the three famous Germans, Guttenberg, Fust, and Schoeffer, of Mentz, did, which,—with all our wonderful means and appliances,—we fail to do, and that simply is, to compel the readers of, and hard-lookers at, a printed page to look at it again and again as *artists'* work, as, indeed, they must look at, and do look at, and regard, a finely-written MS. We certainly, as we say, do not do this; but Caxton, and those who worked with him, most certainly did. To many who have not regarded the subject in this light, this may seem a matter difficult at first of comprehension; but a visit to the Caxton show at South Kensington may convince them of its truth; and if that does not, then compare, side by side, a well-written MS., and early-printed book, and a modern daintily-printed page in a quite new book will. This will soon evidence it, and to those even who may be a little unwilling to acknowledge it. What is the cause of this artistic impress? we may well ask; and what the cause of its absence? A wide question, indeed, and, may be, like many other mysteries, hard to answer; but a cause or causes there must be, and a few words here may be useful, if not convincing. To solve the problem may be impossible at present, but the study of Caxton's work will help.

But few readers will need to be urged to visit the Caxton memorials, but to such of them as go to study a past state of things, we would specially point to this characteristic of the many open pages before them; for the more these printed lines are looked at the more difficult is it to see how the individual *letters* of them were wrought. It may be called to mind, in the first place, that these early printed books are copies of *written* books, and that the effort made by the printer, or artist type-cutter, was to imitate hand-writing. We have now before us a MS., of course written by hand, just indeed as a modern page of MS. is nowadays written, and probably as without a thought of its being anything more or less than ordinary and everyday writing, and consequently with nothing special about it. It is all but, as one would think, reproduced in a printed page by the side of it. Both the MS. and the printing are very plain, simple examples of either kind of work, and do not contain anything out of the usual and common way; yet is there an impress in the printed page of the *artistic* handwriting of the MS.

Many doubtless will consider this the simple, and perhaps necessary result of the fact of the direct copyism; but most surely there must be more than this, for a modern printed "circular," directly imitated from a MS., does not look like genuine handwork and writing, and no one ever takes it for such. But this is not all, for the same impression of handwork is to be seen in

work which does not profess to be a copy of handwriting at all, as in the large initial letters, and in the title-pages. A something is doubtless due to the peculiar quality and texture of the paper, and to the kind of ink used, and to the care with which the work was done, and the very time occupied in the doing of it. Important and not a little influential items these, and to be largely taken into account; but the main strength of the work would seem to lie, and, indeed, must do so, in the artistic skill and accuracy of eye, and keen perception of the type-cutter, whether such type be of wood or of metal; in short, the type-cutters in Caxton's and Faust's day must have been artists and art-workmen, and must have keenly felt the beauty of the work they were dcing, and must have worked both with their brains and hands instinctively as artists in the production of original work.

There is a thought here which may occur to some, and which seems to us to deserve special consideration nowadays, in these times of mechanical production: it is the peculiar, and hard-to-be-defined impression made on the mind unconsciously by autographic work of any kind, by individualised handwriting. A collection of letters, for example, by some famous man of past days, written by himself, though they convey no more than such letters would do if read in a printed page, yet seem to do far more. They take you into his presence, all but, and you see him pen them. Copies of them, however near, do not do this. An interest, too, would seem to lie in his "signature," his "name" at the end of each one, and what does *it* not convey? It would be hard indeed to define this, and to measure it mathematically; but it is so, and how much would the world give to look but for a moment at the autographic work, at the handwriting, of but a few more of those who have for good and all passed for ever away! How glad should we be to see their written work, even but their names, in antique ink.

We might go into almost any amount of detail, and refer to individual pages in the Caxton show of printers' work, but it will well speak for itself. Each item, as studied chronologically, will evidence what is here urged, and will show to the student more and more impressively how much is due to individuality of hand, and to "personality" in the production of artistic work. Mere mechanical processes, however skilfully worked, will not do this, and cannot do it. We might point to many a page, and every individual letter, but need hardly do so, from the simple fact of their number, and the not well knowing what to pass by, and what to specially note, there being so much that is noteworthy, and all of it telling the same tale, and reading the same impressive and instructive lesson. The very curious student of this work of Caxton's early printing efforts should have with him a fragment or page of MS., or if not that, a modern woodcut map containing lettering in the names of places, &c., for it is curious to note that woodcut lettering, thus done, is much nearer the old printer's efforts, than the more regular work in an ordinary printed page from metal types.

We may here remind those who will thus look on those printed pages as *art* work, that they will lose much by not viewing them chronologically, and thus to mark the changes that took place as the machinery of printing got to be more and more comprehensive, and powerful, and perfect. Wynken de Worde followed Caxton, and he in time was followed by others, down to our own day; and step by step we may thus see that, as the *machine* did more and more, there was less and less to be done by *hand*. No one can or dares to complain of this; but where there is a gain, Nature would seem always to say, there shall then be a loss. In the fourteenth and fifteenth centuries there were produced magnificent MSS. magnificently written, now to be seen only, a page here and there, in a tightly-fitting glass case. Nowadays, there are most surely none such; but, in the place of them, millions of printed books and pages, the work of the all-but living machine. In the Caxton display the very commencement of this passing away of the necessity of the art-power of the hand, and its all but final disappearance under the machine, may be curiously noted, and some little time and thought may be spent in balancing the loss and gain, for most certainly there is both a loss and a gain. A wide question, indeed, opens out here in looking through this printers' show, for it is not in such work alone that the *principle* involved is concerned; but it is somewhat curious that it finds illustration in it in so marked and emphatic a degree.

And among many there is another consideration which strikes us as being well worth the consideration of those concerned with the designing and practical carrying out of buildings; and it is the lessons these printed pages afford for the more artistic "lettering" on them, and the wider extension of the idea of it. It is but rarely and exceptionally that a building has any thing *written* on it, any inscription, or motto, or date; and, with the exception of names over shop-windows, miles of streetways may be passed without noting a word but the names at the corners of the streets themselves. This is perhaps a little remarkable, and hard to be accounted for; for in the older architecture the rule would seem to have been to miss no opportunity of writing on them, and all over them. Witness the hieroglyphic writing of Egypt,—walls, columns, doorways, inside and outside, all covered with inscriptions and writing, telling of many things, we yet hardly know how much and how fully. The Assyrian, again, what did he not do? The very robes of his gorgeous and flowing costume were covered, oddly enough, with that same handwriting which made of his palaces open books. And ancient Mexico, too, had its own writing, mysterious as it yet is, on its temple walls, and gateways of entrance into them. And even farther back in time than those, and by far ruder workmen, are the very rough rock surfaces found covered with inscriptions, in forgotten languages! There is much, therefore, for the architect and the builder in this Caxton show of printing, and we would but hope that good use may be made of it.

THE HOME OF PHILIBERT DE L'ORME.

SPEAKING in these columns not many months ago of the new Boulevard Henri Quatre at Paris, we had occasion to mention the home of Philibert de l'Orme, the famous French architect. Now that the Boulevard is open as a public thoroughfare, and every vestige of the old Hôtel de Lesdiguières has disappeared,* it is not a little interesting to observe still existing at the corner of the Rue de la Cerisaie, a considerable portion of the house that De l'Orme had built for himself, and in which he died, May 30th, 1577.†

Not that the ordinary passer-by could point it out, wedged in as it is between two more modern constructions; alone is it recognisable by the dormer-window and some few remains of cornice, which immediately recall the original plan of the building as shown in De l'Orme's "*Livre d'Architecture.*"‡ There, in the eighth book of the first volume (alas! he died ere the record could be published) after speaking of several houses he had constructed, he proceeds to show us "how the learned and expert architect can erect gracefully, and at little cost, a house which shall be as well built as those on which much money has been laid out." He then continues with a minute description of his own dwelling, aided by several illustrations and plans.§ There is a façade on the garden, one on the court-yard, and one on the street. From this description we learn that the house, at the time he wrote (1567), was not completed, the façade on the Rue de la Cerisaie was not built," which, remarks he, "I should much like to have continued, and would have done so long ago, had not God taken from me my very sovereign prince and good master, the late King Henry [II.] whose soul now rests in heaven." De l'Orme promises, however, that in the second volume, "*Dieu aydant,*" he will araply describe "the face of the said *corps d'hostel,*" but death unhappily carried off the great architect before the promised treat could appear; well had he remarked respecting this continuation of his work, that he would alone carry it out, "*Dieu aydant.*"

We have already referred to the strong religious sentiment that reigns throughout the writer's work, and in this doubt whether he will ever finish his task we again find expressed this holy fervour.

The following is a translation of the passage in De l'Orme's "Livre d'Architecture" which treats of his own house:—

"Since I am speaking of this subject, I show you the other face of the house, whic on the garden side. Thus, I have made it in middle, of a round form, a tower, the first st of which serves as a chapel, accompanied t gallery with windows whose height is not proportion to their breadth, but I have m them large to give more *pleasure* to the e gallery, which is graceful and of great beau and even more finished than the plan wo imply. On the second story of the said towe a very strong *cabinet*, built in freestone. each side are two other *cabinets* and terra and in the rear is the principal *corps d'host* the whole, as regards the windows, the corni and attics, built of good materials, with gr conveniences in the way of cellars and ot places; letting you know that the whole been done as for myself, being my own ho such as you see it in the former and next pla

But it must be remembered that this hous not yet accompanied by a *corps d'hostel*, whic had deliberated on having, facing the Ru la Cerisaie, near the Célestins, at Paris, whic desired to build, and would have done so l ago had not God taken from me my very s reign prince and good master the late K Henry [II.], whose soul now rests with God will present you, then, with the façade of *corps d'hostel*, in order that you may be understand its disposition, as also the ene ments which can be given it, without much w or grand order of columns with their ornamen Being on this subject, I would willingly show at once the arrangements of the interior as t will be; but I put this aside; my deliberat tends to no end, if not to show you, after gates, the windows and attics, as I will do, siding me, and will reserve the rest for second volume of our Architecture, in whi will give you not only this house which I h made for myself at Paris, but several other different sorts, for great and small, with t plans, which will be necessary to underst them."

With all the knowledge, however, that l'Orme undoubtedly possessed, the garden fa of his house is by no means free from someth of the ridiculous, though the paved and arca court was a happy introduction.

Paris.

"SOUTH KENSINGTON."

UNDER this title Mr. Edgar Bowring, C contributes an article to the June numbe *The Nineteenth Century*, which, by accident, not come under our notice until now. article contains an incorrect statement, in w we are so much interested that we are compe to allude to it. The writer says,—

"The choice of a general name for the district of London thus opened up was a ma of some importance, and the happy title of Sc Kensington was at length approved by Prince. In order to render the general sch unpopular, the nickname of the 'Bromp Boilers' was applied to the temporary build at first erected for the Science and Art Dep ment's Museum, Brompton being supposed t unfashionable, unhealthy, and objectionable other respects. But, in truth, no part of property is in Brompton,—Westminster Kensington possessing between them, as ab indicated, the enviable privilege of taxing whole of it."

Mr. Bowring is not aware that Kensington the "privilege" of taxing all Brompton, and has led him to a wrong statement. It is with earlier part of the paragraph, however, which we are concerned. The term "Bromp Boilers" was *not* applied to the tempor Museum at Brompton "in order to render general scheme unpopular." The term applied by the conductor of this journal, as esteemed friend of long standing, the writer the article, and many other persons, know perfectly well, and it was applied while the build was in progress simply and merely to obt some mitigation of its ugliness.* We show that it would take the shape when completed a three-fold monster boiler, and the likeness so obvious eventually that the designation stuc it. It has been our aim to assist the "gene scheme" in every possible way, from the t when the Royal Commissioners bought a port of the Harrington Estate, in Old Brompton, 18 and when we wrote urging that "the convers of the Brompton groves, with all their fine

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* See *Builder*, Sept. 9th, 1876.

† Not 1577 as misprinted in *Builder* for July 7th, 1877.

‡ "Le premier Tome de l'Architecture de Philibert de l'Orme." Paris, 1568. Folio. Full of interesting matter to the student and professional man.

§ These have been reproduced by Callet in his "Architectes Français du Seizieme Siècle." Paris, 1842. 4to. See *Builder*, July 7th, 1877.

* See vol. xiv. (1856), pp. 213, 262, &c.

poplar, elm, walnut, chestnut, beech, and orchard trees into classical groves of learning in art and science, with a surrounding area of pleasure gardens for the people, would be a boon,"* up to the present moment; and it is therefore that we protest, in the strongest possible way, against the statement to which we have alluded.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

ARCHITECTURAL CHIAROSCURO.†

A STUDY of architectural chiaroscuro shows the value of plain wall in a façade, and that many magnificent buildings would have been more powerful if their active features had been more concentrated, and suggests that it is as true in architecture as in painting or poetry, that half is often greater than the whole. The eye instinctively looks for a mass of plain wall at each extremity of a series of thickly-strewed openings, as it looks for the abutments of a great arch or bridge, or for the rocks on either side of a glen. In buildings of great length it is often to the eye like the shadow of a great rock in a weary land to the traveller. Some otherwise fine buildings,—most of the club-houses, for example,—would be greatly improved by the addition of a few feet of flanking pier on either hand. So would Burlington House, and even Inigo Jones's Banqueting-house. Even some of the palaces on the Grand Canal at Venice are too equally divided into windows and piers, and lack plain wall at their extremities, which may be said of the Library of St. Mark and School of San Rocco. The river front of the New Houses of Parliament would have been grander with half the number of under windows, and more plain wall at each end. Its equality of division, I think, renders this fine front inferior in power to some of the more private façades of the same building, some of which are very broad and grand. For want of plain wall, the royal residence, Balmoral Castle, has little of the characteristic grandeur of the castle. Its architect might have taken a lesson in the art of giving dignity to his work from some of the humblest of our old English half-timbered houses, or ancient parish churches, some of which look really noble, and not one of them mean.

This plain wall is the desideratum of the architecture of our great trading streets, which would exhibit a very superior character were every alternate shop walled up. But the securing of 5 ft. or 6 ft. of wall between each front would have gone far to give the needful repose,—which would have caused no inconvenience, as so much glass cannot be necessary.

But where a due expanse of unpierced wall is given it is often neutralised by wrong treatment. Such is the case at the Bank of England, the National Gallery, Edinburgh, and at the Temple of Industrial Art, Munich, by the pilasters to the wing walls, which are worse than useless, as they produce a series of narrow breadth-destroying shadows. The same objection applies to entire or three-quarter columns against a blank wall: they cut up, and destroy repose.

There are some important species of town buildings, in which the architect is greatly trammelled by utilitarian considerations; but I believe that in those in which he is most trammelled, or least allowed to sacrifice to beauty, he may, by due thought, obtain a broader distribution of light and shade than we usually see in our streets; where, as in the soberest species of literature, some gleam of imagination and feeling should here and there break out, something to satisfy the quenchless thirst of the human mind for the beautiful. In the costliest sites of London there was no need of the monotony so frequently exhibited by the great blocks of commercial buildings. Many of these are very ornate; but a square or parallelopiped block of building, divided into tiers of equally spaced windows and piers, and void of the charms of composition and chiaroscuro, is only architecture by courtesy.

But it was not necessary they should be so. We could point to hosts of such buildings in London where there was no reason why more variety was not displayed. If projecting features could not have been had, deep central recesses might have been made the width of the staircase, which is better adapted to the exigencies of our climate, attention to which it is remarkable, whether it be a warm or a cold climate, is favourable to chiaroscuro. Most private houses, and many public ones, would be greatly improved in respect of light and shade by the widening and deepening of their entrance-doors, while it would give them a more hospitable look, as nothing looks less so or meaner than a narrow doorway. It is narrow doorways and monotonous division into still narrower windows that, more than the want of ornament, demeans the lower classes of streets, a defect which the humblest cottage in the country escapes, and which the old English cottages and mansions avoided by presenting broad masses either of mullioned windows or walls. In some Elizabethan and Tudor mansions the windows, grouped or bayed, are commanding and unifying objects eminently favourable to breadth. And even in instances where they stretch entirely across the front from end to end, with massive wall below and above, they are not unpleasing. Some houses on the Continent are entitled to equal praise. I refer to those in which the lower story is recessed behind an arcade of broad arches, and the windows grouped on the story above. The house of Francis I., at Paris, is a palatial example of this arrangement.

Unless restrained by the imperative exigencies of the building, as may sometimes be the case, or by the wish to express its purpose, I should advise, in all cases, the grouping of the windows,—bringing them into a large central and two or more smaller side groups; or so condensing or approximating them as to give room for a larger mass of wall at each end.

From the monotony of the alternation of narrow equal piers and windows from end to end of a long façade, I believe a building presenting either all one or all the other element,—unbroken wall or uninterrupted glass,—would be a relief to the eye. Either of these gives a sort of breadth. Indeed, buildings showing unpierced masonry, and which are considered almost without the pale of architecture, possess a power and grandeur that nine-tenths of architectural works are void of. Such are the old feudal castles and city-gate towers. Even prisons and markets often look grand from the same cause. In all such buildings the eye is drawn to the great mass of masonry, not divided, but only relieved by the small windows or loopholes.

In a similar way is the eye affected in such erections as the Crystal Palace, Sydenham, by the great mass of unbroken shade, or dark glass, which strikes as one vast object from being one material, the iron columns not distracting the attention any more than the mullions in a Gothic window. This quality, unity and power, is what gave the Crystal Palace of 1851 in Hyde Park its architectural interest and value.

> "The earth hath bubbles as the water hath,
> And this was of them."

But it was a *great* bubble. There was a greatness of manner about it that touched the imagination more than a mile of the loftiest blocks of building, with tier upon tier of equally paced windows and piers, would do. Such crystal fronts as the Watermen's Hall and the Townhall at Ghent may be defended on the same grounds.

Some buildings are imposing, and strike us forcibly as a whole from appearing mainly as one great mass of sculptural decoration. Of this the Castle of Heidelberg and several French Gothic cathedrals are examples.

Where equal division into windows and piers is imperative, something may be done to prevent or mitigate the disagreeable effect. Extraordinary richness of dressing may so increase the power of the windows as to render the intervening space of the pier powerless to attract the eye from it,—as in Sir C. Barry's Bridgewater House. But spottiness, the opposite of breadth, may be in some measure avoided when, as in later Gothic façades, the tracery of the window is continued over the whole front. Pierce a smooth wall with square or oblong openings, and you have what are opprobriously called hole-in-the-wall windows; round the heads, insert tracery, and mould the jambs, and they are only more ornamental holes; but carry the tracery with which they are filled in all over the wall, and unite the windows with water-tables, string courses, and other horizontal bands, and they cease to be holes in the wall, and the building has a less spotty appearance. The Ducal Palace at Venice is broad from the panelling of its surface, which unites the windows, and supplies a middle tent. In many French buildings a good and uniting effect is produced by forming each pier into a large panel, about the size of the window of which the palace at Versailles is a good example. Timber buildings generally, from the windows being united each way through their complex frame-work, exhibit no lack of breadth.

The compacter the general form of a building the broader it will come in a general view—a remark condemnatory of some of the Mediæval cathedrals, whose long, far-projecting transepts are opposed to breadth, since they present distinct masses of light and also of shadow which cannot be respectively united. A review of various detached edifices will show that the adoption of a hexagonal, octagonal, or cylindrical plan is assisting to breadth of light and shade, since you see at least three sides with high light, half light, and dark at once. As to the rotunda no other form can be so broad or bear so well to be divided into a multitude of openings, or surrounded by columns, as in every view of it the equal spaces grow narrower each way from the centre. The form of building most of all susceptive of a broad effect of light and shade is the rotunda, crowned by a hemispherical dome, as on some point of the latter the sun's rays must fall perpendicularly, and give the highest possible light, decreasing in a line down the rotunda, and gradually dying away in every direction into deepest shade. Concave-sided buildings, such as represented by Wren's unexecuted design for St. Paul's, are also susceptive of a broad effect of light and shade.

What I have said of the rotunda will show that the round column is superior to the square or the octagonal one, or any other supporting form; to it we owe the brilliant effect sometimes produced by the level beams of the setting sun on a colonnade, by a strong line of light on each column, contrasted with the prevailing darkness.

Before I conclude, there is an interesting species of structure I wish to notice,—the triumphal arch of the Romans,—as an extreme instance of the antagonism between utility and architecture. Though favourable to beauty of outline and sculptural decoration, the triumphal arch is adverse to chiaroscuro, the thoroughfare or opening through which the ivory chariots, the golden eagles, the captives, and the pictured cities of the victorious procession were to pass, failing to produce the shadow essential to beauty and power as architecture. This defect (as the ancient purpose had ceased in modern times) their modern imitators in London and Paris had an opportunity of remedying, and gloriously improving on the originals as works of art, by using them for some monumental purpose which would permit the erection of a wall across the passage; in which form they would have served the sheltering of a statue or statues.

Chiaroscuro applies not only to exteriors, but to interiors, where the quality of breadth is dependent on the mode of lighting. The broadest way of bringing in light is from above, and in as few openings as possible; a lesson which I think is taught by the crypts of our cathedrals, in which there is often a grander architectural scene than is found above in nave or aisle.

I have referred in the foregoing remarks to many instructive examples of chiaroscuro. There is one class of examples I must not omit,—those of the infinite nature around us whose works are always broad. A residence among mountains convinces me that there is, indeed, something calculated to expand the mental vision and imagination of the architect among the grand scenes and bold and striking objects of nature, and render him less satisfied with tameness and weakness in design. A contemplation and study of the chains and groups of noble domes presented by the everlasting hills would not only intensify his feelings for grandeur and power in architecture, but it would fill him with boldness of invention; and, suggesting the wide field there still exists for beauty and originality in art, would weaken his reverence for precedent.

Chiaroscuro applies to literature as well as to art; and its importance and difficulty must be felt by every writer of poetry or essays, sermons or speeches, in which the expression of the individual ideas is comparatively easy. It is the general arrangement with regard to a broad distribution of the lights and shadows of the subject, if it have any, or of the different elements of which the piece is composed, that is less easy to manage. Without this it can have but little power over the mind of the hearer or reader. The principle is best obeyed in the greatest works,—in epic and dramatic poems, and the higher creations of the imagination,—in tragedy the shade predominates, in comedy the lights. In "Romeo and Juliet," for example,

* Vol. x., p. 677, &c.
† Continued from p. 708, *ante*.

the tender and passionate are brought up against the painful distress of the tragical termination. In the sacred poem of "Job," the light in the beginning contrasts with the deep gloom of the sudden misfortunes of the patriarch; and this again gradually gives way to the brightening conclusion of his latter end.

But the principle must be attended to in all works aiming at any persuasive effect. Even now I am trying to obey it in the composition of this essay, which will have the greater effect the more I can group ideas of the same kind together. Nay, a note cannot be written as it ought to be without some attention being paid to it,—a fact which was alluded to by some one who, it is said, apologised for writing a long letter by saying he had not time to write a short one.

Chiaroscuro belongs to literature because it belongs to life, of which literature is an exponent; and is seen in the mixture of good and evil, pleasure and pain, joy and sorrow, in the world.

SAMUEL HUGGINS.

THE TOMBS AND CATACOMBS OF ANCIENT ROME.

MR. J. H. PARKER delivered the last of three lectures on "Ancient Rome," in aid of the Roman Exploration Fund, on the 12th inst., in the meeting-room of the Institute of Architects, Conduit-street. Taking for his subject "The Tombs in and near Rome, and Catacombs," he said:—

The number and variety of Roman tombs is so enormous, that it would be preposterous to attempt to give any general account of them in the compass of a lecture; all that I propose to do is to point out some of the most interesting and important tombs that remain visible within the present wall of Rome and in the immediate neighbourhood. We should first bear in mind how extremely useful tombs are for archæological objects. For the history of architecture they are very valuable, as they are usually dated beyond dispute by the inscriptions upon them, although, unfortunately, in Rome these inscriptions have almost always been carried away into museums, and arranged either to serve some purpose, or sometimes apparently almost by accident, and in any case they are deprived of more than half their value by not being left in their original places. The effigies and the sarcophagi, or stone coffins, are also all carried away in the same manner, and of late even the fresco pictures on the walls are now carried away into museums and half spoiled. Another great use of these tombs, within the present wall of Rome, is to show the exact limits of the city. It is well known that no interment was permitted to be made within the city, and yet there are many tombs within the present city, and almost in the centre of it. The explanation of this is, that in the time of the Emperor Aurelian, towards the end of the third century, the boundary of the old city was enlarged to the outer wall, on which he built a more lofty and secure wall upon the old earthworks, and that which had formerly been the *finis*, or limit of the suburbs, became the boundary of the city. The tomb which is commonly cited as being the heart of the city is that of Bibulus, the contemporary of Julius Cæsar, which stands close to the north-east corner of the Capitoline Hill, in what is now the Via di Marforio; but some excavations which were made for me in that street, a little further to the south showed that the wall of the city and the gate were about 200 yards to the south of this tomb, and that there had been a wide and deep foss between the gate and the tomb (this was ascertained by examining the cellars of the houses). The tomb then stood on the outer bank of the fortifications of the second city, adopted by Servius Tullius, and forming part also of the third city. The tomb stood originally detached, and had inscriptions on all sides of it, one of which is now visible in the street, another is partially visible. Nearly opposite to this, but rather to the north-west of it, are slight and miserable remains of the great tomb of the Gens Claudia. The next to which I will call your attention is one of the first century, believed to be that of the great Lateran family, on the western bank of their fortress and palace (which was probably on the Celiolum); this tomb is not in the city, but on the outer bank of the great foss, between the east end of the Cœlian Hill and the Lateran, now almost filled up to the level, chiefly within the last five years, to get rid of the earth brought from the excavations in other parts. On the inner bank, and just outside of the wall of the city (but inside of the boundary line and of the foss), is another tomb of the first century, now under the modern road that goes from the old fortress over the Santi Quattro Coronati to the Lateran. The celebrated tomb of the Scipios belongs to an earlier period; it was the burial-place of that great family for many centuries, beginning about 300 years before the Christian era, and is very much of the same character as a catacomb. There are a number of *cubicula*, or small-vaulted chambers, in each of which was the sarcophagus of some great member of the family, connected by narrow subterranean passages, with stone coffins on either side, but in general with the end turned towards the passage, and not lying horizontally in the walls, as was usual in the catacombs. This is on the first mile of the Via Appia, in the first Regio of Augustus, between the Porta Capena and the Porta Appia. A little further to the south, on the same line, are three large tombs full of *columbaria*, or pigeon-*holes*, for the cinerary urns of those whose bodies had been burnt. These are of later date than that of the Scipios, who would not allow the bodies of their family to be burnt; the practice began after their time, as they were a very ancient family of Etruscan origin. There are three of these great tombs, commonly called the *columbaria*, or pigeon-*houses*, in the same large vineyard of Signor Codini. One of them was for the "servants of the Cæsars," or "officers of Cæsar's household," and among the very numerous inscriptions are the names of several persons mentioned by St. Paul. An excellent account of these has been given by Professor Lightfoot, of Cambridge. The other two belonged to burial clubs. A little to the east of this, in the same vineyard as that of the Scipios, is another very remarkable tomb, the most perfect that has been preserved anywhere; it was most carefully excavated by the Marquis Campana about 1850, and each object scrupulously left in its place. It is known by the name of Hylas, because his name is visible in mosaic letters over the steps, and he and his wife were keepers of it, but for a burial club only. Just outside of the Porta Maggiore, the great eastern gate of Rome, between the two roads that meet there, is the curious tomb of the baker Eurysaces and his wife Aristia; he was the contractor for the supply of bread to the army in the time of Julius Cæsar and Augustus, and was so proud of his trade, that he had his tomb made out of a number of his stone kneading troughs, and on the corners had sculptures representing the whole art and mystery of making bread; at the east end were the effigies of himself and his wife. This tomb had been buried for many centuries in one of the bastions of the gate of Honorius, A.D. 400, the interior of which was earth only, the objects of these bastions or towers being to place a balista on one and a catapult on the other. The tomb which stood ready was used as a part of the filling-up of the tower, and remained entirely concealed and unknown until 1833, when the Municipality determined to re-open the old gate of Claudius of A.D. 50, which was blocked up and concealed by the forticiations of Honorius. Unfortunately the effigies were built up in a wall on the other side of the road instead of being replaced. (This error might easily be rectified: I have little doubt that I could get leave to do it if I could find the money.) The next to which I will call your attention is the mausoleum of St. Helena, about three miles from Rome, a lofty circular building, which had a vault of earthenware pots, as is shown by the remains. The interior was a chapel at the entrance to a catacomb, but it has long been in ruins, and a modern chapel has been built in it. The mausoleum and baptistery of Constantia, the daughter of Constantine, and granddaughter of St. Helena, has been more fortunate, and is nearly perfect, and with an aisle round it, on the vault of which are fine mosaic pictures of the fourth century. The twin-shafts, as they are called, or coupled columns, are believed to be the earliest instance of this fashion, which was largely followed, especially in cloister.

Returning to the Via Appia, but outside the walls, we have the poor remains of a tomb of the Emperor Geta. All that now exists is a square mass, with a modern cottage built upon it. Near to this, but in the meadows below, on the bank of the small river Almo, is the remarkable structure of the beautiful brickwork of the first century, which is usually called a tomb, but perhaps was not really so. It goes by the name of Deo Redicolo, and is supposed to have been erected long afterwards to commemorate the spot from which Hannibal returned. The name of "Redicolo," or returning, is given to the meadow in which the building stands. About a mile beyond this, and visible from it, is the great tomb of Cæcilia Metella, one of the landmarks of that part of the country, being on the edge of a promontory, and standing very high. It is an enormous circular building, with a small aperture in the centre, in which the sarcophagus was placed, the walls being 30 ft. thick. The commanding situation, and the massive strength of this great mausoleum, made the Mediæval family of the Gaetani take possession of it as a keep of a great fortress of their time, at the end of the thirteenth century, and they also built a small chapel very much in the fashion of the English Gothic of that period. Cæcilia Metella was the wife of the rich Crassus, one of the triumvirate with Julius Cæsar, and the date of the tomb must therefore be about fifty years before the Christian era. Another tomb which had excited considerable attention formerly, but is now so much destroyed that it is almost forgotten, is that of the Naso family, to which the poet Ovid belonged, and which used to be called the tomb of Ovid. It was very richly decorated, and an admirable series of engravings of the pictures was made by Santi-Bartoli, one of the best artists of his or any other age, but these frescoes have entirely disappeared, perhaps were sold. The tomb is on the bank of the Tiber, about three miles from Rome, on the road to Prima Porta. Another very conspicuous tomb, on the road to Veii, is usually miscalled the tomb of Nero. It is not of his time, but it is a conspicuous object, and is well known as a landmark. Another fine imperial mausoleum, which is a conspicuous object in the neighbourhood of Rome, and a very picturesque one, is that of the Emperor Gordianus, intended to have been the imperial mausoleum for his family, but they were all cut off at a distance, and this mausoleum was perhaps never completed, and was long much neglected. It is about three miles from Rome, on the Via Prænestina, and is called Torre de' Scavi.

The very remarkable discovery made in the Exquiliæ by the Italian company, who made such enormous excavations there, is the tomb of Statilius Taurus, the same person who built the first stone amphitheatre in the time of Sylla the dictator. He built his own tomb, and it was occupied by his family for many generations, as was shown by the numerous inscriptions found in it. Unfortunately these are all carried away to the museums, and even the very remarkable pictures on the walls are all carried away. If there were more persons of sense and taste to direct these things, the example set by the Marquis Campana would always be followed, and everything would be left in its place. Put a lock on the door, and charge a small fee for seeing it; this would pay much better than selling all the objects to be added to the superabundant quantities already supplied to the museums, all of which have more than they can show properly already. The original series of frescoes in this tomb represented the old legendary history of Rome, and seemed to fit more exactly the Æneid of Virgil than any other author. Virgil himself was living at the time they were painted, and it is extremely probable that he was a friend of Statilius Taurus, and gave instructions for the paintings according to his own ideas. I was fortunate enough to be able to secure a set of photographs of these interesting pictures before they were removed; when they are once taken off the walls no one can tell what tricks are played with them. The Roman artists of the present day are extremely clever in what they call restoring old pictures, but it is obvious that the restoration is a picture of the nineteenth century, not of the first. The frescoes in the upper part of the tomb, and on the vault, are of the time of Trajan, when the tomb was much enlarged; they are good pictures, but have not the vigour of the old ones. There is one figure in the early set, a shepherd with his sheep, which is said by good judges to be as fine as can be seen anywhere. Another tomb, excavated some years since in the garden of the villa Pamphili Doria, about a mile outside of the Porta S. Pancratia on the Janiculum, has also very fine series of fresco paintings of the time of Augustus, not quite so vigorous as those of the time of Sylla, but more highly finished and equally valuable; they seem to represent the villa of that day, with its gardens and menagerie, the beasts and birds are beautifully drawn. It is known that great Roman families frequently had a menagerie in their villas at that period.

The Catacombs.—There are few subjects on which more extreme opinions are entertained on both sides than the catacombs of Rome. An archæologist has nothing to do with any theological question, but the catacombs belong really to archæology more than to theology. The question of the dates of their construction, and of the fresco pictures, are questions of fact not of theory, and must be decided like other such questions by the principle of comparison. Persons who have studied the history of the art of drawing can see the date of a picture at a glance, just as one accustomed to the study of architectural history can see the date of a building. There is no doubt that the catacombs were the general burial-places of Rome for three or four centuries, for all those who had not family tombs by the side of the roads. All the space allowed for tombs on the roads had been occupied during the seven hundred years from the foundation of Rome to the Christian era, which is also the beginning of the Empire, and it is clear that some of the catacombs are of the first century, as is shown by the construction of the walls and the architectural details, where any can be found. This is especially the case with the very large and important one of Prætextatus, where some of the brick walls are distinctly of the time of Nero (there is no mistaking the long thin bricks of his time, which are found in all the buildings known to be of that period, and in no others). They continued to be used as burial-places until the sixth century, in the seventh they were so much damaged in the siege of Rome by the Lombards, that the ecclesiastical historian says "they annihilated the catacombs." After that time, when Charles the Great came to Rome, at the end of the eighth and the beginning of the ninth century, there was a general revival of the building of new churches and restoring of old ones; and it was the same in the catacombs, great restorations were made at that time, but no new ones were made. They were so far restored as was necessary to encourage pilgrimages to them in the ninth century (and the same has been done again in the nineteenth!). The most remarkable buildings connected with them are the chapels at the entrances to them, for the burial-service. At first these were underground, but close to the entrance. After "the peace of the Church" had been declared by Constantine, they were built above ground, near the entrances, of which there are many remains more or less perfect, especially at that of Prætextatus. There were several ways into this very extensive catacomb, one of them seems to have been from a subterranean road between the Church of S. Sebastian and S. Urban, in the district called by the name "of the Catacombs"; it is close to the circus of Maxentius, and the tomb of his son Romulus, which is called *ad Catacumbas* by the contemporary historians. But as these burial-places are older than the time of Maxentius, the district may have been named from them, and not they from the district. This is the valley under the hill on which the great tomb of Cæcilia Metella stands. The Church of S. Sebastian also stands in it. This was originally called *the* Catacomb, because the entrance to many of them in that district was through that church. But the name is quite Mediæval; that used by Anastasius and all the early writers is *cemeteria*. The earliest pictures are in the subterranean entrance chapel of Prætextatus, where the vine is painted on the vault, and spread all over it, and is of the second century. On the wall of this chapel was a Good Shepherd, and the Roman Catholic antiquaries claim this as a proof that this catacomb is exclusively Christian from the beginning, but those who have studied the history of painting could see that the Good Shepherd was quite of a different class of art from the vine, and more probably of the fourth century. (I am sorry to say that this picture of the Good Shepherd has been destroyed in some repairs made about 1875.) Those who are at all acquainted with the catacombs will not need to be reminded of the very narrow passages called *corridors*, or *streets*, with the *loculi*, or graves, cut in the tufa walls on each side, nor of the numerous steps down into them, and the variety of small vaulted chambers called *cubicula*, one of which is frequently the burial-vault of a family. Many of these chambers of the fourth and fifth centuries have columns at the angles, with capitals and bases, and seats, with side-boards, all cut out of the tufa. The very large catacomb of Prætextatus was certainly not exclusively Christian; there are distinctly Pagan subjects in one of the chambers at the foot of the steps of one of the original entrances, and these are of the third century. In another chamber, or *cubiculum*, very near to this, the subjects are Christian, of the fourth century, apparently because the family had then become Christian. The burial-place of the worshippers of the Persian god Mithras is almost, if not quite, a part of this great catacomb, which is on the Via Appia, about two miles from Rome, at the corner of the cross-road that leads past S. Urban's. (If excavations could be made there, they would settle some long-disputed questions.) The principal catacomb, or burial-place of the Jews, is also very close to this; parts of this are of the first century, others of the fourth. The inscriptions and emblems in this are of special interest. (I am sorry to say that an Englishman purchased of the late Jew owner some of the most interesting and important of these emblems, and carried them off to his private museum in England, where they are of comparatively little interest; in their original places they were historical.)

The catacomb of S. Priscilla is considered by the Roman Catholics as the most interesting for the frescoes, which they consider as very early; some writers have even said they are as far back as the first century. Great stress is laid in particular on the chapel called the Capella Græca, which is in the form of the Greek cross, and may probably be of the third century, of the time that two of the bishops of Rome were Greeks, and there was no difference between the Greek and the Roman Church. Whether any of the frescoes of Christian subjects are really before the time of Constantine is very doubtful; one small picture on the soffit of the arch of an *arco-solium* (or niche for a sarcophagus), which is about 2 ft. square, and represents the Blessed Virgin, with a star over her head, and with some one addressing her, called "the Prophet of Bethlehem," is said by the Roman Catholic antiquaries to be very early. If compared with the frescoes in the painted combs on the Via Latina, which are dated by brick-stamps in the walls, as of the third century, it seems hardly possible to imagine that any of the paintings in the catacombs can be of the same period; the drawings of them are very inaccurate when made out by modern artists; the photographs are the only really accurate representations of them. In this catacomb is another celebrated picture, that of the wine-barrels, to which various symbolic meanings are attached. It appears to me to have been the burial-place of the wife of a wine-merchant, and an inscription that was under the picture when my photograph was taken seems to agree with this; but this inscription has since been removed by the authorities. Another interesting picture is said to be the Woman of Samaria at the Well, and this seems probable. In very many of the catacombs there are figures in the Oriental attitude of prayer, erect, with the hands uplifted; sometimes they are at the four corners of a vault, supporting a central picture, perhaps the head of Christ, or the Good Shepherd. In other instances the *orante* is addressed by others. The *orante* are supposed to represent the persons interred, and many of the groups of figures are believed to be family groups. There are also many representations of feasts, which some call *agape*, others the Last Supper of our Lord. Some are evidently family burial-feasts, according to the well-known custom of the ancient Romans. The history of Jonah was a very favourite subject, with all parts of the story; sometimes he is being thrown overboard to a sea-serpent (which is the Vulgate version of what in the English version is translated a whale), sometimes he is under the gourd. We know by illuminations that the history of Jonah was a favourite subject with the artists in the fifth and sixth centuries, and some of these catacomb-pictures are of that period. The three children in the "burning fiery furnace" is another very common subject; also Moses striking the rock, Daniel in the lions' den, Noah in the ark, represented as a box. The most popular pictures in the catacombs, because the best preserved, are those in the catacomb of S. Pontianus in the Trastevere on the Janiculum; among them is the baptism of Christ, the jewelled cross, two large heads of Christ, and three figures of saints standing side by side, with their names written vertically; they are painted on a wall that crosses one of the corridors, evidently a repair of the ninth century, as the wall on which it is painted is of that period. A comparatively small part of this great catacomb has been restored for the pilgrims. I have crept through a hole in the wall, and have got behind this cross-wall, and found the rest of the catacomb in a state of complete ruin, as left by the Lombards.

The lectures, as already stated, were copiously illustrated by photographs thrown on the screen by means of the magic lantern and oxyhydrogen lime-light. They were not so fully attended as they deserved to be, but the sparse attendance did not imply any lack of interest in the subject, as we were informed that many purchasers of tickets were unable to be present.

NEW WATERWORKS FOR MANCHESTER.

A GIGANTIC PROJECT.

THE Corporation of Manchester have just resolved upon a gigantic scheme for the future supply of water to that city. At their meeting last week the Town Council decided upon the construction of works for obtaining water 100 miles from Manchester. The district selected is Thirlemere Lake, which is situated on the west side of the road between Ambleside and Kendal, in Westmoreland, and close to the favourite and well-known little inn at Whitburne, from which many lake tourists make the ascent of Helvellyn. The high level of the lake and the purity of the water, together with the unbounded supply, is said to be strong recommendations in favour of this great scheme.

According to the design of Mr. Bateman, the engineer, the water is to be carried from the lake under Dunmail Raise (one of the Westmoreland mountains) by a tunnel, and then passed above Grassmere, Rydal, and Ambleside, to the river Troutbeck, crossing this stream by an inverted cast-iron syphon pipe. The tunnel is thence continued through an open country to the south-west of Windermere railway station. The conduit, or aqueduct, will be kept mostly to the hills, and entering Lancashire it crosses the River Lune about five miles from Lancaster. It is thence continued southward, in the direction of Garstay and Preston, crossing the River Ribble about five miles to the east of the last-named town. It then proceeds in a south-easterly direction, until it reaches the neighbourhood of Rivington, passing close under the Rivington reservoirs of the Liverpool Corporation Waterworks, and finally terminates in a large service reservoir near Bolton, some twelve miles from Manchester.

The calculation is, that Thirlemere will give a total supply of 50,000,000 gallons of water daily, but in the first instance it is only intended to take 10,000,000 gallons daily, for each of the syphons which will cross the respective rivers will only take that quantity, and as the demands of the City increase additional syphons will be fixed. It is expected that the first supply will not reach Manchester before an expenditure of 2,000,000*l.* has been incurred, and a proportionate additional outlay will be necessary when the supply is increased in the way already explained. Several professors who have tested the water give their testimony as to the excellence of the water, both as regards its purity and softness. From the magnitude of the works it is believed it will take about seven years before the first supply is obtained, and at the end of that period it is calculated that the present water-supply of Manchester will be insufficient for the requirements of the then population, and hence the corporation are anticipating the wants of the inhabitants of the city as regards this important sanitary agent.

It is believed that in carrying out this great project the Manchester corporation will be prepared to enter into arrangements for the supply of water to Preston, Lancaster, Bolton, and other localities intersected by the works, the supply at the source being unlimited and inexhaustible, and it is likewise not improbable that arrangements will be made with the Liverpool corporation (who for some time past have had the question of their future water-supply under consideration), by which Liverpool may have the benefit of the supply which the Thirlemere project will give them, by constructing additional service reservoirs at Rivington in connexion with their own and the Manchester corporation's new projected works.

The Liverpool Art Gallery.—At a meeting recently of the Liverpool Town Council, Mr. Charles Dyall, master of the Liverpool Lyceum, was appointed curator of the Art Gallery, Mr. G. Barry Wallis, son of Mr. George Wallis, of South Kensington, having withdrawn from the competition, though recommended for the appointment. Mr. Wallis objected to the secretarial duties associated with the post.

INDUSTRIAL CLASSES OF THE CANARY ISLANDS.

THE artisan class, which in point of numbers is next in importance to the agricultural, consists principally of masons and stone-cutters, carpenters, boot and shoe makers, tinmen, blacksmiths, and silversmiths. The last-named are few in number, and carry on a very limited trade, which is principally in repairing trinkets of gold and silver, mostly cheap and inferior articles imported from France and Germany. There are also a few watchmakers, or dealers in watches, whose skill in their art does not generally go beyond the power of cleaning and of repairing slight defects in clocks and watches. The great majority of the artisans are very backward in their different callings, and it is remarkable that no articles of any description are made in these islands showing any special taste or aptitude, such as are found in abundance in the neighbouring island of Madeira, and in most other countries, whether civilised or barbarous. Notwithstanding this evident want of ingenuity and industry, they entertain high opinions of their merits. An artisan in a relatively superior position has been heard to say, and evidently with a strong conviction of the force of his remark, that workmen in the Canary Islands were very superior to the English, because they could make with their hands articles which in England could only be made by machinery.

The ports of these islands being free ports, all manufactured articles of every description required for general use are imported from foreign countries and from Spain, and are better than those that can be made in the province, and are cheaper. The 2,460 persons belonging to industry are employed in the small silk-factories at Santa Cruz, in the island of Palma, and at Teod, in Teneriffe, in the different establishments for making paper lucifer-matches, and in those for the manufacture of cigars and cigarettes. More women and children than men are employed in the foregoing industries. The silk factory in Palma employs from thirty-six to forty persons, whose wages do not exceed 6 peals vellon, or 1s. 3d. per day, the working-hours from sunrise to sunset. The principal occupation consists in winding off the cocoons, the silk being mostly bought up and imported in that condition. The factory is active from June until the end of the year, the worms being reared and the cocoons prepared during the three months from March to June.

Most of the capital and labour of the province is employed in agriculture, the staple commodity being cochineal; and since the fall in the price of that article the cultivation of tobacco has been resumed, and is likely to be considerably developed. But the agricultural labourer is in a very primitive condition, totally without education. He is, however, well-mannered, and mild in disposition, and possesses considerable physical advantages. A stranger might travel unarmed over all the islands without fear of bodily hurt, but be on his guard against minor delinquencies. The labourer lives principally on salt fish and potatoes, and in lieu of bread an aliment made of toasted wheat, barley, or Indian corn, ground into flour, and mixed with sufficient water to give it the consistency of dough. It is called "gofio," and was used by the Guanches, the ancient inhabitants of Teneriffe, and the aborigines of the other islands. An English blanket worn as a mantle is the winter wrap of the country people. Some of the agricultural labourers dwell in ill-ventilated and undrained rooms on the ground-floors of houses situated in the outskirts of the towns; others in the country in huts made of a few large stones at the base, the upper part being of mud and beams, with a thatched roof. Those who are in a better condition own a pig, a goat or two, a dog, and sometimes a donkey. Their wages average from 1s. to 1s. 6d. a day; in remote localities they are generally paid in goods instead of money. The "Medianero" is a superior person belonging to his class; he holds more nearly the position of a small farmer in England, and, as his title implies, obtains in most instances one-half the produce of the land which he cultivates, the other going to the proprietor, who also provides him with a dwelling.

The purchase-power of money is about one-third less than that in England, owing to the exorbitant demands of the retail dealers. Salt fish, tea, and rice are sold at prices varying from 200 to 300 per cent. and more above wholesale prices. It is more profitable to import from abroad what each requires than to obtain it in the local stores and shops, but very few possess the facilities for so doing. Bread is sold at from 2½d. to 3½d. per 1 lb. loaf, and is made of inferior flour. Meat is practically in the hands of the municipalities; it is often of very inferior quality, and costs from 5d. to 7d. per lb. The sale of fish is also the monopoly of the few seafaring men at the different ports who are enrolled for service in the navy. Their open boats and tackle are insufficient, and they only go out to sea when the weather is fine and pleasant. The natural consequences of this arrangement are high prices and often scarcity in the supply, although these seas are alive with various sorts of excellent fish: The ordinary wines of the country are poor and scarce, and are not generally consumed. Spanish ordinary wines, which are so good, abundant, and cheap in the peninsula, are sold in the islands at from 6d. to 8d. a quart, but the inferior qualities are imported, and are generally adulterated to a great extent. English draught beer can be obtained of a very inferior quality for 3d. a glass. Looking at the favourable geographical position of these islands, to which every description of goods can be brought by water carriage at moderate freights, articles of first necessity should be cheap, but they are not, and moderate luxuries are out of the reach of the comparatively well-to-do classes. One of the elements wanted in order to develope the natural resources of the country is the skill of foreign artisans. But no inducement is offered either by the Government or the people. There is a want of respect and consideration for foreigners which might possibly be turned into one of hostility towards intelligent foreign artisans who would, by their superior skill and industry, become the successful rivals of the native workmen. From all accounts, indeed, the industrious English workman is not likely to improve his condition should he be induced to seek for employment in the Canary Islands.

QUESTIONS FOR DISCUSSION AT THE SOCIAL SCIENCE CONGRESS.

THE special questions for discussion at the Aberdeen Congress are in the *Health Department* as follow:—

1. What is the best mode of providing suitable accommodation for the labouring classes, and of utilising open spaces in towns?
2. How can the sanitary condition of the population engaged in the coast fisheries of Scotland and the United Kingdom be improved?
3. The present state of house accommodation in rural districts,—can its evils be remedied?

In the *Economy and Trade Department*:—

1. What are the causes of the present general depression of trade all over the world?
2. What are the social effects of trade-unions, strikes, and lock-outs?
3. What are the results of the administration of the Poor-laws in Scotland as compared with those of the other parts of the United Kingdom?

In the *Art Department*:—

1. What principles should govern the restoration of ancient buildings, or their preservation as memorials?
2. Is our modern system of art competition favourable or unfavourable to art-progress?
3. How can art be introduced into the houses of persons of limited income?

NEW SCHOOLS AND MUSEUM AT HAMBURG.

SCARCELY two years before those days of the great fire of 1842 which are recorded in the annals of Hamburg as *dies atræ*, the building called the Johanneum, and containing the higher schools and the city library, was completed. It escaped, fortunately, that terrible conflagration, which lasted for four days, in which over 100 lives were lost, 4,219 houses in 75 streets burnt down, and which caused a loss of 13,500,000*l*. Although it has served up to the present time the purposes for which it was erected, it had long become too small for the increasing number of scholars; additional rooms had to be hired in neighbouring private houses to accommodate them. A remedy had ultimately to be found for this evil, and in 1873 plans for new buildings were sanctioned by the council and the citizens. They were commenced in 1874, and inaugurated at the close of last year. The buildings provide space for the Realschule (or high school), the Gewerbe- und Bauhandwerkerschule (school for the training of architects, engineers, &c.), and the Museum of Arts and Industry.

Our view represents the buildings as seen from the north-east. The Steinthorplatz, where it is situate, is one of the finest squares of the old Hanse town. To the right, in the background, towers the high steeple of St. Nicolai, work completed quite recently. The buildings are in the form of a square, with two large courtyards, and are erected in the Renaissance style. Herr Baudirector Zimmermann is the architect; the cost is about 150,000*l*.

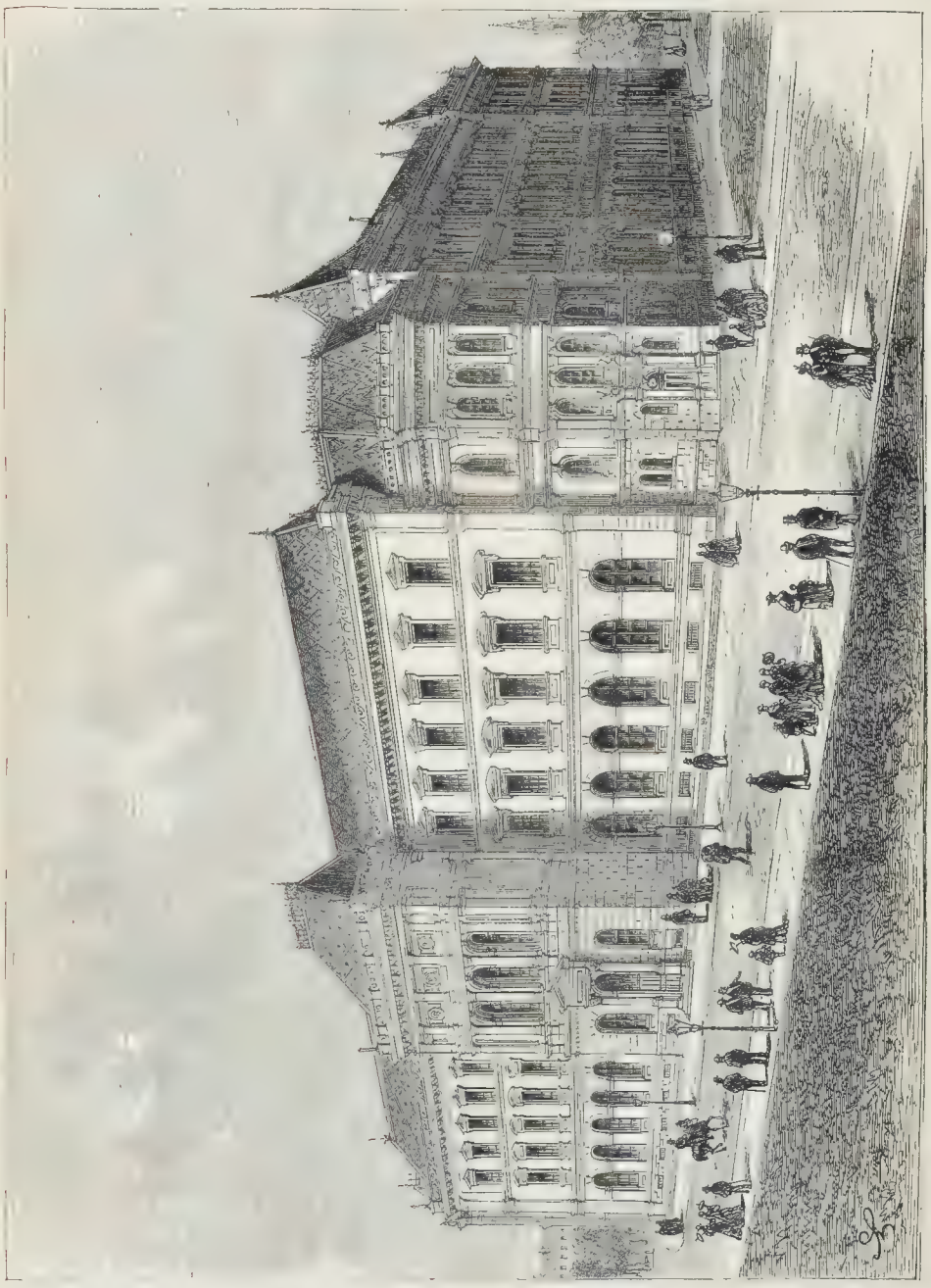
The principal façade is the east front, seen in the light in our illustration. The smooth walls, simply plastered in grey cement, are harmoniously broken by high windows. The windows and framings of the portico, as well as all the enta-tures, are neatly executed in Saxony sandstone. A number of portrait medallions of Hamburg celebrities, as well as of coriphei of German literature and arts, are let in over the windows of the second story of the east, south, and west fronts.

On ascending the steps of the principal entrance, and passing through two handsomely decorated vestibules, the grand staircase is reached. The subdued light, falling through richly-ornamented skylight, lights up a double staircase of yellow French marble. In the first floor, on the east, is the spacious, well-adorned aula, which, bordered by rooms on each side, connected with it by folding-doors, give an extra sitting-room for at least 500 persons. Several other rooms join on to the aula and its side-rooms, which, like the latter, are used by the schools in common; for instance, the chemical laboratory, the lecture-room for physical sciences, &c. The principal portal is also the entrance to the exhibition rooms of the Museum; they are situated on the ground story, and include twenty-three large rooms. Besides these, there are, in the same story, the residence of the headmaster of the Gewerbeschule and the hall for gymnastic exercises. The other rooms of the first and second stories, about seventy, are taken up, on the school side, by the Realschule, on the north by the Gewerbeschule. To these must be added the localities, used by both schools in common, for scientific instruction, as well as a board-room, office, rooms for teachers, &c. On the roof of the centre building is also an observatory. The warming of the whole buildings is effected by eighteen califères distributed throughout the basement; a steam-engine located under the grand staircase sends, by means of two large ventilators, hot air as well as cool air through the respective pipes in all directions. In the basement are further, besides the usual offices, residences for the housekeeper and his subordinates. An excellent communication right round the buildings is provided by well-lighted corridors running along the sides of the courtyard, and connected with each other by seven commodious and elegant stairs.

NEW WHOLESALE MARKETS AT LIVERPOOL.

GREAT changes are contemplated in the public markets at Liverpool, and it is believed that the present retail markets, including the spacious St. John's Market, in the centre of the town, near St. George's Hall, will shortly be given up, whilst new wholesale markets for the sale of meat, vegetables, and fish will in all probability be shortly erected. Great inconvenience is at present felt at the inadequacy of the present wholesale fish-market accommodation, and at the last meeting of the Council the Markets Committee reported that they were preparing a comprehensive scheme to meet the requirements of the wholesale fish trade. It is believed that the scheme involves the construction of a large new fish market in extension of the existing market, and that the carrying out of the project will necessitate the absorption of the Amphitheatre, the largest place of dramatic entertainment in Liverpool.

A Sanguine Town Council.—The Exeter Town Council have for a long time been negotiating with the gas company for the purchase of their works, one of the conditions of purchase being that the Town Council should secure to the original shareholders 10 per cent. in perpetuity. The Town Council have now, however, virtually decided, by a majority of 20 to 8, to break off the negotiations, mainly on account of the success of the electric light, and the probability of its superseding gas.



NEW SCHOOLS AND MUSEUM, HAMBURG.—HERR BAUDIRECTOR ZIMMERMANN, ARCHITECT.



THE CATHOLIC APOSTOLIC CHURCH, CAMBERWELL.—MESSRS. J. & J. BELCHER, ARCHITECTS.

CATHOLIC APOSTOLIC CHURCH, CAMBERWELL NEW ROAD.

THIS church, of which we give an illustration, has lately been opened. It is in the Early English style, and built of red bricks, with stone dressings. In front of the main building, which is set back from the roadway upwards of 40 ft., there is a cloister. The north and south sides lead into the narthex, from which there are four separate entrances into the church. The church consists of a nave of five bays, with north and south aisles, transepts, and a spacious chancel, 40 ft. in depth, terminating with a semicircular apse. The south transept forms a chapel, and in the north transept is placed the organ and choir. It has a vaulted ceiling decorated. The chancel has nine upper windows, five of which are filled in with stained glass, containing representations of our Lord in the centre, with the four evangelists on either side. The chancel is in three divisions, viz., the sanctuary, the upper (priest's) choir, and the lower or deacon's choir. In the sanctuary is the altar-table, on which is a tabernacle where the consecrated bread and wine are reserved for the communion of the sick. The altar-table is of Caen stone, with marble shafts, elevated by three steps above the level of the sanctuary; a lofty baldacchino surmounts it. At the west end, under a recessed canopy or niche, is placed the font. It is in Caen stone, with red Irish marble shafts. There is a band round the font, and four medallions, containing bas-reliefs of the Crucifixion, Resurrection, Ascension, and Descent of the Holy Ghost. The font has been executed by Mr. J. W. Seale, of Walworth. Beyond the chancel there are several vestries for the priests, deacons, and choir, whilst at the west end, near the cloisters, there is a retiring-room for females, together with the other rooms for meeting in connexion with the church. The architects are Messrs. J. & J. Belcher, and the builders are Messrs. Braid & Co., of Chelsea. The buildings were erected at a cost of something more than 8,000*l.*

LIGHT: ITS SANITARY INFLUENCE AND IMPORTANCE IN BUILDING.*

I DO not propose to enter the pitfall of unprofitable speculation, but shall conaider merely the natural light in so far as it relates to architecture and hygiene. And here I may as well touch at once the main point of the relation of architecture to the science of light, by humbly acknowledging that of all men who have contributed to the development of our art, there is no one who deserves more our gratitude than the glass-maker, who first enabled the builders of dwelling-houses to furnish mankind with light, warm, and cheerful homes, in place of dark, cold, and dismal huts, or chilly palaces. The window is the second eye of man, without which the dwelling-house would be simply a kennel or a cave. Many new and wondrous things have been discovered in regard to this same g'ass, even within these past few years. A Frenchman has made it malleable. Gen. Pleasanton, by painting every eighth pane of his conservatory, has made it so fructifying to plants and animals that if his statements prove true, and his "discovery" generally applicable, this whole earth of ours will soon be overrun with living organisms; and poor Malthus, who thought even our present increase of population dangerously large, will turn in his grave with vexation and despair. Nay, has not Mr. Shrove proposed to make use of this wonderful material for effecting what none of the numberless schools of medicine have as yet been able to effect,—the utter banishment of disease from this planet of ours?—with sanitaria such as he sketches for us, with glass houses of so vast an extent that each covers forty acres of ground, filled with the most varied kinds of plants, flowers, vines, and trees, laid out on the plan of the most luxurious parks, and high enough for the erection within the grounds of hotels, schools, libraries, &c., wherein ten thousand people may every winter season enjoy the delights of a perpetual spring and summer climate, undisturbed by changes of weather and the like nuisances of out-door existence; wherein no "probabilities" are tolerated, the thermometer being established as the only trustworthy weather-cock. However, everything has its limits of utility, even glass, in its relation to health; and it is the architect's special business to investigate those limits. Not all glass, in its function of transmitting light, is of equal value: it may be too thin or too thick, or the material of which it is made may have been mixed with injurious substances, or badly solidified. It may be placed in the wrong position, and become a constant source of irritation, or there may be too much of it, &c. I desire to call particular attention to these injurious qualities which light may exercise in passing through glass, as it is a subject hiiherto almost entirely neglected.

Have you not often noticed the peculiar heating and oppressive effect made upon you by sunlight that has passed through the thick French plate glass now so general in use? It is a feeling very much akin to that experienced on a sultry, sunny, *electric* summer day, before the storm has gathered. You do not feel it when you open the window and stand in the free sunlight, nor is it perceptible through every kind of glass. But this thick plate glass invariably produces it, especially when the rays of the sun fall upon it in an oblique direction, and in the winter time. It would seem evident that the heat rays and the magnetic rays which light produces in its transit through our atmosphere gain the preponderance over the pure light rays by passing through the glass, and, destroying the equilibrium, injure our health. A window, again, with a number of small panes, especially if the panes are of uneven and coarse glass, makes you giddy by the unevenness of the rays that cross each other from pane to pane; and the same objection would apply to a house built with glass alone, such as Mr. Shove dreams of. A similar effect is produced, indeed, by reflected light of every kind. Hence the necessity of regulating the colour of the walls in a room with regard to the number and position of the windows, of avoiding placing mirrors in such a position that the light falls upon them, &c. All reflected light has an injurious effect; not upon the body only, but also upon the mind. I cannot understand, therefore, why Sir David Brewster, who otherwise is so judicious in his remarks on this subject, should suggest:—"The opposite sides of the street or lane should be kept whitewashed with lime; and for the same reason the ceilings and walls of the apartments should be as white as possible, and all the furniture of the lightest colours."

For the whitewashed houses on the opposite side of the street must necessarily cast their reflected light through the windows on the other side, and the extremely white ceilings and walls there would only make matters worse. This remark, of course, applies only to streets that admit sunshine; for in dark streets or rooms such whiteness may not be only allowable but absolutely needful and healthful. I intended simply to point out the necessity of avoiding extremes, and to call your attention to the care which the architect must take in regulating the light as well as the heat of his building. That dark streets, alleys, cellars, rooms, &c., may stand greatly in need of light-beams is thus very neatly exemplified by Dr. Brewster:—"In all great towns where neither houses nor palaces can be insulated, there are in almost every edifice dark and gloomy crypts thirsting for light; and in the city of London their are places of business where the light of day never enters, and where the precious light which the sky sends down between chimney-tops is allowed to fall useless on the ground. On visiting a friend whose duty confined him to his desk during the official part of the day, we found him with bleared eyes, struggling against the feeble light which the opposite wall threw into his window. We counselled him to extend a blind of fine white muslin on the outside of his window, and flush with the wall. The experiment was soon made. The light of the sky above was caught by the fibres of the linen, and thrown straight upon his writing-table, as if it had been reflected from an equal surface of ground glass. We may mention another case equally illustrative of our process. A party visiting the mausoleum of a Scottish nobleman, wished to see the gilded receptacles of the dead which occupied its interior. There was only one window through which the light entered, but it did not fall upon the objects to be examined. Upon stretching a muslin handkerchief from its four corners, it threw such a quantity of light into the crypt as to display fully its contents."

This reflected light thrown into a dark room from a white handkerchief or a white screen is not hurtful, simply because it is, in point of fact, not reflected but direct light, or, in other words, the source of light in the dark room. It is just as if a lamp or candle were lighted in the room. But that the reflected light from the white walls of a room which is itself lighted up by direct light has a disagreeable effect, every one can easily test for himself. I quote, however, from Miss Nightingale's "Notes on Nursing":—

"Who has not observed the purifying effects of light, especially of direct sunlight, upon the air of a room? Here is an observation within everybody's experience. Go into a room where the shutters are always shut (in a sick-room or a bedroom there should never be shutters shut), and though the room be uninhabited, though the air has never been polluted by the breathing of human beings, you will observe a close, musty smell of corrupt air,—of air, *i.e.*, unpurified by the effect of the sun's rays. The mustiness of dark rooms and corners, indeed, is proverbial. The cheerfulness of a room, the usefulness of light in treating disease, is all-important. Heavy, thick, dark window or bed curtains should, however, hardly ever be used for any kind of sick in this country. A light, white curtain at the head of the bed is, in general, all that is necessary, and a green blind to the window, to be drawn down only when necessary. 'Where there is sun there is thought.' All physiology goes to confirm this. Where is the shady side of deep valleys, there is cretinism. Where are cellars and the unsunned sides of narrow streets, there is the degeneracy and weakliness of the human race, mind and body equally degenerating. Put the pale, withering plant and human being into the sun; and, if not too far gone, each will recover health and spirit. It is a curious thing to observe how almost all patients lie with their faces turned to the light, exactly as plants always make their way towards the light. A patient will even complain that it gives him pain 'lying on that side.'—'Then why do you lie on that side?' He does not know; but we do. It is because it is the side towards the window. A fashionable physician has recently published in a Government report, that he always turns his patients' faces from the light. Yes, but nature is stronger than fashionable physicians; and, depend upon it, she turns the face back, and towards such light as she can get. Walk through the wards of a hospital, remember the bedsides of private patients you have seen, and count how many sick you ever saw lying with their faces towards the wall."

And why do they not turn their faces towards the wall? Because if it does give light, that light is reflected, and hurts them, even when it has to pass through their eyelids; and if it does *not* give light, they turn from it to hunt up light. The all-overpowering delight of the patient, and indeed every health-desiring human being, however, and the sweetest treat for the eye itself, is to be able to look through the direct light of God's atmosphere into the blueness of the sky, that most wonderful mixture of darkness and light,—that dark back-ground of the infinite, lighted up with the clearness of light to the very shade suited to human eyes. I cannot forbear to illustrate further the importance to architects of obtaining this direct communication with light and the sky in all the rooms of their buildings, than by quoting again from Miss Nightingale:—

"Second only to fresh air, however, I should be inclined to rank light in importance for the sick. Direct sunlight, not only daylight, is necessary for speedy recovery, except perhaps in certain ophthalmic and a small number of other cases. Instances could be given, almost endless, where in dark wards, or in wards with a northern aspect, even when thoroughly warmed, or in wards with borrowed light even when thoroughly ventilated, the sick could not by any means be made speedily to recover. Among kindred effects of light, I may mention from experience, as quite perceptible in promoting recovery, the being able to see out of a window, instead of looking against a dead wall; the bright colours of flowers; the being able to read in bed by the light of a window close to the bed-head. It is generally said that the effect is upon the *mind*. Perhaps so; but it is no less so upon the *body* on that account. All hospital buildings in this English climate should be erected so that as great a surface as possible should receive direct sunlight,—a rule which has been observed in several of our best hospitals, but, I am sorry to say, passed over in some of those most recently constructed. Window-blinds can always moderate the light of a light ward; but the gloom of a dark ward is irremediable. The axis of a ward should be as nearly

* Read before the State Charities Aid Association, by Mr. Carl Pfeiffer, and printed in the *American Architect*.

as possible north and south; the windows on both sides, so that the sun shall shine in (from the time he rises till the time he sets) at one side or the other. There should be a window to at least every two beds, as is the case now in our best hospitals. Some foreign hospitals, in countries where the light is far more intense than in England, give one window to every bed. The window-space should be one-third of the wall-space. The windows should reach from 2 ft. or 3 ft. of the floor to 1 ft. of the ceiling. The escape of heat may be diminished by plate or double glass. But while we can generate warmth, we cannot generate daylight or the purifying and curative effect of the sun's rays."

What Miss Nightingale here says about the employment of plate and double glass is quite correct, so far as the production of more heat is concerned; which, however, is not caused because the thickness of the glass prevents the escape of heat from the room,—as may be shown by letting fresh air into the room from other openings,—but because that kind of glass passes more of the heating, and especially of the actinic, or magnetic, or electric rays of light into the room, or generates those qualities of magnetism, &c., in passing it. For, as M. Emile Saigney, the eminent French writer, clearly puts it, "all forms of light exhibit three kinds of rays,—those which are purely luminous, those which are also calorific or heating, and those which are chemical or magnetic. And I may here add a fact, which will explain the difference in the light transmitted through different kinds of glasses. The purely luminous rays of light we, of course, never see, precisely because they are light, and we can only see colour; but we feel them, and see by means of them. Now of the other rays of the spectrum, or of the coloured light, it is generally known that the yellow, orange, and red rays are specially heating, while the blue, indigo, and violet rays are especially magnetic; but it is not so generally known that the maximum of heat is found in the dark region beyond the red, and that those which are refracted upon the other side, beyond the violet, have a special aptitude for exciting chemical action.

I do not propose to enter into an examination here as to why the so-called dark or invisible rays of light, in its appearance to us, should possess these different qualities in a pre-eminent degree: I merely propose to suggest that every different kind of glass may change the relation between the luminous, calorific, and chemical rays, even as the prism,—to which all glass is more or less alike—changes it. Thus, if a solar ray be received upon a prism of water, the maximum of heat will appear in the yellow, upon a prism of common glass in the red, upon a prism of flint glass beyond the red, upon one of rock salt far beyond the red in the entirely dark portion.

Now, it may very well be, nay, unquestionably is, a fact, that in the case of some (invalid) persons a superabundance of electric rays may be beneficial for health, and excite a feeling of pleasure; and this is the fact upon which General Pleasanton has built his "blue light" theory.

I think the overwhelming majority of facts,—not to speak of the natural supposition that if we needed more indigo in our light it would be there,—confirms Miss Nightingale's statement of the vast superiority of pure sunlight coming direct from the blue sky, and changed as little as possible by the windows through which it passes. If shading is needed, shutters or curtains can be made to act as the eyelashes of the window, and like them keep away a superfluity of light; and if properly constructed so as to allow a change of colours, all the benefits peculiar to the divers kinds of light-rays can likewise be obtained. Those who are suffering from any form of mental irritation or nervousness, for instance, can place themselves under the influence of neutral tints, blue, violet, &c., while the dull, indolent, and depressed may derive benefit from the stimulating colours of red and scarlet. Miss Nightingale seems to think that "shutters should never be shut in a sick-room or bedroom;" but this, I fancy, is only an exaggerated statement, or, perhaps, made with special reference to the dark atmosphere of England. Extremes are always to be avoided. There may be days or hours when there is too much light in a room, and too much light is also dangerous; it is not only apt to produce partial or total blindness, hemeralopia, violent disarrangement of the nervous system, &c., but even insanity and death. The tyrant Dionysius, who was aware of the terrible torture produced by an intense degree of light, especially when reflected, inflicted on some of his unhappy prisoners the dreadful punishment of compelling them to pass rapidly from great darkness to the full blaze of the sun in recently white-washed rooms. Let us, therefore, by all means, furnish our buildings with abundant provisions for the entrance of light: but, at the same time, let us not neglect to provide for its control whenever it is likely to become excessive,—by means of the shutter; and for its purification, as it were, whenever the composition of its rays is not in harmony with the eye,—by colours.

Let us deal with light just as we do with heat,—supply enough of it, but never in excess, and purify it by ventilating apparatus in every room of the house. There is one class of buildings to which this applies particularly,—our school-houses. No other buildings stand so much in need of pure air and sufficient warmth or ventilation, and of an abundance of pure light properly arranged with a view to its fall on the pupils' eyes. For not only are the eyes of the children exceptionally tender, but being compelled to pass the most of their school time in a more or less bent position, however scientifically the school furniture may be arranged, and to strain their eyes by looking upon the white paper in most of their studies, these children require that special attention be paid to the arrangements made for the introduction of light into their rooms, and its proper shading, when from the changed position of the sun or other causes this becomes necessary. Their playgrounds, on the other hand, cannot be too open to the solar light,—a rule of hygiene that many of our public schools sadly overlook, and which public and private institutions deliberately and constantly violate, by erecting high walls around the grounds of their institutions, as if the sun were the deadly enemy of mankind instead of its best friend. The effects of such a dark, enclosed playground on children, and the contrary effects of full exposure to sunshine, are thus happily described in an old number of the *Pall Mall Gazette*, by Dr. Wynter. He says:—

"Passing round St. Paul's Churchyard the other day, our ear caught a low, confused sound which seemed to issue from behind a grille under the gloomy portico of St. Paul's School. Attracted by so unusual a sound, and blinded for a moment by passing from the sunlight under the portico, we at length made out that the sound was that of boys' voices in play. After a little time, when our eyes had been accustomed to the darkness, we perceived that some score of boys were actually at play within its unhappy shade. Such a profound sanitary error on the part of the authorities of the school, to shut up their youth in a cage without light or air, and there bid them play, struck us with some astonishment. Boys at their games are like young birds singing on the bough,—half their joy is the result of the influence of the sunny air. We are told, indeed, that only a very short time is spent in this gloomy retreat; but surely it is hard that the hour of recreation, when academic art should give way to nature, should be selected for this depressing process as at present carried on. What would Dean Colet have said to it? When the St. Martin's National School, leading out of Endell-street, was built some years ago, we noticed with pleasure that a playground was built *at the top of the school*, where light and air were plentiful,—conditions essential in a playground where the children use violent exercise; but this example, we are sorry to see, has no effect upon the Mercers' Company. The necessity of light for young children is not half appreciated. Many of the afflictions of children, and nearly all the cadaverous looks of those brought up in great cities, are ascribable to this deficiency of light and air. When we see the glass rooms of the photographers in every street high up on the topmost story, we grudge them their application to a mere personal vanity. Why should not our nurseries be constructed in the same manner? If mothers knew the value of light to the skin in childhood, especially to children of a scrofulous tendency, we should have plenty of those glass-house nurseries, where children may run about in a proper temperature, free of much of that clothing which at present seals up the skin—that supplementary lung—to sunlight and oxygen. Glass-house nurseries lifted up to the topmost story would save many a weakly child that now perishes for the want of those necessaries of infant life."

Great benefit to the health would accrue by giving children what the ancients termed *solaria*, or "solar-air baths"; that is, permitting them to lie naked upon the bed or floor, free from the incumbrance of swaddling clothes, so that their bodies may be thoroughly brought under the influence, for some period of the day, of good air and bright sunlight.

Playgrounds and gardens arranged on the top of such buildings, as schools, hospitals, and even of private dwellings, &c., are, indeed, beginning to grow quite in favour, and in a large city where ground is often the dearest part of those public buildings, can scarcely be dispensed with. "Some years ago," says Dr. Winslow, "when visiting the great Hospital of St. John, at Brussels, I was much impressed with the most judicious hygienic arrangements made in the construction of that building for the health and comfort of the invalids. On the roof of the hospital an elegant garden is laid out with great taste, and planted with shrubs, small trees, and a grass lawn, interspersed with pretty and sweet-smelling flowers. It is, in fact, a *Parc de Monceaux* in miniature. In this quiet rural retreat patients, particularly the convalescents, are permitted, at certain hours of the day, to promenade, indulging in the luxury of good air and bright sunlight."

Still more objectionable, however, than these enclosures of playgrounds put up for the special purpose of excluding sunlight, are those human habitations into which, under any circumstances, sunlight finds it impossible to penetrate; for while those playgrounds have at least access to the open air, being unroofed, the latter habitations have no access to pure air at all, but are on the contrary, constantly filled with the foulest atmosphere. I allude, of course, to the cellar dwellings which, in our large cities, abound so plentifully and pitifully, and especially to those which are the dwellings of the worst classes of our population. All the murderers that may inhabit them are not a hundredth part as destructive of human life as these their dismal dens themselves. On a former occasion I have pointed out their destructiveness of life, with reference to the want of ventilation and pure air, and to the constant entrance, which they permit, of the poisonous gases that penetrate from the sewers and gaspipes of the street into them.

But now I wish to add that even the most bountiful provisions for the exclusion of those poisonous gases, and for the admission of pure air, could not atone for the want of light. Truly does Sir David Brewster say:—

"If the light of day contributes to the development of the human form, and lends its aid to art and nature in the cure of disease, it becomes a personal and national duty to construct our dwelling-houses, schools, workshops, factories, churches, villages, towns, and cities, upon such principles and in such styles of architecture as will allow the life-giving element to have the fullest and the freest entrance, and to chase from every crypt, cell, and corner, of the elements of uncleanliness and corruption which have a vested interest in darkness."

But as houses are built now, it is next to impossible to bring light into these underground rooms of our cities, even by adopting such artificial means as the white screens of which we have spoken before; and it is absolutely impossible to fill them with direct sunlight.

"Rightly recognising the life-giving and health-sustaining influence of this light," says Dr. Winslow in his work on "Light and its Influence on Life and Health," "the 'Town Improvements Clauses Act of Scotland' enacted that no cellar less than 7 ft. high, without a window, and of which more than two-thirds are below the level of the street, should be inhabited. Acting upon the authority of this statute, the corporation of the city of Edinburgh has considerably improved the physical condition of the working classes of that town by peremptorily closing 3,000 dreary, sunless dens in which the poor people were in the habit of residing." The same authority adds,—"It was computed not many years ago that in Liverpool between 30,000 and 40,000 people lived in cellars. As a consequence of this state of things, the health of the working classes became seriously affected. Legislative measures were adopted for the purpose of declaring such habitations were illegal, and those living in them were ejected by the strong arm of the law. In 1849, 4,700 cellars were cleared of 20,000 inhabitants."

I may add that in Germany also numerous efforts have been made of late to prohibit the inhabitancy of cellars altogether. But no city in the world, I believe, is so cursed with dens

the city of New York, even as it ranks pre-minent amongst cities for the barbarous cha-cter of its tenement-houses, of which I now ropose to say a little. In a recent sermon r. Tyng stated that in the more crowded dis-icts of New York there are 200,000 people to the quare mile, or 120,000 more than are packed in he same space in any part of London. More han 75 per cent. of the mortality in these tene-ent-houses, he added, was of children.

It may be well here to bear in mind the words f Charles Dickens, who wrote:—"Of all the offins that are made in London, more than one in hree is for a little child." Is not this a state of hings so frightful as to require the most stringent nterference of the law? But all the attempts itherto made by our Board of Health to control he construction of buildings with a view to revent at any rate the main cause of this whole-ale assassination of our population have been pposed, owing chiefly to the insuperable objec-ion of our people to the least interference with ndividual freedom. It is argued that if a man as the necessary money to pay for it, he is at erfect liberty to put up any kind of a house, enement, or otherwise, though he have it so onstructed as to make every room in it a Cal-utta Black Hole, and that those who rent the ooms of him have only themselves to thank for he consequences. I say he has no such right. He infringes not only upon the right of his enants, but, in our case, of every citizen of New York, since he assists in the spreading of ll kinds of disease and crime. He is, in point f fact, no less a murderer than is the direct oisoner, for he erects laboratories that of them-elves produce poison; and were it but for our wn sake, it is time that an end should be put to his horrible occupation.

You will undoubtedly concede that in what I ave said on the importance of constructing all uman habitations in such a manner that each part thereof may be accessible to a sufficiency of light, and if possible of direct sunlight, I have not allowed myself to become one-sided in my plea. I have admitted, what is indeed self-evident to any observer, that we may have too much light, or special occasions may call for the shading of light or for giving predominance to special colours, and that hence the architect must also provide for these contingencies. In-deed, every climate requires that its architec-ture should conform in its arrangement of windows, &c., to the quantity and quality of the light which that climate possesses, as well as to its temperature. The aim of the architect in this direction must be, as I have said, so as to arrange his buildings that they will supply a sufficiency of light and heat, and yet keep both light and heat under perfect control. Let us, then, by avoiding extremes, not only pursue the right path, but also pave the way for it amongst the public. Nothing is more difficult than to in-troduce a change in a man's modes of thought and living when that change is advocated by extremists. It has been established by careful observation, that where sunlight enters all the rooms of a dwelling, the inmates are less liable to sickness than in a house where the apart-ments lose its health-invigorating influences. I fear that this fact is not sufficiently borne in mind in the construction of so-called apartment houses. Many are being built with bed-rooms into which direct sunlight never enters; they re-ceive "borrowed" light only from shafts called "well-holes." Such arrangements ought to be prohibited by law. Such apartment-houses will, no doubt, increase the mortality among children, and contribute to the degeneracy of those who grow up within their walls.

Sir James Wylie, late physician to the Emperor of Russia, attentively studied the effects of light as a curative agent in the hospitals of St. Petersburg; and he discovered that the number of patients who were cured in rooms properly lighted was four times greater than those con-fined in dark rooms.

In all cities visited by the cholera, it was universally found that the greatest number of deaths took place in narrow streets and on the sides of those having a northern exposure, whence the salutary beams of the sun were excluded.

The Romans seem to have had a greater ap-preciation of the sanitary effects of sunlight than we have in this country at the present day; they had a Building Act in the time of Augustus, restricting the height of street fronts. It seems to me that such a law ought to be enacted for this city. They exist in the large cities of Europe; there the height of buildings is regu-lated by the width of the streets, and no one is permitted to deprive his neighbour of a suffi-ciency of sunlight. I wish I could enlist the interest of the gentlemen of the press to advo-cate a reform in these matters in this city. Buildings of such inordinate height as are on the north-east corner of Spruce-street and Nassau-street, on the south-east corner of Fulton-street and Broadway, on the north-west corner of Fifth-avenue and Forty-second-street, and many others of similar height, ought not to be permitted.

Florence Nightingale observes: "A dark house is always unhealthy, always an ill-aired house. Want of light stops growth, and promotes scrofula, rickets, &c., among the children. People lose their health in a dark house, and if they get ill they cannot get well again in it."

Dr. Edwardes, of Paris, says the action of light tends to develop the different parts of the body in that just proportion which characterises the species; and that, in warm climates, the exposure of the whole surface of the body to the action of the light will be very favourable to the regular conformation of the body. Humboldt confirms this in the account of his voyage to the equinoxial regions: He says, "Both men and women (whose bodies are constantly inured to the effect of light) are very muscular, and possess fleshy and rounded forms. It is needless to add that I have not seen among these people a single case of natural deformity."

In truth, the light and heat and chemical influ-ence of the sun's rays may be considered as the physical value of all vital power. The inesti-mable cause of light as an element in the preser-vation of health, and treatment of disease, should be fully appreciated in the construction of all streets and buildings, particularly those intended as habitations for the poor, or public hospitals for the treatment of disease.

At the present day it is entirely too soon to take extreme ground on any phase of the light subject. It is a subject which, in its practical phases, is but just undergoing experiment and observation. If I have in any way contributed to direct more special attention to its relation *to health in dwellings*, and therefore to architec-ture in general, I shall feel quite satisfied with my efforts.

In conclusion, permit me to add yet a few words of an eminent physician:—"Let the sun come into our dwellings, and let our chambers be on the sunny side of the house. A room that the sun is not permitted to look into at all should be without a door; it is unfit for human occupancy. Even the flowers will grow pale and be frightened to death in it. The primary object of a window is not for the sons of men to look out, but for the sun to look in. Pleasant sunshine not only brightens a man's buttons, but his heart; it makes his spirit as cheerful as the landscape: he cannot be happy without it."

PROPOSED NEW MUNICIPAL BUILDINGS FOR GLASGOW.

At the last meeting of the town council of Glasgow, Lord Provost Bain, in accordance with notice previously given, brought forward a motion that it be remitted to a committee "to consider and report on the expediency of ac-quiring property in a central part of the city, with a view to the erection thereon, at some future period, of a building in which the various departments of the city's service under the administration of the magistrates and town council may be carried on with efficiency and economy." In commenting on the motion, his lordship explained that even though it was agreed to, it would not commit the corporation to anything at present. In his opinion it was necessary for the economical and efficient work-ing of the public service that the various offices should be centered in one building. At present they were scattered over the city. The work of the council, of its committees, and of the town clerk, was done in a portion of the "County Buildings," while the gas-office, the water-office, lands valuation, police department, and sanitary department, were all inconveniently separated from each other. Were they all gathered into one building much time would be saved to the members of the council, the public might pay all their rates in one office, and both efficiency and economy would be promoted. So "cabin'd, cribb'd, and confined" were the officials in their present quarters, that Mr. Marwick, the city clerk, had had it under consideration to remove himself and his staff to some place where he would have more space and purer air. In an-swering the question where the funds for the new scheme were to come from, his lordship said he had ascertained that the value of the sites of their existing offices, not including the building in which they were then met, which was the property of the Court House Commissioners, would be sufficient to purchase a new site, while the cost of the buildings could be met without im-posing any new tax. At present the citizens paid one penny in the pound for court-houses, and all that was necessary would be to continue that tax. That small rate of 1d. would raise nearly 300,000*l.*, more than enough to erect a structure suitable for all civic purposes, and one that would be an ornament and a credit to the city. Besides, his lordship expected that when the operations of the Improvement Trust came to an end there might be a comfortable surplus, and, if so, to what better use could it be applied than to the erection of a noble town-hall (perhaps with a mansion-house for the Lord Provost), such as had been done by the public-spirited citizens of Manchester, who had spent 750,000*l.* on their Municipal buildings?

Mr. Wm. Miller seconded the motion, after which something like a "scene" ensued, owing to the single-handed opposition of Mr. Councillor Martin, a "popular" representative from the east end of the city, who said he considered that the proposal of the Lord Provost was nothing more nor less than simply for the purpose of getting a handle added to his name.

Mr. Martin was proceeding to make some further observations imputing motives to the Lord Provost, when one of the magistrates, Bailie Thomson, rose angrily and said, "I will not sit and hear your lordship insulted in this manner," and then left the meeting.

The Town Clerk (Mr. Marwick) corroborated at some length the remarks of the Lord Provost as to the inadequacy of the existing accommoda-tion, and said the apartments which were occu-pied by himself and his staff were of the most "unsanitary description." His medical advisers partially attributed his own dangerous illness two years ago to this cause; and he added that since he entered on these rooms, not more than three years ago, he had lost by death three clerks, one of them a most promising young man; another clerk had left, and would not come back; while his shorthand-writer was reduced for months last year, and was now shattered in health.

Mr. Morrison then supported the motion, which was agreed to.

SUGGESTIONS FROM AMERICA FOR CONSTRUCTING FIREPROOF BUILDINGS.

SOME system is very much needed by which, without greatly enhancing the cost, our build-ings may be better secured against fire. We here offer some hints, but do not propose to make an absolute fireproof building in the sense of its being so secure against such an agent as to be indestructible; for that, at this age of the world, would be impossible; but we propose an arrangement by which, at a slight cost, a build-ing may be rendered more fit to resist this devouring element. Neither do we claim for our method that it is the only one that will give good results; we simply offer it as one way in which fire may be prevented from accomplishing such fearful destruction as it sometimes does in a thickly-settled locality.

The first thing in order to have a building in any way fireproof is to see that it is built of such material as will best resist fire; the next, to see that it is properly built. Experience thus far has proved brick to be the best material with which to construct such a building. It is not as elegant as stone, yet, if treated rightly, very grand and imposing structures may be built of it. The parts are small, but if they are properly massed they may be worked up in a most imposing manner. The way in which the interior of the majority of our best buildings are made fireproof is by forming the floors of rolled iron girders, carrying brick arches; this, though, is quite expensive, and few can afford. But even such buildings have been devoured in large conflagrations almost as readily as those of more common construction. Few of the better class of buildings, in ordinary times, catch fire from within, and extend the fire to other build-ings. Those which are the more apt to be the means of extending fire are generally of the cheapest class, probably fine-looking from with-out, but within devised in such a manner as to invite the rapid spread of flames.

Water is the great element used against fire. Steam, under certain circumstances, is one of the best protections; so much so, that we now have first-class safes constructed on the principle of holding in reserve an ample amount of water to generate steam sufficient to act as a protection against fire. Carbonic acid gas is also used to a certain extent, but water is the most general and common agent in use, and this we propose to use by having a supply of it so stored as to be readily made available, and to act somewhat in the manner of steam, thereby keeping the temperature of the exposed parts so reduced as to prevent them from becoming heated enough to serve as a conductor to the more inflammable material within or beyond them.

We would build of brick, after the ordinary styles, using care not to introduce wood in such a careless manner as to neutralise the benefits of the system herein proposed. In the process of construction, we would leave a slight air-space, say 3 in. or 4 in., between our building and those on either side; or, where parties build together, make the party-walls hollow; this could be accomplished without showing any open space in front. For the interior supports, we would use hollow cast-iron posts, notwithstanding that in some of the great fires they were found to be insecure when exposed to a powerful heat, but we would make some slight changes in them, as will herein be described.

In this plan it would make no difference whether a French roof were adopted or not, so long as it was properly constructed. By the way, no French roof should be allowed on any building, and particularly on a high one, in a thickly-settled locality, unless it were constructed of iron, or in some way made fireproof. We would propose gas-pipes for the purpose, as being both light and strong, and as possessing the quality of being easily worked into any desired shape. Again, by the way, we would note the fact that a French roof, in reality, forms more of the side of a building than of the roof proper, the greater portion of it being flat, as the majority of other roofs.

In order to carry out our method, we would construct what is ordinarily termed a flat roof, with the addition of sides, as though we were forming a tank; these sides to be about 1 ft. high, and suitably strong for the purpose. They may be constructed in a number of ways. The covering to the roof to be of tin, and water-tight, and the roof itself capable of supporting, when required, the weight of an amount of water to the depth of about 1 ft. Where the roof is long, it would be well to have it divided by cross partitions into bays or sections, from front to rear; otherwise, as water will find its level, if there were a foot of water at the highest portion of the roof, at the lowest point there might be 3 ft. or 4 ft., which, for ordinary buildings, might be too much weight. These cross divisions would necessitate extra conductors, yet that would be a small item, and could be easily managed. If introduced, they should be slightly diagonal, and not straight across the roof, as that would be the most ready way to cause the water, in ordinary times, to run to a common point, the necessity for which would be readily understood by the practical man.

The tank need not be kept filled all the time, unless so desired, but it should be so connected with a water supply, by hydrants or force-pumps, that it could readily be filled at very short notice; and during the raging of a fire in the immediate vicinity, it should be kept full enough to overflow in small quantities over the sides of the building, and, if desirable, into the hollow iron posts. The ordinary conductor pipes should be arranged with a suitable turn-off valve, so that when the tank was filled the water would not be allowed to run off too freely, but be held in reserve for service. Up and down the sides of the building, in the side walls as well as in the front and rear, there should be arranged small troughs, which, in the design for the front (and rear if desirable), could easily be disguised as belt-courses, introduced into window-heads, &c.; also within the iron posts there should be places to catch and hold small quantities of water. These troughs, as well as the gutters, would hold the water, and the heat, if near at hand and powerful enough under ordinary circumstances to injure the building, would, where there was a constant supply of water, generate steam from it in sufficient quantity to enshroud the whole building, and afford it superior and ample protection.

In an iron front, this arrangement could easily be carried out, and at fires in the immediate vicinity of iron structures there would no longer be that peculiar danger which firemen realise to be so great. This method, it will be seen, would do away with shingle and slate roofs in commercial and block buildings, where it might most probably be introduced, though slate might still be used on the steeper portions of roofs where there would be a flat above for containing the tank arrangement.

In regard to churches and similar structures with high wooden roofs, they must either be built differently, be more isolated, or have fire-proof bulk-heads built near them, else suffer the consequences of being built of inflammable material.

If all cannot afford to build in the manner described, it would be well for the municipal authorities of a city, in particularly inviting localities, to assist in building the fireproof bulk-heads, in the manner herein described, with their roofs so constructed as to be readily converted into a tank that should be abundantly supplied with water. Such bulk-heads, in the presence of a large fire, would convert into an enormous steam-generating institution, that would form a barrier that would arrest the flames and confine them within certain areas. These bulk-heads need not be worthless space, but be combined with some private enterprise; the city authorities, for the better protection of the city, allowing certain parties some bonus for thus making their building answer a double purpose, and, in addition to its private character, becoming a great public blessing. We think that a comparatively few such structures, judiciously distributed throughout a large city, would prevent such disastrous fires as those that have within the past few years occurred in some of our larger cities.

ISAAC P. NOYES, Architect.

Washington.

OBITUARY.

AT his country seat, Heavitree House, near Exeter, died on the morning of the 7th inst., Mr. William R. Gill, contractor, late of the Polygon, London.

Mr. Gill left Exeter as a poor lad many years ago to try his fortune in the metropolis, and with him, as with many others, untiring industry met with its reward, for he amassed a large fortune. Less than a year since he bought an estate near to his native city, and it was his intention, by curtailing his contracts, gradually to wean himself from business, and to spend quietly the evening of his days amidst scenes which were rendered dear to him by early associations. But it was not to be. He had hardly settled in his new abode when sickness set in, and after a couple of months of distressing illness,—bright and active in his intellect to the last,—he passed away on Saturday morning at the comparatively early age of fifty-four. Mr. Gill, especially through his connexions with the Midland Railway, was well known throughout England, and by the free and straightforward manner in which he on all occasions transacted business, was exceptionally popular with every class of men with whom he came in contact. His energy was unbounded, and he has been known on more occasions than one to spend an entire week of nights in a railway carriage, travelling alternately between London and the North. At the time of his death he had several important contracts in hand in various parts of the country, amongst which we may notice extensive works at Whitecross-street, E.C., for the Midland Company.

THE BATH CATASTROPHE.

THE inquest relative to the deaths of the victims of the Bath Bridge accident has been concluded. The coroner, Mr. English, in summing up, said grave responsibility rested somewhere; but he exonerated Mr. King, trustee under the marriage settlement of Mr. Isaac, one of the proprietors. The same irresponsibility, he considered, rested upon Mr. Isaac, and if the jury considered Mr. Hicks was justified in treating the bridge as under the exclusive management of Messrs. Mitchell and Bruce, the former might be left out of consideration in attaching blame. It was for the jury to say whether there had been culpable negligence on the part of Mitchell and Bruce, and whether Tanner, the toll-keeper, might not have rendered himself chargeable by shutting the gate against the crowd, for to their detention was probably to be attributed the downfall of the bridge. In conclusion, the coroner expressed a hope that foot-bridges would be placed under Governmen inspection.

After three hours' deliberation, the jury r turned a verdict of manslaughter against th four proprietors, Messrs. Hicks, Isaac, Mitche and Bruce, and against the toll-keeper, Tanne of all of whom were committed for trial at th Somersetshire Assizes, but allowed bail. Th jury added to their verdict an expression of the strong opinion of the necessity for some legi lative enactment to provide for inspection an supervision of foot-bridges intended for publi use.

VALUE OF PROPERTY IN BERMONDSE

A SHERIFF'S inquiry was held last week i the St. George's Vestry-hall, Borough-road, t assess the compensation to be paid to Mr. Robe Allen, in respect of some house property i Lynton-street, Bermondsey, which the South Eastern Railway Company wish to acquire fo the purpose of extensions. The railway com pany find it necessary, for the purpose of the alterations, to acquire five houses, the propert of Mr. Allen, which are held by him on a leas of seventy years. The total amount of ren received by Mr. Allen for the five houses, a stable and a dairy, is 205*l.*, and, deducting ground rents and losses, the total net annual value wa 135*l.* Considering the character of the property it was stated to be worth sixteen years and half purchase, and allowing ten per cent. fo compulsory sale, the amount claimed was 2,400 in addition to a further claim in respect of th depreciation of two houses which the compan did not propose to take. In support of th claim, Mr. Joseph Dickens, surveyor; Mr George Hawkins, a member of the Bermondse Vestry; and Mr. George Elkington, surveyor t the Bermondsey Vestry, were called, and all o them stated that the property was worth th amount claimed, and that the value of propert in the district was constantly increasing. Th jury assessed the damages at 2,400*l.* for the fiv houses and the stable, but did not allow an compensation for the depreciation of the othe houses.

BOSTAL HEATH AS AN OPEN SPACE.

THE Metropolitan Board of Works has agree to purchase the manorial rights and interests o Bostal Heath, in order to convert it into an ope space for the recreation of the public. The pro posed purchase money is 5,500*l.* At the las meeting of the Board, on the report of the Par liamentary Committee recommending its pur chase being presented, the recommendatio was objected to by Mr. Roche, on the groun that the price proposed to be given for the lan was excessive; but Mr. Fowler, architect, on th other hand, observed that he believed it was very cheap purchase, and he was glad to thin that the south of London was getting some o the good things in the way of open spaces whic Hampstead and Finsbury had received.

THE TELEPHONE.

THE telephone, or musical telegraph, is a apparatus by means of which, according to it inventor, sounds of variable pitch can be con veyed from one place to another by means o electricity. The component notes of a melod can be sent along the wire and reproduced i proper order, distinctly and loudly, at the distan end. To transmit sound by the telephone th atmospheric vibrations have to be collected an transformed into electricity, which must then b sent along a wire in waves or impulses corre sponding in their number per second to th atmospheric vibrations which are proper to th particular note to be reproduced. At the distan end these electrical impulses have to be re-con verted into sound, and in this process lies th most novel part of the invention, Mr. Cromwel F. Varley having found means to produce wha is nothing more nor less than musical thunder A singer's voice may thus be transmitted alon a wire, and heard afar off in the shape of minia ture thunder.

Like all telegraphic apparatus, the telephon consists of two instruments, a sender and receiver. On the 12th inst. both these were a the Queen's Theatre, so that both could be ex amined, and the wire was laid across to th Canterbury Hall and back, a distance in all o some three miles. In the public performances of course, the sending instrument will be at on place and the receiver at the other. Let us con

sider the receiver first, for it is in it that the greatest novelty of the instrument consists. The only thing visible to the audience is a large drum-head or tambourine, inside which is stretched what appears to be a sheet of tissue paper.

The sending instrument is more complicated. A number of tuning-forks, sufficient to enable a simple tune to be played by their means, are employed. Each of these has, mounted near its end, a small electro-magnet, worked by a battery, by which it is kept in constant vibration, precisely, to take a familiar instance, as the strike of an electric bell is kept going when the button is pressed down. The vibrations of the fork are then caused to make and break a second separate electric circuit. A number of keys, one for each fork, are mounted on a key-board, and they are manipulated just like pianoforte keys.

The experiment last week was not wholly successful, but seemed to give promise of a great result by and by.

WALTON BRIDGE.

THE trial of this case, at Maidstone, raised the question as to the liability to repair the greater part of the bridge or bridge-way between Shepperton, in Middlesex, and Walton-on-the-Thames, in Surrey, and it was of some interest from the antiquarian character of the facts on which it depended, and which went back to a period as remote as the invasion of the country by Julius Cæsar. It was a prosecution by the county of Surrey against the county of Middlesex, for not repairing that part of the bridge-way which goes over a tract of low-lying land or marsh on the southern or Surrey side of the river, which Surrey contends to be in Middlesex, while Middlesex insists that it is in Surrey. The spot in question, over which the greater part of the bridge-way extends, is called the Cowey, and it is at a part of the river where, as Camden showed, Cæsar passed the river, the place being that where the stakes the Britons fixed in the stream to obstruct him were found so long ago as the time of Bede (for which reason it was called "Cowey Stakes"), and where some of them continued to exist down to our own time. The *Times* gives a very interesting report of the case, but we cannot repeat it.

In the result, the jury said,—We find that the river has shifted its position, and that it once ran under the bank of Oatlands Park, but there is no evidence to show what the width of the river was at that time, or where the middle of the stream then was; and, therefore, we fix the boundary of the county at the middle point between the gravel bank on the south and the gravel bank on the north side, to be measured along the existing road.

The learned judge upon this finding directed the verdict to be entered for the prosecution.

The practical result of this will be, that the cost of repairing the bridge will be pretty evenly divided between the two counties, one repairing the bridge over the water-way, and the other the bridge road over the marsh land called "The Cowey."

THE HOUSING OF THE CITY POLICE.

GREAT dissatisfaction prevails among the members of the City of London police force, on account of what they deem to be an arbitrary rule compelling them all to reside within the City boundary. Some few weeks ago a petition was presented to the Chief Commissioner (Col. Fraser), in which attention was drawn to the arbitrary character of this rule, and praying him, so far as married constables were concerned, to permit them to reside in the metropolitan area; further, it was pointed out that the almost daily demolition of house property in the City rendered it impossible to obtain adequate accommodation, whilst the rise in the rents put them entirely beyond the reach of the men. To this request the Commissioner replied "that the wives and families of the married officers might reside wherever they chose, but in the event of their removing, the husband must reside in the single men's quarters at the various police-stations in the City." To this the married men reply, in effect, "Thank you for nothing, for if we avail ourselves of your permission to do that which we were at liberty to do without asking you, we shall have to pay double rent." The single men in the force, who are domiciled in the station buildings or barracks, complain of the inadequacy and unhealthiness of the apartments they have to occupy, and allege that some of the best rooms in the newly-erected buildings are monopolised by effete inspectors who have seen thirty years' service, and who ought to be pensioned off. A strike is threatened by the men, although it is hoped that by appealing from the decision of the Commissioner to the Court of Aldermen some amelioration of the grievance may be conceded.

THE FALL OF GIRDER AT FINSBURY PARK STATION.

DR. HARDWICKE has held an inquiry, at the Islington Vestry-hall, as to the death of James Henry Essex, aged 57, of 42, St. Thomas's-road, Finsbury Park, who was crushed to death on Saturday morning, by the falling of a girder which was being thrown over the Seven Sisters-road railway-bridge, for the Great Northern Railway Company, by Messrs. Pitts & Binner, of Stanningley, near Leeds, the contractors. During Friday night wooden piers were erected in the road, and the girder was successfully raised to its position by means of hydraulic power, when by some means or other it toppled over and fell into the roadway, killing deceased on the spot, and fearfully injuring another person.

Mr. Johnson, chief engineer of the Great Northern Railway, said the girder was over 20 tons in weight, and was being placed in its position in the usual manner. He had the greatest confidence in the contractors, who had built a large number of bridges without any fatal accident. He thought the contractors had done what was for the best, but people were always wise after the event.

Mr. W. Pitts, who had charge of the work, in answer to questions, detailed the method adopted to get the girder into its place. The girder having been raised to its place the danger was supposed to be passed, and he could not account for the occurrence except on the supposition that the "jack," on which the south end rested, had given way and had lowered.

Matthew Pitts, one of the contractors, who was on the spot at the time of the accident, also tendered evidence in explanation, stating that his firm had built hundreds of bridges, and had raised girders 75 tons in weight, by pursuing the exact method adopted in this case. He spoke from twenty-two years' experience. They did not consider it necessary to stop the traffic. The girder was propped up on either side to the time of the occurrence. The props, however, were only a precaution.

Mr. Cormack, surveyor of the parish roads, said that on a former occasion of placing girders application was made to erect scaffolding. On the ground of public safety he thought the traffic should have been stopped.

At the conclusion of the evidence,

The Jury consulted for a considerable time, and then agreed to a verdict of "Accidental death," with a recommendation that in all future works of a similar description the traffic should be wholly suspended until the girder was safely fixed, and that the girder should be supported in the centre

TENDER IRREGULARITIES.

FALMOUTH SCHOOL BOARD.

A MEETING of the Falmouth School Board was held on the 9th inst. Present—Messrs. G. H. Fox (chairman), Truscott, Lean, Rundell, Carlyon, and Hicks. At a previous meeting of the Board, the tenders for the erection of a school at Webber's-hill were opened. Mr. Roberts's price was 1,969*l.*; Messrs. Olver's, 1,919*l.*; and Mr. Halligey's, who worded his tender merely as an estimate, 1,455*l.* The Board was scarcely satisfied to receive Mr. Halligey's as a legal tender, but it was proposed to accept it, and the clerk was instructed to see Mr. Halligey to sign the necessary form to forward to the Educational Department. On the clerk seeing Mr. Halligey, it was ascertained that his son (in the father's absence) had worded his supposed tender as an estimate purposely, and on his going through it he proposed to amend it by making it 1,787*l.* At the meeting this tender was received, but one or two members were of opinion that Mr. Halligey's tender ought not now to be considered. After some discussion it was agreed to ask Messrs. Olver, and in the event of their refusing, to ask Mr. Roberts, if they would reconsider their figures, and see if they could not do the work at Mr. Halligey's price.

We quite agree with the editor of the *West Briton*, who points out, in an excellent leading article, the irregularity and injustice of the course pursued by the Board:—"It must be obvious to every person in business," says the writer, "that if public bodies were to treat tradesmen in this way often, there would be an end to tendering. In the first place, it costs a great deal of time and trouble, and even expense, to get out an estimate, and in the next there is intense competition. Just now materials and wages are so high that there is very little margin left for profit. It is most essential that public business should be transacted in the most straightforward and honourable manner, especially in municipal institutions, else all confidence will be lost in them, and we hope the example of the Falmouth School Board will never be followed by any other body in the country."

We are not surprised to hear that both Messrs. Olver and Mr. Roberts have declined the offer, or to make any abatement. The only proper course open to the Board is to accept Messrs. Olver's original tender.

MASTERS AND MEN.

Falkirk.—The journeymen slaters in Falkirk and vicinity struck work a few days ago for an advance of ½d. per hour. The wage paid was 8d. per hour.

Keighley.—The *Bradford Observer* is informed that a meeting of the master builders of Keighley was held on the 3rd inst. to discuss the action of the masons and labourers of that town, who have struck work for an increase of wages, and after giving it their careful consideration, they unanimously refused to grant the advance asked for, and adjourned the meeting to that day fortnight.

Glasgow.—The strike and lock-out of ship-carpenters and joiners at Glasgow still continues. The Glasgow correspondent of the *John O'Groat Journal* says:—"The Dutch carpenters brought here a few weeks ago, may be said to be actually incarcerated. They are completing a vessel in one of the yards on the Clyde; and for this purpose, to avoid contact with the 'strikers,' are never allowed outside the yard gates. The men are working Dutch hours, from five a.m. to seven p.m. at 7d. per hour. It is said that their workmanship is quite up to the mark; but that they believe in being slow and sure. About the laying of a plank, there is generally much talk. The time they spend in planning the execution of a thing would be taken advantage of by Scotchmen in doing it; hence it is said that a Clyde carpenter will do as much work as two of the Dutchmen."

Edinburgh.—At a meeting of the Edinburgh painters on the 14th inst. an investigation Committee of the Manchester Alliance of Painters reported that it was hopeless to continue the strike, and intimated that the support of the Alliance would be withdrawn. The men had struck work for an increase of ½d. an hour, and the Alliance had expended 350*l.* in their support. The meeting resolved to terminate the strike, which has continued six weeks.

Weston-super-Mare.—The master builders and contractors throughout the Weston-super-Mare district have conceded the demands of the labourers for a general advance of 2s. 6d. per week, and a reduction of one hour's labour on Saturdays, making the men's wages 1*l.* 2s. 4d. for a working week of fifty-six hours and a half. Several hundred labourers have now resumed work.

Darlington.—The operative plumbers of Darlington have waited upon the masters and intimated their willingness to resume work on the masters' terms, thus withdrawing all claims made by the men in October last. The strike, which has lasted upwards of nine months, is now settled.

Manchester.—At the Manchester City Police Court, John Yates, James S. Murchie, and Thos. Phillips, officials of the Manchester and Salford Carpenter and Joiners' Union, were charged on remand, with causing an obstruction at the London-road Station on the 16th ult., and intimidating certain workmen who had arrived in Manchester to take the place of others on strike. The latter charge was withdrawn, and for the former offence Mr. Headlam fined Phillips 3*l.* and Yates and Murchie 1*l.* each, or one month's imprisonment. The money was paid.

A County Court Judge on Strikes and How to Avoid them.—Mr. Smith, Q.C., judge of the Madeley County Court, in giving judgment in some petty undefended cases, remarked that the present state of trade was most deplorable, but he hoped that a revival would take place. He had upon other occasions expressed his own opinions upon the subject, and had suggested a remedy for the causes which had produced it. The cause of the present depression was undoubtedly the fluctuations consequent upon the high rate of wages which prevailed a short time ago. Men seemed to think that they had only to make sufficient noise and demand higher wages to obtain them. They sent up the price of labour, and drove the iron trade out of England to Belgium and other places, and the coal trade being in a measure dependent on that of iron, shared in the depression. He some time ago pointed out to the Government and also to the influential em-

ployers of labour who approved of the suggestion, a scheme which he believed would have the effect of preventing such a disordered state of things, and obviate strikes, which were at the bottom of the evil. His plan was to construct a court, at which both masters and men should be represented, and the whole circumstances of the trade stated by able men. Such tribunals should have the power to fix the price to be paid for labour and of enforcing it, and not more than two men should be allowed to meet and conspire to alter that price. A legal vent would thus be given for a statement and discussion of views on both sides as regarded the price to be paid for labour of all kinds; no one should pay more and no one should receive and pay less. At present it was not so much a question of right as one of might—might on the part of either men or masters, and the latter being capitalists, capital in the long run had the best of it. The standard being fixed in the way he suggested, no one should be allowed to depart from it. He hoped sincerely that better times would dawn, and believed that the iron and coal trade would come back to this country, and he trusted more discretion would be exercised in not doing that which may drive them away.

DISREGARD OF AN INJUNCTION.

DE BOLLA *v.* TEAPE.

THIS was an action in the High Court of Justice (Chancery Division) by a restaurant keeper to restrain the defendant from raising a certain wall adjoining his premises above a certain height. An injunction was granted on the 30th of April to stop the building.

Mr. Higgins, Q.C., now moved to commit Mr. Bracher, the builder, for contempt, in continuing the building, notwithstanding the injunction.

Mr. Glasse, Q.C., and Mr. Field appeared for the defendant.

The Vice Chancellor decided that Mr. Bracher had disobeyed the order of the Court; but as the plaintiff did not press for his committal to prison, he should merely order him to pay the costs of the motion.

INCORRECT QUANTITIES.

A CASE of some interest was tried before Mr. Serjeant Petersdorff, at the Bideford County Court, on the 9th inst., when Mr. Harry Hems, architectural carver, of Exeter, sued Mr. Frank Squires, statuary, of Bideford, for 3*l.*, the balance of 6*l.* 10*s.* for work done.

It appeared from the evidence that in June of last year defendant wrote plaintiff asking him what he would carve four finials 12 in. square and a few bosses in Bath stone for at his yard. Plaintiff agreed to do these for 3*l.* 10*s.*, and the work being pressing, sent at the defendant's request a couple of men immediately to Bideford to do it. The stones were then found to be much in excess of the sizes quoted, and in due course a bill for 6*l.* 10*s.* was sent in. This defendant declined to pay, alleging that 3*l.* 10*s.* was the price agreed.

Mr Venns Willmott deposed that he was a foreman in Mr. Hems's employ. He received instructions to go to Bideford to do half a dozen finials 12 in. square. The finials Mr. Squires gave him to do measured respectively on each,—1 ft. 4 in. by 1 ft. 10 in.; 2 ft. 6 in. by 1 ft. 7 in.; 1 ft. 10 in. by 1 ft. 7 in.; and three more 1 ft. 10 in. by 1 ft. 4 in. He pointed out the descrepancies in size to defendant, who promised if they were found to be in excess to pay any fair charge.

Sebastian Lucas, also in the employ of the plaintiff, corroborated this, and stated further, that he "subbed" 2*l.* 10*s.* on account, and his companion 1*l.* from Mr. Squires a day or two prior to the work being completed.

Defendant maintained that a bargain was a bargain, and argued that although the finials might have been larger than the 12 in. he specified, yet, in carving a foot or two of excess stone was nothing worth speaking of.

The Judge said it was evident from the bare fact that defendant "subbed" plaintiff's men 3*l.* 10*s.* before the work was completed that he could not have been under the impression that that sum was to defray all expenses. Evidence had proved plaintiff had actually paid in wages the whole of the sum now claimed less 14*s.* or 15*s.*, and he considered the bill an exceptionally moderate one. He gave for the plaintiff for the full amount and all costs.

A Natural Bridge, said to be far more wonderful than that in Virginia, is reported to have been recently discovered in Elliot county, Kentucky. It is of solid stone, in form a magnificent arch, 162 ft. long, and 15 ft. wide at the top, the river, the Little Chaney, rolling 100 ft. below. Fifty yards above the bridge is a waterfall, 60 ft. high, and the view from the bridge is said to be extremely beautiful.

GROUNDLESS CHARGE AGAINST A CIVIL ENGINEER.

AT the Berkeley Petty Sessions, Mr. William Fontaine Bruff, of Sharpness and Lydney, civil engineer, who has been engaged superintending the construction of the Severn Bridge Railway approaches, surrendered to his bail to answer a summons charging him with having, at the parish of Berkeley, feloniously stolen certain moneys of John Brown, of Maida-vale, Middlesex, gentleman.

The case was originally before the court on Wednesday, June 20th. Mr. Algernon Tathum, of the firm of W. Tathum & Sons, London, appeared in support of the summons; and Mr. Cooper, of the firm of Cooper & Cars, London, represented Mr. Bruff.

Mr. Tathum said that at the preliminary examination Mr. Tibbits appeared on behalf of Mr. Brown, but since then changes had been made, and he (Mr. Tathum) now represented Mr. Brown. He had gone into the matter thoroughly, and he had come to the conclusion that the prosecution ought never to have been instituted. He believed the accounts between Mr. Brown and Mr. Bruff had been muddled up together. He believed the criminal charge could not be sustained, and he begged to retire from the prosecution.

Mr. Cooper said a very serious charge had been brought against his client, and it was one that never ought to have been brought, and he gave a most unqualified denial to it.

Mr. Scott (magistrates' clerk) observed that he had read through the depositions and the papers that had been put in, and he could not see the slightest evidence of felonious intent.

The summons was then withdrawn, and the parties left the court.

CASES UNDER METROPOLITAN BUILDING ACT.

EXEMPTION OF RAILWAY COMPANIES.

AT Greenwich Police-court, Mr. John Shaw, manager and secretary to the South-Eastern Railway Company, was summoned for a contravention of the Metropolitan Building Act, in having erected a building as stabling, erected partly of wood and open, and not of brick, stone, or some incombustible material. Mr. Colman, from the solicitor's department of the Company, attended.

The complaint had been made by Mr. Tabberer, the surveyor for the Greenwich district, and the summons had been adjourned for the magistrate to view the structure previously to giving judgment. It was given in evidence that for several years past Mr. Munyard, a cab proprietor, had been in occupation of a wooden structure in an enclosed yard at the Greenwich terminus, but that on the extension of the line to Woolwich, now nearly completed, the old station had been demolished as well as the old yard, and the stabling used in the old yard removed to other land near the new station, for the purpose of enabling Mr. Munyard to provide proper cab facilities for the accommodation of passengers. In opposition to the Company's claim of exemption, two cases heard at the Hammersmith and the Thames Police Courts were put in, where the magistrates (Mr. Bridge and Mr. Lushington) had decided against the two railway companies. In the Hammersmith case, the buildings complained of were the erection of thirty houses for the dwellings of railway servants, and the other of a wharf, being let by the Great Eastern Railway Company to a coal merchant as a depôt, from the sale of which coals a profit was made by the holder.

Mr. Balguy said he had viewed the stabling in question, and recognised it as the old building he had seen for some time in the old yard. In the cases cited the houses and the wharf did not add to the development of railway traffic, and it came within the provisions of the Act; but the providing of cab accommodation, which was carried on at many railway stations, facilitated such traffic, and he should dismiss the summons, formally adjourning such judgment for a week for the district surveyor to consult the authorities of the Metropolitan Board of Works, and to make an appeal against such decision.

NEW FONTS.

Worcester.—A new font has been erected in St. Andrew's Church, Worcester, in memory of the late Alderman Webb. It is of Caen stone, with devices carved thereon of a dove, ornamental cross, emblem of the Trinity, and the sacred monogram. Marble columns, with carved capitals and ornamental bases, support it. The font was designed by Mr. W. Forsyth, and executed on his premises.

Dungannon.—A memorial font (designed by Mr. Butterfield, architect), standing 5 ft. high from the base, has just been placed in St. Ann's Church, Dungannon. It is composed of eleven different kinds of marble,—Irish, English, and foreign, and also of Scotch. The bowl (upon which there is an oak cover) is octagonal. The eight panels all vary in design, and the figures between each are carved. At the top there is the following lettering made with Lieva marble:—"To the glory of God,—the beloved Memory of Granville Henry Stuart, Earl of Ranfurly." The bowl is supported by a die and eight columns (the green being Galway marble). The lower or kneeling step is of Aberdeen granite; next there is one of white marble. The font was supplied by Messrs. Henry Poole & Son, of Westminster.

Brighton.—A font is about to be placed in St. Peter's Church, Brighton, in memory of the late incumbent (the Rev. Thomas Cook, M.A.), at the cost of Mrs. Cook. The font, which has been designed by Mr. Somers Clarke, jun., will be in the Perpendicular style, corresponding with that of the church. Messrs. Bennett, of the Lewes-road, Brighton, have been entrusted with the work, and they have secured a block of Sussex marble, dug out of the Lanfields estate at Petworth, and weighing nearly five tons.

CHURCH-BUILDING NEWS.

Kirkdale.—The foundation-stone of a new church in the district of St. Mary's, Kirkdale, dedicated to St. Athanasius, was held on the 25th ult., by Mr. A. H. Brown, M.P. The site, which has been given by the Earl of Derby, who has also promised 1,000*l.* towards the endowment fund, is at the junction of Fountains-road and Fonthills-road. The cost, exclusive of the boundary-walls, will be 6,000*l.* The plans have been prepared by Mr. Henry Sumners, architect. The building will accommodate 750 persons on the ground-floor, and will consist of nave, 82 ft. long by 31 ft. wide, north and south aisles, north transept, chancel, 26 ft. long by 27 ft. wide, minister's vestry, choir vestry, and organ-chamber. The church will be built of the local red sandstone in shoddies, with worked dressings, the style of architecture being Geometric Gothic of a simple character. Provision has been made for a spire and tower to be added at a future time. The builder is Mr. James Leslie, Bootle.

Beverley.—The memorial-stone of a new church was laid at Beverley on the 29th ult. by the Dowager Lady Wolverton. The late Lord Wolverton in his will bequeathed the sum of 5,000*l.* towards the cost of the erection of a church in memory of his son, Richard Riversdale Glyn, who died at Arden in 1859. To that sum Lady Wolverton has added 2,000*l.* from her own funds. The new church will be erected near the site of the old one, the ground having been obtained in exchange for that on which the ancient edifice stood. The style of architecture chosen by Mr. J. S. Crowther, of Manchester, who was entrusted with the preparation of the plans, is Geometric Gothic. The exterior walls will be built of Whitby stone with Bradford stone dressings; while the interior walls are to be faced with red brick. The church is to consist of nave, north and south aisles, two vestries, —one for the clergy and another for the choir,— organ-chamber, chancel, narthex, and a porch at the south end. This porch will be surmounted by a tower and a spire, which will have an altitude of 175 ft. The total length of the church, exclusive of the narthex, is 101 ft. 8 in., the width of the nave and aisles being 48 ft. The dimensions of the chancel are 38 ft. by 23 ft. 6 in. The present contract, which is let to Mr. A. Richardson, of Beverley, does not include the construction of the spire, but the tower will be erected, and will be finished with four pinnacles. The seats will be open benches of pitch pine, and accommodation will be provided for 300 persons. Mr. Dickinson is clerk of the works. The cost of erecting so much of the present church as is now contemplated will be 8,000*l.*

Guyhirn.— The memorial-stone of a new church at Guyhirn has been laid. The site, which has been given by the Vicar of Wisbech, is only a few minutes' walk from the Great Northern Railway Bridge. In digging for the foundation a quantity of stone was found, and it is believed that the site was once occupied by a church which is said to have existed in Guyhirn more than 300 years ago. The new church will be built in the Early Gothic style, and will consist of a nave and chancel, the transept forming the vestry on one side, and having seats for children on the other. Sir Gilbert Scott is the architect. The estimated cost is 3,150*l.* The length of the building from east to west will be 85 ft.; the width will be 25 ft. across the nave, and 47 ft. across the transept. The material used will be white Whittlesey brick, with stone weatherings. There is to be a turret with three bells. The builders are Messrs. W. Girling & Son, of Wisbech.

Art Exhibition at Bradford.—Two of the rooms in Manningham Hall, Bradford, have been set apart for the Bradford Art Society's Exhibition, which has just been opened. The exhibition contains about 170 different works, mostly water-colour drawings, many of them the work of amateurs.

"SCIENTIFIC PHILANTHROPY (LIMITED)."

A SUGGESTIVE commentary on what has recently been said in our columns and elsewhere as to the management of Artisans', Labourers', and General Dwellings Company is afforded by recent proceedings at the Bow-street Police-court, where William Swindlehurst, the secretary and manager of the company, and Edward Saffery, described as an estate agent, of Essex-street, Strand, have thrice appeared, charged on warrants, before Mr. Vaughan, with conspiring to defraud the shareholders of the Artisans', Labourers', and General Dwellings Company of the sum of 30,000*l*. In the first instance, Mr. Douglas Straight prosecuted on behalf of the committee of investigation appointed by the company, and Mr. Poland appeared for the defendant Swindlehurst.

Mr. Straight, in opening the case, said it was recently found necessary to appoint a committee of investigation into the affairs of the company. It then appeared that the defendants,—Saffery acting as "middle man," or intermediate vendor,—had contrived to defraud the company in the following manner:—The company, whose object was to purchase estates for dwellings for the poor, had paid 28,000*l*. for the Shaftesbury Park Estate, when only 25,000*l*. had been really received for the same; 48,000*l*. for the Cann Hall Estate, when only 35,000*l*. had been received: making a difference of 13,000*l*. A difference of 17,000*l*. was made also in respect to the sale of a third estate. These moneys, it was alleged, had been participated in by the defendants, and Swindlehurst suddenly resigned his appointment, and made preparations, it was believed, for absconding. Evidence in support of the charge having been given by the Hon. Evelyn Ashley, M.P. (one of the committee of investigation), and by Mr. John Morris of the firm of Ashurst, Morris, & Co.), the case was remanded, the magistrate agreeing to accept bail to the amount of two sureties in 500*l*. for each of the prisoners.

At the adjourned hearing of the case on the 10th inst., Mr. G. Lewis, who now attended for the prosecution, said some additional facts of great importance would be disclosed in this inquiry, but he proposed, on the present occasion, to deal exclusively with the purchase of what was called the Queen's Park Estate, in the Harrow-road, which was offered for sale by the Messrs. Driver, the well-known auctioneers, in April, 1874. The property was divided into five lots, but only one lot (lot 2) was sold. Subsequently negotiations were commenced by Saffery for the purchase of the other lots, on behalf, as he represented, of "a building society." Agreements were made for the purchase of lots 3, 4, and 5, on condition that the purchasers of lot 2 (Messrs. Kelly) would surrender their interest therein, which they consented to do for a sum of 4,000*l*. beyond the amount of their purchase, or 5,000*l*. Saffery was, for obvious reasons, represented as the equitable purchaser, although no contract existed to show the fact, and the large profits made by the re-sale of the estate to the Artisans' Company would be traced from the possession of the two defendants, and, he suggested to add, to one of the directors of the company, one of the 500*l*. bank-notes paid having been paid into his banking account. It would be thus seen that the secretary of the company, who was paid a salary of 500*l*. a year to protect the interests of the undertaking, had been a party to the appropriation of more than 1,000*l*.—that being the amount of difference between the price actually paid to the owners of the property (All Souls' College, Oxford) and that charged to the company—a further deception having been practised by another officer in the false valuation of the same.

Mr. Robert Collier Driver, the well-known auctioneer and land agent, of Whitehall-place, and Mr. Charles Needham Longcroft, the solicitor to the company, having given evidence for the prosecution, the case was again adjourned, the magistrate increasing the bail of Swindlehurst to two sureties in 1,500*l*. each, and himself in 1,000*l*. The same bail as before for Saffery was taken, viz, two sureties in 500*l*.

The case came on for hearing again on Wednesday last, when the chairman of the Board of Directors, Dr. Baxter Langley, was charged on a warrant with participating in the fraud. Mr. Avis said that since the last occasion Dr. Langley had been charged with conspiring with the other defendants to defraud, and also with having, as a director of a public company, received property for his own interest. Out of the money received for the Queen's Park Estate a certain sum had been received by Dr. Langley, whether from Mr. Saffery or Mr. Swindlehurst, it could not be said; but a 500*l*. note had been traced to Dr. Langley, who had also possessed himself of 100*l*., whether from Mr. Saffery or not could not be said. Mr. Lewis said it would be shown that certain notes received from the Cann Hall Estate had been paid by Dr. Langley into his bankers. Dr. Langley, as the paid chairman of the company, could not have honestly received back portions of the money. Mr. Langley resigned his chairmanship a few days ago, with other directors.

After voluminous evidence had been tendered in support of the charge, the case was adjourned, the same bail as on the last occasion being taken for Swindlehurst and Saffery, and one surety of 500*l*. for Dr. Langley.

ST. JAMES'S, MOORE PARK, FULHAM-ROAD.

ON Saturday last the new chancel lately added to this church was consecrated by the Lord Bishop of London.

Seven years ago, when the church was erected, funds could be provided adequate only to the building of the body of the church, leaving the chancel, organ-chamber, &c., to be added when means could be acquired. Since that time, the vicar, the Rev. W. H. Denny, has been untiring in his efforts to consummate his good work, and Saturday saw the realisation of his wishes.

The chancel, apsidal in form, is from the drawings of Mr. Ewan Christian, and forms an elegant adjunct to the church, which was originally designed by Mr. Butterfield. The carved work has been supplied by Messrs. Jones & Willis, and the mural decoration, which is very successful, has been carried out by amateurs of the neighbourhood, the least indefatigable of whom certainly not being Mrs. Denny herself.

Five stained-glass memorial windows, by Messrs. Pepper, have been added,—three at the cost of the vicar, and the other two by one member of his congregation. We may add, personally knowing the difficulty in obtaining funds locally for this purpose, that although the work is completed a heavy debt remains, and to those of our readers who may be disposed to assist in its liquidation, we will simply suggest that Mr. Denny's Vicarage adjoins his church.

SCHOOL BUILDING NEWS.

Sneinton.—An extension of the Sneinton National Schools has been opened. Mr. J. Trueman is the architect, and Mr. Vickers the builder of the extension, which is calculated to accommodate 300 boys, and has cost 1,200*l*. The land was the gift of Earl Manvers. One of the features of the new department is a special class-room, set apart for middle-class education. There is no provision for girls, who are retained in the old schools. The old boys' schools are now applied for the infants. The original schools were erected for 600 children, and thus accommodate 900, with the addition.

Bradford.—The trustees of Eastbrook Chapel are now engaged in erecting new day and Sunday schools, in place of those which now stand in Chapel-street, Leeds-road. The new buildings will be upon an extensive scale. Only a small portion of the site of the present school premises will be required, as it is intended to build upon the enclosure adjoining Eastbrook Chapel. Upon this frontage will be placed the Sunday school, morning chapel, &c., and across the upper end of the ground, joining up to the old schools, will be situated the day school, the two schools having together a frontage of about 150 ft. to Chapel-street. Upon the ground-floor, next to the present chapel, will be the morning chapel, 37 ft. 6 in. by 33 ft. 6 in., and six class-rooms. The Sunday school will be upon the first-floor, its dimensions being 55 ft. 6 in. by 37 ft. 9 in., with six other class-rooms, four of which open upon the principal room by means of revolving shutters. The additional area thus obtained will give a total length to the school-room of 85 ft.

Whitechapel.—On the 12th ult. was laid the foundation stone of a German school in connexion with the German Lutheran Church in Little Alie-street, Goodman's-fields, intended for the benefit of the German population in the East of London. The schools were originally opened in 1805 with seventeen scholars, the number of which had increased last year to 495. In consequence of the dilapidated state of the school buildings, the Metropolitan Board of Works had ordered them to be pulled down. In their place it is intended to erect a school to accommodate 600 children, at an estimated cost of 5,000*l*. The architect is Mr. E. A. Grüning, and the builders are Messrs. Browne & Robinson.

Glossop.—New classrooms, &c., are in course of erection at St. Andrew's Church Sunday-school, Hadfield, Glossop. The cost of the extension will be about 700*l*.

Bristol.—The foundation stone of a new building for the Bristol Grammar School, in Tyndall's Park, has been laid. The building will be erected in the style of architecture prevalent in England in the time of the founder, namely, the latter part of the fifteenth century, will be placed upon the upper part of the land, and will present two fronts of very similar character, one of which will be seen from the Queen's Hotel-avenue. The ground-floor will contain, besides the entrance-hall and room for boys' caps, &c., the head-master's rooms, and the masters' common rooms, and eight class-rooms, each averaging 20 ft. square. The laboratory of the natural science classes, and other offices, will be placed outside the walls of the main building. The upper floor will contain the great schoolroom, measuring 140 ft. in length by 50 ft. in breadth in clear of the walls, and 50 ft. in height from the floor to the collar-beam of the roof. It will be lighted by eight large moulded tracery windows on each side, besides the great oriel window of the transept, and at the ends by traceried windows of seven lights filling the gables. A commodious residence for the head-master will be erected, in the same style, on the northern side of the school building. The building is estimated to cost 18,000*l*. Messrs. Foster & Wood, of Bristol, are the architects; Messrs. Wilkins & Son, of Bristol, the builders; and Mr. G. Salmon, clerk of the works.

Portland.—New Wesleyan day and Sunday schools are now in course of erection at Tophill, Portland. The cost will be about 1,000*l*. Mr. J. P. Scriven is the architect of the building. It is Gothic in style, built entirely of Portland stone, and is calculated to hold about 300.

Abbot's Bromley.—Two years ago the foundation stones were laid of some new school buildings, and a school chapel, to be erected in connexion with St. Anne's Middle-Class School for Girls at Abbot's Bromley. The portion of the chapel first proceeded with was the apse or sanctuary, and the choir, which were dedicated on the 26th ult. Inside, the building is some 30 ft. long, 20 ft. wide, and 50 ft. high, to the apex of the roof. An arch (of wood resting on stone shafts) of lofty proportions separates the curved and boarded roof of the sanctuary from the open-timbered roof of the body of the chapel. The windows are simply treated, and of two lights. The whole is built of local red brick, specially made to a thickness of only 2 in. The ultimate intention is to line the walls of the sanctuary with stone and bands of alabaster, with a reredos in the centre bay, consisting of three moulded arches, in which, carved in red stone, will be the Crucifixion, with St. Mary and St. John. Flanking the reredos on the side walls will be figures of saints under projecting canopies,—three on either side. The choir has been erected at a cost of about 800*l*. The architect is Mr. R. Herbert Carpenter, and the builders Messrs. Espley & Sons, of Stafford.

Poslingford.—The foundation-stone of new National Schools at Poslingford has been laid. The buildings have been designed by Mr. A. A. G. Colpoys, of St. Leonard's-on-Sea. They are intended to accommodate seventy children, and will contain a large mixed schoolroom, 30 ft. by 18 ft.; a class-room, 16 ft. by 12 ft.; and a residence for the mistress, having four rooms and offices. The contract has been taken by Messrs. Mason & Son, of Haverhill, and the total cost of erection is estimated at about 800*l*.

Edinburgh.—The foundation-stone of the buildings about to be erected in connexion with All Saints' Episcopalian Church, Lauriston, was laid on the 18th ult. The new building is situated at the south end of Glen-street, Lauriston, and adjoins All Saints' Church. The front elevation is Gothic in style, with a sloping roof, and is three stories in height. The second floor of the new erection is designed as a hall, to meet the growing wants of the neighbourhood. The new hall will measure 53 ft. by 35 ft., a space which, with the gallery to be added, will accommodate 500 or 600 persons. The entire cost is estimated at over 4,000*l*.

Poole.—New Congregational Sunday Schools

are being erected in Poole. The erection will be faced with red brick, with white brick arches and string courses, and will be supported by piers on either side. A schoolroom and two classrooms will occupy the ground floor, and the former will be approached from Lagland-street and by an entrance in Skinner-street. The dimensions of the schoolroom, measuring from the inside, will be 60 ft. by 38 ft., and of the classrooms 24 ft. 6 in. by 13 ft. respectively. These rooms will be of the uniform height of 16 ft. Mr. J. Danford is the builder.

Margate.—The Dane Voluntary Schools, Margate, have lately been completed and opened. The buildings have been erected to accommodate 420 children. They are built in two flats, the girls having the ground floor and the boys the upper floor. The girls' schoolroom is 75 ft. long by 20 ft. broad, with two good classrooms; the whole capable of accommodating 260 girls. The boys' schoolroom is 45 ft. by 20 ft., and two classrooms; the number of boys it will accommodate is 160. Both schools have entrance-lobbies for hats and cloaks, and separate sanitary arrangements. The work has been carried out by Messrs. Bushell & Sons, from the designs of Messrs. Drewe & Bower, at a total cost of 1,880*l.*

Books Received.

On Hospital Organisation, with Special Reference to the Organisation of Hospitals for Children. By CHARLES WEST, M.D. London: Macmillan. 1877.

DR. WEST occupies a high position among his professional brethren. He has filled the office of senior censor of the Royal College of Physicians; and is president of the Royal Medical and Chirurgical, and also of the Obstetrical, Societies of London, and a corresponding member of the French National Academy of Medicine. Five-and-twenty years ago he founded the Children's Hospital in Ormond-street, to the care of which a very considerable portion of his valuable time has been steadily devoted. The little work which he has now published has the double aim of serving all hospitals, and all those who serve, manage, or direct hospitals, by offering them in a very available form, the fruit of a long experience; and of benefiting the Children's Hospital in especial by the proceeds of the sale of the book. Into the details given by Dr. West we cannot, of course, enter. But there is not a page which does not betoken the careful reflection of a scientific man who has his heart in his work; and not the heart alone, but that without which zeal may do more harm than good,—a cultivated brain also. Especially is the work of value to the managers and committee-men of hospitals, as showing very clearly what are the true laws of the division of labour and of responsibility between staff and committee; and what should be the general outline of the working arrangements. Valuable statistical details are given, as to the cost of a patient in both English and Foreign hospitals. It certainly is matter for serious reflection, on the part of those whom it concerns, that while the cost of a patient per day at the London Hospital is 3s. 4d., and at the Westminster Hospital, 3s. 7d., at the Children's Hospital it rises as high as 4s. 9d. We gather, from the close of the book, that the counsel of the founder is no longer dominant in Ormond-street. The comparison of cost just made shows that there is some considerable room for reform in the management of that beneficent institution. Dr. West speaks simply and weightily when he says:—"The medical report and the treasurer's balance-sheet furnish the test of the good working of a hospital. If the mortality is excessive, if the expenditure is extravagant, there is something wrong, something which must be set right,—considerately always; quietly, if possible,—but which yet must be set right, cost what it may."

The Cottage Hospital: its Origin, Progress, Management, and Work. By HENRY C. BURDETT. London: J. & A. Churchill. 1877.

THE commencement of this movement had our aid; each fresh foundation was recorded; and though the writer of the little volume before us does not include the *Builder* in the list of agencies which contributed to extend the movement, we have the satisfaction of knowing that observations in our columns admittedly prompted to action early workers in the cause. There are now nearly 200 cottage hospitals in the country, with an income of some 50,000*l.* a year. The great feature to be recognised in the system is the requirement of a moderate payment by the patients, thus encouraging feelings of self-help and independence. We cannot resist the conviction that our great hospitals are great pauperising centres.

Mr. Burdett's book contains much valuable information on the subject, and may be usefully studied as well by those who are connected with existing cottage hospitals as by those who project the foundation of one. To the latter we would especially advise simplicity and moderation. The Ross Memorial Hospital, which, as mentioned by Mr. Burdett, contains eight beds, and cost in building and furnishing hard upon 3,000*l.*, ought not to be taken as a model; nor do we desire, except in very special cases, such an extensive establishment as that of which the plan and elevation are given, designed by Mr. Ernest Turner.

Miscellanea.

Public Offices.—The report of the Select Committee appointed to inquire as to the propriety of concentrating the various public buildings in the metropolis has been issued. The Committee strongly urge the expediency of some such concentration, as they are of opinion that delay will lead to greater expense in the future. Three plans were submitted to the committee. The first was that of Sir Henry Hunt, consulting surveyor to the Office of Works. He proposes to purchase all the blocks of buildings bounded by Parliament-street on the east, St. James's Park on the west, Great George-street on the south, and Charles-street on the north. This contains 133,000 superficial feet of building area, and the estimated cost of the ground amounts to 1,300,000*l.* On this block Sir Henry Hunt provides accommodation for the War Office, the Admiralty, and the Council Office; he proposes to remove the old buildings in Downing-street, and to erect houses fronting the Park for the First Lord of the Treasury and the Chancellor of the Exchequer; to add a story to the Treasury Offices, to place the Board of Trade between them and the Horse Guards; to retain the Horse Guards; and to place the Office of Works and the Office of Woods between the Horse Guards and the present Admiralty, and thus to leave the existing Admiralty building at the disposal of the Government. Another plan was submitted by Mr. Mitford, suggesting that the public offices should be placed on the west side of Charing-cross; and the third plan, submitted by Mr. Cates, proposed acquisition of one side of Whitehall-place, and the houses in Whitehall-gardens up to Montagu House.

The Hastings Builders.—The master builders of Hastings, St. Leonards, and district, have formed a trade association, with a view of promoting good fellowship and unity of action in trade affairs. Of course they could not accomplish this satisfactorily without a feast. Accordingly, an inaugural dinner took place on the 3rd inst., when a company numbering about forty persons assembled. In the absence of the President of the Association, Mr. Walter Longhurst took the chair, the vice-chair being filled by Mr. Councillor J. Wood. The company included Messrs. David Parks, F. Amon, H. T. Develin, W. J. Morgan, W. R. Reeve, A. Collins, R. Novis, C. Arnold, G. Geary, G. Austin, G. Sacre, H. Buller, C. Shortell, W. Nowers, A. Vidler, H. Vidler, A. Vidler, jun., F. H. Davis, T. J. McConnel, G. Sharp, H. Gasson, J. Jones, G. King, G. Hare, J. Grisbrook, G. Gough, R. Munday, E. Harman, H. Chapman, W. Steel, J. Ford, S. Starr, T. Collins, J. N. Beaney, &c.

Tree Murder.—The plane-trees in the garden of the churchyard of St. Botolph, Bishopsgate, are now (says the *Gardeners' Magazine*) in a nice condition to illustrate the first principle of tree murder. Those planted on either side of the public pathway to form a shady avenue have been carefully "pruned back," and are worthy of a momentary inspection by such as are interested in town trees, and know something of the way they should be managed. It will be observed that they have made a nice growth, and if left unpruned would now meet overhead and make a delightful shade, which pedestrians would appreciate. But as they have been severely cut in, their natural beauty is marred, and their vigour of root action diminished. There are no windows robbed of light by these trees, and there is no reason apparent why they should be pruned at all.

Model Employers of Labour.—We cli
the following paragraph from a North Countr
paper:—In South Cumberland two iron firn
have subscribed 9,000*l.* between them toward
building a church for the use of their workpeopl
the total cost of the edifice being but 4,000
more. A week or so ago the Bishop of Carlis
consecrated this monument of local munificenc
thus adding a worthy item to others of
similar nature, which could be mentioned. A
though such hard things are sometimes sai
with regard to the relations between th
capitalist and his ironworking dependents, suc
instances as the one quoted tend to remov
even a deep-rooted prejudice which may be fe
in the matter. But many such acts could b
quoted on behalf of large employers of labou
The Peases, of Darlington, in each successi
generation, leave behind them traces of th
noblest and wisest philanthropy, and if we go
little further afield, what of Titus Salt, th
Crossleys of carpet-making fame, Mark Firt
of Sheffield, a Peabody, and a host of others
The Dowlais Iron Company have under the
especial charge one of the largest and bes
regulated elementary schools in Great Britai
and choose to conduct it independently of t
Local School Board.

Proposed Improvement at Millbank.
At a meeting of the Metropolitan Board
Works on the 29th ult., Mr. White moved,
"That it be referred to the works and gene
purposes committee to consider and report as
the advisability of the Board applying to Parl
ment next session for power to form a new stre
from Abingdon-street to Millbank Penitentia
and to embank that part of the river Thame
The mover said he had to ask the Board kindly
make this reference, in order that he might
enabled to state to the committee certain financ
reasons why this improvement should be p
ceeded with with as little delay as possib
which reasons it would not be wise to st
publicly before the Board. The motion havi
been seconded, Mr. Roche objected to the re
rence being made. A committee of the Hou
of Commons had expressed themselves so
cidedly with reference to this proposed met
politan improvement that the Board had
alternative but to withdraw it from their B
and there the matter ought to rest, at any r
for the present. Mr. Selway also objected
the motion, and remarked that the Board had
intention whatever of going to Parliament n
session with a Streets Improvement Bill. T
motion was ultimately carried.

A Halifax Lodging-house.—A large
substantial building has just been opened
Winding-road, Halifax, adapted to accommod
a large class of working men who, from nec
sity, are compelled to live in lodging-hou
The building has been erected between
bottom of Ann-street and Gaol-lane. It is f
stories high. The basement is occupied as
eating-house, there being one entrance to
large dining-room, which is light and lofty;
another to the shop, where the edibles
drinkables are served. Behind is a sitting-ro
where the residents can read the newspap
&c. A large cellar, the full length of the bu
ing, affords accommodation for washing, cook
&c., and is well lighted from the front. On
third floor there is sleeping accommodation
thirty workmen. The room is lighted by l
windows, both in the front and back of the bu
ing. On the top floor there is accommodation
twenty-eight men. The rooms are lofty, li
airy, and cheerful. The *Halifax Guardian*
that what is now urgently needed is a sim
lodging-house for females.

A New Mode of Felling Trees.—Amo
other applications of electricity by man is
of felling trees. An American gentleman a
years ago patented a process of this kind.
gentlemen in Bombay have also patente
similar method, and which they recently
mitted to public experiment. The plan
detailed by a local paper, is simple. The
ends of the copper wires of a galvanic bat
are connected with platinum wire, which
course, instantly becomes red-hot, and whi
that state it is gently see-sawed across the t
of the tree to be felled. At present no plati
wire has been made thick enough to withs
the continual friction; but when this is don
is calculated that a tree, which at present
two hours to fell, will come to the groun
this process in fifteen minutes. The metho
this advantage, that there is no waste of
and no sawdust.—*Farmer.*

he Attempt to Raise the "Vanguard." preliminary experiments on the wreck of ill-fated ironclad, the *Vanguard*, have, it is ed, resulted very satisfactorily, and the ulti- e success of the attempt to raise her is ght to be a matter of certainty. It would that the position of the ship is most favour- for lifting by the means prepared by Captain ain, and approved of by the Lords of the iralty, viz., by means of huge steel wire s passed under her, and made fast above to ense pontoons. Captain Coppin intends to n at once to get the lifting ropes placed r her, so as to be ready for making the lift oon as the pontoons are completed. The oons will be constructed on the Clyde, and will have a lifting power of 3,000 tons, and be specially constructed to meet the require- ts of the work, which it is hoped they may mplish. The divers employed in recent ations, and engaged for the completion of work, belong to the staff of Messrs. John g & Co., of Donaghadee.

rundel Church and the Duke of folk.—We have before alluded to the dog- e-manger policy pursued by the Duke of olk in reference to the Collegiate chapel or cel of Arundel Church. When the church restored, some years ago, the churchwardens essed the Duke of Norfolk, assuming a right ie collegiate chapel, adjoining the church, he Duke, acting on legal advice, caused a antial brick wall to be erected in the arch- which separated the chapel from the church. hurchwardens did not contest the right,— ugh the two buildings are continuous, and collegiate chapel had for years been open called the "chancel of the church." All s to the building from the church has, fore, been stopped from that period, and air, and ventilation denied. We learn from *West Sussex Gazette* that the Vicar of del has caused a breach to be made in the screen, so as to admit light and air into hurch. The act is one in defiance of the ed rights of the Duke of Norfolk, and may to more discord.

utomatic Railway Coupling.—The ad- ages claimed Brailesford's patent automatic ay coupling, just introduced, are (1), the saving of risk to life, there being no ssity to go between the trucks, either in ling or uncoupling; (2) great simplicity and bility,—it can, it is said, be depended on in darkest night or in the thickest fog, and ot fail to act on the sharpest curve, or by m of one coupling being higher than her; (3) it does not condemn the existing lings, and can be fitted to them cheaply and ditionsly; and (lastly) the enormous saving me effected. Twenty trucks, instead of g almost as many minutes to couple by , can be joined in two or three seconds. In ting in and out of sidings, the engine alone lo all the coupling required, one man only g required to uncouple, which can be done, asserted, with perfect safety from either of the truck, even when going at consider- speed. It is well worth the notice of rail- companies and all owners of rolling-stock.

Good Example.—The *Glasgow Herald* —"No more important duty can fall upon authorities of a great and populous city like gow than that of supplying proper, cheap, well-arranged lavatories for the use of each of the community. This has been done to extent throughout the city for the benefit e male portion, and the Local Authority has opened three "lavatories," under proper agement, for the special accommodation of les of every class in the following places, —One at the north end of Jamaica-street ge, one at the south end of Stockwell-street ge, and one in the new buildings of the oration, next the jail, in Jail-square, each ounted with a sign painted 'Ladies' Waiting- and Lavatory.' Should these places be n advantage of to any considerable extent, s will be opened at different points in the ' London and other large cities will do to take a lesson from Glasgow on this er.

indley Cemetery Competition.—In the ut competition for cemetery chapels, and he laying-out of the ground, the Burial d have awarded the first premium to Mr. eaton, Wigan; the second, to Mr. Freeman, n-le-Moors; and the third, to Messrs. Gar- & Johnson, of Southport.

Yet Another Use for Paper.—The uses to which paper has been put of late years as a substitute for wood, iron, cloth, &c., have not, apparently, exhausted the directions in which it may be made serviceable to mankind. It is reported that an officer in the navy has obtained a patent for sheathing vessels with paper, to protect them from corrosion and the gathering on them of sea-grasses and barnacles. It is said that paper was used on the bottom of a vessel in the dock at Portsmouth for some other purposes, and that the officer obtained his patent because, on the return of the vessel to the dock after a voyage, he discovered that every part of the vessel below the waterline was covered with weeds, grasses, barnacles, except the papered portion. He has since experimented with paper as a protector of ships' bottoms, and is said to have found that when a cement of waterproof paper is used, it is the best and cheapest material for protecting iron.

Compo Balconies.—Last week Dr. Hardwicke held an inquest at the Paddington Coroner's Court as to the death of John Mason, 35, of 22, Lawrence Poultney-lane, City. The owners of No. 65, Palace Gardens-terrace, Kensington, engaged Mr. Howard, a builder, of Moscow-road, Paddington, to repaint the front of the house. On Wednesday the deceased and another man went upon the balcony, which was made of compo and had no support. After being there a few minutes the balustrades gave way, and the deceased was thrown to the ground. He was picked up in an insensible condition and taken to St. Mary's Hospital, where it was found that he had received a fracture of the skull, from which he died in a few minutes. It was stated that the whole of the balconies in this terrace were of a dangerous character. The jury returned a verdict of "Accidental death." If another disaster should occur here the verdict would be different.

South Kensington Museum.—The list of Royal Donors to the Museum has received an addition in His Imperial Majesty, the Shah of Persia. The Shah has been pleased to present to the Museum a valuable assortment of modern Persian textiles, consisting of fourteen carpets of various designs, and places of manufacture; twenty-four pieces of patchwork embroidery, made at Resht, to serve as table carpet, tray, and cushion-covers; twenty-six pieces of Kerman silk embroidery on shawl (Silsileh) in the form of waistbelts, bedquilt, pillow, and table-covers, &c.; and ten other pieces of various textiles. An interesting letter from his Excellency the Emin-ul-Mulk, President of the Council, explains the circumstances of His Majesty's liberal gift.

Bursting of a Drainage Outfall.—Great damage has been caused at the outfall works of the King Sedgmoor main drain at Dunball, near Bridgewater. The new auxiliary cut, constructed at a cost of 4,000*l.* or 5,000*l.*, suddenly collapsed, owing, it is supposed, to the shifting of quicksand beneath, and to the combined action of the tide and fresh water accumulated by the late heavy rains. Several massive iron pipes, 6 ft. in diameter, burst with a loud report. A considerable portion of the turnpike road was carried away, and a house close by was undermined to such an extent that its fall is anticipated.

Fall of Houses in Bethnal-green.—At a few minutes before six o'clock on Tuesday evening an accident took place in the Bethnal-green-road, whereby two persons were killed. Some scores of houses in that road have lately been purchased by the Metropolitan Board of Works, for the purpose of having the road widened, to improve the route to Victoria Park. The houses, Nos. 112 and 114, were unroofed, and the outer walls fell into the carriage-way.

Cleansing Public Buildings.—The West-end Branch of the Bank of England in Burlington-gardens has just been cleansed outwardly by one of Messrs. Merryweather & Son's steam fire engines. The performance occupied just one working day as contrasted by several weeks' labour if done by hand.

An Unsuccessful Aquarium.—It has been resolved to close the Manchester Aquarium, and wind up the affairs of the Company. Want of appreciation on the part of the public is the reason assigned for this unfortunate collapse. Was there no other?

Social Science Congress.—Lord Ronald Leveson-Gower has accepted the office of President of the Art Department at the forthcoming Congress to be held at Aberdeen.

Dewsbury.—Mr. William Thornes, of Bradford, has been appointed Assistant-Surveyor for the Borough of Dewsbury, at a salary of 150*l.* per annum. There were forty-three applications.

TENDERS.

For house and shop in Wood-street, Walthamstow, for Messrs. Budd & Co. Mr. J. H. Swan, architect. Quantities by Mr. Thomas M. Deacon:—

Tarrant	£3,523	0	0
Dearde	3,487	0	0
Mitchell	3,300	0	0
Morter	3,296	0	0
Reed	3,250	0	0
Baguley	3,115	0	0

For house, shop, and furniture warehouse in Ebury-street, London, for Mr. James Marshall. Mr. F. Stone, architect. Quantities supplied:—

General Contract.

Lathey, Brothers	£2,650	0	0
King & Son	2,555	0	0
Shaw	2,348	0	0

Ironwork only.

Shaw	530	0	0
St. Pancras Ironwork Company	450	0	0
Mayhew	443	0	0

For alterations to the Railway Hotel, Anerley, and two new houses (with shops) adjoining. Messrs. Bird & Walters, architects. Quantities supplied:—

Downs	£2,755	0	0
Nightingale	2,740	0	0
McLachlan & Son	2,684	0	0
R. & E. Smith	2,514	0	0
Taylor (accepted)	2,437	0	0

For master's house, Southwick, for the Southwick School Board. Mr. F. W. Hyde, architect:—

Trigg & Willett (accepted)	£324	10	0

For laying out two new streets, Kemp-town, Brighton, with drainage, metalling, curbing, &c. Mr. F. W. Hyde, surveyor:—

Bruton	£1,680	0	0
Barnes	1,515	0	0
Howard (accepted)	1,491	0	0

For alterations and additions to the Gladstone Hotel, North-street, Brighton, with bowling alley, assembly-room, billiard-room, and entrances in rear of hotel, for Mr. J. S. Ashton. Mr. F. W. Hyde, architect:—

Patching & Webber	£3,046	0	0
Lockyer	2,994	0	0
Cheeseman & Co.	2,940	0	0
Nash & Co.	2,888	0	0
Colwell	2,780	0	0
Bruton	2,650	0	0
Henning & Co.	2,630	0	0
Anscombe	2,577	0	0
Howard	2,575	0	0
Barnes	2,560	0	0

For rebuilding the church of St. Lawrence, Essex. Mr. R. Wheeler, architect:—

Gozette	£1,616	0	0
Read	1,598	0	0
Stammen (accepted)	1,555	0	0

For a villa residence, stables, and lodge, at Grove-hill, near Bray, County Wicklow, Ireland, for Mr. James Jameson. Messrs. Millar & Symes, architects. Quantities (for the villa only) by Mr. Hans Harford:—

Millard	£20,450	0	0
Moyers	19,700	0	0
Kieninment & Son	19,533	0	0
Bolton	18,850	0	0

For the erection of a villa residence, on the Mill Green Estate, Margate, for Mr. Wm. List. Messrs. Smithies & Gladman, architects:—

Bushell & Sons	£2,038	0	0

For the erection of two semi-detached residences at Brentford. Messrs. Smithies & Gladman, architects:—

Barns	£1,953	0	0
Gibson	1,592	0	0
Taylor	1,588	0	0
Falkner	1,547	0	0
Nye	1,511	0	0
Beauchamp	1,419	0	0

For repairs and decorations at 34, Kensington Park-gardens. Mr. H. H. Collins, architect:—

Crossley	£820	16	1
Poole	756	0	0
M'Intosh	747	0	0
Whiteley	715	0	0
Vernall & Griffiths	658	0	0
Heyward	650	0	0

Accepted for the Bacup Branch of the Lancashire and Yorkshire Bank. Mr. Harry T. Percival, architect:—

Smith & Co. (masons)	£695	0	0
Sutcliffe (joiners)	489	0	0
Clegg (plumber, &c.)	240	0	0
Collinge & Co. (plasterers)	109	0	0
Rushton (slater)	89	0	0

For alterations, &c., and new shop-front to No. 1, High-street, Shoreditch:—
Thomerson (accepted).

For the first portion of Messrs. Mansell's factory for the widening of Theobald's-road:—
Downs & Co. (accepted).

For pulling down and rebuilding the Angel and Crown, Warwick-street, Golden-square. Mr. Henry R. Cotton, architect. Quantities by Mr. A. J. Gate:—

Manley & Rogers	£4,677	0	0
Foxley	4,497	0	0
Williams & Son	4,480	0	0
Shaw	4,118	0	0
Patrick	3,947	0	0
Newman & Mann	3,856	0	0
Toms (accepted)	3,863	0	0

For semi-detached villa residences, Caterham Valley, Surrey, for Mr. A. Weller. Mr. John Glenn, architect:—

Bayes, Brothers, & Allen	£2,790	0	0
Longley	2,702	0	0
Stanes & Son	2,663	0	0
Cullum	2,554	0	0
Ennor, Julian, & Co.	2,500	0	0
Ridge (accepted)	2,412	0	0

For erecting new class-rooms, enlarging school-room, and re-stuccoing outside of chapel for the Building Committee of the Brunswick Sunday Schools, St. Paul's, Bristol. Messrs. J. W. Trew & Sons, architects:—

Stevens & Gardiner (accepted)	£1,563	0	0

For erecting the Chiddy Memorial Cottage for the Committee of the Chiddy Memorial Fund, Hanham, near Bristol. Messrs. J. W. Trew & Sons, architects:—

King	£273	0	0
Stevens & Gardiner (accepted)	267	0	0

For additions to Baptist Schools, Wycombe Marsh, Bucks. Mr. Arthur Vernon, architect:—

Silver	£416	0	0
Nash	368	0	0
Hunt	359	10	0
Taylor	353	0	0

For new workmen's club, Tyler's-green, for Sir Philip Rose, bart. Mr. Arthur Vernon, architect:—

Woodbridge	£850	0	0
Silver	747	0	0
Loosley	670	0	0
Wheeler	573	0	0

For new warehouse buildings, St. Mary-Axe Mr. H. H. Collins, architect. Quantities supplied by Messrs. Batstone, Brothers:—

Bracher & Son	£9,420	0	0
Scrivener & White	9,185	0	0
Newman & Mann	9,030	0	0
Waldram & Co.	9,023	0	0
Browne & Robinson	8,960	0	0
Morter..	8,844	0	0
Brass	8,815	0	0
Bayes, Brothers, & Allen	8,750	0	0
Merritt & Ashby	8,737	0	0
Mark	8,700	0	0
Nightingale	8,582	0	0
Abraham	8,468	0	0
Kirk & Randall	7,810	0	0

For construction of new sewers in fifteen streets, Chelsea. Mr. G. H. Stayton, C.E., surveyor to the Vestry:—

Contract No. 1.

Brass	£4,653	0	0
Mears	3,622	0	0
Pearson	3,284	0	0
Thompson & Son	3,233	0	0
Killingback	3,229	0	0
Nowell & Robson	3,151	0	0
Ford & Norris	3,073	0	0
Braid & Co.	3,000	0	0
Neave & Son (accepted)	2,814	0	0

Contract No. 2.

Brass	£4,200	0	0
Mears	3,461	0	0
Pearson	3,286	0	0
Thompson & Son	3,000	0	0
Prout	2,945	0	0
Killingback	2,940	0	0
Ford & Norris	2,805	0	0
Braid & Co.	2,800	0	0
Nowell & Robson	2,709	0	0
Neave & Son (accepted)	2,420	0	0

Contract No. 3.

Brass	£3,790	0	0
Mears	3,231	0	0
Killingback	2,950	0	0
Prout	2,940	0	0
Thompson & Son	2,900	0	0
Pearson	2,843	0	0
Nowell & Robson	2,700	0	0
Ford & Norris	2,629	0	0
Braid & Co.	2,600	0	0
Neave & Son (accepted)	2,247	0	0

TO CORRESPONDENTS.

A. A. (we cannot advise in private disputes)—Z. C. (if we gave an opinion on *ex parte* statements, we should simply mislead)—H. T. (notice was already in type).—W. D. (the number of storks differs. In one block there are ten)—H. L. (will appear)—W. T.—C. M. H. H.—L. L.—R. D.—W. T. & Sons—S. H.—W. W. L.—W. W.—H. H. C.—A Marbler.—J. F. M.—A. V.—M. & Sons.

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The Builder.

VOL. XXXV. No. 1799 SATURDAY, JULY 2, 1877.

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Climate and Artistic Development.

IN some remarks at the opening of the Wokingham Loan Exhibition last week, Mr. Walter, M.P., promulgated the theory that the development of artistic taste and power in a nation was, to a great extent at any rate, dependent upon geographical position and climatic influence. At all events, if he did not go so far as to say that a favourable and bright climate produced art, he inferred that a climate of the opposite nature checked and hindered it. The idea, of course, is not new, more especially with those who are given to look for the ultimate basis of intellectual movements in a philosophical spirit; but it was a little unusual and unexpected to find this climate theory made part of a popular address on an every-day ceremonial occasion of the kind referred to. We were exposed, Mr. Walter remarked, to great competition with foreign countries who had hitherto excelled us; "and unless the taste of the country could be improved we could not expect to hold our own against the productions of France, Italy, and other countries, where taste came by greater length of cultivation or by greater natural advantages, because there was no doubt that the people living in this country had great natural disadvantages as compared with the natives of other countries. Living under the somewhat gloomy sky of England, with the phlegmatic temperament of Englishmen, they had little chance of gaining the refinement of those who lived under brighter skies. So much was that the fact that he had seen it stated, on the authority of the Blue Books, that even Frenchmen who came over to impart their ideas and knowledge to English students had found that a long residence in this country had the effect of taking out of them a good deal of the artistic power which they possessed."

This last sentence we can hardly imagine was intended to be taken quite seriously, in spite of the reference to the formidable authority of "Blue Books" in regard to the decline of foreign artistic genius when transplanted to these shores. The statement reads as if it came in evidence from some hereditary haters of "*perfide Albion*," who attributed to her blighting influence every difficulty of their career; like the country gentleman in the *Spectator*, who thought there had been no good weather since the Whigs came into power. That a certain French painter of Society pictures, who has domesticated himself with us, does not paint as well as he used, may be urged, perhaps, as a practical proof of the correctness of Mr. Walter's view; we ourselves should be inclined to attribute the decadence (perhaps only temporary) to the carelessness of an artist a little spoiled by success. But as to the general view, independently of this surprising Blue-book testimony, that artistic power is very largely dependent upon climatic influences,—what of it? Is it in the main true or not? The question is rather important; for, if it be so, to what end are art-schools and Kensington Museums against the preponderating force of Nature? It is Mrs. Partington and the Atlantic over again.

The conclusion we come to on the point will perhaps depend a good deal on what we agree to comprehend under the term "Art." If we take it as including every kind of creation and æsthetic expression, comprehending poetry and drama as well as plastic arts, we should find a good deal of difficulty in the way of Mr. Walter's theory. Not only is Shakspeare generally admitted to be supreme among poetic creators, in variety and force of imaginative power, but he is beyond many southern poets in warmth and richness of style and imagery. The tragedies of the Italian Alfieri are as cold as ice compared with "Lear" and "Othello." "Juliet" is full of all the warmth of a southern nature; and this intensity of feeling and expression is even more prominently developed in others of our dramatists; Webster and Marlowe, for example. The names of Byron, Shelley, and Keats, in modern times, add force to the conviction that we must, at all events, leave poetry out of the category of arts influenced by climate. If we come to music, it might seem that England offered an instance of the truth of the theory. We are not by any means a music-producing nation; and in regard even to our anonymous national melodies, it was remarked by a foreign composer, on hearing one of these, that he should have known it to be English, "it was so cold and destitute of feeling." This is the characteristic of English national melodies; there is no passion in them. But if we were to attribute this to the direct influence of climate, we should be brought up by the consideration of the different character of the Irish national tunes, which are wild in expression and full of pathos, though under much the same climatic influences; or by the recollection of the intensity and fire of expression which characterise Polish music, under no more favourable national influences than our own. So we must put music on one side. And if this art and poetry are obviously not dependent upon genial climatic influences for their development or their intensity of expression, we must conclude that any climatic influence in regard to art must be looked for rather as affecting some details in its development than as hindering or promoting the innate power and genius for art-production.

There is, probably, a direct influence in climate on the general characteristics and manners and external appearance of a people who have lived for generations under its influence. Probably we may go so far as this with Mr. Walter, that a people living in warmth, comfort, and sunshine, are more likely to become beautiful in appearance, and to love and care about outward beauty, than those who are always contending with inclement elements and consequent privation, and a hard struggle for existence. Heine, in his little poem, "Das Meer," where he supposes a youth and a maiden seated by the sea, and indulging in fancies about the different lands to which the ships are sailing, draws the distinction in two concentrated verses between the inhabitants of the tropical and the cold climate:—

> "Am Ganges duftet's und leuchtet's,
> Und Riesenbäume blüh'n,
> Und schöne, stille Menschen
> Vor Lotosblumen knie'n.
>
> "In Lappland sind schmutzige Leute,
> Plattköpfig, breitmäulig und klein;
> Sie kauern um's Feuer und backen
> Sich Fische, und quaken und schrein."*

These are extreme instances of the undoubted fact that on the whole the human growth, like other growths, luxuriates under warmth and light, and is stunted under the influence of cold and bleak sunless skies; just as, on a smaller scale, the influence of a well- or ill-lighted room tells on its inhabitants, as was pointed out in Mr. Carl Pfeiffer's excellent and practical paper on "The Sanitary Influence of Light," reprinted in the last number of the *Builder*. And body and mind are too intimately connected for the condition of the one not to act upon the other, and influence more or less the character of work which may at first sight seem very little connected with corporeal conditions at all. Certainly we should hardly expect the art of the Laplanders and of the Hindoos to have much resemblance, any more than their growth and aspect as specimens of humanity. But if we come to try to define this too much, and to decide what particular influence this or that climate has upon artistic production, we are soon landed in contradictions and propositions which cancel one another. In Longfellow's prose tale, "Kavanagh," an amusing *reductio ad absurdum* is given of this kind of thing, no doubt based on what the poet had heard from uncongenial spirits among his own countrymen. A "prospector" of a new national magazine called on the schoolmaster, who is one of the personages of the story:—

"'I think, Mr. Churchill,' said he, 'that we want a national literature coramensurate with our mountains and rivers,—commensurate with Niagara, and the Alleghanies, and the Great Lakes!'"

'Oh!'

'We want a national epic that shall correspond to the size of the country; that shall be to all other epics what Banvard's panorama of

* "On the Ganges are light and fragrance,
And giant trees are in flower,
And beautiful silent men
Kneel 'neath the Lotos bower.

In Lapland are dirty folk,
Flat-headed, wide-mouthed, and small;
They cower o'er the fire and bake
Their fish, and jabber and squall."

the Mississippi is to all other paintings,—the largest in the world.'

'Ah!'

'We want a national drama, in which scope enough shall be given to our gigantic ideas, and to the unparalleled activity and progress of our people!'

'Of course.'

'In a word, we want a national literature altogether shaggy and unshorn, that shall shake the earth, like a herd of buffaloes thundering over the prairies!'

'Precisely,' interrupted Mr. Churchill; 'but,—excuse me,—are you not confounding things that have no analogy? . . . . . A man will not necessarily be a great poet because he lives near a great mountain; nor, being a poet, will he necessarily write better poems than another because he lives nearer Niagara.'

'But, Mr. Churchill, you do not certainly mean to deny the influence of scenery on the mind.'

'No; only to deny that it can create genius. At best, it can only develop it. Switzerland has produced no extraordinary poet; nor, as far as I know, have the Andes or the Himalaya Mountains, or the Mountains of the Moon in Africa.'"

The absurdity of the theory as applied by the interlocutor in this little scene is of course obvious to every one; but the application of Mr. Walter's theory to art would lead to something very like this, if followed out unreservedly to its logical conclusions.

It has been implied, however, that, with certain reservations, there is a relation between climatic influence and art. But if we look at the facts, we shall probably come to the conclusion that this amounts to very little more than a determination of the taste in favour of a greater or less richness of decoration, especially in regard to colour, and an influence upon the treatment of detail in reference to its effect under certain lights. The degree in which architectural style, in all cases in which it has been untrammelled by fashion, has been influenced by this cause, is of course too obvious, and has been too often dwelt upon in the columns of the *Builder*, to need more than a word of passing reference; but it may just be observed that the influence of climate on this art has resulted merely in distinctions of architectural treatment, not in any particular advantage of one style over another in æsthetic beauty or fitness, or in grandeur of effect. We may take the Moorish, the Greek, and the northern Gothic styles as three typical examples of architecture, showing very distinctly the influence of climate: the first being marked by that exuberance in colour and detail which seems to belong peculiarly to tropical art, where a love for what is bright and glowing and full of colour seems a part of the whole habitude of life; the second, the Greek, showing that delicacy of detail and contour which could only be effective in a very clear air and under a bright sky; the Gothic exhibiting, in its deep mouldings and shadows, the natural result of the effort to make architecture effective in a dull climate and thick atmosphere. The differences in these styles, which may really be said to be almost directly traceable to climatic influence, are very marked, but they are differences of kind rather than of degree. Most architectural critics would probably concur in thinking that the northern Gothic, considered purely as architecture, or the art of expressive building, has achieved greater things than any other style of architecture erected under what would be supposed, on the theory we are discussing, to be more favourable climatic conditions.

If we look at painting, we shall again find it difficult to say that climate exercised a marked and unmistakable influence in developing or depressing artistic power. We have the fact of the great era of painting having developed in Italy; but this was on the very same soil and under nearly the same climatic conditions which surrounded the Roman progenitors of the cinquecento Italians,—those very Romans whom Mr. Walter, in the course of his address, cited as an example of a people devoid of artistic feeling or imagination, curiously overlooking the obvious contradiction which this fact gave to his climatic theory. Even landscape painting, which one might suppose to be specially connected with or influenced by climate and scenery, only very partially illustrates the position. Greek landscape appears to have had no artistic existence; Orientals, one and all, seem, so far as we know, absolutely unable to feel or to represent landscape in art. None of the greatest landscape-painters belong to Italy; and (to clinch the matter) Turner was an Englishman.

If we come to decorative work and colour, there,—and, it may be said, there only,—we seem to find something like a distinct and obvious relation between climate and artistic success. Tropically situated people seem to feel intuitively the beauty and the harmony of rich colouring in a way which by northern artists is, except in rarer instances, only painfully acquired by deliberate study, if at all. In regard to the mass of people in northern Europe, beyond the circle of professed artists, it may be said that, for the most part, it never is acquired; and that while an African or an Italian woman, with no art-education or culture, will intuitively select harmonious colouring, it is impossible ever to predict in what harsh and inharmonious combination a lady of modern Europe may not, even with deliberation and intention, attire herself. It seems to be really the fact that a heated tropical climate, which brings out, as one may say, a great deal of bright and varied colour in nature, leads to an intuitive love of such colouring, and a natural perception of its conditions. The other fact, that Oriental ornamental work is mostly superior to Western work, can hardly be attributed to direct climatic influence, save that perhaps we may conclude that the exuberance of animal and vegetable life under a tropical sun has a kind of counterpart in a tendency to exuberance of fancy in the human subject. But, in fact, it is probable that the fancy and richness of Oriental ornamental work is due to climatic influence, if at all, only in a secondary way. The more luxurious conditions of life under such a climate leave, perhaps, more time and inclination for the elaboration of decorative art, one of the ornaments rather than of the serious objects of life; and, indeed, a good deal of Oriental decorative work may be considered to be not merely exuberant but extravagant, quite overrunning the boundaries of what is truest and most refined in art, and verging towards the grotesque. The superiority of Oriental decorative work over "the tawdry things seen in English shops," alluded to by Mr. Walter, is indubitable; but it must be remembered that English decorative art was not always tawdry. The very same country and race produced at one period metal-work which we now greatly admire. And modern French ornament, which Mr. Walter seemed to regard as superior to ours, really contains quite as much that is tawdry, meretricious, and vulgar, as our own jewellers' and other shops can show: the workmanship is perhaps better; but in regard to good taste there is little to choose, and no reason for us to humble ourselves before the Parisian art workman.

One remark at the close of Mr. Walter's address at Wokingham we noticed with some interest, inasmuch as it was of a character not usual in addresses delivered on such occasions. It is by no means our practice or our province to under-rate the influence of art in raising the tone of society and giving interest to life; from certain points of view, and taking the word in its broadest sense, we may echo the sentiment of Goethe, "Happy is he who in early life has known what *art* means." But so much passes for art at present which in the higher sense is hardly worth the name, and so much mere high-sounding verbiage is constantly used, on occasions like the one we have been referring to, attributing to art, or to "the fine arts," every possible good that humanity is capable of enjoying, that it is really rather refreshing to find a speaker original enough to close his remarks on such an occasion with a hint that possibly, after all, art is not the whole of life; that there may even be a higher mission for a nation than to be reckoned foremost in artistic production. Mr. Walter cited a passage from Virgil in regard to the political rather than artistic greatness of Rome, and suggested that possibly this also was the part of England to take the lead in great political and moral movements rather than in points of artistic taste. If this be so, perhaps we may connect this fact also with climatic influence, according to Kingsley's theory of the influence of the "hard grey English weather" in forming the English character. A thoroughly balanced life would have both, no doubt; but if that were impossible, certainly moral and political greatness, with some deficiencies of taste, would seem a more healthy state of things than the possession of all the artistic wealth of the Renaissance period, along with its moral corruption and ingrained duplicity. At all events, the suggestion is, under the circumstances in which it was made, sufficiently unusual and original to be worth calling attention to; nor is it out of keeping, it may be said, with the objects and principles which have been advocated in the columns of this journal, in which it may fairly be claimed that the moral importance and influence of architecture, in the provision of healthy dwellings and the sanitary arrangement of towns, as the physical basis of a healthy moral life, whether individual or national, have always been kept prominently in view.

PRACTICAL INFORMATION AS TO SANITARY PROCESSES.*

MESSRS. ROBINSON and Melliss have to some extent performed a service of which we have long since intimated the need. It is, indeed, according to our view, one of the simplest and most important functions of the Local Government Board which has thus been left to two private professional men to fulfil. To inform the Local Sanitary Boards throughout the country of the steps taken in each locality,—of the principles adopted, the means employed to carry them out, the cost incurred, and the result attained, should have been, we have more than once ventured to suggest, a duty annually discharged by a competent officer of the Local Government Board. How exertions were frittered away; how expenses were incurred again and again; how experience was acquired, paid for, and disregarded; how every one was left to go his own way with the very minimum of help and advice we have only too often deplored. In 1874 the Corporation of Rochdale, as Messrs. Robinson and Melliss mention in their preface, collected and published in a tabular form, what was being done by other towns. During the session of 1875 a return of a similar kind was called for in the House of Lords by Lord Roseberry, and it was published in March of the following year. We have before us the return moved for by Mr. Sclater Booth, and ordered by the House of Commons to be printed on the 11th August 1875; showing the several nuisances reported to and dealt with by, the several urban and rural sanitary authorities in England and Wales in 1874, and the estimated cost of sanitary structural works, undertaken during the same year. Sixty-one pages are occupied with these details, of which, whatever may be their value as indicating the activity or the enterprise of the various authorities, there is no a line that would guide any one as to the choice of measures to be adopted. The reports under the Public Health Act are generally open to the same objection. The writers lose themselves in details, and seem utterly unaware that there is a general question of primary public interest,—for the solution of which what is most requisite is the collection of broad facts. The Society of Arts held a conference, in May, 1876, on the health and sewage of towns—the proceedings of which were given in our columns with remarks as to the numerous inquiries of the same kind which had been dispersedly made up to that time, and the want of a general synoptical view of the information actually collected from so many various sources. The reports of the Council of the Association for Preserving the Rivers and Locks of Scotland from Pollution, dated 1875, and the Reports of the Rivers Pollution Commissioners, are cited by our authors. So are the minutes of the proceedings of the Institution of Civil Engineers, to which we have lately called attention. Last comes the report of the Committee appointed in 1875 by the Local Government Board to inquire into the several methods of treating town sewage, to which, as we have lately seen, Mr. Bailey Denton has raised objections in his recent work. Messrs. Robinson and Melliss observe with justice, "Valuable as is the matter brought together in these publications, it is not in a form which can be utilised by sanitary authorities." The object of the work before us, then, is to review and arrange the results thus obtained, pointing out inferences for the guidance of those who have to deal with the refuse of towns. The authors incidentally refer to their own experiences of the subject. But the chief value of the book is its impersonality. We have continually had to deplore the intrusion of some crotchet, hobby, or personal craze, into works that had involved much labour, and which included much informa-

* Purification of Water-carried Sewage. Data for the Guidance of Corporations, Local Boards of Health, and Sanitary Authorities. By Henry Robinson, M.Inst.C.E., and J. C. Melliss, Assoc.Inst.C.E. London: Smith, Elder, & Co. 1877.

tion. In all these cases the utility of the tale told is impaired or destroyed by the moral appended to it by the narrator, or, still more disastrously, by the moral which he attempts to insert between the lines of the text. What we want is, facts, so collected, so described, and so arranged, that they shall speak for themselves And certainly the nearest approach that has yet been made, so far as we are aware, to that important desideratum, is to be found in the volume before us.

One chief defect of the book, as it occurs to the inconvenience of the writer who proceeds to analyse it, and as it is therefore likely to occur to the persons who recur to it for information, is the want of a distinct index, or list of towns, referring to the page in which the name of each may be found. There is, it is true, a general index, but that is another thing. From a perusal of the book, we come to the conclusion that the experience of about 166 towns has been collected. But some names are referred to under several heads. The difficulty thus experienced by a reviewer—tolerably well versed in the subject—is likely to deter many readers from obtaining as much information from the book as it really contains. In the case of the work reaching future editions,—and something of the sort ought to be published year by year,—it will be well for the authors to prefix a full and well-arranged table of contents, and also to add, in a tabular form, a list of towns of which the proceedings have been described, with references to the different pages in which the names occur.

The book inquires into the experience gained in the several places described in methods classed under the heads precipitation, irrigation, filtration, and discharge into the sea. An appendix contains chemical analyses of the results of various processes. There are tables showing the cost of different modes of treatment. In twenty-seven places irrigation has been adopted. The average cost of the process has been 7*l.* 16*s.* 4½*d.* per million gallons of sewage; the highest cost having been 26*l.* 7*s.* 5*d.* per million gallons at Eton, and the lowest, 5*s.* 9½*d.* for the same quantity at Cheltenham. In five places precipitation has been employed, and the tabulated result yields an average of 4*l.* 18*s.* 4*d.* per million gallons. For discharge into the sea the sole instance of Brighton is found in the tables. The cost has been 5*l.* 9*s.* 7*d.* for the same unit. Instances of filtration are not tabulated. The chapter on this subject only contains nine pages. It refers to thirty-eight towns. But the remark, "excepting in laboratory experiments, and a few instances upon a very small scale, filtration of crude or untreated sewage apart from irrigation has never yet succeeded," with which the chapter begins, possibly gives the reasons for this slight treatment of this part of the subject. It would, however, have much added to the permanent value of the book if statistical details had been collected as to these asserted failures; and if the attempts at this mode of treatment had been exhibited both as to their financial results, and as to their chemical want of results, as distinctly as is done with regard to other methods of procedure. A fourth table shows the proportion of land used for irrigation purposes, to a daily flow of one million gallons of sewage at thirty-two of the principal places where the irrigation system has been adopted, and also indicates the nature of the soil. The variation of proportions shown by this table is such as to demand explanation. At Kendal 130 acres of land, consisting of sand, loam, and boulders, is allowed for a daily flow of one million gallons of sewage. At Watford 1,090 acres are allotted to the same purpose. Personal acquaintance of old date with the neighbourhood of Watford enables us to remark that the gravel found in that vicinity is of the best description. It occurs in pot-holes on the surface of the upper chalk; and consists of a sharp, red, silicious sand, with blue and red pebbles interspersed. Unless it be from the fact of its extreme compactness when undisturbed, we know of no material anywhere that we should expect to act with greater efficacy for the oxidation of sewage. The soil at Kendal is returned "sand, loam, and boulders," in the table before us. We turned to Mr. Bailey Denton's description of the works at this place for some more specific information as to the geological character of the soil, but in vain. There is a note in the table, "exceptionally favourable formation of land, and very dilute sewage." But what is wanted is exact information, especially when we find a proportion of eight to one under circumstances of apparently very similar character.

A hundred and seventeen pages, out of the 214 which compose the book, deal with the two questions of precipitation and irrigation. Precipitation, or chemical treatment of water-carried sewage, requires, the authors justly remark, consideration under four several heads. These are,—(1) mechanical straining, so as to remove the larger portions of refuse; (2) chemical treatment and subsidence; (3) disposal of the precipitated matter; (4) filtration of the effluent water. In fact, these four steps in the process of disinfection recur under whatever head the main process is ranked. Nor does it appear possible that either aspect can be neglected, in any case, without mischief. The second class is the only one with which it is possible to dispense. And the great problem before the sanitary engineer is, whether he saves or loses money by the introduction of a precipitating process in a series of operations which it is idle to attempt very materially to simplify. As to this, Messrs. Robinson & Melliss's book gives available information with regard to the different procedures employed. Mechanical straining becomes necessary when the sewage contains much foreign matter, such as paper, rags, corks, hops from breweries, and the like. The authors recommend Latham's self-cleansing mechanical strainer, as a simple appliance for this purpose.

Chemical treatment is intended to deodorise, disinfect, and precipitate the organic substances contained in the sewage. The conditions necessary are; to employ chemical substances which effect the three objects (and not the latter alone); which are attainable at a moderate price; and which add as little as may be to the bulk of the precipitate. The processes on which experiments on a large scale have been made are grouped by our authors under four heads. These are,—(1) processes which employ salts of alumina as the chief precipitating agent; (2) processes which employ lime as the chief precipitating agent; (3) processes in which salts of iron are used as precipitants; and (4) miscellaneous processes.

Under the first head, the first instance given is at Coventry. The population of the place is about 40,000. Its sewage has for many years been poured into the river Sherburn, at a spot situated a mile to the south of the city. In this locality the river is not more than 10 ft. wide, and very shallow, so that the flow of sewage, amounting to two million gallons in the twenty-four hours, often doubled or trebled the volume of the river itself. The sewage was extremely foul, coloured by the refuse of dye-works and the like; and the result was, that the Sherburn really was turned into an open sewer of a very offensive character. This water, in conjunction with that of another small river called the Sowe, entered the River Avon, and contributed to supply the drinking-water for the town of Warwick. In consequence, the authorities of Coventry have been exposed to much trouble, and have made various unsuccessful attempts to get rid of the nuisance. For these we refer the reader to Messrs. Robinson and Melliss. Since April, 1874, the work has been in the hands of the General Sewage Company, whose course of procedure has been as follows:—

The sewage flows to the works by gravitation. It is first mechanically strained through Latham's extractors, which have collected, among material naturally to be expected, live fish and frogs, walking-sticks, silver-mounted meerschaum-pipes, and even spoons and forks. After straining, the sewage receives a charge of milk of lime, and then flows to four precipitating-tanks, worked on the continuous principle. These, when full, allow the effluent water to flow over weirs at their ends in a fair state of purity. From the tanks the effluent water runs to filter-beds, covering nine acres of land. These beds are used intermittently, so that when one requires rest or repair, another is ready to replace it. The effluent water finally passes into the River Sherburn. Analysis shows but little organic (albuminoid) ammonia, and not much more than half a grain of saline ammonia, per gallon. The nitrogenous organic constituents of raw sewage appear, according to a report by Dr. Voelcker, soon to become oxidised, and changed into nitrates to a considerable extent. A gallon contains 26 grains of sulphate and carbonate of lime, and 7¼ grains of chloride of sodium, besides other salts and acids, amounting in all to 44 grains per gallon.

The chemicals used per diem are one ton of crude sulphate of alumina, which is manufactured on the works, and 5 cwt. of lime, to every million gallons of sewage, the cost of these ingredients being 34*s.* The total cost of rent of land, purchase of materials, management, labour, and interest on cost of works, is at the rate of 3,446·7*l.* per annum, being equivalent to 4·7*l.* per million gallons, or to 1*s.* 8½*d.* per unit of population.

The tanks are periodically stopped, and the precipitate removed for drying. The amount collected is about 25 tons per diem, of which 85 per cent. is water. This precipitate is passed through a drum filter, which reduces the moisture to 65 per cent. It is then passed through Milburn's drying-machines, and exposed to a low heating process, by which the moisture is reduced to 60 per cent. It is then stacked, in its heated state, and continues to lose moisture till it has dried down to from 10 to 15 per cent. In this condition the dry precipitate amounts to 4½ tons, of which, as we have seen before, 1¼ ton represents the weight of chemicals added. The cost of drying is said to amount to from 6*s.* to 7*s.* per ton. The material has been sold as manure, at rates varying from 4*s.* a ton for precipitate containing 65 per cent. of water, to 40*s.* a ton for the dried manure, containing 10 per cent. of moisture. Some has been "fortified" by the admixture of phosphate of lime and other fertilising agents, and has been sold at from 5*l.* to 6*l.* per ton; the price being stated to represent more than the additional cost added to that of the manure by the fortifying materials. The authors state that if the estimated value of the manure be realised, the annual cost of 3,446*l.* would be diminished by sales amounting to 832*l.*, reducing the cost to 1*s.* 3½*d.* per unit of population. There is, however, no account of the actual debtor and creditor operations. It is clear that it is to such accounts, extending over a series of years, that the engineer has to look for guidance. When, on one hand, there is a positive expenditure, and, on the other hand, an estimate of value, possibly to be realised, we are far from being on solid ground. As the General Sewage Company have been at work since the 30th of April, 1874, we do not understand why only the amounts of the expenditure for August, September, and October, 1876, should have been taken from the books; and why the actual cost, and actual receipts, from April, 1874, to, say April, 1877, have not been given by Messrs. Robinson & Mellish. The matter is one of too much practical importance for any one to give much for estimates when actual accounts should be forthcoming.

Nuneaton, with a population of 7,399, has adopted the same process that is used at Coventry. The effluent water is filtered through two acres of land, and the cost of the works, exclusive of any receipts from sales, is reckoned at 1*s.* 8*d.* per unit of the population. The accord between this financial result and that attained at Coventry is a satisfactory feature in the case.

The native guano, or A, B, C process, patented in 1868 by Messrs. Sillar & Wigner, consists mainly in the addition to the sewage of alum, blood, and clay. In 1868 it was introduced at Leicester. No account of the financial result is given; but the testimony on the Rivers Pollution Commission report is to the effect that the process failed to purify the sewage so as to render it admissible into running water. In 1869 the process was in operation in Leamington, where it was also given up. The cost of the ingredients employed here is said to have amounted to 15*l.* 18*s.* per million gallons of sewage. Another trial of the process was made at Crossness in 1872. The heavy cost there incurred is said to be due to exceptional circumstances. It is not, however, encouraging, even with this qualification, being equivalent to 7*l.* 6*s.* per million gallons of sewage. In 142 tons of dry manure yielded by the process, only about 61 tons consisted of ingredients found in the sewage, while 81 tons had been added by the experimenters. Thus the manure, to the sale of which the patentees looked for a profit, was worth, if chemically regarded (which is a very different thing from a sale price), barely 20*s.* per ton, while it cost 6*l.* 6*s.* 4*d.* per ton to produce it. Experiments on the same process have also failed at Tottenham and at Hastings; at Bolton, Southampton, and Leeds. The process is now being worked at Aylesbury, where upwards of 7 tons of foreign ingredients are added to every million gallons of sewage. The results have not been published.

The phosphate sewage process, patented in 1870, consists in the use of the expensive ingredient phosphate of alumina, together with lime. Experiments were made on this process

three years ago at Barking; but the results have not been published, and the trials have been abandoned. At Hertford the corporation have made an arrangement, highly favourable for the town, with the Phosphate Sewage Company. The balance-sheet of the latter has not yet been published; but chemists are of opinion that the value of the phosphates is deteriorated by the process through which they pass, so that more money is put into the sewage, in the form of this expensive chemical, than comes out of it in that of manure.

Bird's process employs what is called sulphated clay, which is a mixture of from four to nine parts by weight of sulphur with one of common clay. It was tried without success at Cheltenham. It is still in use at Stroud. One ton and three quarters of solid materials are added by this process to a million gallons of sewage. The sewage at Stroud is weak, but the effluent fluid is not such as to be admissible into a clean river. Financial details are not given.

Last of this group of processes is Stothert's, patented in 1852, which employs lime, sulphate of alumina, sulphate of zinc, and charcoal. It does not appear that the process has been in practical application anywhere, and as the ingredients to be added to a million gallons of sewage appear to amount to more than ten tons in weight, it is not improbable that this may continue to be the case.

No less than nine processes have been patented which employ lime as the chief precipitating agent. These are called by the names of the inventors; Hille, Maraden & Collins, Holden, Fulda, Blythe, Whitbread, Campbell, Hanson, and Goodall. Details of the trials of each are given in the volume. The general upshot is, that the lime process, one of the earliest attempted, has been under trial for thirty years; that it does not purify, but only clarifies, sewage; and that it produces a nearly valueless manure. Results like this it is of the first importance to the sanitary engineer to learn, to verify, and then to act upon by abandoning any further application of time and money to a method radically inefficient.

Salts of iron have been used as disinfectants for more than a century. At Northampton chloride of iron, in conjunction with lime, was tried for the sewage of a population of 40,000, six gallons of chloride, and twelve bushels of lime, being added to each million gallons of sewage. The effluent water was then filtered through 8 in. of calcined iron ore. In 1870 an injunction was granted against the Corporation, and the system was abandoned. Trials at Clifton and at Cheltenham also failed.

There are many other patent processes for the precipitation of sewage, none of which have been put to any practical use. The methods of Higgs, Dale, and Dimsdale; of Lenk; and of a mixture of hydrate of lime, chloride of lime, and alum, under experiment at New Shoreham, are mentioned among them.

We have thought it useful thus far to enter into the details of that portion of the book which is likely to be of most use to the engineer by way of preventing useless experiment. For the other heads of treatment we must refer to the volume itself. The "general conclusions" of the author's by a reversal of the ordinary method of arrangement, occupy the first chapter of the book. We call attention to the statement that "a careful investigation of the various systems for treating sewage leads to the conclusion that water-carried sewage has never yet yielded a profit, when all things are taken into consideration, and that it is a nuisance that must be got rid of at the expense of ratepayers." Another part of this chapter leads to a not less important conclusion, although it is one which is too much ignored in recent proposals for sanitary works. "The disposal of sewage by discharging it into the sea does not hold out the hope of a a solution of the difficulty in that direction that is claimed for it. At Brighton the cost would appear to amount to upwards of 5*l.* 10*s.* per million gallons of sewage. No possibility of any revenue exists, and the authorities now have to face the difficulties of sewer gas and ventilation of sewers, with the attendant risk of disease."

A serious defect in the book is the want of any account of what has been attempted, and what has been effected, by General Scott. The name of this officer only once occurs in the Index, and the place in the work to which we are referred says nothing as to the manufacture of cement by the process patented (we believe) by him. Yet, if the other conclusions above quoted are to be relied on, it is to the combustion of the precipitated matter, in combination with the filtration through the ground of the effluent water, that experience points. It would be highly important to know all that is known of the experience that has been obtained as to the use of the precipitate as a self-consuming fuel, and as to the composition and utilisable character of the resultant ash. Messrs. Robinson and Melliss have thus given rather a comprehensive sketch than an exhaustive report; but their work is the most complete which we have as yet had to notice. It is a step in the right direction. It will probably be some years before enough experience is collected to allow of the writing of a systematic standard book on the subject. Meantime the need of the sanitary engineer is wide-spread, detailed and exact information, as to what is the actual outcome of the large expenditure already directed to this portion of our sanitary work.

THE BIRTHPLACE OF PETER PAUL RUBENS.

UNTIL a few years ago, Cologne was considered the birthplace of Rubens, a house in the Sterngasse being pointed out as the spot where the painter saw the light. It was even intended to perpetuate this hypothetical assertion by a commemorative tablet. It was then that M. Backhuisen van den Brink brought forward proof from the archives of the house of Orange, according to which the family of Rubens, at the time of the birth of Peter Paul, was living at Siegen, which place had been assigned to the father as a forced place of residence. Cologne thus seemed to have lost its claim, and raised no objection when recently the little town of Siegen celebrated officially the tercentenary of the birthday of its supposed great native. But Antwerp protested; Antwerp is not inclined to give up its claims to be the birthplace of Rubens. The manuscripts brought forward by M. Backhuisen were somewhat inconvenient for those claims, but it was alleged that the mother of the painter, shortly before his birth, went to Antwerp, and was delivered of a son there. The *Cologne Gazette*, in alluding to the above, says that, though there are no positive proofs, yet the possibility of Rubens having been born at Antwerp cannot be denied. According to our contemporary, it matters little where the great painter was born, since, as appears from a letter of his, he remained at Cologne only until the tenth year. At that age he returned with his family to the Netherlands, and consequently received there the education which makes the man. The most recent information on the subject of Rubens's birthplace has lately been brought to light by M. van den Branden, assistant librarian of the city of Antwerp. This gentleman has come across a notarial document, in which Rubens, with Breugel and van Balen, all painters, appear as witnesses, and are all described as burghers of Antwerp. The otherwise not uninteresting document is as follows in the original Flemish:—

"28 Augusti 1618.

Signors Jan Breugels, oudt omtrent achtenveertich jaren, Henrick van Balen, out dryenveertich jaren ende Peetro Paulo Rubbens, oudt eenenveertich jaren, ALLE schilders, POORTERS ende ingesetenen DESER STADT, my notario wel bekent, ende hebben, ten versuecke van Signor Laureys de Smit, by manne waerheydt, eedt presenterende des versocht synde, geattesteert hoe dat sy, onlancx geleden, alhier binnen deser stadt, gesien hebben, in den winckel van den voorschreven Laureys de Smit, eenige stucken tapisseryen, gevrocht met gout, silver, syde ende saeyet van de Historie van Chipion ende Hanibal, ende dat het patroon, daernaer die gemaect zyn, is de teeckeninge van Julio Romano, fameus Italiaens schilder, discipel was van Raphael Durbino, metten welcken hy in compaignie werckende was ende oyck desselffs Durbino erffgenaem geinstituuert, ende oversulcx, een van de fraeyste patroonen die sy attestanten alhier binnen deser stadt gesien hebben. Affirmerende tgene voorschreven gesecgt te hebben voor de gerechte waerheyt. Consenterende etc. Aldus gedaan t'Hantwerpen, ter presentien van Michel de Cock ende Christiaen Peetermans als getuygen etc.

JEAN BRUEGHEL.
HENDRICK VAN BALEN.
PIETRO PAOLO RUBENS."

[TRANSLATION.]

"August 28, 1618.

Messrs. John Breugel, aged about forty-eight, Henry van Balen, forty-three, and Peter Paul Rubens, aged forty-one, ALL painters, BURGHERS, and inhabitants OF THIS CITY, well known to [illegible] notary, have, at the request of Mr. Laureys Smit, testified on oath how that they, lately in t city, have seen, in the shop of the above-nam Laureys de Smit, a few pieces of tapestry, work with gold, silver, silk, and worsted, representi the history of Scipio and Hannibal, and that t pattern after which it has been made is design of Julio Romano, the famous Ital painter, disciple of Raphael of Urbino, w whom he worked, and also appointed the sa Urbino's heir, and, therefore, one of the ha somest patterns which the undersigned h seen in this city. They affirm the aforesaid be in accordance with the strictest truth. Th consent, &c. Done thus at Antwerp, in t presence of Michael de Cock and Christi Peetermans as witnesses, &c.

JOHN BREUGEL.
HENRY VAN BRULEN
PETER PAUL RUBENS."

The importance of this document (the wri in the above-named journal thinks), with resp to the question under discussion, consists in t fact that the rights of a citizen or burgher (*poort of Antwerp, according to the old laws (*costu men*), can only be acquired by birth in the pla itself, independent of the quality of the paren or by solemn admission, by being sworn in befo a magistrate and the town council, and bei entered in the burgher-rolls (*poorters-bookes*: Now it is another fact that in these well-p served books Peter Paul has not been th entered, while there is such an entrance for h elder brother—"Philips Rubbens, Janssor geboren van Ceulen"—in the year 1609. M. v den Branden concludes from this eviden that Peter Paul never bought or otherwi acquired the right of citizenship, and that h since it is notorious that he was a burgher Antwerp, possessed the right of citizenship b virtue of his being born there. The *Colog Gazette* generously adds:—"Although this pro is negative, and not very binding, we do not fi fault with the Antwerpers if they rest the proud claim upon this evidence. Rubens is th head and the representative of the Flemi school in its most singular singularity, and n one will contest with the Flemish the fame claiming the great master as one of their ow It matters very little whether the house und the roof of which Maria Pypelinckx gave him the world stood at Siegen or at Antwerp."

ST. PAUL'S SCHOOL.

THE Mercers' Company have purchased si teen acres of land in Hammersmith, at a co of something over 40,000*l.*, and on this sit buildings will be erected for the celebrate school now located in St. Paul's Churchyar behind the east end of the Cathedral. M Barnes Williams is the Company's architec and will, we suppose, build the new schoo The existing school was built from the design of the late Mr. George Smith, about the yea 1823. Some of our readers will remembe some will not, that this school was founded b Dean Colet in the year 1512, and that he mad the Mercers' Company, of which his father wa a distinguished member, the governors of it.

THE WELLINGTON CHAPEL, BIRDCAGE WALK.

A CORRESPONDENT is startled by what h calls the "wreckage" of the interior of th Doric chapel at the Wellington Barracks but he need not be alarmed: it will all b put straight again. Mr. Street is the archi tect, acting under a committee of officers and Messrs. Adamson & Sons are the builder engaged upon the work. The tender, as we understand, was at first 16,000*l.*; but by substi tuting stone for marble, deal for oak, and so on it has been reduced to 9,000*l.* The style of the new interior will be much less archaic than that of the exterior, which will remain as at present

Falling in of a Roadway.—Considerable ex citement has been created in Tottenham-court road, in consequence of the roadway and footpath in front of the Gladstone public-house, Cumber land-street, kept by Mr. W. Purkess, falling with a tremendous crash into the cellars, almost bury ing some unfortunate men in the *débris*. To all appearance, there is some danger of the house itself falling.

AN ABSTRUSE QUESTION FOR THE ABERDEEN CONGRESS.

HOW HAS THE SOCIAL ELEVATION OF WOMAN INFLUENCED THE DECLINE OF ARCHITECTURE?

SIR,—I was yesterday painfully reminded that you have received no communication from me since my letter of the 19th of May last, when naught but duty forced me to speak upon a subject of the highest importance to men and architects in England and America. This letter will take a wider range: it treats of a matter which affects the world. Judicious acceptance and immediate publication of it will undoubtedly restore your readers to a proper sense of their obligations; for I regret to say that several recent numbers of the *Builder* which I sent to my sister-in-law and Fitz-Boodle have remained uncut. Indeed, it was only after a wickedly sarcastic remark of my own that little Lorimer took up one, and finding nothing of mine in it—she is the governess at Fitz-Boodle Hall, and when excited uses the *bourgeois* slang, though by no means a bad match for a moneyed man without brains—she said that it was really quite too awfully dull. I know, and my reasons are logically based, that she was prejudiced in her assertion, and so you need not take notice of it. My journey to the Hall was an important one. I shall never forget certain circumstances with which the visit was accompanied. We formed a *partie carrée*, half of science, half of fashion: My Lady Fitz-Boodle, Miss Lorimer, myself, and Miss E. Lizardo. The last-named, the great entomologist, is, as you are doubtless aware, the authoress of "The Condition of Ants in the Middle Ages," of "The Colorado Beetle: its Functions in the Press," of "The Insect at Home," and other equally well-known works. Our meeting was brought about in this wise. Miss Lizardo, having heard a report that the new beetle had committed deplorable ravages at Fitz-Boodle Hall, wrote to my brother for the facts of the case, and hinted that no exact opinion could be pronounced upon the actual condition of poor Fitz-Boodle's fields without personal inspection. Of course, under such circumstances, there was nothing to be done but to take Miss Lizardo to Norfolk; and as my brother, who expects another Pigott debate in the Lords, would not miss recording his vote,—the only return he feels he can make to the country for keeping him to legislate for it,—the three women were confided to me, and we left town on Friday. Obviously the conversation, almost purely insectorial, was sustained by the entomologist and myself. The technical discussion, however, was accompanied at intervals, and indeed, I may say, has been followed, by an inquiry into a question totally distinct from the Colorado Beetle; and yet one which at this season of the year most editors like to keep in reserve for the approaching festival of drought, when St. Swithin shall have retired and gooseberries and currants are no more. It is a question, too, involving a problem of such importance that a folio or quarto of a hundred pages might be usefully devoted to its solution; or a new weekly periodical might be started with the sole object of offering resistance to an increasing evil. For my own part in broaching it publicly I feel that I owe people an apology. Personally, perhaps, Woman and Mr. Cavendish-Bentinck would be justified in complaining that the life-long specialities they have made their own, are treated in a voluminous publication like this within the compass of a page.

Sir, have you observed that the degradation of the arts is co-eval in all ages with the increase of female influence? Never before has the mistaken ambition of the inferior sex been so forcibly pointed out to me as by Miss Lizardo. I am not a vain fribble; I adore the sex and have been frequently adored,—I am not absolutely an artistic or a scientific man, but my labours have never enriched any frivolous literary organs. There was no political necessity for me, a younger son, to provide a peer to keep the constitution intact. Perpetually single I have continued perpetually in love; and Miss Lizardo glanced gracefully at the circumstance. She complimented me on the unbiased views I took of men and women. "Mr. Fitz-Boodle," she said, "Intellect is the destroyer of art: women have destroyed art from the earliest periods to the present day." It would be impossible for me to give the conversation word for word: permit me simply to put together the gist of Miss Lizardo's discourse and the points of her argument. Admirably well informed, she expresses her thoughts with a marked facility of utterance: she edges in Pericles, Praxiteles, and Plato as if they were mere relations of a Brown or a Jones. The weakness of a *parvenu* in the first or of a dolt in the fourteenth century, if at all historically famous, are calmly exposed by the great entomologist, who defies Mr. Walter, M.P., with all his art-learning, to make the modern English even as artistic as the Romans. She defies Mr. Forsyth, Q.C., M.P., with all his love for the sex, to improve the franchise, or reform the House of Commons, except by the total subjection of Woman to the will and pleasure of her traditional lord and master, Man.

Take, she says, the age of Pericles, for it is premature to talk of Helen or of Troy until the archæologists have settled the exact date of the birth of the one and of the destruction of the other; take the century of artistic supremacy from the year 450 B.C. to the year 350 B.C., and inquire into the then state of the lower orders of human kind. The respectable portion of the women were little better than slaves; and as Miss Lizardo hinted, with the female writer's proverbial delicacy, of her own sex the Grecian slaves alone possessed their liberty. Then arose the school of Plato, in which love was glorified, and the miserable passions of human nature were so described as not only to magnify a woman's opinion of herself, but even to induce the men to keep instead of exposing their female children, and perhaps to educate them. From that moment the arts began to languish; the power of artistic production, and the means of adornment in architecture were gradually lost. Even when Pausanias wrote of Greece, the works of the few preceding centuries were regarded as inimitable, or impossible to be surpassed.

Take the epoch of Cæsar and Cicero,—the first of Roman soldiers and the first of Roman philosophers. The wealth, physical and intellectual, of the world as it then was, lay at their feet; but neither they nor their countrymen, for even a hundred years after the murder beneath Pompey's statue, attained to the excellence of the Greeks who built the Parthenon. Why? Simply because they admitted women to a familiarity which might well have shocked the decorum and studied dignity of the Athenian in presence of his wife and her women. That is Miss Lizardo's opinion; and she holds that further degradation resulted in the course of the first century. Women were then admitted to participate in the pleasures of the table; and instead of weaving garments for their brothers, sons, and husbands, as the wife of Augustus did, they aspired to paint the frescoed walls of private houses. Pliny tells of one Iaia of Cyzicus, who always remained single, and who was a portrait-painter. The historian says he saw a large picture by her of an old woman, and also one of herself, taken with the aid of a mirror. There was also one Olympias who painted, and who took pupils,—Antobulus being one of her pupils. All this time the Roman buildings were getting bigger, yet, æsthetically regarded, they were inferior to the earlier architectural efforts not only of the Greeks, but of the Romans themselves. Even years before, Sallust recorded how virtue had lost her influence, poverty was thought a disgrace, and a life of innocence was regarded as a life of ill-nature.

A different policy was pursued in the Middle Ages: the woman was not only an inferior, but the teaching of the Church pointed to that inferiority. No priest consorted with her; she was not permitted to enter a church, except her head and features were decently covered with a veil. In the twelfth century, Guibert de Nogent denounced with extraordinary force the allurements of Woman's nature, and the development of the original sin of coquetry. The determined manner with which for several centuries the Church enforced the humble and absolutely inferior condition of the sex was accompanied by uninterrupted excellence in art. Mediæval devotion never forgot or overlooked the early and beatified state of primitive Man. Chaucer, in "The Parson's Tale," says very nobly,—"For trust well, though so it were that the fiend tempted Eve, that is to say, the flesh, and the flesh had delight in the beauty of the fruit defended, yet, certes, till that reason, that is to say, Adam consented to the eating of the fruit, yet stood he in the state of innocence." From the end of the twelfth to the end of the fifteenth century, architecture, which then comprised all the constructive arts, flourished in a state of completeness and innocence unknown since the time of Alexander; it was never experienced after the successive elevation of two women to the English throne, and the enfranchisement of the sex. Then followed the licence of manners in the comedies of Charles II.; the worst sentences and parts were allotted to the female characters. The triumph at home and abroad of Queen Anne was attended with artistic demoralisation to so great a degree as to give birth to the reproach now levelled against an ugly building,—that of "Queen Anne" architecture. If France did not sink to an equal abyss of abasement, and if there, since the time when Henry VIII. visited Francis on the Field of Gold, every age possesses a few buildings fit to figure as the monument of it, the *loi Salique*, which is still in force, may be considered one though obviously not the principal cause.

The state of England in the Elizabethan age is described by Miss Lizardo as monstrous and intolerable. She has good authority for asserting that in the early part of the Middle Ages women were betrothed while still children, and, arrived at the marriageable condition, they were handed over to their stipulated lords after the proper ceremonies of the Church. But in the sixteenth century this wholesome practice exploded. A writer of the time describes the "canker of pride" which had eaten into the Commonwealth; how "every poore yeoman his daughter, every husbandman his daughter, and every cottager his daughter will not spare to flaunt it out in gownes, petticots, and kirtles!" Nor did the author of "Ye nutbrowne Maide" fail to perceive the reckless levity of the sex,—at the same time possibly misunderstanding the effect it was producing upon the arts of the country,—when he wrote that popular ballad, of which the burden is:—

> "I say not nay, but that all day
> It is both writ and sayde,
> That woman's faith, is as who saith,
> All utterly decayed."

And again, is it at all likely that Shakspeare, who sang so many pretty things about women, would have permitted Iago to indulge in his sarcasm about "fools and small beer," had not the tide of female revolution mounted higher than the poet considered expedient? But one of the strongest arguments, in an architectural point of view, to support Miss Lizardo's hypothesis, is to be found at this very moment when the social elevation of woman is higher than it ever was, and when, as Mr. Cavendish Bentinck, not many months ago, was good enough to explain, the decline and fall of British Architecture is an accomplished fact. Critics, bookmakers, lecturers, and women generally, point to the state of our actual buildings, and shrug their shoulders; restorers and anti-restorers, town surveyors, and æsthetic upholsterers, all the youngest students in the profession of architecture, gloat over the deplorable condition of the arts. Miss Lizardo's answer is unstudied and categorical; she points to the general ousting of men from all employments except haberdashery and the higher grades of domestic service, and thus pronounces her *pourquoi*. But, says she, if the arts are lost to Britain, they are still safe in the great dependency. In the empire of India the old traditions are preserved. Men there are still building with the genius and according to the example of their fathers; for, she adds with great emphasis, all their mothers are locked up, after the fashion of the Greeks.

I confess, sir, I am somewhat startled with this astonishing avowal on the part of a female entomologist of great reputation. Hireling pens may possibly take the matter up, and offer suggestions to obviate the inconveniences which a too great liberty accorded to the weaker sex has produced. I myself am contented to state a fact: the question whether a revival of the Grecian practice of dividing a house into an "andronitis" and a "gynæconitis" could be achieved by the formation of a Limited Liability Company—with my brother Fitz-Boodle's name to head the list of directors, and that of Miss Lizardo as trustee or arbitrator—I leave to you. Perhaps for the moment publicity will suffice. It would be desirable in any discussion upon this subject to secure the attendance of a large number of learned women; and the approaching meeting at Aberdeen of the National Association for the Promotion of Social Science will doubtless afford an opportunity, since the audiences of its Art-sections are principally composed of those whom a gradual rise to social power has unexpectedly placed under a ban of inquiry.

Let it not, however, be supposed by the admirers of my literary productions that I take a revolutionary view of the female position. Since it is such as it is, I say let fate do its worst. That it was not contemplated when,—source of all our joy and woes,—Angelic woman

into being rose, few will venture to dispute. I, at least, will admit with my Lord Lytton's father the probabilities of a coming race when the lion shall lie down at the bidding of the lamb; when the arts which require "rather the finger than the arm," and but a sparse quantity of brain, will be the appanage of majestic females; when the domestic virtues will be the whole duty of man; when the sciences will be a study for boys; and when another Lizardo will become the natural protector of another

BOODLE FITZ-BOODLE.

NEWCASTLE-UPON-TYNE AND ITS TRADE.

NEWCASTLE-UPON-TYNE is the northern metropolis of coal. The county of which it is the chief town does not produce the largest quantity of fuel,—indeed, it does not rank very high amongst the coal-producing counties,—but to the Tyne a large amount of Durham, as well as Northumbrian coal is taken for shipment, and so far as coal shipments are concerned, that dark river may be described as the first of our coal-shipping rivers. Of the town itself, nothing is known prior to the Roman era; but when, more than sixteen centuries ago, the great wall was built from the Tyne to the Solway, Pons Ælii was the second of the strong fortified camps or stations along the route. When, however, the protective Romans departed, there came down on the North Country tribes from the farther north,—"like the wolf on the fold,"—who swept out the place from remembrance for a time; but the deserted place was re-settled, and under the Normans, Newcastle arose in name, and in the embryo of the town we know, and though in the troublous years that followed the inhabitants had to suffer, yet they acquired special privileges from successive monarchs, amongst which privileges was one granted by Henry III., giving to the good men of Newcastle "licence to dig coals and stones in the common soil" of the town. From that time it might be said that the fortune of the young community was made. Its castle was completed; there were additions to the conventual establishments, growth characterised the town, and its trade became settled. But not until towards the close of last century was there any promise of either the great trades or the town attaining their present dimensions; for although in 1791 the coal shipments amounted to nearly half a million chaldrons, other trades were on a scale even comparatively smaller, and the population of the town was small, indeed, to what it now is; indeed, in 1821, it was only 43,507, and it was in the decade following that growth set in, the population rising to 55,922 by 1831, but this rate of growth, even, is small to that between 1851 and 1861, when nearly thirty thousand people were added, and the total was brought up to 109,108 for the last-named year, or to that of the decade preceding the last census, when the population was raised to 128,443. And the effects of the growth of Newcastle, and of the centring of trade on the Tyne, have been perhaps as much marked in the district outside that borough as in it.

Up to the end of the last century Newcastle preserved traces of its antiquity in its streets and buildings, far beyond what the visitor to it now would deem possible. The town was divided "into two sections by an inconsiderable brook," the houses were closely packed together, the streets were narrow, but even in some of what are now the worst, dwelt the chief of the townspeople. Newcastle has shared the fate of London, in that much of its oldest parts and mementoes were swept away by a fire, after the population had felt the scourge of a plague. From that time the improvement of the town and of its architecture,—commenced at the beginning of the present century,—received an additional impetus; and now, in the character of its approaches, of its public buildings, and of its business streets, Newcastle may vie with any town of its size and situation. Under Grainger, the great business arteries of the town, and its chief ornaments in street architecture, were carried out, at a cost of nearly half a million sterling. The high-level bridge became a monument of Stephenson, and a most commodious station became a fitting terminus to the great railway road into the town. And in its public buildings, in its churches and chapels, its noble institutes and halls, and in the more extensive of its banks and mercantile establishments, there is full proof that modern Newcastle has right to take high rank amongst the towns of the kingdom, whilst, probably, in none has there been a greater change in some two score years than has been seen in the Tyneside metropolis of coal. But probably the greatest change in the condition and aspect of Newcastle this century is due to the extension of its chief industries, and the development of others. Not only has there been a growth of the coal trade which is unparalleled, but the engineering trade has also become one of vast proportions, the chemical manufacture is of vast extent; and iron shipbuilding, glass manufacture, and other industries have attained to large importance.

Taking, first, the great industry of coal shipment, it may be said that whilst in the first year of this century the total amount shipped was 1,331,870 tons, it increased in the first decade of the century by nearly half a million tons; in the next there was a farther increase, and in the following an annual shipment of two million tons was considerably more than passed. By 1841 three million tons were shipped,—more than two-thirds being sent coast-wise. Since that period a further increase has taken place, but chiefly in the foreign shipments, which have grown to exceed those to other home ports. Ten years ago the exports were rather more than four million tons annually; by 1870, they had passed five million tons yearly; in 1873, they were close upon five and a half millions, and now the vast quantity of six million tons annually has been more than reached. And in its other exports the Tyne has known a vast if not an equal growth. It has very large chemical works, old and extensive engine factories, and other industries, which contribute largely to that growth of the exports of the river. A dozen years ago, the value of the exports from the port of Newcastle (other than fuel) amounted to about 770,000*l.* yearly; but by 1870, it rose to 2,100,000*l.*; by 1873, to 3,100,000*l.*; and although the decreased value of goods, such as iron, has caused a fall to be marked in the value, yet the total yearly exported is still vast; and it may be still said, we believe, that no other river in Britain, excepting the Mersey, has so large an export trade. The imports into the Tyne ports are large, though not equally so,—the grain, ore, and sulphur having been largely increased of late years. Annually about 17,000 vessels "clear" from the river, the outward tonnage being over six-and-a-half millions; the ships built on the Tyne range from 80 to 120 yearly, and the engines built,—locomotive and marine,—are many and powerful. The river, under the Tyne Conservancy, has been changed, works of dredging and other improvements having been undertaken on a very large scale, and the value of the river for purposes of refuge and commerce has been almost indefinitely increased in consequence.

Deriving their subsistence in the chief degree from these industries, in its district or union, one of limited area beyond the town, is a population of 130,800. It may further give some idea of the extent of that district if it be added that there are in its limits 2,729 paupers. In the borough, in the last police year, 10,894 persons were proceeded against for offences. In some degree contributory to this criminality, it may be said that there were 450 public-houses, and 355 beerhouses. Included in the offences was that of drunkenness, for which the large number of 4,768 were proceeded against, the number of policemen being 200. But unquestionably this criminal return was swelled by the mining population, which, at stated seasons, flocks into Newcastle as its mart, its great pleasure-ground, and its centre of attraction, and in which the droughty portion gratifies its love of drink.

Dependent so largely on the coal trade, Newcastle must be greatly affected by the question of the duration of its great fields of fuel. It is the opinion of some of those whose words are entitled to weight that the best seams of one of the chief classes of coal are being speedily exhausted, but their opinion is not one universally held. It is, however, tolerably clear that at the present time the position of the coal-owners of the great Northumbrian coal-field is far from being as unchallenged as it once was, for the competition with South Wales is increased. And it may also be said that the output of coal in the Northumbrian coal-field is scarcely likely to be largely increased, for the number of workmen is probably less than it was, and the cost of coal as well as the output per man has been adversely affected by the operation of the Mines Regulation Act. Whether or not the Northumbrian coal trade has attained its meridian, it is scarcely probable that the great centre, Newcastle, will not continue to increase. It is no longer based exclusively on the coal trade; it has become an engineering centre; the chemical trade is one of its chief supports, and various branches of the iron trades are in its vicinity. There is known at the present time in several of these industries a deep depression which has been unusually prolonged, but this may be taken to be one of the ebbs in the trade wave which are the usual followers of a long period of prosperity, and which should now be speedily recovered from. The proposal to extend the accommodation of the Tyne shows that its foremost men take this view, and that they have a full belief in the future of that river, and of the town which is its trading centre. So long as its coal lasts, the foundations of its trade are secure; and even the exhaustion of its supplies of fuel by no means ensures the sapping of these, for new industries are growing, new resources are being developed, and the future of Newcastle is therefore one of promise.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

ENGINEERING A BRANCH OF ARCHITECTURE.

ARCHITECTURE, in some respects like her sister arts Painting and Sculpture, but altogether unlike Poetry and Music, has its ethereal spirit fettered to a material body. In its purely monumental walk it is in exactly the same case as painting and sculpture. But in all its other departments the art-spirit is manifested through a material body devoted to a practical purpose for the supply of physical wants only. It is soul and body; and as the soul of man is a principle that animates the whole of the body, so in architecture you cannot say this part is mere building, and this art, for the art-spirit thrills, as it were, every part of the building at once, reminding us of the pantheistic theory of the universe expressed by Orpheus, "The world,—all we see and feel, is the body of Zeus or God." Such is architecture, which, I am about to maintain, is a broader and more comprehensive thing than is usually supposed.

Most people, though looking on architecture and engineering as closely related to each other, consider them as separate pursuits, between which a distinct line can be drawn. But no such line appears in a correct view of them;—the latter melts into the finer art, and is embraced along with it in any true theory of structural art. Architecture, by which I mean all building art and science in the largest acceptation of the word, consists of three great branches,—viz., civil, military, and naval,—the first, civil architecture, being again divided into civil architecture proper and civil engineering, which latter, though not usually reckoned as a branch of architecture, is, I conceive, not only a branch of the science of architecture or building, but of the art also; for I have yet to learn why a bridge, an aqueduct, a water-tower, a mill, or any other engineering object placed constantly before our eyes should not be framed by the laws of art, and made as beautiful as a palace if it can be made so, and not by merely superadded features, but by composition and form, proportion, contour, chiaroscuro, &c.

In an engineering work, it is true, the demands generally of the practical purpose are more imperious and stringent than in an architectural work, and allow less sacrifice to be made to the graces. Engineering works are more the creations of constructive science, and less of art and beauty, than architectural works. But so far from great magnitude or strength and durability exempting any works from the duty of being agreeable to the eye, it deepens the obligation under which they lie to be so; it renders their claim to exemption the less. They ought to be made beautiful if they can be.

But there are so many objects,—lighthouses, war-towers, turrets, Roman aqueducts, bridges, tall chimneys,—which, though fitness only was considered in their formation, have, nevertheless, more or less of grandeur, or grace, or beauty,—as much, in some instances, as works in which beauty was the prime object, that this is beyond a question; and it is evident that all engineering works might be at least agreeable to the eye instead of disagreeable; that all are susceptible of more or less of architectural beauty, and of being designed in the true architectural spirit,—science and art working together hand in hand in their formation. I could point to tall chimneys

hich, from their size, form and proportion, and raceful outline, are really imposing objects, and rike the imagination more than many spires and onumental columns. Those I refer to look e what they are,—chimneys. I mean they e not disguised as Italian bell-towers, through hich, when issuing smoke, they present a some- hat alarming appearance. Even those most eful constructions the Britannia and Conway bular bridges, honouring to the age as trophies constructive science and skill, needed not to e so painful to the eye of taste as they are,— e latter more particularly, marring as it does e castle and city. I feel sure that no objects lf so hideous disfigured the ancient world as ose bridges. There was difficulty, I grant out these; and the fine-art spirit might well e excused if she slightly shuddered at the idea entering these super-marine tunnels. But all asonic erections upon the earth are in a diffe- nt case, and the most Cyclopean walls might built, like those of Thebes, to the sound of e lyre, and made music of the eye. The fable Amphion's so raising the walls of the capital Bœotia has been supposed to mean that he rsuaded by his eloquence a wild people to ite and build themselves a city; which may true. But to me it conveys also the impres- n of the ancient poets of the connexion between lossal architectural achievements and those otions of the soul which music can most readily d powerfully excite. I attach the same mean- g to the incident of Apollo, the god of poetry, sic, and eloquence, assisting Neptune to build e walls of Troy.

It does not appear to me that the Romans had y idea of a difference in the treatment between ir architecture proper and those colossal rks which were for purposes of public utility. eir aqueducts and bridges, both at Rome and the provinces, equally with their palaces and mples and triumphal arches, attest the gran- ur of design which characterised the architects the early period of the Empire.

But engineers, whose productions, of all the rks of man, come nearest to rival those of ternal nature in point of size, ought, in e treatment of their works, to be guided by e analogy of nature, who never, when free m accident or disease, produces anything ly or without some quality to gratify the eye. e most useful things,—fruits, vegetables,— e makes as beautiful often as things that are beauty only. A kitchen-garden or orchard not much less pleasant to the sight than a wer-garden. If by accident anything very ightly appears she hastens to adorn it; and ver upheaves a rock, hill, or mountain, without aightway proceeding to clothe it with beauty. e ugliest fissures made by some convulsion of crust of the earth are in time decked with es and shrubs, grass and herbs, and become antic glens, which the popular imagination ples with fairies. Nature not only never cts anything unsightly when she has her own y, but she is always increasing the beauty of works by garlands of leaves and flowers minute vegetation, and sometimes exhibits rface decoration sufficient to make us blush ome of ours. If these lessons of nature had their due effect, there would not have been outcry that has sometimes been made by ers of picturesque scenery against the intro- tion of railways into beautiful and romantic ts of the country. The poet Wordsworth, for ance, would have had no objection to their oduction into the Lake District if the rail- s he had seen elsewhere had been as agree- e features of the earth as they might have n. The railway itself does not disfigure the ntry it passes through more than any other or road, and all buildings in connexion with as well as the locomotive engine, with its ular boiler, its chimney and colossal plume moke and train of carriages, are susceptible eauty. Nor need slate and stone quarrying al-mining operations at all mar the beauty he country.

ut what I here say of civil engineering lies to the other great divisions of architec- in a less imperative degree, viz., military naval architecture, or shipbuilding, as I have ady indicated by using the word architecture the comprehensive sense in which those nches are included,—for castles, barracks, eries, magazines, forts, ships; everything is to be seen by mortal eye, is under the e obligation of being agreeable to or not ading that eye.

rchitecture is the art of the beautiful in ding,—building of any kind; and there is no structure into which the fine-art essence or spirit of beauty will not enter. She is capable of revealing herself, more or less, in every form which the physical wants of man dictate, and which ascends into the sphere of art in proportion as it has imbibed her essence. That this spirit of beauty can float over the sea in a ship we well know; for ships generally—sailing-vessels in particular—exhibit a fairy-like grace that charms everybody. And that she can throw a veil of enchantment over the threatening war-tower or lonely beacon is as evident; for such buildings often exhibit a grandeur of form that renders them rivals of the palace and the temple, and, along with other known objects before mentioned, show that everything erected by man on the face of the earth, or made to rise out of the sea, or to float on its bosom, may, like the works of Nature herself, have its own species or order of beauty.

To return to civil engineering. Though it is pretty evident that Vitruvius and others of the ancients, and certain that many moderns united in their persons the character of engineer and architect, yet it was wise, I think, to keep them generally separate. But I maintain that the engineer should join to his knowledge of mathematics, and the principles of mechanics, hydraulics, &c., a knowledge of architectural design, and combine in his works architectural beauty with fitness for the purpose for which they are designed; that while engineering or constructive science more or less goes into every work of civil architecture, architectural beauty should enter more or less into every work of civil engineering. The civil engineer should, in fact, be a votary of architecture, which enjoys the proud distinction of being the only one of all the arts that has been named great; that is, had the epithet "great" incorporated with its name.

Some skill in architectural design is necessary to the engineer to enable him so to treat large works that their dimensions will tell or be fully appreciated, and the utmost power attained,—an important point, both in architecture and engineering, especially in reference to large works, which are most easily invested with sublimity. In such works there should be in the design some feature that will serve as a scale by which the eye can measure it,—some feature proportioned to the human stature,—a door, statue, niche, or pilaster of common size. For want of this some great works have failed to strike upon the sense with a force proportioned to their magnitude. For want of this scale, and from being situated in a boundless plain, it is said the Great Pyramid, the sublimest of the works of man, disappoints the traveller by its diminutive look; while the Colosseum of Rome, from its being divided into four stories, and relieved by moderate-sized openings and columns, though not a third of the height of the Pyramid, is the most imposing building in the world. The great dimensions of the fine catenary arch spanning the Dee at Chester, is not appreciated for want of the scale which the voussoirs would have supplied had they been properly emphasized, instead of being disguised as one colossal moulded archivolt.

Great or grand objects are especially valuable in cities and towns for their tendency to expand the mind, and engineers should be rejoiced to find that it is within their power to make their works (even when architectural ornament is out of the question, as in dock walls, barracks, mills, factories), by fine form and breadth of composition, sublime.

I consider civil engineering as simply another walk of architecture,—as much related to all the other walks of architecture as they are to each other,—as much related for example to domestic architecture as that is to ecclesiastical architecture. The difference between architecture and engineering is that in the latter strength is more imperatively required than in the former, and beauty less; which does not hinder it from being considered what I humbly assert it, rightly considered is, *a branch of fine-art architecture.*

SAMUEL HUGGINS.

Blenheim.—Some of the sculpture work at Blenheim Palace is undergoing restoration. The colossal statue of the great Duke,—a work representing his Grace in the costume of Augustus,—has lost the figure of Victory which formerly stood in his hand, and other parts show signs of wear. The work has been entrusted to Mr. Roddis, of Birmingham, under the direction of Mr. F. B. Osborn.

CHURCH OF ST. MARY ALDERMARY, BOW LANE.

THE original Church of St. Mary Aldermary or Oldermary is supposed to be the oldest church in London called by the name of St. Mary, and therefore originally of very ancient foundation, prior even to St. Mary-le-Bow.

The building immediately before the present one was founded by Sir Henry Keeble, grocer, and Mayor in the year 1510, and was not completed when he died in 1516. A great portion of the church was destroyed in the Great Fire of London, and was afterwards reinstated by Sir Christopher Wren, and completed in 1682 at the expense of Henry Rogers, a great-grandson of Sir Henry Rogers, privy councillor to Queen Elizabeth. The general character of the building, as restored after the fire, followed that of the former structure.

At the union of the benefices of St. Antholin and St. John the Baptist upon Walbrook, with those of St. Mary Aldermary and St. Thomas Apostle, a short time since, it was determined to thoroughly renovate the church, and to render it more fitting for the purposes of divine worship. Funds having been obtained for the purpose partly from the sale of St. Antholin's Church and tower, and partly from the united parishes of St. Mary Aldermary and St. Thomas Apostle, the works were commenced in the early part of last year, and the church was re-opened for divine worship on the 17th inst., the Lord Mayor and sheriffs and a large body of the clergy being present on the occasion.

The works which have been executed at the church consist chiefly of the following:—

The removal of the cement which covered the external face of the walls, and reinstating the stone ashlaring; rebuilding the buttresses where the old foundations were found to exist; the re-opening of the windows in the north aisle, which had been blocked up after the Fire of London; a general repair and restoration of the external stonework, including the tower, and some new doorways and oak doors; the removal of the gallery and internal fittings; the fitting up of the church with new oak seats, and the chancel with stalls; a new oak glazed screen across the church at the west end; and the erection of a stone reredos, which was the gift of the senior churchwarden of St. Antholin's; also the repaving of the church with encaustic tiles, with marble steps to the chancel. The windows have been reglazed principally with painted glass, which has all been presented to the church by various donors. The monuments from the church of St. Antholin have been replaced in the tower. A new heating apparatus and hot-air flues have been provided; also new gasfittings of polished brass, consisting of coronæ suspended from the centres of the arches, the chancel being lighted by handsome brass standards springing out of the brass altar-rail.

The whole of the works have been carried out from the designs and under the superintendence of Mr. Charles Innes, architect. Mr. Charles Fish, of Pimlico, was the contractor for the general works; Mr. Alfred Robinson, of Holborn, executed the oak seats, stalls, screen, and other fittings; Messrs. Simpson & Son laid the tile paving; Mr. Seale executed the Caen stone reredos and other carving; and Messrs. Richardson, Ellson, & Co. provided the gasfittings and altar-rail; Messrs. Clayton & Bell are executing the painted windows, except those of the clearstory and tower, which have been provided by Messrs. Gibbs & Moore. Messrs. Blake & Co., of Coventry, provided the heating apparatus.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE localities of the annual excursion included Whalley and Stonyhurst. Full as these places are of objects interesting alike to the architect and the archæologist, the trip did not attract so many as could have been desired. On the way a call was made at Mitton Church, the date of which is believed to be earlier than 1593. A beautifully-carved font cover bears that date and the name of Richard Molenex (so spelt), one of the Sefton family. There is in the chancel some interesting sculpture over the tombs of the extinct Sherburne family, who gave their land for the Roman Catholic College of Stonyhurst. At the conclusion of the visit to Stonyhurst, Mr. J. M. Hay (president) conveyed the thanks of the members to the rector for allowing them to inspect the college. The party returned to Whalley, and

at five o'clock dined together at the Swan Hotel. Mr. J. M. Hay (president of the Society) occupied the chair, and Mr. James Montgomery (treasurer) the vice-chair; amongst those present being Mr. Joseph Boult, F.R.I.B.A. (one of the members of the council), and Mr. F. W. Hornblower (hon. secretary).

PORCHESTER CASTLE.

ALTHOUGH England is rich in Roman remains, and full of material traces of the all-pervading energy of that race of conquerors and colonists, such are chiefly roads, encampments, foundations of domestic buildings, and less frequently of fortresses or military works in masonry. Of these latter the chief are Burgh, Caerleon, Caerwent, Caistor, Pevensey, Richborough, and Silchester; parts of Colchester, Lincoln, Wroxeter, and York, and a few traces at Chester and Leicester. But of these, not inconsiderable, remains, none are to be compared for completeness of preservation, and but few for extent of area, with Porchester.

That Porchester is a Roman work is unquestionable, though this certainty is not derived from its early history, of which little has been preserved, but from the evidence afforded by its plan, materials, and workmanship, confirmed in some measure by the relation of its walls to the additions of the Norman period; also, an undoubted Roman way connects Porchester with Venta Belgarum or Winchester.

This celebrated fortress is built upon a low point of land which projects into the inner or northern part of Portsmouth Harbour, dividing that spacious and secluded inlet into two heads, and expressing in its name both its position and its character. It is placed about three miles above the narrow entrance which, flanked by the towns of Portsmouth and Gosport, is the passage from the larger and exterior roadstead of Spithead.

In its present and tolerably perfect condition, Porchester is a walled enclosure, square or nearly so, containing within its area close upon nine acres. The investing walls measure, by the larger Ordnance survey, 210 yards north and south, and 207 yards east and west. They range from 15 ft. to 40 ft. high, and from 6 ft. to 10 ft. thick. They were supported outside by four mural bastions on each face, and one at each angle, in all twenty, of which six have at various times been removed, two from the east, one from the north and from the west, and two from the north-west and south-east angles. Those bastions which remain are half-round, 19 ft. to 20 ft. in diameter, and have slightly prolonged and flattened sides. The angle bastions are of the same pattern. That to the north-west was removed to make way for the keep; that to the south-east has fallen, undermined by the sea. The two remaining are open at the gorge, as are the two upon the east front. The rest are closed, and probably all were originally so, for the interior work is very rough indeed, and seems intended to have been concealed with earth and rubbish, as was often the fashion in Roman works. Probably some of these now open have been cleared out by the Norman architect, to make use of the interior; the gorge wall of one of those to the south has recently given way, and the interior is seen rough as the Roman builders left it. These bastions at present, with one exception, rise no higher than the curtain, no doubt their original condition, but it seems probable that the Normans raised a story upon them, and thus converted them into mural towers. They stand from 41 yards to 42 yards apart, from centre to centre, the distances being slightly unequal. On the west face, however, the two bastions flanking the gate are 48 yards asunder.

The walls are built mainly of flint nodules, laid in courses with as thick, or even thicker, beds of mortar. Occasionally are seen single and double flat courses of red tiles and of tile-stone, and sometimes of herring-bone work, characteristic peculiarities, especially strongly marked in the bastions. The work seems late in the Roman period. The walls have been patched with Caen stone, and by later builders with coursed flint, and more recently with brick. Here and there the parapet may be Norman, but this can scarcely be the case with much of it, which must have been frequently renewed. The two missing bastions to the east, to judge by the patching up, were probably gone when the Normans took possession. One on the west face was evidently standing in the Perpendicular period; that at the south-east angle fell but a few years ago. There is still an east and west, a water and a land gateway, nor do there appear to have been more in the Roman period.

The east face is washed by the sea, here a good defence, because too shallow for boats, and too deep for land operations. On this face the curtain is especially high, reaching 40 ft., and at the base of its parapet is a row of small holes, as though to carry a timber gallery or *brêtashe*, no doubt a post-Norman addition. Between the south face and the sea there intervenes a triangular strip of flat land, from nothing to 60 yards broad. To command this, and protect the foot of the wall, a berm or platform of earth has been thrown up against the wall, about 6 ft. high and 24 ft. broad, in front of which is a light ditch, prolonged westward to the advanced ditch to check any approach round the angle of the place. The curtain here is about 30 ft. high.

On the north front the margin of land is much broader, and is cut off by a deep and broad ditch communicating with the sea, and which turns the north-west angle, and extends along the west or main front nearly as far as the great gate; it would seem that originally this ditch covered this whole front, and extended onward to the sea, but the drawbridge of the gate has been replaced by a causeway, and the further traces of the ditch are but faint, as it has been filled up south of the causeway with some care.

In addition to these special defences the whole work is covered by a deep ditch with a high interior bank of earth, which has been cut from sea to sea right across the tongue on which the castle stands. This is about 300 yards in length, and from 50 to 100 yards to the west of or in advance of the west front, forming a broken curve with its salient near the centre. In outline it is rude, and as it bears no traces of masonry was probably stockaded. The notch for the entrance is placed considerably to the north of the main gate, so that the approach was oblique and exposed to be enfiladed from the castle. This work looks rather like an English addition before the arrival of the Normans. There is no trace of any rectangular camp or earthwork of earlier date than the walls. They are built upon the natural ground, and there is little or no difference between the interior and exterior level. In what condition the Romans left, or the Saxons found, the works which have thus been described, is not known. So convenient an enclosure, so well posted, could scarcely have been neglected by any people.

In Domesday, "Porcestre" is a manor, and is the subject of a long and rather detailed entry. Mention is made of a "halla," or mansion-house, or hall, but none of the castle. It had possibly been disused as a fortress, though probably then and long before a parish, with a church within its girth.

The Normans were for a time content with the existing wall; for it was not till about 1133 that Henry I. here founded a priory for Augustine canons, and built the small and plain, but very complete, Church of St. Mary, which was also the parish church, and most of which remains uninjured. Probably a little before this, judging from the internal evidence of the buildings, he proceeded to convert the Roman into a Norman fortress. This was effected by placing a rectangular keep at the north-west angle, about 10 ft. in advance of the line of wall, removing for this purpose about 60 ft. of the adjacent curtain on each face, and the capping bastion of the angle. The projection of the keep is mainly inwards. It seems to rest upon the natural soil, at that corner slightly elevated. It has been thought to stand upon an artificial knoll, but more probably its base has been banked round by the earth removed from the ditch, which is here both deep and broad. The keep required defence from the large interior court, as well as from the field. To afford this, and also to divide the castle from the church, Henry further enclosed a base-court, of about 67 yards east and west, by 47 yards north and south, or about one-fourteenth of the whole area, in which detached space the keep stood, and of which the great curtain formed the north and west sides. The entrance was in the south face, near the south-east angle, and this inner wall was covered by a wet ditch, fed by a culvert in the north curtain from the exterior tidal ditch, and which completed the isolation of the inner from the outer ward.

The church was placed in the south-east corner of the outer ward, diagonally opposite to the new ward, to which its enclosure corresponded. The conventual buildings stood against the church on the south side, and extended to the Roman curtain, which bears marks
Norman alteration. At Caister, in Norf
where the parish church stands within
similar enclosure, it occupies the south-w
angle. The wall which, it is probable,
off the monastery from the rest of the ou
ward, is gone. The western or landward g
house of the outer ward was remodelled a
the Norman fashion, but the eastern or wa
gate was left unaltered.

The keep answers to the usual condition
such structures. It measures at its exterior b
65 ft. north and south, by 52 ft. east and west;
was, as originally built, about 55 ft., and as o
pleted, 100 ft. high. On its west front th
broad pilaster strips, of slight projection,
from the ground, independently of the plinth
rather above half the present height of the to
On the north front the arrangement is the sa
save that the lower half of the pilaster to
east is united with the wall of the forebuild
that covered the entrance to the keep, on the
face. The south face has only two pilast
that in the centre being omitted. The east
is again different; here the basement is cove
by the forebuilding, and there is but one pila
at the north end. These pilasters in the no
west, and south faces, rise plain to the seco
floor level, where both wall and pilasters
reduced by a set-off. The wall is not again
duced, but the pilasters have two or three r
sets-off before they die into the wall. Near
was the base level of the original parapet.
angles are solid, that is without nooks. The
pilasters covering the south-west angle ha
slightly bolder projection than the rest, and
tain a well-stair, the head of which opens
low turret. There are no turrets nor trac
them at the other three angles. They were
natural finish of the pilasters covering the an
and as these are not carried to the summit
possible that the usual turrets were also omit
The present battlement is probably in subst
of Decorated date. The north and south para
are horizontal, but those to the east and
rise to the centre so as to form a very
pitched gable, a very unusual outline in su
building, and for which there is nothing in
arrangement of the roof to account. The ext
of the keep is very free from ornament. The
exception is a string-course about 12 ft. a
the base on the west wall, which has on its u
side a billet moulding of great delicacy.
string is confined to this face, and to the
being stopped by the pilasters.

The material of the keep, inside and o
chiefly of Caen stone ashlar for facing,
hearting of chalk flints. The stones are
4 in. to 6 in. square on the face; high up
are perhaps a little larger, but there is
difference between the original work and
additions. The stones of the parapet are
larger, and seem, from the accounts, to
come from the Isle of Wight.

The walls at the base average about 1
thick, and at the first floor about 7 ft. A
summit they are about 6 ft., the reductio
thickness being thus unusually small.
interior is divided throughout by a cross
running east and west, from 5 ft. to 3 ft.
thick. It has a basement and four floors.
entrance was in the first floor, and a
stair, the only one, occupied the south-
angle and rose from the first floor, and it m
from the base, to the battlements, comm
cating with, probably, each floor, by doo
which all but one are walled up. In the s
east angle was the pipe of the well, with si
communications. The floors throughout w
timber, the beams resting in holes in the
The interior sets-off, reducing the thickne
the wall, are irregular.

The two basement chambers are not
equal, the southern being the larger. The
about 12 ft. high, each has a loop in its wes
and two in the north and south walls, six f
these are of 6 in. opening, round-headed
placed in splays of an hour-glass section, h
recesses inside and out of 2 ft. opening.
door to the well-pipe is visible, though blo
but that to the stair seems to have been c
and obliterated. Each of these chamb
vaulted with a low-pointed barrel, runnin
and west, and stiffened by six very deep sl
ribs, with hollow chamfers. These have
cut away from the vault, but the gabl
remain attached to the wall, and sections
others are seen at their springings. This
looks Early Perpendicular, or, perhaps,
earlier. It is excellent, and much too goo
cellar, though no doubt intended special

the custody of the royal prisage wines, which formed a part of the revenue, and were often stored here. There is a door between the vaults, near the west end of the cross-wall, and an outer door in the east wall of the south vault, which latter was probably opened when the vaults were turned, and the spiral stair closed. This, however, may be an original door opening from the basement into a dungeon in the base of the forebuilding, or it may have been connected with an outer door in the forebuilding itself. It is difficult to be sure on this point.

The first-floor is also of two chambers, 43 ft. long, and 21 ft. and 18 ft. 6 in. broad. These doors contain the two state-rooms, which, to the timber ceiling, were 24 ft. high. In the north and south walls are in each two windows, round-headed, of 2 ft. opening, of hour-glass section, with splays of 3 ft. opening outside, and 5 ft. inside. The sill of the recess is 4 ft. above the floor, and the recess 12 ft. high. Its angles are occupied by a bold bead, or engaged shaft, with bases and foliated caps, whence the bead is carried round the head. Besides these four windows, in each west end is another, of the same character, but with recesses 20 ft. high, and without headed angles. The two south windows were probably walled up when the exterior smaller wall was added, and light ceased to be an object in the keep. In the north chamber the west window is also closed. The doors to the well-shaft, and the stair, have been closed in modern times. In the cross-wall is a large modern arch. The old door was near the west end; also, in the south-west angle of the north room, a door opened into a small garderobe in the west wall. This is partially bricked up, but the loop is seen in the central pilaster, outside. The main entrance of the castle is on this floor, in the east wall of the south chamber. It is round-headed, of 4 ft. 6 in. opening, perfectly plain, without chamfer or rebate, which, no doubt, has been cut off. It is evidently original. There are two doors in the east wall of the north chamber, but they are modern openings.

The second floor, 13 ft. high, was the attic of the original building, and a mere series of lofts. The roof was very singular. Over the cross wall was a central ridge, and over the middle of each chamber a valley or gutter, from which the walls rose to the outer walls. As a lean-to, there was, therefore, in the cross section, a central triangle divided by the cross wall, and on each side a half-triangle, formed by the outer wall; and in each of the four half gables is formed in the east and west walls was a small round-headed window, eight in all. The windows remain, as does the stone weather-table, by which the section of the early roof is indicated. The roofs were steep, and, therefore, of use could be made of them as a platform for machines of defence or for storing missiles. In the cross wall, here 3 ft. thick, is a tall, very thin, round-headed door, of 2 ft. 6 in. opening, communicating between the halves of the central roof. The south loft was reached by the spiral-stair, but how the three northern lofts were reached does not appear. In the north chamber, under the southernmost of the two east windows, are traces of a door, which no doubt led to the battlements of the forebuilding, covering the main door, as seen at Scarborough and Richmond, and elsewhere. The arrangement of the original roof resembles that of Helmsley, a very fine keep, which also has been raised.

Soon after the completion of this roof, and within the Norman period, it was decided to use the keep two stages, by which means the roof attics were converted into a regular second floor. Something of this kind was done at Richmond and at Bridgenorth.

The third floor, then built, is 18 ft. high. It is quite plain, without an opening in the cross wall, and with one small window in each west wall. How the north chamber was entered is not known. The present floor is from 3 ft. to 4 ft. above the original one. The next is the fourth floor, upper floor, about 15 ft. high, with a cross wall 3 ft. 6 in. thick, of rough rubble, while the other walls are of ashlar on both faces. The north chamber has four windows; those in the north wall of two lights flat-headed, but under a full-centred arch of relief outside, and within arched in a recess, also full-centred, of 5 ft. 6 in. opening. The whole are quite plain. There is a similar window in the east end. The west-end window is of similar pattern, but with a single light; and of the north chamber, two windows the north side and one in each end are also of one light. In the east wall of this chamber a small door opens by an L-shaped mural passage turning the north-east angle into a garderobe, having a loop in the east wall, and a vent opening directly outwards on the face of the north wall. At Brougham is a similar arrangement for an oratory. In the south jamb of the west window of the south room a small oven has been excavated. As this could not be reached from the old floor level, it is probably very modern. Whether the well-pipe is brought up through the new work does not appear, nor is there any trace of an original opening from the turnpike stair, though probably there was one. The door in the cross wall, of 4 ft. 6 in. opening and full-centred, is placed near the west end. This has a rebate, so that the door opened into the north chamber, and was bolted on that side.

The original roof of the Norman addition was flat, as shown by a bold weather-table carried round the walls; but the actual present roof is exactly the reverse of that described below, there being a central and two side gutters, and a ridge over the centre of each chamber, an equally impracticable roof for a defensive platform. The flat or nearly flat roof much resembled that now upon the White Tower, London. The parapet can be examined from the top. The embrasures are at long intervals, and 4 ft. 6 in. deep by 2 ft. 3 in. opening. No traces of angle turrets are seen save at the stair head, and that is but a small affair. No fireplace has been discovered in the keep, and only two mural chambers, both very small, for garderobes. The absence of ornament or of any very well marked state-room with mural closets, is probably due to the late date of the keep, and to the construction at the same time of more convenient domestic buildings in the inner ward.

The forebuilding was part of the original design of the keep, of the lower part of which it is a prolongation, of the same breadth, and 25 ft. deep, eastward. Its walls, as thick as those of the keep, also contained two chambers, divided by a cross wall, east and west. The northern chamber is now filled up, and possibly always was so. The southern chamber seems originally to have had no outlet, and if used as a dungeon or cellar, it was probably reached by a trap in the timber floor.

The first floor of this structure, at the level of the same floor of the keep, was divided also into two chambers, between which was a passage, which led from an outer stair to the door of the keep. The north chamber has been defiled by use as a dust-house and garderobe for modern prisoners in the keep; but an elegant oriel window in the late Perpendicular style inserted into its north wall shows that it has been a room of some pretension. The south chamber was the chapel of the keep. In its west wall, the wall of the keep, is a large full-centred recess, about 11 ft. broad and 2 ft. deep, for a seat, and in the south wall remains half a Norman window, which originally opened into the inner ward.

The original roof of the fore-building had rather a high pitch, of which, over the chapel, the weather-table remains. This was superseded by a higher roof, but at a very low pitch, suitable for lead. The top of both roofs reached nearly to the level of the floor of the second story of the keep. The battlements of this accessory tower were 15 ft. to 20 ft. below those of the original keep. The approach to the first-floor of the forebuilding was by an exterior staircase of twenty-six steps, placed against its east wall, so as to reach the outer door about the centre of the building, and leading on also to the north curtain. The present staircase is modern, but a careful examination will show Norman remains about its base. It would seem that when the keep was raised it was decided to make a door in the south wall of the fore-building into the space below the chapel. When this was done the wall was thickened on the outside. The door still remains, but opens no longer into the open court, but into the basement of a later building. Part of the added facing has fallen off, and the old wall is seen, with a billeted string corresponding to that upon the keep. In later times a Perpendicular window has been opened in the chapel-wall above, and a second Perpendicular door into the space below. This is the door which has over it the arms of Queen Elizabeth in stone, and which was probably made by some earlier monarch to admit the wine-tuns into the vaults of the keep.

The inner ward is still bounded to the east and south by the original Norman wall of Caen stone, 6 ft. thick. The original domestic buildings were ranged along the south side to the west of the entrance, as traces of the original walling still show. At the south-eastern angle was a large rectangular tower, of 23 ft. breadth by 25 ft. projection, placed diagonally,—not a usual Norman arrangement. The walls are 6 ft. thick, and the gorge is open. It was of two stages, the basement being one, had timber floors, and was, no doubt, like the middle gate-house of the Tower of London, boarded in the rear. The two exterior angles are hollow, or nooked, though without shafts. The upper floor was lighted by three narrow roundheaded loops.

Whatever may have been, in Norman times, the extent of the offices, at present these buildings cover three sides of the court, that to the north being open. Near the centre of the court was a well, and in the north wall, close to the steps of the keep, a small postern; at the north-east angle, partly on the two curtains, is a rectangular tower of great strength, about 26 ft. by 30 ft., with walls about 6 ft. thick. Its basement seems to have been used as the great kitchen, though not originally constructed for that purpose. The upper floor is on the level of, and entered from, the north curtain; its north and east walls are pierced by a mural gallery, 3 ft. broad, with two loops to the north and three to the east. There is also on that side a door opening on the main curtain. From this floor a well-stair, near the north-west corner, ascends to the battlements. The base of this tower seems Norman, but the upper floor and battlements are Early Perpendicular.

Of the domestic buildings there is built against the keep and the west curtain the smaller hall, 18 ft. broad by 30 ft. long, one end abutting on the keep, the other on a retiring-room common to it with the great hall. It is of two floors, the lower on the ground level, having a handsome door and windows. The hall, with a timber floor and roof, occupies the upper floor. The fireplace is in the middle of the west side, let into the Roman curtain, which has been raised. In the east side are four windows looking into the ward, each of two lights divided by a transom, with cinquefoil heads.

Set against the keep, and also abutting on this hall, is a building of two floors, the uppermost of which seems to have been a chapel, superseding that of the keep with which it communicated. It has an east window flanked by two diagonal buttresses. Opposite to this, against the south curtain, is the great hall. This is 67 ft. long by 28 ft. broad, also of two floors, the basement having been probably a cellar. In its north wall are arches as for a battery, and some remains of the original Norman walling, probably of an earlier hall. In the north side are four windows, three to the west and one to the east of the great door, in front of which is a handsome Perpendicular porch with vaulted roof, and steps leading up to the hall. From the porch a well-stair and short gallery led to the music-gallery at the east end of the hall, and at this end also, in the south wall, is the great fireplace. If this was the dais end, the gallery must have been above it,—not a usual arrangement. The hall had a wooden floor and a low-pitched roof. The porch seems later than the hall. East of the hall are other smaller rooms, abutting against the wall which flanks the entrance-gate. Beyond this gateway the remainder of the south wall, and the whole of the east wall to the kitchen tower, are occupied by buildings of Tudor date,—mere shells, probably servants' lodgings, batteries, and rooms connected with the kitchen department. It is said there were buildings against the north curtain, but of such there is now no trace.

How the ramparts of the west, south, and east walls of this ward were reached is uncertain. There is no way to them from the keep or from the kitchen tower. The north curtain is reached by a short stair from the fore-building. This curtain is here 10 ft. thick, and has a rampart-walk 6 ft. high, with a high parapet and rere-walk. One of the old Roman bastions occurs on this part of the curtain. It is solid below, and has been raised to contain a small chamber, the floor of which is a little below the rampart level, from which a door opens into it. There is also a good west window of two lights, cinquefoiled, opening on the rampart-walk, and a small fireplace; altogether far too comfortable a post for any officer on duty. East of this bastion the hollow angle between it and the curtain is crossed by an oblique arch or squinch, of two rings of voussoirs of excellent Decorated work, which supports a small garderobe, such as is seen on Southampton walls and at Ludlow.

There remains to be described the gatehouse, or entrance to this inner ward,—a very curious structure, of unusual length, and of three

periods. First, approaching from the outside are two parallel walls, 5 ft. thick, and 9 ft. apart, from within the ends of which hung the drawbridge, apparently without any special arch or gateway. In one wall is a squint loop, commanding the approach from the great gateway of the outer ward. From the drawbridge a passage, at first of 9 ft., and then of 10 ft. in width, and 15 ft. long, ends in a portcullis and gateway, the whole 2 ft. deep, and 9 ft. of opening. Beyond this the passage continues 10 ft. broad for 17 ft. So far, the road was either open or roofed with timber, and all is of Perpendicular date.

Next follows a remarkably fine archway of the Decorated period, deeply moulded and portcullised, with a rebate for a door. This leads into a sort of peristyle, 8 ft. deep, vaulted and groined, with ribs and bosses, and ending in a second and rather lower portal. In this peristyle are two lateral doorways, of 3 ft. broad, opening upon the scarp of the ditch between it and the curtain wall, just as at Hawarden, only there they open from a chamber on the counterscarp. The arch in which the peristyle ends is rebated for a door, but has no portcullis grooves. The Decorated work here ends, the portal being seen to mask the original Norman entrance. This is a perfect, plain, square-jambed Norman entrance archway, placed in the front and centre of the original gatehouse, which was a plain rectangular tower of 23 ft. projection from the curtain, and 28 ft. broad. Entering, the way lies between two lofty walls, 19 ft. apart, and which for 22 ft. are those of the old Norman gatehouse, with two lateral loops raking the curtain. There was a timber floor above this passage. The walls are then continued 28 ft. further, on the left being the rooms attached to the great hall, on the right those of Tudor date. Thus the entrance to this ward is about 100 ft. long, defended by a drawbridge, a portcullis, and two sets of gates.

The two gatehouses of the outer ward next require attention. The water-gate is, in substance, Roman. It was 26 ft. square, with walls 6 ft. thick, having no projection outside the curtain. All is perfectly plain, without buttress, chamfered edge, or moulding. The way lies through two doorways, opposite each other, of 8 ft. 6 in. opening. The inner arch is built of white limestone, with a few blocks of blood-red iron sandstone. The vousseirs are heavy, and a single ring. The walls generally are of coursed flint rubble, very open jointed. In the Decorated period a sort of porch, of 20 ft. projection by 12 ft. in breadth, was added upon the outer face, in the centre of which is an outer gateway, portcullised, and flanked by a pair of buttresses, placed diagonally. Over the gate is a small window, and in the side walls two loops raking the curtain. The old Roman doorway in the line of the curtain has also been altered and refaced in the Decorated period, and a rebate added for a door. The roof was of timber, and there was an upper floor, no doubt an addition. This was reached by a well-stair in the south-west angle, rebuilt for the purpose, and entered by an interior door.

A study of the water-gate will throw much light upon what has been done at the land-gate, which was evidently built originally upon the same pattern. Here the Roman work was either pulled down and rebuilt of the same dimensions, or, which seems more probable, the Roman core has been preserved, and a Norman facing applied. The inner gate is perfectly plain, save that the arch springs from a simple Norman abacus, which is continued outside the wall as a string. The outer gateway has not even the abacus; but it is masked outside by a handsome Decorated portal, with a drop arch and good moulded jambs, and an exterior drip. There is no portcullis, and no middle gate. The space between the gates, a square of 14 ft., was vaulted over from four heavy corbels in the angles, from each of which sprang five ribs, two placed against the walls. There was a plain but hollow chamfer, and they met in a central open circle, and four half circles against the four walls, connected by four ridge-ribs. The whole is of Late Decorated or Early Perpendicular character.

Here, also, an upper floor has been added, and remains pretty perfect. The chamber is barrel-vaulted, the axis being east and west, and strengthened by seven plain chamfered ribs, of which the springings remain; but the rest, with the vault, are gone. The vault seems to have been pointed, and looks Perpendicular. This room had windows over the gateways. It was reached by a straight staircase, placed in a projection parallel to the north wall, on the north side, and vaulted over. The stair-head opened on the left into the upper chamber, and on the right upon the curtain. There is another door on the south side of the chamber opening on the opposite curtain. This gatehouse has a perfect and very handsome parapet, with merlons and embrasures of equal size, and a bold moulding is carried round each.

A few yards north of this gatehouse a small lancet doorway has been opened in the Roman curtain, probably as a postern. At present it is a mere rough hole; but it looks old, and had it been very modern it would have been lined with brick.

The structural history of the castle is tolerably plainly written upon its walls. Henry I., probably before 1133, seems to have built the keep, and inclosed the inner ward, repaired the Roman curtain, rebuilt or restored the gatehouse, and placed a hall and other domestic buildings along the south side of the inner ward. It may be that Henry himself raised the keep before the works were completed, or this may have been done by Henry II. as late as 1160.

In the Winchester volume of the Journal of the Archæological Institute is a paper by Mr. Hartshorne upon Porchester, which gives some curious particulars as to its government and repairs. From these it appears that in 1220 the roof of the keep was out of order, as the constable has four "carratas" of lead for its covering. This shows that the roof then upon it was the flat one indicated by the weather moulding. Henry III., who obtained in his second, third, and fourteenth years upwards of 10l. for tallages from the town or manor of Porchester, suffered the castle to fall into decay, and the return of a survey ordered by Edward I. in 1274 states that the buildings within the castle are old, out of repair, and unfit for habitation. A second report was made twenty years later, after a visit from Edward in person, and repairs were at once ordered, which were very extensive, and were continued through much of the reign of Edward II. Mr. Hartshorne gives an analysis of an account of the clerk of the works here in 1321.

After the receipts, which in this year were 55l. 0s. 0½d., the particulars of the expenditure are given in detail. First, the cost of the materials, then the wages of the people employed, the foundation-diggers or "fundatores," the masons or "cementarii," at 4d. a day; their labourers or "servientes"; the collectors of stones, "colligentes lapidum," most of which were picked up on the beach, at 6d. a day; throwers of sand, "jactantes zabulonis," at 2d.; carpenters, "carpentarii"; sawyers, "sarratores," at 4d.; fallers, "prostratores"; bark peelers or "scapulatores," at 3½d.; tilers, "latamores"; plumbers, "plumbatores"; smiths, "fabri"; labourers, "laboratores," &c. A new lock and key for the east gate cost 4d. Wm. Giles, the tyler, had 4d. a day, and Robert, his boy, 3d., while covering the chamber of Edward II. Two large hawsers, for lifting timber and stone to the top of the tower, cost 43s. 8d.; thirty-two weldichboarde boards were purchased at Havonte for 4d. each. Thos. le Piper supplied 157 stones at 10s., and their carriage from the Isle of Wight cost 6d. They were employed for the foundation of the bridge under the castle: probably that in front of the west gate. Peter de Pulford, as clerk and overlooker, had 12d. a day. These works would be all in the Decorated style, varying in detail as the style advanced. The work at the top of the keep was probably the present parapet.

About 12 Edward III. the repairs were resumed. The Queens and Knighton's chambers were repaired. A "fausse wall" was ordered to be built, and a barbican with a "brétasche" and barriers: works evidently of timber, and probably in advance of the west gate.

Richard II. resumed the works, and about 1396-7, just as the Decorated style was passing into the Perpendicular, seems to have pushed them forward with great activity. Mr. Hartshorne points out that the castle was supplied with stone from Bonchurch and South-Wight, with freestone from Bereston for doors, windows, and fireplaces; and with flint-stone and "ragplaten-stone" from Binnerbeg, also in the island. Besides these were wainscot boards, Botincholt boards, for doors and windows, hearth tiles or "hurthtighel," Flemish tiles from Billingsgate, and "reretighel" or fire-bricks, for the backs of fire-places This accounts for the early Perpendicular work found all over the castle. Probably that in the Tudor style was executed in the reign of Elizabeth, who seems to have given her name to the kitchen tower, probably in consequence of alterations made in it.

The works in modern brick were executed during the present and past centuries, when the Crown held the castle on lease, and fitted it up as a prison; building barracks, now removed, in the great court. As early as 1761 there were Spanish and French prisoners of war here; in that year, it is said, 4,000. The Dutch prisoners taken at Camperdown were stowed here, and many French taken in war. It is said that at one time as many as 8,000 were lodged here. The castle has long been the property of the Thistlethwayte family. A couple of hundred pounds judiciously laid out on the keep would close its breaches, restore the old doorways and stairs, and replace the floors at their proper level. Some such moderate outlay would also much to improve the inner ward.

The history of Porchester is but scanty. Until comparatively modern times it was always in the hands of the Crown, and commanded by constables, whose names occur from time to time in the public records. King John, the most reckless of monarchs, was here eighteen times between 1200 and 1214, in all for fifty-two days. Much mention is made of wine stored here; at one time there were thirty tuns. In 1205 the King sent an engineer and sixteen miners to stay here for twenty days, and the constable was to find twenty picked men to aid them. Also Stephen English, an artificer, was sent. There might be to dig the well in the inner ward; the keep-well must have been dug when or before the keep was founded. Sheep are sent for the garrison, sixty at a time, and petraria and mangonels, and other military stores. The tenants who held by castle guard were warned. To the castle was attached a large demesne, and forest, under the charge of the constable, the income from which was considerable.

Edward I. seems to have been here two or three times, and Edward II. more frequently, staying here for several days in 1324-5. Edward III. mustered his army here before his French wars, and kept up a strong garrison and good supplies of wheat, and barley, and wine.

THE CHURCH.

Those who visit the castle cannot pass the fine Norman church unnoticed. It is composed of nave, central tower, north transept, and chancel. The south transept has been removed, as has been the conventual buildings which stood on that side, as shown by the water-table for the roof of the cloister. The upper part of the tower has also been removed, and the north and south nave porches. The east window is modern, as is the vestry on the north. The angles of the west front are nooked, like those of the south-east tower of the inner ward, but in the church tower these angles contain a bead or shaft. The west front is excellent. There is a doorway with sculptured bands, and flanked by fluted and twisted shafts. Above are three coupled windows, arches, all ornate. The central is the only one pierced, but the filling up of the others is worked in a lozenge pattern. On each flank is a broad pilaster strip, and on the gable above a Norman loop.

The tower rests on four full-centred arches with flanking shafts, and above, two small Norman windows opened into the transept roofs. At the north-west angle, between the nave and transept, there seems to have been something like a room for lepers. The present door into the transept is modern, and the low commanding a view of the altar is blocked. There is a stone bench against the walls of the choir and transept; the font is rich Norman, cylindrical form, with intersecting arches.

The curtain wall, south of the church, are traces of an arcade of nine small intersecting arches about 6 ft. high, and their bases 12 ft. from the ground, and below them seems to have been a small door in the wall, no doubt a private postern for the use of the monastery. The arches have been one side of a room, probably the chapter-house.

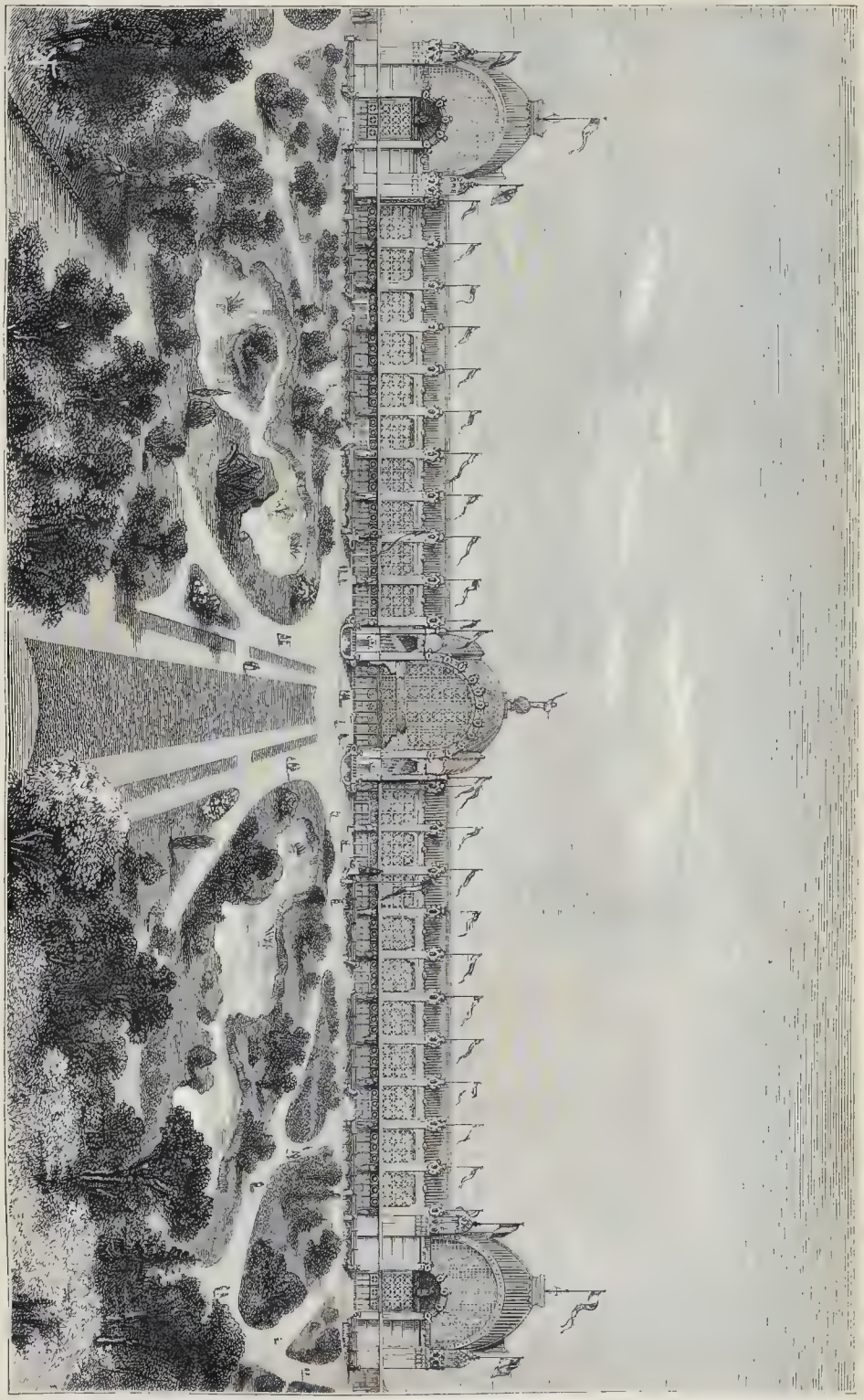
Soon after its foundation Henry I. moved the establishment from hence to Southwick, where it remained to the dissolution. It is therefore probable that the conventual buildings were then pulled down. The transept connected with them seems, however, to have been standing within the last two centuries. G. T. C

TO RENDER WOOD UNINFLAMMABLE

SIR,—Will any of your readers inform me of a solution or otherwise to prevent or assist in preventing fire from igniting wooden buildings? E. A. L

A. Outer ward and church. B. Inner ward and keep. C. Keep, basement. D, E, F, G. First, second, third, and fourth floors. H. Fore-building and chapel. I. Lesser hall. J. Greater hall. K. New chapel. L. Tower. M. Water-gate

PORCHESTER CASTLE.



FAÇADE OF THE PARIS INTERNATIONAL EXHIBITION BUILDING.

Director, M. Duval; Architect, M. Hardy. Copied by special Permission from the Architect's Drawing, adopted by the Commission.

THE PARIS UNIVERSAL EXHIBITION.

Two centuries and more have passed away since the day when Henrietta Maria, the widow queen of Charles I. of England, slowly ascended, in her by no means gaudy coach, the height of Chaillot; the unhappy Henrietta, whose father, Henry IV., had been assassinated, and whose husband had been beheaded but two short years previously, came there to found a convent, which henceforth received the name of the Monastery of the Nuns of the Visitation de Ste. Marie (1651).

Long ago as that time is, it may, without exaggeration, be said that the change has been greater on this spot within the last few months than in the two centuries that separate us from the day when the widowed queen looked from these same heights over the city of Paris, at her feet. The Revolution has passed over the spot, destroying with it the monastery, but little has it changed the aspect of the hill. How different now, when every day the Palace of the Trocadero rises, as if by enchantment.

A more detailed account of the Exhibition than we have as yet given for some time past is necessary fully to appreciate the immense progress made within the last few months. Happily no political events, either at home or abroad, have in any way been allowed to interfere with the works of the Exhibition, and the numerous contractors rival each other in their activity.

As is now well known, a vast hall (the diameter of which will exceed 50 yards) will occupy the height of the Trocadero, in which accommodation will be afforded for 7,000 spectators. The difficult problem of emptying the hall of these spectators has been happily well looked into, and the whole has been surrounded by a double wall pierced with numerous doors. From each of these, in the two-yard space which separates the walls, ascends a staircase, which will give access to the different rows of boxes; each place will have its special means of exit. We see thus that the plan of the Roman arenas has been strictly carried out, and by this means the chances of grave accidents are greatly diminished.

To the right and left of this hall the wings, of semicircular form, are rapidly approaching completion. On the side which looks on to the Champ de Mars extends the gallery *promenoir*, the columns of which are soon to be put in position. These columns, which will be of white stone, relieving on a red-coloured background, heightened with gold, will certainly produce a handsome effect.

With regard to the plan of the cascade, one of the great attractions of the Exhibition, it is now alone awaiting execution. The works possess some interest, as, to form the bed of the future fall, it will be found necessary to use blasting-powder. When completed, the cascade will be considerably larger than the famous fountains of St. Cloud; it remains, however, to be proved whether in the present century we can equal the beauty of the old cascade which forms so conspicuous a feature in that superb masterpiece of Lenôtre, the Park of St. Cloud. No expense is to be spared, some 28,000*l.* having been voted for the purpose.

On the Champ de Mars the same activity reigns as on the Trocadero, and since the recent visit of the Marshal President the progress has been great. Now that the immense work of masonry is completed, the public can easily observe the advance made daily by the different contractors. As we have already stated, the gallery of the Fine Arts is completed, while the building in which the city of Paris is to show a number of marvels to the world, is advancing. Thus at present one is able on the spot thoroughly to take in at a glance, as it were, the immense works of the Exhibition, all of which are now far above ground on each portion of the Champ de Mars. On every side rise huge pieces of cast-iron work, ready prepared, and alone waiting to be placed in their proper positions. It is owing to this fact that, in a few hours, a small gang of intelligent workmen are able, with the aid of powerful cranes, to set up masses of iron weighing many tons. Eight contractors divide the works of the Champs de Mars. The great galleries parallel to the Seine and the École Militaire are under the charge of Messrs. Eiffel & Cail. The other gallery, parallel to the Avenue Labourdonnage, is being constructed by the Compagnie des Fives-Lille; that on the side of the avenue Suffren by the Compagnie du Creuzot.

As a proof of the extraordinary activity that reigns we may mention that on the 25th of May, when the Marshal President visited the Champ de Mars, not a pillar of the gallery parallel to the river had been posed, while now nearly half of the construction is completed. Each extremity of this gallery will be terminated by domes, while in the centre a circular pavilion, looking on to the Pont d'Iéna, will serve as the principal entrance. The pavilion alone will have a circumference of forty yards, the gallery a breadth of twenty-six.

As may be imagined, great interest is shown by the public, who may be always seen watching the progress of the immense works. As each huge piece of iron arrives it is rapidly hauled to its proper position by immense cranes, and there firmly riveted. While one end of a gallery is thus hourly progressing, may be seen at the other the glaziers rapidly filling in the iron sashes.

Thus, by means of skilful co-operation, no time is lost, and every day makes it more evident that it alone remains with the rest of the world to decide whether the solemnity of next year shall take place.

When at length the Exhibition opens not a little interest will be added, in the minds of some few of the numerous Anglo-Saxon visitors, from the fact that the spot on which a part of the Palace is built has seen the sorrows of the unhappy queen of Charles I., and in later years the philosophic dreams of Benjamin Franklin.*

We publish in our present number the first correct view of the intended building that has yet been given. It shows the entrance-front, next the Quai d'Orsay, with the arrangement of the grounds as definitely determined on. The contracts already made in respect of the Exhibition amount in the whole to 25,000,000 francs (1,000,000*l.* sterling), of which 8,200,000 francs have been already expended, viz., 6,000,000 at the Champ de Mars, and 2,200,000 at the Trocadero.†

THE DOMESTIC ECONOMY CONGRESS IN BIRMINGHAM.

THE Congress on Domestic Economy, and the Exhibition in connexion therewith, were inaugurated by a public *conversazione*, held in the Rotunda of the Society of Artists, New-street, Birmingham, on the 17th inst., the mayor in the chair, in the absence of Lord Leigh, through an accident.

Several letters were read from gentlemen unable to be present, including Mr. Le Neve Foster, secretary of the Society of Arts.

Professor Huxley, after some preliminary observations, said: I am happy to say a few words upon the objects of this Congress, and the expediency of arousing public feeling in regard to the importance of the objects it has in view, because this particular subject is one which has always possessed a very great interest for me, and it happens to be one on which in former years I have expressed very decided opinions. In fact, I think I could go back as far as the year 1868, when it was my business to address a working men's college on the subject of what constituted a liberal education, and although I am exceedingly loath to quote myself, yet, if you will allow me, I will trouble you with two or three of the observations that I made on that occasion. I said:—

"If any one is interested in the laws of health it is the poor workman, whose strength is wasted by ill-prepared food, whose health is sapped by bad ventilation and bad drainage, and half of whose children are massacred by disorders which might be prevented. Not only does our present primary education carefully abstain from hinting to the workman that some of his greatest evils are traceable to mere physical agencies, which could be removed by energy, patience, and frugality; but it does worse: it renders him, so far as it can, deaf to those who could help him, and tries to substitute an Oriental submission to what is falsely declared to be the will of God, for his natural tendency to strive after a better condition."

I believe that these words remain as true now as I think I may venture to say they were ten years ago; and although it is perfectly true that since that time the Education Act has been passed, which, whatever any of us may think about its details, or about the extent of ground which it covers, must, nevertheless, be admitted by all, I think, to have been a step in legislation of the first magnitude—I say that primary education has not in reality touched any of the points which are here referred to. . . . If people are taught reading, writing, and arithmetic, they will know reading, writing, and arithmetic; but however well they know reading, writing, and arithmetic, that is no guarantee that they will understand one syllable of their social duties, or of those conditions upon which their health and welfare depend. It is these matters, and the importance of their being impressed on our public life, which has led to congresses such as these.

The real work of the Congress commenced on the 18th instant, when, in Section A, Miss Kenrick (a member of the Birmingham School Board), presided, and Miss Mary Willis (Society of Arts Examiner in Domestic Economy) read a paper on "Needlework." Mr. Joseph J. Pope followed with a paper on "Clothing and its Materials," in the course of which he strongly condemned the "low dresses" worn by ladies at her Majesty's drawing-rooms and receptions. In the discussion which followed, Mr. Edwin Chadwick remarked that black was a colour that absorbed mephitic gases in very large quantities; and to avoid that, doctors and clergymen, who did so much visiting of the sick, should always go about in white.

In the same section, Mr. Edwin Chadwick, C.B., read a paper on "Head to Foot Washing." He said the effect of cleanliness was not sufficiently recognised. He found evidences of its effects in various ways. Dealing with the animal creation, he said the pig that was washed would put on one-fifth more flesh with the same amount of food than the pig that was unwashed. The same effect was observable in other animals. They had seen the horse washed from head to foot to give it additional force. The same argument applied to the human creature. He knew the case of an army hemmed in by the enemy and put upon half rations. They were regularly washed, and it was found after a time that the men who washed were equal in force to those who were unwashed and put upon full rations. Head to foot washing was not only important in the matter of economy in food, but also for the prevention of contagious disease. Nurses who attended scarlatina cases and other cases of contagious disease had found out that, by washing twice a day, and sometimes by changing their clothes, they might withstand the dangers resulting from the practice, and doctors who were similarly engaged had come to the same conclusion. As a defence against an outbreak of epidemic disease he would have the whole population tubbed. He mentioned that in a prison containing 1,200 persons washing was enforced, and instead of using seventy or eighty gallons of water for each bath, and causing a large expenditure of time, a very simple method was devised for giving the prisoners a thorough good bath. Each man was placed in a recess, with a spray of tepid water overhead, which completely cleansed him. Schools at which unwashed children attended were centres of children's epidemics. They were well aware of that in Holland, for if it was discovered at any school there that a child had not been "tubbed," it was taken aside, properly washed, and the mother was admonished that she must not send her child again to school in that condition. There was an enormous sanitary improvement in consequence of that rule being enforced. There had been a marked reduction in epidemic diseases, and he maintained that, in this country, a cleanliness league was quite as important to the population as a temperance league, because filth, intemperance, idleness, and vice went always together.

Papers on "Washing," by the Rev. Harry Jones, and on "Baths and Swimming for Children," by Miss Chessar, followed.

In Section B (Health), Professor Huxley read a paper on "Elementary Instruction in Physiology," which was followed by a paper by Mrs. F. C. Hoggan, M.D., on the "Necessity of Substituting Science Subjects for Fancy Work in Girls' Schools," which, in reviewing the course of instruction at present given in day schools, urged that if a few scientific subjects were included in the curriculum of education to the exclusion of many things to which now a great deal of attention was given, there would, in a generation or two, be a more powerful tone than that which existed at the present day.

In Section C (Methods of Teaching Domestic Economy), Sir Henry Cole, C.B., read the first paper, the subject being "The Practical Development of Elementary Education through Domestic Economy." In the course of it he said that the arts of reading, writing, and arithmetic were the three principal instruments for education, or drawing forth the faculties which God had given

* Franklin lived at Passy, and the street in which he resided, now running into the Place du Trocadero, bears his name.

† A view of the intended buildings at the Trocadero has already appeared in the *Builder*.

to the child, and were of necessity the basis of any system of public elementary education. These arts could be taught, but they could not be properly cultivated or well preserved without constant and intelligent use. What our State machinery has up to this time been able to effect in instilling a knowledge of the three arts was shown by the Report of the Committee of Council on Education for 1876–7. He would avoid statistics as far as possible, but he could not give an idea of what was done for nearly the two millions expenditure spent yearly without a few general figures. In 1876 there were nearly three millions of children registered as being under instruction in reading, writing, and arithmetic in England and Wales. One million two hundred thousand "passed" what is called "a satisfactory examination" in these three arts, and of this number nearly seven hundred thousand, *i.e.*, about one-fourth "passed" the prescribed test without failure "in any one of the three subjects." But the Duke of Richmond and Gordon and Lord Sandon reported to the Queen that "they were obliged to repeat the remarks which they used last year, that the results were not satisfactory, and that the "nature of the results attained by many of those examined was meagre." Their lordships said, "only thirty-eight in every hundred of children above ten years of age were presented in standards appropriate to their age," and not twelve in a hundred presented passed in the Standards IV. to VI. Referring to what the education system proposed to do, he said that the little child of an agricultural labourer, of eight or nine years old, was expected, in Standard II., to read with intelligence, to write a sentence from dictation, to know the four first simple rules in arithmetic as far as long division. Besides, it was "to point out the nouns, the definitions, the points of the compass, the form and motions of the earth, and the meaning of a map!" The very enumeration of these demands appalled him. How many, even of that audience, would come forth and stand this examination? Who would volunteer to be the examiner except one of her Majesty's Inspectors? But none of these could be present there. Should they send into those parts of Birmingham, which were shown to Mr. Cross as condemned to removal, and take at haphazard any ten children under thirteen years of age, in tatters of finery, dirty, emaciated perhaps, and see what came actually out of the present system? Should they stand as illustrative specimens in the exhibition? Did he, then, condemn learning grammar, geography, and history? God forbid. But he gravely doubted if the teaching of them took its right place in our present system of State education. Domestic economy for girls was placed by the Code in the tenth division after nine others, being—1, English literature; 2, mathematics; 3, Latin; 4, French; 5, German; 6, mechanics; 7, animal physiology; 8, physical geography; 9, botany; and 10, domestic economy. Would any one venture to say that a knowledge of health, good food, thrift, and the like was not of much greater value to every one of the three millions of children of working people (under thirteen years of age), than Latin and every other of the subjects he had named? And yet the teaching of domestic economy was discouraged unless the child "parses a simple sentence, and knows the geographical outlines of the colonies."

Papers by the Rev. J. P. Faunthorpe, and the Rev. E. T. Stevens, on "Text Books in Domestic Economy"; by the Rev. E. F. MacCarthy, on "The Mode of Inspection and Administration of the Government Grant for subjects included under Domestic Economy"; by Mr. Charles Critchett, on "The Examinations of the Society of Arts in Domestic Economy"; by Mr. G. C. T. Bartley on "School Savings Banks"; and by Dr. Langford on "A Birmingham School Board Bank," having been read and discussed,

A paper by Mr. S. Wall Richards was then read, the subject being "The Influence of Order, Method, and Cleanliness in Factories and Workshops upon the Homes of the Industrial Population of Large Towns." Having had frequent opportunities of comparing workmen's homes in the textile districts of Lancashire and Yorkshire with workmen's homes in Birmingham and neighbourhood, he had been led to inquire into the cause of the differences there were between them. Many of the houses of the operatives of the northern counties were characterised by an air of cleanliness, freshness, and an appearance of general comfort that was altogether wanting in a similar class of houses in Birmingham. A different spirit seemed to pervade the household, and was a striking feature to a resident of the midland counties. There was no doubt in his mind that the superior manner in which houses were built, and the more complete domestic arrangements that were made by architects and builders of that class of property in the North, had a great deal to do with the general cheerfulness of home life there. Working men and working women in the neighbourhood of Birmingham had not the remotest notion of the attraction of a Yorkshire fireside. Whether the bright hearthstone was the complement of the general cleanliness of the walls, which are painted (not covered with a tawdry paper, as in Birmingham), or the whitened ceiling a crowning feature of the whole, is a moot point. What was the interior of the homes like of the operatives of Birmingham? How compared it with the same class of house in the North? A single living-room on the ground-floor in a court of houses, a *cul de sac*, with no second apartment; a cramped room, with a ridiculously small fire-grate, no hot-water boiler, a small baking-oven on one side only (9 in. or 10 in. square) divided in two parts, a fire-grate, perhaps the cheapest, commonest, and most useless design ever made; no back apartment, wash or slop kitchen; no painted walls, but, instead, covered with a cheap, showy paper, that was never cleaned or changed for years,—a contrivance for harbouring loathsome insects,—and ceilings that were white washed at long intervals of years also. That adjunct of comfort and promoter of cleanliness and health,—a good supply of water,—the operatives here were also denied. A common pump in the centre of the court, into which the sewage might percolate and be of serious mischief, was the usual, and in most cases the only, supply. The immense difference, so much in favour of Lancashire and Yorkshire, he attributed to the order, method, and cleanliness observed in factories there, and the entire absence of corresponding rules and regulations in factories and workshops in Birmingham till recently. The magnificent factories, with every appliance and contrivance that could be suggested by human ingenuity for securing the most favourable conditions upon which the gigantic industries could be carried on, had aroused and kept alive the desire of the factory *employés* for clean, convenient houses. What had been the rule, method, or custom in Birmingham? Most factories in Birmingham might be said to consist of a series of workshops that had grown from month to month and year to year, without symmetry or design, that the largest of them were, with few exceptions, agglomerations of shops, all shapes and sizes, forming irregular masses of buildings (very frequently a congeries of six or seven houses, communicating with each other through two holes in the walls), with no principle observed securing to the workers either proper light, ventilation, or cleanliness. All those important considerations had been ignored, so that, as a rule, places are built subject to no supervision, and, in consequence, were in direct contravention of the laws of health, and sometimes even of decency. Systematic cleanliness in workrooms was a term almost unknown, he regretted to say. Except in rare instances, observed, perhaps, in not more than ten per cent. of the various trades of Birmingham; and if a hundred workshops or manufactories were visited he doubted whether, previously to the Factories Act Extension Act, 1867, more than five per cent. of them had been whitewashed in a decade, and since, from the relaxations engrafted in that Act after the most persistent opposition by the Birmingham Chamber of Commerce, and especially to the whitewashing clause, he doubted very much, up to the present time, whether the practice of whitewashing had by any means been general. To further restrict the employment of females in degrading labour he believed to be the surest means of improving their condition, physically, socially, and morally. Slowly as all these changes were brought about, a change was coming over the habits of Birmingham industrial life; thanks to the unremitting efforts and untiring zeal, coupled with long experience, of Mr. Robert Baker, her Majesty's inspector of factories of the district. The influences of the factory and workshop were undoubtedly the most powerful in the life of an operative; they might be good or bad; the employer was frequently the only person occupying a high social position that the employed came in daily contact with: how important, then, that the influence should be of the right kind; what a powerful agency it might and could be made! As a manufacturer, engaged in one of the staple industries of Birmingham, he maintained that there were not any insuperable difficulties to be overcome by four fifths of the trade here in any endeavours employers might choose to make to bring about a better state of things. If they desired order, method, and cleanliness in their establishments, the reforms were easy of accomplishment, and the inclination for them existed. The great variety of trades, and large number of small masters,—who were constantly with their workpeople, and, therefore, were supposed to have the influence of personal supervision,—made the attempt easy. His firm employed upwards of 400 operatives, three-fourths of whom were females. He did not know of any beneficial change that suggested itself for their consideration that they should hesitate to make. The time-honoured institution of Saint Monday, for example, was not known with them. For many years the Saturday half-holiday was an institution that had been observed. Again, they had a rule which was cheerfully obeyed, and it was this,—that the floors of every room in the factory in which any persons were employed be scoured with soap, soda, and hot water once the last week in every month. Some of the rooms were 150 ft. in length. They had another rule, that every alternate month the windows be cleaned throughout the works; and what was the result? Why, an amount of cheerfulness and brightness not common in Birmingham manufactories. The average sickness last year was four days for each member. At the present moment they had not a healthy public sentiment influencing the masses in the matter of cleanliness. The municipal authorities and other governing bodies of our town give little heed to it. After factories and workshops, the dirtiest buildings in Birmingham belonged to the corporation and public bodies. Only last week the chaplain of the borough prison made formal application to have the rooms and passages of his residence (which belongs to the town) white-washed and coloured, pleading at the same time that they had not been done for six years. Perhaps the most unwholesome public room that they had ever had in Birmingham was the lecture-theatre of the Midland Institute,—a room that was used periodically for the delivery of lectures on the laws of health. To his knowledge it had gone as long as six or seven years without a coat of whitewash. Again, their School of Art was whitewashed and cleaned down a year ago, the first time for eight or ten years. It is all the more remarkable that Birmingham, occupying such an advanced position in many matters, should be so indifferent to this momentous and vital question.

This concluded the first day's proceedings.

On the second day (the 19th inst.), in Section B, Mrs. C. T. Bracey read a paper by Mrs. W. E. Gladstone on "Nursing for Artisans and Cottagers," and Miss Helen Taylor made some remarks on "Nursing in Connexion with Education." Mr. Lawson Tait read a paper on "Provident Dispensaries as a Means of providing for Sickness," in the course of which he remarked upon the pauperising effect of some of our large hospitals. Miss Rose Adams followed with a paper on the good work that has been done by the Ladies' Sanitary Association.

Dr. Carter next read a paper on "Buildings for Working Men," by Mr. R. Rawlinson, C.B., who was unable to be present. Every working man's house, it stated, should have sitting-room, kitchen, and scullery, and three good bedrooms. The sitting-room should not be less than 12 ft. square, and none of the rooms should measure less than 9 ft. from floor to ceiling. He then went on to speak of the sites of these houses, many at the present time being built on land little better than a swamp, simply because the land was cheap. The paper went on to speak of the manner in which dwellings were huddled together in large towns, and drew attention to the need for more stringent regulations with regard to their erection.

Dr. Alfred Hill read a paper on "House Drains in their relation to Health." Every subject on the programme of the Congress, he said, was more or less intimately connected with health, and none of them were more important in this respect than the subject he had to introduce. It was difficult to excite an interest in such a topic, because it was scarcely tangible; drains were invisible, and their effects to ordinary minds were not easily seen. But imperfect drains brought sickness into many homes, and led to the sacrifices of many thousand lives. The danger from drains was increased in the present day, when for convenience closets were inside the house instead of out of it, and the connexion existed between the house and the drains by a

dozen different channels. Dr. Hill then went on to consider the question under three heads,—the absence or deficiency of drains, defective drains, properly-constructed drains. In dealing with the latter point he showed a number of diagrams to illustrate a system by which the noxious gases of the drains were prevented from entering into the house. The ordinary syphon, he said, was not sufficient, for in the case of a flushing the foul air was forced through the water-valve formed by the syphon into the house. There should be two outlets for gas in the drains,—one on the ground and another by means of a pipe carried above the roof, and the system was so arranged that a pure current of air entered at the bottom and went right through the drain continually. He had taken the trouble to send out these drawings to persons who were interested in the question, and he should be happy to give any information or supply diagrams to any of those present.

Mr. Frank Curzon said the paper he had in his hands on "The Appointments and Appearance of the Workman's Home" was far too long to be dealt with *in extenso*; he should, therefore, refer only to one or two points that he wished to urge emphatically. They had heard a great deal from the preceding speakers with regard to the construction of dwellings and their sanitary arrangements, and he would devote the little time at his disposal in showing how the working-man's home could be made comfortable. He congratulated Birmingham in inaugurating the first Congress of this description, and in reference to the active efforts of Sir Henry Cole he said that by his efforts in South Kensington Science seemed to have received a soul and Art to have become a religion. He then went on to refer to the cheerless houses of many of the working classes, and pointed to the Building Society, by which a man was enabled to become his own landlord, as the best remedy. This house was to cost not less than 200*l*. As to its situation, it should certainly not be in the heart of a crowded town; his early experience had taught the workman what that meant, but some half a dozen miles from his work, in a clean, bright district, if nothing more, and where the railway gave him a cheap workman's pass. It was to have a little ground about it, a decent plot of grass in front, small yard behind, where the outbuildings were compactly arranged on the best sanitary principles, at a somewhat higher cost than usual, because what one had to economise here is, not money, but health and life. The house should have five rooms, two below, three above. The rooms below should be—a living-room behind, a bright kitchen, with covered sink, low mantel-piece, ample cupboarding, a range which Mr. Buckmaster might approve, an immovable stone fender, a good wooden floor, well excavated beneath, and a broad window. Mr. Curzon concluded with a reference to the furnishing of the house, in which respect he observed that the taste of the working classes sadly needed education.

Captain Douglas Galton, C.B., followed with a paper on "Warming and Ventilation." He said there was perhaps no subject connected with the economy of the dwelling which had so great a range of importance as that of warming and ventilation. It involved health, comfort, and expense. Ventilation was the science which enabled us to regulate the purity of the air within our houses, by renewing our supply from the outside; and the problem of ventilation included a consideration of the degree of purity possessed by the outside air, as well as of methods by which fresh air can be most advantageously admitted into, and vitiated air removed from, the house. The simple forms of ventilation rested on the principle of an outlet for the warmed air, and an inlet for fresh air. The position of the inlet was of material importance, because the question as to whether draughts were felt or not necessarily depended upon that. For this reason it is desirable to admit fresh air, especially cool air, at the upper part of the room, above the heads of the occupants, and to break up the stream by admitting it to numerous inlets. It thus becomes partially warmed by the air already in the room. He then explained the various processes by which the temperature of a room could be regulated, and the importance of a thorough knowledge of the subject.

Mr. George Skey said that during the preceding papers he had been trying to carry out in his own mind the various suggestions offered. In others words, he had been building a house according to the suggestions of Mr. Rawlinson, draining it according to the admirable arrangements of Dr. Hill, and having the appointments and appearance of the working-man's home precisely in accordance with Mr. Curzon's suggestions, and the warming and ventilation in accordance with those of Captain Galton. But he wished to introduce into the discussion a disagreeable element. What about the £. s. d.? Twenty-five years ago his attention had been called to the subject, and he had built what people had been pleased to call "model dwellings" for the working class, but the return he had received did not amount to 3 per cent. In a lengthy speech he enumerated other instances, and in conclusion he said that if a plan could be shown by which these houses could be built on an economical scale so as to pay even 4 per cent. on the outlay they might get them built, but not otherwise.

General Cotton said with regard to the difficulties of getting houses built on sanitary principles great changes had taken place during the past eighteen months. Builders in London knew now that if great attention was not paid to their houses, they could not sell them when built, and so they were led to pay every attention to the matter.

The Rev. Brooke Lambert, referring to Mr. Skey's remarks, said good houses were built in London on the system which had been discussed, which returned 5 per cent. on the outlay.

This ended the morning sitting of the second day of the Congress.

The greater part of the afternoon sitting was devoted to "Food and Cookery."

The Congress, which is generally regarded as a great success, was brought to a close with the usual formal votes of thanks, especially mentioning Sir Henry Cole; and, on the motion of Mr. Trace, of Manchester, it was resolved that in view of the beneficial and practical results from this Congress, it was desirable that the Local Committee and Sub-committee remain in action until the next annual Congress, which had been announced by the Society of Arts to be held in some part of Lancashire in 1878.

CANFORD CHURCH.—A RESTORATION.

SIR,—Notwithstanding M. Loftie's fiery denunciation of modern church architects and their restorations, I venture to bring to your notice a work recently completed in Dorsetshire, which seems to me to be deserving of much praise. No doubt, from the denunciatory point of view, all that has been done here or anywhere else must necessarily be wrong, for if a restoration be so well executed as to appear a part of the original structure, it is said to be a sham; and if it be in the style, if such there be, of the nineteenth century, it is said, with much truth, to be out of keeping, so that the safest plan is to do nothing: this course, at least, would either not be denounced, or spoken of in far from severe terms. To this course there is but one objection,—that, if followed, our churches would gradually fall into ruin. Now I am neither a clergyman nor an architect, nor a patron of a church, but only a layman who has been obliged by circumstances to rebuild a chancel, and to be largely concerned in building a church, and this has led me to take an interest in these subjects, and to arrive at the conclusion that there are architects, and that Scott and Street, at least, are among them, whose restorations are such as the original builders of our churches would have approved. With the church I am about to describe I have nothing whatever to do, but, happening to visit it some time ago, I was led to pay attention to its condition before the late alterations, and, in consequence, to examine them after their completion.

Canford is a very ancient, a very curious, and, alterations and repairs notwithstanding, a tolerably perfect structure in the Norman style of architecture. It has recently undergone a thorough and much-needed repair; the fittings have been removed, and the plaster scaled from its interior, in consequence of which much is exposed that before was covered up, and the history of the building is laid open so far as it can be deduced from the evidence of its details.

This church stands in a small churchyard on the right or south bank of the Stour river, a mile or so below Wimborne Minster, and some miles above its union with the Salisbury Avon, and their joint discharge into the sea near to the castle and church of Twynham or Christchurch, and below the headland known as Hengistbury, a district rich in memories of the later British and earlier English contests. The church stands about 100 yards from, and 8 ft. to 10 ft. above, the stream, close to the very ancient wear and water-mill, and a little above the site of the old Manor House, the "Caput" of the "Royal Lordship" and "Peculiar" of Canford, and the seat, from a remote period, of a succession of royal and noble personages. Of the ancient house, the kitchen, attributed to John of Gaunt, and apparently of his age, alone remains, and, still in use, forms a part of the modern mansion, the work of Blore and Sir Charles Barry, and the residence of Sir I. B. Guest.

The church is composed of a nave and chancel, each with aisles, and a tower. The southern aisles are continuous, and the northern communicate through the tower, which is placed between them, on the north side of the junction between the nave and chancel. At the east end of the south aisle is a sort of transept, opening from the chancel, built probably as a mortuary chapel, and afterwards used for the holding of the court for the Peculiar.

The *chancel* measures inside 40 ft. by 15 ft., with walls 3 ft. thick. It opens into the nave by a large arch, of Decorated date. In its east end is a window which, with the wall above its cill, is modern. This window replaced a Jacobean insertion of four-lights, flat-topped. It rests, internally, upon a bold half-round string, which is returned about 1 ft. 6 in. along each side wall. The wall below is probably of the age of the string, and of the tower. The lateral walls are original, and apparently the oldest parts of the church. Each is pierced by four full-centred arches, quite plain, opening into the aisles and tower. Of these the two eastern open from the dais of the altar, and are of 7 ft. span. The two next are, that on the north, 6 ft. 6 in.; that on the south, 4 ft. 9 in. span. Then follow two small doorways, also full-centred, of 3 ft. 3 in. opening; but, while that to the south is perfectly plain, that to the north has a rebate for a door, the lintel of which is flat-topped and shoulder-headed, the shoulders being two small brackets, having a bead-moulding and below it a hollow chamfer. They seem as old as the doorway, and are of white stone, the rest being blood-red. The pair of arches next west of the doors are, on the south, 4 ft. 9 in. span, and on the north 5 ft., opening into the tower.

Above the springing line of these arches are traces of original windows. In the inner face of the north wall is one jamb and part of the full-centred arch of a window, which has been cut into and blocked when the arch below was opened. In the south wall nothing is visible inside, but outside is the jamb of a loop and part of its head. It is evident that the original chancel had no aisles, but was lighted by two or, perhaps, three full-centred loops in splayed recesses high up in its side walls. There was, of course, a longer east window resting on the string. The fact of the addition of the aisles is confirmed by the remains of a plinth outside the south wall. As there is no trace of the string having been carried along the side walls, it is probable that when the arches were cut, and the loops closed, on the addition of aisles in the late Norman period, the east wall was rebuilt from the foundation with the contiguous ends of the side walls. The chancel has a good barrel or cradle roof by Brandon, and carved stalls are being placed on either side. The chancel is no doubt early Norman, and the arches were opened in the later Norman period.

The *chancel aisle, north*, is 28 ft. long by 7 ft. 6 in. broad, dimensions which evidently point to the Norman period. In the east end is a small two-light lancet window in a splayed recess, with a drop arch, the voussoirs of which are mostly of white stone. In the north wall are two lancet loops and a small shoulder-headed door. These walls seem to have been rebuilt; but with the old stones and on the old lines. Against the south wall are several plain stone corbels, which probably supported the hammer-beams of the original roof, which was a high-pitched lean-to. In the west end an arch opens into the tower.

The *chancel aisle, south*, is 22 ft. by 10 ft. 6 in. Its south wall seems Decorated, as certainly is its western arch, opening into the nave aisle. On the north wall is seen the external plinth of the original chancel, and the orifice of a loop high up, with a line of corbels as in the north aisle. In the north-west angle, 10 ft. from the ground is a small broken doorway which led into the rood-loft. In the east end a drop arch, boldly chamfered, of Decorated date, opens into the chapel. In the south wall is a Perpendicular window, flat-topped, of three lights. There is also a door, in its present form modern, but with

traces of an earlier one. This aisle seems to have been rebuilt in the Decorated period.

The *transept* or *chapel* at the east end is 16 ft. 6 in. east and west, by 16 ft. It occupies the south-east angle of the church. In its south end is a flat-topped Perpendicular window of three lights, trefoiled, and rather earlier than the window in the adjacent aisle. The east wall is solid, and flush with the east wall of the chancel.

The *nave* is 54 ft. long by 15 ft., but of the length the western 18 ft. were added thirty or forty years ago, in the taste of the day, and have recently been rebuilt in keeping with the rest of the building. The chancel arch is equilateral, of 14-ft. 6-in. span. It has a bold central rib, chamfered, as are the edges of the voussoirs. This is a Decorated insertion, replacing, no doubt, a smaller Norman opening. The side walls contain arcades of two arches on each side. These are 10-ft. span, with an intervening pier 7 ft. 6 in. broad, and walls 3 ft. thick. The arches spring from thick half-round shafts, resting upon square bases. The base moulding is the ordinary double round and hollow, of a late character. The capitals vary in pattern, but are of one date. The two southern arches, and the most eastern on the north side, are full-centred. The mouldings are, on the inner face, two angles replaced, the upper by a keel-shaped bead, and the lower by a round bead or roll. On the outer face is a mere rebate. There are plain half-round roll drips on each face. The fourth arch is pointed, and a Decorated insertion. In the south-east angle of the nave, high up, is the broken door of the rood-loft. The westward extension now in progress contains an excellent west window of three lights, and above a marigold opening, and there are two lateral windows of one-light each.

The *north aisle* is 36 ft. by 9 ft. 6 in., and has at its east end an arch into the tower, and above it the weather moulding of the original roof. In the west end is a pointed Norman window of 12 in. opening, in a deep recess, splayed and stepped up to the window. In the north wall near its east end is a modern memorial window. The north doorway is original. It is round-headed, and the two angles in the mouldings are replaced, the upper by a keel-shaped fillet, the lower by a roll, as in the nave. The arch springs from an abacus with a hollow chamfer. The doorway stands within an outer arch, also round-headed, and flanked by two nook-shafts, slender and detached, with stiff flowered caps and a central boss upon the shafts. The bases are concealed, but the whole is of a very late Norman and, in some respects, Early English character. The shafts are of white, the rest of red stone. There is no drip. There are traces of a porch, and possibly of a niche over the doorway; the porch is about to be replaced.

The west wall of this aisle is propped by a clumsy buttress, 3 ft. 6 in. broad by 4 ft. 6 in. deep, of two stages. It has been added to support the north wall. At the base of this wall is seen the original plinth. Inside are four corbels for the hammer-beams of the old high-pitched roof.

The *south aisle* is 37 ft. long by 9 ft. 6 in. At its east end a drop-arch, of the date of that below the nave and chancel, opens into the chancel aisle. It springs from the wall without jambs or shafts. In the inner wall are four corbels, as in the north aisle. In the west end is a window corresponding to that in the north aisle, and the line of the exterior plinth is also seen, though the projection has been cut away. The south wall is also original. In it, east of the door, is an original splayed loop with a trefoil head, each cusp terminating in a medallion like a draughtsman. East again of this is a flatted-topped late Perpendicular window of three lights, cinquefoiled. This has superseded a loop window, of which the splay and east jamb remain. At the east end of this wall is a small round-headed piscina, with traces of a cupboard above it. The south door is of the same general pattern with the north, but rather larger, and with different details. The doorway has a trefoiled head, with medallioned cusps, such as is seen in one of the upper chambers of Conisgburgh Castle. The flanking shafts are three-quarter engaged, and have no central boss, and the bases are higher. Outside the wall are two plain buttresses, 2 ft. broad by 4 ft. 6 in. deep. One marks the junction between the nave and chancel aisle, and seems Perpendicular; the other may be Decorated. A porch is to be placed on this side also.

The *tower* is about 17 ft. square at the base. It is of four stages, marked by three sets-off, reducing its summit to 14 ft. Its north-east angle is capped by two flat pilasters, one on each face, the two meeting to cover the angle, which is solid. There is a third pilaster on the west end of the north face. They have no set-off, but die into the set-off of the first-floor. The basement measures, inside, 11 ft. north and south by 10 ft. east and west. It has arches on its east, west, and south sides opening into the aisles and the chancel. Of these the western is 8 ft. span, high-pointed and plain, having a square rib between two angular recesses springing from a plain abacus with a hollow chamfer. Below are two coupled three-quarter shafts, placed on the inner face or soffit of the jambs. In the south face is a larger pointed arch of the full breadth of the chamber, and within it is seen the small round-headed arch of the chancel, against which the tower has been built. The arch opening eastward is also pointed, but lower, and of only 3 ft. opening. It springs from an abacus with a hollow chamfer. Above this arch is a small lancet window without a drip, and the angles of the recess are replaced by a roll, continued round the head, but broken by bases and caps at the arch-springing. The caps are of white stone. Outside, below this window, is seen the high-pitched weather-moulding of the chancel aisle.

In the north wall, high up, is a larger window, of one light, and slightly pointed, in a round-headed recess with a stepped cill. The opening is flanked by two slender engaged nook-shafts, with flowered caps and rather raised bases of Early English character, as is the central boss in each shaft. The shafts are of red stone, and parcel of the jambs; the bases and caps are white. Over all is a drip. The window is evidently of the date of the two doors. High up in the west wall is a small square-topped door, reduced in width at some very early period, from which a narrow mural stair ascends in the west wall to the first floor. It is lighted by a small west loop, and had also a door, now blocked, upon the nave roof.

In the first-floor of the tower, in the north wall, is a closed Norman recess, and in the east a square-topped loop.

In the second-floor are three original windows of two lights, with a central pier and flanking shafts. They stand within round-headed arches. In the south wall is a loop.

In the third-floor are four round-headed windows, small and plain, and above is a low solid parapet, probably of Decorated date, but after the original pattern.

The chancel is probably the oldest part of the structure, built in the Norman period without aisles, and with three looped windows high up in each side wall. Aisles were then added, the windows blocked, and the side arches cut, in the late Norman period, but since then the added aisles have been rebuilt on the old lines, the North in the Early English, and the south in the Decorated style, when the chancel arch and that between the south aisles were inserted. The chapel was probably also Decorated, but has been much altered, if not rebuilt.

The nave and its aisles and the tower were probably all built in the late Norman period. The nave possibly first, and there may have been triforial openings, as the aisles were unusually lofty. The font is Early English, a polygonal bowl with a central stem and shafts round it.

The material of the original chancel was a deep blood-red sandstone, much used in the Norman period. Altogether this is a most interesting little church, and its condition does infinite credit to the liberality and taste of the patron, and to the skill of Mr. Brandon, its restorer.

OBSERVER.

Bath. — The landslip which made itself apparent more than a year ago on the northern slope of the city of Bath is becoming more serious. A number of houses are dangerously affected by the subsidence, and the city surveyor has served a fresh batch of notices on owners, directing their attention to the unsafe condition of their tenements. Walcot Church has lately exhibited signs of a settlement. The Town Council has called in professional advice, and the continued slipping of the hill side over a considerable area, mainly covered with cottages occupied by artisans, is attributed to a current of water descending the hill to the river acting upon a substratum of sand and gravel.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

THE fourth annual conference of this Association commenced on the 19th inst., at Bristol, the meetings being held at the office of the Sanitary Authority, Prince-street. Mr. Lemon (Southampton) occupied the chair, amongst those present were:—Messrs. F. Ashmead, M.I.C.E., president-elect (Bristol); James Lemon, M.I.C.E., president for the past year (Southampton); Edward Prichard, C.E., vice-president and hon. district secretary for Midlands (Warwick); Charles Jones, C.E., general hon. secretary (Ealing); E. Vawser, C.E., assistant secretary of Lancashire and Cheshire (Warrington); E. B. Ellice Clark, C.E., assistant secretary for Home Counties (Hove); B. C. Cross, C.E., assistant secretary for Yorkshire (Dewsbury); and others.

It was agreed that the meeting for 1878 should be held in Liverpool.

The president (Mr. F. Ashmead) then took the chair, and delivered an inaugural address.

The reading of papers followed, the readers being Mr. F. Ashmead and Dr. Davies (medical officer of health for Bristol). Mr. Ashmead, in the course of his paper, remarked that the whole of the Bristol sewers were unventilated. This caused a considerable discussion, the general opinion being in favour of the ventilation system. Dr. Davies urged the value of distinct dwellings, and condemned the accumulation of families in one large building.

In the evening the members sat down to a banquet at the Clifton-down Hotel, under the presidency of Mr. Ashmead, and after dinner there were various complimentary toasts.

The reading of papers was resumed on the morning of the 20th inst.

Mr. W. W. Stoddart, F.G.S., F.C.S. (Bristol), city and county analyst, read an interesting paper on "The Water-bearing Strata of Bristol." Before commencing it he, however, referred to the discussion that took place on the previous day with reference to the ventilation of sewers. He said if those who so strongly condemned Mr. Ashmead's plan of non-ventilation lived in Bristol, and were well acquainted with its conformation, they would perhaps modify their views. The levels varied from 300 ft. above the mean sea level to 20 ft. below it. If the sewers were ventilated in some of the districts, they would require two or three Dr. Davies. Bristol was so peculiar in its geological formation that each district had to be separately dealt with, and Mr. Ashmead had a most difficult task. We extract the following from Mr. Stoddart's paper:—The great diversity in the geological formation of the ground on which Bristol and Clifton are built rendered the question of water supply a very important one. The strata might be arranged into four groups,—namely, first, inclined impervious beds; second, inclined impervious beds with numerous fissures; third, impervious horizontal beds; fourth, porous horizontal beds. The millstone grit and carboniferous limestone of Clifton and Kingsdown-parade were instanced as examples of the first group. Wells dug to catch the several springs almost depended for the purity of the water on the absence of dwellings on the top of the beds, because the water not being able to penetrate the strata found its way "between" them in an almost unfiltered state. A good instance of the unsafe condition of this state of things was mentioned by Mr. Stoddart in one of the city conduits, which comes from a spring that once was situated in the open country, but which now is extremely impure from being surrounded to a large extent by houses. Kingswood, Stapleton, and Fishponds were mentioned as illustrating the second group; and Keynsham, Bedminster, and Horfield the third. The centre of the city, with the parish of St. Paul, were given as examples of the fourth division. The different ways of contamination that affected potable waters under these varied circumstances were explained and proved by a long and exhaustive list of analyses that the author of the paper had made during the last twenty years. The paper concluded with a short description of the supply that the citizens of Bristol and Clifton now enjoy from the Waterworks, and the reasons were given why the water supplied could not be contaminated by drainage impurity. The city wells especially, being so subject to the infiltration of tidal water, as well as waste material from so populous a place, were all of them described as being impure, and access to a good supply of water from a long distance from Bristol was considered so

bvious a necessity that no argument was re-uired on this point.

Mr. Lemon, referring to the ventilating of ewers question, said he disputed entirely that he sewers of Bristol were not ventilated, for if hey were not they must have a perfect con-exion with every house in the city, which they new was impracticable. Those vent-holes aused ventilation, and he would rather that the as came out in a proper way than on the sly. Ie proposed a vote of thanks to Mr. Stoddart.

Mr. Parry (Reading) seconded the motion, and aid no doubt if Mr. Ashmead had had all the nformation that Mr. Stoddart could now give hem twenty years ago, it would have influenced im in laying out the system of sewers.

Mr. Ellice Clark asked Mr. Stoddart his pinion, with reference to the theory of the oxy-isation of sewage by its passing through water.

Mr. Stoddart, in reply, said he was not an ngineer, and could not say whether there was perfect non-ventilation of the sewers; all he uld speak to was the effect upon the wells. eferring to the use of sewage on farms, he said e believed that the value of it was greatly aggerated. As regarded oxydisation, he men-oned that the sewage of Bath was turned into e Avon; at Hanham it was found to be par-ally oxydised, and further down it became still ore so, but there could not be a perfect oxydi-tion in so short a distance.

Mr. A. W. Parry (Reading) read a paper on e "Maintenance of Highways, Scavenging, atering Roads, and Collection of House Re-se." In his opinion the work was better done r the authorities themselves than by con-actors, and at a less cost.

A discussion took place, in which most of the eakers agreed with Mr. Parry.

Mr. Henry Masters (Bristol) explained his stem of ventilating sewers, and the double-nk system.

Mr. Lobley explained Amsley's planometer,— ingenious instrument for accurately measuring ound.

The meeting then adjourned, and in the after-on visits were paid to various large manufac-ring works in the city. On Saturday last a sit was paid to the Bristol Waterworks.

WATER WORKS FOR LONDON.

THE Water Examiner, Major Bolton, in his last port says:—

The Lambeth Company have finished their vered reservoir at Norwood; it is capable of lding 5,000,000 gallons, and has lately been ought into use. The company are giving con-nt supply in a number of courts and alleys. e alterations in fittings under the Board of ade Rules and Regulations are being gradually ected as occasion offers, and are carried out in new buildings. This company require an mediate extension of their area of filtration, enable them to efficiently filter water during e prevalence of floods.

The Chelsea Company's new works at Molesey e rapidly approaching completion, and the ncreting and paving of the inner slopes of the servoirs is progressing. Two of the reservoirs ll shortly be taken into use, one having been ed up during last month. The erection of the cessary engine power has been completed.

The companies that are actively moving in the tter, and giving constant supply under the ovisions of the Metropolis Water Act, 1871, in portion of their districts, are the Kent, New ver, and East London. The Act provides wer to compel all the companies to give con-nt supply as and when the public authorities y see fit to demand; but no company is com-lled to give such constant supply if it can be own by them that after the expiration of two nths from the time of service of the requisition ve than one-fifth of the premises in such dis-ct are not provided with the proper fittings, in cordance with the Regulations made under the ove-mentioned Act.

The number of miles of streets which contain ins constantly charged and upon which drants for fire purposes could at once be fixed, each district of the metropolis, is as follows:— nt, 80 miles; New River, 175; East London, ; Southwark and Vauxhall, 112½; West ddlesex, 70; Grand Junction, 41½; Lambeth, ; Chelsea, 56: making a total length of 0 miles, and the Water Companies are ready affix hydrants thereon when required by the horities. The total number of hydrants oted is at present 4,279, of which 2,752 are for private purposes, 542 for street watering, 510 for public use, and 475 in Government establishments.

"SOUTH KENSINGTON."

SIR,—I am indebted to your courtesy for a copy of the *Builder* of this day's date (July 21st), containing some criticisms on an article written by me in the June number of the *Nineteenth Century* on South Kensington; and I lose no time in disclaiming the construction which you have placed on a passing remark in that article on the well-known phrase "Brompton Boilers," which phrase you state to have originated in the *Builder*.

The fact is, that, in penning that paragraph, the thought of connecting the *Builder* with the phase in question never entered by mind, and it is your remarks alone that recall to my recollection that which the present generation never knew till to-day,—that the phrase was first employed by you twenty-one years ago. I intended to refer to the systematic and long-continued use, in a hostile sense, to which it was turned by the many opponents of the Commissioners' schemes, of whose existence you are of course aware. You, in fact, observe yourself that "the designation stuck to" the building. Though invented by a friend, it was too epigrammatic not to be eagerly seized upon and *exploité* by the enemy, and it was of the enemy alone that I spoke.

If I had occasion to write the paragraph over again, I should gladly put it thus:—"In order to render the general scheme unpopular, the nickname of the 'Brompton Boilers' (originally invented by the *Builder* in no intentionally hostile spirit) was persistently applied by the Commissioners' foes to the temporary building," &c.

I am glad to take this opportunity of bearing testimony to the generous, but at the same time discriminating (and therefore especially valuable) support which the *Builder* has at all times given to the plans of the late Prince Consort and the Royal Commissioners of 1851.

EDGAR A. BOWRING.

P.S.—My remarks as to the whole South Kensington Estate lying exclusively in the two parishes of St. Margaret's, Westminster, and Kensington, and not in any parish of "Brompton" (to the parish church of which one portion is indeed nearly contiguous), are strictly accurate. (See Commissioners' Act of Parliament of 1854, and other official documents.) The point, however, is of infinitesimally small importance.*

WORKMEN'S CLUBS.

ON the 20th inst., the fifteenth annual meeting of the Working Men's Club and Institute Union, the Dean of Westminster, president, was held in the theatre of the Society of Arts, John-street, Adelphi. The object of the union, as our readers know, is to promote the social, mental, and moral welfare and recreation of the working classes by the establishment of clubs, institutes and libraries.

The report, which was read by Mr. Hodgson Pratt, entered in detail into its successful operations. The number of clubs and institutes established, which at the end of the first year was not more than fifty-four, of which half only were in the Union, was now 805, with an estimated membership of 133,000. The work in London and the provinces was described. The receipts during the year had been 1,536*l*., and there was a balance in hand of nearly 100*l*.

Mr. Samuel Morley, M.P., moved the adoption of the report.

The Dean of Westminster made an interesting address at the close of the proceedings.

The Royal Savoy.—The buildings at the corner of Savoy-street, Strand, have recently been demolished, and the street is about to be widened and improved by the erection of a building, consisting of shops and offices, to be called the Royal Savoy Chambers. The architects are Messrs. A. & C. Harston. Adjoining these premises, the Art Union of London are about to erect offices and galleries, from the designs of Mr. E. M. Barry.

* We are very unwilling to seem contentious, but are forced to repeat, positively, that a considerable part of the land belonging to the Commis-ioners is in Brompton. There is no "parish" of Brompton. Brompton is a part of Kensington, and is a District for ecclesiastical purposes only.

THE ROMAN FORUM.

SIR,—Suppose it were known that Mr. A resided at No. 1 in a given street, and we found it recorded that B lived between A and C, might we not use this to prove that No. 2 was the house of B, as well as that No. 3 was the habitation of C, without laying ourselves open to the charge of arguing in a circle or ignorance of the simplest rules of logic?

So if Roman archæologists, starting from the Temple of Castor, use the *Monumentum Ancyranum* to identify the Basilica Julia as well as the Temple of Saturn, they are not fairly open on this account to the same imputation.

The argument is unquestionably sound with respect to the Basilica Julia, though there may be sufficient other grounds for its identification. With respect to the Temple of Saturn, it is doubtful whether Mr. F. M. Nichols (not Nicholls) has not, as well as some former writers, attributed too much weight to it. Becker pointed out long ago that, as the Temple of Vespasian did not exist in the time of Augustus, the B. Julia would then have been correctly described as between the temples of Castor and Saturn, whichever of the competing ruins might be supposed to represent the latter. But here also there is so much more evidence on the same side that the question may almost be regarded as beyond controversy.

The most conclusive argument is, perhaps, derived from the two fragments of the marble plan of Rome of the time of Severus, containing portions of a building lettered B——VLIA, and, upon one, part of a neighbouring building with the letters VRNI. Becker's objection that the letters B and VLIA are in different styles of writing, and that, therefore, the fragments do not represent parts of the same building, is met by the answer, which has not, I believe, hitherto been pointed out, that while one fragment is partly original and the other is a restoration from the Vatican drawings, we find that in the drawings the writing is in the same style on both, and differs from that of the original fragment (see Jordan, "Forma Urbis Romæ." Berlin. 1875).

R. C. N.

CASES UNDER METROPOLITAN BUILDING ACT.

BAD BUILDING—A CAUTION TO BUILDERS.

ON the 26th ult., Mr. T. Stanway, the builder of Nos. 37–49, Shaftesbury-road, Hammersmith, appeared before Mr. Paget, at the Hammersmith Police-court, in answer to a summons taken out by Mr. Knightley, district surveyor of Hammersmith, requiring him to take down the south flank wall of No. 37, in consequence of having built it with broken bricks, not properly bonded and solidly put together, as required by the Building Act.

Mr. Knightley produced a sample of the broken bricks used in building the wall, and explained how impossible it was to form bonded work with such material, and side by side showed the method of bonding with bricks of the size specified by the Act. He had continually complained of defendant's buildings, but finding remonstrance useless, now asked the magistrate to order the demolition of the wall. He called, as witness, Mr. E. F. Roberts, a local architect and surveyor, who spoke to the bad quality of the work; and his assistant, who saw the sample taken from the building; and the magistrate, having expressed his intention of making an order unless defendant could bring evidence to alter it, he (defendant) applied for an adjournment, and paid costs, 30*s*. At the adjourned hearing, on the 17th inst., Mr. N. Bezalgette, instructed by the Metropolitan Board of Works, appeared for Mr. Knightley, and Mr. Claydon for defendant, and cross-examination of defendant's witness proved nothing beyond confirming the belief in the mind of the magistrate that the walls were badly built. He summed up as follows:—The question before me is one of bare fact. Are these walls built in the manner specified by the Building Act,—that *is* to say, do the bricks overlap each other, and form bonded work; and are the bricks, as specified by the Act, not less than 8½ in. long? It has been shown there was a large quantity of broken bricks, or "bats" used. The district surveyor complained of this, gave notice to amend, and followed it up by a letter that such notice could not be waived; but defendant deliberately built the walls higher with the same bad material, in direct opposition to the proper authority. He, therefore, made an order as prayed, with general costs, amounting to 1*l*. 15*s*. 6*d*.

ROUSDON, DEVON.

ON the 7th inst. the chief corner-stone of the belvidere of the large mansion now in course of erection for Sir Henry W. Peek, bart., M.P., was laid by his only son, Mr. Cuthbert Edgar Peak, who was presented by the 350 workmen engaged on the building with a silver trowel and a box of tools. The trowel was made by Messrs. Ellis, goldsmiths, of Exeter, from a drawing made by Mr. Ernest George, architect. The box and all the tools (consisting of mallets, square, level, chisels, &c.) were made by the men engaged on the works. The whole of the workmen afterwards rode to Musbury, a village about four miles distant, where they were liberally entertained at dinner, at the cost of Sir Henry Peek.

The mansion at Rousdon when completed bids fair to be one of the most important and extensive in England. Built upon the high ground, immediately over the sea, and located almost midway between Lyme Regis, on the Dorset, and Seaton, on the Devonshire, coast, the site and its surroundings possess great natural beauties, whilst the grouping of the mansion, built in the Baronial style, is highly picturesque. Purbeck stone and flint are the chief materials used, whilst in the gables half-timbered oakwork is freely used, the panelling therein being all filled with sgraffito work. The roofs are covered with warm-coloured tiles.

The architects for the work are Messrs. Ernest George & Peto, the contractors being Messrs. Moass & Redway, of Exeter; and the carving and sgraffito work are being executed by Mr. Harry Hems. The resident clerk of works is Mr. Prosser, and Mr. John Shore is the foreman. It is hoped that by the latter end of next year the works may be completed.

"TWO-HOUR STUDIES."

SIR,—It would appear from a paragraph in the *Times* that Mr. Legros has been kind enough to give some of his two-hour studies to the South Kensington Art Department. Whether this gift was solicited, or volunteered, we do not gather, but we assume that it was solicited. It is, therefore, a public matter, and open to criticism.

The question respecting the merits of these studies is one which lies quite outside and apart from that which, I think, may very properly be raised as to whether it be a wise proceeding to encourage haste, by any example whatever, in a country wherein art for the most part has a tendency to slightness and to hurry. Art is not a matter of Hey! presto! All great work has been deliberate, well-considered work The facility which some of the famous and dexterous portrait-painters exhibited came of long study and practice. The facility which comes of long and putient study is that facility alone which is of any value. Completeness, and not sketchiness, ought to be the object of true art. A clever sketch made by a student in two hours, which no amount of after-painting would ever make excellent, will be of no value either to him or to art.

That craze of ours for "dashing off" work had, I had thought, been sufficiently chided and checked by the precept and example of the pre-Raffaelites. If there were a virtue in pre-Raffaelitism, it was that of the inculcation of care and patience. Moreover, the partisans of that movement had the example of the greatest painters to encourage deliberate painstaking. Look at the studies made by the great masters for their works, often with the silver point; how delicate and *correct* they are! There is about them no sign of dash—of bombast.

We English have got some ridiculous notion about bold drawing; by bold drawing is meant a daring surcharged outline, brought out in shading with thunderings of black. This is the *vid terribile* and *grandiose*, and very terrible it is. Now the grandeur of Michelangelo's works was not due to "the sweep of line" of the acute critic, but to the mental conception, and to the *correct* drawing. There is feeble drawing, there is *correct* drawing, and there is impudent drawing, and, for that matter, painting, too. "Boldness" in the English vocabulary of art, although it be not writ down so, is synonymous with impudence. For if "boldness" mean any greater surcharge of line, any extravagance of effect, beyond what is just and *correct*, it must mean the very bragadoccio and impertinence of art.

There is no more a royal road to art than to the mathematics. When shall we learn that its study should be a common sense and straightforward pursuit, and that even the "ingenium" can never be crowned with success unless the "labor" lead it on to victory?

W. CAVE THOMAS.

MONUMENTAL.

Bearwood.—On the 30th ult. was unveiled the monument erected in St. Catherine's Church, Bearwood, by the members of the Royal Humane Society to the memory of the late Mr. John Balston Walter (eldest son of Mr. John Walter, M.P.), who, it will be remembered, lost his life in saving his younger brother and cousin on the frozen lake in Bearwood Park on Christmas Eve, 1870. The memorial, which is about 6 ft. in height, was executed by the late Mr. Matthew Noble, sculptor, shortly before his death. It is constructed of Carrara marble, and is in *alto relievo*. The scene on the lake is illustrated on the base, and above an angel points towards heaven, while on the pedestal is the following inscription, written by the Dean of Westminster, the chairman of the memorial committee:—

"Many waters cannot quench love,
Neither can the floods drown it."
Canticles viii. 7.

This monument was erected by the members of the Royal Humane Society,
To the memory of
JOHN BALSTON WALTER,
Eldest son of John Walter, esq., M.P., Bearwood,
In recognition of his having risked and lost his life whilst rendering assistance to his brother and cousin on the frozen lake in his father's park, on Christmas Eve, 1870, two days after his return home from long and perilous travels,
In the 26th year of his age,
Leaving to his family and friends the blessed remembrance of a manly, industrious, blameless youth, and the bright promise of a useful, honourable, Christian manhood.

"So Lycidas sank low, but mounted high
Through the dear might of Him who walked the waves."

St. Paul's Cathedral.—On the 12th inst. a marble memorial of the officers, non-commissioned officers, and privates of the 57th (West Middlesex) Regiment of Foot was unveiled in St. Paul's Cathedral. It consists of a group representing "Christ the Comforter." The central figure is sitting in the centre of a group of the infirm, the sorrowing, and the weak,—to whom he tenders consolation. Overhead are two angels with outspread wings, bearing a boldly-designed scroll with the words,—"Grave, where is thy victory; death, where is thy sting?" The fourth verse of the fifth chapter of Matthew,—"Blessed are they that mourn, for they shall be comforted,"—is traced in a straight line below. Beneath the memorial is a marble space wrought into emblems of warfare,—the customary drums, shakoes, and sword-hilts, bordered with furled flags and garlanded with immortelles,—and bearing on it the number of the regiment and its honours. The sculptor was Mr. Forsyth, of Camden Town.

Halifax.—There has lately been erected in Lister-lane Cemetery, Halifax, a monument to the memory of the late Robert Midgley and his wife, of Salterlee, Northowram, at the expense of their children. The style is Early Decorated. Upon a square base and sur-base, stands the first stage, which is arcaded, with carved flowers in the mouldings, resting on red granite columns with carved caps, and having a crocketed gable over with carved finial, behind which is a sunk and moulded panel on each face, one bearing the inscription. The second stage by a bold splay is brought to the octagon, and has a sunk and moulded panel with cusped heads, over which is an arcade with crocketed gablet, carried by banded grey granite shafts on each face. From this stage springs a spire richly crocketed with finial at the apex. The whole stands over 20 ft. high, and has been executed and fixed by Mr. Richard Harvey, of Halifax, from the designs of Messrs. Jackson & Fox, architects.

Berlin.—A monument is now being erected in the Thiergarten of Berlin to the memory of Queen Louise, the consort of Frederick William III. The monument is being executed in marble. A sum of 48,729 marks has been raised towards its erection by private subscription. Whatever more the structure may cost will be defrayed by the city of Berlin.

Worcester.—A memorial has just been placed in Worcester Cathedral in memory of the late Dean Peel. The late Dr. Peel erected the reredos in the cathedral in memory of his deceased wife. In the flat alabaster back of the reredos the present memorial has been placed. The subject is a Grand Cross, having the Lamb, or "Agnus Dei," in a *vesica piscis*, occupying the centre of the composition, with the symbols of the four evangelists at the corners of the space, the whole being bound together and enriched with elaborate foliage of an early character. Running along the lower part is the commemorative inscription. As the alabaster did not admit of being worked in relief, the design has been incised. It is worked in gold and colour, and was carried out by Messrs. John Hardman & Co., of Birmingham.

Macclesfield.—On the 28th ult., the monument which has been erected in memory of the late Dr. Hall, of St. Alban's Roman Catholic Church, Macclesfield, was formally unveiled. The monument is a canopied tomb, with a series of floriated Gothic arches, the base being embellished with sculptured panels, while incised in the marble slab beneath the canopy is a representation of the recumbent figure of Dr. Hall in full ecclesiastical costume. The monument (the design of Mr. J. F. A. Lynch, of Macclesfied) has been executed by Mr. Hilton, of Manchester.

Bedford Leigh.—The committee for erecting the Middlehurst memorial at Bedford Leigh, Lancashire, have selected the design of Mr. J. F. A. Lynch, of Macclesfield. The monument is to include a statue (life size) of the Rev. M. Middlehurst, standing on a base having eight elaborately carved panels, approached by steps and surmounted by a canopy supported on four columns with carved capitals; the shafts will be of red Aberdeen granite; the roof finishing in a spiral form surmounted by a cross.

SCHOOL BOARD SCHOOLS.

Rotherham.—The Board have decided to erect schools at Thornhill to accommodate 225 boys, 225 girls, and 250 infants. Messrs. Tacon & Rawson, of Rotherham, architects to the Board, have been instructed to prepare the necessary plans for them.

Patcham.—New Board schools have recently been opened at Patcham, near Brighton. They stand on a site adjoining the old National Schools. One of the schools is for boys and girls, and the other for infants; the two together accommodating 140 children, of which number 102 are already on the register. The schools and the master's house adjoining, were built by Mr. G. R. Lockyer, of Brighton, from the plans of Mr. G. Tappen, of the same town. The cost, including fittings, &c., was 1,590*l.*

Hollingbourne.—New Board schools are in course of erection at Hollingbourne, Kent. The buildings, which will be of brick, and gable roofed, will consist of a principal schoolroom 46 ft. by 18 ft., with 20 ft. pitch, a class-room and an infants' school, 24 ft. by 17 ft. There are also separate residences for the master and mistress, and extensive playgrounds. The contract is in the hands of Mr. H. Bridge, builder, of Maidstone, and the plans have been prepared by Mr. G. Ruck, architect, also of Maidstone.

Huntingdon.—A new Board school is about to be erected at Huntingdon, at a cost of 1,000*l.* Mr. W. Lewis, of York, is the architect, and Mr. H. Creaser the builder.

Aston.—On the 27th ult., the memorial stone of the Alma-street Board schools, Aston, was laid. The buildings will be Gothic in style. The principal block, consisting of boys' and girls' schools, will front to Alma-street, and contain, on the ground-floor, general room for boys, three class-rooms, master's room, lavatories and cloak-rooms; and the girls' school, which on the first-floor, contains similar accommodation to that of the boys, with the addition of teachers' and sewing rooms. The infants' school is situated in the rear, and contains large room 70 ft. by 34 ft.; babies' room, two class-rooms and mistress's room. The warming will be by Haden's principle of warm air and warm water combined. The architect is Mr. William Jenkins, of Birmingham, whose designs were selected in limited competition. The builders are Messrs. Surman & Son, whose contract amounts to the sum of 9,187*l.*

Radford.—The foundation-stone of new Board schools at Radford, Notts, was laid on the 22nd ult. Mr. R. C. Sutton is the architect.

Crook and Helmington Row.—On the 14th inst. the foundation stones of two new Board schools were laid at Crook and Helmington Row, in the county of Durham. The ceremony at Crook was performed by Mr. Arthur Pease. The new school is to cost about 3,575*l.*, the building to be set in Gothic in style. The principal rooms are to

110 ft. by 20 ft. wide, and 74 ft. by 20 ft. The reading and class rooms are to be 18 ft. by 19 ft. Mr. Graham, of Sunnyside, is architect for the schools, and Mr. A. Kellett, of Crook, builder. The laying of the foundation-stone at Helmington was performed by Mr. H. F. Pease. The school is to cost 3,170*l.*, Mr. W. Walton being the contractor for the masonry. The building is to be in the Gothic style. The large room will be 70 ft. long by 20 ft. wide, the next 56 ft. long by 20 ft. wide, and the reading and class rooms 20 ft. by 12 ft. and 19 ft. by 20 ft. respectively.

Stokenchurch (Oxon).—On the 16th inst. the foundation-stone of new Board Schools here was laid by Major Tane. The new building will comprise mixed schools for 160 children, and teacher's residence. The materials used will be flints, with random brick dressings and slated roofs. The contractors are Messrs. Taylor & Grist, of Bierton, near Aylesbury, at the sum of 1,849*l.*, and the architect is Mr. Arthur Vernon, of High Wycombe.

ANNUAL CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

LLANGOLLEN is the place fixed on, and the following will be the proceedings of the Congress:—

Monday, August 27th.—Opening meeting at the County Hall, Llangollen, at 5·30 p.m. Members and visitors will then be conducted to Plas Newydd, formerly the residence of the "Ladies of Llangollen," where General Yorke will take them over the house and grounds. Public dinner in Assembly-room. Inaugural speeches, &c.

Tuesday.—Members and visitors, at 9·30 a.m., will ascend the Castell Dinas Bran, and inspect the ruins, which will be described, and then leave Llangollen at 12 30 p.m., arriving at Wrexham at 1·5 p.m., when the Church will be described by Mr. B. Ferrey, F.S.A., and commented on by others. Luncheon at Wrexham. Afterwards to Gresford Church, &c., and return to Wrexham for the 6·25 p.m. train, arriving at Llangollen at 7 p.m. for evening meeting.

Wednesday.—Leave Llangollen at 10 a.m. in carriages for inspection of Offa's Dyke, which will be explained by Mr. J. Tom Burgess, F.S.A., and others; then to visit Chirk Castle, by the permission of R. Myddleton Biddulph. Luncheon at Chirk, and then in carriages by Pont Cysyllttau, to visit Valle Crucis Abbey, and Elisig's Pillar. The Abbey will be described by Mr. Loftus Brock, F.S.A., and commented on by Mr. Wynne, M.A., F.S.A.; Mr. Bloxam, F.S.A., will give the history of Elisig's Pillar; then return to Llangollen. Evening meeting at 8·30.

Thursday.—Leave in carriages at 10 a.m., and visit the site of Owen Glendower's House, Sychant), Mound, and Farm, on which Mr. George R. Wright, F.S.A., will make some observations, and then on to Corwen Church, Rûg Chapel, which will be described by the Rev. W. Richardson, B.A. Ascent of the Caer, an ancient British encampment afterwards. Luncheon at Corwen. Return to Llangollen for evening meeting.

Friday.—Proceed by special train to Dolgelly, 8·45 a.m., for a visit to the remains of Cymmer Abbey, Abbot's House, &c., which will be commented on by Mr. Wynne, and the architectural features pointed out by Messrs. John Reynolds and Loftus Brock, and others. Luncheon at the Golden Lion Hotel, Dolgelly. At 2 p.m. the party will proceed by special train to Bala; and there carriages will convey them to the ancient manor House of Rhiwaedog, which will be described; then to Palé, the seat of Mr. Robertson, M.P., and Llanderfel Church. Special train to leave Llanderfel at 6·30, arriving at Llangollen for evening meeting.

Saturday, Sept. 1.—VALE OF CLWYD.—Leave by train at 9·50 a.m. for Llanrhaiadr, *viâ* Corwen. On arrival at the station, carriages will be in readiness to convey the members and visitors to the church, where will be found some ancient painted glass windows, &c., and then on to Denbigh, for luncheon at the Town-hall. The castle will afterwards be visited and described, and the party will leave by train for Derwen Church, where will be seen a rood-loft and screen, and an ancient cross and lych-gate in the churchyard. Leave Derwen by special train at 6·35, arriving at Llangollen for the evening meeting.

Monday.—Leave by train to Mostyn at 9 a.m. for the examination of library, &c., at Mostyn Hall, by the express permission of Lord Mostyn; afterwards it is proposed to visit the remains of Basingwerk Abbey and the Holy Well of St. Winifred, and return to Llangollen in time for the closing meeting and reading of papers.

METROPOLITAN STREET IMPROVEMENTS AND ARTISANS' DWELLINGS.

ON Monday, the 16th inst., before the House of Lords' Committee on opposed Bills, Lord Hardinge in the chair, the preamble was proved with amendments, of the Metropolitan Street Improvements Bill, brought from the Commons. The labouring-class displacement question formed the chief feature of the inquiry. Amended returns were put in showing that within the limits of the proposed scheme there were, roughly computed, 10,000 of the labouring class, of whom from two-thirds to three-fourths would be displaced. Including artisans the 10,000 mounted up to 15,000; and a clause will be added to the Bill providing "that before the Metropolitan Board of Works, under the powers of this Act, shall take down fifteen or more houses occupied wholly or partially by persons of the labouring class, they shall prove to the satisfaction of one of Her Majesty's principal Secretaries of State (Home Department) that they have provided either on the lands coloured blue (Gray's-inn-road) on the deposited plans, or on lands elsewhere in London, as the Secretary of State shall approve, sufficient accommodation in suitable dwellings for the persons whom they may so displace." It was stated that these displacements were a source of great difficulty to the Metropolitan Board, capitalists and builders being reluctant to take up the appropriated sites. The sites, therefore, had to be let or sold at reduced valuations, and it was estimated that under the present Bill 60,000*l.* would be deducted from what would otherwise be the commercial value of such of the lands as were set apart for labourers' dwellings. The estimated gross cost of the entire scheme authorised by the Bill was 3,630,470*l.*, and after allowing for recoupments, the net cost would be 2,694,740*l.* Seven years was the period specified within which the work could be carried out. The Honourable Miss Stanley, Alderman Sir S. H. Waterlow, M.P., Mr. West, Q.C., and many others were called by the latter to prove the hardship the displacements would inflict on the artisan class, especially where the principal West-end improvements are to be carried out, and the committee, on the suggestion of Alderman Sir S. H. Waterlow, M.P., determined to add words to the above clause, rendering it still more onerous in its operation. The Gray's-inn-road Spur (Exmouth-street) was rejected on the opposition of Mr. J. Early Cooke, which reduces the gross estimate by 135,000*l.* and the net estimate by 90,000*l.*

BUILDERS' BENEVOLENT INSTITUTION.

THE thirtieth annual general meeting of this Institution was held on Thursday at Willis's Rooms, St. James's. The treasurer, Mr. Geo. Plucknett (of the firm of Cubitt & Co.), in the chair.

The annual report congratulated the subscribers and donors upon the satisfactory position of the Institution. Through the energetic appeal made by the president (Mr. Charles B. Waller) on the occasion of the annual dinner in November last, the donations then obtained were very liberal; and as the Court of Chancery had sanctioned the transfer of the "Building Fund" to the General Relief Fund, the amount now invested in the Three per Cent. Consols was 20,292*l.* 13*s.* 7*d.* Such being the case, the committee felt they could safely recommend that all future donations should be expended instead of being funded, and that the amount of the pensions should be increased. As to legacies, it was proposed to fund them as heretofore. The report also recommended that the widow of a pensioner should receive a woman's pension on the death of her husband, in lieu of, as at present, receiving the half-pension until elected a full pensioner upon the funds of the charity. These alterations will be very advantageous to the recipients, and it is hoped that the donors and subscribers will do their utmost to enable the committee to carry them out. The committee report, with much satisfaction, that Mrs. Larner (lately a pensioner) has been enabled, from altered circumstances, to withdraw from receiving her pension, and that she has, with feelings of gratitude, presented the Institution with a donation of five guineas. Five pensioners were elected during the past year, and six have died. The thanks of the committee are due to the secretary for the ball, Mr. F. W. Keeble, for the interest he took in making it a success, by which the sum of 54*l.* 3*s.* was realised. The annual dinner will take place on November 8th.

The report having been unanimously adopted, the meeting sanctioned, *nem. con.*, the alteration and revision of the rules of the Institution. By Rule I., as amended, the men's pensions are increased from 24*l.* to 30*l.* per annum, and the women's pensions from 20*l.* to 24*l.*

Votes of thanks to the patrons, vice-presidents, committee, trustees, treasurer, and auditors, and to the president for the past year, were duly accorded; and the officers and committee for the ensuing year were elected.

On the motion of the Chairman, Mr. William Higgs,—a gentleman well known and respected in the building trade,—was unanimously elected President of the Institution for the ensuing year, and thus terminated one of the most important and satisfactory meetings in the history of the Institution, inasmuch as it marks the commencement of a new (and, we sincerely hope, increasingly prosperous) epoch in its affairs.

KENSINGTON VESTRY HALL COMPETITION.

THE Vestry on Wednesday, 25th inst., selected designs bearing the following mottoes, which, in their judgment, are best suited for the purpose required:—

"Experientia."—Robert Walker, F.R.I.B.A.
"Expert."—John J. Thomson & Fred. Davis.
"Experience."—Edward C. Robins, F.R.I.B.A.

Inasmuch, however, as considerable doubt exists as to the possibility of either of the selected designs being carried out for the sum of 18,000*l.*, named in the particulars issued, the architects are to be called upon to show clearly that the building can be erected in accordance with their respective designs within a reasonable limit of the sum named.

The Vestry awarded an extra prize of thirty guineas to the author of the design marked "Cavendo Tutus,"—Frederick Mew.

MARBLES.

SIR,—I find it very difficult to get to see various marbles to study. The Geological Museum is the only exhibition I know of the kind open to the public; but it contains only a few of the marbles in general use, having no black and gold, Sienna, Sicilian, Egyptian green, Verde antique, jasper, Brigga-di-Carra, and numerous others. Will any of your readers oblige by informing me of any building containing them where I should be able to obtain admittance? A MARBLER.

CHURCH-BUILDING NEWS.

Kemble (Wilts).—On the 8th inst. the parish church of All Saints, Kemble, Wilts, was re-opened, after being rebuilt from the foundations at the sole cost of the patroness of the living, Miss Gordon. The works have been carried out from the designs of Messrs. Medland & Son, architects, of Gloucester. The works comprise the taking down the chancel, which was built about the year 1840 quite out of harmony with the remainder of the church, and the building of a new chancel, in Thirteenth-Century Gothic, of the same size and form as the old, with richly-moulded lancet windows and Purbeck marble shafts, tile wall decoration by Maw & Co., at the east end containing Creed, Lord's Prayer, Ten Commandments, and the words over the Holy Table, "This do in remembrance of Me"; new oak Holy Table and Glastonbury chairs, presented by Mr. W. Price Jones, of Elm-green; velvet covering for Holy Table, elaborately worked, and "a fair white linen cloth," the offering of the Misses Price Jones. The tile floors are by Mr. Godwin, of Lugwardine. The restoration further comprised the taking down of the south or Ewen aisle, stated to be of the fifteenth century, the south porch, thirteenth century; and north chapel, twelfth century; the whole of which were in a most ruinous condition; and the re-building of the whole, replacing every stone in the exact position whence it came, and only renewing such stones as were absolutely decayed. The porch and north chapel have been entirely re-roofed and new north doorway and rose-window have been added to the north chapel, which will now be used as a vestry. The quaint little three-light lancet window, which a tradition in the village relates was brought from Salisbury

Cathedral, and the Transitional south archway, have been carefully replaced in their original positions. The nave has been re-roofed and a new aisle added on the north side of the nave, lighted by three-light lancet windows and divided from the nave by an arcade of two arches, in exact conformity with the ancient ones which divide the nave from the Ewen aisle on the south side, supported by a Pennant stone shaft. The church throughout has been refloored, and re-seated with pitch pine. Porritt's underground stove has been adopted for warming the church. Messrs. Medland & Son's plans have been carried out by the contractors, Messrs. Wall & Hook, of Brimscombe, who had for their foreman Mr. Thomas Whiting.

Woodstock.—A meeting of the committee for the restoration of Woodstock parish church was held on the 7th inst., to receive tenders for the restoration of the parish church. The portions of the church to be now commenced are:—1. North aisle clearstory; 2. Nave, south aisle, and groundwork; 3. Floors, and reseating. The contract of Mr. Groves, of Milton-under-Wychwood, Oxon, was accepted, the amount being 3,918*l.* 1s. 11d.

Brampton.—The foundation-stone of a new church at Brampton, Cumberland, was laid on the 12th inst. by Mr. George Howard. The church will be Gothic in style, and will consist of a nave, two aisles, and a chancel. Its length is 97 ft. wide, and its breadth 60 ft. 10 in. outside. The interior width of the nave is 20 ft. 6 in.; the north aisle, 15 ft. 1 in.; and the south aisle, 15 ft. 9 in. From the floor to the top of the nave, in the centre of the building, the height is 40 ft. The length of the chancel is 41 ft. There are to be two vestries, an upper and a lower; and at the west end the plans show a tower and a spire, but in all probability the spire will not be erected at present, as the funds will not allow of it. The new church will accommodate 500 people. Much of the material of the old church, which has been pulled down, is being used in the erection of the new one, and the whole of the building will be of red freestone. The estimated cost is nearly 9,000*l.* The architect is Mr. Webb, of London; and the contractors for the whole of the work are Messrs. Beaty, Brothers, Carlisle. Mr. Morland is clerk of the works.

Books Received.

A Hand-book to the Public Picture Galleries of Europe, with a brief Sketch of the various Schools of Painting, from the Thirteenth Century to the Eighteenth inclusive. By KATE THOMPSON. London: Macmillan & Co. 1877.

THIS very compact book is, as we learn from the preface, the result of notes taken by the authoress when visiting the principal picture galleries of Europe with her father, Sir Henry Thompson, during five successive seasons; not originally with any view to publication, which was an afterthought, arising from the suggestion of Mr. G. Grove. What Miss Thompson has endeavoured to accomplish has been an examination of all the chief picture-galleries of Europe, and most of the smaller ones, so as to be able to point out the principal and most interesting pictures in each, adding their numbers and titles from the local catalogue: and a brief historical sketch of the principal European schools of art down to the end of the last century, with a few biographical records of each of the principal masters. To this is added a chronological table of the dates of the birth and death, so far as they are known, of every painter of eminence.

The book is very systematically arranged. First comes the list of museums and galleries named in the book, grouped under the headings of their various countries, and followed by a list of authorities consulted. Then follows the bulk of the hand-book in the shape of a brief history of each national school or schools of painting, which is really a series of brief comments on the style of each eminent painter, with mention of two or three leading facts of his life, the whole assuming the form of a continuous narrative; but the names of the painters being inserted in the margin of the paragraph devoted to each, so as to be easily found when wanted. The chronological table of the painters of each nation follows the history of each national style: while the latter portion, consisting of about half the volume, is occupied by the catalogues of the principal galleries all over Europe, with the numbers of the pictures on the walls or in the catalogue given wherever practicable.

This is a very complete system, and the book is really a most useful one for those who, not knowing much about painting critically or historically, wish to examine foreign galleries systematically, and in a complete and comprehending manner. The book will not be less useful to the majority, from the fact that it is not calculated for students so much as for everyday observers. A book was rather required which would give this class of readers good and trustworthy general information about pictures and picture-galleries. Miss Thompson does not diverge into criticism much, contenting herself for the most part with a general statement as to the position in art of the painter of whom she is speaking, and his leading characteristics, which are described in the main well and correctly; and there is a quiet sensible tone, and absence of verbiage or superfluous remarks, which is very satisfactory to the reader. The book is, however, rather a memorandum and guide as to facts than a work suggesting anything like thoughtful or profound criticism, and occasionally, as in her brief remark about Blake, the authoress falls short of appreciating or sympathising with her subject. For general readers, travellers, &c., the book is really what it professes to be, an intelligible and complete handbook, very well carried out.

Christian Gravestones. Illustrated by 150 Examples, in which Suitability of Purpose and Expression have been especially considered. Designed by WILLIAM SHARP OGDEN, author of "Studies in Mercantile Architecture." London: Batsford. Manchester: John Heywood.

THIS is a collection of lithographed designs for gravestones, chiefly elevations on a small scale, with the sections of mouldings roughly given in black shading; not quite clearly enough, in some cases, to enable any one working the mouldings to gather precisely the intention of the designer as to detail, though the general idea is clear enough. The author says that he has endeavoured to work out certain principles which he thinks should be observed in designs of this class, viz.: "simplicity of outline, severity of detail, and a general motive of design in which the cross or other Christian emblem, monogram, or text are leading features," and adds, that "*style*, as generally understood, and as the expression of various systems of thought, is intentionally avoided, the object being to obtain an elastic and harmonious combination of workable detail, at once effective, inexpensive, and durable."

Looking at the designs in the light of these remarks we can readily perceive in what way the author has aimed at carrying out the principles here expressed, and to which, theoretically, we make no objection. But we should say he had somewhat deceived himself in regard to the realisation of these principles. Referring, in the first place, to the statement as to the avoidance of special style: where this is most prominently realised, it seems only to amount to the union of certain features of Classic with certain features of Gothic architecture. But, in fact, for the most part the designs do appear to us to be in a style, and that not a general style but a local one. As there is, or at least was, a Manchester school of politics, so there is, as it seems to us, a Manchester school of architectural detail. When we noticed some time since the same author's painstaking and elaborate set of designs suggesting treatment for mercantile architecture, we noticed the prevalence of this Manchester manner; and it is one which we can only admire with a great deal of reservation. There is a sort of "go" and effectiveness about it, but a great want of refinement and repose. The prominent characteristics seem to be a great love of the chamfer system of ornament, employed in every kind of varied manner, in some cases clever and effective, but producing an impression angular and fidgety to a degree. This is the impression, we must say, which these designs for head-stones give us. Certainly we cannot say that simplicity of outline is the characteristic of a great number of them; and even when the outline as drawn appears to merit this description, a perspective view of the design might give a very different impression; for it is one of the stumbling-blocks of the chamferesque school of design that it is capable of being worked into forms which appear very pretty and symmetrical in geometrical drawing, but are by no means so satisfactory when seen in perspective. Then in regard to severity and durable character in detail, we gather from the drawings that a good deal of the surface ornament is incised, filled in black, in a manner which has become prevalent of late; at least, we presume the ornaments in thin lines which appear on so many of the designs are intended to be produced in this way. This method of ornamentation is really anything but durable or monumental in character, nor can it be said to realise severity of effect: rather the contrary; it produces a thin wiry prettiness, and is not in keeping with that masonic feeling which should govern the treatment of a monolithic design. In some designs where this is avoided the effect is better; in the two upper head-stones on plate 4, and the stone with a solid cross worked upon it in plate for example.

A good many of the designs are suggestive of novel treatment, which might perhaps be realised with more of repose of effect than is shown here and we give Mr. Ogden full credit for ingenuity and for a good deal of pains expended in working out varieties of "chamferesque" design. But, in fact, there is a limit to the successful use of this method of producing ornament and expression, and the collection of designs in question conveys to us the impression of a straining after novelty in the mere shape of the head stones, resulting too often in the production of forms which are simply odd and unusual, without being either pleasing or in any special degree suitable for their purpose: such forms as the middle one, on plate 7, for instance, those on plate 18, and the lower ones on plate 20, and a good many others, appear simply odd and unusual, and certainly are not beautiful. Our impression is that Mr. Ogden might do better things than these, if he would get rid of the influence of the rather bad local taste which seems to form his style, and cultivate more breadth and simplicity of manner in designing and make less effort to appear original, which often a very different thing from being so.

Miscellanea.

"Miniature Aquariums."—The Southwark and Vauxhall Water Company are too enterprising by half, according to statements made at the meeting of the Lambeth Vestry on the 17th inst. Mr. F. H. Fowler called attention to the allegation that living organisms were being found in the water supplied by the Southwark and Vauxhall Company. It was most important at this time of the year that water should be pure. The water supplied by the Lambeth Company, he believed, passed muster, and the he attributed to the provision of sufficient filtering-beds. The medical officer stated that so as the "living organisms" spoken of were concerned, he had not seen them. These organisms were only revealed by very high microscopic power, which power he did not possess; but the Vestry thought it was advisable he should report upon the relative purity of the water the two companies, he would attend to matter. He thought it was very much to regretted that these alarming statements about "living organisms" went forth, leading to inference that they were very dangerous health. It was probable that they might not dangerous at all. Mr. Hill said he did not know where the medical officer of health had to his water from, but he (the speaker) certainly thought these "living organisms" did not quire the microscope to disclose them; nor they require a young person's eyes, for they were "magnificent animals." In fact, a tumbful of water was a sort of "Brighton Aquarium in miniature." There ought really to be some action taken in the matter. Ultimately it decided that the medical officer should make report to the Vestry as to the state of the water supplied to the parish by the Southwark Vauxhall Water Company.

Somerset House.—An accident occurred Somerset House last week. A portion of the balustrade surrounding the square gave way and fell over on to the area below, where it shattered to fragments. This floor, which is a level with the cellars and underground portions of Somerset House, is accessible in many places by flights of steps, and is frequently used as a passage. Fortunately, at the spot where the fall occurred there is a small garden, in which no one happened to be at the time.

Our Water-supply System.—Commenting a letter in our columns, signed "George tchell" (p. 668, *ante*), the *Sanitary Record* ys,—"We believe that the case just stated is ly one example of a great number of similar tances. First, as to the practice of the water mpanies. We believe most of these bodies im the right to demand their rates in ad- nce,—on what ground of justice or equity we not pretend to say. We do not remember ether this claim has ever been supported by a al decision in favour of the companies, but it altogether opposed to the practice of other ding corporations, and it is certainly a most equitable claim. The claim, however, is not forced in the case of those of the general body water-consumers, who are known to rate- llectors as 'respectable payers,' and some of e companies, in the case of these 'respectable yers,' are content to collect the rates for the lf-year, after they have become really due, tead of in advance. In the case of the poor, wever, the companies are more exacting, and the instance under discussion it would appear at the water was cut off on the plea that a rate e,—that is to say, due in advance,—had not en paid. Now, if the case as we have given e substantiated,—and, judging from other and ilar instances, there seems no reason to doubt the least the statements to which our contem- rary has given publicity,—it reveals what is thing less than a scandal, and shows the dan- rous unwisdom of permitting the water-supply the metropolis to remain in the irresponsible nds of private companies."

'Steam Superseded." — The death is nounced of Mr. William Wallwork, who was gaged maturing an invention which he styled new motive power, to supersede steam," and ich it is stated he completed about six days fore his death took place. It is stated posi- ely that the machine has been worked by Mr. r, and fully justifies what Mr. Wallwork had ted to him it would do. Its power, he stated, s unlimited,—of course increasing the strength the material,—and at a trial it blew off air at a ssure of 40 lb., as tested by a patent steam ge. Mr. Mason (says the *Pendlebury Times*) patenting the invention,—which is extremely ple in construction, and is a wonder to those o have witnessed it how it has been kept so ny years in abeyance,—at a considerable cost ll countries. It will be put to a large engine week and tried practically in the place of am. Having no fire, of course it emits no oke, works without noise, and the first machine, s said, will do the work of a 50-horse power gine, yet it takes up so little room that on dnesday morning a light cart and one horse ried all away, including the patterns. If all s turns out to be correct we may look for a olution in the engineering and manufacturing ld; and Mr. Mason, a practical man, is guine as to the results.

Government Offices in London. — The ect committee appointed to inquire into the ual expenditure on public offices and build- s have presented their report to Parliament. y state that at the present time 20,080*l.* are d annually for the hire of houses for the use the public departments at the West End of ndon, and that the evidence taken by the mittee shows that, independently of the cient accommodation, the system of hiring, en applied to the great departments, is un- sfactory. They call attention to three plans the concentration of certain public depart- nts which have been submitted to them, and, conclusion, remark that,—"they cannot too ngly insist on the expediency of the Govern- nt losing no time in proposing some plan by ch the evils complained of may be remedied." is their opinion that "delay will lead to ater expense in the future, and that imme- e action is demanded for the efficiency and fort of the public departments and the nity of the country."

The Haymarket, Oxendon-street, Pres- terian Church.—On Saturday the founda- -stone of a new Presbyterian church, on the e of Haverstock-hill, was laid. The church eing erected by the Presbyterian congrega- formerly worshipping at the old church in ndon-street, Haymarket, near Leicester- are, the site of which has been built upon by Civil Service Supply Association. The rch was founded by Richard Baxter, author Baxter's Saint's Everlasting Rest," in the 1676.

The Consumption of Coal.—From the recently-issued returns of the Government Inspectors of Mines, showing the quantity of coal raised in the kingdom for the year 1876, it appears that the consumption at home does not increase, but, on the contrary, has diminished. This result is opposed to the views of the Select Committee on Coal, whose Report, dated July, 1873, states that as the coal for domestic use is generally estimated at one ton per head of the whole population, "the future increase under this head may be expected to coincide with the increase of population." And further, "as regards the future exportation of coal, although a very large increase has taken place within the period embraced in the preceding table, yet there is reason to doubt whether much further increase will take place in this direction." From the Inspectors' Reports, however, it appears that the quantity of coal raised in 1876 was only 818,681 tons more than 1875. On the other hand, the exports of coal in 1876 were 16,265,839 tons, against 14,554,919 tons in the previous year, or an increase of 1,720,920 tons. If from this increase are deducted 818,681 tons, the excess of the yield of 1876 over that of 1875, there is left a deficit in the home consumption for last year of 902,239 tons.

The Fatal Fall of Houses in Bethnal Green-road.—Mr. Donaldson has held an inquest relative to the deaths of William Henry Hare, aged 32, a solicitor's clerk, and Henry Savage, 14, a printer's assistant, who were killed on Tuesday week by the falling of some houses in the Bethnal Green-road. Mr. Alfred Barker, of the firm of Irons & Co., building material dealers, said that he had just left off work at a neighbouring house, and hearing a great crash, looked up and saw the premises coming down. He and his men had been at work on them, and had removed the lead, tiles, sashes, and frames, part of the flooring and the roof, but the brickwork had not been touched. The houses were three-storied, 35 ft. in height, the front wall being only 9 in. thick, and he should think about a century old. Mr. Stuart Barker, auctioneer, said that he was employed by the Metropolitan Board of Works to take charge of the demolition of this property. It had been sold to a number of parties; but, according to the conditions of sale, the houses had to be taken down in a prescribed order, and that order had in this case been fully observed. The jury returned a verdict of "Accidental death."

Cleopatra's Needle. — The *Times* correspondent at Alexandria says,—"Mr. Waynman Dixon, the engineer who is conducting the removal of the English obelisk, a gentleman known in archæological circles for his interesting discoveries at the Great Pyramid, has found a curious inscription at the base of the sister obelisk known as Cleopatra's Needle. It stands on a huge square block of granite, but originally was supported by four bronze crabs, one at each corner. Three of the crabs are gone, but on the fourth, which still remains, Mr. Dixon has found an inscription duplicated in Greek and Latin, to the effect that the obelisk was placed in its present position in the eighth year of Augustus Cæsar, when Barbarus was Prefect, and Pontius, the architect, raised the stone. This puts the date of erection of our obelisk about B.C. 19, some fifteen hundred years after the stone was cut and carried up the river past Thebes, in the days of Thothmes III."

Unhealthy Dwellings in Lambeth. — At the last meeting of the Lambeth Vestry, the Sewer and Sanitary Committee reported that the Medical Officer had revisited the blocks of dwellings he last year selected for demolition under the Artisans' and Labourers' Dwellings Act, and the result of a house-to-house inspection was that the following places were found unfit for human habitation:—Salutation-place, Windmill-row, Great and Little Windmill streets, and Broad-street, including a large number of courts. It was resolved that the report be forwarded to the Metropolitan Board of Works.

The Proposed India Museum.—The London correspondent of the *Liverpool Journal*, who appears to be usually well-informed, writes:—"Lovers of architecture are already beginning to be anxious about the proposed India Museum. It is, I believe, now definitely to be raised on the Victoria Embankment, and, I hear, is to be in the Palladian style. Will it be an ornament to the Embankment, I wonder—and I fear? The Ceylon Legislative Council has voted 15,000*l.* towards the expenses."

Cannon-street and Charing-cross Foot Bridges. — Mr. J. Willing writes:—"Having become the lessee of the tolls of several of the bridges, and amongst them the foot-bridge over the Thames at Cannon-street Station, I have, since the 12th inst., thrown it open to the public, thus giving the free use of the shortest route between the Surrey side and the main thoroughfares of the City, which, I trust, will afford some relief to the foot traffic over London Bridge. I take the opportunity of notifying with regard to Hungerford Bridge that an entrance is now being made from the Embankment, and within a few days that will be open, and give the nearest and most direct way from Charing-cross to the Surrey side." Mr. Willing is to be commended for his enterprise, but we hope he will not seek to recoup himself for the abolition of the tolls by further disfiguring the already too-ugly bridges in question with the glaring "posters" with which he "doth give us bold advertisement" on the London hoardings.

Election of Borough Engineer, Newcastle-on-Tyne.—At a meeting of the Town Council on the 18th inst., the town clerk submitted the names of the following six selected candidates for the office of borough engineer:—Ernest Benedict (38 years of age), London; Alfred M. Fowler (40), borough engineer of Salford; Arthur Jacob (45), engineer to the Barrow-in-Furness corporation; H. U. McKie (54), city surveyor, Carlisle; J. P. Spencer, borough engineer of Tynemouth; B. P. Stockman, London, in private practice. A letter was read from Mr. McKie, withdrawing his candidature. The voting was then taken as follows:—For Mr. Fowler, 29; for Mr. Benedict, 9; for Mr. Spencer, 4; for Mr. Jacob, 1. A resolution was passed declaring Mr. Fowler elected, the engagement to be terminated by a six months' notice from either side.

London Bridge.—At a special meeting of the Court of Common Council on the 18th inst., Mr. McGeorge, as chairman of the Bridge-house Estates Committee, proposed the adoption of a report upon the opinions of the law officers, recommending that the committee should be authorised to take the necessary steps to obtain Parliamentary powers for raising upon the credit of the Bridge-house Estates the requisite funds for increasing the width of London Bridge. Several members expressed a strong opinion that the pressure of traffic was felt more in the approaches than on the bridge itself, and that the projected improvement would not remedy this evil; but ultimately the report was adopted.

Steam Tramways in Dublin.—In Dublin, on the 25th inst., the first public trial of Hughes's steam tramway engine was made in connexion with vehicles of the Dublin Tramway Company. The new locomotive presents the appearance of a miniature tram-car, fitted with curtained plate-glass windows, and a small funnel rising about 9 in. above the roof. The carriage and engine weigh 4½ tons. The engine is ten-horse power, and drew sixty-five persons with the greatest of ease at from ten to twelve miles an hour. It was brought to a standstill within its own length. Messrs. Abbott & Duncan, the proprietors, have resolved to go to Parliament for a Bill to legalise the use of steam power between Blackrock and Dublin.

Surplus Funds, Exhibition of 1851. — On the 20th inst., a deputation representing great provincial centres waited upon the Prince of Wales, at Marlborough House, to urge upon his Royal Highness, as President of the Commissioners for the Exhibition of 1851, that the surplus funds at disposal of the Commissioners should be applied in the promotion of science and art in the country at large, as well as in the metropolis, by the establishment and supply of museums. His Royal Highness, with whom was Lord Granville, promised that the best consideration of the Commissioners should be given to the views of the deputation.

The Soldiers and Sailors' Memorial, Boston, U.S.A. — Two large bronze figures, representing Peace and History, have just been shipped, by the steam-ship *Batavia*, for Boston. They were modelled by Mr. Martin Milmore, at his studio in Rome, and cast by Messrs. Cox & Sons, at their bronze foundry, Thames Ditton. These complete the above important memorial of the war between the North and South. The monument, which consists of a large column, ornamented with nine figures, trophies, wreaths, and several bas-reliefs, all in bronze, is to be unveiled in September next.

Home Hospitals for the Well-to-Do.—Last week a meeting of the committee recently appointed to consider the scheme for the promotion of Home Hospitals for the Well-to-Do was held in the Venetian Parlour of the Mansion-house, under the presidency of the Duke of Northumberland. It was resoved to establish an association to provide homes, which should be self-supporting, for the treatment and cure of disease, as in hospitals, by skilled nursing, rest, and regulated diet, under proper sanitary and hygienic conditions, with the comforts of home, for the benefit of all classes when attacked by illness, who could afford to pay in various degree for such advantages. For that purpose the committee decided to make an appeal to the public for funds—say 20,000*l.*,—to enable them to open one or more homes fitted with every comfort and requirement which science and forethought could suggest.

Disinfection and Sanitation.—We have had our attention called to the patent appliances of the Disinfection and Sanitary Works Company, Limited, and their mode appears so simple and efficacious for preventing the escape of sewer and other noxious gases into houses, and securing immunity from the foul odours arising from drains and water-closets, that persons who study their health, and have a regard for household comfort, would do well to call at the office of the company (Queen Victoria-street), simply to see their "automatic disinfector" in operation. As an efficient and practical method of purifying and disinfecting the atmosphere of private houses, it seems to us well deserving of attention.

TENDERS.

For paving the footways of the Albion-gardens, Hammersmith, for the Fulham Board of Works:—

Val de Travers	£187	0	0
Société Française des Asphaltes...	120	0	0
Brunswick Rock Asphalt Co. (accepted)	100	0	0

For alterations, 177, East India-road, for Mr. Hall Messrs. A. & C. Harston, architects:—

Johnson	£322	3	0
Sheffield (accepted)	297	0	0

For alterations, 175, East India-road, for Mr. Chapman. Messrs. A. & C. Harston, architects:—

Wood & Sleap (accepted)	£165	0	0

For enlargement of boiler-house, Stepney Union Workhouse, Bromley. Messrs. A. & C. Harston, architects:—

Seward	£181	0	0
Heiser	165	0	0
Le Frere (not in attendance)	148	0	0

For building new coach-house and stables in Amhurst Park-road, Stamford-hill, for Mr. R. Ellis. Mr. Wm. Eve, architect:—

Crabb	£250	0	0
Salt	245	0	0
Herne	244	0	0
High & Co. (accepted)	232	0	0

For the erection of stabling and coach-houses at Central-hill, Norwood, for Mr. T. J. White. Messrs. Selby & Rogers, architects:—

Hitchcock (accepted)	£700	0	0

For stabling at Leigham Court-road, Streatham. Henry Hall, architect. Quantities by Messrs. Selby & Rogers:—

Walker	£670	0	0
Lister	595	0	0
Smith	586	0	0
Mason	579	0	0
M'Lachlan	563	0	0
Hitchcock (accepted)	526	10	0

For completion of St. Mark's Tower, Dalston. Mr. J. L. Blackburn, architect:—

Stamp & Bowtle	£2,917	0	0
Boyce	2,544	0	0
Forrest	2,458	0	0
Winship	2,255	0	0
Cook	2,198	0	0

For erecting business premises at Croydon. Quantities not supplied:—

Ridge (accepted)	£1,204	0	0

For the erection of house, St. Lawrence, for Mr. Spain. Mr. W. S. Barwick, architect:—

Port	£398	10	0
Duckett	398	0	0
Bugden	397	10	0
Mitchell	325	0	0
Newby	281	0	0

For the erection of four cottages at Bryant's-place, Strood, City of Rochester. Mr. J. H. Audrews, architect:

Cates	£819	0	0
West (accepted)	800	0	0
Jeffrey	796	0	0

For the erection of workshops, club, and institute, with dwelling-house attached, St. Peter's, Vauxhall, for the Rector and Building Committee. Mr. E. R. Blatchley, architect. Quantities by Mr. C. W. Heward:—

	Institute.	Dwelling.
Moy	£2,2 0	£1,15
Josolyne	2,037	1,293
Colls & Sons	1,987	1,277
Stimpson & Co.	1,988	1,270
Dowas	1,990	1,350

For rebuilding the Boys' Refuge, Great Queen-street, Lincoln's Inn-fields, for the committee. Messrs. E. Habershon & Brock, architects:—

Coleman	£8,579	0	0
Browne & Robinson	8,356	0	0
Julian & Co.	8,355	0	0
Nightingale	8,058	0	0
M'Lachlan	7,990	0	0
Bowman	7,990	0	0
Mattock Brothers	7,833	0	0
Brass	7,698	0	0
Haynes	7, 0	0	0
Newman & Mann	6,725	0	0

For restoring warehouses for Messrs. Jones Brothers, Slate Merchants, City Basin. Mr. Owen Lewis, architect. Quantities not supplied:—

Bullock	£875	0	0
Roberts & Co.	838	0	0
Grove	797	0	0
Bowden	785	0	0
Sabey & Son	700	0	0
Blandford & Co.	760	0	0

For fifteen pairs villa residences at Sutton, for Mr. C. Argles. Messrs. Raggett, Williams, & Beadon, architects. Quantities prepared by Mr. Alfred Boxall:—

Priddle	£27,500	0	0
Harman	26,649	0	0
Jarvis	26,276	0	0
Cowland Brothers	26,090	0	0

For sundry repairs to St. Mark's Church, Myddelton-square:—

Browne & Robinson	£397	0	0
Cowland Brothers	374	0	0

For erection of St. Peter's vicarage, Saffron-hill. Mr. G. Lansdowne, architect:—

Wagstaff	£3,204	0	0
Bird	3,149	0	0
Cowland Brothers	3,047	0	0

For cleaning and painting works at Christ's Hospital, Newgate-street. Mr. Thomas Renton, architect:—

Shaw	£735	0	0
Morby	715	0	0
Hayward & Son	700	0	0
Patman & Fotheringham	685	0	0
Pitman & Cuthbertson (accepted)	610	0	0

For house and offices at Kingston-hill, for Dr. Kane. Mr. Henry Macaulay, architect. Quantities by Mr. Alfred Boxall —

Wells	£2,550	0	0
Oldridge	2,463	0	0
Todd & Saunders	2,437	0	0
Jarvis	2 375	0	0
Lane (accepted)	2,308	0	0

For erection of club building, Northumberland-square, North Shields. Mr H. Miller, architect:—

Chapman & Sons	£3,200	0	0
Shotton	2,598	8	4
Sopwith & Kent	2,549	16	0
Miller	2,425	15	0
Bolton (accepted)	2,395	0	0

For alterations and repairs at 21, Woburn-square, for the Misses Thomson. Messrs. Tarring & Wilkinson, architects:—

Henson	£320	0	0
Phillips & Son (accepted)	301	7	3
Decoration.			
Phillips & Son	231	0	0

For additions and alterations at No. 16, Kensington Palace Gardens. Mr. Charles Barry, architect:—

Trollope & Sons	£10,592	0	0
Holland & Hanten	10,360	0	0
Fish	10,770	0	0
Downs	10,580	0	0
Perry	10,115	0	0
Peto Brothers (accepted)	8,887	0	0

For erection of house at Ascot, for Mr. Bowen May. Mr. R. Adolphus Came, architect. Quantities supplied:—

Simpson	£2,931	0	0
Phillpson	2,696	0	0
Pither	2,602	0	0
Kearley	2,589	0	0
Yardley	2,533	0	0

For the erection of additional wing at the Cavendish College, Cambridge, for the College Association. Messrs. John Giles & Gough, architects:—

Bell & Son	£9,151	0	0
Hook & Oldrey	8,781	0	0
Bayes Bros. & Allen	8,755	0	0
Lovatt	8,245	0	0
Pattinson Brothers	8,189	0	0
Sharman	8,090	0	0

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Vol. XXXV. No. 1800. Saturday, August 4, 1877.

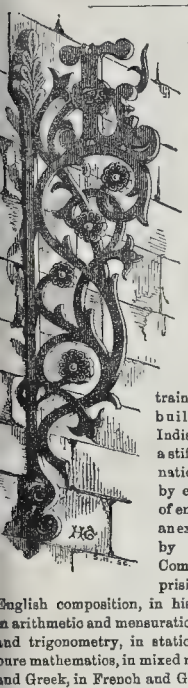
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The College of Indian Engineers.



LAST year about this time we gave a somewhat long account of the Royal Indian Engineering College at Coopers Hill; we explained the necessity of its existence, congratulated the Government upon its institution, and enlarged upon points connected with it which, in our opinion, augured well for its success as a preliminary training school of future builders throughout India. As we then said, a stiff competitive examination has to be passed by every youth desirous of entering the College,—an examination conducted by the Civil Service Commissioners, and comprising exercises in English composition, in history and literature, in arithmetic and mensuration, in Euclid, algebra, and trigonometry, in statics and dynamics, in pure mathematics, in mixed mathematics, in Latin and Greek, in French and German, in chemistry, in heat and light, in electricity and magnetism, in geology and physical geography, in freehand drawing, and in geometrical drawing. The luckier youths, by no means prodigies of intellectual power, who are scientifically crammed by professional experts with the answers likely to turn out successful to the probable questions of the examiners, then submit to a course of study at Coopers Hill, and—three years after passing the preliminary Civil Service examination,—are on their way to India, nine-tenths of them as Assistant Engineers (second grade), with a salary of 420*l.* per annum, and one-tenth as Assistant Engineers (third grade), with a salary of 300*l.* per annum. Now in these days an income of 400*l.* in Calcutta goes much further than one of 200*l.* in London, and an income of 300*l.* in the Mofussil is certainly better than one of 200*l.* in an English county town.

Every year a public day is celebrated at the College, and last Friday, the 27th ult., the Marquis of Salisbury distributed the usual prizes, and made the customary speech after the president, Colonel Chesney, R.E., had delivered his annual report. The Indian Secretary of State was in the best spirits and temper; and as he had to announce unpleasant facts,—that the number of students must be reduced, and that a famine in the south of India was imminent,—he probably preferred to look at everything connected with the College and the future officials of the Public Works Department in the rosy tints in which Colonel Chesney paints his pictures, and the outside examiners write their reports. He even announced that the Government is so satisfied with the results of six years at the Indian Engineering College that at no distant date a similar establishment will be founded for the training of recruits for the Indian Civil Service. Lord Salisbury mentioned the principal advantage of such home colleges: in them young men who in after years will be called upon to co-operate with, rule over, or obey each other in the administration of an unwieldy empire are brought up together; some contract early friendships, all get to know each other, and all are inevitably seized with that spirit of association which is the foundation of good government.

Although Lord Salisbury did not say so, there is a little humbug in every new and successful thing; and there is the inevitable quantum of humbug in the competitive examinations both of the Civil Service Commissioners and of the College of Indian Engineers. The object of the former is to pass as many candidates as the State requires; the object of the latter is to pass all the candidates if it can only be decently done. Three examinations which are held at the the College complete a student's course,—one at the end of the first, another of the second, year, and then the final examination after he has passed the required time in the office or workshop of a civil or a mechanical engineer engaged in professional practice. This undoubtedly sounds very well, but really the two years' study at the College is in all only eighteen months, and the "practical course" supposed to be passed in a working office, and to endure a whole year, is not more than a five months' ordeal. What with the examinations, the boating, cricketing, volunteering, billiards, and a host of extra things which we admit ought to be part of a gentleman's education, not very much time is left in the nine months for hard and continued study. We were not surprised, therefore, to hear that the examiner in geology was not entirely satisfied with the answers made by some of the students to the paper he set them; but we are surprised to know that Lord Salisbury should think the students have time to take up a collateral study,—that they must tackle mineralogy if they are ever to complete his lordship's satisfaction, and render themselves perfect as Indian engineers. We should have been better pleased to hear a suggestion that no student be gazetted to even 300*l.* per annum unless he can draw as well as a London architect's "improver," who is glad to receive even 1*l.* per week; we should have been much better pleased to hear his lordship remind the staff of the College that the Department of Indian Public Works wants men who have had a three years' training in the science and art of engineering, and in the rudiments of architecture,—not youthful *dilettanti* who have learnt many things that an engineer may want, and who have avoided almost everything that he will surely and immediately require. Means of knowing what the annual examiners in engineering and architecture think of the proficiency,—not of a few,—but of the general body of students, are abundant; we have even received communications from passed students of the college, and we do not hesitate to say that the majority of these young men whom the State sends with a free passage to India are not worth, as engineers or architects, the salary which it is agreed to pay them. Of course,—for did not Vitruvius quote the Grecian precedent?—an engineer or an architect ought to know everything it is possible to know, but the rudiments of that everything cannot be acquired in twenty-three months. We therefore urge, if, as is not unlikely, a reduction of the College staff is imminent, that the educational forces should be concentrated upon construction, both engineering and architectural, upon surveying both of buildings and land,—upon, in fine, those practical details which in England are divided between surveyors, architects, and engineers, but which in India are combined in one individual. "Mathematics" and "Applied mathematics" are admirable as mental exercise; but has not that exercise been accomplished by the preliminary Civil Service examination which every student passes before admittance to Coopers Hill? The glowing report of the examiner in mathematics,—his reports grow in glowing effects,—prove that too much time, comparatively considered, is devoted to that study, for none of the other reports seem ever to approach his in absolute intensity of satisfaction.

The announcement by Colonel Chesney, of the nature of some of the reports received by him from professional gentlemen, with whom four of the students had been placed during their final "year" of training, assists the impression we have formed that the College of Indian Engineers, admirable in principle and object, is attempting too much; and, obviously, that it is wasting its great advantages and powers. "The first thing I do," said a civil engineer to us, "when a student of Coopers Hill is sent to me, is to make him forget all that he has learnt at the College." Allowing the usual grain of professional jealousy, much may be read between the lines of that speech, especially when we remember the opportunities which abound under that civil engineer's direction, and which are offered to a student, to learn the rudiments of practical engineering. As for our own branch of the Indian Engineer's duties, we do not hesitate to affirm that the study of architecture is treated at Coopers Hill with suicidal indifference. We do not wish to engage these budding engineers in the battles of style or even in the details of the "five orders"; but we do wish to see all and every one there expert in the principle of planning,—in the technical method of delineating doors windows, stairs, floors, roofs, &c., upon paper, even to a small scale,—before they are launched into practice and set to design the details of bridges and buildings away from all drawings

books, and technical example or assistance. We make these remarks in no spirit of opposition, and refer our readers to the account we gave last year for our judgment of what the College is intended to be and to do. We simply warn the authorities that the opinions of outsiders, who believe in the utility of the institution, are not so rose-coloured or favourable as the general annual jubilation would lead people to suppose. A little less pretentiousness of display, and a little more devotion to the particular object for which the College was founded, may be profitably advocated by the powers that be. We repeat that in different parts of England and Scotland there are trained architectural assistants, whose stipends vary from 150*l.* to 200*l.* per annum, and who design and superintend buildings admirably well in the name of their employers. They have had, of course, many years of practice and experience. The knowledge of this fact makes us doubt if the Government are aware how long a time it takes to make even a London architectural assistant, and how little often he can earn when he is made. But, by the outlay of a few hundred pounds, a young gentleman of mediocre ability may now secure a certain and increasing income in India, with the additional advantage of receiving, as a privileged "engineer," more than enough to live on while he is attempting to learn his profession *there*.

The tearful pathos which marked the closing sentences of Lord Salisbury's speech prepared the visitors less for a sight of the students' drawings than for admittance to their hall. A disquisition upon the horrors of famine, and delivered after midday, was suggestive of appetite. Not a long time elapsed between the close of the Secretary of State's remarks and the luncheon, which was to most of the guests a disagreeable scramble. It is of course hardly gracious to look a gift-horse in the mouth; but really a public entertainment provided out of the revenues of India ought not to take the character of a subscription ordinary. The guests got seats when and where they could; ladies and gentlemen were absolutely jammed together upon the narrowest of chairs wedged in beneath the tables. There was little if any respect for persons; Sir Henry Norman, Mr. Leonard, and others of equal note, were left to find the best places they could, and many distinguished people were elbowed in the general squeeze. The waiters were helpless, the salads were old and not dressed, and the wine had to be asked for. The custom in India to leave all the details of table and bed accommodation to the care of several servants acting under the orders of a butler is generally successful, and, though expensive, is habitually followed; but in England the eye of the master is indispensable. The rough-and-ready manners of the bungalow among hosts and guests, all intimate with each other, will not do in England, especially in mixed society. The gentle gift of courtesy, both in the reception and entertainment of specially-invited guests, who, at some trouble and expense to themselves, are carried to Egham by "special train," would soften the criticism and smooth the feelings of many who, last Friday, as at other similar feasts and triumphs, went away physically empty and morally disappointed.

WALLACE'S "RUSSIA."

We owe a great deal to any writer who gives us careful and trustworthy information, such as will take us a step further in understanding the inner life, the social, political, and commercial conditions of another nation. The advantages from the publication of such information are, no doubt, in many cases equally shared between those who read the book and those about whom it is written. Better mutual understanding between nations differing in language and habits is the most important condition in the promotion of peace and of mutual helpfulness in the great ends of life. And the value of new information about Russia arises not merely from the prominent part that country is at present playing in European affairs, but in general from the difficulty of understanding or getting at the real facts about a people spread over so vast an extent of country, and in some respects so much removed from the sympathies of Western Europe, by its more primitive stage of civilisation as well as by geographical distance. Though St. Petersburg is now much visited by Englishmen, and has fulfilled to a remarkable extent the far-sighted intention of its imperial founder, that it should be "a window from which Russia could look upon Europe," so that the educated classes of the nation are now fully abreast of the times, this is certainly not true of the middle and lower classes, who probably know almost as little about Western Europe, and its social and political ideas, as Western Europe knows about them. Mr. Wallace's book is hardly likely to penetrate at present to the notice of many of those of whom it principally treats, and show them to themselves as others see them, but it is certain to have been or to be read by educated Russians, and no one in England who has any interest, theoretic or practical, in progress in "foreign parts," can afford to overlook it.

Mr. Wallace's book * differs greatly from a large number of books of its class, more or less interesting in their way, in that it is not the mere record of observations taken during a few months' residence or a tour in a country,—observations which are so often unavoidably superficial or misleading. In this case the author has resided for six years in the country of which he writes, moving from place to place, and visiting districts of special interest with a special object, and taking means to procure reliable information. And to this thoroughness of investigation is added a breadth of view which seems always to deal with each isolated experience in relation to the whole subject of the present state and future prospects of the country, and of its position in regard to European progress generally, and which renders the book one of the most valuable and suggestive of the publications of the day, besides forming an historical record of more than temporary interest.

It happens that no inconsiderable portion of Mr. Wallace's investigations touch upon, even when not directly dealing with, subjects which come within the special interests of ourselves and our readers, and which we need make no excuse for considering a little more in detail. Little space, comparatively, is expended upon the great cities which are known to most English travellers: the object being rather to give information as to the state of the country at large, and especially of portions of it which are usually unvisited by and little known to other Europeans. And in the first place we may refer to the two exceedingly useful maps, one prefixed to each volume, the first showing areas of comparative density of population, and the second "zones of vegetation," as the author entitles it, though we might perhaps rather term it "zones of agricultural condition." The two maps are of identical size and scale, so that one can be at once applied to the other. The first map is distinguished by colouring into regions containing a population of above fifty inhabitants to the square verst,† diminishing in gradations to "40 to 50" to the same area, "30 to 40," and so on down to 2½ to the square verst, the proportion below that being left blank, as practically uninhabited, the approximate population of the towns being also distinguished on a simple system of indication. We thus see at a glance that the most thickly-populated portion of the country is in a central band extending in a generally north-easterly curve from just above Kishinef to Moscow. Only a small proportion of this, however, west of the Dnieper (except the neighbourhoods adjoining Moscow and St. Petersburg), reaches the highest proportion of above fifty to the verst; Poland alone, more densely populated than any part of Russia, making a deep brown tract on the west; but it is, of course, impossible to consider Poland as Russia when we regard the country in a social and economic point of view, whatever may be said about it politically. Of the great tracts to the north-east and south-east, of which Archangel and Astrakhan are respectively the main seaports, the first is blank, the second comes under the lowest division of the population schedule, representing 2½ to 10 to the verst. Comparing this with the agricultural zone map, we find the northern or Archangel region is nearly coincident here with the "forest zone," and that a considerable portion of the belt of greatest population coincides as nearly as possible with that marked as "Southern agricultural zone," and further described as the site of the practice of the "three-field system of agriculture." The lower or south-east tract of thinly inhabited country coincides with the "Steppe system of agriculture," and (more south-easterly and adjoining the shores of the Caspian) the pastoral region," where life goes on probably very much as it has gone on since a time before the Christian era.

We thus see that the most populous part of the country is cultivated on a plan called the "three-field system," and it may be interesting to turn to the chapters devoted to that portion, and see what the system of life is in this most populous district of Russia. Now the typical Russian village would appear to be, from Mr. Wallace's account, a somewhat remarkable institution, a kind of *imperium in imperio*, with its own constitutional (though unwritten) laws and government. The Communal principle, indeed, seems for some reason to be deeply rooted in the habits and preferences of people of this (as we generally think) eminently autocratically-governed country. In speaking of the peasant family of the old type, the author describes how the various members of a family, even after their several marriages, continue not only to live as members of the original household, but that all work for the household, and all that each earns is expected to go into the family treasury. And the Russian village is something very like a family combination of this kind on a larger scale. The whole of the arable land and pasturage in connexion with the village is its common property. In both the single family and the communal village there is a certain amount of common responsibility in the one case for all the debts, and in the other for all the taxes and communal obligations: and both are protected to a certain extent against the ordinary legal consequences of insolvency; for the family cannot be deprived of its house or necessary agricultural implements, and the commune cannot be deprived of its land, by importunate creditors. And the arable land belonging to the village is divided, on what has been referred to as the "three-field system," into three large fields, each of which is cut up into long narrow strips. "The first field is reserved for the winter grain,—that is to say, rye, which forms, in the shape of black bread, the principal food of the peasantry; in the second are raised oats for the horses, and buckwheat, which is largely used for food; the third lies fallow, and is used in the summer as pasturage for the cattle." Between these three main divisions of the land a regular though simple system of rotation of crops is kept up, and each family has one or more of the strips or subdivisions to work upon, as allotted according to circumstances. The village is governed by a village Elder, who is elected from time to time, but who is controlled by a kind of parliament, in the shape of Heads of Households. The result of this sort of organisation is thus sketched by Mr. Wallace:—

"The villagers are bound together by ties quite unknown to the English rural population. A family living in an English village has little reason to take an interest in the affairs of its neighbours. . . . . But amongst the families composing a Russian village such a state of isolation is impossible. The heads of households must often meet together and consult in the village assembly, and their daily occupations must be influenced by the communal decrees. They cannot begin to mow the hay or plough the fallow field until the village assembly has passed a resolution on the subject. If a peasant becomes a drunkard, or takes some equally efficient means to become insolvent, every family in the village has a right to complain, not merely in the interests of public morality, but from selfish motives, because all the families are collectively responsible for his taxes. For the same reason no peasant can permanently leave the village without the consent of the Commune, and this consent will not be granted until the applicant gives satisfactory security for the fulfilment of all his actual and future liabilities. If a peasant wishes to go away for a short time, in order to work elsewhere, he must obtain a written permission, which serves him as a passport; and he may be recalled at any moment by a communal decree. In reality, he is rarely recalled so long as he sends home regularly the full amount of his taxes,—including the dues which he has to pay for the temporary passport,—but sometimes the Commune uses the power of recall for the purpose of extracting money from the absent member. If it becomes known, for instance, that an absent member receives a good salary in one of the towns, he may one day receive a formal order to return at once to his native village, and be informed at the same time, unofficially, that his presence will be dispensed with if he will send to the Commune a certain amount of money. The money thus sent is generally used by the Commune for convivial purposes. Whether this method of extortion is frequently used by the Communes I cannot confidently say, but I suspect that it is by no means rare, for one or two cases have accidentally come under my own observation, and I know that the police of St. Petersburg have been recently ordered not to send back any peasants to their native villages until some proof is given that the ground of recall is not a mere pretext.

In order to understand the Russian village system, the reader must bear in mind these two important facts: the arable land and the pasturage belong not to the individual houses but to the Communes; and all the households are, collectively and individually, responsible for the entire sum which the Commune has to pay annually into the Imperial treasury."

Mr. Wallace's laudably impartial statement of the working of the village communal system renders it at least evident that human nature is the same in Russia as in England, and that com-

* "Russia." By D. Mackenzie Wallace, M.A., member of the Imperial Russian Geographical Society. Third edition. Cassell, Petter, & Galpin. London, Paris, and New York. 1877.

† A verst is nearly three-quarters of an English mile, lineal measure.

bination is subject to abuse there as here. But, putting this aside, it is worth note that Mr. Wallace found the most intelligent of educated Russians strongly under the opinion that this village system presented a practical solution of many difficult social problems, which in the West were for the present unsolved. He listened to discourses on the evil effects of centralisation among Western nations, and in England especially. The natural increase of the population, he was told, together with the expropriation of the small landholders by the great landed proprietors, had created an ever-increasing proletariat, a mass of persons without property of any kind, or any stake in existing institutions. "Part of these gain a miserable pittance as agricultural labourers, and live in a condition infinitely worse than serfage. The others have been for ever uprooted from the soil, and have collected in the large towns, where they earn an uncertain living in industrial occupations, or swell the ranks of the criminal classes. In England you have no longer a peasantry in the proper sense of the term, and unless some radical measures be soon adopted, you will never be able to create such a class, for men who have been long exposed to the unwholesome influences of town life are physically and morally incapable of becoming agriculturists." Such is the sentence passed upon us by Russian economists.

"Runs not this speech like iron through your blood?" one might say to the English legislator in social and economic matters. That there is a real element of social stability in the existence of institutions thus bound up with the soil seems probable enough. On the other hand, there may be too much of stability. As a matter of fact, it seems to be admitted that the village commune system is unfavourable to improvements in farming, in so far as it seems to foster a conservative feeling in regard to modes of operation, though Mr. Wallace seems to think there would be no serious obstacle of this kind if the Russian peasantry were once brought to entertain the idea of scientific cultivation, which has hardly entered their heads as yet. The mixture of what we should term conservative and radical feeling seems very singular, when we contemplate these specimens of local democracy in the midst of an autocratic country; and not the least singular incident is that voting by ballot, for the election of the Head of the Village and the Committee of Householders, was ordered at one time by the Imperial Government, and greatly objected to by these rural democracies, who called it "playing at marbles."

More specially interesting to us, perhaps, is the account given of the workmen's guilds, as we should call them—the societies of workmen denominated "Artéls." These remind one, at first, of our trade unions, but are not established with quite the same end; not for the sake of organised resistance to the terms of employers, but apparently with the simple view of mutual assistance and companionship. They were, in their original form, Mr. Wallace tells us, itinerant associations of workmen, who, during the summer, lived together, fed together, worked together, and on the termination of each bit of work divided amongst themselves the profits. Capital, however, has had its influence on this primitive and brotherly institution, and instead of forming themselves into a temporary association, the workmen now generally make an engagement with a contractor who has a little capital, and receive from him fixed monthly wages. According to this arrangement the risks are less and the wages smaller, and if any exceptional profit occurs it goes into the pocket of the contractor, in compensation for the exceptional losses which he may have to bear. The manner in which the artél system is further developed in some of the large towns, and its results, are told in a paragraph sufficiently significant to be worth quotation:—

"In some of the larger towns there are artéls of a much more complex kind,—permanent associations, possessing a large capital, *and pecuniarily responsible for the acts of the individual members*. Of these, by far the most celebrated is that of the Bank Porters. These men have unlimited opportunities of stealing, and are often entrusted with the guarding or transporting of enormous sums; but the banker has no cause for anxiety, because he knows that if any defalcations occur they will be made good to him by the artél. Such accidents, however, rarely if ever happen, and the fact is by no means so extraordinary as most people suppose. The artél, being responsible for the individuals of which it is composed, is very careful in admitting new members, and a man when admitted is closely watched, not only by the regularly-constituted office-bearers, but also by all his fellow members who have an opportunity of observing him. If he begins to spend money too freely or to neglect his duties, though his employer may know nothing of the fact, suspicions are at once aroused among his fellow members, and an investigation ensues,—ending in summary expulsion if the suspicions prove to have been well founded. Mutual responsibility, in short, creates naturally a very effective system of mutual supervision. Might not some of our employers of labour, who complain loudly of the carelessness and dishonesty of their servants, make some practical use of this principle?"

This is certainly an unusual and eminently healthy and praiseworthy piece of social organisation. In this country, unhappily, where combinations are formed in the ranks of those who are labourers for or servants to others, the object is not to see that the whole body do their duty honourably, so much as to give mutual assistance in evading duties and getting the better of employers. Some classes in England have a lesson to learn from the Russian Porters' "artél.".

We do not find any special remark in Mr. Wallace's pages in regard to the nature or construction of the dwellings in the normal Russian village. Only incidentally, in his chapter on a visit to the pastoral or nomadic tribes of the Steppe (in southern Russia), he observes that, as they progressed, "the ordinary wooden houses, with their high sloping roofs, gradually gave place to flat-roofed huts, built of a peculiar kind of unburnt bricks, composed of mud and straw." The first aspect of the Tartar village (if it could be so called) must have been really curious. Our traveller, after leaving a village of the ordinary type, had fallen asleep in the "tarantass" (a kind of wheeled conveyance of the land), when he was wakened by a stoppage, heard a dog barking furiously, and saw no village, but a wide, open space, and a group of haystacks, and was aware of two very wild-looking figures, in long cloaks, with big sticks, talking in an unknown tongue. He thought he had been entrapped, but, on the moon shining out, the supposed haystacks made themselves out as tents. The two figures with long sticks, "whom I had suspected of being brigands, were peaceable shepherds, dressed in the ordinary Oriental khalát, and tending their sheep, which were grazing beside them. Instead of being in an empty hayfield, as I had imagined, we had before us a regular Tartar *Aoul*, such as I had often read about. For a moment I felt astonished and bewildered. It seemed to me that I had fallen asleep in Europe and awoke in Asia."

The tents turned out to be circular, "cupola-shaped" erections, composed of a framework of light wooden rods covered with thick felt, and about 12 ft. in diameter. As to their inhabitants, the author's cautious judgment on them after further acquaintance is that they are "not so inhuman as they look," but he mentions some details as to cuisine and other matters, the publication of which will probably tend to prevent these good people from being at all overrun with visitors from the West. A curious contrast seems to be afforded by the establishment of some of the foreign settlers on the Steppe, among whom are a good many small colonies of "Menonites,"—the religious distinctive name of a sect of people originally German, or rather Dutch, who have brought their national habits of frugality and tidiness with them to their settlements among the nomadic Tartars. These semi-German colonists art at great pains to cultivate trees, which do not seem to come to much under the adverse influence of climate and soil, but their houses "are large and well arranged, and kept in such thoroughly good repair that they appear to be always newly built. . . . . Adjoining the house are a stable and byre, which would not disgrace a model farm in Germany or England. In front is a spacious courtyard, which has the appearance of being swept several times a day," &c. The contrast between such abodes and the Tartar tents, in the same region and under the same natural conditions, is a curious example of the illustration of differences of race to be seen in the characteristics of the dwelling-house. The same sort of connexion between the habitation and its owner is brought out in the graphic sketch of "a proprietor of the modern school" (in chapter xvi.). As we approach his house we at once perceive that he differs from the majority of his neighbours. The gate is painted, and moves easily on its hinges, the fence is in good repair. "The house is of wood, and not large, but it has some architectural pretensions in the form of a great pseudo-Doric wooden portico that covers three-fourths of the façade." Here, as in every part of the world, one of the first signs of civilisation seems to be the attempt, in some way or other, to engraft Greek or Roman architecture on the dwelling. The Classic style, if it is really becoming obsolete, at all events seems to die hard.

In the more detailed remarks which we find on the aspect of Russian towns, in the chapter describing the author's experience of a sojourn in Novgorod, the conclusions are not favourable. Those who want to enjoy the illusions of stage decorations, observes Mr. Wallace, should never go behind the scenes; and the same is true of a Russian town: however picturesque outside, inside they are little more than villages in disguise, and a walk through them "proves satisfactorily that irregularity, even when combined with squalor, is not necessarily picturesque. . . . . The general impression is that most of the burghers have come from the country, and have brought their country houses with them." The houses are generally one-storied, and seem indifferent about fronting to the street; the few shops seem to have no custom; horses and cows graze in the great square; the streets are either unlighted, or supplied with a few oil-lamps; the more cautious citizens arming themselves with lanterns. Even in Moscow an honourable town councillor a few years ago opposed the introduction of street-lighting with gas, maintaining that those who chose to go out at night should carry their lamps with them. In all this we recognise the early stage of a young civilisation, such as our own country has passed through, and the description of which reminds one in some of its details of what used to be told of London and Edinburgh at no very greatly removed period of history. This description does not apply to St. Petersburg and Odessa (as, indeed, every one knows in regard to the first-named city), which Mr. Wallace, however, considers to have a distinctly foreign air. Moscow is still in essentials a genuine Russian town; and there, as in other such towns, there is a semi-rustic air, "or at least the appearance of those retired suburbs of a large city which are still free from the jurisdiction of the municipal authorities." The scarcity of towns is also remarkable. Defining a town as a place with at least 10,000 inhabitants, there are in European Russia (excluding Finland, the Baltic provinces, and Poland), only 127 towns, and of these only twenty-five contain more than 25,000, and only eleven more than 50,000 inhabitants.

Two chapters are devoted to St. Petersburg and to Moscow respectively; very picturesquely written, and which bring out in effective contrast the differing character of the two cities. St. Petersburg Mr. Wallace compares to Berlin. "Both are built on perfectly level ground; both have wide, regularly-arranged, badly-paved streets; in both there is a general look of stiffness and symmetry, which suggests military discipline and German bureaucracy." The great distinction is, that the Spree hardly deserves the name of a "river," with which geographers have dignified it, whereas the river at St. Petersburg is magnificent; and a general impression of size and scale pervades the place. "Even the private houses are built in enormous blocks, many of them containing more than a score of separate apartments": a statement we do not quite understand; probably by "separate apartments" the author means separate dwellings, as a house with twenty rooms would hardly be "enormous." "Every house has a porter, who is servant of the proprietor, and at the same time a police agent. He has to sweep, and in summer to water, the street in front of the house, and to see that all the inmates observe scrupulously the passport regulations." These men act as night-watchmen, and the author notes as a brilliant example of the Russian capacity for resisting extreme cold, that they will lie down and go to sleep in a night when the thermometer is 30° below zero, and yet "are rarely if ever frozen to death." In Moscow all is different, and a single stroll will convince the visitor, even if he knows nothing of Russian history, that the city is not, like its rival, the artificial creation of a far-seeing, self-willed autocrat; but a natural product which has grown up slowly, and been modified according to the changing wants of the population. The paving of the streets, even the most modernised ones, is "execrably Asiatic," and there is nothing that, by any possibility, could be termed "street architecture." The general description of the town is, in great measure, an amplification of what has been already quoted as to the characteristics of the pure Russian town. It may be noticed that Mr. Wallace cruelly calls in question the "gilded domes" which travellers are so fond of describing, and affirms that very few of them are gilt, the great majority of them being painted green, like the roofs of the houses. The backwardness of Moscow in civilisation seems to be moral as well as material, since it

boasted for some time of a set or association of "Slavo-phils," whose avowed mission was to resist the encroachment of European ideas and improvements.

The state of railways in a rising country is always an interesting point, and no bad test of progress, and therefore we just advert to what Mr. Wallace has to tell us on this subject, the first touched upon in his opening chapter. Russian railway-carriages are much better than ours, and in winter are kept warm by small iron stoves, and double windows and doors. The speed is slow, however, varying from fifteen to thirty miles an hour; but in Russia time is *not* money; if it were, Mr. Wallace drily observes, nearly all the subjects of the Tsar * would have always a large stock of ready money in hand, and would have often great difficulty in spending it. A singular peculiarity of Russian railways is that they seem to avoid the towns; and even on arriving at the terminus you may find yourself set down at a station which bears indeed the name of the town at which you wished to arrive, but which is situated in the middle of fields, while the town itself is far away. The only explanation Mr. Wallace can give is that the arrangement is governed by economic reasons, land being naturally dearer near to the towns. But in the case of the St. Petersburg and Moscow Railway it is said that the straight course which takes the traveller for fifteen hours through forest and morass, with scarcely the sight of a human habitation, is due to nothing less than the will of the Emperor Nicholas; and that the "Tsar," hearing that those entrusted with the work were too much influenced by personal considerations, when the Minister of Ways and Means laid the map before him to explain the route, took up a ruler and drew a straight line between the two towns, merely saying, "You will make the line so." Whether his Imperial Majesty had any theory that a straight trunk line between the main points would prove the best foundation for a system, or whether he acted simply from caprice or contradiction, must be left to conjecture. With this anecdote of paternal rule we take leave of a book which deals with more subjects, and even more important ones, than those we have touched upon, and which every one with any interest in European affairs and in social progress ought to read.

* It seems that this is the new way of spelling the Imperial title. The spelling of foreign names in English seems, under recent new lights, to be getting into endless and hopeless confusion.

THE LAW RELATING TO PARTICULAR LIGHTS.

We have previously referred to the question of the right to lights, and the way in which these lights can be affected injuriously by new buildings. But in addition to the subject of what we may term general lights, there is also the question of *particular* lights, if we may use the word. And by particular light we mean lights employed or necessary for particular or special employments or businesses, and this matter is of perhaps greater importance, because whilst the owner or person entitled to this particular right may be fully aware of his privileges, it is quite possible that those who have not such a right may possibly unintentionally infringe the rights to particular lights possessed by others. But particular lights, we may at once say, must have existed for twenty years without interruption, in order to give their owners a perfect right against all encroachments. The owner of a particular light, if it has existed for this length of time, cannot be deprived of it; but there are two elements necessary in the first place to constitute such a particular light. The light in question must be necessary for some particular purpose, and the building in respect of which it is claimed must have been used for the particular purpose. To take the last point first, in that case to use the words of an acute judge, the light becomes the property of the possessor, "property which no man has a right to take from him." That, so far, is simple enough, but questions of greater nicety arise when we come to consider whether or not a certain light is required for a certain employment. Of course where a person possesses a certain light and possesses also an ordinary dwelling-house or shop, if his light is disturbed, it must be done so as to cause him substantial injury or annoyance. But if in this house the owner carries on some particular trade or profession, he may be entitled to prevent any deprivation of light at all if he would, by such taking of the light, be injured so far as regards this particular trade or employment. Therefore, to put it shortly, a person who possesses a right to a particular light, possesses a right to an ordinary amount of light, plus that which is required for his unusual trade or employment.

It will best explain this proposition if we give an example from the most recent case on this subject, decided in the course of last year, in which the well-known sculptor, Mr. Theed, was the plaintiff. He complained that the defendants interrupted his rights to the light which he needed for his artistic work. The statement of claim set forth that the plaintiff, as a sculptor, required not only a direct light, but what is technically termed an under or low light, which he had hitherto enjoyed. The court decided that the buildings complained of would cause a serious diminution of the light required by the plaintiff for the purposes of his profession; and this being the case, an injunction was issued to prevent the defendants proceeding further with their erections. Here, it will be observed, was a particular light long enjoyed, a particular and very technical art, and it is equally clear that, except for the unusual character of the light required, there was no such diminution of the plaintiff's light as would under ordinary circumstances have entitled him to prevent the defendants from continuing their work. We will now give an instance of exactly an opposite character, that is, where a right of the kind now being discussed was set up, and was pronounced against, on the ground that there was no need for the light desired. The case is that of the "City of London Brewery Company *v.* Tennant," and Lord Justice James stated the case in words which cannot well be improved upon. "Now in this case there is no pretence for saying that there has been any interference with the comfortable enjoyment of the house as a dwelling-house. The question is confined entirely to the diminution of light in one room, which room has for many years been used as a bar to a public-house. The question then is, has there been any substantial diminution of the light so as to cause inconvenience in the case of the room as a bar to the public-house." And the conclusion the judge arrived at was that there was no substantial damage done. But here, again, it will be observed, that there is a wide difference between the trade of a publican and a sculptor, the light required to drink a glass of beer can scarcely be considered as of an unusual character, and therefore this last case may be considered a good instance of the limits beyond which this doctrine will not be extended. There are many cases besides those of an artistic character in which the right to particular lights can be maintained, and it is important that this particular branch of the law should be known by others than lawyers.

A TREE FROM A SEED.

Our readers will remember the brave slater, Caris, who on the top of the belfry of the church at Ville-sur-Ourthe, in Belgium, endured without moving the pain produced by molten lead falling on his arm rather than risk the life of his companion who was standing on Caris's shoulders to fix a lightning-conductor. We made his courageous endurance known, and having fully satisfied ourselves as to the correctness of the story, were able to send him a trifling sum subscribed by three or four friends, simply as a testimony of appreciation. The story we had told ultimately reached the Belgian newspapers, and Major-general Bartels took up the matter, appealed to the officers of the Belgian army to mark their sense of Caris's plucky act, and has recently sent us, with kindly acknowledgments, a packet of printed papers showing what has been done. To make the story quite short, his Majesty the King of the Belgians, —always ready to do a generous act,—sent a special gift to Caris; the Count of Flanders joined in the general subscription, and a sum of money has been collected, with which some plots of land have been purchased, and will make the rest of his life easier than it has been. General Bartels is good enough to ascribe much of the success which has attended his efforts to our initiative, and so from a little seed has come a goodly tree.

"Caris! thy tale shall be inscribed
Bright on the roll of hero fame,
And distant times will reverence still
The simple Belgian workman's name.

All honour to the kindly hearts
That made thy deed of courage known,
And rallied to the workman's cot
Even the homage of a throne."

C. S.

MUSIC IN ARCHITECTURE.

In more than one,—in more than several articles in this journal, and in some comparatively recent, certain theorems have been enunciated with respect to the theory of Architecture which might seem presumptuously dogmatic unless on the understanding that demonstration in detail were producible on demand. One reference is to such statements as that not only are Music and Architecture distinguished among the arts by the elements with which they respectively deal being susceptible of accurate numerical estimate and measurement, but that the certain leading laws and principles of harmony, as based on proportionate relations, are common to both, and may be brought into comparison with the simplest numerical accuracy.

These statements have been made with the full consciousness that they are liable to be listened to with scepticism, or even to provoke a share of that contemptuous reception which has certainly been merited by what has been proffered in many instances as a satisfactory solution of problems which in general terms might be taken to be the same. But other speculators must bear the burden of their own misdoings. In the fact that an inquiry of interest has been so unsatisfactorily dealt with as to be likely to be thrust aside indefinitely, there is incitement for those who are convinced that the true clue is in their hands, to strike for a success which will be enhanced by the strength of the prepossession which has to be encountered at starting.

What is a more serious difficulty than the initial discouragement is the consciousness that the subject is of necessity and in its nature somewhat dry; at least, it is apt to be thought so; even those who have surmounted the notion that the matter is a futility from beginning to end,—who can recognise that it demands and doubtless will reward an accurate analysis,—may be disposed to draw back from an invitation to follow the process. Interesting, again, as the subject may be, it may be thought likely to interest comparatively few; and an audience of the few, however fit, is not what a journal can be expected to lay itself out for, that stands in close relations to the business of life, and is bound more particularly to insist upon theory in those precise lines where it inosculates with the practical. But this is precisely what the theory in question asserts for itself, if it is only once thoroughly mastered in connexion with illustrations forthcoming in due time.

There is nothing for it in such case, if the thing is to be done at all, but to make a bold appeal to confidence, and ask for a little resolute attention while the bearings of the subject are being set forth. This can only be done by entering, in the first instance with some minuteness, into what has the formidable name of the Theory of Music. We believe that it can be shown to be by such means formidable; divesting it of technicalities, deducting—

"What is but vanity or dress
Or learning's luxury or idleness,"—

we shall find that we may dispense with logarithms on the one hand, and physiology on the other, and follow forth our subject to very important conclusions by easy application of even less than the first four rules of arithmetic.

We invite, then, in the first instance, an allowance of candid attention and consideration to a simplified exposition of those elements of the system of music that are usually presented obscurely and repulsively; if thus much is conceded, we do not hesitate to engage that the pertinence of our exposition to the theory,—the theory even in its nearest reference to application in architecture,—shall be satisfactorily established.

The analogy between Music and Architecture that seems to present itself most definitely is constantly recognised between the equal spacing and regular subordination of architectural members, and the regular bars and subdivisions of the parts contained in the bars of musical successions. The analogy is just as far as it goes, but proportionate divisions of time still hold but a secondary place in considerations of harmony and equal spacing gives but a barren outline of architectural effect. This aspect of the subject may be returned to, but must be left aside for the more important discussion of the harmonic relations of musical notes in respect of that quality that makes them musical, in fact, of pitch, and that determines what notes shall and shall not take their place in a musical scale.

When it is proposed to bring any two arts whatever into comparison, it is of the highest

rtance to keep in view from the first that must have its differentiating character. Be the analogy between them what it there are still two arts and not one, each specific capacities and specific disabilities. comes out most distinctly when one art s attempt to reproduce the effects of an; when painting would represent a work of ture, or a scene from an acted drama. So e glad and grateful to have such multiplied sentations of paintings as engraving sup- in many respects so admirably; but, theless, we are bound to recognise that, in employment, the art is hampered by obliga- o translate in some way what, in any per- way, is untranslateable. And not only is rt so bound to strain after what it cannot ut it is withheld from doing what it best it is arbitrarily shut out from a chance of ng energies which are its proper and exclu- birthright. The true triumphs of Engraving to be achieved by self-assertion as an endent art developing itself from within rds. Many fine works have no doubt been ced on this original plan as true originals, ich the genius of the art has been pressed at restriction or reserve to the production own peculiar effects; but it still is apt to too much the depressing influence of nde to painting; and true it is of the as of the serfs of the king of Ithaca,—

"love fixed it certain that whatever day
Makes man a slave takes half his worth away."

neme of the celebrated Laocoön of Lessing diversity of treatment of the very same t, which is imposed by the several con- s of art so diverse as sculpture and poetry. read this treatise now, we find it neces- for the full appreciation of its value and its ty, to recal by its aid, as best we may, eption of the views which it combats,— obsolete that, but for its authority, we doubt their having had any considerable ; but if, as we read, we mentally extend ope of its enunciations to other arts, we nd that its generative thought has an im- ven yet not exhausted.

n, therefore, we propose to set forth the y between harmony in music and in archi-, it is of the first importance to trace ccuracy the material conditions which ex- ly affect one art or the other, and thus to with strictness the range of the principles e common to both, and the point where ity comes in, and they must needs part ny. It is by the neglect of this precau- at the speculative have constantly made eck. The sense of harmony which is by admirable architecture has given no currency to the saying that architecture e petrified; but it has been a hasty con- that the harmony of audible sounds must re impose its own limitations on the y of visible dimensions and magnitudes. ld be just as reasonable, or rather as un- able, to bind music to the proportions are most in favour, or it may be are ex- ly, available for her sister art, — for ly we are constantly sensible, in attend- a grandly conceived composition, — a ony or a succession of choruses,—of an ions effect that is most appropriately nted by the term architectonic.

ght seem that there is a primary opposi- ween the modes of presentation of musical hitectural compositions that should put h comparison out of the question. A great tural whole presents itself to us simul- ly; we may take in the entire design and tion at once, and from a single point of and the original impression may be d,—be continuous,—be gone over and attention travels and re-travels from the to parts, from one part or another as -point, to recovery and re-consideration whole. Music, on the other hand, carries ard ever and without pause; it is a d story in contrast to a pictured incident; n is bound to the course which is pre- for it, with no option of divergence or and, when released by a conclusion, can our to the experience by an effort of , which at best will be incomplete in as well as in volume and sequence.

on the other hand, it is to be observed he case of the worthy hearer of worthiest he effect of one movement by no means when another is commenced; its impress on the sensibilities, and thus it enters odifies, enhances, that of the second, and rds; so that as the composition grows towards its completion, the composite influence on the sensibilities is growing also, until the resultant impression may be considered to be as absolutely under obligation to every successively preceding part as that which architecture produces by all its parts in presence together. So it is that a grand speech, like a fine overture, impresses us with a sense of harmony which we are moved to qualify as architectonic, when it has conveyed to us a sense of a large unity among varied parts all duly subordinated, all contributing in order and proportion to a purpose which intellectual and imaginative power combine to make most richly varied, yet culminating at last in singleness and simplicity itself.

Abstractedly considered, therefore, the analysis of harmony might be commenced from examples of either art indifferently; but there can be no hesitation as to adopting music as the basis of the inquiry, and of the exposition of its results. The ground here has been cleared by many predecessors, and abundant examples are at hand for illustration; what we have chiefly to attend to is to exhibit the results of analysis in a more intelligible form than they usually are presented in, and then to mark with precision the lines which divide the theory of harmony as applicable to two arts, or as dependent on the distinctive conditions of one alone.

Harmony in any form is a matter of numbers,— of quantity, and of fitting quantities,—that is, of proportion. It is so in painting no less than in music and architecture; but the harmony of colours in a picture is dependent on relative degrees, and masses, and juxtapositions of tints, which it is for the refined eye alone to determine in the first instance, or to appreciate afterwards, and which science certainly has not yet succeeded in reducing to numerical expression. Some attempts have been made in this direction; but little more than crudity most repulsive has been produced by those who have taken as a sufficient guidance to the mysteries of combined colour the receipt provided for realising the ultimate conditions of white light. Musical sounds, in consequence of the peculiar conditions of their production, have always been more amenable to scientific analysis; and it was due to this that music was adopted in the remotest antiquity of science as the type of that dependence on proportional quantity which it was justly inferred must be the explanation of all the variety, and all the regularity which dominates variety, alike in the planetary system and in human arts and human affairs.

On the assumption, then, that we do not hastily rely on enlisting a certain following in the direction of certain regions which should not be the less inviting because hitherto,— by the moderns at least,—left unexplored, we premise in the first instance an exposition of the proportionalities that underlie the musical scale. If a sufficient account of this, an account at once simple and exhaustive had been found where it is most naturally sought for, it might be enough to refer to it, or at least abstract it. Such, however, has not proved to be the case. An independent analysis, therefore, becomes indispensable, though it is only when this is completed that we can enter into the properly architectural exposition in something of the spirit of the delightful lines of Lucretius:

"—— Juvat integros accedere fontes,
Atque haurire: juvatque novos decerpere flores."

The distinction between sounds as musical sounds or notes and noises depends primarily on a distinction in respect of pleasingness. Certain sounds are in themselves agreeable to the ear as contrasted with others which are unpleasing, or, at best, simply inoffensive. The standard of agreeableness in this, as in all other matters of taste, must be adjusted with reference to sensibilities that are neither sophisticated by false culture nor merely rude and unexercised, or exercised only to their disadvantage. Sounds are not beautiful in any sense that entitles them to be treated respectfully as elements of true beauty, merely because a barbarous tribe, or a coarse individual of any tribe, takes pleasure in them; while, on the other hand, sounds may have to be protected against exclusion at the bidding of a theory which pedantically disregards and defies the verdict of cultivated ears, or of fashion that is the victim of habits and narrowing prejudices.

The pleasing sounds, which to express their pleasingness we call musical, have certain common qualities, or, perhaps, we may say a single quality, with common names, such as brightness, purity, distinctness, clearness. Such qualities have their analogy in colours, which are recognised as beautiful individually in virtue of a certain positive homogeneousness which enables their best effect to tell continuously and completely,—unchecked, and, to employ an expressive word, unmuddled.

All sounds are communicated by vibrations of the air, which science has found the means of measuring with the utmost exactness; and experiment has proved that those sounds which in virtue of their specific delightfulness we call musical,—that musical notes, in fact, are produced by vibrations which are in excess of a certain minimum rapidity, and succeed each other at a rate which, whatever its rapidity, is uniform.

The minimum of rapidity which is capable of producing a continuous musical sound is said to be about thirty double vibrations in a second,— that is, thirty departures and returns of the vibrating matter to the same point. When the vibration is slower than this, any sensation which it produces ceases to have the continuousness which is characteristic of a musical sound, which constitutes a note; and, on the other hand, when a certain maximum rapidity is exceeded, the sensation which is excited becomes so shrill as to be disagreeable, and even painful, and thus unmusical, just as a colour may be so brilliantly illuminated as to confuse and pain the organ of sight. The specified minimum must be taken to measure a certain capability of the ear, which again may be illustrated by an analogy from sight.

When a spark at the end of a stick is whirled round at less than a certain rapidity, we only see a single spark carried round in a circle; if a certain rapidity be attained, we see a continuous circle of light, and as the rapidity is gradually increased, the illuminated circle will be seen as brighter and brighter. These differences, it is well known, are due to the limited continuance of an impression on the eye; this effect is exemplified in the experience of our continuing to see a bright spark for a moment or so after closing our eyes to the exciting cause. As a necessary consequence, if the lighted spark returns in a circle to the starting-point before its first excitement is exhausted, or, as we say, has died out,— all the intermediate points of excitement will still be active, and the vision of a luminous circle results.

We have precisely the same authorisation for crediting the ear with a degree of rententiveness of impression, in virtue of which, within a certain limit, one momentary excitement is indistinguishable as divided by an interval from another; and what is equally important, when a sound ceases, the ear is left in a certain modified condition of sensibility, which must tell upon its receptivity of an ensuing excitement. Such modified receptivity has two chief varieties,—a certain excitement prepares and predisposes for a repetition of the like; a stimulus which does not exhaust the sensibility leaves it prepared to receive a repetition without the violence of a surprise; a repetition is prepared for and expected. When exhaustion does ensue, the sensibility is prepared for receiving with relief a new stimulus that addresses different receptive organs.

For a musical note to ensue, therefore, it is necessary that vibration should proceed with a certain degree of rapidity, but the nature of the sound which results is found to depend on the rate of rapidity,—it becomes higher as vibration becomes more rapid, and therefore the sound can only be maintained as a uniform musical note by the vibration being maintained at a uniform rate.

We are accustomed to regard musical notes as successive incidents in a discontinuous series, but it is evident that musical vibration may be commenced at the very slowest rate the ear will acknowledge, and be gradually increased without any perceivable break until it reaches the limits of hearing in the other direction, and no further increase of high pitch is distinguishable. The parallel case in colour would be given by the colours of the spectrum being followed by the eye through absolutely insensible gradations from one extremity to the other. Let the eye pause at any point, and the tint which it would rest on, taken as a line transversely to the spectrum, would be a single colour that might be dealt with as individual and homogeneous; and in like manner the discontinuous scale of sound as described may be stopped at any point, and the rate of vibration which pertained to it being maintained would give us,—does give us,—a specific musical note of a definite pitch dependent on a specific uniform rate of vibration.

Musical sounds thus differ, and may differ infinitely in *pitch*,—in their position upon a scale extending from the gravest sounds to the most acute,—from the deepest base to the highest treble; and they may differ also in *duration*, whether they are alike or not in pitch, accordingly as one is maintained longer than the other. There is no limit to the length of time that it is possible for a musical note to be sustained; what may be the limit of momentariness it may be more difficult to say.

Both pitch and duration, again, are independent of *loudness*. Two notes of different pitch may agree in respect of loudness, and two of like pitch may differ in this respect; that is to say, the pitch of a note as more or less acute does not change because it is sounded more or less loudly. A note may be sustained at a definite pitch, and yet gradually change in respect of loudness. A note is the same note whether we hear it in full power as we stand by the instrument, or catch it at a distance; it is the same for two persons at different distances, and may be for the same person if the original loudness is gradually altered.

Another difference between musical notes is in respect of *timbre*,—the quality by which we recognise the distinction of notes as produced by vibrations transmitted from various materials. Notes which correspond exactly in pitch, loudness, and duration are recognised as proceeding from the human voice, a violin, hautboy, or flute by a peculiar quality which we call *timbre*.

This is a word which is so useful that it cannot be too soon or too completely naturalised into English,—and this would be best done by bravely spelling it in future "tambre. Difference in *timbre* resulting from the variety of instruments employed is the principal basis of the charm of orchestral music; but the same difference affects the delightfulness of two instruments of the same kind or of two human voices even when singing the same words and notes with equal accuracy. Musical sounds therefore may be more or less alike in pitch, loudness, *timbre*, and duration; may agree or differ in all or any of these respects, and in any degree and in any variable degree.

Differences of pitch, as we have said, are known to depend on different rapidities of vibration; differences of loudness depend on the extent or span of the vibrations,—that is, on the extent of the excursions of the vibrating atoms on either side of the position of rest whatever may be the rate of the excursions. *Timbre*,—the specific quality of a sound as due to one material or another as its transmitting agent to the air,—has been assigned to variable divergences of the lines of atoms intermediately between their extreme vibrations.

Grave and acute sounds are sometimes distinguished as deep and shrill or even low and high; but the word "low," is apt to be ambiguous as sometimes equivalent to not loud,—as in the case of a low sound. It may be added here that all sounds grow feebler as they recede from the originating source, but that all travel at the same rate and arrive together as they started, except so far as some have become inaudible.

SCIENCE AND ART TEACHING IN IRELAND.

The proposed Science and Art Museum and National Library in Dublin was the subject of a long discussion at the meeting of the Corporation on the 16th ult. Mr. Vereker proposed, "That while we heartily approve of the action taken by the Government for the foundation in Ireland of a Department of Science and Art, we feel it our duty to state in the most explicit manner that no such department can be established in this country with a reasonable prospect of success that does not carry out in its integrity the promise made by Mr. Ward Hunt, then Chancellor of the Exchequer, to the deputation of Irish peers, members of the House of Commons, gentlemen, and merchants who waited on him on the 26th of March, 1868, and that it is indispensable to the success of such an Irish department of science and art that it should be placed under the management of a board of Irish gentlemen in direct communication with the Government, and with such state supervision or control as may be desirable, that for the above reasons we object to so much of the Bill before us as invests the existing department of science and art with any authority, privileges, or right of interference with science and art in Ireland." The resolution was carried by 19 votes against 2.

THE HOUSEHOLD AT DIFFERENT ERAS.*

THE REFORMATION.

"Half the intellect of the age was absorbed in the base sciences of grammar, logic, and rhetoric: studies utterly unworthy of the serious labour of men."

JOHN RUSKIN, 1853.

A happy dispensation of Providence has permitted individuals with different and opposing qualities of intellect to influence, each in his turn, the opinions of mankind. As at enormous and incalculable intervals of time the surface of the earth has been deprived of the sun's rays, or submitted to them, so the inhabitants, at successive and sometimes remote eras, have been imperceptibly directed to think and act in a manner subversive—to all contemporary appearances—of former principle and practice; and their thought and action have been ultimately subverted by an advanced stage of principle and another form of practice. If an art-enthusiast like Mr. Ruskin possessed, some twenty-five years ago, enough of grammar, logic, and rhetoric to exercise mental sway over thousands of his countrymen, it was partly because, about 250 years before, Bacon, Shakspeare, Ben Jonson, and others had cultivated those so-called base sciences. Every cycle of years into which the history of Western Europe may be divided has doubtless been usefully attended, both at the beginning and the end, with its enthusiasts. To such men Charlemagne probably listened; such men encouraged the artificers of the twelfth century to break away from monastic tethers; such men preached the true Vitruvian principles; and each having done his work, separately or with others, lingered, perhaps, upon the world's stage, "*sans* eyes, *sans* taste, *sans* everything." One of such men is Mr. Ruskin. His mission is now accomplished; and though the excellence and value of the work he did may be hereafter depreciated, its results will neither be lost nor lessened, when, in 1903, people smile at the recital of words which, fifty years before, were considered to be little short of heaven-descended wisdom.

The renascence of the arts and the revival of learning are seductive themes; but they contain perhaps hardly enough attraction to induce a repetition of the fine language that has been bestowed upon them at various times. Neither of those phrases, we make bold to say, conveys a true notion of the reality. It was the spread of intelligence, and the infusion of fresh blood among the cultivated classes, which produced that brilliant chapter of history, the sixteenth century. People then first began to talk and write about the arts previously practised in accordance with traditions handed, if not from father to son, from craftsman to craftsman. People then first began not only to travel, but to record and compare their experiences; and the travellers returned to delight and astonish with their tales. The difference between England in 1600 and England in 1500 may be likened to the aspect the world presents to a man now who sees it after having passed two months in a ship. Twenty-four hours of every day spent upon a deck, or between decks, for forty-eight or sixty days, so crib, cabin, and confine the mind, that a solitary woman, deformed and ugly, acquires beauty in the eyes of her male fellow-prisoners; that the pettiest grievance is nursed into a personal insult or a common misfortune; that one passenger regards another with feelings of love or hate utterly immoderate in their intensity. But once on firm ground, the world seems to open and expand; the traveller is astonished at the sentiments he expressed on board ship, and half ashamed to recall the apparent waste of life the voyage represents. The islander of the time of Elizabeth seems to have set foot on the continent of Europe, and in other parts of the world, with very much the same relief and curiosity that an educated inhabitant of Japan doubtless experiences on landing in the port of London; or that an Englishman, cooped up for six weeks in a steamer, entertains on reaching Yokohama. The author of "The Anatomie of Abuses," one Philip Stubbes, wrote in 1583 that there was almost as much difference between a man who had travelled and him who had dwelt continually in one place, as between one living and one dead. Nor did Shakspeare hesitate to describe the young exquisites of the time as a prey to some of the glaring affectations which a superficial acquaintance with foreign manners always engenders. "Farewell, Monsieur traveller," cried Rosalind, "Look you lisp and wear strange suits; disable all the benefits of your own country; be out of with your nativity, and almost chide God making you that countenance you are; or scarce think you have swum in a gondola." results of this travelling were inevitable Englishman was "a proper man's picture, his doublet was bought in Italy, his round in France, his bonnet in Germany, and his viour everywhere,—at least, so said Shakspe fair mouthpiece, Portia.

At the coronation of Henry VIII., in London was still subservient to the rule prejudices of Mediæval discipline. Henry, a panied by his queen, left the Tower to t the streets of the city richly hung for the sion with cloth of Arras and tapestry, and with cloth of gold. The various trade cor tions were stationed in Cheape and Cornhil Holinshed tells how "every occupation ato their liveries, in order, beginning with bas mean occupations, and so ascending to the shipful crafts." Edward Hall, or Halle describes "the crafts standing in the stre good order" when the Admiral of Franc ceeded from Tower Wharf in great triun the Bishop's Palace, where he lodged till t of St. Bartholomew. The next day he w ceived by the king, and "to tell you," con Halle, "of the costly banquet-houses tha built, and of the great banquets, the masks. . . . . that were shewed to him would much marvel and scant believe." is the repetition of early custom: the exter construction of slight edifices around or vicinity of an actual building. Royal and cipal houses were not yet planned for the tion of great guests and their attendants. In from the records of an embassy which a there in 1577, it was then a common for the *concierges* to let their masters' hou the day or the month during the absence owners. Even as late as 1638, when M Medicis arrived in London, her retinue billeted upon private persons; and in the of the latter, the doors were chalked wi names or numbers of those to be accomm The custom had long been common, a have already alluded to it in our on the "Middle Ages"; a travelle usually preceded by a courier who ann his arrival, and sought permission for his to use, or who even hired a private house. S Gresham entertained certain of the train o of Cleves, who came to England in 153 there is an account of 56*l.* 4*s.* 4*d.* paid for the charge of ambassadors lodged in his The practice of ceremonious hospitality a among the citizens was only just begin mayor in 1501 is said to be the first wh court in his own house. He was the first be attended from the Guildhall to the rive when he took barge for Westminster, aldermen on horseback.

The discipline of the trade corpo getting more and more difficult to enforc an insuperable bar to freedom of knowle competition. One of the "petty pr attributed to Cardinal Wolsey was an that children should follow their father fession, because the father's "eminency' art "begat in the child a propension same."* The Cardinal used to urge th two or three generations "happily insis steps one of another, they raise an art fection." It was the practice, not the kn of this fact, which was dying out; and things combined to effect the change. An yearning on the part of tradesmen and a to escape from the immediate vicinity trade Hall, or from a particular quarte doubtless from the restrictions impose them,—was the subject of no little perpl London. There is a relation in Arnold's C of the "great ruin and decay" to which was brought because so many freeme beyond the circuit of its liberties and fra and it was enacted, or at least it was att to enact, that "all manner of persons pre out of the city and franchise thereo shall keep (within the city) their contin principal dwelling and inhabitation wi and household, or else utterly to be disfran So great a number of "stranger" a existed that the trade of the freemen a was said to be destroyed. A clause in o Acts, printed in Arnold's Chronicle, persons free of the city not to buy war by a stranger,—and a "stranger" necessarily imply a foreigner,—nor

* See p. 678, *ante*: "The Great Moguls."

* Lloyd's "State Worthies." The Cardinal, was right as far as the artistic part of the questi

anything to make to a stranger artificer." At that time a great many Germans were domiciled in England; and much of the ornament upon the Elizabethan gables, tombs, and furniture may be traced to a German source. In 1517, London was said to be filled also for miles around with "French fashions and infections"; and there was a proverb then current that "Tottenham is turned French." One of the abuses catalogued in Stubbes's "Anatomie" is the ambition rampant among women for the silks, satins, and damasks of the Continent; and, according to this early Puritan, if things did not come from beyond the sea fashion hardly deemed them to be worth a straw.

The Flemings were then the great traders of Western Europe; and in Flanders the municipal laws were of a protectionist character exceeding any that were in vogue, or, at least, practised in London. At Antwerp, if a citizen married out of the city without leave of the burgomaster he forfeited his freedom; and no one could exercise any art in that city until he was made free of it. If a citizen dwelt away from Antwerp for six weeks without leave he lost his freedom; only the unmarried citizen could stay away as long as he pleased. If a citizen with his wife and family dwelt outside that city, he was compelled to declare himself of the citizens without, or he was deprived of his freedom. The rule was:—"He that declareth himself a burgess without is bound to take his oath to the town once a year, and to pay half-a-crown to the public treasury; and so he may enjoy his freedom and privileges without any prejudices." The tendency, both on the Continent and in England, to break away from the trammels of guilds and corporations, is apparent in the descriptions extant of the time. The writings of Philibert de l'Orme are full of allusions to the prevailing contempt of earlier discipline; and Stubbes is eloquent thereon. "To such outrage is it growne," he cries, "that nowadayes every butcher, shoomaker, tailer, cobler, husbandman, and other; yea, every . . . . artificer and other, *gregar'i ordin's*, of the vilest sorte of men that be, must be called by the vaine name of 'maister' at every word."

One of the means by which the learning babined during the preceding ages was diffused n England during the sixteenth century, is attributed by Mr. Gifford, the translator of Juvenal's Satires, and the virulent champion of Ben Jonson's reputation, to the numerous translations which were made of works published in Spain and Italy. The destruction of monasteries and the disrepute in which the old forms of religion were sunk led young men who had been intended for the priestly life, to flock to the metropolis; and their chief resource, in order to earn the means of subsistence, was translation. Until the latter half of the sixteenth century, the principal literature within reach of educated Englishmen was that of ancient Greece and Rome, and in those days even ladies of the higher classes read a little Greek and Latin. Indeed, no one then seems to have thought it worth while to make a systematic translation of the classical works. Stories of voyages to the East and West Indies and to other parts of the world were among the first modern books that reached the public ear. The dissensions between the rival religious authorities were obviously prolific of argument. An imaginary dialogue, written by one George Gifford, and printed in 1580, shows very clearly the sort of opinions held by Papists and Protestants concerning the present and future state of men. The former doubtless argued, and the latter scarcely cared to refute the charge that the Lord's House had become a den of thieves. Both Shakspeare and Ben Jonson refer to "Paul's," and to "fopperies at Paul's," in a way likely to puzzle those who admit the sanctity of a sacred edifice. So great was the indecorum which reigned in the cathedral of London, that the Lord Mayor and the Common Council issued instructions relating to the preservation there of order. The preamble stated that "The material temples of God were first ordained for the lawful and devout assembly of people," and that therefore they ought not to be used as markets or common places of meeting. The inhabitants of the City were enjoined not to pass through the building carrying vessels of ale or beer and baskets of bread;* and not to lead mules, horses, or other beasts through the Cathedral of St. Paul. The churches of the metropolis were not yet encumbered with parishioners' pews; they afforded a wide expanse of shelter. Indeed, it is stated that the Cathedral of Paris was not provided with such furniture until after the Great Revolution. The oldest mention, however, of benches, specially reserved for the use of parishioners, is said to be at the Church of St. André des Arts, in the year 1577, and the allusion made to the "pews" by Sir Christopher Wren implies that long before his time the Londoners had been familiarised with their existence.

In the utter disregard which seems to have been felt for the maintenance and preservation,—the word "restoration" had not been adopted,—of ecclesiastical edifices, the chain of native building traditions was allowed to drop. St. Paul's cathedral is described by writers of the time as tottering in parts on the very verge of ruin; and during the early years of the seventeenth century it is the "stately palaces" on either side of the river, not the churches, which astonish the traveller. Foreign ambassadors affirmed that the most glorious sight in the world, taking water and land together, was to come upon a high tide from Gravesend, and shoot the bridge to Westminster. Then, necessarily, the river was the great highway. It was Elizabeth not Cleopatra that *Enobarbus* pictured:—

> "The barge she sat in, like a burnish'd throne,
> Burnt on the water; the poop was beaten gold:
> Purple the sails and so perfumed that
> The winds were lovesick. . . . . .
> . . . . . She did lie
> In her pavilion (cloth of gold, of tissue),
> O'er-picturing that Venus, where we see
> The fancy outwork nature. . . . . .
> . . . . . From the barge
> A strange invisible perfume hits the sense
> Of the adjacent wharfs."*

In the streets men rode on horseback, and women were carried in litters. Anne Bullen was so conveyed to Westminster, and the chronicler says that "in the middest of the Hall she was taken out of her litter." Coaches, of a shape not unlike that of the hearse still common in Paris, were the state conveyances of the great; and towards the close of Elizabeth's reign a bill was introduced to restrain their excessive use.† Imported into this country from Holland, the Queen's coach was driven by a Dutchman who was appointed to the royal household in the year 1564. At that time the horse, both for riding as well as driving, was of the huge Flanders type known to modern eyes in the dray-cart of London and the omnibus of Paris.

An interesting parallel made by James Howel between London and the great cities of Europe was published in 1657. In spite of an excusable bias for the charms of the English capital, and its superiority over all other cities in the world, he wrote of Palermo, that it was "a jolly neat city," possessing one thing of which neither London nor any other town in Christendom could boast,—"a fair spacious uniform street of above a mile long." Next to that of Palermo he ranks the old High-street of Edinburgh, running, as it still does, between Holyrood and the Castle. James Howel also regrets that the numerous proclamations for building in brick, during successive reigns, had not been observed in London. He attributes most of the stone buildings "whereof many have remained until our time" to an Act passed in the first year of Richard Cœur-de-Lion. By it every building up to a certain height was to consist of stone, and the roof was to be covered with slate or "burnt tyle." His words are,—"For gaining of ground they have been taken down, and in place of some, being low (as but two stories above the ground), many houses of four or five stories are placed." In Cornhill Ward he says there were "divers large houses, especially for height, for merchants and artificers." About sixty years before, some of the Flemish towns had been visited by Guicciardini; and, as we have already said, the Flemings surpassed the English in the magnitude of their trade and the size and constitution of their cities. Guicciardini describes Ypres as a fair rich town and well built," notwithstanding that most of the houses were of timber and of small appearance without"; but the buildings of Liege were of stone, and, he adds, that Liege from its beauty, riches, and the number of its churches, surpassed all other towns either of France or Germany. The stress which is laid in legal documents of the time, both in Edinburgh and London, upon a "stone house" leads to the inference that a substantial or a presumably uninflammable building for private dwellings was comparatively rare. In England, the systematic construction of even large houses composed entirely of wood and plaster, continued.* Our fig. 1 is the reduction of a plan made by John Thorpe; and it is preserved in his Sketch-book with others of a similar kind. Those names of the rooms upon our diagram were written by the architect himself upon his plan (about the year 1600); and the "uprights" or elevations which accompany it (in the Sketch-book) represent the design of a man far less learned than Philibert de l'Orme, yet, like his French predecessor, who died about 1577, engaged in grafting upon native forms of construction foreign ornament of Classical origin.

The porch is an example of Gorhambury, and it is not dissimilar from designs in Thorpe's book. When the queen, in one of her progresses, visited Sir Nicholas Bacon there, she complained jestingly of the smallness of his house; and the Lord Keeper answered:—"Madam, my house is well, but it is you that have made me too great for my house." That response exactly hits the state of the time. There were plenty of buildings, big and small, but the big houses had grown from century to century, and, after alterations and additions, were what they were; the little houses were too rough and bare to be other than mere shelters. Both were devoid of any systematic plan or arrangement; both were unsuited to the tastes,—we do not mean tastes architectural, but tastes domestic,—which were spreading, and to the comparative refinement which some enjoyed and others envied. Lord Bacon complained that such huge buildings as the Vatican and the Escurial contained scarcely "a very fair room." His essay is necessarily an advance upon the thought of his contemporaries. "I say," and it is he who advises, "you cannot have a perfect palace, except you have two several sides; a side for the banquet, as is spoken of in the book of Esther, and a side for the household: the one for feasts and triumphs, the other for dwelling." Such a theoretical division is too obviously antique to be practically adopted, though John Thorpe's house, designed by himself,—but not built, we think,—was arranged on a similar principle (see fig. 2). The following rigmarole, written against the plan, is more curious than grammatical:—

> "Thes two letters, I and T,
> Joyned together as you see,
> Is ment for a dwelling-house for mee."

In the letter I is arranged a block for the service, in the letter T a block for the dwelling, and the two are connected by a wooden passage or gallery covered only at the top, and one story high. Lord Bacon's "perfect palace" is to be divided into two parts,—one for ceremony and the other for home. "I understand," are his words, "both those sides to be not only returns, but parts of the front . . . . and to be on both sides of a great and stately tower in the midst of the front. . . . . I would have on the side of the banquet (ceremony), in front, one only goodly room above stairs . . . . and under it a room for a dressing-place at times of triumphs. On the other side, which is the household side, I wish it divided at the first (floor) into a Hall and a Chapel, with a partition between . . . . and those not to go all the length, but to have at the farther end a winter and a summer parlour; and under these rooms a large cellar sunk underground, and likewise some privy kitchens, with batteries, pantries, and the like. . . . . Beyond this front is there to be a fair court, but three sides of it of a far lower building than the front. And in the four corners of that court fair staircases cast into turrets on the outside, and not within the row of buildings themselves. . . . . The row of return on the banquet side, let it be all stately galleries; . . . . on the household side, chambers of presence and ordinary entertainments, with some bedchambers." In this quo-

* We remember to have seen a similar notice on the doors of St. Eustache, near the Halles, Paris.

* There is something exquisitely ludicrous about the "properties" with which Shakspeare has surrounded Cleopatra: happy the poets that lived before the age of archæology!

† In the account of Sir Thomas Roe's Embassy to the Court of Jahánghir, at Agra, occurs the following passage:—"One particular of his Majesty's [James I.] present to this Prince being a fine coach [*a thing wholly new*, and consequently to be presumed pleasing to him], he was so taken with it that he got the same night into it and made some of my men draw him about the court."

* The mansion of the Earl of Bedford, built near the bottom of what is now Southampton-street, was principally of wood. It was begun during the latter half of the sixteenth century, and remained till 1704. This building was called Bedford House (not to be confounded with the Bedford House which stood in Bloomsbury-square, and which was pulled down at the beginning of the present century), and was enclosed with a brick wall extending northward nearly to the site of what is now Covent-garden Market. In Knight's "London" it is said that "in March, 1552, a patent was granted to John Russell, Earl of Bedford, of the gift of the Convent-garden, lying in the parish of St. Martin-in-the-fields, with seven acres called Long-acre, of the yearly value of 6*l.* 6*s.* 8*d.*, parcel of the possessions of the late Duke of Somerset. This was a modest slice of the church lands the duke had obtained possession of."

tation one court or quadrangle only is described; beyond it, there was to be another court "of the same square and height." The sides of the latter were to contain privy lodgings, and the end was for privy galleries,—"whereof," according to Bacon's description, "you must foresee that one of them be for an infirmary, if any special person should be sick, with chambers, &c." This infirmary was to be placed upon the second story; the first or ground story was to be entirely open, the superstructure being supported upon pillars; and the third story was all to be an open gallery, in which to enjoy the air and the garden prospect. The offices and dependencies were to stand at a distance, and to be connected with the main building by means of covered passages.

We have given the projected house of an English architect who flourished at the close of the sixteenth century, and who practised in France as well as England; we subjoin the plan of an hôtel built by Philibert de l'Orme for himself (fig. 3). It is situated in the Rue de la Cerisaie,* Paris, and the original of the plan we publish was made in 1837 by the late M. Vaudoyer, who presented a copy of it to the Institute of British Architects. The library is at B, the *salon* at S, and the dining-room at H. At C is a "study"; G, G are called "*galeries*," and V is the vestibule. Both figs. 2 and 3 were novelties to the subjects of Henri III. and Elizabeth.

The imperfect description left by Vitruvius, in his first and sixth books, was eagerly spelt by house-owners and house-architects during the era of the Reformation. The Classical origin of Bacon's "perfect palace" is apparent. Modern domestic servants, and whole families of the squalid poor, have probably to thank Palladio for the underground story in which a great part of their lives is spent. In the second chapter of his second book he says: "Cellars, wood-houses, pantries, kitchens, servants' halls, laundries, and other offices which are continually used, should be placed in the lower part of the building." He admits that he commonly ordered them a little underground. "Those who know," says Palladio, "how hard it is to introduce a new way, particularly into the art of building, in which every one presumes to be knowing, will think me very happy that I have met with persons who were generous and judicious enough to approve my reasons." Nor was he undeserving of their confidence, or unmindful of his clients' interest, regarded in a business point of view. Describing a palace he erected at Vicenza, near the market-place, for Count Octaviano de Thieri, he says that, as an architect should always have an eye to the advantage of those who employ him, he left room for shops on the side of the building which faced the market. Every shop had a half-story over it for the use of the shopkeeper; and the count's rooms were necessarily above. It was not till a century after the death of Palladio, which occurred in 1580, that shops with half-stories over them began to rise in Paris. The Place Royale, built by Henri IV., is devoid of any; and in the designs of the "Place de France," ordered by that king, no trace of an "entresol" is to be seen.

A less pretentious scheme for a house than that projected by Bacon is to be found in Dr. Andrew Borde's directions, printed about the middle of the sixteenth century. Starting as a sanitary reformer, and warning people not to apply chimney-corners to other than their legitimate uses, he advises them not to allow "clean air" to get "putrified," and also to keep kitchens and offices scrupulously clean. With him, as with all the writers and practitioners of his time, the Hall is a most important, if not the most important feature. He would so arrange the building as to place the parlour at the head of the Hall and the buttery at the opposite end of it. The kitchen would then be beyond the buttery; the pastry-house and the larder-house would be annexed to the kitchen. "Then," to use his words, "divide the lodgings by the circuit of the quadrangle court, and let the gate-house be opposite or against the Hall-door (not directly) but the Hall-door standing abase and the gate-house in middle of the front entering into the court." None of these writers conceive a large house to be complete without a privy chapel; and Andrew Borde would annex it to the "great chamber of state," so as to allow that and other chambers to have a prospect into the chapel. The terms "Hall" and "Chamber," implying in earlier times two distinct things, got to be used indiscriminately, and at the present day the hall is a passage or an ante-room next to the house-door. Dr. Borde's ideas are partly realised in the plan of a building designed by Thorpe, and preserved in his sketch-book.* The few references upon it are in the architect's handwriting; and from the regular arrangement of the walls and windows we presume the building to be an entirely new one, rather than an old one altered. It must be admitted, however, that there is little in Thorpe's Sketch-book to aid the inquirer in a search after identity or even for proofs of authenticity.

The Hôtel d'Ecoville, at Caen, is one of the most justly celebrated domestic buildings of the Renaissance; even in ruin and debasement the vestiges of its original beauty which remain attest what it once was. Founded in 1538, by Nicolas de Valois, Seigneur d'Ecoville, there is no doubt, both from its refined arrangement and studiously rectangular shape, that it was carefully designed and erected without intermission or subsequent addition. M. C. Sauvageot has published a plan of the hôtel as he presumes it to have been in the sixteenth century, and he has "restored" its exterior in a series of elevations which accord neither with the plan nor with each other. Indeed, the whole monography, like many others in the book,† is a clever "restoration," founded, as such things often are, upon the learned ingenuity of the restorer. At the same time, the position of the walls is doubtless correct, though that of many of the doors and windows is uncertain. We reproduce the plan in fig. 5. There was no habitable story below the ground-floor rooms; there were merely cellars, and our impression is that the kitchen and offices were situated in the parts B, B, C. There probably existed a means of communication between B and B,—perhaps across the entrance-passage or *porte-cochère*, A. The portion devoted to horses, carts, or perhaps a coach, is at D and E. On the opposite side, the great Hall has a summer parlour, perhaps at M, and a winter parlour at K. Or was K the kitchen? It will be observed in the plan (fig. 5) that the entrance-lobby at the top of the steps is entirely open to the external air, without doors or windows; and that some of the presumed offices are similarly constructed. There is a large cupola over the staircase, S; that on the opposite side of the quadrangle rises in the form of a small tower, and it is crowned with a conical roof.

No one has explained with more lucidity than M. Viollet-le-Duc the transformation of parts of a Mediæval castle into the signorial residence of the Renaissance; and nowhere are there so many and valuable artistic monuments of that age as in France. The great work of unknown genius,—the Château de Chambord,—may be a parody upon the feudal stronghold of the thirteenth and fourteenth centuries, but men of all shades of faith in architectural matters admit it to be a marvellous building. A glance at its plan suffices to reveal the difficult and illogical programme which the reformer of the day set himself to accomplish. The huge Hall of the Middle Ages, the extensive but narrow Gallery of the fifteenth century, no longer responded to ideas of household comfort and privacy. Separate rooms, each with its fireplace and a small retiring-room, or *cabinet*, were required; but in the haste to be rid of a Common Hall or a Gallery the means of approach to one room without passing through another were overlooked. To build rectangular rooms in circular towers was a problem which was solved at Chambord by the waste of materials and necessarily of space. The architect, whoever he was, had been bred amidst Gothic traditions, and like Philibert de l'Orme, dressed the Mediæval carcass in a Classical garb. The latter, a diligent exponent of Vitruvius, could hardly fail to supply his countrymen with many things in their new houses they did not want, and to omit many things which they did want.

The prevailing affectation could not escape the eye of Rabelais. His description of the Abbaye des Thelemites and the Manoir des Thelemites is a pungent satire upon the ambitious extravagance to which a little knowledge had brought his wealthier countrymen. The abbey was hexagonal, and at each angle was a round tower sixty paces in diameter. Between each tower there was a length of 312 paces, and the whole rose to a height of five stories above the cellars. There were 9,332 chambers, each with an "*arrière-chambre*" and a "*cabinet*"; each with a chapel and an exit into the great Hall. The manor-house was not less magnificent; it formed the four sides of a court, in the middle of which was a fountain. On the ground-story, columns and antique arches supported the building; and within these were fine galleries, long and ample, adorned with paintings, with the horns of stags, unicorns, rhinoceroses, and hippopotamuses, with elephants' teeth and other curious things. In front of that portion of the house devoted exclusively to the ladies were placed the circus, the hippodrome, the theatre, and the baths. All the rooms were hung with tapestry of different kinds, according to the season; and the floor-pavement was covered with green cloth. The beds and their hangings were embroidered. In each "*arrière chambre*" was a mirror of crystal in a gold frame, studded with pearls; and it was of such a size that the whole person could be reflected within it. At the exit of the ladies' apartments were stationed perfumers and hair-dressers, through whose hands male visitors were compelled to pass before being admitted to an audience. Every morning the hair-dressers placed in the ladies' chambers rose-water, "orange-flower," and all sorts of perfumery. We make no excuse for seeking in a satire rather than in a chronicle of the time some evidence of indoor manners. That everywhere was evinced a desire for what are now called home comforts, for larger lights and windows that would shut or open, for doors and partitions for panelled coverings to the once painted walls is certain. The manner in which windows were added to the round towers of a fortified castle has been happily illustrated by M. Viollet-le-Duc;* and no better answer to those fanatics of to-day who would leave an old building to crumble uselessly to ruin—simply because its parts represent pages of history—can be found than in the sensible practice of the French during the great age of vigorous reform.

The old manners "in Hall" had not, however, died out in the time of Elizabeth. It may be assumed, from an examination of Shakspearian comedy, that the Hall was still the common dining-room, the place for masks and revels; and that it was still furnished and decorated as occasion required. Take, for instance, the opening of the second scene in the second act of "Romeo and Juliet." It is a Hall in Capulet's house; musicians are waiting to begin the revels, while servants are clearing away after the banquet which has just been concluded. "Where is Potman," cries a servant, "that he help not to take away? He shift a trencher! He scrape a trencher! . . . . Away with the *joint-stools*, remove the *court-cupboard*, look to the plate." Soon after these words are spoken, Capulet, accompanied by the guests, maskers, and others, enters the Hall. His words are:—

> "Come, musicians, play;
> A Hall! a Hall! Give room and foot it, girls.
> More light, ye knaves; and turn the tables up,
> And quench the fire, the room is grown too hot."

A passage in "Timon of Athens" refers to the banquets of Shakspeare's time, and to the custom for each guest to bring his own knife. *Apemantus* says:—

> "I wonder men dare trust themselves with men:
> Methinks they should invite them without knives,
> Good for their meat and safer for their lives.
> There's much example for 't; the fellow that
> Sits next him now, parts bread with him, and pledges
> The breath of him in a divided draught,
> Is the readiest man to kill him."

Though "arras" hangings were common enough in large houses,—witness the murder of *Polonius*,—there are few records of the use of carpets. Particular mention is made of certain "Turkey carpets" in the will of Lady Isabella Gresham, who, we think, was Sir Thomas Gresham's aunt. The old fashion of strewing the floor with rushes seems to have continued even among the great. *Iachimo*, in *Imogen's* chamber, says:—

> "Our Tarquin thus
> Did softly press the rushes."

Again, in "The Rape of Lucrece":—

> "By the light he spies,
> Lucretia's glove, wherein her needle sticks,
> He takes it from the rushes where it lies."

It may, however, be urged that the description of *Imogen's* bedroom belies the possibility of the floor being strewn with rushes. Her chamber,—

> "It was hang'd
> With tapestry of silk and silver; the story,
> Proud Cleopatra. . . . . A piece of work
> So bravely done, so rich, that it did strive
> In workmanship and value."

* We published at p. 730, *ante*, a description of the present condition of this house from a French correspondent.

* Sketch No. 72.

† "Palais, Châteaux, Hôtels, et Maisons de France."

* "Dictionnaire de l'Architecture Française": Château, pp. 183, 189.

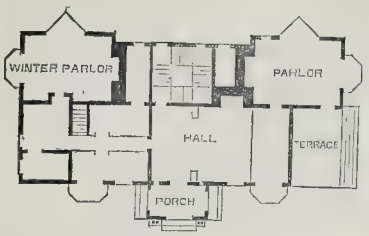


FIG 1.

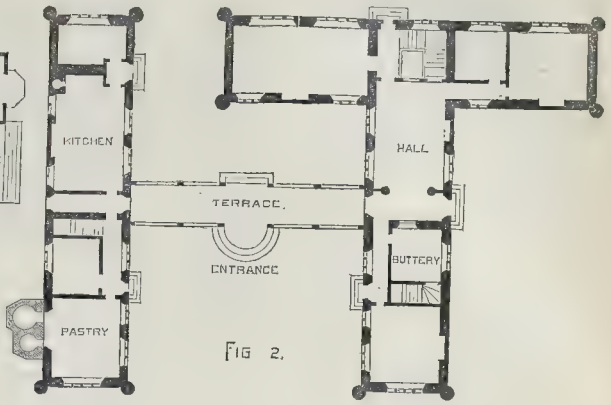


FIG 2.

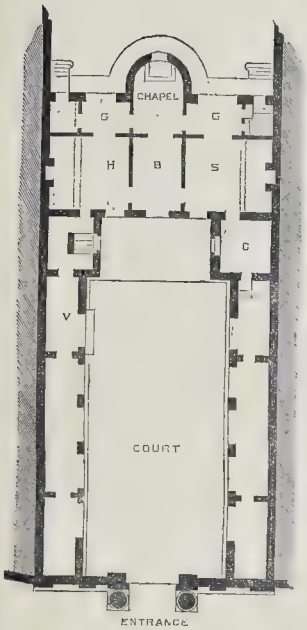


FIG 3.

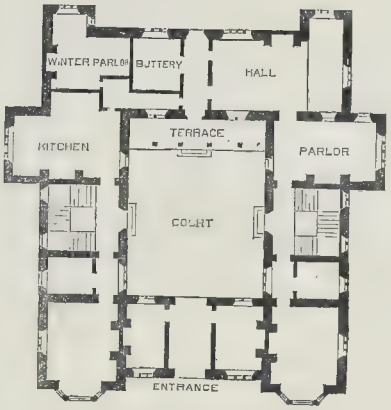


FIG 4.

"The chimney
Is south the chamber; and the chimney-piece
Chaste Dian, bathing."

"The roof o' the chamber
With golden cherubims is fretted: Her andirons
(I had forgot them) were two winking Cupids
of silver, each on one foot standing, nicely
Depending on their brands."

Nevertheless, the rushes, like other old
ustoms, lingered,—as the sand still strewn in a
shionable Paris "restaurant" was similarly
ed by the Romans in their dining-rooms. Straw
so was not only often spread in Halls and
hambers, but even in the time of Henry VIII.
rtain persons were deputed every night to
amine the "the straw of the king's bed."
deed, Shakspeare is thought by many to have
voked so little of the poet's licence in the
nes,—

"Imperious Cæsar, dead and turn'd to clay,
Might stop a hole to turn the wind away."

to have derived the illustration from some of
e houses he had seen built in country places.
"description of England" in 1577 contains
e following passage:—"In the fenny countries
d northern parts, unto this day *for lack of*
od they are enforced to continue the ancient
anner of building (houses set up with a few
ets and many raddles), so in the open and
ampain countries they are enforced, for want
stuff, to use no studs at all, but only frank-
ets and such principals with here and there a
rding whereunto they fasten their splints or
ddles, and then cast it all over with thick clay
keep out the wind." Any one who has

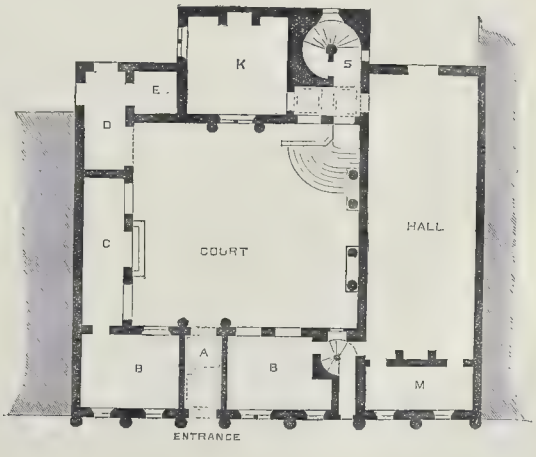


FIG 5.

FIG. 1. Wooden house by Thorpe.
,, 2. Thorpe's design for his own house.
,, 3. Philibert de l'Orme's house, built by and for himself.
FIG. 4. House by Thorpe.
,, 5. Hôtel d'Ecoville, Caen.
Scale of plans: 32nd of a foot to an inch.

examined some of the houses still occupied, and perhaps still being erected, in the more secluded districts of Cornwall, Wales, and Scotland, will hardly attempt to refute the assertion that many inhabitants of this island during the reign of Elizabeth lived in houses of clay and mud.

The influence of woman upon the state of a household is now so great that her condition, and the opinions entertained concerning her, at different periods are always interesting. The relaxation of feminine manners was a fertile topic of regret and reproof three centuries before the Christian era and also in the first century. In the twelfth century Guibert de Nogent was studiously and conspicuously full of complainings. The French women were enjoined to cover the head with veils in order to hide, at least during the services of the Church, anything likely to excite the senses. These veils were called "*dominicaux*" or "*dominos*." The gallantries of Henry VIII. and his courtiers favoured the vicious continuance of a fashion which had grown out of a mistaken method of defending virtue. As the knightly tournament had degenerated into a pageant, so the religious veil became a mask for the reveller,—

"Those happy masks that kiss fair ladies' brows."

In Shakspeare's time the ladies of Venice wore long veils when they walked abroad; and their veils, especially at church, often reached to the ground. Venetian fashions, however, were largely swayed by commerce with the Levant. James Howel, comparing London with Venice, says, rather finely of the latter:—"She hath many things to glory of, as her wonderful situation, that she was born a Christian; that she hath continued a virgin near upon 1,300 years, having never been ravished by the assaults of any enemy, though some out of malice would make her concubine to the Grand Turk." Still Italy—and the Venetians were regarded as eccentric beings by the Italians—set the fashion to both France and England. The fan which fine ladies, in Paris and London, caused to be carried after them, came through Italy from remoter and hotter climes. Their pretty affectations gave Philip Stubbes a wide subject for his "Abuses." To him women appeared to be "the smallest part of themselves." They were not natural, not flesh and blood, but "puppets, rags, and clowtes compact together." He deprecates their vain gestures and the "coynes of women in the middest of their pecok fethers"; their fingers "clogged with rings"; their "sweeted gloves"; their looking-glasses which he calls "the devill's spectacles."

The machinery of some of the pageants, then much in repute about the court, and among courtiers, was confided to the management of Inigo Jones, who returned to England after a visit to Italy and a mission to Denmark in 1605. The influence that Palladio exerted over the arts of Western Europe,—that Philibert de l'Orme exerted over France,—Inigo Jones may be said to have possessed in England, at least after his second journey to Italy. Architectural polemics, however, are not within the scope of these papers; we inquire rather into the shape of the house, the accommodation, and peculiarities of the household. Between the Hall common to the whole family and the House divided into rooms for every member of it, the Elizabethan dwelling,—at least of the upper classes,—is a half-way stage in the scale of refinement. The question of style and adornment we have put entirely aside; with the arrangement and plan we have alone to deal. In the sixteenth century neither Paris nor London possessed anything resembling the dwelling-house now peculiar to each capital. At the death of Henri IV. the *maison-à-loyer*,—and a primitive form then existed,—was a rough combination of dwellings in which the habits of life in common were still superior to any attempt at privacy or retirement. At the death of Elizabeth the private house of the modern residential square and fashionable street nowhere existed. It was not till the middle of the seventeenth century that the lines of the metropolitan dwelling began to take their present shape. In 1633, Le Muet published a series of plans and designs which were, doubtless much used and well known in London after the Great Fire of 1666; but not until the close of the reign of Louis XIV. were the domestic building traditions of Western Europe generally obliterated in France and England,—a vestige remaining here and there, in obscure corners of both countries, to support at a later day the blind guesses and erratic zeal of a second and shorter period of revival.

A REFORM IN POMPEII.

M. Viollet-le-Duc recounts, in the *Journal des Débats*, a visit he has recently made to Pompeii. The entrance to the ruins of the antique city is now, it appears, by a *tourniquet*. "As for this *tourniquet*," remarks M. Viollet-le-Duc, "I bless it and venerate it. If you knew what Pompeii was before its establishment,—a mass of nests peopled with brigands; robbers making money out of every wall, every stone. Some had seized the house of Diomedes and the Way of the Tombs, others received a retribution at the villa of Cicero. The Forum, the public baths, Jupiter's Temple, that of Fortune and Mercury, of Augustus, were guarded by another group of collectors. Others came to seek you, and dragged you, against your will, to the other end of the city, amidst a heap of cinders and *débris*, and with shouts, to the amphitheatre, where you arrived, covered with dust, and cursing the monuments, the ruins, the paintings, and the discoveries.

There existed then also another kind of speculation, which specially appealed to the Anglo-Saxons. It consisted in digging, in making researches *scavi a posta*, that is, for the visitor and in his presence. This fraud was long tolerated. A boy would hide under the ashes a false bronze or terra-cotta, which a companion would soon rake out, to the joy of the ignorant stranger. I was fortunate enough once to be witness of a piece of admirable patience and heroic *sang froid* on the part of a gentleman to whom such a homage had been rendered. During the operation of the digging, he awaited with imperturbable phlegm (he was an Englishman, it appears), then when the object sought for saw the day, he gave the zealous searcher the finest kick that I have ever seen. The young *birbante* rolled over in the *lapillo*, amidst the laughter and cries of joy of his own comrades. As for the gentleman, he turned his back on the scene and continued his visit.

Now, the *tourniquet* guarantees one against all this thievery. For two francs you are master of Pompeii for a whole day if you like. Each visitor or group of visitors is accompanied by an old soldier, polite and discreet, who serves as a guide,—at least, for the order to follow and the direction to take. The greatest silence, the most minute cleanliness reigns everywhere, and each person can admire at ease the curious and charming picture which is offered by Pompeii and its magnificent frame, little changed since the time of Pliny, for there still stand Vesuvius, Capræ, and Misena."

"ICI ON PARLE FRANÇAIS."

Although Paris at present is said to be empty, it is curious to remark how large a number of persons attended last week, notwithstanding the heat, the *concours* of the Conservatoire of Music, as also what a crowd on Wednesday, the 25th ult., filled the rooms of the École des Beaux Arts, where were exhibited the pictures of the young painters who have competed this year for the Prix de Rome. Ten pupils of the school, as usual, went *en loge*, but nine alone competed, No. 9 having retired. The programme of the competition was the well-known incident of the entry of the Gauls into Rome, when the curule magistrates, wishing to die bearing the insignia of their office, seat themselves in their traditional ivory *sellæ*, awaiting the arrival of the barbarians. One of the Gauls having passed his hand over the beard of the aged Papirius, the patrician struck the offender with his ivory wand. Irritated, the Gaul instantly kills Papirius, with whose death the massacre of the Romans commenced. Each artist has naturally treated this subject in a different way, but Nos. 2, 5, and 7 are undoubtedly the most worthy of praise. The painter of No. 2, who is a pupil of M. Gérôme, has well understood the subject, while the treatment of the figures and the drapery is careful, and the colouring solid. Of the picture No. 5 great hopes are entertained; the colouring is more vivid, and the treatment more modern,—the influence of Regnault is felt. The painter of No. 7 deserves praise, though his Gauls are too clean and tidy: this is a fault that is not evident in No. 4, where the barbarians are splendid in their lawless, wild bearing, though the whole scene is too vigorous. Of the others much might be said: all show talent, and this year's exhibition is considered to be highly satisfactory.

Within the last few days the artistic world has been delighted with a revival of Beaumarchais's immortal "Barbier de Seville," at the Théâtre Français, with the inimitable Coquelin as *Figaro*, Febvre as *Almaviva*, and the charming Mme. Barretta as *Rosine*. Probably one of the most important parts of the whole play was the famous singing-lesson. In the modern revival *Almaviva* plays on a clavecin the accompaniment to *Rosine's* air. This innovation, however, led to some difficulties. Nowhere could be found a clavecin, and Mme. Erard, when applied to, only possessing the instrument which had once belonged to Marie Attoinette, and which she was naturally unwilling to lend, fresh researches had to be made. At length an old clavecin was dragged out from a dealer's shop, and this instrument, carefully repaired, figured prominently at the first representation, and will thus become a stage property of the first theatre in the world.

The anniversary of the taking of the Bastille some days back, furnished to most of the Paris journals a host of anecdotes; but few seem to have remembered the anniversary of the assassination of Marat (July 13, 1793), on whose death the legends are numerous. Especially do these latter treat of the famous bath in which was stabbed the Friend of the People. It is known that in the funeral ceremony this same bath made part of the cortége. The interment completed, the relic was deposited in the Hôtel de Ville, whence the reaction of Thermidor drove it to the lumber-room. What, then, became of the bath? Not a few persons affirm that the relic that figures in a famous show in Baker-street is really the *theatre of the crime* of Charlotte Corday. It is generally believed, and David, the painter, has encouraged the idea, that Marat's bath was an ordinary one. Not at all. It appears that it was a sitz-bath, in which the *conventionnel*, seated, was quietly correcting the proofs of his speech. This bath, for which a more worthy one had been substituted, was not in copper, but in lead, and after the Thermidor came into the hands of an English collector, and also the proofs stained with blood, of which we have just spoken. As the authenticity can not be contested, we do not see why the bath, which can be seen in the "Chambre of Horrors," near the scaffold of Louis XVI. may not be the true one, as is affirmed. At all events, this sitz-bath of lead entirely answers to the description given of that which belonged to Marat. Notice to all painters about to treat this thrilling subject. As for the knife with which Marat was stabbed, it has never been found. In 1843, a prison inspector, while passing through Caen, expressed a desire to visit the archives. There he found a box, enveloped in a paper bearing this inscription:—"It results from the perquisition made at the house of the parents of Charlotte Corday that the knife wanting to make up this dozen is that which served to execute the horrible crime committed on the person of the illustrious citizen Marat." The box was opened, and there were found eleven handsome knives, with horn handles, pierced with six holes, garnished with silver. The blade was narrow, much like an Italian stiletto. On the back was a plate of chiselled silver. The whole denoted English work of the last century. It is, then, certain that the knife with which Marat was stabbed was like the eleven found at Caen, where now only three remain. By some extraordinary coincidence the eight others are in the possession of a sculptor, M. Vasselot; and at a dinner given by him some years back, the eight knives figured on the table by the side of many plates dating also from the time of the first Revolution.

On the 16th ult. the fourth exhibition of the works of art acquired or commanded by the city of Paris, was opened in the *Salle Melpomène*, in the École des Beaux-Arts. This exhibition comprises numerous works commanded or purchased at the *Salon*, together with some old pictures restored since last year. The catalogue is divided into five parts. This year's exhibition is particularly rich in religious subjects, and no less than twenty-six pictures are destined for the churches of Paris and the department of the Seine. Among these there are several that were exposed in the *Salon*; let us mention some sketches for mural decoration for the church of the Sorbonne, by Timbal, as also the six restored pictures by Lebrun, Restout, Natoire, De Troy, and Abel de Pujol. Of the twenty-four pieces of statuary, four alone are destined for religious purposes. The others are to adorn the public squares and gardens of Paris, the Palais de Justice, &c. There is among this number a bust of Mdme. Sévigné, which is to be placed in the house at once occupied, and where now the municip

rary is situated. The bust is not satisfactory, happily. There is a bronze by the late lamented rraud, which is to ornament some public nare, as also several medals and engravings, ne of which surpass the ordinary standard of ellence. Indeed, as a whole, the exhibition far from satisfactory. It may be remarked as somewhat curious coincidence that the exhi-ion takes place in the room in which are ually exposed the copies of the *chefs-d'œuvre* the greatest Dutch, Italian, and Spanish sters, but these works have been covered up, d over them have been hung the modern pro-ctions of France's rising generation, so liberally tronised by the State and the municipality. M. Emile de Girardin, the eminent writer, is the present moment much occupied. Not ntent with daily directing in his journal the publican campaign, the famous publicist finds ne to sit two hours a day for his bust, or rather ats, for M. Girardin is at present in the hands two very different artists, Mdlle. Sarah Bern-rdt, the well-known *sociétaire* of the French medy, and Mdlle. Jeanne Andrée. Each has her tings. The Mondays, Wednesdays, and Fridays long to Mdlle. Sarah Bernhardt; the Tuesdays, ursdays, and Saturdays to Mdlle. Jeanne ndrée.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

INSCRIPTIONS AS A MURAL DECORATION.*

The expression of approval of my general ews on the above subject, with the remarks ich accompanied it, which appeared in the *ilder* of the 14th inst., induces me to a brief turn to one or two important points therein, nich seem to need further elucidation or pport.

I am not surprised at the exception taken to y suggestion of Greek and Hebrew passages; r I had a consciousness while penning it that was laying myself open to criticism. But I d not mean to suggest such inscriptions for any t great ecclesiastical and scholastic edifices; d in those cases supplemented by translations the vernacular. And it was not from any sregard for the mental or moral culture of the ass to whom Greek and Hebrew passages ould be unintelligible, nor from any idea of e insufficiency of the English language for e purpose, that I offered the suggestion. believe the language which was found sufficient r "Othello" and "Hamlet," and "Paradise ost," is equal to the full expression of any idea emotion whatever; and I think Dr. Johnson's ejecting to write an English eulogium on Gold-mith, an English poet, for Westminster Abbey, ne of the absurdest acts of his life. I suggested e application of Greek and Hebrew passages rtly from an impression of the greater prestige at attaches to the original text of the Bible, and the sacred languages in which it is embodied, hich may well be considered as the literary and cred property of each Christian nation; and I nnot but think it a rational object of desire to e a great Christian temple illuminated with ssages from the sacred writings in the actual ords in which they were delivered to mankind, which must be more correct and forcible than y translation of them. To these, from their ing more direct from the pens of the inspired riters, more sacred associations must attach; nd I should still recommend a Greek inscription r the frieze of St. Paul's Cathedral, from the ritings of St. Paul himself, illustrative of the irit and genius of Christianity as being, inde-ndently of the greater beauty of the characters, trinsically a more illustrious ornament and ore worthy appliance than any translation ould be.

I was partly led to the suggestion also from a eling of the unpicturesqueness of our alpha-etic characters compared with the Greek, ebrew, Arabic, and other Oriental ones; and think it cannot but be deemed a matter of gret that those symbols of thought we call tters, which present so vividly to the mind hat no chiaroscuro or colour,—marble or ronze,—could represent, which lay bare the eart and mind of man to their inmost recesses, nd delineate the tenderest and loftiest feelings our nature, should be so unfit for association ith objects of ornamental art; and that what as such power to delight the heart should have little to please the eye. This is a great bar the adoption of inscriptions as a mural decora-on. Some Mediæval alphabets are more picturesque; but they are so great a departure from the form of the Roman characters that they are unintelligible to general readers. What are called Old English, or black-letter, and German text might be excepted. But the purpose in question requires, I think, a more curvilinear, symmetrical letter, like the Greek small character, than which I know none more suited to the purpose. The Hebrew is squarer, but it is more picturesque than ours. It may be that I am somewhat beguiled by association of ideas, but I have seen Hebrew and Greek inscriptions that seem as pleasing to the eye as if they were designed solely for architectural embellishment. Inscriptions on Roman monuments, on the contrary, might serve as a warning against inscriptions altogether as an architectural adornment, for they are not adorning. They have generally a disfiguring, disenchanting look wherever they appear. But the general adoption of this element of decoration would probably soon remedy the evil, by promoting the design of alphabetic characters exactly suited to the purpose.

If the visible form and manner of the inscriptions could be rendered satisfactory and worthy of their purpose, I am sure the intellectual matter of them could be; and the sources from which they would be drawn would be all but infinite, including the utterances of the very highest, the divinest of the arts—poetry—that art which appeals directly to the soul, which of all the arts has the greatest power over it, and which itself is the expression of the deepest and sublimest principle of our nature. But suitable inscriptive matter would be yielded from every department of the wide realm of literature—philosophy, history, rhetoric, romance, biography, divinity (including the Scriptures), a fountain that is ever replenishing, and can never become exhausted, so that every new building might have a fresh utterance, and open a new chapter of the volume of wisdom.

Inscriptive matter should be directed, in the first place, to the expression of the proper character of the edifice it adorns, so as to excite ideas or emotions in harmony with the building's purpose, and the increase of its æsthetic and intellectual power. There would be no danger of repetition or monotony; for in the immense variety of classes of structure into which architectural works are divided, in respect of use or destination,—Ecclesiastical, scholastic, palatial, domestic, commercial, forensic, political, auditory, gallery (museums and exhibition rooms), theatrical, literary (libraries), &c.,—there would be the fullest scope for every variety of poetic or literary subject, till gems from all the caskets of genius,—all the productions of the understanding and the imagination through the medium of the pen, would find their frieze, or panel, or other fitting place. The scheme duly carried out would render the architecture of a great town a library or encyclopædia of knowledge.

Besides its architectural object as decoration, would be the inculcation of important truths on the public mind, to furnish a light to the feet and a lamp to the paths of those who could not be well reached in any other way, and who might with some reason complain that no man cared for their moral welfare. It might be made, I believe, a powerful moral engine, and levelled at some of the prevailing vices of the age with good result,—a mightier one even, from its greater flexibility and range, than that which Hogarth discovered in his pencil, and which has done so much honour to his name. Such engines none will say are uncalled for. We have a check to one vice,—drunkenness,—in teetotalism, and a more solemn protest against it in Good Templarism; but drunkenness is not the only vice that cries for check. There are lying and dishonesty, for example, which, if not so destructive to the body, are equally polluting to the soul, and there are passages that could be selected from the Proverbs of Solomon, and from the Psalms (a celestial fountain, teaching, as Hooker expresses it, heroically magnanimity, exquisite justice, grave moderation, exact wisdom, &c.), which, had they been published in stone, in the manner in question, would have been a spiritual sword to slay such vices. Who knows, had architectural inscriptions been in general use, how many youths might have been arrested by some handwriting on the wall in the slippery or morally downward paths which so abound in a great city,—in how many it might have caused the mental monitor to wake up for ever?

It will be admitted, I think, by Mr. Buckle, that so far from discomposing history, or obliterating evidence which constitutes a building an historic record, such inscriptions would render it more luminous as an historic record. With the notable Rosetta stone in remembrance I should urge in favour of the scheme in reference more particularly to inscriptions in two languages—the vernacular and the sacred—that it might be the means, in some distant age, of saving our language from oblivion, but that I cannot conceive it possible for the English language, since printing has come to the rescue of letters, to perish. It might, however, be the means of preserving a purer form of that language than will exist a millennium hence.

Samuel Huggins.

* See p. 641, *ante*.

THE PRUDENTIAL ASSURANCE COMPANY'S NEW BUILDINGS, HOLBORN.

From the designs of Mr. A. Waterhouse, a large new building, which will be one of the most prominent in Holborn, is at present in course of erection. The building in question, which is intended for the offices of the Prudential Assurance Company, is situated at the corner of Brooke-street, in Holborn, and will occupy an area of about 30,000 ft., or two-thirds of an acre in extent. One of its distinguishing features is the unusual depth which it is carried in a northerly direction, along Brooke-street, and to Greville-street, from Holborn, its extreme depth from the Holborn frontage to its northern boundary in Greville-street being about 360 ft. In clearing the site for the building, a large number of houses, of a dilapidated character, in the neighbourhood of St. Alban's Church, have been taken down, in addition to the premises fronting Holborn, formerly occupied by Messrs. Meeking, the extensive drapers. The Holborn elevation stretches from Brooke-street to Furnival's Inn eastward, and is 82 ft. in length. Although it is the finest architectural feature in the structure externally, the Brooke-street frontage is striking and prominent, owing to its great length, being upwards of 190 ft. long, and absorbing more than half the entire length of the east side of that street. The lower portion of the structure, from the ground line, both as regards the Holborn and the Brooke-street frontages, is in massive red and grey polished granite, this material being used to the top of the first floor. The general character of the Holborn elevation is Gothic, with a central main entrance supported by polished granite columns, and a Gothic arch in the same material, a pediment in red brick and terra cotta surmounting the arch. The frontage is lofty, being 80 ft. in height, and at the west end there is a bold and handsome gable, enclosing a large and elaborate oriel window. Smaller gables, uniform in design with the first-named, surmount the eastern portion of the frontage. The materials used in the two frontages above the ground floor are chiefly large blocks of red terra cotta and red moulded brick. About one half of the Brooke-street frontage is in character with the Holborn elevation, but the other portion to the northern boundary is of simpler design, and not so lofty. We understand that the whole of this extensive building is intended to be devoted to the business of the company, and will be specially fitted up internally for that purpose, containing, in addition to the managers' and other offices, board-rooms, &c., a very large and handsome central hall, elaborately finished, and lighted from above. The works are of an unusually substantial character, the main foundation walls being 6 ft. thick, and iron is largely introduced in columns for the floors and other parts of the building.

Messrs. Holland & Hannen are the contractors for the building, which, it is stated, will involve an outlay of upwards of 200,000*l*.

Proposed Viaduct over Fleet Valley.—At the meeting of the Metropolitan Board of Works on the 27th ult., Mr. Walker moved:—"That the engineer be instructed to report as to the desirability and probable expense of erecting an iron bridge across the Metropolitan Railway adjoining the Sessions-house, Clerkenwell, on a level from Red Lion-street to a corresponding level on the west side of Hatton-wall, the intervening spaces on both sides being maintained by brick arches as at the Holborn Viaduct, so that the new street from Shoreditch to Bloomsbury may be formed throughout as a level road, available for heavy as for light traffic." The motion was negatived.

FROM ORVIETO.

A CORRESPONDENT sends us some information respecting the tombs of Etruria, as follows:—I have been making a careful inspection of the tombs of Etruria, the frescoes in which are now only represented by some fragments, but which, together with the sculptured objects in the museums and private collections in central Italy, are still sufficient to show that much of the Middle Age Ecclesiastical art of this locality is entirely copied from them, only that it is improved and adapted to its special purpose. As the frescoes still remaining, though in many cases carefully guarded, are day by day becoming less distinct, careful accounts of what now exist may be valuable; the devices on the Etruscan pottery being generally more curtailed, or too minute, from want of space, to convey with force the histories which the life-size figures and representations give. I have therefore been taking notes of some of the most interesting. The street, or rather streets, of tombs discovered three years ago close to this city, have no frescoes, but they have points of even greater interest, as they almost settle the question of the land whence their builders emigrated. They correspond minutely in construction with some tombs I lately examined in Lydia, though the constructors may only have been a small colony in this part of Italy. It is remarkable that they differ from the Etruscan tombs in many points.

METROPOLITAN SUBURBAN BUILDING.

SOUTH LONDON.

WHETHER viewed north, east, south, or west, around what may be regarded as the great central business area of the metropolis, suburban London is rapidly extending in every direction, and rural mansions and domains are constantly giving place to the demands of the builder. In no district is this state of building activity more conspicuous than in several places south of the Thames, and amongst others the rural portions of Camberwell, Peckham, Hatcham, and other districts, are rapidly being converted into urban localities.

The mansion and grounds known as the Bushy Hill estate in Camberwell, with an entrance from the Peckham-road, has just been purchased for building upon, and is now being laid out for that purpose. It is about 20 acres in extent, and stretches in a south direction from the Peckham-road boundary, opposite Camden Church, near to the Champion-hill station of the Balham and Mitcham section of the London and Brighton Railway. The old mansion on the estate is now in course of demolition, and with it several of the ornamental plantations in the grounds; but, in laying out the streets many of the choice old trees have been preserved, and will serve to ornament the areas in front of the several high-class residences intended to be built upon the estate. The principal thoroughfare, which is being constructed through the centre of the grounds, is about half a mile in length, and extends from the Peckham-road, by a gradually ascending gradient, until it reaches the southern boundary, on the margin of the railway. This thoroughfare will have a carriage-way about 40 ft. in width, with wide and convenient footpaths. The estate is being laid out by Mr. W. Adams Murphy, architect, of Camberwell; and Mr. W. Harris is the contractor for the roads and sewers. The houses to be erected on the estate will be about 200 in number, and all of a superior character, being confined to the villa class. The estate immediately adjoining, and containing about the same number of acres as the Bushy Hill estate, is intended to be similarly laid out next year. It is at present in the occupation of Mr. Robert Alexander Gray, J.P., one of the oldest magistrates in Camberwell.

Continuing eastward is the Peckham Park Estate, which is approached by way of Marlborough-road, out of High-street, Peckham. The estate has been laid out in streets at right angles, and building is actively proceeding. Upwards of 100 houses have already been erected, and preparations are being made for the erection of about 200 more. The total number of houses intended to be erected upon the estate is about 800, and a large proportion of them are expected to be completed during the present year. The houses range from 30*l.* to 40*l.* per annum. In laying out the estate the fine avenue of trees at the junction of Marlborough and Goldsmith roads, forming the approach to the park, has been preserved. It may be added that building is likewise proceeding in Goldsmith-road, immediately adjacent. A large block of houses has already been erected there, and it is stated that Goldsmith House, which has an historical interest as a former residence of the poet, and that in which several of his poems are said to have been written, will shortly be swept away to be replaced by more modern dwellings. Very extensive building is likewise in progress in the neighbourhood of Meeting-house-lane, immediately adjoining. The large market-gardens there are being rapidly covered with dwellings, and it is stated that within the last twelve months upwards of 1,000 houses have been erected in the locality.

About half a mile further, on the Hatcham Park Estate, approached from New Cross-gate and Queen's-road, is a scene of busy building. The Haberdashers' Company, who are the owners of this estate, between 90 and 100 acres in extent, will allow nothing but houses of a superior class to be erected upon it, and these are now in progress. Several semi-detached residences have just been built, and a large number of others, uniform in their external and general appearance, are in course of erection. Some of the houses face the New Cross-road, whilst others are built upon the plots on each side of the fine new road, 60 ft. in width, leading up to Telegraph Hill, where the summit of the estate is reached, and from which there is a commanding panoramic view of several parts of the metropolis and surrounding country.

AN ADDRESS TO WORKMEN.

MR. THOMAS HAWKSLEY, C.E., president of the Institution of Mechanical Engineers, presided over the summer meeting of that body, which commenced on the 24th ult., at Bristol. In the course of an interesting address, he said:—

We are at this time diminishing our wealth and the means of supporting our rapidly-increasing population by more than 100,000,000*l.* per annum. And why? Simply because foreign nations will not voluntarily take such sufficient quantity of our goods to enable us to liquidate our constantly-recurring indebtedness to them for the food we involuntarily require at their hands. Again, let me ask why? Simply because we do not manufacture cheaply enough, and to some extent well enough. For the third time, let me ask why? Simply because our labour is too dear,—in respect of price, in respect of the quantity of work performed, and also in respect of the obstructions and restrictions which the modern workman thinks fit to place upon his employment and employer. In all these respects the English capitalist employer,—the workman's best friend,—is placed at a singular and often ruinous disadvantage when he is brought by the exigencies of his business into immediate competition with the foreign capitalist employer, who, although suffering to some extent from the operation of similar interferences, suffers from them in a much milder degree, and to a much smaller extent. The causes of this immense loss to the country,—a loss of such magnitude that it cannot be continued for many years without involving the nation in ruin,—are not difficult to discover or far to seek. We have passed through a period of unnatural and factitious prosperity. The capitalist has, unfortunately for himself and his country, in too rapid a manner duplicated and re-duplicated his wealth, whilst the working man, observing this, and being misinstructed by his popular advisers, themselves utterly ignorant of the first principles of international political economy, has conceived and become thoroughly imbued with three transparently false notions. First, that he is entitled to share in his employer's success in business; secondly, that he has a right, in combination with others, to exact conditions from, and prescribe terms to, his employer; thirdly, that he has a right, in combination with others, to force his employer to yield to his exactions and prescriptions,—exactions and prescriptions which concern not merely himself, but which are so exercised as to control the employer in regard to the manner in which he shall conduct his business, and even in respect of his relations to the general public at home and abroad. Besides this, the workman is induced, by popular misrepresentations, to believe that capital is rather his enemy than his friend, and that he has a perfect right, by unionistic efforts, to crush his employer's trade for union purposes, and so to destroy, in the result, the source of his own livelihood. And, again, the working-man has been, and is still, so mis-taught as to have become firmly convin
that an increase of wages, however enforce
necessarily a sound and permanent additio
his own means of living, in comfort or otherw
and only too frequently "otherwise." Owin
these patent mistakes, wages (but not the me
of living) have of late years been forced u
an undue manner in this kingdom; whilst, on
other hand, however, production has been r
tively as unduly forced down. The trades o
monopolised by England, the whilome wo
shop of the world, have become wholly or
tially settled elsewhere; whilst our own work
people, still unshaken in their belief in
virtue of strikes, high wages, short hours,
workshop restrictions, are only partially
ployed, and that too with the certainty sta
th-m in the face that unless they cease to
spire to make goods dear,—the goods they
as well as those they make,—their opportuni
of earning a comfortable livelihood must ne
sarily become from year to year fewer
fewer, till in the end, when we shall have
the larger part of our foreign export trade,
struggle for existence will become most painf
and increasingly severe among them, and
and less capable of mitigation. Much obser
tion and long experience have finally brou
me to the conclusion that, if the trade of
country is to be saved, and if the British wo
man is to be secured of his industry and
well-merited fruits, the cost of all commodit
labour included, must be closely assimilated
this kingdom to the cost of like commodities
the Continent of Europe and in America. M
man and master open their eyes to this alre
pressing necessity.

ENDOWED GRAMMAR SCHOOL, ODIH

IN accordance with a scheme prepared by
Endowed Schools Commissioners, this school
been rebuilt, and was opened in the autumn
last year under the management of an influen
Board of Governors, Mr. Solater-Booth be
chairman.

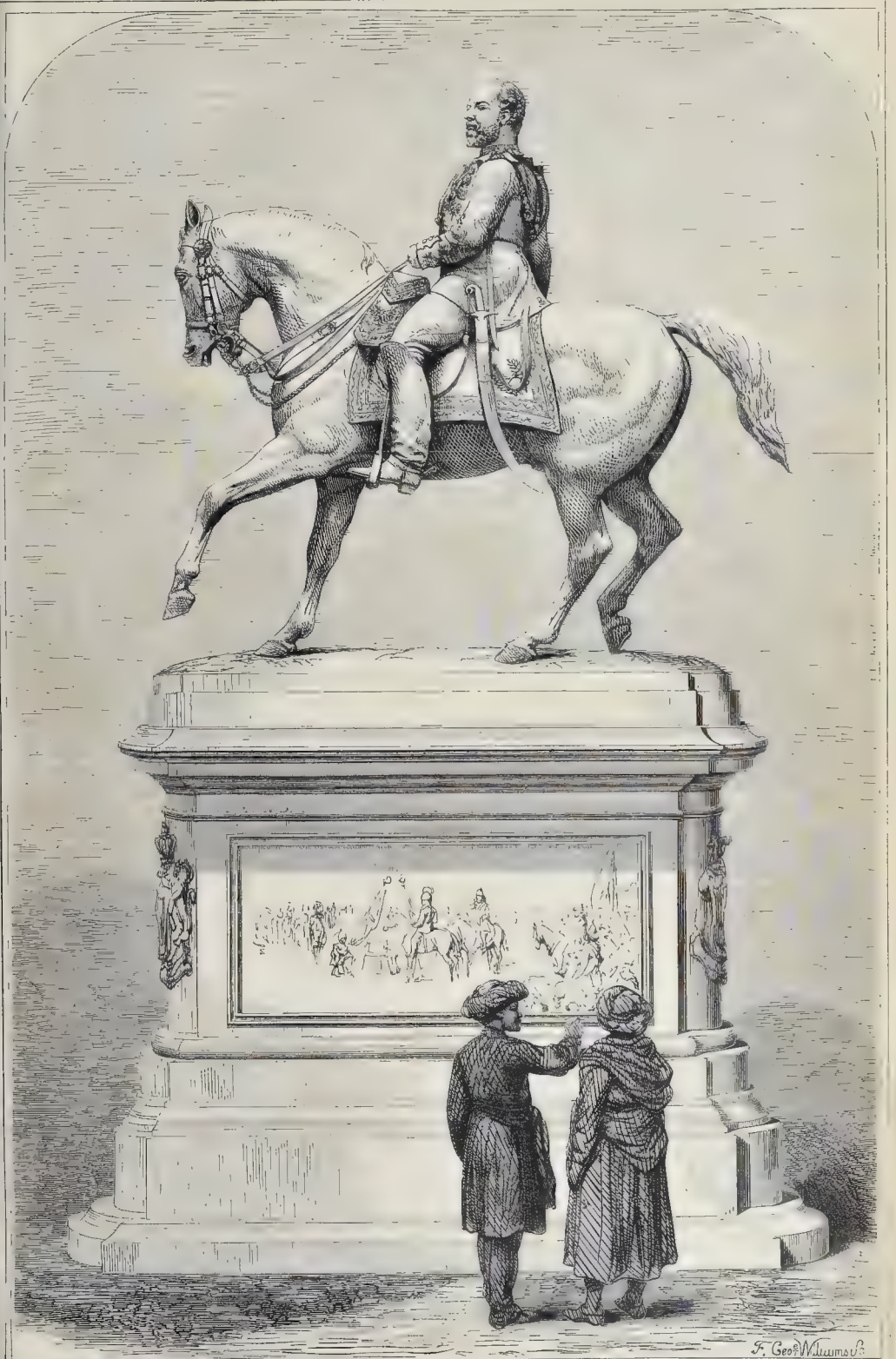
The site is in that portion of the town situ
east of the church, and running parallel to
south of the High-street known as "the Bur
The style of the building is that of the Dome
Tudor Gothic, the materials being red bri
pointed black, with Bath stone quoins, ga
copings, finials, and door and window dressi
The roof coverings are old tiles, and the spire
of the turret is surmounted by a gilt vane.
principal school-room, about 55 ft. by 20
with open ribs sustaining the roof, plaste
between the principals and purlins, is lighted
large traceried windows in the north and so
gables, and two smaller windows to the e
There is a large class-room and dining-hall, a
these three principal apartments are finished
red brick with a struck white joint, on a d
dado faced in Portland cement. The gasfitti
in the school-room and dining-hall are by Ha
Son, Peard, & Co., of London. There are th
lofty, well ventilated and lighted, commodi
dormitories, lavatories and bath-room, besi
the master's residence, which is fitted for
moderate family.

The original contractors were Messrs. Ne
man & Son, of Winchester, but consequent up
their failure, Messrs. H. W. Frampton & T.
Burton, of Winchester, their sureties, we
called upon to complete the works. The to
cost of the building, fences, and enclosures, h
been about 4,400*l.* Mr. Edmund Woodthor
Coleman-street Buildings, Moorgate-street, w
the architect, and Mr. H. F. Sanders the cle
of the works.

Regent's Park.—On Monday, the ceremo
of felling trees and cutting the first sods on t
land conceded to the vestry of St. Pancras
the Commissioners of Woods and Forests, for t
purpose of widening Gloucester-gate Bridge
its reconstruction, was carried out under t
auspices of the General Purposes Committ
The tender for the reconstruction of the brid
by Messrs. Kirk & Randall has been accepted
the sum of 13,500*l.*, and the work is to be co
pleted in nine months from the present tim
Reference was made to the other project
metropolitan improvements for St. Pancr
including the widening of Kentish-town-roa
Gordon House-lane, &c., Mr. Farniss stating th
by next Monday the whole of the required i
provements in the parish would probably ha
been considered and agreed to by the Metrop
litan Board of Works.



THE ODIHAM ENDOWED GRAMMAR SCHOOL.—Mr. Edmund Woodthorpe, Architect.



EQUESTRIAN STATUE OF H.R.H. THE PRINCE OF WALES, FOR BOMBAY.—Mr. Boehm, Sculptor.

EQUESTRIAN STATUE OF H.R.H. THE PRINCE OF WALES.

The equestrian statue of the Prince of Wales, of which we give a view, is presented by Sir Albert Sassoon to the city of Bombay. It is the work of Mr. Boehm, and will be an ornament to the city. The figure is about 10 ft. high, the horse in proportion, and it will have a polished granite pedestal, with the arms of his Royal Highness, a shield, with the inscription of occasion and donor, &c., and two bronze panels in relief; one, "The Arrival of the Prince at Bombay" (staff, functionaries, and Indian chiefs are portraits). The subject of the other has only lately been decided. It will represent a different subject from that proposed at first, and at the time when the woodcut was made (and too late for change). It is to be the school children of Bombay greeting the Prince. The subject was named by the Town Council of Bombay, to whom, with his Royal Highness's sanction, Sir Albert Sassoon left the choice, in preference to the one formerly proposed, of giving the colours to the Bombay Marine Regiment. The whole affair will entail a cost to Sir Albert Sassoon of about 10,000*l.*, none of which is subscribed, but solely borne by him alone. The statue is now being cast at Messrs. Young's, Eccleston Foundry, Pimlico.

THE PREVENTION OF FIRES.

The Report of the Select Committee appointed to inquire into the constitution, efficiency, emoluments, and finances of the Metropolitan Fire Brigade, and into the most efficient means of providing further security from loss of life and property by fire in the metropolis, has been issued. The Committee recommend:—

That the Fire Brigade should be transferred from the Metropolitan Board to the Commissioner of Police for the metropolis, so, however, as to constitute a distinct branch to be placed under the immediate command of a separate Assistant Commissioner, and to be authorised to act within the city of London as well as in the metropolis.

That hydrants should, without delay, be affixed to mains and service-pipes, wherever there is a constant supply, and should follow the extension of such supply.

That the water systems now belonging to the various companies should be consolidated in the hands of a public authority, which, in dealing with the questions of constant supply, pressure, and pipage, should be bound to have regard not only to the convenience of consumers, but also to the requirements for the extinction of fire.

That no new theatre or large music hall in the metropolis should be finally licensed until certified that, in respect of position and structure, it satisfies all due requirements for the protection against danger from fire, and that the Metropolitan Board should be the certifying authority.

That with respect to existing theatres and halls the Metropolitan Board should have power to call on the proprietor to remedy such structural defects as appear to the Board to be the cause of special danger, and to admit of being remedied by a moderate expenditure, option being allowed to the proprietor to refer the whole question to arbitration.

That with a view to the prevention of danger from fire, the Lord Chamberlain and the justices should be authorised to make regulations as to the management of theatres and music halls under their jurisdiction; that for the purpose of ascertaining whether such regulations are complied with, provision should be made for the inspection of these buildings, and that any breach of the regulations should be punishable on summary prosecution.

Society for the Encouragement of the Fine Arts.—The members of this society were on the 24th ult. conducted over Westminster Abbey by Dean Stanley. In describing the history of the structure, Dr. Stanley remarked that nothing was more erroneous than to suppose that the people of former ages had any respect for antiquity in architecture. Just the reverse was the case. After the time of Henry III., large portions continued to be added to the church, and one peculiarity of this continuation was that the destruction was not carried out in a ruthless manner,—hence the Abbey was one of the few places where architecture of the thirteenth century had been carried on in the nave up to a later period.

A VISIT TO THE CATHEDRAL AND PARISH CHURCH OF ST. ASAPH, NORTH WALES.

This cathedral, the smallest in Great Britain, is of great historical interest. It is so small "that it is not unlikely that the Norman successor of the first British building covered the same extent of ground"; * the British or Celtic church has always prided itself upon its priority to the Romish Church. Bishop Anian, who built the cathedral on the old site, it will be recollected, was the favoured prelate chosen to baptise the infant Prince of Wales, born in Carnarvon Castle.

St. Asaph, or as it is called by the Welsh, Llan Elwy, the Church of Elwy, a name obtained from its situation on the bank of the river Elwy, which flows along the west side of the town, consists of little more than a single street, pretty regularly built, up the side of a hill, called Bryn Paulin, from having been made a place of encampment by Paulinus, a Roman general, on his way to the island of Mona.

The foundation of this episcopal seat and monastery has been thus related. Cyndeyrn Garthwys, or Kentigern, the son of Owain ap Urien Reged, was bishop of Glasgow and primate of Scotland, but was driven thence by the persecutions of one of the Scottish princes. He fled into Wales, where he was taken into the protection of Cadwallon, uncle to Maelgwn Gwynedd, prince of North Wales. Here, about the year 560, he founded an episcopal seat and monastery, and became himself the first bishop. On the death of his persecutor he was recalled into Scotland, but first nominated his disciple Asa or Asaph, his successor, from whom both the church and town received their designation. In the time of Asa, the number of monks was nine hundred and sixty-five; of these, three hundred were labourers in the fields, three hundred servants about the monastery, and the rest were religious. Asa died about the year 596, and was interred in his own cathedral.

About the year 1247, in the wars between Henry III. and the Welsh, the bishops, both of St. Asaph and Bangor, were driven from their sees, and became indebted to voluntary contributions for subsistence.

The first building, which was of wood, was consumed by fire in 1282. Upon the burning of the cathedral, &c., Anian was desirous of translating the episcopal see to Rhyddlan, two miles from thence. King Edward promised ground to build a church upon, and 1,000 marks towards building it; and letters were written to Pope Martin IV. to procure leave. However, the same was prevented by the Pope's death, as Godwin supposes, or by the Archbishop of Canterbury's circular letters, wherein he exhorts the bishop and canons to rebuild the church, which they did, and raised from the ground the present fabric, the walls of which have stood ever since 1284. The roof, or upper part, was burnt down about 1401, by Owen Glandwr; and about 1490 Bishop Redman repaired the walls, and carried them up to the present height, and placed thereon a new roof, and made the east window-stalls in the choir. The choir remained unfinished until about 1770, when it was nearly rebuilt by the dean and chapter.

In the Parliamentary wars the edifice was desecrated and greatly injured, being used as a barrack and hospital for the military. One Milles, who held the post-office and lived in the bishop's palace, sold wine and other liquors there, and kept his horses and oxen in the body of the church, and tied up and fed calves in the bishop's throne and other parts of the choir, removed the font into his yard, set it in the ground, and made use of it for a hog-trough, &c.

The following mortuaries were formerly due to the bishop of this diocese on the death of every beneficed clergyman. On the interference of Bishop Fleetwood they were set aside by Act of Parliament, and the living of Northop was annexed to the bishopric in their stead.

His best gelding, horse, or mare.	His waistcoat.
His best gown.	His hat and cap.
His best cloak.	His falchion.
His best coat, jerkin, doublet, and breeches.	His best book.
His hose or nether stockings, shoes, and garters.	His surplice.
	His purse and girdle.
	His knife and gloves.
	His signet or ring of gold.

These mortuaries amounting to a very small sum, Bishop Fleetwood forgave the poor widows, and compounded with the rich. The money he expended in buying books for the library of the school-house, which was taken down in 1780, since which time the books were removed to the Consistory Court.

North Wales has had its legends, witches, and saints,—of course, wonderful stories; St. Asaph has not been exempted; "not many years ago a mark on a black stone in the pavement of the street, about the middle of the hill between the two churches, used to be pointed out to strangers as the print of St. Asaph's horseshoe, when he leaped with him from Onan-hassa, which is about two miles off." This, however, observes Mr. Grose, who relates the story, seems to have been a miracle performed rather by the horse than by the saint, to whom it is ascribed, unless the keeping of his seat at so great a leap may be deemed such. What was the occasion of this extraordinary leap we are not told; whether only to show the agility of his horse, or to escape the assaults of the foul fiend, who, in those days, took unaccountable liberties even with saints.

Wharton, in 1695, in the compilation of his "Lives of the Bishops of St. Asaph," used some notes from the "Lyfr Coch Asaph," now lost. The building was visited also by Giraldus, who speaks of it as "the poor little church of Llanelwy."

Browne Willis, in 1720, issued a "Survey of St. Asaph," and in 1801 an enlarged edition was published. This work is of historical value, but of little architectural interest; it is devoted more particularly to the bishops, deans, and other religious dignitaries. The dimensions of the cathedral are given in yards occupying several pages; an outline plan, figured, would have been more easily comprehended. Some portions of the history are unintelligible, for instance:—"The height of the steeple or tower is 93 ft.," and "the top of the tower was leaded and the upper part of the steeple put into good repair, after a breach occasioned by a storm on Feb. 2, 1714," which blew down the top of the steeple, which fell into the choir and did much damage to the roof, organ, and seats.

In 1801, the cathedral church was not used as a parish church, as the other cathedrals in Wales were.

In the hand-book of the late Ecclesiological Society, the cathedral is called "coarse, mean, and small," and mainly attributed to the poverty and scanty population of this mountainous district. The building, although very far from possessing the architectural beauties of the English cathedrals, still affords a valuable example of a neat, plain cross.

Rickman observes that "the nave and transepts are evidently of Decorated date, and though worked very plain, contain some singularities, and even beauties; among these may be reckoned the west window, which is an elegant one of six lights."

The internal dimensions are as follow:—

	ft.	in.
Nave and aisles	83	1
Piers of tower arch	4	8
Tower	30	8
Piers of chancel arch	5	3½
Chancel	59	9
Total length of church	183	5½
Nave	31	9½
Piers	3	10
North aisle	14	4½
Piers	3	10
South aisle	13	11
Total width of nave and aisles	67	9
North transept	34	0
Tower piers	5	0
Tower	30	0
Tower piers	5	0
South transept	34	0
Total width of church	108	0

In recording the dimensions of a cathedral or church in handbooks, it would be more satisfactory if it were stated whether the dimensions were internal or external.

The nave is separated from the aisles by four piers and two responds, supporting five pointed arches on each side. The piers and arches consist of plain but bold mouldings, continued without the interruption of capitals, round the arches. Above the arches, on each side, are five ancient clearstory windows; small square apertures recessed, with an octafoiled light. The west window is pointed, in six lights with trefoiled heads; in the head of window is Flamboyant tracery. The window is filled with

* *Builder*, vol. xxxi., p. 637.

stained glass in memory of Canon Rowland Williams, M.A., date 1856.

The west doorway and doorway in north aisle are pointed. The modern oak doors are in memory of Sir Stephen Glynne. The hinges of the west door cost 75*l.*, and those of the north aisle door 45*l.* Narrow brass plates recording these gifts are placed under the sills of the doors.

The roof is modern, of wood and groined, with knees and corbels, partly sculptured, with bosses at the intersections, being carved into foliage, flowers, and other devices. No doubt there was an authority for this, but it seems hardly in character with the simplicity and boldness of the architecture of the building. In 1720 the roof was plain, without any ornaments, and all compass work, very different to the present groining.

In the nave, on the south pier of the tower arch is a slate mural slab, with an imposing ornamental brass cross, in memory of Charles Butler Clough, M.A., date 1859.

The pulpit is situated in the north-east angle of the nave. It is octagonal, panelled, and the cornice is decorated with the grape-vine; the fruit and foliage are sculptured alternately.

In 1631, Bishop Owens fixed a new wainscot pulpit, and seats and forms, to hear divine service, and newly built or "beautified" his episcopal throne.

Bishop Isaac Barrow, uncle of the eminent Dr. Isaac Barrow, in about 1670, repaired several parts of the cathedral church, especially the north and south aisles, and newly covered them with lead; and caused the east parts of the choir to be wainscoted, and laid out a considerable sum of money in the building and repairs of his palace at St. Asaph, and the mill belonging to it.

The roof of the north aisle is a lean-to, of oak, in compartments, with quatrefoil rosettes at the intersections, knees plain. The cornice is embattled. In the north wall are three windows and a door. The windows are in two trefoil-headed lights, with a quatrefoil in the head of each. All are glazed with common glass. The string-course of the wall consists of a simple roll moulding, the upper member overlapping the lower.

The west window of the north aisle is pointed and splayed. It is in two trefoil-headed lights, with a quatrefoil in the head. The window contains painted and stained glass, with Scriptural figures and quotations, in memory of Captain Bonner, son of Dean Bonner. Beneath the window is a brass in memory of two daughters of Richard Maurice Bonner, Dean of St. Asaph,—dates 1859 and 1865. This aisle is separated from the transept by a pointed arch, with piers, similar to those in the nave, and a panelled screen.

There are marble mural monuments. One is on a grey slab, with embattlements and pinnacles, to the memory of Thomas Webster, of Liverpool, date 1832; and a white marble mural tablet to John Blewer, 7th battalion R.A., and James Blewer, 23rd regiment R.W.F., formerly choristers in this cathedral, who fell during the siege of Sebastopol in 1855.

The roof of the south aisle is modern. There are four windows similar to those in the north aisle. This aisle is separated from the south transept by a pointed arch and screen, exactly the same as in the north aisle.

There are several white marble mural slabs, placed from east to west in the following order:—To Harriette Anne, wife of Lieut.-Col. G. Browne, C.B., of the metropolitan police, Dublin,—date, 1859; Lieut.-General Sir Henry Browne, K.C.H., Col. of the 80th regiment, of Bronwylfa,—date, 1855; Louisa Anne, wife of the above, and daughter of the Bishop of Bristol,—date, 1823; Felicity Dorothea Browne, of Rhylton,—date, 1827; Elizabeth Anne, wife of Lieut.-Col. Sir Henry Browne, of Bronwylfa,—date, 1826. In memory of Felicia Hemans, "whose character is best pourtrayed in her writings; she died in Dublin the 16th May, 1835, aged 40." This tablet was placed here by her brothers. A clumsy marble slab, surmounted with an urn, to the memory of Elizabeth, wife of Edwin Wyatt,—of the Mount,—date, 1839. A white marble mural monument, by Westmacott, R.A.: two angels, full length in bold relief, beautifully sculptured, with armorial shield beneath the inscription coloured by the organist, which is no improvement to the monument, to the memory of Sir John Williams, bart., of Bodelwyddan,—date, 1830. Another white marble mural pyramidal sculptured monument, to Sir John Hay Williams, 2nd bart., of Bodelwyddan,—date, 1859. A mural slab, with hat and sword, sculptured, in memory of Charles Whiteman Thomas, Captain 21st Hussars, died in India,—date, 1867. White marble tablet with an urn, in memory of Richard Bythell,—date, 1845. A marble slab, surmounted by armorial bearings, with a long Latin inscription, copied *in extenso* by Browne Willis, to the memory of William Price, of Rhiwlas,—date, 1691,—completes the monuments at present on the wall of the south aisle. This tablet used to be on the north side of the altar.

There are several modern brasses: an ornamental one to Lady Sarah E. Hay Williams, of Rhiawa, Anglesey,—date, 1876; a plain brass to Major William John Bythell, late of the Imperial Austrian army,—date, 1866.

In the floor are slabs with ornamental borders and armorial bearings to the memory of John Price, of Vanol, eldest son of Colonel William Price, of Rhiwlas,—date, 1685; and William Price, 1691.

The font stands at the west end of the aisle; is octagonal, with a quatrefoil on each side of the basin. The stem has trefoil-headed panels. Part of the basin is from an old font.

The nave and aisles are paved with stone, and fitted with chairs secured in the usual way; and lighted by twisted brass standards, each having four branches. The nave was re-opened, after restoration, September 2, 1875.

The north transept has a compass roof superficially ribbed. The windows are of a Decorated character. The north window is pointed, in five trefoiled lights, with quatrefoiled tracery over, with painted and stained glass. In the east wall are two windows in three trefoiled lights, with a quatrefoil over.

Beneath the north window is a cumbersome Gothic monument to John Luxmoore, D.D., Bishop of St. Asaph, and of his family, date 1830; an arched canopy upon an altar-tomb. Beneath the canopy against the wall are marble panels in compartments, containing Latin inscriptions. On the panelled sides of the tomb are brasses recording the more recent deaths of members of the family—dates, 1849, 1854, 1860, and 1862. In the floor is a brass plate over the entrance to the vault.

In 1535, Bishop Standish left in his will 40*l.* to pave the choir, with which, as tradition says, the organ was bought. There has been a tradition that his executors thought an organ more needful, and so bought one, which was made by a cooper (!), and when it was set up in the church his executors were sued for non-performance of the letter of the will.

In 1635, Bishop Owens set up "the great and new organ," which was brought from London in the beginning of October, and played upon. On which occasion this distich was made:—

"Magna silet Campana, sonant tamen Organa Sancti Assaphensis; Honos, Gloria, Lausque Deo."

The present organ is against the east side of the transept by the tower, and was erected in 1714; it is carved, gilt, and painted. Beneath the organ are seats and fittings for the choristers to assemble in; which occupies nearly half of the transept, and is admirably adapted for a barrack-room. The masonry of the transept is plastered. An interesting Norman cushioned capital is lying on the floor, also a sculptured monumental stone found at the depth of 2 ft. in the ground at the chancel end.

Under the tower, and in the north aisle, were interred Dean Middleton, J. Loche, Francis Darington, organ-blower,—his gravestone is in the south transept; Anne Gregor, and Ignatius Thwayts.

The south transept, formerly called Cappel Vair, or St. Mary's Chapel, is entered from the south aisle. A stone figure of a bishop standing upright, like a policeman on duty, first merits attention. This figure in episcopal robes was formerly recumbent, on an altar tomb in the chancel, in memory of Bishop Dafydd ap Owain, the first Bishop of St. Asaph, who died in 1502. It is to be regretted that the altar-tomb and the recumbent effigy of the bishop were not retained in their original position, instead of being excommunicated to make room for glaring and slippery polished marble pavements and other performances which are entirely out of character with the original simplicity of the cathedral.

A white marble monument, consisting of a seated figure on a pedestal, to the memory of William Davies Shipley, dean and chancellor of this diocese for more than half a century, is placed in the transept. He died in 1826. The monument was sculptured by Ternouth in 1829, and cost 600*l.*

In the floor are several memorial stones to Richard Herbert, 1661; Francis Darington, organ-blower, 1691; John Wolf, 1671; Thomas Jones, verger, 1685; and his wife, 1680; an incised cross on a stone and other memorials.

Suspended in this transept is a curious map of Flintshire, by John Speede, date 1400.

The south transept is used as a chapter-house and consistory court, and is closed up with wainscot work. On the east and west sides are ranges of oak cases, embattled and panelled with trefoiled heads, containing numerous MSS.; an autograph letter of Charles II.; a prayer-book in Old English character, date 1657; a polyglot Bible, 1657; and two different issues of the prayer-book, 1549; in 1849 Isaac Griffith presented to the Bishop of St. Asaph a book of 1518, formerly belonging to Richard Robert Jones, born at Aberbawn, in Carnarvonshire, 1780, died 1847. He was familiarly known as Dick Aberbawn. Among other works are those of Clarke, Fleetwood, Kettlew, Barrow, Leslie, Allen, Bilson, Stebbing, &c.

The consistory court, vestry, and library comprise a canopied throne and the usual fittings, all of wainscot.

Browne Willis, in 1720, says that in the library were 1,458 volumes of various branches of literature. Bishop Fleetwood began the library, and the number of books has since been increased by the donation of several persons.

The roof and windows are of the same character as those in the north transept. The walls are likewise plastered. The armorial bearings in the east windows of the south transept are ancient, and were formerly in the east window of the chancel.

Beneath the tower is the choir, fitted up with Perpendicular stalls, with crockets and finials, the seats of the misereres are carved and interesting, and without vulgarities. The bishop's throne is canopied, and is placed under, and on the south side of the chancel arch. A brass plate with a Latin inscription is affixed on the back of the throne, in memory of Dr. William Beveridge, eminently devout, zealous, and useful, and frequently designated "the apostolic bishop," and "the restorer of primitive piety." Opposite the throne, under the arch on the north side, is a modern fanciful octagonal oak pulpit, panelled with heads in bold relief.

Rickman describes the choir in his time as a "modern re-edification, with much attempt at imitation of ancient work, but no real resemblance to any style, though the intention appears to have been the imitation of the Perpendicular style." Some wood carvings, stalls, altar-rails, throne, &c., with one of Cromwell's spurs, have been deposited in the belfry. At present there are only two bells, and those were cast out of three, which are said to have been brought from Wrexham, and exchanged for a very large bell which was called "Dicas," and had inscribed upon it, "*Dicas Boddlewiddan*," as supposed, by its being given by an ancient family of that name in this parish. On the smaller bell is the following inscription,—"*Thomas Roberts fecit ex decreto et cooperatis capituli Asaphensis*, 1681"; and on the largest,—"*He duæ campanæ e tribus conflatæ sunt.*" Both these bells were exchanged for one from Gloucester in 1793.

In November, 1638, the "steeple and belfry were repaired and new made with boards and the frames of the bells re-edified."

On the 2nd of February, 1714, a violent storm blew down the "top of the steeple," which was afterwards repaired by Bishop Wynne, at the cost of 600*l.*

It is to be hoped that before long a peal of bells will be added, as the tower is not only capable of receiving them, but in 1720 there were frames for eight bells, and in 1759 John Tanner, prebendary, left in his will 21*l.* towards a peal of bells. This will do to head a subscription-list, as bells add considerably to the dignity of a cathedral.

At the west end under the nave arch stands a brass eagle, the gift of Miss Mesham, which cost 120*l.*

The chancel has a compass roof, ceiled with panels. The east window was modern, and said to have been an imitation of one at Tintern Abbey! It is now in seven lights; six have trefoiled heads, the central light has a cinquefoiled head, quatrefoiled tracery in arch, with a hexafoil in the centre. The window is glazed with modern stained glass as a memorial of the late Bishop Carey and Mrs. Carey. The window is the gift of the representatives of Mrs. Carey. The central light is devoted to the subject of "The Ascension," and the three lights on either side contain in each two subjects from Our Lord's

istory. The tracery above the side lights is ɔoupied by the six Acts of Mercy, and the hole is surrounded by an oval, in which is a epresentation of Our Lord enthroned in glory, earing in his hand the orb and sceptre.

The side windows of the chancel are modern arly English, out of character with the rest of ne cathedral; grouped together in two and three ghts, with labels and dog-tooth ornament on ne exterior, with banded columns, with capitals noulded and foliated.

One window on the north side is in memory f Mrs. Hemans, given by the Rev. Hicks Owens. here are five steps to the altar. The benches n the chancel are of oak, with carved finials. he chancel is paved with variegated polished narbles and tiles, imparting an Italian character, pparently quite foreign to the simple character f a mountain cathedral. In 1720 the chancel as paved with freestone, intermixed with grave-tones.

The reredos is of alabaster and marble; it was ompleted in 1871, and consists of a series of inquefoiled arches supported by marble columns vith foliated capitals and bases in the Decorated tyle. The spandrels contain sculptures. The entral portion over the altar is of rich tabernacle vork; it represents the procession to the place f Crucifixion. In the centre is the figure of Christ bearing the cross; to the right are Roman oldiers preceding, and on the left the three Marys, and several of the disciples following; ll these figures are in alto-relievo. The cost of he reredos was about 600*l.*; it was the gift of Mrs. Hesketh, of Gwrych Castle. Surely there s no authority for this elaborate work, which must present a striking contrast to the usually imple altar-screen.

On the south side of the altar are three sedilia, ll on the same level; they have trefoiled arches, supported by marble shafts, with foliated and moulded capitals. The chancel is lighted similar o the nave, with twisted brass pillars, support-ing four branches.

The marble tablet to William Price, of Rhiwlas, formerly on the north side of the altar, has been removed to the south aisle; also the mural monument to the daughter of Evan Lloyd, of Pengwern, 1763.

In about 1712, Bishop Fleetwood paved and flagged a great part of the cathedral, at his own expense, with broad stone, obtained from Sir Pierce Mostyn, of Talacre, Flintshire. He also laid out above 100*l.* in adorning and painting the choir throughout.

The choir was "much improved" in Bishop Shipley's time, 1780, and a new throne and pulpit erected, when all the gravestones were taken away, including Bishop Owen's tomb, and the whole newly paved in a "modern style." Under the gravestones were interred the son of Colonel Price, &c. Under the communion-table were buried Dean Evans and the eldest son of Bishop Parry; and below the bishop's throne were interred Bishop Griffith, Susanna Griffith, and Robert Griffith, third son of Dr. W. Griffith, chancellor of the diocese.

In the middle of the choir were interred Edmund Ferrars, Vicar Tarbridge, and Thomas Otty, vicar precenter and organist.

The choir and chancel were re-opened after restoration, September 30, 1869.

Exterior.—The tower of the cathedral com-mands a most extensive prospect of the vale of Clwyd, in every direction. It is said to be 93 ft. high, and rises from the intersection of the nave and transepts, embattled with parapets and cornice; the upper part has been rebuilt. The turret staircase is in the north-east angle. The windows, one on each side, in two lights pointed, and transomed, with trefoiled heads. They are filled with louvres. The roofs are covered with slates from Ogwen, in Carnarvonshire. The tower and aisles are leaded. The nave is em-battled, with a corbelled cornice and parapets, all modern work. The buttresses are in one stage gabled, bold, simple, and very plain. The windows have external shafts, with moulded capitals and bases. The labels have ghastly corbel-heads, apparently not improved by scraping. The buttresses of the chancel are in three stages, splayed; with square-panelled, heavy, stunted pinnacles, with crockets, and ill-proportioned finials. The stone veneering of the north-east angle buttresses is becoming dis-located. On the gable is a cross. The chancel has a corbel-table to parapet. The transepts have buttresses in two stages, splayed. On each gable is a cross with a large chimney-pot behind it. The tower is mostly of squared stone, some of which is red. The chancel and other parts are of a soft red stone, said to have come from a rock in or about Kill Owen.

The cathedral being insulated, a good view of three of its sides can be obtained from the churchyard. The south side faces the street.

In the churchyard by the western entrance is an altar tomb to Bishop Isaac Barrow, date 1680, uncle of the eminent Dr. Isaac Barrow.

The parochial church is dedicated to St. Asaph and St. Kentigern, and is situated at the foot of the hill of which the cathedral occupies the summit. It consists of a nave, with a bell-turret of two openings, with one bell, south porch, north aisle, and vestry-room.

The nave is called Eglwys Asaph, that is St. Asaph's Church; it is separated from the aisle, that is Kentigern's Church, by four piers and two responds, consisting of moulded shafts, with hollows between. The roof is an open-timbered span, with cambered tie-beam, with struts, openings foliated; by knees on stone corbels, with hearts, angels, &c. The west window is in three cinquefoiled lights, with Perpendicular tracery above. This window is glazed with stained glass in memory of Captain Thomas, date 1872. The windows in the south wall are in four cinquefoiled lights. The floor is paved with stone, and the seats are open. Over the south doorway are the royal arms.

The font is circular, and stands at the west end of the nave on the south side. The porch has been rebuilt. On the inner door is "1687, S. I. E. I." On the west wall are marble tablets of recent date.

The nave and north aisle comprise two equal portions under separate roofs, divided by an arcade, without any visible distinction of chancel. The original position of the pulpit on the south side of the nave; used to mark a division, a small window, high up, is close by the former place. The east window has a depressed arch, with five hexafoiled lights, with trefoiled tracery over.

In the east window was "A. 1614." This in-scription remaining, painted on the glass, which seems to denote the time it was built in. "*Orate pro Bono Statu omnium Parrochianorum Parrochiæ Asaphensis opus vitreum et Lapideum factum fuit et finitum A.D.* 1524."

The altar is raised four steps, and paved with encaustic tiles. The pulpit, of carved oak, now stands on the south side, by the altar. The stalls are open, with carved finials. In the south wall near the east end are two piscinæ.

The roof of the north aisle is an open-tim-bered span, with cambered tie-beam, with struts. The east window has a depressed arch and transomed. The lower part is in four lights, cinquefoiled; the upper part has trefoiled heads. In the north wall are two windows; one is in two cinquefoil lights, and the other window is in three similar lights. The organ is in the north-east angle. The vestry-room on the north side is modern, and was built about 1872.

There are several marble slabs on the walls, in memory of the families of Lloyd, Humphreys, Foulkes, Evans, O'Connor, and others, dating from 1680 to 1859; also a brass, to Thomas Lloyd de Keven,—date, 1695.

The whole of the interior stonework has been thoroughly scraped; the piers in the nave have been reduced to the last stage of consumption. The parish church was re-opened after restora-tion, October 18, 1873.

The churchyard is large, and has numerous gravestones, with inscriptions in memory of the parishioners. Some of the stones, in shape of stone coffins, are said to have been brought from Rhyddlan Abbey.

The term "Church Restoration" has been so long accepted that it would be futile at this period to attempt a more exact or truthful meaning. To restore means to reproduce exactly, or to make good, in its own likeness, that which existed before; that it should be worked in the same material not being of that vital importance as the repro-duction of the mental design of the work. If a church be not exactly restored, in accordance with the above definition, it would, perhaps, have been more reasonable to employ the term *re-modelled* in lieu of restoration. To illustrate this point, reference may be made to Ruabon church, "restored" in 1872; the account given at that time says, that "an entirely new roof has been put up, the stone pillars which sup-ported the arches between the nave and side aisles have been replaced by others of a *lighter character.*"

St. Asaph's Cathedral affords an illustration of that which can be effected by bold, simple, and graceful proportions, without vulgar orna-mentation; to which, unfortunately in later years, it has been subjected.

There is no guide-book to the cathedral sold in the town, and the photographs are very indifferent.

W. Pettit Griffith, F.S.A.

NEW CHURCH ON COPTHORNE COMMON, WORTH, SUSSEX.

On Thursday, the 19th ult., a commodious and much-needed church was opened by the bishop of the diocese (Chichester), in the presence of the donors, and a large attendance of the local clergy and laity.

The church, which is in the Early Gothic style, is dedicated to St. John, and is the gift of Lady Lampson. It is built on a portion of the pro-perty of Sir Curtis M. Lampson, bart., the undu-lating ground having been most picturesquely levelled to form a suitable site. It consists of a spacious chancel, nave, and side aisles, the latter divided off by four bays, composed of pointed stone arches, supported by circular stone pillars. The handsome east window, in three separate lights, is filled with stained glass, by Mr. Gibbs, of London. The subjects are Christ as the Good Shepherd, in the centre light; St. John in the right-hand one; and St. Peter in the left. Interiorly, the walls are of red brick, with deco-rative bands of black and buff brick; exteriorly, they are of local rag-stone, with dressings to the buttresses, and window tracery of Bath stone. The spire, also of Bath stone, forms a pretty object, standing out white from its background of green trees. The church has taken rather more than one year to construct. Messrs. E. Habershon & Brock are the architects, and Mr. Shearburn, of Dorking, is the builder.

BIRKENHEAD SCHOOL.

In the new school here the separate studies, to one of which every boy is entitled, possess each a superficial area of about 70 ft., and a pro-portionate cubical area. They are heated by hot-water pipes, and ventilated by extractors running up the entire length of the building. In addition to these there are large rooms adapted to the accommodation both of senior and junior scholars, as well as apartments for the staff. The half-sunk basement floor contains the music room, laboratories, storerooms, and the usual offices; while the large dining-hall, 40 ft. by 23 ft. and 17 ft. high, offers ample room for upwards of 100 boys. The first and second floors contain the cubicles and dormitories for about forty-five boarders, the sanitary arrangements of which are regarded as most complete, no expense having been spared either in design or construc-tion to carry these out. Bath and lavatory accom-modation is provided, and a system of waste-pipe ventilation. The corridors on these upper floors are heated in the same manner as the studies, and are ventilated. An isolated sick ward, with day-room and lavatories attached, occupies the southern end of the upper floor, and is effectually cut off from the other parts of the building. Each floor is provided with a master's dormitory and sitting-room, and the whole is in direct communication with the principal's house. The style of the buildings has been designed to con-form with the school proper, erected about seven years ago, and is Late Gothic in character, the materials used being brick with stone dressings, and the entire block forms an imposing group. The works have been executed by Mr. W. H. Forde, of Birkenhead, at a cost of about 5,500*l.*; and the architect was Mr. David Walker, of 11, Dale-street, Liverpool.

Metropolitan Fire Brigade.—At the weekly meeting of the Metropolitan Board of Works, on the 27th ult., it was resolved, on the recommen-dation of the Fire Brigade committee, that the Board should purchase of Lieut.-Col. Sterling, for the sum of 2,900*l.*, the lease of a house in Chapel-place, and two stables in Relton-mews, Brompton, at Ground-rents amounting to 16*l.* a year, the lease to be for eighty years from the 29th September next. It is the intention of the Board to erect a new station on the site thus acquired. At the same meeting it was resolved that a bronze medal be instituted, to be given to men of the Metropolitan Fire Brigade, who dis-tinguish themselves by extraordinary bravery at fires, and that the matter be referred back to the committee, with authority to prepare and submit to the Board a design for a medal.

ARCHÆOLOGICAL SOCIETIES.

Northampton and Oakham.—The annual excursion of the Northampton and Oakham Architectural and Archæological Society took place on the 17th and 18th July, when a large number of members visited Oxford. Assembling at the Old Radcliffe Library, they were met by Mr. James Parker, M.A., who kindly accompanied them during the whole of their stay, indicated the various points of interest, and gave a description of the buildings and places visited.

Berkshire.—On the 24th ult. the members of the Berkshire Archæological and Architectural Society, to the number of about eighty, visited Gloucester. They assembled in the cathedral at noon, where they were met by Mr. J. D. T. Niblett and Mr. F. W. Waller, who took them over the building, describing its salient features. The crypt was explained by Mr. Waller to consist of Norman, and not, as had been supposed, of Saxon work, the characteristics of each style being pointed out. Visits were also paid by the party to the deanery, the remains of the domestic offices of the abbey, the dismantled outer cloisters, &c., Bishop Hooper's monument, St. Mary de Lode and St. Nicholas Churches, &c. In the afternoon visits were paid to the Roman wall at Eastgate House and to the museum, where Mr. Bellows explained the collection of Roman remains on view there which were found at Eastgate House, and he afterwards gave a short lecture in the theatre upon them, mentioning the special discoveries he had made, including the remains of two Roman temples. The secretary of the society, Mr. F. W. Albury, recognised one of the pieces of stone, outside the science school, which was found at the base of the Roman wall near the city ditch, as the base of a column from 40 to 50 ft. in height; the temple to which this belonged, and which is supposed to have been to Claudius, must therefore have been of massive proportions.

Birmingham and Midland Institute.—The second half-day's walking excursion of the Archæological section of the Birmingham and Midland Institute took place on the 28th ult. The locality chosen was one necessarily near home, the places to be visited being Baddesley Clinton, Wroxall, and Rowington, all easy of access by the Great Western Railway. After visiting Baddesley Hall and church, the party left for Wroxall. Wroxall Abbey is nearly two miles from Baddesley, but, to avoid the wet grass, the party went round by a farther road. Some of the party, who thought they knew better than others, were for turning up a lane to the left, but on referring to the ordnance map it was found that it was the wrong road, and that it led direct to a place called "Hell,"—in fact, they were only two miles from that region, whatever it might be like. The *Birmingham Gazette* says there are actually two places so called in the locality,—"Hell" and "Little Hell." Avoiding these, the right path was chosen, which brought the party speedily to Wroxall Abbey. The abbey and church by tradition date back to the twelfth century. In 1546, the site of the priory, with the church belfry, churchyard, and all the lands in Wroxall thereto belonging, as also the rectory and the tithes of Wroxall, were granted by Henry VIII. to Robert Bargoyne and John Scudamore, and they continued in the Burgoyne family till 1713, (when Sir Christopher Wren purchased the estate, and for a long period it remained in the possession of his descendants, of whom Mr. Chandos Wren Hoskyns was one who lately occupied it. Some few years ago the old abbey was taken down, and Mr. James Dugdale built a modern mansion, partly on the same site. About midway between Wroxall and Rowington stands the fine half-timbered house known as the Shakspeare house, which most of the party stopped for a few moments to see. It is stated to have been inhabited by an uncle of the poet, and tradition has it that some of his sonnets were written in the little gallery chamber over the porch.

Norfolk and Norwich.—The Norfolk and Norwich Archæological Society has just made an excursion to the neighbourhood of Cromer. After visiting Cromer Church, the party proceeded in carriages to Beeston Regis, where the principal feature of interest is the cluster of hollows upon the hills, which has gained for the locality the name of "Hills and Holes." These hollows are not, however, peculiar to Beeston. There are no traditions, we are told, respecting them. A writer in Vol. III. of the Society's papers states that these hollows are supposed to be the sites of the habitations of the ancient British. The same writer says that in some instances two of the pits were joined together by a narrow trench, which was carefully lined with stones. Mr. Sharon Turner, in his "History of the Anglo-Saxons," mentions that Euphorus, an ancient writer, describes the Kimmerians or Cymri as inhabiting hollows connected with galleries or trenches. Some earthworks on the land side of these hollows is supposed to be a vestige of the Roman occupation. From these prehistoric remains the antiquaries turned to inspect the ruins of the Priory, upon which some farm-buildings abut. This Priory was founded by Lady Isabel de Cressey, in the reign of King John, for canons of the order of St. Augustine. Proceeding on to Sherringham, a fishing village, the visitors inspected the church, and went for a stroll through Sherringham Park. Thence they proceeded to Gresham and Aylmerton, where there are hundreds more of the supposed British hollows. Returning to Felbrigg, the party proceeded through the magnificent wooded park to the church, which contains some fine brasses.

Bristol and Gloucestershire.—The Bristol and Gloucestershire Archæological Society, which now numbers some 500 members, will hold their annual meeting in Cirencester on August 28th, 29th, and 30th, under the presidency for the year of Earl Bathurst. The inspection of the town, its church, and Roman remains, conducted by the Rev. E. A. Fuller, will, with the annual meeting, take place on the first of the days named, on the evening of which a dinner and meeting for papers and discussion will also take place. The following day will be devoted to an excursion to Chedworth Church, and an inspection of the Roman villa on the estate of the Earl of Eldon, who will provide luncheon. A visit to Stowell will follow on the way home. At the evening meeting a paper on recent Roman discoveries will be read by Professor Church. Next morning Fairford will be visited, and an inspection of the painted glass will be made, under the guidance of Mr. Joyce. It is hoped that a good temporary museum of objects of local antiquarian interest will be got together.

Royal Archæological Institute.—The annual Congress of the Royal Archæological Institute of Great Britain and Ireland has been fixed to be held at Hereford, and the arrangements of the proposed excursions have just been made. The Hereford meeting will be held under the presidency of the Lord Bishop of Hereford, and among the local patrons are Lord Bateman, Lord-Lieutenant of the county, and High Sheriff, the Marquis of Hartington, Earl Powis, Earl Beauchamp, Earl of Bradford, Earl Ducie, &c., and all the local M.P.s. Sir W. Guise is the president of the section of Antiquities; Mr. Beresford Hope, M.P., of History; and Mr. Gambier Parry, of Architecture. On the afternoon of the opening-day Sir Gilbert Scott will conduct the visitors round the cathedral, and give a description of the fabric. There will be excursions on every day of the congress, with the exception of the opening day, to objects of archæological and antiquarian interest in the surrounding district. These will include the minster at Leominster, and Ludlow Church, Ludlow Castle, Kilpeck Castle, Ewyas Harold Castle, Goodrich Castle, Kentchester (Magna Castra), with a Roman road crossing Offas Dyke near, and Credenhill Camp will be visited. It is proposed to wind up the meeting by devoting a day to an excursion to Tewkesbury, to examine Tewkesbury Abbey, now in course of restoration.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

The following is a list of officers elected for 1877 8:—

President—Fredk. Ashmead, M. Inst. C.E., Bristol.

Vice-Presidents—F. G. Deacon, M. Inst. C.E., Liverpool; A. W. Morant, Assoc. Inst. C.E., Leeds; E. Pritchard, Assoc. Inst. C.E., Warwick.

Council—Lewis Angell, Past-President, M. Inst. C.E., West Ham; James Lemon, Past-President, M. Inst. C.E., Southampton; J. G. Lynde, Past-President, M. Inst. C.E., Manchester; E. B. Ellice Clark, Assoc. Inst. C.E., Hove; P. B. Coghlan, C.E., Sheffield; C. Dunscombe, M.A., C.E., Derby; A. M. Fowler, M. Inst. C.E., Salford; J. E. Greatorex, C.E., Portsmouth; S. Harpur, Assoc. Inst. C.E., Merthyr Tydvil; P. C. Lockwood, Assoc. Inst. C.E., Brighton; E. J. Purnell, C.E., Coventry; W. S. Till, C.E., Birmingham; E. L. Stephens, C.E., Leicester; J. Fox Sharp, Assoc. Inst. C.E., Hull; T. C. Thorburn, C.E., Birkenhead.

District Secretaries—E. B. Ellice Clark, Hove; E. Pritchard, Warwick; R. Vawser, Warrington; B. C. Cross, Dewsbury.

General Hon. Secretary—Charles Jones, Assoc. Inst. C.E., Ealing.

THE BORINGS FOR THE SEVERN TUNNEL.

At the Bristol meeting of the Institution of Mechanical Engineers, last week, Mr. John Geach read a paper descriptive of the mechanical appliances used in the construction of the heading under the Severn for the Severn Tunnel Railway. The object of the paper was to record the results obtained in everyday work by the machinery used at the tunnel. The subject was arranged under the following heads:—Sounding by machine, sinkings of first shaft, driving the heading by hand, by the McKean machine and by the writer's machine, details of the rock-drilling machine in use, details of rock-drill carriage, details of air-pump and method of cooling, details of pumping machinery. Soundings were taken by the aid of a machine, consisting of a light drum, round which the brass sounding wire was coiled, a worm on the same shaft gearing into a worm-wheel, and an adjustable index hand and plate. The lead used was 12 lb. weight. This machine enabled two soundings per minute to be taken in 60 ft. of water. The plan followed was to sound on parallel lines north and south of the Parliamentary centre lines, at intervals of 30 ft. apart. After about twenty of these lines had been sounded and plotted, a final line was decided on as the central line of the tunnel: and along this soundings were again more numerous than before, and so well did these soundings agree that two would often plot on the same spot, although taken at different times. The machine shown was designed and made for the purpose, and was used in a row-boat 20 ft. long and 6 ft. 6 in. beam. Owing to the current, the soundings were only taken about half an hour before and after high and low water. As soon as the final centre line for the tunnel was fixed, the position of the shaft was marked out, and sinking was commenced by hand through sand, sandstone, and marl, down to 45 ft. deep, at which depth the hand-pump, skips, &c., failed to keep the water under. As a temporary measure, one of Tangye's special pumps was put to work in the shaft, and by its aid the sinking was carried 25 ft. further, when it got overpowered. A bucket-lift on the Cornish plan was then erected, which kept the water under at four strokes per minute. As the shaft went down, a plunger-lift was coupled on the same engine, working in a tank, into which the same bucket-lift raised the water. With the aid of these lifts the shaft was sunk to the required depth of 200 ft., having passed through top soil, sand, sandstone, marl, conglomerate, pennant, clay shales, coal shales, millstone grit, limestone boulders and clay, and into ironstone. When down to the proper depth, another similar plunger-pump was erected at the bottom of the shaft, and the one with which the shaft had been sunk was also fixed at the bottom, so that there were two plunger-lifts fixed for draining the heading. Two suitable cages were now erected in the shaft, with wood guides, and were provided with catching-gear. These cages were suspended with $\frac{5}{8}$-in. round steel-wire ropes, both ropes working on the same drum, but wound on in opposite directions. The drum was 6 ft. diameter, and was geared 1 to 4 to a pair of horizontal engines with 10-in. by 14-in. cylinders, fitted with reversing gear, and with two brakes, one on the drum direct, and the other on the crank-shaft of the engine. As soon as the above work was finished, the driving of the heading was started by hand-labour, and the progress that could be made was not more than 1 ft. per 24 hours. The M'Kean rock-drills were then put at work, and for the next month the progress averaged 2 ft. per 24 hours. These machines worked from January, 1875, until the November following, when they were entirely worn out; the average rate attained was 6 ft. per 24 hours. In November, 1875, the author's improved rock-drilling machines were put at work, and in driving by their aid till the end of January, 1876, the average speed in the same pennant rock had risen to 8 ft. per twenty-four hours. This has since been much exceeded,—20 yards in six days, or at the rate of 10 ft. per day, has been driven in solid rock; and when the ground was more favourable as much as 26 yards in the same time, or at the rate of 13 ft. per day. Not only has this been done, but the average speed in the same rock is now rather more than 9 ft. per fourteen hours. The rock-drilling machine used differs from most rock-drilling machines in being made strong and heavy, and having a very efficient system of rota-

on and method of holding the drill. The latter nature is quite new, so far as the writer is ware; its extreme simplicity, and the entire bsence of any loose parts, must commend it to ractical men, whilst its holding power is ample. is also self-centering, which is very necessary ith such men as work these drills, being merely rdinary labourers. This method of holding the rill has never been found to give any trouble, nd the tool is also easily extracted.

THE ANCIENT WALLS OF FIESOLE.

On examining the Etruscan walls of this ery interesting place, a correspondent (Dr. henè) says,—I found a breach, of about 40 ft., aused by some recent heavy rains. It is sserted here that these walls, which are still 0 ft. high, the whole surface being seen to dvantage since the removal of the earth which oncealed from 12 ft. to 15 ft. of their elevation, re 5,000 years old, though I should think 2,000, r even 1,000, years prior to our era might be a afer conclusion. Still, in that case, they are of rofound antiquity, and of very remarkable conruction. The stones are large: I measured one 7 ft. long; they show no signs of weathering, or, except in the breach referred to, have they eviated from the delicate angle they were laced at. The accumulation of earth which oncealed them no doubt contributed to these esults, as it does not appear to have existed here the wall has fallen. This portion is lso near the old Etruscan aqueduct, leakage rom which may have been the primary cause f the fall. The wall is simply a retaining all to a vast mass of earth behind it, and f much less thickness than might be antiipated from the walls of its class. There re two walls of different construction; the one ear the Roman theatre being that from which he design for the mural masonry of the Pitti 'alace was taken. The wall I refer to is uite smooth. It has many of the features f the ancient cyclopean, although the stones re to a great extent tetragonal murally, and re not nearly so closely fitted in as most of he Etruscan walls. This certainly indicates reat antiquity; and as the breach, if not repaired, will increase, and finally reduce the emainder, a notice in the *Builder* may avert what would be an irreparable loss to the hisorian and the lover of antique art.

Florence.

BUILDING SOCIETIES' PROTECTION ASSOCIATION.

At a meeting of this Association, held at the Guildhall Tavern, Gresham-street, under the presidency of Mr. Stainsby, the following clauses were adopted:—

"1. The committee recognise with satisfaction the partial solution of the difficulty, since the matter was referred to them for consideration, by the final settlement of the question raised in the case of 'Lovejoy *v.* Mulkern,' on appeal to the Lords Justices, on May 16th, 1877, by the application to the rules of a modified interpretation which, while limiting the cumulative principle to the first six months of arrear, has recognised the justice of such a continuous monthly fine as may afford a reasonable protection against loss of interest upon the deferred instalments.

2. They feel that it would not be practicable to recommend all societies to adopt one uniform charge of fines; seeing that regularity in the payment of monthly subscriptions or instalments is of greater importance to terminable than permanent societies, and that the great variety which exists in the modes of working, even among permanent societies, precludes the possibility of anything like uniformity of fines as a safeguard to their varying interests.

3. Notwithstanding this difficulty, the committee feel that an important step may be gained by abandoning the arbitrary principle of basing any system of fines upon a rate of so much per share, and adopting the actual amount overdue as the basis upon which a fine should be charged, thus converting a fine into a percentage upon the actual sum of money of which the society loses the use through want of payment at the proper time.

4. They feel that, excepting in the case of amounts of less than 2½s., it is not advisable in any case to impose a fine exceeding 6d. per month on every pound in arrear.

5. They further submit that, assuming that so high a fine may be deemed necessary to check carelessness as to punctuality of payment, such a rate of charge should in no case be extended beyond a term of six months; and when it may be desirable in the interest of the defaulting member to permit arrears to continue for a period exceeding six months, no fines incurred after that time should be at a higher rate than 3d. in the pound per month."

The Victoria Dock Extension. — In our description of this work a fortnight ago, mention was made of the blue Staffordshire bricks used for facing the wing walls of entrance lock, &c. These bricks are being supplied by Mr. J. Hamblet, of West Bromwich.

CLIMATE AND ART.

Sir,—In your leader of last week you very wisely and courageously ran the editorial pen through the discouraging dictum that climate is the prime element in the development of art. I was very glad to find this so promptly done, as your journal is now to all intents and purposes the weekly journal of the fine-arts.

The elevation of the clerk of the weather, of climatic influences, to be the chief patron of art, is a fatalistic doctrine which would stamp all endeavour to promote art in this country as mere folly, and the vast sums expended upon its encouragement as so much money thrown away.

We may, perhaps, venture to assert thus much, and no more, viz., that the Temperate Zone is more favourable to mental development than the Torrid or the Frigid, and that, all other conditions being equal, the artist working in the fairest climate would have the advantage; but this is all. How small a factor climate is in the development of art may be gathered from the following facts:—

1. That Egypt, with the same climate, has for thousands of years failed to produce any art development.

2. That Greece, with the same climate as of old, has failed to produce a great artist for thousands of years.

3. That ancient Rome, with the same climate as Cinque-cento Italy, produced no great art development.

4. That Italy, with the same climate as Mediæval Italy, and with all the great examples of the past before her, has failed in art-achievement for several hundred years. The same may be said of Spain.

5. That there are many countries in the world possessing beautiful climates which hitherto have never produced any art at all.

All these instances clearly demonstrate that the development of art depends on other than climatic conditions. It should be recollected that the condition of the mental atmosphere has far more to do with the development of the fine arts than the physical atmosphere. Their successful development depends upon the advent of gifted individuals,—upon social and political conditions, and in their highest development on the perception, the culture, and the encouragement of a dominant class to remove and to promote them from the unstable condition of whim, and individual caprice, to broader views and to national purposes. Meter.

LANDLORD AND TENANT.

In re Hastings—Shirreff *v.* Hastings.

A question of considerable importance to landlords arose in this case (tried in the Chancery Division before Vice-Chancellor Sir Richard Malins). In 1872 Miss Shirreff granted a lease of a house in London to the late Admiral Hastings, at a rent of 210*l.* per annum. The lease was in the usual form, and contained a covenant for the payment of the rent. Admiral Hastings died early in 1876. Letters of administration were granted to his widow in September, 1876, and in November of the same year an order was made for the administration of his estate. At the death of Admiral Hastings there was a year's rent due from his estate to Miss Shirreff, and as that estate was insufficient for the payment of all his creditors in full, the question was whether Miss Shirreff, as his lessor, was entitled to be paid the whole of the rent due to her in priority to the other creditors. The question depended mainly on the construction to be placed on Mr. John Hinde Palmer's Act,—viz., the 32 and 33 Vict., c. 46,—which, in 1869, abolished the distinction that till then had existed as to priority of payment between the specialty and simple contract debts of deceased persons.

The Vice-Chancellor said,—On the construction of Mr. Palmer's Act this debt was clearly not entitled to priority. The object of that Act was to sweep away all such priorities, and it must be construed liberally. His lordship then referred to the various cases which were cited in the arguments, and said that the effect of one of them was to meet the arguments based on the Bankruptcy Act of 1869 and the Judicature Act, 1875. He was of opinion, on the whole case, that it was within the enactment of the 32 and 33 Vict., c. 46, Mr. Palmer's Act; but that, if it had not been, it was covered by the provisions of the other statutes. On those grounds, therefore, it must be declared that Miss Shirreff had no such priority as was here relied upon.

MASTERS AND MEN.

London.—On Saturday last, in accordance with notices issued by the stonemasons that they required an advance of 1d. an hour after the 28th of July and a reduction in the hours of labour, the men in many of the large shops in the metropolis went out on strike, notably at the new Law Courts, where nearly 200 masons went out.——On Sunday afternoon a meeting of builders' labourers and others was held in Trafalgar-square, when it was resolved, "That this meeting of builders' labourers declare themselves to be the greatest sufferers by disputes arising between the skilled operatives and the employers, frequently resulting in lock-outs, and we respectfully request the associated master builders to consider the claims submitted to them by their skilled workmen, or submit the case to arbitration, which we believe is the most judicious and rational manner of arriving at honest conclusions." It was further resolved to raise a fund specially to assist labourers thrown out of work by the strike and the impending lock-out.

Kendal.—The strike of joiners at Kendal has terminated, and the men have resumed work, after having been out nine weeks. The demand was for 32s. a week, and the employers recently offered to give that sum for eight months of the year and 30s. for the remaining four. It has been arranged that the men shall receive 31s. per week during the coming winter (from November to February), and afterwards 32s. week.

Manchester.—As to the joiners' strike, the *Manchester Examiner*, July 25, says,—"We are informed that the weekly meeting of the employers was held last night at the Palatine Hotel. It was stated that not a single member of the Association of Masters has given the advance demanded; that all are working unanimously and cordially together; and that they are determined to stand by one another. It was also said that more men are now receiving strike pay than at any time since the commencement of the strike; that the masters are getting fresh joiners into the town every day; and that by the end of the week almost every employer will be supplied with non-society foremen of a superior class." It is stated that there are 850 men still out on strike in Manchester and district, and they are receiving a guinea a week as strike pay.

Wolverhampton.—We learn from the *Wolverhampton Chronicle* that the master-builders of this town have almost recovered from the inconvenience occasioned them some weeks ago by the strike of their carpenters and joiners for an advance of ½d. per hour. All the shops are well supplied with first-class workmen, obtained for the most part from distant towns, who have accepted engagements at the old rate of wages. Although the full complement of men required in all the cases has not yet been obtained, applications are being received almost daily from men applying for engagements. At a meeting of the carpenters and joiners on strike, resolutions were passed "condemning the underhand way in which the employers are bringing men into the town, and also the manner in which they are paying the advance." The men state that several of the employers belonging to the association have acceded to the men's demands. The men were unanimous in strictly adhering to the former resolutions "they have passed demanding the ½d. per hour advance and no surrender."

Aberdeen. — The union masons at Messrs. Legge's have been out on strike for about eight weeks. They want an advance of ½d. per hour,—from 7½d. to 8d. There is no sign of a settlement, though some of the union workmen have broken with the union and resumed work on the old terms.

The Strike of Railway Men in America.—The strike of railway workmen in America, against a proposed reduction of their wages assumed the character and more than the proportions of an organised insurrection. The railway workmen were joined by great numbers of other operatives out of employ, and of idle and discontented persons generally. They intercepted at several points the communication along all the chief lines of through traffic, and have taken absolute possession of more than one important town, and of several principal stations. They have encountered and defeated both State and Federal troops, denying to the flag of the Union that respect which, since the civil war, it has hitherto invariably received. Traffic has been suspended, and business seriously inter-

fered with. Miles of permanent way have been torn up, and much valuable rolling stock destroyed. We hope that such anarchy will never arise in this country. The loss has been very great, but the difficulties are now being overcome.

COMPETITIONS.

Scarborough Spa Buildings.—The *York Herald* understands that the directors of the Cliff Bridge and Spa Company have at length decided upon the plan to be adopted for the renovation of the Spa. As stated some weeks ago, four designs had been selected, from a number sent in, by Mr. Cockerell, who was appointed assessor for that purpose, and of these four the directors have selected the design furnished by Mr. T. Verity, of London, and that gentleman will be appointed architect to carry out the plans, supposing the shareholders approve the carrying out of the scheme. The other three architects whose designs were selected by Mr. Cockerell are awarded 60*l.* each.

Nottingham Church Cemetery.—The *Nottinghamshire Guardian* states that thirty-nine sets of designs for the erection of the proposed mortuary chapel have been sent in for competition in answer to the company's advertisements.

West Combe Park Estate, Blackheath.—Some time since the Midland Land Corporation offered three premiums of 150 guineas, 100 guineas, and 50 guineas for the three best designs for laying out for building purposes the West Combe Park Estate, Blackheath, Kent. The drawings, seventy-two in number, have been on exhibition this week at the Masonic Hall, New-street, Birmingham.

SALE OF THE SURREY MASONIC HALL.

On Tuesday last the recently-erected Masonic Hall in Camberwell New-road was sold by auction at the Mart, Tokenhouse-yard, by order of the mortgagees. There was a numerous attendance of Freemasons amongst others, and the proceedings appeared to excite considerable interest amongst the craft.

The interior of the structure was described as containing an elegant lodge-room, or temple, 31 ft. long and 22 ft. wide, fitted specially for Masonic purposes, and decorated with enriched pilasters and capitals, and pillared canopy recess for the Master's chair. Adjoining is a handsome banqueting-room, 31 ft. by 26 ft. The building also contains a public hall, 95 ft. long, 39 ft. wide, and 25 ft. high, with coved ceiling, decorated with pilasters, having capitals enriched with Masonic symbols. It was stated that at the present time fourteen lodges, two chapters, and two lodges of instruction, as well as the Surrey Society of Arts and several other bodies, hold their meetings there, and the property was announced to be sold subject to the right of these several Masonic lodges, societies, and other tenants who now use the hall, to continue such meetings. It was added that it was likewise used for public balls, concerts, and large meetings, and in the hands of an enterprising tenant might be rendered a very profitable undertaking.

The first offer made for the building was 3,000*l.*, and by advances of 100*l.* and 50*l.* at each bid the property was brought up to 3,650*l.*, at which it stood for some time, when the auctioneer remarked that it was not one-third of what the building cost only a year or two ago. He added that the vendors, of course, had placed a certain reserve upon it, which, however, was a very moderate one. A further offer of 50*l.* was then made, when the auctioneer stated that the property would not be sold, or rather "given away," if no further advances were made. The bidding then became more active, the property being run up to 4,600*l.*, at which sum it was knocked down to Mr. Sanson, surveyor and builder, of Kennington-road. It was, however, fully understood in the room that the building was bought for Mr. Oliver, of Camberwell, who was the contractor for the structure, and who has not yet obtained a settlement with the "Surrey Masonic Hall Company." The cost of the building was nearly 12,000*l.*

The Colorado Potato-Beetle. — Messrs. Hardwicke & Bogue have published a greatly enlarged view, coloured after nature, of this much-dreaded pest. It is of the utmost importance that its form should be known so that the insect may be detected on its first appearance.

THE CITY CHURCHES.

Sir,—Allow me most earnestly, as a Churchman and architect, to suggest, before the materials of the church of Allhallows, Bread-street, are carted off and sold as "old materials," that the above church (built of Portland stone and in sound condition) be carefully taken down and rebuilt with new internal fittings in some such populous district as named, viz., Shepherdess-row, St. Luke's, City-road, or Battersea Park-road, close to the new Model Buildings (just opened). In either of these districts thousands of people are without a church or clergy, like the heathen in foreign lands. This chaste design of Sir C. Wren would come out well, and be a great ornament to the neighbourhood, especially in the Battersea Park-road; there is a good skyline to bring the tower out.

It is bad enough that the necessity exists to take them down, but there is no earthly reason why, in case of their being built of good Portland stone, in good preservation, they should not be rebuilt in some populous parish. In case of brick erection it cannot be done.

If the materials of this church of Allhallows, Bread-street, be sold as "old materials" and not re-used, it will be a lasting disgrace to the City of London. Surely the way in which the church of St. Antholin, tower and spire (Budge-row, Queen Victoria-street), was treated,—a work not to be outdone by any work of modern skill,—ought not to be repeated. It was said as old materials enough at least the tower might, if it had been but standing, have been an ornament to Queen Victoria-street for all future time. They may adorn with the most costly work the interior of St. Mary Aldermary (just opened), but it will never, in the sight of God and all true architects and lovers of the beautiful, atone for the evil work and destruction of the beautiful tower and spire of St. Antholin, Queen Victoria-street, taken down and destroyed for ever.

R. Fayne.

THE WATER SUPPLY OF LONDON.

Sir,—I observe in your last number a quotation from the *Sanitary Record* which supplies a valuable and substantial confirmation to my letter, as I have since been often attacked as to the veracity of my statement about the rate being in advance. Whenever the truth of a matter comes out straight there are always a lot of people to be found who will not believe it. For instance, I have stated, over and over again, that farm labourers in the West of England often work for 6*s.* a week and a little sour cyder, and that their average is not less. Well, the majority of persons will not believe it; yet I saw the men at work last week, and they told me they only had for working six days and a half! Well, this may be a digression; but I want to show that the public are so fond of taking a rose-coloured view of things, that they will not have the truth if they can help it.

Now, respecting the Chelsea water case, or rather the case of absence of water. I received a letter from Mr. Albert Gill, secretary to the Waterworks of that district, in which he says,—"The company never cut off water for rates due in advance;" and then he appeals to my "sense of justice to let it be known that the company do not act so inconsiderately as has been represented." But I have by me the last receipt of the water-rate in question, and I beg to hand you a copy of the same. It reads thus:—

"Walton-street.—Four Quarters.

24th April, 1876.

Received of Mr.——

Two pounds four shillings for 4 quarters' water-rate to *Midsummer*, 1876, for the Governor and Company of Chelsea Waterworks. 2*l.* 4*s.*

W. C. Briscoe, { Collector. Office, 8, Sloane-st. Chelsea, S.W."

Well, Sir, as a man of business, I am bound to say that this looks very much as though they do cut off water for rates in advance. In the late case the water was cut off on the 9th of May for rates not due till the 24th of June. But not to make any mystery of the matter, permit me to point out what is the exact mode of operation on the part of water companies. First, they make a rate in advance. Then they worry people until they have paid it, and the result is that three parts of the water in London are paid for before being used. I, however, have a great objection to payment in advance. I never pay in advance if I can help it. I therefore wait until the end of the period before they get my cheque. Of course I get very much bothered, and at last I get insulted. I get threatened that if I do not pay I shall have a man sent into my house to commit an act of violence and destruction. Then I pay. But if I did not, or could not do so, what would be the consequence? Why, they would enforce me with the upholsterer's more rapid punishment for not having paid in time. So that a poor man who has to allow the water to be cut off is compelled to pay so much in advance on account of his deficiencies. This was precisely what happened in Walton-street, and I repeat that it ought not to happen in any crowded neighbourhood, for the sake of the health of a whole district,—and I further say it ought not to happen at all, for the sake of the liberty of the citizen. I say that water companies and gas companies ought to take out county-court summonses like other tradespeople, and that the bailiffs can get hold of the defaulters' property let them do their dirty work for the company under the law into their own hands by throwing large households in darkness and decimating the population by disease.

I want to know why it is that these companies are so much taken care of by all our public bodies. Who are their guardians in the Metropolitan Board of Works, for instance?—the wonderful Board of Works with all its paperbarnalia and frightful expense. How is it that we have never had so much as the shadow of a shade of proposal from the Metropolitan Board of Works for amending the gas and water supply of London? Who are the wire-pullers of our vestries and municipal boards, but the shareholders of these companies and their satellites?

Sir, in conclusion, I desire to compliment your valuable organ on the great power it possesses. Why, my letter had not appeared in your columns six hours before the Chelsea Water Company re-stored the water supply to the house I complained of, without asking for one penny. If the water was a gratuitous evil, why was it put on the very day my letter appeared? But, I regret that neither you nor I can do good without doing some amount of harm. The particular whose case became public through your columns were almost immediately afterwards turned out of house and home, and thus the vengeance of the water company, the landlord, and the authorities was wreaked on the unfortunate family, simply because I exposed their shortcomings.

G. Mitchell.

WIRE DOORS.

Sir,—It is intended to place a wire door in our church as a means of constant ventilation, but before one is ordered, will you kindly allow me, through the *Builder*, to ask what kind of door is found to answer best?

The required door is to be an inner one, so that on opening the large outside doors, the church will be secured against intrusion, and at the same time air will be freely admitted.

Both a wire door and an open-work wooden one have been suggested, and any experience of both will be valuable.

The situation of the church is especially exposed, and it will be important in stormy weather to guard against draughts during service.

In order to this, a heavy curtain has been suggested, but should there be any simple inexpensive contrivance as part of the door, of the nature of a shutter which could during service, close the open wire or wood work, it might be preferable to a curtain, from the latter being liable to be blown about.

Q. Q.

CHURCH-BUILDING NEWS.

Milton.—After considerable alteration, Milton parish church, Northants, which is dedicated to the Holy Cross, was re-opened on the 12th ult. The old roofs of the nave and both aisles have been renewed in pitch pine, with spandrel pieces and wall-posts resting on stone corbels, those in the nave being carved on the face. The whole church has been re-seated in pitch pine. Two of Porritt's stoves have been adopted for heating purposes. The whole of the works, including the chancel, have been carried out according to drawings prepared by Messrs. E. F. Law & Sons, of Northampton, and under their superintendence. The works of the chancel have been executed by Mr. Asplin, of the village of Milton, and those of the church by Mr. Gee, of Daventry. The carving was executed by Mr. Phillips, of Northampton. The cost of the entire restoration, including the chancel, &c., will be about 2,800*l.*

Pevensey.—At a meeting of the Pevensey Church Restoration Committee on the 19th ult. it was decided to carry out the restoration of the nave, and the tender of Messrs. Franklin of Deddington, near Oxford, for 2,802*l.* was accepted. Mr. Gilbert Scott, jun., is the architect.

Coventry.—St. John's Church, Coventry, was re-opened on the 17th ult. by the Bishop of Worcester. The church was closed in September 1875, and since that time workmen have been engaged in carrying out the works, from the designs of Sir Gilbert Scott. The work now completed embraces the external renovation of the nave and its aisles; the internal repair of the whole structure; lowering of the floors to their ancient level, 4 ft. 6 in. below their recent position; the opening of the lantern tower, and the erection of a new vestry. The flooring is of English oak, and the passages have been tiled by Godwin, of Hereford. The amount of the present contract is 5,400*l.*

Northleach.—The ancient church of Northleach, Gloucestershire, is to be restored. It is a Perpendicular structure, and consists of a chancel, nave, and north and south aisles, with a well-built, lofty, embattled tower, containing a peal of six bells. According to Rudder, the south chapel was built in 1489 by William Bicknell. The state of the building has for some time been regarded by the inhabitants as anything but satisfactory. The seats are old, high, comfortless boxes, and the roofs are in bad order especially those of the nave and the north aisle. Mr. Brooks, architect, of London, has been consulted, and will report on the works required to be done.

New Malden.—On the 3rd ult. was laid the memorial-stone of a new chancel to the parish church, to be erected by and at the sole expense of the family of the late Mr. John Coysgarne Sim of Coombe Wood. Under the direction of Mr. Edward Christian, architect, a contract has been entered into with Messrs. Goddard & Son, builders, of Farnham and Dorking, for the lengthening of the nave towards the east by one arch, whereby seventy-five additional sittings will be secured at a cost of about 689*l.* The building of a commodious organ-chamber, and the enlargement of the present small and inconvenient vestry, also form part of the committee's programme.

Chelmsford. — The work of restoring the chancel of St. Mary's Church, Chelmsford, has been commenced. The restoration is being carried out by the Archdeacon and his family, who have entrusted the superintendence of the work to Mr. A. W. Blomfield, architect. It is proposed to take down portions of the existing chancel and restore it thoroughly, raising it to the height of the new north transept, and lighting it from above with clearstory windows at an elevation nearly equal to that of the clearstory

of the nave. The existing three-light eastern window, which was erected in memory of the late Lady Mildmay, will be respected so far that it will be used as the nucleus of a fine five-light window, which will be more in proportion with the dimensions of the chancel when it leaves the builder's hands.

Haileybury.—A new chapel has recently been consecrated at Haileybury College. We learn from the *Herts Mercury* that the chapel has been built in accordance with the plans proposed by Mr. Blomfield, the architect, some years ago. Mr. Blomfield felt that the chapel should be made the great central feature of the college buildings on almost every ground, the only reason which the opponents of his plan could urge against it being that no chapel could be satisfactory unless Gothic, which a building incorporated with Wilkins's Classic façade could not possibly be. The chapel, as constructed according to Mr. Blomsfield's plan, now forms the centre of the buildings, with a dome 120 ft. high and 40 ft. in diameter, rising over the principal portico of the southern façade. Considerations of economy, and the use of brick instead of stone, prevented the employment of a pure Classical style, which might have accorded in a more complete manner with the details of the façade, but seeing that the main portion of the new building stands within the quadrangle, which is of plain brickwork, and entirely without architectural character, considerable freedom of treatment seemed admissible. In plan the chapel is cruciform, the longer and southern arm of the cross occupying the position of the former library; the altar stands in an octagonal apse, which forms the northern arm. The total length internally is 104 ft., and the width across the transepts is 64 ft. The building is seated for 500 boys and 100 adults, including masters' seats; the whole of the fittings are of oak. The contractors were Messrs. Dove, Brothers.

Banbury.—Banbury parish church has been undergoing alterations and improvements for a considerable time past, and upwards of 5,000*l.* has been expended upon it. A new chancel was built by Messrs. Davis Brothers, at a cost of nearly 2,000*l.*, and it was decorated by Messrs. Heaton, Butler, & Bayne, the expense of which was 1,000*l.* A new organ has also been erected at a cost of 1,000*l.*; and Miss Back presented a font at a cost of 200*l.* 1,500*l.* have been expended in putting stained-glass windows into the church. Mr. Arthur W. Blomfield was the architect.

Alderley.—Although about 800*l.* were expended two years ago in repairing the dilapidations which time had wrought in its fabric and furniture, Alderley Church is again in the hands of the masons and the carpenters. The old, uncomfortable pews, with their narrow seats and high backs, have been removed at the initiation of the rector. On removing the old pews, it was discovered that the foundation-stones of the piers supporting the church had given way, and the superincumbent weight forming an uneven pressure had crushed the bases of the columns into fragments, and had also broken and displaced the foundation-stones. The church was imminently dangerous, and might have fallen at any moment. The walls are found to be greatly shattered by the sinking of the pillars. They have, however, been successfully removed and replaced, under the care of Messrs. Paley & Austin, architects, Lancaster. The lowering of the floor to its old level will add much to the apparent height of the building.

Ashton Keynes.—The church of the Holy Cross, Ashton Keynes, Gloucestershire, has just been re-opened, after restoration under the direction of Mr. W. Butterfield, architect, the work being carried out by Mr. William Restall, of Bisley. The Norman chancel-arch has been raised from each spring and widened. In taking down the arch, six old stone coffin-lids were found embedded in the walls, with the evident design of binding the arch, so that they must have been, at some distant period, removed from their first position and economically applied to strengthening the arch. Choir-stalls of oak and walnut have been placed in the chancel, and the latter has been paved with encaustic tiles. The chancel ceiling has been decorated, the roof being set off with carved and gilded oak bosses. The decorations were executed under Mr. Butterfield's instructions, by the same artist who was entrusted with the decoration of Keble College, Oxford. The whole of the windows have been restored and re-glazed. At the east end of the north aisle a new oak screen has been erected, dividing the (at present vacant) organ-chamber from the vestry, and a new doorway has been opened from the north wall into the vestry. A similar doorway on the opposite side of the chancel has been built up. In the process of cleaning the walls the remains of an old fresco-painting were found over the vestry door on the north wall. The painting was supposed to be a representation of the Trinity, but it was so imperfect that it had to be destroyed. The roof has been cleaned and restored throughout, the old timbers, which were in good order, and which contain some fine specimens of carving, being retained. The total cost is estimated at 2,050*l.*

DISSENTING CHURCH BUILDING NEWS.

Cotham.—The memorial stones of a new Wesleyan chapel at Cotham, Bristol, have been laid. The building, which is being erected from the designs of Mr. R. Curwen, jun., Liverpool, is Early Gothic in style, and will be constructed of Pennant stone from the Stapleton and Hanham quarries, with freestone and Westwood stone dressings. The interior dimensions will be,—length, 66 ft. 3 in.; width, 45 ft. 3 in.; and height from the floor to the pitch of the roof, which will be boarded and panelled, 48 ft. Inside the building a gallery will run round three of the sides; and at the north end will be an organ-chamber. The whole of the fittings in the interior will be of pitch pine. The building will accommodate 800 worshippers. Attached to the south end of the structure, and connected with it by a corridor, will be a building intended for Sunday-school purposes, and accommodating 450 children. The contractors are Messrs. Stephens & Bastow, and the clerk of works is Mr. George Dalton.

Canterbury.—A new Congregational church has lately been opened at Canterbury. The building has been erected from the designs of Mr. J. G. Hall, the city surveyor, and is in the Early Decorated style. The front, which abuts on Guildhall-street, is of Kentish rag facing, with Bath stone dressings, and consists of a gable, pierced with a five-light window, flanked by two slender spires, one on each side, rising to a height of about 80 ft., and acting as buttresses to the main gable. Under the window is the entrance,—a three-arched doorway, divided into compartments by polished granite columns with carved stone caps. The main body of the building is of brick, and will accommodate 750 worshippers, inclusive of 290 in the galleries. It is rectangular in shape, 64 ft. 6 in. by 47 ft., with a school-room at the north-east, and vestries for the minister and deacons on the opposite side. The work has been carried out by Mr. J. G. Naylar, of Rochester, whose contract was 4,122*l.*, exclusive of heating and lighting, for which separate contracts have been made with Messrs. Drury & Co. and Mr. Tice. These, with other expenses incurred, bring the probable total outlay up to 5,500*l.*

Liverpool.—The Presbyterian church in Prince's-road, Liverpool, has been re-opened, after enlargement and almost entire rebuilding. The building is in the Gothic style, of dark red bricks, with Stourton-hill stone dressings. Sitting accommodation is provided for 700 persons. The ceiling is of pitch pine. There are two large stained glass windows, executed by Messrs. Shrigley & Hunt, of Lancaster. The church was originally designed by the late Mr. H. H. Vale, whose death occurred at the commencement of the work, when Mr. G. E. Carroll was selected as his successor, to superintend the erection of, and prepare designs for, large additions and alterations to the church.

Newport (I.W.).—The Congregational chapel in St. James's-street, Newport, has been re-opened, after internal decoration and the addition of an apsidal recess for the organ. The floor of the chapel generally has been repewed, the old square pew-doors having given way to modern bench ends of Gothic character. The gallery, too, has undergone considerable alterations. The roof of the chapel inside has been coloured a light blue tint, and the timbers a marone colour, with black and gold relief. Most of the structural work has been carried out by members of the church and congregation. Mr. J. E. Snellgrove, of Newport, was entrusted with the painting and decoration. The work is estimated to have cost about 1,100*l.*, and it has been done under the supervision of Messrs. Searle, Son, & Hayes, architects, of London.

Spondon.—A new Wesleyan Chapel is about to be built at Spondon, Lincolnshire. The architect is Mr. E. Fryer, of Derby. The contracts have been let to Mr. J. Maddocks for the building, and to Messrs. Kirklands for interior fittings. The schoolroom will accommodate 250 children, and the chapel 220 worshippers. The total outlay is to be 800*l.* The schoolroom is being built upon a piece of ground behind the present chapel.

Manchester.—The corner-stones of the new Primitive Methodist Church, Higher Ardwick, have been laid. The foundation-stones of the church were laid in January last, and the building is expected to be completed in January next. It is to be built of brick, with stone facings. The cost is estimated at over 6,000*l.*, making, with the cost of the school and the minister's house, over 10,000*l.* Accommodation is to be provided for 1,000 persons.

Alderbury.—A new Wesleyan Chapel, which has been erected on the site of an old one at Alderbury, Wilts, has been completed and opened. The building has been erected by Mr. Charles Bryant, of Pitton, at a cost of 270*l.*

Tewkesbury.—On the 4th ult. the four memorial stones of a new Wesleyan chapel at Tewkesbury were laid with the usual ceremonies, in the presence of the Mayor (Capt. Price, M.P.) and Corporation of Tewkesbury. The site is one of the best in the town for a public building, and was formerly occupied by the old Market-house. The chapel will be about 60 ft. long by 32 ft. wide; the roof is of open timber, the western end being occupied by a gallery, and the east end terminating in an apse. The front elevation, the only part of the exterior visible from the street, will be of Stanway-hill stone walling, with Bath stone dressings. The design is effectively treated in the style of the fourteenth century. The old chapel in the town was opened by the Rev. John Wesley just a century previously to the date of the stone-laying of the new chapel. The architect is Mr. Charles Bell, of London. The contract has been undertaken by Mr. Thomas Collins, of Tewkesbury (the builder engaged on the restoration of Tewkesbury Abbey Church), and the quantities were prepared by Mr. H. Lovegrove, of London.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Wigan.—The foundation-stone of St. Joseph's new Roman Catholic Church, Caroline-street, Wigan, was laid on the 8th ult. In October, 1870, Father Lamon was appointed to the mission, and in the following January service was held in a small chapel formerly belonging to the Primitive Methodist body, and capable of holding about 150 persons. In April, 1872, the Church of St. Joseph, which occupied the same site as the small chapel, was opened. This was erected at a cost of over 2,000*l.*, and accommodation was provided for between 500 and 600 worshippers. In 1874 new schools were built, at a cost of 5,000*l.*, and these have now an average attendance of 800 scholars. The church not being large enough for the increasing number of attendants, it was determined that a new building should be erected, and this will stand on the same site as the present building, which will be entirely removed. Additional land has been purchased, and the contract has been let to Mr. Joseph Wilson, builder, Wigan, the estimated cost being 6,000*l.*

St. Helens.—The Roman Catholic Bishop of Liverpool (Dr. O'Reilly) has laid the foundation-stone of a new church at Peasley Cross, near St. Helens. There is a large Catholic population in the neighbourhood, and the temporary chapel which was built in 1862 has been found inadequate for the wants of the present day. The new church will cost about 6,000*l.* It will be a large modern Gothic brick building, 100 ft. by 56 ft., and will afford sitting accommodation for about 700 persons. The architect is Mr. James O'Byrne, of Liverpool.

The New Class of Honorary Associates at the Institute of Architects.—We desire to remind our readers that the new class of Honorary Associates has been established for the purpose of admitting to the ranks of the Institute gentlemen who, without following architecture as a profession, desire to enjoy the privileges of membership. The class will consist of amateurs, men of science, archæologists, and artists, who are not engaged in the prosecution of any branch of building as a trade or business. We recognise the advantage of recruiting the ranks of the Institute by the admission of non-professional members, and trust that the arrangement will be taken advantage of by many qualified persons.

SCHOOL BUILDING NEWS.

Seacombe.—On the 9th ult. the memorial stone of new schools connected with St. Thomas's parish church, Seacombe, was laid by Mr. T. Cookson. The site of the schools (which are the gift of Mr. Ed. Hatton, a Liverpool merchant) is in Bedford-place. The building will consist of three separate schools, — boys', girls', and infants',—and will cover an area of about 4,000 yards. It is estimated that the cost, exclusive of the site, will be over 4,000*l.* The building will be entirely of brick, specially moulded, the style of architecture being Gothic. The builders are Messrs. W. & G. Johnson, of Seaforth, and the architect is Mr. Henry Hartley, of Liverpool.

Halsted.—The new schools in connexion with St. Andrew's Church, Halsted, intended to supplant the old national schools in Head-street, have been formally opened. The new schools are situate in Colchester-road, and have cost about 2,800*l.*, the entire expense being defrayed by the family of the late Rev. Dr. Adams, vicar of the parish. The work was executed by Mr. Harcourt Runnacles, builder, of Chelmsford.

Owlerton.—On the 16th ult. two memorial-stones for a Wesleyan school-room at Owlerton were laid. The site is immediately adjoining the new chapel, and the building will consist of two rooms, which will together accommodate about 400 children.

Lochee.—The congregation of St. Mary's Roman Catholic Church, Lochee, have just erected a girls' school. It adjoins the old schools, and has a frontage to Burnside-street and St. Mary's-lane. It is two stories in height. The following were the contractors for the work: Mason work, Croll & Pirie; joiner, Willison & Laing; plasterer, Mr. M'Ritchie; slater, Mr. Buttars (all of Dundee); plumber, Mr. Masterton; painter, Mr. James Stewart (Lochee). Mr. Blackadder, Dundee, was the architect.

THE MASONS' STRIKE IN LONDON.

In the case of this strike, already mentioned, the operative masons have struck work generally for two distinct objects. First, the shortening of the hours of labour from fifty-two hours and a half per week in summer-time, as now worked, to fifty hours per week. As to this the master-builders object that the hours of labour having been already reduced within the last few years from sixty hours per week to fifty-two hours and a half, the reduction has gone far enough. Secondly, the operative masons require a general rise of 1d. per hour for all—viz., from 9d. to 10d. per hour, without regard to the skill and ability of the operative. This, also, the master-builders have declined.

It has been reported to the masters that the operative masons, by means of levies, &c., among their society, have a large fund in hand for the present strike. Moreover, that if the rise of 10d. per hour had been granted, very early notice of a further rise to 11d. and then to 1s. per hour would have been given. There seems, therefore, very little hope of masons' work being actively resumed in London till a great deal of money has been wasted. A correspondent suggests that it now becomes the duty of architects, and of those engaged in building operations, to strive in every way to reduce the amount of masons' work, as far as possible, by the substitution of other material.

ART UNION OF LONDON.

REMAINDER OF THE PRINCIPAL WORKS SELECTED BY THE PRIZEHOLDERS.

From the Royal Academy.—The Way through the Wood, G. Wells, 200*l.*; Tempting Waters, E. H. Fahey, 200*l.*; Music hath Charms, R. J. Gordon, 100*l.*; Uneasy lies the Head that wears a Crown, J. C. Dollman, 80*l.*; On the Lake of Orta, Harry Johnson, 75*l.*; A Stitch in Time, H. King, 70*l.*; What will He do with It, J. L. Pickering, 63*l.*; Flowers, W. J. Muckley, 60*l.*; Breton Peasant Girl feeding Ducks, W. L. Picknell, 50*l.*; A Hundred Years ago, Tom Lloyd, 45*l.*; May Queen (marble), George Halse, 42*l.*; Daybreak on the Atlantic, Robt. Leslie, 42*l.*; Quiet Quarters, F. E. Bodkin, 40*l.*; The Black Pool, Odiham, Hants, A. C. Sealy, 40*l.*; By the Brook-side, N. O. Lupton, 40*l.*; L'Immortelle, W. H. Weatherhead, 35*l.*; Glenfalloch, G. V. Sheriff, 25*l.*; From Holmbury Hill, Surrey, Arthur Clay, 21*l.*; After Rain, C. Collins, 20*l.*; Sunday Morning, H. Hume, 20*l.*; He's not coming, F. S. Walker, 20*l.*

From the Society of British Artists.—Lovers Beware, A. F. Patten, 65*l.*; Disarmed, C. Cattermole, 50*l.*; The Image of his Father, T. Roberts, 50*l.*; A Rustic Scene—Evening, E. J. Cobbett, 50*l.*; The Shrimper, E. Hume, 45*l.*; Autumn, W. J. Muckley, 45*l.*; Near Richmond, F. W. Cartwright, 45*l.*; A young Gleaner, E. J. Cobbett, 45*l.*; Bridge over the Stour, Iford, J. W. B. Knight, 35*l.*; Teaching Brother, Walter Bromley, 30*l.*; Heavy Laden, J. T. Peele, 25*l.*; Bordeaux from La Bastide, J. L. Vychen, 25*l.*; The Midday Drink, J. C. Waite, 25*l.*; At Burnham Beeches, F. Muschamp, 25*l.*; Colours of the Buffs at Albuera, F. S. Secombe, 25*l.*; Oh! dear, what can the matter be, &c., W. H. Weatherhead, 20*l.*; A Busy Hour, West of Ireland, F. G. Kinnard, 20*l.*; Snowdon, from Capel Curig, D. Law, 20*l.*

From the Crystal Palace Picture Gallery.—A Mother's Sacrifice, A. Ludwig, 100*l.*; Forest in Spring, J. Wenglein, 50*l.*; The Bend of the River, G. Wells, 45*l.*; On the Borders of the Stornbergers, Bavaria, J. E. Steffan, 40*l.*; Italian Landscape, H. Lewis, 35*l.*; Spring Morning, H. Baisch, 34*l.*; On the Coast, Moonlight, T. S. Croxford, 25*l.*; The Farmer's Pets, A. Corbould, 20*l.*; Country Vanity, J. M. Bowkett, 20*l.*; Near Pembridge, Isle of Wight, W. J. Roffe, 20*l.*; Work and Play, C. J. Grippa, 20*l.*; Happy Hours, A. Stevens, 20*l.*

From the Institute of Painters in Water Colours.—Volendam under a Cloud, T. W. Wilson, 31*l.* 10*s.*; Laid up in Ordinary, W. W. May, 25*l.*

From the General Exhibition of Water Colours.—Corry-na-Creagh, Skye, D. Law, 40*l.*

STAINED GLASS.

Calverley.—A stained-glass window to the memory of the late Rev. Alfred Brown, vicar of Calverley, is about to be placed in the parish church. Messrs. Clayton & Bell have been commissioned to execute the work.

East Bergholt.—We learn from the *East Anglian Daily Times* that a stained-glass window has just been placed in the parish church of East Bergholt, to the memory of John Constable, R.A., who was born there. The window is the result of a subscription among admirers of the great painter, and is a production of his namesake, Constable, of Cambridge. The memorial is the middle one of the large windows on the south side of the church, between the porch and the south chapel. The subject of the lower central division of the window is founded on the story told by ancient writers, that St. Luke had painted portraits of Christ and His Mother. St. Luke is represented in a sitting posture, and engaged in the act of taking the likeness of the Virgin, with the infant Saviour on her knee. The other two lower compartments are filled with scenes connected with John the Baptist and John the Apostle. In the lower western, is the beloved Apostle, after our Lord's crucifixion, taking the Virgin away to reside in his house. The upper part of the window is filled with a representation of the Ascension, extending over the three large compartments.

Fulham (London).—The central apse window of the Church of the Servite Fathers, Fulham-road, Brompton, has recently been filled with stained glass, designed and drawn by Mr. W. Tipping, of West Brompton, and executed by Messrs. Clayton & Bell. It consists of three lights and tracery. The centre light is canopied, and represents the Crucifixion, with "pieta" in base. The side lights are also canopied, and contain "Presentation," "Flight into Egypt," "Finding in the Temple," and "Death of St. Joseph."

Salisbury.—A small window has recently been placed in the tower of St. Edmund's Church, representing the St. Edmund, Archbishop of Canterbury, and once Canon and Treasurer of Salisbury Cathedral, to whom the church is dedicated. The glass is by Messrs. Clayton & Bell.

Oswestry.—Two memorial windows, by Messrs. Clayton & Bell, of London, have been placed in the parish church of Oswestry. One, in the south aisle of the chancel, has been given to the church by the sons of Mr. Salwey, in memory of their father's long connexion with the parish as vicar. The subject is Christ feeding the multitude. The other, the west window, has been placed in the church by the Misses Croxon, to the memory of the late Richard Croxon, and Frances, his wife, and the subject of it is our Lord's appearance to His disciples after the Resurrection.

Miscellanea.

The Working Men's Club and Institute Union.—The annual conference of friends and representatives of working men's clubs and institutes took place, on the 21st ult., in the theatre of the Society of Arts. The chair was occupied by Mr. Stansfeld, M.P. A paper by Mr. Graveson, Bowness, was read, suggesting that banking might be undertaken by the Union, greatly to the advantage of the working men. Another paper suggested that intemperance amongst working men might be greatly checked by greater vigilance in preventing the adulteration of food and drink. Mr. Allerson suggested the organisation of an excursion to the Paris Exhibition next year. About 3,000 working men had visited the Paris Exhibition of 1867, under the direction of Mr. Pratt. Mr. Lowe had one objection to urge against a workmen's bank, and that was that the working men had no money to put into it. This was the worst year the working men had seen for a long time; so bad that he saw no hope of saving money for an excursion to the Paris Exhibition. As to the cultivation of literature in the clubs, his opinion was that, in this pushing, driving, steam-engine age, working men were too much exhausted by their day's work to take to intellectual studies in the evening. Mr. Symons, on the contrary, thought that working men were at the present moment more anxious for mental culture than ever. It was the present teaching-machinery which was in fault.

Typhoid Fever in the Prince of Wales's Household.—Prince Albert Victor of Wales, the heir presumptive, is now, as our readers are aware, suffering from typhoid fever,—the third of his line who has been thus afflicted within a period of sixteen years. The fever was, it is believed, contracted at Sandringham; and this is a circumstance which will, of course, require careful local sanitary investigation. Typhoid fever being essentially a preventable fever, due to causes which, by perfect sanitary arrangements, may be held at bay, it is, we believe (says the *British Medical Journal*), proposed that Dr. Seaton, the head of the medical department of the Local Government Board, shall make a searching examination of the water supply and other sanitary arrangements at Sandringham. Since the serous illness from typhoid fever of his Royal Highness the Prince of Wales the water supply of Sandringham has been remodelled at considerable cost and trouble. It is stated, however, that at the time of the recent visit of the Prince and his family for some days to Norfolk, the works connected with the newly-arranged water supply were out of order, and recourse was had for a while to the source from whence the water was drawn prior to the Prince's purchase of the estate.

Bolton Abbey.—A stone altar-screen in the Perpendicular style has just been erected in Bolton Abbey at the sole expense of the Duke of Devonshire. At the time of the Dissolution, when the Abbey lands were sold to the ancestors of the Duke of Devonshire, the nave was retained as a place of worship, and has so continued to the present day, whilst all the rest of the building was suffered to fall into ruin. During the last twenty years the interior of the nave has undergone a complete restoration at the sole charge of the Duke. The entire area has been filled with massive open oak seats; a stone pulpit, a desk, and font have been provided, and the ancient rood-screen has been repaired and placed at the west end of the building. The work of restoration has been completed by the removal of the unsightly wall at the east end of the nave, and by the erection in its stead of the new screen. It is about 40 ft. in height and 30 ft. in width, and is divided into eleven equal compartments with ornamental capitals, corresponding in design with the outer screen of the great west tower of the Abbey.

The Newington-Butts Improvement.—Last week the Newington-Butts improvement was formally inspected by Sir James Hogg and the members of the Board of Works. At the conclusion of the inspection the street was handed over to the care of the Vestry of St. Mary, Newington. The old parish church of St. Mary, Newington, has been completely removed, together with a part of the ancient churchyard and several adjacent houses, and the road widened in front. The total cost of the improvement, including 5,000*l.* towards the rebuilding of the church, amounts to close upon 12,000*l.*

St. Werburgh's Church, Bristol.—We learn from the *Bristol Times and Mirror* that the plans of Mr. J. Bevan, architect, Bristol, for the removal and re-erection of St. Werburgh's Church in Mina-road, have been accepted, and there is every probability that the work will commence very shortly. "The old materials will be used as far as practicable, and the style will, it is said, be maintained intact, with one or two slight exceptions. Chief among these is an important addition to the ornamental pinnacles on the grand old tower. In his notice of the building, the historian Barrett says of the tower:—"It was built with pinnacles at the corners, 10 ft. high, with copper vane on each, and in the centre a curious hollow-worked pinnacle, about 20 ft. high, with a golden ball and weathercock." The "curious hollow-worked pinnacle" of which the historian speaks has disappeared, but after a great amount of laborious research, and a thorough and very careful examination of the tower, Mr. Bevan has no doubt that it at one time existed, and although, of course, he has (according to our contemporary) had to draw on his imagination to a great extent to realise its precise character, he has introduced one in his new plans which is in perfect harmony with the style of the remaining pinnacles, and with the loftier ones frequently used at that period. The architect has also taken the liberty of introducing a slight alteration in the upper parts of the windows by adding additional mullions, thus bringing them into closer accord with the style of the earlier period of the church's history. At present the nave consists of only four bays, and one will be added, giving an additional length of about 13 ft. to the church. The new building will be 106 ft. in length by 59 ft. in width, and by a re-arrangement of the pews will accommodate about 600 worshippers. A chancel will be added, together with a good-sized vestry for meetings, and an organ-chamber. Underneath the north aisle will be a muniment chamber and crypt, the latter being intended for the reception of the monumental stones in the church and churchyard, and it will be lighted by windows in the foundation wall. The building will be heated by hot water, and the heating-chamber will be under the vestry."

The Wallace Monument at Stirling and its Architect.—At a public ceremonial on the Abbey Craig, Stirling, in September, 1869, the Wallace Monument was handed over to its permanent custodians. On the occasion a report was read in which much credit was assigned to the late Mr. William Burns, of Glasgow, and his friends, for completing the monument under difficulties; while it was stated that all costs were discharged save "one hundred pounds" due "for materials and to the architect." The report was received with cheers, in which Mr. J. T. Rochead, the architect of the structure, who was present, was remarked to join. Of course (says the *Dundee Advertiser*), all believed that his claim had then been mainly discharged; and as two collecting-boxes (one at the Craig and the other at Stirling) were not handed over, but retained by the committee, it was hoped that from these or other sources the "100*l.*" due "to the architect and for materials" would soon be fully settled. But a revelation has been made lately. Mr. Burns departed this life in August last, and up to the time of his decease Mr. Rochead had, with interest, a claim against the "Monument Committee" of 487*l.* 10s. It would appear from Mr. Rochead's statement that his claim altogether amounted to 737*l.* 10s.; but of this sum, before Dr. Charles Rogers, the original secretary of the committee, left Stirling in 1863, he (Mr. Rochead) had received payments amounting to 250*l.*, being the proportion due to him up to that time. Since Dr. Rogers's retirement in 1863, Mr. Rochead, it appears, has not received a single payment towards his commission.

Fall of Houses in Bethnal Green-road.—In reference to the paragraph which appeared in last week's *Builder* (p. 771) as to the fall of houses in Bethnal Green-road, Mr. William Irons writes to say, firstly, that the person referred to as "Mr. Alfred Barker, of the firm of Irons & Co.," is not a partner (as might be inferred), but merely an *employé* of that firm; and, secondly, that he (Mr. Irons) had not commenced pulling down what he had bought, viz., the brickwork only, not having bought any lead or timber.

"Davy."—A new metal, according to the Paris *Golos*, has been found in platinum mines by Mr. Kern, who has named it "Davy," in honour of Sir Humphry.

Height of Buildings in London.—In reply to Mr. P. A. Taylor, in the House of Commons, Sir J. M'Garel-Hogg said:—The attention of the Metropolitan Board has been directed to the buildings to which he refers near to St. James's Park. No inquiry has been made as to how far buildings of such height are calculated to injure the neighbours, who would, I apprehend, be able to assert their legal rights if injuriously affected as regards light and air. The rules of the Building Acts at present in force are calculated for walls up to 100 ft. in height, but where it is intended to exceed that height a discretionary power is given to the Board, which they have not felt justified in refusing to exercise in the present instance, having regard to the unusual strength and stability of the building. A Bill was introduced by me in 1874 which would have dealt with this question, but it did not receive the sanction of Parliament, and up to the present time the Board has not come to any resolution to renew their application for further powers.——At the meeting of the Metropolitan Board of Works, on the 27th ult., the Building Act Committee recommended that the application of Mr. F. Butler, for approval by the Board of a plan for the construction of buildings, to be named "Alexandra Mansions," in Victoria-street, Westminster, with walls exceeding in height the limit prescribed for dwelling-houses by the schedule of the Metropolitan Buildings Act, 1855, be not granted. The recommendation was unanimously approved.

Proposed Aquarium for Edinburgh.—A Scottish paper says that the Lord Provost's Committee have had before them the model of an aquarium which it has been proposed to construct in the Waverley Market, Edinburgh. The space underneath the gallery at the west end of the market is the part which it is intended to utilise, including the corner to the left of the Waverley Bridge entrance-gate, which is at present uncovered. The tanks, to the number of twelve, with an aviary in the centre, will be placed, according to the model, in a semicircle passing from side to side of the building. The former will measure from 10 ft. to 12 ft. in length by 7 ft. in breadth, and from 5 ft. to 7 ft. in depth. The aviary will be 35 ft. long by 7 ft. broad. A probationary tank and pump-room will be placed at the south end. Immediately behind the aviary, and in the north corner of the present open space, a seal-pond has been planned, measuring 30 ft. long by 35 ft. in breadth at the front, diminishing to 10 ft. at the back. The depth of water will be 5 ft. The cost, which is estimated at between 3,000*l.* and 4,000*l.*, will be met by a syndicate of gentlemen who offer to pay 200*l.* a year to the Town Council for the use of the building.

New Middle-class School for Girls.—The foundation-stone of a new middle-class school for girls, which the trustees of Lady Holles's trust, in the parish of St. Giles, Cripplegate, are about to erect, was laid on the 23rd ult. by Mr. Alderman Knight, chairman of the governors. The site is in Mare-street, Hackney, next to the Catholic Apostolic Church. The new school is to be built under a scheme of the Endowed Schools Commission, by which a sum not exceeding 7,000*l.* is set apart for the purpose. The building will afford accommodation for 250 scholars. The style of the new building will be Elizabethan, and the material red brick, with stone dressings. There will be all necessary class-rooms, day-rooms, &c., and a residence for the head mistress; and special provision is to be made for rooms to be devoted to the teaching of music, which will be fire-proof and sound proof. The building has been designed by Mr. Edmund Woodthorpe, the builders being Messrs. Bayes Brothers & Allen, and the clerk of the works Mr. J. Coleman. The cost will be about 5,500*l.*

A New Picture for Mr. Ruskin's Museum.—Mr. Ruskin says:—I have secured a picture of extreme value that has been overlooked in the Manfrini Gallery; and clearly kept for us by Fors, as the exactly right picture on the possession of which to found our Sheffield School of Art. It is a Madonna, by Verocchio, the master of Leonardo da Vinci, of Lorenzo di Credi, and of Perugino, and the grandest metal-workers of Italy. And it is entirely pure and safe for us, but will need carefullest securing of the tempera colour on its panel before it can be moved; it cannot, therefore, reach Sheffield till the autumn.

A Proposed Transformation.—A proposal is being discussed for turning the Manchester Aquarium, which has been a failure financially, into a church.

A Crystal Palace for Birmingham.—The first statutory meeting of the Sutton Park Crystal Palace Company (Limited), has been held. The company was registered on the 2nd ult., the capital being 25,000*l.*, in shares of 5*l.* each. The company was established for providing a place of entertainment and refreshment adjoining Sutton Park, to supply the wants of the numerous visitors, and, according to the original prospectus, the company had the option of building a palace in Mr. Cole's Royal Promenade Gardens, and working it in conjunction with that gentleman, but the directors, after considering the matter, had become of opinion it was better to pay Mr. Cole out and acquire the entire gardens, and also to buy some adjoining land so as to build an entrance to the gardens near the Park Lodge and immediately adjoining the main road, and upon which ground they also desired to erect a suite of large refreshment-rooms. It is also intended to provide an aquarium and skating-rink.

Chilled Cast-iron Shot.—We have received a sample of a new material—chilled cast-iron shot—for sawing and surfacing granite and other stone. Several of the large London builders and Aberdeen and Cornwall granite quarry proprietors are now, we are told, giving it a trial. It is produced by suddenly separating into fine particles by mechanical means (the particulars of which have not reached us) a stream of molten iron, and allowing them to drop into a tank of water. The Patent Sand-blast Company say they have received from America several tons of the material, to be presented to any builders and others who may feel disposed to give it a trial.

A Fire at Venice.—Venice, in spite of its canal-streets, seems to have no efficient provision for extinguishing fires. A building full of valuable objects was all but reduced to ruins there a few days ago. The pumps could not be got to work, and no regular chain could be formed for a long time. The confusion was great, the want of discipline indescribable. The *Gazetta del Veneto* says:—"Let us provide, we repeat it, let not those whose duty it is forget that Venice is rich in monuments and masterpieces of art, in whose preservation and safety the whole of the civilised world is interested. Let us, above all, not forget the fire of SS. Giovanni e Paolo."

City Commissioners of Sewers.—At a meeting of the Court of Sewers on the 24th ult., upon a memorial from the rector, churchwardens, and parishioners of the parishes of Allhallows the Great and Less, requesting that the vote of 4,000*l.* for improvements in Upper Thames-street, by laying into the public way the site of the tower and vestibule of Allhallows, be increased, it was resolved, under certain contingencies, to add the sum of 500*l.* The salary of Dr. Sedgwick Saunders, medical officer of health, was increased from 500*l.* to 700*l.*

Cork Improved Dwellings Company.—At the half-yearly meeting of this Company, just held in Cork, the directors' report showed that for the half-year there was a net balance of profit of 401*l.*, out of which the directors recommended the payment of a dividend at the rate of 6 per cent. per annum, carrying forward for the half-year 104*l.* to the reserve.

Land in the Poultry.—At the last meeting of the Commissioners of Sewers for the City of London, the Court received tenders for the purchase of the freehold ground-rent of 755*l.* and reversion in respect of the premises No. 38, Poultry. The Court accepted a tender amounting to 19,280*l.*, being equal to 25½ years' purchase.

Shute's Patent Mitre Cutter.—We are asked to say that in the advertisement of this machine (which appeared in our last number) Messrs. F. W. Reynolds & Co., of Southwark-street, omitted to state that they continue to send this machine on one month's trial.

Silver Flagon, Elland Church.—A memorial has just been given to Elland Church in the shape of a silver flagon for the Holy Communion service. It has been made in London from the designs of Mr. W. S. Barber, architect.

The Manchester Water Supply.—The scheme for supplying Manchester with water from Thirlmere has been formally sanctioned at a meeting of the ratepayers, called pursuant to the provisions of the Borough Funds Act.

Architectural Association.—This year's (the eighth) excursion, will be to Warwick and the neighbourhood, commencing on Monday, August 13th, and terminating on the following Saturday.

TENDERS.

For additions to the Civil Service Store, New Oxford-street. Mr Josiah Houle, architect:—

Adamson & Son	£8,400 0 0
Parmas & Fotheringham	8,050 0 0
Scrivener & White	7,898 0 0
Sewell & Son	7,784 0 0
Morter	7,777 0 0
Langmead & Way	7,200 0 0

For the erection of the Beach Mansions, St. Helen's-parade, Southsea. Messrs. Archibald Ford and Alfred Hudson, joint architects:—

W. E. & C. Light	£22,655 0 0
Bramble Bros.	21,550 0 0
Burbidge	21,212 0 0
Ward	20,453 0 0
Cooper (accepted)	19,129 0 0

For new building, alterations to old building, and boundary-walls, at Alexandra Schools, Penge, for Beckenham School Board. Mr. Alexander R. Steening, architect. Quantities supplied by Messrs. Linsdell & Giffard:—

W. & R. Nottle	£10,011 0 0
Macey & Sons	9,311 0 0
Saley & Son	9,170 0 0
Hooker	8,933 0 0
Bangs	8,620 0 0
Syme & Duncan	8,535 0 0
Cox	8,480 0 0
Jarrett	8,415 0 0
Enaor	8,345 0 0
Newman & Mann	8,341 0 0
Cooper	8,263 10 0
Masters	8,159 0 0
Jerrard	8,089 0 0
Prout	7,995 0 0
Joselyne	7,985 0 0
Burrows	7,505 0 0
Oxford	7,394 0 0

For finishing villa residence, Oakleigh Park, for the Whetstone Land Company. Mr. S. Tucker, architect. Quantities by Mr. T. J. Fife:—

Wheeler	£950 0 0
Axford	921 0 0
Smith	847 0 0
Barber (accepted)	810 0 0

For fitting up the Old Manor House, Mare-street, Hackney:—

Thomerson (accepted).

For erection of a warehouse, High Cross-street, Leicester, for Mr. Thomas Almond. Mr. William B. Tomlinson, architect:—

Burdett (accepted)	£2,380 0 0

For erection of Congregational Church Sunday-school, class-rooms, boundary-walls, &c., Avenue-road, Whittington Mow, Derbyshire. Mr. Parker, architect:—

Stevenson	£1,481 10 0
Fidler	1,435 0 0
Cropper	1,370 0 0
Forrest	1,343 10 0
Crowcroft, Naylor, & Co.	1,342 13 8
Clubley & Stringfellow	1,342 0 0
Price	1,318 0 0
Kirkby	1,310 0 0
Toplis & Dailey	1,266 7 7
Wheeler & Boyce	1,151 0 0
Rose & Co.	1,129 0 0
Dew	1,089 0 0
Bradbury (accepted)	1,080 0 0

For building residence, &c., at Uxbridge, for Mr. A. D. Woolls. Mr. Chas. Godbolt, architect. Quantities supplied:—

Taylor	£3,755 0 0
Green	4,4 0 0 0 0
Kerby	4,300 0 0
Johnson	4,200 0 0
Brown	3,676 0 0
Gipson	3,580 0 0
Cave	3,475 0 0
Groom	3,200 0 0
Rose, Lloyd, & Co.	3,000 0 0
Cox & Son (accepted)	2,935 0 0

For the erection of new rectory-house, St. Mary's, Chatham. Mr. G. M. Hills, architect:—

Cobham	£3,013 0 0
Nisbett	2,983 0 0
Bayes & Co.	2,881 0 0
Waiters & Clements	2,859 0 0
Calund	2,429 0 0
Gates	2,393 0 0
Naylar (accepted)	2,345 0 0
Wilkins & Son	1,787 0 0

For painting, &c., and repairs, at the Surrey Dispensary, Great Dover-street:—

Rider & Sons	£515 0 0
Tarrant & Son	513 0 0
Sayer	495 0 0
Marsland	464 0 0
Pack	445 0 0
Josolyne (accepted)	350 0 0

For the erection of new villa residence at St. Margaret's, Rochester, for Mr. Geo. Wattson:—

Naylar (accepted)	£1,030 0 0

For painting, &c., and repairs, at the Asylum for Deaf and Dumb, Old Kent-road. Mr. C. A. Gould, architect:—

Marsland	£543 0 0
W. & F. Crosker	527 0 0
Moy (accepted)	396 0 0
Horner	360 0 0

For alterations and additions to shops, &c., Benhill-street, Sutton, Surrey, for Mr. A. Dyer. Mr. A. Stanton Cook, architect. Quantities supplied:—

Stewart	£620 0 0
Tripe	517 0 0

For the erection of Infectious and Contagious Diseases Hospital, at Plaistow, Essex, for the Board of Works for the Poplar District. Quantities by Mr. Thos. Nixon:—

		Additional Story to B Block.
Sewell & Son	£13,050	£1,695
Perry & Co.	12,950	1,700
Bangs & Co.	12,871	1,617
Harris & Wardrop	12,790	1,804
Watts	12,633	1,630
Abrahams	12,443	1,688
Coleman	12,133	1,634
Johnson	11,995	1,650
Killby	11,435	1,483
Atherton & Latta	11,444	1,450
Wood Bros.	11,380	1,627
Linn	11,200	1,500
Martin	10,843	1,600

For the erection of six new shops, at Old Charlton, for Sir Spencer Wilson, bart Mr. E. M. Forster, architect. Quantities by Mr. S. Tucker:—

Kent	£8,295 0 0
Gerrard	7,973 0 0
Tongue	7,927 0 0
Kirk & Randall	7,884 0 0
Messum	7,589 0 0
Wells	7,310 0 0
Burman	7,200 0 0
Cook	7,171 0 0
Barber	7,150 0 0

For malting, &c., at Wandsworth Bridge-road, for Mr. Thomas Whittaker. Mr. F. Fred. Holsworth, architect. Quantities by Mr. A. J. Gate:—

Brass	£9,400 0 0
Colls & Son	9,237 0 0
Lawrence	8,492 0 0
Perry & Co.	8,025 0 0
Aviss & Co.	7,930 0 0
Downs & Co.	7,900 0 0
Hill, Higgs, & Hill	7,850 0 0
Patrick	7,274 0 0

For alterations and additions to the Eagle Tavern, Ladbroke-grove-road, Notting-hill, for Mr. Henry Stevens. Mr. George Stooke, architect:—

Hopton	£613 0 0
Howe	578 0 0
Handover	575 0 0
Nickels	535 0 0
Sanders (accepted)	528 10 0

For the erection of two new houses and shops, Stratford, for Mr. Halford. Mr. Henry Ough, architect. Quantities not supplied:—

Reed	£999 0 0
Cogg	977 0 0
Palmer	935 0 0
Nichols	897 0 0

For the erection of new school buildings, Sheerness, for the Minster-in-Sheppey U. D. School Board. Mr. E. H. Lingen-Barker, architect:—

Hall	£2,987 0 0
Gibson	2,947 0 0
Geere	2,880 0 0
Naylar (accepted)	2,873 0 0
Prout	2,859 0 0
Smeaton & Son	2,553 0 0

For re-seating and general restoration of Hernhill Church, near Faversham, Kent. Messrs. Newman & Billing, architects:—

Naylar (accepted)	£1,145 0 0

For painting and repairs to residence, 6, Leinst gardens. Messrs. Winstanley & Horwood, architects:

Larke	£398 0 0
Lawrence	370 0 0
Pitman & Cuthbertson (accepted)	350 0 0

For building a granary at Darfield Wharf, Lambe Messrs. Whitmore & Kennard, architect:—

	If Iron Joists, &c.	If Wood.
F. & F. J. Wood	£4,405	£4,083
Lathey Bros.	4,390	4,250
Cooke	4,220	4,079
Martin	4,100	3,850
Hobson	3,998	3,931
Turtle & Appleton	3,840	3,840
Bangs & Co.	3,795	3,850
Rider & Son	3,780	3,728

For new premises, Nos. 137 and 138, Oxford-stre for the executors of the late Mr. Thomas Brand Messrs. John Giles & Gough, architects. Quantities Mr. C. H. Goode:—

Kirk & Randall	£8,505 0 0
Bayes & Allen	8,430 0 0
Colls & Sons	8,346 0 0
Thorn	8,210 0 0

For warehouse, at Rugg-street, Limehouse, for Mr. McAlister. Messrs. A. & C. Harston, architects:—

Johnson (accepted)	£659 0 0

For concrete foundations for Royal Savoy Chambe Strand:—

Keeble	£836 0 0
Sheffield	789 0 0
Green (accepted)	655 0 0

Longhedge Engine-sheds, Battersea.—Mr. C. Dickin has commenced the contract for new running sheds a workshops, covering an area of two acres, for the Lond Chatham, and Dover Railway Company, at Stewart's-la Battersea.

Restoring Warehouses for Messrs. Jones Bros.—In yo list of tenders for this work last week, 760*l.* appe against our name in lieu of 670*l.*, the actual amou which was accepted.—F. Blandford & Co.

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W. S.—F. H.—W. P. P.—C. & Sons.—Gen. B.—A. K.—Dr. D. B. T.—Mr. B.—W. T.—G M.—C. B.—B. & Co.—T. B.—G. F. R. B.—P. & C.—A. S. C.—R. A.—C. G.—H. W. C.—G. R. S.—G. C. D.—B. & Co.—Maithew (washing the parts left, after removing seriously affected and the fungus, with a solution of corrosive s limate, has been found useful. But competent advice should be tal on the spot).—R. C. R. (shall be looked to).—B. B. (next week).

We are compelled to decline pointing out books and giv addresses.

All statements of facts, lists of tenders, &c. must be accompan by the name and address of the sender, not necessarily publication.

Note.—The responsibility of signed articles, and papers read public meetings, rests, of course, with the authors.

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Books received: Paley's Manual of Gothic Mouldings (Voorst); Mackenzie's Pleasures of House Building (Routledge); Variorum..... 819, 820
Miscellanea 820

London Gas Supply and its Cost.

We are provided by the annual publication, prescribed by four Acts of Parliament, of the accounts of the Metropolitan Gas Companies, with a means of analysis which may throw some positive light on not a few questions of great importance, both to the gas consumers and to the ratepayers of the metropolis. From time to time representations have been made of the enormous saving which might be effected by the consolidation of the entire gas supply of the metropolis in the hands of the Metropolitan Board of Works, or even in those of a single company. While it is pretty clear that items of avoidable expenditure are now incurred by the unequal division of districts, of capital, and of service, it is only right to say, in the first instance, that those flattering promises of great relief which have been held out to the ratepayers have been made in entire forgetfulness of the fact that a certain large amount of capital has been expended under the authority of Parliament by the existing companies; and that a provision for the dividend or return upon this capital which the proprietors are authorised to claim must form an essential feature of any rational scheme for the transference of either the property or the control of the property. It is only by clearly recognising the limits within which improvement is possible that there is any chance of real improvement being carried out. The first thing, therefore, to be borne in mind is that there is a capital of, in round numbers, eleven millions sterling, on which an average return of a little over ten per cent. is now made to the proprietors; and that the provision of about 1,100,000*l.* per annum by way of interest on money actually laid out has therefore now become a portion of the cost price to the consumers of London gas.

The companies of which the returns for the year 1876 were ordered by the House of Commons, on the 11th of June last, to be printed, are six in number. Of these "the Gas Light and Coke Company" has raised its capital under the authority of eleven Acts of Parliament. In addition to the Act of 1868, by which the original company (which obtained its first Act of Parliament in 1810) was authorised to raise its capital to the sum of 1,550,000*l.*; the City of London Gas Company, incorporated in 1817; the Imperial Gas Company, established in 1821; the Great Central Gas Consumers' Company, the Equitable Gas Light Company, and the Independent Gas Light and Coke Company, are now fused into one concern; which had an authorised amount of share capital, on 31st of December, 1876, of 8,268,000*l.* It had actually expended the sum of 7,583,286*l.* Its borrowing powers were for 2,561,500*l.*, of which 1,436,500*l.* had been borrowed, included in the above expenditure. The gross revenue of this great company, for 1876, was 2,387,926*l.*; out of which the expenditure amounted to 1,570,772*l.*, leaving a net income of 817,154*l.*, which is equal to a mean earning of upwards of 10 7 per cent. on the actual outlay. It may be remarked that the cost of management amounted for the year to 58,358*l.*, or about 2·44 per cent. on the gross income. With the exception of the district comprising Stepney, Poplar, Limehouse, Bow, and the neighbourhood, which is served by the Commercial Company, as well as of the area extending from Hammersmith to Lambeth, bounded by the Fulham-road on the north and by the Thames on the south; together with a third small district south of Gray's-inn-lane (which is supplied by the London Gas Company), all London north of the river Thames may be said to be in the hands, as to its illumination, of the Gas Light and Coke Company.

The authorised capital of the Commercial Gas Company, on 31st of December, 1876, was 832,000*l.*, to which is added power to borrow 300,000*l.* The total expenditure or capital account to that date was 566,157*l.* The gross income for the year was 270,273*l.*; the expenditure, 214,009*l.*; the resulting profit, 56,264*l.* Thus, while the profit of the Gas Light and Coke Company is upwards of 28 per cent. of their gross income, that of the Commercial Company is less than 21 per cent of their income, although nearly 10 per cent. on their capital. The cost of management, in the last instance, is 3·16 per cent. of gross income.

The authorised capital of the London Gas Light Company, at the close of 1876, was 873,842*l.* stock and share capital, and 191,667*l.* loan capital, out of which 842,177*l.* had been expended. The gross revenue for the year was 286,180*l.*; the working cost, 208,042*l.*; the profit, 78,138*l.*; or a little over 27 per cent. of the income. The cost of management was 3·84 per cent of the income. The net income is at the rate of 9·28 per cent. on capital expended.

North of the Thames, therefore, the capital now laid out by the gas companies amounts to 8,991,620*l.*, the gross income to 2,914,379*l.*, and the net income to 951,556*l.* It will be remarked that while the largest company earns a profit of 10·76 per cent. on its capital, its gross revenue is only at the rate of 31·47 per cent. on the capital outlay. The smallest company, on the other hand, while receiving a gross income of 47·74 per cent. in its actual outlay of capital, only earns a net income of 9·28 per cent. There is probably more to be said on this head than is to be found in the returns; but the general advantage is clearly in favour of the largest company; which saves 1 or 1¼ per cent. per annum of its gross revenue by reduced cost of management.

South of the Thames the most important gas company is the Phœnix Gas Light and Coke Company. The district supplied by this company stretches along the right bank of the river, from a line drawn from Wandsworth to Tooting-common as far as to London Bridge; with the exception of the block of building bounded by Vauxhall-road, Kennington-road, and Westminster-road, which is supplied by the London Gas Company. It also includes Lewisham, Blackheath, and Greenwich. The authorised capital of the Phœnix Gas Company is 1,044,000*l.* stock and share capital, and 200,000*l.* loan capital. The amount actually expended is 1,030,610*l.* The year's gross income is 340,640*l.*, being 33·53 per cent. on capital. The expenditure is 249,784*l.*; the net income 90,855*l.*, being 24·14 per cent. off gross income, and allowing a return of 9·39 per cent. on gross capital outlay. Cost of management, 3·27 per cent. on gross income.

The district of the Surrey Consumers' Gas Company lines the bank of the Thames from London Bridge to Deptford, and extends to the south of Nunhead Cemetery. The authorised capital is 250,000*l.* in stock and shares, and 60,000*l.* in loans. The expenditure on capital account to the end of 1876 was 289,521*l.* The annual revenue amounts to 114,535*l.*, or 32·65 per cent. on capital. The working expenses to 84,805*l.*, or 74·4 per cent. on gross revenue; and the net income to 29,729*l.*, or a little over 10 per cent. on capital. The expenses of management are 4·36 on gross revenue.

Finally the South Metropolitan Company serves a district lying between that of the Phœnix, to the west, and that of the Surrey Gas Consumers', Companies, to the east. The authorised capital at the close of 1876 was 500,000*l.* in shares, and there is no mention of loans. The total expenditure at the same date was 427,370*l.* The year's income was 190,430*l.*; being 44·56 per cent. on capital outlay; a higher ratio than that obtained by any other company, except the Commercial. The expenditure was 145,373*l.*; 76 per cent. of the income; the profit 45,056*l.*, or about 10½ per cent. on capital. The cost of management was a little over 3 per cent. on gross revenue. In all these respects the South Metropolitan Company very favourably bears comparison with its neighbours.

Thus far we have looked at the comparative result of the financial operations of the several companies. We have, however, to look at the no less important questions of the quality of the gas which they supply, and the charges made to the consumer. The question of the excellence, no less than those of the cost and the profit of the supply of London with gas, is of no small importance to all residents in the metropolis. We

have seen that more than eleven millions sterling are now actually invested in the property and works of the nine companies between which, with an odd irregularity of plan, the supply of the metropolis is divided. In the time of Queen Elizabeth, when the threatened approach of the Spanish Armada stimulated the Government to a watchful activity, an order in Council was passed which enjoined every London householder to suspend a lamp at his door before sundown, on penalty of being made to take its place; that is to say, under penalty of death at the hands of the common hangman. The material now consumed for the annual illumination of the streets and houses of the metropolis is rather more than a million and a half of tons of coal, of which about 4 per cent. is of that rich bituminous nature which flames like a torch when ignited, and thus owns the name of Cannel, or candle coal.

After various efforts had been made to secure the important requisite of the lighting of the metropolis, an Act of Parliament was passed in the year 1736, authorising the Corporation to erect lamps, which were to be kept lighted from sunset to sunrise. A special rate was levied for these purposes; a rental of 10*l.* per year being charged with a light-due of 7*s.*, and the rate mounting upwards by a sort of sliding-scale, until 20*s.* were paid for houses rented at over 50*l.* per year. The bowl-shaped lamp, with its included tin oil-vessel and cotton wick, which gave the best light known in any capital of Europe before the introduction of gas, held its own against that innovation, within the memory of many of our readers, in the stately conservative precincts of Grosvenor-square. But oil illumination did not come triumphantly out of the struggle, notwithstanding the long prestige in its favour.

In 1810 an Act of Parliament was passed to authorise "the manufacture and distribution of inflammable air," and the "Gaslight and Coke Company," afterwards known as the Chartered Gas Company, the actual condition of which we have already described, was incorporated by charter under the provisions of this Act. The capital was 200,000*l.*, and the operations of the company were limited to the cities of London and Westminster, and the borough of Southwark. A critical test of the value of the new method of illumination, which, of course, excited a very lively hostility on its first introduction, was supplied by the lighting of Guildhall for the entertainment given by the Lord Mayor to the allied sovereigns, the Emperor of Austria, the Czar of Russia, and the King of Prussia, on their visit to this country in 1815. When all the arrangements were completed, the contractor took the wise precaution of proceeding to test the effect of his chandelier by lighting up the Hall on the day before the banquet. To his horror not a single beak would take fire! Guildhall refused to be illuminated. A careful search was immediately made, and the main pipe was discovered to have been cut in two, and the end turned up, so that the full supply of gas escaped into the atmosphere. There was not too much time left to set all to rights, and to obviate the means which one of the anti-gas party had taken to verify the prediction that the scheme would never answer. When the evening arrived, the gas was lighted at a low pressure throughout the Hall, and the engineer mingled with the crowd to listen to their comments. They took the tone of low general grumble,—one person finding the new light not much brighter than the old; another maintaining that it was not even so good. A very general impression prevailed that no great improvement had been made. But when the trumpets announced the arrival of the Royal and Imperial guests, and the full pressure of gas was at once turned on at the main, the sudden ejaculation that burst from the crowd, as a sort of echo to the burst of splendour that at once dazzled, surprised, and charmed them, was an unmistakable testimony to the success of the new plan.

The average quantity of gas produced from a ton of coal may be taken as a unit of comparison as to the efficiency of different gasworks. In London, where there is an aggregate annual supply of nearly fifteen thousand millions of cubic feet of gas per annum, the average production of gas is calculated by Mr. Field at 9,892 ft. per ton. In the year 1876 the yield obtained by the different London gasworks varied from 9,591 ft. per ton, which was the ratio of the Commercial Gas Company, to 10,158 ft. per ton, reached by the Gaslight and Coke Company. The Surrey Consumers' Company was the next economical, in that respect, obtaining 10,099 ft. per ton. The prices paid for coals, however, by the different companies, varied by more than 2*s.* per ton, the South Metropolitan having paid only 16·02 shillings, while the Commercial paid 18·33 shillings per ton. But we are not yet in possession of the figures which give the ultimate cost of even the raw material of gas. The rental derived from the sale of gas forms only about three-fourths of the gross income of the companies. Nearly one-fourth of their revenue is derived from the sale of coke and breeze, tar, and ammonia, for which residual products the receipts, in the year 1875, were respectively 492,927*l.*, 162,151*l.*, and 111,951*l.*, making 767,029*l.* in all. The gas rental for that year was 2,606,818*l.* But it is a more accurate way of arriving at the comparative economy of the actual manufacture of gas (which is, of course, a very different matter from the general outcome of the operations of a company) to deduct the price received for the sale of residual products from that paid for coal, and thus to obtain a cost price for the material employed in the manufacture, apart from other elements of outlay. When we see what is the different ratio of the gross income received as referred to capital, and, again, what are the variations in the percentages of working cost, in the instances which we have already cited, it is clear that we must not be contented with anything less than a searching analysis, if we have to look for the sources of future economy in the supply of the metropolis. A company, of which the revenue is very high in proportion to its capital, has not the same incentive to economy as a company in which the gross revenue is comparatively low. If ten per cent. can be easily earned, there is great inducement to treat all the expenditure of the company in a spirit of munificence which would make a very considerable difference in the cost borne by ratepayers if it became the general rule. Again, the loss of gas by leakage is a very serious item in the expenses of the gas companies. In 1875 this loss amounted to 7·32 per cent. of the total quantity of gas manufactured, but it varied from 4·3 to 9 per cent. It is probable that the age of the mains and other portions of the works of the companies may have much to do with the rate of leakage. It is very remarkable that in every instance the loss by leakage, or by gas "not accounted for," is considerably more in the case of the rich gas derived from Cannel coal than in that of ordinary gas. Again, it is pointed out by Mr. Richards, in an exhaustive book, published recently, which must certainly be regarded as the text-book for the gas engineer, that the rapidity of the sale of coke has very much to do with the sum derived from this product. When stacked, coke at once begins to crumble under the influence of the atmosphere, and the weight of a stack of coke is thus subject to a continual and serious decrease. Mr. Richards gives it as the result of his experience that it is more profitable to use coke as soon as it comes from the retort, at 12*s.* a chaldron, than to stack it for six months, and then sell it at 16*s.* a chaldron. That gives an allowance for disintegration and loss at the rate of 50 per cent. per annum. We are unable, at the moment, to contrast or verify the estimate, but we call attention to the extreme importance of a detail which could only assume its actual value in the eyes of a person of practical experience. Thus we find that in anxious supervision of salaries and general expenses, in cost of direction and management, in loss by leakage and waste, and in loss by tardiness of sale of residual products, there are to be found so many sources of loss, each of which requires the Argus-eye of a truly able manager.

It is possible that there is a natural compensation in the various kinds of economy effected by the different companies, and that it would not be practicable to combine them in any high system of management. On the other hand, if we regard the very different rates at which different companies carry out their business, we may certainly obtain some useful guidance, both as to the direction in which economy is to be sought and the degree to which it must be limited. Thus, if the large proportion of income to capital enjoyed by the Commercial Gas Company could be combined with the economy of working expenses in proportion to income obtained by the Gas Light and Coke Company, we should attain, as far as experience teaches us, the best conceivable results for the metropolis. Under these conditions we should obtain on a concentrated capital of say twelve millions sterling, a gas rental and sale of residual products amounting to 5,730,000*l.* per annum, with a working expenditure of 2,485,200*l.* per annum. Allowing 1,200,000*l.* for interest, at the rate of 10 per cent., two millions sterling per annum would thus be applicable in reduction of gas-rates, which would allow of a reduction in the price of gas from 3*s.* 9*d.* to 2*s.* 6*d.* per 1,000 cubic feet. We must not be understood as affirming that such a reduction is possible. But, on the other hand, some reason ought to be forthcoming for the proportion between capital and income which varies from 47·74 to 31·47 per cent., according to the returns of the two companies we have cited.

Another very instructive mode of comparison is that to which we before referred as to the net cost of coal per 1,000 ft. of gas. Thus the Gas Light and Coke Company, who pay 18·3 shillings per ton for coal, receive 10·89 shillings of that outlay back again for sale of residual products. This leaves the net price to the company of a ton of coal at 7·41 shillings. As a ton of coal makes 10,158 cubic feet of gas in these works the price to the company comes to 8·75 pence per thousand feet for the raw material. This is almost exactly the net price which is paid by the Metropolitan Company, who pay only 16 0[illegible] shillings per ton for coal, but receive only 8·7[illegible] shillings for residual products, and produce 9 994 cubic feet of gas per ton of coal. This comparison is highly satisfactory. It seems to show that the result of the decomposition of the coal is such as to compensate the difference in price; the higher-priced coal producing exactly its extra cost in the extra value of its component parts when distilled. But we find that the "London Gas Company" paid, in 1876, at the rate of 16 2 shillings per ton for coal, and received for residual products as much as 11·2 shillings; thus reducing (if we suppose the sales to apply to the product of the year alone) the net price per ton of the coal they consumed to the low figure of five shillings. Their yield of gas, indeed, is the lowest obtained by any company except one, being only 9·874 cubic feet per ton; but the cost for the material per 1,000 cubic feet of gas still only amounts to 6·07 pence, being 19 per cent. less than in the case of the two other companies previously cited.

We desire to guard ourselves, as well as our readers, from hasty generalisations. We have only at hand the accounts for 1876; and it is possible that there are some exceptional circumstances in the mode in which the statement for that year has been made up, which may account for a difference that is otherwise very striking. At the same time it must be borne in mind that the purchased cost of the coal for the London Gas Company is not quite so low as that for the South Metropolitan, and is not more than 7d. or 8d. per ton less than the price paid by the Phœnix and by the Surrey Consumers' Gas Companies. The great difference is in the receipts from sales of residual products, which amount to a shilling per ton of coal more than is received by either of the two last-named companies, and to 3d. per ton more than the receipt of the "Gaslight and Coke Company." It is possible that the saving effected by rapid sales may account for the difference. It is, at all events, one that deserves the very pointed attention of all interested in cheap gas; and, we may add, especially that of the engineers of the different companies. The ratio of the gross income of the London Company to its capital is about the average, being a little under 34 per cent. The working costs form a larger proportion of the gross revenue than the average; notwithstanding this great economy in the cost of raw material. This again looks as if there were a compensating principle at work and as if the companies which possess or effect a great advantage in one respect were careless in other items. At all events, the subject deserves mature consideration. The Parliamentary returns give us a statistical basis. Taking our stand on this, we can indicate the directions in which economy is effected; in capital outlay, by one company; in raw material, by another; in management, by a third. When all these various savings are brought into one focus, we think we are justified in the opinion that 3*s.* 9*d.* per thousand is not the lowest price at which the inhabitants of the metropolis should expect to be supplied with gas; due faith being kept with all existing legitimate interests.

New Brewery Buildings, Weymouth.—New Brewery Buildings for Mr. John Groves, in Hope-square, Weymouth, are being erected from plans by Mr. Crickmay, architect, of that town.

MR. GLADSTONE ON TOWN AND COUNTRY.

Considering the multitude and variety of occasions on which Mr. Gladstone is obliged to make, or is cajoled into making, speeches long or short, it is really wonderful how seldom he misses saying something effective and to the point in relation to the special occasion, and extracting a general application out of a particular incident. His habitual readiness in this respect did not fail him at Hawarden on Saturday last, when he had the privilege or penance of addressing a crowd of admirers under circumstances, to say the least, thoroughly novel. It is unnecessary to recall the particulars of a scene the account of which has been read with wonder and amusement all over the country, and which, if we could divest ourselves of the notion that there was any acting on either side, would certainly appear piquant and characteristic enough; and even if we cannot avoid a smile at the notion of an eminent statesman felling a tree to the accompaniment of alternate psalmody and cheering from a mob of not very discreet admirers, we can very well understand that there may have been, as eye-witnesses aver, matter for a picture at the moment when the right honourable woodman, sparing the tree for a time, leaned on his axe and addressed those who had been scrambling for his chips. And whatever we may think of the sentimental absurdity of the scene as a whole, the chief actor in it became exceedingly practical when he addressed himself to speech: practical, at all events, in the tenour of his remarks, if not always in his method of expression.

The idea uppermost in Mr. Gladstone's mind seems to have been, after expressing his pleasure at seeing his visitors from Bolton enjoying the park scenery, why, after all, should they be obliged to come to Hawarden Park, or to any other park, to enjoy fresh air and the sight of trees? Why should not manufacturing towns be, at all events, a much less deplorable contrast to the country than they invariably are at present? We may say, in regard to this class of towns, invariably. There is such a thing as a pretty town,—a picturesque town,—even in England; and some parts of the streets of London, though they will hardly bear examination in detail for architectural beauty, are highly picturesque in their general character and outline, taken *en masse*; much more so than is commonly recognised; and as to our cathedral towns, many of them require no guide to point out their picturesque character. But every one who has "been North" knows painfully what a regular manufacturing town is like, and for the most part one description does pretty well for all. Stalks of chimneys emitting smoke or variously odoriferous vapours; masses of brick building, with square windows filled with glass, of which half the panes are broken (whether it be in mere wantonness or in the healthful desire for immediate ventilation); a stream, if there be one running through the town, with waters sluggish and prismatic with various chemical refuse,—a "gilded puddle, that beasts would cough at," as Shakspeare phrases it; barren ground, slag-heaps, indescribable and various refuse,—the general face of things hideous. The causes of this peculiarly forbidding aspect of manufacturing towns are to be found, of course, partly in the fact that the buildings erected for manufactures are almost unavoidably built with the sole object of getting quick returns,—making the least possible outlay in proportion to the expected profits; partly that almost every kind of transmutation of raw material into an artificial product is accompanied by the employment of heat and the generation of steam or smoke, and involves the collection of a quantity of refuse matter, which is often left to lie about anywhere. This latter refuse element is perhaps one of the most serious blots on the face of a manufacturing district. Let any one think of the district about Wolverhampton, for instance, as it appears in merely passing through it on the railway, and say whether anything more utterly desolate and forbidding to the eye and mind could be realised, even if it were set about as a deliberate object; but this face of things is the mere accidental, and, as it may be said, natural result of the employment on a large scale of manufactures whose smoke poisons the vegetation, and whose refuse matter completes the operation by substituting a kind of mineral garbage for the natural soil. Wherever iron has to be dealt with, especially, its effects on a country seem to be deadly. The poet of the "Faërie Queene" typified the "House of Care" as a kind of transcendental blacksmith's forge, where there was never any rest from noise and heat; and the description might be extended as a poetic representation of the state of things in a large manufacturing town. Everything restful and pleasant to the eye is banished; and perhaps one of the most permanent mischiefs inflicted by this state of things lies in the moral influence which it certainly exercises, in the long run, upon those who are continuously subject to it. The typical operative of the manufacturing town is a sharper man than his agricultural brother; but his sense of the healthfulness and freshness of Nature is often hopelessly blunted or destroyed, and he is driven for recreation to the coarsest stimulants, mental and physical.

Mr. Gladstone urges that this is not the natural or inevitable state of things in a manufacturing town. Repeating in a slightly different form the old and hackneyed doctrine that "God made the country and man made the town," he observed that there were three disagreeable things in large towns,—noxious smells, want of pure water, and an enormous abundance of smoke, and that it appeared to him that "God Almighty never ordained any of those three things," or intended that they should subsist wherever people were gathered together in large numbers. That is a rather curious way of putting it, if we may be pardoned for saying so. If it merely means that Nature does not, when left to herself, produce smoke, foul water, and noxious smells unless under some very exceptional circumstances, we hardly require to be reminded of that fact. But it certainly is the most inevitable and "ordained" result of natural laws that if we burn anything we have smoke, that if we artificially change the chemical combination of things we are likely to get into bad odours. In a general way, it is not more true that there is no smoke without fire, than that there is no fire without smoke. The whole process of manufacture consisting in artificially changing the natural conditions and combinations of things, we cannot get rid of the unhealthy results without taking artificial means to nullify them. Apart from this, it is most distinctly in the nature of things that manufacturing towns should be unhealthy; and against this nature of things we have to contend.

We only differ, however, from Mr. Gladstone's way of putting the question in the first instance, which partakes of the sentimental rather than the philosophical. His further remarks are very practical, though he drops the link in the reasoning by which they should be connected with his opening. The way of putting it should logically be this: we cannot carry on manufacture without disturbing the healthful conditions of nature; we are morally bound, for the best interests of ourselves and others, to restore the balance, to take artificial means to counteract this disturbance of nature, and fulfil the laws of health: how can we do this most economically, comparatively speaking? Or can we even do it with positive economy and positive gain, over and above the initial gain from the main branch of the manufacture? If we can, so much the better; but if not, we are equally morally bound to carry out the work, to artificially counteract the unsanitary conditions we have artificially created. This latter point, though we have no doubt Mr. Gladstone will entirely concur with us in regard to it, was a little dropped in his *extempore* remarks. What he did bring forward was a very pointed instance of the pecuniary advantage which may result from proper sanitary measures in regard to the results of manufacture, in the shape of the experience of a large paper-manufacturer, who had been rightly compelled by legislation to desist from running the refuse from his factory into a neighbouring stream; and being thereby put upon considering what to do with it, found, on having it chemically examined, that it could be so turned to account that an additional profit of 3,000*l.* a year could be made of it. This is a good exemplification of the maxim that "dirt is only matter in the wrong place"; and perhaps not a few instances might be found in which a similar course of legislation and investigation would lead to similar results, to an extent that would never be surmised without experiment. But it must not be expected that in all cases of a similar kind so happy an economic result would be obtained. Great, we might say golden, hopes were held out to us from sewage, and we cannot conclude that its possibilities have been solved exhaustively as yet; but so far the economic results are, at all events, very doubtful. "There are always," says Mr. Gladstone, "people who think their interests are concerned in maintaining the existing state of things"; and he infers that they will find themselves mistaken, and that, after the example of his paper-mill anecdote, they will always find it to their account in taking steps to prevent the pollution of a neighbourhood by their manufactures. So we believe they will, but not always in the pocket: it would be fallacious to urge this. We must take higher ground: the ground of duty to one another, of the general health and well-being of the community; which, in fact, does ultimately and indirectly, if not directly, affect the well-being of every member of it. If this duty on the part of the manufacturing capitalists, of doing what is in their power to counteract the unbeautiful and unsanitary effects of the processes by which they have their wealth, were universally recognised and insisted upon by the moral pressure of public opinion, so that it should be considered disgraceful to a capitalist to destroy the beauty and healthfulness of a town and make no effort at compensation and counteraction of the evil, the subject would eventually come under the head of economics, as one of the necessary expenses to be considered in reference to the capital laid out. There are already noble examples of the adoption of this creed by great manufacturing capitalists; but they are few and far between, and it will be long before we get it adopted as a universal article of faith. That, however, is what we have to work for, and to be instant in season and out of season about; not merely to tell people that they may make more money by using up their refuse, for example, instead of throwing it on the neighbourhood, because that may turn out not to be the fact; but to insist that it is their duty to consider the effect of their proceedings on the sanitary condition and aspect of things, and do their best to minimise the noxious part of the result, whether it "pays" them (in cash) to do so or not. In certain cases this is of course provided for by legislation; but there are evils and iniquities which are great and real, and which it is yet very difficult for the law to touch.

As Mr. Gladstone put it in concluding his remarks,—"Most of us can do something to prevent the pleasant things which have been vouchsafed to us from being deformed and defaced by the hand of man in the future." That "something," if diligently done by each one who feels convinced of the desirability of doing it, would amount to a very considerable force of public effort and public opinion; though there would still, probably, be a numerical majority on the adverse side. For we have to contend not only with those who, as Mr. Gladstone says, think their interests are involved in maintaining the existing state of things, but with those who would maintain them simply because they exist. This latter class of "obstructives" present a formidable obstacle often to town improvements. As a mild example, it has not unfrequently been proposed that the wide roadway of Portland-place offered a fine opportunity for a boulevard, a row of trees down the centre. Mentioning this to a householder in the street the other day, we learned that, whenever brought forward, the idea had been opposed by some of the oldest residents and owners of houses, on the simple ground,—"We have never had trees there; why should we have them now?" The story is typical of a great deal which stands in the way of London improvements, and, we presume, of improvements in other towns. We can only contend against this by continually urging the subject; it requires, as Mr. Gladstone said, that "people should think about it a great deal," and each do what he can; and we thank him cordially for a word in season, though delivered amid somewhat singular accompaniments.

The New Educational Buildings, Nottingham.—The first sod of the site of the New Educational Buildings in Horse Fair-close was turned on the 25th ult. by Mr. Councillor Goldschmidt, Chairman of the Free Public Libraries and Museums Committee; and amongst those present were Mr. Richard Enfield, representing the anonymous donor of 10,000*l.*; the town clerk, the borough engineer, the contractor and clerk of the works. Messrs. Fish & Son are the contractors for the first portions of the buildings, and Mr. John Loverseed, of the Park, is sub-contractor for the excavations.

CURRENT CONVERSATION.

Peerage property in the metropolis was, not many years ago, the subject of an article in the *Builder*. We discovered that nine peers owned more land west and north-west of Temple Bar than any ninety commoners; and had it not been for the tempting alliteration of nine and ninety, we are not sure whether a greater difference would not have been more correct. However, the nine peers who own that large part of the metropolitan soil,—for ever and ever the inheritance of the Dukes of Bedford, Portland, and Westminster; of the Marquises of Exeter, Salisbury, Northampton, and the Marquis Camden; of the Earl Craven and the Earl of Portman,—are immensely interested in the question raised by Lord Salisbury or his agents, as to the privileged rights and pecuniary exigencies of those few families who, by the long custom of this country, are born to rule it. Such a question allowed to remain unanswered in another part of Europe has induced revolution, followed by destruction, both political and human; but here it is quietly dismissed with a sneer at the decision of "only" a Lords' Committee and the suggestion that the zeal of legal advisers or the acuteness of auctioneering agents is at the foundation of a blunder of which the noble perpetrator is superbly ignorant. But the fact is, a greater question was at stake last Monday evening than many even of those who heard the debate were probably aware. Only an Act of Parliament can make the land upon which the greater part of Central London is built a marketable commodity. Only an Act of Parliament can enable the thirty millions who inhabit the British Isles to buy what for centuries has been, and still is—speaking generally—unpurchaseable. If, therefore, a great territorial freeholder, with the consent and connivance of the House of Lords, can defy the country by the mouths of its representatives to do what it does with impunity to the petty landowners, his neighbours, it would be, not exactly impossible, but commercially disadvantageous, to make new streets in the heart of the capital. The case of Huddersfield has been cited. It once belonged entirely to Sir John Ramsden, who by some ancestral fluke became the possessor of a large town, crowded with houses, instead of a few fields shaded here and there with hedgerows and elms. The corporation wanted to improve the town it and its predecessors had built, and it obtained an Act of Parliament to acquire land in order to pierce new thoroughfares. Parliament,—and the House of Lords is included in the term,—gave it permission so to do, the consequence of which was that the frontages of the new streets became the property of several Englishmen, instead of one. The original and exclusive landowner, who would not or could not improve the town, the foundations of which were his, was replaced in parts by several landowners, who were both able and willing to bring about their own and the general good.

The Marquis of Salisbury did not figure as an obstructive. He was quite willing to see public improvements effected at the public cost, and to accept from the metropolitan ratepayers the additional value which such improvements gave to his land. All that he desired was to be paid a large sum of money for certain strips, the conversion of which into a new street would leave him frontages of comparatively enormous value, and to retain those same frontages for his own benefit and commercial profit. This was not obstruction. It was simply the proceeding of a shrewd man of business, who knew the value of land to an hereditary landowner, and the power which the peers can exercise when they choose to exert it. How these great estates were originally acquired it is always politic and polite to hush. Property is property, and, no matter how it was obtained, possession is not only nine points of the law, but it is the law itself. Most of the outlying lands of those noblemen who, three centuries ago, occupied houses in the Strand were "church" lands, which at the Reformation became everybody's property. How and at what price the ancestors of the Duke of Bedford obtained the "Convent Garden" is well known; Lord Salisbury's land in St. Martin's-lane was no doubt the property of what was once "the church," and it is not unlikely that the fields on which St. Martin's is now situated fell, like "Long-acre," to the arm of the strongest at a trifling cost.

The loyal heart of Mr. Froude must have 'ed within the last fortnight or three weeks. The historian of the imaginative Irish not only travelled beyond the Tweed to tell hard-headed Scotchmen how lucky we English are to possess landlords who do not make a commercial speculation of their land, but he even printed his discourse. His felicitations were certainly balm to many who think that a system which gives four-fifths of the English soil to less than 10,000 persons is prejudicial to the legitimate interests of the greater number of Englishmen. It is certainly a hard and poor return for his generous assurance that the very first attempt, since the publication of his speech and paper, to create a long-called-for metropolitan improvement, should have been signalised by an act subversive of his chief argument.

The Peers are not singular as a source of extraordinary expense to the metropolitan ratepayers. The outlay required to obtain the consent of Parliament before the simplest improvements can be begun is, it cannot be disputed, very large. Counsel will not examine, solicitors will not negotiate, architects and surveyors will not express opinions or give advice, without being adequately paid for their experience and time; but when a committee of the House of Lords, at the instigation of a peer who has suffered no worse expropriation than his uncomplaining neighbours, inserts a clause which renders it necessary for the Metropolitan Board, in the interests of its constituents, to withdraw a Bill, the expenses are multiplied and the burden upon the ratepayers who have to pay for the Lords' opposition, is rendered sensibly heavier. The outlay required, according to the provisions of another amendment also made by the Lords, to house the expropriated poor—and which must fall principally upon the middle classes—will be also a burden; for, according to the terms of the Act under which these new streets are to be made, certain portions of the new frontages are to be let at a reduced price expressly for the erection of artisans' dwellings. Thus had there existed half a dozen blind alleys and miserable slums instead of a nobleman's mansion upon the site of Northumberland House, the metropolitan ratepayers would have been compelled to let a part of that land, say, at one shilling instead of ten shillings the superficial foot for eighty years; and instead of hotels, public offices, and fine houses of stone, granite, and marble, the Londoner would have continued in the enjoyment of his accustomed brick and compo,—the windows patched here and there with pieces of cloth and paper,—and of a motley combination of lodging-houses shared by an infinity of tenants who each sublets a part of his own lodgings. That this will happen in the new street from Charing-cross to Tottenham-court-road is certainly not unlikely; and ratepayers will have the satisfaction of assisting artisans and labourers not only to enjoy town, but also to live in a brand-new thoroughfare in the midst of a population who, because they are not artisans or labourers, have to pay ten times as much for the houses, or parts of houses, in which they reside, as their luckier and more muscular neighbours. Houses for the working-classes must, of course, be provided; and the cost of doing this must be regarded as part of the cost of rendering the town salubrious, by which all will benefit. That it should be done with wisdom is all we ask.

Sir Sydney Waterlow's evidence before a Committee of the House of Lords which sat to consider this same Street Improvements Bill is not offered to the public; but from what is said the honourable baronet seemed to go a little too far. Of course the piercing of a broad new street through a labyrinth of alleys might mean improving the tenants of these alleys off the face of the soil. The conditions of modern legislation, however, compel the improver to provide other dwellings for those same tenants. This undoubtedly is as it should be; but it may be thought not fair to the community at large,—and it will have a great effect in reducing the value of the adjoining land,—to compel the ratepayers to provide accommodation in a new street of 70 ft. or 80 ft. wide, for the shops of birdfanciers, and old-clothesmen, the rag and bottle warehouses and brothels, which in Soho must succumb to the axe of improvement. It is very hard, we admit, to offer a solution to the question of improving Central London and retaining the poor quarters. It is not for the *Builder*, which for more than a generation has exposed the home miseries of the poor, and urged the necessity of giving them proper houses, to say that such houses ought not to be provided, even to some extent at the public expense. But we certainly do not ask to have such houses,—barracks of artisans' dwellings,—in our new West-end streets. "Do you think," Mr. Cripps is reported to have said, "that in such a street as we design in the West-end improvement,—a great leading thoroughfare, with important shops,—it would not be a block to have labourers' dwellings fronting the streets?" "I do not believe," replied Sir Sydney Waterlow, "that you would think so if you saw the dwellings which are now occupied under the same circumstances, *with flowers in the front windows and decent blinds.*" Now this is aiding one's clients too much; and we do not mind saying that to have the artisans' dwellings, to which Sir Sydney refers in the very centre of another and far nobler "Regent-street," would be neither wise nor just. The poor families who are to be turned out of parts of Soho and St. Martin's-lane must be located in other parts of Soho and the vicinity of St. Martin's-lane. If the metropolitan ratepayers are to pay indirectly for re-housing them, they will lose less by buying two sides of an old street in a poor neighbourhood than by devoting any portion of the frontage of the new streets, at least at the West End, to the erection of "model" blocks of barracks or dwellings.

The Indictment against the Metropolitan Board that it does not see the wisdom of spoiling commercially a great thoroughfare made with its constituents' money, is doubtless true; but at the same time it should be remembered that the Board is elected by the metropolis to do certain works in a business-like manner. It is a commercial not a philanthropic body; and if the poorer classes are to be properly lodged in Central London and in the heart of rich neighbourhoods, their housing must be done wisely. It would be extremely dangerous if the Metropolitan Board, pulled up by its constituents for spending too much money and for extravagance, could reply that the too much money which had been spent resulted from the Act of Parliament and the Lords' amendment.

Paris and London seem to be treated, as regards the homes of workmen and of the poor in opposite extremes. In the French capital, especially during the great Napoleonic expropriations, they were driven from the centre to the suburbs: thousands of workmen were to be seen hastening night and morning to and from Neuilly, Courbevoie, Montmartre, Belleville, and other places, and the outside seats upon the omnibuses, which cost three sous, were usually monopolised by Messieurs and others in artisan attire. In the English capital the poor and the majority of working men are located in the centre of town; and not only is the tendency of the Londoner to live out of London in favour of maintaining the poor within the centre, but it seems to be generally recognised that the labour of a long walk or drive, which is useful to the man who works with his brain, ought not to be imposed upon him whose work is principally muscular. Moreover, many women of the poorer class work for shops situated in the centre, and time lost in carrying articles from their homes to their employers' shops is of considerable importance, both pecuniarily and morally, for often they have to lock up their children while they run out. It would be curious if both capitals failed in their attempts to improve the homes of the multitude, because both acted in direct opposition to the avowed sentiments and commercial instincts peculiar to each. Yet such a result unhappily achieved in Paris is not unlikely to happen here. The troubles of Paris have partly risen from a too great adherence to the commercial principles of municipal extension and improvement, and the exaggerated disregard of landlords' rights. In London, the inclination seems to tend towards ignoring business principles in the matter of the poorer dwellings, and towards accepting the over-assertion of landlords' rights. Let us hope that such over-assertions and want of discretion will not bring similar trouble to England one of these days.

The Poorer Classes are defined differently by people of different grades; but the public should learn to discriminate between the artisans and the poor. If an artisan, who works five days and a half a week is numbered among the poor,—if the laws of business are to be set aside, if special legislation is to be devised for housing him, then half the curates, nearly all

he literary hacks, many artists, and a host of ther educated men and women in London may laim to have an equal right to enjoy the philan-hropic favours of both Lords and Commons; nd though we doubt whether they would care o inhabit blocks of model dwellings erected artly under sufferance of the metropolitan atepayers, they could do so with quite as good grace as any member of a trade-union, earn-ng his 9d. an hour. The ratepayers of London ill be contented to lose a hundred thousand ounds or so in the construction of a new street, f they understand that the really poor and de-erving unfortunates of an enormous capital would hereby get rooms in which to dwell decently; but hen they are asked to spend that money for the enefit of artisans whose incomes are larger than hose of a vast number of even better men, it is ot surprising that the Metropolitan Board should esitate, in the interests of the general public, o set apart the best sites for the purpose. It is ot surprising that the Board has hitherto hesitated o let any such sites to the first limited liability ompany which asks for them at an eighth or a enth of their market value. The middle classes f London are already heavily taxed, both irectly and indirectly.——Almost ever since the reat Fire there has been a privileged and an nfinitesimally small part of the community,—the andowners,—into whose capacious coffers the avings of the middle classes have slowly drifted. et these landowners never forget their position, if hey wish quietly to retain it; let them remember he responsibilities attaching to it, and that small berality in good time may prevent large losses ereafter.

THE OLD GUIDE-BOOK TO MYCENÆ AND OLYMPIA.

Who was Pausanias?—the Pausanias whose ame has been brought before us all so repeatedly f late in connexion with the explorations in reece? Whether we are appealed to to recog-ise the palace, the tomb, nay the very remains f Agamemnon at Mycenæ, or the subject of a roup of sculptures dug up at the scene of the orld-renowned Olympic games, the appeal is ill to the testimony of Pausanias. He was in ot the author of a very detailed handbook,—an ncient representative of Murray or Bädeker, r the greater part of Greece. Yet we only ather his name from his title-page; no ancient uthor quotes or refers to him, and he himself, otwithstanding that he lets us in to his haracter undesignedly, never takes pains to btrude himself, and leaves us to pick up acci-ental hints as to his origin while he attends in ll singleness of mind to the business that more nterests him. So we are able to gather infe-entially that he was probably a Greek of Asia linor, and the district of Lydia,—so we can etermine certainly that he lived under Hadrian nd the two Antonines, was occupied upon ifferent portions of his book, and the journeys hich gave him his materials between 162 and 74 A.D., and at the latter date was only part f the way towards completion. His account xtends over nearly the whole of Peloponnesus, ver Laconia, Messenia, Elis, Achaia, Arcadia, rgolis, and so forth, and to the north over ttica, Bœotia, Phocis, and Ozolian Locris. His hief interest was to make note of what, in a hrase very usual with him, was "worth seeing"; nd what he considered worth seeing comprised certain number of natural curiosities, but above ll works of art that were remarkable for ntiquity or sanctity or proper artistic excellence. Monuments that were connected with great ames, whether mythical or historical, whether f renowned or unknown artists, are noted by im and chronicled in scores,—in hundreds. nd still he has attention to spare for much hat he considers "worth hearing,"—popular or riestly legends and ceremonies connected with articular sites or statues, mythology, and raditions. Then he is given to breaking off ddly and unaccountably enough to interpolate section of Greek history that, as it comes in bruptly, breaks off quite as a fragment. Some f these extended episodes are very valuable dditions to knowledge of history; nor less so re many of his quite incidental notices. As gards the social state of the country as he ound it, any allusion to it is quite accidental. he illustrations which he furnishes of the istory of ancient art and ancient religion, and nen his services to geography, are of a value that an scarcely be over-estimated; he often dis-ppoints us by omitting what he could so easily nd so interestingly have told us,—tongue-tied in some critical cases out of deference to a warning dream; but it is impossible not to be grateful to him as well as not to admire the diligence of the worthy man and his con-scientiousness withal.

And what a catalogue of art and antiquities was it not given him to compile! Ravaged and pillaged as Greece had been by civil war and conquering Romans, the cities which Pausanias visited one after another were still replete with works of renowned artists and monuments of early progress in the arts, or of primæval objects of veneration. A tourist from England who visits the north of Italy for the first time is astonished at the rapidity with which an hour or two on the rail carries him from one celebrated city to another, each with a history and an aspect of its own, each retaining still, in spite of dis-persion and decay, productions of art sufficient to be the glory of the capital of a kingdom. In Greece the wealth of the country in similar respects was even more remarkable, for centres of such interest could there be reached by tra-versing a few miles on foot, and their collective territories could almost be comprised within a single view from an elevation not so high as to rank as a considerable mountain, or scarcely a mountain at all.

The journeys and notes of Pausanias become especially interesting when we consider their precise epoch. They coincide with the latter part of the best period that the Roman world enjoyed under the Emperors,—with that period, indeed, during which, according to Gibbon, the condition of the human race might be unhesi-tatingly declared the most happy and prosperous. As regards the arts, Pausanias had no interest to spare for contemporary productions: we on looking back can observe that he might have lived to witness the dying out of ancient sculpture; a few busts of merit are all that survive to witness for the continuance of even moderate ability into the next period. With respect to opinions, his position is especially curious. It is much if a single passage can be interpreted as acknowledging the existence of the sect of Christians, though when he visited Corinth a hundred and twenty years had elapsed since St. Paul had founded there the church which at this very time was treasuring and re-copying his epistles. On the other hand, his tone of mind was still more remote from that of the satirist Lucian, who at this time was turning into ridicule every god and goddess of Olympus by assigning them parts in farcical dialogues, and treating quite as unceremoniously the affecta-tions not to say hypocrisies of pretended philo-sophers who were on the look-out for the heritage of expiring superstitions. Between these two parties Pausanias occupies a place in relation to the old religious systems of Greece, which is curiously like that of Herodotus, the father of Greek history. He is so far superior to him that he is not haunted by a feeling that the gods are animated by all the mean jealousies of human potentates; but he is much on a par with him in his recognition of the distinct personalities of the various gods, and of a general substratum of truth in the legends respecting them; however, some latitude may be admissible in accepting them all or literally, considering how tradition and the poets together had manifestly interfered with many. But he is far more simple than shrewd, and what shrewdness he can display is very intermittent. He finds at Sparta a statue of Mars chained, and compares it consistently enough with the Victory without wings of the Athenians; but he mentions without remark that so it was thought in both cases to secure the permanence of warlike success. Presently, however, he comes upon a figure of Venus in chains, by which he agrees that Tyndareus, father of Helen and Clytemnestra, intended to symbolise the duty of conjugal fidelity; another account, that Tyndareus de-signed in this way to punish the goddess as authoress of his daughter's infidelities, he rejects entirely,—"for it would, indeed, be utterly absurd to propose to punish the goddess by ill-treating a figure which he had made out of cedar wood and called Venus." At Troezene he came upon a locality where it was said that Bacchus brought back his mother, Semele, from Hades, and Hercules dragged up the dog of Hades. This is too much for him; he says bluntly,—"I do not believe that Semele, who was a wife of Jove, ever died at all; as to the so-called dog of Hades, I will say what I think on another occasion." He is as good as his word. When he gets to Cape Tænaron, the most celebrated scene of the story, he says, in the first place, that the cave there was destitute of any passage downwards, and that in any case he did not believe that the gods had an underground resi-dence for the reception and assembly of souls. As to the dog,—the likeliest explanation he had met with was that a poisonous serpent at Tænaron got the name of "dog of Hades" from the deadliness of its bite; that it was this serpent that Hercules brought to Eurystheus, and that it came to be regarded as a dog, was endowed with three heads, and got the name Cerberus in times after Homer, who says nothing of these details. As his work advances, however, and it was in progress many years, his point of view on such matters changes. He is in constant intercourse with the persons who were most closely attached to the sanctuaries where he found the objects which most interested him, and was always eager to listen to any local fable, and with peculiar respect to any ancient tradition, if it bore the stamp of seriousness and reverence, whatever of rude, or even grotesque, it might be associated with. Whatever progress new opinions might be making elsewhere,—and Christianity had now just completed half its course from its origin to its public establishment by Constan-tine,—the precincts of the temples with their constantly-recurring rites and festivals and func-tions connected with the custody of what was at once both precious and sacred, are presented in his narrative as still uninvaded by the surging waters of new thought. We observe that the more secluded the locality, the more primitive was ever the form which traditions retained. This is what might be expected; in the more frequented cities rites of coarse symbolism were liable to be vulgarised first and then discredited, while the more refined became divorced from any principle of deep seriousness by being absorbed into poetry and made material for mere imaginative treatment. But in retired situations legends came down honestly; and we are sur-prised to meet with many still retaining the crude forms which Homeric poetry had taken possession of long before historic times, and dealt with as matter for poetic suggestion un-checked by scruples of any kind. We come, in fact, upon true survivals from a time when a respectable symbolic purpose excused any dis-regard of elegance, and even of the proprieties. Various mysteries and initiations which were scattered over Greece, and of which those of Eleusis were only the most celebrated, were habitually occupied in engaging the respect of votaries by connecting solemn obligations and sacred meanings with traditions and rites, that, to those outside might well seem meaningless or worse. Every religious tradition, however mon-strous in form, has, in virtue of being prompted by the religious impulse, a germ which may be developed more nobly; and, doubtless, on the other hand, it has constantly been a maxim among those who sought to work at any cost upon the crude religious instinct of the ignorant, that awe is capable of being promoted by in-sisting solemnly on the irrational, and even on the gross. So it is that the old Greek religion is brought before us by Pausanias as lingering obstinately about its earliest haunts, and attach-ing itself sometimes to the images and practices that seem relics of barbarism, and at others to all that is poetical and refined. So was it ex-posed by double reaction to be denounced as fundamentally debased, or else as having de-generated into the insincere and simply orna-mental.

When Pausanias gets into Arcadia, he is told this story by the natives in relation to a foun-tain—Arne—lamb-fount. "When Rhea brought forth Poseidon (Neptune), she laid him in a meadow, to be reared among the lambs, and hence the fountain on the spot obtained its name; to Uranus, who was given to devouring his children, she told that her offspring on this occasion was a foal, which she presented to be swallowed accordingly,—just as she saved Zeus, another child, by substituting a stone wrapped in swaddling clothes." "Now stories like this," says Pausanias, "I regarded, when I began my book, as mere absurdities, but after making some progress in Arcadia, I have accepted this as-sumption regarding them. I conceive that the presumed wise men of the Greeks made their enunciations of old not directly, but by enigmas, and that this account of Uranus is wisdom of some kind. Let us entertain, therefore, without cavil, what is told us about matters that have reference to the divine." He does not give us to understand in this instance that he knows what was the wise saw wrapped up in so strange a guise. On some other occasions he tells us

distinctly that he is in the secret which must rest between him and other initiates.

Between the superstition with which Pausanias puts on record the wildest traditions, and the simplicity with which he will assume a recondite moral in the strangest attributes and anecdotes, his work is an inexhaustible mine for the student of Greek religion and mythology,—the more valuable as purest sincerity can always be relied on. The cases are innumerable in which poetic allusions and subjects painted on the vases would have remained unintelligible but for the hints he puts on record. The student of Greek art and its history is under like obligations to him. It is impossible to over-estimate the services his writings have contributed to the elucidation and appreciation of ancient works of art,—both the preserved and the lost. Yet never was traveller more destitute of sense of poetry or taste in art. When Sheridan was asked how a contemporary was likely to describe a phœnix as an emblem of his theatre rising from its ashes when rebuilt after the fire, he said:—"Like a poulterer,—he will not spare us a feather of it." So, Pausanias sets down the details of a fine composition as if he were taking an inventory. Whether he stands before the sculptures of the temple of Olympian Jove, or in a painted portico,—he begins at one end of the composition and plods along from figure to figure till he reaches the other. This, however, is much better, and we are more grateful to him than if he had filled his page with false ecstasies and verbose and equally defective criticism. It is in the power of criticism, with the materials which he gives us to work upon, to recover, in most cases, the general scheme of composition. This has been done with success in respect of two important pictures by Polygnotus at Delphi, of which he catalogues the dry enumeration of persons introduced to the number of some scores. Still more importantly it is the case with the ornaments of an altar and throne at Amyclæ, in Sparta, which were covered with sculptured subjects, and associated with an archaic bronze figure of Apollo. This was some 40 ft. high, and bore a general resemblance to the now familiar figure of Diana of the Ephesians,—a column surmounted by a head and with arms only and feet.

Still more important in relation to works of art of the highest and noblest style are his detailed accounts of the statues of ivory and gold,—the so-called chryselephantine statues of Athene and Zeus,—that is, of Minerva and Jupiter, which Phidias made at Athens and Olympia. It is a trifling but interesting illustration of his accuracy, that the recent clearance of the site of the Olympian temple has brought to light fragments of the black marble which Pausanias mentions as forming a pavement round the immediate base of the statue. The same excavation is now daily recovering the figures, more or less complete, that he saw and catalogued on the exterior of the temple; but even the possession of these is less important for the appreciation of ancient art than his description of the statue within, every fragment of which is beyond all hope and question lost for ever. After a period of 600 years from the date when Phidias completed his masterwork, it still remained intact and in all its perfection. Olympian Jove,—a figure of such colossal size that, even as seated, its head reached nearly to the roof of the temple,—was, according to the general testimony of antiquity, an embodiment of gracious dignity, of majesty in that aspect which represented to a Greek his highest conception of the divine. Yet it was bright with colour and enriched by a variety of materials, ivory and gold chiefly, but also other metals and contrasted marbles; and besides subjects painted on the base of the throne, the robe of the God was also adorned with flowers and animals painted upon it by the brother of the sculptor. A crown of olive of natural colour was on the head, the sceptre on the left, surmounted by an eagle, was variegated by intermingled metals, and a figure of Victory of ivory and gold, wreathed also and holding a fillet, the symbol of victory in an Olympic contest, was on the extended right hand. Figures and groups enriched the arms, supports, and back of the throne, and golden lions supported the footstool.

When Mitford wrote his history of Greece he adverted to the art of Phidias in these terms:—"Meanwhile Phidias himself was executing works of statuary which, *while they lasted*, were the admiration of succeeding times. Nor does the testimony to these works rest merely on Grecian report; for the Romans, when in possession of all the most exquisite productions of Grecian art, scanty relics of which have excited the wonder and formed the taste of modern ages, were at a loss to express their admiration of the sublimity of the works of Phidias."

More of these works had lasted to his own time than the historian supposed, and the British Museum now contains no scanty portions of them which excite the admiration, the despair, of modern sculptors; but even these, while they assure us far better than any Roman testimony, of the genius of the great Athenian, give us no aid to his solution of that problem which the moderns have never ventured to approach,—the combination of great variety of colour and material with a work of sculpture of the very highest dignity.

Certainly on a par with this work, and perhaps superior to it in the same characteristics, was the Minerva of the Parthenon at Athens; these are only two examples of numerous works of art of the purest style or highest interest, that Pausanias describes in his common-place way in the course of his peregrination. Many a traveller, no doubt, followed his routes, and was indebted to his indications before the majority lost their interest with the advance of a new faith. Some 200 years later, in A.D. 395, the Gothic host of Alaric swept over the peninsula from end to end, and nominally Christian as he was, he had as little disposition to stay the wanton destructiveness of his soldiery as to check the zeal against emblems of Paganism of the monks who accompanied them.

Centuries more have rolled by, and the services of Pausanias again come into demand. Our own Colonel Leake, as true a Phil-Hellene, and also as thoroughly prosaic notwithstanding, made him his travelling companion and guide, and set our own century an early and valuable example of simplicity and conscientiousness in a work of critical topography. Now from week to week we are expecting revelations of importance to history and art, our gratitude for which will be divisible between the energetic explorers and the author of the old guide-book whose pages lie ever open beside them as they work.

THE PARIS UNIVERSAL EXHIBITION.

Steadily in the midst of the natural excitement caused by the political state of France, the works of the great Exhibition advance toward their completion; but ten short months separate us from the time when the Palaces of the Champ de Mars and the Trocadero will be thrown open to the world. While on every side huge girders are being adjusted in their places, and the elegant colonnade of the Trocadero is rising, the general commission has also been hard at work completing the arrangement of the regulations. No less than 33,500 demands, against 19,000 in 1867, from French exhibitors alone, have been received; and although the space is considerably larger than in 1867, though the Quai d'Orsay has been granted for the animals' show, the administration has, unfortunately, not been able to accord to certain exhibitors all the space that they require.

As for the Superior Commission of international Exhibitions, its members met three times last week. In the course of these meetings some important resolutions were taken. One of these fixes at 1,500,000 francs (60,000*l.*) the sum to be employed in prizes. Another fixes at 300 the number of recompenses which will be awarded to French exhibitors, and at 350 to foreigners. It establishes also that the division of these latter amongst the various nations who will take part in the Exhibition, will have for basis the surface occupied by each of them, the number of exhibitors and the importance of the objects exhibited. The third article determines the formation of the juries charged with awarding the recompenses, and decrees that the lists of the jurymen will be given for the foreign exhibitors by their respective Governments.

Many persons will remember what interest the Japanese exhibitors at the Alexandra Palace, Muswell-hill, some years back, excited, as they erected their houses and show-rooms; here in Paris we have already received an instalment of Persian architects and builders, who are going to erect a Persian palace. This building, which will be some two hundred yards square, will be composed of a first story, surmounted by a belvedere. The walls will be ornamented with the beautiful tiles for which Persia is so famous, and the windows and whole decoration will be in pure Oriental style.

In distributing, on Saturday, the 4th inst., at the Conservatoire, the prizes to the success candidates in the National School of Singing a Music, M. Brunet, the new Minister of Pub Instruction and Fine Arts (why have we not England such a position?) delivered an intere ing discourse, from which we extract the follo ing passage relative to the Exhibition of 18 In referring to the insufficient size of the exi ing concert-room of the Conservatoire, M. Bru remarked,—"This room, which the refined, t lettered have judiciously compared to a Stra varius,—this room, which can only contain a f chosen persons jealous of their places,—this ro has ill sufficed, for a long time past, for t eagerness of a public which each year increas in number. Dramatic music has its splend palace; symphonic music is on the eve of havi one also, it will have the palace of the Trocade That is equivalent to saying that, at the Exhi tion of 1878 a large share will be awarded music. Up till the present, the plastic arts h alone freedom in these great manifestations art and industry. Music, as it were, was e cluded; 'to exhibit sounds, it was said, impossible.' Experience, I may say, will so show the contrary. At the request of ma different artists I have studied the question. have confided, also, the matter to a compete committee, and soon, I hope, in the vast conce room which will for the future belong to t city of Paris, we shall assist at great natio *fêtes* in which the authors of the *chefs d'œuvre* all nations will join with the same enthusia the interpreters and admirers of the classics symphony."

Paris.

THE MASONS OF PARIS.

The society of masons and stonecutters Paris is, at the present moment, erecting in t Rue des Chantiers a large building destined serve as a club-house, a lecture-room, a school. The end which this society proposes attain is the moral and intellectual instructi as also the welfare of its members. Thanks the pecuniary assistance given to aid the wo the new building will perfectly answer eve requirement. A dispensary and an infirma will be annexed. Contractors will thus be al to have their sick workmen taken care of, a all the attentions of an absent family supplie The inauguration of the new club is fixed for t 15th of next September. The formation of th club has seemed to us a favourable opportuni to speak of French masons and of Parisi masons in particular.

As is well known, the art of masonry is ve ancient, but it was only in the reign of Louis IX in the thirteenth century, that the masons France formed an important corporation. Thank to the perfect understanding that existed amon the different members, the art of masonry mad rapid progress, and in the present day it may b said that France occupies, in that respect, th first rank among all other countries.

Among the masons, there is the *limousin*, wh works at the foundations; the *compagnon*, wh does the light work; and the *aide-maçon*, wh is a simple hod-man. The departments, or, s we should say, the counties, which furnish th largest number of masons, are those of the Creus and the Corrèze. No less than 60,000 work men come each year to Paris to exercise thei profession; many, after remaining during th summer in the capital, return home for the thre winter months. These emigrations are chiefl caused by the sterile and unproductive nature o the soil of the country. As for the slaters, thei origin is much more modern. We learn tha King Dagobert covered the cathedral of Sain Denis with sheets of lead, but this was a unusual occurrence; tiles and slates have bee introduced comparatively recently.

In Paris, the home of the masons is the Ru de l'Hôtel de Ville, formerly known as the Ru de la Mortellerie, in consequence of the ravage which the cholera produced there in 1832. Thi street offers to the lovers of the picturesque th most strange aspect; from end to end the Ru de l'Hôtel de Ville is peopled by workmen know under the various names of *limousins*, masons stone-cutters, and dressers; they are true work men, who think only of their work, withou caring about the *chefs-d'œuvre* in the building o which they play so important a part. They leave their villages to work in the great city under direction; and when the task is completed they return home, little thinking of what they have built; to such a pitch is this indifference to all else carried, that often in their old age

y express a hope that they may not die before ving seen Paris.

These masons, almost all coming from the ne part of the country, seek to keep together: e lodgings inhabited by these workmen are med of rooms, in which sleep together *coteries* cording to the technical expression used by em), composed of six, eight, twelve, or even enty-five workmen. Each *coterie* comes from e same village. They leave home for work at e in the morning, each bearing with him a ge hunk of coarse bread, in the middle of ich has been inserted a red-herring or a piece *merluche*, or salt cod. This meal, washed wn by a glass of water, and taken while at rk, at an hour usually marked by several hs struck together, serves till the evening, en the gang returns home, at about seven, d finds laid on a long table knives and forks uivalent to the number of lodgers. Soon a rge bowl is brought to each, filled to the edge ith a thick, fat soup, exhaling a really appeing odour, and in the middle of which is a ce of beef surmounted by a large carrot. Each dger takes his place, and in a short time the ole is consumed, the general harmony only m time to time disturbed when some one of e party is noticed to have a larger carrot than s neighbour: immediately a shower of witty d stinging remarks are launched, in which the mes of the lucky lodger and the cook are ingled intimately.

After the meal, the workmen, who are, as a le, excessively sober, go and pass on the neighuring quay the hour or so which separates em from the time of retiring to rest. They ay then be seen sitting on the parapet, silent, d not smoking, which may appear strange, at which is in reality true. The mason has ten been criticised on account of his small mount of education; however, this family of orkmen is as honest in its outward form as it upright in conduct, and it is very rare that a sser-by has ever had to complain of any sult or inconvenience.

Let it be remarked that, after the evening eal, as after the morning repast, the mason ily drinks a glass of water; he has then spent his day eighty centimes (about 7½d.) for his od, and forty centimes for his bed; in all, one anc twenty centimes (not a shilling), and as he ains five francs fifty centimes,—that is, someing more than 4s.,—he realises each day an nportant economy. Let it be remarked, however, that the mason does not dress himself: he ily lives in the city during the fine weather, nd simply needs for his work a blouse, a pair f corduroy trousers, and a large felt hat, which he rings from his home, but which is rarely worn.

The rooms of which we have spoken are almost l uniform; the beds are composed of a hard attress and sheets of coarse linen, but always ean and well kept. A square box in which the orkman keeps his tools, his trowel, his square, s plumb, and sometimes also his letters from ome, is placed under the bed. Let it not be nagined that the dust that covers it is the ust of oblivion: respect it, it is the dust of the wner's profession.

The old workmen are generally married in the ountry, where the wife, who tills the piece of nd, increasing in size each year, brings up her hildren in the paths of honesty and labour, and hus forms the masons of the future. On returng to Paris, like the "swallows," with the fine eather, the mason transports his habits, which e preserves pure and unsullied from alloy with he civilisation of the capital. He puts by, and f the pay of each fortnight he spends alone hat is necessary, but it is not the box which ill receive his economies. The money will be, owever, placed by the side of the trowel which ained it, in the hands of the *doyen* of the room, ften a municipal councillor in the village, and ho thus preserves amidst his brethren a real uthority.

At the end of the campaign, that is to say, ve months later, each one makes up his bundle o return home, and then each mason may be een with a knapsack on his back, a large pair f shoes outside, and in his hand a huge red mbrella. On the arrival near home, the caravan eparates, each rejoins his family, and hangs up is umbrella as a trophy and a recollection. As or the money so painfully gained, it is consecrated to the acquisition of a piece of land, the earest investment which the Frenchman can nake. On the Sunday the mason dons his suitble costume, and, having attended mass, wanders by the river, rarely, if ever, giving himself up o any costly pleasure.

Such is the life of the Parisian mason. How different to that of the London workman, and how little the two have in common, with the exception of hard work.

A COLONIAL ENGINEER ON THE RAILWAYS OF THE WORLD.

It is certainly good for people, to use the words of the poet Burns, to see themselves as others see them, in whatever line of life they may be. From this point of view a recently published Parliamentary paper has a good deal more interest than the majority of the documents which honourable members are so wishful to make public. The paper in question is "A Report of Observations on Railways made during a Tour in 1874 and 1875, undertaken by direction of the Government of Victoria." The author is Mr. Higginbotham, engineer-in-chief of the Victoria Railways. With an energy worthy of the Emperor of Brazil he travelled over nearly all the important lines of Europe, Asia, and America, and surveyed the railway world from the Rocky Mountains to the Cliffs of Dover. Much which is told to the people of Australia is necessarily commonplace and well known in this or the country to which it relates, but there is also necessarily much that is either new or distinctly suggestive in this lengthy report. Proceeding first of all to San Francisco, Mr. Higginbotham's first engineering object was the Central Pacific Railroad. This line, though wonderful on account of its length, including indeed, with its branches, 1,600 miles of railway, is noticeable for its bad and hasty construction and the poor materials of which it is made. But this was in some degree necessary owing to the rapidity with which the track had to be laid down. But this hastiness in the first instance soon necessitates reconstruction and a consequent heavy expenditure. This is a good instance, indeed, of the difficulties which investors find in regard to railways in distant countries. However probable the position of the line makes it that it will sooner or later be a pecuniary success, it is yet impossible for a person hundreds of miles distant to know the actual state of the permanent way. And this leads us to mention the gauge of the various lines in different parts of the world, for it is impossible in these remarks to do more than glance quite cursorily at some of the most prominent features in this paper. The general width of the gauge in the United States is 4 ft. 8½ in., but in some mountainous parts, and in branch lines used for mineral traffic, the gauge is 3 ft. only. Thus on the Colorado Central Railway there is the usual gauge as far as Golden City, when for thirty-two miles there is a break to a 3-ft. gauge. "The narrow gauge," says Mr. Harrison, "is used through the mountain gorge known as Clear Creek Cañon, which is steep and tortuous. The scenery is very grand. The sharpest curve is 440 ft." But no evil in railway construction has been greater than the want of uniformity of gauge. It was admitted, indeed, by all those connected with the management and working of the narrow gauge railways in Canada that a false economy was adopted in constructing them, and this admission, says the writer, "was made by gentlemen who had been the most earnest advocates for a gauge of 3 ft. 6 in." The saving, indeed, caused by the narrow gauge in the construction of some railways was far outweighed by the expense and other evils of a break of gauge, and it was Mr. Higginbotham's decided opinion that no more narrow-gauge railways would be made in Canada. Perhaps no country has suffered more from this want of uniformity than India, where the construction of public works has frequently shown a very considerable want of forethought. In some of the first lines a gauge so wide as 5 ft. 6 in. was adopted; subsequently what is known as the metre gauge was introduced, and the consequence has been a vast number of breaks very undesirable both as regards the traffic arrangements and the construction of rolling stock; thus at Agra the cost of transferring ordinary freight from one gauge to the other in labour alone is 1¾d. per ton. Let us now turn to Mr. Higginbotham's remarks in regard to stations. In no country has greater attention recently been paid to this subject than in America, where the growth of the traffic has so rapidly increased that not only has it been necessary to consider the accommodation for those travelling during the present time, but also to consider the probable increase in traffic. Thus at Boston at the present time 28,000 passengers per day came into the stations from the four railroads, and it was computed that in eight and a half years this number will, at the average rate of increase be doubled. The Boston authorities accordingly proposed to erect four stations, each 700 ft. long by 125 ft. wide, with streets between and adjoining them not less than 60 ft. each in width. The railroad station buildings of the eastern states of the Union Mr. Higginbotham considered good, and in some instances even "very fine" structures, and he is particularly struck with the success which in England has followed the attempts to obtain central positions for railway stations,—a circumstance, indeed, which must frequently have struck those who are in the habit of frequenting Continental stations. As regards the stations in India, it may be as well to quote the writer's own words:—"Many of the railway stations in India, on the lines over which I travelled, are large and commodious buildings, and in the principal towns attempts have been made at architectural effect; but, like almost all the efforts of this kind made by Englishmen in India, the result is not satisfactory. The stations at Lahore, Delhi, Gazeeabad, Agra, Cawnpore, Allahabad, and Jubbulpore, are all very spacious and substantial, and appear to be well adapted for the work which they have to do." This, indeed, is the chief desideratum, and individual ideas differ so much in regard to what is or is not an architectural success, that we are disposed to consider this considerable praise from a competent and well-informed critic; for if the stations fulfil their actual practical object, much as architectural beauty is to be desired, they must be considered as essentially successful,—much more so, indeed, than if externally handsome they were internally inconvenient. Another subject which occupied not a little of Mr. Higginbotham's attention was the materials of which wheels were constructed in the different countries. When we recall to mind the lamentable accidents which have from time to time taken place in consequence of some latent defect in a tyre, or from the powerlessness of the latter to resist atmospheric or other influences, no subject can have greater importance in the eyes of railway managers and railway travellers. In Canada, cast-iron wheels did not give satisfaction, and accordingly experiments were being made with wrought-iron wheels with steel tyres, which seemed to be likely to answer better than the former kind, which it was found impossible to have cast with perfect uniformity: consequently they injured the permanent way, and broke during the hard long winter of Canada. On the other hand, the intense cold of these regions is found to loosen the steel tyres of the other kind of wheel, so that for winter wear they really do not seem to have such great advantages over the cast-iron wheels. However, further experiments are being made with wheels with cast-iron centres and cast-steel tyres, as well as with wheels of cast-steel alone. Upon this point we may give Mr. Higginbotham's personal conclusions:—"There has always been a distrust of cast-iron wheels in England; they are believed to be much more liable to break than those of wrought-iron, and this is no doubt the case when the common cast-iron is used; but it is impossible to resist the testimony in favour of the safety of the cast-iron disc wheel, which is used in the States. The iron used in the best of these wheels is cold blast charcoal iron, made from the red hematite ores, and great care is taken in casting them. I feel convinced that the best of these wheels are as safe as the best wrought-iron wheels in any climate, and that they are safer than wrought-iron wheels with steel tyres in countries subject to severe frosts." It is at any rate quite certain that a wheel which is safe during a Canadian winter will be more than safe in Great Britain or Australia, and it seems that these and similar experiments should always be carefully noted in this country, where there is possibly less desire than in the colonies to try experiments with the object of equal safety or greater economy. There is much more to be extracted from this report of the engineer-in-chief of the colony of Victoria if our space would permit; we may, however, conclude with some interesting tables, by which those who wish will be able to compare the character of the passenger carriages of the various railways of the world. There are many more sketches than we have space for, but the following will repay a passing glance:—Great Western Railway (England),—first-class carriage, (*a*) number of

wheels, 6; (b) their diameter, 3 ft. 6 in.; (c) number of compartments, 4; (d) length, 29 ft.; (e) breadth, 8 ft.; (f) height from floor to centre of roof, 7 ft.; (g) weight of vehicle, when empty, 9 tons 16 cwt.; (h) number of passengers, 24; (i) space for each passenger, 67 00 cubic feet; (j) dead weight carried per passenger, 914 lb Victoria Railway,—first-class carriage, (a) 4; (b) 3 ft.; (c) saloon; (d) 24 ft. 1 in.; (e) 8 ft. 2 in; (f) 6 ft. 6 in.; (g) 8 tons; (h) 32; (i) 34 cubic feet; (j) 560 lb. Paris and Orleans Railway,—First-class carriage, (a) (b) (c), 3, (d) 19 ft. 10 in.; (e) 8 ft. 4 in.; (f) 6 ft. 3 in.; (g) 6 tons 1 cwt. 8 lb.; (h) 24; (i) (j) 565 lb. Austrian railways,—First-class carriage, (a) 4; (b) (c) (d) (e) (f) (g) 113 cwt.; (h) 18; (i) (j) 890 lb. First-class passenger day car, for New York and Boston Express line,—Body framed, 50 ft. 6 in. long, 9 ft. 3 in. wide; Miller platforms; heating apparatus. Two trucks, each with 4 double plate wheels; diameter of wheels, 33 in.; weight, 540 lb.; the body of car complete weighs 36,620 lb.; the truck complete, 14,160 lb.; total, 50,780 lb.; 705 lb. per passenger, and seats 72 passengers.

It will be evident from these figures that English first-class carriages are superior to most of those of other countries. Of course, since the larger proportion of passengers are third-class travellers, it would be fairer in some respects to compare third-class compartments, but the superiority in one class is generally proportionably the same in another class. At a time, however, when we are rather inclined to consider American arrangements on railways as superior to our own, it is something to find an independent witness laying it down as his opinion that the ordinary American passenger-cars cannot compare with English carriages, more especially in long journeys. The want of support for the head and shoulders, the inconvenience of two doors, the draughts and chills which, from one open window, will sweep over fifty or sixty passengers, are all drawbacks to the American system. Again, the newsboys and hawkers passing up and down become in the States an absolute nuisance. On the other hand, there is no doubt that the American cars do give great facilities for collecting and examining tickets, and consequently save many of the delays which are so common in this country. These observations are supported by Mr. Higginbotham's testimony, and it may be doubted, taking all the *pros* and *cons.* into consideration, whether the American cars are ever likely to be much patronised in England.

KENT ARCHÆOLOGICAL SOCIETY.

The Kent Archæological Society selected the Isle of Thanet as the *locale* of their annual meeting and excursion this year, making Ramsgate their head-quarters. The proceedings extended over two days, and commenced with the annual meeting, held in the Ramsgate Assembly Rooms, on the 1st inst., under the presidency of the Earl of Darnley (in the absence, through illness, of Earl Amherst, the president). The hon sec., the Rev. Canon Scott-Robertson, read the twentieth annual report, which congratulated the members upon the past growth, the present vigour, and the future prospects of the society. During the past year sixty new members have been elected, and the council have been able to invest in Consols the sum of 55*l.*, derived from fees for life membership. The number of members is 850. Of these, 14 are honorary members, 100 life members, and 736 are annual subscribers. A large amount of accumulated arrears of subscriptions having been received during the year, the council felt justified in printing another large volume of "Archæologia Cantiana," although the tenth volume had been issued in July, 1876,—only twelve months ago. The eleventh volume will be distributed among the members next September. The balance standing to the society's credit in the banker's books amounts to 294*l.*, which will be sufficient to defray what is still due for the printing and binding of volume xi. During the past twelve months the council have contributed towards the expense of excavations, at Reculvers, under the superintendence of Mr. Dowker, and at the Joss Farm, near the North Foreland Lighthouse. Other excavations, not yet commenced, will be made at Milton, under the superintendence of Mr. George Payne, jun. The council have likewise rendered assistance in another branch of archæology. Sir Stephen Glynne devoted much time during forty years to visiting and making notes respecting the majority of the churches of Kent, and upon his death his notes came into the hands of his brother-in-law, the Right Hon. W. E. Gladstone, who has agreed with Mr. Murray for their publication. Although very complete, the notes needed illustrating to make them interesting, and supplementary foot-notes to record recent changes by restoration. Archdeacon Harrison, one of the vice-presidents of the society, kindly supplied these foot-notes, and the council agreed to lend to Mr. Murray such woodcuts as they possessed for the illustration of Sir Stephen Glynne's notes.

The council expressed their deep regret at the early death of its vice-president, Mr. T. G. Godfrey-Faussett, of Canterbury, who had for ten years been hon. secretary.

The report having been adopted, the remainder of the business transacted comprised the election of Sir Walter James and Sir Walter Stirling as vice-presidents; Mr. Robert Furley, as a member of the Council, in the room of Mr. J. S. Burra; the re-election of four retiring members of the Council; the appointment of Mr. J. D. Norwood as local hon. secretary for the Ashford District; and the election of nine new members.

A move was then made to the carriages, and the excursion commenced. The first halt was made at St. Lawrence Church, the architecture of which was explained by Mr. J. P. Seddon. Several interesting features were pointed out by the Rev. G. W. Sicklemore, the vicar and rural dean, and the Rev. Canon Scott-Robertson, especial reference being made to the brasses and memorials. After a very brief stay here the drive was resumed, Minster being the next place visited. Here the company assembled in the fine old parish church, and listened to an interesting paper read by Canon Jenkins, who dealt mainly with the uses to which that building, with others, was formerly devoted. The varied styles of architecture contained in the sacred edifice were subsequently pointed out. From the church the party proceeded to Minster Abbey, which had been kindly thrown open by the owner, and here also some interesting relics were examined. The visitors then passed on to Nash Court, where a subterranean passage was entered by a large number and examined. From Nash Court the route lay by Salmestone Grange, where Mr. Potter had made liberal and hospitable provision for the entertainment of his visitors. Here were found the remains of a small but very complete set of monastic buildings, thought to be an offshoot of the great college of St. Augustine at Minster. The chapel at the Grange, now used as a barn, having been looked over, and the salient features explained, the party passed on to St. John's Church, Margate, which was restored about two years since. The miscellaneous character of the windows, and the numerous and interesting brasses and monuments, especially that of St. Imar, the founder of the church, were pointed out by the vicar, the Rev. W. Benham. Shortly after five o'clock nearly two hundred ladies and gentlemen dined at the Foresters' Hall, Margate, under the presidency of the Earl of Darnley. The company afterwards adjourned to the Church Institute Rooms, where a temporary museum had been formed. Here were exhibited numerous relics of the past.

The assembly on the second day was at Cecil-square, Margate. A fair commencement of the voyage of examination and discovery took place at eleven o'clock, and a string of carriages, whose occupants altogether numbered about 200, quickly defiled along the road in the direction of Dandelion Gate, the only traces left of an ancient baronial hall. The gate, the date of which is put at the reign of Henry IV., is in good preservation,—indeed, the structure is so firm that the interior has been converted into a species of agricultural store. After staying but a few minutes, the party was again in motion, and passing Garlinge and Westgate-on-Sea a halt was made for the examination of Birchington parish church. The edifice, it was explained by the vicar, originally stood nearer the sea, but the fall of a cliff partially demolished it, and the remaining portion was removed to the present site. The earliest record is a brass put up to the memory of John Quex, and bearing the date 1449. From this village the party journeyed onwards to St. Nicholas-at-Wade, in the church of which may be seen some Early English and Norman work. Next a move was made to Chislett, and here at the vicarage the party were entertained at luncheon by the vicar, the Rev. Dr. Haslewood, and afterwards visited the parish church. The final halting-place was the coastguard station at Reculvers. Here are the remains of a Roman castrum, the history attaching to which is interesting. The mass ness of the structure was pointed out and planatory details were given by Mr. Dowk under whose supervision the work of explorat at this spot has been carried on. Upon the s of the church, the two towers of which s remain, the party were assembled to rece further information as to the excavations wh have been carried out, and also some fa forwarded by Mr. Roach Smith for their delec tion.

The weather during the two days was favo able, although one or two slight showers sor what marred the pleasure of the journey.

A BLOT IN CONNEXION WITH TRADI AND FRIENDLY SOCIETIES.

At the risk of giving offence where none intended, we would earnestly impress up the committees of trade, friendly, and oth kindred societies, the necessity that exists an immediate reform of the objectionable syst that regulates their place of meeting. T present writer can say with a confidence th challenges denial, and from a knowledge th embraces many years and many visits to cit and towns throughout the three kingdoms, th one of the most urgent and desirable refor called for in connexion with the class of societ he has mentioned is that in relation to th places of meeting. This is a subject that mig properly find a place in the programme of one the yearly trade congresses. Public-houses beershops, no matter how respectable persona may be their proprietors, cannot be consider proper centres for holding the ordinary meetin of a trade or friendly benefit society, or even of t more remarkable and special ones during tim of "strike" or impending strike. With few exce tions, however, during trade disputes well-kno public-houses are chosen by strike committe and with a generosity that is highly questionab publicans are found in many instances placi their largest room, during a strike, at the fr disposal and use of the trade or trades concerne To these head-quarters, morning, noon, and nig scores of men resort, old hands and new hand unionists and non-unionists, and fresh or stran workmen arrived from the provinces, who are n unnaturally intercepted by the "pickets," a paid for refusing to work while the dispute las Immense quantities of drink are consumed, an personally, the idle men are heavily out pocket, not only through reduced "strike" pa but through money squandered in drink. T money levied from other trade societies suppo ing the strike hands is to no small extent wast also, as well as the money levied from the e ployed workmen of the trade, or branches the trade specially concerned. No matter ho economically, from their own point of view, m be the management of the strike committee there is a great waste of resources. The me forming the sitting strike committee recei a certain liberal pay for their daily labours, a betimes refreshment expenses; indeed, the r freshment they receive apart from their allowan is constant throughout the day, for the commi tee-room is seldom without a number of friend visitors. It must be allowed that the tempt tion to drink is great, but it is not our desire exaggerate the evil to the disadvantage of wor men as a class, but to point it out and picture plainly as it exists, so that a reform may be e pedited by the trades' bodies themselves. The can exist no valid or defensible reason for hol ing the meetings of trade or friendly societies publichouses, and we must say that the wor men of the building trades are among the greate sinners in this respect. Several of the buildi and other trades are strong in funds, and a quite able to build or hire a hall of sufficie dimensions to meet all their wants; yet the committees are often found squeezing then selves into some dirty, dingy, and ill-smelli taproom in a back street, for meeting committee purposes. Occasionally, of cours when a large aggregate meeting of the tra may be required, a public hall is hired f the night; but again the next day the resul are discounted, as before, at the publi house place of meeting. Trade societies, themselves, it must be acknowledged, are n the only bodies of workmen at fault, for present it will be found that several branches the Odd Fellows, Foresters, Druids, and oth kindred societies, not excepting the "Ant diluvian Order of Buffaloes," meet in publi houses, and the numbers of the branch will h

found emblazoned in several districts of the metropolis on the coloured lamps in front of the publicans' houses. It is a folly to think that it is economical to meet in the rooms of gin-palaces, even if in some instances the landlord foregoes the hire of the room. It is a well-known fact that publicans, in new neighbourhoods particularly, are always anxious to get one or another of the above societies to start with. To use his own words, "They help to bring custom to his house." We have "workmen's clubs," for some time established apart from dramshops, and they are certainly a great improvement on the former mode of assembly. As long as trade or friendly and kindred societies continue to meet as they have done, so long will their proceedings be open to the gravest objections. The social and political position of the working classes, particularly those of the skilled labour kind, have been considerably elevated within the last quarter of a century. In some respects they owe this elevation to their own exertions; but in various directions they have met with a prompt and ready recognition and much practical sympathy at the hands of men above them in the social ranks. The workman's meeting place, like his home, should be above reproach. His shopmates and companions in work may not be all as good in character as might be desired, but when a man is at work and doing his work he has little time for talk. At the dram-counter and in the tap-room it is otherwise, and where drink drowns the recollection of self and fellows, classification and reserve are impossible. Under circumstances such as these the taunt of an outsider might be well flung in the face of an artisan, "Show me your companions and I'll tell you what you are."

It is not our intention in these pages to preach a lay sermon on the evils of intemperance; we will leave that to other advocates; but incidentally our touching upon the question is unavoidable. There is a close connexion between drink and human misery, drunkenness and dismal dwellings. As the healthy and comfortable home has a harmonising effect, all sanitary efforts rightly directed must lead to the improvement of the man and his home, and therefore a weaning from drinking habits. Man is gregarious in good actions as well as in bad, according to the strength of the influences by which he is surrounded. A persistence in the present system of conducting and managing their trade affairs must bring discredit upon their utterings and counsel, no matter how sincere they may be in the promulgation of their claims, or how deserving otherwise may be that claim to respectful attention.

GIFT OF A NEW PEOPLE'S PARK TO BARNSLEY.

LOCKE THE ENGINEER.

A new park, about twenty acres in extent, which has been laid out and presented to the inhabitants of Barnsley by Miss Sarah McCreery, sister-in-law of the late Mr. Joseph Locke, the eminent civil engineer, was opened on Tuesday last with great rejoicings. This is the second gift of the kind which the town has received within the past fifteen years from the Locke family. The first benefaction was contributed by the late Mrs. Locke, whose husband was a native of near Barnsley, and who, in addition to her handsome present, founded the Locke Scholarships. After the death of Mr. Locke, who on many occasions exhibited his munificence, his widow, with a view to perpetuate his memory, purchased, fenced, and laid out a plot of ground seventeen acres in extent. This, together with a sum of money, was handed over to the Corporation in trust for the inhabitants. Since that time the land has been laid out and planted by Mr. Fox, the park-keeper, and for some time it has been the pride of the inhabitants not only of Barnsley, but the entire district. A few years after the park was given, the engineers did the town the honour of erecting a life-like statue of Mr. Locke in the park. The statue, which was designed by the late Baron Marochetti, is of life-size, and is erected on a marble pedestal. The new park is all the more valuable to the town and district, inasmuch as it adjoins the ground presented by the late Mrs. Locke, who died in the year 1866. After the death of that lady her only surviving sister, Miss Sarah McCreery, expressed herself as anxious to do something in connexion with the Barnsley Park as a tribute of respect to her departed sister. She paid a visit to the town a few years ago, and soon after it was announced that she intended to make a present to the town of a new park. The new portion lies on the south-east of the original park, and forms one of the most prominent positions in the district, being at a higher elevation than any part of that given by Mrs. Locke. The land has been laid out and planted by Mr. Barron, of Boroughwash, under the inspection of Mr. E. P. Spiers, of London, architect to Miss M'Creery. In addition to the park itself, the generous lady, through Mr. Spiers, has caused to be erected a memorial tower in memory of her deceased sister. The structure, which is placed on the most elevated portion of the new park, is a very substantial erection. It is in three divisions or tiers, and its foundations, which were carefully laid, measured in depth at some points over 20 ft. It is circular in form, and the base measures 41 ft. in diameter. It is built of Ancaster stone, procured from the quarries in the neighbourhood of Sleaford, Lincolnshire. On the top of the first tier is a balcony, supported by fourteen Ionic columns, the space being sufficient to accommodate a goodly number of people. The second elevation or tier is in the form of a circular tower, flanked by similar pillars. Around the two circular galleries are the monograms of Miss M'Creery, mingled with clusters of grapes, lilies, &c., which give it a rich appearance. The last tier is of oak, surmounted by a lantern and terminal. On the top tier there is also a balcony, from which on a clear day a view of a vast extent of country can be seen. With the exception of a small patch, the whole of the surrounding district, including Wentworth Castle and its grounds, as well as a considerable portion of the South Yorkshire coal-field, can be viewed. Stretching across the landscape in the one direction, the town of Wakefield, with its recently restored church, can be seen. In another direction portions of the Yorkshire moors, and many other objects of interest, including, it is said, York Minster, are observable. The structure reaches a height of 74 ft. or 75 ft., exclusive of the groundwork. On the summit of the tower is a weather-vane, with gilded initials of the donor, the whole forming a conspicuous object in the landscape.

The coat of arms of the Locke family also adorns the structure, and on a stone on the south-east side is the following inscription:—"To the Memory of the Donor of the Park, Phœbe, Widow of Joseph Locke, M.P., this Tower was erected, and Twenty Acres of Land added to the Park by her Sister, Sarah McCreery, A.D. 1877." The tower is approached from the lower portion of the park by terraces, which are beautifully planted and studded with flower-stands. Below the tower it is intended to erect an ornamental fountain, with subscriptions received from the working classes, in recognition of her gift. The tower has been erected by Messrs. Robinson & Sons, builders, of Barnsley. In addition to Miss McCreery's munificence, which will exceed 10,000*l.*, a beautiful plot of ground, including a fine cluster of old beech trees, has been presented to the Corporation by Mr. F. W. T. V. Wentworth, Wentworth Castle. This portion has been fenced by the Corporation, and also forms a valuable addition to the park, making it close upon forty acres in extent. The park was opened on Tuesday, by Lord Halifax, of Hukleton Hall, the day being observed as a general holiday, and the town being beautifully decorated. The entire portion of the old and new parks was studded with flags, some ten or twelve yards apart. The statue of Joseph Locke, and all available places in the park, were illuminated at night.

Compensation Claims.—Mr. Under-Sheriff Burchell and a special jury, at the Middlesex Sheriff's Court, were occupied in the case of Farlow *v.* The Metropolitan Board of Works, to ascertain the value of four houses in Willow-walk, Old-street-road, required for the new street from Shoreditch to Oxford-street. In the course of the case, Mr. Talfourd Salter, Q.C. (with whom was Mr. V. Williams), insisted in putting in an offer made by the Board of 4,450*l.* Mr. Philbrick, Q.C. (Mr. Biron with him), said it was made for the sake of peace, and to save about 1,000*l.* expenses in the compensation inquiry, and ought not to have been mentioned. The Under-Sheriff admitted the offer. After a long investigation the parties took the verdict of eleven jurors, and they awarded 4,400*l.*; and this being less than the offer, the expenses will fall on the claimant.

HOMES FOR THE LABOURING CLASSES: A SUGGESTION.

Sir,—The importance of destroying a large number of the present dwellings, for they can scarcely be called homes, of the poorer industrial classes in London, and perhaps most of our large cities, will be acknowledged by all who have a practical acquaintance with the subject, whether in its general social aspect of benefiting the community, or with the direct humanitarian view of caring for the well-being of those who have been the chief sufferers. There must be much genuine right feeling in the matter (notwithstanding such startling revelations as have been lately made, and which you have chronicled as "Scientific Philanthropy, Limited"), and there would be more if the actual condition of the dwellings of the poor was better known. Your own persistent endeavours for very many years to make known and remedy the evil have no doubt conduced much to the good results manifest in the commodious dwellings which of late years have been erected for the artisan and labouring classes. These may appear to many to be all that can be desired, the more so as they fill readily when built, but a closer view of the subject will show this is not the case. The tenants are not always of the class for whom they were intended, and if they are, have probably gone through some process of selection for respectability, and if of a more respectable class are no doubt more acceptable to the landlords. The industrial dwellings (using the term in a general sense) of to-day have sifted much of the population, and in obtaining suitable tenants have left a residuum probably not so readily to be dealt with. The already overcrowded neighbourhoods have been still closer occupied with many of those who either *would not* or *could not* avail themselves of the better dwellings provided for them. It will not do to assume the latter alternative any more than to assume that because the new dwellings are filled they are all that can be desired. Hitherto the great destruction of the poorer class of house property has been caused by railway and street improvements with scarcely a thought of re-housing the people disturbed,—but the greater destruction contemplated under the Artisans' and Labourers' Dwellings Act, and future street improvements, will have to be compensated for by building other dwellings expressly intended for the classes disturbed. It is well then to have regard to their wants and welfare.

In course of inquiries bearing on this matter I have been from house to house in many of the worst courts and alleys in London, worst in sanitary and moral condition, and can testify to a state of wretchedness which you have so often well but not overdrawn.

Amongst these people, and also those somewhat better off, there exists a strong opinion that whatever alterations may be made these will not tend to their benefit, and aversion is expressed for *model houses*, as they continue to be called (but this term should be dropped, for model houses will not find model tenants in the multitude requiring to be housed). Whilst some would gladly get into the new buildings if they could only pay the rent required, others say they would not live in them on any account; it is difficult to get at their reasons, whether well or ill founded, but the feeling seems to be that they would not be or have not been (for some speak from experience) "at home" in them. Avoiding details the following objections have been expressed:—

1. The exclusion of people with large families.

2. The exclusion of people working at home, or carrying on a business which requires some little space for store, such as that of a costermonger, &c.

3. The regulations and compulsory requirements, as having to return home by a fixed hour, the prohibition of driving nails to hang pictures, the having to take a share of the cleaning on certain days, &c.

4. The barrack-like aspect of the buildings; the having too much in common use, particularly closet accommodation and convenience for washing, the height of the stairs, &c.

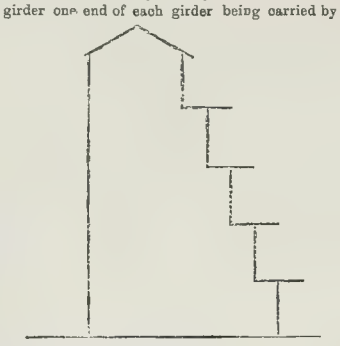
With regard to objections Nos. 1, 2, 3, I have no suggestion to offer, but Nos. 1 and 2 are important, and require attention. It certainly does seem hard that a respectable man should be disqualified as a tenant on account of the number of his children, or a working shoemaker or tailor on account of his trade. As to compulsory restrictions (No. 3), they are alike repulsive to well and evil disposed tenants. The first

feel them to be unnecessary, the latter intolerable; but as owners of good houses will hardly submit on this point, it is likely to be a source of contention. The fourth objection is not a superficial one, it touches the home life of a family more closely than may be thought by those who consider the tenants ought to overcome their prejudices, and adapt themselves to circumstances. But, viewing it simply as prejudice, it may be well to bear in mind that, as in other matters, a tradesman finds it easier to comply with the wants of his customers than to teach them what they ought to want; so, those who cater for poor tenants will find it more to the interest of all to comply with their wants, excepting in such matters as involve uncleanly and evil habits. But the objection is a real one, and assumes greater force where the house is large, various staircases and corridors bring numerous families into contact (and contention). The height of the stairs ought not to be so much regarded if water supply is given at the top, but a mother does not like to send her young children from the third or fourth story to play below out of her sight. The matter of closet accommodation is as important as any; where there is only one w.c. for a moderate-sized tenemented house, it is difficult to have it kept in decent order, and where it has been attempted to remedy the evil, by destroying the fences and building good closets in one group, the more public arrangement has made matters worse. Under any circumstances, I consider it essential to sanitary and decent living that a separate water-closet should be provided for each tenement. But, after all, the strongest feeling is that of home. Home! a word dear to all who know its blessings! The right cultivation of home society and home duties probably is nearer the source of general social order and happiness than anything else. I am well aware that the material construction of home is but one phase of its development, but it is an important phase. Home, rightly understood, requires that there shall at least be the option of isolation from its surroundings. Every Englishman likes to feel that his house is his castle, which he may live in without interference; and so strong is this feeling that a man will assert it when living in a wretched single-room tenement destitute of all the comforts and conveniences which should contribute to make a dwelling a home. There still exists in London a class of property which when once destroyed will not be repeated. Cottages of two or three rooms, with a small yard or garden at back, give accommodation to a family with far more of the feeling that it is home than any tenements in larger houses. They are much appreciated by those who live in them, and desired by those who do not, and it can hardly be otherwise but that in a few years their sites will be occupied by lofty buildings.

To adapt or arrange tenements in large blocks of building so as to give all the accommodation of cottage dwellings I have given considerable attention, and, that it might not be too much an affair of the imagination, have made a model of part of a five-storied block, showing every essential detail. Having started with the idea of benefiting the lowest stratum of society, my model is made to show tenements of only one and two rooms. However undesirable it may be to acknowledge one-room tenements for families, it is but too clear they will have to be provided for many years to come. An experiment does not necessarily end in success, so I will at once own that I think my plan more adaptable to tenements of three or four rooms than of one or two; but, having no personal interest to serve in the matter, I am not disposed to incur further trouble in making another model without good reason, which, perhaps, fair criticism may supply.

I will endeavour to describe the buildings as shown in the model. The block of dwellings is divided by party-walls into separate houses of five stories. Each house, with yard in the rear, covers a space of 36 ft. frontage, by 44 ft. depth, and contains ten tenements, five of these being on either side of the staircase, and each entered by a door (taking the place of street door) on the ground-floor and landings. The stairs are of stone, under cover of the roof, and are walled round on three sides, but open to the air in front. The house walls are of brick, and in front are vertical from ground to roof, but the backs of the houses require particular description.

The dimensions of house, from front to back, for each floor, are as follows:—Ground floor, 32 ft.; first floor, 28 ft.; second floor, 24 ft.; third floor, 20 ft.; fourth floor, 16 ft. It will be seen that the back walls are not continuous from floor to floor, but are divided into sections, each receding 4 ft. floor by floor. Above the ground floor each of these sections is carried on an iron girder one end of each girder being carried by



the party-wall, and the other end by the wall parallel to it, these walls having additional strength for the purpose. Four feet of roofing being required to cover the space left on each floor by the receding of the back walls, this is covered by tiles and asphalte, and is extended another 4 ft. over the yard below, giving a space of 8 ft. of balcony, available as a yard, on each floor above the ground, which has 12 ft. of yard from house to back fence, and each yard or balcony is partly under cover. The tenements on each floor are different, and are approximately of the following dimensions:—

	Area.	Area of yard.
Ground floor ..{ 14 ft. by 11 ft. / Two rooms... 15 ft. by 10 ft. }	= 304 sq. ft.	... 250 sq. ft.
First floor ..... { 14 ft. by 11 ft. / Two rooms... 11 ft. by 10 ft. }	= 264 ,,	... 175 ,,
Second floor ... { 11 ft. by 10 ft. / Two rooms . 11 ft. by 10 ft. }	= 220 ,,	... 160 ,,
Third floor One room ... 18 ft. by 11 ft.	= 198 ,,	... 140 ,,
Fourth floor— One room ... 14 ft. by 11 ft.	= 154 ,,	... 140 ,,

Against the back wall of the staircase are built the water-closets in five pairs vertically over each other, without separate supply, as I believe flushing by a pail of water is the most reliable method of cleansing for this class of occupiers; a ventilator for the soil-pipes is added to comply with the sanitary requirement of the day. Against the same wall are fixed coal-bins, which may be filled through openings in the wall on the stair landings; there is also a dust-shaft from which the dust can be removed without going into any of the tenements. The sinks and taps are placed in the yards or balconies, but under cover; the water supply is assumed to be constant, and therefore no cisterns needed. The supply-pipes being under cover are probably sufficiently protected from frost unless they should be against a wall having a northern aspect. In each room there is a fireplace, all of these being attached to the party walls.

Thus each tenement is self-contained, having *externally* a water-closet, coal-bin, sink with water tap and ample yard accommodation (partly under cover) to do scullery work and washing, to hang up clothes to dry, &c., and for young children to be out in the air in sight of their mothers.

Of cost I am not competent to speak, but bearing in mind the increased accommodation, it seems fair to assume that an increased cost of construction may be incurred, especially in reference to an expensive site. Compared with a five-storied house with vertical walls back and front, and having the same frontage, the same cubic contents, and same area of site, 36 ft. by 44 ft., there is a loss on the open ground area of about 200 square feet, but a gain in the area of upper yards or balconies of about 800 square feet, leaving about 600 square feet net gain, and this with an increase of air and light and notably of *sunshine* which seems in danger of being ignored. Of course the poorest cannot pay increased rent, but there are others who would find it economical to do so if such advantages can be secured for a moderate outlay. May I mention only, without further trespassing on your space, that I believe a similar mode of construction applied to lofty buildings of a superior class would produce very advantageous results.

I shall be glad to show the model to any one interested in promoting the improvement of artisans' and labourers' homes.

F. H. McLauchlan.

19, *Dalyell-road, Stockwell.*

THE BISHOP'S THRONE, OXFORD CATHEDRAL.

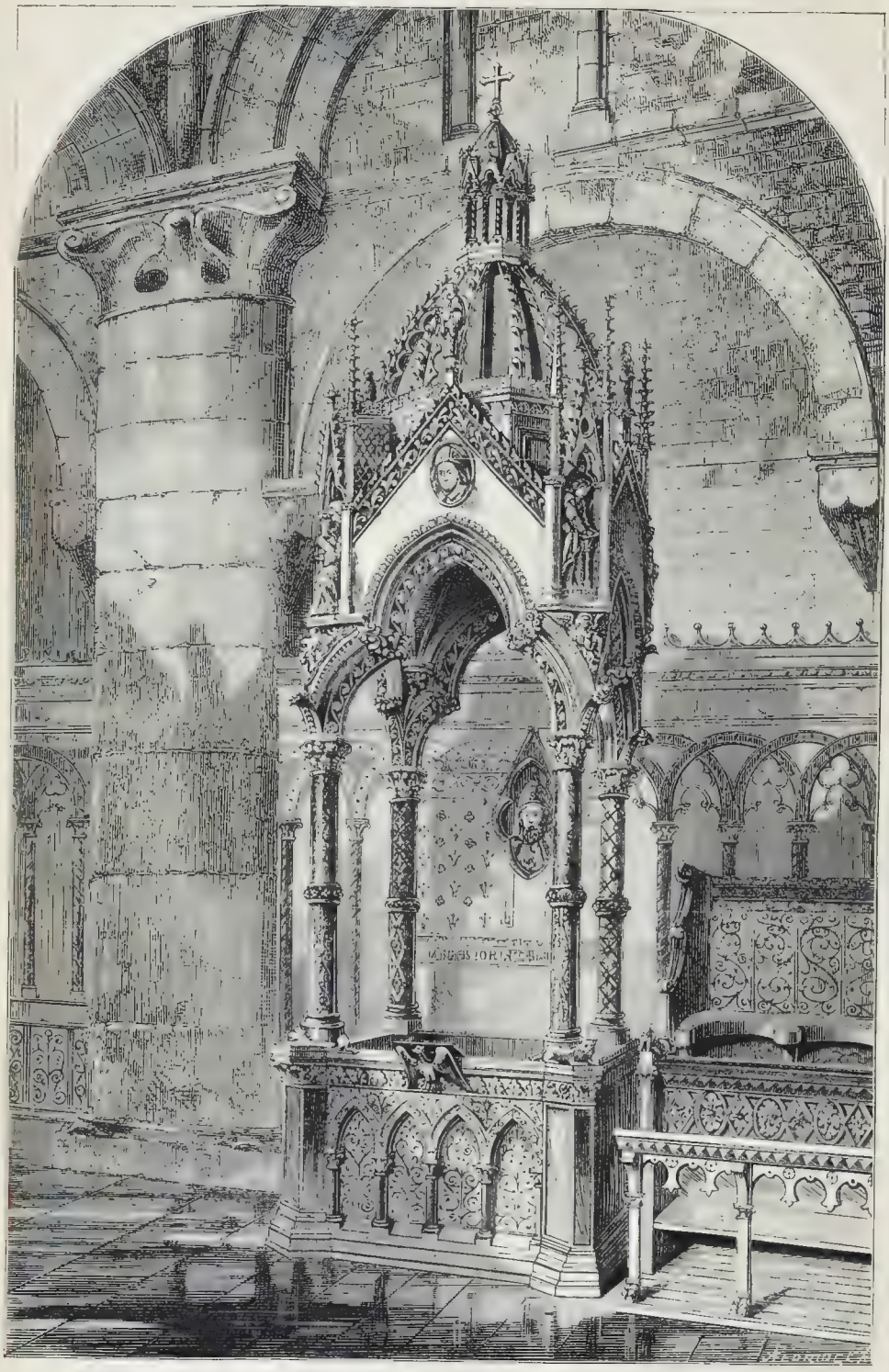
WILBERFORCE MEMORIAL.

The Bishop's throne in Oxford Cathedral, of which we give a view, is erected to the memory of the late Bishop Wilberforce. It is composed of walnut-wood. At the four corners of the canopy are figures of Matthew, Mark, Luke, and John, with the signs under them, and a portrait of the bishop is on the throne. The work was executed by Messrs. Farmer & Brindley, from the designs of Sir Gilbert Scott, R.A. The stalls are also new.

GLASGOW RIVER SUPPLY WORKS.

Some years ago the Glasgow corporation obtained Parliamentary powers to construct extensive works on the banks of the Clyde before it reaches the city, with a view to afford a supply of river water for manufacturing purposes in the east end, and consequently reduce the consumption of the purer element from Loch Katrine, the supply of which, in the opinion of some far-sighted citizens, may in time become insufficient for the domestic use of the population. After considerable delay, the river-supply works were commenced on the lands of Westhorn, about two miles and a half from Glasgow, on the north bank of the Clyde, and as it is expected that they will be completed in a few weeks, a brief description may be useful. The pumping engine and boiler-houses are situated on the low level bank of the river a few yards east of a well-known spot in local history called Harvey's Dyke, while the gigantic brick stalk and the reservoirs are built on the rising ground about 30 ft. higher than the bed of the river. Of the two reservoirs each one has a capacity of about 400,000 gallons, substantially constructed of earth and clay puddle, the inner slopes being lined with concrete and brickwork to the height of the proposed water-level. There are two large and powerful compound engines for pumping, the combined horse-power being about 150, and which are intended to raise the water about 50 ft. above their own level. The four boilers for the supply of these engines are fitted with all the most modern appliances. The engine-house is an oblong building about 70 ft. long by 40 ft. broad, with an elevation of 20 ft. The engines are set 7 ft. 6 in. below the surface, the walls of the house to this height being built of stone or concrete foundation, and faced with white enamelled bricks. In the upper walls of the same building red bricks have been used, the inside faced with white fire-bricks, having black bands and moulded courses; the outside showing fire-clay moulded cornice and semicircular arches, stone string-course, and squares. The roof has wood-work of pitch-pine, the whole of the exposed parts to be varnished. The boiler-house is a building about 45 ft. square to the height of 25 ft., and above this it is carried in an octagonal shape to the height of 18 ft., a dome roof 15 ft. high being placed above the level of the walls. The stalk stands on the high level at a distance of about 150 ft. from the boilers, rising to a height of 120 ft. above the surface. The base of the stalk is octagonal, and the shaft circular. The main flue connecting the chimney and boilers is carried from the latter on the low level to the chimney on the high level with a gradual slope, and is 6 ft. high by 4 ft. wide inside. The flues and the lower part of the chimney are lined inside with fire-bricks, the main flue immediately in the rear of the boilers being fitted with Green's economiser. The main water-pipe is carried along the banks of the Clyde westwards to Springfield-road, and thence to the manufactories to which the water is intended to be supplied. Attention has been bestowed by the engineer, Mr. J. M. Gale, in order to promote the completeness and efficiency of the works, and to that gentleman's energy is mainly due the comparatively rapid progress which has been attained. The contractors are:—For reservoirs and foundations of engine and boiler-house, Messrs. A. & H. M'Donald; engine and boiler-houses, chimneys and flues, mason and brick-work, including joiner, plumber, slater, and painting work, Mr. W. Steven; while the engines and boilers were supplied by Messrs. Rait & Lindsay. The estimated cost of the undertaking is about 30,000*l.*

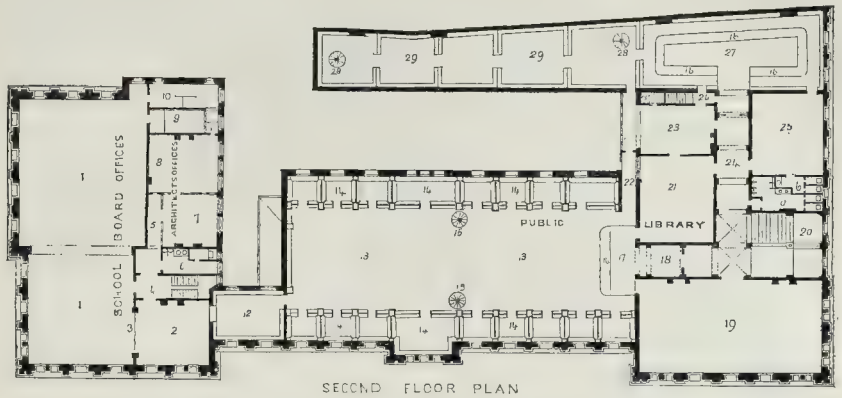
The Manchester and Salford Sanitary Association. — An Exhibition of Sanitary Appliances has been opened in Manchester.



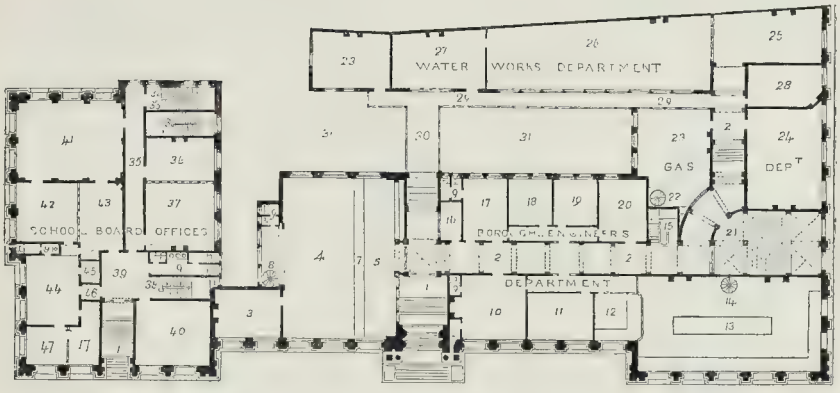
THE BISHOP'S THRONE, OXFORD CATHEDRAL.—The Wilberforce Memorial.



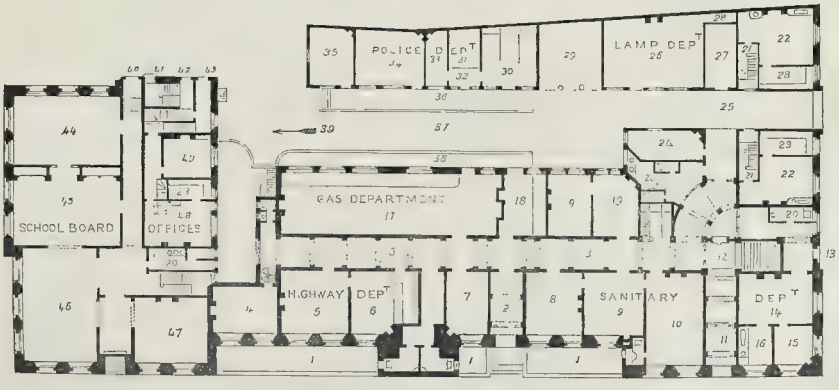
LEEDS CORPORATE OFFICES: SELECTED DESIGN.—By Mr. Corson.



SECOND FLOOR PLAN



PRINCIPAL FLOOR PLAN



GROUND FLOOR PLAN

SCALE OF FEET

SELECTED DESIGN FOR LEEDS CORPORATE OFFICES.

LEEDS CORPORATE OFFICES.

The design illustrated was selected in open competition out of about twenty-six sets of drawings in the autumn of last year. The author of it is Mr. Corson. The second premium was adjudged to Mr. D. Brade, of Kendall; and the third to Messrs. Hill & Swann, of Leeds and Sheffield; the assessor to the Corporation being Mr. Cockerell, of London.

Since the selection was made, however, and our illustrations were completed, owing to difficulties encountered in the proposed diversion of Alexander-street, and the wish of the School Board to have a separate building, it has been determined to erect two distinct buildings, one for the School Board Offices, fronting to Calverley-street, Great George-street, and Alexander-street, and another for the Corporate Offices and Free Library, fronting to Calverley-street, Alexander-street, and Centenary-street.

Plans for the School Board offices have been made by Mr. Corson, and approved by the School Board and Corporation, and the working drawings are now in hand, in preparation for tenders. The drawings for the Corporate offices have also been made and approved by the committee, subject to minor alterations by the Free Library Committee.

The style adopted for the new designs is somewhat similar to the competition drawings now engraved, but the plans have been considerably modified, in consequence of the division into two distinct blocks, and the provision of accommodation elsewhere for the Fire Brigade. Under the circumstances we need add nothing more than full references to the plans.

Ground Floor.

1. Area.
2. Public entrance.
3. General corridor.
4. Rate-collectors.
5. Private office.
6. Public office.
7. Smoke inspector.
8. Chief inspector's room.
9. Clerk's room.
10. Medical officer's room.
11. Entrance to public library.
12. Stairs to public library.
13. Private entrance for inspectors of nuisances.
14. Inspector of nuisance.
15. Disinfecting-room.
16. Bath-room.
17. Inspector's room.
18. Plumber's shop.
19. Caling-over rooms.
20. Lavatory.
21. Stairs.
22. House, living-room.
23. Pantry.
24. Chief inspector's room.
25. Entrance to police-yard.
26. Lamp inspector's room. General lamp-store under.
27. Lamp-store.
28. Stairs down.
29. Engine-room.
30. Stable.
31. Loose box.
32. Harness-room.
33. Cleaning lobby.
34. Parade room.
35. Cab inspector.
36. Level causeway.
37. Police-yard.
38. Incline down to heating-chamber.
39. Incline up.
40. Store-room entrance.
41. Entrance for males; to gallery of board-room; back entrance to board's offices and architect's offices.
42. Porter's entrance.
43. Entrance for females.
44. Clerks' office.
45. Store-room.
46. Stock and store room.
47. Sanitary clerks, &c.
48. Kitchen.
49. Living-room.

Principal or First Floor.

1. Principal entrance.
2. General corridor.
3. Accountant's private office.
4. Accountant's public office.
5. Space for public.
6. Space for waiting-seat.
7. Counter.
8. Stairs down to rate-collector.
9. Lavatory.
10. Borough engineer.
11. Plan-room. Assistant engineer.
12. Contract's room.
13. Drawing-office.
14. Stairs up to plan gallery.
15. Stairs to entresol.
16. Porter's room.
17. Waiting-room.
18. Accountant's room.
19. Drainage inspector's room
20. Building inspector's room.
21. Staircase to public library.
23. Stairs up to book-store.
23. Collectors' room.
24. Clerk's office.
25. Secretary's room.
26. Clerk's office.
27. Collectors' room.
28. Sample-room.
29. Gallery of communication.
30. Bridge.
31. Open court.
32. Stairs for males.
33. To gallery and architect's offices.
34. Stairs for females.
35. Service corridor.
36. Superintendent's office.
37. Attendance offices.
38. Private stairs.
39. Inner hall.
40. Offices. Clerks.
41. Board-room.
42. Committee-room.
43. Ante-room.
44. Chief clerk's room.
45. Strong-room.
46. Lobby.
47. Assistant-clerk's room.

Second Floor.

1. Examination-room.
2. Small examination-room, or retiring-room.
3. Revolving shutters.
4. Private staircase.
5. Lobby.
6. Lavatory.
7. Private office.
8. Clerk's office.
9. Stairs for females.
10. Stairs for males.
11. To architect's office.
12. Students' room.
13. Reference library.
14. Study.
15. Stairs up to gallery.
16. Counter.
17. Public.
18. Reference-library corridor.
19. Gent.'s reading-room.
20. Principal staircase.
21. Store-room.
22. Librarian's passage.
23. Librarian's room.
24. Lending library.

Corridor.

25. Ladies' reading-room.
26. Stairs up to binding-room.
27. Public space. Lending library.
28. Stairs.
29. Lending library.

M. VIOLLET-LE-DUC ON ARCHITECTURE IN THE NINETEENTH CENTURY.*

If we want to have an architecture of our own time, let us first provide that the architecture shall be ours, and not seek everywhere else than in the bosom of our own social state for its forms and arrangements. That our architects should be acquainted with the best examples of what has been done before us, and in analogous conditions, is highly desirable, provided they unite with this knowledge a good method and a critical spirit. That they should know how the arts of former times faithfully reflected the social conditions amid which they were developed is also most desirable, provided that this knowledge does not lead to an unconsidered imitation of forms that are often foreign to our usages. But that, under pretext of maintaining such or such a doctrine, or, perhaps, merely for the sake of not troubling the repose of some twenty individuals, we fail to deduce the practical results from those studies which could be gained by paying regard to principles rather than to forms, is reprehensible. The architect must not only be well informed, but must make use of his knowledge, and must derive something from his own powers; he must determine to ignore the commonplace notions which, with a persistence worthy of a nobler cause, have for nearly two centuries been promulgated respecting architectural art.

The architecture we desiderate must take account of the ideas of progress proper to the age,—subjecting those ideas to a harmonious system sufficiently pliant to lend itself to all the modifications and even consequences of progress; it cannot therefore confine itself to the study and application of purely conventional formulas; for instance, those relating to the orders, or those derived from what are called the laws of symmetry.

Symmetry is not a general law of architectural art any more than equality is a law of society. We assert the equality of all men before the law; but equality is not the law, for we do not acknowledge an inequality in intelligence, in aptitudes, in physical strength, or in wealth among all the members of a social body. Symmetry insisted on as a general dominant law is none other than a kind of communism, enervating art and debasing those who observe it.

Because you build all the houses of a street or of a square after the same pattern, and require your architect to make all the windows of the façade just alike, regardless of the very various arrangements which the building contains, you conclude that you are showing respect for art. No such thing; you are putting it on the rack; you become its torturer; you stifle its noblest quality, that which consists in the free expression of its wants, its tastes, its individuality. There is no art without liberty; for art is the expression of thought; but what is the expression of thought if you are compelled to repeat what your neighbour says, or to call that white which you see to be black?

That a town council should interfere to limit the height of the houses or their encroachment on the street by municipal regulations is perfectly legitimate; but that it should use its authority to oblige twenty architects to adopt in twenty houses the same cornice-moulding or the same window, or the same height of string-courses, under pretext of symmetry, when each of these houses is differently arranged within, is scarcely justifiable. Be assured that those superior intellects which, without any practical knowledge of the arts, have a certain influence on their direction, would never have been involved in this lamentable imbroglio of errors and false principles, if artists themselves had not urged them forward on this downward path, by crying up doctrines opposed to immutable reason; representing architecture as a kind of recipe applicable to every purpose and to every programme,—a common formula which all may apply without having recourse to reason.

Symmetry cannot be accredited with the qualities which go to constitute a law; it is at most, and only in certain cases, a gratification to the eye: but harmony and equilibration are laws which must be defined and applied in architecture.

In the preceding lecture we explained some of the harmonic laws of proportion; as respects the laws of equilibration, they are illustrated in the noble edifices of Classic times and of the Middle Ages; but equilibration is not symmetry, for it admits of variety. Like things do not require balancing, for the simple reason that they are similar. Nothing is more common than for a programme rigorously observed to give an irregular disposition of plan; but it is for us artists to contrive that this irregular plan shall in elevation present a balanced *ensemble*,—that the edifice shall not appear deformed or unfinished.

Suppose, for example, that we have to build a small town-hall, containing offices on the ground floor and a large hall on the first floor, and having a belfry. It is evident that if, for the sake of symmetry, I place the belfry-tower in the middle of the front, I cut the large hall in two; or I must have recourse to complicated, fictitious, and expensive means of construction (for in architecture falsehood is often very costly). I determine to be truthful. I place the tower at one of the ends of the building, with an entrance porch below; I build the staircase outside; the offices and the mayor's room will be on the ground floor. On the first floor I have every facility for obtaining an anteroom above the porch, and a spacious, well-lighted hall in the body of the building. In the roof space I contrive muniment and store rooms. Thus settled, in elevation the belfry tower is boldly treated; it is a strong and massive feature; it strengthens one end of the building, and rises to a considerable height. Then comes the great hall amply lighted; and to strengthen the corners of the front opposite to this tower, and enable them well to resist the thrust of the relieving arches of the great windows, I erect a turret—an angle pier—a buttress or vertical mass; in this way I terminate the gable and balance the façade, which is in nowise symmetrical. The eye in fact perceives that the left corner occupied by the tower is thicker, more massive and lofty; that the portion lighted is not weighted, and that this front, perforated with wide openings, is terminated at its extremity opposite to the tower by a weight acting vertically. The building is not symmetrical, but it is balanced.

Look at the antique paintings representing *villæ*, *i.e.* collections of buildings; if we examine the buildings themselves we shall be struck with the delicacy of observation displayed by the architects of classical antiquity as regards the balancing of the masses. And our Mediæval buildings,—our castles, abbeys, hospices, and even our mansions,—what numerous examples do they not present us of the application of this principle of equilibration? These buildings are firmly based, and they present a most pleasing appearance to the eye. Look at the house of Jacques Cœur, at Bourges, the Hôtel de Cluny at Paris: look at all these old feudal castles, and the châteaux of much more recent times,—Blois, Chenonceaux, Ecouen, Azay-le-Rideau. Is it to symmetrical arrangements that these edifices owe the charm that engages us? Certainly not; but rather to skill in balancing the masses. This, I allow, is a more difficult achievement than continuing the lines of a building,—than repeating the same window, and the same pier a hundred times over,—than fatiguing the eye by the uniformity of the masses. But it is art; and none will assert that art—as the chief condition of beauty—must be easy to produce.

The laws of architectural equilibration do not apply only to the masses; we observe that the ancients regarded them as the essential in the design of the details, and that the Mediæval artists applied them with consummate intelligence. Our architects of the thirteenth century, when they had to terminate the lower portion of a gable, sought and discovered combinations which decidedly expressed both the return of the mouldings and the weighting which it is necessary to give to the angles. Such a gable base balances its mass, and is moreover perfectly logical. Perhaps at the other angle there might be a staircase turret, or a tower; in that case the eye will none the less be reassured by this decided finish, so frankly expressing a termination. Equilibration is in fact the art of making a finish where symmetry is wanting; and when the architect has no other resource than the adoption of symmetrical arrangements to give an air of finish to his work, it differs little from that of those machine looms which reproduce with such remarkable precision the corresponding sections of the design woven in them.

While, therefore, properly speaking, there are no laws of symmetry, or while the laws of symmetry express merely the result of a mechanical labour, there are laws of equilibra-

* From Lectures on Architecture. Translated from the French of M. Viollet-le-Duc by Benjamin Bucknall, architect. Part III. London: Sampson Low & Co. Of previous parts of this work we have given notices.

tion in architectural art,—laws which the architects of Classic times and those of the Middle Ages strictly observed; these laws of equilibration, like the laws of proportion, are only the outward expression of statical laws. Geometry and calculation constitute, therefore, in architecture, the fundamental basis of art; with these as a basis we shall be able to get rid of the pitiable vulgarity of so-called Classic forms; and if our engineers, who are excellent geometricians and accurate in calculation, concerned themselves less with designing those Classic forms, too often introduced into their constructions in disregard of what common sense would dictate, they would undoubtedly produce works of artistic merit. Laws based on geometry and calculation, and resulting from a nice observation of the principles of statics, naturally give rise to true expression,—sincerity. Now, sincerity endows every work of art with a charm that engages the most cultured mind as well as that which is least so. Though we have depraved the taste of the public by the falsity that pervades architectural productions, when that public chances to find a truthful work,—one that appears what it really is,—its attention and interest are awakened. Whatever clearly explains itself, pleases and engages it, in France at any rate. The various materials we use possess different properties; and if we succeed in expressing these properties by the forms we give to our materials, not only do we thus open a vast field of variety, and take advantage of infinite resources, but we likewise interest the public by this constant endeavour to give every object the form that befits its nature. Is it not, moreover, the duty of artists to enlighten the public taste when it goes astray? Is there not a kind of baseness in deferring to people's errors, especially when these are manifest? Not to deceive is the first rule which persons of taste lay down for themselves; how then can we credit with taste artists who in their works heap falsehood on falsehood? The word is strong, but the thing itself is monstrous. The so-called Classical architecture which prides itself on perpetuating the traditions of antiquity is a deception; while one of the noblest qualities of ancient architecture is that of never deceiving, either in regard to the material or the mode of using it. To begin with, this formal architecture, supposed, very erroneously, to be derived from the Classic arts, might with some care preserve a truthful character, whenever an edifice has to be built without regard to expense; but when the means are limited, to what untruths must not the architect have recourse, in order to give his building the pompous appearance recognised as Classic! Plaster columns and cornices; wooden beams simulating stone-lintels; lath-and-plaster ceilings simulating timber-framing and carpentry; stucco simulating marble; plaster ornament simulating sculpture; lath vaults simulating plastered masonry. The pervading principle of this architecture is simulating something,—deception in form and material. But without descending so low,—though we often do descend to this,—let us look at some of our great modern buildings, erected at great cost; do we not see that the masonry in nowise accords with the form; that the beds of the courses do not coincide with the heights of the bases, string-courses, and entablatures; that after a few years, as each stone takes a different tint and each bed becomes apparent, the jointing of the structure does not accord with the form adopted: that the *simulated* lintels are cut in the most disagreeable fashion by the joints of the stones which compose them; that the outer mouldings of the arches do not extrados the arch-stones, whose joints stray into the spandrels; that the bas-reliefs show beds cutting the sculpture; that the enormous windows simulating openings which in the ancient buildings were destined to remain unfilled, are partitioned by glazed wooden framing which destroys the effect they were intended to produce; that the string-boards of stairs pass across windows, and that stories which appear outside to form a single ordonnance, are cut by the floors of entresols; that the roofs are concealed by parapet walls; that iron floorings are coated with plaster to represent wooden ceilings; that immense rooms are lighted by several stories of windows, so that on the outside these interiors of 30 ft. in height appear divided by several floors; that the wood is often painted in imitation of stone or marble, and the stone of wood; that inside there are as many false doors as real ones, so that you do not know where the entrance is, and open a sham door, supposing it leads into a room,* while enormous chimney-pieces are erected to contain small fireplaces? What name can we give to these eccentricities? Falsehood: no other is applicable.

If we seriously desire to invent an architecture, the first condition to be fulfilled is not to deceive, either in the general design or in that of the smallest details of the building to be erected. Certainly, in the present day, the determination to be absolutely sincere would produce a very novel and probably very fascinating result. Besides, we should thus be putting ourselves in perfect accord with the methods pursued in the good periods of antiquity; we should be making ourselves really Classic, in the sense of obeying the invariable laws of art. Having at our disposal novel materials, having machines formerly unknown, powerful appliances much more developed and complicated than those of the ancients, a tolerably complete acquaintance with what has been effected amid various civilisations in the past, and with all this, a determination to be sincere,—to comply absolutely with the requirements, to take the materials for what they are and for what they will allow us to attempt, having regard to their properties, making some little use of science and a good deal of our reason, seeking, above all, to forget false doctrines, and to put aside some prejudices, we might then be able to lay the foundation of an architecture of our time; and if we did not discover it immediately we should at least be preparing the way for our successors.

Not the least important law in architectural design,—one that concerns more directly art *per se*, and which is too often disregarded,—is that of *fitness*; and it must be acknowledged that while we erect buildings without sufficient regard for the general rules of proportions, while deception is habitual with us in the manner of observing the programme and using the materials, we nearly always disregard this law, which I call that of propriety or fitness. To give to a house raised on shops which absolutely destroy its basement the aspect of a palace; to ornament its front with Corinthian pilasters resting on woodwork, behind which peep forth hats or stockings, is an evident contravention of this law; to erect in the same town and during the same period, a Gothic church, a second of a Renaissance character, and a third of a pseudo-Byzantine style, is not easily reconcilable with propriety (I mean, artistic propriety): seeing that for churches we either preserve a traditional style because the worship is a tradition equally belonging to every period, or, on the other hand, adopt a new style suitable to the novel requirements of a worship undergoing modifications; but it is not readily conceivable that the same form of worship should accommodate itself to architectural forms that are foreign to one another. Which will be the most orthodox, the Byzantine form of church, that of the Renaissance, or the neo-Gothic? But why allow it to be supposed that one can be more orthodox than the other two? To make the front of a Mairie *simulate* the front of a church built as a pendant; a small theatre beside a large one appear a fragment detached from the latter; to crown a court of justice with a cupola like a mosque: all this manifests contempt for, or, at least, ignorance of, the laws of fitness which govern matters of art. If in a vast palace you exhaust on an accessory all the means adopted to express richness, what will you do when you come to the principal part? If, beginning with the vestibule or the staircase you lavish the resources afforded by art and material, what will you give the public after this introduction?

And the law of fitness, be it remarked, extends to everything,—to the whole as well as the details: we fail to observe it if we erect porticos where no one passes, and we are obliged as a matter of precaution to close; for we do not benefit the public by this shelter, while we render the rooms which have these windows beneath its arches very dismal; we fail to observe it, if, behind façades covered with sculpture carved at great expense in stone, we decorate the interiors with plaster-work simulating wood carving, bronze, or marble; we also disregard it if our interior decoration affects a style out of harmony with that followed for the outside.

As regards the mode of decorating buildings, the architect should never lose sight of this necessary gradation; he should not expend all he can afford on the front or on the vestibule sobriety should be observed, even where conditions of the greatest richness are admitted; for in art, richness only acquires value by contrast and a judicious use of its resources. What, in fact, are those palace interiors which are now presented to the gaze of a public which is soon wearied after a first surprise? Accumulations of ornaments, gildings, and paintings almost invariably concealing poverty of design, ill-considered proportions and disconnected masses! The effect is like that of varnish on a roughly-formed object, or embroidery on an ill-shaped figure. Dress up a deformed person, and you will never succeed in producing a noble carriage. Be assured that it is the same with architecture. When by lavishing sculpture and gilding you have tried to disguise an awkward assemblage of lines, unpleasing proportions or vulgar forms, you will only have succeeded in amusing the public for a moment.

The memory will retain only a confused recollection of the whole,—often nothing more than a feeling of deep disgust at the splendours so tastelessly lavished; a longing to find some square room with smooth whitewashed walls. Nothing in the arts leads more quickly to satiety than the abuse of richness; especially when the richness does not adorn,—while leaving it apparent,—a beautiful form; nothing so nearly approaches absolute sterility. It is only by lines intelligently combined, forms easily comprehended, and general striking effects, that a deep impression is produced on the mind, and a conception acquires the dignity of a work of art. And in this the ancients are our masters. While you depart from these principles, therefore, do not say that you are the only supporters of Classical art, and while you borrow from the age of Louis XIV. some tinsel ornaments, without reproducing the sense of form whose traces are still apparent in its monuments, do not talk of venerable traditions; for the public, weary of these gilded rags covering miserable bodies,—of this art without character, and utterly commonplace,—will end by asking to be taken back to the colourless, cold reproductions of classical art in vogue at the beginning of the century, but which were, at any rate, not ashamed of their baldness, and did not conceal their poverty of conception beneath a splendour borrowed from a few old mansions of the Marais or the Faubourg Saint-Germain.

As a *resumé* of this lecture, we will conclude by recapitulating the conditions essential to the formation of the architect: method in the study of the arts of the past,—this study being always subjected to the crucible of reason: observation of certain laws when we come to synthesis,—to design,—laws, some of which are purely mathematical, others belonging to abstract art. The former are corollaries of statics, and relate particularly to construction; the latter concern proportions, the observance of effects, decoration, fitness deduced from the requirements, the purpose, and the means at command.

Archæological study has proved to us that each period of art possesses a special style,—that is to say, a harmony, a unity in the general conception and the execution of the details. There never was, and never can be, an art not based on this fundamental condition. Either we must adopt one of these known styles, or we must form a new one. If you would produce an amalgamation of the various known styles, the archæologist comes and analyses your mixture, and proves in the most logical manner that it is composed of contradictory elements that are incongruous and mutually injurious; and, inasmuch as knowledge has something to say on the question, its dictum must be duly respected. What some have called eclecticism in art,—the adaptation of elements derived from various quarters to the composition of a new art,—is, in every respect barbarism; it is what was attempted after the ruin of the Classic arts, before the rise of the secular school of the twelfth century. When in the eleventh century the Romanesque architects took a ground-plan from the Romans, details from the East, *débris* from the old monuments of the Empire, a dome from the Byzantines, and timber-framing from the northern peoples, there was no one to label these often incongruous fragments according to their derivation. But we have now too much knowledge to attempt such a proceeding; in our times we should not make these admixtures with that naïveté or good faith which thus gave a harmonious tone to the most hetero-

* Have we not seen in a modern edifice, built with, perhaps, excessive luxury, doors symmetrically represented in a staircase whose landings are naturally at different levels, so that of four doors thus symmetrically placed, two open into empty space? On seeing this architectural freak, some one suggested that people one wanted to get rid of might be very conveniently shown out by these doors, opening on corresponding precipices.

geneous combinations: in fact, ignorance alone was capable of giving shape to this confused mass of elements. Science can classify them, but for the very reason that it does classify, it is unable to mingle them. It soon perceives that only two or three essential principles are to be found among them, and a very limited number of ideas pertaining to each of these principles; but that to attempt to harmonise these principles in a single expression of art, or not to regard the ideas as derived from the principles, would be a deliberate lapse into barbarism.

It would be an unworthy office to object to archæological studies: we believe, in fact, that they are calculated to serve as a solid basis for modern art; but at the same time we must not close our eyes to the danger they entail, especially as archæology would seem of late to be exerting an influence rather on the material than the intellectual side of art. If we would derive advantage from the study of the past, we should not occupy ourselves so much with inquiring whether the metopes of such or such a temple were coloured blue or red; whether the bronze enclosures were inlaid with silver; whether gold fish were painted at the bottom of azure-floored *vivaria*; whether the eyes of such or such a statue were incrusted with enamel or precious stones,—as with investigating the reasons which led to the adoption of such or such a style of decoration, or obtaining a precise and comprehensive idea of the civilisations a few of whose manifestations we have succeeded in deciphering. The numberless and puerile details with which the study of Classic and Mediæval times is occupied in the present day too often cause it to lose sight of the chief object,—that of investigating human nature, its efforts, its tendencies, and the means it has employed to manifest its thoughts, taste, and genius. It is of trifling importance to us to know the composition of the pomades used by the ladies of Greece and Rome; but it is of great importance to us to know what was their social and domestic status, how they spent their leisure, and what was the degree of their mental cultivation. I see no harm in painters knowing the number of rows of pearls the Satraps wore on their necks, and whether they wore laced-up boots, shoes, or sandals, provided they first learn what a Satrap was. Archæological studies will be advantageous to the arts provided they first lead us to ascertain the dominant principles, the causes, and the logical order of facts; when observations respecting details,—trifling results,—offer themselves, they should certainly not be thrust aside, or even neglected; but it is well to give them their due place, and not accord them a greater importance than they deserve in human history. In a word, the part played by archæology should not be that of narrowing the mind of the artist, but on the contrary, of enlarging it, by showing him certain grand invariable principles which always rule in the products of intelligence. But in the nineteenth century there is a serious question which is daily assuming greater importance, and which will eventually take precedence of all the rest: the question of expense,—the financial question. The greater the increase of prosperity in a particular civilisation,—the greater the extent of wealth,—the more are people inclined to make a judicious use of their means; and useless expenditure excites public disapprobation. When all are possessors of property every one knows the value of things and criticises the misapplication of the public money, which is in some sort the property of each. In a word, what every one occasionally finds fault with, is not that too much is expended, but that it is unwisely expended, or that the best use possible is not made of the public resources. Now, in a nation like ours, buildings form a large item in the budget; it is, therefore, of consequence that they should be useful, substantial, and beautiful, and cost no more than the value they represent; for we like to get full credit for the sacrifices we make, when we are rich and know what we have a right to expect. Is architecture prepared to give satisfaction to that spirit of true economy, which is certain to have a vigorous extension? I think not. Moreover, a singular phenomenon is witnessed in our days, which are so fertile in contradictions. On the one hand, those to whom the expenditure of the public money is intrusted are for the most part strangers to art, and often cherish the conviction in secret, if they dare not openly avow it, that what is called the mania for building is the ruin of a State, and that if we were wise, we should limit ourselves to the erection of mere sheds, fit to last some fifty years, for all our public offices. They are horrified, and not without some reason, at seeing enormous sums expended in the erection of buildings whose destination is not altogether fixed, and which assume architectural forms whose adaptation no one can perceive. In their view, the architect is simply an enemy of the public prosperity,—a spending machine that makes short work of the purse when it has clutched hold of the strings. On the other hand, our architects, directed by the school, and enjoying its special patronage (I do not say instructed by it, for it does not instruct), are not prepared for refuting these charges: on the contrary, the tendency of their education is fully to justify them, since not a word is ever said to them about the direction of works or the judicious employment of materials, or the application of architectural forms and means of construction to the requirements of the case; but they are trained to produce designs that cannot be executed, and which are of a monumental character, no regard being had to the method of securing a wise economy. Thus, in one quarter of Paris the State is educating young men as architects, who in another quarter will incur the most bitter suspicion, and whose tendencies will be deliberately counteracted. The State will charge the architects with ignorance of that which has not been taught them in a school maintained and protected by it, of which it is the master, and whose tendencies, hitherto at least, it has not thought fit to alter. It should, however, be observed that building has never ruined States during periods when architecture was in perfect harmony with national habits and wants, and was subordinated to the requirements of the case, the judicious use of the materials, and the necessities of the times. The buildings erected by the Romans in the provincial towns did not ruin them, but, on the contrary, contributed to the spread of civilisation and of ideas of order, wealth, and comfort. France was not ruined at the end of the thirteenth century, during which it rebuilt all civil and religious edifices on entirely new plans. This was because those buildings then represented an idea, or were erected to satisfy real wants, and did exactly satisfy them. Their degree of richness depended on their distinction; and it was impossible to mistake a palace for a hospital, or a guildhall for a princely mansion. The architectural forms were in harmony with the necessities of the times. In a word, architecture was then a pliable art, applicable to everything, understood by all, and not a conventional formula foreign to the social condition, to the times, and to practical appliances. It changed as did customs, and, free in its expressions, it had not yet been subjected to the enervating *régime* by which we now see it oppressed.

"ICI ON PARLE FRANÇAIS."

To the privileged "few," who have not as yet quitted Paris, last week offered a series of agreeable artistic surprises that amply compensated for the loss of any of the pleasures that the country may at this season afford. After the usual seclusion *en loge* of seventy-two days, the two competitors for the Grand Prix de Rome in the section of sculpture, exhibited on Tuesday, the 31st ult., at the École des Beaux Arts their respective works. The subject chosen was the finding of Orpheus's head and lyre, in the river Hebrus, after the cruel scene described so glowingly by Ovid in his "Metamorphoses." The subject was to be treated as a bas-relief, a form ill-suited, it may be observed, for competition. Great satisfaction, however, is expressed with the result of this year's labour, and much indecision reigned with regard to the fortunate candidate who should bear off the prize. On Friday, the jury gave their verdict, which has named M. Cordonnier (No. 4) the prize-man in sculpture this year, and with him M. Labutat and M. Lefebvre.

The same week there was an exhibition of the drawings of the ten candidates for the *Grand Prix* in architecture. The subject given was "an Athénée or Athenæum for a large town," in which were to be planned lecture-rooms, class-rooms, a concert-room, library, conservatories, laboratory, gardens, &c., the whole adorned with reproductions from the famous statues of antiquity. In the plans there was the usual manipulative skill displayed that all French architectural drawings exhibit, though in the artistic conception of the elevation much difference existed. The competition in architecture this year has been highly satisfactory, nor was it without mature consideration that the jury, on Saturday last, decreed the *Grand Prix* to M. Paul Nenot, born in Paris in 1853, and pupil of M. Lequeux and M. Questel-Pascal. The other prizes were gained by Nos. 3 and 5 of the competitive drawings. With this judgment of the jury the annual series of competitions for the *Grand Prix* is closed for 1877. It may not be uninteresting to add that the three laureates in painting, sculpture, and architecture are, in virtue of a law passed in 1872, exempt from military service entirely. M. Nenot, however, who gained the *Grand Prix* in architecture, has already served his country; for, in 1870, when only seventeen years of age, he took an active part in the defence of Paris, and was decorated with a military medal; three years later, on again being enrolled, he obtained the diploma of sub-lieutenant in the artillery.

In the section of painting the jury, presided over by M. Meissonnier, awarded, on the 28th ult., the *Grand Prix* to M. Theobald Chartran (No. 2), pupil of M. Cabanel (not of M. Gerôme, as erroneously stated), born at Besançon in 1849. The other prizes were awarded to M. Frietel and M. Courtois.

On Thursday, the 2nd inst., under the famous cupola of the French Academy, at no very great distance from the École des Beaux Arts, a numerous assembly had been gathered to witness the distribution of the "Prix de Vertus." An extra treat was promised on the occasion, as M. Alexandre Dumas fils, the well-known author of the "Demi-Monde," the "Étrangère," and so many other famous works, was to preside, and to deliver a speech. M. Dumas, with his usual wit, acquitted himself of his somewhat difficult task with success, and his speech, which has been by this time fully reported in the English journals, was received with unanimous approbation. It is much to be regretted that we have not established a system of prizes like these in England, where such acts as that of Caris, the courageous Belgian workman, might be publicly and amply rewarded, as also not mere deeds of bravery, but those numerous examples of long-continued self-sacrifice that we know exist so often ignored.

For the artistic world, the return of Mdlle. Sarah Bernhardt to the French Theatre, after so long an illness, is an event, and in the new *rôle* of *Andromaque*, in Racine's famous drama, the charming actress has reaped a fresh crop of merited laurels.

With the re-appearance of this elegant *comédienne* is announced, on the other hand, the disappearance of the old Hôtel Dieu, one of the most ancient hospitals in Europe, for its age reaches back more than 600 years. The new Hôtel Dieu being perfectly ready, the demolition of the old building will soon be completed.

THE ARTISANS', LABOURERS', AND GENERAL DWELLINGS COMPANY.

The report of the Committee of Investigation appointed to look into the affairs of this company has been issued. The Committee report amongst other matters that they found that the Board appeared to have systematically abnegated their proper functions by leaving almost everything to the secretary and manager. The practice seems to have been for two directors to sign from time to time a large number of blank cheques, and to hand them over to the secretary and manager for filling up and issuing at his discretion. It appears that it frequently happened that no accounts were placed before the directors before they signed the cheques, and that they were sometimes signed as long as three weeks or a month before the accounts even came in. Under these circumstances it was not very extraordinary to find that in many cases materials were purchased at an extravagant cost. A very great quantity of goods required were bought of one man of the name of Franckenberg, who, by trade a dealer in glass, supplied the company with a great many other articles which might have been far more cheaply bought from the wholesale dealers themselves. The prices actually charged to the company were most exorbitant. As to the land purchases, strong evidence was obtained of complicity against the principal officer of the company, who suddenly sent in his resignation. The further evidence since unfolded has implicated other parties connected with the company in these transactions. Large sums of money have been charged to the company in excess of the prices which the real owners received for the properties produced. The Committee are advised that the parties implicated in these transactions

are liable to repay to the company the money which they have so improperly abstracted. They think that if the irregularities and waste which have already absorbed so much of the company's capital had been allowed to continue much longer unchecked, the financial ruin of the company must have inevitably followed. In conclusion, they strongly recommend that the capital and revenue account should for the future be kept entirely distinct, instead of being intermixed as heretofore.

An extraordinary general meeting of the company was held on the 3rd inst., to receive the report. The Hon. Evelyn Ashley, who presided, said it appeared to him that the shareholders were rather to blame for the irregularities and mismanagement which had occurred in not looking after the affairs of the company more closely. At the last general meeting in March there were only eighty-eight persons present, and of those forty-two were in the direct employment of the board of directors. The Committee of Investigation now found themselves compelled to undertake, at least for a time, the management of the affairs of the company.

The report was received and adopted. In the course of the proceedings, Mr. Samuel Morley, M.P., remarked that the history of this company was one of the greatest of modern scandals. Here were men placed in the position of great responsibility,—men who were utterly unfit for such a position, and he must express his amazement that gentlemen could be found who could sit round a table and approve of transactions which came before them, simply from their feeling of confidence in one individual. It appeared to him that no proof was given to the directors that the property was worth so much, but everything was left to one or two persons. The present directors intended to bring all these things out in the interest of commercial morality.

Dr. Baxter Langley was present, and denied that he had derived any financial benefit from the company.

The thanks of the meeting were accorded to Mr. John Pearce, lately one of the auditors of the company, for his persevering and disinterested efforts in promoting an investigation into the affairs of the company," and it was subsequently resolved that the directors should pay Mr. Pearce 300*l.* as an honorarium, seeing that he had been put to considerable expense in the matter.

Mr. B. Whitworth, M.P., in seconding a vote of thanks to the Chairman, remarked that the tendency of property in London and the neighbourhood was to increase in value, and he believed that it was in that way the company would have a return of prosperity. On that ground he advised them not to sell any of their estates.

THE SURREY ARCHÆOLOGICAL SOCIETY'S OUTING.

The annual excursion of this society took place on the 30th July, under the presidency of Mr. J. R. Daniel Tyssen, F.S.A. The rendezvous was at Redhill Junction, near Reigate. Reigate and Gatton, having been visited by the Society in 1860 (see vol. ii. of the Society's Proceedings), were not explored on this occasion. The members and their friends were driven to Horley Church, where a descriptive paper was read by Major Heales, F.S.A. He said the oldest part was on the north side, and the plan was very peculiar, so much so as to render it difficult at first sight to say which was the nave and which the aisle. The nave was much wider at one end than at the other. The church was restored by John de Ratherwick, Abbot of Chertsey, as was also Great Bookham Church, by the same Prior, in 1320. The chancels of the two churches are similar. The roof of Horley Church consists of a king-post. The glory of the church, however, is the remarkable wooden framed tower, which is of the fifteenth century. There were eight bells. The stained glass in the east window was no doubt original. After noticing the font, the gallery at the west end, the Major said the church was dedicated to St. Bartholomew. The parish registers contained very little of importance. The state of the church was bad and insufficient for the wants of the congregation. He would recommend that it be enlarged by putting a south aisle, and not by interfering with the singular framed tower as had been suggested.

Mr. J. G. Waller next gave a description of the monuments and brasses in the church; and after inspecting the interior and exterior of the edifice the company were driven to the site of Thunderfield Castle where an essay was read by Mr. W. Granville Leveson Gower, F.S.A.

Mr. Gower commenced by saying the site was not mentioned in Domesday. It is included in the Manor of Bletchingley, formerly belonging to the family of De Horne from the thirteenth century. There is a small earthwork just outside the outer ditch, which is all the earthwork now left remaining. The term "castle" is not as the Mediævalists knew it, but is derived from the Roman word "castrum," an inclosure, or encampment. Thunderfield is the name of the common adjoining, and was derived from the Saxon word "Thor," the Saxon god. Tradition says that King Athelstane had a house here, and also that a Danish battle was fought here, the only support of the latter being that some bones have been found.

Barstow Church was described by Mr. Ralph Nevill, F.S.A. He commenced by tracing the history of the lords of the manor of Barstow. The church was not mentioned in Domesday, but must have been erected soon after, from the remains of two Norman windows which can be traced. The large timber tower (similar to that at Newdegate Church), is supported by massive wooden piers 21 in. square. The celebrated astronomer, John Flamsteed, was rector of this church. After describing the details of the church, and the king-post roof, Mr. Nevill expressed a hope that if ever they visited that church again, the plaster ceiling would be removed, and the fine roof-timbers left open.

Smallfield-place was next visited, and described by Mr. R. A. C. Godwin-Austen. At the Chequers Inn, Horley, a collation was provided, and a few speeches closed the day.

SANITARY STATE OF BIRMINGHAM.

A correspondent sends us the following noteworthy extracts from the *Sewing Machine Chronicle*, which gives a sad but true picture of Birmingham. It cannot be too often brought before the notice of the Corporation of that ambitious and energetic town. The conductor of the *Builder*, in connexion with the Social Science Association, told Birmingham a few truths of the same kind some years ago, but "authorities" would not then believe; some of them, as our pages of that time show, would willingly have stoned the speaker, had stoning then been the current mode of expressing dissent. Birmingham is wiser now, and is, at any rate, willing to listen:—

"It was a happy thought to initiate a public movement in favour of 'Economy' at Birmingham. In the last generation Manchester had a mission to preach Free Trade, and nobly did its work, received the due reward of success, and became Conservative. It would appear as if the next city which has a mission is to be our great Midland town, the home of Radicalism, enterprise, hot restless energy, hard speaking and public spirit. Domestic Economy means the prevention of waste at home, and 'waste' is an awful word, abhorrent to the Birmingham mind—wasted time, energies, influence, life, and even money is nothing compared to waste in material, and if economy in this only can be brought about by any Congress sitting anywhere great good will result. While this particular Congress was sitting in Birmingham, any of its members might have seen, as the writer did in the district between Aston and Lozells, parties of young men and youths grubbing among the discarded heaps of rubbish for material treated formerly as waste, but now valued because scarce, and consequently dear. Nor in this particular was Birmingham fruitful in lessons to members of a Congress devoted to the promotion of happiness and comfort in the home. A more appropriate or a sadder centre for the commencement of a mission could not well have been better devised. The centre town in the kingdom, the most enterprising, energetic, and wealthy in the metal trades, with beautiful suburbs—yet such a centre presents some of the most cruel contrasts to be found in our civilisation. In no other city in the Empire would be found the same squalor and filth—the same hard-featured toil-and-sin-battered women—and the same number of wretched, neglected children. The root of the evil is in the home-life the poor and labouring classes live. The cupidity of landlords has caused the streets to be intersected with narrow alleys, in which houses are back to back, or built with back walls in which no windows appear, ventilation being thus impossible. But it is in the drainage of the town that the saddest hindrances to home comfort and decency are to be found. Houses innumerable exist without water-closets, or with one closet to a row of houses—the soil falling into an open space tainting the air. What would members of the Congress think of rooms being erected over these cesspools, in which only a bare flooring separates the abode of father, mother and family from the foul mass beneath. Nor is this all, for in some cases the boiler of the factory, the home of the artisan, and the cesspool are in such close proximity, that it is not an uncommon fact for the latter to be such a seething, heated mass, as to bring an indignant tenant before the owner of the boiler (and it was used in a sewing-machine business), with a complaint that 'he was boiling his filth.' Under such circumstances, decency, modesty, and health find sore discouragements, and selfishness, coarseness, and sickness find full play."

CHRIST CHURCH CATHEDRAL, DUBLIN.

MR. GLADSTONE AT THE INSTITUTE OF ARCHITECTS.

Sir,—I observe that Mr. Gladstone, at the Institute of Architects, on April 30th, when speaking of rebuilding on *débris* of former buildings at Hissarlik, is reported to have said,—

"Undoubtedly I can well conceive that the distinguished architects who sit in this room will be shocked to the last degree at the idea of rebuilding upon the *débris* of the former edifice. I do not recollect to have heard a case of that kind in modern times that can be strictly so described. The nearest to it in my recollection is one which is related either by Mr. Street or by some gentleman who has written an extremely interesting book upon Christchurch, in Dublin, whence it appears that there was, I think, in that beautiful edifice a noble stone roof; but, yielding to the hand of Time upon a certain occasion, this stone roof came down, and covered the ancient floor of the church with ruins, I think to the depth of some 6 ft. to 10 ft. The parishioners or attendants at that church in Dublin thought that it would be a most laborious business to cart away all these stones, and that the church before had been quite unnecessarily high, so they put a wooden floor over the remains of the ancient stone roof, and a plaster ceiling in the place of the old roof."

Can any of your readers inform me, as I should not have the temerity to ask the distinguished statesman himself, who is the "some other gentleman" who has written in an interesting book such a tissue of misrepresented and inaccurate statement? Mr. Street is at once out of the question as the possible author.

The roof of Christ Church did not, strictly speaking, yield to the hand of Time. The north wall of the nave was founded upon a stratum of peat bog lying on a sloping bed of gravel. The peat slipped down the hill one day, and the groined roof fell in.

The floor remained covered with rubbish to a depth of 3 ft. 6 in. to 4 ft., not 6 ft. to 10 ft. There were no parishioners exactly in control of this cathedral church. Earl Sydney, Lord Deputy, built up part of the walls again; he did not build upon *débris*. He laid a flagged floor upon the rubbish in the nave,—not a wooden one. In fact, the main walls of the ancient structure are, for the most part, standing still on their original foundation, and no part of it rests on any *débris* whatever. Lord Sydney re-covered the nave with an open oak roof. There never was any plaster ceiling that I ever saw or heard of. Who is the author of the fanciful statement supplied Mr. Gladstone relative to a building which does not present the remotest analogy in its circumstances to those at Hissarlik under discussion?

Thomas Drew, F.R.I.B.A.

Dublin.

WHITWORTH SCHOLARSHIPS: SCIENCE AND ART DEPARTMENT.

The following is a list of candidates successful in the competition for the Whitworth scholarships, 1877:—

	No. of Marks. Theoretical.	Practical.	Total.
Last, William I., 19, mechanical engineer, London	1,901 ...	377 ...	2,278
Ogden, F., 18, mechanic, Oldham	1,373 ...	644 ...	2,017
How, W. F., 21, engineer, London	867 ...	969 ...	1,836
M'Kenzie, W. S., 21, engineer, Aberdeen	774 ...	1,060 ...	1,834
Ottewell, A. D., 21, draughtsman, Derby	1,808 ...	196 ...	1,802
Low, D. A., 20, engineer, Dundee	1,108 ...	418 ...	1,526

PLASTER OF PARIS.

Sir,—I am anxious to obtain information respecting the quantity of plaster of Paris used in London, but have been up to the present unable to get any figures on this point. Will you allow me through your columns to ask if any of your readers can give me information on this point or direct me where it may be found?

Gypsum.

MASTERS AND MEN.

London.—On the 2nd inst. a meeting of the union masons at present on strike under the circumstances already detailed was held at the Regent Music Hall, Westminster, to consider the position of affairs. The chair was occupied by Mr. Young, and about 2,000 men were present. The business transacted related to points of detail. During the proceedings the policy of certain firms was closely and somewhat keenly discussed. What may be called "border" cases were stated, and their legality argued. The local levy soon attracted attention. Mr. Cole moved the following resolution as to its collection:—"That it is the opinion of this meeting that the local levy of 8d. per day be paid by every member (in work) on Saturday evenings through their shop stewards at their respective lodges between the hours of 12 a.m. and 8 p.m., where the secretary or sub-committee shall receive it; and in all cases of payment a lodge-stamped receipt shall be given to each member." A Committee-man seconded this motion, observing that they would thereby be carrying out what had been the case in previous strikes. Mr. Storer maintained that the levy should be paid by every member in work, no matter what the work was; and every man was presumably at work, unless he put his name on the strike-roll. Mr. Nisbett said it was admitted on all hands that the levy should be paid on Saturday night. Payment should be enforced with strictness, as arrears were dangerous. Three weeks hence the strike might be closed, and if only one-third of the levy was in, great difficulty would then be experienced in obtaining the remainder. Mr. Adams moved as an amendment, "That the levy-money be paid to the secretary of the lodge, as in the past." The resolution, thus amended, was carried. The question of piece-work next came under discussion, and a motion was proposed that men on strike should be allowed to do piece-work during the dispute. Objection was raised to this proposal, on the ground that it was unfair. Mr. Nisbett, in the course of the discussion, contended that the code would allow piece-work, such as granite curbing. In any case he pointed out that they could not stop a man taking piece-work on hand, as, having once struck, they could not strike again, and they had no control over him in regard to the matter, save that of force, of which he did not suppose a man would advocate the exercise. The resolution, on being put, was carried by a large majority. We quote the foregoing from the *Daily Chronicle*, which thus states the case of the men on strike:—

"The object of this extreme measure [the strike] is to shorten the hours of labour from fifty-two and a half to fifty a week, and to obtain an advance of wages from 9d. to 10d. an hour. In reference to the shortening of time, many of the workmen reside a short distance in the country, and being unable to reach their work in town until half an hour after the time of commencing work, six o'clock, owing to the lateness of the train service, they suffer pecuniary loss. What is wanted is to delay the time of commencing work half an hour each day, to obviate this inconvenience. An increase in wages is wanted in consequence of the usual cause in these cases, the dearness of the necessaries of life. Six months' notice of the strike had been given to the employers. The number of firms on which the strike bore was about 150; but of these fifty-five have conceded the increase in the rate of wages, though refusing to allow a curtailment of the time. This concession of part of the demand has been accepted by the men, who now only press the other firms for a similar compromise. The London branch of the National Operative Stonemasons' Society consists of nineteen lodges, with about 2,500 members on the books. Of this number about half are in work for the firms which have given way, the other half being on strike. The funds at the disposal of the trade for the maintenance of a strike are ample; in fact, we understand that, with the exception of the engineering trade, no trade is in so flourishing a condition, so far as money to fall back upon is concerned. The men on strike receive 18s. each a week, 12s. from the general fund of the society, and 6s. from the local fund created for the purposes of the strike, and to which each man in work contributes, under the operation of what is called a local log, 4d. a week. It is anticipated, however, that the strike will not be one of long duration. The trade in London was never known to be in a better condition; and we understand that a large amount of contract work is on hand in various parts of the metropolis. The firms are giving way individually, as, it is supposed, the urgency of work requiring execution presses upon them."

Arbroath.—The slaters here had their wages advanced, unsolicited, to 7½d. per hour in the spring. A few days since they were again advanced to 8d., unsolicited.

Aberdeen.—The strike of the Aberdeen masons still continues. It has now gone on for two months, and there is no appearance of a settlement between the men and masters being come to. The number of men on the strike-roll is seventy-five, and each of these receives 14s. per week of strike pay. The number of men employed in the city is 350, as compared with 700 before the strike.

Hales Owen and Old Hill.—The strike of the nailers in the above districts has terminated, after continuing fifteen weeks. On the 31st ult. there was a meeting held at Hales Owen, when it was decided to "go in," and to accept work at the reduced prices. At a subsequent meeting of the Old Hill operatives, a resolution similar to that at Hales Owen was adopted, it being thought useless to hold out any longer. The speakers urged that they had lost their point in consequence of the "blacklegs," and they said that on the first opportunity the agitation against the reduction would be renewed.

SURVEYORSHIP ITEMS.

Hythe.—At a meeting of the Hythe Town Council, on the 1st inst., sitting as the urban sanitary authority, the principal business was the appointment of a surveyor and inspector of nuisances for the borough, at a salary of 100*l.* a year. There were three candidates,—Mr. Thos. Miller, who has been acting as deputy surveyor of the borough; Mr. Charles John Denne, of New Romney; and Mr. Arther H. Clarke, of St. Lawrence, Thanet. The Council decided to appoint Mr. Miller.

Wandsworth.—Mr. J. C. Radford, C.E., surveyor to the Wandsworth District Board of Works, has had an increase of 50*l.* per annum made to his salary.

Melksham.—Mr. Hookins has been appointed surveyor to the Melksham Sanitary Board.

Malvern.—At a meeting of the Malvern Local Board, on the 24th ult., the Streets Committee reported that they had examined the whole of the applicants (forty-six) for the appointment of assistant to the surveyor, and, in accordance with the resolution of the Board, they recommended three candidates, viz., Mr. Bascombe, of Southampton; Mr. Caink, of Malvern; and Mr. Smythe of Birmingham, to the Board for final selection. Mr. Caink was elected.

Wolverhampton.—The *Wolverhampton Chronicle* says:—"It was scarcely to be expected that a gentleman holding the position which Mr. Anthony Morgan, the late borough surveyor, so long and ably occupied in Wolverhampton, should be allowed to pass away without some tangible tribute of respect being paid to his memory; accordingly we are not surprised to learn that shortly after his death a number of gentlemen connected with the Town Council, and other friends of the deceased, met together, and formed themselves into a committee for the purpose of obtaining subscriptions for the erection of a memorial. It was decided that no public canvass should be made, but the mayor, as chairman of the committee, sent out circulars to his colleagues in the council, and other gentlemen in the town, intimating to them what was proposed to be done, and soliciting their support. A meeting of the committee was held on the 24th ult., when, from the report made by the honorary secretary, Mr. T. J. Barnett, it appeared that the response so far had been very liberal. The precise form which the memorial shall take has not yet been decided upon.

LARGE NEW CONVENT BUILDINGS IN CAMBERWELL.

A VERY large new convent, which, with the grounds, will cover upwards of an acre, is about to be erected in Camberwell. The site for the new structure is Myatt-road, opposite the Camberwell railway station, and immediately adjoining the Roman Catholic Church of the Sacred Heart, with which it will be in connexion. The land forms part of the Myatt's Fields estate, and, until its purchase for the purposes of the intended building, was used as a nursery and market-garden. The outer walls enclosing the grounds are now in course of erection, and the excavations for the foundation-walls of the convent itself have already been made. It will be uniform in its architectural features with the church and clergy-house adjoining. The main frontage of the building to Myatt's-road will be upwards of 70 ft. in length.

SCARBOROUGH SPA COMPETITION.

SIR,—In the notice of the above in your last issue, I am credited with being the successful competitor. May I request you to add the name of Mr. G. H. Hunt, my partner in this, as the design was submitted, and the award made, in our joint names? THOS. VERITY.

STAINED GLASS.

Boston.—A stained-glass window has been placed in the south side of the parish church of Boston, Lincolnshire, in memory of Mr. and Mrs. Jebb. It is the workmanship of Messrs. Hardman, of Birmingham, and is a four-light window, in each light there being two scenes, making in all eight representations. In addition to these there are miniature figures at the top and bottom of the window. In the centre space of the tracery in the top is a figure representative of Faith holding a cross, beneath which, on the left, is an angel with a scroll bearing the words, "Blessed are your eyes"; and in the corresponding position on the right is another angel with a scroll, on which is a continuance of the text. A figure of Charity, with heart in hand, is seen down the arch of the window on the left, while a figure of Hope, with its symbolic anchor, is seen in the corresponding position on the right. The upper illustration in the left light is that of the parable of the "Hidden Treasure"; that in the second light, the parable of the "Talents"; that in the fourth, the "Good Samaritan." Figures of the four evangelists with their symbols occupy the centre of these four lights. The lower illustration in the left light is that of the "Labourers in the Vineyard"; in the second, the "Return of the Prodigal Son"; in the third, the "Sower sowing good Seed," with the enemy in the rear sowing tares; in the fourth, the "King making a Marriage for his Son," and the halt, and blind, &c., who were called as guests. Beneath these illustrations are miniature figures of angels in each light, holding a scroll stretching across the entire window on which is traced the sentence, "With many such parables spake He the Word as they were able to hear."

Warwick.—Messrs. Heaton, Butler, & Bayne have been commissioned by a local committee to place a stained-glass window in St. Mary's Church to the memory of the late vicar, the Rev. J. Boudier.

East Tytherley.—A stained-glass window, executed by Messrs. Ward & Hughes, has just been inserted in the east end of East Tytherley Church, as a memorial of the late Rev. J. Mason, for twenty-five years incumbent. In the central light of the window, which is an Early English triplet, are "The Nativity," "The Crucifixion," "The Incarnation," and "The Atonement." In the side lights are representations of "Our Lord in Prayer" and "The Sermon on the Mount," while beneath are "The Baptism in Jordan" and "The Institution of the Eucharist."

Melton Ross (*Lincolnshire*).—Two painted windows have lately been placed in the church of this village, by his family and friends, to the memory of the late Rev. W. H. Wyatt, rector of Melton. They are near the font, and are single-light windows of the Decorated period of architecture. They contain richly-coloured subjects, on quarry ground, of "Christ blessing little Children" and "The Good Shepherd." Messrs. Ward & Hughes are the artists.

Bressingham.—Two memorial stained-glass windows have been inserted in the north aisle of Bressingham Church, Norfolk: one by Mr. Robert Bunn, to the memory of his late father, the subject being the two Apostles, "St. Peter and St. Paul"; the other by Mrs. Elizabeth Huson, to the memory of her late husbands, the subject being composed of various Scriptural devices. The work has been executed by Messrs. J. & J. King, of Norwich.

Monifieth.—A window has just been placed in Monifieth parish church to the memory of the late Mr. Thomas Erskine, of Linlathen. The greater part of the window is occupied with two large figures, representing John the Baptist and St. Paul. Both appear as standing on the green sward, studded with wild flowers, while the stem of a tree, thrown into circles and semicircles, rises behind, and the branches and leaves completely fill the whole window, and form a very pleasing and effective background. The window was supplied by Messrs. Maurice & Co., of London, and was put in by Messrs. Lindsay & Scott, glaziers, Dundee.

Ashbourn.—The restoration of the Flamboyant window over the door of the north transept of Ashbourne Church will shortly be completed by the insertion of the stained glass which the Misses Hartshorne have presented to the church, in memory of the deceased members of their family. The subject intended to be illustrated by the new window is the Crucifixion of our Lord. The work has been entrusted to Messrs. Hardman, of Birmingham.

MODEL BYE-LAWS: HEALTH ACT.

The Local Government Board have issued, for
e use of the Guardians acting as the Rural
anitary Authority, a selection of model bye-
ws, under the first part of section 44 of the
ublic Health Act, 1875 (38 and 39 Vic., cap. 55),
ith respect to new streets and buildings, baths
nd washhouses, the cleansing of footways and
avements adjoining any premises, the removal
house-refuse from any premises, and the
eansing of earth-closets, privies, ashpits, and
sspools belonging to any premises; and, under
ction 80 of the same Act, with respect to
mmon lodging-houses.

Prefatory memoranda accompany the several
ories of bye-laws to indicate the points of im-
ortance to which it is necessary that the
ttention of the Sanitary Authority should be
rected in connexion with the special subjects
which those series relate. We will make an
pportunity to return to them.

WEST COMBE PARK ESTATE COMPETITION.

It will be remembered that the directors of
e Midland Land Corporation, Birmingham,
fered three premiums for the best designs for
ying out the West Combe Park Estate, Black-
eath, recently purchased by them. There were
ty-two competitors, and the plans, with
otions of roads and drainage, specifications,
nd estimates of costs, were exhibited at the
asonic Hall, Birmingham, last week, and the
emiums were awarded as follows:—

1.—150 guineas, to "Invicta," Mr. John Ashdowne.
2.—100 " "Deo," Messrs. Isaacs & Florence.
3.—50 " "Hic Labor," Mr. Robt. Kirle.

We are glad to find the directors, in making their award,
ted, as an honorarium, ten guineas to each of the ten
mpetitors whose designs were considered to possess the
st merit after the first three. Their names are as
low:—"Respice Finem," Mr. A. C. Bean; "Model,"
essrs. Bell & Roper; "Finis coronat Opus," Mr. H. M.
mmings; "Civis," Mr. J. D. Mathews; "Quis,"
essrs. Medland & Son; "Supero," Mr. T. M. Nelson;
A Man of Kent," Mr. P. S. Pannell; "Finem Respice,"
r. H. W. Spratt; "South Eastern," Mr. R. Walker;
Finem Respice," Mr. Henry Webb.

THE ROMAN FORUM.

Sir,—In your notice of my book on the Roman
rum, a question is raised as to the method of
asoning applicable to the identification of
cient sites, which, as it has an interest inde-
ndently of my humble work, may be thought
your readers worthy of reconsideration.

It is observed that "the author drops into just
e same arguing in a circle which other Roman
chæologists have shown such a tendency to,
d having quoted the *Monumentum Ancyranum*
prove the position of the Temple of Saturn
being that of one of the temples flanking the
asilica Julia, quotes the same passage again to
ove the position of the Basilica Julia, as being
at which the Temple of Saturn immediately
joined." The reviewer accordingly proceeds
suggest to archæologists "the necessity for
re consideration of the simplest rules of logic,
d a recognition of the fact that you cannot
sume A to prove B, and then use B to prove
"

This objection appears, if I may say so, to be
nded upon a misapprehension of the method
reasoning applicable to the subject. It is
e that the topographer does not always pro-
ed from one established deduction to another.
s problems are not like those of Euclid, con-
utive, but co-ordinate. The site of each
mber of a group of monuments may with
ual reason be considered first, or last; and
ch identification must be taken as hypothetical,
til the position of the others, proved to be
nnected with it, has been also considered. The
chæologist has in each case to show that the
ntification he proposes is consistent with all
e indications derived from the appearance of
e locality, and from ancient authorities; and
argument would be incomplete if he omitted
y one of these indications.

The case mentioned by the reviewer may
rnish an example to illustrate my meaning.
e Ancyran inscription describes the Basilica
lia as situated between the temples of Saturn
d Castor. The archæologist desires to point
t, if possible, the site of these three monu-
nts; but there is no logical necessity for
ginning with one rather than another. His
rangement leads him to take Saturn first. In
ler to be consistent with all his authorities, he
bound to show, among other things, that the site he assigns to this temple is at the side of a possible or probable Basilica Julia. After awhile he comes to the Basilica. Here he has to show that the proposed site is between his temple of Saturn and an assumed temple of Castor. If he fails to do this, the Ancyran inscription is against him. The identification of the temple of Castor is treated in the same way. It is obvious that, if the Ancyran inscription were the only authority for the site of these monuments, the argument would be weak; but it would be equally admissible in every case. It would not, as the reviewer seems to think, be exhausted by its first use. But inasmuch as each case is supported by other proofs, the three identifications, connected by their authority, lend a strong support to each other; and it would, as I submit, be an error to omit this argument in dealing with any of the three.

The above was written before your number containing a letter on the same subject reached me. As the method of reasoning to which I have addressed my remarks (and which would be as applicable on the plain of Troy as amid the ruins of Rome) is not treated in the same way by the writer of that letter, I send you this, nevertheless. F. M. Nichols.

THANKFUL.

Sir,—As an old contributor, I feel impelled to thank you for acting as you so constantly do as the champion of oppressed and unjustly treated architects. I am sure we owe you a deep debt of gratitude for taking our parts against the covetous world, which is so apt to take advantage of professional men under shelter of being a committee. E. A., Architect.

VENTILATING DOORS.

In reply to "Q. Q.," who wrote in our last under the heading "Wire Doors" (p. 794, *ante*), "S. I." suggests that some kind of louvres or Venetian laths moved by a lever might be found useful.

Sir,—In answer to "Q. Q." for church ventilation, I propose an ordinary wooden door, with a 3 ft. 6 in. by 2 ft. 6 in. opening at the top, in the place of a panel, it being filled in with galvanised iron laths to work on pins at the side, the same as a Venetian lath, to be worked in an endless screw and small lever placed on one side; the laths to be bevelled upwards from the inside, which would prevent draught and encourage ventilation. William Rimell.

SURREY MASONIC HALL.

Sir,—As the concluding paragraph in your article of last week, wherein you state "the cost of the building was nearly 12,000*l*." is calculated to mislead the public, and more especially the Craft, I beg permission to state, through the medium of your valuable paper, the following facts:—

The contract for the building was 4,830*l*. The bill sent in amounted to 7,990*l*., which sum included complete furniture and fittings for the Temple and ante-room, and also 30*l*. charged for fittings and furniture for the Banqueting-room and Public Hall.

The builder received upwards of 4,000*l*., but the bill for 7,990*l*. being justly disputed, caused the building to be offered for sale. I was a bidder, and in the opinion of eminent judges the building fetched its full value. In the event of it being turned into a club, I shall build a temple as an addition to a building I am about to erect for the accommodation of a literary institution, in the immediate neighbourhood.

W. Ramsey, Chairman of Directors.

Books Received.

A Manual of Gothic Mouldings, with Directions for Copying them, and for determining their Dates. Illustrated by upwards of 600 Examples. By F. A. Paley, M.A. With numerous Additions and Improvements by W. M. Fawcett, M.A., Architect. Fourth Edition. London: John Van Voorst, Paternoster-row. 1877.

The re-editing and enlarging of the treatise which, under the name of "Paley's Gothic Mouldings," introduced many of us to our first systematic acquaintance with the varieties of Mediæval moulding, has been undertaken (it appears from the editor's preface) at the request of the original author of the book, who thought that some professional revision would secure accuracy, and give the work a more practical character. At the same time, the editor has judiciously abstained from making any additions on such a scale as to alter the character of the publication, which still remains essentially what it was—a small and handy volume conveying a good deal of information in compact form. The additions made have been chiefly with the view of explaining anything that might not otherwise have seemed quite clear to the student, and a considerable number of woodcuts have been added, and the localities from which the mouldings were taken indexed as far as practicable; but they cannot all now be ascertained with certainty. It is considered now such a matter of course to give the name and locality of the building from which any architectural illustration is taken that it appears strange that in the original publication very few of the examples in the plates were named.

Another point the editor calls attention to in his preface,—the nomenclature. He records his dissatisfaction with the vagueness of the terms "Early English," "Decorated," and "Perpendicular," which Mr. Paley adopted, like many other writers, from Rickman's classification; and the objection is just; but he was quite in the right not to disturb terms which are employed by the author throughout the book, more especially as it is impossible to say that any other nomenclature has received more general, or even, perhaps, equally general acceptance. Probably archæologists will never settle quite upon any fixed nomenclature; and though it is true the terms quoted convey no distinct chronological information, they have through association acquired in the minds of many students a very distinct meaning.

The importance of minute study of the mouldings of Mediæval architecture cannot be overrated so long as the question is one of archæological study; the sections of mouldings form so complete an index in regard to date and changes of style, and are marked with such delicate and characteristic variations, that it is absolutely impossible to enter into the spirit of Mediæval work critically and historically without a study of this peculiarly architectural type of decoration. Whether it is possible to over-rate the importance of minute study of mouldings in reference to effect in new buildings is a question which may, perhaps, have its two sides. The subject is sometimes spoken of as if a lifetime would hardly be sufficient for acquiring perfection in the art of designing mouldings alone; which, if we granted it to be so, would hardly seem a satisfactory employment of life even for a professed architect. We do not think there is any danger of architectural designers erring on this side, however; practically we may imagine that mouldings commonly receive too little attention, and that, whether the building be a Gothic or a Classic one, it is often considered sufficient to sketch some sections that are recognised as orthodox, leave the mason to work them out, and exercise an implicit faith that, being sanctioned by precedent, they will be found, when executed and *in situ*, to have the proper effect. The drawing of moulding-sections is, in fact, often the work of the youthful articled pupil, who is considered to find useful training in the process, and possibly does so. But, in fact, mouldings do demand more attention than this, and if they are to be really helps to the expression of a building, should be designed with careful reference to their place on the building, distance from the eye, material in which they are executed, and the amount of light which they are likely to have. One or two eminent architects, who took trouble with such details (Sir C. Barry was one), were in the habit of having a large scale elevation drawn to try the lines and scale of mouldings on, before finally deciding the full-size sections. Some would urge, perhaps, trying full-size models of the section at the required height; but this would involve more practical difficulties than the end would quite justify. We do urge, however, most decidedly, that each moulding on a building should be considered separately and in reference to its effect upon the whole, and a large-scale elevation is probably as good a help towards this as can be practically available. All we say, on the other hand, is, that when one considers all the great practical and æsthetic problems which modern architecture is or ought to be concerned with, one is sometimes inclined to smile at the solemnity of phrase with which the study of some particular branch of detail is commended to the student's attention, as if it were the "be-all and the end-all" of architecture. In regard to such points of detail, it may be said, these ought ye to have done, but not to leave the other undone. But in an archæological point of view, as we have said, Gothic mouldings really occupy an almost more important place than in

an architectural light, they are so intimately connected with the history of the styles and of their smallest changes and gradations.

It is unnecessary here to say anything as to the characteristics of Mediæval mouldings, a subject which may now almost be said to be worked out in regard to theory, and almost in regard to illustration; at least, we can hardly suppose that in English Gothic any new varieties remain to be illustrated. Nor is it necessary to commend "Paley's Gothic mouldings" to our readers, except those who are just commencing their studies, and may not be aware of its usefulness. To them we can say that they will find no book so useful for initiating them at the same time into the theory and the facts of Gothic mouldings. Mr. Sharpe's admirable illustrative publications, with sections on a large scale, are indeed the most valuable of all as records and illustrations; but Mr. Paley's plates were drawn with great care, though to a small scale, and remain excellent illustrations of the character of the different types of moulding; while the information given as to the *genesis* and changes of style of these decorative details could hardly be better and more clearly put.

In the remark on page 8 of the introductory chapter, on the method of illustrating mouldings, we concur with the writer in thinking that the system, at one time a favourite one with architectural illustrators, of drawing the section of the moulding geometrically, and then producing the lines and shading the surfaces, to give the effect of the whole, is not a good one. As is remarked in the passage referred to, it confuses the eye in estimating the actual peculiarities of the section. When, at the early period of the Gothic revival, text-books such as Parker's and Bloxham's were published with the view of popularising the study, this method of illustration was extensively adopted, probably because it was believed to convey to non-practical or non-professional readers a better notion of the mouldings than a mere section would give. But an intelligent study of the subject ought to enable the reader to dispense with this factitious aid, which involves an inaccurate conventionality in drawing; and the sooner a young student learns the habit of estimating the effect of such details from the appearance of geometrical sections, the better for his progress in comprehending his work.

The Pleasures of House Building. By J. Ford Mackenzie. London: Routledge & Sons.

The author of this little book, an architect, calls it "A Story of Struggle and Adventure, 'Jerrywise' and otherwise," and gives a humorous and not exaggerated account of the perils that environ an ignorant unsuspecting wight who is tempted to deal with the speculative builder of a certain class. On the other hand, he gives a rose-colour description of the advantages which will result to a careful man who wishes to become his own landlord from joining a good building society. This is all true enough if it be a good society, honestly conducted, and the member keep up his payments regularly; but once let him fall behind, once let him get into the land of "fines," and the chances are that he will find himself all shaven and shorn at the close. Mr. Mackenzie, we have no doubt, from the cleverness shown in the present little story, could make a telling tale on that side of the question if he were to try. The moral of the book before us is,—before buying a house, big or little, employ a competent person to examine it and report as to its real character and value as an investment; advice we emphatically repeat.

VARIORUM.

A third edition has been published of "A Handbook of Hygiene and Sanitary Science," by George Wilson, M.D. (J. & A. Churchill), a previous edition of which was favourably reviewed in our columns. This book was specially prepared for the use of medical officers of health, but will be found serviceable by all who are interested in sanitary progress.——The current number of the *Quarterly* contains an article on "Recent Discoveries in Art and Archæology in Rome." "Perhaps the most interesting," says the writer, "of all the recent discoveries made in the region of the Forum is that of the basement of the temple of Vesta, situated at the south-eastern angle. The misnomer of the beautiful little circular temple still standing in the Forum Boarium has long been detected by archæologists, who have conjecturally placed the temple of Vesta, from the frequent mention of it by ancient writers and other evidence,—as the finding of the tombs of the Vestals,—at the south-east of the Forum, underneath the Palatine, where, indeed, it has been found. The substructures are in a circular form, built of tufa, with brick superimposed. They are broken and crumbled, and nothing of the superstructure is left. Behind it are remains of the Regia, mentioned by Horace with the temple of Vesta (Od. i. 2), once the residence of the Pontifex Maximus, but subsequently of the Vestal virgins. This temple, or others which stood in its place,—for it was rebuilt more than once,—enshrined some of the most elevated sentiments and sacred affections of the Roman people; the sanctity of the family relationship, the purity of the domestic hearth; and there is something very gratifying in gazing upon these vestiges of the symbol of Rome's most beautiful worship. Silvia, the mother of Romulus, was said to have been the first Vestal. The office was guarded with the most jealous care in the best days of the city. As long as the sacred fire should be kept burning by the virgin sisterhood, so long should those virtues be regarded upon which national greatness can alone be securely built.——The current number of the *Gentleman's Magazine* contains a forcible and searching article on "The Royal Academy and Exhibition." The writer, who claims to have seen

> "The very pulse of the machine,"

says in conclusion:—"The measure, then, which the writer would advise being brought before the House of Commons is not whether a few men more or less shall enjoy vested rights; it is that the fine arts be incorporated with the ornamental, under the Council of Education; that the curriculum be real and not fictitious, Academic not gratuitous; and that, above all, the present vexation and morbid anxiety about exhibition should be put an end to by the national provision of a vast hall for that purpose. The number of petty societies and speculating galleries is already likely to defeat their own ends, and we have just seen a new one of importance established, and another announced. If the schools were empowered to confer certificates or degrees of qualification, we should have a means of electing the jury for reception and hanging. For the *Salon* in Paris all former exhibitors vote in the council and hanging committee, and upwards of a hundred distinctions by medal, by the Order of the Legion of Honour, or by purchase, are always made by the Administration of the day. Exhibition, to the English painter, has become a necessity; it is his means of making himself known, and of selling his productions. To the public the exhibition is at once a festival of taste and a means of study and refinement. The members of an irresponsible society, which claims to be only an Assembly of Honour, with inadequate accommodation, has, by its tyranny and low standard of selection, almost shut the door against the high class of design, and has caused twenty minor shows to start into existence. Let our Government undertake the office of National Exhibitor, and in a very few years the Department of Art will have completed a system better than that of the *Salon* or any other. As to education in fine arts, it is identical with education in the ornamental. A vast annual exhibition would be the completion of the structure,—the keystone of the arch. What, then, should be done with the Academy? The Senate of Rome still exists, and the Council of Ten at Venice. Why should not the Forty continue to hold their meetings, and elect a President as the Cardinals elect a Pope?"

"Hackney Express" Indemnity Fund.—Last week a meeting was held in the Council Chamber of the Shoreditch Town-hall for the purpose of presenting to the proprietor of the *Hackney Express*, Mr. Joseph Cox, the fund which has been subscribed to indemnify him against the costs incurred in the late action for libel in connexion with certain buildings at Hackney Wick. Mr. W. H. Fell, one of the representatives of Shoreditch at the Metropolitan Board, presided. Mr. Cox was complimented on all sides for the manner in which he conducted his paper, and the chairman presented to him a cheque for 302*l.* 4*s.*, the amount of the subscriptions, which will probably cover all the costs of his public-spirited attempt to improve the mode of building small houses in his neighbourhood.

Miscellanea.

Plymouth and the British Association. Six-and-thirty years have passed since t British Association, then in its infancy, paid visit to the good old town of Plymouth. Th August the great Devonshire seaport welcom that learned body once again. Six-and-thir years are a small fragment of the history of town which was notable when the Black Prin fought in France, and of which Drayton, r membering the "spacious times" of Quee Elizabeth, enthusiastically wrote,—

> "Upon the British coast what ships yet ever came
> That not of Plymouth heare, where these brave navi lie,
> From cannons' thundering throat that all the wor defie;"

a town of which Camden says that "its nam and reputation is very great among all nation and this not so much for the convenience of th harbour as for the valour and worth of th inhabitants"; and of which old John Princ the worthy author of the "Worthies of Devon declares that it is "a port so famous that hath a kind of invitation from the commodiou ness thereof to maritime noble actions." town whose name is inseparably associated wit some of the greatest events in our national hi tory; on whose waters lay the little fleet wher with Drake and Hawkins and Raleigh, Howar Frobisher, and their fellows, beat the invincib Armada; from whose harbour sat sail the litt *Mayflower*, bearing the Pilgrim Fathers to Ne Plymouth, across the wide Atlantic; arou whose walls, in the great struggle betwe Charles and his Parliament, the tide of batt raged for four long years, the sturdy Roun heads who defended it giving way not one inch which was first in all England to declare f William of Orange; and which is inextricabl linked with every stage in our later naval hi tory. Six-and-thirty years are not much in th life of such a town as this; and yet, since th Association last visited Plymouth, it has, familiar phrase, quite grown out of knowledg The population has more than doubled, and no with that of its sister towns of Devonport an Stonehouse, exceeds considerably 150,000. Score of streets and thousands of houses have bee erected; and even in the older parts of the tow so great have been the changes that, with th exception of the churches of St. Andrew an Charles, a few ancient houses near the quay and the citadel which Charles II. erected t keep the sturdy townsfolk in order, few of th ancient landmarks remain.—*Leisure Hour.*

Assay Offices, Birmingham.—On the 14t ult. the memorial-stone of new assay offices wa laid by Mr. S. Buckley. The building, which is th first new erection caused by the Borough Im provement Scheme, stands at the corner o Newhall-street and Charlotte-street, on the sit lately occupied by the Catholic Apostolic Church The level of Newhall-street at this place is abou 24 ft. above the natural ground, consequently very large amount of excavating and concrete work has been required to ensure a solid founda tion, it being very essential that vibration shoul be avoided, as it would interfere with the delicat operations of the assaying processes. The base ment contains porter's house, workmen's dining room, workshops, and coal-vaults. On the ground floor are the assay-master's rooms, weighing room and waiting-rooms, and a large workroo and refinery, the latter being only one story abov the street, with lantern-lights and ventilators o the roof. The upper floor contains rooms whic allow for future growth in the business of th office. The style is Italian, the chief materia being red brick, with the plinth, string-course cornices, and other horizontal dressings in Darle Dale stone, and columns and balastrades o polished red granite. The entrance is in th centre of the Newhall-street front, through a archway with ornamental wrought-iron gates an portico, finished with a balcony and balastrad The aim of the architect (Mr. A. B. Phipson) ha been, by adopting simplicity of form and boldnes of detail, to give the building as much as possibl the appearance of a public edifice. The cost o the building will be about 9,000*l.* Messrs Horsley, Brothers, are the builders.

To Fasten Letters on Glass.—For a cemen for fixing metal letters to glass windows, take o copal varnish fifteen parts, drying oil five part turpentine three parts, oil of turpentine tw parts, liquefied marine glue five parts. Melt i a water-bath, and add ten parts dry slaked lim

Qualifications for a Sanitary Inspector.—t their meeting on the 28th ult., the Alnwick ural Sanitary Authority proceeded to the ection of a sanitary inspector in view of the ilure of the Amble sewerage. There were urteen applicants for the office of inspector, id much amusement, we are told by the local apers, was caused by their letters accompany- g testimonials. One stated that he had been a pupil teacher, and could teach singing"; r. Yeaman remarking that he would indeed be some value if he could introduce harmony mongst the members of the Board. Another id that he "was very steady and a good holar." A third, that he "was a travelling ook-agent, and could walk any distance"; while fourth modestly wrote that "in experience and ility he was second to none." Another had en brought up to "the farming line, and knew mething of dranes." One gentleman had been ven years landlord of the Blue Bell at Roth- ry, and therefore "he had a perfect knowledge sanatary work"; and another who had many ualifications, stated by way of climax that he was a practical chemist, and could detect ulteration in bread."

The Greek Games.—At the recent sale of the llection made by the late Rev. Thomas Hugo, e British Museum purchased a large white arble slab inscribed with a decree of the Senate, arly all in Greek capitals and in excellent pre- rvation. It was sold at the moderate price 20*l.* This important monument was originally tained by Mr. Calvert from a mosque, where had been brought from Sestos, on the Helles- nt, and it measures 5 ft. high by 2 ft. wide, ntaining 106 lines of writing. It was the bject of a paper at a meeting of the Archæo- gical Institute in 1865, when a rubbing of the scription was exhibited. The name of King talus being mentioned in the inscription, ables the date to be fixed at about 130 B.C.; d the decree of the Senate and people states at a certain Menas should be crowned with a lden wreath, and a pillar of white marble be aced in the Gymnasium, for services rendered his country in peace and war. Menas was osen Gymnasiarch, and instituted games in nour of Mercury and Hercules, to whom he oted statues, and gave prizes of arms en- ved with the names of the victors in the mes.

Suicide of an Architect.—Mr. Carter has d an inquest at the "Empress of India," nterbury-road, Brixton, relative to the death Mr. George Frederick Payne, aged twenty- ne years, an architect and surveyor, residing 12, Geneva-road, Coldharbour-lane, Brixton. om the evidence of Miss Pittman, it appeared deceased was employed under Mr. Craiger, hitect and surveyor to the Metropolitan lice, in Scotland-yard. On Wednesday, in last ek, he left his home in the morning, and urned at an early hour in the afternoon of same day. Miss Pittman let him in, and he uired after Mrs. Payne and the baby. rtly after the deceased called out "Mary!" d on witness going into the dining-room she him sitting on the sofa with his head lying a chair. He asked witness for a wine-glass, d on her return into the dining-room she found lying on his back with a small empty bottle his side. Deceased died immediately after, m the effects of swallowing prussic acid. The y returned a verdict of "Temporary in- ity."

Mr. Whalley's Reservoirs Bill, when it omes law, will enable any landowner, however ited his interest, to collect water on his estate n any pure source at his command, and having ered into a contract to supply it to any sani- y authority within reach, he can borrow the ney required for the necessary works, and, h the approval of the Enclosure Commis- ners, charge his estate with the cost on two ditions,—first, that the amount is repaid by alments extending over a limited period of rs; and, second, that the income to be derived m the water shall be sufficient to satisfy the mmissioners that the reversionary interests,— the property,—will be benefited by the nsaction. Mr. Bailey Denton points out that nany localities this measure will be found of at advantage, for the reservoirs and works templated by it will not be limited in their to the storage of surface or surplus waters, will be found available for the collection of ng and subterranean waters where they are to be favourably obtained, on private tes.

Another "Duchess of Devonshire."—More mystery! In what is called the Byron Gallery, Savile-row, a second Duchess of Devonshire, attributed to Gainsborough, is now being exhibited. The owner claims that while in the stolen picture the face was painted by Reynolds, here we have it all the work of Gainsborough. The face, which is very lovely indeed, seems nevertheless to have been painted on. The story told about the picture sounds reasonable enough, though one wonders to hear that this also was stolen when in America; only if it had not been stolen we should probably ask why something was not said about this when all the world were talking about Mr. Agnew's loss. In the same Gallery is an exhibition of pictures painted by R. C. Saunders, illustrating the birthplace and homes of Tiziano Vecellio, together with various scenes in the Italian Tyrol, selected from the picturesque district known as "Titian's country." The prices affixed to these, regarded as works of art, are simply ridiculous.

Mark Twain's New House.—The description of Mark Twain's new house in Hartford appears in an American paper. The house is humorously described as belonging to the "Early Ironic" style of architecture, being a cross between a Mexican hut and a Swiss cottage. It is built of brick, and cost $80,000. On the north end is a small building near the street which contains the kitchen and servants' rooms, separate from the main building, while adjoining is a large dining-room, 13 ft. by 30 ft., having so little light that when used gas must be lighted. The parlour is where the kitchen would be located in any other house, while Mark's own room, where most of his time is spent, is at the top of the house, and is almost entirely of glass. Take it all in all, it is the queerest piece of architecture to be met with, though it has one feature belonging to English houses,—that is, open fireplaces in every room.

The London and County Bank.—At the last half-yearly meeting, Mr. F. Francis, the chairman, said in the course of his address,—As showing the progress of the bank during the last ten years, the bank balances were then, in round numbers, 10,000,000*l.*, they were now 22,500,000*l.*, and, in other respects, there had been a corresponding increase, and he thought it must be very gratifying to many shareholders to find that the business had so satisfactorily progressed during that period. One new branch bank had been opened. The shareholders numbered nearly 4,000, and were gradually increasing, and the bank had something like 80,000 accounts. He thought it was clear that the bank stood on the firmest possible foundation, and he was glad that the directors were able to declare a dividend of 16 per cent. He believed that a more satisfactory account had never been presented to the shareholders of the bank.

Sawdust in Mortar.—A German scientist is said to recommend very highly the use of sawdust in mortar as superior even to hair for the prevention of cracking and subsequent peeling off of rough-casting under the action of storms and frost. His own house, exposed to prolonged storms on the sea-coast, had patches of mortar to be renewed each spring, and after trying, without effect, a number of substances to prevent it, he found sawdust perfectly satisfactory. It was first thoroughly dried and sifted through an ordinary grain sieve to remove the larger particles. The mortar was made by mixing one part cement, two lime, two sawdust, and five sharp sand, the sawdust being first well mixed dry with the cement and sand.

The Windsor Drainage.—The drainage of Windsor, the application for the last loan of about 9,500*l.*, making in all 42,500*l.*, having been authorised at a special meeting, is now all but complete. Mr. Hawksley is the engineer. Tanks have been constructed at the Ham, where it is intended to treat the sewage by precipitation, the effluent water to be disposed of by filtration. Negotiations have been entered into with M. F. Hillé, and the Town Council decided to adopt his system for the treatment of the sewage, subject to the preparation of the necessary contracts. It was stated that M. Hillé's system was the cheapest to work which the committee had investigated.

Wesleyan Chapel Building. — At the Wesleyan Conference just held at Bristol, it was stated that during the year 281,481*l.* had been spent in chapel extensions. One hundred and eighteen new chapels had been erected at a cost of 185,000*l.*, furnishing 25,000 additional sittings.

The New Liverpool Eye and Ear Infirmary.—The committee of this institution recently invited a number of Liverpool architects to send in designs for a new building, and seven or eight gentlemen responded to the invitation. A sub-committee was appointed to consider the plans, and after due consideration and consultation with a London architect as referee, they selected the designs which were sent in by Mr. C. O. Ellison. The new building is to be erected in Myrtle-street.

Red Ink.—According to the *Paper and Printing Trades Journal*, a superb red ink is obtained by a solution of eosin (an aniline product). This ink has a brilliant red colour, much finer than that made from ammoniated cochenille, and is free from the blue tinge which the latter possesses. By using the so-called imperial red or scarlet instead of the eosin, a yellow tone is given to the ink. The ink flows freely from the pen, and can, by adding gum arabic and glycerine, be made to copy.

St. Mark's Vicarage, Nottingham.—The corner-stone of this building was laid last week, by the Rev. W. Felton, in the presence of the committee and a few friends of the vicar. The building, towards which the Ecclesiastical Commissioners have made a grant, is being erected from designs prepared by Mr. S. Dutton Walker, of Albert-chambers, Nottingham, and is situate in a pleasant part of Mapperley-road.

Intimidation by Workmen. — At the Preston Quarter Sessions, five men, named Keal, Morgan, Flintoff, Marsland, and Garth, were each fined 10*l.* and costs for persistently following Fred. Webster, for the purpose of compelling him not to work for Messrs. Bell & Copland, cabinetmakers. Defendants had left complainants' employ because of some dispute on a trade question, and Webster and another non-society man had taken their places.

Marlborough House. — Reports are prevalent that the attack of typhoid fever, from which Prince Albert Victor of Wales has suffered, was contracted at Marlborough House, and not at Sandringham, as at first reported. The condition of the drainage at Marlborough House is said to be very bad. The water supply and connexions, however, should be first looked at.

Metropolis Valuation Act.—A return has been printed showing that the gross estimated rental settled by the Valuation Lists at Lady-day, 1876, was 27,602,649*l.*, and the rateable value 22,763,082*l.*, against 21,621,082*l.* in the preceding year.

TENDERS.

For various works required to the Licensed Victuallers' Schools, Upper Kennington-lane. Mr. J. W. Reed, architect:—

Anderson	£379	0	0 †
Bruty	357	0	0
Whitby	354	0	0
Wright	345	0	0
Featherstone	318	0	0
Uff	318	0	0
Askew, Jones, & Co.	300	0	0
Webber	299	9	6
Masters	268	0	0
J. B. Smith	260	0	0
W. Smith (Camberwell)	259	0	0
Cole	249	0	0
Smeaton & Son	246	0	0
Britton	241	0	0
Lewin	240	0	0
Jaques	235	0	0
Wilder	235	0	0
Grimwood & Son	233	8	0
Ward	230	0	0
W. Smith (Kennington)*	215	0	0
Riches (withdrawn)	185	0	0 †

* Accepted.

For St. Mark's Vicarage, Nottingham. Mr. Dutton Walker, architect:—

Marriott & Wartnaby	£2,483	0	0
Claricoat	2,430	0	0
Messom	2,405	0	0
Lynam	2,400	0	0
Fish	2,390	0	0
Vickers	2,380	0	0
Hind	2,377	0	0
Danbeny	2,371	0	0
Tutin	2,360	0	0
Lowe	2,345	0	0
Bell & Son	2,344	0	0
Clarke	2,325	0	0
Stevenson	2,310	0	0
Jelley	2,239	0	0
Woolt	2,220	0	0
Bailey (accepted)	2,100	0	0

For block of seven houses on Plot C, Holborn Viaduct Mr. E. N. Clifton, architect. Quantities by Messrs. Williams & Gritten:—

Ashby, Bros.	£33,000	0	0
Conder	32,770	0	0
Peto, Bros.	31,100	0	0
Brass	30,987	0	0
Holland & Hannen	30,680	0	0
Lawrance	29,985	0	0

For new probation block, Islington Workhouse school. Mr. Frederick Wallen, architect:—

Channing	£2,835	0	0
Vears & Co.	2,677	0	0
Howard & Co.	2,459	0	0
Larter & Son	2,345	0	0
Johnson & Co.	2,240	0	0
Crockett	2,191	0	0
Julian & Co.	2,140	0	0
Prout	1,995	0	0
Mattock, Bros.	1,933	0	0

For the erection of a mission-hall in connexion with St. Mark's Church, Victoria Park, for the Rev. J. W. Harte. Messrs. Hills & Fletcher, architects. Quantities supplied:—

Shurmur	£1,539	0	0
Grover	1,528	0	0
Perry & Co.	1,491	0	0
Coleman	1,477	0	0
Sheffield (accepted)	1,447	0	0

For the erection of West India House, Leadenhall-street. Mr. J. Lewis Holmes, architect. Quantities supplied by Mr. Joseph Waghorn:—

Browne & Robinson	£30,700	0	0
Patman & Fotheringham	30,510	0	0
Scrivener & White	30,370	0	0
Dove, Bros.	30,217	0	0
Colls & Sons	29,994	0	0
Brass	29,987	0	0
Carter & Son	29,690	0	0
Downs & Co.	29,130	0	0
Killby	28,94)	0	0
Kirk & Randall	28,810	0	0
Peto, Bros.	28,0.0	0	0
Braid & Co.	28,000	0	0
Merrit & Ashby	27,691	0	0

For the West End Synagogue, Petersburg-place, Bayswater. Messrs. N. S. Joseph and W. & G. Audsley, joint architects:—

Kirk & Randall	£21,956	0	0
Downs	19,651	0	0
Colls & Son	18,680	0	0
Browne & Robinson	18,233	0	0
Dove, Bros.	18,074	0	0
Scrivener & White	18,403	0	0
Newman & Mann	18,043	0	0
Adamson	17,980	0	0
Peto, Bros.	17 042	0	0
Shaw	16,593	0	0

For embankment to the river Thames, boundary and retaining walls, pump-wells, engine-house, boiler-house, chimney-shaft, tanks, filters, &c., for the Chiswick Improvement Commissioners. Mr. H. O. Smith, engineer:—

Williams, Son, & Wallington	£14,210	0	0
Webster	14,087	0	0
Bugbird	13,023	0	0
Acock	12,427	0	0
Nowell & Robson	12,350	0	0
Downs & Co.	11,990	0	0
Phillips & Co.	11,092	0	0
Prout	10,490	0	0

For a residence to be erected on the Dover-road, Folkestone, for Mr. Glazier. Mr. Burgess J. Reeve, architect. Quantities supplied:—

Webster	£707	0	0
Prebble	686	0	0
Brooks	654	0	0
Butler (accepted)	576	0	0

For two houses to be erected on the Broadway, Sandgate, Kent, for Mr. R. J. Sidle. Mr. Burgess J. Reeve, architect. Quantities supplied (exclusive of bricks, chimney-pieces, stoves, and gas):—

Payne	£1,334	0	0
Brissenden	1,300	0	0
Clemmans	1,280	0	0
Holdom	1,275	0	0
Hoad	1,261	0	0
Slade	1,249	0	0
Prebble	1,240	0	0
Butler (accepted)	1,190	0	0
Reason (withdrawn)	990	0	0

For the erection of warehouse, Holiday-yard, Ludgate-hill, for Messrs. Fourdrinier, Hunt, & Co. Mr. Charles Bell, architect. Quantities by Mr. W. E. Stoner and Mr. Henry Lovegrove:—

Woodward	£5,900	0	0
Bangs	5,862	0	0
Killby	5,555	0	0
Nightingale	5,175	0	0
Scrivener & White	5,119	0	0
Browne & Robinson	5,110	0	0
Tarrant & Sons	5,050	0	0

For the erection of Wesleyan Sunday schools, Sydenham-hill. Mr. C. Bell, architect. Quantities by Mr. H. Lovegrove:—

Bowyer & Sons	£1,370	0	0
Tarrant & Sons	1,254	0	0
Nightingale (accepted)	1,191	0	0

For alterations and repairs to 139, High Holborn. Mr. Lewis Solomon, architect:—

Jeffreys	£805	0	0
Tory	541	7	6
Vears	475	19	0

For alterations to Woodlands, Uxbridge, for Lady Willshire. Mr. Lewis Solomon, architect:—

Sargeant	£815	0	0
Davey	683	0	0
Vernall & Griffiths	638	11	0

For alterations and repairs to the Hambro' Synagogue, Fenchurch-street. Mr Lewis Solomon, architect:—

Davey	£613	0	0
Peters	439	18	0

Gasework, Lacquering, and Gilding.

Brown	£134	10	0
Abrahams	123	0	0
Peters	110	0	0

For additions to offices of the Thames Conservancy, Trinity-square, London. Mr. S. W. Leach, architect. Quantities supplied by Mr. Sidney Young:—

Brass (accepted)	£1,316	0	0

For new buildings, Stroud's-vale, Islington, for the Victoria Dwellings' Association. Mr. Charles Barry, architect. Quantities by Mr. J. H. Strudwick and Messrs. Selby & Rogers:—

	Block B.	Block C.
Booth	£15,500	£25,230
Baker & Son	13,478	22,365
Brass	12,999	22,080
Trollope & Son	13,100	22,190
Peto, Bros.	13,263	21,990
Downs	12,887	21,785
Macey	12,698	21,864
Browne & Robinson	12,612	21,487
Perry & Co.	12,00)	20,350
Patrick & Son	11,900	20,345

For new building, 59 and 60, Cornhill and Gracechurch-street. Mr. B. Tabberer, architect:—

Chapman	£5,750	0	0
Robinson	5,280	0	0
Bracher	4,830	0	0
Colls & Sons	4,765	0	0
Newman & Mann	4,713	0	0
Merritt & Ashby	4,552	0	0
Browne & Robinson	4,493	0	0
Nightingale	4,423	0	0
Braid & Co.	3,999	0	0

For the erection of seven blocks of buildings in Peel-street, for the National Dwellings Society:—

Hill, Higgs, & Hill	£19,990	0	0
Cowland, Bros.	19,670	0	0
Kirk & Randall	18,940	0	0
Newman & Mann	18,640	0	0
Sewell & Co.	18,473	0	0
Browne & Robinson	18,375	0	0
Perry & Co.	18,114	0	0
Shepherd	18,000	0	0
Braid & Co.	17,635	0	0
Lang & Co. (accepted)	17,600	0	0
Lloyd & Co.	17,452	3	7
Chappell	16,855	0	0

For building four houses on Stepney-green. Messrs. Davis & Emanuel, architects:—

Williams & Son	£2,969	0	0
Johnson & Co.	2,925	0	0
Hunt	2,894	0	0
Julian & Co.	2 890	0	0
Atherton & Latta	2 720	0	0
Judd & Hawkings	2,579	0	0

For pumping-station, Oxford Main Drainage:—

Acock	£15,100	0	0
Dickenson	15,000	0	0
Bugbird	12,792	0	0
Dover	11,903	0	0
Jones	11,734	0	0
Chamberlain	11,392	0	0

For alterations and repairs to No. 23, Parliament-street, for Mr. T. J. White. Messrs. Selby & Rogers, architects:—

Richards	£303	15	0
Sawyer	308	0	0
Messrs. Lister (accepted)	300	0	0

For erection of the nave only of St. Saviour's Chu Littlehampton, for the Rev. P. Norton and the Commit Messrs. E. Habershon & Brook, architects:—

Bushby	£1,255	0	0
Suewin (accepted)	1,205	0	0

For repairs and decorations to the Manor Hall, John's Wood Park. Messrs. Selby & Rogers, ar tects:—

Nash	£526	0	0
Messrs. Curtiss	510	0	0
Atkins (accepted)	495	0	0

For alterations and repairs to No. 32, Great To street, for Mr. Deane. Mr. G. Sparks, architect:— Omit for Fr

Adamson & Sons	£1,852	£140	
Sparkes	1,690	150	
J. & J. Greenwood	1,557	141	

For well-sinking, Devizes Waterworks. Contract N Mr. Henry Tomlinson, engineer:— Bugbird (accepted).

Granary, Dartfield Wharf, Lambeth.—Although Mes Rider & son's tender was the lowest, as inserted in last week, the following is the result of an amen estimate on the same bill of quantities:—

Rider & Son	£3,345	0	0
Bangs	3,184	0	0

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E. G. T.—W. D. & Co.—J. H. I.—S. & P.—F. C. B.—S. & E. W.—B. P.—C.—J. W. B.—F. S.—H. L.—H. & P.—J. S.—W. E. L.—M.—P. L.—W. R.—H. P.—W. P. G.—Dr. P.—S. Y.—H St. C. C.—J. W. S.—L.—J. L. H.—J. A. H.—L. S.—O. R.—C. H. O. S.—B. J. R.—P. G. S.—H. J. C.—P.—M. & Co. (alr mentioned).—G. B (depends on p ints not stated. Take advic the spot).—W. W. (next week) E. B. (next week).

We are compelled to decline pointing out books and g addresses.

All statements of facts, lists of tenders, &c. must be accompa by the name and address of the sender, not necessarily publication.

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The Builder.

Vol. XXXV. No. 1802. Saturday, August 19, 1877.

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The Encouragement of Typhoid Fever.

APPILY the youthful Duke of Cornwall, as the usual courtesy that regulates the descent of hereditary dignities would teach us to describe the heir of the Prince of Wales, is now reported to be out of danger. The utmost reserve was maintained, as far as possible, as to the fact that a life so important to the country had been actually exposed to serious danger. We need not dwell on any of those reasons which, at the present moment, especially render the health and welldoing of this branch of the Royal Family of unusual importance. We may content ourselves with stating the bare and naked facts, and with asking whether they are not utterly disgraceful to—we will not say merely our civilisation—but our sanity? Three generations of princes—lives of which it is impossible to estimate the value (from any point of view in which one life differs from another), have been perilled, in the very palaces of the Sovereign and the Heir to the Throne, by a cause of mischief which, though subtle, is at once detectible and preventible. Whatever may or may not be yet ascertained as to the laws of propagation of disease generally, the circumstances which cause an access of typhoid fever are, at all events, known. To say that they can be, and ought to be, prevented, is merely to repeat what the conductor of this journal, and other of his fellow labourers, have been saying for more than a quarter of a century. What kind of comment on the text is furnished by the extracts from the *Lancet*, which tell us of the youthful Prince's convalescence?

When the country was stirred to its very heart by the serious illness of the Prince of Wales, and when all shades and hues of political opinion were forgotten in the general thanksgiving for his recovery, it was our hope, and that of those who cared for the public health, that the result would be a legislation of that plain, direct, efficient kind that would lead to the stamping out of preventible disease. We need not now refer to the mode in which that opportunity was wasted. But it cannot be too distinctly recorded that hesitation at that time was not on the part of the country. Neither public opinion nor Parliament would have recoiled from root and branch work at that moment. Nor can it be denied that, although the most serious danger is happily past before it was admitted to exist, there is at least as much ground at the present moment for public inquietude as was the case in December, 1871. As much! Is there not more? Do we not find that, in spite of all the exertions of those interested in sanitary reform, the unimpressionability of those who should be held responsible for neglect has allowed the Royal Palaces, the War Office, and other places which might be specified, to be retained as preserves and breeding grounds for typhoid fever? Have we not seen the guardian of the health of the navy poisoned in the water which was his temperate beverage? Have we not seen that neither the untimely death of, perhaps, the best and wisest prince in Europe, nor the almost miraculous escape, from the same cause of evil, of his son, has been enough to make people bestir themselves; but that his grandson should have been as much exposed to attack as if typhoid fever were some mysterious disturbance beyond human cognisance as to its origin,—unexpected, unintelligible, and unpreventible?

This dead weight of heedlessness is in itself sadly discouraging. What can be said, what new considerations urged, what sense of personal interest appealed to, that shall be new? There is, indeed, one aspect of the case which has not hitherto been thoroughly exhausted. If we refer to that, it is with no wish to throw blame where it is not due, or to insinuate it where we do not openly proclaim it. But it is from the sense that one only course seems to us to promise any rational expectation of a change, without the effecting of which we must be content to see the very cream and pick of our country mowed down at discretion by preventible disease, that we now speak.

We refer to the homely wisdom taught in the fable of the lark and her young ones. Parliament has been invoked, and has promised to come to the aid of the sanitary reformer. Local Boards have been invented, and certainly have shown abundant vitality, in so far as the increase of local taxation is concerned. Yet, season after season, the harvest of public safety remains unsecured. It remains that those who are responsible for the crop should take it in hand themselves.

Who are the people to do this? The question, indeed, concerns every one of us. Unfortunately the proverb comes in here, that what is everybody's business is nobody's business; and as matter of practical experience, we cannot believe that the urging of the householders at large to protect the lives of themselves, their wives, and their children, is likely to have much more effect during the ensuing decade, or quarter of a century, than it has had during the last. There are many reasons for this, but the chief of them is this. The knowledge, not as a theoretical assent to a scientific proposition, but as an intimate conviction, regulating the activity of each day's life, of the requisites and conditions of health, is a specialty. It is confined to the expert. You may write about it, print about it, lecture about it, fill the newspapers with paragraphs, even get a word of aid from the pulpit; but all this is of little avail as a means of giving medical knowledge to the medically uneducated. The merchant, or banker, or tradesman, or private gentleman, hears all you have to say, and goes away and does nothing. If he is moved very strongly by some disastrous death or lingering illness that has come to his knowledge, and recalls the warnings and the counsel of his doctor, or his surveyor, or of some disinterested and anxious friend, he may go so far as to say, "Dear me, how sad it is that Mr. A. should have neglected his drains! The state of the War Office is absolutely unpardonable. Somebody or other ought to be punished,—the Commander-in-Chief impeached, or the contractor hanged." This is in the unusual case of interest being really awakened. But if you go a step further and say, "My dear Mr. B., have you any idea what is the state of your own drains?" "I," is the reply—or more probably "me,"—"you don't suppose that I understand that sort of things. My people are not pigs, sir. I pay my sanitary rate, and a pretty round one it is. I pay my doctor; and if every patient has as long a bill as I find comes in at Christmas all I can say is that no wonder doctors keep their carriages. I go to the City as soon as breakfast is over, and when I come home do you think that I am going to spoil my appetite for dinner, and to make my servants give warning, by pottering about the house-drains? No, no, my good sir, neglect in such things, I quite admit, is entirely inexcusable. I am sure we all owe a deep debt of gratitude to you, and to all those excellent men who are so disinterested as to sanitary reform; and it is a matter of the sincerest satisfaction to be told that we cannot catch cholera, or typhus, or any of those horrid diseases with Latin and Greek names, except by our own fault. But I should just like to see the face of my cook if the butler were to say,—'Master is coming to look at the sink in the back kitchen.'"

We put it to any of our readers whether this is an imaginary or exaggerated case? How is such a block to be got over? And we are taking the most favourable example, that of the reasonable man, who hears all that you have to say, who is grateful for your advice, and who really, as far as his light is concerned, agrees with you. What is the case with the majority of persons? Will not the officious friend be told, with more or less circumlocution, according to the plane of social life in which the interlocutor moves, to mind his own business? "My house infected," says Dives, "a pretty puppy you must be to say so. There is the hall-door, sir, and the sooner you are outside it the better I shall be pleased." Put the thing strongly to him. Say, "My dear Mr. Dives, as I passed your back-door I perceived such an odour that I am convinced, as having some acquaintance with the subject, that you are exposed to imminent danger of typhoid fever. Besides, you cannot fail to observe how pale Master and Miss Dives are looking. Believe me, my dear sir, you are in danger,—in imminent danger." Say this, and suppose that you are a person of too much gravity and importance to be summarily characterised as a

puppy, what will be the reply? Will it not be that there are no servants so cleanly, no housekeeper so particular, no lady so apt to take the slightest hint of want of sweetness in the atmosphere as those of Mr. Dives's family? That no children are more healthy, and that Mr. Alderman Dives himself nowhere enjoys so excellent an appetite as in that very house of which you are attempting to depreciate the monetary residential value?

If this is the case with persons of a grade and position in society to which the sanitary reformer looks for recruits and support in his most holy crusade, what is the case as we descend the social ladder? In an Irish market, the writer of these lines once objected to purchasing certain carrots because they were covered with the soil from which they had been extracted. "D.rt, yer hanner," said the salesman, "that's what keeps 'em fresh." "You seem to think so yourselves," was the instinctive reply. "'Deed, yer hanner, and what ud we be washing for?" was the rejoinder. Wide experience comes to the conclusion that, in the case of a very large majority of the working classes, such ideas as that of the daily use of the bath, for example, are regarded either with detestation or with ridicule. A man who advocates proper ablution or proper ventilation, or any well-considered preservative of health, is regarded as either a nuisance or a fool. And even if people do not love dirt for its own sake, they love unventilated houses for the sake of warmth, and, as they think, of economy. Their noses are blunted by the constant presence of odours compared to which a trifling faint smell of sewer-gas would be a bouquet. That a smell, good or bad, should indicate the approach of death, they do not and will not believe. Help the sanitary reformer they will not; resist him tooth and nail they will. As matter of cost, as matter of custom, as matter of taste, as matter of skill,—invincible is the dislike to his interference.

To whom, then, can we look for aid? To the engineer? As far, no doubt, as the design and execution of the works necessary for that essential requisite of health, urban drainage, is concerned, it is no doubt a matter of engineering. We must bear in mind, however, that the subject is one of extreme delicacy, difficulty, and cost. It is one in which opposite and inconsistent requisites have been, and often still are, loudly demanded. The subject, although it has been made matter of assiduous study by many earnest professional men, has never been so formally handed over to the investigation and the execution of engineers, as a profession, as to allow of the general determination of those primary principles and normal rules which the great difficulty of the inquiry pre-eminently requires. It is not, however, so much in that portion of the subject that relates to the sweetness and safety of the dwelling house (which is the matter now under consideration), that doubts will be found to arise, as in the more distant portion of the work, where it becomes necessary to deal with accumulated sewage. Even as to this, though our progress is slow, yet there is a regular advance. The present year has enabled us to lay before our readers more than one instance of good work done in the direction of collecting facts as to positive and useful experience, and considerably limiting the field of doubt, by indicating the direction in which we have to look for further improvement. Thus, the idea that a large revenue can be obtained from sewage, as to which the wildest expectations have formerly been raised, is now almost entirely exploded. The sense of the danger that augments with collection, and that augments with delay, is becoming dominant with the engineer as well as with the physician. The plans, of which the name is legion, for making fortunes by putting expensive chemical ingredients into collected sewage, in order to "fortify" or raise the agricultural value of the product, have one by one been tried, at unrestricted expense, and found wanting; as might, perhaps, have been anticipated if the conditions of the problem had been fairly and fully stated in the first instance. In some important questions, no doubt, the best solution may be yet in suspense. But these difficulties are annually becoming less; and, as we before remarked, it is in his character of ratepayer, not in that of occupier, that they principally affect the householder.

At the same time, it must be remembered that the engineer cannot act until he is duly called in. He cannot originate action. He is not responsible for the public health, or for instructing the public as to the conditions of health. Those conditions, indeed, should be either well known to him, or should be the subject of constant study. But that is the case precisely in the same way in which the doctrines of hydraulics, of the dynamic equivalent of heat, or any other branch of mechanical science, has to be known to him. If a public lecturer, or if educating private pupils, it is the business and duty of the professional man so far to become a teacher on these subjects. Otherwise he will best keep his shot for his own use, for discussion with his brother professional men. If his position and occupation be such as to lend weight to his abstract opinions, he cannot afford his time to ventilate them. If not, he possibly will not much advance the case he has at heart by appearing as a missionary. Thus whatever amount of good service we may expect, and rightly expect, from the civil engineer, we should only look in vain to that profession to enforce on the public intelligence and on the public conscience the lessons that are so seriously needed.

It is another thing with the medical man. The medical profession is the natural guardian of the public health. It is so *ex officio*. But it is more than that. A large acquaintance with many of the brightest ornaments of the medical profession, in and out of the British isles, leads to the certain conviction that the preservation of the health, not only of his patients, but of his neighbours, townsfolk, countrymen, is a motive that presses on the life of the doctor with unslumbering force. No offence need be taken by the members of any other class and calling if we attribute to our physicians and cultivated men of medical science and practice a degree of active and disinterested beneficence to which it is hard to find a parallel elsewhere. And it is to this that the appeal must now be made. It is this willing horse that we have to spur. We must call on our physicians and family doctors to do some violence to their professional or personal delicacy of feeling in the interest of the common weal. There is little doubt that, as a rule, the higher are the intellectual and professional qualifications of the physician, the less is he disposed to volunteer advice. When he is consulted, he must, no doubt, probe the case of his patient to the bottom. And so he does; and in exact proportion, as far as our own experience extends, to the real value of the time of a physician, measured by quarters of an hour, is his apparent utter disregard to the lapse of time while he is investigating the symptoms, or listening to the complaints of a patient. But here the limit is drawn. Into the circumstances and habits of that patient, unless as they bear directly on the very point of his complaint, the physician shuns to pry. At times, indeed,—all honour to them for the same,—men of large practice will put some delicate or circuitous question as to the ability of a patient to pay golden fees without inconvenience; but solely with the view of remitting or reducing such fees in case of real need. But if a man goes to consult a physician, say as to the state of his heart, the physician will not be likely to question him as to the condition of his scullery or his sink.

We very much fear that we shall have more and more royal, noble, and even medical victims to typhoid infection, unless the profession somewhat change their band in this matter. It will be remembered that we are now more especially referring to the condition of connexions with the sewers, and the escape into a house, or the water used to drink,—as at Marlborough House, the War Office, and the Admiralty Offices,—of that subtle and deadly gas which bears the germs of this disease, or, at least, sets up the abnormal action which ultimately takes that form. It is to be expected, no doubt, that if called in to a typhoid case, the doctor will make some inquiry; just as, if he were called in to a case of consumption, he would inquire as to the dry or wet condition of the subsoil, and the state of the ventilation. But we mean something more than this. What we wish to become the universal practice is, that when a medical man is consulted on any occasion, at his own house, or on visiting a patient, whatever be the illness, whatever the symptoms, he should make minute and searching inquiry as to the possible escape of sewer-gas, or the contamination of water; and, if he visit the patient, should not only inquire, but see for himself, what the state of things is. If one or two of the most eminent men would set the example it would be universally followed. Those men who failed to take the trouble would by and by be stigmatised as heedless and unreliable practitioners. We freely admit that there would, at first, be much that would be disagreeable in the change of practice. The doctor must make up his mind to be stared at; to lose so much time in the course of the day; even to affront and, perhaps, lose, patients. But what we have before said is enough to show how thoroughly we are convinced that these drawbacks would be freely borne by the majority of the profession, if once convinced that it was an unavoidable professional duty to make such searching inquiries. Nor do we for one moment doubt that in the additional success that would attend the practice of any man who adopted this course, there would very soon be found a compensation for all the discomfort. Many things that were really obscure to the physician himself would become clear to him if he made a point of overhauling the places in which his patients lived. Why do the children of such a family so often want the doctor? Why have they hoarseness, sore throats, catarrhs, want of appetite, red eyes, or a hundred other things? In the luxurious and well-appointed drawing-room to which the little things are brought down, when the doctor's carriage stops at the hall-door, the why may be very puzzling to the doctor himself. He knows, of course, what palliatives or restoratives to give, and he gives them. He prescribes, it may be, a wise course of regimen. He cures the little one for that week, and ten days after he is called in again.

But if, instead of a state visit to the drawing-room, the physician insists on seeing his patient, so to speak, *in situ*, how different will be the case. "I cannot allow Sir X. Z. to go into the nursery when it is in such confusion," says the fond mother. That is not Sir X. Z.'s view of the case. The more confusion the better, so that it results from the children making horses of the chairs, or even tents of the scraps of carpet, which alone should be allowed in their dominions. But, ten to one, something worse than confusion will catch the eye,—or some sense,—of Sir X Z. "What is this, nurse,—do you burn gas in the nursery?"—"Only at night, sir." "And how long has this smell been perceptible?" "Well, I think I perceived something when we came back to town; but we keep the door open. All gas-pipes smell, sir!" "Bring me a box of matches." The physician strikes a light and approaches it to the gas-pipe, runs it along to the joint, and a slight, fairy-like flash blows out the match. Or the hot-water pipes, carefully and conveniently laid into the night nursery, for the benefit of the bath, bring up around them a little jacket of foul air from the scullery or worse places. And then the closet itself,—but we need not go further. These are instances which must be familiar to us all. The little sufferer wanted the physician, indeed; but he was in far more urgent need of the gasfitter, or, rather, of the quiet, decided, grave man, who should say, on going down, "My dear Mr. So-and-so, if you wish to have your children grow up healthy, send immediately to your tradesmen, and have all these matters looked to under proper advice.

One example,—and we are sure it will awaken an echo of sympathy from many a one who has learned sad lessons from experience,—may serve for all. In spite of the labours of twenty or thirty years, of books, pamphlets, leading articles, lectures, speeches, Acts of Parliament; in spite of the loss of the noblest, the brightest, the dearest from our side by this fatal and subtle poison, to the spread of which, what are to a certain extent sanitary improvements, if unwatched by a competent eye, may directly tend; how many of our palaces, mansions, public offices, are still maintained as the seed-beds of preventible disease? We make one more appeal. Will not the eminent men who so well know the truth of what we say come forward, and endorse our recommendation; enforce it, rather, by turning advice into practice?

Art-Union of London Exhibition.—The pictures and other works of art selected by the prizeholders of 1877 are now being exhibited in the gallery of the Institute of Painters in Water-Colours, Pall-mall, and it will remain open till September 1st. The works are 197 in number, and form a very charming exhibition. As we have already given a list of all the principal pictures purchased, and the prices paid, and have reviewed many of them in the various public galleries from which they have been selected, it is unnecessary now to say more.

ABOUT LONDON IMPROVEMENTS.

After many years of objectionable conservatism, we seem at last to be getting into that stage of public feeling in regard to metropolitan improvements which is exhibited in a general desire to have the subject, to use an established phrase, "thoroughly ventilated." It is rapidly becoming the topic of talkers and of newspapers, and seems likely, within the circle of metropolitan interests, to succeed the sewage question as "the question of the day." Not, of course, that we are regarding the sewage question as a settled one; but it has already got beyond the stage in which it formed a matter of interest to that large portion of society whose great desire is "to tell or to hear some new thing." Progress of opinion in these matters is rapid after a certain turning point has been reached; it is curious to see how soon we come to the stage at which some eager people have to be repressed for a tendency to go too fast, even when the practical treatment of a subject is yet in an early phase.

According to Lord Salisbury, the time to institute a policy of caution in regard to the rebuilding of property along the line of a new street has already arrived. It was natural that, after failing in the endeavour, through his agents, to prevent the disturbance of his own property, a noble owner should be a little possessed with a spirit of prophecy, and should be disposed to declare to his spoilers that a day of retribution was at hand. This, however, is, in fact, a mere commonplace,—another way of putting the obvious truism, that if you offer more of an article than there is a demand for, you will lose upon it. If the Board of Works were to go on systematically purchasing land and house property, and making new streets lined by superior property to that they have displaced, of course they would in time find that their new frontages would begin to fall in value. But we hardly think, with deference to Lord Salisbury, that such a crisis has yet been reached. So large a number of persons in trade and in business are now housed in premises which (however interesting from history and association) are ill-lighted and inconvenient,—persons who are well able to pay for superior accommodation if they can get it,—that there is little doubt that for some time to come the rebuilding of frontages in new streets, in a superior style, will continue to be remunerative. At the same time, the warning of Lord Salisbury may as well be taken into consideration by the Board: if it is not entirely called for now, it directs attention to future effects of rebuilding which will have to be considered sooner or later, if the Board continues its course of procedure in carrying out street improvements: and the question, of course, assumes quite a different aspect when it concerns a corporate body dealing with public money, from what it would in the case of a private speculator, who would be pulled up in time by the consideration of his own interests in investing money.

When this point is reached, when it appears that the taking of frontages which already have a considerable commercial value, and rebuilding on a larger scale and in a more handsome and costly manner, ceases, for a time at least, to be remunerative, there will come the question how far it can be made remunerative to rebuild dwellings or premises of a lower class, and provide better planned and wider thoroughfares through "rookery" neighbourhoods, lining such thoroughfares with tenements of the same class, and intended for the same type of tenants as those who are displaced. Here, again, to make such a scheme less costly, it would be necessary to pre-suppose that some of the worst and least valuable tenements, paying the lowest rental, were removed, and their place supplied by new tenements commanding the best class of tenants, and the best rental that the particular district would afford. For every district, even the poorest, has its variations in wealth and ways of living, and the result would be the same as in the experiments that have before been carried out, only on a smaller scale. In the case of new streets that have already been made, and lined with a high class of buildings (such as Queen Victoria street), the result is that large tradesmen who can afford high rents come to the front and take these, as an improvement on their old class of premises worth paying for. There would of course be, in the case of a street made in a poorer neighbourhood, and lined with houses necessarily rather better than the unhealthy ones that were displaced, the same result of a congregation of the best tenants of the district on the fringe of the new street, if we are to suppose the improvements to be partly paid for by an increased rental from the rebuilt property. But always there is a residuum of those who cannot afford a compensatory increase of rent for any improvements, and whose districts nevertheless do imperatively demand wholesale improvement—even to the extent of improvement off the face of the earth,—in the interests of the public health, to say nothing of philanthropy. The whole process of recouping by frontages, carried on by the Board of Works, is in fact, simply a process of collecting the wealthiest available tenants of any class along the line of street which the improvement takes. It is obvious that the limits of remunerative outlay of this kind are not very far out of reach, though, as we have said, they are hardly arrived at yet,—are probably by no means so close as Lord Salisbury's warning would imply. But the warning was not out of place. It is as well that the real conditions of this kind of speculation in street property should be kept before the public and of their agents, as in this light we may consider the Board of Works to be; that they should remember that in carrying out improvements in such a city as London there is, however we put off the evil day, something in the end which has to be paid for without hope of return in cash; that the fact must be faced that we, or those before us, have allowed things to get into a state from which they can only be raised by a dead lift, and not by any clever expedient of putting down money in one place to see it come up in another.

Let us add a remark of our own from the moral point of view rather than the commercial. It is this: that there is some danger in the awakening interest about street improvements lest we should learn to be content with a kind of "whited sepulchre" result in improving a district. A great deal is being made, and more is evidently about to be made, of the idea of the value of new and wide and commodiously planned streets, which are to be lined with handsome or (at the least) decent and substantial buildings. Yet this style of improvement, admirable and loudly called for in itself, is rather apt to have the result of blinding people to the actual state of a district; teaching them even to forget it, providing them with opportunity for the time-honoured receipt for avoiding disagreeable sights (used, no doubt, long before the parable of the Good Samaritan was spoken), "passing by on the other side." We are constantly meeting with evidence of this kind of forgetfulness of what is behind the face of "improvements," which really have the effect of giving a decorous fringe to a district that is thoroughly rotten behind. As we now pass, for instance, by the wretched route through the Seven Dials district, which forms the only direct passage northwards from Charing-cross, the character of the district is unmistakably forced upon us: it is a kind of standing rebuke to our civilisation. But when the new much-wanted road of the Board of Works is made through this district, those who have not previously known its nature will pass up this (as we hope) commodious thoroughfare, lined with the rebuilt premises by which the Board profess to recoup themselves and save the ratepayers, without any testimony being thrust before their eyes, as now it is, in regard to the real sanitary character of the district; and even those who knew the place before may be too much tempted, as they felicitate themselves on their new advantages of locomotion, to forget what is behind the veil. In a letter on the subject of new streets in the *Times* of the 11th (to which we shall refer again), we find, for example, reference to a suggested new street, which would "break up a whole nest of wickedness and filth." These two qualities certainly too often go together, but not always; and there are districts in which the latter is almost, under their present circumstances, an unavoidable condition. Yet we constantly find, as in this case, suggestions made as to the improvement of communication by carrying a new street through such a neighbourhood as that indicated, without any apparent consideration as to what is to become of the tenants displaced in making it, or of those who are hidden behind its respectable frontages from disturbing their more fortunate brethren, who have driven a highway through their midst. A word on this head is certainly not superfluous; and a great city provided with handsome thoroughfares serving as screens for districts of a character offensive to the more civilised part of the community, would be even a sadder spectacle, morally, than one in which no such improvements had been carried out, and in which destitution and unwholesome dwellings were frankly left open to the sight of all.

Money, therefore, has to be spent ultimately without return, upon rebuilding and re-arranging the worst parts of London; and it is useless to attempt to speculate now as to who is originally in fault. The subject is now seen to be one of public interest and even of public safety (in a sanitary point of view), and public money,—that is, the money of ratepayers,—will ultimately have to be laid out in promoting the better condition of London. It would be hardly fair to the present great land-owners of London, even if it were possible, to trace the state of many of the overcrowded districts to the fault of the first private owners, and endeavour to fix the onus of improvement morally (it could not, of course, be done legally) on their descendants and present representatives; though we must certainly demand that they should give due weight to public interests. The daily papers of the same date as our last number, in which Lord Salisbury's stand against the Board was commented on, contained the announcement of the acceptance by the Lords of the Bill for the new street in its original form, an acceptance recommended by Lord Salisbury in the speech in the course of which he gave the warning as to the speculations of the Board which has been already referred to; but his way of looking at and speaking of the matter was not, we must say, indicative of very strong sympathy with public interests apart from his own.

Reference has been made to a letter which appeared in the *Times* of the 11th, repeating suggestions in regard to new routes and street improvements. The letter, signed "M. P.," was short and practical, and we may reprint the suggestions, which he tabulates as follows:—

"There is no road between Knightsbridge and the Brompton-road from Montpelier-square at one end to Exhibition-road at the other. A way might be pierced by Rutland-gate or Ennismore-gardens.

2. There is no direct communication between Piccadilly and the Grosvenor-square district from Park-lane until Berkeley-street, except a very narrow and tortuous way by Down-street and Shepherd's Market, opening on Curzon Chapel. If this were widened, it would make an important artery. The prolongation of South Audley-street, once proposed, would carry the traffic of the north to Hyde Park-corner; but this would increase the pressure there, unless the tunnel from Grosvenor-place were added to the scheme.

3. A way from Leicester-square north to Oxford-street, by Dean-street or Soho-square.

4. A way from Piccadilly through Coventry-street eastward to the strand.

5. There is no direct opening between Victoria-street and the Birdcage-walk from Buckingham-gate to Storey's gate, and a street north and south would break up a whole rookery of wickedness and filth. A good opportunity for a road has been missed to the east of the Wellington Barracks Chapel, which is now filled up by the hideous erection of flats; but through Queen's-square, with its pretty old Queen Anne houses (which are models of what is wanted in unpretentious street architecture), a way may still be found.

6. The pressure at Charing-cross and 'Pigtail-square' is becoming dangerous: a way into the Mall, if that sacred enclosure might be utilised for the benefit of the nation, to which it belongs, can be done by the pulling down of a grille, and this might be widened by the removal of one house of small dimensions; or a way might be opened north of Carlton-terrace.

7. The finest modern improvement in London, the Thames Embankment, is rendered nearly useless for want of communication, first with Whitehall and next with the Strand. A way by the gardens of the destroyed Fife-house, which abut on the river road, to Whitehall Chapel-street would effect the first, and the removal of the flights of steps and other obstructions at the end of many small streets, such as Cecil-street, Essex-street, &c, would open the latter with the greatest ease. It is melancholy to see the broad river thoroughfare with a couple of carts and a cab occupying the space while the Strand is blocked for hours every day."

"M. P." further urges that the Metropolitan Board of Works should have one comprehensive scheme, every part related to the rest, even if it cannot be carried out except gradually and piecemeal. This, however, is more easily said than done. A grand scheme might no doubt be laid down on paper, but it would remain to be seen, when it came to be carried out in detail, what obstacles there might be to portions of it, and how it might have unavoidably to be modified. London has grown up so gradually, so irregularly, that it seems almost to baffle any attempt to lay down a great general or symmetrical scheme on its irregular and tortuous map of street lines. The presiding idea of "M. P.'s" suggested alterations is the obtaining of cross lines of communication, north and south, between the great lines of thoroughfare which nearly all run east and west. This is of course the great want in the London street system; one item of which is to be supplied by the new Bill of which we have been speaking above. Yet even in these few suggestions we have quoted there is matter for question, and indication of a too great indifference to the effect

of the proposed new routes on the property adjoining them. It is not right or sensible that, in the consideration of providing better lines of communication from one part of London to another, the convenience of the passengers who will find these useful should be thought of without any feeling for the comfort of the residents in the neighbourhood through which they pass.

Take, for instance, the first of the improvements suggested by "M. P." If there is really so much want of a new cross-route through the triangular district east of Exhibition-road to connect Knightsbridge (or, properly speaking, the Kensington-road) and the Brompton-road; supposing such a road opened, as proposed, through Rutland Gate, who is to be answerable for the inevitable depreciation of property there, and loss to the comfort of the inhabitants, by turning that quiet square into a thoroughfare? And if it be replied that there would not be traffic enough to make any disturbance to the comfort of residents, the change can hardly be wanted. As a matter of fact, we doubt if it is. There is little connexion between the two thoroughfares; the class of houses in them are very different (at the portion in question at least), and the two classes of traffic which use these roads bifurcate naturally at the corner near Albert Gate. The quarter where a regular intercourse between the two lines of route might be expected is supplied with a cross-route by Exhibition-road, which, it may be observed, faces and continues a main route through Hyde Park, which the new cross-road proposed would not do. Yet, even with these considerations, the traffic up Exhibition-road is not, under ordinary circumstances, by any means large; indeed, the wide road generally looks nearly empty. What strikes us in this and other suggestions is an apparent indifference as to preserving that quiet and seclusion of some centres of habitation of the richer class, which is almost a feature characteristic of London. The *culs-de-sac* which occur every here and there in many of the western districts of London, so long as they are not absolutely in the way of public convenience, are an immense boon to many London residents, furnishing little oases of quiet in the midst of the roaring stream of circulating traffic. Let us add that there is often a degree of historical interest about these old nooks, in the Mayfair district particularly, which we cannot wish to see lightly or inconsiderately obliterated, though a clear way north and south is greatly required. The Grosvenor-square question has more in it. The best approach to this important square from Piccadilly, that by Berkeley-street, cannot be called either very dignified or very direct; and perhaps a direct route through from Down-street might be worth making; it would be appreciated, no doubt, by the Junior Athenæum Club, and their handsome house would mark the junction in a dignified manner. Yet, on the whole, we may doubt whether the advantages would be worth the amount which would probably have to be paid in compensation, as far as the mere route would be concerned; though it might be an opportunity, certainly, for a fine new street of first-class houses: an undertaking, however, which will hardly find capitalists to embark in it while so many large West-end houses are standing empty, waiting for tenants or purchasers. The prolongation of South Audley-street, getting rid of the queer little twist and narrow straits at the west end of Curzon-street, is a more natural and feasible plan, except for the question of Hyde Park-corner. Apropos of that subject, and of the hint above, that the tunnel or low-level road that has been talked of would sufficiently meet this objection, we may take the opportunity of here observing how little this idea of various levels seems to have been considered in connexion with proposed improvements. Indeed, it seems generally to be regarded as a rather eccentric kind of thing to propose. Yet look at the admirable way in which the same principle has been freely used in some of the various railway systems going out of London where, by means of cleverly-contrived gradients, railways are carried past each other, over and under, in a way that would be perfectly impossible on the same level. Those who are concerned or consulted in carrying out street improvements would surely do well to take a hint in this respect from the railway engineers; and in some kind of application of this system, we are disposed to think, lies the ultimate solution of such difficulties as are involved in the Hyde Park-corner and other blocks.

A way from Leicester-square to Oxford-street is, indeed, wanted, though its provision would deprive the London cabman of one of his great pleasures,—that of making what are supposed to be short cuts through a labyrinth of narrow streets. Sometimes John in these cases finds even his favourite haunts too much for him, for we heard of a passenger the other day who rashly took a Hansom from Charing-cross to Berners-street, and after a lengthy plunging about among alleys, was at last drifted out into the middle of Regent-street, and taken all round by Oxford-circus, the driver having found the navigation too much for him. There can be no doubt this route wants opening up at the first chance. The proposition as to a route through Coventry-street eastward to the Strand we do not see the force of so much. If it means coming into the Strand near its western extremity, avoiding the angle of the Haymarket, the gain is hardly worth the cost. A street from Coventry-street to cut into the Strand towards Wellington-street would be a valuable straightening of the route between Piccadilly and Fleet-street; that would involve crossing Covent Garden Market, so that if this structure is really going to be re-built, some consideration of this kind might enter into the scheme.

A direct opening between Victoria-street and Birdcage walk at the point named is certainly a desideratum, but that would be only half, and the smallest half, of what is wanted; the real want is a road and bridge across St. James's Park, where the present foot-bridge is, and which is just opposite the point west of Queen Anne's Gate, where "M. P." proposes to take the road through. Such a road would connect the line of St. James's-street directly with the Westminster neighbourhood, instead of leaving only the choice of a long round east or west of the park; and the bridge might be made a highly ornamental feature. "M. P." laments the loss of the chance of a road east of the barracks, which is now closed by what he justly calls the "hideous erection" adjacent; but as far as the road is concerned, the route just named, opposite the present foot-bridge, would be just as good, and is in a sense half made already. As to the "erection," and the Westminster Aquarium also (another weariness to the flesh), some of those interested in the neighbourhood which has been allowed to be so sadly spoiled, have, we believe, dreamed of the "fearful joy" of a wide street or boulevard to connect Broad Sanctuary with Buckingham Palace Gate, passing over the sites of the Aquarium and the towers in flats, and giving compensation, of course, to each, on the condition of annihilation. Westminster is a neighbourhood that will soon undergo much alteration and development, so we throw out the idea for consideration, as the only chance of restoring the *genius loci*.

What is said about the Thames Embankment and the blocked-up streets running down from the Strand is perfectly true, and has often been observed upon; but this part of London is in a state of change, and we take it that all these connexions, and the removal of barriers, have always been intended to take place in due time, though certainly one may say that the time is fairly due now. Northumberland-avenue was a step in the direction of connecting the Embankment with the main traffic lines; and, after all, the Embankment is already more largely used than "M. P." seems to be aware of. The proposition to open a road "north of Carlton-terrace," that is, we suppose, between Carlton-terrace and the clubs, seems simply ridiculous, and would be deliberately to spoil one of the pleasantest corners of London.

One route we may mention that is very much wanted, in this case not a cross route but a longitudinal one, and that is from Kensington to the Victoria and Westminster district. The way round is a very long one now, unless, of course, we take the underground railway into consideration, but all people do not care about that mode of conveyance. There is a road "authorised" from Fulham-road to the South-western angle of Eaton-square; this is not exactly the line wanted for connecting Kensington and Victoria, being too far south; but if this road were carried on just south of Victoria Station, and then to a new bridge in a line with Church-street, Lambeth (just a little varying from the present small Lambeth suspension bridge), this would form a shorter route to the City (railways apart) than keeping the line north of the river. This will probably not have occurred to many, but a glance at the map will render it obvious.

One thing, nevertheless, that we do wish to see kept in mind, and which we insist on, because we see plainly that it is in danger of being overlooked, is that due value should be given to the picturesque and historical interest of sites before changing their whole character by running a new thoroughfare through them. In a place so full of the stress of life as London, it is suicidal to break up, without very strong reasons as to the greatest convenience of the greatest number, the few quiet and restful spots that we have.

"TURKEY IN EUROPE."

The interest just now felt in everything connected with the East accounts for the fact that the book recently brought out by Lieut.-Colonel James Baker, under the above title,* has already (like Mr. Wallace's "Russia," which we reviewed recently) reached its third edition, a success hardly to be explained on the ground of the intrinsic merits of the book, which is, in fact, a hastily-written sketch by an English officer, possessing property in Turkey, and possessed by strong pro-Turkish feelings, and who is rather an advocate than an impartial critic. Into the subject at large we cannot, of course, enter here, nor can we estimate how far the author's ideas may have become modified by events that have taken place since he committed them to paper. His remark on the contrast between what he read in the English papers about the state of things at Salonica, where his estate is situated, and what he saw himself, is certainly calculated to shake one's faith in the "special correspondent," but we do not quite gather at what date it was written. However, he tells us that, after reading accounts in the papers that made his hair stand on end, his last experience before leaving Salonica was that the Christians of that town gave an amateur concert for the benefit of the Turkish wounded, which was attended by the Turkish Governor-General and Staff, as well as numerous other Turks, and a sum of nearly 300*l.* was handed over by the Christians to the Turkish authorities. We accept the fact, of course, on Colonel Baker's statement, and quote it for what it is worth.

It is just to the author to say that he has resided in the country he describes, "off and on," for over three years, and has travelled on horseback for more than a thousand miles in European Turkey. His style, however, conveys the idea of the book having been written in a hurry, and not in that judicial temper, and with that special and careful investigation in the absence of which a book of this kind is entertaining rather than seriously instructive.

Among topics incidentally touched upon, however, are some references to the conditions of life in Turkey, in regard to habitations, manners, &c., which suggest a word or two in connexion with points which may be considered without launching into the political questions involved in the main subject. Almost at the outset of the book we meet with an illustration of the tendency to Europeanise, if we may so term it, which is becoming so prevalent in the more civilised parts of the Eastern world, and is threatening to obliterate much of what is most characteristic and picturesque in Oriental life. As the author approached "the capital of the old Byzantine empire," after a long absence, he noted that Time here, as elsewhere, had wrought a change. "Large blocks of picturesque Oriental buildings, which I remembered to have seen during the Crimean war, were gone, and in their place stood great ugly modern edifices, devoid of all pretensions to architectural beauty, and which destroyed the general effect of Oriental scenery. They seemed to say, 'Look at us! We are the produce of the Hatt-i humayoun, the Hatt-i-cherifs, and the Iradets! We are Stamboul reformed upon a Western model!'"

"They might well be accepted as fit symbols of the reformation. They are modern, ugly, and imperfect imitations of Western edifices, and in conjunction with the older and Eastern style, look out of place. The very cypress-trees seemed ashamed of the *parvenus*; and, as if to complete the desecration of the beauties of the Bosphorus, innumerable small steamers were puffing their black smoke in every direction, and destroying all possibility of romance by suggesting recollections of the Thames."

We cannot subscribe to the sentiment that

* "Turkey in Europe." By James Baker, M.A., Lieutenant-Colonel Auxiliary Forces (formerly 8th Hussars). With two maps. Third edition. Cassell, Petter, & Galpin: London, Paris, and New York. 1877.

collections of the Thames "destroy all possi-ity of romance," unless we are to take the rd with a very limited meaning. The intrn of second-hand Western architecture in an stern town is another matter. Probably this ter change is inevitable if the Oriental nations gin to accept in spirit the ideas of Western e; and to them it is possible that the square-ss and heaviness of average European com-ercial architecture is attractive, as a novelty, st as dwellers among mountains have been nd to express great admiration of a district here all the country was flat. But what a y it seems that this transformation should be ing on; that elements of picturesque beauty d variety in the world should tend to dis-pear as civilisation advances; and all for no al good, either,—since there is no doubt that e essential conditions of civilised life may be well fulfilled in picturesque buildings as in ly ones,—we might say, "better fulfilled," t, we fear, any one who says so in these days set down as "sentimental" and "unpractical." The Turkish ladies, also, are for the most part flocked out in the latest Paris fashions"; just we have before heard that the Japanese ladies ve been discarding their own picturesque ss, which precisely suits their personal style d their climate, for English dresses which suit ither. At this rate, Eastern ladies visiting gland will be going to South Kensington or ewhere to see what their country women once re, before the European fever came upon them. is gratifying, however, to learn that with the ropean habiliments the Turkish lady is adopt-g European social habits, so far, at least, as at she receives the visits of English and other reign ladies; and, as Colonel Baker observes, when once the stone is set rolling, who can say ere it will stop?" and already the inmates of e harem may be seen driving about in hand-ne broughams to "do their shopping," with eir faces covered by such a veil as is only a minal concealment, a formal concession to reditary notions of propriety.

The opportunities for reforming Constantinople chitecturally seem to be amply provided by the tent of the fires. The author was told that e whole of Constantinople is burned down ery twenty years by means of weekly fires; d without accepting the statement in full, he atifies that serious fires are of weekly occur-nce. During his stay there upwards of 250 uses were burned in one day, notwithstanding e active and very efficient exertions of the e brigade; but the streets are so narrow, and much wood is used in the construction of the uses, that it is exceedingly difficult to check e progress of the flames in a high wind. Con-antinople, like London, had its great fire, which ourred in 1870, when upwards of 3,000 houses ere burned down. All this gives opportunity t only for the replacing of Eastern with estern architectural design (which, as we have served, is to be deprecated), but for the more actical and altogether desirable substitution soundly and sanitarily constructed buildings those which are otherwise. How far the portunities of doing this are made use of, Col. ker does not tell us. That there is plenty of om for improvement in such matters we know ry well. The fact is that fire is almost the tural agent for finding out the weak points in dly-built towns, and giving opportunity, ether wished for or not, of doing things over ain in a better way. When we hear of a town ving many fires we may generally conclude, t only that it is badly and insecurely built, t that it is unhealthy and unsanitary, for the o conditions almost always go together. In ch towns conflagrations may be called, and ght to be made in every sense, cleansing ents.

According to Colonel Baker, however, the max of Eastern unsanitariness is reached ong the Ottoman Greeks on the Black Sea ast; and the town of Sisopolis, at the entrance the Bay of Burgas, stands out pre-eminent in is respect. He recommends every one visiting to provide himself with a "patent waterproof tisewage umbrella," with a receptacle for *eau Cologne* in the handle. The streets are so rrow that the houses nearly meet across them, d all the sewage falls into the streets from the ojecting first floors. "The people seem to e well, for in front of about every third or irth house a sheep was being slaughtered; but s does not add to the cleanliness of the town, all the blood and refuse is left to pollute dution." The houses cannot be described as ventilated, for the wind in winter gets all through them; a matter of indifference to the Greek inhabitant, who on a rainy day will come in and sit down in his wet clothes, in a thorough draft, until he dries. This hardihood, as the author observes, would be admirable if it were only accompanied by cleanliness: in regard to which subject the author's account of the manner of morning ablutions is characteristic enough to be worth quoting. The sleeping arrangements consist in the provision, in the principal room, of a quilt and pillow brought in for each visitor, "and the company rolls itself up to snore under an *allegro agitato* accompaniment of animals that shall be nameless."

"The ablutions in the morning are performed in the verandah, where may be espied a small brass basin on a wooden sink projecting over the street. The basin is covered with a brass net-work, culminating in the centre in a receptacle for a pretty Mediæval looking brass coffee-pot with a very small spout, and capable of holding as nearly as possible an imperial quart of water. The inexperienced traveller, having unrolled himself from his lively quilt, hovers about the Mediæval brass vessel and thinks of coffee, and with hopeful hesitation places his hand on it to see if it is hot; but his hopes are doomed to disappointment, for one of the ladies of the house now appears with a small piece of soap in her left hand, and a towel over her arm. She approaches, seizes the coffee-pot with her right hand, and looks kindly and invitingly at the visitor. He is now initiated into the art of producing a cheerful countenance from small resources. He is supposed to hold his two hands together, while the lady pours water into them out of what I may call the coffee-pot. If he is clever he may save a few drops from running through his fingers, and these he rubs quickly over his face; it is cool and refreshing, and he longs for more, but the water is running short. He is then handed the piece of soap, with which he lathers his hands, the remainder of the quart of water is poured over them, and he is then made to believe that he has had his bath. The Greeks will make the quart of water do for two people, but I was wasteful and used it all for myself. After this, Turkish coffee is brought in little cups, which hold about a teaspoonful of grounds and a teaspoonful of coffee; and about four hours afterwards breakfast is served, which consists of soup and two or three made dishes, which would not be bad if they were warm, but they are usually half cold. Notwithstanding all this, the good humour, anxiety to please, and hospitality of the Greek host are so genuine that you leave with a feeling of gratitude, accompanied by sorrow that you cannot teach him how to be comfortable."

The too frequent discrepancy between what is picturesque and what is comfortable and sanitary, again appears significantly in this description. Imagine the feelings, we will not say of a European (for, unhappily, all Europeans have not yet taken their degree in the virtue that is said to be next to godliness), but we may assert, emphatically, of an Englishman, at being invited to content himself with this degree of cleansing,—in a hot country, too,—as a preparation for the day; and yet, on the other hand, what could be prettier and more graceful in appearance, one may imagine, than the manner of the thing,—the lady, in picturesque Eastern dress, and with hospitable benignity of expression, pouring the water from the "pretty Mediæval-looking" vessel over the hands of her guest? We commend the incident to Mr. Hodgson as a subject for a picture,—"Morning Bath at Sisopolis," let us say,—in which outward grace of grouping might be happily combined with a "sanitary" moral.

The matter of cleanliness seems to be no better among the Bulgarians, who also seem to present to the student of humanity the same kind of combination of picturesque and unsanitary life. Among the elements of the picturesque it is mentioned not only that the dress of the village women is very brilliant, and at the same time harmonious and pleasing to the eye, but that they have a habit of adopting a special costume peculiar to each village, and worn by all the inhabitants of the village as a kind of uniform. These picturesquely clad peasant women are very industrious: bake their own bread, spin wool and cotton, weave all the stuffs for family use, and are rarely seen idle. One of the few references to the character of habitations in the book is made in regard to the Bulgarian peasant dwellings, which are described as "generally plastered with a mixture of cowdung and clay, and consisting of two rooms and an enclosed verandah. The furniture consists of pots and pans, and some rugs for bedding, a pretty carpet for grand occasions, and some gaily-painted boxes for holding the family clothes and treasures; and these, with an open fireplace and chimney, form all the household appointments of a Bulgarian yeoman." At Yeni-Zaghra, which Colonel Baker thought "a most miserable place," other people evidently thought otherwise, for building was going on so industriously that the clack, clack, of the hammers reminded him of a builder's yard: and he notes that the houses were built "of small bricks between beams of wood, like some of the old houses of Cheshire and Worcestershire."* This was was not the only architectural suggestion of England which our traveller met with, for he mentions that in riding along the foot of the Balkan, after leaving Sopat, he passed the ruins of the only castle he had seen in Turkey, perched high up on the mountain, and at a distance apparently suggesting something like the English "Perpendicular" style; and that he could learn nothing about it except that it was "very old," and that it had been, as he was told in a mysterious manner, "built by the English." We should be curious to know the history of this ruin of an English castle on the Balkan. At Yanboli, too, "a lively town, with shops painted in brilliant colours," a fine stone clock-tower was being erected, and it was understood that the clock had been ordered from "Dent, of London."

Colonel Baker records his opinion that Turkey is in possession of prodigious natural but undeveloped wealth in the form of extremely rich Government lands, forests, and mines. They merely require roads of communication, and capital to be invested on them, to bring forth all their wealth. "By neglecting to make and keep up roads of communication, the Porte locks up her wealth and puts the key into her pocket." Here is a specimen from the author's experience in regard to his own farm:—

"My estate is only eight miles from Salonica, and five years ago the magnificent highway-road to Seres was made, and passes close to the property. The road has never been touched from that day to this, and is now impassable for wheeled carriages. The consequence is that, although I have an excellent market only eight miles off, I must send all my grain to it on pack-animals, and for that short distance it costs me 6 per cent. on the value of the grain, while with wheeled carriages, and the road in order, it would only cost me 1 per cent. Here is a sheer and unnecessary loss of 5 per cent. on the produce of the farm. And in this sense that which is a loss to the producer is indirectly a proportionate loss to the Government."†

Apathy and procrastination, he considers, have brought the country to its present state. The Turkish official seldom refuses, but always postpones. "If I had to devise a Turkish banner I should inscribe on one side of it, 'Evet Effendim' (certainly, sir); on the other, 'Yarin' (to-morrow), and below, the motto, 'There is but one God, and backshish is his prophet.'" This is pithily put, no doubt. Whether any opportunity will yet remain for Turkey to try Colonel Baker's remedies,—"railways, telegraphs, and time,"—we must wait for the lapse of the latter term of the series to show.

NOTRE DAME DE NOYON.

THE Central Archæological Society of France have been endeavouring to resuscitate the public interest in a sacred building—one among the noblest architectural antiquities in the country—the ancient cathedral of Our Lady of Noyon. The Minister of Public Instruction has associated himself with their efforts, and it is likely that before long a complete study of the celebrated structure, in its ruin and in its renovation, will be given to the artistic world. There seems visible, indeed, throughout France just now, a disposition to repair the wrecks of revolution, and restore the historical architecture of the land, blemished and shattered as it was by the iconoclasts of the eighteenth century. But in few instances have the enthusiasts had so interesting an object to work upon as the cathedral of Noyon—formerly known as Pavon. Not comparable, indeed, either in dimensions or in loftiness, with those crowning edifices which constitute the glory of Chartres, Rheims, and Amiens, its architecture has a beauty of its own; there is a pure severity beyond conception in its style, together with a harmony of proportion entitling it to a front rank among French religious monuments. It would have been a pity, therefore, to witness the sinking down and dissolution in the earth of this grand old French church, particularly as it preserved some relics of peculiar architecture rapidly falling into discredit and decay throughout not the south of France alone, but the south of Europe altogether, and especially as regards its remnant arches and

* These words were written before the account reached England of the events which have made Yeni-Zaghra a "most miserable place" in another sense than that of the author.

† Turkey, however, seems only to share the general indifference in that part of the world in regard to keeping roads in repair. The following note of a *Times* correspondent on the state of three bridges on the high road in Roumania may serve as a pendant to Colonel Baker's complaint:—"The flooring has been removed, and new bridges built a few yards below the old structures, a sharp turn being required to reach the new bridges. The direct line, of course, leads over the floorless viaducts, but there are no bars or other obstructions placed at the ends to prevent the engulphment of horses, carriages, and human beings who may be using the highway on a dark night."

vaults, dating from the thirteenth century, and, in many parts, exquisitely perfect. But in the singularly interesting "Study of Middle-Age Architecture" just published by one of the forty French "Immortals," and dedicated to this structure, while some anomalies are pointed out, it is shown also that they belong to different parts of the building, and to different dates of its history; but the commissioners declare themselves totally unable to fix these with any probability of an agreement. They have lost their way, in fact, amid uncertified traditions, questionable documents, records which might as well be dumb, bewildered chroniclers, half of whose MSS. are, at the present day, undecipherable, and sets of archives, each contradicting nearly all the others. Still, in the midst of all this discouragement, under the name of discovery, the French Archæological Association believes itself to have determined upon a focus, towards which its general investigations, for the future, must tend; and, if they be right, we may count upon a new and most interesting chapter in the artistic history of France. Folios after folios have been dedicated, for example, to the great shrine at Noyon; yet, being out of the general tourist's path, it is little more than a myth or a shadow to the English traveller. Nevertheless, the purposeless wanderer might well go out of his way to examine these fine remains, so characteristic of the period and the people, and of the several ages in which they arose.

Let us, however, before considering the conclusions of the Parisian archæologists, notice the work upon which they have so emulously engaged. Above the ancient ramparts of Noyon, now reduced to monstrous mounds of stone and grass, are still seen rising, over the roofs and chimneys of the motley town, two great square towers, flanked at each corner by formidable bulwarks. They do not diminish in dimensions as they rise, but grow, in stately uniformity, up to their topmost battlements; for that antique cathedral had all the strength and value of a fortress in the days of war. All now is solemn and severe. The chapels, the pictures, the enamelled pavements, harmonise with that old episcopal palace, and that still older town-hall, which arrest the tourist involuntarily on his way. The belfries alone appear graceful and light. But, beyond these accessory structures, extends an edifice of the noblest and most gracious proportions, terminating in a chapel, with many flying buttresses, and intercepted in the middle by a transept of the loftiest and most attractive design, such as made the artists of the Middle Ages our masters; and yet there is little unison in the grand, half-ruined, and yet uncompleted plan. The suppleness, so to speak, of all this work is no less surprising than it is admirable. From the giant masonry of the clock towers, cyclopæan in thickness of wall and depth of foundation, you pass by treacherous steps, to roofs rising towards a point, to heights of architecture covered with masonical lace-work, to labyrinths of serpentine curves, double-arched aisles, and beautiful confusions between the Roman and the Byzantine styles, very charming, and yet an anachronism beyond the whole power of art to reconcile. But, to the mind of the stranger, however slightly studied in these matters, there comes a suggestion that the work of "restoration" going on is rather imaginative than critical. The enthusiasts of the south, notwithstanding all the reports, phases, and diagrams they have accumulated, can only reconstruct, from fancy, the eight court-yards of the wealthy priory; the old cloister, with its five colonnaded walks, now obscured by ruin; and the time-worn sacristy, which looks as though it had been a dozen times burned to the ground, leaving, at each interval of ruin, a relic stamped with an historical date. But over all this hovers a feudal rather than a sacerdotal aspect. "Our Lady of Noyon" would seem to have been a Joan-of-Arc instead of a Teresa. We may pass it by, however, with the legends of the St. Peter's Gates, the images and ornaments in the corridors leading to them, and the sculptured gems of the architecture generally, which is, it may be emphatically said, not "Early Christian" in the most authentic sense of the term. In fact, even amid these ruins, you detect a kind of artistic Pagan luxury, a richness about the shrine which it is impossible not at once to rebuke and to admire, and a universal sense of richness impossible to be interpreted. But a question of a very new interest arises,—how were these deep and characteristic delineations produced? They appear to bear no traces of the hammer or the chisel; they simply seem to have been stamped, as if gradually, yet beneath the power of some gigantic pressure. At the same time, these figures and friezes, if the term may thus be applied, are recognised as belonging to the most ancient parts of the edifice, which was, probably, composed of coarse red tiles and bricks. In the interior, the vast porches having been passed, all is a *mélange* of styles; combined with that harmony of proportion to which allusion has been made; but the eye is still perplexed by what it admires; the ogival windows; the long arcades; the aërial roof vaults; the galleries floating, as it were, upon the summits of their springing pillars; and the grand surprises of window and wall between, and also above the nave and the choir. The restorers have, in some instances, taken counsel from ancient authority, following, for instance, a Romanesque example by allowing the principal galleries of the great nave to rest, alternately, upon square and cylindrical pillars, perfectly isolated. This style was in universal favour, among French ecclesiastical architects, at one time, and the restorers of Notre Dame de Noyon are doing their best—or worst—to bring it into vogue again. But the cathedral was unquestionably reared upon the foundation of a Roman temple, dating from long below the age of Julius Cæsar, and even its own capitulary roll contains archives of a curious antiquity. The edifice has been a work of many eras—some of its masonry resembling sponge, other parts firm as the granite of the Roman roads; but all possesses an interest, distributed between two epochs in the history of the European world, which is not to be wholly despised, even if it cannot be thoroughly understood.

THE DEMOLITION OF THE OLD HÔTEL DIEU IN PARIS.

The lovers of antiquity and the past will hear, with just a spice of regret, of the approaching demolition of the Hôtel Dieu, one of the oldest hospitals in Europe, and one of the worst. Not for the purpose of opening up any new thoroughfare has this venerable building been obliged to give way, but in the interest of public health, and on this score there are few Parisians who know the Hôtel Dieu who will be sorry to hear of the disappearance of the by-no-means attractive-looking pile which has stood for so many centuries on the south side of the Parvis Notre Dame, or Cathedral-close.

Tradition states, though erroneously, that the foundation of the Hôtel Dieu can be traced to the reign of Clovis II., who lived in the middle of the seventh century; we must, however, attribute the establishment of this famous hospital to Philippe Auguste, contemporary with our Richard Cœur de Lion.* To the English reader it is of little interest to recount the successive enlargements of the hospital, as each sovereign took the Hôtel Dieu specially under his care. With all this munificence, the state of this hospital has at all times been deplorable, and loathsome details are extant as to the state of the sick received for treatment. The history of the Hôtel Dieu is an interesting one, though lengthy; the ceremonies, the accidents, the fires, the dramas, the strange quarrels and scandals that took place among the monks and nuns (who attended the patients), the doctors, and even the sick, would afford a by no means unproductive source for the pen of some future Ainsworth. But it is not of this that we would propose to speak; happily the Revolution of the last century, in correcting so many other abuses, purged the hospital of much that was shameful, and since then the Hôtel Dieu has been behind other European hospitals only in consequence of the insufficiency and badness of the accommodation which the ancient building afforded.

At present this is to be remedied, and within the last few days the new Hôtel Dieu, which rises on the northern side of the Parvis Notre Dame, has been opened, and the invalids are daily being transferred to their new quarters. The hospital has eighteen rooms and 420 bedrooms. Each of the *salles*, which are vaulted, is lighted by thirteen windows, six on each side, and a large bay-window at one end. Numerous arrangements for the comfort of the sick are provided, and all the modern improvements introduced.

* St. Bartholomew's, in London, dates from 1123, and St. Thomas's from 1213, though neither was a hospital proper till the middle of the sixteenth century.

Such as the new Hôtel Dieu is, it forms, with its three well-separated wards, a striking contrast to the old hospital which has existed for so many centuries, and the insufficient accommodations of which have at length necessitated a change. Of the old Hôtel Dieu, which will soon have disappeared, we will alone speak of the "*cagnards*," one of the most curious, and at the same time one of the least known, portions of the hospital. The *cagnards* are the rooms built under the water terrace and above the cellars. In the reign of Henry IV. (at the beginning of the seventeenth century, that is) these *cagnards* were destroyed, one alone was spared, which may still be seen near the Petit Pont. It can be easily recognised by its Gothic window and iron bars.

The *cagnards* which still exist are vaulted halls, chiefly occupied by the pharmacy of the hospital. For the lover of antiquity this pharmacy is an interesting place. None of the shine and elegance reigns there that mark the shops of modern chemists. The counters, the seats, and the whole accessories, are in solid oak, blackened by age and polished by continual friction. Instead of the regulation coloured bottles, earthenware and pewter jars of the strangest forms line the shelves, reminding one of the days of Molière's apothecaries, or the dear old Speziaria of the once existing Italian convents. The bronze mortar in daily use dates from the reign of Louis XIII. (1610—1643), and the set of brass weights are of no mean antiquity. In another part of the *cagnards* is a secret room, in which took place some of the first experiments in anatomy that were practised in France. Here it was that, in 1526, but a short time it will be remembered after André Vesale or Vesalius had made his anatomical studies in Italy, Francis I.'s doctor secretly dissected, in presence of a few enthusiasts, the body of a tortured man which had been bought at an enormous cost from the executioner. But these rare operations were done only in secret, for the Church would have absolutely forbidden such a profanation had it been known.

Before closing this hurried notice of the old Hôtel Dieu, let us not forget to notice the most ancient portion of the building which is destined so soon to be demolished. It formerly was part of the constructions executed by orders of Blanche de Castille, and is, therefore, more than 600 years old; it is the subterraneous chapel of the Salle St. Thomas. The architecture is simple,—not a trace of foliage, not the slightest ornamentation. The vault is ogival, and accompanied by rounded mouldings, as in all edifices of the thirteenth century. But, were it not for its antiquity, the chapel would possess little or no interest. For a long time past it has been used as a wine-cellar.

From a monumental point of view, the disappearance of the old Hôtel Dieu will cause but little regret. Composed of irregularly-disposed buildings, added one to another at different epochs, the hospital formed an extremely disconnected whole. From a hygienic point of view, the demolition is in no way regrettable. Indeed, ever since the Revolution, since the hospital has been little more than an anticipated grave, this last refuge of those who had no other place to die in had been doomed to destruction.*

Paris.

Cambrian Archæological Society.—The Cambrian Archæological Society, of which the Prince of Wales is patron, is this week holding its thirty-second annual session at Carnarvon. The inaugural meeting was held in the Castle on Monday night, Professor Babington presiding. The Bishop of St. Asaph was elected patron, and the following presidents:—John Evans, F.R.S., F.S.A.; J. H. Parker, D.C.L., F.S.A.; W. S. Skene, F.S.A., LL.D.; and C. C. Babington, M.A., F.R.S., F.S.A. Sir Llewelyn Turner, chairman of the Local Committee; Professor Rhys, Canon Bridgman, and Mr. J. Romilly Allen were elected committee-men; and the following honorary secretaries were appointed:—Scotland, J. W. E. Mackenzie; Carnarvonshire, Hon. F. G. Wynn; Flintshire, Mr. T. Morgan Owen, M.A.; Cardigan, Professor Edmonds; Carmarthen, Rev. A. Roberts; Pembroke, Mr. F. Lloyd Phillips; Glamorgan, Mr. Dillwyn Llewelyn.

* The Paris correspondent of the *Times* stated a few days ago that the new Hôtel Dieu, site and building, has cost the Municipality 37,000,000 francs; or about 30,000 francs (3,600*l.*) per bed! May we hope that this is the climax of Hospital insanity?—Ed.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

GALLERIES AND PEWS AS FEATURES OF PROTESTANT CHURCHES.

If a Protestant church be chiefly to preach and hear a sermon in; if the reading of the prayers and administering the communion ought to be performed in the sight and hearing of the whole congregation, and there be no separation of the clergy and laity recognised therein, then it follows that such church should afford a compact open space the bounding lines of which are almost equidistant, front and flank, from the pulpit placed near one end,—square, polygonal, circular,—a form, in truth, the very antithesis of what is now in general use, and everywhere being erected. In fact, a building in which to celebrate the worship of Protestants, whose genuine ritual observances, as Barrow says of Christianity, being few in number, in nature simple, have no business with a clearstory, which is entirely unmeaning in it; and it cannot dispense with a gallery,—a feature which the natural limitations of the human voice render essential to it,—if enormous waste of money in building is to be avoided; for beyond a certain limited number it is not possible to accommodate a congregation that is to be entertained through the medium of the ear rather than the eye, on one level. This truth is referred to, if I remember rightly, in explaining his object in the plan of St. James's Church, Westminster, by Sir C. Wren, who was well aware that his fifty London churches would not suffice for the demand should he set his face against galleries, which he did not, for they all with but one exception have galleries. The Wesleyans and Nonconformists also are aware that they would have to build nearly twice the number of chapels were they to dispense with galleries.

Mr. Garbett, in his excellent "Treatise on the Principles of Design in Architecture," calls the gallery "an odious requirement of modern parsimony." I am loath to differ from so judicious a writer; but I can conceive a gallery being inserted from quite a different motive to parsimony,—viz., to bring within the hearing of one man as many as could be decorously seated for the purpose, which could not be done without it. Take out the gallery of most churches or chapels, and extend the ground floor in any direction to receive the displaced seats, and they would be beyond the range of the preacher's voice. As the voice will not go forward beyond 70 ft. or 80 ft., and *will* rise beyond 5 ft. or 6 ft., the height of the ear from the ground, the idea of extending the accommodation on a vertical line will naturally occur without the promptings of parsimony; the idea would occur where funds were unlimited and ungrudged. It is as natural a way of increasing the seeing-and-hearing-accommodation in churches, as it is in theatres and opera-houses, where usually there are some half-dozen galleries, or in great libraries and museums. It is as natural to erect a gallery in a church as to build an upper story to a house; and there is no more reason for confining church accommodation to the ground-floor space than to restrict dwelling-houses to one story, or ships to one deck. This is so obvious that the wonder is that churches generally have not two heights of galleries rather than no gallery at all; which is evidently a wasting of the voice and strength of the preacher.

I believe a due recognition of the social feeling and sentiment of Christian fellowship, on which the assembling together for public devotion is partly based, in the plans of places of worship, would exclude the cruciform plan, as it divides the congregation, which, as the word implies, should be one, into two or three distinct sections that cannot see each other, and dictate the simple compact form I contend for. I believe such form, containing as great a number of seats as can be placed within the range of a speaker's voice, whatever its architectural merits or demerits, is calculated, when filled with devout worshippers, to present a spectacle that should be infinitely preferred by the Christian, as more kindling to the flame of devotion than any architectural vista,—a spectacle that would give more effect to the melodious tones and rich harmonies of the organ, greater beauty to the liturgy; exciting something of the feeling that prompted the exclamation of the psalmist, "How amiable are Thy tabernacles, O Lord of Hosts." I conceive, therefore, that even where means are unlimited, and economy unnecessary, congregations beyond what could hear a sermon on one floor are desirable. "I will give Thee thanks," says King David, "in the *great* congregation. I will praise Thee among *much* people."

I believe it would be an advantage not only to the people, but to the preacher, for the two parties to be brought as near together as possible. To see his congregation hanging on his lips, and know that they heard him, must, as iron sharpeneth iron, have an inspiring effect upon any preacher who is really in earnest; while, on the contrary, the consciousness that some hundreds of his congregation were beyond the reach of his voice, which I know is very often the case under the present mode, would have a depressing influence on him.

It is incumbent, therefore, on those who dispense with galleries, to show that there is something irreligious in a gallery, or that He who has promised to be present where two or three are gathered together in His name, made an exception in the case of the worshippers being arranged in two tiers, or one above another.

If a gallery is not objectionable on religious or ecclesiastical grounds, which should be one and the same thing, it should not be on architectural grounds; for it cannot be very inimical to beauty or due expression of solemnity. A galleried church cannot look quite as airy and lightsome as an ungalleried one; but, if lofty enough, it may be made sufficiently so, and very beautiful and solemn. That a gallery is no very great impediment to architectural beauty many existing churches and chapels will testify: St. Martin's-in-the-Fields, for example, and most of those of Wren, who made them harmonious features of his designs. These are Classic in style; but the gallery is more congenial to the nature of Gothic than it is to Classic; *multitude* being a principle peculiar to the Pointed style, which admits of and rejoices in a division into small parts; and it would offer justification of the tripartite disposition which is not inseparable from the clearstory, the exclusion of which would necessitate more of that perpendicular elevation of wall so essential to dignity.

The introduction of galleries would give the Gothic style an opportunity of showing so far a new phase, and making a step in advance,—like the pushing out of a new limb of an animal in the geological theory of progressive development. It would rectify the plan and vertical section of churches, which are both now generally, in every respect, the reverse of what they should be. They belong to the church system of the Middle Ages, to ecclesiastical principles and usages, which are not recognised by Protestants.

A simple compact form, nearer to that of the chapter-house or lady-chapel, which is often a model of architectural beauty, than to that of the entire cathedral, which too many modern churches affect, is as susceptible of all the chaste beauty and solemnity befitting a sacred edifice as any cross-plan, Greek or Latin. There is no limit to the beauty of which it is susceptible in the way of decoration and character, which the grace of superior fitness must enhance,—the gallery front may have a fairy lightness, and its soffit or ceiling, as well as that of the church, may be a complicated and beautiful geometrical problem.

But I am sorry to observe not only the omission of the gallery in new churches, but its removal from old ones, which is a still greater mistake; for the gallery of an old church is as interesting archæologically as any other feature, as a natural outgrowth and development of time and ecclesiastical progress, indicating as it does changes therein made in sympathy with revolutions in the religious feelings and opinions of the people, as represented by the Reformation, rise of the Puritans, and great Civil War; viewed in which light it is a connecting link between the Mediæval church and the present day, and a chapter in architectural and ecclesiastical history. The gallery, more than any other, is a feature adapting a church to the requirements of the present day and the Protestant religion, and the removal of it is throwing the church, so to speak, centuries back, and readapting it to bygone times. Very often, I grant, you find a Dissenters' chapel with too wide a gallery, which has a smothering effect upon the place; but very little in regard to seat-room is gained by this, and generally a sacrifice of one line of seats would have made all the difference, and secured an open airy chapel instead of a choked-up one.

Galleries were first inserted, both in churches and chapels, for the best possible reason, viz., to bring the greatest number of persons possible within the sound of the Gospel at a given cost in each case, generally the utmost sum available for the purpose; the harvest being plentiful, but the labourers few. The same reason exists still, neighbourhoods destitute of churches being known to exist everywhere, to a large extent even in London. Taking out galleries is increasing the destitution, and is tantamount to pulling down churches; removal of the galleries from two churches is almost equal to the destruction of one entire church; for it is only very rarely it can be done without reducing the seat-room below the demand. At St. John's Church, Chester, which lost its galleries a few years ago, owing to its great size (having been a cathedral in Catholic times) sufficient seat-room was obtained on the ground-floor. But it lost much of its archæological interest. The interest of its Norman architecture was not increased, while the link that united the Norman and Pointed church to the present day is wanting, and the latest chapter of its historic record destroyed.

A word now concerning pews, which are sharing the same fate as the galleries,—omitted in the new churches, and disappearing from the old. As penance is no part of Protestant discipline, the seats in a Protestant Church should be arranged with a view to the personal comfort of the congregation, which I am convinced cannot be duly secured by open benches with narrow or no book-boards, or by anything short of the old-fashioned pews, with divisions high enough for leaning against. They are necessary also to protect delicate people from draughts; and I doubt not that many such are obliged to absent themselves for want of due accommodation in the churches lately built, or altered to the new ecclesiastical fashion,—a fashion which is, besides, destructive of all signs of age, and so far of dignity, in church interiors, reducing them to a cold, rude, market-like character unbecoming the House of God. For these disadvantages of open benches in churches I never could see nor feel any compensatory spiritual ones.

I have heard it pleaded that the substitution of open benches for pews in churches does away with the appearance of exclusiveness. It may do this. It may do away with the *appearance*, but I am quite sure it will not do away with the *reality* of exclusiveness on the part of the upper class in reference to that below it. Social tea-parties, so common in our day among congregations and Sunday-school teachers, where poor and rich have their feet for the nonce under the same long tables, and ladies vie with each other in condescension to the humbler guests, were designed to do away with exclusiveness. But they have not done it, and they never will do it. When individuals of the different classes meet in the street next day they are as distant as ever. The only cement that will join them into one is the spirit of Christianity, inculcated by the faithful preaching of the Gospel in the churches to rich and poor. Till the thick stone wall of pride is removed, it would be better, indeed, to let the thin wood partition of the pews remain; which would be more consistent and truthful, and less pretentious of virtues which do not exist, than plain open benches in common; or, instead of removing the pews, let them be extended to all alike throughout the church.

Though the omissions and alterations here animadverted upon are an adaptation of the churches to ritualistic rites, it is evident that this cannot in all cases be the object of them. They arise, I am persuaded, in many, if not in most, cases, simply from a desire to conform to the prevailing mode introduced since the publication of "Tracts for the Times." Now, whatever authority these tracts may have for others, they can have no authority over the Protestant, whose sole rule of faith and practice in religious matters is the Bible, which is entirely silent on the subject of church architecture. The plan of the Jewish temple was exactly given in the Old Testament, but there is not a syllable of authority in the New Testament for one plan of Christian temple more than another; but, on the contrary, a host of expressions tending to show that neither where God was to be worshipped, nor what form of house He was to be worshipped in, was any longer of account. "The hour now is," says the Saviour to the Woman of Samaria, "when the true worshippers shall worship the Father in spirit and in truth." The Holy Ghost on the day of Pentecost was to show the Apostles *all things*. But he taught them nothing about the places they should worship in. Nor in the accounts of the planting of churches, in the "Acts of the Apostles," is there a word on that subject. It was left for the architectural to take form from the ecclesiastical, as the body takes form from the soul, influenced by what

exercise of the spirit of sacrifice, as to quality and decoration, should be deemed expedient.

In accordance with this is the fact that the greatest of all sermons was delivered to a multitude on a mountain of Galilee, and that those of the Apostles were delivered in all sorts of places, within doors and without. The apostle Philip preached to the Ethiopian eunuch sitting in the carriage of the latter; while St. Paul's sermons were preached in the Jews' synagogues, from the prisoners' bar before Roman governors, in the house of the Philippian jailor, on Mars Hill at Athens, and in his own hired house at Rome.

Samuel Huggins.

THE LONDON EDUCATIONAL PARLIAMENT.

The members of the educational parliament for London that have their head-quarters in a certain tall structure on the Thames Embankment anticipated the legislators who occupy the larger and more imposing structure a little higher up the river; the London School Board have held their closing sitting prior to the recess, and adjourned till Wednesday, September 26.

The Speaker's and strangers' galleries of the House of Commons are seldom without visitors, and on important occasions the applications for admission are often greatly in excess of the accommodation, always excepting, of course, during the abnormal sittings forced upon the House by Biggar, Parnell, & Co. The educational house has also its "speaker's" and "strangers'" galleries, that are rarely without occupants, few of whom fail to be interested in the proceedings. The "speaker's" gallery is on a level with the floor of the house, or rather is only a step above it. It is reached by a separate entrance from those used by the members, and is in a recess distinctly separating it from the chamber. The strangers' gallery is over the "speaker's," and is reached by a separate staircase, which is carried up in the same "well" with another stair, the one stair being for the use of the visitors to the gallery, the other for the use and convenience of the School Board office staff. Each of the galleries has two rows of benches, the front being "for ladies only."

The chamber is a well-lighted, lofty, and soberly-decorated apartment. Across the upper end of the chamber a dais is occupied by the principal members of the "government," and executive officers. They are accommodated with high-backed chairs, upholstered in olive green leather, without tufts, and bordered with rows of brass nails. Sir Charles Reed, chairman of the Board, has a chair larger than the others, and slightly raised above them, and occupies the centre place. He has on his right the Rev. John Rodgers, M.A., vice-chairman of the Board, and chairman of the School Management Committee, with some other member of the Board on the remaining seat on that side. Next to the chairman, on his left, are Mr. Croad, the clerk of the Board; and on the outer seat the minute clerk. Mr. Robson, architect; Mr. Isitt, statistical clerk, and other officers of the Board, with members of deputations (when there are any present), are accommodated in ranges of benches in the side aisles. Immediately in front of the chairman's platform is a reporters' table, providing ample and convenient accommodation. The members are accommodated on two ranges of benches, the back bench raised to a convenient height above the other; the seats take a semicircular form at the end of the room opposite the chair. There is a clear passage at the back of the platform, and all round the room. The members' entrance and exit way is by lofty double doors at the corners of the chamber, to the right and left of the chairman. The members may also, if they think fit, use the entrance to the speaker's gallery. Over the chairman's seat, in a recess, is a fine life-size kit-cat portrait of Lord Lawrence, first chairman of the Board. The recess contains, under the portrait, ranges of bound reports and papers, and other volumes for reference.

The whole of the woodwork of the chamber doors, benches, tables, dado, and so on, is of wainscot finished without polish, varnish, wax, or other skin. The panelled dado, about 8 ft. high, is divided by pilasters, carved on the face, with capitals carved in high relief, and connected by a frieze carved in basso-relievo, the whole finished by a well-proportioned cornice. Over the dado on each side are three large three-light windows. The roof of the chamber is groined and appropriately ornamented.

The places of the members and the forms of procedure in the School Board Parliament are interesting, and in several respects a counterpart, on a reduced scale, of those in "another place." There are not, of course, Government front and Opposition front benches, to the right and left of the chair, or recognised places for gentlemen who sit behind such benches, to give an unqualified support to their parties respectively; nor are there the partial supporters of the two sides who sit "below the gangway"; but the School Board follows the other House in this, that the members have their accustomed seats, although they flit about very freely at intervals from one seat to another for conference. On one side three clergymen may be seen, at almost every meeting of the Board, sitting together, not clad in "vestments," but in such "undress uniform" as can leave no doubt respecting their calling. Opposite them are as many religious teachers, or teachers of religion, who, like Mr. Spurgeon, repudiate the prefix "Reverend," and prefer to be known and designated by their baptismal names simply; but if they must, from the politeness of the clerk, accept an addition, prefer the suffix "Esq." to the prefix "Rev." These gentlemen appear to regard conventionalities in dress with contempt. But for that matter, one of the benefited clergymen on the Board, and who is certainly as highly respected as any of his colleagues by almost all the members, seems to share in this non-conventional feeling, and appears in a beautiful ultramarine neck-tie, and light drab inexpressibles. Of the toilettes of the four ladies on the Board, Mrs. Surr, Mrs. Westlake, Miss H. Taylor, and Mrs. or Miss Miller, or whatever the legal designation of the lady may be, we can say nothing more than that they are faultless. But much more to the credit of the lady members may be said,—they are true in an exemplary degree to their board duties, and when the list of attendances and of members taking part in divisions comes to be published, the four lady members will stand well in the eyes of their constituents and the public. Nor are the lady members mere "wall-flowers" or silent members, but are always ready to assert their privileges. An amusing instance of this occurred a short time since, on the question of again adjourning the debate on the opening of Board school playgrounds on Sundays. The lady member, who had "a notice on the paper," was asked if she consented to a division now. Her prompt reply was, "Not before I have been permitted to speak." Speak she did, and a capital speech she made, on which side it is not necessary to say. The motion to throw open the playgrounds on Sundays was lost by 28 to 10 votes. In the debate referred to, and others, a practice of the "Commons" is frequent, for speakers are interrupted, by those who have already spoken on the subject especially, with impatient cries of "'Vide!" "'vide!" "'vide!" In dividing, the members of the School Board do not follow the example of either Lords or Commons; their vote is not "content" or "non-content," as in the one case, or "ay" or "no," as in the other; there is no procession to the "lobby," no need for "tellers"; Mr. Croad, with his preternaturally keen senses and varied accomplishments, calls the roll, and the members answer "For" or "Against," as they list, and in about a minute the matter is settled.

Members of the Houses of Lords and Commons are deluged with official papers, and during the busy part of the session a member of the Lower House, who has any business to attend to, has quite enough to do in digesting the single bundle known as "votes and proceedings" daily. The printed papers and MS. memoranda laid before members of the School Board at their meetings, some of them having been posted previously, are in themselves, and in their indications, sufficiently conclusive evidence that the members of the Board, if they attempt the faithful performance of their multifarious duties, must expend a large portion of their time in their attention to the principles and details involved in the development of the vast educational machinery intrusted to their direction. To take a few illustrations; on a certain date they are supplied with a printed copy of agenda for a Board meeting to be held a few days later. At the meeting they are furnished with a "revised paper of business," which includes,—Minutes of last meeting; reception of a deputation; report from joint committee of the works and school management committees; with motions and amendments; two reports from school management committee; report of works committee; report of special committee on the legal expenses of the Board; report of the bye-laws committee; report of the select committee on spelling reform; to consider notices and questions, (1) appointment and resignation of managers; (2) appointment of members of divisional committees; (3) general, embracing about a dozen resolutions upon different subjects; documents for seal; applications for transfer; correspondence; and, finally, to transact matters of emergency." The matters thus summarised embrace, with resolutions, amendments, and various details, fourteen pages folio of printed matter. The printed reports delivered to the members, in connexion with the "paper of business," sometimes amount to about sixty folio printed pages. Some of these are very interesting documents, and give rise to protracted discussions. In addition to the reports and papers already referred to, there are others, such as the reports of the Board's own inspectors, and those of the Government, with other documents that members of the School Board are expected to read and digest.

The onerous duties devolving upon the members of the Board, and the heavy demands that their discharge makes upon energies and time, are explanations sufficient of the retirement from the honour and responsibility of holding the office by Lord Lawrence, the Rev. Canon Miller, Mr. Samuel Morley, M.P., the Hon. and Rev. Aug. Legge, Mr. John Macgregor ("Rob Roy"), the Rev. B. Waugh, Mr. Hepworth Dixon, and many other members of the first two Boards, who would, it is almost certain, have been re-elected if they had offered themselves.

It is pleasing to notice that in the Board meetings no trace is apparent of the acrimony engendered in candidates of different views during the election contests. The spirited opposition with which they encountered each other during the struggle in November has been succeeded apparently by cordial amity at the Board, and hearty co-operation in such matters pertaining to their respective divisions when they can conscientiously agree.

The members of the London School Board have well earned their holiday, and there is no one who knows anything of the heavy work they have gone through, and the sacrifices that they have made in the public service, who will withhold the hearty wish that they may thoroughly enjoy it.

CRYSTAL PALACE ENGINEERING SCHOOL.

The fourteenth term of this school closed on Saturday last, when the certificates awarded to the successful students were presented to them in the Lecture Hall, in the South Tower of the Crystal Palace, by Mr. James Abernethy, vice-president of the Institution of Civil Engineers. The meeting was on this occasion unusually interesting, from several causes, amongst them that the number of students attending during the term, sixty-three, has been considerably larger than the number attending in any preceding term. The school started at the beginning of 1873 with nine students, that have increased, continuously and progressively, to more than four times that number.

In the drawing-office a number of graduated lessons are gone through; first, a drawing, in three views, of a 4-in. bolt, quarter size, tinted and shaded, with dimensions figured; weight calculated; the same to be tested with bolt in the weighing-machine. The time allowed for this exercise is one day. The second exercise is upon a wrought-iron plate, with lap and butt joints; with single and double fillets, ordinary snap and countersunk rivets; tinted, sectional, and shaded; strength for shearing to be calculated at 37,500 lb. per inch, sectional area. Time allowed one day and a half. The third exercise in the drawing-office is to draw a 6-in. plummer-block, half size; three views tinted and shaded, with proportions written in. Weights of cast iron, wrought iron, and brass to be calculated. Time allowed two days. The fourth exercise in the mechanical drawing department is to draw a connecting-rod with one marine end and the other strap; three views, tinted and shaded, have to be given, as also weights of wrought iron and brass; tensile strength of rod; power to resist compression; power required to shear off gibs and cotters; and cost. The time allowed for this exercise is three days. The last exercise of the preliminary course of drawing, for the whole of which Mr. Wilson, the principal, considers eleven days sufficient, is to make a complete set of sketches, general and in detail, of

the 6 in. parallel vice, and to prepare a lineal drawing of the same; this subject in three views, and appended a calculation of the strength of grip with a pressure of 28 lb. From these exercises the students are carried to higher departments, and more important works in mechanical and also in civil engineering; their course including specifications, quantities, and estimates for costly machinery of various kinds, harbours, railways, bridges, piers, warehouses, docks, &c.

On this occasion, as on all others that have preceded it, the chairman, Mr. Abernethy, spoke in the highest terms of the value and manifest efficiency of the school, and complimented the principal in high terms.

The examiners were Messrs. Henry Law and William Dempsey, members of the Institution of Civil Engineers, whose report was read by Mr. Shenton, Superintendent of the Art, Science, &c., Department of the Crystal Palace Company.

The lectures for the term were on "Railway and Dock Work." Thirty-four students attended the lectures, of whom twenty-three were eligible for examination, and seventeen passed satisfactorily. The highest number of marks attainable was formerly 232; it is now 242. F. J. Scott was first with 215 marks; C. H. Clarke, second, 195 marks; and L. S. M. Marsh, third, 191 marks. In the drawing-office F. J. Scott was first; C. H. Clarke, E. Hott, and P. H. Naftel equal seconds. Six other students were awarded certificates for drawing. For work in the pattern-shop seven students were awarded certificates,—F. E. Fuller first, C. W. Carrington second, W. A. Fenton and W. Hewett equal thirds. For work in the fitting-shop, thirteen certificates were awarded,—G. F. Hardy and W. S. H. Hutton, firsts; A. Pine second; J. S. Boyer, third. In the Civil Engineering Section for General Surveying and Preparation of Plans, Sections, &c., for Parliament, eight certificates were awarded,—G. S. Firth and L. W. Toms, firsts; H. H. Lake, second; W. U. Wollaston, third. For the calculation of strains and the preparation of general and working plans, specifications, and estimates of a railway and dock, four certificates were awarded,—S. R. Lowcock, first; C. W. James, second; H. V. R. Read, third. Each of the seventeen students who had certificates for lecture questions had a second for work in a special department.

THE MAIDEN WAY.

When I was at Gilsland, A.D. 1873, I walked to Bewcastle, as a Sabbath-day's journey, hoping to see the late incumbent, the Rev. John Maughan; but his illness prevented his seeing visitors, or performing the church service. Antiquaries are indebted to him for the trouble he took in the investigation of the Roman road. This Way, according to his idea, led from Birdoswall Station to Castleton. In vol. xi. of the "Archæological Journal," A.D. 1854, Mr. Maughan's survey of the Maiden Way from the Roman wall into Scotland is contained in four sections, pp. 1-22, 124-135, 217-235, and 345-52. These sections include six maps, illustrating the Maiden Way, the ground-plan of the Cross, being an ancient fortress near the Way, an engraving of a bronze spear-head, found near the camp graves, 10½ in. in length, and one of the cairns, now destroyed, consisting of five ridges of stones or barrows, about 150 yards long and one yard deep, having the appearance of terraces rising above each other, running parallel from north to south. Plan or map 1 traces the Way from Birdoswald to the river King, in a north-west direction, crossing the Gilsland-road, — 3,200 yards. Plan 2 traces the Way from the river King through Spade Adam, by the relics of a mile-castle to little Beacon Tower, 4,000 yards, in a north-west direction. About 450 yards west of the tower are the remains of a beacon, and a quarter of a mile north-west are the foundations of a tower, destroyed some years since to build adjoining fences, and both of these edifices are planned (p. 15). Here, and from the tumulus a quarter of a mile westward, probably the grave of some "Tower Brow Chieftain," I observed an extensive prospect, north and south, when returning from Bewcastle. Beacons were ordered to be raised A.D. 1296, when the office of Lord Warden of the Marshes was appointed. Plan 3 shows the Way, going north-west to Brown Knowe; half a mile further is a cairn, 20 yards in diameter. From Brown Knowe, the Way leads to the river Kirkbeck, 2,400 yards, crossing the White Beck River, about 1,200 yards from Brown Knowe, and proceeding N.E. to the Kirkbeck. At the side, east of the Way, about half a mile from Brown Knowe, is an old ruin, possibly the remains of a mile-castle, 18 yards square. The ruins of an ancient pistrina are near the side. In plan 3 it appears that at three-quarters of a mile from Kirkbeck another way turns westward—477 yards,—when it goes north-west to the Kirkbeck river, close to Bewcastle; and farther north-west to Tinniehill, N.B. Bewcastle Station is one mile and a quarter west of the Way, as it crosses the Kirkbeck in its north-east route,—2,000 yards to Greyhill. About a quarter of a mile before reaching Greyhill, the Way turns northward to White Lyne River,—nearly 4,000 yards, and this is shown in plan 4.

On the right of the Way, 530 yards from the Kirkbeck, are the relics of Braes Tower, an ancient stronghold, covering nearly an acre of land. On the left of the Way an ancient road is noted at this point; and at the distance of 3,080 yards from the Kirkbeck the Crew Tower is seen possibly a mile-castle, which covered land 70 yards broad from north to south, and 40 yards from east to west. The Way, according to plan 5, crossed White Lyne river, northward, to Black Lyne river—3,400 yards—leaving Christianbury Crags to the east, and, further on, The Cross to the left, about 800 yards from the Black Lyne. Crossing the Black Lyne, the Way proceeds to Green Knowe mile-castle,—2,600 yards. The Way passes Catslack Crags, on the left; a mile-castle on the left, and a tower on the right about 4 yards square. On the left is the stone to the memory of Davidson, Sir James Graham's gamekeeper, here murdered on November 8th 1849. From Green Knowe the Way crosses the Kershope river, as is shown in the plan 6, at the distance of half a mile, entering Scotland. It proceeds to Castleton—4,800 yards—in a north-east direction to Tweeden Burn, and then to Castleton, leaving Clintwood Tower to the right, in a north-westerly direction; and going subsequently to the Roman road which went from Netherby to Eildon or Tremontium, according to Mr. Maughan's idea.

Taking the scale of 800 yards to an inch, the whole extent of the Maiden Way from Birdoswald to Castleton appears to have been fifteen miles, viz., 6 miles and 90 yards to the Kirkbeck; 8 miles and 1,600 yards to the White Lyne river, and 3,420 yards farther to the Black Lyne river,—10 miles and 1,503 yards. Another mile and 1,440 yards, making 12 miles and 1,180 yards from Birdoswald, conducts to the Kershope river, from which place the distance is 4,720 yards to Castleton, or 15 miles 620 yards from Birdoswald. Mr. Maughan's step measurement agrees nearly with mine with a scale, as I make the whole distance rather over 15 miles. His articles and plans should be reprinted for the use of pedestrians, &c.

There are other interesting facts to be mentioned with reference to Bewcastle and the Maiden Way. Mr. Maughan regarded the Way as forming part of the great chain or network of roads which extended from the wall of Antoninus, between the Firths of Forth and Clyde, to Jerusalem. He deemed the term of Maiden Way to be synonymous with Highway. This one may have been formed originally by the Celts, joining the ancient before-mentioned Roman road, "which is supposed to have run between Netherby and Trimontium or Eildon," near Melrose. Hutchinson (History of Cumberland, vol. i., p. 63) stated that this way passed "through Carvorran to the east of Bewcastle due north nearly, and entered Scotland near Lamyford, where" (Mr. Hutchinson stated) "it crosses the River Kirksop." The Celts or British, by digging two parallel ditches, and casting the earth between them, may have raised the Way, calling it the Maiden road. The Romans probably completed it. The author of "Salopia Antiqua" suggests "Mad," and "Madien," as the interpretation of Maiden,—an eminence or elevation. Bewcastle Station, hexagonal in form, on an eminence, occupied six acres of land. Roman relics have been found here, including Samian pottery and a gold ring with a brilliant. The Rev. J. C. Bruce, in his "Wallet Book of the Roman Wall," observed that the Maiden Way, which came up to the south rampart of Carvorran, seems to have proceeded northwards from the station right over the hills, past Bewcastle, and so into Scotland. On the top of a distant hill, called Cillalees Beacon, due north, a small cairn-like object may be discerned in favourable weather. This is the ruin of a Roman watch-tower, by the side of the Maiden Way, between Birdoswald and the river King-Water. The traces of the road are somewhat dubious; but after crossing this river and coming to Ash Fell, a strip of the Way is met in a nearly perfect state. Having once fallen in with the road, the antiquary may, without much difficulty, trace it nearly to Bewcastle. Beyond this place its course is dubious. In the 6 in. to a mile Ordnance map of Cumberland, portions of this Way are traced, where I saw it near Spade Adam, as stated in the *Builder*, No. 1791, in my notes upon the "Roman Wall." As to this relic, in Knight's "Pictorial England," vol. i., pp. 51-53, views of it as it appears near Housesteads and Denton-green are contained. At p. 110, London Stone, a Roman relic, is engraved. In the "Archæologia," vol. xiv., and in Lysons's "Magna Britannia," vol. iv., p. 198, and in the *Gentleman's Magazine*, vol. xii., p. 319, views of Bewcastle Pillar are engraved, and the characters upon it are described, according to the ideas of the interpreters. Mr. W. Howitt, in his "Stroll along the Border" (1851), visited the remains of the Roman wall, &c., near Chollerford, where there is a railway station. It is reached easily from Hexham. In the tale of "Guy Mannering," chap. xxiii., reference is made to the Maiden Way, as "a sort of rugged causeway, the remains of an old Roman road," which Dinmont and his companion on horseback followed in a due northerly direction, at the rate of nine or ten miles an hour, to reach Dinmont's home in Liddlesdale.

In conclusion, I extract from this tale this truthful sentence with reference to the Romans, viz.,—"What a people! whose labours, even at the extremity of their empire, comprehended such space, and were executed upon a scale of such grandeur! In future ages, when the science of war shall have changed, how few traces will exist of the labours of Vauban and Cohorn, while this wonderful people's remains will even then continue to interest and astonish posterity. Their fortifications, aqueducts, theatres, fountains, all their public works, bear the grave, solid, and majestic character of their language; while our modern labours, like our modern tongues, seem but constructed out of their fragments." Doubtless, Sir Walter Scott had visited Birdoswald and Housesteads,—the British Tadmor. C. C.

THE TEMPLE AND WELL OF THE GODDESS COVENTINA.

NEWCASTLE SOCIETY OF ANTIQUARIES.

At the last monthly meeting of this Society, Mr. John Clayton read a long and interesting paper on "The Temple and Well of the Goddess Coventina." He remarked that at the December meeting of the Society, a paper was read descriptive of a well, or receptacle for water, and its multifarious contents, which had been discovered in the month of October preceding, near to the station of Procolitia on the Roman Wall, and which well, from its contents, was supposed to have been within a temple of a water goddess, bearing the name of Coventina, a divinity which had not previously been known or heard of. The object of that paper was to present to the Society an accurate statement of facts, and to invite the expression of the views and opinions of antiquaries and scholars on the subject. The invitation so given has been largely accepted, and during the present summer the remains of the temple in which the well is placed have been exhumed. The wetness of the winter and spring has delayed till this month the completion of the excavation around the well. The result of that excavation is to confirm the conjecture that the well had been placed within a temple. The outside walls of the temple have been found standing to some extent, which puts us in possession of a perfect outline of the building. By whom was this temple of the Goddess Coventina founded? It certainly was not founded by the native Britons, for at the time of its foundation—which will be found to be tolerably certain—a few years only had elapsed since "wild in woods the noble savage ran." The views and appetites of the ancient Britons at that time would be altogether mundane, and they would be most unlikely to give any of their attention to an invisible goddess. So euphonious a name as Coventina would scarcely occur to the gallant Dutchmen, of whom were composed the rank and file of the 1st Batavian Cohort, which formed the garrison of Procolitia; and, moreover, being troubled at home with a superfluity of water they

would have no predilection for a water deity. The founding of the Temple of Coventina must be ascribed to the Roman officers of the Batavian Cohort, who had left a country where "the sun shines every day," and where, in Pagan times, springs and running waters were objects of adoration. The next question which arises, viz, the derivation of the name of the Goddess Coventina, admits of a variety of opinions. The goddess was a local goddess, and her worship has been confined to the locality. No altar has been raised to her divinity elsewhere than at Procolitia; the root of the name might, therefore, be expected to be found in some local object or event, and found in the Celtic language. Dr. Wake Smart, of Cranbourne, suggests a Celtic (or Keltic) derivation from "Gover," in the Celtic language "a rivulet or head of a rivulet." He adds that the initial letters G and C are often interchangeably used, and that Roman ingenuity has supplied the rest of the name. Dr. Hooppell (strong in Celtic lore) takes a different view of a Celtic derivation. "Cof," pronounced "Cov" in the Celtic language, means "memory"; and "Cofen" in that language, pronounced "Coven," means a "memorial." The temple might have been reared in memory of some event. Mr. Carr-Ellison, in a very learned paper read at a meeting of the Society on the 6th of February last, suggested a Greek derivation for the goddess. Mr. Roach Smith contributes a suggestion that the goddess derived her name from the Convenæ, a people of Aquitania, in Gaul, inhabiting a country abounding in springs and rivulets. The 1st Cohort of the Aquitani was part of the forces employed in building the Roman wall, and has left in the station of Procolitia a record of its presence there. From another source we receive a suggestion that the Roman officer who took the lead in the creation of the goddess and her temple might possibly have named the goddess after some divine creature, the object of his adoration in Italy, who had declined to share his lot amongst the barbarians, *divisos ab orbe Britannos*, but to whom he continued devoted. None of these suggested derivations can be considered as conclusive, and the derivation of the name of the goddess may, without inconvenience, remain an open question.

The date of the foundation of the temple may with tolerable certainty be assumed to be the reign of Antoninus Pius. That emperor, though he protected from persecution both the Christians and the Jews, was devotedly attached to the ancient religion established in his country, and was, in fact, a sincere and devout Pagan. It is natural that the spirit of the Emperor should be infused into his subjects, and that Titus Domitius Cosconianus, the military prefect in command of the garrison of Procolitia, should be minded to erect a Pagan temple in a new country. In the selection of a divinity and a site for the temple, he probably had the assistance of the Pagan priests. The site fixed on was a wooded glade, through which flowed a copious stream of pure water, and the divinity selected was a water deity. Thus rose from earth the Temple of the Goddess Coventina. It was built of stone, and by inside measurement measured 40 ft. by 38 ft. The recent excavation has unearthed the lower courses of the outer walls of the temple, which are 3 ft. in thickness. In the middle of the space enclosed by these walls is placed a well of substantial masonry, measuring in the inside 8 ft. 4 in. by 7 ft. 2 in. Its depth is at present 7 ft., but it has originally been deeper, as a higher course of stones has evidently been removed, and the floor of the temple has evidently been higher than the present level of the ground. This must be ascribed to the wearing away of the soil by a constant stream of water flowing down the valley. The well on the outside is cased with clay of the thickness of about 2 ft., the effect of which would be to render the well watertight. The depth of the well, as well as its structure, would seem unfavourable to the supposition that it was intended for, or used as a bath. Inside the walls of the temple would be placed the votive tablet to the goddess, recording the name and rank of the dedicator. Around the temple and within its walls, no doubt, were ranged, as in the case of the Goddess Sequana, the altars inscribed to the goddess by individual worshippers, and the priests seem to have kept in store in the temple a collection of blank altars, some wholly and others partially filled, ready to receive the dedication of devotees. The temple having been thus established seems to have prospered, and the priests to have flourished. Offerings came in, altars were inscribed and dedicated, and love-sick damsels cast into the well their spare trinkets, in the hope of obtaining the countenance of the goddess in their views. To these it seems pretty clear that we are indebted for the brooches, rings, and beads found in the well. The waste of current money by throwing it into the water must have been most unsatisfactory to the Pagan priests, and is the most difficult feature with which we have to deal. It did not take place in the case of the Goddess Sequana; it did not take place at Bourbonne-les-Bains, where the coins of four centuries, evidently the fruits of innumerable offerings, were found collected in a vase, but it did take place in rivers and lakes,—the Clitumnus, the Nile, and the Lake Corzio,—and it did take place in the Acque Apollonari, but 400 years before the birth of Christ. The opening of this temple of the Goddess Coventina, in the reign of Antoninus Pius, would no doubt attract devotional offerings of money, which might possibly escape the grasp of the Pagan priests, and be thrown into the well. To this circumstance may partly be ascribed the collection of coins found in the well. This notion is favoured by the circumstance that we find amongst them coins of the 3rd Consulate (A.D. 140), and of the 4th Consulate (A.D. 145), of Antoninus Pius, which have never been in circulation. The temple and the worship of the Goddess Coventina seem to have been maintained for more than two centuries and a half. In the reign of Constantine the Great the Pagan religion received its first heavy blow; but Constantine was no theologian, and introduced the Christian religion into the Roman army simply from motives of policy, as he found his Christian soldiers more reliable than the Pagan. The temple stood and the goddess flourished during the reigns of the succeeding emperors, including that of Gratian, with whom the collection of coins found in the well terminates. There are found none of the coins of Magnus Maximus, issued during his usurpation of three years. In the year 386 the edicts of Theodosius, for the extirpation of the Pagan superstition in the Eastern Empire, were extended to the Western Empire. The temple of the Goddess Sequana was sacked and burnt, and the altars and objects of sculpture in it were broken and defaced. The priests of the Goddess Coventina seem to have foreseen the approaching storm, and to have saved from desecration the votive tablet and altars in the temple, including a dozen blank altars prepared for the purpose of receiving inscriptions, by depositing them for concealment in the well: there is not a fracture or scratch on any of them, and amongst the altars so deposited were carefully placed two votive vases of fragile materials and delicate workmanship, which are quite undamaged. At the same time, and with the same object, it is assumed that the Treasury of the Temple, including the mass of coins of the lower empires, found at the top of the deposit, would be placed for safety by the priests, who probably were glad to escape with their lives.

CYCLOPEAN FORTRESS ON THE ISLAND OF SAMOTHRACE.

I have just completed the route taken by M. Choiseul-Gouffier, as described by him in the *Voyage Pittoresque*.

There being no established means of communication to many of the islands, the only way was to have a yacht at my disposal, and I engaged a Greek one. My great object was to visit the islands he had passed by, which are little known to modern travellers, especially the northern islands on the coast of Thrace. I made ascents of the mountains, and in particular the difficult one of Samothrace, and reached the summit, in splendid weather for the view. The grand point of interest in the island has not, I think, been described in published travels. It consists of a magnificent cyclopean fortress. The gateway and adjacent walls average 30 ft. in height; the damaged walls are still from 5 ft. to 20 ft. high; the long walls are probably the earliest examples of such constructions; they extend from the sea nearly half a mile up the mountain. Of these, large portions are prostrate. The style is quite as rude and primitive as that of Tiryns, and clearly older than Mycenæ. The stones average the size of those of Tiryns. I measured several 7 ft. long. The area enclosed is large. There has been a cyclopean bridge like that of Mycenæ. The walls are not less than 10 ft. thick in any part. I send a plan, and a drawing of the gateway; it is 45 ft. long inside, and 10 ft. wide. In front of it is a much more recent Hellenic platform. Samothrace is referred to by Homer and Diodorus Siculus. Plato, Pliny, and Strabo mention the inundation of these islands by the irruption of the Euxine. Samothrace was the seat of the mysteries of the Cabeiri, in which Philip of Macedon and his wife were initiated. I forbear description, because of the value of your space.

The plan, of course, is not to scale. If it were, a fine hair-line would show the thickness of the walls, and would convey little.

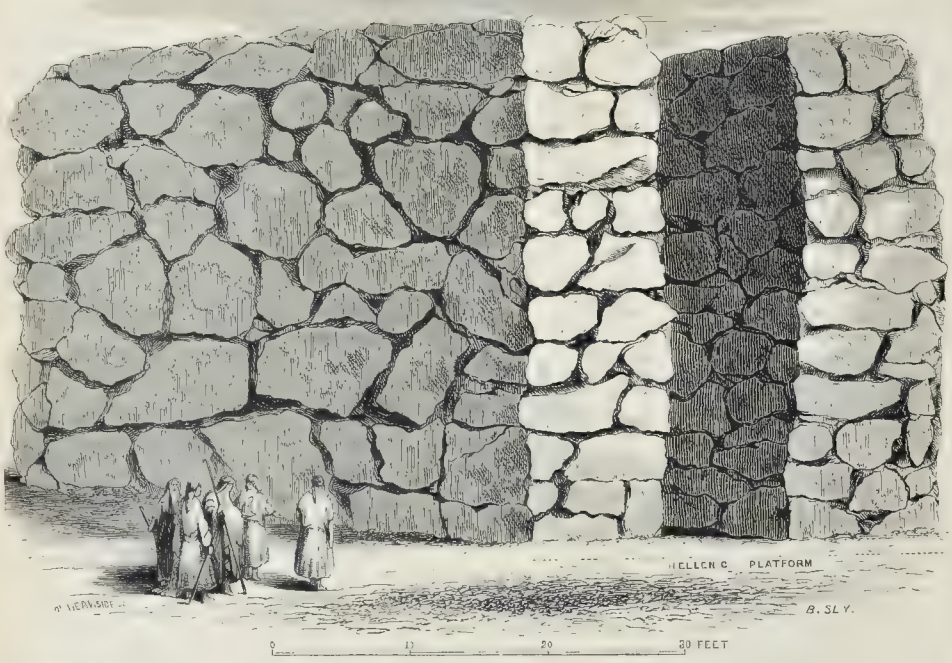
Athens. John S. Phené.

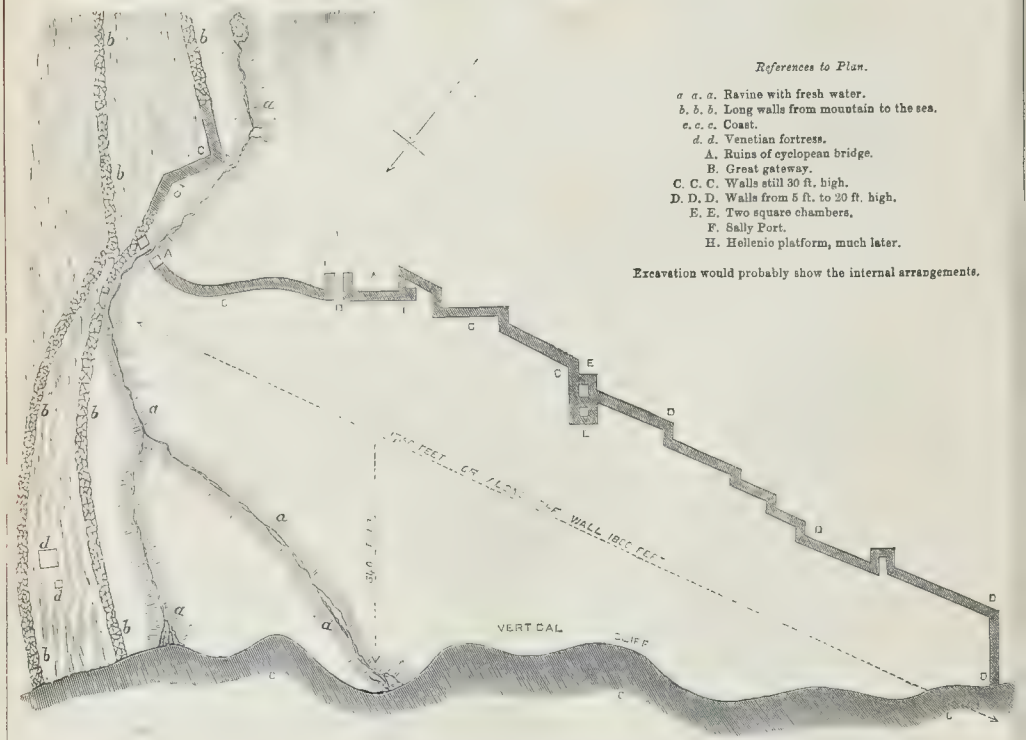
*** Until quite recently this most curious island, Samothrace, was, as Dr. Phené supposes, unexplored. Murray's "Dictionary of Greek and Roman Geography" speaks of it as such. In 1873, however, and more particularly in 1875, the Austrian Government sent an expedition for scientific purposes to the island, and many remarkable remains were discovered, including the most ancient mystery temple in archaic Doric style, remains of later Greek temples, proved by an inscription to have been erected 286—246 B.C., and sculptured figures. Some of these remains were taken to Vienna. We are not aware that the walls of the old town of Samothrace, now illustrated for us by Dr. Phené, have been figured before. They are amongst the oldest and most remarkable of Cyclopean works. Having a dangerous coast without anchorage the island is seldom visited, even by fishermen. Pelasgians are said by Herodotus (ii. 51) to have first inhabited the island and to have introduced the mysteries.

CIVIL SERVICE SUPPLY ASSOCIATION: NEW BUILDINGS, BEDFORD STREET, COVENT GARDEN.

An extensive and costly building erected for the Civil Service Supply Association was opened on Monday last for business. It stands at the corner of Bedford-street and Chandos-street, Covent-garden. The Bedford-street frontage, which is the principal elevation, extends about half the length of the street in the direction of the Strand. The materials are red Suffolk brick, with Mansfield stone dressings, and a free introduction of terra-cotta work for ornamentation, so that the colour of the whole is red. The windows on the first floor have ornamental pilasters in terra-cotta on each side, and are surmounted by pediments, also in terra-cotta. At each angle of the elevation there are fluted pilasters in terra-cotta, surmounted by carved capitals, carried up to the top of the second-floor windows, and there are similar pilasters at intervals throughout the entire length of the elevation. Immediately above the second-floor windows is an architrave in Mansfield stone, above which is a frieze in terra-cotta, containing festoons of fruit and flowers, surmounted by an overhanging cornice in Mansfield stone. Above this is the third floor, with terra-cotta pilasters between the windows. There are two entrances to the building, one at the south boundary of the Bedford-street frontage, and the other at the angle of Bedford-street and Chandos-street. Each entrance has Mansfield stone pilasters on either side, with corbels supporting a massive pediment in Mansfield stone. The Chandos-street frontage is uniform in design with that in Bedford-street, and it has a dormer in the centre of the roof above the third floor, uniform with others in the Bedford-street frontage. The works have been carried out by Messrs. Lucas Brothers.

Is it the Architect's Fault?—The London correspondent of the *Manchester Guardian* mentions, as an instance of want of forethought on the part of the architect of the new Government buildings at Whitehall, that there are suites of commodious rooms running round the top of the building in which clerks cannot work, because the only light is that of a lunette on a level with the floor, and hence below the desk of a writer. Some of these rooms, it is alleged, are now wanted for the ordinary business of the departments, and it has been suggested to utilise them by piercing the roof and inserting skylights. Those to whom architects are always "fair game" are making much of this statement, but what is it worth? If it be true that rooms only intended to serve as attics or lumber-rooms are being used as offices, the blame will probably be found to rest with the Government.



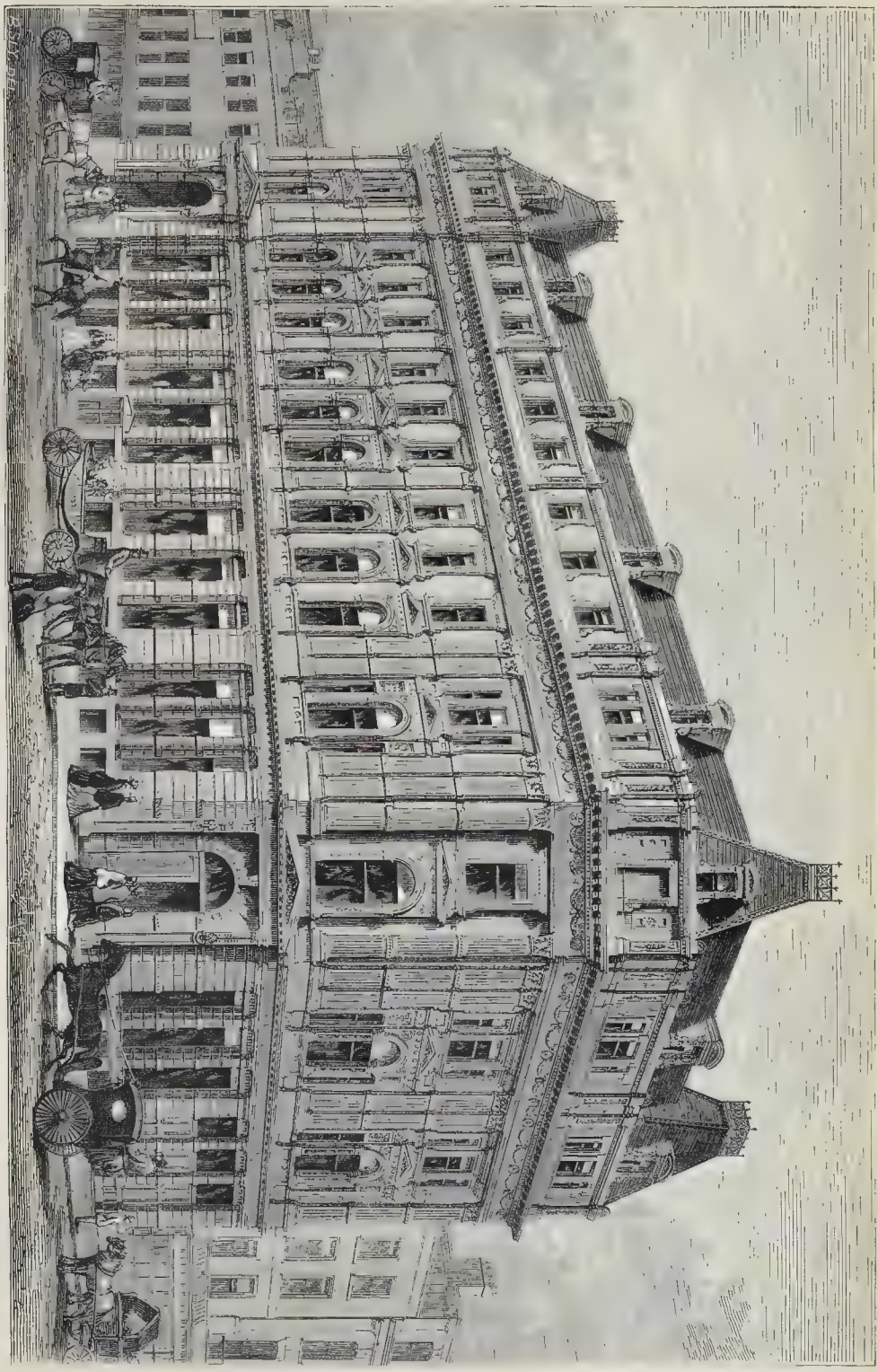


References to Plan.

a a. a. Ravine with fresh water.
b. b. b. Long walls from mountain to the sea.
c. c. c. Coast.
d. d. Venetian fortress.
A. Ruins of cyclopean bridge.
B. Great gateway.
C. C. C. Walls still 30 ft. high.
D. D. D. Walls from 5 ft. to 20 ft. high.
E. E. Two square chambers.
F. Sally Port.
H. Hellenic platform, much later.

Excavation would probably show the internal arrangements.

CYCLOPEAN FORTRESS ON THE ISLAND OF SAMOTHRACE, ON THE COAST OF THRACE.



CIVIL SERVICE SUPPLY ASSOCIATION: NEW BUILDINGS IN BEDFORD STREET, COVENT GARDEN.—MESSRS. LOCKWOOD & MAWSON, ARCHITECTS.

ROYAL ARCHÆOLOGICAL INSTITUTE AT HEREFORD.

Hereford was this year selected as the scene f the Archæological Institute's annual meeting. he proceedings commenced on the 7th inst., hen the members were formally received and resented with an address, on behalf of the Mayor and Corporation. The president of the eeting (the Bishop of Hereford) then made his naugural address. Disclaiming all pretentions o archæological knowledge, the bishop confined is remarks to welcoming the members of the nstitute to his cathedral city, and to a running ommentary on the picturesqueness and interest- ng associations of the places to be visited. The rmal proceedings concluded, the visitors were ntertained by the Mayor at a *déjeûner* at the reen Dragon Hotel.

In the historical section, presided over by Mr. ambier Parry,

Sir Gilbert Scott read a paper on Hereford athedral, in the course of which he said

was only reasonable, when their annual atherings were held in a cathedral city, that e cathedral should be the leading object, for e fact was that the architectural history of the thedrals of the country formed the first page the national history of architecture. There- re, when such a great society as this sum- oned its synod under the shadow of those great rpical edifices, it was naturally expected that ere would be a full investigation and elucida- on of the architectural and antiquarian history the cathedral. Such was the case when they d a Willis for their leader, and his monographs Canterbury, York, Winchester, and other athedrals had given world-wide celebrity to e Institute. He wished, therefore, that illis's mantle, as well as his duty, had fallen on him (Sir Gilbert) on this occasion. Having, wever, undertaken the task of investigating the story of Hereford Cathedral, he was not long discerning that he had undertaken a most fficult one. In giving the history of a great ilding, it was sometimes the case that the ficulty arose from too great an abundance of formation, — an *embarras de richesse* o storical facts,—and such he dared say was the se when that prince among those who under- ok such tasks, Professor Willis, compiled his rivalled architectural history of Canterbury thedral, for in that case the most important rts of its history were so fully and accurately roniclcd that Professor Willis must have found ficulty in condensing the materials, rather an in searching them out. At Hereford the se was very different, for here they found most a nullity of historical information in gard to the building, except what was indirect d uncertain. He had to search, therefore, in ery conceivable direction for such mere waifs and strays" of history as might suggest esses or theories, or furnish excuses for them, hich it was impossible to prove or test. In iting on Hereford Cathedral, in 1841, Professor illis said:—"It is much to be regretted that e period of no one part of this cathedral has en recorded, with the exception of its front ndation." How, then, could he (Sir Gilbert), o was no investigator of antiquarian docu- nts, venture to give the history of a structure builders of which, and those who were eye- nesses of its erection, had neglected to record at they did and what they said? But having epted the task, he begged their considera- n of the difficulty he had met with, for very paucity of information had increased labour of seeking it, and poor as was the ult, he should be ashamed to tell them the e and labour he had devoted to the task. eir sister society, the Archæological Associa- n, had been before them on this ground, and a per had appeared in the journal of that Asso- tion, written by Mr. Gordon M. Hills, which peared to have so nearly exhausted the docu- ntary information within reach, that he should, h the writer's permission, make free use of it, ding such information as he might have picked elsewhere. The see which now took the ne of Hereford dated from very early times, d it was likely enough that there was a church some importance here so early as Offa, the at king of Mercia, who treacherously mur- ed his son-in-law—or intended son-in-law— elbert, king of East Anglia, somewhere here- nts, in the year 793, for the purpose of adding kingdom to his own. Hereford was then wn by the name of Fernleigh, and the body King Ethelbert was brought here for re- rment by a pious noble named Brithfrid.

About 830 the church was rebuilt in stone by Wilfrid, ruler of Mercia, in honour of the now sainted Ethelbert, and about two centuries later it was rebuilt by Bishop Athelstan, in the time of Edward the Confessor. Athelstan's cathedral was, however, but short-lived, as it was burnt in 1056 by Griffin, the Welsh king, or Bruce, who slew Leofgan, the bishop, and many of his clergy. Leofgan was succeeded by two natives of Lorraine. The first was Walter, nominated by the Confessor, and the second was Robert, appointed by the Conqueror. Robert of Lorraine, commonly called Lozing, a corruption of Lotharingus, was consecrated in 1079, and he held the see sixteen years. He undertook the reconstruction of the cathedral, which had lain waste since the invasion by King Griffin, and he was said by William of Malmesbury to have built it of a circular form in imitation of the Basilica of Aix-la-Chapelle. Now, they knew something of the church he chose for his model. It was a round or polygonal plan, imitated, as it was said, from the Church of San Vitale, at Ravenna, which had about the year 550 been erected by Justinian, possibly in imitation of the temple of Minerva Medica at Rome, and, more probably still, of the Church of the Holy Sepulchre at Jerusalem. All those imitations were, however, but rough ones, and consisted mainly in the adoption of a round or polygonal plan. Charlemagne's church at Aix-la-Chapelle probably still existed, and was in ideal very similar to those built afterwards by the Templars in rough imitation of the Church of the Holy Sepulchre, which he probably had in his eye quite as much as that at Ravenna. But, however it was, the unfortunate fact remained that they had not in the Norman cathedral here at Hereford a trace or a suggestion of any of those buildings, and if Robert of Lorraine did really imitate Charles the Great's sepulchral basilica, his successors,—and probably Bishop Reynelm,—must have utterly obliterated his work. Reynelm held the see from 1107 to 1115. His reputed effigy bore what might be a model of a church, and his *obit* styled him as "*fundator Ecclesiæ Sancti Ethelberte*," which was altered in a later hand, and he thought erroneously, to "*Hospice*." Writers on the cathedral seemed disposed either to deprive him (Reynelm) of all claim as a builder of the cathedral, or to attribute to him the completion of the work began by Lorraine. Neither of these suppositions seemed to him (Sir Gilbert) agreeable to common sense. If Robert of Lorraine completed his design, or if Reynelm completed it, how was it that there was no vestige of anything agreeing with William of Malmesbury's description? Instead of that they had a church in a very straightforward Norman type,—apsidal, it was true, but less pronouncedly so than usual, and bearing no resemblance whatever to that at Aix-la-Chapelle. Again, the architecture was not of the earlier Norman type, but that of a more advanced period. Nor did Reynelm complete the cathedral, for they found that this was not finished until thirty years after. He (Sir Gilbert) therefore inclined to the belief that Robert of Lorraine only began the church, and that, being a German, he was proud to do honour to the Imperial basilica of his Fatherland; while Reynelm, who was probably a Norman, reverted to the manner of his own country. One could not but regret that Robert's church did not still exist, as it would have been quite unique among English cathedrals. Robert was a learned man in all the wisdom of his age. He was a poet, a mathematician, and learned in the stars and their influence on human affairs, and though intimate with Remigius, the builder of Lincoln Minster, with Walstan, who built that at Worcester, and probably with the builders of Gloucester, Tewkesbury, and other vast churches then rising, he perhaps scorned to follow in their wake, and gloried in imitating the basilica which overshadowed the great hero of his own race. Unhappily, what he had said was all they knew of the building of the Norman cathedral, excepting that it was not finished by Reynelm, but by his third successor, Robert Bethune, or Betun, who held the see from 1131 to 1148, and who having suffered, and his cathedral likewise, during the wars of King Stephen's days, lived to recover and repair the injuries incurred. The cathedral, then, throwing Lorraine out of the calculation, took forty years in building in its Norman form. The scheme of its design was, that its nave had eight bays of not unusual Norman type, supported by massive round pillars, to which double shafts were attached both to the north and south. The triforium was of moderate height and good design; the clearstory was somewhat lofty. The choir,—or rather the precentory, for the choir proper was beneath the central tower,—was of three bays, supported by piers, which were masses of wall rather than columns, and judging from the great pilastering upon their inner faces, he agreed with Mr. Gordon Hills that it must have been vaulted, which was very unusual at that time in churches of so great a span. It terminated eastward in an apse, not formed, as was so frequent, by the swinging round of arcade, triforium, clearstory, and aisles upon the altar as a centre, and uniting themselves together in semicircular continuity; but a separate and narrow structure, opening into the presbytery by an arch of moderate dimensions, over which the eastern wall returned in a square form. Each aisle also terminated in a smaller apse, and each of the three apses had its own separate roof. The transepts, of which one only remained, were of an ordinary type, without,—at least, the remaining one was,—the apsidal chapels which are so usual. He had elsewhere shown that three not distant monastic churches of Gloucester, Tewkesbury, and Pershore, followed a scheme peculiar to themselves, and displayed great originality of invention. There was no trace of that scheme at Hereford. He was not sure, however, whether the nave here was not more beautiful than that of its more original neighbour. The less lofty columns surmounted by a well-proportioned triforium and lofty clearstory, formed a more elegant composition than the exaggeratedly-lofty columns of Gloucester and Tewkesbury, which unduly stunted the upper stories of the nave, though it was possible that the two ranges of aisles in the choirs of those churches, running unbroken round the apse, and the continuous aisle with its apsidal chapels, may have produced a more pleasing effect than the non-continuous arrangement at Hereford. It mattered little, however, which looked the best. They displayed two quite different systems, each being good, and nobly carried out. They saw them now but in imagination, for all those churches had been so altered that the true effect was visible in none. He had said that the architecture of this cathedral was not Early but Advanced Norman. Its details in all the principal parts were decidedly rich in ornamental character, and very different from those of Remigius's work at Lincoln, at the consecration of which Lorraine would have been present had the stars been propitious; but no concurrence of stars could have rendered such details as those at Hereford possibly contemporaneous with those of the work of Remigius. He did not believe that a single stone of Robert of Lorraine's cathedral remained in its place. The great glory of the Norman cathedral at Hereford was its west front. It was probably the work of Robert de Bethune, and was consequently very late in style. What little Norman vaulting remained was without diagonal ribs. Possibly Bethune's work was otherwise, as that feature had become frequent in his day. At some time during the Norman period the great timber hall of the Bishop's Palace and the curious double chapel of St. Margaret were erected, and St. Catherine's which adjoined it. Bethune's successor was the famous Gilbert Foliot, but though he ruled here fourteen years, nothing was heard of him respecting the cathedral. Sir Gilbert Scott then referred to the great transition in Mediæval architecture during the time of the three successors of Bethune, and said that the next work done in the cathedral was the alteration of the east end by, probably, his fourth successor, William de Vere. De Vere reigned from 1186 to 1199, just the time of the two greatest transitional works in the West of Britain, those of Glastonbury and St. David's, so that he was more likely to have been the promoter of the work referred to, as it displayed some marked resemblances to both the splendid structures just mentioned. The older abbey at Glastonbury had been burnt in 1186, the very year of De Vere's accession at Hereford, and the next few years were devoted to the exquisite chapel of St. Mary, now known as that of St. Joseph of Arimathea, while the last decade of the twelfth century saw the rise of the unequalled Abbey Church itself. The chapel was more Romanesque in its character than the church, though both alike display a refinement of detail and workmanship, and an artistic sentiment, which it was impossible to excel. They were the right glorious contemporaries of De Vere's work at Hereford. The work was of a very fine transitional character, with a large supply of that rich semi-Norman decoration which characterised the two great works

alluded to; yet with other beauties derived from France, and with evidences, such as the great projection of the foliage of the capital, that it was not quite early in its style. The great alteration Sir Gilbert Scott alluded to was the entire removal of the three apses, and the substitution of an eastern aisle, supplying the deficiency in the first scheme of a continuous aisle or ambulatory round the apse, and the adding to that aisle eastward a range of chapels. The point most open to objection in De Vere's alterations was the blocking up of the fine eastern arch of the presbytery, by which the interior was deprived of its culminating feature without the substitution of anything in its stead, and the beauty of the choir was most seriously damaged. The re-opening of the arch was a work of our own age, and had done much to remedy the radical defect. They now arrived at the opening of the great thirteenth century, and here they had to start afresh with, if possible, still less direct information than they had hitherto found, though the church was rich in noble work of every part of the century; but every part was left to tell its own tale almost without even the suggestion of a date. He would pass over the mere guess that the first bishop in that century,—Egidius de Bruce,—built the central tower, the predecessor of that which now existed. It certainly was not the western tower, as some had supposed, for no such structure existed before the fourteenth century. First of all came the noble lady chapel. This was wholly undated and unappropriated by any founder. He had come to the conclusion that the lady chapel was somewhat early in its style, because the general details were not transitional, but developed Early English, and that a marked interval must have elapsed between the closing of De Vere's work and the beginning of the lady chapel. It was true that at Lincoln and St. Alban's they found developed Early English work at the very beginning of the thirteenth century, but where they had Transitional work of a very pronounced character up to the very end of the twelfth century they could hardly believe that the style at the same places suddenly changed without an interval. He would not, however, venture to assign it to any particular bishop. The bowing down of the vaulting upon the side walls, which necessitated the arcading over the windows, had an early appearance, but not so as to class it with transitional work. He should call it a fine design of the earlier period of Early English, though the details of the crypt seemed too late even for that. The next work was the clearstory of the presbytery. It was a specimen of very advanced Early English. The windows had what Professor Willis termed "plate tracery." It was not improbable that the original clearstory and vaulting had become damaged by the unsettling and sinking of the tower, for he could hardly otherwise account for their having gone to the expense and inconvenience of reconstructing so important a part of the building. The style and details of the clearstory were particularly elegant. They now arrived at a yet more marked era in the architecture of the cathedrals. The Pointed style made its *début* in the Transitional work of De Vere, and they came to the second transition—that from Early English to Decorated, or from First to Middle Pointed. The windows in the lady-chapel were strictly lancet-shaped. Those of the north transept, to which they now came, had bar tracery, that was to say, tracery pierced in all its little spandrels and corners so as not to look like a flat surface, but like the bending about of the mullions. This invention was the Magna Charta of Gothic architecture, setting it free from all the trammels of its earlier years. The history of the see about the period when this work was introduced was remarkable, and threw more perplexity than light upon the origin of the great work. It was held from 1240 to 1268 by Peter de Aquablanca, a turbulent foreigner, who came over in the train of William de Valance, half-brother to Henry III. Aquablanca was a favourite of the king, but hated by the clergy, and he was absent from England from 1259 to 1268 in the Holy Land. In 1264 the king, passing through Hereford, found there neither bishop nor clergy, and the church in a ruinous state. He was enraged, and reprimanded the bishop, and threatened that if he did not quickly return and mend his manners he would take the temporalities into his own hands. Aquablanca returned, but only to be taken prisoner and robbed of his wealth by the insurgent barons. He was imprisoned at Ordelay, and he died in 1268. If Aquablanca built the beautiful transept it was difficult to imagine how he came to have the will or the time to do so. Yet that he had a hand in it was certain. His exquisite tomb, which they might be sure nobody would have erected but himself, bears so close a resemblance to the architecture which overshadowed it as to leave no doubt that they were by the same hand. Sir Gilbert then proceeded to point out that the tower was not all built at the same time. He concluded that the work of the lower part of the transept was carried out by the dean and chapter in Aquablanca's time, and that it was completed by the two succeeding episcopates, somewhere about 1288. The great faults of the design were the straight-sided form of the arches and the thinness of the details of the triforium, but with those exceptions it was an exquisite architectural design. Sir Gilbert next referred to the shrine of St. Thomas de Cantilupe, and its translation from the Lady-chapel to the Chapel of St. John the Baptist in the aisle of the new north transept, which was partly, he dared say, built by himself, but not until then completed, remarking that they might rest satisfied that it was the *bonâ fide* shrine of St. Thomas of Hereford.

In the afternoon there was service in the Cathedral, and in the evening the Bishop and Mrs. Atlay held a reception at the Palace.

On the 8th inst. there was an excursion to Ludlow and Leominster.

The annual business meeting of the Institute was held on the 9th inst., Lord Talbot de Malahide presiding. The annual report (read by Mr. A. Hartshorne, the secretary), after alluding to the flourishing condition of the finances of the Institute, expressed the regret of the Council at the exceptionally severe losses which the Institute had sustained by the deaths of Mr. Joseph Burtt (the late secretary), Mr. Edmund Sharpe, and Dr. Matcham. The report having been adopted,

It was resolved that next year's meeting of the Institute be held in Northampton.

Later in the day a visit was paid to All Saints' Church (which was described by Sir Gilbert Scott), the members afterwards inspecting the cathedral effigies, under the guidance of Mr. Bloxham. An excursion was also made round the town. Of these and subsequent proceedings we may give further particulars next week.

SUSSEX ARCHÆOLOGICAL SOCIETY.

The Sussex Archæological Society held its annual meeting in Horsham and its vicinity on the 9th inst., the weather being, unfortunately, somewhat unpropitious. At noon, the members of the society and their friends, to the number of about 100, assembled in the Town-hall, where a loan-collection of antiquities had been got together. After examining the collection for some time, the company assembled for business purposes, and several new members having been elected, the Rev. W. Powell, of Newick, read a paper, in which he called attention to some passages in Domesday Book relating to the locality, and pertinent to the question of the antiquity of Horsham. In reading and hearing the remarks of others about the antiquity of places, Domesday Book, he observed, is constantly quoted, but when these quotations are compared with the original, and with the remarks of persons who have paid great attention to the subject, they are not always found to be satisfactory in the way of bearing out different propositions which they were selected to support. When Horsham came into existence is, as already noticed, a vexed question. There is a theory which fixes its foundation several centuries before the compilation of the Domesday Book; but the lecturer suggested that had the borough been in existence at the time of the Conquest, it was improbable that mention of it would have been omitted in the Domesday Survey. In offering this suggestion, he took the precaution of also pointing out that, in this respect, churches differ from towns. In his introduction to the Domesday Book, which is supposed to contain all the best information on the subject, Sir Henry Ellis reminded them that as the surveyors who were employed in this great national undertaking were not required to make returns of churches, churches not being mentioned in Domesday was no conclusive evidence or sign that they did not exist at the time.

Mr. Garraway Rice read a paper upon the rubbings of the monumental brasses exhibited by him. In view of the fact that the Rev. E. Turner had written a paper upon "The Brasses of Sussex," which appeared in vol. xxiii. of t Transactions of the Society, Mr. Rice devot his attention to the brasses in Horsham Churc first noticing that of Thomas Clerke, probably vicar, who died in 1411, and the special poi of interest about which was the exception arrangement of the vestments in which he w represented; and then alluded to the remains other brasses in the edifice.

The proceedings at the Town-hall were co cluded by the chairman submitting a letter fro Mr. Paul Harrison, with reference to the excav tions and discoveries at Cissbury, stating th a pit had been opened there last autumn, and explored as to present some features of conside able interest. The galleries in it are very e tensive, communicate with other shafts, a evidence a prolonged occupation, and precautio against surprise from chalk blocks.

Horsham Parish Church was next inspecte It is situated on a gentle slope above the Aru is surrounded by picturesque old houses, and h a beautiful avenue of chestnut and lime tre It, according to Miss Hurst's "Horsham, History and Antiquities," occupies the site of church of earlier date, the lower portion of t tower and a part of the north wall of which still remaining, the round-arched doorway, a the narrow windows with deep splays, whi have been discovered in it, being characteris of the Early Norman period. The tower adorned with grotesquely-carved heads, su ported by massive buttresses, and surmount by a broach spire, slightly off the perpendicul covered with shingles, which rises to the heig of 230 ft. Against this tower the present edi is said to have been erected about A.D. 1247, part, it is believed, through the munificence the nuns of the neighbouring convent of Rusp who were then in possession of the recto tithes. Part of the principal entrance was, 1307, a chantry chapel, which was designat the Chapel of the Holy Trinity, and was found by Walter Burgess, and endowed by him for t celebration of divine service daily for his so and those of his successors. In the fifteen century, the church underwent considera alterations, and till 1550 it remained a no edifice, "with fine Perpendicular windo carved screen, and richly-coloured ceiling; elegant chantry chapel on the north side, a an open oratory on the south, the walls pain with various designs, and the whole area un cumbered with pews or galleries." Decay disfigurement now succeeded; and ultimate in 1864, practical steps were taken to rest the building and adapt it to modern tastes a usages. This work of restoration was complet in 1865. The vicar, the Rev. J. F. Hodge pointed out the principal architectural featu of the church.

The company next proceeded to Cheswor which was the residence of a branch of t family of Lord William Braose, who landed w the Conqueror, and which at one time must ha been a substantial baronial mansion, with an ext sive manor attached. Edward I. and Edward took up their abode here when travelling throu this part of the country, and King John m have been an occasional visitor. Queen Eli beth is also said to have slept at the house.

Sedgwick Castle, which is situated about t miles and a half to the east of Horsham, w likewise visited. It is believed to have b originally an independent residence, and not appendant of any other castle. It appears have belonged to a family entitled Le Salva or the Savage, the early lords of Broadwater, having considerable possessions in the Rape Bramber. It stands upon a portion of the pari 150 acres in extent, but a deed of Edward shows that there was a park here of 400 ac and Sedgwick Park in 1608 is stated to h consisted of 62¼ acres. The form of the ca had been circular, the outer wall being ab 200 yards in circumference, and there hav been an outer and an inner moat. For about 4 or 5 ft. from the bottom of the inner fosse, walls are for the most part perfect; and in on the walls on the east side there is some curi herring-bone masonry, formed of tiles about thickness of common roof tiles, but much lar About 300 yards from the inner moat is a w constructed of large blocks of hewn stone, called the Nun's Well, and sometimes St. Ma Well. Other interesting facts concerning castle may be gathered from the Sussex Arch logical Collection, vol. viii.

After returning from Sedgwick, the p luncheed at the King's Head Assembly Roo The chairman, Mr. E. H. Hurst, in propo

cess to the Sussex Archæological Society," rked that it had existed for thirty years, vas one of the most popular and largest of unty archæological societies, and had col- a great amount of information, in twenty- volumes, now on their shelves, which would ry valuable to future historians of Sussex. so commended these annual meetings of the ty for the interchange of ideas, and it be, as had been the case that day, for the very of a "missing link" in some archæo- l treasure. The name of the Rev. W. ll, one of the hon. secretaries of the Society, oupled with the toast.

OMERSETSHIRE ARCHÆOLOGICAL SOCIETY.

e twenty-ninth annual meeting of this ty was held on the 7th inst., under the dency of the Hon. and Right Rev. Bishop rd, of Bridgwater. A temporary local um was arranged in the balcony of the -hall. Among other articles of note were nt manuscripts belonging to the Bridgwater oration. The proceedings opened with the cil meeting, followed by the general meet- which took place in the Town-hall, and was attended. Mr. Jerom Murch, the president he past year, at first occupied the chair, and few complimentary and eulogistic remarks roposed that the Hon. and Right Rev. op Clifford should be the president for the nt year. The motion was carried amidst al cheering, and Bishop Clifford (of Clifton) nducted to the chair.

r. C. J. Turner, one of the hon. secs., read eport. The Council called the attention of society to the resolution of the committee ioned in last year's report, recommending removal of the ruinous buildings in the yard of Taunton Castle. The Council now mmended the meeting to sanction the re- l of so much of these as were ruinous and fe. In conclusion, the Council referred with regret to the death of the Rev. T. Hugo Mr. H. D. Seymour.

e Bishop then gave his inaugural address, hich he spoke of the ancient history of gwater and its neighbourhood, stating that town, in old documents, was called Aqua . He also entered largely into the achieve- s of Alfred the Great.

r. F. H. Dickinson proposed a vote of thanks e Bishop, and, in an address of considerable h, he dwelt upon the greatly altered res of the district during the times his hip had passed in review, and the close eological research it required to arrive at ccurate conclusion with reference to them.

vote was unanimously carried, and the bers then accepted the invitation of the or of Bridgwater to a luncheon in the grand- room.

fter luncheon the members of the society ed the Church of St. Mary, and inspected altar-piece, a picture of the Descent the Cross, captured from a Spanish steer and presented to the town of Bridg- r. They also visited the house of Admiral e, the site of Bridgwater Castle, and other es of interest, and then went in a number of ks for a ride into the country on an excur- to Chisley-mount (Puriton), an old Roman ritish encampment, near which are still the ins of the old Roman road, and visited lzoy Church, where a prolonged stay was e while the visitors inspected every part of nterior, with its many features illustrative e ecclesiastical architecture of the thirteenth nry. The consecration crosses, of which e are so many illustrations in Somersetshire ches, also attracted notice, and explanatory rks were made by Bishop Clifford (the ident), the Rev. W. Hunt, Mr. F. H. inson, and others. Returning amidst con- d bright weather, the members and friends d together at the Royal Clarence Hotel. he evening there was a meetiog at the Town- when several papers on subjects of local est were read.

Luminous Paint.—A French chemist is to have succeeded in producing a paint which to illuminate the numbers of street at night. Figures traced with it shine so be read through the most profound dark- ; and the preparation of the compound is to be simple, inexpensive, and not injurious.

NEW MARKET BUILDINGS AND EXTENSIONS.

London.—The new Billingsgate Market was formally opened by the Lord Mayor on the 20th ult. The total area of the new market on the level of Thames-street is about 39,000 ft. super., as against 20,000 ft. of the former market. From the nature of the site, being the bed of an estuary or creek, it was necessary to excavate the soil,—a mingled mass of piling, river mud, cesspools, and refuse of all kinds,—to a depth varying from 30 ft. to 40 ft. below the present level of Thames-street. Advantage was taken of the dimensions of these necessary excavations to construct a lofty, airy, and fully-lighted basement about 24 ft. high, which has been in use as a shell and general fish market, and is applicable for other market purposes, should overcrowding on the level of Thames-street render it necessary or desirable. Access is obtained to this part of the market by spacious staircases, occupying the middle of the Thames-street and River Arcades. The general fish-market, on the level of Thames-street, is a broad level space about three-fourths of the area of the entire site, and devoted entirely to salesmen's stands, the remainder of the area of the site being used as shops, with warehouses over, and let to salmon and other salesmen requiring this accommodation. These shops or warehouses (fourteen in number), situated on either side of the market, and extending from the river to Thames-street, have their frontages towards and are entered from the great market area. The accommodation of this floor also includes two large taverns, situated at the south-east and south-west extremities of the river front. The broad area of the market is covered with louvred roofs, carried on lattice girders of 60 ft. span, affording ample light and ventilation. The height from floor to roof will be 31 ft. 6 in. at the plate, and 43 ft. at the ridge. The gallery, some 30 ft. in width, running from north to south above the General Market (from which it is approached by the staircase halls, which also serve for the access to the basement), has an area of some 4,000 ft., and is used as a market for the sale of dried fish. The lighting and ventilating of this part of the building is similar in every respect to that of the General Market. The heavy goods, barrels, &c., for the upper and lower markets of this building will be raised or lowered by means of lifts, one of which is fitted up near Thames-street to take the land traffic, and another is proposed to be placed next the river. This lift is the work of Messrs. Bunnett & Co. Boiling-places, supply of steam, &c., have been provided for cooking lobsters, crabs, and other shell-fish. This work, together with the engine, &c., for raising lift-accumulator and pumping the lower drainage, has been executed by Messrs. Simpson & Co., of Grosvenor-road, Pimlico. The design of the building is Italian in character, and the materials used in its construction are Portland stone, with polished grey granite plinths and wall linings, while the intervals between the archivolts and windows are filled in with yellow brick facings. The front next Thames-street consists of an arcade, terminating in its eastern and western extremities with pavilion buildings, and a pedimented central feature marking the entrance to the shell-fish and dried-fish markets, surmounted by a figure of Britannia. To the river front is a similar continuous arcade, flanked by Italian pavilion buildings at either end. The whole of the work has been executed from designs of Mr. Horace Jones, the City Architect. The contract for this building was entered into by Messrs. Mowlem & Co. in December, 1873, and the foundation-stone was laid by Mr. Thomas Ruckin, the chairman of the Billingsgate Market Sub-Committee, on the 27th October, 1874. The total cost is stated to be 250,000*l.* In our volume (xxxii.) for 1874, pp. 868–69, will be found a view of the river frontage, and on p. 925, a plan of the market. We have also given a view of the interior. Increased accommodation had long been wanted.

Sheffield.—The long-contemplated and greatly-needed improvements in the Sheffield markets have now been fairly inaugurated by the Duke of Norfolk. The first section of the scheme, which consists of the covered area extending between the Norfolk market-hall and the Old Corn Exchange, has just been completed. The new roof is supported on iron columns. There are eight avenues, and the mean height will be about 20 ft. The pavement of the avenues for cartage, of which there are two, are each 27 ft. wide, and the flooring of the remainder of the area is of asphalt. The whole is well drained' and special provision has been made by the erection of lavatories, &c., for the comfort of those occupying the spaces. The roofs are glazed on the system patented by Mr. W. E. Rendle, of Westminster. The space occupied by the old Corn exchange and the open area in front up to the street which crosses the Haymarket will be entirely covered; thus, when completed, providing an area of about 5,000 yards, or rather more than an acre. The second section of the improvement is being proceeded with. This from the street just mentioned to the old Corn Exchange building will be covered during the autumn. The old building itself will remain until the new Corn Exchange is erected, the plans for which are in a forward state of progress. The architects are Messrs. Hadfield & Son. Messrs Handyside & Co., Limited, of Derby, are the contractors for the roofing, glazing, columns, &c.; and Mr. John Pearson, of Sheffield, for the drains, foundations, and other work. Mr. Matthew Hirst has acted as clerk of the works.

Dundee.—Mr. David Stewart, solicitor, Dundee, has (according to the *Dundee Advertiser*) stepped forward to provide Dundee with public markets. The site selected is the ground lying between King-street and Victoria-road. It extends 400 ft. north and south, and includes fully 1½ acre, the frontage at King-street being 130 ft., while at Victoria-road it extends to 172 ft. There is a difference of 55 ft. between the levels of King-street and Victoria-road, but this heavy gradient has been turned to advantage by the architect, Mr. Robert Keith. The frontage to King-street, as already mentioned, extends to 130 ft. Here a four-story block is to be erected, having eight shops on the ground floor, with cellars beneath, and offices and dwelling-houses in the flats above. In the centre of the block an entrance, 12 ft. wide and 13 ft. high, leads, by means of an archway of iron and glass, into what is termed the King-street Arcade,—a one-story building 80 ft. long, with five shops on either side, a free passage 16 ft. wide being left in the centre. At the north end will be the Central or Main Arcade, 160 ft. by 50 ft., and two stories in height, containing accommodation for thirty-one shops on the ground floor; and at the north-east corner a warehouse is provided, 60 ft. by 35 ft., to be partioned off into stores for the use of the tenants. The second floor of the Central Arcade is on a level with Charles-street, from which there are two entrances. Entering by this level, access is obtained to the Butter Market, 32 ft. by 35 ft., well lighted and ventilated, and fitted up with stalls for the sale of the produce of the dairy. Passing from the Central Arcade, the visitor will reach the Charles-street Market, 92 ft. by 155 ft., and having a height of 27 ft. It has a cart-entrance from Charles-street, and also an access from Infirmary-lane, and stalls suitable for butchers and fish-dealers are to be fitted up in it. A flight of steps in the centre of this market will lead up to a market on a level with Idvies-street, to be fitted up with stalls for the sale of dry fish. It is 155 ft. by 45 ft., and is provided with a cart-entrance. Over this, and communicating with it by a staircase, is the fruit and vegetable market, 95 ft. by 155 ft., with cart-entrances from Victoria-road and Infirmary-lane. The elevation to Idvies-street of the fruit and fish markets is to be of open ornamental ironwork. In Victoria-road a four-story building, in the Scottish Baronial style, having a frontage of 172 ft., will provide ten shops, with ample cellarage accommodation, the flats above being designed for offices and dwelling-houses. The block is continued down Infirmary-lane, where three additional shops are provided. The erection of the buildings is to be carried on in three sections, and it is expected that the whole of the markets will be completed in the course of eighteen months. The outlay is roughly estimated at about 40 000*l.*, and the price paid for the ground was 22,000*l.*

Middlesbrough.—A new covered market at South Bank, Middlesbrough, was lately opened. In July, 1876, Mr. Harkewitz made an offer to the Normanby Local Board to sell the Market-house for 5,000*l.*, and it was decided to accept the offer. The new building embraces a covered market and a spacious town-hall. The new building is situate in Normanby-road, Ash, Oak, and Jackson streets. The general market is 120 ft. by 72 ft.

Manchester.—The Manchester General Markets Committee lately decided to accept the tender of Mr. James Herd, of Bristol-street, Hulme, for the erection of a covered market in Campfield, at a cost of 20,390*l.* The space to be covered

consists of two plots of land bounded by Deangate, Tonman-street, and Liverpool-road, and separated in the centre by St. Matthew's Church. The area of the larger market to the west of the church will be 3,950 square yards, and that to the east of the church, 2,720 square yards, making a total covered space of about half the extent of the present Smithfield Market. The markets are intended to be upon a similar plan to those at Smithfield, but of a more ornate though not costly character. They will be open, and constructed principally of iron. The architects are Messrs. Mangnall & Littlewood.

Kettering.— Considerable improvement has lately been made in the market accommodation of Kettering by the provision of a house exclusively for the sale of butter and eggs. It stands in the Market-place. Some months ago the Local Board, the lessees of the property, resolved upon modifying it to meet the required purposes, and a tender for the necessary alterations was accepted from Mr. Margetts, of Kettering, and the work was at once proceeded with. The place was thoroughly cleaned out, new windows were put in, and a convenient front entrance made. The ground floor is used for the holding of the market, and the upper floor is converted into a room for the use of the Local Board, with a separate side-entrance.

Wigan.—A new market-hall has lately been opened at Wigan. It appears that for forty years the question of building a covered market for Wigan has been under discussion, but it was not until 1871 that a site was definitely selected. This, however, did not include a covered building, but in 1874 the Corporation decided to erect a hall, and offered premiums to architects for designs. The then borough engineer (Mr. Hunter) reported on the various designs forwarded, but the Market Committee awarded the prizes in opposition to his report. In 1875 the committee asked Mr. Hunter to prepare a design himself, and this was eventually selected and adopted by the town. The contract for the building was let to Mr. C. B. Holmes, Wigan, for 12,500*l.*, and he afterwards obtained the contract for the internal fittings for 1,900*l.* The new market-hall is an oblong building, 200 ft. long by 150 ft., and 26 ft. high. The fish-market, which is a separate building, is 120 ft. long by 50 ft. wide. In the general market there are forty-two shops, twenty butchers' stalls, twenty fruiterers' stalls, besides earthenware stalls, ables for hardware, drapery, butter, &c. The stalls and shops were let by public auction, and realised nearly 5,000*l.* a year.

Rotherham.—At a recent meeting of the Rotherham Town Council, the Markets Committee recommended that the following tenders for the new covered market, including filling in and retaining walls, be accepted:—Messrs. Dobb & Gummer, Rotherham, masons' work, retaining wall, and filling in, 2,375*l.* 12s. 3d.; Mr. H. Heathcote, Rotherham, slating, 293*l.*; Messrs. Unwin & Goodwin, joiners' work, 776*l.*; Messrs. Spurr & Inman, ironwork, 2,024*l.* 8s. 1d.; Mr. Brookfield, plumbing, 319*l.*; Mr. Booker, painting, 240*l.*; total, 6,028*l.* 0s. 4d.; but the contractors are to allow for old material at Sheffield prices. The committee also recommended that the following tenders be accepted:—For slaughter-houses, Messrs. Dobb & Gummer, 3,325*l.* 17s. 6d.; for new street, Messrs. Lovedale & Jarvis, Masbrough, 1,800*l.* The committee likewise recommended that application be made for sanction to borrow 18,500*l.* for the construction of new markets, slaughter-houses, and streets. The recommendations of the committee were adopted.

ODDFELLOWS' HALL, STALYBRIDGE.

The directors of the Stalybridge Oddfellows' Hall and Social Institute Company having offered premiums for the best two designs for an Oddfellows Hall and Social Club to cost about 2,000*l.*, four sets of drawings were sent in. Mr. Amos Lee, borough surveyor, acted as professional adviser to the Board; and it was decided that the plans bearing motto "Adaptation" were the best. Mr. Gregory Gill, architect, of The Hollins, Stalybridge, was the author, and the work has been entrusted to his care. The foundations have already been let, and the superstructure will be proceeded with as quickly as possible. The building is in the Italian Gothic style,—plain, but characteristically treated,—of stock bricks and York stone dressings. It is situate in one of the most central positions of the town.

CONVERSION OF THE LONDON SKATING RINK INTO BATHS.

A little more than twelve months ago the *Builder* contained a description of a large new skating-rink, and buildings in connexion, which had been just been constructed in Camberwell New-road, under the name of the "London Skating Rink." It is now proposed to convert this establishment, which contains the unusually large area of 26,000 superficial feet, into baths and a gymnasium, and a company has just been formed for the purpose under the name of the "London Baths and Gymnasium Company." The proposal is to convert a portion of the area of the rink into a large swimming-bath, about 200 ft. in length and 60 ft. in width, with an ornamental fernery and a fountain in the centre of the north side. A further portion, on the south side of the swimming-bath, and running parallel with it, is to be formed into private warm baths, separated from the swimming-bath by a spacious corridor, whilst the remaining portion of the space at the east end is to be converted into a gymnasium, containing an area of about 6,000 superficial feet. The original purpose of the establishment is in part to be retained, the proposition being that in winter the swimming-bath shall again be adapted as a skating-rink. It is estimated that the alterations and conversion of the premises for the purposes named will cost about 4,000*l.* The plans for the conversion have been prepared by Mr. Banister Fletcher, architect.

THE NEWINGTON CLOCK-TOWER.

The works of the new clock-tower which is being erected on the site of old Newington Church, at the cost of Mr. Robert Faulconer, are making rapid progress, the structure having already been carried up to a height of nearly 30 ft. When, completed it will be 98 ft. high, and a prominent feature in the immediate locality. It is Gothic in character, with ornamental carving on the Newington Butts elevation, as well as on the north and south frontages. It is built on foundation walls in Portland cement, 10 ft. in thickness, and footings in brick, 6 ft. 4 in. in thickness, carried up to the level of the churchyard, and on which the superstructure rests. The dimensions of the tower are 14 ft. square at the base, and it is carried up in five stages, with buttresses. To the height of about 6 ft. the materials are Portland stone, the remaining portion of the structure being in Bath stone. There is an entrance in the centre of the Newington Butts frontage, with windows in the upper portion of the elevation, and turrets. The clock will be placed at an elevation of 70 ft. The dial being 5 ft. in diameter. In the panel on the left-hand side of the entrance is the following inscription:—"This tower was built at the expense of Robert Faulconer, esq., A.D. 1877, on the site of the old parish church of St. Mary, Newington."

The architects are Messrs. Henry Jarvis & Son, and the contractors, Messrs. Coles & Son, of Camberwell, but the whole of the masonry is being carried out by Messrs. Tilney & Co., of Walworth.

THE CHRISTIAN KNOWLEDGE SOCIETY'S NEW BUILDINGS IN NORTHUMBERLAND AVENUE.

In addition to the grand hotel which is about to be erected on the north-east side of Northumberland-avenue, the works in connexion with another large and handsome building intended to be erected on the south-west side of the Avenue have been commenced, and a large number of artisans are now engaged in getting in the foundations. The building in question will form the new premises of the Society for Promoting Christian Knowledge, and will be very costly, the estimated outlay being close upon 100,000*l.* The excavations for the foundation walls have already been carried to a depth of 44 ft. below the street line, and in the process of sinking, when at a depth of 29 ft., a spring of pure water, of great volume, was met with, which has required incessant pumping. The "Pulsometer" steam pump, of which we gave an account some time ago, is being used with excellent effect. The trenches for the foundation walls are 9 ft. in width, and these are being filled in with concrete to a depth of 25 ft. The building will have two main frontages, one facing the Avenue, and the other—the south elevati—facing Scotland-yard. The Avenue frontag which will be the principal elevation, will 60 ft. long, whilst that to Scotland-yard will of great length, being 160 ft. from the corner the Avenue to the western boundary of t building. The structure will be unusually lofi containing seven stories. The style of arcl tecture will be of a Classical character, and t materials chiefly Portland stone.

The architect is Mr. J. Gibson, and Mr. Shaw, of Earl-street, Westminster, is the co tractor; Messrs. Hodgkin, Neuhaus, & Co., Battersea Foundry, have supplied the pumpi engines. Mr. Wortley is clerk of the works.

A MASON'S WORD TO MASONS.

Sir,—Having followed the trade of a mas for the last fifty-two years, and having watch the rise and progress of the Operative Sto Masons' Society for the last forty-four yea should you deem the following remarks worth of insertion you will oblige both myself a others interested by publishing them.

During the first ten years of my experience the trade strikes were almost unknown. Abo forty-two years since the construction of ra ways was begun in earnest. For about twen years I followed my calling on railways, workin in about twenty different counties in Englan and Wales. I think the public will allow that t various trades employed in constructing railwa for the last forty-five years have left many prod behind them of their industry. The valleys ha been exalted; the hills have been brought low and the mountains have been pierced wi tunnels, to make a highway for trade ar commerce.

I have seen and taken part in many squabbl and strikes on railways, but these strikes we seldom premeditated. Some grievance sudden arose, and as suddenly the men struck; and, a rule, after a few blows on each side, employe and employed came to terms. But the mode striking seems now to be wholly altered. Th O. S. M. gave six months' notice before the present strike. This seems to me after th manner of prize-fighters. Give the challeng stake the money; appoint the time; and then cold blood give each other a pommelling.

Of course, the O. S. M. Society have an excu for striking,—9d. per hour is not sufficient procure the necessaries of life. About thirt years since 6d. per hour was the rule; 4s. 6 per day in many cases. When the O. S. M requested 5s. 6d. instead of 5s. per day, th excuse was dearness of provisions.

A most important question arises,—Why a provisions so dear? We cannot well complai of scarcity. Take the produce of the buildin trades as a sample. A house and home is o of the great provisions we require,—a goo house and home is highly conducive to healt happiness, and morality.

Picture to yourselves the great bulk of hums beings in London whose income will bear n comparison to 9d. per hour, or even half th sum; yet these poor people want a home. He is a man with a wife and three or four childre in one room, at 4s. or 5s. per week. Is it n a pity that he cannot have two good rooms f the same amount? Why is it that he cannot d so? Is it the fault of the builders or the owne of property, or can it be fairly traced to those wh are engaged in the building trades? Sixpenc per hour thirty or forty years since, at prese 9d., and clamouring for 10d. Now, 50 per cen on the cost of our homes and habitations wi account in some measure for our miserab homes among the very poor, and the O. S. M Society seem determined to make matte worse. There is one way out of the difficulty if we can persuade the builders and owners household property to lose five or ten per cen on all their transactions, instead of looking f that amount of profit, this will be a parti remedy.

When all classes seem determined to enhan the price of their productions by having increase of wages, they are actually defeatin the great end they have in view. There a some of the down-trodden, such as the agricu tural labourers, that really want an advance wages, but not so with the O. S. M. Th can boast that they have ample funds allow them to walk about in voluntary idl ness for weeks and months, with 18s. p week for their support. Their own confe sion is the greatest reproof that can

ven them. They have saved on 9d. per hour fficient sums for their support to gain 10d. It rather bad logic on the part of the O. S. M. say that 9d. per hour is insufficient to live on, d then to boast that they have ample funds to stain a strike. I, by personal experience, ow that they were better off at 6d. per hour an they are now with 9d. If the O. S. M. d been content thirty or forty years since, hers would have been content. As a rule, the . S. M. have taken the lead, and others have llowed. Wages have in that space of time een raised 50 per cent., and this leaves us in a orse state than we were some fifty years since. he very poor cannot enjoy the luxury of a home ecause our building trades are so constantly amouring for an advance, and the expense of ir homes must be in proportion to the outlay. ad our building tradesmen been more con- nt, what strikes, what tumults, would ave been avoided. How many wives and ildren have been forsaken and left to arve through strikes? How many hus- nds have become wanderers and vagabonds rough strikes? How many employers have en driven to poverty and bankruptcy through rikes? This, of course, the O. S. M. look on s an achievement that deserves laudation and raise. A word to you: you hold them up as a arning to other delinquents who resist your ictation. Now, for your own sakes, cease this justice. You are unjust to the public at rge. You are unjust to your employers. You re unjust to your wives and families; and, last nt not least, you are unjust to yourselves.

JOHN GRIFFIN.

Upper Westbourne-park.

PRE-HISTORIC ATTICA.

THE *Times* correspondent at Athens has described some important discoveries. About a nonth ago a dark hole, some 3 ft. in circumfer- nce, suddenly appeared on the side of a little ill close by the village of Spata, in Attica. A Greek rustic soon observed it, and called his ompanions to come and see the new phenomenon. Not far from the surface he came upon a spacious hamber, in which, and others adjoining, the rchæological Society of Athens has since dis- overed objects precisely similar in all essential espects to those of the sepulchre of Agamemnon. There is this great difference, however, between he two "finds,"—namely, that whereas the arlier confirmed in a most remarkable way the radition which from time out of mind had pointed to the spot where it was made as the ity of the "King of Men," the more recent vas made in a place to the ancient identity of which there seems to be no clue whatever. Of ourse the antiquaries have already each proached his theory on this as on every other oint, but the only one which has any apparent asis whatever is that which maintains that Spata was the site of the dominion of the fifty Pallantides, the sons of Pallas, the brother of Egeus, who was killed by Theseus for opposing vith violence his accession to the throne of Athens; for the name of the property in which he tombs actually are is "Pallas." Though lose by Athens, Spata is altogether an Albanian illage. Greek is scarcely spoken among the eople; and if, as some maintain, the new-found epulchres are, indeed, Pelasgian, how strange it s to find the same race after so many centuries f exile returning to their original abodes, and iving, unconscious of the fact, on the very tombs f their ancestors!

Instead of describing my own examination of he tombs, it will be more interesting to give ome account of the operations conducted by Mr. Stamataki, the representative of the Govern- ment, whose presence, I may here say, was, as far as it could be, a guarantee of the genuine- ness of the discovery. On descending through the hole which I have already mentioned, the excavator found himself in a chamber quarried n the soft sandstone of which that part of the hill is composed. It is, roughly speaking, rect- angular, but is not formed with exactitude, the opposite sides not being quite of the same length, and the wall being higher in some places than n others. It is about 5·50 mètres long, 5·00 broad, and 2·80 high to the springing of the roof, which slopes upwards at an angle of about 45 degrees, forming, as it were, a gable at each end. In the centre of the west end was found a doorway, 2·65 mètres high and 1·22 wide, built up with stones to within a mètre or so of the top. Outside the doorway is a long passage or cutting (the original entrance to the tombs), sloping gradually upwards, to meet the fall of the hill, about 25 mètres in length, near the doorway, 8·00 in depth, 2·20 wide at the bottom, and 0·60 at the top, and 1·93 wide where it issues on the side of the hill. There are no indications of this passage having been covered, except in the middle of its length, where two large stones, opposite to each other, one on each side, were found at the top. In the south wall of the first chamber, near the south-east corner, is the entrance to a passage, 2·00 mètres high, 1·20 wide, and 2·10 long. In the middle of the walls are grooves for a door, and a flagstone was found *in situ*, having a circular sinking, in which a hinge had apparently worked; but no door was there. This passage leads to a second chamber, 3·71 mètres long, 3·50 wide, and 2·10 high to the springing of the roof, which slopes to the centre as in the first chamber, but at a smaller angle. In the east side of the second chamber, near the north-east corner, is a passage or doorway, 1·30 mètre wide, 1·78 long, and 1·75 high, leading to a third chamber, roughly rectangular as the others, 3·35 mètres long, 2·75 wide, and 1·87 high to the springing of the roof, which is similar to that of the second chamber. When I have added that the first passage connects the long side of the first chamber with the middle of the short side of the second, and that the second passage connects the long side of the second chamber with the middle of the short side of the third, any one wishing to do so will be able to sketch a plan of the tombs with tolerable accuracy. In the second and third chambers, which were not filled with stone, about forty small objects were found, and in the first chamber about 1,000. Another tomb, of one chamber, excavated in conglomerate, at a distance of 11·87 mètres from the other, has since been discovered. It was quite empty. Its dimensions are 3·76 mètres long, 2·90 wide, 2·60 high; entrance cutting, 10·50 mètres long, 5·00 deep. Possibly the whole hill is honeycombed with such tombs.

Of the objects themselves, which have been brought from Spata and deposited temporarily in the National Bank, it is impossible at present to give more than a general description. Among them there are neither coins nor inscriptions. They consist of pottery, in design and material the same as that found at Mycenæ, a few things in silver, arrow-heads, and, I believe, some other implements of copper, more than 100 small gold ornaments, some of them precisely similar to those of Mycenæ, and of a great number of objects in ivory and a glasslike substance which were probably left by the earlier excavators as of little value, but which, in the present position of archæological science, are almost priceless. The ornaments of gold are exquisitely designed and made, and, being pierced with holes, seem to have belonged to earrings, bracelets, and other portions of female attire. The motives of the designs are taken from shells, fish, waves, leaf-buds, flowers not imitated, but rendered conventionally in the highest style of art.

Of the objects in ivory, ten surpass the others in importance, and excel all that was found at Mycenæ. The designs are most spirited, and the way in which they are fitted into the oblong blocks and accommodated to them shows something like Gothic vigour.

Full-size engravings of all the principal objects found at Spata will be published in an Athenian archæological paper within the next fortnight.

ARCHÆOLOGICAL LOGIC.

SIR,—Mr. Nichols's defence of his "circular" reasoning about the Temple of Saturn and the Basilica Julia is much better put than that of his volunteer defender, "R. C. N.," in the *Builder* for July 28, to which Mr. Nichols's letter rather unfortunately directs attention. The notion of "R. C. N." that he is setting your critic right about logic, when his letter only, in fact, affords additional evidence of want of logical perception, is amusing enough. He says, "suppose it were known that A resided at No. 1 in a given street, and we found it recorded that B lived between A and C, might we not use this to prove that No. 2 was the house of B, as well as that No. 3 was the house of C, without laying ourselves open to the charge of arguing in a circle?" &c.

Doubtless, most logical "R. C. N.," we might do so; but do you not see that the very point in the case is that we do *not* know that A lived at No. 1? The logical fallacy is really this,—all that we positively know is that B lived between A and C; we find a house situated between two others which, for several reasons, we think was that of B. If that is granted, the two others are probably A and C: then, when we come to consider the two latter, we are to say, "no doubt this is A, because we know it was situated next to B, and the next one we know is B, because it is situated between A and C." To turn to the actual case before us, Mr. Nichols says (p. 24) that the Ancyran inscription "describes the Basilica Julia as being between the Temple of Castor and the Temple of Saturn. Now, as we find the area of the Basilica Julia lying between two temples, it is scarcely possible to resist the conclusion that the temples are those named by Augustus." There, obviously, the Basilica Julia is used to prove the positions of the temples of Castor and of Saturn. Turn to page 43, and we read that the identity of the Basilica Julia "is proved, not only by the character of the building, but by the evidence of the Ancyran inscription, which places that basilica between the temples of Castor and Saturn." Here the temples of Castor and Saturn are used to prove the site of the Basilica. If that is not arguing in a circle, there is no such thing in the world.

Mr. Nichols's letter puts a different face on it, his explanation, however, really going to show that he did not express his meaning accurately in his book. His lapse is but a slight one, compared with the wholesale jumble of premisses and conclusions in which some more voluminous archæological theorists indulge. But your correspondent "R. C. N." had really better not set people right about logic, or attempt to defend his friends, till he can state an argument correctly in logical form himself.

H. H. S.

THE SCIENCE OF PROPORTION.

SIR,—I fear lest I may too frequently trespass on your kindness and the valuable space in the *Builder*, but as the science of proportion is my pet subject, or, as some people would say, "my craze," I cannot resist the temptation to venture a few observations on the topic of Music and Architecture, under the more general title adopted above. It is many years since I first touched upon the subject of proportion in the columns of your journal and elsewhere, and from that day to the present it has expanded under investigation. I have now completed a treatise on some of its more important aspects which awaits a publisher. Since I first addressed you on this subject, I have, of course, arrived at greater precision in numerical expression, and a clearer statement of principle, as you may gather from the contents of this letter. We should be careful not to inculcate the notion that either the painting or the architecture, even of old time, was in any way based upon music. Certain analogies between the three arts have been observed, and treatises written upon them, time out of mind. That such analogies should have been observed is not at all surprising, when we come to consider, from the standpoint of modern science, that the three arts are reared upon the common basis of our human nature, from which all mundane harmony dates, and that our sensuous human nature is, throughout, a meter of quantitative impressions. The Fine Arts are records of the sensuous constitution of man, which records, by a reflex action, play upon and charm natures similarly constituted to that of the artist. Music is a thing not existing independently of man,—man made all three arts, not founding one upon another, but in obedience to the laws of his own being. The harmonies of one art, therefore, have equal authority to those of another.

The fact is, all relativity is fundamentally quantitative. The relations of sounds, forms (sculptural and architectural), of chiaroscuro, of colour, are all fundamentally proportional relations, and there is but one scale of quantitative differentiation, varying between the extremes of 1 : 1, or the ratio of equality, and 1 : 0, or the ratio of greatest difference. If, then, we can show that certain ratios are universally agreeable to the sensuous nature, we shall establish points of contact, of identity, between the proportional relations approved by the different senses, and that there exists a certain music, if we choose to call it so, common to our whole nature.

In medio tutissimus ibis expresses a great truth; in that expression the experience of ages is treasured up in a few words. It is a tribute and testimony to the importance of the

golden mean, to that mid-path of safety to our human nature which lies between extremes. All experience shows that healthy human nature prefers mean, or moderate, proportional relation to extreme differences.

The infinite subdivisions of the unit, which may be regarded as the monochord of nature, combined two and two, would represent every proportional relation, or ratio, which is possible between two quantities. This scale of ratios presents us with eight very marked combinations, viz., 1 : 1, 3 : 4, 1 : 1½, 1 : 2, 1 : 2½, 1 : 3, 1 : 4, 1 : 0. The extremes of ratio are represented by 1 : 1, and 1 : 0. The mean of the differentiation of ratio is represented by 1 : 2, because there are as many ratios approaching equality nearer than 1 : 2, as there are ratios diverging from equality in a greater degree than 1 : 2. The limits of moderation are represented by 3 : 4 and 1 : 4, because there are as many ratios lying outside these limits of more extreme degree than those within them. Now too great an equality, as well as too great a difference between the two terms of a quantitative relation, are, as experience teaches us, displeasing to the senses. Therefore, all those proportions which approach equality nearer than 3 : 4, or diverge from equality in a greater degree than 1 : 4, found no favour in Grecian architecture. At all events, accepting the exhortation to "be moderate in all things" as of the highest wisdom, we have just grounds for receiving the following proportions as the best, because they are within the limits of moderation, viz., 3 : 4, 1 : 1½, 1 : 2, 1 : 2½, 1 : 3, 1 : 4. Now, 1 : 2, or the mean of ratio, was that adopted in the order called *systyle*; 1 : 4 in that called *areostyle*; and, I believe, 3 : 4, 1 : 1½, 1 : 2½, and 1 : 3 were also used. When, however, some grand or startling effect is to be produced, the even tenor of the beautiful is to be departed from, extremes have to be resorted to, and we have to enter upon another phase of the subject, or that of harmony by contrast, or the theory of compensation.

Geometrical figures, in which the longer to their shorter axes are in those moderate ratios, have also found favour. 1 : 2 is the relation of the contiguous octaves in music, but here we come upon a characteristic difference in the form of the two senses of sight and hearing; 1 : 2 is a marked difference to the sense of vision, whereas the vibrations of the two strings differing in this ratio are regarded as the same note. The progression of octaves is to the ear what a progression of squares of different sizes is to the eye. But we have a point of contact in the tenor, or moderate clef, being preferred to the extremes of the bass and of the treble. Another point of contact, or of identity of principle in the two senses, is the recent discovery, announced by Professor Barrett, that the ratios of the harmonic notes and of the harmonic colours are identical.

W. Cave Thomas.

ARTISTIC INDIVIDUALISM.

Sir,—Believing your journal is open to suggestions made expressly for the benefit of architectural art, I hope you may deem the following worthy of insertion:—

It is generally acknowledged, by appreciative students, that what is called "individualism" is a strongly marked and most important characteristic of Mediæval art; and it appears to some of us that a revival of individualism is essential to the artistic success of modern architecture.

This revival need not be at variance with the usages and customs of the present age; but would simply be that freedom of artistic individual skill which gave its characteristic life and freshness to old work.

This, it appears, is what the architectural journals are continually asking for, especially in the reparation of old buildings. "The true spirit of the Mediæval work," we always hear, is wanting. If this spirit is to be revived, the present system of automatonism must be superseded.

There is little real artist work developed now by individual skill. The hands are always working without any proper sympathetic action of the brain. Might not this be changed? Are there not among the various art associations some who are impressed with the importance of this subject, and who have ability to bring it forward for discussion? The new movement for more systematic technical instruction is a good one, but it overlooks the want of freedom in the workman. He may study carefully some decorative branch of Mediæval work until he can produce artistic work almost as good as that of the old workmen; but automatonism gives him a stencil-plate, or a dull model, as his guide, or in some other way binds him, totally neglecting the essential "spirit of the old," which was expressly founded on originality, and not on copyism.

It may be said that freedom will foster error, that there was indifferent construction, bad anatomy, and crude design in old work, and probably these all would be repeated. But for the lesser evil, we should not forego the greater good, remembering rather that it is this long-neglected individualism which has always given the greatest value to material.

A Workman.

DEEP MINING.

In a lecture on this subject, recently delivered, Mr. Walter Rowley, C.E., says:—The shaft of the argentiferous lead mines of Przibram, in Austria, has achieved the greatest victory up to the present time, the silver and lead being now actually worked and drawn from a depth of 1,093·1 yards. These mines were first explored about the sixteenth century, but only commenced actual working to any extent about the year 1779, and up to 1800 the shaft was only 290 yards deep. In 1865 they had reached a depth 781·2 yards. This shaft seems, from the earliest period, to have, year by year of its existence, had the honour of testifying to the practicability of deep mining; for, during the first ninety-six years of its working, the annual increase of its depth was 34 ft., and during the last ten years it has annually increased on the average of 88 ft. The deepest coal-mines in the world are the Viviers Remus shafts, near Gilly, in Belgium, which are sunk to a depth of 940 yards in one perpendicular shaft. From a drift at this depth another shaft has been sunk to a further depth of 222 yards, making a total of 1,162 yards. The above shaft was continued 50 ft. lower, to a depth of 1,178·2 yards; but, as the coal sought for at this depth was not satisfactory in its character, the present mining operations are confined to the depth of 940 yards. In Belgium there are at the present time about 112 shafts 500 yards deep and upwards; whereas in England there are only fifteen exceeding that depth. It is not intended to consider any of less depth than 500 yards, as under that distance they are not uncommon, and therefore do not come within the scope of the present inquiry. The deepest mine in Great Britain at the present time is that at Rosebridge, Lancashire (coal), 815 yards.

PRICE OF LAND FOR ARTISANS' DWELLINGS.

The Works and General Purposes Committee of the Metropolitan Board of Works submitted the following report to the meeting of the Board on the 10th inst.:—

Your committee, under the authority conferred upon them by the Board, have from time to time caused advertisements to be issued inviting tenders for the plots of land reserved under the provisions of the Metropolitan Street Improvements Act, 1872, for the erection of dwellings for the labouring classes. The plots remaining unlet are those marked C, D, and G upon the accompanying plan. Tenders have been received in reply to the Board's advertisement from the Improved Industrial Dwellings Company, but the amounts offered are so much below the valuation of the Superintending Architect that your committee are quite unable to entertain the proposals, and they deem it right to report, for the information of the Board, the amounts of the Architect's estimate of the rental value of the sites, and the amounts offered by the above-named company. The architect's estimates are as follow:—

Plot C at 4d. per foot = 291*l.* per annum.
,, D at 4d. ,, = 200*l.* ,,
,, G at 3d. ,, = 231*l.* ,,

The amounts offered are:—

Plot C 150*l.*, being about 2d. per foot.
,, D 90*l.*, being under 2d. ,,
,, G 100*l.*, being about 1¼d. ,,

Your committee further learn from the Superintending Architect that the commercial letting value of the land would be as follows:—

Plot C at 9d. per foot = 655*l.* per annum.
,, D at 8d. ,, = 400*l.* ,,
,, G at 7d. ,, = 540*l.* ,,

The report was unanimously adopted, on the motion of Mr. Roche, who remarked that to sell the land in question at the prices offered would be tantamount to giving half of it away for the building of artisans' dwellings. If the Board were to give land for such a purpose, they could not logically refuse to give bricks and mortar.

NORTHUMBERLAND AVENUE.

At the meeting of the Metropolitan Board of Works on the 10th inst., the Works and General Purposes Committee reported that,—

"In pursuance of the authority conferred upon them by the resolution of the Board of the 1st of June last, they have had a conference with the Council of the Royal Institute of British Architects, as suggested in their letter presented to the Board on that day, on the subject of the designs for buildings proposed to be erected in Northumberland-avenue. Your committee, as the result of that interview, instructed your Superintending Architect to prepare a general elevation for the block comprising plots 12 to 19 inclusive, a portion of which, viz., plots 12, 13, 14, and 15, had been let to Messrs. Francis, who propose to erect a large hotel thereon. The Architect accordingly prepared and submitted a sketch design for the buildings upon the whole of the block. He then, by their direction, communicated with Messrs. Francis for the purpose of ascertaining whether they would be willing to adopt that elevation, and he ultimately laid before your committee an elevation received from those gentlemen, amended by them after having had an opportunity of seeing the one prepared by the architect. This amended elevation, with the sketch design above referred to, was thereupon forwarded to the Council of the Institute for their observations, with an intimation that they had been approved by your committee for transmission to that body, but had not at present been recommended for the formal approval of the Board. It was also pointed out to the Council, with reference to the sketch design, that since it had been prepared some modifications had been made in the elevation for the hotel, but that care would be taken that the general elevation for the remainder of the block would be treated in a corresponding manner. Your committee have now had before them the letter received from the Council in reply, which was presented to the Board on Friday last. In this they express their regret that they cannot regard the amended elevation for the buildings proposed to be placed on plots 12 to 15 as satisfactory even in its revised form, and they advise an architectural treatment of the building to be placed on these plots in accordance with the sketch design prepared by your Superintending Architect, which they consider far preferable. They also refer to the reasons which they understand have been urged by the lessees for the alteration in the design for the hotel revised by your Superintending Architect, namely, first, that the windows on the fourth floor should be arranged in double instead of single openings; secondly, that the fenestration of the fifth story should be of stone, and included in the main façade, instead of being confined to roof dormers, and they express their belief that the lessees' wishes on those points can be carried out under the advice of your Superintending Architect, and recommend that the details of the façade as modified to meet these requirements should be submitted to that gentleman, and be only executed with his approval. Your committee have carefully examined the amended design submitted by Messrs. Francis, and have given their best attention to the suggestions contained in the letter received from the Council of the Institute. It must be borne in mind that considerable alterations have already been made by Messrs. Francis in the elevation originally submitted by them with a view of assimilating it as far as possible to the one prepared by the Architect, and your committee have reason to believe, moreover, that there is a disposition on the part of Messrs. Francis to consider any suggestions made by your Superintending Architect with regard to the two points above alluded to. Under all the circumstances, and looking to the desirability of avoiding any further delay in the matter, it appears to your committee that the Board may with propriety give their sanction to the amended elevation. They beg therefore to submit the same with this report, and recommend that it be approved by the Board."

The report was agreed to *nem. dis.*

HOUSES AT THE SEA SIDE.

At the Liverpool Summer Assizes on Tuesday, August 5th, before Mr. Justice Hawkins and a common jury, the case of Yearsley *v.* Henderson was tried. Mr. Edwards, Q.C., and Mr. Tomlinson appeared for the plaintiff, and Mr. Gully, Q.C., and Mr. E. S. Roscoe for the defendant. The case was one of some interest and importance to builders at watering-places. The plaintiff's house, one of a very "jerry" description, was built on the sand at New Brighton, the rear portion being built with very slight foundations. The defendant was the builder employed by the neighbouring landowner, and found it necessary whilst building a house on the adjoining land to underpin the plaintiff's house. Considerable damage in the shape of cracks and subsidence occurred about that time, and the plaintiff alleged that this was caused by the negligent underpinning of the defendant's workmen. Other questions as to support were raised, but the crucial point was whether or not the defendant had taken due and proper precautions, considering the character of the soil. The defendant conclusively proved that he had underpinned in lengths of not more than 2 ft. at a time, and that he inserted boards to keep the sand from running out in any quantity. The jury returned a verdict for the defendant, which shows that if a builder takes proper precautions he is not responsible for damage which may arise from his operations, in the eyes of a common-sense jury.

Water Supply.—West Looe (Cornwall) is about to be supplied with water, by gravitation, from a stream flowing into the Looe river. Mr. E. Appleton, of Torquay, is the engineer; and Mr. Honey, of Looe, the contractor.

THE LONDON BUILDING TRADE.

The masons' strike still continues, and has en the subject of correspondence in the papers. the first place, Mr. Charles Goolden, secretary the Central Association of Master Builders of ndon, wrote :—

"As erroneous reports are being circulated, and as it s been reported in a contemporary that fifty-five firms re conceded the increase in the rate of wages, and as e statement tends to prejudice the cause of the masters, eg to say that, as far as this Association has been able great pains to ascertain, there are only two firms, ploying a very small number of masons, who for special sons have given the increase under protest."

The correctness of this statement has been nied on behalf of the men by Mr. Henry abet, "Secretary of the London Lodges' Comttee of the Operative Stonemasons' Society," o writes :—

"Mr. Goolden denies the accuracy of the report that y-five firms have conceded the increase in the rate of ges. The report was correct when made, but others st now be added, as there are now ninety firms who have ceded the increase of wages. . . . Of course, I cannot the source from which Mr. Goolden derives his infortion, or the exertions that were made by the members the Association to find the two firms; but if they were walk the length of the street in which their office is ated they would find at least two firms paying the adce,—one of them employing about 1 0 masons. As ore stated, our list of firms now paying the advance nbers ninety, the correctness of which we are prepared prove to the satisfaction of any one, under certain conons."

On Saturday last a meeting of builders' ourers was held in Great Guildford-street, uthwark. It was announced that 50*l.* had en voted towards the support of the families labourers thrown out of work through the ike. Mr. P. Kenny read some correspondence ich had passed between him and the secrey of the Masters' Association. The reply of masters to a request made by the labourers a settlement of the dispute by coming to ms, or submitting the case to arbitration, was the effect that they, the masters, were ferers, like the memorialists, by the acts of a gle body of their skilled workmen, and they ld not but regret the position in which the ourers had been placed.

MASTERS AND MEN.

Preston. — Six months ago the operative mbers of Preston gave notice to their emyers that after the expiration of that notice standard rate of wages to be paid to them uld be raised from 30*s.* to 35*s.* per week. The sters have decided to offer them an advance 4*s.* per week instead of 5*s.*, and this has been epted.

Aberdeen.—The operative plumbers of Aberen have resolved to agree to the terms of the sters as to bye-laws and payment for walking country jobs, and the strike which was eatened, has thereby been averted. The n are to be paid 6*d.* a day extra for walking country jobs over two miles from the munial boundary, and 1*s.* a day for jobs over four es distant. The men wished the distance to calculated from the centre of the town.——

a largely-attended meeting of the masterons, held on the 8th inst., a communication ich was received from the operatives now on ke offering to refer the dispute to arbitran was agreed to on certain conditions, the of these being that any difference in the ges which may result from the arbitration do take effect till four months hence.

Manchester.—The New York correspondent of *Manchester Guardian*, writing on the 1st ., says :—

The steamship *Montana* yesterday took out fifty carers, who, it is stated, go to be employed by Messrs. Neil & Sons, builders. The preference was given ngle men, and none were accepted without tools and references. Messrs. R. Neill & Sons advance the age money ($28), which has to be refunded at the rate pe. per week, to be deducted from their wages. Six ths is the stated term of employment, and the wages 17c. an hour. A notice appears in the *Herald* reting carpenters to keep away from Manchester use there is a strike there."

he men arrived at Liverpool last week, on r way to Manchester, where they were to be ployed in the room of the men who recently ck for an advance of wages. The men on ke state that only two of the men so importec menced work, and they have now left off.

he Clyde. — On the 10th inst. the Clyde cutive of the Amalgamated Shipwrights of at Britain and Ireland were engaged con.ing the recommendation of the Glasgow wrights, that "The present dispute should bmitted to arbitration." The proceedings private, and it is intended to convey the result to the master shipbuilders through neutral parties. At a meeting of master shipbuilders a committee was appointed to ascertain if the Glasgow Trades' Council were authorised by the workmen to propose arbitration as a means of settling the dispute.

The Nail Trade.—The Belper horse-nail makers have submitted to a reduction of 3*d.* per 1,000 nails in their wages, in consequence of the nailers in Staffordshire having been dropped that amount. The common nailers have been given a week's notice that their wages would be reduced from 1*d.* to 3*d.* per stone, according to the sort they made. The proposed reduction will make a difference of about 3*s.* a week to a man who works regularly. It is said that the nail trade has not been known to be so bad for a great number of years.

Amalgamated Society of Carpenters and Joiners.—According to the quarterly report of the Amalgamated Society of Carpenters and Joiners, there are now strikes going on in Manchester, Salford, Oldham, Wolverhampton, Norwich, Hull, Dudley, and Halifax. The contest at Worcester has been brought to an end by the masters conceding the demands of the men. At the commencement of the quarter the funds of the society were 73,808*l.*, and at the end of June they were 72,013*l.*, in spite of the drain caused by the large number of men on strike.

A RELIC OF NOTTINGHAM CASTLE.

An interesting relic of the old fortress has recently been discovered in one of the walls of the modern castle. It is a stone about 12 in. by 7 in. on the face, covered with an inscription surrounded by a border. The inscription has not been easily deciphered, but Mr. Hine, who has been assisted by the Bishop of Lincoln and others, has forwarded to us the following interpretation of it :—

NE·INTRES·IN·IVDICIVM
CVM·SERVO TVO·DOMI
NO·QVIA·NON·IVSTIFI
CABITVR IN·CONSPECTV·TVO·OMNIS
VIVENS·SCRIPTVM·PER·ME·IOANNEM
SPOR·WOD·DIE·IOVIS·NONODECIMO·DIE
MENSIS·ANNO·MILLESIMO. SEXCENTESI
MO * * * * * * * QVADRAGESIMO.

At this end the stone was nearly a foot longer, and had probably tailed or bonded into an old wall.

Or,

"Enter not into judgment with thy servant, O Lord, for in Thy sight shall no man living be justified. Written by me, John Sporwod, on Thursday, the Nineteenth day of the month of January, One thousand six hundred and forty-three."

It is conjectured that the stone formed part of the masonry of one of the old prisons, and was used as a building-stone in the new edifice. Mr. Hine suggests that the inscription is the work of some unfortunate Royalist, who was imprisoned in the castle during the Civil War, and that the darkness of the cell would account for the rudeness of the lettering. The history of the Civil War would give January, 1643, as a likely time for the imprisonment of John Sporwod, who was probably one of Prince Rupert's officers. October is the only other month in this year on which Thursday, the 19th falls. The writing marked with stars is obliterated. We may recommend the subscribers to Mr. Hine's book on "Nottingham, its Castle," to paste the above on one of its blank sheets, which are evidently intended for scrap-pages, and should be used as such by those interested in collecting historical fragments.

HOUSES FOR ALL CLASSES.

Sir,—You have so often advocated the better housing of the less well-to-do classes in London, and your remarks on the same subject in this week's *Builder* show you are still thinking of the subject, that I am induced to write a few words to you on the same question.

In the first place, is it necessary that people who can only pay a certain rent should live in what you call "barracks," or, in other words, in houses with such exterior appearance that any one who passes may know that the inhabitants are considered poor, and, in most cases, not free to do in their own houses what they like? I think this classification exceedingly objectionable; besides, it is not necessary. That private speculators should build streets, or whole quarters, entirely for people who can only pay a low rent can, of course, not be prevented; there are many with a small income, whose social position does not allow them to live in a poor neighbourhood or in "barracks," and for that class especially it seems to me very little is done.

You are undoubtedly right that it would be wrong to build "barracks" in such a street as the one contemplated to be formed from Tottenham-court-road to Charing-cross. In the first place, is it necessary in London more than in many Continental towns to build houses to look different from any other house because some of the inhabitants do not pay so high a rent as others? As a matter of course, a house with costly decorations must cost more than one without them; but a house can be built in good taste without being very expensive, and, what is particularly objectionable is that all the large houses intended for tenants who pay small rents should be so much alike that when you have seen one you know them all.

I know from experience that in the best streets in London third and fourth floors are difficult to let as offices, even at very low rents, and as they generally are badly arranged for people to live in, there are an immense number of such rooms not used except for lumber. If some of the houses in the new street were built so that there could be, say, three shops in each block, and the three floors above have a private entrance, so that with each shop could be let a floor, it would be convenient to many, and as each floor would have the width and depth of the three shops below, there would be ample room for a family to live in. I would then have fourth and fifth floors arranged for tenants who pay small rents; and, if necessary, a staircase could be arranged in each block of houses for the top floors.

C. L.

GOLDSMITH'S HOUSE.

Sir,—In your issue of the 4th inst., speaking of "Suburban Building in South London," you mention Goldsmith House, the former residence of the poet, and say it is stated that it will be shortly swept away.

My directors think you will be very glad to hear that at present they have no intention of pulling down this residence.

It will also interest you to know that a large portion of the garden will still be retained and will form recreation ground for the tenants of the model buildings now approaching completion under the superintendence of the company's architect.

Walter West,
Sec. Sanitary Dwellings Co.

ART FURNITURE.

Sir,—Can you tell me if amongst the several firms who deal in what is termed "art furniture," there is even one who thinks at all of the many who would prefer to have their houses furnished with some amount of taste, but who are unable to afford the large prices asked for this class of furniture as now made? Doubtless much of it is very beautiful, and all that sort of thing; but I want to get at something plain and economical, but still designed and made with taste and style. A firm who would give this idea some practical attention I think would not regret it. M.

MORE FEELING.

Sir,—The *feeling* school have lately taken another new crotchet into their heads, viz., that a church with two front towers should always have them as dissimilar as possible, taking as their precedents Canterbury (as it was), Llandaff, Chartres, Rouen. Of these churches you can only get a side or angular view, and in such cases odd towers look best; but wherever a full west view can be obtained, as at Lincoln, Lichfield, Wells, Brussels, twin towers were always built, and look by far more satisfactory. Two odd towers, contrary to the original design, have just been built to St. John's, Islington, a church of which no side view is visible; but its front overlooks a thoroughfare wider than most London streets.

I would suggest, by the way, some use for coupled towers. Generally one contains a peal of bells, and the other merely "looks on." There should be a chord of three bells,—one an octave below the tenor, one a third higher, and the other a third above this. I have tried on a piano the effect of a peal in two parts thus pro-

duceable. They would also do for a large clock to strike on. The three clock-bells at St. Paul's should be so replaced when the new peal has been hung; and an addition of the same kind made at Westminster Abbey, Lichfield, and Canterbury.

W. Scargill.

SURREY MASONIC HALL.

Sir,—As a letter in your impression of August 11th is likely to grossly mislead some who are interested in the above building, we, as the architects and surveyors to the company, beg to give an unqualified denial to Mr. Ramsey's statement of "facts."

In the first place, no lump-sum contract was ever entered into. There was, however, a priced bill of quantities, amounting to 4,882*l.*, for a building designed by the late Mr. John Thomas, which was, after his death, accepted as a schedule of prices for the building designed and carried out by us, and which contains fully three-times the floor-space of the building originally intended, the total cost of which, 7,965*l.*, includes expensive decorative work and several hundreds of pounds worth of furniture.

It seems unnecessary to say anything beyond this, except that when the accounts were made up and sent in an unjustifiable dispute arose (out of unsatisfactory business relations between the builder and Mr. Ramsey). The matter became a subject of reference from Mr. Justice Hawkins to Mr George Pownall. He, after searching and careful inquiry, complimented us upon the design and outlay, and gave his award for the full amount, 7,965*l.* of our certificate, less 3*l.* only. These are facts which speak for themselves.

The reason the building was offered for sale was the foreclosing of the mortgage for interest not paid; and when we inform you that the income of the hall is stated by the secretary of the company to be 1,000*l.* a year as a minimum, and has a ground-rent of only 25*l.* per annum, it requires but little professional skill to know that the building at 4,600*l.* is at less than half its marketable value.

Pain & Clark.

THE "DUCHESS OF DEVONSHIRE."

Sir,—I hope you will give me a little space in your journal to explain to your readers that the "Gainsborough" portrait of the Duchess of Devonshire, which you referred to in last week's impression, was not stolen in America, but in Sydney, South Australia, and the owner of the picture (Mr. Foster) was communicated with directly Messrs. Agnew's picture of the Duchess was stolen last year, whereupon arrangements were immediately made for the return of the owner to this country, but circumstances prevented his arriving here with his picture before the early part of June last; and it was exhibited to the public as soon after that as the necessary preparations would admit.

A. T. Holmes, Manager.

SKETCH-PLANS.

GLOVER *v.* THEEDDER.

In this case, heard a few days ago in the Lowestoft County-court, the plaintiff, an architect, claimed 3*l.* 3*s.* for preparing a sketch-plan.

Plaintiff said—On the 19th of August I saw the defendant at Mr. Leggett's house. Defendant was there, and entered into a treaty for some building land, and he gave me instructions to make plans for a house that would cost about 1,500*l.* Plans (produced) I sent to Mr. Leggett. In December defendant came to my office and said he approved of the plans, with the exception that he required some rooms larger. I then told him I thought he had better raise the money. I saw defendant several times afterwards, and he told me that he was raising the money, and he would see me again. I allowed the account to stand over because defendant had told me he was getting the money.

Cross-examined—I did not first suggest that I would get out the plans, and if they were approved, the money raised, and the house was built, I should act as architect. I never undertook to prepare plans on condition that if the house was built I should act as architect.

Mr. Leggett said, I recollect in 1874 introducing plaintiff to defendant.

Defendant said: At the interview referred to by Mr. Leggett, the plaintiff said it would be an expensive job, and he would get me out a little sketch plan to show Mr. Bugg Coaks, of Norwich, to whom I was going to apply for the money, and if I was successful the plaintiff was to be the architect. I was unsuccessful, and two years afterwards plaintiff sent me a bill.

Mr. Prentice, architect, said he had known several cases of architects preparing a sketch plan on the condition that if the building was erected the architect should have the preparing of the plans, &c. He had frequently prepared sketch plans at his own risk, and if the buildings were erected he charged 5 per cent. on the cost of the works.

The Judge said, in this, as in many other cases, the plaintiff swears one way and the defendant the other. He believed that defendant gave the order, and no special contract had been proved to his satisfaction. He therefore gave judgment for plaintiff for the amount claimed.

THE OPENING OF MUSEUMS AND FINE-ART EXHIBITIONS ON SUNDAYS.

Sir,—Much is being said at the present time about the opening of museums and galleries on Sundays, and great opposition is brought to bear upon such proposals. The people that are greatly opposed to this scheme say that it would bring about a great deal of extra and unnecessary labour on the Sabbath day, and that those men that are engaged six days in the week deserve one day at least out of the seven as a day of rest. I fully concur in this part of the question, but we must remember that this little extra work that is caused by the opening of these museums is a little extra good work, and I feel quite sure in my own mind that there are lots of good, kind-hearted people that would be only too glad to give their services gratuitously part of the Sabbath day, so as to relieve some of the officials that are at work all the week at our picture galleries and museums. Supposing, we say we will close the public-houses, and open the fine-art exhibitions on Sunday, do you not think that we should be taking a very long stride in the right direction? In my very humble opinion, I think that we should. Now it would be rather unreasonable to expect to be able to walk into a public-house on the Sabbath day and ask a working-man to go straight with you from the beer-house into the church. Is it to be supposed for one moment that we should find this man in a proper state of mind to be able to sit down and hear an eloquent and a touching sermon? I think you will agree with me when I say that this man wants a little preparation; but we could with the greatest confidence ask a working-man on his leaving the museum or the picture-gallery just to step into some of our beautiful churches. Can any of us give any estimate as to the great good that might result from this? It is well known that many of our picture-galleries contain some very splendid paintings on Scripture subjects, which being inspected on the Sabbath by working people might greatly tend to cultivate their tastes to far higher motives. In conclusion, let me ask if any of our active members of our dear old Church of England will pull the wires on this subject.

G. Ryan, a Working-man.

Miscellanea.

Mexican Antiquities.—Mr. W. H. Jackson, of Professor Hayden's Survey Corps, sends from Santa Fé, New Mexico, an account of work among the ancient ruins of that country. A number of ruined pueblos were visited in May, in the parts between the Tunecha and the Jenarz mountains; the largest of them was 540 ft. by 310 ft. They are mostly built around three sides of a rectangle, with open court facing south, and enclosed by a semicircular wall; and three or four stories can be traced with rooms sometimes as large as 14 ft. by 25 ft., and 12 ft. in height. In all the rooms there is a notable neatness of finish. A prominent feature is observed in the circular rooms, or "estufas," the council halls, or secret places for religious uses. One is over 60 ft. in diameter. In speaking of the ruined pueblos, Mr. Jackson notices the remarkable skill with which the stone walls were built. This has enabled them to withstand for hundreds of years the ravages of human hands and the slower work of the elements. The builders had their methods of laying the stone,—by regular sandstone blocks of the size of two bricks, cut and ground to a uniformity, by alternate layers of these blocks with layers of very small and thin pieces of sandstone, generally three courses of the thin to one of the thick, and last by laying the entire wall of these excessively small pieces of thin sandstone, without a particle of mortar at the surface. One wall, measured, was 490 ft. long, and originally fully 40 ft. high, and averaged 24 in. thick. The interiors of these walls were laid in with rougher stone, and with abundant clay mortar. Binding courses of pine sticks were laid in the wall.

Compensation for Improvements.—A deputation of the municipal corporations has presented a memorial to the President of the Local Government Board with reference to the tribunal for assessment of compensation to owners whose property has been taken for street improvements. They pointed out the unnecessary cost and delays of the present mode of assessing compensation by constituting a separate tribunal for every separate interest, and further that these evils prevented corporations from undertaking many valuable improvements, while in other cases property was bought by private treaty at excessive prices to avoid the delay and cost of proceedings. They considered that these evils would be effectually remedied by constituting one tribunal for the assessment of all the compensation payable for the property, as in the Artisans' Dwellings Act. In reply, the President said this new procedure in the Artisans' and Labourers' Dwellings Act was considered a great improvement, and the deputation had stated quite enough to show that on the score of expense, trouble, and time, the alteration they asked for was justified, provided only that the rights of private individuals were not unduly pressed for the sake of town improvements. That was a point which he should have to examine into, and if he could see his way to carry out their wishes, he should be happy to do so.

The Late Rev. Charles Boutell.—Many of our readers will have heard, with regret, of the death of the Rev. Charles Boutell, which took place a few days ago, at his residence, in Portsdown-road, Maida-hill, at the age of sixty-seven. He received his education at Cambridge, where he graduated, but was subsequently incorporated at Trinty College, Oxford. He was well known as the author of a work on "Ancient Monuments and Recumbent Effigies," and of an elaborate work on "Ancient Arms and Armour."

Loans for Metropolitan Improvements.—At the last meeting of the Metropolitan Board of Works, it was resolved, on the recommendation of the Finance Committee, subject to necessary approval, that the following sums be paid as loans:—To the Vestry of St. Lu 10,000*l.*, for five years, at an interest of 5 cent., for purchasing property in the parish carry out improvements. To St. Pancras (Ba and Washhouse Commissioners), 12,000*l.*, twenty years, at an interest of 3*l.* 15*s.* per ce to pay off balance of former loan; also a furt loan of 10,000*l.* for thirty years, at 3*l.* 15*s.* cent. interest, towards the construction of t new baths and washhouses near Tottenh court-road. To St. Pancras Burial Bo 10,000*l.* for thirty years, and 10,000*l.* to Islington Burial Board, at the rate of 3*l.* per cent. per annum, for the same period, purchasing additional land to enlarge t cemeteries at Finchley. To the managers the Central London Sick Asylums District, 45,178*l.* 6*s.* 8*d.*, 10,000*l.*, to pay existing loi that sum to be advanced for twenty-three ye at the interest of 3*l.* 15*s.* per cent. To Guardians of Lambeth, the sum of 6,0 towards defraying the cost of their new firmary, for thirty years, at an interest of 3*l.* per cent.

Public Works in Ireland.—The forty-f report of the Commissioners of Public Work Ireland, just issued, gives details of the var undertakings carried out by this branch of public service during the past year. The t amount of money advanced for the year 121,405*l.*, being a larger amount than that iss in any year since 1851. During the year wo have been commenced under 200 new lo divided as follows:—60 loans for drainage other land work,—amount, 44,825*l.*; 104 l for farm buildings,—amount, 59,240*l.*; 36 loans for labourers' dwellings,—amo 28,875*l.* The quantity of land drained un the Acts from the commencement, in 184 the 31st of March in this year is 258,183 ac and of this quantity 2,627 acres have b drained during the past year, at an aver cost of 7*l.* 0*s.* 6*d.* per statute acre. Since passing of the Acts 1,043 loans have been s tioned for the erection of farm buildi amounting to 519,670*l.* Of this number, 84 l amounting to 51,435*l.* were approved du the past year. For the purpose of erec dwellings for agricultural labourers, 349 l have been sanctioned since the passing of Act, giving a total amount of 1,999,090*l.*; during the past year forty-four applications sanctioned, amounting to 32,105*l.*

Kentish Timber.—Kent (says Mr. Ja Duff, in an interesting article on the "Ar culture of the County of Kent," in the number of the "Transactions" of the Scot Arboricultural Society) must have been at s remote period covered with vast forest primeval oak, for throughout the county the is the predominating tree, except on the c formation, where beech luxuriates. Larch Scotch fir frequently grow tolerably well on chalk formation, where the chalk is not near surface, but I have never seen large fir tree chalk. . . . . The oak timber of Kent is of quality, and generally grows to large dimens Trees measuring 300 to 400 cubic feet of tim are frequently seen, and trees ranging fro to 130 cubic feet of timber, and about the number of years' growth, are annually These are found on a good, deep, clay loam. the oaks growing on sandy soil are subje coult and ring shakes, which greatly reduc value. . . . . In several parts of Kent En elm is grown, which sometimes attains dimensions, measuring 250 to 300 cubic feet realises from 2*s.* to 2*s.* 6*d.* per foot.

Sea Defences at Dover.—A special me of the Corporation of Dover was held on the ult., to consider the means to be adopte carrying out the proposed work for the de of the East Cliff from the sea. After some siderable discussion it was decided, upo motion of Mr. Adcock, seconded by Mr. Bra "That the surveyor of the town be the eng appointed to carry out the work; that he structed to report as soon as possible o works to be carried out, and before comp his plans and specifications that he subm *précis* of the work he suggests for exec That the remuneration to be paid to him be cent. on the cost of the works, to include al liamentary and other works usual in such except travelling and hotel expenses.

empted Sale of the Manchester rium.—On the 1st inst., at the Clarence Manchester, the property and effects nting the Manchester Aquarium were o for sale by auction, by Mr. W. Wilson, neer, on behalf of the liquidators ap- d at a meeting of the shareholders of anchester Aquarium Company, Limited, n the 4th ult. The notice of the sale rth that the property consisted of a plot d containing 12,727½ superficial square the site of the aquarium building covering portion of the area. The remaining were ready for the erection of first-class residences. The notice went on to say he Aquarium was fitted with upwards of y commodious tanks, containing fishes, e animals, &c., collected at great expense, an enormous expenditure of time and s. The bidding commenced at 5,000*l.* was soon increased to 5,500*l.* The next as 6,500*l.*, and this was followed by a 6,750*l.* As there seemed to be no dis- on on the part of any one to make a bid, the auctioneer withdrew the ty.

Oxford Military College. — The tion-stone of a new building to accommo- xty additional students was laid on the lt. The new building has been designed T. G. Jackson, of London. It consists of k which will form the eastern side of the ngle, which it is proposed ultimately to nd with a complete set of collegiate build- The block now in progress will be three high; the ground-floor will contain class- and a master's room, and the two upper dormitories, divided by wooden partitions, bicles, of which the whole block will con- ty-six. At one end the new building will nicate with the existing buildings, and other there will be a spacious stone stair- The materials used will be Headington with dressings of brick, and on the side s the quadrangle with terra-cotta pilasters rnices in two orders. The plain wall face n the dressings will be finished with ing. The whole building will be warmed ntilated on Messrs. Haden's system. Mr. rt, of Gloucester, is the builder, and Scott clerk of the works.

ue of City Property.—The freehold and ld property known as St. Olaves Bonded ouses, situate in John-street, Minories, utched Friars, and the freehold premises ng known as Colonial Chambers, which recently offered for sale by auction by . Debenham, Tewson, & Farmer, have en disposed of for 76,800*l.* and 6,500*l.* ively. St. Olaves Bonded Warehouses an area of about 18,600 square feet, and t on lease at 5,111*l.* 13*s.* per annum. 4,900 ft. of this property is freehold, and mainder leasehold, for long terms at -rents amounting to 416*l.* 7*s.* 5*d.* per . Colonial Chambers occupy an area of 1,400 square feet, and produce a gross of 469*l.* per annum.——A plot of land, d at the corner of Gracechurch-street and ll, covering an area of about 850 ft., has y been let on building lease, by Messrs. & Davids, at a rental of 1,650*l.* per , or equal to nearly 2*l.* per square foot.

stionable Amendment of Building ws.—At the last meeting of the Slough Sanitary Authority, Mr. Barrett asked ard to agree to an alteration of one of the s. He referred to that which required s to carry up the party-wall above the the houses to a distance of 12 in. mea- at right angles from the slope, the object prevent the spread of fire from house to He said it was almost impossible to keep from coming down between the wall and tes, and there was hardly any material d which was effectual, but its price was tive in the smaller class of houses. He t it would benefit the neighbourhood if ould so far alter the bye-law. There was movement in the building trade, which en at a stand for some time, and it was le to give an impetus to it if possible. eration was approved.

ew Mansion, stables, and other works, nt to be commenced at Sidbury, in the urhood of Sidmouth, county of Devon, Right Hon. Stephen Cave, M.P., from igns of Mr. David Brandon. Messrs. Brothers are the contractors.

Social Science Congress.—The preliminary programme of the annual meeting of the Social Science Association is now complete. The special questions to be discussed have been selected, and will be taken on three days of the congress, the two remaining days being devoted to papers on other subjects coming within the scope of the various departments. The congress will be presided over by the Earl of Aberdeen, who will inaugurate the proceedings with an address. The following have accepted the office of presidents of departments, all of whom will deliver addresses:—International and Municipal Law,—Lord Gifford, one of the judges of the Court of Session. Repression of Crime,—The Lord Advocate. Education,—Lord Young. Health, — Mr. Edwin Chadwick, C.B.; and Economy and Trade,—Mr. James Caird, C.B., F.R.S. Art,—The Lord Ronald Leveson Gower. The meetings of the departments will be held in the Marischal College; while for other purposes the municipal buildings will be placed by the corporation at the service of the congress. The meeting will be held in Aberdeen from September 19 to 26.

The Archæologist. — Imagination (says *Fraser's Magazine*) is a very important qualification for an archæologist to possess; without this he becomes only a chronicler of facts—a mere writer of catalogues—and must be wholly without the power of seeing the value of the discoveries he may have made. The old theory that a student of antiquities must be a "Dryasdust" ought to be now exploded. There is no department of thought presenting so many influences which are calculated to excite the imagination. The constant contact with relics of former times is an incentive to this faculty, picturing to the mind the former condition of things and of men. The use and purpose have often to be realised of shreds and patches which have been brought to light, and this is the power which accomplishes it. But, in proportion to the strength of this power, a counterpoise of judgment is necessary, otherwise the imagination gets loose and runs riot.

A New Street.—At the Consistorial Court of London last week, an application was made to Dr. Tristram, the chancellor of the diocese, for a faculty or licence to remove some tombstones and a number of bodies from one portion of the burial-ground of St. Dunstan, Fleet-street, to another portion, in order to form a new street, between Chancery-lane and Fetter-lane, in continuance of Bream's Buildings. A petition has been filed in the Registry of London by the rector and churchwardens of St. Dunstan's in support of the application. It was stated therein that the churchyard had been closed for a number of years by an Order in Council, and that the Ecclesiastical Commissioners and the Commissioners of Sewers of the City of London were co-operating in the application. The Court required to hear evidence in support of the application, and the matter stood over until the next court day.

New Police Stations in Manchester.—A new police-station for Manchester, intended as an auxiliary to the one in Goulden-street, Rochdale, has been opened at Collyhurst, between the Queen's-road and Collyhurst-street. The building, which has been erected of brick, with stone dressings, by Mr. S. Warburton, of Harpurhey, from the designs of the city surveyor, Mr. J. H. Lynde, affords accommodation for a resident officer, charge-office, reserve-room, seven cells, and a parade-room above. In the rear is a drill-ground, at one corner of which there is in course of erection a large room, which is to be used for public purposes. Steps are at present being taken for the erection of a substation in Newton-street, Piccadilly.

Lifeboats.—The Royal National Lifeboat Institution has accepted a tender for 520*l.* for the erection of a handsome boathouse at Clacton-on-Sea, where the first of the lifeboats founded by the Freemasons in honour of the Prince of Wales will be stationed. This lifeboat-house will be the handsomest on the coast, and a tower will be erected above it at the request of the donor of the site.

Eastbourne.—At a recent meeting of the Local Board, it was resolved, on the motion of Mr. Cavendish, to offer 3,000*l.* for Oak Cottage and the ground attached to it, for the purpose of building public offices and a town-hall. One of the speakers described the present accommodation for magisterial and public business as a positive disgrace to a flourishing town like Eastbourne.

The Campden Reservoir, Kensington.—A correspondent informs us that a committee of the Kensington Vestry has been appointed to inspect the Campden Reservoir, Campden-hill, Kensington, which is, he alleges, "in a dangerous state, leaking fearfully, and there would be immense loss of life if it were to give way. . . . Buttresses are constantly being built, but it is confessedly a weak structure for such millions of tons of water to be contained in it above such a populous neighbourhood."

TENDERS.

For the erection of two houses, with sale-shops, at Basford, for Mr. W. H. Hutchinson. Mr. S. Dutton Walker and Mr. Herbert Walker, joint architects. Quantities supplied:—

Hodson & Facon	£1,025	0	0
Bell & Son	975	16	0
M'Culloch	941	12	0
Woodcock & Clayson	913	19	5
Clarke	895	0	0
Woolf	880	0	0
Hopwell	853	3	0
Doughty	839	8	0
Wade	830	0	0
Baines & Turton	825	0	0
Stainforth (accepted)	765	0	0
Newham	760	2	8
Herriot	750	0	0
Dickens & Brown	584	5	11 !

For the erection of Board schools at Sherwood, for the Basford School Board. Mr. S. Dutton Walker and Mr. Herbert Walker, joint architects. Quantities supplied:—

Hind	£2,555	0	0
Fish & Son	2,530	0	0
Mosley	2,5[illegible]6	13	8
Jelley	2,471	18	0
Stevenson	2,453	0	0
Bell & Son	2,221	0	0
Vickers	2,190	0	0
Wayte	2,185	0	0
Hodson & Facon	2,166	0	0
Woolf	2,163	12	0
Baines & Turton	2,100	0	0
Doughty	1,993	18	8
Clarke	1,959	12	0
Woodcock & Clayson	1,901	11	0
Stainforth (accepted)	1,777	0	0

For paving, kerbing, &c., in Bulwell Market-place, for the Local Board. Mr. Herbert Walker, engineer. Quantities supplied:—

Cordon	£698	0	0
Messom	595	0	0
Redgate	551	3	3
Stainforth	525	0	0
Meats, Bros.	521	0	3
Attenborrow	457	13	8
Parker	434	7	6
Knight (accepted)	337	5	0

For the erection of a villa residence at St. Leonard's-on-Sea, for Mr. C. G. Eversfield. Messrs. Fowler & Hill, architects. Quantities supplied by Messrs. Fowler & Hugman:—

Howell & Sons	£6,370	0	0
Parks	6,105	0	0
Vidler	6,068	0	0
Morgan	6,025	0	0
H. & C. Hughes	5,990	0	0
Rodda	5,899	0	0
Wood (too late)	5,450	0	0
Cruttenden	5,400	0	0

For the erection of stables at St. Leonard's-on-Sea, for Mr. T. Mason. Messrs. Fowler & Hill, architects. Quantities supplied by Messrs. Fowler & Hugman:—

Ockenden	£833	0	0
Wood	829	0	0
Rodda	765	0	0
H. & C. Hughes	759	0	0

For rebuilding Nos. 291 and 292, High Holborn, with premises in the rear. Mr. Charles Reilly, architect. Quantities by Messrs. Gardiner, Son, & Theobald:—

Holland & Hannen	£11,700	0	0
Ashby & Horner	11,580	0	0
Conder	11,475	0	0
Sewell & Son	11,470	0	0
Ashby, Bros.	11,117	0	0
Killby	11,085	0	0

For rebuilding No. 64, High Holborn. Mr. Shoppee, architect. Mr. E. Overall, surveyor:—

Drew & Co.	£2,622	0	0
Lawrence	2,187	0	0
Braid & Co.	2,000	0	0
Bishop	1,979	0	0
Langmead & Way	1,964	0	0
Newman & Mann	1,961	0	0
Nightingale	1,943	0	0
Axford	1,935	0	0

For rebuilding house, Tenter-street, Prescott-street. Mr. S. C. Aubrey, architect:—

Boyce	£694	0	0
Wire	583	0	0
Thomason	572	0	0
Johnson	557	0	0
Reed	475	0	0

For hospital at West Ham, Essex, for the Board of Works, Poplar:—

Sewell & Son	£13,050	0	0
Perry	12,950	0	0
Baker & Co.	12,871	0	0
Harris & Wardrop	12,790	0	0
Watts	12,683	0	0
Abrahams	12,443	0	0
Coleman	12,133	0	0
Johnson	11,995	0	0
Killby	11,485	0	0
Atherton & Latta	11,444	0	0
Wood	11,380	0	0
Simm	11 200	0	0
Martin	10,948	0	

For alterations at the Kemble's Head, Bow-street. Mr. W. Paice, architect:—

Lamble	£177 0 0
Shurmur	171 0 0
Godden	170 0 0

For alterations at the Amherst Arms public-house, Shacklewell. Messrs. Lamb & Church, architects:—

	Alterations.	Repairs.
Godden	£299 0 0	£98 0 0
Lamble	298 0 0	98 0 0
Shurmur	300 0 0	93 0 0
Hockley	280 0 0	83 0 0

For branch Police-station, &c., at Tynemouth. Mr. J. P. Spencer, architect. Quantities by Mr. Roger Shotton:—

Hirst & Sons	£4,500 0 0
Bolton	4,488 0 0
Harbottle	4,444 0 0
I. & T. Robson	4,353 14 0
Shotton, Bros.	4,157 15 0
Chapman & Son	4,130 0 0
Miller	4,052 0 0
Nicholson (accepted)	3,932 6 9

Amended, for covering over the Markeaton Brook, in the borough of Derby, for the Urban Sanitary Authority. Mr. Clement Dunscombe, borough engineer.—

		Per foot run.
Nowell & Robson	£6,398 0 0	£8 13 0
Baker & Firbank	5,750 0 0	6 0 0
Tomlinson, Bros.	4,988 0 0	5 4 0
Benton & Woodiwiss*	4,632 0 0	4 12 6

* Accepted.

For paving with wood the carriageways of certain streets in the borough of Derby, at per yard super., and annual maintenance thereof for fifteen years, for the Urban Sanitary Authority. Mr. Clement Dunscombe, borough engineer.—

	First cost.	Annual Maintenance.
Henson's Street Paving Company	17s. 0d.	1s. 3d.
Carey, Sons, & Co.	16 0	1 6
Ligno-Mineral Paving Company, beech and elm	16 0	0 6
Ditto, pitch pine	15 0	0 7
Improved Wood Pavement Company (Limited)*	15 0	0 9
Asphaltic Wood Paving Company (Limited)*	15 0	0 9
Armstrong & Addison*	14 6	0 8
Wilson	13 9	1 3
London Wood Paving Company	13 0	1 6

* Accepted.

For paving with stone the carriageways of certain streets in the borough of Derby, for the Urban Sanitary Authority. Mr. Clement Dunscombe, borough engineer:—

	Mountsorrel.	Welsh.	Dalbeattie.	Enderby.
Gripper	£11,418	—	£13,017	—
Tomlinson, Bros.	10,595	£11,100	11,100	—
Nowell & Robson*	—	9,998	9,998	£9,998
Batch	9,699	—	—	—
Wilson (schedule of prices only).				

* Accepted.

For sewer works in the borough of Derby, for the Urban Sanitary Authority. Mr. Clement Dunscombe, borough engineer:—

Baker & Firbank	£1,392 0 0
Nowell & Robson	1,359 0 0
Morrow & Eckett	1,326 0 0
Pickering	988 0 0
Faulkner & Holden	930 0 0
Tomlinson (accepted)	786 0 0

For rebuilding No. 2, Pancras-lane, for Mr. Champion. Quantities by Messrs. Batterbury & Huxley:—

Greenwoods	£2,260 0 0
Newman & Mann	2,135 0 0
Ashby & Horner	2,113 0 0
Ashby, Bros.	2,078 0 0

For alterations and extensions to gas plant, for the Haddam Gas Company. Messrs. Chandler & Sons, engineers:—

Chandler & Sons (accepted).

For heating apparatus, for the committee of the Lower Norwood Baptist Chapel:—

Chandler & Sons (accepted).

For alterations to the Fountain public-house, for Messrs. Whiter, Bros. Mr. G. Treacher, architect:—

Beal	£723 0 0
Simpson	692 0 0
G. & S. Fisher	689 0 0
Everett	570 0 0

For sixteen carcasses in the Fontenoy-road, Balham, for Mr. E. Ryde. Mr. Henry Hall, architect:—

Beckey	£12,120 0 0
McLachlan	11,100 0 0
R. & E. Smith*	11,000 0 0
Hitchcock	8,643 0 0

* Accepted for twelve carcasses.

For alterations and decorations to Langlands, Clapham Park. Messrs. George & Peto, architects.—

B. & E. Smith (accepted) £1,500 0 0

For a new vicarage at Eton, Bucks, for the Rev. Mr. Shepherd. Messrs. B. & E. B. Ferrey, architects:—

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Gibson	3,720 0 0
Dove, Bros.	3,695 0 0
Goddard & Sons	3,675 0 0
Holis	3,585 0 0
Fassnidge & Son	3,510 0 0

For painting the exterior of Stepney Union Workhouse and Infirmary, at Bromley-by-Bow, and for sundry repairs and exterior painting at the offices, York-street, Commercial-road, for the Guardians of the Stepney Union. Messrs. A. & C. Harston, architects:—

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Balding	366 0 0
Wortley	345 0 0
Whitford	327 0 0
Anderson	311 0 0
Haynes	297 0 0
French & Malony	285 0 0
Derby (accepted)	279 0 0!

For works in forming new roads, &c., at Hackney. Messrs. Lee & Smith, surveyors:—

Castle	£495 0 0
Waltram & Co.	449 0 0
Forrest	379 0 0

For works to the public baths and washhouses, Whitechapel. Mr. John Hudson, architect:—

Builders' Work.

Crabb	£10,678 0 0
Hunt	8,200 0 0
Wood, Bros.	8,074 0 0
Jacobs	7,920 0 0
Johnson & Co.	7,741 0 0
Little	7,471 0 0
Green & King	6,751 0 0

Engineers' Work.

Hett	£6,000 0 0!
Fraser, Bros.	3,450 0 0
Millar & Sons	3,434 15 6
Rosser & Russell	3,168 0 0
Mason	2,693 0 0
J. & F. May	2,569 0 0
Smith & Co.	2,346 0 0!

Boiler Makers' Work.

Cleveland Bridge Engineering Company	£2,700 0 0!
Hett	1,550 0 0
Smith, Pender, & Co.	1,510 0 0
Marshall & Co.	1,335 0 0
Rosser & Russell	1,297 0 0
Mason	1,229 0 0
Millar & Sons	1,189 0 0
Hodge & Sons	1,179 0 0
Fraser, Bros.	1,075 0 0
Howarth	1,065 0 0
Abbott & Co.	1,050 0 0
J. & F. May	1,040 0 0!

For additions to Bryntirion, near Llandrindod, Radnorshire. Mr. E. H. Lingen-Barker, architect:—

Berry	£3,124 14 0
Stephens & Bastow	2,698 0 0
Welsh	2,529 0 0
Balcombe	2,515 0 0
Jones & Co.	2,488 0 0
Morgan	2,394 0 0
Coleman, Bros.	2,322 0 0
Griffiths	2,232 3 6
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For alterations and fittings at 52, Threadneedle-street, London. Mr. William Eve, architect:—

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For the erection of stabling and warehouses at Newington, London. Mr. William Eve, architect:—

Heiser	£1,160 0 0
Devereux	1,109 0 0
Salt	994 16 0
Sheffield	988 0 0
Crabb (accepted)	950 0 0

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LONDON HOUSE: MINTON & CO. 50, Conduit-street, Regent street, W. | MANCHESTER: 110, King street.

LONSDALE'S PATENT
VENTILATING STENCH TRAP
and ALEXANDER'S PATENT VENTILATING GULLY form a complete System of Ventilation. Approved and adopted by the Leeds Corporation and others.
Manufactured in Glazed Earthenware solely by
THE FARNLEY IRON COMPANY (Limited), near Leeds.

ADVERTISING.—C. H. MAY & CO.
GENERAL ADVERTISING OFFICES.
No. 78, Gracechurch-street, London.
Established 1846.
ADVERTISEMENTS RECEIVED for insertion in all Newspapers, &c.

COMPETITIONS.

BOROUGH of BOLTON.—The Council of the Borough of Bolton invite DESIGNS for a MUSEUM to be erected in Bolton Park
Plans and sections of the site, with further particulars, may be had from the Borough Surveyor, Town-hall, Bolton, on payment of 5s. which sum will be returned after receipt of Design.
For the best Design, in the opinion of the Council a premium of 50l. will be offered, and for the second best 25l. but no payment will be made for any other Design.
Designs under seal, without signature, but with a motto or device, and a letter (also under seal) containing the correspondents name or device and the designer's name and address, must be sent to the undersigned on or before the 29th day of OCTOBER next.
By order,
R. G. HINNELL, Town Clerk.
Town-hall, Bolton, 17th August, 1877.

[*Competitions continued, and Contracts, on next page.*

DOULTON & CO. LAMBETH,

MANUFACTURERS OF

Faience for Art Decoration, Plain and Ornamental Stoneware

Architectural and Horticultural Terra Cotta, Sanitary Ware, Plumbago Crucibles, &c.

HAVE OBTAINED AWARDS AT VARIOUS EXHIBITION

Including Five Medals at Vienna, Five at Philadelphia,

AND THE DIPLOMA OF HONOUR WITH GOLD MEDAL AT THE SOUTH AFRICAN INTERNATIONAL EXHIBITION, 1877.

Chief Offices: HIGH STREET, LAMBETH, LONDON, S.E. Manufactories: LAMBETH, STAFFORDSHIRE, and LANCASHI

Depots: LIVERPOOL, MANCHESTER, BIRMINGHAM, and PARIS.

GRANITE ROCK AND SEYSSEL ASPHALTE.

For Floors, Paving, &c. A certain Preventive of Damp and Vermin.

For Prices and Specimens, apply at the Offices of the Company, 57, GRACECHURCH STREET, E.C.

BOROUGH of STAFFORD.—COVERED MARKET EXTENSIONS.—The Town Council invite DESIGNS for the ERECTION of BUTCHERS' MARKET, &c. Printed instructions and lithographed plans of the site may be obtained on application to the Borough Surveyor. A Premium of 75*l.* will be paid for the best set of Plans, and 25*l.* for the Second best. All plans to be sent in on or before the 15th day of OCTOBER next.—By order,

MATT. F. BLAKISTON, Town Clerk.

Guildhall, Stafford, September 4th, 1877.

TO ARCHITECTS.—WANTED by the Corporation of Swansea, ELEVATIONS for JUDGES' RESIDENCE. Copies of the plans of the several floors and proposed site, together with instructions and conditions, can be obtained on application to Mr. EDWARD COUSINS, Borough Engineer Guildhall, Swansea. A premium of 50*l.* is offered for the Elevation that is accepted and adopted by the Council.

JNO. THOMAS, Town Clerk.

Guildhall, Swansea, 23rd August, 1877

CONTRACTS.

WAR DEPARTMENT CONTRACTS,— To BUILDERS and CONTRACTORS.—Triennial Contracts, Northern District.

TENDERS are required for the performance of such WORKS and REPAIRS and for the SUPPLY of such BUILDING MATERIALS as may be required to War Department buildings and property at the undermentioned station, from the 1st of October, 1877, to the 31st of March, 1880:—Liverpool, including Everton, North Fort, Lizard Battery, Perch Rock Battery, and Adcar Battery

Persons wishing to Tender for the above Station may obtain forms of Tender and schedules of prices on application to the Commanding Royal Engineer, Royal Engineer Office, Manchester. The contract will embrace bricklayers', masons', paviors', carpenters', plasterers', plumbers', slaters', smiths', painters', and gasfitters' work.

A sum of 18*s.* 6*d.* will be charged for the schedules. The schedules of prices can be seen at the Barrack Sergeant's Office, Liverpool, or at the Royal Engineer Offices, Chester, Bootle, &c. P.O.O. to be made payable to Bennett Jebb-Osborne, Chief Clerk, R.E. at the Chester-road Post-office, Manchester.

Tenders to be delivered at the War Office, London, on or before SEPTEMBER 24th, 1877.

The Secretary of State for War reserves the right of rejecting any or all of the Tenders.

Royal Engineer Office, 12, Princes-street, Cornbrook, Manchester, 27th August, 1877.

NEW WORKHOUSE, SHEFFIELD UNION.—The Guardians of the above Union are prepared to receive TENDERS for the Works required in the ERECTION of New WORKHOUSE BUILDINGS, and in the Construction of ROADS, on land at Fir Vale, Bramoor, Sheffield. Tenders will be received for the whole or for the various departments of the Works separately. Drawings and specifications may be seen after AUGUST 21st, at the Office of Mr. HALL, Architect, 10, Paradise-square, Sheffield. Copies of quantities may be had on payment of three guineas, which sum will be returned on receipt of a bond fide Tender. Sealed Tenders, addressed to me, and endorsed "Tender for New Workhouse Buildings," to be delivered at my Offices, Kelham-street, Sheffield, not later than TWELVE o'clock at Noon on TUESDAY, OCTOBER 23rd inst. The Guardians do not bind themselves to accept the lowest or any Tender.—By order of the Board,

JOSEPH SPENCER, Clerk to the Guardians.

Union Offices, Kelham street, Sheffield, 15th August, 1877.

GREENWICH DISTRICT BOARD of WORKS to PAVING CONTRACTORS and OTHERS.— The Board of Works for the Greenwich District is prepared to receive TENDERS for PAVING the FOOTWAYS of River-terrace (from the Pilot P.H. to the River Bank), Upper Tyler-street (from Walnut-tree road to New road), the portion of Edward-street south, which enters it from Walnut-tree-road to New-road, and New road (from Conduit-lane to Edward-street South), in the Parish of Greenwich, with TAR COMPOSITION and ABERDEEN GRANITE and GUERNSEY GRANITE KERB; and MAKING GOOD the Roadways with Bomb'ay Gran. te and Kentish Rag Stone, and for Paving the Channels with Aberdeen Granite Cubes, and other Works, according to the specifications. Also, for Paving the Footways of Somerville-road and Frederick-street, Blackheath, in the Parish of St Paul, Deptford, with 2½-inch Tooled York Stone and Aberdeen Granite, and Guernsey Gran te and York Stone Make Good the Roadways with Kentish Rag Stone and Linton Flints, and Paving the Channels with Aberdeen Granite Cubes, and other Works, according to the specifications The specifications and plans can be seen, and particulars obtained at the Offices of the Board, in the Greenwich-road, Greenwich, between TEN and FOUR o'clock (on Saturdays, between TEN and ONE). A separate Tender (which must be made on the form to be supplied at the Board's Offices), for the Works in each Street, sealed up and endorsed with the name of the Street to which it refers, must be sent in to the Board's Offices as above, before FOUR p.m. on WEDNESDAY, the 26th inst, and parties Tendering, or their agents should attend at the said Offices at SEVEN p.m on that day The Board does not bind itself to accept the lowest or any Tender.

J. SPENCER, Clerk of the Board.

Greenwich, September 12th, 1877.

GREENWICH DISTRICT BOARD of WORKS.—To OILMEN, &c.—The Board of Works for the Greenwich District is prepared to receive TENDERS for the SUPPLY of BROOMS, BRUSHES, CANDLES, OIL, &c. Printed forms of Tender can be obtained, and samples seen at the Offices of the Board, in the Greenwich-road, Greenwich, between TEN and FOUR o'clock (on SATURDAYS between TEN and ONE). Tenders must be sent in on the printed forms, sealed up, and endorsed "Tender for Brooms, &c. before FOUR p.m on WEDNESDAY, the 26th instant, and parties Tendering or their agents, should attend at the said Offices at SEVEN p.m. on that day. The Board does not bind itself to accept the lowest or any Tender.

J. SPENCER, Clerk of the Board.

Greenwich, September 12th, 1877

BUILDERS desirous of TENDERING for the ERECTION of a BLOCK of BUILDINGS in FLATS, at Southwark Park, are requested to send in their names and addresses, with reference, to WYNNE E. BAXTER, Esq. Solicitor, 5, Laurence Pountney-hill, Cannon-street, E.C.

MIDLAND RAILWAY. —To BUILDERS and OTHERS. — The Directors are prepared to receive TENDERS for the ERECTION of BUILDINGS for HYDRAULIC MACHINERY, at the Victoria Docks Persons desirous of Tendering for these works may inspect the drawings, specification, and quantities, upon application at the Engineer's Office, St. Pancras Station, London, on and after MONDAY next, SEPTEMBER 10th. Tenders to be forwarded by post to the Secretary of the Way and Works Committee, Midland Railway, Derby, not later than NINE a.m. on TUESDAY, SEPTEMBER 18th. The Directors do not bind themselves to accept the lowest or any Tender, nor to pay any expense connected with any same. JAMES WILLIAMS, Secretary.

Derby, September 4th, 1877.

MIDLAND RAILWAY. — To CONTRACTORS and BUILDERS. -The Directors of the Midland Railway Company are prepared to receive TENDERS for the MASONRY FOUNDATION of an HYDRAULIC COAL-HOIST at North Dock, Sunless. Plans and specifications may be seen, and Form of Tender and particulars obtained on application to the Resident Engineer's Office, Brecon, on and after WEDNESDAY, 12th SEPTEMBER Sealed Tenders to be sent in, addressed to the Secretary of the Way and Works Committee, Midland Railway, Derby, not later than NINE a.m. on TUESDAY, the 18th of SEPTEMBER 1877 The Lowest or any not necessarily Unreasonable to accept the lowest or any Tender, nor to pay any expenses attending the same JAMES WILLIAMS, Secretary.

Derby, September 6, 1877.

THE BOARD of WORKS for the LEWISHAM DISTRICT.—To SEWER CONTRACTORS and OTHERS. Notice is hereby given, that the Board is prepared to receive TENDERS for the CONSTRUCTION of about 500 feet run of 15-inch and about 2 800 feet run of 12-inch PIPE SEWERS in certain new streets leading out of Brockley-lane, known as Webb's Estate, and in Brockley-lane, Lewisham The plans and specifications of the work may be seen at the Offices of the Board on and after the 17th inst. where printed forms of Tender and other particulars may be obtained. Tenders to be delivered at the office on or before the 25th inst. The Board does not bind itself to accept the lowest or any Tender —By order,

SAMUEL EDWARDS Clerk to the Board.

Rushey-green, Catford, S.E. September 3 1877

BOARD of WORKS, Whitechapel District. A Meeting of this Board will be held on MONDAY, the 17th of SEPTEMBER, 1877, at SIX o'clock in the Evening, at the Office, No 15, Great Alie-street, Whitechapel, to receive TENDERS for certain PAVING WORKS in Commercial-road East, and to accept the Specifications, with forms of Tender and further particulars, may be obtained on application to the Surveyor of the Board, between TEN and TWELVE o'clock in the Forenoon Tenders to be delivered previously to the hour of Meeting; but the Board do not bind themselves to accept the lowest or any Tender.

ALFRED TURNER, Clerk.

No. 15, Great Alie-street, September 4, 1877.

OVER DARWEN LOCAL BOARD.— The Over Darwen Local Board are prepared to receive TENDERS for the SUPPLY of from 600 to 700 Tons of 4-inch CUBE WELSH or SCOTCH SETTS, to be carriage paid to Over Darwen Station. A sample to be forwarded to Mr DAVID SCHOLES, Surveyor to the Board from whom any further information may be obtained Sealed Tenders to be sent to the undersigned, on or before the 22nd day of September, 1877, endorsed "Tender for Cube Setts." The lowest or any Tender will not necessarily be accepted

CHARLES COSTEKER, Law Clerk to the Board.

Church street, Over Darwen, Lancashire, 1st Sept 1877.

CROYDON LOCAL BOARD of HEALTH. CONSTRUCTION of SEWER.—Notice is hereby given, that the Local Board are prepared to receive TENDERS for the CONSTRUCTION of 780 lineal yards of 4 feet CULVERT in Brickwork and Concrete, with Manholes, near Birmingham Barn, Croydon Full particulars may be obtained on application at the Town Hall, Croydon, where plans, &c may be inspected Tenders to be sent to me by 10 o'clock, on TUESDAY, the 18th of SEPTEMBER instant. The Board will not be bound to accept the lowest or any Tender By order of the Board,

E. J. CHEESWRIGHT, Clerk.

Town Hall, Croydon, September 5th, 1877.

TO BUILDERS.—TENDERS are invited for the ERECTION and COMPLETION of a NEW BUILDING at the Pale Ale BREWERY, Maidstone, for Messrs. Premiln Brothers. The plans and specification may be seen at the Brewery on and after THURSDAY, SEPTEMBER 20th, 1877, and a copy of bills of quantities obtained on payment of one guinea, which will be returned on receipt of a bond fide Tender The Tenders are to be delivered not later than TEN o'clock, on THURSDAY MORNING, SEPTEMBER 27th The Proprietors do not bind themselves to accept the lowest or any Tender

Pale Ale Brewery, Maidstone, 6th September, 1877.

TO BUILDERS.—TENDERS are requested for the REBUILDING of STONDON PLACE, Essex, belonging to Mrs. Baker. The property is situate about four miles from Ongar and 21 from Brentwood. On and after MONDAY, the 10th of SEPTEMBER, plans and specifications may be seen between ELEVEN and THREE o'clock, and quantities obtained on payment of 10*s.* at the Office, No. 20, John-street, Bedford-row, London, W.C of E SWANSBOROUGH, Esq the Architect The Proprietor will not be bound to accept the lowest or any Tender. All Tenders must be sent in by MONDAY, the 24th of SEPTEMBER next, addressed to J. C STODDON, Esq. 15, Clement's-inn, Strand, London, W.C

TO CONTRACTORS and OTHERS.—The Eastbourne Local Board is prepared to receive TENDERS for the ERECTION of SIX OAK GROYNES in the Foreshore of the Grand Parade, Eastbourne Plans and specifications may be seen at the Surveyor's Office, Meads-road, Eastbourne Tenders to be sent in not later than WEDNESDAY, the 19th SEPTEMBER, 1877, addressed to the "Chairman of the Highways Committee, Surveyor's Office Eastbourne," and endorsed "Tender for Groynes." The Board does not bind itself to accept the lowest or any Tender.—By order.

September 11th, 1877. CHAS. TOMES, Surveyor.

BOROUGH of GRAVESEND, KENT BROKEN GUERNSEY GRANITE.—The Gravesend Sanitary Authority being desirous of CONTRACTING for the CHASE of about 500 Yards of BROKEN GUERNSEY GRANITE for the purpose of metalling the roads within the said Borough same to be approved by the Surveyor of the said authority, and livered on the bank of the Canal Basin, Milton, next Gravesend. Invite TENDERS for the SUPPLY thereof at per Cubic Yard.

Tenders must be sent to my office before FOUR o'clock on WEDNESDAY, the 26th inst.

The Contractors must give such security for the due performance the Contract as the authority may require

G E SHARLAND, Town Clerk

Court House, Gravesend, 6th September, 1877.

COUNTY of NORFOLK.—AUXILIARY LUNATIC ASYLUM.—To BUILDERS.—The Committee Visitors of the Norfolk County Lunatic Asylum are desirous of receiving TENDERS for the ERECTION of an AUXILIARY LUNATIC ASYLUM, at Thorpe, near Norwich, to accommodate 250 patients. Builders wishing to send in estimates may see the plans and specifications at my Offices, Surrey-street, Norwich, on and after MONDAY the 17th inst. and obtain bills of quantities upon depositing the sum of five guineas, which will be returned to those sending in a bona fide Tender. All Tenders are to be sealed and endorsed "Tender for Auxiliary Asylum," and addressed to the Visiting Justices, Norfolk County Lunatic Asylum, and to be sent under cover to me, at my Offices, at Norwich, not later than FRIDAY, the 12th of OCTOBER next. The Visiting Justices do not bind themselves to accept the lowest or any Tender.

R. M PHIPSON, Architect,

County Surveyor of Norfolk and Surveyor to the Diocese of Norwich.

Norwich, September 13th

UXBRIDGE UNION.—To BUILDERS. The Guardians of the Poor of the Uxbridge Union, at a meeting to be held at the Union Workhouse, Hillingdon, on FRIDAY the 21st day of SEPTEMBER instant, will be prepared to receive TENDERS for carrying out the several works necessary to be done in the ALTERING and RENEWING WARDS, and erecting a Padded Room and other Works, at the Union Workhouse at Hillingdon, according to the drawings and specification prepared by Mr. GEORGE EVES, and which will be open for inspection at the Board-room of the said Union Workhouse on and after TUESDAY next, the 11th inst. where printed forms of Tender can be obtained Tenders must be sent to me at my Office in Uxbridge, on or before THURSDAY, the 20th of SEPTEMBER inst.; and no Tender will be considered unless it is made up in one of the printed forms

All persons Tendering must attend the meeting of the Guardians at TWELVE o'clock on the said 21st of SEPTEMBER inst

Security will be required for the due performance of the contract

The Guardians do not bind themselves to accept the lowest or any Tender.

CHARLES WOODBRIDGE, Jun.

Clerk to the Guardians

Uxbridge, September 7, 1877.

TO BUILDERS.—The Chepstow School SCHOOL-HOUSES in Chepstow Plan and specification and draft contract to be entered into, may be seen at the School Board Office, Beaufort-square, Chepstow, between the hours of TEN a.m. and FOUR p.m daily (except Sundays) Sealed Tenders, endorsed "Tender for Erection of Schools," to be addressed "To the Chepstow School Board" by post, and be at the office above-mentioned on or before NOON of MONDAY, the 24th day of OCTOBER next The Board do not bind themselves to accept the lowest or any Tender. The name, address, or names and christian name and description of a good and sufficient surety or sureties, to join the contractor in a bond for the due fulfilment of the contract, must accompany the Tender.

Dated September 12th, 1877.

THOS. GRIFFITHS, Clerk to the Board

TO CONTRACTORS and OTHERS.— GREAT CROSBY DISTRICT.—The Local Board for the District are prepared to receive TENDERS for CHANNELLING, KERBING, PITCHING, and ASPHALTING the ROADWAY and FOOTWAYS of a portion of Mersey-road, Great Crosby, extending from Alberta-road to Kenilworth-road. Plans, sections, specification and quantities may be seen at the, Office of Mr. T. MELLARD READE, C.E. the Engineer and Surveyor of the Board, 4, South John-street, Liverpool. Sealed Tenders, addressed to the Chairman of the Highway Committee, and marked "Tenders for Mersey-road," must be sent to the Local Board Office, Victoria-road, Great Crosby, before SIX p.m. on MONDAY, the 24th day of SEPTEMBER instant. The Board do not bind themselves to accept the lowest or any Tender.

MAURICE J. HORE, Clerk to the Board.

Offices of the Board, Victoria-road, Great Crosby,

September 1, 1877.

NOTTINGHAM and LEEN DISTRICT SEWERAGE BOARD (25 and 26 Vict. Cap. 103).—OUTFALL WORKS. — The CONTRACTORS and IRON FOUNDERS.—Notice is hereby given that the Board are prepared to receive TENDERS from competent and experienced Contractors for the EXECUTION of the OUTFALL SEWER and WORKS from Nottingham and Sneinton to Stoke Meadows, in the parish of Gedling, and for the SUPPLY of IRON PIPES in connexion therewith.

CONTRACT No. 1 comprises the Construction of Brick and Concrete Sewers, about 13,598 feet in length, in Embankment, in Cutting and in Tunnel; also the Excavation for, and Laying of, about 9,522 feet in length of Iron Sewers, from 24 inches to 44 inches in diameter.

CONTRACT No. 2 comprises the Supply of the Iron Pipes and other Ironwork.

Plans, specifications, and conditions may be seen at my Office where also forms of Tender may be obtained on payment of 5*s.* 5*s.* (which sum will be returned to each competing Contractor on receipt of a bond-fide Tender) Contractors proposing to submit Tenders for the Works, are requested to forward their names and addresses to me when particulars will be sent as to the time fixed for inspecting the plans and sending in Tenders. The Board will not necessarily accept the lowest or any Tender, and no allowance will be made for estimates.—By order of the Board,

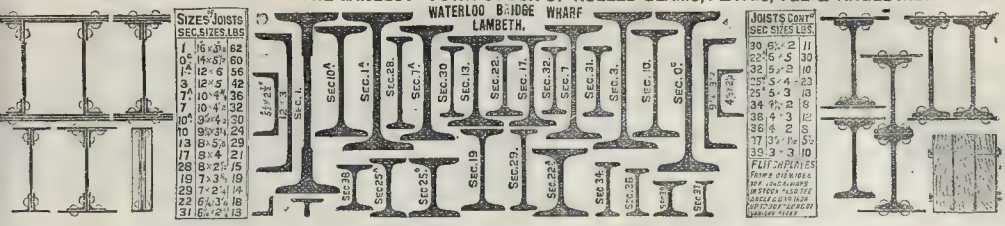
M. OGLE TARBOTTON, Engineer.

Municipal Offices, Nottingham, September, 1877.

[Contracts continued on p. xv

MATTW. T. SHAW & CO.

ENGINEERS, IRONFOUNDERS, & CONTRACTORS. **CHIEF OFFICES:** 141, CANNON STREET, E.C.
MANUFACTURERS OF RIVETTED GIRDERS, ROLLED JOISTS, BRIDGES, ROOFS, TANKS, COLUMNS, CASTINGS, &c.
THE LARGEST TOWN STOCK OF ROLLED BEAMS, PLATES, TEE & ANGLE IRON KEPT AT



RICHARD MORELAND & SON.

MILLWRIGHTS AND ENGINEERS,

MANUFACTURERS OF

CONSTRUCTIONAL IRON WORK,

"Messrs. R. Moreland & Son, Engineers, 3, Old-street, E.C. October 30th, 1876.
We are pleased to inform you that your Patent Fire-Proof Flooring was the means of Saving the Steam Engine and Boiler from destruction in the fire that occurred at our Albert Oil Mills, Hammersmith.—Yours faithfully,
(Signed) PINCHIN, JOHNSON, & CO."

3, Old-street, London, E.C., Corner of Goswell-road.

ZINC ROOFING.

Vieille Montagne Co.'s Manufacturing Agents, F. BRABY & CO. Limd.

By the adoption of our Patent Solid Ridge Plates the use of solder is entirely dispensed with, and consequently the danger incurred by the use of fire-pots is avoided.

F. BRABY & CO.

Have recently introduced New Ornamental Zinc "FISH SCALE TILES," which are now being very extensively used on the Continent, they being specially adapted for ROOFS, MANSARDS, TOWERS, and CIRCULAR TURRETS; having a Groove Lap, they are more ornamental and weather-proof than Slates.

Ornamental Stamped Zinc for Cornices, String Courses, Entablatures, &c. to any Design.

Estimates for every description of Zinc Work forwarded on application.

FITZROY WORKS, EUSTON ROAD, LONDON, N.W.; HATTON GARDEN, LIVERPOOL; GREAT CLYDE STREET, GLASGOW.

MEASURES BROTHERS & CO. Southwark St., London, S.E.

Proprietors of Phillips's Patent Rights, and Manufacturers of Patent Girders, Rolled Iron Joists, Riveted Girders, Flitch Plates, Columns, Fire-proof Floors, Tee, Angle, and Sash Iron, &c.

Have always in their TOWN STOCK about 3,000 TONS of the following sizes, from which orders can be immediately executed at low prices. Section Sheets and Book free on application.

MANCHESTER OFFICE: 6, BOND STREET.

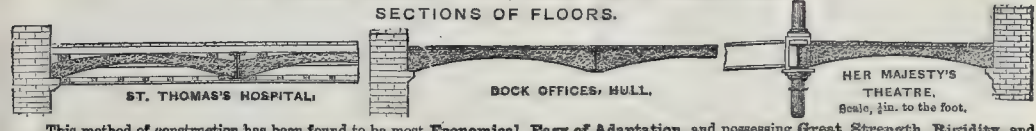
3″ × 3″=10 lb. per ft.	5″ × 3″=13 lb. per ft.	7″ × 3″=14 lb. per ft.	9″ × 3½″=24 lb. per ft.	12″ × 5″ =42 lb. per ft.
3 × 1½= 5 ,, ,,	5 × 4½=23 ,, ,,	7 × 3½=20 ,, ,,	9½ × 4½ =29 ,, ,,	12 × 6 =56 ,, ,,
4 × 1½= 7 ,, ,,	6 × 3 =11 ,, ,,	8 × 4 =22 ,, ,,	10 × 4½ =32 ,, ,,	14 × 6 =60 ,, ,,
4 × 3 =12 ,, ,,	6 × 3 =16 ,, ,,	8 × 5 =29 ,, ,,	10 × 5 =36 to 48 ,, ,,	16 × 5½ & 6 =60 & 63 ,, ,,
5 × 2 = 8 ,, ,,	6 × 5 =29 ,, ,,	8 × 6 =34 ,, ,,	10 × 6 =56 ,, ,,	19½ × 7 =109 ,, ,,

JOISTS—Length from 10 feet to 36 feet. PLATES—Width 6″ to 19″; Length, 12 feet to 30 feet; Thickness, ¾″ to ⅞″.

DENNETT'S FIRE-PROOF CONSTRUCTION

As Patented in Great Britain, Canada and the United States.

SECTIONS OF FLOORS.



This method of construction has been found to be most **Economical, Easy of Adaptation,** and possessing **Great Strength, Rigidity,** and highly **Fire-proof** character. It has been subjected at various times to severe tests, and is now generally adopted by the first architects of the day

TESTIMONIAL.

"I have made use of Messrs. Dennett & Co.'s material for Fire-proof Arching, and though I have, happily, had no practical experience of its efficiency as against fire, I can bear witness to its strength, and its extreme convenience of application. I have made use of it in positions in which I should have found it difficult to introduce any other fire-proof material, and it has this advantage, that the arches constructed of it are so entirely in one mass, that they cover the space like a compact shell or inverted basin, and are, consequently, almost wholly free from lateral pressure. GEO. GILBERT SCOTT, 20, Spring Gardens."

ROBERT DENNETT & CO.

No. 5, WHITEHALL, LONDON, S.W.; STATION STREET, NOTTINGHAM.

Drawings, Estimates, and full Particulars will be furnished without charge by the Patentees, on application to either of the above addresses. Rough Sketches or Tracings of Plans should accompany the application.



ORIGINAL MANUFACTURERS OF

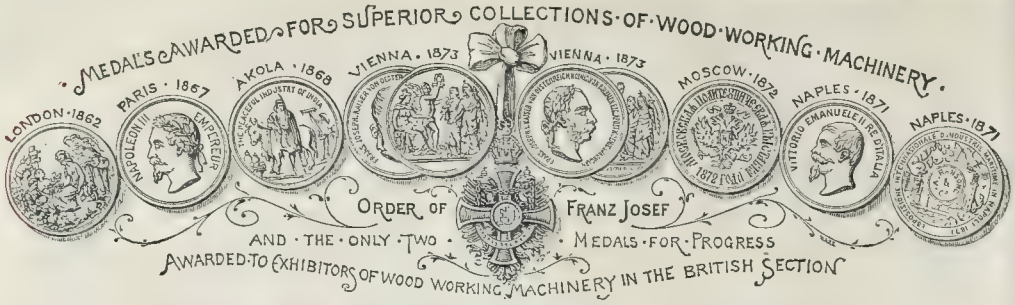
The "NORWICH" STOVES.

"Excellent in every way."

See the *Times*, Jan. 30, 1877.

WIRE NETTING, LAWN MOWERS, ROLLERS, CHAIRS, and all GARDEN REQUISITES.

DESCRIPTIVE CATALOGUES FREE ON APPLICATION.

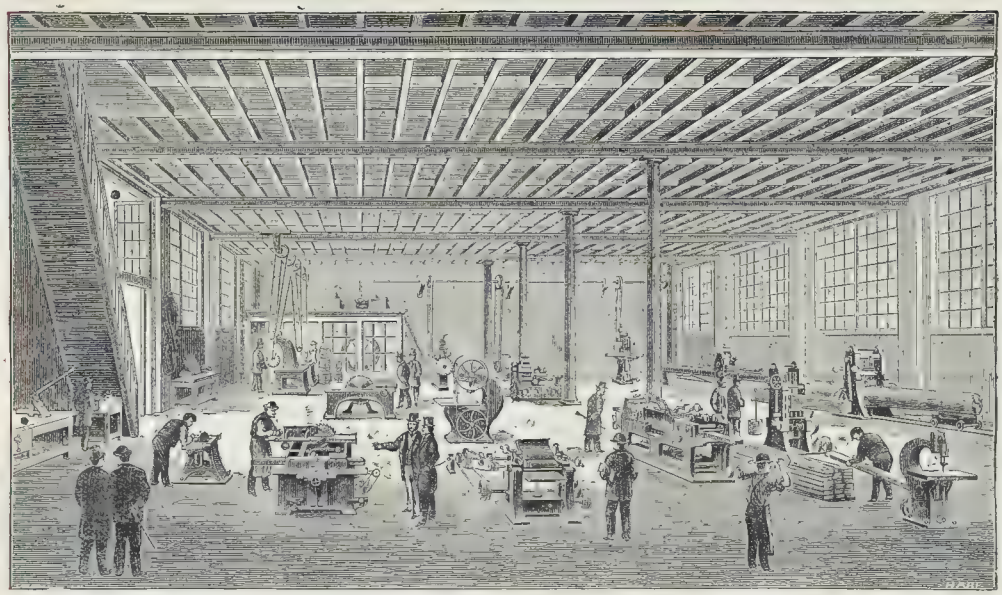


THE ABOVE FIRST-CLASS MEDALS HAVE BEEN AWARDED TO

A. RANSOME & CO.

FOR

SUPERIOR WOOD-WORKING MACHINES.



A. RANSOME & CO.'S SHOW-ROOM FOR MACHINERY IN MOTION.

The above engraving represents the interior of a large building which has been recently erected at the Stanley Works for the purpose of thoroughly testing all new machines, and also for giving intending purchasers the opportunity of judging of their merits by seeing them actually at work.

As new machines are from time to time brought out, they are fixed in this shop, and worked for the purpose of showing them to those interested; and thus, at any time, a selection of the most novel and improved machines may always be seen in operation by application at the Works. Besides a number of new and special machines temporarily fixed for trial, an assortment of those which are in more general demand are kept constantly at work in this building, such as Timber and Deal Frames, Circular and Band Saws, Planing, Moulding, Mortising, and Tenoning Machines, Patent Complete Joiner, Saw-Sharpening Machines, &c.

Competent men are always in attendance to work the machines and explain their action and capabilities, and they will also give instructions how to work them to the best advantage, to men who may be sent by purchasers for that purpose.

The rapid increase in the demand for A. RANSOME & CO.'S MACHINES has induced them

To PURCHASE the extensive PREMISES and PLANT of the late BATTERSEA FOUNDRY COMPANY,

Where in future a portion of their work will be carried on. These works, which comprise nearly an acre of Shops, including one of the largest Foundries in London, will enable A. RANSOME & CO. to execute the most extensive orders in a very short time; but their chief Works and Offices will continue to be the

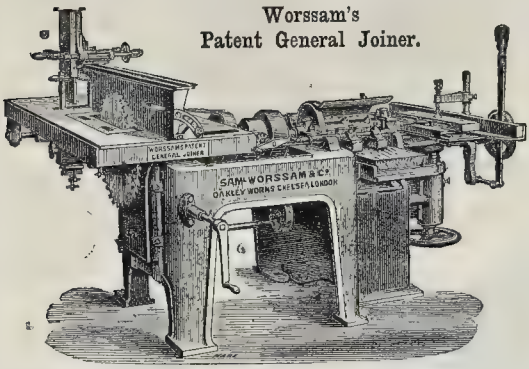
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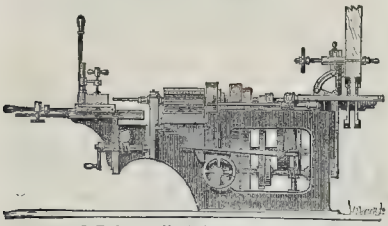
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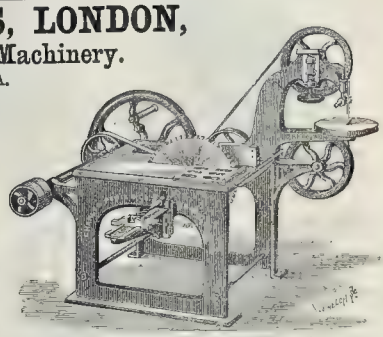
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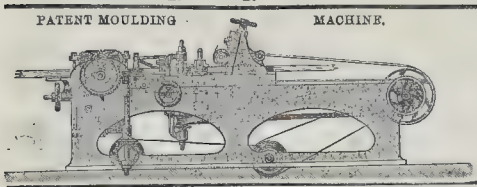
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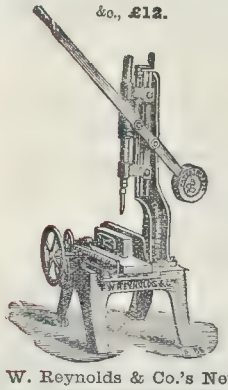
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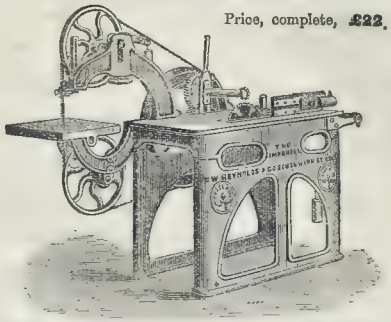
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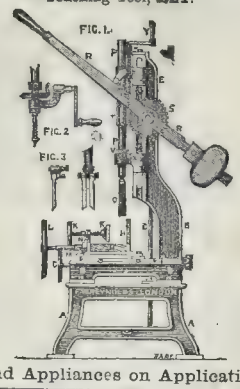


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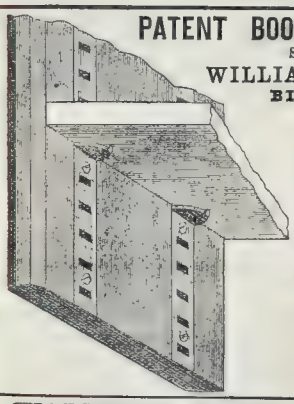
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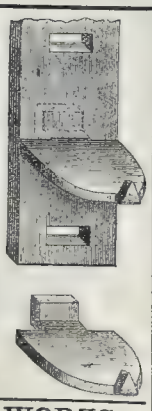
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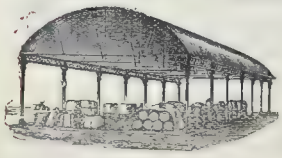


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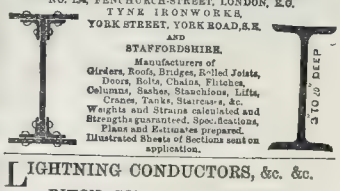
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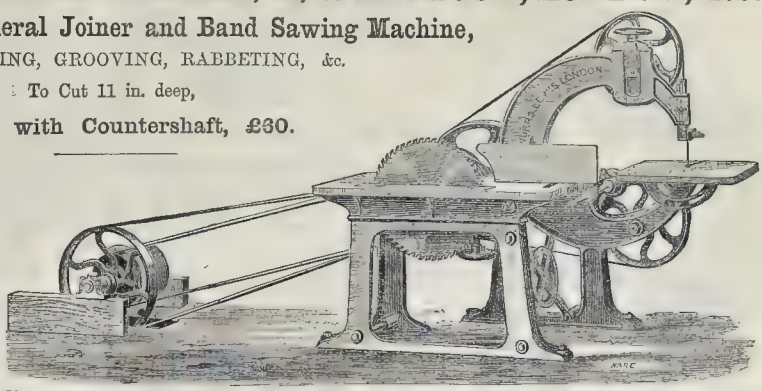
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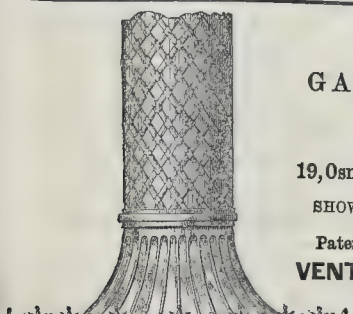
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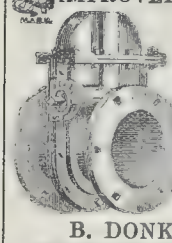
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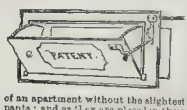
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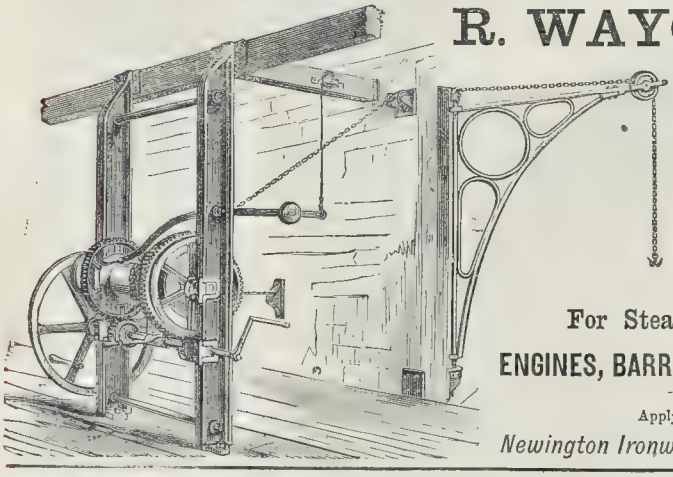
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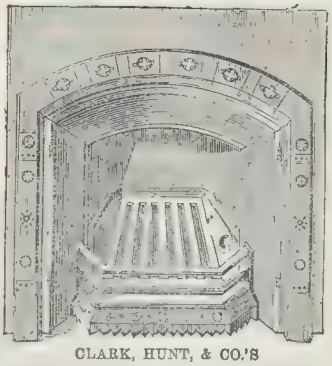
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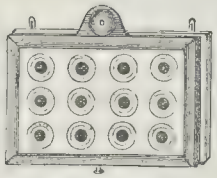
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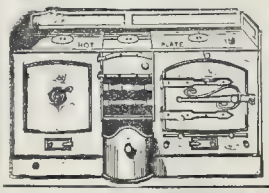
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CLARK, HUNT, & CO.

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STOVE and RANGE MANUFACTURERS

SMITHS, &c.

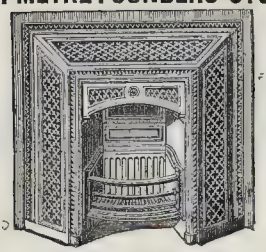
No. 159, SHOREDITCH, LONDON.

Illustrated Price Lists forwarded upon application enclosing stamp



A. STEER & COMPANY,

ART METAL FOUNDERS STOVE & RANGE MAKERS, & IMPORTERS OF MARBLE CHIMNEYPIECES.

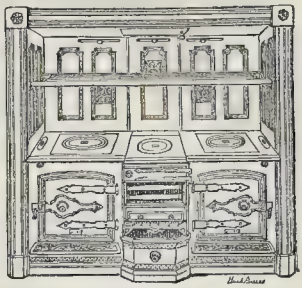


PATENTEES and MANUFACTURERS of FIRE-GRATES for ECONOMISING FUEL and UTILISING HEAT.

This Grate is now in Use at Charing-Cross Hospital, Greenwich Infirmary, Leavesden and Caterham Asylums.



All kinds of MARBLE and ENAMELLED SLATE CHIMNEYPIECES.



CLOSE and OPEN FIRE RANGES of every Class and Price.

Special Estimates given for Stable Fittings, Ornamental Castings, Carriage Entrance Gates and Railings, Cast Iron Stairs, Stair Railings, Verandahs, Balconettes, &c.

DRAWINGS AND PRICE LISTS ON APPLICATION.

Warehouse & Show-rooms, 114, QUEEN VICTORIA STREET, LONDON, E.C.

J. STANNAH,

Late W. H. SISTERSON,

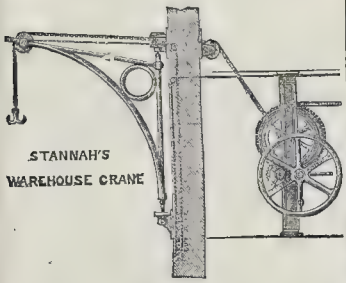
ENGINEER,

29, SOUTHWARK BRIDGE ROAD,

LONDON, S.E.

STEAM or HAND CRANES,

For Wharfs, Warehouses, Factories, &c.



STANNAH'S WAREHOUSE CRANE

STANNAH'S "SPECIAL" DINNER LIFT,

With Break, for Mansions, Club Houses, Hotels, &c

SINGLE OR DOUBLE LIFTS,

BY STEAM OR HAND POWER.

BASEMENT AND INCLINE LIFTS.



STANNAH'S PATENT SAFETY APPARATUS.

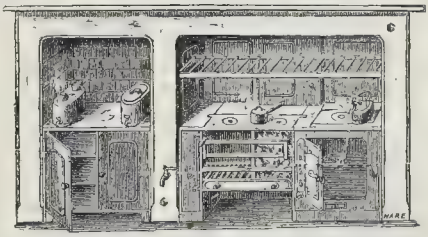
To Prevent the Box or Cage Falling, in the event of the Main Rope or Chain Breaking.

Should be applied to all Lifts used for raising Passengers or valuable Goods.

It is applicable to Lifts with Wood or Iron Guides.

ESTABLISHED 1835.

CUNDY'S PATENT BRICK OVEN WINDING CHEEK SEMI-CLOSE KITCHEN RANGE



This Range, also Cundy's Patent Brick Oven Double Fall-down Bar Kitchen Range, and Cundy's Patent Cottage Range; also Cundy's Patent original Fire-brick Warm-Air Ventilating Stove, suitable for Churches, Halls, Schools, and Staircases, can be seen in operation daily at the SHOW-ROOMS of the Manufacturer,

WM. ADDIS,

Wholesale and Retail Ironmonger, Stove Grate and Range Manufacturer,

Nos. 6, 7, & 15, LEICESTER STREET, LEICESTER SQUARE, LONDON.

A Prospectus, with full description and Price of the above, will be sent per Post on application.

PATENT CLOSE AND OPEN FIRE COOKING RANGE



(No. 220), Manufactured by the Patentees,

NEWTON, CHAMBERS, & CO.

THORNCLIFFE IRON WORKS,

NEAR SHEFFIELD.

A MODERN INVENTION.

The high price of coal has induced Messrs. NEWTON, CHAMBERS, & CO. to direct their attention to the ECONOMISING OF FUEL IN COOKING RANGES, and they have now Patented an Apparatus which they believe to be the most efficient, simple, and economical of anything ever yet invented.

It consists of a small Fire Range, which may be used as an open or close fire at pleasure, and is changed from one to the other in a moment. A Hot Closet is placed at one side of the fire, and a Hot Plate for Boiling, Stewing, or Grilling extends to nearly the full width of the fireplace. Above the Hot Plate, at about the level of the eye, there are two large sheet-iron Ovens, which are quickly heated, and are most conveniently placed for the cook to attend to what is in them.

Behind the Hot Plate is a wrought-iron boiler, which supplies hot water for all purposes. It will be seen from this that all fires ascend, and consequently do not require such a quick draught as those which descend. It is impossible for them to get out of order; they can be regulated to the greatest nicety, and managed by the most inexperienced person, and the commonest coal can be used.

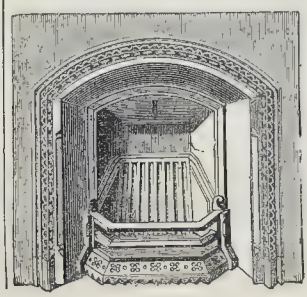
Messrs. NEWTON, CHAMBERS, & CO. have the fullest confidence in recommending this Apparatus to the notice of their friends; the saving of coal will, in a very short time, repay the whole cost, and the coolness and comfort of the kitchen, compared with the ranges hitherto used, are alone sufficient to insure its adoption in all well-regulated households.

The Apparatus may be seen at work, and full particulars obtained, by applying as above, or at the Branch Establishments,

No. 1, HOLBORN VIADUCT LONDON, E.C., and 47, Sheffield Moor, Sheffield.

R. H. & J. PEARSON'S (Improved Slow Combustion) REGISTER GRATES,

IN EVERY VARIETY, SUITABLE FOR ALL ROOMS.



These GRATES are constructed upon an entirely new and sound principle, and ENSURE the smallest possible consumption of fuel with double the ordinary amount of heat. The bars are placed close upon the hearth; the aperture is lined at back and sides with fire-brick; and instead of a grate forming the bottom, a fire-brick lump is fitted into a cast-iron tray, forming a bed upon which the coal is burnt. This secures the most complete combustion, and as there is no current of air rushing through the fire as in ordinary grates, the thorough consumption of the fuel is effected, and there is no waste of heat.

Prices from Twenty-eight Shillings.

R. H. & J. PEARSON,

WHOLESALE BUILDERS' IRONMONGERS,

IRON, STEEL, and METAL MERCHANTS,

Gas and Hot-Water Engineers, General Smiths, &c.,

141 and 143, High-street, and 91, 95, and 97, Camden Hill-road.

Iron, Steel, and Metal Warehouses:—

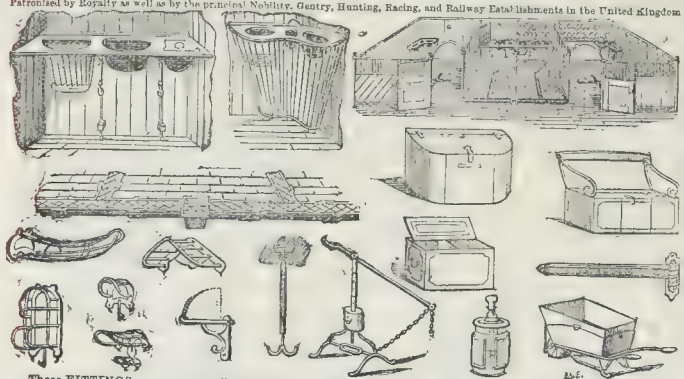
21, 22, and 23, UPPER UXBRIDGE-STREET.

Manufactory and Workshops:—

14, DURHAM-PLACE,

NOTTING HILL GATE, W.

COTTAM & COMPANY'S
STABLE FITTINGS AND HARNESS BRACKETS,
PATENTEES AND ORIGINAL INVENTORS OF
THE IMPROVED SYSTEM OF STABLE AND HARNESS FITTINGS.
Patronised by Royalty as well as by the principal Nobility, Gentry, Hunting, Racing, and Railway Establishments in the United Kingdom



These FITTINGS, now so generally specified by architects, may be seen (variously arranged) in full-size Stalls, Loose-boxes and Harness-rooms, at the Manufactory (of the original inventors), 2, Winsley-street, Oxford-street, W.

Their advantages over others are, improvement in shape, increased capacity, no projections, free ventilation, preventing foulness in the rack, facility in fixing, safety from accident, durability in construction, and cleanliness in use.

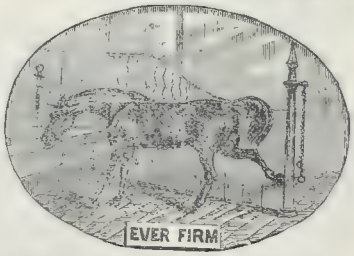
*** Apply for No. 3 Catalogue, to be had free of

COTTAM & CO., IRON WORKS, 2, Winsley Street, Oxford Street, London, W

N.B.—WINSLEY STREET IS THE STREET OPPOSITE THE PANTHEON.

ST. PANCRAS IRON-WORK COMPANY
OLD ST. PANCRAS ROAD, LONDON, N.W.
STABLE FITTINGS.

EVERY VARIETY OF FITTINGS FOR STALLS AND LOOSE BOXES,

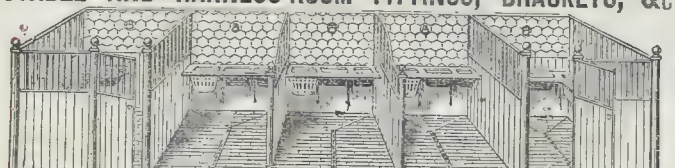


PAVING, DRAINAGE LIGHTING, VENTILATION, &c. &c. &c. OF ALL CLASSES,

To be seen in the STABLE of 100 feet in length, erected at
ST. PANCRAS IRON WORKS, OLD SAINT PANCRAS ROAD.

"The St. Pancras Iron-Work Company have done a clever thing, and a useful thing."—*Builder*, 30th July, 1870.

BY APPOINTMENT TO H.R.H. THE PRINCE OF WALES.
BARTON'S PATENT
STABLE AND HARNESS-ROOM FITTINGS, BRACKETS, &c



Patronised by His Imperial Majesty the Emperor of Germany, the King of the Belgians, the King of Italy, the King of Holland, the Khedive by the principal Nobility of the Kingdom, and adopted by the first Architects and Builders of England and the Continent
The New Catalogue, with Plans, Designs, and 350 Illustrations of Stables and Harness room Fittings, Corn Bins, and Stable Requisites, sent for twelve stamps.

For alterations of Stables and Harness-rooms a competent Person sent to inspect and estimate.
JAMES BARTON, IRON WORKS, 370, OXFORD STREET, LONDON, W.

MOLINE'S PATENT WROUGHT-IRON WINDOWS.



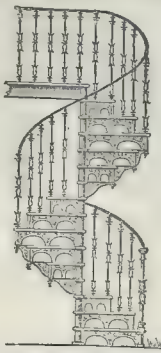
Sole Manufacturers:
THE
GENERAL IRON FOUNDRY COMPANY,
LIMITED,
BROKEN WHARF, & 43 UPPER THAMES ST.
LONDON.



Illustrated Prospectus forwarded on application.

COTTAM & CO.
(IRON WORKS),
2, Winsley-street, Oxford-street, London, W.

IRON STAIRCASES (Circular and Straight)
Ornamental Staircase Bars, Panels, Newels, &c.



COTTAM & CO. beg to draw particular attention to this, an important branch of their trade, which they closely follow up, and keep experienced designers and workmen solely engaged in it. Their stock of patterns and drawings afford a better and greater selection than can be seen at any other manufactory. Drawings and prices on application to

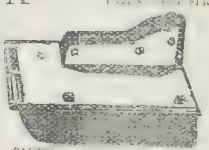
COTTAM & CO. (IRON WORKS),
2, Winsley-street (opposite the Pantheon),
Oxford-street, London, W.

PATENT WROUGHT NAILS
J. J. CORDES & CO. DOS WORKS,
NEWPORT, MONMOUTHSHIRE,
The PATENTEES and MANUFACTURERS of the well-known
PATENT WROUGHT NAILS,
Commonly known as EWBANK'S Nails,
Desire to make it known that they have adopted a
"STAR," or "CROSS,"
As their Trade Mark; and that all Nails now made and sent out by them, except clasp, bear this mark upon their heads; and that Kibbin every package sent from their works is also placed [illegible] stating their name and address. All their bags are also branded "CORDES & CO."
These Nails are manufactured by J. J. CORDES & CO. out of scrap and the best [illegible], and have long since earned the appreciation of [illegible]. The Nails are all uniform in make. Each [illegible] count out full 1,000 to the M.

PATENT WROUGHT NAILS
Manufactured by J. J. CORDES & COMPANY,
THE ONLY PATENT WROUGHT NAILS
which are uniform in their make, the bulk always corresponding to the sample. They are distinguished by a star on the head, as [illegible] to their respective weights. Sold by [illegible]. A stock of these is kept by the Agents,
JOHN GEORGE & SONS,
[illegible] HIGGS & GEORGE,
General Ir[illegible] and Warehouse,
[illegible], LONDON, E.C.

NAILS and IRONMONGERY
from BIRMINGHAM direct.
Builders, Contractors, and Others, supplied with NAILS, IRON, and IRONMONGERY, every description, at the
LOWEST BIRMINGHAM PRICES.
A complete List of which will be forwarded upon application.
FRANCIS BIANCHI & CO., 25, SUMMER ROW, BIRMINGHAM;
And 14a, SHERBORNE LANE, LONDON.

ARCHIBALD SMITH & CO.'S
[illegible] IRONS,



ESTABLISHED UPWARDS OF A CENTURY.

CAUTION [illegible] BUILDERS.—In consequence of [illegible] introduction of INFERIOR and SPURIOUS ARTICLES [illegible] of
ARCHD. SMITH & CO.'S PATENT DOUBLE ACTION DOOR SPRINGS,
ARCHD. SMITH & CO.'S PATENT WEATHER-TIGHT WATER BARS; and
ARCHD. SMITH & CO.'S PATENT WEATHER-TIGHT CASEMENT FASTENING for FRENCH WINDOWS.
The above are most respectfully requested to observe that all GENUINE ARTICLES are [illegible] with their NAME, OR TRADE-MARK, and ADDRESS, 19, PRINCES STREET, LEICESTER-SQUARE, LONDON, and SUCH ONLY are WARRANTED.

BEN TURNER'S NEW PATENT
ADJUSTABLE REGULATING DOOR SPRING,



Which describes considerably more than half circle in opening. It can be made strong or weak; it can be adjusted to any centre, and the whole of the inside taken out without unhanging the door. Manufacturers of the Original Smith's Patent Door Spring, Water Bars, &c. Springs of every description made. Inventors and makers of the first door-springs used.
SMITH & TURNER,
No. 50, BARTHOLOMEW CLOSE, LONDON, E.C.

WROUGHT-IRON TANKS, CISTERNS.

BURNEY & COMPANY,
MILLWALL DOCKS, LONDON, E.

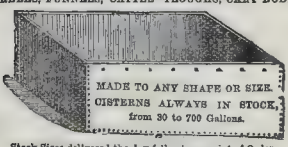
CATTLE TROUGHS, CART BODIES. Write for Reduced List of Builders' CISTERNS. Note.—All Tanks at these Works made with Burney's Patent Corner.



GOLD MEDAL CAPE EXHIBITION.

CROUCH & JAY

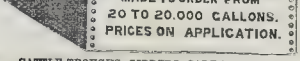
(CROUCH 18 years Manager of the Works, Limehouse, for TUPPER & CO.)
REGENT'S WHARF, CATHERINE STREET, LIMEHOUSE.
WROUGHT-IRON CISTERNS AND TANKS
FOR WATER, OIL, TURPENTINE, &c.
GIRDERS, FUNNELS, CATTLE TROUGHS, CART BODIES



Stock Sizes delivered the day following receipt of Order.
PRICES FORWARDED ON APPLICATION.

JOHN BELLAMY,

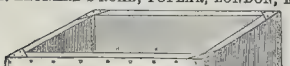
BYNG-STREET, MILLWALL, LONDON, E.
WROUGHT-IRON TANKS AND CISTERNS.



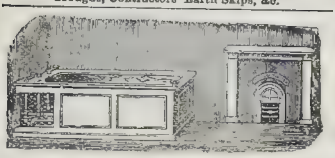
CATTLE TROUGHS, GIRDERS, CART BODIES, &c.
Omnibus from West India Dock Station passes Byng-street.

CALVERT LAW,

ST. LEONARD'S-ROAD, POPLAR, LONDON, E.



IMPROVED WROUGHT-IRON TANKS,
Cisterns, Corn-Bins, Water-Cart Bodies, Funnels, Cattle-Troughs, Contractors' Earth Skips, &c.



J. TYLOR & SONS,

ENGINEERS,
No. 2, NEWGATE STREET, LONDON.
Bath and Heating Apparatus erected in Public and Private Buildings in London and Country.
ESTIMATES ON APPLICATION.

EXCELSIOR GAS BATH,

With LINEN WARMER,
£5. 10s. 0d.
PATENT GAS CONSERVATORY BOILERS.
G. SHREWSBURY, 59, Old Bailey. Factory: Barrington-road, S.W.

THE ROYAL PORCELAIN BATH,

Moulded and Glazed in one piece. Designed by his late Royal Highness the Prince Consort. Gold Isis Medal Society of Arts. Great Exhibition and International Exhibition Medals.



Bath Fittings, Hot-water Apparatus, Porcelain Sinks.
Plug Basins and Water-closets. Glazed Bricks.
Wall and Floor Tiles, &c. Estimates given.
[J. FINCH, PATENTEE, 11, ADAM-STREET, ADELPHI.

SAVING IN GAS.

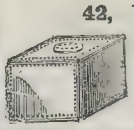
D. HULETT, INVENTOR and PATENTEE. The Mercurial Gas Regulator is the only efficient instrument for insuring wholesome and uniform lighting, equalising the pressure and preventing any irregularity in the height of the flame
D. HULETT & CO. 55 and 56, High Holborn,
Manufacturers of Gas Chandeliers, Glass Lustres, &c.

LONDON PATENT FELT COMPANY'S

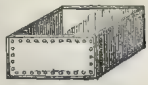
IMPROVED ASPHALTIC ROOFING FELTS
DRY HAIR FELTS,
And PATENT SHIP SHEATHING FELTS,
Delivered Free at lowest Prices.
Offices: Sussex-place, 94, Leadenhall-street, London, E.C.

CROCCON & CO.

42, UPPER THAMES STREET, LONDON,

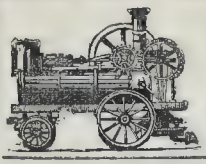


Cattle-Troughs, &c., Galvanized or Painted.
Makers of WROUGHT-IRON TANKS, CISTERNS, &c.
2 Goree Piazzas, Liverpool; 59, George-square, Glasgow.
A large Assortment always in Stock.
Estimates free on application.



PORTABLE STEAM PUMPING ENGINES

ON HIRE.



Side Entrance Covers, Doors and Frames, Penstocks, Tide Flaps, Gully and Air Grates,
CHARCOAL VENTILATORS, and every description of Sewer Ironwork in Stock.
GEORGE WALLER & CO. Phœnix Engineering Works,
HOLLAND STREET, SOUTHWARK, S.E.; and at STROUD, GLOUCESTERSHIRE.

CLAYTON & SHUTTLEWORTH'S

NEW CATALOGUE, No. 77,
WITH REVISED LIST OF PRICES OF
PORTABLE ENGINES AND THRASHING MACHINES,
WITH OR WITHOUT PATENT COMBINED GUARD AND FEEDER.
TRACTION ENGINES.
STRAW ELEVATORS AND STACKERS.
HORIZONTAL FIXED ENGINES.
CIRCULAR SAWS.
CORN MILLS, &c., &c.
CAN BE OBTAINED, POST FREE, BY APPLICATION TO
CLAYTON & SHUTTLEWORTH, LINCOLN;
78, LOMBARD ST., LONDON; and 35 & 37, TARLETON ST., LIVERPOOL.



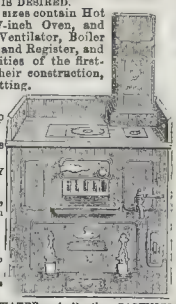
RELIANCE FIRE & BURGLAR RESISTING SAFES & DOORS

PARTY WALL DOORS, Plain and Sliding.
JOHN TANN,
No. 11, NEWGATE STREET, E.C.
RELIANCE SAFE, 25 in. by 19 in. by 18 in. £5 5s. Carriage Paid.
LISTS FREE.

IMPROVED CHEAP KITCHENER,

SUITABLE TO COTTAGES AND PLACES WHERE ECONOMY IN SPACE IS DESIRED.

The 24-inch and 30-inch sizes contain Hot Plate, Ironing Stove, 17-inch Oven, and Roaster, with Shelves and Ventilator, Boiler and Brass Tap, Flue Pipe and Register, and thus possess all the qualities of the first-class Ranges, while, from their construction, they require little or no setting.



Price complete,
24in...51s. } Improved Cheap
30in...65s. } Kitchener.
Liberal Discount to Builders and the Trade.
COUNTRY ORDERS PROMPTLY EXECUTED.
YOUNG & BUSS,
Birmingham and Wolverhampton Merchants,
AND
Wholesale Ironmongers,
18, BLANDFORD STREET, BAKER STREET, W.;
91 & 93, DAVIES STREET, OXFORD STREET, W.
STOVES and RANGES, RAIN-WATER and all other CASTINGS STABLE FITTINGS, BUILDERS' and UPHOLSTERERS' IRONMONGERY in GREAT VARIETY

COX & SONS,

ART-WORKERS in WOOD.
" " METAL.
" " STONE.
" " GLASS.
" " DECORATION.

Messrs. COX & SONS beg to suggest to Architects that as the various works in the above branches are done on their own premises, great facility for superintendence is offered.
The strictest attention is paid to the working out carefully all Designs entrusted to them for execution, skilled Foremen, accustomed to work from detailed drawings, being at the head of each department.
COX & SONS' Catalogues of Church Furniture, Lighting Arrangements, Stained Glass, Monuments, and Artistic Domestic Furniture, price 6d. each, post free.
SHOW ROOMS,
Nos. 26, 29, & 31, Southampton-street, Strand, London.
STAINED GLASS WORKS, Maiden-lane, adjoining. | BRONZE STATUE FOUNDRY, Thames Ditton, Surrey.
MANUFACTORY,
The Wood and Stone Carving, Gothic Metal, Monumental, and Granite Polishing Works, College Wharf, Belvedere-road, Lambeth.

WINDOW BLINDS.

E. ADKINS,
122, HIGH STREET, ST. JOHN'S WOOD
REGENT'S PARK, LONDON, N.W.
OUTSIDE SUN-SHADE
AND SPRING-ROLLER MAKER
TO THE TRADE.
Patent Self-adjusting Venetian Blinds, requiring no Fastenings for the Cords
Illustrated List of Prices post free.
Export and Shipping Orders will receive due attention



DAVENPORT'S PATENT FASTENING

FOR GATES, DOORS, CUPBOARDS, CASEMENTS, &c.
"Ought to come speedily into general use."—*Builder*, May 13, 1876
No springs; self closing, fitted by any one.



In malleable iron for Entrance and Field Gates, 2s. 9d. each.
Yard, Stable Doors, &c. 1s 9d.
Cupboards and Casements from 7d.
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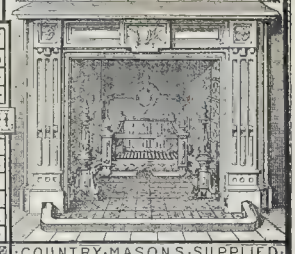
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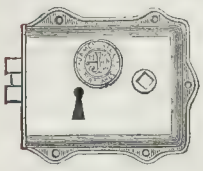
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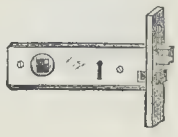
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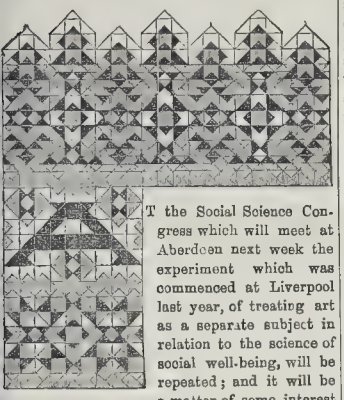
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Art and Social Science.



THE Social Science Congress which will meet at Aberdeen next week the experiment which was commenced at Liverpool last year, of treating art as a separate subject in relation to the science of social well-being, will be repeated; and it will be a matter of some interest to see whether the class of subjects included under this new section can really be treated so as to yield practical results and justify the new classification. In such cases it is the second trial that often decides in great measure the success or non-success of an experiment; for as such the Art Section must, so far, we think, be regarded. The success of this part of the meeting at Liverpool last year was almost a foregone conclusion, so far as the interest of the moment went: the novelty of the idea, and the fact that Liverpool had become recently again a place of considerable interest for artists, together with personal influence, drew to the meeting some of our most eminent artists, and the papers and discussions that ensued were without doubt very interesting for an audience to listen to. Whether the practical conclusions arrived at were in proportion to the ability and eloquence of some of the papers, is a question which, perhaps, could not be so unhesitatingly answered. We printed a fair proportion of the addresses, and took occasion to enforce their teaching in some instances, and thus so far allied ourselves with the scheme.

But it can scarcely be denied that there was on that occasion a certain amount of talk,—some of it good, some of it not very good, but which, whether bad or good, did not go for much beyond talk. And that this should be so it was very natural to expect from the peculiar relation in which this section stands to the real object of the Social Science Association, the amelioration of the conditions of life in the community: but it would be well for those who will be concerned with the coming meeting to bear in mind the special difficulty in bringing the consideration of this class of subjects to a practical result.

Art cannot be treated *per se* by the Social Science Association: it must be art in its relation to social well-being; that is to say, as an influence in rendering the condition and circumstances of life in general better and happier; or, as the prospectus of the association words it, all questions may be dealt with which bear upon art "considered in relation to the civilisation, education, and industrial development of the people, and on the best methods of cultivating a sound and high standard of taste in all ranks of the nation." This assumes, of course, that the existence of a sound and high standard of taste is a state of things conducive to social well-being, and to be desired on that account; and so in one sense we unquestionably hold that it is. But it is not so in that distinctly logical sense of cause and effect in which healthy houses are said to be a condition of well-being. There are those who would even say (and among them are some of the most powerful minds of the day) that what is called a cultivated taste for art is at best a matter of very secondary and arbitrary importance, at worst a pretence and illusion, so far as the best ends of life are concerned: and those who reason so might make a strong point by citing the example of the Italian society of the Renaissance, in which almost all the most serious evils of society, private vice and luxury, public tyranny, hatred, and perfidiousness of the deepest dye, co-existed with the most refined and critical taste and the highest artistic power. But in addition to this puzzling question of art and morality, there is the additional difficulty that we are not even agreed as to what we mean or what we profess to want by art, in the same way that we are in regard to other subjects of discussion. When we take up such questions as those in the sanitary department, we all know what we want in discussing the question of providing better accommodation for the labouring classes, or improving the sanitary condition of the population engaged in the coast fisheries; and if we differ as to the means of doing this, there is the ultimate practical test of statistics and experience to revert to. But in the other case we are not all even agreed as to what we precisely mean by art; and even if we are, the results of certain conditions of artistic practice and artistic teaching are hardly capable of being put into any definite statistical tables. In reality, therefore, the Art Section appeals not to absolute science, to definite knowledge resulting from investigation; but in a great measure to the critical faculty, and it is in this respect that it stands on a somewhat different footing from all the other sections. If we say that we confine the investigations of the section to the results of methods of instruction, and to the question of economy in regard to the disseminating of works of art and of education in art, this really bars us out from that which is most keenly interesting—the art itself, the questions of style and feeling and aim, and all those deeply-interesting subjects which come under the head of art-criticism; and even in this case we seem to have no scientific ground to occupy, since, after we have shown, statistically perhaps, that some special method of teaching has proved the most attractive, and led to the best progress among the pupils of our schools of art, we may have the question suddenly and unexpectedly taken out of the ground of science into that of criticism, by the objection that the whole system is wrong, that what it produces is not art in the truest sense, and so on; a question which might be raised in such a way as obviously to go to the root of the whole matter, and change the whole view of the subject, and which yet would be entirely critical and not scientific. We may illustrate the case by supposing a Literature Section (and there is no reason why there should not be one as well as an art section), in which a discussion might take place on the best system of literary training for a novelist, and statistics might be introduced giving a definite test by the extent of sale of various novels; but all this would be overthrown at once if the objection were started that novel-writing ought not to succeed,—that it was a waste of life, and an enervating element in society: the truth or falsehood of the view would be of the last importance, but it would belong to the region of criticism and morals, not of science. And that is precisely what we fear may be increasingly felt in regard to the Art Section. It is not that the subjects with which it deals are not of the highest interest, and nearly the highest importance, but that they do not admit of discussion on the same grounds as the subjects included in the other sections. The question, however, is one of method. We are only too glad to see some of the subjects connected with artistic culture occupying a larger place in the attention of the Congress; and if it be found eventually that the number of subjects connected with art which come legitimately under the programme of the association is limited, it would probably be found that those which have the most really practical bearing on social science could be suitably considered under the head of education.

In the meantime we may say that the subjects chosen for consideration in the present instance afford, in the case of two of them at least, scope for a good deal of really practical discussion. The second leading subject named—"Are Art-competitions favourable to Art-progress?" seems to present less fruitful ground for discussion; the area of possible difference on the subject seems somewhat restricted, and the grounds for coming to any decided conclusions, as it appears to us, are rather insufficient. However, this may be one reason why the question should be considered, with the possible result of bringing it to a more definite issue. The first question on the paper, "What principles should govern the restoration of ancient buildings?" admits of a great deal of practical treatment, and the preservation of our great architectural memorials, as a part of our history, ought to be of serious interest to all educated people; and as the discussion of the subject has been, as we may say, a good deal artificially stimulated of late, there is a good opportunity here for some of those who have had most experience in restoration to give their views and the result of their experience, as against the somewhat overdone attacks of the newly-formed anti-restoration party. We expect that some of

those who could, if they would, speak from practical knowledge of the difficulties of restoring, those who are moderate and in the main conservative men, and do not unconditionally unfurl the restorer's banner, have something to say on the matter which ought to have considerable weight with those who are not determined to see ignorance, carelessness, or vandalism in every repair or re-decoration of an ancient building. Only we venture to suggest that the subject should be treated apart not only from personality, of which there has been too much, but apart also from party feeling, and simply on the ground of common sense, and of consideration alike for the sentiment of the past and for the needs of the present.

The third subject announced in the Art Section, "How can Art be best introduced into the Houses of Persons of Limited Income?" appears to us to be by far the most important and interesting of the three, and the one, moreover, which is most capable of leading to practical conclusions; one, indeed, which could hardly be discussed by people of sense and education without their throwing out ideas worthy of attention by all who are interested in rendering life more gracious and beautiful in its conditions. There is, indeed, the same complaint of vagueness which may be made against the wording,—against the use of the "ambiguous middle term," which is called "art." "What do you mean when you talk of introducing art into people's homes?" would be a perfectly legitimate question, certainly, and the answer to it would radically affect the answer to the main question, Do you mean enabling them to get good pictorial works of whatever kind in an economical way; or enabling them to furnish their houses artistically and effectively at a low rate; or cultivating in them the taste which would lead them to wish to do all this and to learn how to do it? Any or all of these might be the line intended by the question, and all, perhaps, will be touched upon. But while pointing out that the word "art" as used here is necessarily somewhat vague, we are not complaining against the form of the question on that account; for we must have some of these convenient shorthand expressions which have the advantage of packing up a great deal of meaning in a small space, even though leaving a considerable latitude of interpretation; and the question is one which it cannot but be well to discuss, whatever shade of meaning is given to it. The most important, and hitherto the most neglected, subject in regard to art as affecting society is the consideration, how that which gives its charm to life, and renders it ornamental and enjoyable in the fullest degree, is to be made something more than an appanage of wealth; is to be brought within the reach of those who live in small houses and cottages, in its essentials, at all events, if not in its accidental and superfluous forms. What forms of the higher arts are there which have most of the spirit of art, most of its intellectual element, with least of its merely material costliness? How can art of this class be made cheap without being commonplace and mediocre? For, of all things in the world, mediocre art is the most entirely useless and worthless; a pretence, where the outside show of being something exists only, and the essence and spirit are absent. Then there is the consideration how the element of good artistic effect, in regard to form and colour, can be realised in the furnishing and decoration of houses without a prohibitory rate of expenditure,—a subject in regard to which some correspondence has taken place in our columns within the last few weeks. In regard to details, there is much to be looked into before arriving at any certain conclusion on this point; details as to cost of materials and processes, and their durability, permanence, and effectiveness; on all which we hope to get some information from those who will take part in the discussion of the question at Aberdeen. In regard to principle, the matter seems to us capable of being reduced into a narrow compass. It is in the main a question of good, truthful, and expressive workmanship. Let any article of furniture be made in the best and most common sense manner, in regard both to the purpose it is to serve and the material of which it is to be composed, and let any ornamental treatment given to it be such as to fall in with and emphasise that purpose and the qualities of that material, and such treatment, however simple and inexpensive, can hardly fail to be in the best sense artistic. How this aim is to be realised is one of the points on which we hope to get some farther suggestions from those who will discuss it at the Aberdeen Congress.

THE PARIS CLUB OF MASONS AND THE FRENCH ARCHITECTS.

AN attempt to improve the moral and intellectual condition of the French workman has been attended, it would seem, with a comparatively large measure of success; and amongst those who have offered encouragement to the more zealous artisans the architects of Paris are conspicuous. The Club of Masons and Stonecutters, lately referred to in our pages, is actively engaged in a work no less important than the education of its members, and, in fact, of their *confrères* generally. It offers this year—1877–78—its third annual competition which is open to all *appareilleurs* and *tailleurs de pierre* of French nationality who are less than forty years old. The programme consists of six questions, each of which is explained by a diagram; these questions relate to circular vaulting, to arched openings penetrating a barrel-vault, to a lantern dome, and so on. The competitors are invited to make drawings showing the shape, size, and jointing of the different stones necessary to compose the bits of construction to which the questions refer; or they may make plaster models. In the latter case at least half the pieces of which the model consists must be loose, or fit to undo and refix. The drawings or models are to be delivered at the office of the club on the 16th of February, 1878, and a public exhibition of them will be held from the 21st to the 25th of February. A jury composed of the Comte de Cardaillac, and M. Bailly, architect, both members of the French Institute; of M. Eugène Millet, the worthy successor of M. Viollet-le-Duc in the post of Inspector-General of Diocesan Edifices; of other architects; of well known contractors, and of the President of the Society of Master-masons. The prizes, which are to be distributed on Sunday, the 28th of April, next year, will consist of two premiums of 800 francs and 300 francs; of an "honourable mention" substantially backed with 100 francs; and of several medals in bronze and silver. The works of the successful competitors are to be exhibited at the forthcoming International Exhibition, which is to make Paris once more the envied centre of attraction for the philosopher, the critic, and the tourist.

We not only offer our sincere congratulations to the masons of France in general, and to the members of the Masons' Club in particular, for the practical and business-like character of the programme of their third competition, but we further congratulate them for the inauguration of a course of instruction, entirely gratuitous, and consisting of (1) "primary instruction," (2) practical geometry, (3) linear drawing and "*coupe de pierre*." The course, which is to begin on the 1st of October next, will continue until the 15th of April, 1878, when prizes will be distributed to the deserving. The third section is to include the execution of plaster models; and the professor is a working foreman,—an "appareilleur." His branch of masonry is perhaps one in which the modern French excel theoretically, and which French architects, notably Philibert de l'Orme, have reduced to a science. The custom during the last thirty years of using soft stone and cutting all the mouldings after the stones are put together, has undoubtedly induced a little carelessness—a little disregard of geometrical rule in the shaping and jointing of stone walls, even in French public works. Where, as at St. Germain, under the direct orders of M. Millet, the stones have been moulded and sometimes even sculptured before they were fixed, the masonry has been carefully and scientifically executed; but we think even the most French of Frenchmen will admit that their masons have depended more upon the abundance of native stone, and the excellence of plaster in the neighbourhood of Paris, than upon those "subtle inventions" which Philibert de l'Orme left to an ungrateful posterity, or which the learned Rondelet approved. In England, where stone is scarce and dear, a great deal of respect is still paid to it; and we are convinced that the science and economy exhibited in the stonework of the New Law Courts would satisfy even M. Viollet-le-Duc that, if little is said academically, or perhaps understood, in this country of the "*coupe de pierre*," the application of geometrical laws is here practically in force, even though it be sometimes applied in what is irreverently called a "rule of thumb" fashion.

In a recent article upon "The Masons of Paris" we perhaps led those of our readers who are not closely acquainted with French work and workmen to confound the *maçon* with the English mason. Among our neighbours masonry includes all construction composed of stone or rubble, of brick, mortar, or plaster. The ordinary *maçon* builds a brick wall, fills in a wooden partition, or he plasters both; he imitates brick on a plaster surface, and runs a cornice inside or outside a house, with equal ability and indifference. He makes and lays *béton* or concrete; builds an ordinary stone wall; carries and hoists freestone, rubble, brick, or mortar; raises or puts together common scaffolding. The foreman of the *maçons*, called the master-companion, is the recognised superior of all the workmen of all trades engaged upon a building. Over the larger part of France the *maçon* is as common as the bricklayer is over the larger part of England; a great deal of brickwork of the more difficult kind has been done in Normandy, and even in Paris, by Englishmen, simply because there was only the mason to do it; and his notions, both of Flemish and English bond, were obviously of a crude character. In France, external walls are now generally composed of soft limestone blocks embracing the entire thickness of the wall; and party-walls are of small cubes of freestone, squared and dressed roughly, and laid often in plaster. Brick is sometimes used in the chimney flues, and the chimney shaft above the roof is often entirely of brick. But the *briqueteur* is, like his name, often an importation. In fact, the best brick buildings executed in the south of France during the Middle Ages are to be found in the neighbourhood of Toulouse and of the Agennais, not far from the original province of Limousin, whence the common kind of *maçon* has acquired his name, though in these days not always by right of birth. Not that the division of labour amongst workmen is less in France than in England; on the contrary, it is much greater, for in the first-named country the general contractor,—the farmer of petty tradesmen, and capitalist-employer of labour,—is almost, if not entirely, unknown. There the uninterrupted use of stone as the chief constructive material has preserved to the *maçon* his pre-eminence in the building fraternity, and the original nomenclature has been handed down to the present day. In the Book of Etienne Boileau (thirteenth century), the *maçons* and *tailleurs de pierre* are mentioned together, and defined differently, or rather with the distinction which now marks their labours and duties. In the larger part of England the comparative scarcity of stone, and the employment, for two hundred years at least, of brick as the chief constructive material, have caused the stone-cutter to be not only a specialist, but also a luxurious adjunct of the building trade.

The designation of the different workmen employed by the contractor of *maçonnerie* is very varied, and the pay of each is determined by the nature of the duties performed. The rough walling and other ordinary work is done by the "limousin" whose wages amount to hardly a franc a day more than the assistant, or, in Mediæval phrase, the apprentice of the "maçon." The last-named receives almost as much as the stone-cutter; he is hardly ever to be met without his assistant, who fetches, mixes, and hands him his plaster, and who keeps him supplied with *moëllons* or bricks, as the case may be. The "tailleurs de pierre" are simply the cutters or rough moulders of freestone, that is of *pierre de taille*, both hard and soft. They seldom mount the ladders; they remain under cover or in the open yard of a building in course of erection. These men prepare the blocks after they have been sawn into a convenient and necessary size or height of course; they square the edges, knock off the soft and perishing excrescences, smooth the face which is to be seen in elevation, dress the beds, and rough out the moulded profiles where directed. Only when the stone is exceptionally hard are the mouldings finished before fixing; with soft stone like that used in Paris, the mouldings are cut after the façade is put together. Such mouldings are consequently intrusted to a superior description of workman, called a "ravaleur," partly because he reveals out of half meaningless forms what the architect intended to express; and the work of cutting the different mouldings and ornaments upon the face of a wall is called the *ravalement*—the carved or sculptured portions being reserved for the eventual chisel of an artist who justly arrogates to himself the title of sculptor.

When a block leaves the cutter's hands it is generally carried on a two-wheel cart by a coterie of men and youths called "bardeurs," and it is raised to the required level by a crab, or

ne more recent engine of the kind. It is n taken in charge by the "poseur," who is isted by a "contre-poseur." Two other rkmen, the "pinceur" and the "fichcur," close at hand—the one wielding an iron lever, other a metal blade with a jagged, toothed ge—who assist respectively in rolling the ck along the rising wall, and in spreading rtar or plaster between the joints. Over these men, who cut, carry, raise, fix, joint, l ultimately mould freestone, there is a eman, who draws, under the direction of the hitect, the several constructive details to ir real size either on a plastered wall or an right surface of planks, and who prepares the mplets, which are usually made of laths, hough lately zinc has been sometimes em- yed. This man, intrusted with what is lled the *tracé d'appareil* and the *coupe de erre*, is the "appareilleur." He and the master- mpanion are the two most important officials gaged upon a French building, and they are ferior only to the inspector or clerk of the rks, who is generally a young architect. We fer, of course, only to large works, for in or- nary Paris houses a clerk of the works is rely seen. There, the master-companion and e *appareilleur* take their orders usually direct om the architect or from one of his more ad- nced pupils.

The Paris Club of Masons and Stonecutters as founded in 1867, and nine years after, on arch 21st, 1876, it was officially recognised as "public utility." The Paris architects, who late have distributed medals to the most meri- rious pupils in various art schools, have also re- rved for the workmen of the above club a silver d a bronze pro-medal (*jeton medaille*). The first edals of the kind given by the Société Centrale es Architectes seem to have been awarded to he Club of Masons and Stonecutters, although he carpenters have been since equally honoured ith similar marks of recognition. A report of he "Jury des Récompenses" to be accorded his year to "private architecture" has been repared by M. Charles Lucas, the energetic ecretary-editor of the society. In it we find hat since the Congress of French Architects, in 875, the École des Beaux Arts has been en- owed with a prize given by the Society, and alled "Prix de la Société Centrale des Archi- ectes"; a prize is also given to the pupil of he École Nationale de Dessin et de Mathe- natiques who has there carried off, the preceding ear, the chief prize for ornamental composition. This year the medals reserved for the Club of Masons are presented, one to M. Auguste Leroy, stone-cutter, at Boulogne, near Paris; the other o M. J. Capdevielle, who is also a stone-cutter. The former was one of the winners in the com- petition for the *coupe de pierres*, 1876-77; the latter was a prize-holder in the course of prac- ical geometry presided over by M. Colson. The recognitions for meritorious work done by contractors, master-companions, and workmen, and now given annually by the Central Society of Architects, are this year reserved for remarkable efforts in wood-carpentry; and we use the compound advisedly, for the French have their "*charpente en fer*" as well as their "*charpente en bois*." Consequently, the scaffold- ing erected twelve months ago for the completion of the cast-iron *flèche* at Rouen Cathedral has been deemed worthy of signal tribute; an open- timbered roof in the style of the fourteenth century, executed from the designs of M. Juste Lisch, a Paris architect, at the chapel of the Dames du Sacré-Cœur, has also been charac- terised as remarkable; while M. Abadie has asked his brethren to reward the zeal and de- votion, the "incontestable honorability," of the contractor of masonry at Perigueux Cathedral. The result is, that the Central Society has pre- sented a silver medal to M. Filleul, a master- smith, and M. Gambier, a master-carpenter, both of Rouen, and a bronze medal to M. Gambier's chief workman; while two contractors of carpentry in Paris and M. Jean Laurent, of Perigueux, have received each a silver medal. The rewards given for "private architecture" are obviously not confined to workmen and con- tractors. The medal of the Society was given this year to M. Jules Hénard, and in the second place to M. Henri Parent, the architect of several modern *hôtels*,—that is, private mansions. A medal is also given to a provincial architect, and this year M. Joseph Letz has carried it off.

It appears that this excellent Society, which was founded in 1840, elects a jury or committee of members, consisting of the most distinguished architects in France, who visit houses and private buildings recently erected; and who report thereon to the general body. Hence the award of prizes. Whether the insular notion of rewards and punishments, in the shape of medals, entirely tallies with that in vogue among our neighbours it is needless here to mention. The Royal Institute of British Architects gives one big gold medal, with the sanction of the Queen, to a man of eminence who has made a name for himself,—and often a comparative fortune also, —to whom such a recognition is indubitably an honour, but only an honour. The French archi- tects, on the other hand, appoint a committee of their superiors, all of whom are worthy to receive such a recompense as that given by the Queen,—and one of whom has received it,—to go into the highways and byeways of Paris and France seeking out the meritorious works of comparatively unrecognised talent. The present of a medal, however petty, by such men as MM. Lesueur, Bailly, Duc, or Lefuel to a strug- gling professional man is not only a com- pliment; it raises him in public estimation, or presents him to public notice. *Bis dat qui cito dat.* Honours are doubly welcome when they come unexpectedly; and they are usually most appreciated in the morning of professional or working life. We commend some of the pro- ceedings of the Central Society to the attention of its British contemporary, more particularly with regard to the recognitions of merit, appa- rently acceptable, and to the relations, apparently cordial, of French architects and French work- men.

MUSIC IN ARCHITECTURE.*

THE course which we have laid out for pro- ceeding to the elucidation of music in architec- ture requires us now to attend with some circumstantiality to the causes and charac- teristics of pitch in the music of sound. If the exposition may appear to make excursions occa- sionally a little to the right or left of the most direct route, it may be understood that this is for the sake of securing attention to what is most to our special purpose, by setting curiosity at rest on collateral questions that inevitably intrude themselves; it has been due in no slight degree to these confusing annoyances in flank not being duly provided against, that the main attack on the subject has hitherto so egregiously failed.

There are two kinds of instruments,—the monochord of ancient and the siren of com- paratively recent invention, which give the means of computing the absolute or the relative frequency of the vibrations of the air which produce musical notes, and these contrivances accurately confirm each other. The monochord is the simpler contrivance, and supplies available introductory illustrations in a more convenient form. In its ordinary construction it is simply a single string or wire of uniform material and thickness, fastened at one end to a board, and then passed over two fixed bridges at any con- venient interval, and kept at a uniform tension by means of a constant weight. The applica- tion of a straining weight is for the convenience of modifying the tension by the substitution of different weights of easily adjusted and com- pared proportions; otherwise, any string of a violin which is kept at a certain tension by the screw is equivalent to a monochord. When such a string is thrown into vibration by being drawn aside and released with a sufficient degree of force, it sets the air around in vibration, and produces a certain musical note,—its proper or fundamental note. The sustaining bridges are supported by or in contact with an adjacent elastic surface, which responds to and reinforces the vibrations that a perfectly rigid surface would only receive to deaden; and thus more air is set in motion, and a more audible sound produced, than would be due to the motion of the string alone and unassisted. Such a surface is supplied by a sounding-board, or a stretched parchment; the body of a violin is a combina- tion for this purpose, of which the perfected construction is a masterpiece of ingenuity.

Under these fixed conditions of uniformity of the string or wire and degree of tension, the re- sulting vibrations are uniform in time, whether the excursions of the string on either side of its line of rest be greater or less; and when the rate is sufficiently rapid, they produce a musical note which is loudest at first when the excursions are largest, and gradually becomes less so till the string is at rest. If the vibration of the mono- chord is maintained, as by the continuous action of a fiddle-bow, the fundamental note may be prolonged for any time without change.

For purposes of experiment with the monochord, a movable fret is provided, by which the string may be stopped as by an intermediate bridge, at any point between the strained extremities and to the length of the vibrating string—of the por- tion of the full monochord which is thrown into vibration—may be varied as required.

This adjustment is equivalent to that which the violinist effects by touching a string with a finger at various points, and thus shorten- ing its vibrating portions, and by altering the condition of length, producing a different musical note.

By experimentation then with various adjust- ments of the monochord, it is found, that as the length of the string is gradually shortened, a different musical note is produced with each change, and successively higher and higher in pitch, or more and more shrill; but that when it is shortened to precisely half its original length, a note is produced of higher pitch indeed, but recognisable by the ear, as the same as that of the full string. This result is best put to proof by providing two monochords exactly corre- sponding to each other, when on sounding the half string of one simultaneously with the full string of the other, the ear will appreciate the resulting musical note as unchanged. Let the shortened string be again reduced by half; that is, let it be reduced to one quarter the length of the full string, and again we have the identical note produced by its vibrations at again a higher pitch. This is a phenomenon of which the knowledge is due to experiment alone; apart from experiment, we should have no grounds for inferring *à priori*, that the note produced by a given full string would not differ as absolutely from that produced by its half as from others produced by its third or fifth.

It is upon this phenomenon that all the con- ditions of that musical scale, which has to be taken into consideration in the adjustment of musical harmony, is ultimately dependent; it will be observed how absolutely dependent are these conditions on the physical characteristics of elastic bodies, and of the air as the interme- diary of audible sounds; and caution is most needful in transferring any but the most general analogies to impressions produced on other senses, as that of sight, by the agency of vibra- tions of a different medium having laws and characteristics of its own.

For the two monochords to possess the exact similarity which the experiment requires, they must agree in length, tension, and also in weight; the agreement in weight of two strings of similar material being measurable by comparison of transverse sectional areas, in fact, of their relative thickness.

The rapidity of vibration of a particular string of given tension and diameter,—or weight,—is in an inverse ratio to its length; the longer the string the slower will be the ratio of vibration; if it be shortened to one third, its rapidity will be trebled; if to one half, only the rate of vibra- tion is doubled. In this latter case, as we have seen, the resulting musical note will be the first repetition of the original fundamental note at a higher pitch; and if the length of the string be doubled, the rate of vibration will be halved, and the first repetition of the original note at a graver pitch will be produced. Like changes may be induced by leaving the length of the string unaltered, and varying either its tension or thickness.

Increased tension produces more rapid vibra- tion, and therefore a higher note; degrees of tension may be regulated or ascertained by com- parison of stretching weights; and it is found that to double the rate of vibration we must quadruple the stretching weight;—to treble the rapidity we must increase this weight ninefold. That is to say, in general terms,—"Rapidities of vibration of strings which agree in other re- spects, compare in the proportion of the square roots of the tensions,—or of the stretching weights."

The length and tension of the string or wire may be left unaltered while the fundamental note will be affected by a change of thickness. Increase of thickness,—that is, of weight,—re- duces rapidity of vibration; and here again the differences proceed proportionally. Assuming the string to be round, as circles are proportionate to each other as the squares of their diameters, the diameter of a string is the exponent of the square root of its weight; the law, therefore, may be stated thus:—"Rapidities of vibration are inversely proportional to the diameters,—

* See p. 776, *ante*.

that is, to the square roots of the weights, of the strings."

Thus to reduce the vibration to one third, the diameter of a given string must be trebled; and to halve the rapidity the diameter must be doubled.

Whether the weight of the string is increased by additional thickness of like material or by substitution or addition of material of different specific gravity, makes no difference in the law; and it holds in either case that "the rapidities of vibration of different chords which agree in length and tension are inversely proportionate to the square root of their densities."

There is no proof that the ancients availed themselves of the density of metal for their stringed instruments, either as wire or by strings enveloped in a coil of wire. Pope, in a beautiful translation of a beautiful passage, makes Homer say :—

"As when some heavenly minstrel taught to sing
High notes responsive to the trembling string,
To some new strain when he adapts the lyre,
Or the dumb lute refits with vocal wire,
Relaxes, strains, and turns it to and fro,
So the great master drew the mighty bow;"

but when we turn to the original, we find that the ancient bard was beholden specifically to the "gut of a sheep."

In antiquity the great name of Pythagoras was credited with the discovery of some certain proportionate relation between the notes of the musical scale and the weights of instruments which produced them; such is the ultimate gist of the story of how he observed a difference between the notes produced by hammers of different sizes striking on an anvil, and traced the proportionate differences to proportionate weights. The story would bear on the face of it the proof of being blundered in transmission,—it reaches us through channels of the veriest gossip,—even though the particular proportions which it pretends that the Samian sage identified, were not in every instance perversely erroneous. What we cannot reject as highly significant, what will only be underrated by those scientists who in the pride of progress forget the difficulty of beginnings, is the original reduction of the phenomena of sound to a standard of numerical computation. It would not be unfair to ascribe to the just sense of what such a discovery imported, very much of the strength of that conviction that all the phenomena of Nature, on earth and celestial, must ultimately be connected by a chain of proportions, which has stimulated and sustained, and it may be added rewarded both speculation and research from the days of Pythagoras to our own. If, indeed, the philosopher thought a hecatomb no inadequate acknowledgment of thankfulness for a pregnant discovery in pure mathematics,—the equality of the square of the hypothenuse of a right-angled triangle to the squares of its other sides,—he might still more worthily, and even more enthusiastically, have bestowed another for the discovery which bridged over with security the momentous interval between the empirical and the absolute. Such is the large scope of the principle, as we have it in a sentence of the Pythagorean Philolaus, that it is the function and privilege of harmonious adjustment to reduce the manifold to unity, and the diverse to agreement.

It was in the very nature of this discovery that its bearing should be as palpably significant in the direction of art as in the study of nature. We may leave aside,—at present, at any rate,—the controversy as to the progress of scientific instrumental music among the Greeks,—but the abundant and varied remains of Greek lyric poetry exemplifies the labour and art with which all the mysteries of rhythm, of proportionate combinations of time, were brought into strict numerical subjection. For the maxims of one art to be transferred to another has never seemed more natural than in the earlier ages of artistic development; something of the later Hellenic sense of the allegiance of architecture to laws which might be called those of rhythm or of music, but were laws of harmony at last, seems expressed in the antique legend, how the stones that formed the walls of Thebes fell into their places at the sound of the lyre of Amphion. There are some strong indications that the earlier Greek architects put especial reliance on the leading proportions of Pythagoras, before a spirit of more decided independence was encouraged by the sense that architecture had as good a right,—was bound by as strong an obligation as audible music, to originate harmonious combinations of its own, and with exclusive reference to its own conditions.

To follow, as we have elected to do, this earlier speculative course and process, we direct our attention to proportionate lengths of an equally tense homogeneous string as the most convenient exponents, in the first instance, of variety in pitch of musical notes.

Commencing with such a monochord, we may assume it to be shortened by successive degrees of the utmost conceivable minuteness, and put into vibration after every change of length, producing at each change a different note, until when the string should be shortened precisely by one half, the original note would be found to recur but at a higher pitch. If we proceed to shorten the string still further, it is clear that at every degree we shall make it just half one of the lengths that we have already passed, and shall, therefore, have only a repetition of a previous note; and so if we lengthen the string beyond its original extent, at each degree, we shall but have a graver repetition of a previous note.

It must be observed, therefore, that notes which differ in pitch and, whether or not, also in loudness and *timbre*, may nevertheless agree in another respect which we will call character. This is the quality in virtue of which a note is identified with all the repetitions, whether higher or graver, and distinguished from all intermediate notes, quite irrespective of other differences. In the supposed experiment, therefore, of the constantly shortened monochord, we should have produced, whatever its original length, a representative of every possible variety of character of musical note, any one of which is producible at a series of degrees higher or graver; while conversely, of course, no note whatever is producible, that would not therein have had its representative either at a higher pitch or a lower.

Convenience requires that some particular note in this multitudinous series should receive an accepted name, and thus become identifiable as a common point of departure and comparison; only so can music be put accurately on record, and only so have a chance of being executed in some accordance with the intention and original conception of the composer. The name C has been assigned to such a note; but in the course of time, and in the absence of any authoritative standard, and also of any scientific test, the name has been liable to shift its place on the scale, and what should have marked a point of departure has, in fact, itself moved on, and to this extent the standard, as between one period and another, has been vitiated. The invention of the siren renders it possible to determine with perfect accuracy the number of vibrations, within a given time, as a second, which produce a certain note, and the means also of producing a note by any given number of vibrations in a second. It has thus appeared that the sound which Handel intended to be performed in the counter-tenor scale, when he wrote C, about A D. 1740, was produced, as appears by his tuning-fork, by 499½ vibrations in a second; but the Philharmonic concerts A.D. 1812–1842, represented it by the note answering to 518⅔, and the Italian Opera by 546. These changes, which must, to some extent, falsify the execution of earlier music, are all in one direction, towards a rise in pitch, the tendency is usually ascribed to the rivalry of singers striving to surpass each other in the highest notes; it may have been promoted sometimes by an important singer only anxious to accommodate the best notes of his individual voice.

Mr. Chappell states that the later works of Haydn, and those of Beethoven, were composed for a standard pitch approximate to 512. This number is the cube of 8, and it has the convenience that the lower octaves of the notes that it expresses may be carried down through as many expressions as may be required, without recourse to fractions. It appears that it might have been adopted in England but for serious interference with vested interests in stocks of instruments constructed for the higher standard.

What we have now immediately in view is the elucidation of the proportions between the notes of the musical scale; and from this point of view it is indifferent what note is taken as the standard; the proportions between the series of harmonising notes, or the conditions that produce them, will always be the same.

From what we have seen of the physical characteristics of musical notes, these consequences follow; the proportionate relation of a series of notes whether higher or lower in pitch, to a note which is the fixed departure for comparison, may be expressed in terms of :—

1. The absolute vibrations within a given limit of time that produce the compared notes.

2. The proportions of the vibrations which produce the several notes to those which produce the standard note; it is matter of convenience whether these ratios shall be written down in their lowest terms, or, as fractions reduced to a common denominator,—the denominator being the equivalent of the standard or key-note of the series.

3. The proportions of the lengths of the monochord producing the several notes to the full undiminished lengths, proportions which may either be expressed numerically or exhibited on a scale as the marked divisions of a given line.

As the lengths of strings which produce particular notes are in inverse proportion to their vibrations, the terms of the ratio for a given note would, as between such cases, be exactly reversed. Thus, in the case of a recurrent note at a higher pitch, the ratio of the doubled vibrations would stand as 2 : 1 or ⅔, and that of the halved string which produces them as 1 : 2 or ½; and so of any intermediate notes,—the ratio ⅘ of the vibrations being equivalent to ⅘ of the string; a string four-fifths only of the length of the full chord, would generate vibrations at the rate of five to four of those of the standard. There is a certain convenience in making use exclusively of the expressions in proportional terms of vibrations; in consequence the denominator of a fraction will be understood in what follows, to represent in every case the assumed standard or key-note, and the numerator the compared note,—that is, the relative number—not the absolute number—of the vibrations that produce it. So the fraction or ratio ⅘ represents a note which has two vibrations in the time of one of the standard note,—is its first recurrence at a higher pitch, ⅘ being its second recurrence still higher, having four vibrations in the same time.

According to this scheme, whenever the numerator of a fraction which represents a note is the higher number, the note which is expressed by the ratio, is more acute than the standard note; and, on the other hand, when the numerator is the lesser number, the note is more grave; thus, ½ represents the first graver recurrence of the standard note, and ¼ the next.

The following series represents the ratios of the musical notes of the major and minor scale

$$\frac{1}{1}\ \frac{9}{8}\ \frac{5}{4}\ \frac{4}{3}\ \frac{3}{2}\ \frac{5}{3}\ \frac{15}{8}\ \frac{2}{1}$$

The denominators of these fractions represent so many vibrations of those producing the standard note which occur within the time occupied by those expressed by the respective numerators; and each fraction thus represents a note, which harmonises agreeably when heard along with, or in sequence with, the standard note.

It is obvious, on simple inspection, that this series of ratios is a very limited selection from the list of those which might be interposed between its extremes of ¼, or equality, and ⅔. It is, above all, the principle of this selection which we have to set forth and account for; thus only can we vindicate our warning for the music of sound to respect its proper boundaries, and not claim to control the laws of proportion in the music of architecture.

Wentworth.—The Archbishop of York has consecrated the new church at Wentworth, which has been erected by Earl Fitzwilliam in memory of his parents. The building is Early English in style, and consists of nave north and south aisles, two transepts, chancel, and vestry. The total length of the church, outside measurement, is 130 ft., the chancel being about 25 ft. long, the transepts about 20 ft. across, and the nave about 80 ft. long. The width of the nave, including the aisles, is 46 ft. inside, the outside measurement being 53 ft. The space between the chancel and the nave is lighted by means of a lantern tower, the top of which is 100 ft. from the surface of the ground. Over this is the spire, reaching to a height of 198 ft. from the surface of the ground. The edifice is built of Darfield and Hooton Roberts stone, the pews and all the woodwork being of English oak. It will accommodate about 550 worshippers, all the seats being on the ground-floor. With the exception of the portion covered by the pews, the floor has been laid with Roman Mosaic paving, which has been supplied by Messrs. Burke & Co., of London. The architect of the church is Mr. J. L. Pearson, A.R.A., of 46, Harley-street, London; the contractor being Mr. G. W. Booth, of London and Gosport. The cost is stated to be 25,000*l*.

LOCAL MUSEUMS, AND THEIR VALUE.

THE DOVER MUSEUM.

THERE are many things, not unfrequently touched on here, and urged on the attention of those who are most interested, which are still year after year suffered to remain in their but too commonly imperfect state,—things that might be made to serve most useful ends, but yet do so very little for us. Of this multitude of things, not one of the least important and interesting is that of local museums, *i.e.*, of museums devoted to the acquisition and orderly arrangement of objects special and peculiar to the locality in and around which they are produced and collected. A visit, for however short a time, to any one almost of our sea-side towns especially,—of course not forgetting inland ones,—will but too soon convince any one of the importance of this; not only from the fact of what such collections do contain and do not contain, but from their very meanness, and from the notable absence in them of so many things which such institutions ought in fairness to contain to make them illustrative of the precise locality wherein they are situated. It may, at this season of the year, be of some little interest, as all the world who can by possibility do so go to see other localities than their own, and get to feel an interest in them, and a wish to know a something more about them than is to be got at through an ordinary guide-book. We would, in illustration, here refer to one or two well-known provincial localities, world-famous ones too, and of ancient interest, and wherein attempts have been made, as it is, to form local museums and collections of the objects, both natural and artistic, which they have made in the past or do now in the present day produce. We confine ourselves at present to matters antiquarian and artistic.

We might take for example such a town as Dover, famous and noteworthy in very many ways. Dover was a Roman station, and before that "long time ago" it was a primeval British one,—Dwr. Saxons and Normans have each in turn held possession of it, and each have left more or less striking memorials of their occupation. The Cæsar himself was tempted, we are told, by the sight of Dover cliffs to cross the sea, and to look at our island for himself. Right notable, therefore, is it, and, as might be supposed, it contains even yet not a few things indicative of the successive races of men who have occupied it, and built each in its own way upon it. We can but imagine the rude men, with their manufacturing and artistic capabilities and their building contrivances, whom Cæsar first met on his landing here, or very near to the present town of Dover. But it may be of interest to note that in the Dover Museum collection, imperfect as it is, there is a very interesting collection of savage objects of art and contrivances [from New Zealand and other South Sea Islands. These are not ancient "British," it is true; but the savage man, as Humboldt has remarked, is much the same in many ways all the world over, and his same rough ways and contrivances are to be found north and south. The details differ, in a wonderful manner, too, sometimes; but the way of work is the same, or nearly so. Thus, as we venture to think, in the absence of any genuine British antiquities, and ways of doing things, these contrivances and rude artistic work from New Zealand are not inappropriate here. But, we would ask, could not an effort be made to get together a more or less complete collection of the arts of the British man, who, once on a time, though so long ago, here held undisputed empire?

Now Dover has the *beginnings* of a museum,—a sufficiently miscellaneous one. There are all kinds of things and curiosities in it besides this series of curiosities and war-clubs, and paddles, and fragments of dresses, and "ornaments" from New Zealand, and from other places in the South Seas. They are, as such now out-of-the-way things always are wherever found, of much interest. And then there is a zoological collection of a very miscellaneous character, and of course in so small a space, very imperfect indeed; a collection of stuffed birds; and then again a number of cases filled with a miscellaneous collection of minerals and geological treasures; and then, what will perhaps most interest the readers of an art journal, a collection, and a very small one, of *antiquities* and *architecture*. And here it is that we may perchance throw in a word that may be useful should any attempt ever be made to render this museum one more strictly typical and *locally* interesting. Dover, as we said, is so notable and historic a spot, that it would seem as though no pains could well be thrown away in the effort to collect as many special records of it as possible, and that we should spare no pains to collect together as much and as many fragments of its past as can be done. Many inhabitants of such a town, it will be found, have in private possession not a few odd fragments of its *past*, which, though but mere curiosities when seen on a mantel-piece, would be of great importance and interest if brought together and catalogued, and described according to date and precise locality. We have seen a few of these, and been a little surprised at the small amount of interest taken in them until their historic value was pointed out. Much might thus be acquired.

And there are, as it is, in this collection, and to it we more especially refer, a few fragments and examples of the past Gothic architecture and sculpture. True, they are very few in number, and not being catalogued or labelled in any way, we can but make guess here and there at them. There is a Perpendicular cap on the ground, so that it is difficult to see it; and there are some three or four small figures, and some odd fragments picked up here and there, as we must suppose, by accident. But there is one noteworthy example: a sepulchral slab from some neighbouring church. It is one of those few memorials yet left, in original state, of the Crusaders, and of which the London Temple Church contains so many. This is a stone slab, with the cross and long-pointed shield in relief. It is simple enough, but is admirably cut, and striking from its very simplicity. It would, we think, be better if on the *floor* of the museum than where it now is, and might, we cannot help thinking, be added to, if diligent search were made. And might not a notable collection of such memorials of the Norman occupation here be made, by adding *casts* of those yet to be found near at hand? There is, indeed, no more instructive or interesting work to be found in broad England than is that of the Normans during their occupation of the country. A great race of architects they were, it is certain, and nothing more impressive has been done here in England than what they did. Much more might be said here, and with the remains of the magnificently-placed castle and keep close by, and which form so striking a picture when seen from the sea, no pains would seem to be too great to help to further knowledge of the race who could do such notable things.

There would seem to be hardly a doubt that a most interesting and instructive collection of the *local* antiquities of such towns as Dover might be formed, and would in time prove attractive to visitors, and certainly to artists and lovers of historic antiquities. First, a collection of the special materials, either produced on the spot or specially *imported* into it, and for its own use. And, then, as many examples of the *uses* to which such materials have been put in past days, and as showing how they have been moulded into form, and as showing how those forms have changed as time, and art, and manners changed. We are here confining ourselves to our own special side of such local museum,—to materials, and to forms in materials,—to architecture and sculpture, and antiquities,—and cannot but think that some novelty even in these days of museums and exhibitions would be found in the very fact of confining these collections to the localities themselves, and without attempting too wide fields of action. People might be supposed to go to a town like Dover,—to cite that by way of special example,—to look into *its* special history, and antiquities, and past modes of work. Antique Britons, rude and savage as they were, are worth the knowing a something about. After them the Romans, world-conquerors, found out England, and left "memorials" enough, even here; then Saxons, and Normans, and then the great Gothic ages,—down to the present day. But a few examples of each of these art efforts might be got together from, in, and about the town itself, and might and would usefully exemplify the successive phases through which art and architecture have *locally*, as well as generally, passed. Much, it is true, has already been done in this way here and there, but it is as nothing to what might be done. And in thus speaking specially of a museum of Dover antiquities, we must not be understood as meaning to confine them alone to the mere fragments to be found and seen on tables, and in the glass cases in a museum-room, but to include those larger and more impressive examples to be found here and there in its antique castle itself, and in its churches and elsewhere. The Normans were adepts, indeed, in architecture, in castle and church building, and if the word "picturesque" applies well to a building *per se*, it certainly does so to a Norman castle. As here to be seen overlooking Dover town, nothing can be imagined better placed, or still more happily chosen! It grows out of the hill on which it stands naturally, and gets more and more impressive as you get nearer and closer to it. A right true and keen perception of the sublime in architecture, and in the grouping of its parts, had the Norman architects, and the idea of it gradually grows till the massive "keep" itself, surrounded by towers and walling, is reached. The good town of Dover has reason to be proud of its tower, even in its present somewhat unhappy state of repair, poor enough as the work indeed is, patched and smoothed over every here and there, whole square yards of it, with common cement, marked to look like stone! It is truly but a poor ghost of its former self, and with all sorts of falsities in and about it, so much of the original work having disappeared. It is in part utilised as a military storehouse. We might ask why so, for there are close to it whole lines of barrack buildings and storehouses far better suited for such a purpose. The antique unrestored "Pharos" is at present utilised as a coal-shed!

We have specially cited Dover by way of example, not by any means because action is needed there more than elsewhere, but because there would seem to be some just now peculiar facilities and opportunities for action. York might, too, be specially named; for that archiepiscopal city is right full of memorials, and, indeed, generally it would perhaps be impossible to name any one of the old towns of England, dating from the Conquest, and even further back than that, to which our remarks do not apply. Every locality is found to produce some special material, and to call forth some special modes of construction, and to induce some peculiar turns and phases of architecture and art, and certainly and always did so in times of yore, and before our modern systems of contract made all things and methods so much alike all the kingdom over. Much,—very much,—has been got and gained by facilities of travel, and by increase of trade and commerce, and by universality of knowledge and information; but a something, and a good deal, too, has been lost and sacrificed to it at the same time,—among much else, individuality of work, and human expression, and individuality of artistic thought and development. All things are getting alike everywhere, and what you see every day, and all day long, in the huge metropolis, comes in fragments to Dover and to multitudes of places like it. What is peculiar to each is lost sight of and falls out of use. The local power, artistically and otherwise, is all but lost in the all-potent machine-like movement going on everywhere. Much gain here, doubtless, but infinite loss, too!

THE FUTURE OF NEWCASTLE-UPON-TYNE.

NORTHERN ARCHITECTURAL ASSOCIATION.

THE opening meeting of the Northern Architectural Association for session 1877–78 was held on the 4th inst., in the Old Castle, Newcastle-upon-Tyne.

Mr. Thomas Oliver, the President, delivered an inaugural address, in the course of which he said:—I leave it to your imagination to fill up the particulars of the material development of the district, with its enlarged population, and the improved appliances for reducing disease and improving our atmosphere, that are likely to ensue when Newcastle shall become a city, with a cathedral church; when it shall possess its local university, a magnificent town-hall, a railway encircling nearly the whole of the new city and suburbs; when the Moor shall be studded with mansions, and the Leazes one great laid-out park; and when the suburbs of Newcastle shall be not only within easy access of the city, but be choice and picturesque, if not like Jesmond Dene, at least something approaching to it. Our ancient town is evidently in course of translation into a city. Few people outside appear to be aware that Newcastle is already a county of itself, as much as the county of Northumberland is a county of itself. Indeed, many of the older geographical school-books call it the capital of Northumberland; and even now letters by well-educated people are not in-

frequently addressed Newcastle-upon-Tyne, Northumberland. When legally entitled to the more dignified and euphonious name of city, we shall be asked for our cathedral. Shall it be St. Nicholas, or, like Manchester and Edinburgh, shall we aspire to a new and more befitting one? Wealthy as the district undoubtedly is, and noble and generous as many of the donators may be, I fear the strain would be too great to attempt to erect a new cathedral, and, almost simultaneously with it, a localised university. That now at Durham ought to have been in Newcastle. Something has been transferred, it is true; and a successful school of science has been established which may be looked upon as an embryo university—not necessarily a university such as Oxford or Cambridge, but such as exist in London and Edinburgh. Why should the youth of the present day have to live out of town—in another city, indeed—in order to be educated? Why cannot the professors come to them here? If a place be wanting, surely this would be forthcoming. We can get a site upon the Moor—the Moor must be had! The dual authority of the Corporation and the freeman can only terminate in one way. The municipality of the new city will demand this as an earnest to its progress and the pressing necessities of the case. For necessary it is, not only for occupation and building purposes, but also as a source of revenue to the heavily-taxed inhabitants of the borough. Quite towns are being built beyond our municipal boundaries, none of which add to our revenue in the form of rates and taxes, but all of which make use of our facilities and improvements. Would you build upon the Moor? I have been asked. Distinctly I say, Yes, I would. I would not build rows upon rows of houses, with front streets and back streets, and such like. I would have no back lanes whatever; they are a source of disease, crime, and immorality. I would build mansions to begin with, and with the money obtained for the sites I would make roads, and I would sink deep drains to purify the soil and carry off the foul water that either lodges in it or evaporates with the sun's heat into dangerous malaria. I would then make a few parks—not one, but a dozen; that is, I would suggest having large open spaces, all free to the public, and of course plant them with trees, shrubs, and flowers. There is plenty of land both for mansions and parks. But, in addition to these, I would build suitable dwellings for the working classes. These should be as near to the city as possible; and instead of being built at the rate of from thirty to fifty per acre, I should give them open places for playgrounds for their children, and for workplaces, as gardens, for the parents. The area of the Moor is about 1,100 acres, and, with the Leazes, these two cover about as much ground as the whole of Newcastle does. Is it not shameful waste? It is not unhealthy to build upon open spaces, provided you drain, build well, and do not overcrowd. London is very closely built in, yet the death-rate of London is not nearly so high as Newcastle. The Moor has been called the lungs of Newcastle. Yes, but these lungs are not perfectly healthy; they want better food to improve the blood, which is quite out of order. Now, this can only be done by having a properly levelled and channelled surface, capable of being drained and kept in good order by carrying off the surplus water in deep, underground conduits; and this can only be secured over so large an area by placing it in the hands of one responsible body, which body shall have power to dispose of portions of it for its own improvement. And in order to bring these and other extensions within easy access of the city, I propose that a new line of railway should be formed outside and almost encircling the city. Begin at the Picton Station, on the Blyth and Tyne branch, proceed to the Manors and Central Stations, then branch off at Elswick—and proceed by underground to Benticck—thence to Benwell, on to Fenham, traverse a portion of the Moor, and keeping within its skirt Coxlodge, Balman village, and Gosforth, where, uniting with the Blyth and Tyne branch once more, you have a mode of communication nearly half made, and certainly very desirable. Tramways, of course, will become universal between given districts; and as noiseless engines are now in vogue, we ourselves may expect to see their introduction before many years. But, in addition, we ought to have more and better constructed omnibuses. Thus, with the above, and with the Cattle Market removed beyond the limits of the city, where abattoirs for slaughtering cattle would be erected, after the healthy and wholesome manner of the French; and with a new infirmary erected in a suitable and salubrious situation; and a new town hall, with its grand cupola or dome reaching to a height of 250 ft. in the air, removed from the huxtering of shops and barter, and dwarfing by its commanding size and proportions the beautiful Catholic Cathedral of St. Mary, as it stands on its magnificent site, now occupied as a cattle market. The new Courts of Justice—courts in keeping with the architecture and wealth of the city—will present themselves in Northumberland-street, and just as old houses are found useful when new ones are built and occupied, no doubt the old courts will prove valuable adjuncts to the increasing demands for large and well-ventilated buildings. The Free Library will be a feature in New Bridge-street, where, unfortunately, a lot of poor-looking buildings have lately been erected, which greatly intercept the fine view of a very effective architectural group of public buildings. And so with other works, not excluding the Leazes Park and Elswick Park. What Jesmond Dene will be time only can tell. It is perfectly charming now; it may hereafter realise our idea of the Champs Elysées. The improvements in our bridges, roads, and approaches are already very considerable; hereafter we may expect to see greater improvements still. The death-rate will then be considerably decreased, personal comfort will be greatly enhanced, facilities for locomotion will be enlarged, social habits and customs will be elevated, and the spiritual, intellectual, and physical condition of the community will be advanced. As architects, we shall have to take our share in the work to be performed, and I trust we shall be prepared to do it manfully.

The Honorary Secretary (Mr. W. H. Dunn) then read a letter from the trustee of Mr. David Bryce, architect, Edinburgh, who has been called upon by the trustee of Sir Wm. Fettes and the Bank of Scotland to deliver up the original plans, specification, and drawings of Fettes College and the Head Office of the Bank of Scotland. As the question of ownership of drawings is one of great importance to the profession, it was resolved to write to the trustee to arrange to have action delayed until the Royal Institute of British Architects had been consulted in the matter.

Mr. Thos. Prosser, in the name of the members of the Association, presented Mr. Oliver with a handsome gold watch, suitably inscribed, in appreciation of the valuable services rendered by him as honorary secretary to the Association during a period of twenty years. Mr. Prosser said it was to Mr. Oliver that they were indebted for the establishment of the Association, and it had been the cause of many kindred associations being established. The speaker referred to the benefits which the Association had conferred upon the profession, and said he was glad to know that it was progressing.

Mr. Oliver thanked the members for their handsome present, and said he should appreciate it for the remembrances and associations in connexion with it. He felt that it was an unmistakable token of his having the goodwill of his professional brethren, and that satisfied him above anything else.

The meeting considered the proposed building bye-laws for Newcastle, and approved of them, with a slight modification.

THE LLANGOLLEN CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.*

As already noted, the members of the British Archæological Association visited the remains of Cymmer Abbey on Friday, the 31st ult. Of Mr. Lofius Brock's paper we here give a fuller account. He said the long beautiful valley, hemmed in with lofty trees, more or less distant, indicated plainly that the ruins on its side were those of a Cistercian abbey. Leland ascribed the foundation to Llewelyn, Prince of North Wales, about the year 1200. The foundation was an offshoot of the Cwm Hîr Abbey, in Radnorshire. The founder or founders, however, could not be conclusively determined. What was then known of the documents relating to the abbey was set forth in the "Monasticon," and in a capital article in the first volume of "Archæologia Cambrensis." The British Museum roll of Cistercian abbeys gave the date of foundation 1199. The known documents, the Cistercian roll, and the site, all agreed that this was a house of that order. Strange to say, the buildings alone, where they should expect to find clear evidence, did not agree in that respect. They could not trace there any of the usual arrangements of a Cistercian abbey. The ground plan of the church was all but perfect, and could quite be made out. Instead of the cruciform minster, with its transepted chapels and its central tower, they found there a continuous nave, a continuous north aisle, the anomaly of a western tower opening into the nave, and of the continuous north aisle opening into the church by arches only at the western extremity of the nave, and which was elsewhere entered only by openings (irregular) into the eastern part, walled off from the western. The south side of the church, how much ruined, so far as the nave was concerned, had some irregular openings, which led to apartments, of which there were no remains, outside the church. A roughly walled area, now an orchard, afforded space where they would seek for the conventual buildings, constructed as usual around the central cloister space; but in this area there were no traces of buildings anywhere. A small spring, open above and below, was carried partly underground along the south side of this space, and reappeared again in a plentiful fountain at the south-west angle. This must have always been a small house. At the Dissolution the revenues were only 53*l.* 15*s.* 4*d.*; but the quadrangular space south of the church, its usual position, appeared to indicate that the intention at least was to construct the buildings according to general rule, and which could be adapted as well to a small as to a large establishment. The anomaly of the western tower was so great that it would be of interest to state that it was almost the only example of such an arrangement known in Great Britain—excluding the western tower of Furness Abbey, since that was a late erection in place of and upon an earlier and towerless west front. The period of the erection was of interest, for it led them on in the history of the buildings. After a careful survey of the architectural features, he had come to the conclusion that none of the work now standing belonged to the original building, or at least of the date of the foundation, and he could detect no signs of reconstruction; also, that it was of one period, or nearly so. The whole agreed in style, and could not be ascribed to an earlier period than the end of the thirteenth, or beginning of the fourteenth century. The north aisle arches sprang from octagonal columns with plainly-moulded capitals and bases, while the arches had two plainly-chamfered orders. There had been a moulded label on the nave side. Sufficient traces of four clearstory windows remained to show that they were of two lights each. Above the three eastern lancets were three smaller ones, but they were hidden beneath the luxuriant ivy which now covered most of the ruins. The three lancets had the peculiarity there, as at Valle Crucis, of commencing at a level remarkably close to the paving, in proportion to the size of the church. The present earthen flooring represented pretty nearly the original level, and he did not believe that there was any considerable accumulation of earth within the building. Excavations were made a few years ago and no paving was found. The questions raised were so unusual, and the remains so interesting, that the Association had sanctioned the preparation of a carefully-executed ground plan, from a survey made expressly for this purpose. It was to be hoped that its appearance in their *Journal* would be of interest, and the more so since it had never yet been published in its entirety. The dimensions were as follow:—Total length from east to west (inside the walls), 118 ft. 3 in.; width of nave, 26 ft. 2 in.; width of north aisle, 17 ft. 1 in. The material was the slaty stone of the district, not too well built, with dressings of freestone. The large quantity of small square holes quite through the walls had often called for remark. They were certainly more numerous there than in any other building known to him, and from their going quite through the walls, they were arranged for some other purpose than mere "putlog holes." They were also too numerous and too closely connected to have answered this purpose. In explanation, if they supposed that all the windows of the church were fixtures, then they might assign at once a use for them,—the ventilation of the building.

After hearing Mr. Brock's paper, the party

* See pp. 903-906, *ante*.

adjourned to the so-called refectory of the abbot's house—a large hall with a timber roof and gallery on one side, near to the huge fireplace and its roomy chimney corners opposite to the western door of the abbey. Here Mr. W. W. E. Wynne and Mr. Bloxam made some interesting observations, Mr. Wynne narrating to the company that he and Miss Lloyd, then present, had some years before excavated the interior of the abbey in the hope of finding some gravestones or effigies, as had been so successfully done at Valle Crucis, but with no results at Cymmer, they only coming across a large number of bones; and Mr. Bloxam remarked that the plan of the abbey resembled that of the small Priory of Ulverscroft, in Leicestershire. He expressed the opinion that the building they were then in was no refectory at all of the abbey, but merely a hall of the seventeenth century. From this view, however, many dissented, as although parts of the hall were undoubtedly of that time, the remains of the other buildings around it indicated a much earlier period. After a thorough re-examination of the abbey, under the guidance of Mr. C. W. Talbot and Mr. John Reynolds, and a further explanation of the peculiarities of the building by the former gentlemen, the party walked back to Dolgelly.

Llandderfel Church, visited later in the day, was described by Mr. Brock, who said it was a simple Welsh village church on the site of another of very great antiquity. The greatest interest of the church was its connexion with St. Dervel. The statue of that saint was one of the most renowned in North Wales. It was held in high veneration in the sense in which Roman Catholics still used the word, and pilgrimages were made to it. Mr. Brock called attention to the great antiquity of the foundation of the church as indicative of a time when Christianity was more known in Wales than in England. On perambulating the outside of the church the party were much interested at some of the label terminations of the windows, which presented a very grotesque collection of ugly faces, both male and female, boldly carved in light yellow freestone, the stone of the country, and about the same date as the church. In the porch the visitors noticed the remains of the wooden horse upon which St. Derfel was said to have been once placed. This figure, as Mr. Breese related, was used at Smithfield to help to burn a priest for denying the king's supremacy in 1538, and thus was an old Welsh prophecy fulfilled, as the poor friar's name was Forrest, that "the Saint Derfel should set a whole forest on fire." Pennant says, quaintly enough, that he hopes this deed was done "to take away from the people the cause of idolatry," this image bringing in a large revenue to the church from the number of offerings made at its shrine. The "Spere" staff, or a portion of it, mentioned in some verses quoted by Pennant, still exists, and was pointed out by Mr. Breese, who remarked that there was little doubt of its date suiting the time of the legend.

An evening meeting was held in the Assembly-room at Llangollen, when the following papers were read and discussed, viz.:—"On the Arms of the Principality of Wales," by Mr. Stephen Tucker (*Rouge Croix*); "On the Ancient Laws and Statutes of Wales," by Mr. C. H. Compton; and "On the Welsh Converts of St. Paul," by Mr. J. W. Grover, C.E.

On Saturday, the 1st inst., there was an excursion to Denbigh and Ruthin. Arriving at Denbigh at 11·30, the visitors were met at the railway station by the Mayor (Mr. T. J. Williams), who escorted them round the town. Among the objects of interest inspected was the Burgess Gate-tower, an old military structure, with a fine archway, defended by two massive flanking towers or bastions, with spur buttresses. It is locally considered to be the only remaining town gate, and was formerly closed by a strong portcullis.

The visitors next proceeded to the ruins of Denbigh Castle, where Mr. J. Robinson pointed out to them the special points that were dangerous, and how it was intended to shore them up. He stated that the town and neighbourhood had subscribed and collected 600*l.*, which was to be expended, not in rebuilding, but in preserving the ruin. Those buttresses which were to support the overhanging parts were to be built of rubble, so that in a thousand years to come the supporting part might easily be distinguished from the real old ruin. Mr. Loftus Brock commended Mr. Robinson for his discretion, and trusted he would carry out the work in the spirit in which he had conceived it. He especially advised that the east corner of the noble front arch should be made secure. As to the entrance itself, he noticed that the groove of the portcullis was round, and not square, which was a very rare feature. The tower called the Peveril Tower of Dover Castle was like this, but not so good. The company then moved on to what is called the Kitchen, but upon its being really the "kitchen" some expressed their doubts. Mr. Brock said that there was no doubt that an older fortress stood on this site, and probably the tradition was right which ascribed the building of the castle to Lacy, Earl of Lincoln. To architects it was especially interesting from the worked stone so plentifully used at the grand entrance, and in other parts of the building. Much was recorded of the many towers in the castle, one of which overlooked that in which they were standing, though built in the valley beneath. This was the Goblin Tower. He thought that the green courtyard they saw must have had an intersecting wall, supported by towers, to account for the number. The architecture was of various dates; the building was altogether a good specimen of a strong castle, and he rejoiced at the efforts made by the people of Denbigh to keep it from falling down. It was curious that, notwithstanding the gallant defence it made on behalf of Charles I., his son ordered it and Carnarvon Castle to be dismantled. This was blasted by gunpowder, but Carnarvon yet remains. Mr. Robinson rather warmly criticised the Government of past days for keeping Carnarvon Castle in repair with public money, whilst they would not give a penny to preserve Denbigh for the people. By desire, Mr. J. Tom Burgess gave a brief account of the fortifications and general plan of the castle. He said that though he had only seen the castle that day, he dissented entirely from the idea that the gateway which bore his name (the Burgesses' Tower mentioned above) should be considered as belonging to the town wall. On looking round the fortifications he found that the castle, like many border castles and those constructed in a hostile country, was not only a fortress proper, but afforded defence for a much larger population than an ordinary garrison of the retainers of the lord of the castle. The Burgesses' Gate was the principal, and, indeed, the only entrance to the castle then visible, though possibly there were others on the basement story. A curtain wall extended from this gateway to two corner towers, from which walls could be traced to the outer wards of the castle proper. The space thus enclosed contained a church, St. Hilary's, and the large ruin they had seen. It was, in fact, the outer bailey of the castle. The stately entrance was a remarkable feature; it was, in fact, the keep—a building of great strength, and presented many features of military architecture of the period prior to the general introduction of machicolated parapets. The keep had a drawbridge, a portcullis, and inner gates, all commanded by the garrison. If these defences were taken the assailants would find themselves in a close space open to missiles of all descriptions, and a similar portcullis and gates before them. They would find that not only this but each of the towers was a complete fortress in itself, capable of making a separate defence, and probably held by some baron or knight of the Marches. Outside these were an outer guard or ward commanding the escarpment, and affording quarters for the purely military garrison outside the domestic offices.

As the company were examining the building usually called the chapel, of which only the walls remain, an old plan on Speed's map of Denbighshire was produced by Miss Gee, which singularly verified Mr. Burgess's statement. The party afterwards passed through the grounds of Castle House, the residence of Miss Fazakerly.

The ruin of Leicester's unfinished church excited deep interest. Mr. Brock said it was the remains of what would have been the largest and finest church founded after the Reformation; indeed, it was the first so founded. Robert, Earl of Leicester, though a man of great ambition, was a good friend to Denbigh, and he desired to remove the see of St. Asaph there. After passing through these grounds and visiting the Bloody Well in Goblin Tower, the party adjourned to the Assembly Room for luncheon, after which a few members found time to visit the desecrated remains of the Carmelite friary, known as the Abbey.

The party then proceeded by train to Ruthin, where they were met by the Mayor, who pointed out many of the quaint houses. The most interesting was one called "Plasnewydd," a low porched, half-timbered house, which gave little promise of the treasures inside. A balustered gallery runs round the central apartment, and the moulded beams of another show signs of the Tudor period. Hence to the Castle of Ruthin was but a few steps. At the castle the visitors were most courteously received by the Mayor, Dr. Jenkins, who conducted the party through the building and its grounds. The plan of this castle, founded in the reign of Edward I., differs in many respects from that of Denbigh. On the ruins a modern edifice, the seat of Mr. Cornwallis West, lord lieutenant of Denbighshire, has been erected. Mr. G. R. Wright read an account of the castle, which was chiefly remarkable for its siege in the Civil Wars by Colonel Mytton. After the Restoration it came into the hands of the Wests, Earls of Delawarr, to which family the present owner belongs. After going round the outside of the castle, the party sat down to tea, with fruit, served in the fine saloon of the castle, by Mr. West's butler. Mr. Tucker, on behalf of the strangers, returned thanks to Major and Mrs. West for their hospitality and kindness.

A special train conveyed the members back to Llangollen at half-past six. At the evening meeting, in addition to the conclusion of Mr. Compton's paper, there was also read "Notes on Early Monumental Sculpture," by Mr. C. Lynam.

Several members, instead of returning to Llangollen from Ruthin, proceeded to St. Asaph, and stayed there during Sunday.

Monday, the 3rd inst., was the last official day of the Congress, and the members left Llangollen in a heavy downpour of rain, by special train, *vid* Chester, to Mostyn Hall, whither they had been invited by Lord Mostyn. In the entrance-hall Lord Mostyn explained that he had been obliged to pull down and rebuild the oldest part of the house, which was of the sixteenth century, and was built early in the reign of Henry VI. He found that the greater part of it was built of clay without lime. The hall was a fac-simile of the old one, and the chimney-piece was modelled on the old chimney. The party were then conducted through the principal rooms of the house, and the large and most interesting collection of family and other portraits on the walls was described by his lordship. In the dining-room the date of the house (1632) is carved on the oak panelling over the fireplace. The books and manuscripts were described and commented on in a very lucid and interesting manner by Mr. W. de Gray Birch, of the British Museum. Before leaving the Hall Mr. Brock referred briefly to the architecture of the building, which he said was one of the most interesting old houses the Association had ever visited. It must be a gratification to all archæologists to find a house like that so admirably kept. He was glad to say that the modern portions, which had been rendered necessary from the lapse of time, were designed in a style so admirably and eloquently in accordance with the old parts. Their warmest thanks were due to Lord and Lady Mostyn for so kindly and courteously opening to them their hospitable house. Some refreshments were served to the visitors, who were obliged to decline a pressing invitation of Lord Mostyn to stay to a substantial luncheon which had been provided for them.

The party, after taking their leave of Lord and Lady Mostyn, left by train about two o'clock for Holywell Station, whence they proceeded in carriages to the celebrated well of St. Winifred, one of the "Wonders of Wales." There are many persons who still believe in the miraculous virtues of this holy well. The legend is thus told by the late Mr. Timbs:—

"In the seventh century lived a virgin of the name of Winifrede, of noble parents, her father, Thewith, being a rich noble, and second man in the kingdom of North Wales, next to the king. At a very early age she was placed under the care of her maternal uncle, Beuno, a holy man and a priest. Under his care she lived with certain other pious maidens, in a small nunnery, erected for her by her father, near the site where the spring now is. Having been seen by Caradoc, Prince of Wales, he was struck by her great beauty, and finding it impossible to gain her in marriage, he attempted to carry her off by force; she fled towards the church, pursued by the prince, who, on his overtaking her, in the madness of his rage, drew out his sabre and struck off her head. The severed head bounded down the hill, entered the church door, and rolled to the foot of the altar, where St. Beuno was officiating. Where the head rested, a spring of uncommon size burst forth—a fragrant moss adorned its sides; her blood spotted the stones, which, like the flowers of Adonis, annually commemorate the fact by assuming colours unknown to them at other times. St. Beuno took up the head, and, at his prayers and intercessions it was united to the body,—the virgin was restored to life, and lived in the odour of sanctity fifteen years afterwards."

On the visitors assembling in the chapel of

St. Winifred, Mr. Brock gave an interesting account of the sacred wells of Wales. He said that the holy wells of a country were interesting evidences of its antiquity. St. Winifred's Well was the most famous for its healing powers, and it was much more visited now than in Pennant's time. There was no record of it earlier than the intended visit of the Earl of Chester, but its antiquity was attested by its Saxon name. They might safely infer that it was one of the most ancient as well as the most famous of holy wells. The legend of St. Winifred had its origin in the seventh century. When he was there last, thirty-nine crutches and six sticks had been left behind by persons supposed to be cured. Mr. Brock then gave some details of the history and architecture of the chapel. The chapel is Late Perpendicular, with a very curious octangular apse. It is said to have been rebuilt by Margaret, mother of Henry VII.

After luncheon the archæologists paid a hurried visit to the interesting remains of the Cistercian Abbey of Basingwerk. Mr. Brock, in a brief description of them, said that it was greatly to be regretted that the owner, Sir Piers Mostyn, had allowed them to fall into such a state of neglect and decay. The party afterwards left by special train for Chester, and arrived at Llangollen about seven o'clock.

The closing meeting of the Congress was held in the evening in the Assembly-room, Mr. Thomas Morgan, F.S.A., hon. treasurer, in the chair. Mr. Dillon Croker read an historical paper on Harlech and Criccieth Castles, written by Mr. F. G. Westmacott Chapman, who traced the history of this famous fortress, beginning:—

> "In Arthur's days of ancient date,
> When Cambria's chief elected
> Her Maelgwyn to the regal seat,
> Were Harlech's towers erected."

But the present building belonged to the Edwardian period. In 1408 the castle was taken by Owen Glendower, and held for four years. Here Margaret of Anjou took up her quarters in the dark days of her misfortune. It was held for nine years by Dafydd ap Ijan ap Einion, who was at last obliged to surrender. The famous air, "The March of the Men of Harlech," dates from this period. It was also the last stronghold that held out for Charles I. Mr. de Gray Birch then gave a *resumé* of the work of the Congress, observing, in conclusion:—The British Archæological Association will depart conscious of having done its best for this year—the thirty-fourth of a vigorous existence—if it shall have taught you to *be still* and to hear the still small voice of bygone days which we, as archæologists, hear so plainly when we enter into the presence of the dead past; to see, as we see, the departed spirits of our ancestral sires; and to acknowledge reverently the superiority of those who have gone before us,—at least, as far as regards the lesson they have left to us, their posterity; and we may reiterate the words of an ancient poet, who so truly said:—

> "Ætas parentum pejor avis tulit
> Nos nequiores, mox daturos
> Progeniem vitiosiorem."

The customary votes of thanks were then warmly passed to the local gentlemen who had so kindly received the association, to the authors of the papers, and to the officers, after which Mr. J. Griffith expressed the pleasure which the visit of the association had afforded to his townspeople.

Thus ended the last meeting of the Congress proper.

On Tuesday, the 4th inst., a large number of the members of the Association went to Llangedwyn, at the invitation of Sir Watkin and Lady Williams Wynn. On reaching Llangedwyn they were heartily welcomed and hospitably entertained. Amongst the curiosities they inspected was a large golden torque, which was found on Cader Idris, and some tapestry of the seventeenth century. The visitors much admired the picturesqueness of the old-fashioned house, and the beauty of its surroundings. Just before leaving, Mr. G. R. Wright conveyed the thanks of the Association to Sir Watkin and Lady Williams Wynn for their courtesy and hospitality.

A section of the members, instead of going to Llangedwyn, explored the remains of Old Oswestry, and their proceedings are reported in the *Wrexham Advertiser*. During the brave resistance made by the Carnabii, the Silures, and the Ordovices, under Caractacus and Venusius, the great camps which yet remain on the Salopian hills and the Welsh borders played a conspicuous part. Though it is almost impossible to identify any particular one of these, there can be no doubt that the oppidum known as Old Oswestry (little more than a mile north of the town) must have borne an important part. A slightly oval space of sixteen acres which crowns one of the low hills, billows of pebble and gravel, which here overlook the Cheshire Plains, has been entrenched, escarped, and defended by works of no slight strength or importance even when measured by such formidable earthworks as Old Sarum and those on the Herefordshire Beacon. By the kindness of Lord Harlech, this most interesting encampment, which, with its ditches and outworks, covers an area of nearly sixty acres, was not only thrown open to visitors, but the nettles and weeds which flourished in the ditches were cut down to permit a close inspection of the contour of the works. Those who took advantage of this opportunity were amply rewarded, for this great oppidum presents many peculiar features. The ramparts or valla are ranged in terraces round the hill, varying not only in number but in slope and depth, but in no instance are there less than three lines of rampart, and the others merge into these in a similar manner to those of the great encampment on the Herefordshire Beacon. Those on the western side are not only the most numerous, but they enclose a series of elliptical hollows, now partly filled with water. Eight of these are on the north side of the south-west entrance, and two on the south. They answer to the "slingers' pits" in the great stone entrenchments at Worle, near Weston-super-Mare, but cannot have been used for this purpose. From the great care taken to fortify this position they possibly may have been formed to contain the household treasures of the leaders of the Carnabii, on the frontier of whose territory Old Oswestry stands. The spring which supplied the camp with water is situated by the side of this entrance, and in close proximity to these singular hollows. Watt's Dyke is connected with the outer vallum on this side, and runs due south in the direction of Oswestry, near the lane, but it is lost at Maesbury, three miles off. The encampment at Porkington, known as Castell Brogyntyn, lies to the west and south-west. A low tumulus crowns the summit of a slight elevation skirting the old road to the camp. The Wrekin can be plainly seen on the south-east, marking the site of Uriconium, the city of the Carnabii or Cornavii, for the name is variously spelt. The grey and misty heights of Breidden, the "City of Robbers," is plainly visible on the south. On these slopes one of the Roman legions was cut to pieces, and the Roman power trembled for supremacy until Julius Agricola assumed the chief command.

Oswestry itself rewarded the ardent few who wandered through its spacious streets. Half-timbered houses, with well-designed gables and barge-boards, queer penthouse roofs springing from dumpy first-floors, and surmounted by curious dormer windows, spoke of old times and of a taste to preserve these memorials. The church has been recently restored by Mr. Street. The heavy-buttressed and picturesque tower, which was partially destroyed during the siege by the Parliamentarians, and restored in that vague Palladian style which prevailed in the reign of Charles II., was worth inspection, as were also the lych-gate and framed house adjoining.

On the return of the party to Llangollen in the evening, their visit was brought to a most agreeable termination by an admirable entertainment in the Assembly Rooms, for the benefit of the Llangollen Cottage Hospital. Mr. Theodore Martin took the chair, and readings were given by Mrs. Theodore Martin (Miss Helen Faucit) and Mr. Dillon Croker, the musical arrangements being in the hands of Professor Davies and Miss Jennie Davies. It is stated that after paying all expenses there was a surplus of upwards of 50*l.* to be given to the hospital funds.

We may add that a small temporary museum was open during the Congress, under the direction of Mr. George Wright, the hon. Congress secretary, curator, and librarian. A large collection would have been formed had a more suitable place been found for the purpose than the Assembly Room. Sir Watkin Wynn contributed a beautiful collection of silver plate, &c.; Mr. J. F. Edisbury, Wrexham, an interesting series of coins of all ages from the Roman period to Mediæval times. A series of old engravings, illustrating the progress of the art, was exhibited by Mr. Brock. Captain M. Taylor sent interesting specimens of Celtic date, found in the immediate district of Corwen, amongst which were several very curious bronze implements. Miss Smith, of London, contributed several Etruscan vessels; and Mr. Brock a series of ancient lamps of Greek and Roman date, &c. Mr. Cecil Brent, Mr. Burgess, and other gentlemen were also contributors to the museum.

OUR MATERIAL PROGRESS.

THE publication of the twenty-fourth "Statistical Abstract for the United Kingdom" presents us with a mass of valuable facts; and as it is accompanied with similar facts for fourteen previous years, it supplies us with a record of the material progress of the country for fifteen years. In addition to a table of the public and local expenditure, the national debt, the customs' tariff, &c., we have a statement of the exports and imports, the shipping, the prices and sales of corn, the acreage under crops, postal and banking statistics, vital facts, educational, pauper, and criminal returns, with a mass of railway, mineral, and other statistics. Some are given at great length, others are presented in a most condensed form, but a summary of the whole may be found interesting. It appears from the initial table that the public revenue last year attained its highest point for many years, the exchequer receipts being 78,565,036*l.*—equivalent to a payment of 2*l.* 7*s.* 6*d.* per head of the population of the United Kingdom. The gross expenditure for last year was close upon this amount, the proportionate sum per head being 2*l.* 7*s.* 2*d.* The total receipts derived from local taxation during last year were 45,533,815*l.* Without dealing with the details of either of these two items we may pass on to the income-tax schedules, which show that the amounts assessed on were under Schedule A, last year, 162,431,893*l.*; under Schedule B, 66,752,333*l.*; under Schedule C, 42,389,640*l.*; Schedule D has the largest sum, the value being 266,942,347*l.*, and that under Schedule E, 32,540,064*l.* — the total amount of the whole being over 571,000,000*l.* Coming to the interesting subject of imports and exports, we have first a proportionate statement, from which it appears that in 1876, the imports were at the rate of 11*l.* 6*s.* 8*d.* per head of the population, and the exports of British produce 6*l.* 1*s.* 3*d.* The table of exports and imports to various countries proves that our trade—so far as value is concerned—received a general check last year; but the possibilities of impending war caused a curious diversion of the trade with Wallachia and Moldavia, our imports therefrom being more than doubled, and our exports thereto showing a sad falling off. Our imports from foreign countries were in value 290,822,127*l.*, and our exports 186,626,713*l.* to foreign countries; whilst those to British possessions added 84,332,576*l.* to the imports, and 70,149,889*l.* to the exports. Taking the chief articles of trade, we imported considerably more animals, meat, butter, corn, eggs, fish, jute, fruit, glass, preserved meats, wood and timber, and woollen and worsted yarn, though the value was occasionally less, whilst in many other of the chief articles there was a decrease; and we retained generally more of the principal articles, paying import duty for home consumption. Taking some of the latter of these, the quantities retained for home consumption are reducible as follows:—Bacon and hams, 9·49 lbs. per head of the population were retained; butter, 5·54 lbs.; cheese, 5·03 lbs.; eggs, 22·75; potatoes, 20·37 lbs.; rice, 10·27 lbs.; corn, 167·80 lbs.; tea, 4·50 lbs.; tobacco, 1·47 lbs.; raw sugar, 50·16 lbs. The grain imported was less, there being a falling off in the quantities of wheat brought in from the southern ports of Russia, from Sweden, Denmark, and Germany; from France, British North America, and the United States; whilst the imports from Spain, Chili, Holland, and one or two other countries were greater. Our exports of British and Irish produce fell off, showing in value a falling off to Russia, Sweden, Denmark, Germany, Holland, and other of our chief customers; whilst to France, Spain, and one or two other countries there was an increase. We sent out more cotton, yarn and manufactures, less linen and more jute, less iron and steel, and less woollen and worsted yarn and manufactures.

Turning now to the navigation returns, it is ascertainable that there is a general and, in the total, a large increase in the tonnage of vessels entering and clearing at ports in the United Kingdom,—the total entrances and clearances being 50,784,902 tons, against 46,276,838 tons last year. The steam-vessels only supply

27,169,037 tons of this, but the increase is scarcely up to the ratio of late years in this respect. The tonnage built last year is stated as 236,890 tons of sailing vessels, and 123,475 tons of steam-vessels,—the number of vessels built being 687 sailing, and 320 steam. Passing on to agricultural returns, it may be said that the acreage under corn and green crops was less, that under flax and other crops was slightly more, as also were those in permanent pasture, orchards, &c. Monetary statistics follow; and they show in the first instance that the Post-office Saving's-Banks received more in deposits last year than in any previous year, and the payments were also higher. The capital was 26,996,550*l.* for the whole of the kingdom. The savings-banks under trustees received slightly less than in the previous year, and the repayments were also less, the capital standing now at 43,283,570*l.* The rest of the financial statements cannot be satisfactorily compressed. The postal returns show continuous growth. The number of letters delivered during the last year was for England and Wales, 856,000,000; for Scotland, 91,000,000; and for Ireland, 72,000,000. Or placing it in another light, every hundred of the population received last year 3,520 letters in England and Wales; 2,579 in Scotland, and 1,354 in Ireland. In addition to these, there were delivered in England and Wales 242,000,000 newspapers and book packets; in Scotland, 33,000,000; and in Ireland, 24,000,000; and over the United Kingdom, 93,000,000 post-cards. The telegraphic messages forwarded were, in England and Wales, 17,671,518; in Scotland, 2,383,820; and in Ireland, 1,519,869. In addition to this vast mass of communication, the postal department issued 14,766,117 money-orders in England and Wales; 1,418,753 in Scotland; and 1,137,263 in Ireland; the amounts for which they were issued being:—England and Wales, 23,063,803*l.*; Scotland, 2,367,283*l.*; and Ireland, 1,994,254*l.*; all of which amounts show an increase over preceding years, like that of the postal work generally. The population last year was estimated as having attained to 25,547,309 for England and Wales; 3,560,715 for Scotland; and 5,336,395 for Ireland. The births were 887,464 for England and Wales; 126,749 for Scotland; and 140,438 for Ireland: the deaths, 510,308 for England and Wales; 74,122 for Scotland; and 92,499 for Ireland: and the marriages, 201,835 for England and Wales; 26,563 for Scotland; and 26,503 for Ireland. Education continued last year to make vast strides, there being 17,787 schools inspected; accommodation for 3,946,775; and 2,830,523 children present at inspections. There was a further decrease in pauperism, traceable to the falling off in out-door paupers, but there remained a total of 728,350 paupers, exclusive of vagrants, in England and Wales; 100,105 in Scotland; and 78,528 in Ireland. The convictions for crime were more: there were 12,195 convicted in England and Wales last year; 2,039 in Scotland; and 2,344 in Ireland. Emigration was checked in the ratio of increase, and immigration was also lessened.

The mileage of railways open was increased from 11,789 to 11,989 for England and Wales; from 2,721 to 2,726 for Scotland; and from 2,148 to 2,157 for Ireland. For the whole of the kingdom, the total paid-up capital was 658,214,776*l.* The passengers carried numbered 538,681,722,—being in the proportion of 31,928 per mile; the total traffic receipts were at the rate of 3,551*l.* per mile, and the working expenses 33,535,509*l.* The mineral statistics show that 131,867,105 tons of coal, 6,365,462 tons of pig-iron, 4,322 tons of fine copper, 57,435 tons of metallic lead, 9,614 tons of white tin, and 6,717 tons of zinc, were raised or produced in the kingdom last year, the estimated value of the total metals produced from British ores being 64,640,232*l.* at the place of production, a slight declension on the previous year's value, but due to fall in price rather than to lessened quantity.

The Trees in Paris.—The annual cost of keeping in order the trees, shrubberies, and seats upon the boulevards and in the public squares and gardens of Paris is nearly 2,000,000f. It is estimated that the trees in the avenues and boulevards of Paris number 82,201; those in the cemeteries, 10,400; and those in the squares and court-yards of various buildings, 8,300. There are also 8,000 seats for the accommodation of the public. The expense of keeping up all the extra-mural recreation grounds, exclusive of the Bois de Boulogne and the Bois de Vincennes, is rather more than 300,000f.

SCHOOLS FOR TEACHERS.

UNDER the above heading attention was directed in the *Builder* of October 23rd, 1875, to what was considered a palpable anomaly and grave defect in the Elementary Education Act of 1870; an insuperable obstruction in carrying out to a legitimate issue the purposes of the Act; and that furnishes a valid and rather grievous ground of complaint to a large number of young people, the pupil-teachers, who have been induced to enter upon the teaching profession with expectations that must, in many cases, be doomed to disappointment. The defect referred to is this, that only a small proportion of the pupil-teachers who serve their apprenticeship, pass successfully all their examinations, and seek the admission to training colleges to which they are entitled, will find accommodation provided for them in such institutions.

It was stated in the article referred to that the accommodation in existing training colleges was already stretched to very nearly the utmost limits, and that no provision, or almost none, existed for the large number of additional applicants that would present themselves one year after another, as their terms of apprenticeship in Board schools expired. The first batch of these apprentices has recently dropped in, and the number will considerably increase from year to year for some time to come. The discrepancy between the available accommodation in training colleges and the number of pupil-teachers offering themselves for the necessary Government examination, is even greater than was feared. To take the recent examination at Stockwell Training College for Girls as an illustration. Six hundred candidates were eligible, and underwent examination, but there were only sixty vacancies in the college! It is not necessary to assume that all the 600 will have passed the examination successfully: the result of the examination is not yet known, but it may be safely assumed that a much larger number than sixty will pass, with the mortifying result to many of them of being prevented from assuming the status to which they are entitled, and, hindered in their career, remaining simply "uncertificated ex-pupil teachers," instead of becoming eligible to take situations as certificated assistants or mistresses of schools.

That this anomaly is certain to become greater as the School Board system becomes more fully developed will be apparent from the following figures:—At the 30th of June, 1875, the London School Board had 199 schools under their direction; at March 23rd the number had increased to 238. For the two periods respectively there were 436 and 567 departments, *i.e.*, boys', girls', infants', and mixed schools, the last including boys and girls. The total accommodation at the two dates was for 112,901 and 156,662; on the rolls, 115,414 and 119,454; average attendance, 88,749 and 119,729, or 76·9 and 80·1 per cent. of the number on the rolls. Masters and assistant masters, 419 and 647; mistresses and assistant mistresses, 692 and 1,038; male pupil-teachers, 397 and 445; female, 906 and 1,095. The candidates for apprenticeship have fallen away considerably, the numbers for the earlier date being boys 122, and girls, 298; but for the later, only 71 and 222 respectively. The totals of apprenticed teachers for the two periods are 1,303 and 1,540.

In passing, it may be mentioned that the general average of the Government grant in aid of the education in London Board schools is 14s. 8½d. per scholar. The highest grant, 17s. 6d., is taken by the Greenwich division, and the lowest, 13s. 6½d., by Hackney, which is the most populous division within the London School Board boundary.

As bearing on the need there is for more and better *trained* teachers, it should be mentioned that the complaints of inefficiency by the Board's own as well as by the Government inspectors continue as numerous as in former years.

The complaint continues, that pupil-teachers in their first and second years are almost useless. For this defect it is confessedly difficult to provide a remedy. An economical aspirant after musical culture, on being told that the terms for the first twelve lessons would be four guineas, and for the second twelve lessons two guineas, proposed to take the second course first; but the gulf could not be so leapt over in his case, nor can the first course be dispensed with in the case of the pupil-teacher. If the monitorial is not to supersede the pupil-teacher system it is manifest that, at whatever age commencing, there must be a first and second year of apprenticeship, and to secure a supply of practised, trained, efficient teachers, it should be evident that young persons of both sexes should be brought up to the art of teaching by actual engagement in the work. But there is surely a great deal of useful work for which pupil-teachers of the first and second years should possess the requisite educational attainments. A Board inspector reports concerning 33,889 scholars, that 13,554 were in Standard I. or lowest; 8,844 in Standard II.; 6,060 in Standard III.; 3,357 in Standard IV.; 1,585 in Standard V.; and only 489 in Standard VI. That is, about double in the lowest two standards of the number in the four above them. Young persons "apt to teach" with the requisite qualities in temper and firmness, might surely be useful in the lower classes.

The School Management Committee of the London Board has prepared a scheme which will effect an important modification of the pupil-teacher system, but does not materially affect the question of inadequate accommodation in training colleges.

The estimated cost of carrying out the scheme is, for 351 additional assistant-teachers, 30,000*l.* per annum; teachers at centres at 5*s.* per hour, 4,500*l.*; travelling expenses, 1,000*l.* — total 35 500*l.*

Reverting to the defective accommodation in training schools, it would be unwise to encourage the Board to enlarge their expenditure. We have no inclination to cavil about the somewhat costly scheme above referred to. The Board has done a great work in building and acquiring 238 schools, in providing accommodation for 157,000 scholars, and in enrolling 150,000 children. These children are worthy objects of their care, but the 1,800 pupil-teachers have also their claims. The Board schools are in many places almost in clusters; in some portions of the region south of the Thames, to the east of London Bridge, they seem almost as thick as autumnal leaves that strew the brooks in Vallombrosa. It is not insinuated that they have been planted where they are not needed, but supposing the 238 schools had two added,—and what would they be among so many!—one a training school for males and another for females, their establishment would only be an instalment of justice to pupil-teachers, a proof of loyalty to the Act of 1870, and an obliteration of what seems a stultification of the Board and its action.

The answer of the Board to this plea is, we know, that "the department" will not allow them to provide training schools, which should be initiated at least by "voluntary effort." Voluntaryism in education has been tried and found wanting, and that was the *raison d'être* for the passing of the Elementary Education Act. Why should not the Board try to obtain Parliamentary powers for providing the accommodation in training schools needed by their own apprentices?

THE REPORT OF THE COMMITTEE ON EMPLOYERS' LIABILITY FOR INJURIES TO THEIR SERVANTS.

WE have previously, on several occasions,* drawn attention to the present state of the law as regards the liability of masters for injuries caused to servants by fellow-servants, and we have pointed out how it has been laid down again and again by the judges of the land that a master is not in such a case civilly liable for such injuries. It may possibly be in the recollection of some of the readers of the *Builder* that in the course of the session of 1876 a Committee of the House of Commons was appointed to inquire into this question, and that this Committee, being unable to wholly perform its work during the session of 1876, was reappointed at the beginning of the session of the present year. Their report has now been issued, and it is one of a very concise character, and is quite certain to have an important effect on this subject. Taken as a whole, it will be disappointing to the general body of workmen, and acceptable assuredly to the employers. For, speaking broadly, it does not consider that the present principles of the existing law are objectionable. On the contrary, it goes so far as to criticise with considerable severity the long-established principle that a master is responsible for injuries done to strangers by his servants, so long as they are acting within the

* See the *Builder*, February 17, March 10, April 7.

scope of the duties for which they are engaged "There is a strong concurrence of authority," says the Committee, "against the justice of this law, though there seems to be some difference of opinion as to its origin and historical development," and after examining the various theories, they add that the last of these is "an analogy which may explain, if it does not justify, the law." Such being the opinion of the Committee on the general question, it was not to be expected that they would look with disfavour on the exception to it which exists as regards masters, workmen, and fellow-workmen, and they naturally came to the unanimous and important conclusion that "your Committee therefore are of opinion that no case is made out for any alteration in the law relating to the liability of employers to their workmen for injury in the course of their employment, except in the matters to which they now proceed to refer." This is clearly a judgment which will prevent, for a time, at least, any legislative changes in the existing law as regards the general principle. But it is also noteworthy that this Committee had rather to form a definite conclusion upon already well-known facts than to investigate a large number of details, and therefore their opinion is likely to be of less weight than if the world generally was not as capable as Mr. Mundella or the Attorney-General of forming an opinion. But, again, the impartial character of the Committee, having upon it members so thoroughly the workmen's friends as Mr. Macdonald, Mr. Mundella, and Mr. Hopwood, must clearly prevent workmen from impugning the justice of the general conclusion at which the Committee has arrived.

Let us pass on to the changes which are recommended. It is a doctrine of law that if it can be proved that the master has omitted to provide the servant with proper materials and resources for the work in hand, such as engines or scaffoldings, or has been negligent in the choice of persons to whom he intrusts the supply of such materials, or has been guilty of want of care in the selection of proper servants, then he is liable for injuries even to his own servant. But actual personal negligence on the part of the master must be shown. Now, considering the number of modern companies and partnerships, it is perfectly obvious that this rule must frequently be a mere dead letter. The committee, therefore, recommend that when the functions of the master are delegated to agents, the defaults of the agent in such a case shall be considered the defaults of the master.

The second suggestion is that "the doctrine of common employment has been carried too far when workmen employed by a contractor, and workmen employed by a person or company who has employed such contractor, are considered as being in the same common employment." There can be no doubt that a blot is here pointed out, and the alteration, if carried out, will go a long way towards preventing the existing rule as it is to stand from pressing with undue harshness on workmen, or from being too lenient to employers. But, nevertheless, it is quite certain that it is much easier to give the above opinion than to carry it into practice. What is a common employment, is an exceedingly difficult question to answer, and depends upon the circumstances of each particular case. It is this very difficulty, indeed, that has caused the extended application of the present law; for once give it a range of any width, then precedent after precedent continually broadens it. It appears to us, therefore, that some such definition of the words common employment, as "hired or paid by the same master," will have to be put in the statute-book if the advice of the Committee and to be of any real and practical value. But if some such course is taken, the labours of this Committee will have not been without their value. On the whole, the recommendations contained in this Report seem to savour somewhat of a compromise between the interests of masters and workmen, which is scarcely as satisfactory as might have been hoped for. For the first suggested change in the law is a clear blow to the existing doctrine, and a lever which may well be used to overturn the whole doctrine, especially as the views of the Committee on the general question are based upon a dislike to the whole principle of liability of masters for acts of agents. But there can be no doubt of the importance of the suggestions of the Committee, from a legislative point of view, having regard to future enactments, and from the effect they will have, so far as they go, upon the relations of employers and employed.

HEALTH AND SEWAGE OF TOWNS.

THE Executive Committee of the Society of Arts on the Health and Sewage of Towns report that the Conference held this year applied itself especially to the dry systems, as distinguished from the water-carried systems discussed last year. The Committee have passed the following resolutions:—

"1. That the pail system, under proper regulations for early and frequent removal, is greatly superior to all privies, cesspools, ashpits, and middens, and possesses manifold advantages in regard to health and cleanliness, whilst its results in economy and facility of utilisation often compare favourably with those of water-carried sewage.

2. That hitherto no mode of utilising the excreta has been brought into operation which repays the cost of collection.

3. That the almost universal practice of mixing ashes with the pail products, though it applies these as a convenient absorbent, and possibly to some extent as a deodorant, is injurious to the value of the excreta as manure.

4. That, for use within the house, no system has been found in practice to take the place of the water-closet.

5. That, although there are appliances and arrangements by means of which the sewer-gases may be effectually prevented from entering houses, they still do so in the great majority of dwellings, both in town and country, including the metropolis.

6. That it is of the highest importance, in a sanitary point of view, that the metropolitan and local authorities should exercise great vigilance with respect to this matter, and that it should be made by law the duties of these bodies to enforce efficient measures for the exclusion of sewer-gases from dwellings, and to watch over their being efficiently carried out under such a system of payment as shall not press too heavily on those at whose charge the work is done.

7. That in every large town plans of its drainage should be deposited with the local authorities, and be accessible to the public.

8. That all middens, privies, and cesspools, in towns, should be abolished by law, due regard in point of time being had to the condition of each locality.

9. That the annual accounts of the sanitary authorities, especially in great towns, should be prepared and published in sufficient detail."

NEW BUILDINGS IN BERLIN.

THE PRINGSHEIM MANSION, WILHELMSSTRASSE, BERLIN.

THE German capital cannot boast of a wealth of interesting and characteristic private buildings, especially not such as date from former times. It was only in the second half of the seventeenth century that the genius of the architect Schlüter presented Berlin with a small number of residences of striking features. At last, after a long period of stagnation, the architect Schinkel, in the nineteenth century, exerted a distinctly regenerating influence upon the architectural character of the city. The greater number of the better private buildings which have risen since that time are indebted to the pupils of Schinkel for their origin. They are all distinguished, besides a laudable tendency for pleasing appearance, by a certain poverty of material; for stucco and zinc castings were hitherto the usual means employed for producing the dazzling effects of modern Greek style.

Recent generations of architects, on the contrary, approached again towards Italian Renaissance; and at the same time they were actuated by a desire of emancipating themselves, wherever the means offered permitted of it, from the use of surrogates, which had increased considerably in the preceding periods of architecture. This, the selection of building material, will always remain an essential question in the architectural development of Berlin, sandstone of the required quality not being found in sufficient quantities in the Mark of Brandenburg. It must consequently be considered highly satisfactory, and of significance for the architectural progress of Berlin, that recently architects have again turned to the finer descriptions of bricks, which had been used in Brandenburg from the earliest times. Their application was renewed successfully by Schinkel—examples of his being the Academy of Architecture, the residence of the Feilner family—the pottery manufactory of March contributing not a little by its artistic productions in extending their use. One of the most interesting and richest examples of this style of architecture is the residence of Herr Pringsheim, one of the more fortunate actors in that period of mad speculation, not to say of bubble company mongering, which is known in Germany as the *Gründerperiode*, and which is considered by many as one of the dire effects of the milliards paid by France. However, Herr Pringsheim was wise enough to retire from the giddy sphere of reckless venture in time, and he was also wise enough to apply his gains in a suitable manner, by raising for himself a handsome edifice in the Wilhelmsstrasse, near Unter den Linden, the model of which house was the subject of great admiration at the Vienna Exhibition of 1873.

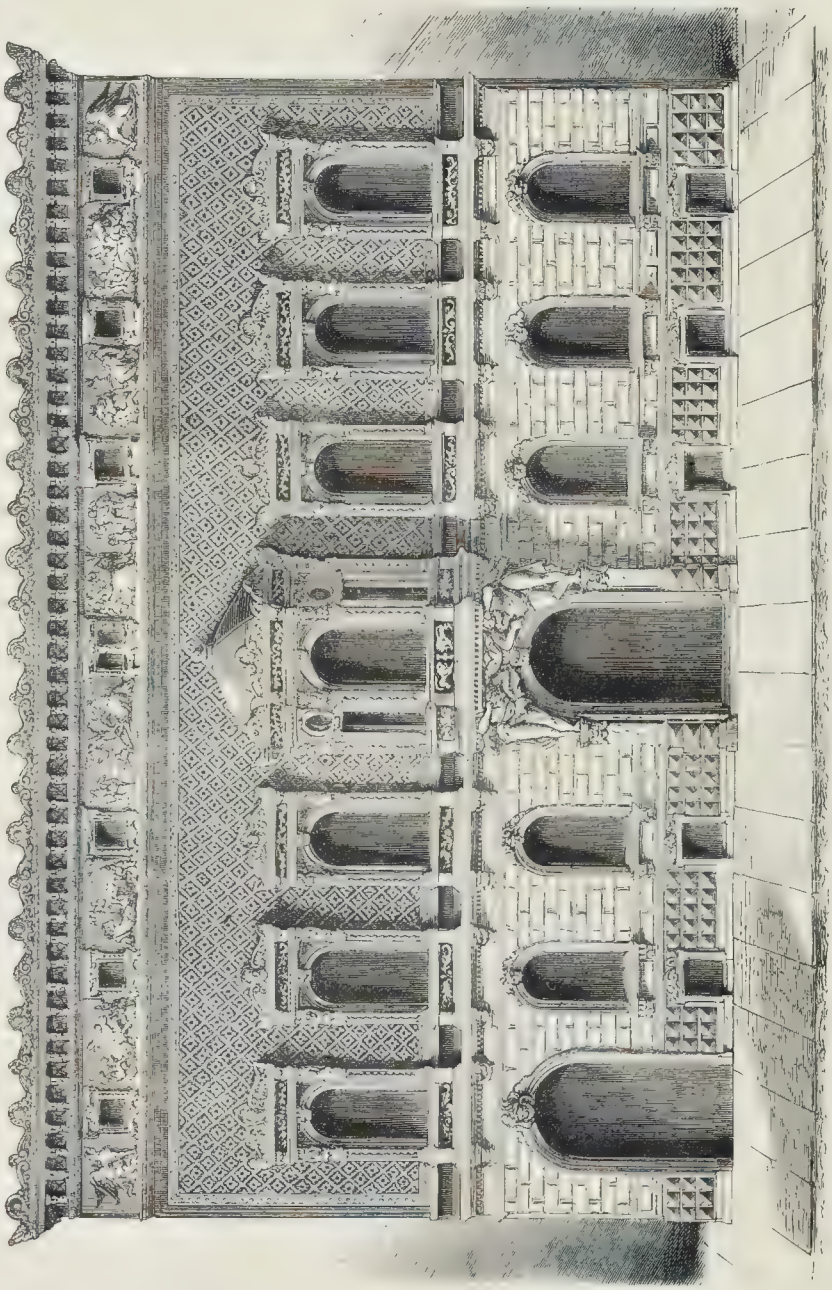
The architects are Herren Ende and Breda, and their work is a pure terra-cotta erection. By using the term terra-cotta, instead of brick, it is to be intimated that, all the membering of the mouldings and the ornaments being executed in burnt clay, the form of the ordinary brick is no longer the dominating feature. Since Schinkel, the buildings of which Cramer was the architect, especially the Anatomical Museum and the Chemical Laboratory, were the first representations of a more correct application of terra-cotta forms. Here it should be remarked that greater demands are made in this respect as regards private buildings than for public edifices; in the latter of which erections more imposing proportions are the rule, neatness and elaborateness of detail being dispensed with in favour of a more sober architecture. To attain this pleasing appearance in private buildings, a more complicated ornamentation becomes necessary, especially a greater variety in colour, whereby the possibly absent effect of shadow resulting from the outlines of the ornamentation is supplied. This involves the avoidance, as much as possible, of raw brick as a surface acting as a decoration.

Fully conscious of the task set before them, and of the difficulties attending its happy accomplishment, the architects of the building which is the subject of our illustration made the attempt of doing justice to the terra-cotta style of architecture in the principal story,—for the ground story, being executed in sandstone, is not taken into consideration,—so that also in this respect a decided progressive tendency might be perceivable. It should not be forgotten that the proprietor, fully aware of the object to be attained from an artistic point of view, gave *carte blanche* to the architects with respect to cost.

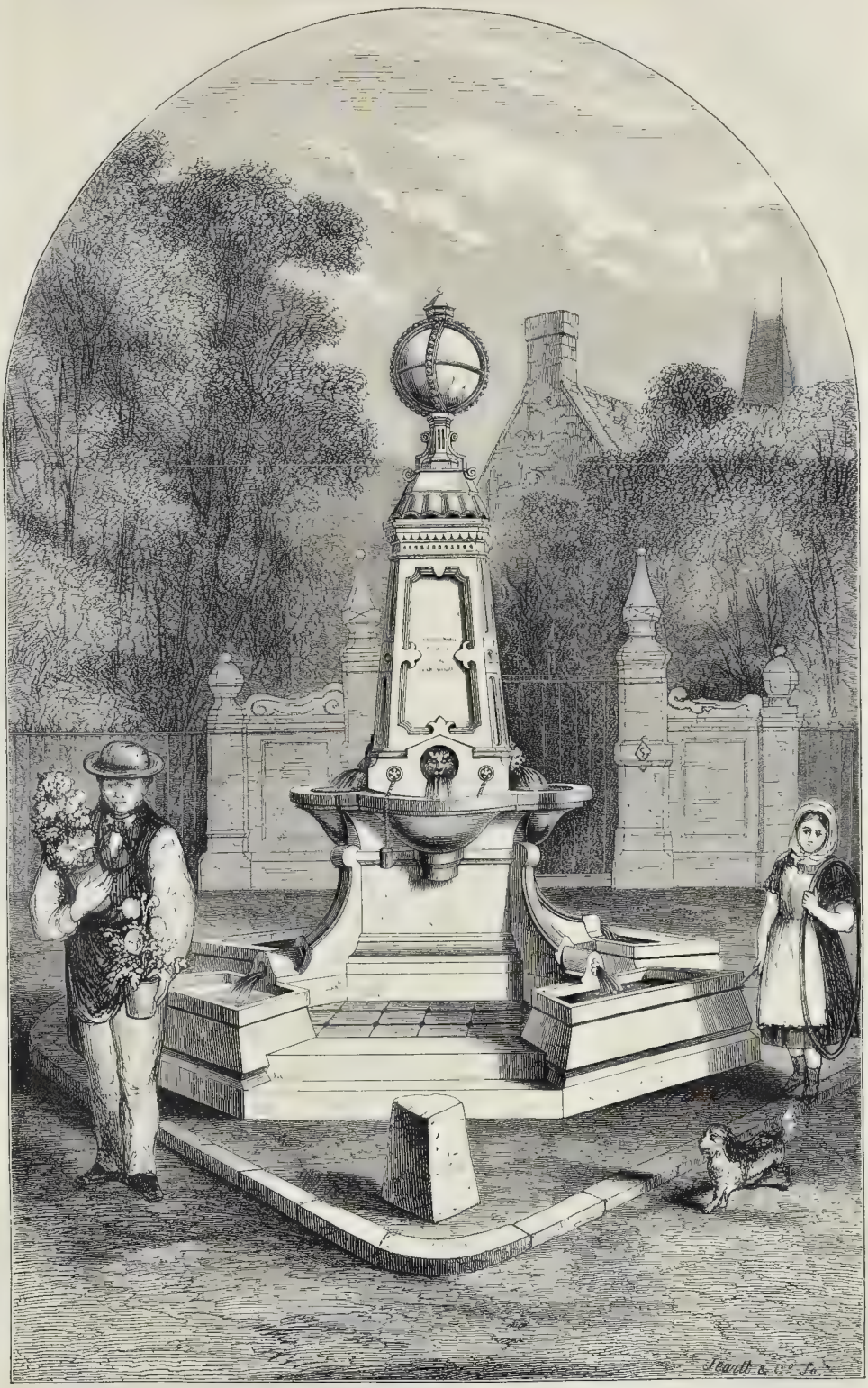
In the first place, all the framings and memberings are constructed of large terra-cotta pieces; the dressings of the windows in brilliant yellow; the friezes and the entablature in dark brownish red, unglazed; the parapet mouldings and gutterface glazed in olive-grey colour. The ornamental work is everywhere held in its natural yellow clay colour; only here and there parts have been rendered more prominent by yellow glazing; but the ground is everywhere treated with coloured glazing. The ground of the crown of the entablature, the soffit panels, the panels between the consols of the entablature, and those in the window crowns, appear in a delicate greyish blue, which is also employed for the necks of the window pilasters. The ground of the panels under the windows, on the contrary, is a dark reddish brown; while the ground of the delicately ornamented window pilasters is a darker shade of terra-cotta, but unglazed. These terra-cottas were made in the manufactory of E. March, of Charlottenburg, and are executed with the greatest care.

All those coloured ornaments are held together in their effect by the full reddish-brown ground tone of the quiet surface of the façade. The latter, in the same tone, but patterned in a somewhat lighter shade, was executed in the well-known manufactory of Villeroy and Roch at Mettlach. Although the façade surface proper is covered with a coloured clay mosaic, it attains its consummation in the frieze, which is in coloured glass mosaic upon gold ground, executed after the designs of A. von Werner, in the manufactory of Salviati, of Venice. The composition of this frieze presents in the eight panels separated by the windows a symbolic representation of the principal periods of human life. They are "Happy Childhood," "The Mirthful Feast of Poetry," "The Love of Youth," "Conjugal Felicity," "The Work of Creative Man," and, finally, "Clio taking down at the deathbed of Age the deeds of an industrious life." The execution of these mosaics is excellent, and worthy of the masterly composition.

Though we have not conveyed an adequate impression by the above description and our illustration of the outward appearance of this interesting building, some idea may from them be formed of its *tout ensemble*, which reminds us of some of the old Venetian palaces. As regards the artistic completion of the several rooms, it is at least on a level with its outward architecture. We may mention, however, with respect to its ornamentation that the execution of the frescoes of the principal apartments, such as the ball-room and the dining-room, was intrusted to some of the most eminent painters in this *genre* of Berlin, Düsseldorf, and Munich.



NEW BUILDINGS IN BERLIN: THE PRINGSHEIM RESIDENCE, WILHELMSSTRASSE.—Herren Ebe & Benda, Architects.



THE WEBSTER MEMORIAL FOUNTAIN, DULWICH.—MR. CHARLES BARRY, F.S.A., ARCHITECT.

HE WEBSTER MEMORIAL FOUNTAIN, DULWICH.

WE illustrate a monument erected recently in lwich to the memory of a worthy man, Dr. orge Webster, who for sixty years had resided re, and had been identified with the changing tunes of this charming locality. Up to the ar 1853, Dulwich was but little known, save a lovely suburb of the great metropolis, but ce that year, when under the reforming nds of the Charity Commissioners a new neme for the application of the revenues of e estate of old Edward Alleyn was adopted, d they were to be mainly applied towards the dowment of a great public school, the place s become of more general interest.

In its old days and under its new condition, r. Webster always took the liveliest interest in affairs, and acted as magistrate, guardian of e poor, and in other more or less public notions. In 1875 the feelings of respect and atitude with which he was regarded prompted me of the inhabitants to suggest that some neral recognition of them was due to him. he response to their suggestion from all classes as immediate and universal. It was then certained that the doctor would accept nothing r himself, but would feel gratified if his name ight be identified for ever with the place to nich he was so much attached, by the erection a public drinking fountain in the village. On aring this a committee was at once named to rry out the idea, and the result is the structure e have engraved. Of this committee, Mr. W. C. Hutton, J.P., lately Sheriff of London, as appointed chairman, and Mr. Fleming, one the oldest inhabitants of Dulwich, the secre- cy and treasurer.

Only a few days after the first meeting of the mmittee (on the 16th November, 1875), the ject of their solicitude was struck down by ath after a few hours' illness; and a further lamity occurred, for at a meeting of the com- ttee on the 24th March, 1876, it was announced at their respected secretary, Mr. Fleming, had o died suddenly on the 17th of that month.

In the meanwhile, however, Mr. Charles rry, architect to the Governors of Alleyn's llege, had prepared a design, which, having en approved by the committee, was submitted the governors and approved by them, when ey generously gave a site for the erection of e memorial in a prominent position in the llage and close to the residence wherein Dr. ebster had passed nearly all his life.

The fountain is constructed of granite from the arries of Messrs. Sheares & Smith, at Dal- attie. Grey granite, finely axed, being used r the steps and water-troughs for cattle, while the perstructure is of red granite, polished. Its ramidal apex is surmounted by a handsome mp, executed in bronze, partly gilt, the whole om the designs and under the superintendence the architect. The parish of Camberwell has ntributed the sum of 50*l.* by way of a small lp towards the annual expense of maintenance the fountain and its water supply, the whole rden of which (subject to the donation) has en most generously undertaken by the Metro- olitan Drinking Fountain and Cattle-Trough ssociation, who have also at their own expense it in the foundations, and also supplied the pe-work for the water supply, and whose cretary, Mr. John Lee, has rendered valuable sistance to the architect. The cost of the work, clusive of the foundations, has been about 375*l.*, hich sum has been raised by subscription in the ighbourhood where the late Dr. Webster was well known for over sixty years, and so highly teemed.

The fountain bears the following inscrip- on:—

"A.D. 1877.
To commemorate the long and varied services, public and private, of
GEORGE WEBSTER, M.D., J.P.,
for more than sixty years an inhabitant of Dulwich, This Fountain is erected from the Contributions of his many friends and neighbours of every station.
He died 19 Nov. 1875. Aged 78 years."

The fountain was opened to the public on the h inst., without any ceremonial.

Books.—A catalogue of second-hand books, 12 pages, just now issued by H. Sotheran & Co., , Piccadilly,—a quaint house, of which we gave view some time ago,—includes a large number architectural, scientific, and artistic works. me of our readers may be glad to know this.

CONGRESS OF BRISTOL AND GLOUCESTERSHIRE ARCHÆOLOGICAL SOCIETY.

THE annual "outing" of this society was held at Cirencester on the 28th, 29th, and 30th of August, under the presidency of Earl Bathurst.

The annual business-meeting was held in the Corn Hall. Sir William V. Guise, the retiring president, having vacated the chair in favour of Earl Bathurst, Mr. P. Hallett, the general secretary, submitted the annual report of the council, who said they believed they might congratulate the society on its satisfactory progress during the year.

The members now amounted to a total of 513, which included 501 subscribers. This showed a net increase since the meeting at Gloucester of forty-eight subscribers. The finances, too, were satisfactory. The balance in the hands of the treasurer, after deducting the estimated cost of the annual volume of transactions, was about 60*l.*; of this total the life subscriptions amounted to 40*l.*, which it was considered desirable to invest as a funded capital. . . . Since the summer meeting at Gloucester last year the society had held two winter meetings,—one at Bristol and the other at Cheltenham. . . . . The subject of the formation of an archæological museum and library was alluded to by several speakers at the Gloucester meeting, but nothing thereon had as yet been determined. The council had already made certain purchases of books, and they had to thank Mr. Long, of Wrington, Mr. Playne, of Nailsworth, and Mr. G. T. Clark, of Dowlais, for the presentation of works to the society. . . . . One important object of the society, mentioned in its constitution, is the preservation of ancient local monuments. With this object in view a committee was formed at the Bristol meeting in December last for the preservation of St. Werburgh's tower. This tower is a handsome member of the Bristol group of towers of the fifteenth-century date, which a private Act of Parliament, obtained for the so-called removal, but, in an historical sense, for the destruction, of St. Werburgh's Church, had given the Bristol Town Council powers either to preserve or demolish, as it saw fit. The committee, in conjunction with other committees formed at Bristol, had collected promises to the extent of nearly 1,000*l.*, in order to save the tower; and under the influence of their endeavours the Town Council rescinded a resolution it had passed adverse to the tower's continuance. In the delays, however, that followed other influences prevailed. The party of destruction again gained the ascendency, the Town Council reoured to its original position, and the tower was now apparently doomed. It would probably be deemed a lamentable circumstance that a great monument of Mediæval art and culture, with traditions extending back to the earliest periods of English history, should be thus sacrificed to what appeared little more than a narrow and short-sighted utilitarianism. . . . .

The report was adopted, on the motion of Professor Rolleston, seconded by Mr. Christopher Bowly, and the retiring members of the council having been re-appointed,

The President delivered his inaugural address, in the course of which he said:—

Cirencester,

The Corinium of the Romans, was a place of importance in the time of Julius Cæsar; four great roads met there,—first, the Foss; second, the Icknield Way; third, the Irmin-street; and fourth, Aoman-street. In addition to the roads, there are various antiquities belonging to the Roman age. There is an area called the Bull Ring, which had long been considered a Roman amphitheatre, but this has lately been made a subject of doubt. Our abbey church occupies the first position in the town. Henry I. founded the abbey church, but little, if anything, remains of the structure. The present parish church was rebuilt when Hasketown was abbot, between the years of 1504 and 1522. An ancient church existed before. Having briefly referred to the history of Cirencester, the President made a few remarks on some of the places to be visited, and concluded by observing that although some might deem archæology a dull and unattractive science—and it certainly could not be compared in delight to the cheering sound of the hunter's horn, or to the excitement of the Newmarket races—yet it might be pursued by persons of moderate means, it added to our store of knowledge, and perhaps was not followed by extravagance and ruin.

Under the guidance of Professor Church, the members visited the Loan and Corinium Museums, and afterwards proceeded to Oakley House, where they were entertained by the President. At the Barton they inspected a good specimen of Roman pavement, which was described by Professor Church. Retracing their steps, they visited Cecily-hill, Park-street, Thomas-street, and Dollar-street, under the guidance of the Rev. E. A. Fuller, who explained that the street now called Cecily-hill was originally called Inchthrop-street, meaning, possibly, entrance to the town, and was the main entrance to the town from Stroud on the Oakley side. Later on it was called St. Cecilia-street, because of the Chapel of St. Cecilia, which was originally there. Hence the corruption—Cecily-hill. The Chapel of St. Cecilia was still in existence at the time of the death of Sir William Nottingham, in 1483. When Leland visited Cirencester in 1542 only the ruins remained. Thomas-street, he reminded them, just marked the inside of the Roman wall. Thomas-street was formerly Battle-street, probably so called from some storming of the town by King Stephen's or some other forces. It became Thomas-street from the hospital founded by Sir William Nottingham for the benefit of four poor weavers, and who had to pray to the shrine of St. Thomas of Canterbury in the parish church.

Proceeding to the Grove-lane, the first point to which attention was drawn was the old so-called Saxon arch, at the entrance to the abbey. Mr. Fuller pointed out that this arch was the means by which entrance was obtained to the abbey precincts, by a road leading out into the present Whiteway, or old Wigge Ham way. The arch had been wrongly called the "Saxon arch." It was a part of the buildings of the abbey, begun 1117. In 1131 they were so far advanced as to allow the first abbot, Serlo, to be appointed, and who was consecrated in that year at Brockley Church.

Progress was made to the Beeches, where Professor Church called attention to an earthen bank still existing, which supported the Roman wall, nearly in a line with those portions seen in the abbey grounds. The wall continued nearly straight for some distance, when it curved inwards twice, and worked round to the portions found in the workhouse garden. Having passed the New Mills, described by Mr. Fuller as formerly known as Falling Mill, built by Albert Blake, on the site of a Roman tower, the course of the party was shaped to the New-road, the scene of Mr. Banks's excavations. Here Professor Church pointed out the remains of the Roman villa which Mr. Banks had discovered. A very large amount of foundations had been found, from which great quantities of stone had been dug, and among those foundations were discovered some pieces of sculpture preserved as freshly as if the sculptor's chisel had left them but yesterday. The pavements under which these sculptures were found were very rough and inferior. Sir William Guise called attention to the fact that some of the carvings were found among the *débris* of the foundations. Now, what was it caused the destruction of these important buildings? He had always thought that the destruction ensued in that period of Cimmerian darkness which overspread the whole country after the departure of the Romans, and no light was let in except by the few old monkish chronicles, &c., which bore upon the subject. At that time,—and Froude and Freeman took this view,—the Roman Brit had been undoubtedly reduced to a state of utter cowardice, and he called in the Danes to help him against the hordes of Picts who were destroying him and his houses. Then, according to his theory, came the time that these towns were destroyed and ruinated, reduced to a condition in which pieces of sculpture were mingled up with heaps of rubbish. That was, he believed, when the destruction occurred, otherwise they had nothing to account for the destruction of such an important town as Corinium, and the finding of pieces of sculpture indiscriminately mixed with the foundations. This was, no doubt, a place of great importance. Here were found grand cornices, fine Corinthian capitals, showing that a prætorium and other public buildings had existed; and yet the fragments of them were found levelled with the foundations. Nothing but destruction could have done it, and that destruction was, he thought, worked in the fifth and sixth centuries by the hands of the invading Anglo-Saxon race.

The Parish Church, Cirencester,

was next visited, and was explained by the Rev. E. A. Fuller. The church, dedicated to St. John the Baptist, was, he said, the largest of the whole of the parish churches in Gloucestershire, measuring internally from east to west 154 ft. On the north of the nave was the Trinity Chapel; on the south of the chancel was the Chapel of St. John the Baptist; the chapel on the north of the chancel was St. Catherine's Chapel; and to the north again beyond this was the Lady Chapel. The church also formerly included the altars of St. Thomas of Canterbury and St. Edmund the Confessor. There were eight chantries, viz., The Trinity, the Blessed Virgin Mary, St. Thomas the Martyr, St. Anthony, St. Christopher, St. Catherine and St. Nicholas, Jesus, and John Jones. During the fifteenth century there was also one of St. Edmund the

Confessor. As to the growth of the structure of the parish church, Mr. Fuller said there was nothing but the architecture to tell its own story. Of the Early Romano-British church in this town he could tell them nothing, and of the Saxon church not much. In the course of the restoration of the church, under the organ they found a bit of foundation which they thought might be connected with the Saxon church. The architecture told of a smaller Norman church, which he had marked on the plan. The chancel and nave were then narrow, and some time toward the end of the twelfth century the chancel was widened in the direction of the south, and in so doing some Roman pillars were used up. The nave was rebuilt apparently in the thirteenth century, and the original Lady chapel. In the fifteenth century a great deal was done—at the very beginning the tower was built, the huge flying buttresses being put up before the top story was put on, to remedy a settlement which had taken place in the lower stories. Trinity Chapel was built before 1440, as legacies in aid of its building had been found about that time. The Lady chapel was rebuilt about the same time, and about the same period the east corner of the south aisle (Garstang Chapel). By the end of the fifteenth century the church had grown to its present dimensions, and in 1514 the nave began to be rebuilt, though it was a long while about. Mr. Fuller fixed the date of the building of the great south porch at about 1500.

The annual dinner took place in the evening at the King's Head Assembly Room, Earl Bathurst in the chair. After dinner there was a meeting in the Corn Hall, where the subject of the "Prehistoric Interments of Gloucestershire" was dealt with in a very interesting paper by Professor Rolleston. Then followed a paper by the Rev. W. E. Hadow, vicar of South Cerney, on "Monumental Brasses at Cirencester and the neighbouring churches." The Rev. E. A. Fuller next discoursed of "The Relation of the Town to the Manor of Cirencester," giving a very graphic history of the town. This brought the proceedings of the first day to a close.

On the second day (Wednesday, the 29th), the members started in carriages from the market-place, and proceeded on an excursion to Calmsden, Chedworth, and Stowell. The first halt was made at the wayside cross at Calmsden, described in one of Murray's handbooks as "a picturesque wayside cross, supposed to have been erected by the Knights Templars of Quenington, who held a large possession here." The structure consists, according to Pooley, of four steps, "and a pedestal or socket, into which is inserted a taper octagonal shaft, surmounted by a cube whose sides face the four cardinal points." A drive of three miles from the cross brought the party to the parish church of Chedworth, the architectural features of which were described by Mr. Niblett, who thought the archway under the square western tower was decidedly the oldest portion of the fabric. The church consisted of nave, western tower, chancel, and north aisle. The west arch was Early Norman, and the columns dividing the aisle from the nave might be set down as Late Norman. After a picturesque walk through Chedworth Woods, the party arrived at the Roman villa at Chedworth, discovered by Mr. James Farrer about eleven years ago, on the property of the Earl of Eldon, at whose cost the excavations, together with the erection of the museum and the construction of the necessary protective coverings, have been carried out. The visitors having been conducted over the villa and the museum under the guidance of the Rev. W. Dyke, were entertained at luncheon on the lawn, by the hospitality of the Earl of Eldon. After a ramble in the woods for the inspection of the remains of a Roman temple, the cavalcade was reformed, and a drive along hilly and at times uncomfortably rough roads, through the village of Yanworth, landed the excursionists at the little village of

Stowell,

where the parish church was visited. The Rev. W. Wiggin, rector of Hampnett, acting as *cicerone*, said the church was probably of the fourteenth century. It was at present in a very dilapidated state, but was shortly to be restored, at the cost of Lord Eldon. The Rev. H. N. Ellacombe regarded it as a very early cruciform church, with only the demolished north transept missing. He considered it a very Early Norman church, and said the walls were undoubtedly Norman, with Early Decorated windows inserted. He was inclined to put the date of the church at between 1000 to 1050. Mr. Wiggin dissented, but Sir William Guise agreed with Mr. Ellacombe in regarding the church as being unquestionably an Early Norman structure. After much argument, the controversialists still remained firm in their respective convictions (according to the very copious report in the *Wilts and Gloucestershire Standard*, to which we are indebted). Stowell Manor House, the residence of Mr. Thomas Walker, was next visited. The house was built by one of the Atkinson family, about the end of the sixteenth century. The visitors were hospitably entertained by Mr. Walker, and afterwards returned to Cirencester, where the second day's proceedings were brought to a close with an evening meeting in the Corn Hall.

Roman Remains.

The first paper read was by Professor Church, "On Some Recent Roman Finds in and near Cirencester." In the course of the paper the author said: During many recent excavations for building purposes in Cirencester the interior decorations of walls have been found in great quantities—in cart loads, I may say. The colours are still adherent to the plaster and concrete, but the designs are not greatly varied or of particular merit. A marone ground with white lines and black border commonly occurs: two excellent specimens of yellow leafage ornament upon a marone ground have been fortunately secured for the museum. One of these was found in Cricklade-street, the other in the Leasoes. An imitation granite pattern is common. But the most interesting piece of coloured plaster work bears upon it something more than an ordinary design, and I beg that this fragment be carefully inspected. I am more particularly anxious that persons familiar with similar relics found in Pompeii and Rome should examine this specimen, since its genuineness has been called in question by one or two gentlemen whose thorough acquaintance with such subjects I have reason to doubt. The object is an inscription in Roman capitals, forming a set of squared words, to which a much later origin than the fourth century had been assigned before the present discovery was made. The best archæological authorities who have seen the Cirencester example do not doubt its genuineness, while the circumstances of the find place its authenticity beyond suspicion: I beg once more to place them on record. During the levelling of a garden in the New-road, Cirencester, many coins and Roman tiles were daily disinterred. Captain Abbott watched the operations narrowly, and one day had his attention called to a fragment of wall plaster found, in his presence, by the ignorant workmen employed there, who saw letters upon it. Captain Abbott washed it and showed it to me, and subsequently deposited it in the museum. It must be recollected that it was not sold by the labourer, and that no one had any interest in producing a forgery, nor I may add, the very special knowledge required to do so. The letters absolutely agree in form with those of the graffiti or wall-scratchings of Rome and Pompeii, and run thus—

ROTAS
OPERA
TENET
AREPO
SATOR

Some discussion ensued as to the meaning of these words. Sir William Guise, writing afterwards on the subject, says:

At first sight they would seem easy to explain, and, as was suggested by one speaker, may read thus:—"Arepo, the Sower, keeps his wheel works," or "keeps his wheels at work," but the merest tyro in Latin knows that by no form of grammatical construction can the words be made to bear correctly any such interpretation. Another speaker stated that some scholar somewhere had made the discovery that in some form of base Latinity "Arepo" means "a drill-plough,"—it might as well mean steam-plough for all the light it throws on the matter. Let us now examine the puzzle. It will be seen at once that the letters, read perpendicularly as well as from side to side, form the same words. "Rotas" may be read all round, so may "Sator." It will next be observed that "Rotas" and "Sator" are the same words reversed. The same is observable of "Opera" and "Arepo." There remains then only the word "Tenet," which seems to be the verb that governs the sentence, but in fact while serving that purpose it supplies the letters needed to construct the anagram. Thus, under the specious guise of a Latin sentence, which has no real meaning, an ingenious puzzle is contrived, which has served its purpose when it has amused or surprised its readers. I am told that it has been found in an Early Mediæval work; possibly it may date from the period of the Lower Empire, but it bears about it so strongly the marks of monkish ingenuity, that I should be disposed, unless there be good evidence to the contrary, to believe that it had its origin in the cloisters. The appearance of the words on a Roman tile in the Museum of Cirencester would seem to militate against this theory; but a whisper has reached my ears that the manufacture is of far more recent date, and that there was one at least at Cirencester who could h thrown light upon the subject. This ought to be inqui into; as although the inscription is in itself of no spe importance, the fact of its genuineness is.

The Rev. G. H. Moberly, rector of Duntisbou Rous, followed with an interesting paper "Local Names near Cirencester"; and Wilfred Cripps read some "Notes on Ancie Church Plate at Cirencester"; and a paper "The Disarmament of Suspected Persons in county of Gloucester," contributed by Sir Jo Maclean, F.S.A., was read by Sir William Gui in the absence of the author.

The concluding meeting was held in the Co Hall on Thursday, the 30th, when it w announced that the council recommended Bris as the place of meeting for next year. T recommendation having been confirmed, so formal business was transacted, and the membe proceeded on an excursion to Ampney, Fairfo and Bibury. The first halt was made at Ampn Crucis, where the members inspected the no restored ancient "Cross of Ampney Holy Roo in the churchyard. The church was th inspected, Sir William Guise expressing opinion that it was of about the year 1200, Norman architecture,—built during the Norm transition,—its transepts being of a later perio and the doorway not being of a Norm character. The party then proceeded on Fairford, where the Rev. J. G. Joyce, of Strat fieldsaye, read a paper on the celebrated staine glass windows. The homeward journey was v Quenington and Bibury. At the former pla the church was visited, and the visitors we hospitably received by Captain Maunsell William and Mrs. Williams at Bibury Court, a fi specimen of a Cotswold Manor House. Bibu Church having been inspected, the excursion w brought to a close, and with it the three day meeting, which appears to have been a success

INDIAN RAILWAYS.

MR. JULIAND DANVERS, the Governmen Director of Indian Railways, has just issued h report for the year 1876-77. We extract som passages from it:—

"During the year 1876, 479 miles of new lin were opened for traffic. The whole extent no completed is 6,948 miles. Of these, 767 ar constructed with a double, and 6,179 with single line; 5,748 are on the 5 ft. 6 in. gaug 1,162 on the metre, 27½ on a 4 ft. gauge, an 20 in the Guicowar of Baroda's territory on 2 ft. 6 in. gauge. The lines opened since the en of 1875 comprise 297½ miles of the South India Railway, which is now complete, with the excep tion of a section, 37 miles in length, south o Cuddalore; 103 miles of the Northern Punjaub State line, extending from Lahore to Jhelum 20 miles of the Rajputana; 13 miles of the Holkar State Railway between Kandwa and Chual Choki, and between Mhow and Indore 36½ miles on the Neemuch State Railway, and nine miles on the Pali branch of the Bombay and Baroda Railway. I understand also, although it has not been officially announced, that the lin from Rangoon to Prome has been opened. A the same time progress has been made on other lines in course of construction. The Pali exten sion of the Dakor branch of the Bombay, Baroda and Central India Railway is an illustration of the moderate cost at which railway works may in favourable situations, be executed. The line is 13·83 miles in length, is of the 5 ft. 6 in. gauge, and is laid with 60 lb. rails on iron bowl sleepers. The stations are plainly built, but of sufficient size for their purpose. The total cost has been 614,950 rupees, being about 4,000*l.* a mile.

Out of a total of 107,036 persons employed on the 6,624 open miles of railway on the 30th of September last, 101,254 were natives, 3,032 were Europeans, and 2,750 East Indians. The number of deaths amongst the Europeans was 60, or about 2 per cent.; amongst the East Indians, 34, or 1·24 per cent., during the preceding twelve months. The Europeans, it will be seen, form only 2·83 per cent. of the whole number employed.

The development of the resources of the country which is now taking place, and the large traffic which has ensued, point to the probability of more expenditure in future years for the additional accommodation and means of transport that will be required. The State lines on which the principal expenditure was incurred were the Northern Bengal, the Punjaub Northern, and the Indus Valley. The total amount of capital that has been expended up to

end of the year was 109,364,867*l.*, of which 72,265*l.* was on account of guaranteed, and 92,602*l.* on account of State lines. The l amount of guaranteed capital that had been ed up to the 31st of March last was 32,562*l.*, of which 84,374,121*l.* consisted of e capital, 4,766,300*l.* of debentures, 2,458*l.* of debenture stock, and 269,683*l.* of tal not bearing interest. The net revenue ved from the railways during the year 1876 4,564,823*l.*, compared with 3,647,868*l.* of the rious year. The State lines, 935 miles in th, earned 113,401*l.*, and the guaranteed s, 6,000 miles in extent, earned 4,451,422*l.* guaranteed interest advanced during the r 1876 amounted to 4,634,222*l.*, so that there a difference only of 182,000*l.* between that the receipts. But inasmuch as certain lines ned surplus profits to the amount of 833,170*l.*, that sum (after deducting 19,835*l.* con- uted to the provident fund of the East Indian lway) had to be returned to the companies. the previous year the difference between ipts and guaranteed interest was 1,073,882*l.*, the half surplus profits amounted to 173,506*l.* e net amounts chargeable against the revenues the country for the two years respectively re, in 1875, 1,247,338*l.*, and in 1876, 588,467*l.* e number of passengers carried was 35,319, with an average mileage of 6,592 es, compared with 26,779,437 of the previous r, and a mileage of 6,298. The proportion cent. of the first-class was ·76, of the second, 4, and of the lower classes, 97. The amount goods carried was 5,871,690 tons, compared h 4,388,660 of 1875. The proportion per t. of the gross revenue from passengers was 34, and from merchandise, including minerals, 16. The expenses of maintaining and work- the railways were 4,226,966*l.*, being 487,043*l.* re than the previous year, and 49·20 per cent. the gross receipts.

BUILDING IN BRADFORD.

FROM two long articles which have recently peared in the *Bradford Observer* we cull a few rticulars as to some new buildings in that wn.

A new pile of buildings is being erected ex- ding from Kirkgate to Hustlergate, and having rontage to the new street which supersedes e old Post-office passage. The new Liberal ub occupies the most prominent position in s new street, now known as Bank-street. The e was a costly one, varying from 46*l.* to 52*l.* r superficial yard, and, in order to obtain a venue, the ground and basement stories of the ub buildings have been appropriated for shops, d also for the banking office of the Halifax mmercial Banking Company. Space has been served for a central front entrance from Bank- reet, and a secondary entrance from Queens- te. The interior accommodation of the Club s been arranged on the three upper floors of e building. The club will be warmed by an paratus supplied by Haden & Co., of Trow- idge. The building is of fireproof construc- n, on Fox & Barrett's system throughout. he style is Italian, and the cost of the building, clusive of land and furniture, will be about ,000*l.* The works are being carried out by essrs. Crabtree Brothers, masons, Keighley; c. Robert Sugden, joiner, Keighley; Mr. Rush- orth, jun., plumber, Shipley; Mr. Hird, iron- under, Shipley; Mr. B. Dixon, plasterer, Mr. nithies, slater, and Mr. E. Harland, painter, of adford. The furniture will be supplied by essrs. C. Mills & Co., Bradford. Mr. Spencer s acted as clerk of works.

The adjoining pile of buildings has been erected r Messrs. Parkinson, Clark, & Co.'s drapery nd silk mercery establishment, and from top to ottom is occupied by that firm. The shop front nd fittings inside have been supplied by Messrs. urtis & Sons, of Leeds; the masons' work by essrs. Crabtree Brothers, of Keighley; the iners' work by Messrs. John Ives & Son, hipley; the plumbers' and glaziers' work by essrs. S. Rusbworth & Son, Shipley; the astering by Messrs. T. Cordingley & Sons; e iron work by Mr. R. Hird, Shipley; the ating by Mr. Thomas Nelson, and painting y Mr. E. Harland, all of Bradford. Mr. J. S. ilson was clerk of works.

The block of buildings at the top of the new reet has been erected for Messrs. M. Rhodes Son, goldsmiths and jewellers, and has an tensive frontage into Kirkgate, as well as into ank-street and Queensgate. The window show-cases and internal fittings have been carried out by Mr. John Drew, of Hatton-wall, London. The masons' and joiners' work have been completed by Messrs. John Ives & Son, of Shipley, to whom much credit is due for the energetic manner in which these departments have been executed; the plumbing by Mr. John Davis; plastering by Messrs. Thomas Cordingley & Sons; iron work by Messrs. Cole, Marchant, & Co.; slating by Mr. Thomas Nelson; and painting by Messrs. Morrell & Hartley. Mr. John Wilson has acted as clerk of works.

The Liberal Club Buildings Company's premises, also those of Messrs. Parkinson, Clark, & Co., and Messrs. Rhodes & Son, have been erected from the designs of Messrs. Lockwood & Mawson.

Of a similar character to this block, both in regard to the style of architecture adopted and the purposes for which the new erections are to be used, is the block of shop and office premises now being erected upon the site of the old White Swan Inn and other property in Market-street, and of which Messrs. Milnes & France are the architects. The old White Swan premises, along with the adjoining shop property, and the whole of the land in the rear bounded by Charles-street and Brook-street, was lately purchased by Mr. Angus Holden, with the view of erecting a large number of shops, offices, and market-rooms. The new buildings will comprise altogether forty-four shops, forty-six offices, sixty-five market-rooms, and several warehouses. These are disposed in the three frontages to Market-street, Charles-street, and Brook-street, which enclose a quadrangle, wherein will be placed two blocks of shops and offices, separated from each other and from the outer buildings by arcades, which will be covered with an ornamental glass roof. These arcades are approached by four archways, closed out of business hours with iron gates. The style adopted is Italian, freely treated. Scoured sahlar has been freely used in the three frontages, and also in the walls of the arcade, the wall-spaces being covered with decorative tiles. The whole of the floors will be fireproof, and will be laid with tiles, cement mosaic, and cement concrete.

On the opposite side of Market-street is afforded another instance of a metamorphosis, in the new shops and offices erected by Mr. Parkinson, tobacconist. The building consists of three shops on the ground floor, and offices overhead, the latter being approached from the adjoining passage. The front elevation is of dressed stone, the style adopted being Italian. The contractor was Mr. T. Holliday, and the architects are Messrs. Knowles & Wilcock.

The second half of the new Kirkgate Covered Markets is making rapid progress, and will shortly be ready for occupation. When finished, there will be provided fifty-two shops and eighty-two covered and open stalls, or in all 134 separate tenements. The market will have a central level entrance in Darley-street, and a spacious entrance, with steps down, from Godwin-street and Rawson-place. A second dome, in the market roof, 50 ft. diameter, is being constructed over the latter entrance, to correspond with the one now at the Kirkgate entrance.

At the north-east corner of this market block of buildings, fronting into Darley-street and Godwin-street, and extending from archway to archway, the whole of the upper floors have been appropriated for the new Free Library. A separate entrance from Darley-street, and another from Godwin-street, give access to a noble staircase, 16 ft. wide, well-lighted, and by which the various rooms are approached. On the first floor will be the men's reading-room, 75 ft. by 37 ft. 6 in., extending up two stories, with a gallery round the same at mid-height, and lighted by a continuous lantern light. Another room, 92 ft. by 40 ft. wide, will form the women's reading-room, and the issue department or lending library. On the upper floor will be the reference reading-room — a noble apartment, 110 ft. long, 40 ft. wide, and 30 ft. high, lighted by side lights, and also by a continuous lantern light as before described. The building will be fireproof throughout in construction, on Fox & Barrett's system; and will be warmed and ventilated by Haden & Co.'s apparatus. The Corporation, on completing these works, of which Messrs. Lockwood & Mawson are the architects, will have finished the scheme of markets reconstruction, which has occupied several years to develope.

Mr. Geo. Thorpe, silk-mercer and draper, some time ago ago purchased ground fronting to Hustlergate and New Tyrrel-street, upon which he erected his wholesale warehouse, the site costing 23*l.* per yard. He also recently secured the adjoining plot, having frontages to Hustlergate, New Tyrrel-street, and Ivegate, with a view to the erection of a retail establishment, for which he gave the large price of 43*l.* per yard. The new premises are now completed, and with the wholesale warehouse, form a block which it is estimated has cost about 55,000*l.* In this case, too, the style adopted is Italian. Considerable ornamentation has been bestowed upon the principal retail entrance doorway, at the junction of Ivegate with Tyrrel-street. It is deeply recessed, the massive lintel being supported by short Doric piers upon highly ornamented brackets. The architects are Messrs. Hope & Jardine, of Bradford, whilst the contract for the works was placed in the hands of Messrs. John Ives & Son.

A commencement has been made towards the formation of the important thoroughfare from Sun Bridge to City-road, by the re-erection of the shops occupied by Mr. Newby, Messrs. Harrison & Parkinson, Dixon and Masser, &c. The architects are Messrs. Knowles & Wilcock.

The most recent example of warehouse architecture is the building erected by Messrs. Charles Semon & Co., in Bolton-road,—a new quarter of the town for warehouses,—but one possessing the advantage of easy approach. In this respect, this new district is much superior to "Germania," where huge merchants' warehouses are ranged high up the steep slopes of the hill extending to Barkerend. Messrs. Semon's new building is situated between New Commercial-street and Bolton-road, having frontages to Balme-street and the latter road. At the angle of the two streets is placed the principal entrance. The frontage to Bolton-road is 164 ft. in length. The style adopted is Italian. The architects are Messrs. Milnes & France.

The building now in course of erection for the Alexandra Hotel Company in Horton-road is sufficiently near the heart of the town for the convenience of commercial men, even judged by its distance from the Town-hall. A feature of importance will be the ample provision made for horses and carriages, thus supplying a want which in Bradford is now much felt. The principal building will be of brick faced with stucco. The architects are Messrs. Andrews & Pepper.

The new offices of the Bradford Poor-law Union are now approaching completion. The new building presents a plain, substantial appearance, and is Italian in style. The plans were prepared by Messrs. Andrews & Pepper.

Within a short distance of this building there is fast approaching completion one of the most notable erections of modern Bradford, namely, the new Friends' Meeting-house. The site of the old Meeting-house and burial-ground will shortly be required for the erection of the large railway station in Wakefield-road, and hence the Friends have had to seek a new location. The new Meeting-house and schools are being erected on a site fronting into Fountain-street and Brunswick-place. The style of the buildings is Italian. The outlay, exclusive of the site, will be about 14,000*l.* The architects are Messrs. Lockwood & Mawson.

In the neighbourhood of Manningham a cluster of almshouses is being erected in Whetley-lane by Mrs. Rand, in memory of her husband. The architects are Messrs. Andrews & Pepper. There are eight houses, each containing separate sitting-room, bedroom, and scullery.

THE YORKSHIRE ARCHÆOLOGICAL ASSOCIATION.

THE eleventh annual excursion of the Yorkshire Archæological and Topographical Association took place on the 29th ult., when the members and their friends visited Bolton Abbey, Skipton Castle, and Holy Church, Skipton. Special facilities for inspecting these places were afforded by the Duke of Devonshire and his agent, Mr. Cottingham; the Rev. C. Bellairs, M.A., rector of Bolton; Sir H. J. Tufton, owner of Skipton Castle, and his agent, Admiral Eliott; and the Rev. P. C. Kidd, M.A., rector of Skipton.

The carriage-ride from Skipton to Bolton was of much interest to the geologists of the party. The lofty escarpment known as the Skipton rock, from which limestone is supplied to a wide area, was passed to the right. Embsay Kirk, the original seat of the Augustinian canons, who were afterwards transferred to Bolton, now a private residence, lay to the left. Arrived at Bolton Abbey, the visitors were received at the

western entrance by the Rev. C. Bellairs, the rector, who, alluding to the interest attached to the abbey, said that fortunately it was possessed by a nobleman [the Duke of Devonshire] who preserved it with loving and watchful care. His Grace had in his possession the original compotus of the abbey, and documents containing many interesting particulars of the domestic life and affairs of the Cliffords. He trusted that his Grace might be induced to allow them to be published. Col. Brooke having thanked the rector for his kindly welcome, an inspection of the Abbey Church was made. Previous to this, however, the Rev. C. Bellairs drew attention to the stone screen erected by the Duke of Devonshire during the recent restoration, and which separates that portion of the abbey now used as a parish church from the ruined chancel. The transference from Embsay to Bolton Abbey took place in 1151, and it is stated that the Abbey Church occupied eighty years in building. As was the case with other priories of the Augustinian order, the church was associated with a parish church, the memory of which is preserved in the continued use of the present nave for Divine service. The following are the dimensions of the church:—Total length outside, 261 ft. 7 in.; length of nave (inside), 88 ft. 6 in.; length of transept, 121 ft. 5 in.; outside width of choir, 40 ft. 4 in.; of nave (inside), 31 ft. 3 in. There is no south aisle to the church. A tower originally stood over the transept, but this was subsequently replaced by the tower at the west end, which was in process of erection by prior Moon at the time of the Dissolution, and was never finished. A frieze along its north front bears this inscription:—"In the yer of our Lord MVCXX R ◡ (signifying Moon) begaun this fondacon on quho' sowl God have merci Amen." On the south side was the cloister court, chapter house, kitchen, brewhouse, dormitories, common house, probably a guest house, and other erections. These buildings extended considerably southward, and the site of a portion of them is now occupied by the rectory. The clear value of the possessions in 30th Hen. VIII. was certified as 238*l.* 15*s.* 1*d.* The house was surrendered by Richard Moon, the last prior, and fourteeen canons on January 29th, 1540, remained in the king's hands till April 3rd, 1542, when it was sold to Henry Clifford, first lord of Cumberland, for 2,490*l.* The visitors had, however, the opportunity of inspecting the excavations recently ordered to be made in anticipation of the visit of the association, and much satisfaction was expressed with the result, showing, as it does, many of the outlying foundations. Many of the basement courses laid open to view present (according to the *Bradford Observer*, from whose report we condense this account of the meeting) all the appearance of recently-dressed stone. The gate-house still remains on the west of the abbey, and with extensions on either side has been converted into a residence. The vaulted entrance, now closed at either end, forms the dining-room. During the last twenty years the interior of the nave of the church has undergone a complete restoration, the cost of which has been defrayed by the Duke of Devonshire. The six windows on the south side have been filled with coloured glass at an expense of 3,000*l.* The area has been filled with massive open oak seats. Stone pulpit, desk, and font have been provided, and the ancient rood-screen has been repaired, and placed at the west end of the building. The work of restoration has been completed by the removal of the unsightly wall at the east end of the nave, and by the erection in its stead of the new screen above mentioned. It is about 40 ft. in height and 30 ft. in width, and is divided into eleven equal compartments, with ornamental capitals, corresponding in design with the outer screen of the great west tower of the abbey. The major portion of the visitors having assembled in the ruined choir of the abbey,

Mr. J. T. Micklethwaite, F.S.A., described the various remains of the conventual buildings, and pointed out their architectural features. He especially noticed the peculiarity that the church had but one aisle, and showed that this was not a caprice, but was the legitimate consequence of the conditions under which canons' churches were erected. In this respect parish churches differed from monastic churches, which were large, comfortable buildings with aisles. Parish churches as first built were sometimes cruciform, and sometimes without transepts, but in either case they were aisleless; and if there was a tower it was in the centre of the edifice. The canons adopted the cruciform style, which was the finer type of parish church, and glorified it by making it larger, but still kept to its characteristic want of aisles. Mr. Micklethwaite then analysed the construction of the church at Bolton, attributing the aisle to the early part of the thirteenth century, and the rebuilding of the choir and transepts to the fourteenth century. Reverting to the question of central towers, he explained that the reason why they came to be erected at the west end was because they were invariably additions, and it was more convenient to enclose a piece of outlying land than to pull down and re-erect the entire structure. The tower at Bolton was an illustration. It was begun in 1520, and after thirty years had elapsed, had only reached the elevation which it now presented. This also showed the slow process adopted by the early church-builders. He then referred to the use of the naves of old churches for service, as illustrated by the church at Bolton, the piscina and sedilia being still preserved on the south side of the present altar. Reference was also made to the positions of the remainder of the monastic buildings, the chapter-house, the dorters, refectory, guest-house, &c., and took occasion to thank the Duke of Devonshire for the work of excavation undertaken in anticipation of the meeting, by which several interesting points had been cleared up, and which had enabled them to prepare the most complete plan of the abbey buildings yet produced. The reading of the paper concluded, the company strolled round the ruins, Mr. Fairless Barber and Mr. Micklethwaite explaining the former positions of the dismantled buildings.

On arriving at Skipton, luncheon was partaken of in the town-hall. Before departing for an inspection of Skipton Castle, the next item upon the programme, Mr. Leader proposed the toast, "Success to the Yorkshire Archæological Association," especially eulogising Mr. Fairless Barber, who, he said, was the life and soul of the society. His zeal and powers of organisation had been as apparent in the success of that day's excursion as it was in the ordinary working of the Association. Mr. Barber, in response, said that the financial position of the society was most satisfactory, their treasurer having over 600*l.* to the good.

The company then placed themselves under the guidance of Mr. A. W. Morant, F.S.A., who read a paper on the history of Skipton Castle, and its possessors. Skipton Castle is situated on the edge of a limestone cliff, which is very precipitous and picturesque. As a place of strength it became almost a necessity to defend the town of Skipton, which in early times was of some importance, and its position, commanding the road through Airedale and the one leading to Wharfedale, was especially well chosen. The associations of the castle, however, are of even more interest than attaches to its position as a stronghold.

The remaining place of interest visited was the Church of the Holy Trinity, closely adjoining the entrance to the castle. Of the first church, probably coëval with the Norman castle, no traces remain in the present fabric, the earliest portions of which are referable to about the year 1300. The parts of the church of this date which remain consist of a north door, the six westernmost piers in the nave, portions of the tower and a part of the south wall, in which sedilia are still preserved. The church was extended and altered to its present form in the following century. The roof, which is of carved oak, was restored in 1853 by Mr. J. A. Cory. The church contains some fine monuments of the Cliffords, and at the west end is a small but valuable library, bequeathed by Sylvester Petyt, which is in a sadly-neglected condition. Mr. Fairless Barber, Mr. Morant, and Mr. Cory, having explained the distinguishing features of the building, the excursion was brought to a close.

Tynemouth Aquarium and Winter Garden.—The building for the Tynemouth Aquarium and Winter Garden is now far advanced towards completion. The entire length, with two long wings on the north and south, is 309 ft. 9 in., and the width at the wings is 117 ft. The extent of the aquarium, which occupies the whole of the basement of the main building, is 216 ft. by 50 ft., the width at the transepts being 82 ft. Adjoining and running the whole length of the aquarium on the east side there is a spacious arcade, intended to serve as a promenade. The winter garden, which is of the same dimensions as the aquarium, will be roofed with iron and glass, and will also be lighted from the east and west sides.

THE OBELISK AND ITS PEDESTAL

SIR,—I perfectly agree with Mr. Ba objections to the Parliament-square site fo obelisk, and with his observations on the ' stract necessities for a good site for the m ment"; but his alternative recommends and conclusion do not seem to me to be unexceptionable.

Of the many sites suggested, the fron Greenwich Hospital has much in its fav but the distance from London is an insuper drawback. The objections to the area in f of the British Museum apply in even a gre degree to the Park-crescent site, for inst of one mile of land transit, there would more than two miles along the line of crossing a complicated system of undergro works, and for what? to place the monumen a spot without association or interest of any k past or present, and entirely out of the wa the student or sightseer,—in effect, getting of it. Isolation for this solitary ancient mo ment seems to me to be an indispensable c dition: indeed, in one sense it is forced u us, for obelisks were invariably placed in p in front of the gate of the temple, and here companion is wanting. The site which I sho recommend would be the extensive area in fr of Buckingham Palace, in the line of the br avenue leading up to the centre of the Palace spot from which it could be seen from St. Jame and the Green Parks, Piccadilly, and other poin without interruption or inharmonious surrou ings; while the distance from the river is great, and the practical difficulties of transp would be few. If, however, a place on t Embankment, or in its vicinity, is consider essential, then the Northumberland-avenue s would appear to be the best. It presents few practical difficulties, is easy of access, and affor greater surrounding space than could be fou elsewhere, as the depth from the shore line the buildings is greater than at any other po of the Embankment. The monument would seen from Trafalgar-square and from the rive from the Embankment and from the bridge while it would be isolated by a considera space around. The objections to the site a the lofty railway station and bridge; but thes although near and not handsome works, presc at least horizontal lines, and thus coincide wi the general laws applying to such monumen and the buildings connected with them, inste of contrasting disadvantageously with vertic structures of far greater height. The obeli as a pillar is not large when compared wit spires or similar structural works; but as monolith nearly 70 ft. high it is grand, ar should not be dwarfed by unfavourable juxt position.

It may not be inopportune to offer a few word respecting the pedestal. I have seen, I think all the obelisks that now remain, and have n hesitation in concluding that every obelisk ha a base of some sort. The great obelisk at Ka nak, 95 ft. high, is still standing on its pedestal The pedestal is a single cubical block of granite bearing an inscription of eight horizontal line of hieroglyphics on each of its four sides (pub lished in Burton's "Excerpta Hieroglyphica" On the staircase of the British Museum is a cas of the Apex, or Pyramidion, of the companio obelisk which lies broken in pieces by its side There were originally four obelisks standing i front of the temple, two being of much smaller dimensions; one of these is still on its pedestal which is so entirely covered with *débris* that i has never been seen. The obelisks of Luxor eac stood on a cubical block of granite, the north and south sides being sculptured in Egyptian low relief, with four Cynocephali in the attitude of adoring the sun. On the east and west sur faces are figures of the god Nilus bearing the productions of Egypt. This block stands on two steps. The obelisk of Matarieh, ten miles north of Cairo, is still standing on its base, which when uncovered a few years ago, was found to be mutilated. Mr. Dixon has excavated the base of the obelisk still standing at Alexandria, the companion of that which he is bringing to Eng land, and found it to be supported on four crabs or tortoises, which may have furnished the idea to the architect Fontana, who placed the obelisk he erected in the Piazza San Pietro, at Rome, on four small bronze sphinxes between the monolith and the base.

When the Nelson Monument was proposed the late Owen Jones sent in a plan for re-erecting the Alexandrian obelisk on the site in Trafalgar-square now occupied by the Nelson column, and

esigned a pedestal, placing at the base eight nxes, in pairs, two on each side. This draw- I have now before me, as well as another lly curious, made by John Martin, the ter, more than fifty years ago. It is a design a triumphal arch in honour of Wellington, was proposed to be erected across the Mary- ne-road, to serve as a means of communica- between Park-crescent and Park-square.

n conclusion, the subject of the site of the lisk is well nigh exhausted; but amid the nerous opinions and suggestions that have n broached, there is yet one conspicuously ent—it is that of Mr. Erasmus Wilson, whose nificence has originated the prolonged con- versy.

JOSEPH BONOMI,
Curator of Sir John Soane's Museum.

IR,—The purpose of the obelisk in art is that s foil or contrast to architectural proportions ponderous and opposite kind. To place one, refore, in the immediate neighbourhood of hitectural features of its own kind, and of far ater *absolute* magnitude, in the position, in t, which the pattern now occupies, sur- nded by the lofty towers and buttresses of stminster, would be to misapply it, and to rive it of its proper effect.

The absolute dimensions of the *Needle* as an hitectural feature are insignificant items in consideration; what are they to those of our tory-chimney obelisks rising to hundreds of t.?

The one great point to be steadfastly kept in nd in beating about for a site for the cele- ted monolith, is this,—that it should be ced in opposition to architectural proportions an opposite tendency to its own. The sites ich suggest themselves to me, as those which nld be most appropriate are, the place of the tue of Queen Anne, opposite to St. Paul's, the ound in front of either the British Museum, or University College, the esplanade at the back the Horse Guards, the front of Buckingham lace, and the centre of the roadway between gates at Hyde Park Corner. With all due erence to Mr. Barry's suggestion, I feel that the end of Portland-place it would be ruined the magnitude of the vista. If placed opposite Paul's it would fulfil the same architectural rpose as the obelisk does in front of St. Peter's, d it would gratify those spirits who are striving make our Protestant cathedral as close a copy possible of the great Roman edifice. But first t us your obelisk.

SPHINX.

*** We willingly "ventilate" the question, t adhere to our original opinion that the Thames nbankment offers the best site for the obelisk.

"MONASTIC BUILDINGS."

TINTERN ABBEY.

THIS was the title of a paper read by Mr. homas Blashill, at Tintern, a few days ago, the occasion of the visit of the Woolhope aturalists' Field Club. Tintern Abbey, said e lecturer, was a house of that branch of the eneditine order known as Cistercians or White onks. It was founded in 1131 by Walter de are, who, becoming possessed of a vast extent country, including Monmouthshire, followed the great nobles of his time, in settling a all part of his possessions to religious uses. he Cistercian order had only been established 1098, and confirmed by Pope Pascal in 1100. t. Bernard, to whom it owed its great celebrity, ined it in 1112; its first house in England was unded at Waverley in 1128; Tintern was erefore one of the first evidences of the power which the order so suddenly attained. Of the onastic buildings then erected nothing remains, nless the north wall of the nave is in part of at date; but no sculpture or moulded stone as survived for proof. Whether or not these onks suffered the vicissitudes common to the arlier houses of their order, we may be sure at rigid plainness characterised their buildings, s voluntary austerity marked their life. The xisting building owes its foundation to Roger igod, Earl of Norfolk, a descendant of this anch of the family of de Clare, and owner of eir lands, who, in 1269, caused this work to be egun. The church was finished in 1288, and it ood in its glory for two centuries and a half till he dissolution of the monastery in 1537. It us became one of the later examples of the istercian buildings; for long before the disso- ution monasteries had ceased to be newly con- ructed, although in 1496, only forty-one years before that catastrophe, the monks were partially rebuilding their cloister and the quarters of the prior. They were thus but indifferent prophets of the future, and this last work shows by its magnificence that they were then but indifferently austere. But these buildings of 1269 were undertaken in what most persons will think the happiest moment of the history of English architecture. It was the very year in which the new choir and transepts of Westminster Abbey, built by Henry III., were opened. It was just at the time when the graceful simplicity of the Ladye-chapel of Hereford Cathedral had developed into the richer style,—especially as regards the windows—of the great north transept. The beauty of the mouldings, the elegance of the outlines of the thirteenth century, are preserved; the purity of its carving not quite lost; the glories of the fourteenth century tracery are anticipated; while there is a reserve of fancy, a grand uniformity which hardly any other building of its age can rival. As to its character as a ruin (pity that it should be a ruin), I can point out nothing which every lover of the picturesque will not see for himself. In that quality it is clearly unequalled amongst our monastic remains; and whenever people talk of scenes which have afforded them the fulness of delight, this romantic valley, these graceful outlines and sweet tints of stone and foliage, yon broken eastern window—across whose solitary mullion the rising moon will, three nights hence, shine round and broad—are first and last remembered. Having given a long and interesting outline of the origin and usage of monastic buildings generally, Mr. Blashill described in detail the buildings at Tintern, and concluded by briefly referring to the buildings erected by the other monastic orders.

STATE AID TO SCIENCE AND ART.

MR. WARRINGTON WOOD, the sculptor, was entertained at dinner by the members of the Liverpool Art Club on the 7th inst., in connexion with the opening of the Walker Art Gallery. Lord Sandon was one of the speakers, and in responding to a toast with which his name was coupled, alluded to the great difficulties in the relationship of the State to science and art. When he looked at the toast list he saw that it gave the toast as the "National Recognition of Art," which was a very different thing to the Government recognition of art. He would venture to say that what he saw that day and the previous day confirmed him in the opinion that he had long entertained, and which he intended to cling to—namely, that the nation was recognising art with heart and soul as far as it could. He put aside Government recognition, because that evidently had dropped. They saw that the nation was very willing and most earnest to recognise art, and reward those who were the priests of art in the highest way that they could by approbation, and in some solid manner; but it was a serious question how far it was wise for the Government of the day—that was, those who had charge of the national exchequer—to expend the national resources in supporting art. There was no Minister at the present moment who represented science and art in the country. [A voice—"There ought to be."] He was thinking just then what a very serious matter it would be if they had a Government of the day with one of its representatives charged with so grave and responsible a thing. Let them think of the different schools of [art, and the different classes of art, of the different divisions in science, and of all the different towns that would try and struggle for the patronage of the Minister had he the funds to dispose of. Let them think of the Minister of the day who should throw the whole scale of his influence on one side of art, who took the mediæval or classical view, and let them think of the perplexities that would throng round the Government in its distribution of that patronage. One Minister might be devoted to the rising school, another strongly devoted to the school said to be past its date. He thought they would sympathise with the political difficulties that thronged the career of every Government, but he looked with more apprehension to the difficulties that would throng round the Minister, who would be submitted to the criticism and intellect of those who were trained in science and art. While he was heartily glad of the amount of assistance they were able to give through their great organisation at South Kensington; while he rejoiced to think that they were aiding in training the lower portions of the population who had the talent to fit them for the very highest positions, he doubted whether it would be wise for the Government to go further. He trusted very much to the higher impulses of all great communities which led them like Liverpool to spread all that was high and lofty in sculpture, art, and science; and, in his opinion, they gained much more by the freedom and originality which left matters to the community in an English fashion than they would gain by the more rapid advance they might get by Government support. He had yet to learn that the support of the State had ever produced artistic genius or success. He was quite aware that individual patronage—and he did not use the term in a disagreeable sense—had been of very great value; but he looked in vain for any great result produced by State patronage either in the present time or in the past. He hoped, therefore, that they would adhere to the English habit of trusting to individual exertion, and that as time went on they would prove that they had not trusted to a broken reed, but to one that would prove itself to be the very staff and support of the nation.

THE ABERDEEN CONGRESS OF SOCIAL SCIENCE.

THE order of proceedings and the general arrangements for the Aberdeen Congress are just now completed.

In the early part of the first day of the Congress (Wednesday, the 19th inst.) a joint meeting of the committees of departments will be held, and also a meeting of the council; a special service will take place in the West Parish Church in the afternoon, at which the Rev. Professor Milligan, D.D., will preach. In the evening the Earl of Aberdeen will deliver his inaugural address.

On Thursday morning Lord Gifford will deliver his address on "Jurisprudence." The meetings of departments will follow, for the reading and discussion of papers; and in the evening the Lord Provost and the magistrates and town council will entertain a large party at dinner in the Town-hall.

On Friday the Right Hon. Lord Young will deliver his address on "Education;" the discussions will be continued; and in the evening there will be a *conversazione* in the Advocates' Hall and County Buildings, at which Lord Ronald Leveson-Gower will deliver his address as president of the art section.

On Saturday the Lord Advocate will deliver his address on "Repression of Crime;" after which the departments will sit; and in the afternoon there will be excursions to Dunnottar and Aboyne, and possibly other places.

On Monday the proceedings will commence with the delivery of an address on "Health," by Mr. Edwin Chadwick, C.B. In the afternoon, after the discussions, a visit will be paid to the Old Mill Reformatory, under the able guidance of Mr. Sheriff Thomson; and in the evening there will be a working men's meeting.

On Tuesday Mr. James Caird, C.B., M.S., will deliver his address as president of the Economy department; the sections will proceed with the discussions; and in the evening a *conversazione* will be given in the Music-hall.

On Wednesday, the last day, a meeting of council will precede the concluding meeting, at which the address of the president of the council (Mr. G. W. Hastings) will be delivered, and a report on the business of the departments will be presented. In the afternoon excursions will be made to places of interest in the neighbourhood.

Test of Cements. — In Berlin the Royal Society of Engineers has lately made 3,150 tests of cement mixed with different proportions of sand. Blocks measuring 4 in. by 4 in. by 2½ in., which had hardened for ninety days, were subjected to pressure, with the following results:—Pure cement, average pressure at which first crack appeared, 4,125 pounds; average crushing pressure, 4,708 pounds. Equal parts of cement and sand, first crack appeared under an average pressure of 3,058 pounds; crushed by an average pressure of 3,527 pounds. One part of cement to two of sand, first crack appeared under an average pressure of 2,375 pounds; crushed under an average pressure of 2,773 pounds. One part of cement to three parts of sand, first crack appeared under an average pressure of 1,849 pounds; crushed under an average pressure of 2,375 pounds.

STOKE-UNDER-HAM, ILMINSTER.

THE south transept of this very interesting church has been lately repaired at the sole cost of Mr. John W. Walter, of Stoke-under-Ham, as a memorial of Mrs. Walter. The walls internally have been cleaned of the yellow ochre and white-wash with which they were covered, and have been pointed. The transept has been re-paved and re-seated with solid oak benches in character with the Mediæval ones existing in the nave of the church. A new panelled ceiling of English oak, with carved bosses, replaces a modern flat lath-and-plaster ceiling. All the windows (which are lancets of Early English date) have been filled with painted glass, the production of Messrs. Heaton, Butler, & Bayne.

The work described is only an instalment of what is proposed, *i.e.*, the complete reparation of the nave, chancel, and north transept (under the tower). One of Porritt's underground stoves in a proper chamber has been placed in the nave, and an ornamental chimney-shaft carried up in the angle of the south transept and nave. The cost of this has been borne by subscription. The formerly handsome oak ceiling of the nave was almost destroyed in Georgian times, but the whole of its design can yet be traced. Mr. Maurice Davis, of Langport, was the builder, and Messrs. Benjamin and Edmund B. Ferrey, were the architects.

NEW DRINKING FOUNTAINS.

Kew.—On July 26th H.R.H. the Duchess of Teck opened a drinking-fountain and cattle-troughs at Kew-bridge. The structure was designed by Mr. R. Keirle, the architect to the association. It consists of polished grey granite, and stands about 30 ft. high. The fountain is approached by a flight of four steps on two sides, and on each of the other sides is a large trough, &c., with a lower one for dogs. The fountain was presented to the Metropolitan Association by Mrs. Wheeler, of Chertsey, in memory of her late husband.

London.—A new drinking-fountain is about to be erected by the authorities of Broad-street Ward, which is intended to supply the place of the pump in Bartholomew-lane, the use of which was interdicted by the Commissioners of Sewers on the recommendation of the medical officer. The Bartholomew-lane site being too circumscribed, the commissioners sanctioned the erection of the fountain at the northern end of the eastern Royal Exchange avenue. In the design adopted the lower part of the fountain is (according to the *City Press*) of Penryn granite of different tints, and polished. (The contract for this will be entrusted to Messrs. Freeman.) Upon this base, supported by coupled columns at each angle, is an ornamental canopy to protect a group of sculpture; this will be wholly of bronze, picked out with gilding. (This part of the design will be entrusted to Messrs. Hart, Son, & Peard.) The group of sculpture, consisting of three figures, has been modelled by Mr. S. Dalon, Chelsea. The architect is Mr. J. S. Edmeston, Great Winchester-street. The cost of the marble group will be 300*l.* The Drinking-Fountains Association have agreed to supply the hydraulic work, set up the fountain, and form the drainage, which is probably equal to a donation of 50*l.*

St. Pancras.—On the 22nd ult., Mr. William Thornton, senior churchwarden of St. Pancras parish, publicly presented an iron drinking-fountain to the vestry, on behalf of the parish. The fountain, which has been erected in the St. Giles-in-the-Fields portion of the grounds, has been provided at the sole cost of Mr. Thornton.

Bridgnorth.—The Town Council have approved of the tender of Mr. Griffiths, of Bayswater, for the public fountain to be erected as a memorial to the late Mr. Whitmore, who formerly represented the borough in Parliament. Mr. R. Herbert Carpenter is the architect. The fountain is to be erected in Aberdeen granite, surmounted by a bronze figure of Sabrina, the goddess of the Severn. Bronze medallions will enrich the four sides of the pedestal.

Windsor Castle.—Workmen have just been engaged in laying mains in the cloisters and near the north side of St. George's Chapel, Windsor Castle, in order to provide a sufficient supply of water in case of fire. The new system has been connected with the service in the Castle-hill, which is supplied with water from Cranbourne, and hydrants will, it is understood, be erected in the cloisters and about St. George's Chapel.

ACCIDENTS.

ON the 3rd inst. a terrible accident occurred at Warrington, resulting in the death of two or three children, and in injuries of a serious character to several others. About half-past six o'clock in the evening a cupola chimney, belonging to Messrs. Bolton, Son, & Wood, of Oxford-lane, fell into a street in which scores of children were playing.

On the 25th ult. a master plasterer, named Charles Edwards, carrying on business in the Old Kent-road, met with a fatal accident at some new buildings at Rotherhithe. Having reached the top round of a ladder, he attempted to step on to the scaffold, and in so doing his foot slipped, when he fell to the ground, and received such severe injuries that he died almost immediately.

Mr. Payne, the coroner for Southwark, has held an inquest at Guy's Hospital relative to the death of W. T. Bessell, aged seventeen. The deceased was at work pulling down a house, No. 60, Gravel-lane. He was warned that a wall between 5 ft. and 6 ft. high was going to be pushed down, and he replied "All right, I'm clear." The wall was then pushed down, and just as the wall was falling deceased had discovered that his coat was lying under the wall and had tried to secure it before the wall fell. He, however, was knocked down and his head was buried under the *débris*. When extricated he was removed to the hospital, but was found to be dead. Verdict: "Accidental death."

On the 30th ult. an inquest was held before Mr. Price, coroner, at Patricroft, on the body of Selina Rogerson, who met with her death through the fall of a "derrick" upon her at some shops in course of erection in Liverpool-road. The evidence went to show that deceased had had her skull fractured through the injuries she received. The jury complained of the unprotected state of the building, around which the builder had erected no hoarding. A verdict of "Accidental death" was returned. The jury also passed the following resolution: "That the two men, named Barnes and Thorley, be censured in having taken the poles down in a negligent manner, and without sufficient care; that Messrs. Speakman, the builders, are to blame in not erecting a hoarding round the building to protect the public; and that the Eccles and Barton Local Board be impressed with the necessity of carrying out and enforcing their building regulations with regard to all buildings, and that they strictly enforce the regulation requiring hoardings to be placed round buildings in course of erection."

On the 16th ult. one of the hydraulic swing bridges at the west entrance of the Morpeth Dock, Birkenhead, was being opened for the purpose of being cleaned, and when about midway it broke in two, one portion of the structure falling into the dock. Fortunately there was no one on or under the bridge at the time. The bridge is worked on a "ram" by hydraulic power, and was constructed about ten years ago by Sir W. Armstrong. The structure is 140 ft. long by 27 ft. wide, and was built at a cost of between 3,000*l.* and 4,000*l.*

MASTERS AND MEN.

Manchester.—The nineteenth week of the joiners' strike has been completed, and the struggle still continues. The men have issued a circular in which they refer in no delicate way to the action of the masters' association in seeking men in different parts of the United Kingdom, on the Continent, and in America, and state that of the 4,000 men who struck work on the 1st of May, 650 now only remain on the books; and of the 400 non-society men, 150 only remain. At a meeting of the Associated Masters on the 28th ult., it was reported that men were coming into the district in search of work in larger numbers than at any previous period of the strike, and the employers were quite sanguine of having the full number of men they require very shortly. A deputation from the workmen's strike committee waited upon the employers, their object being to see if the employers would enter into negotiations with the committee. The employers replied that they declined to meet the committee, and remarked that the shops were open at 8½d. per hour, but on no other terms. Twenty-five joiners for Manchester arrived from New York on the 7th inst. by the Guion steamer *Wisconsin*. Their fares were advanced, and three years' employment guaranteed to them, at wages equalling $3½ per day in New York.

The Clyde.—A fortnight ago, when the masters agreed to arbitrate on the present dispute, it was thought that the men would immediately resume work. This the shipwrights refused to do until a basis for arbitration had been agreed upon. The masters, on the 30th ult., sent a note to the shipwrights, requesting that five delegates from the men should meet a like number of masters to arrange the basis of arbitration, the men meanwhile resuming work. On the evening of that day, however, at a largely attended mass meeting of shipwrights, it was unanimously resolved not to accept the masters' proposal until the basis of arbitration had been agreed upon.

Newton Abbott.—The wages dispute between the master builders and the masons of Newton Abbott has terminated. The masons are to receive their demand of 6d. per hour, and all sub-contracts are to be abandoned.

Motherwell.—About three months ago the master joiners of Motherwell intimated to the men that after the expiry of three months they would not bind themselves to abide by the bye-laws and rate of wages then in force. Subsequently they submitted a revised code of bye-laws and rate of wages for the consideration of the men. The latter have responded by formulating a counter code of bye-laws. The employers' notice expired on the 25th ult., and the men came out on strike. The masters of the districts of Motherwell, Hamilton, and Blantyre, are making arrangements to adopt the same rules and rate of wages.

THE MASONS' STRIKE.

SIR,—I cannot see the force of the arguments based on the number of houses built in London in a year. It does not follow that because the number of houses built in 1876 exceeded that of previous years the number built in 1877 will be greater. Possibly too many may have been built in 1876, and the number built in 1877 may be much less, especially as bricks are so dear and the masons are trying to further increase the cost of building. The number of houses built comprises a very large number of small houses, in which hardly any stonework is used; moreover, concrete and terra-cotta are, to a great extent, taking the place of stone, so that the number of houses built can be no criterion as to the quantity of stonework used. One great argument for a rise in wages would be the increased cost of living; but I find that many articles of necessity are decreasing in price, especially coals. I have not bought coals so cheaply as I have done lately for very many years.

A READER.

THE POLITICAL ECONOMY OF THE SEWAGE QUESTION.

SIR,—You will think me persistent in writing on this subject, but I cannot give over without trying to say another word in favour of schemes for utilising sewage. There is a sentence in the last number of the *Builder* (Sept. 8) to the self-effect,—"The idea of value to be obtained when the main object is nuisance to be destroyed, has been perhaps the most prolific source of all the delay, waste, and misconstruction that has up to this moment so fatally retarded the sanitary engineer." Now, looking back fifty years, we find that it was neglect of utilisation which was the very root and progenitor of the evils now sought to be removed,—these evils, caused by this neglect, grew and spread for twenty-five years, till they assumed alarming proportions. The idea of recovering the value and purifying sewage water by filtration was then started, and, since that, it has been misapprehension and misconstruction with regard to the particular *method* of utilising which has caused much delay. There has been a general desire that the utilisation should be carried out in its most perfect form; but amidst misapprehension, misconstruction, and bungling, the idea itself survives and grows in strength and importance.

The other idea of trying to simply get rid of sewage, and be done with it for evermore, has been tried in practice, has been tried a long time, and has not only failed, but the larger practised grows the more hopeless. We know of no other *safe* method for the disposal of sewage but by its utilisation. Had earth and dry closets come into general use when waterclosets were introduced, the pollution of rivers would not have assumed the proportions that it has done.

Next, with regard to the comparative value of the commodity. It is valuable to the farmer, and it is better to give it to him for a trifle, or for nothing, than throw it away.

Commodities we do not ourselves require, as, for instance, old clothes, we sell for what they will bring in the market, and let them go; the party who buys is a direct profiter by the transaction, we are no loser, and the wealth of the nation is increased a little,—however little. The stable-keeper sells the manure of the stable for what it will bring, and would never think of destroying it as long as he could get any one to cart it away for him. In like manner, the magistrates of towns dispose of the sweepings of the streets; and why any one should oppose the economic view of the sewage case I fail to see; it seems like infatuation.

WILL. H. BLACK.

MODEL LODGINGS.

SIR,—I observe in the *Builder* of the 8th inst. an anonymous letter purporting to be from a "Working Man," in which certain statements are made with respect to "the premises now erected by the 'Improved Industrial Dwellings Company.'" I think no one can read that letter without feeling that the allegations contained in it are exaggerated, and I need only state that they have no foundation in fact. With nearly 4,000 dwellings in various parts of the metropolis, accommodating nearly 15,000 persons of the working-classes, something will, of course, occasionally go wrong; but no complaint is ever made to the company which does not receive immediate attention. The best evidence I can offer of the appreciation of the efforts of the company by the working-classes is the fact that the demand for the dwellings is always greatly in excess of the supply.

JAS. MOORE, Secretary.

"DESERVING REWARD."

SIR,—Under this heading you report in the *Builder*, p. 890, an act of great courage which *does* deserve reward. I enclose 5s. in stamps, which I should have sent direct to the builder, were it not that I think that if you opened a subscription for the brave man it would prove an encouragement to other good fellows whose worthy deeds are often unnoticed and unrewarded.

The *Builder* is the *Times* of its kind, and I feel sure that, by imitating the example of the great journal and appealing to an appreciative public, you will add another claim to the favour and patronage of English readers in the building and architectural line.

P. E. CHAPPUIS.

*** We have received the 5s. mentioned. Mr. Godwin adds 5s., and we will wait a week before forwarding the amount, in case any other admirers of pluck should desire to add to it.

THE CHAPEL ROYAL, SAVOY.

SIR,—During the last week remarks have been made by most of the daily and weekly papers in reference to the alterations about to be carried out in the above building, and as some fears have been expressed lest the ancient character of the edifice should be injured, we have thought it right, as architects to her Majesty for the works, to inform you explicitly what their nature is.

The existing vestry, which dates back only some five-and-twenty years, and which, beside being too confined for the necessities of the choir, is defective in its sanitary arrangements, will be removed. In place of it, and on the same site, will be erected a new vestry, more in accordance with the character of the chapel and in no way interfering with the view of the east elevation.

A new, small doorway is to be cut through the east wall by the pulpit, not, as stated by one paper, to be an entrance solely for the Chancellor's use, but chiefly to form, what is so much needed at the north end, a vomitorium for the congregation in case of fire. Before this door will be a porch which will also give access to the new vestry.

These are the only works now definitely arranged, for the scheme for raising the organ into a loft at the south end, and forming doors in the south wall, towards the Embankment, in place of the present modern east door, is postponed for further consideration.

PERRY & REED, Architects to
Her Majesty's Chapel Royal in the Savoy.

CEMENT KILNS.

SIR,—In reply to Mr. V. De Michele's letter relative to what I stated in the *Builder*, as to the tunnel flue system for drying the slurry with the waste heat from cement-kilns, it was when I was employed in the erection of cement works at Greenhithe, under the tunnel flue system, that I made by my own notion the improvement I claim, viz., in the improved formation, by constructing the flues at the back end, to bring the heat to play more fully and directly over the slurry, and that was on the 3rd of November, 1873. Moreover, the ventilating holes through the crowns were never thought of until I myself adopted the plan. These holes were introduced for two reasons: 1st, if the gases were to ignite suddenly in the tunnels, they would perhaps blow both loading holes out at front end and back end. These ventilating holes are simply a safety-valve should the gases blow and give vent, instead of allowing the gases to blow out the end load holes; so you see I am quite aware that there are ventilating holes in the crowns; also, I am aware that the heated gases have been brought to the lowest point in the tunnels for some time, viz., since the kilns were first lighted up, but Nov. 3rd, 1873, would be some time ago.

W. MAY.

CHURCH-BUILDING NEWS.

New Shoreham.—The parish church of New Shoreham was re-opened on the 27th of June, after restoration under the direction of Mr. Arthur Loader, architect, Brighton. The Bishop of Chichester, in the course of a sermon delivered on the occasion, referred to the controversy which took place in our columns and elsewhere as to the manner in which the architect was dealing with the building. His lordship said:—"We have here but the remains of a far greater building; the green mounds show how it extended westward. Happily, the more beautiful part of the building, the choir, remains to us. This it is which, so far as we are allowed, has been carefully and tenderly repaired, and I bear willing witness to the scrupulous piety with which the whole work has been carried on. It has not been the purpose of those connected with it to substitute some better thing of their own invention, but rather to reproduce with exact fidelity what originally existed; to trace out and recover the ancient plans, so that the church might again stand complete and unmutilated as it came from the founder's hands. This is the principle of the work; how it has been executed you can all judge. This was the idea of the architect, and I believe it to have been as truly conceived as it has been successfully realised."

Netherhampton.—Netherhampton Church was lately re-opened, after undergoing restoration, to an extent almost tantamount to entire rebuilding; for, with the exception of the lower part of the tower, and one or two windows, nothing of the original structure remains. The work of rebuilding was commenced in the summer of last year, Mr. Butterfield, of London, being the architect, and Messrs. Hale & Sons, of Salisbury, the builders, Mr. W. Cowley acting as clerk of the works. The total cost, including fittings, has been about 1,900*l.*, towards which the Earl of Pembroke has liberally contributed upwards of 1,500*l.* The style of the new church, which is constructed to seat a congregation of about 110 persons, exclusive of those in the chancel, is Decorated. The tower has been raised some 10 ft., and is surmounted by a steeple covered with oak shingles, which are also used to cover the roof. The outer walls are of brick faced with flint and Tisbury stone, Bath stone being used for the quoins and dressings.

Buckland Monachorum (Devon).—The foundation-stone of a small church for the hamlet of Milton, in the parish of Buckland Monachorum, Devon, and dedicated to the Holy Spirit, was laid, with a special service, on July 24th. The building is to consist of nave, 37 ft. 6 in. by 20 ft.; chancel, 20 ft. by 15 ft.; vestry, and west porch. The style is Early English, the materials being local stone, with Roborough Down stone quoins, and dressings of Bath and Ham-hill stone. There is to be a lofty stone bell-turret at the west end. The nave is to accommodate about 114 in chairs, the chancel seats to be wainscot oak, also the altar and rail. The cost of the building, including the purchase of the site, is to be about 1,100*l.*, undertaken by the Rev. R. J. Hayne, vicar of Buckland Monachorum. The contractor is Mr. Blowey, of Buckland; the architect is Mr. Ashworth, of Exeter.

Porton.—The new edifice, called, as was the ancient structure in place of which it was erected, after St. Nicholas, is built in the Decorated style of architecture. It was designed by Mr. Pearson, of Harley-street, London, and built by Mr. Grace, of Lower Wallop. It is built of flint, with stone at the angles and in the buttresses, and in the chancel there is an altar-rail of scrollwork, fitted up with beaded bands of wrought iron, the work of Mr. C. J. Tutt, ornamental ironworker, Salisbury. The site on which the edifice stands, and the little churchyard around it, were given by Mr. J. Ingram, of Wylye.

South Teal (Devon).—The hamlet of South Teal, in the parish of South Tawton, Devon, has had its old chapel restored. Hitherto neglected and dilapidated, the old granite structure, dating from Tudor times, had of late years been used as a school. Through the care of an old resident, and under the direction of the Rev. J. Bliss, vicar of the parish, the building has been newly roofed in red deal, granite windows have been inserted, and the interior, about 35 ft. by 13 ft., reseated. The sacrarium has a tiled floor, and the altar is of English oak. Three figures in stained glass,—the Crucifixion and the two Marys,—occupy the east window. The vacant arch of the turret has a new bell, in unison with the old one. The granite work and masonry have been executed by Mr. John Aggett, of Chagford; and the woodwork, &c., by Mr. Underhill, of the same place, Mr. Ashworth, of Exeter, being the architect. The chapel was opened by a special service on the 17th of July.

Tonbridge.—The concluding service in the old parish church of Tonbridge, prior to restoration, virtually amounting to rebuilding, has been held. The contract for the work has been taken by Messrs. Punnett & Sons, Tonbridge, for a sum of between 8,000*l.* and 9,000*l.*, which does not include reseating nor the restoration of the tower.

Corwen.—A small vestry has recently been added to the east end of the south aisle of Corwen Church, North Wales. Previously the church possessed no vestry at all. The designs for it were furnished by Mr. Edmund B. Ferrey.

Bishop's Sutton (Somerset). — The church here, built in 1848, has just been re-opened, after having been thoroughly repaired and cleaned, and the chancel entirely refitted and embellished. The organ, which formerly blocked up the north side of the chancel, has been removed to the east end of the south aisle. New oak chancel stalls and prayer desks of handsome design have been added, and a rich encaustic tile pavement laid down of Godwin's make from the architect's design. There have also been provided a new altar rail of oak carried on ornamental wrought-iron standards, an oak altar table, a stone credence, and Caen stone reredos. All the chancel windows have been reglazed with ornamental lead quarries of cathedral rolled glass and white glass intermixed. The chancel roof and walls have been cleaned and improved. Six pendants, of brass, light the chancel. The works to the chancel have been carried out under the direction of Mr. Edmund B. Ferrey, architect, by Mr. Vallis, builder, of Frome, aided by other tradesmen.

Higher Broughton.—On July 30th Mr. W. S. Clowes, M.P., laid the foundation-stone of a new church in Great Cheetham-street, Higher Broughton, to be dedicated to St. James. The church is to be built of brick and terra-cotta. It will be in the Decorated style, and is to accommodate 600 persons. The nave will be 86 ft. long by 26 ft. wide, with five arches; the chancel, 36 ft. long and 25 ft. wide. The height from the floor to the wall-plate of the nave will be 30 ft., and the height to the ridge, 50 ft. There will be north and south porches at the west end. The interior of the roof will be of pitch pine. The church is to be lighted by large three-light windows in the side walls, by a five-light window at the east end, and by two three-light windows at the west end. Messrs. Paley & Austin, Lancaster, are the architects, and Messrs. Foreman & Todd, Higher Broughton, the contractors. The cost will be about 7,000*l.*

Books Received.

An Essay on New South Wales, the Mother Colony of the Australias. By G. H. REID. London: Trübner & Co.

UNEXAMPLED prosperity has attended New South Wales during the past few years, and this essay, which comes to us from the Government of the colony, seeks to make this fact widely known, and to show that it is the best place in the world for the right sort of people to settle in. Our convictions go a long way with the writer. High wages, short hours, good living, and fine weather; that is the promise Mr. Reid makes to every persevering and respectable working man going to New South Wales. The progress of the colony has certainly been extraordinary. Mr. Reid says more land has passed into private hands in the last five years than in the previous eighty-three years. The area disposed of by auction and conditional sale at 1*l.* per acre and upwards from 1871 to 1875 was over 8,200,000 acres, and, at the same rate, it will take about 180 years to dispose of the area still available. As regards commerce, not very long ago nearly the whole of the colony's trade was engrossed by the mother country. Now they have a colonial and foreign trade of upwards of 15,000,000*l.*; the trade with the United Kingdom having, moreover, doubled during the last ten years. Mr. Reid gives a glowing account of the climate, describes as indescribable the beauty of Sydney harbour, and speaks with a glow of satisfaction of the plenty and happiness apparent amongst all classes of the population. In fact, if we read any further the chances are we shall shut the inkbottle and be off to New South Wales.

Concrete: Its Use in Building and the Construction of Concrete Walls, Floors, &c. By THOMAS POTTER. London: Spon; and Reynolds & Co., Southwark-street.

IT would be very easy to find fault with this treatise. It is to a great extent a compilation, the sources sometimes acknowledged, sometimes not, and the scholarship shown is limited; but, on the other hand, it includes a considerable amount of practical information on the subject with which it deals, and does not run into extremes. The value of concrete as a building material, under certain circumstances, and when properly made, is now so widely recognised, partly through the continued advocacy of the *Builder*, that plain straightforward instructions, whereby failure may be avoided and a

successful result ensured, are constantly asked for. To such inquirers, and we have had many, we recommend the little volume before us.

With reference to one of the objections we made at starting, we will give an instance. Mr. Potter says "Mr. Reid appears to have been the first, in his work on 'Concrete'" [a work Mr. Potter has made good use of], "to have used the word 'matrix' for the cementitious ingredient, although it is somewhat difficult to understand why this should be so, a matrix generally being supposed to mean 'a mould or cavity,' and therefore would apply more correctly to the space or void in which the concrete is to be deposited;" and he elsewhere speaks of the impropriety of the term. If he had turned to his dictionary he would have avoided this show of ingratitude, for he would have discovered that in mineralogy the term has been applied for long years to the earthy material in which mineral ore or organic remains are embedded!

Nevertheless, we adhere to our recommendation.

The Plumber and Sanitary Houses. By S. STEVENS HELLYER. Batsford, No. 52, High Holborn.

THIS is a practical treatise on the principles of internal plumbing work, with reference to the best means for excluding noxious gases from our houses. It treats of traps, soil-pipes, wastes, lavatories, baths, closets, ventilation, and so on. It is illustrated with numerous diagrams, and tastefully got up. It is very disheartening to find, after all we have been saying for years about traps and drains, that it should still be necessary to print much that we find here. However, so it is. We should be glad if every plumber in the kingdom would buy the book; this would give a good sale to Mr. Hellyer, and a good lift to sanitary plumbing.

Works in Iron: Bridge and Roof Structures. By EWING MATHESON, M. Inst. C.E. 2nd Edition. London: E. & F. N. Spon. 1877.

SEEING that all the examples of structures given in Mr. Matheson's work were made and erected by Messrs. Handyside & Co., of Derby, a casual examiner might be led to pronounce this a mere trade-book, and shut it up doubtingly. This, however, would be a great mistake. The book is brimful of most valuable practical information, and may be studied by those concerned with the greatest advantage. We spoke well of the first edition, and we can speak even more warmly of the second, because we know the book better.

Miscellanea.

The Measurement of Gas.—An important question brought under the notice of the Standard Weights and Measures Department is (says the Warden of the Standards in his report for the past year, just issued) the question of testing the index of a gas-meter. At present the inspector of gas-meters is not required by law to examine into the accuracy of the index, and consequently gas-meters are stamped as correct, although the inspector's examination is a partial one. Three recent instances have been reported to the Standards Department in which consumers of gas were charged for gas much in excess of what they had consumed, owing, as it was subsequently accidentally discovered, to the inaccuracy of the index only. In one instance a "3-light" meter registered five times more than was really consumed; in a second instance a "300-light" meter registered three times more than was really consumed; and in a third instance a gentleman of Torquay complained that his meter, though stamped as correct, had been found to register 86,000 ft. in excess. The whole system of testing gas-meters seems (says the *Pall Mall Gazette*) to be conducted in rather a "happy-go-lucky" fashion; for it is mentioned in the report that on the officers of the Standards Department examining the condition of the working standard gas measures used by the inspectors of London, Edinburgh, and Dublin in the actual testing of gas-meters, it was found that in no case had these working standards been reverified since their original verification in 1860. The condition of the working standards issued to other places is probably similar. After a period of seventeen years the errors of these working instruments may now be considerable, and the accuracy of any results obtained from them is doubtful.

The Masons' Strike.—The operative masons of London appear to be on the winning side—at all events for the present—in their contest with their employers, notwithstanding the cry of "No surrender" so vigorously put forth on behalf of the masters at the outset of the struggle. At a meeting of masons held on Wednesday evening in Cambridge Hall, Newman-street, Oxford-street, the chair was occupied by Mr. H. Broadhurst, who said the position they occupied was considerably better than it was last week. Since their last meeting two firms had been added to the list of those who had consented to give the 10d. an hour. One of these firms was that of Messrs. Lawrence, the other that of Messrs. Peto, of Pimlico. Since their last meeting their cause was being taken up by their provincial brethren in the most hearty and unanimous manner. Last week it was the committee's pleasing duty to announce that the trade of the town of Birmingham and its district had resolved to levy themselves in order to increase the men's already respectable dividend, which they received in addition to their strike-pay. Since that time the brethren of Bristol had met and determined to levy themselves 1s. a week to support the masons on strike in London. The Scottish society, which now stood the first trade society in Scotland (the Scotch masons) had resolved to do their best to support the men on strike—if not materially, at least with such an amount of "moral support" as in former years they had not always received from Scotland.—Mr. Hancock, the secretary, made a report. He said the number of men on strike had considerably decreased since their last meeting. In reality, three firms had since given the 10d. an hour. In the letter of Mr. Goulden, on the part of the employers, it was stated that fourteen firms had 376 men employed on the old terms. If so, they must be labourers. He defied Mr. Goulden to show that there were thirty masons working for these employers. Mr. Phillips then proposed:—"That in consideration of the progress hitherto made with respect to the advance, we, the masons of London, being fully sensible of the justice of our claims, are unwavering and unanimous in our decision, and are determined to adhere to the resolution passed at our last general meeting." Mr. Redmond, in seconding the motion, said no doubt they were able to carry on the struggle for months to come, but they wished for an amicable settlement. In Scotland, the society were not only determined to prevent men from coming to London, but to help them over the winter. Mr. Nisbitt suggested that advertisements should be inserted in foreign papers to prevent men coming to England. The chairman said foreign workmen would be dear bargains. They were tried in 1859, and an English mason would do six jobs while a foreigner was "squaring" round it lighting his cigarette. The motion was carried.

Industrial Dwellings for Newcastle-on-Tyne.—At a meeting of the Newcastle Industrial Dwellings Company on the 27th ult., it was resolved to proceed with the proposed extensions to the company's buildings. The additions will comprise sixty-four dwellings of not less than two rooms to each, including five shops, two of which will have two rooms to each. It is intended to provide a large room, about 50 ft. by 15 ft., to be used as a reading-room and library, and for any other purpose available for the mental improvement or rational amusement of the tenants. The following tenders for the various works in connexion with the new buildings have been accepted:—Mason and bricklayer, J. & E. Middlemiss; carpenter and joiner, J. Grisdale; slater, R. Carr; plumber, H. Cable; plasterer, Thos. Wallace; painter and glazier, A. Robertson. The entire cost of the extensions, including cost of land, will be about 10,500*l.*

Work on Table Decoration.—We are told that an entirely novel work on this subject is in the press. Messrs. Wyman & Sons, publishers, Great Queen-street, London, announce early in October "Floral Designs for the Table," being plain directions for its ornamentation with cut flowers and fruit, with classified lists of suitable plants, berries, and leaves. The work will be in folio size, and will contain twenty-four original Coloured Designs (executed in a high style of Chromo-lithography), showing the best and most attractive method of decorating the Breakfast, Luncheon, Dinner, and Supper Table at a moderate cost.

Upsala Cathedral.—The *Times* correspondent writes:—The Upsala Cathedral, in which the official festivities connected with the centenary of the university are held, is a very fine and imposing specimen of old Gothic architecture, though somewhat spoilt by the vandalism of later ages. It is built of large red bricks, with portals of stone, and dates from the thirteenth century, though it was finished only in 1435. A French architect, Etienne Bonneville, was the author of the design, which was, however, altered during the construction. The cathedral had originally three towers, the lofty spires of which rose to a height of 400 ft., and were of an elaborate design; but after the great fire of 1702, which destroyed the church and laid half the town in ashes, these Gothic spires were replaced by two square towers of only half the height, and strangely contrasting with the style of architecture preserved in the main construction. The interior is still very grand, with the twenty-four columns supporting the nave and the choir, and the arches rise majestically; but the whitewash with which even the marble columns and capitals have been covered to hide the traces of smoke and fire gives to the whole a monotonous character. The shrine containing the relics of St. Erik, the patron of the church and the Saint among Sweden's kings, has still its place near the altar. In the Gustavian Chapel are the last resting-places of several kings of the Wasa dynasty, the last male scion of which died some few weeks ago an exile. The founder of the house, Gustavus I., is lying in marble between two of his queens, a work of Flemish art; and over one of his sons, King John, is raised a monument, the marble figure of which is due to the chisel of Donatelli, but having been shipwrecked on its way to Upsala, was hidden for many years in a Dantsic warehouse.

"Lightning Protection."—The *Finance Chronicle* says,—Builders, from observation and experience of damage done by lightning to buildings, might be expected to know better than to construct a house for their personal use *minus* a lightning-rod. Yet we are told that this is frequently found to be the case; and a recent lightning-storm which passed over Warwickshire has furnished us with a signal proof of their indifference to the use of such a safeguard. We read in the local papers that on the 16th ult. the lightning struck the house of Mr. Brown, Dover-street, Coventry, and not having a lightning-conductor, it received "much damage. The chimney was shattered, the pots were completely broken, the pieces of one even thrown into the window of the house opposite, the staples were torn off, a rent was made in the wall, a portion of the iron palisading was twisted, &c." There is nothing unusual in this; but when the accident happened to the house of a builder there is much in it to surprise one, and which calls for comment.

Railway Mileage in the United Kingdom. A general report to the Board of Trade states that

The total mileage for the United Kingdom at the end of December, 1876, was 16,472 miles, including 11,989 miles for England, 2,728 for Scotland, and 3,157 for Ireland. The increase for the United Kingdom over the total in 1875 is 214 miles, which is much the same amount of increase as in 1875 over 1874. The per-centage of increase is in both cases about 1·3 per cent., which is a small rate of increase as compared with what has often been witnessed, and much smaller than the rate of increase in 1874, and one or two years just previous. Almost the entire increase in 1876 has been in England and Wales, the increase in Scotland being five miles only, and in Ireland nine miles. The increase of double mileage is greater than the increase of the whole mileage. Of the above total of 16,872 miles the number of double miles was 9,169, and of single miles 7,703; and, comparing these with the corresponding details for 1875, we find that while the increase of double miles has been 271, there has been a decrease of fifty-seven miles in the single mileage.

Maidstone Bridge.—A new bridge is to be constructed across the Medway at Maidstone, from the designs of Sir Joseph Bazalgette. The estimated cost is 32,000*l.* The bridge is to be of stone, and the Local Board are all in favour of such a bridge. Some of the ratepayers, however, are in favour of an iron bridge; they claim for it that it would be cheaper, more elegant, and could be erected in one span, and ask why all the modern bridges, such as those of Westminster, Blackfriars, &c., are built of iron if stone is preferable. To this the Local Board reply that iron bridges require constant painting, are less durable, and are only adopted in London because "the constructors, being limited in funds, have to use, not the best, but the cheapest materials." Tenders are invited for the stone bridge, and must be sent in on the 24th inst.

ortality in Madras.—A sad story reaches
s to the mortality which has occurred at the
cingham Canal, a work intended for the
f of famine sufferers. Out of twelve non-
missioned officers of the Royal Engineers
inted to that work, three have died, and
are on sick leave. It need scarcely be said
25 per cent. is a death-rate which the famine
f in its wildest moments has never reached.
Government has called for a report, and
it we learn that "this alarming sickness
mortality are attributed to want of acclima-
ion, physical unfitness, overwork, exposure
ne sun, insufficient shelter, and want of food
provisions suitable for Europeans." So says
O'Shaughnessy in charge of the work. Our
information says overwork and insufficient
were the chief causes.

hange of Name.—The Royal Engineer
artment, a branch of which is established at
military stations, is (according to the *Daily*
s) the subject of a royal warrant just issued.
title of "clerk of works" is to be altered
assistant surveyor," and the pay of the civil
fessional branch of the Department is fixed
he following scale:—Chief surveyor, 800*l.*,
reasing by 40*l.* yearly to 1,000*l.*; first-class
veyor, 400*l.*, increasing by 20*l.* yearly to
l.; second-class surveyor, 300*l.*, increasing
15*l.* annually to 375*l.*; assistant surveyor,
l., increasing by 10*l.* yearly to 280*l.* The
rant gives power to the Secretary of State
War to grant in special cases extra-duty pay,
ging from 100*l.* to 250*l.*, in addition to the
ogoing rates.

The Telephone in Mining Operations.—
the 4th inst., Dr. Foster, Government In-
ctor of Mines, and his brother, an electrician,
nducted experiments at the Eliza Mine, St.
stell, Cornwall, with the telephone, which had
er before been tried in a mine. The little
trument, attached to a covered copper wire,
s sent down the ventilating shaft, and within
uarter of an hour speaking at the bottom of
mine was distinctly heard, even more audibly
n in the mine, where whispers at the top and
gs were sung, and questions were asked and
swered, demonstrating its thorough adapt-
lity to mines. The importance of telephones
mining operations seems considerable, as the
e and instrument are portable, and can be
ried to the extreme point of any mine.

An American Canal.—A water highway
m St. Paul, Minnesota, to New Orleans, a
stance of 2,000 miles, has just been opened,
e last obstruction to navigation — the Des
oines Rapids—having been overcome by the
ilding of a Government canal, now nearly
mpleted. The canal is seven miles and six-
ths long, 300 ft. wide in embankment, and
0 ft. wide in excavation. The water in the
nal will be from 5 ft. to 8 ft. deep, which is
fficient to float the steam-boats of the Upper
ississippi. The two lift-locks and one guard-
k, which are built of cutstone masonry, con-
med most of the money expended on the work.
he original estimate of cost was $3,390,000, but
anges in the plans were, of course, made, and
e cost has already reached $4,281,000.

**Proposed Corporate Buildings at Sun-
erland.**—On the 30th ult. Mr. J. T. Harrison,
E., an inspector of the Local Government
oard, opened an inquiry in Sunderland with
ference to the application on the part of the
nderland Corporation to the Treasury, to
nction a loan of 22,000*l.* for the proposed pur-
nse of the Victoria Hall, and the erection of
ildings on the site adjoining the same for
unicipal offices and corporate purposes. After
earing some formal evidence, the inquiry was
djourned until the 25th inst.

Death of Mr. John Piggot, Jun., F.S.A.
e regret to announce the death, on the 30th
lt., of Mr. John Piggot, jun., of the Elms,
lting, Maldon. Mr. Piggot was a member of
e council of the Essex Archæological Society,
or whose *Journal* he wrote many interesting
apers. For a short time he was proprietor and
ditor of a periodical entitled *Long Ago*, which
as ultimately abandoned. He was also an
ccasional contributor to the *Art Journal* and to
ur own columns.

**Proposed Aquarium, Waverley Market,
dinburgh.** — A sub-committee of the Lord
rovost's Committee on Markets has decided in
avour of letting on lease for 200*l.* per annum a
ortion of the Fruit and Vegetable Market, for
he purposes of an aquarium.

Kew Gardens.—The select vestry of Rich-
mond have unanimously passed a resolution
pledging themselves to do all in their power to
assist the Kew Gardens Rights Defence Com-
mittee in their effort to obtain the opening of
Kew Gardens at an earlier hour than at present,
and to the substitution of an iron railing for the
unsightly brick wall bounding the gardens in the
Richmond-road. Dr. Selle, in proposing the
resolution, observed that no fewer than 58,000
persons visited the gardens last Bank Holiday,
and a great number, being ignorant of the hour
of opening, were kept waiting about outside for
a long time.

**Improved Dwellings and the Rate of
Mortality.**—Dr. Bateson, the medical officer of
St. George the Martyr, Southwark, in issuing a
report on the health of the parish for the year
ending March last, points out that the death-
rate is reduced from twenty-four per 1,000 per-
sons living in the previous year, to twenty-one
and a half per 1,000 this year. He also states
that the mortality shown by Peabody's-buildings,
Blackfriars-road, gave evidence of the health
enjoyed by those who dwelt there; whilst
twenty-one and a half died in 1,000 living in the
district, but twelve and a half died to the same
proportion of persons in the buildings.

Gas from Wood.—At Tagil, in Russia, says
Mr. John Milne, F.G.S., many of the shops and
foundries are lighted by gas which is made from
wood,—200 cubic feet of wood giving about 800
cubic feet of gas. The roots of pine and the rind
of birch furnish the largest quantity of gas.
The light from this gas is poor as compared with
that made from coal, the former being equivalent
to about ten candles, whilst the latter is equal to
about fourteen. It is, however, cheap,—one jet
costing half a kopec (one-sixth of a penny) per
hour.

Ornamental Churchyards in London.—
The Rev. W. Abbott, the rector, and the church-
wardens of St. Luke's, Oldstreet-road, applied to
the Chancellor, at the Consistory Court, on the
24th ult., for a faculty to convert the closed
burial-ground of the parish church of St. Luke's
into an ornamental place for trees and flowers.
There was no opposition to the plan, and the
inhabitants were in favour of the proposed im-
provements. The Chancellor said the faculty
would be given in a few days.

The Romford Lighting Scheme.—At the
last meeting of the Romford Local Board the
tender of Mr. Dietz was accepted for altering the
public gas-lamps according to his patent for
burning oil, and the tender of Mr. E. Pertwee, a
local oilman, was accepted for the supply of
white petroleum (120 degrees) at 1*s.* 2*d.* per
gallon for lighting the lamps.

The Walker Art Gallery, Liverpool, was
opened by the Earl of Derby on the 6th inst.
The building, as our readers know, has been
erected at the cost of Mr. A. B. Walker, the mayor,
by whom it has now been formally presented to
the town. Mr. Sherlock is the architect, and the
cost has been about 40,000*l.* We have already
given a view of the building.

The Post-office Savings-Bank.—According
to the *City Press*, a new building is about to be
erected in Queen Victoria-street to accommodate
temporarily the Central Savings-Bank, until
permanent provision can be made for that and
other departments for which there is at present
no accommodation in the General Post-office
buildings, St. Martin's-le-Grand.

Brighton.—At a meeting of the Brighton
Town Council a communication was read from
the Local Government Board sanctioning the
purchase of the East Lodge estate, and the
borrowing of two sums of 6,000*l.* for works in
connexion with street improvements.

TENDERS.

For alterations to the Temple Club, Arundel-street, Strand, for Mr. C. H. Russell. Messrs. Dunn & Tylor, architects. Quantities by Mr. T. Nixon:—

Bowyer & Son	£25,000 0 0
Mortier	19,487 0 0
Williams & Son	19,400 0 0
Killby	19,327 0 0
Patrick & Son	19,190 0 0
Sewell & Son	19,169 0 0
Howard & Co.	18,950 0 0
Rider & Son	18,888 0 0
Adamson & Son	18,792 0 0
Longmead & Wey	18,347 0 0
Hook & Oldrey	17,947 0 0

For rebuilding Nos. 316 and 318, Bethnal-green-road, for Mr. Borton. Messrs. Stone, architects:—

Stamp & Bowle	£1,993 0 0
Brett	1,935 0 0
Lewis	1,837 0 0
Atherton & Latta	1,867 0 0
Goodman	1,835 0 0
Hunt	1,728 0 0
Forrest	1,694 0 0
Johnson	1,663 0 0
Judd & Hawkings	1,659 0 0
High	1,390 0 0

For villa residence, for Mr. J. C. M'Leod, on the Wood-side Estate, Finchley. Mr. G. H. O'Donogue, architect:—

Messrs. Toms	£1,280 0 0
Gibbon & Mitchell	1,260 0 0
Ball & Wicks	1,185 0 0
Gould & Brand	1,155 0 0
Wall, Brothers	1,154 0 0
Aitchison & Walker (accepted)	1,057 0 0

For piers, wing walls, gates, and railings, at Manor Park, Essex, for the Manor Park Cemetery Company, Limited. Mr. Herbert J. Jones, architect. Ironwork by the Coalbrookdale Company:—

Williams (accepted)	£500 0 0

For cottage and coach-house, at Westbury-on-Trym, near Bristol, for Mr. Joseph Watkins. Mr. Herbert J. Jones, architect:—

Brookes	£176 14 0
Williams (accepted)	176 0 0

For drainage works, at Sussex-place, Bristol. Mr. Herbert J. Jones, surveyor:—

Humphreys	£190 0 0
Ford (accepted)	163 3 0

For rebuilding 36 and 37, Poultry:—

Ansteg	£4,610 0 0
Beale	4,575 0 0
Bracher	4,550 0 0
Kirk	4,537 0 0

Accepted for works in connexion with the extension and alteration of the Corn Exchange, Edinburgh:—

Bishop & Son (masonry)	£3,183 0 0
Pullar (joiner-work)	1,160 0 0

For residence, for Mr. John Jarratt, at Forest-road, Loughborough. Mr. George Hodson, architect. Quantities supplied:—

Needham	£1,268 11 0
Barker	1,081 0 0
Harding	1,025 0 0
Ludlam	1,013 0 0
Main	989 12 0
Johnson, Brothers (accepted)	940 0 0

For Wesleyan Chapel, at Sheepshed, Leicestershire. Mr. George Hodson, architect. Quantities supplied:—

Aspell	£1,535 0 0
Johnson, Brothers	1,450 0 0
Needham	1,422 0 0
Wright, Brothers	1,399 10 0
Books	1,330 0 0
W. & J. Main	1,320 13 0
Ludlam (accepted)	1,235 0 0

For the taking down and re-erection of the Buck Inn, at Clay Cross, Derbyshire. Messrs. Rollinson & Son, architects:—

Askew	£2,145 0 0
Clubley & Stringfellow	2,050 0 0
Tutin	2,029 0 0
Fidler	2,027 0 0
Broomhead	2,003 0 0
Hays	1,980 0 0
Hodson & Facon	1,935 0 0
Bingham	1,900 0 0
Brown (accepted)	1,897 0 0

For stabling, coach-house, &c., at 36, Grosvenor-place, for Mr. J. G. Morris. Mr. Alfred Waterhouse, architect. Quantities by Mr. T. M. Rickman:—

Perry & Co.	£2,155 0 0
Smith & Co.	2,097 0 0
Holland & Hannen	2,033 0 0
Lascelles	2,032 0 0
Higgs & Hill	1,984 0 0

For altering two villa residences to one house, at Wood-riding, Finner, Middlesex, for Mr. Tandy. Mr. Hide, architect:—

Temple & Forster	£2,056 0 0
J. & J. Greenwood	2,017 0 0
Williams & Son	1,831 0 0
Beckey	1,760 0 0

For lengthening present car-sheds, at Queen's-road, Peckham, for the London Tramways Company, Limited:—

Taylor	283 0 0
Holliday (accepted)	267 0 0

For works, 3, King's-road, Bedford-row, for Shum, Crossman, & Crossman. Mr. J. Lavender, architect. Messrs. Raynes & Shum, surveyors:—

	Repairs to old house.
Atfield & Son	£1,750 ..... £165
Manley & Rogers	1,730 160
Patman & Fotheringham	1,446 170
Axford	1,367 130
Langmead & Way	1,295 125

For the erection of stables, &c., to be known as Horbury Mews, Ladbrook-road, Notting-hill, for Mr. E. Cocks. Mr. W. J. Worthington, architect:—

Longmire & Burge	£11,992 0 0
Clemence	11,919 0 0
Cowland	11,846 0 0
Butt	11,792 0 0
Clark & Bracey	11,390 0 0
Outhwaite & Son (accepted)	10,770 0 0

For addition to No. 12, Wigmore-street. Mr. Hughes, architect:—

Manley & Rogers	£2,477 0 0
Colls & Son	2,476 0 0
Bywaters	2,458 0 0

For alterations and additions to Belmont, Uxbridge, for Mr. C. W. Wakefield. Mr. E. J. Shrewsbury, architect:—

Silver & Son (accepted) £2,646 18 6

For sewers, for the Vestry of St. Leonard, Shoreditch. Mr. G. C. Perrett, surveyor:—

Coker	£7,621	0	0
Wainwright	6,050	0	0
Groom & Scrowen	5,900	0	0
Waddingham	5,193	0	0
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Docwra	4,450	0	0
Nowell & Robson	4,449	0	0
Pearson	4,443	0	0
Prout	4,365	0	0
Riley	4,350	0	0
Thompson & Sons	4,250	0	0
Dunmore	4,225	0	0
Pizzey	4,2.0	0	0
Bloomfield	4,187	0	0
Stamp & Bowtle	4,149	0	0
Crockett	4,139	0	0
Waldram & Co.	3,597	0	0
Ford & Norris	3,890	0	0
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Rendall (accepted)	3,166	0	0

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Woods	£4,383	0	0
Brighton	4,160	0	0
Shurmur	3,939	0	0
Knight & Simpson	3,916	0	0

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Brighton	2,12)	0	0
Shurmur	2,097	0	0

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Staines & Son (accepted) 174 0 0

For alterations and additions, Boyn-grove, Boyn-hill, Maidenhead, for Mr. J. C. Wootton. Mr. Edwin A. B. Crockett, architect:—

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Cox	2,455	0	0
Woodroffe	2,400	10	0
Woodbridge	2,370	0	0
Silver & Son	2,365	0	0
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* Accepted.

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* Accepted.

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Chamberlen	1,330	0	0
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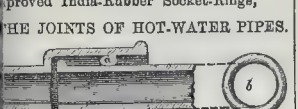
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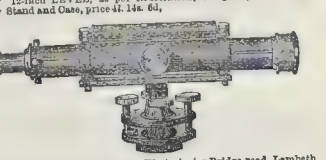
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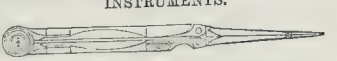
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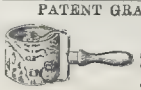
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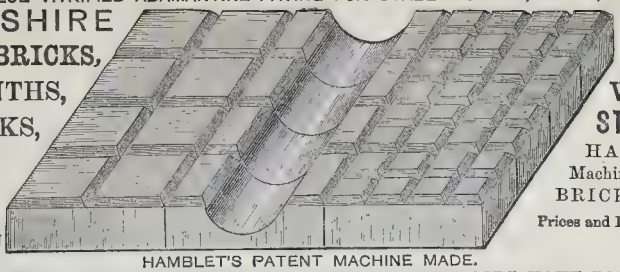
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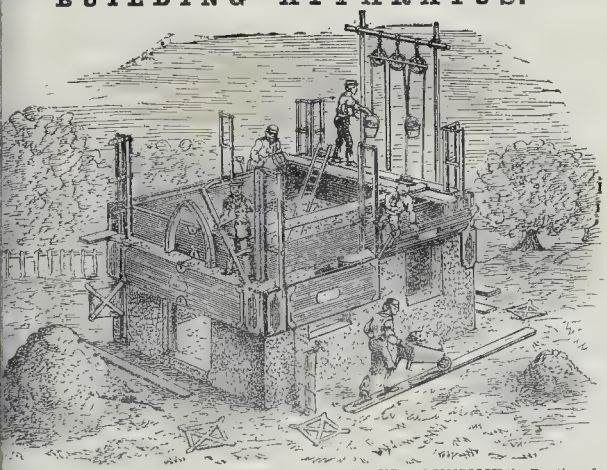


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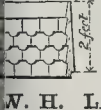
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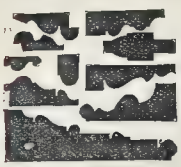
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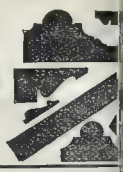
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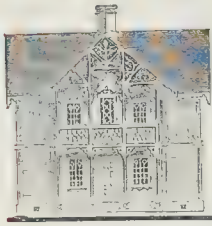


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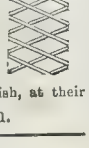
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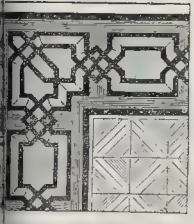
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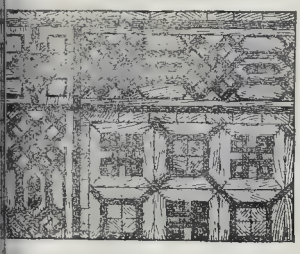
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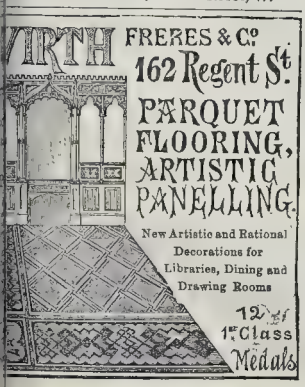
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PLAIN AND IN THE CHOICEST DESIGNS.

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India-rubber Macintosh Coats of superior make in every material, style, and quality.

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As an absolute PREVENTIVE of the ENTRY of SEWER GAS into Dwelling-houses by way of the most dangerous inlets, viz., the waste and overflow pipes from cisterns, baths, lavatories, and sinks, DOULTON & CO. strongly recommend the use of

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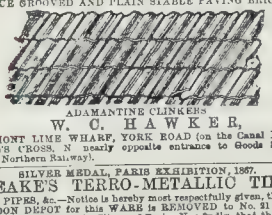
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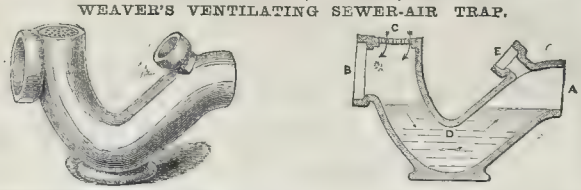


Are superior to all others are Square-cornered, like Slate; are perfect in lap; also in bonding one another by break-joint.
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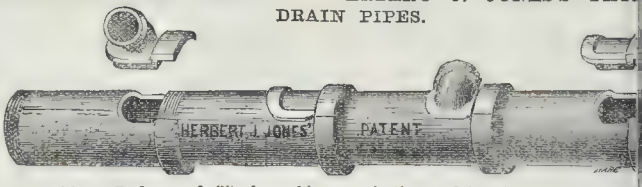


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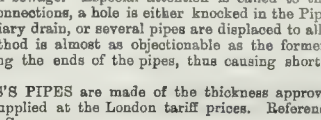
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Phillips's Improved Access Pipe and Vitreous Invert Bricks.



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SUPERIOR GLAZED STONEWARE DRAIN PIPES.

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This Joint is absolutely Water-tight. Needs no skilled labour in fixing.

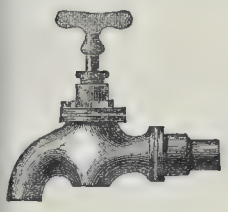
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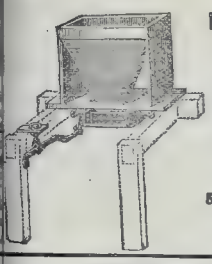
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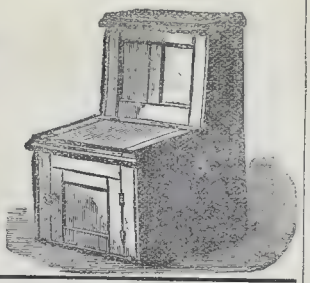
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APPLY TO

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COMMODE, No. 10.



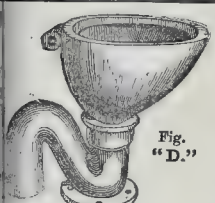


Fig. "D."

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Cottage Pan and Trap at 4s. 6d. (as Illustration)

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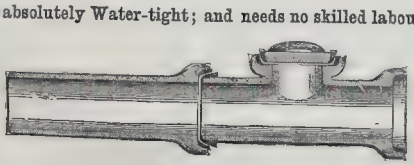
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And every description of

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MANUFACTURED BY

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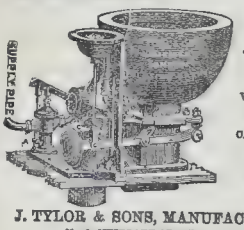
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PATENT REGULATOR VALVE CLOSET,

WITH FULL-SIZE BASIN TRAPPED ABOVE FLOOR LEVEL WITH AFTER-FLUSH.



PATENT "WASTE NOT" VALVE, WHICH CLOSES OF ITSELF, CAN BE FITTED TO THIS CLOSET.

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PAVING COMPANY (Limited).—Awarded the only Medal for Rock Asphalt at Philadelphia. Now being laid at Messrs. Gibbs's Warehouse, Chalk Farm road (3,200 superficial yards), Southbrook Manor Park, Newstead road, and Alsion gardens, &c

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Also FLINTS and CHALK.

Delivered anywhere on the Thames by arrangement at 2s. per ton for Gravel, f.o.b.

Apply to Mr. JUPP, Stone, near Dartford.

SALES BY AUCTION.

LAMBETH-WALK. Contract Cart-Horses Carts and Harness, which have been employed by Messrs Mowlem, Burt & Freeman, on the works of the Holborn Viaduct.

MR. KYMILL will SELL by AUCTION, at No 5, NEWPORT STREET, Lambeth-walk, on THURSDAY next, 20th SEPTEMBER, at TWELVE o'clock, by order of Mr. Henry Clarkson, THIRTY useful young English CART and VAN HORSES, 9½ one horse brick carts, nearly new; pair horse and single vans, 30 sets thill and chain harness, brown pony, cart and harness, chaff machines, utensils, &c.—On view day prior. Catalogues of the Auctioneer, Repository, Barbican, E.C.

BARBICAN REPOSITORY.—English Cart-Horses, the property of Mr. F. Wiggins, of Wharf road, King's cross.

MR. KYMILL will SELL by AUCTION, at BARBICAN, on FRIDAY next, SEPTEMBER 21st, THIRTY English CART-HORSES, with size and power, nearly all six or seven years old. Have been regularly employed under contract with the principal London brewers and distillers.—On view two days.

CLAPHAM.—By order of the School Board for London

MR. DOUGLAS YOUNG will SELL by AUCTION, on the PREMISES, on TUESDAY, SEPTEMBER 18th inst. at TWELVE, Noon, the MATERIALS of EIGHT HOUSES, corner of Lyham road and Windmill street, Leat's road, S.W. —comprising capital bricks and usual materials. View morning of sale. Catalogues at the Board's Offices, Embankment, W.C.; and of the Auctioneer, 212a, Clapham road, S.W.

DEPTFORD. Nearly-new MATERIALS of Five Houses, Nos. 1 to 5, Rudstreet, Tanners hill.

MR. DOUGLAS YOUNG will SELL by AUCTION on the PREMISES, as above, on FRIDAY, SEPTEMBER 21st, inst. at TWELVE o'clock, by order of the School Board for London, the Capital MATERIALS: including sound bricks, board, and timber floors, new timber; very excellent sashes, doors, and frames, and fittings, stones, stone paving, sills and st pantiles, metal, and other materials. View day before. Catalogues in the course, at the School Board Offices; and of the Auctioneer, 212a, Clapham-road, S.W.

KENTISH TOWN.—To Builders, Cabinet Makers, and Others.

MESSRS. LEREW & RANDALL will SELL by AUCTION, on the PREMISES, Junction-road, near Bull and Gate, on MONDAY, SEPTEMBER 17, at ONE for TWO, the surplus STOCK of TIMBER, comprising 7,000 feet of Spanish and Honduras Mahogany planks and Battens, 7,000 feet mixed flooring, 3,000 feet wide pine, 80 square 3-inch flooring, garden palings, slating battens, dry cut stuff, joists, rafters, doors, old materials, &c. Also a useful cart-horse.—Auction Offices, Cardington-street, Hampstead-road, N.W.

STREATHAM, Surrey.—The beautiful Freehold Estate, distinguished as Woodlands, one of the most charming residential properties to be found within the same distance of London, situate on the verge of Tooting common nearly opposite the church, about ten minutes' walk from the Streatham-hill and Streatham Railway Stations and only six miles by road from the City and West-end. It comprises a gentlemanly residence in thorough substantial and decorative repair, approached by a broad carriage-drive and entrance-lodge. Detached capital stabling for four horses, with double coach-house and small loose box, or two-stall pony stable, harness room, with two men-servants' rooms and lofts over, &c. A beautiful shrubbery walk, exceptionally pretty pleasure-grounds handsomely timbered, lawn tennis ground, conservatory, greenhouse, kitchen garden, compact farmery, two cottages and gardens, and rich pasture meadow land, comprising altogether about 29 acres, with possession. The great value of this estate, in addition to its residential attractions, is its facility for profitable building operations. It occupies a frontage of 950 feet to the road, with three separate approaches from Mitcham lane, and by the formation of new roads through the land many hundred feet of valuable frontages would be secured, with direct communication with Tooting common, and this without materially interfering with the enjoyment of Wood Lands house and grounds.

MESSRS. NORTON, TRIST, WATNEY, & CO are instructed to OFFER the above ESTATE for SALE at the MART, on FRIDAY, OCTOBER 19, at TWO o'clock precisely. To be viewed by cards only. Particulars, with plans, may shortly be had of ALFRED LESLIE, Esq., Solicitor, 34, Lincoln's-inn-fields, W.C.; E. BODMAN, Esq. Solicitor, 123, Cannon-street; Mr. GEO. GOULD-SMITH, Estate Agent and Surveyor, 7, Pont-street, Belgrave square, at the Mart; and of the Auctioneers, 62, Old Broad-street, Royal Exchange, E.C.

CHELSEA.—The remaining Plant of a Builder and Contractor, in consequence of the lease having expired

COOPER & GOULDING will SELL by AUCTION upon the PREMISES, No. 79, Pavilion road, Sloane-street, on TUESDAY, SEPTEMBER 18, at ONE punctually, PLANT, STOCK, and MATERIALS: comprising 1,500 feet of yellow pine, yellow and white deals, floorboards, moulding, mahogany offfittings, copper bath and miscellaneous items. View morning of Sale. Catalogues of the Auctioneers, Ethelburga House, 70 & 71, Bishopsgate street Within E.C.

CLAPHAM. To Builders, Contractors and Others.—In consequence of the business having been discontinued

COOPER & GOULDING will SELL by AUCTION, upon the PREMISES, Mr. Wright's Yard, Parkcrescent, Clapham Park, on THURSDAY, SEPTEMBER 20, at TWELVE precisely, the remaining PLANT STOCK, and MATERIALS, including about seventy new sashes, new doors, bay-windows with shutters, sashes and frames, flooring and lining, new cucumber-frames, and a variety of materials; also lifting jacks, 6-cwt. timber-carriage and casks, van carts, harness, &c.—View morning of Sale. Catalogues of the Auctioneers, Ethelburga House, 70 & 71, Bishopsgate street, E.C.

The De Lank Granite Quarries for Sale.—In the High Court of Justice, Chancery Division.—Bolitho v. Harrison, 1877, B. 144.—TO BE SOLD BY AUCTION, on SATURDAY, the 29th SEPTEMBER 1877, at FOUR o'clock in the afternoon in One Lot, at the ROYAL HOTEL, Bodmin, by

MR. WILLIAM PHILP (the person appointed for that purpose), pursuant to an order of the Vice-Chancellor, Sir Richard Malins, the judge to whose Court the above action is attached, the valuable estate and interest of the Trustees in the valuable and extensive GRANITE QUARRIES distinguished as the De Lank Quarries, in the parishes of St Breward and Blisland, in the county of Cornwall, about nine miles from the Bodmin and Wadebridge Railway, and about 14 miles from the Bodmin and Wadebridge Railway, held under certain indentures of lease for terms of years, granted by Mr. Charles Goodyear, and by whom the quarries have been partially developed and worked. The reputation of this granite stands high in the estimation of contractors and builders, and large quantities have been supplied for the Thames Embankment and other large contracts. The quarries are well situated for working, and the deposits of granite appear to be inexhaustible. The cranes and other machinery, plant, and fixtures (a schedule of which will be placed at the sale), are to be taken at a valuation, as provided in the Conditions of Sale.—Particulars and conditions of Sale may be obtained (gratis) at the place of Sale; of Mr. JOHN BASSET COLLINS, Solicitor, Bodmin; of the following Solicitors in London,—namely, Messrs. COODE, KINGDON, & COTTON, 7, Bedford-row; Messrs. WALTERS & GUSH, 3, Finsbury-circus; Mr. E. A. DAY, 12, Regent-street, Piccadilly; and Mr. W. F. PHILP, 30, Budge-row, Cannon-street; and of the Auctioneer, at Bodmin and St. Austell.

To Builders also Contractors.—Old, but commodious Brick and Timber Premises, opposite the Windmill Tavern and Toll-Bar, Crescent-land, by direction of Messrs. G Myers & Son, the valuable surplus BUILDING MATERIALS and PLANT, comprising 1,200 scaffold-poles, 800 scaffold-boards, a large quantity of scaffold-cords and pullies, blocks, chains, and tackle, iron trussells and gear, lifts, three crab winches, two wagons, spring van, four carts, eight large ladders, two stone trucks, timber carriage and chains, seasoned mahogany and pitch-pine boards, deals and battens, stone sinks, steps and blocks, drain pipes, slate cistern, 14,000 new bricks, carpenters benches, a 5 feet nearly new kitchener, portable forge, old greenhouse and a quantity of other materials, which will be SOLD by AUCTION, by

MR. LUCKHURST, on the PREMISES, on WEDNESDAY, SEPTEMBER 19, 1877, at ONE o'clock, precisely.—May be viewed the day previous, and catalogues had at the Auctioneer's Offices, 19a, High-street, Clapham, S.W.

To Builders, Contractors, and Others.

MESSRS. HORNE, EVERSFIELD, & CO. are instructed to SELL by AUCTION, on the PREMISES, Henry-street, Gray's-inn-road, on TUESDAY, SEPTEMBER 25th, at ELEVEN, without reserve (by order of the mortgagee, relinquishing the premises), the valuable MACHINERY, PLANT, and STOCK: comprising a capital nearly new 12-horse power portable steam-engine, by Fowle & Co.; an 8-horse power ditto, by Clayton & Shuttleworth; circular saw-benches, a band saw-bench, two band mortising machines, two underneath motion mortar-mills, circular and bandsaws, dressing tools, grindstones, weighing machines, 11 carpenters' benches, a large quantity of scaffolding, ladders, steps, trestels, tools, screw-jacks, floor dogs, gin-wheels, pumps, crabs, blocks, iron girders, load, tiles, bricks, the contents of painters', plumbers', and smiths' shops and ironmongery store, dry deal and boards, pine planks, 30 new four panelled 1 doors, cut stuff, useful stone, two string cart horses dog-cart, phaeton, two builder's spring-carts, a ditto van, a timber-carriage, trucks, harness, stable utensils, and a large quantity of useful materials; also a few lots of office furniture.—May be viewed the day previous. Catalogues had on the Premises, and of HORNE, EVERSFIELD, & CO. 80, Fore-street, E.C.; and 17, Great George-street, S.W.

KENSINGTON.—Building Materials of the Vicarage.

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, on the PREMISES, during the month the Valuable BUILDING MATERIALS of the Lodge and premises known as the Vicarage, Church-street, Kensington, comprising a large quantity of capital bricks, tiles, slates, rafters, joists, girders, floor boards, pine doors, and other sashes, doors, mantels and other chimney-pieces (some with carved wood dressings), lead gutters, cisterns and pipes, stone paving, coping and cills, stoves, ranges, folding coach-house and other gates, a large horse-chestnut tree, and numerous other fixtures and fittings up. May be viewed the day previous. Catalogues had on the Premises; and of Horne, Eversfield, & Co. 80, Fore-street, E.C., and 17, Great George-street, S.W.

V R

MR. SPILLMAN, of Bell-yard, Temple-bar, W.C. will SELL by PUBLIC AUCTION, at the ROYAL ARSENAL, Woolwich, by order of the Secretary of State for War, on TUESDAY, 25th SEPTEMBER, 1877, at ELEVEN o'clock in the Forenoon, precisely, the following:—

Clothing,	Gutta Percha,
Ashes (Lead, and Founders'),	Canteens (Wood),
Iron (Old Scrap),	Paper Cuttings,
Flies (Old),	Harness,
Pouches,	Linen (Old),
Junk,	Harness (Old),
Old Canvas,	Leather (Old),
Belts,	Old Blankets, Rugs, and
Serge Cuttings,	Sheets,
Waterproof Covers,	Wagons and Carts,
Steel (Old),	Wheels,
Bedsteads (Iron),	Wood Staves, &c.
Railbrooks,	

The Lots may be viewed at the Royal Arsenal, Woolwich, from Ten to One o'clock, and from Two to Five o'clock, on the Thursday, Friday, and Monday previous to and on the morning of the Day of Sale, and catalogues may be obtained at the Way Office, Pall-mall; at the Tower; and at the Ordnance Office, Royal Arsenal, Woolwich.

FOR SALE by PUBLIC AUCTION, in the SALE-ROOM, at G. M. BARNES & KING'S TIMBER YARD, Cannon's Marsh, Bristol, on WEDNESDAY, SEPTEMBER 19, 1877, at ONE o'clock precisely.

Luncheon at Half-past Twelve o'clock.

Per Accurate of Importers

10,000 Unassorted Archibuc's Spruce Deals and Battens
5,000 Unassorted selected Finland Spruce Deals and Battens
1,000 Quebec Pine Deals and Battens
10,000 Petersburg Redwood Deals and Battens
2,000 Selected Redwood Deals and Battens
3,000 Hudiksvall Redwood Deals
5,000 St Petersburg Red and Whitewood Deals and Battens
3,000 Memel Redwood Deals
2,000 feet Redwood Planks
600 1st Wyburg Redwood Battens
800 Patent Pine Deals and Planks
1,000 Logs Pitch Pine
50 Logs Hewn Pitch Pine
200 Logs Quebec Red and Fir
100 Logs Stettin Hewn Oak
100 Logs Pensacola Hewn Oak
15 Logs American Walnut and Walnut Oak
5 Logs Dantzic Oak (large dimensions)
4,000 Redwood Boards (grooved for iron)
2,000 Memel Planed Fillets
20,000 Redwood, Whitewood Prepared Flooring Boards
With other Goods.

For catalogues apply to
G. M. BARNES & KING, Brokers.

To Architects, Builders, and Others

MR. JAMES POUSTY has received instructions from Messrs Mosley Brothers to SELL by AUCTION, on the Premises, 6, CARLS-STREET, Chelsea, on TUESDAY, SEPTEMBER 18th, on account of removal to more extensive Premises, their Manufactured Stock of CHIMNEY-PIECES, in British and Foreign Marbles. Also about 30 Slabs, Bilton Tiles, and sundry lots of Marble.—Catalogues on the Premises; and of the Auctioneer, No. 97, Fleet-street.

FOREST GATE. Seven-ish Sale of Freehold Building Land, five minutes' walk from the station, way to and on.

MESSRS. PHILIP D. TUCKETT & CO. are instructed by John Gurney, Esq., to SELL by AUCTION, at the SWAN HOTEL, Stratford, on THURSDAY, OCTOBER 4, at SIX o'clock, in 66 lots, a further portion of very eligible FREEHOLD LAND with long frontages, varying from 50 feet to 100 feet to Nora road, and to the new roads, 5 feet wide, and 60 feet to 80 feet wide, and 2 feet 6 inches to 3 feet to the road, where a smaller class of house may be erected. The position is the best in the neighbourhood, being near the new public park at Wood Ham, between Ma'shal Point and Forest Gate Railway Stations, about three-quarters of a mile from Stratford, five miles from the City, and where additional villa residences are greatly needed to meet the demand. Free conveyance, and payment by half-yearly instalments extending over ten years. Particulars of Messrs YOUNG, JONES, ROBERTS, & HALE, Solicitors, No. 2, St. Mildred-court, E.C.; or of Messrs PHILIP D. TUCKETT & CO. Land Agents, Surveyors, &c. 10a, Old Broad-street, E.C.

HOLBORN-BARS.—Important Builders' Sale

MR. EDWIN J. WHITE will SELL by AUCTION, at the BUILDERS' SUPPLY STORES, 145, Holborn-bars, on TUESDAY next, SEPTEMBER 18 in at ONE for TWO o'clock punctually an extensive assortment of BUILDERS' GOODS, comprising 60 pairs of mahogany and polished pine doors, 40 white and coloured marble and enamelled slate chimney pieces, 11 ton best Scotch glue, 3½ tons screws and iron, nearly 40 gallons of London and Oxford paints, 20 rolls of floor cloth, &c. View and catalogues Monday and morning of Sale.

THE BUILDERS' SUPPLY STORES, 145, HOLBORN-BARS, City, established 20 years. Show-rooms for White and Coloured Marble and Enamelled Slate Chimney-pieces, French and English Paper-hangings, Ceiling Centre Flowers and numerous other items for House Furnishing and Decorative Price Lists free. EDWIN J. WHITE, Manager.

TO BE LET, at East Greenwich, with immediate possession, valuable and important BUSINESS PREMISES, covering an area of about three acres, longest river frontage, with two jetties, suitable for laying either ships or barges at any depth. The buildings are very large and substantially built. There are seven 30-in. chimney shafts and four boilers of about 50 h.p. already fixed. Also some machine tools, &c. The offices are commodious, and have just been entirely renovated and decorated throughout.—For full particulars, plans, &c. apply to T. LAWRIE, architect, 4, Queen-street-place, Cannon street, London.

ELTHAM, KENT.—TO BE SOLD, a very desirable DETACHED RESIDENCE standing in about ¼ acre of ground, and approached by a sweeping carriage drive with two entrances. The house contains four reception-rooms, eight bedrooms, billiard-rooms, and spacious offices, a conservatory, greenhouse, vinery, paving 5s. &c. Held on lease direct from the Crown for ninety years, at a very low ground-rent.—Apply, H. P. FOSTER, No. 5, John street, Adelphi, London.

BUILDING LAND TO BE LET.—
At WEST HILL, Sydenham, for Detached Villas, to cost n
less than 1,000l each
At RUSHEY GREEN, Catford, for Detached Villas, cost not le
than 1,000l close to station.
At CATFORD BRIDGE, for small Villas, with Advances.
At UPPER TOOTING and WANDSWORTH COMMON, f
Detached Villas, with Advances.
At EDMONTON, for Cottages. Advances at the rate of 100l. p
house.
At STAMFORD HILL, for Cottages. Advances at the rate of 10
per house.

Apply to F. S. BERRETON, Architect and Surveyor,
No. 36, Lincoln's-inn-fields.

BUILDING LAND.—TO BE LET several PLOTS, close to a station and within 15 minutes of Lo don Bridge. The houses let immediately they are finished. Advan made if required.—Apply Messrs. HALL & SON, 14, Bell-yard, W.C.

BUILDING ESTATE, STREATHAM.—
TO BE SOLD, on advantageous terms, 120 Acres of FRE HOLD LAND, admirably situated, and having a great depth of bui earth.—Messrs. HARVEY & DAVIDS, 126, Bishopsgate-street Cornhill.

CAPITAL BUILDING LAND, at Tooting
TO BE LET, at 2s. 6d. per foot. All the adjoining houses a let.—TUNLEY & BOYLE, 14, Clement's lane, Lombard street, E.C.

VALUABLE FREEHOLD BUILDIN
LAND TO BE LET, for building purposes, on the Prio Estate, Bedford hill-road, Balham, with splendid frontages, in eve way adapted for first-class Villa Residences. Moderate ground-re to good builders.—Apply to R. CARTER & CO. Auctioneers, Leigham-terrace, Balham, S.W.

TO BUILDERS and OTHERS.—LOWE
PLACE FARM, Acton, and STONEBRIDGE FARM, Willesden, TO BE LET, in sections varying from 10 acres to one-quarter an acre, or less, if required, for building purposes. Quite in the country, and within a quarter's walk of Acton and Willesden Junction Stations, from whence hundreds of trains run dail to all parts of London—Broad-street, City, in thirty-two minute Mansion House, thirty-five minutes, Temple, thirty minutes. Fi particulars of PHILIP WILKINSON, Esq. Surveyor, 151, Edgwar road, Hyde Park, W.; and of Messrs. BOLTON, ROBBINS, & BUS No. 1, Lincoln's-inn.

BUILDING SITES, KINGSWEAR, a
the mouth of the Dart, opposite Dartmouth.—TO BE LET, long Leases, or SOLD upon advantageous terms, beautiful BUILDING SITES, for large and small houses, commanding magnificent views of the river Dart and open sea. Railway station and pi within a few minutes' walk. Advances made on the buildings, if desired. Building stone on the property. Water supply from public works. Kingswear is the headquarters of the Royal Dart Yac Club.—For further particulars, apply to E. APPLETON, Architect Kingswear, Dartmouth, South Devon.

FREEHOLD BUILDING LAND, Green
wich, TO BE SOLD, particularly adapted for the erection artisans' dwellings or any business requiring space. Superficial ar about 14,500 feet.—Apply to Messrs. SHALLESS & BUDDS, London-street, Greenwich.

FREEHOLD BUILDING LAND, Prior
Estate, Bromley-road, Lewisham, seven minutes' walk fro Catford Bridge Railway Station.—TO BE LET, on 99 years' lea Moderate ground-rent, and advances as works proceed if required. For all particulars apply personally, or by letter, to Estate Offi as above

WEST HAM.—FREEHOLD BUILDIN
LAND.—TO BE LET or SOLD, about 8½ acres, with lo frontages to Stephens and Manor roads, opposite the Leathercl Works, and 5 minutes' walk from the Plaistow and Stratford Bri Railway-stations.—Apply to Mr. V. BUCKLAND, Surveyor, No. Cannon-street, City.

SOUTH PARK, Wimbledon, adjoining th
L.B. Railway Station.—FREEHOLD BUILDING LAND TO LET or SOLD. Advances made if required. Planning purposes. Particulars apply to Mr. PEPPERMAN, 23, Cannon-line, W.C.

HOLLOWAY ROAD.—BUILDIN
LAND, on the Poynder and Mercers' Estate, TO BE LET, largest or small lots on ninety years' lease. Land fully ripe, and almost rounded with completed property. Approached by Mercers' ro Two stock terraces, and other houses and eligibly placed as to con munication for the purchasers of 467 & 1,000 value. Advances required.—Apply to the Surveyors, Messrs. WAYMOUTH & SON, Moorgate street; and Messrs COOPER & GOULDING, Ethelburg House, 70 and 71, Bishopsgate street Within, E.C.

CAMBRIDGE.—To BUILDERS, COACH
BUILDERS, TIMBER MERCHANTS, and OTHERS. TO BE SOLD the extensive MANUFACTURING PREMISES, SAW MILLS, with PLANT. Also two useful freehold sawing & planing carriage buildings in working order, with immediate possession entire or in lots. Apply to the Railway station.—Apply to H. W. 9, Regent-street, Cambridge.

TO CEMENT MANUFACTURERS
CAPITAL SITE, and PUBLIC COMPANIES, wanting five Ac of CEMENT-MILLS have been erected in Essex with canal, wate carriage of London, affording the best possible site for erecting lar CEMENT WORKS in the most economical manner.—For full pa ticulars, apply to E. SALTER, Esq. as the Surveyor, 87, Queen street London, E.C.

EXTENSIVE PREMISES (near the City
suitable for stabling timber yard, builder's yard, or any bus ness requiring space, TO BE LET on LEASE.—Apply to Messrs FULLER, HORSEY, SON, & CO. 11, Billiter-square, E.C.

ON THE THAMES, BANKSIDE, ne
SOUTHWARK BRIDGE. TO BE LET, on a Building Lease a valuable FREEHOLD ESTATE, having an area of about 3,600 square fe and a frontage to the Thames of 47 feet. For further particulars apply to Messrs. FULLER, HORSEY, SON, & CO. 11, Billiter-square, E.C.

ROTHERHITHE, on the Thames.—TO BE
LET on Lease, the extensive Wharves and PREMISES, known as FRIARY WHARF, Rotherhithe—for many years in the occupation of Messrs. R. B. Bates & Co. having a frontage of 220 feet to the river Thames, with an average depth of about 125 feet, and a total area upwards of half an acre, on which have been erected spacious and large recently-repaired timber sheds, stabling, and all requisite buildings for the business. Also to be Let, on a Building Lease direct from the Freeholder, the extensive FREEHOLD LAND lately occupied with the Thames Plate Glass Company, situate at Orchard place, Blackwall, London, comprising an area of about 5 acres, on a promontory extending into Bow Creek, close to the River Thames, and having a waterside frontage of about 1,500 feet, adapted for the erection of premises or jetties where ships could lay afloat in safety.—Messrs FULLER, HORSEY, SON, & CO. 11, Billiter-square, London, E.C.

BLACKWALL.—TO BE LET or SOLD
as a whole or in portions, or on a Building Lease direct from the Freeholder, the extensive FREEHOLD LAND lately occupied with the Thames Plate Glass Company, situate at Orchard place, Blackwall, London, comprising an area of about 5 acres, on a promontory extending into Bow Creek, close to the River Thames, and having a waterside frontage of about 1,500 feet, adapted for the erection of premises or jetties where ships could lay afloat in safety.—Messrs FULLER, HORSEY, SON, & CO. 11, Billiter-square, London, E.C.

[See also p. 911

London: Printed by CHARLES WYMAN, Printer, at the Printing-office of WYMAN & SONS, Nos. 74 and 75 Great Queen street, Lincoln's-inn-fields, in the Parish of St. Giles-in-the-fields; and Published by Direction for Proprietors, at the Office of "THE BUILDER," 46, CATHERINE-STREET, in the Parish of St. Paul, Covent-garden—both in the county of Middlesex.—Saturday, September 15th, 1877.

The Builder.

AN ILLUSTRATED JOURNAL FOR THE Architect, Engineer, Operative & Artist.

Vol. XXXV. No. 1807. SEPTEMBER 22, 1877. PRICE FOURPENCE. By Post, 4½d.

REGISTERED AT THE GENERAL POST OFFICE AS A NEWSPAPER.

ROYAL ARCHITECTURAL MUSEUM, WESTMINSTER.—The newly-formed "SKETCHING CLUB" will commence its duties on MONDAY, OCTOBER 1st, and the names of intending Members should be sent at once to the Curator, from whom particulars can be obtained. The School of Art will also re-open on OCTOBER 1st, with the Art-Workmen's Class. The Ladies' Class and the Men's Life Class will recommence on the following SATURDAY, OCTOBER 6th.

JOSEPH CLARKE, CHARLES R. ADAMS, } Hon. Secs.
No. 13, Tufton-street, Westminster, S.W.
September 20th, 1877.

PATENTS for INVENTIONS. — Provisional Protection confers immediate security, with the power to manufacture and sell for six months, at a total cost of 5l 8s. Complete information for Inventors, and plans of 100 Mechanical Movements, with key, gratis. Foreign and Colonial Patents obtained on moderate terms.—Mr CLARK, Patent Office, 53, Chancery lane, London.

PATENTS for INVENTIONS.—The Office for obtaining Patents, 21, Cockspur street, Charing cross, London, supplies gratis, on application, a HANDBOOK for the GUIDANCE of INVENTORS, to enable them to securely obtain through their office, Home, Colonial, and Foreign Patents at fixed and moderate charges.—Address, Mr J. MORGAN, as above.

PHOTO-LITHOGRAPHY.—Architects' Drawings Photo-Lithographed from one sixth to one-third the cost of Drawing on Stone, by WHITEMAN & BASS, Photo-Lithographers to the Queen, 236, High Holborn.
Manufacturers' Catalogues.

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All work executed in the most finished manner, at reasonable prices.

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W. L. CROSBY'S Old established Warehouse,
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Patterns forwarded in Town or country.

MUSEUM of DECORATIVE ART,
Hallam street West, Belgrave-square, S.W.
Liverpool Branch 2, Minster-buildings, Church-street.
Messrs. TROLLOPE & SONS have engaged the executive services of the artist who has executed works in
SGRAFFITO
South Kensington and elsewhere, and are prepared to undertake this beautiful branch of art for the external or internal Decorations of either Mediæval or Classic buildings.
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Messrs. TROLLOPE & SONS have made special arrangements for a quick supply of material for the above, and have a large staff of Italian workmen for laying the same.
MEXICAN ONYX.
Messrs. TROLLOPE & SONS having secured all the large blocks imported into Europe, beg to call the attention of Architects and others to this very beautiful material, and its applicability for Columns, Pilasters, Pedestals, Balusters, Panels for Wall-linings, &c.

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Messrs. TROLLOPE & SONS have accepted the Agency of the largest and best manufacturer of Parquetry on the Continent. The specimens will be found very superior to those in ordinary use, not only in artistic design, but in quality of wood and workmanship.
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Messrs. TROLLOPE & SONS are Sole Agents for the principal manufacturers in Italy and the South of France, and have a large variety of samples of these artistic and cheap productions.
The Museum contains specimens of all the above; also Chimney-pieces in all styles, and other varieties of Marble Work for Decorative purposes. Constructive Woodwork, Ancient and Modern Tiles covering of real wood in lieu of painting and paperhanging Xylochromography, or the Stained Wood process, Carpets, Tapestries, Embroideries. Ancient and Modern Furniture in Queen Anne and other styles, and all kinds of Architectural [illegible]
G. T. ROBINSON, Art Director.

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MANUFACTURERS of STONEWARE, of every description including the new
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CAULDON PLACE and ROYAL VICTORIA WORKS, STAFFORDSHIRE POTTERIES,
Manufacturers of China and Earthenware, are now prepared to supply the above, of VARIOUS PATTERNS, DESIGNS, and COLOURS, for FLOORS, MURAL DECORATIONS, STOVES, FIREPLACES, HALLS, BATHS, WASHHOUSES, FLOWER STANDS, and other useful and ornamental purposes.
Also superior LETTERS for STREET NOMENCLATURE, RAILWAY STATIONS, and PUBLIC PLACES.
By a new patented process they are enabled to produce these Tiles in greater variety of effects, and with more regard to economy than has hitherto been practicable.
Prices, designs, and all useful information may be obtained by applying direct to the
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STAINED-GLASS WINDOWS.
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See also Advertisement on front page last week.

J. & H. REDFERN, Manufacturers of PATENT HOT AIR WARMING APPARATUS, protected by Her Majesty's Letters Patent, for Churches, Chapels, Public Buildings, &c. Estimates, &c. given on application to Messrs. REDFERN, Nos. 22 and 24, Clarence street, Dudley Staffordshire.

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"They exhibit a clear gain of 30 to 40 per cent."—Mechanics' Mag.
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Mansfield Chambers, St. Ann's square, Manchester.

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Manufactured in Glazed Earthenware solely by
THE FARNLEY IRON COMPANY (Limited), near Leeds.

COMPETITIONS.

TO ARCHITECTS.—WANTED by the Corporation of Swansea, ELEVATIONS for JUDGES' RESIDENCE. Copies of the plans of the several floors and proposed site, together with instructions and conditions, can be obtained on application to Mr. EDWARD COUSENS, Borough Engineer, Guildhall, Swansea. A premium of 50l is offered for the Elevation that is accepted and adopted by the Council.

JNO. THOMAS, Town Clerk.
Guildhall, Swansea, 23rd August, 1877.

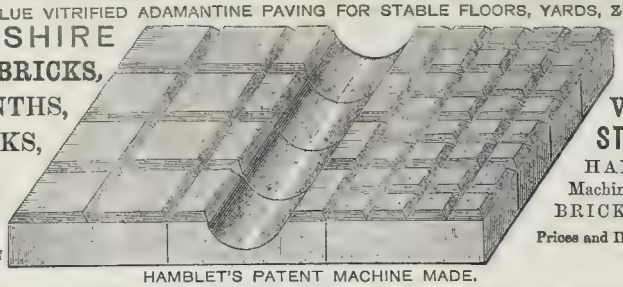
BOROUGH of STAFFORD.—COVERED MARKET EXTENSIONS.—The Town Council invite DESIGNS for the ERECTION of BUTCHERS' MARKET, &c. Printed instructions and lithographed plans of the site may be obtained on application to the Borough Surveyor. Premiums of 75l will be paid for the best set of Plans, and 25l. for the Second best. All plans to be sent in on or before the 15th day of OCTOBER next. By order,
Guildhall, Stafford, September 4th, 1877 CHARLES CLARKSON, Town Clerk.

BOROUGH of BOLTON.—The Council of the Borough of Bolton invite DESIGNS for a MUSEUM to be erected in Bolton Park.
Plans and sections of the site, with further particulars, may be had from the Borough Surveyor, Town hall, Bolton, on payment of 5s. which sum will be returned after receipt of Design
For the best Design, in the opinion of the Council a premium of 50l will be offered, and for the second best 25l. but no payment will be made for any other Design.
Designs under seal, without signature, but with a motto or device, and a letter (also under seal) containing the correspondig motto or device and the designer's name and address, must be sent to the undersigned on or before the 29th day of OCTOBER next.
By order,
R. G. HINNELL, Town Clerk.
Town-hall, Bolton, 17th August, 1877.

[Contracts see next page.

BLUE VITRIFIED ADAMANTINE PAVING FOR STABLE FLOORS, YARDS, &c.

STAFFORDSHIRE
Vitrified BLUE BRICKS,
COPINGS, PLINTHS,
STABLE BRICKS,
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Terra-Metallic
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OF EVERY DESCRIPTION



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HAMBLET,
West Bromwich,
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Machine-made BRINDLED
BRICKS now largely used.
Prices and Illustrated Book of Designs
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THROUGH THE WIDE-SPREAD REPUTATION WHICH THESE GOODS HAVE GAINED, many Makers have been induced to send into the London and other markets Spurious Imitations, which are only Coloured by a chemical process, and will not bear any comparison, for Strength, Durability, &c., with the Genuine Article.

CONTRACTS.

WAR DEPARTMENT CONTRACTS.—To BUILDERS and CONTRACTORS.—Triennial Contracts. Northern District.

TENDERS are required for the performance of such WORKS and REPAIRS and for the SUPPLY of such BUILDING MATERIALS as may be required to War Department buildings and property at the undermentioned station, from the 1st of November, 1877, to the 31st of March, 1880:—Wrexham.

Persons wishing to Tender for the above Station may obtain forms of Tender and schedules of prices on application at the Royal Engineer Office, Manchester, up to OCTOBER 11th, 1877.

The contract will embrace bricklayers', masons', paviors', carpenters', plasterers', plumbers', slaters', smiths', painters', and gasfitters' work.

A sum of 18s. 6d. will be charged for the schedules, or the schedules of prices can be seen at the Barrack Sergeant's Office, Liverpool and Wrexham, or at the Royal Engineer Office, Chester. Post Office Orders to be made payable to R. Polkinghorne, Chief Clerk, R.E. at the Chester road Post-office, Manchester.

Candidates are requested to send testimonials of competency with their applications.

Tenders to be delivered at the War Office, London, on or before OCTOBER 19th, 1877.

The Secretary of State for War reserves the right of rejecting any or all of the Tenders

Royal Engineer Office, 12, Princess street, Cornbrook, Manchester, September 12th, 1877.

TO BUILDERS. — The Commissioners of her Majesty's Works and Public Buildings are prepared to receive TENDERS for the ERECTION of NEW OFFICES, in Queen Victoria-street, for the Post-office Savings Bank Department.

Persons desirous of tendering must apply at Her Majesty's Office of Works, between the hours of ELEVEN and FOUR p.m., where the drawings, specification and a copy of the form of contract can be seen, and where bills of quantities and a form of Tender can be obtained on payment of £2 2s. on and after the 20th instant.

The Tenders are to be delivered before TWELVE o'clock on TUESDAY, the 2nd of OCTOBER next, addressed to the Secretary, Her Majesty's Office of Works, No. 1, Whitehall-place, S.W., and must be endorsed "Tender for Post-office Savings-Bank Offices."

The Commissioners to not bind themselves to accept the lowest or any Tender A. B. MYDDOMD, Secretary.

Her Majesty's Office of Works, September 6, 1877.

TO BUILDERS.—Trinity House, London, E.C September 13th, 1877. This Corporation being desirous of receiving TENDERS for the ERECTION of a LIGHTHOUSE, Foghignal House, Dwellings, outbuildings and other Works, at Bull Point, near Ilfracombe, in the county of Devon, hereby give notice that the plans may be inspected, and forms of Tender, specifications obtained on application at the Store Department at this House, or to the Chief Coastguard Boatman at Morte, near Ilfracombe on any day between the hours of TEN and FOUR p.m. Tenders, sealed, and marked outside "Tender for Bull Point Lighthouse," must be addressed to the Secretary, and delivered at this House, or before NOON of OCTOBER next; and no Tender will be entertained that is not made on the form provided. The Corporation does not pledge itself to accept the lowest Tender. By order

ROBIN ALLEN, Secretary.

TO BUILDERS.—EALING, W.—Persons desirous of submitting TENDERS for the ERECTION of a large new SHOP, together with STABLING, OFFICES and PREMISES, situate near the Railway Station, Ealing, W., may see the plans and specification on application at the Post-office, Ealing.

The lowest or any other Tender will not necessarily be accepted.

Ealing, September 13th, 1877.

TO BUILDERS.—TENDERS are invited for the ERECTION and COMPLETION of a NEW BUILDING at the Pale Ale BREWERY, Maidstone, for Messrs. Fremlin, Brothers. The plans and specification may be seen at the Brewery on Tuesday, THURSDAY, SEPTEMBER 20th, 1877, and a copy of bills of quantities obtained on payment of one guinea, which will be returned on receipt of a bond fide Tender. The Tenders are to be delivered not later than TEN o'clock on THURSDAY MORNING, SEPTEMBER 27th. The Proprietors do not bind themselves to accept the lowest or any Tender

Pale Ale Brewery, Maidstone, 6th September, 1877.

TO BUILDERS.—The West Ham Local Board hereby invite TENDERS for the ERECTION of an ENGINE-HOUSE for PUMPING Station, Canning Town. The plans may be inspected, and further particulars obtained on application to Mr. LEWIS ANGELL, C.E. Town-hall, Stratford, on and after MONDAY, SEPTEMBER 24th, 1877. The Board do not bind themselves to accept the lowest or any Tender Sureties will be required for the due performance of the contract. Tenders, endorsed "Tender for Engine-House," to be delivered not later than THREE o'clock on TUESDAY, OCTOBER 9th, 1877. By order of the Board, FRED E. HILLEARY, Clerk.

Town-hall, Stratford, E. September 17, 1877.

TO BUILDERS.—The Chepstow School Board are prepared to receive TENDERS for ERECTION of SCHOOL-HOUSES in Chepstow. Plan and specification and drafts of contract to be entered into, may be seen at the School Board office, Beaufort-square, Chepstow, between the hours of TEN a.m. and FOUR p.m. daily, except Sundays. Sealed Tenders, endorsed "Tender for Erection of Schools," to be addressed "To the Chepstow School Board" by post, and be at the office above-mentioned on or before NOON of MONDAY the 8th day of OCTOBER next. The Board do not bind themselves to accept any Tender. Tenders must state the address, or names and addresses, and description of a good and sufficient surety or sureties, to join the contractor in a bond for the due fulfilment of the contract, must accompany the Tender.

Dated September 12th, 1877.

THOS GRIFFITHS, Clerk to the Board.

TO BUILDERS.—The West Ham Local Board hereby invite TENDERS for the ERECTION of TWO FIRE-ENGINE STATIONS, one at the Town-hall, Stratford, and one at the Market-road, near the Custom-house Railway Station. The plans may be inspected, and further particulars obtained, on application to Mr. LEWIS ANGELL, C.E. Town-hall, Stratford, on and after MONDAY, SEPTEMBER 24th, 1877. The Board do not bind themselves to accept the lowest or any Tender. Sureties will be required for the due performance of the contract. Separate Tenders, endorsed "Tender for Fire-Engine Station," to be delivered not later than THREE o'clock on TUESDAY, OCTOBER 9th, 1877.—By order of the Board, FRED. E. HILLEARY, Clerk.

Town-hall, Stratford, E. September 17, 1877.

GREAT AYTON, near NORTHALLERTON, YORKSHIRE.—Builders desirous of Tendering for the ERECTION of a Pair of COTTAGES and a detached COTTAGE for D. D. Hodgson, esq. are requested to send their names and addresses to the undersigned on or before WEDNESDAY the 26th inst. Quantities will be supplied.

ALFRED WATERHOUSE Arch tect

No 29, New Cavendish street, London, W 20th September 1877

THE KING'S SCHOOLS, WARWICK.—The Governors of the King's Schools are prepared to receive TENDERS for the ERECTION of NEW BUILDINGS for the Middle School Plans and specifications may be seen at my Office, No. 1, New-street, Warwick, on and after MONDAY, the 17th of SEPTEMBER Sealed Tenders, endorsed "Tender for Middle School" must be sent to me, not later than (by post) on the 1st of OCTOBER The Governors will not be bound to accept the lowest or any Tender

R. C. HEATH, Clerk to the Governors.

NOTICE to TIMBER DEALERS and OTHERS.—WORKS DEPARTMENT, ROYAL ARSENAL WOOLWICH, 18th SEPTEMBER, 1877.—TENDERS are invited for the PURCHASE and REMOVAL of a WOODEN SHED over Slip No 3 Royal Dockyard Woolwich, covering an area of about 121 ft. by 68 ft. Parties desiring to Tender must leave their names at this Office from the 25th SEPTEMBER till 3rd OCTOBER next, where forms of Tender and all information can be obtained

W. HATT NOBLE, Lieut.-Colonel R.E.

Asst Engineer Inspector of Works

BOROUGH of CHIPPING NORTON, OXON. TENDERS are invited for the CONSTRUCTION of the PUMPING STATION, Service Reservoir, Pumping Machinery, and Culvert Main, &c., complete, for the Water Supply to the town of Chipping Norton, in accordance with the plans and specifications prepared by Mr W H Y. WEBBER, the Engineer to the Town Council, which may be inspected and full particulars obtained, at the Office of the Town Clerk. Separate Tenders for the above to be addressed to the Water Supply Committee, Town Clerk's Office, Chipping Norton, Oxon, endorsed "Water Supply, Tender for Contract No —," will be received up to and including the 29th inst. The Committee do not bind themselves to accept the lowest or any Tender

September 17th, 1877. G. H. SAUNDERS, Town Clerk.

BOROUGH of HANLEY.—To CONTRACTORS of SEWERAGE WORKS.—The Town Council of the Borough of Hanley (acting as the Urban Sanitary Authority) are prepared to receive TENDERS for SEWERAGE WORKS as follows:—Contract No. 20 LEEK ROAD and CAULDON ROAD INTERCEPTING SEWERS. Being about 1,080 yards (brick egg-shaped sewers) from 10 feet to 27 feet deep,—together with materials and other appurtenances. Plans and specifications may be seen, and all particulars obtained at the Office of Mr JOSEPH LOBLEY, Borough Engineer and Surveyor, Hanley, Staffs., where a Bill of Quantities may be had on payment of five shillings, which will be returned to persons sending in a bona fide Tender. Sealed and endorsed Tenders, which must be on the printed form issued by the Corporation, to the Office before TWELVE o'clock on TUESDAY the 1st day of OCTOBER, 1877. ARTHUR CALLINOR, Town Clerk

Corporation Offices, Hanley, September 17th, 1877

BRIDGWATER CORPORATION WATERWORKS.—To PIPE FOUNDERS.—The Waterworks Committee of the Corporation of Bridgwater are prepared to receive TENDERS for making and delivering certain CAST-IRON SOCKET PIPES, of 12 inches diameter and other and for other Pipe Castings. Tenders, sealed, and marked on the outside "Tenders for Pipes" are to be sent to my Office, 44, King's-square, Bridgwater, on or before TEN o'clock in the forenoon of MONDAY, the 8th day of OCTOBER, 1877. Specifications and forms of Tender may be had, and any further information required may be obtained on application therefor to Messrs. THOMAS & CHARLES HAWKSLEY, Civil Engineers, No. 1, Great George-street, Westminster, S.W. The Corporation do not pledge themselves to accept the lowest or any Tender.

JAMES COOK, Jun. Town Clerk.

King's-square, Bridgwater, September 17, 1877.

COUNTY of NORFOLK.—AUXILIARY LUNATIC ASYLUM To BUILDERS The Committee of Visitors of the Norfolk County Lunatic Asylum are desirous of receiving TENDERS for the ERECTION of an AUXILIARY LUNATIC ASYLUM, at Thorpe, near Norwich, to accommodate 150 patients Builders wishing to send in estimates may see the plans and specification, and may on application, to my Office, Surrey-street, Norwich, on and after MONDAY, the 17th inst. and obtain bills of quantities upon depositing the sum of five guineas, which will be returned to those sending in a bond fide Tender All Tenders are to be sealed and endorsed Tender for Auxiliary Asylum," and addressed to the Visiting Justices Norfolk County Lunatic Asylum, and to be sent under cover to me, at my Office at Norwich not late than FRIDAY, the 12th of OCTOBER The Visiting Justices do not bind themselves to accept the lowest or any Tender. R. M. PHIPSON, Architect,

County Surveyor of Norfolk and surveyor to the Norwich, September 13th Diocese of Norwich.

ENFIELD LOCAL BOARD of HEALTH. SEWAGE WORKS.—Notice is hereby given that the Enfield Local Board intend to enter into CONTRACTS for the following WORKS, and are prepared to receive TENDERS for the same, viz.:—

Contract No. 4—The Construction of Straining Tanks, Storage Tanks, Engine-House, Boiler House, and other Works in connexion therewith. Plans, specifications, and conditions of the Works to be done may be seen, and forms of Tender and bills of quantities may be had, at the Office of R. B. GRANTHAM, M. Inst. C.E. 22, Whitehall-place, London, S.W., Engineer to the Board; and on and after SATURDAY, the 22nd SEPTEMBER inst. Sealed Tenders, which are required to be on the proper forms, and endorsed "Tender for Tanks and Engine-house, &c." must be sent to the Office of the Board, in Enfield Town, on or before WEDNESDAY, OCTOBER the 3rd.—By order of the Board,

F. LETCHWORTH Clerk.

HOLBORN UNION. To BUILDERS.—The Guardians of the Poor of the Holborn Union require TENDERS for certain PAINTING and REPAIRING WORKS at their Workhouse in Shepherdess-walk, City-road. A specification prepared by the Architect, Mr H. SAXON SNELL, is for inspection at the Masters Office at the Workhouse. Tenders are to be sealed and endorsed "Tender for Works at Luke's Workhouse," addressed to J. W. HILL, Esq. and delivered at the Office at the Workhouse, on or before ELEVEN o'clock on TUESDAY the 2nd day of OCTOBER next. The Guardians do not bind themselves to accept the lowest or any Tender.—By order,

JAMES W. HILL, Clerk to the Guardians.

TO BUILDERS.—TENDERS are invited for the ERECTION of a block of INDUSTRIAL DWELLINGS in Church street, Chelsea.

Plans and specification may be seen and particulars obtained at the Office of the Architect, E. HOOLE, Esq. No. 30, Russell-square, London, W.C.

The lowest or any Tender will not necessarily be accepted.

LYMINGTON LOCAL GOVERNMENT BOARD.—A TENDER for a Contract is required by the above Authority for BORING, in Lymington, a HOLE, of the diameter of about 4 inches, and to a depth of about 200 feet, at the bottom of a well, which is about 40 feet from the surface of the ground; 30 feet of water stand in the well, and the stratum through which the boring is to be carried consists of clay and a small proportion of sand. Any further information which may be required will be given by

E. G. BUREORD, Clerk to the Board.

No. 123, High street, Lymington, September 18th, 1877

ROYAL MASONIC INSTITUTION for BOYS.—EXTENSION of BUILDING at WOOD-GREEN.—The Committee are desirous to receive TENDERS for the WORKS necessary for the above, to be carried out in accordance with plans and specifications prepared by Mr. STEPHEN BARTON WILSON, of 27, Walbrook, E.C from whom bills of quantities may be obtained on payment of five guineas, such sum to be returned in the event of a bona fide Tender being sent in. The Tenders must be addressed to the undersigned, and delivered at the Offices of the Institution, Freemasons' Hall, Great Queen street, W.C. The Committee do not bind themselves to accept the lowest or any Tender.

FREDERICK BINCKES, Secretary.

Office, 6, Freemasons' Hall, London, W.C.

September 18th, 1877.

THE Corporation of Middlesbrough are prepared to receive TENDERS for BUILDING a GASHOLDER TANK, proposed to be erected near the North-Eastern Railway Goods Station, at Middlesbrough. The will be plans shewing two schemes prepared by Mr RICHARD CAIL, of Newcastle, and Mr GEORGE LIVESEY, of London, respectively—for building the Tank, and Contractors are at liberty to Tender for either or both. Plans and specifications are now ready, and may be seen at the Gas Manager's Office Gas Works, Middlesbrough. Plans and specifications and quantities showing Mr. Cail's Scheme, may also be seen at his Office, 5, Dean street, Newcastle-on-Tyne. Tenders, endorsed "Tenders for Gas Tank," to be sent addressed to the Town Clerk, not later than THURSDAY, OCTOBER 3rd, 1877. It is to be understood that the Corporation do not pledge themselves to accept the lowest or any Tender, nor will anything be allowed to parties Tendering. By order

GEORGE RAINFORTH, Town Clerk.

Corporation Hall, Middlesbrough, 8th Sept. 12th, 1877.

IRON TANKS.—The Managers of the Metropolitan Asylum District are prepared to receive TENDERS for PROVIDING and FIXING the CAST and WROUGHT IRON WATER TANKS required for the School for Imbecile Children in the course of erection at Darenth, near Dartford, Kent. Plans and working and specifications and forms of Tender obtained, at the Offices of the Managers, 37, Norfolk-street, Strand (between the hours of TEN and FIVE), where Tenders must be delivered not later than ELEVEN o'clock on THURSDAY, the 11th OCTOBER next. The Managers do not bind themselves to accept the lowest or any Tender.—By order,

W. F. JEBB, Clerk.

10th September, 1877.

BUILDERS' & CONTRACTORS' PLANT

TO BE SOLD, CHEAP, VIZ.:—

6-h.p. Vertical Engine, Boiler, and 6-ft. Pan
Mortar Mill, on carriage work and wheels.
6-h.p. Winding Engine and Drum combined.
6-h.p. Mortar Mill, on travelling wheels.
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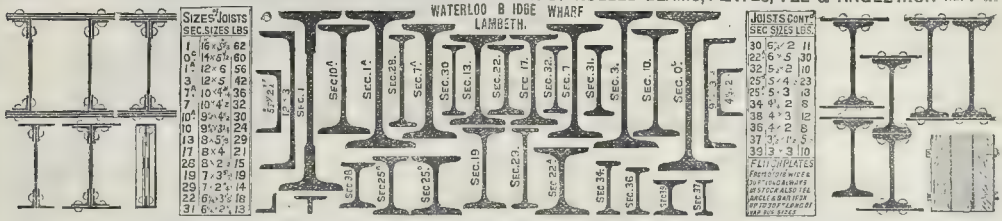
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4 × 3 =12 ,, ,,	6 × 3 =16 ,, ,,	8 × 5 =29 ,, ,,	10 × 5 =36 to 43 ,,	16 × 5½ & 6	=60 & 62 ,,
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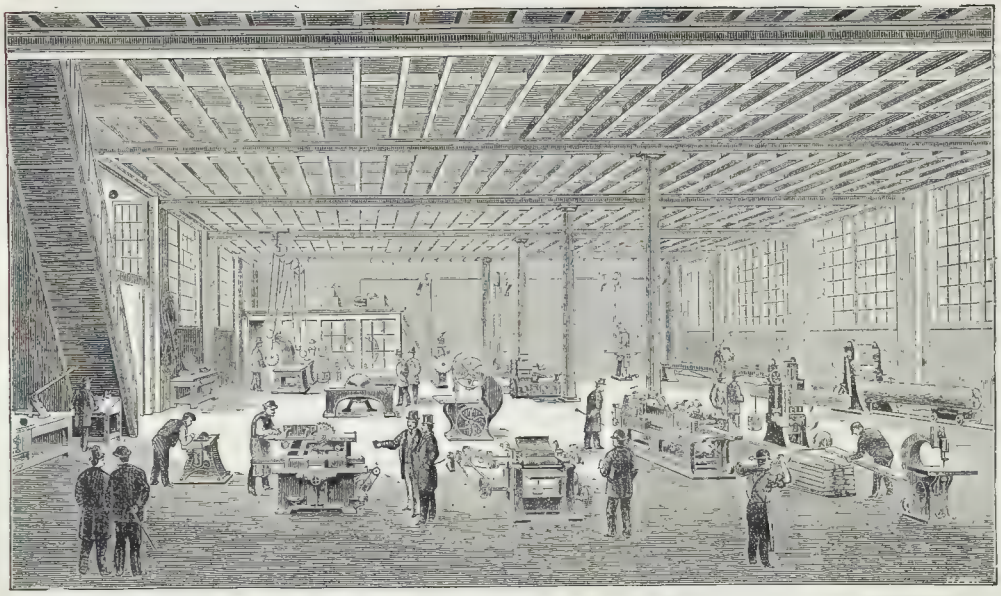


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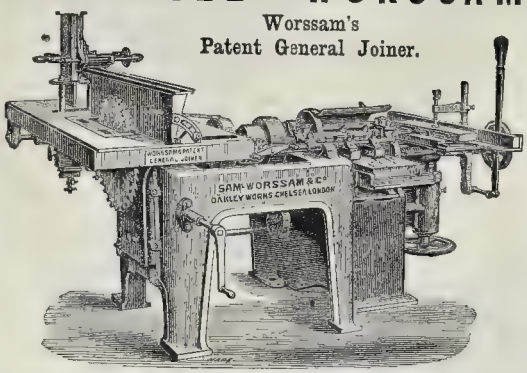
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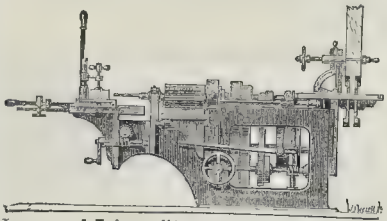
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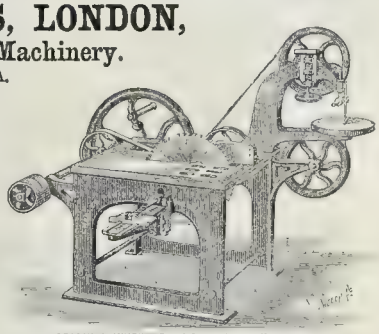
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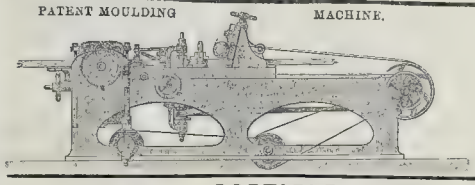
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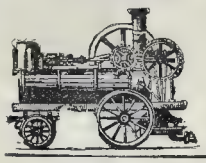


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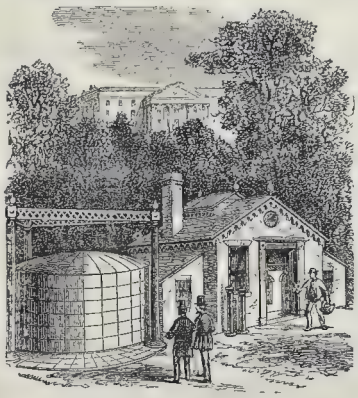
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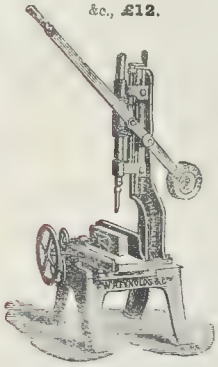


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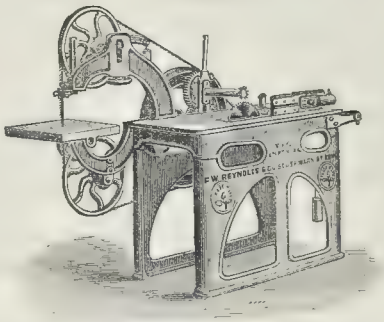
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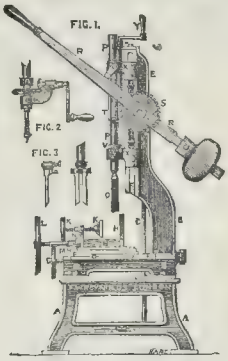
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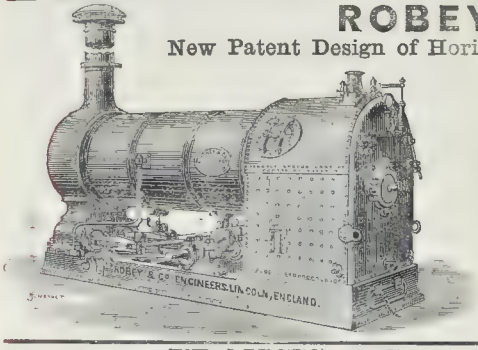


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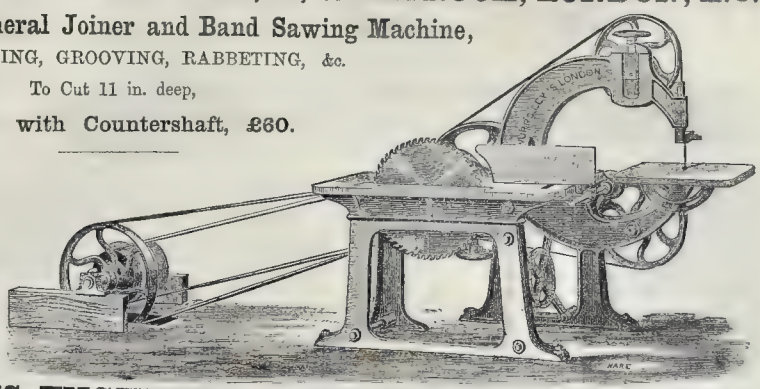
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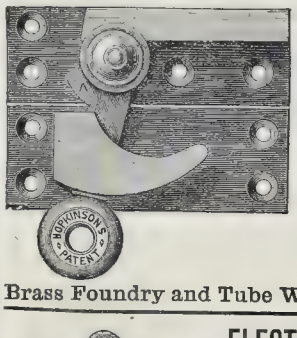
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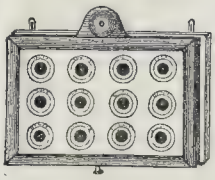
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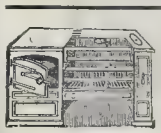
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BELLS! BELLS! BELLS!

IMPROVED SYSTEM.

For particulars apply to—

J. F. CLARKE, 49, Moorgate-street, London.



CLARK, HUNT, & CO.

WHOLESALE IRONMONGERS,

STOVE and RANGE MANUFACTURERS

SMITHS, &c.

No. 159, SHOREDITCH, LONDON.

Illustrated Price Lists forwarded upon application enclosing 2d stamp





ARCHITECTS' OWN DESIGNS CAREFULLY CARRIED OUT

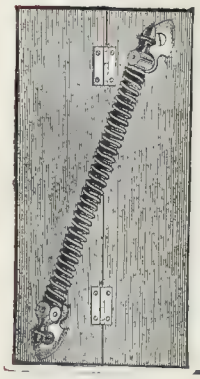
Special Designs and Estimates forwarded upon application.

THE

AMERICAN PREMIUM DOOR AND GATE SPRING.

BRITISH PATENT, No. 3,808. 1876.





IS THE ONLY SPIRALLY TWISTED DOOR-SPRING ever made to either Open or Close a Door. It is supported on PIVOTS, to prevent its bulging or unshipping when the door is open or closed.

The opening or closing action is effected by the spring being so arranged as to wind or unwind, the end of the Spring with ONE hole being fixed on the LOWER pivot.

This Spring is made of the best cast-steel wire, finely tempered; it is of the simplest construction, is easiest of application, and the most durable spirally-twisted Door Spring ever made.

It needs no skill to apply it, and will always keep in order. Full directions are sent with each Spring.

These Springs are meeting with universal favour in America, and are in use in many public buildings, steamboats, railroads, ferries, &c. throughout the country, and most flattering testimonials of their superior merits have been received. Every Spring is warranted. The following are its advantages over any other Spring:—

1st. It is the only one suspended on PIVOTS, which gives it the advantage of accommodating itself to the angle of the door as it is opened and shut.

2nd. It is the only one that will not hump or bulge when the door is shut or opened to its fullest capacity.

3rd. It is more readily applied than any other Spring, and it is the only one that can be attached and detached without removing the screws.

4th. Its superiority of design gives it an ornamental appearance when on the door.

5th. Its ease of adjustment, and numerous other advantages, make it the most desirable Spring that can be applied to a Door or Gate. **The Prices are very reasonable.**

Proprietor: ALEXR. KELLY, 59, Mark-lane, LONDON.

AGENTS—ALEXR. KELLY, Washington Chambers, Wolverhampton; W. S. W. ASTBURY & Co., 48, King-street, Manchester; D. & D. F. DALZIEL, City Rope Works, 22, Howard-street, Glasgow; EDWARD JONES, Contractor, Caerphilly, Cardiff; GEORGE SEAGRAVE, 3, Cope-street, Dublin. Agents Wanted.

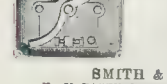
ARCHIBALD SMITH & CO.'S
PATENT DOOR SPRINGS.



ESTABLISHED UPWARDS OF A CENTURY.

CAUTION TO ARCHITECTS & BUILDERS.—In consequence of numerous ATTEMPTS to pass the substitution of INFERIOR and SPURIOUS ARTICLES in lieu of
ARCHD. SMITH & CO.'S PATENT DOUBLE-ACTION DOOR SPRINGS,
ARCHD. SMITH & CO.'S PATENT WEATHER-TIGHT WATER BARS, and
ARCHD. SMITH & CO.'S PATENT WEATHER-TIGHT CASEMENT FASTENING for FRENCH WINDOWS.
The above are now in general use, and it is requested to observe that all GENUINE ARTICLES are stamped with NAME, Our TRADE-MARK, and ADDRESS, 3 PRINCES STREET, LEICESTER-SQUARE, LONDON. NONE ONLY are WARRANTED.

BEN TURNER'S NEW PATENT
ADJUSTABLE REGULATING DOOR SPRING,



Which describes considerably more than half circle in opening. It can be made strong or weak; it can be adjusted to any centre, and the whole of the inside taken out without unhanging the door. Manufacturers of the Original Smith's Patent Door Spring, Water Bars, &c. Springs of every description made. Inventors and makers of the first door-springs used.

SMITH & TURNER,
No. 50, BARTHOLOMEW CLOSE, LONDON, E.C.

REDMUND'S PATENT HINGE
MANUFACTORY and WAREHOUSE,
Wellington Foundry, 108, Pearce street, City-road, E.C.
(near the Canal Bridge).

BENJAMIN SLATER,
(Late R. GOLLOP), SOLE PROPRIETOR.

A LARGE STOCK of the PATENT HINGES kept ready for delivery, consisting of Floor springs, Gate hinges, Rising hinges, Rising Spring hinges, Sash rod fastenings, Hinges, Double acting Spring-hinges, Rising and Noiseless Door Back-springs, &c.

IMPROVED PATENT FLOOR SPRINGS, SINGLE OR DOUBLE ACTING.



With Improved Shifting Pivots, particularly adapted for Doors requiring to be kept very steady when shut, and yet of easy action as they open; as the chief power of the Spring is exerted to keep the Door perfectly steady when shut, the power is lessened as the Door opens, and thus the easiest action is obtained, and the tendency to oscillation avoided.

REDMUND'S BEN
REGISTERED TRADE MARKS.
Price Lists and Drawings on application as above.

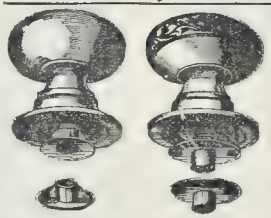
J. OSWALD GARDNER & CO.
ENGINEERS, IRONFOUNDERS, and CONTRACTORS,
NO. 134, FENCHURCH-STREET, LONDON, E.C.
TYNE IRONWORKS,
YORK STREET, YORK ROAD, S.E.
AND
STAFFORDSHIRE.

Manufacturers of
Girders, Roofs, Bridges, Rolled Joists, Doors, Sills, Chains, Flitches, Columns, Arches, Stanchions, Lifts, Cranes, Tanks, Staircases, &c.
Weights and Strains calculated and Strength guaranteed. Specifications, Plans and Estimates prepared.
Illustrated Sheets of Sections sent on application.





PATENT ASPHALTE CALDRONS,
WITH TOOLS COMPLETE, for LAYING ASPHALTE FLOORS.
NEW VERTICAL ENGINES, CIRCULAR SAWS, CARTS FOR BUILDERS' USE.
WOODS, COCKSEDGE, & CO. STOWMARKET.



THOMAS PUGH & CO.'S NEW PATENT
ECONOMIC SELF-ADJUSTING MORTISE AND RIM LOCK FURNITURE.

J. B. SCAMMELL & CO. (late Thomas Pugh & Co.), Wholesale Ironmongers,
No. 13, KING STREET, SNOW HILL, LONDON.

The most perfect article now manufactured, great improvements having been recently made in it. It has been extensively used in Public and Private Buildings, in Her Majesty's Pavilion and Camp at Aldershott, alone, many hundred sets with out one single failure. It is applicable to Doors, Locks and Latches, both Rim and Mortise, and effects a most secure fastening, without any screw in the neck of the knob. Perfect action guaranteed in both Locks and Furniture, if the Locks are of our own manufacture.

New Patterns in Glass, China, Brass, Bronzed, Gilt, Carved Woods, Inlaid, &c. &c. or to any Design.

THIS FURNITURE MAY BE HAD WITH PLATES OR NUTS.

A most complete and extensive stock of every description of Locks, Latches, Brass Foundry, and Ironmongery, required for Buildings, of the best quality manufactured, at the lowest wholesale prices.

** Illustrations and Particulars sent on application.

WAREHOUSES FOR NAILS, PIPES GUTTERS, &c. 32, HOSIER LANE.

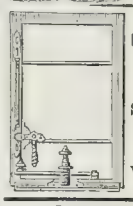
MOLINE'S PATENT WROUGHT-IRON WINDOWS.



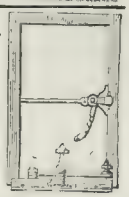
Sole Manufacturers:
THE
GENERAL IRON FOUNDRY COMPANY,
LIMITED,
BROKEN WHARF, & 43 UPPER THAMES ST.
LONDON.



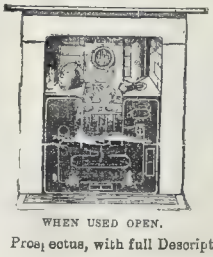
Illustrated Prospectus forwarded on application.



BURT & POTTS'
PATENT WROUGHT IRON WATER-TIGHT WINDOW AND FRAME,
SUITABLE FOR
Churches, Chapels, Parsonage Houses, Schools, Public Buildings, or Private Houses.
THEY CAN BE MADE TO ANY DESIGN.
FULL PARTICULARS AND PRICES ON APPLICATION.
Also Manufacturers of
WROUGHT IRON SKYLIGHTS, CONSERVATORIES, &c.
38 and 65, YORK STREET, WESTMINSTER.



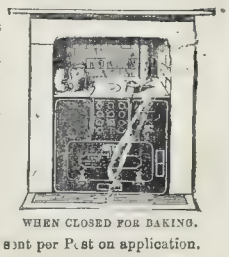
CUNDY'S PATENT ECONOMIC COTTAGER'S COOKING AND IRONING STOVES.



WHEN USED OPEN.

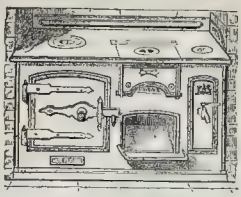
These Engravings represent the Smallest size Stove, viz. 24 in. long, 24 in. high, and 15 in. deep. The Oven is 18 in. long, 14 in. deep, and 11 in. high. The Boiler contains three pails of water.

This Stove, also CUNDY'S PATENT BRICK OVEN, Double Fall-down Bar KITCHEN RANGE, and Patent BRICK OVEN, Semi-close Range, also CUNDY'S Patent Original FIRE-BRICK Warm-air Ventilating STOVE, suitable for Churches, Halls, Schools, and Staircases, can be seen in operation daily at the SHOW-ROOMS of the Manufacturer,
WM. ADDIS,
6, 7, & 15, LEICESTER STREET,
LEICESTER SQUARE, LONDON.



WHEN CLOSED FOR BAKING.

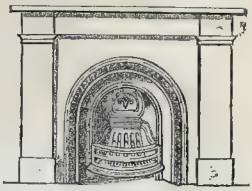
Prospectus, with full Description and Price of the above, will be sent per Post on application.



GRUNDY & CO.'S
MARBLE AND IRON WORKS,
No. 26, PAGE STREET, MILLBANK, WESTMINSTER.

BUILDERS WILL REALISE
A GREAT SAVING in Cost of Marble Chimney-pieces,
With STOVES and GRATES, at these STORES.

£2. 10s. Od.] VERY CHEAP! [£1. 10s. Od.



PATENT CLOSE AND OPEN FIRE COOKING RANGE



(No. 220), Manufactured by the Patentees,
NEWTON, CHAMBERS, & CO
THORNCLIFFE IRON WORKS,
NEAR SHEFFIELD.

A MODERN INVENTION.

The high price of coal has induced Messrs. NEWTON, CHAMBERS, & CO. to direct their attention to the ECONOMISING OF FUEL IN COOKING RANGES and they have now Patented an Apparatus which they believe to be the most efficient, simple, and economical of anything ever yet invented.

It consists of a small Fire Range, which may be used as an open or close fire at pleasure, and is changed from one to the other in a moment. A Hot Closet is placed at one side of the fire, and a Hot Plate for Boiling, Stewing, or Grilling extends to nearly the full width of the fireplace. Above the Hot Plate, at about the level of the eye, there are two large sheet-iron Ovens, which are quickly heated, and are most conveniently placed for the cook to attend to what is in them.

Behind the Hot Plate is a wrought-iron boiler, which supplies hot water for all purposes. It will be seen from this that all flues ascend, and consequently do not require such a quick draught as those which descend. It is impossible for them to get out of order; they can be regulated to the greatest nicety, and managed by the most inexperienced person, and the commonest coal can be used.

Messrs. NEWTON, CHAMBERS, & CO. have the fullest confidence in recommending this Apparatus to the notice of their friends; the saving of coal will, in a very short time, repay the whole cost, and the coolness and comfort of the kitchen, compared with the ranges hitherto used, are alone sufficient to insure its adoption in all well-regulated households.

The Apparatus may be seen at work, and full particulars obtained, by applying as above, or at the Branch Establishments,

No. 1, HOLBORN VIADUCT LONDON, E.C., and 47, Sheffield Moor, Sheffield.

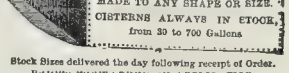
WROUGHT-IRON TANKS, CISTERNS.
BURNEY & COMPANY,
MILLWALL DOCKS, LONDON, E.

CATTLE TROUGHS, CART BODIES. Write for Reduced List of Builders' CISTERNS. Note.—All Tanks at these Works made with Burney's Patent Corner.



GOLD MEDAL CAPE EXHIBITION.

CROUCH & JAY
(CROUCH 18 years Manager of the Works, Limehouse, for TUPPER & CO.)
REGENT'S WHARF, CATHERINE STREET, LIMEHOUSE.
WROUGHT-IRON CISTERNS AND TANKS,
FOR WATER, OIL, TURPENTINE, &c.
GIRDERS, FUNNELS, CATTLE TROUGHS, CART BODIES



Stock Sizes delivered the day following receipt of Order.
PRICES FORWARDED ON APPLICATION.

CROCCON & CO.
42, UPPER THAMES STREET, LONDON,



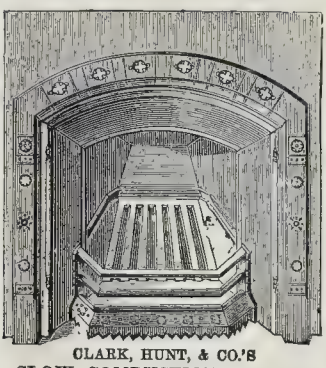
Cattle-Troughs, &c., Galvanized or Painted.
Makers of WROUGHT-IRON TANKS, CISTERNS, &c.
2 Gorse Piazzas, Liverpool; 59, George-square, Glasgow.
A large Assortment always in Stock.
Estimates free on application.



JOHN BELLAMY,
BYNG-STREET, MILLWALL, LONDON, E.
WROUGHT-IRON TANKS AND CISTERNS.



CATTLE TROUGHS, GIRDERS, CART BODIES, &c.
Omnibus from West India Dock Station passes Byng-street.

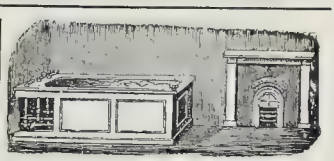


CLARK, HUNT, & CO.'S
SLOW COMBUSTION GRATES

Are of an entirely new construction,
A SOLID FIRE-BRICK FORMING the BOTTOM of the GRATE on which the fire burns.

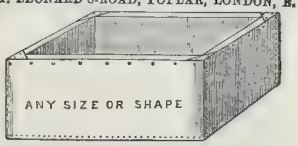
Fuel placed in these Grates soon becomes a mass of fire, producing great heat; fires carefully made up in them WILL BURN WITH WONDERFUL STEADINESS FOR SEVERAL HOURS WITHOUT ATTENTION. The consumption of fuel in these Grates is ABOUT HALF that of ordinary Register Stoves. As no ashes are seen, the tiled hearth is always tidy. These Grates are also constructed with a chamber at the back, for WARMING THE AIR BEFORE ENTERING THE APARTMENT. Illustrated Price List sent on application, inclosing stamp.

CLARK, HUNT, & CO.
Stove and Range Manufacturers,
No. 159, SHOREDITCH, LONDON.



J. TYLOR & SONS,
ENGINEERS,
No. 2, NEWGATE STREET, LONDON.
Bath and Heating Apparatus erected in Public and Private Buildings in London and Country.
ESTIMATES ON APPLICATION.

CALVERT LAW,
ST. LEONARD'S-ROAD, POPLAR, LONDON, E.



IMPROVED WROUGHT-IRON TANKS,
Cisterns, Corn-Bins, Water-Cart Bodies, Funnels, Cattle-Troughs, Contractors' Earth Skips, &c.

EXCELSIOR GAS BATH,
With Linen Warmer, £5. 10s. 0d.



ECLIPSE GAS RANGE, With Open Fire, £10. 0s. 0d.
GAS CONSERVATORY BOILERS.
REFLECTOR COOKING STOVES from 15s. 6d.
Sole Maker,
G. SHREWSBURY, 59, OLD BAILEY, E.C.
FACTORY: 98, BARRINGTON ROAD, EAST BRIXTON, S.W.

LIGHTNING CONDUCTORS, &c. &c.
DIXON, CORBITT, & SPENCER,
Manufacturers of
HEMP, MANILLA, AND WIRE ROPES
of every description; Lines; Twines.
Copper, Iron, and Steel Cords for Sash-lines and other purposes.
GILT and SILVER CORD for HANGING PICTURES
Fencing Strand.
COPPER ROPE LIGHTNING CONDUCTORS, &c.
Warehouse: 26, COMMERCIAL ROAD EAST,
Removed from 103, Fenchurch-street, E.C.
Works: Gateshead-on-Tyne.

STOVES!
PORTABLE TERRA COTTA!
ROBERTS'S PATENT FOR COAL!

Emit pure heat Twenty-four hours for about One Penny, without attention. For bed-rooms, greenhouses, or almost any purpose.

Prospectus, drawings, and authenticated testimonials can be had.

In use daily at Offices of Patentee,

THOMAS ROBERTS,
No. 112, VICTORIA STREET, WESTMINSTER.

THE ROYAL PORCELAIN BATH,
Moulded and Glazed in one piece. Designed by his late Royal Highness the Prince Consort. Gold Isis Medal Society of Arts, Great Exhibition and International Exhibition Medals.



Bath Fittings, Hot-water Apparatus, Porcelain Sinks.
Plug Basins and Water-closets. Glazed Bricks.
Wall and Floor Tiles, &c. Estimates given.
J. FINCH, PATENTEE, 11, ADAM-STREET, ADELPHI.

A PRIZE MEDAL for SUPERIOR LOCKS
was awarded to J. H. BOOBBYER, at the Great Exhibition of 1851, who invites the attention of Builders, &c. to his Stock of Iron mongery, Brass Foundry, Nails (wrought and cut), Copper, and Zinc Patent Locks of all descriptions, China, Glass, and Wood Furniture of all kinds, with Patent Shifting Spindles; Dr. Arnott's Ventilators and the New Registered Venetian Ventilator, so much admired

J. H. BOOBBYER (late STURCH & BOOBBYER), established nearly 200 years, for the supply of GOODS of the BEST MANUFACTURE, at the LOWEST PRICE.
No. 14, Stanhope-street, Newcastle-street, Strand, London, W.C.

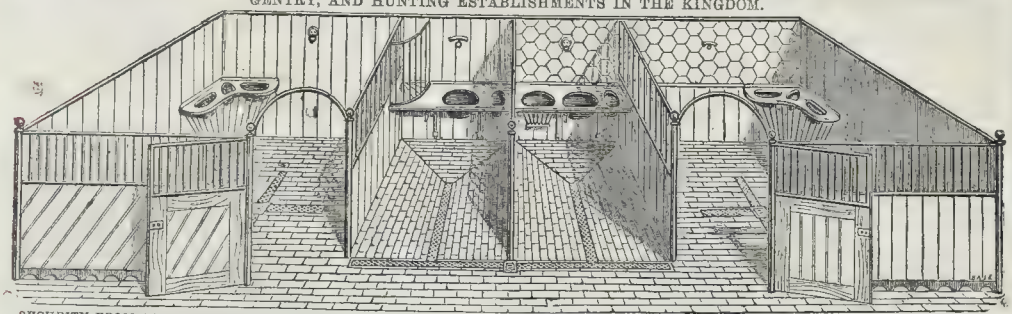
NEWALL'S
PATENT COPPER ROPE
LIGHTNING CONDUCTOR.
Standard Size 1s. per foot.
130, STRAND, W.C.
36, WATERLOO-ROAD, LIVERPOOL.
68, ANDERSTON QUAY, GLASGOW.
Manufactory, Gateshead-on-Tyne.

COTTAM & CO. IRON WORKS, 2, WINSLEY STREET, LONDON, W.

PATENTEES AND ORIGINAL INVENTORS OF THE

IMPROVED SYSTEM OF STABLE AND HARNESS FITTINGS.

PATRONISED BY THE ENGLISH AND CHIEF FOREIGN GOVERNMENTS, AS WELL AS BY THE PRINCIPAL NOBILITY, GENTRY, AND HUNTING ESTABLISHMENTS IN THE KINGDOM.



SECURITY FROM ACCIDENT, Promotion of HEALTH, COMFORT, and CONDITION, Economy in the use of Food, and Imperviousness to Infection are some of the chief recommendations of COTTAM'S Plain and Enamelled IRON FITTINGS for Stalls, Loose Boxes, and Harness Rooms.

THESE FITTINGS, now so generally specified by Architects, MAY BE SEEN (variously arranged) in full-sized Stalls, Loose Boxes, and Harness Rooms, at the Manufactory (of the original inventors), 2, WINSLEY-STREET, OXFORD-STREET, W. APPLY FOR No. 3 CATALOGUE (FREE OF)

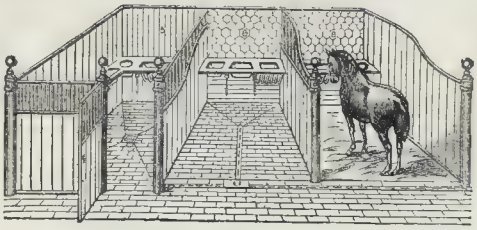
COTTAM & CO. IRON WORKS, 2, WINSLEY STREET, OXFORD STREET, LONDON, W.

N.B.—Winsley-street is the street opposite the Pantheon.

MARSHALL & HATCH,

BINGFIELD IRON WORKS,
YORK ROAD, KING'S CROSS,
LONDON.

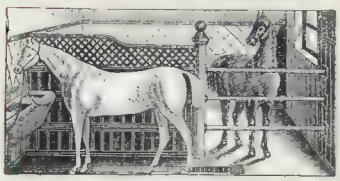
ESTIMATES FREE.
PROMPT EXECUTION.



PATENT
STABLE FITTINGS
IRON ROOFS,
STAIRCASES,
SASHES, AND DOORS,
STRUCTURAL
IRON WORK.

HIGH CLASS WORK.
MODERATE PRICES.

IRON FOUNDERS
TO H.R.H. THE PRINCE OF WALES.
Prize Medals awarded:
LONDON, PARIS, and BRUSSELS.



MUSGRAVE'S
PATENT STABLE FITTINGS,
MUSGRAVE'S PATENT
IRON COWHOUSE FITTINGS,
MUSGRAVE'S PATENT
SLOW COMBUSTION STOVES.

Priced Catalogues, copiously illustrated, and Estimates will be forwarded on application to

MUSGRAVE & CO.
(LIMITED),
ANN STREET IRON WORKS,
BELFAST,
And 97, NEW BOND STREET, LONDON, W.

J. L. BACON & CO.

MANUFACTURERS OF
IMPROVED HOT-WATER APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.

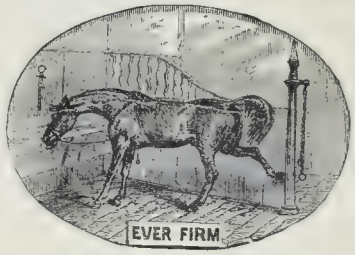
OFFICES AND SHOW-ROOMS:—
No. 34, UPPER GLOUCESTER PLACE, DORSET SQUARE, LONDON, N.W.
Illustrated Pamphlet on "Heating" post free for Twelve Stamps.

ST. PANCRAS IRON-WORK COMPANY

OLD ST. PANCRAS ROAD, LONDON, N.W.

STABLE FITTINGS.

EVERY VARIETY OF FITTINGS FOR STALLS AND LOOSE BOXES,



PAVING,
DRAINAGE
LIGHTING,
VENTILATION,
&c. &c. &c.
OF ALL
CLASSES,

To be seen in the STABLE of 100 feet in length, erected at
ST. PANCRAS IRON WORKS, OLD SAINT PANCRAS ROAD.

"The St. Pancras Iron-Work Company have done a clever thing, and a useful thing."—*Builder*, 30th July, 1870.

COX & SONS,
ART-WORKERS in WOOD.
" " METAL
" " STONE
" " GLASS.
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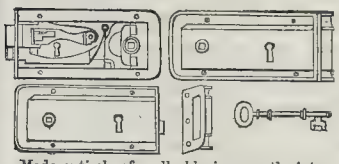
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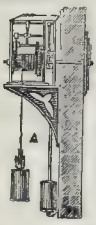
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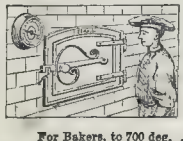
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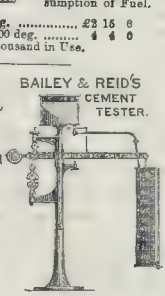


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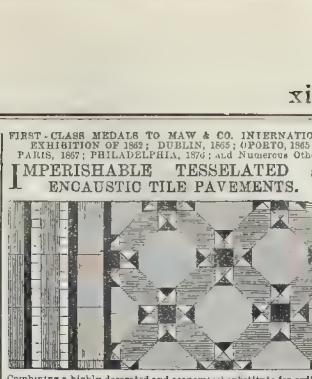


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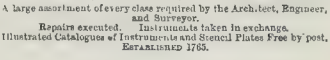
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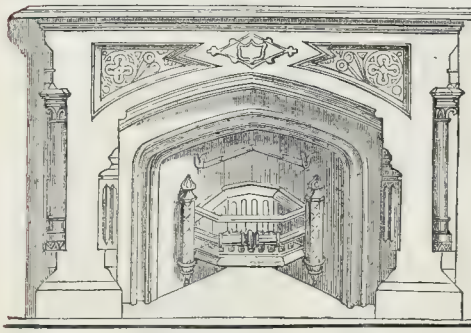
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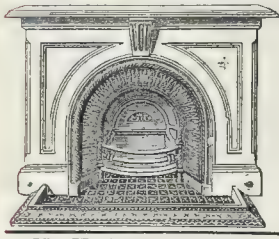
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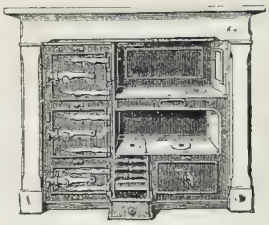
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Vol. XXXV. No. 1807. Saturday, September 22, 1877.

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Aberdeen and the Social Science Congress.

THE expression in one of Tennyson's poems, "a clear-walled city by the sea," comes into one's mind in looking at the architecture of the more modern and handsome portions of Aberdeen. These are not the portions nearest the sea, certainly, and it must be confessed that the lower portions of the town have a grim and uninviting character, where the flat unbroken granite walls have become dark and dingy with time, and where the streets are narrow and dirty. But the city as a whole is a sea-side city, and very invigorating is the sharp, keen feel of the air that blows through its streets, and forms (when there is not *too* much of it) the best ally of the "Health Section"; and there is something in the look of the hard bright walls of grey granite that stretch in long perspective up Union-street, especially when seen in light and clear weather, which seems remarkably in keeping with the climate, and gives, of course, a great deal of individuality of character to the architecture of the city.

This same street, called Union-street, may be said to be the backbone of the city, not only architecturally, but, if we are rightly informed by those who ought to know, commercially and in relation to general prosperity also. The street presumably derives its name from the fact that it crosses, by means of a large granite arch, a deep dell through which the railway now runs, and which formerly must have acted as a considerable barrier in the way of circulation of traffic; so that Union-street is to Aberdeen in some sense what the Holborn Viaduct is to London, only that its relative importance is much greater; for the formation of this street has almost practically originated the success of modern Aberdeen. A walk about the place, and a glance at its map, would show at once how this would be so. The town is irregularly built, the old streets running at every possible angle, and neither wide nor cheerful; and the driving through its centre of this wide straight thoroughfare, lined from end to end with a high class of public buildings and dwelling-houses, at once gave the whole place a new character and dignity, and might be said to have transformed it at one bound from a second-class to a first-class city, so far as character and appearance (not size) are concerned. The undertaking was made in a bold and what was once thought a very rash spirit, on the strength of borrowed capital, which involved the Corporation at one time in considerable difficulties; but all this has been long since tided over, and the foresight of those who initiated the scheme more than justified. Perhaps there could hardly be found a more striking testimony as to the important effect which the planning and laying out of streets may have upon the status of a city.

A good deal was said in our columns, a little while ago, in regard to the value of granite as an architectural material, and the desirability of extending its employment further in London. In continuation of the subject it may be interesting just to recapitulate the impression which this granite city produces when regarded as a whole, and in reference to the architectural capabilities of the material. The old portions of the town unquestionably show that granite changes its effect very much, after exposure for a considerable period to the smoke and dust of a city atmosphere, even one so comparatively little contaminated as that of Aberdeen; and the heavy dark grey, or nearly black, walls of some of the older streets have an oppressive effect on mind and eyes. But there is also a look of solid strength about them which is, in one sense, more satisfactory than the picturesque but rickety and tumble-down structures one sees in the old portions of so many towns; and it may be doubted whether dirty granite is not, on the whole, a less grim and depressing material than dirty brick.

Coming to the new architecture of Union-street, and considering its *ensemble*, one may say that granite very fairly vindicates the claims of its adherents, as a fine and effective though rather unmanageable building material. The peculiar coldness of effect which has been deprecated will be found to be less marked than would be expected: except in dull weather, lightness rather than coldness would seem the characteristic: lightness without hardness or glitter. For it is to be noted, especially in reference to the little controversy in our columns already referred to, that the Aberdeen folk do not polish their granite for external use to anything like the extent which is seen in the City buildings in London, where granite seems to be used chiefly to obtain glitter in the shape of polished surfaces, and pilasters, and shafts. Except an occasional door architrave or shaft (and that but seldom), there is no polish to be seen all along the length of Union-street; nothing but the white or grey lustre of the tooled stone. And this appears to advantage in both Gothic and Classic designs, so far as general effect is concerned. The Roman Catholic Church in Huntly-street, a comparatively new work, has a well-designed and elegant spire, the effect of which, in this white material, is quite fairy-like, though there is no attempt at any elaboration unsuited to the character of the material. The Classic portico of the Music-hall in Union-street, though belonging to the same precise and formal order of Revived Classic, looks less cold, less out of place, in granite, than a similar design, with portico and Ionic columns, appears when executed in some of the darker sandstones in frequent use. And some of the dwelling-houses in the same quarter, though plain to excess, with just a cornice, and in the more prominent houses perhaps an order of flat pilasters, have not only a solid and comfortable, but even an artistic appearance, set off, as many of them are, by the effective treatment of the entrances, where the door and its accessories, painted in very dark tints, slightly relieved with colour or gilding, stand in effective contrast to the white granite walls, and make a façade which, though it has, perhaps, to southern tastes a slightly tomb-like appearance (and that is really a matter of association), is also "monumental" in the other and architectural sense of the word. The difficulty is, of course, in regard to ornamental detail, which can be but little elaborated in so stubborn a material. In the case of the Catholic Church just mentioned, some of the usual details of fourteenth-century Gothic are cleverly treated so as to have at a little distance a very orthodox appearance of completeness, though in reality they are little more than blocked out with square sinkings. It will be readily supposed that the material lends itself better to the more symmetrical and formal character of Greek detail than to the freedom of Gothic; and some of the caps of columns and pilasters in the Classic buildings seem executed with as much precision and almost as minutely as if in marble. The great drawback to the architecture of Union-street is the flatness of everything. Cornices and strings seem as little used as possible, and when used are kept with as little projection as possible, to avoid the expense of much moulding; and even projecting window-sills are almost unknown, as the granite seems to require no protection from drip, nor does it show any of those vertical stains beneath the sills which so much disfigure ordinary stone and brick buildings where sills are used flush with the walls. To the eye accustomed to projecting sills and to pedimented windows or projecting architraves the effect seems singularly bare, the windows being literally holes in a flat wall. In some of the more recent buildings this has been discarded, and in the "City Buildings," containing the municipal offices, Messrs. Peddie & Kinnear, of Edinburgh, have achieved a Gothic building, combining Scottish Gothic detail with something of the character of a Flemish guildhall, with very considerable success; some of the details seem rather wanting in refinement, but the treatment of the arcaded ground-story of three-centred arches is very effective. The move in the direction of Scottish Baronial Gothic which seems to have been made is, however, to our thinking, rather doubtful; and we should be disposed to regard something founded on more Classic types of building as better suited to develop the architectural qualities of granite than this, not florid, certainly, but more elaborate and less quiet style. The corbelled-out turrets of the City Buildings and one or two other buildings in the eastern part of Union-street come out well, certainly, in the view down the street; but the view in the opposite direction is as characteristic in its way. The street runs nearly due east and west; and in the evening the appearance of the long lines of white buildings, with the sunset sky seen at the end of the vista, is something very

unique and deserving to be called picturesque, though not in quite the usual sense of that expression.

The Old Town is, in some parts at least, picturesque in the ordinary sense of the word, especially about the Bridge of Don neighbourhood, though the picturesque consists rather in the placing of the buildings than in their actual appearance as buildings. Exception must be made to this in regard to the old cathedral church, however, the two towers of which are seen from the high road leading out of the town, and across the new Don Bridge. Their peculiar outline courts attention at once, and nothing could seem more peculiar and more at variance with one's experience of mediæval architecture in England than the aspect of the west front of this building, where things that we are accustomed to regard as entirely separate in the history of Gothic detail seem all jumbled together: a west window with a number of long narrow lights, giving the idea of a number of lancet windows placed together, but with a fourteenth-century type of mouldings, and then again with rounded and not pointed heads. The towers, terminated by short stumpy spires with battlemented bands, are very peculiar; looking at a distance like something Romanesque, though they are, in fact, of late date. The new Bridge of Don crosses the river two or three hundred yards lower down than the old one, and presents, like most bridges of recent times, nothing of the picturesque character that is so often found in old bridges; but the original Don Bridge, Byron's Bridge, deserves all the repute it has acquired as a picturesque and interesting relic of old bridge building, and crosses the stream just at a sharp bend, with one pointed arch much higher than its width, and adjacent to a dark nook of the river between high banks covered with trees. The bridge is steadied on one side by very broad massive buttresses one on either side of the arch; but in spite of these it is in an unsafe condition, and a good deal of repairing is going on at its abutments; we hope it will not be necessary in any way to touch or interfere with the arch itself. It may not be known generally that the eminent French artist, Gudin, painted this scene; the picture was in one of the International Exhibitions at Kensington some years ago. His picture was painted specially in connexion with the interest of the place as a haunt of Byron's in his youth; but it is quite a corner for a painter on its own merits, and the view from the old bridge down to the new one, through the arches of which the sea is seen beyond, would make an admirable picture.

There are evidences in recent buildings in Aberdeen of an intention to make more direct use of the opportunities for constructive polychromy presented by the varying tones of the different granites available for use in the neighbourhood; though this source of effect has been apparently much neglected, and certainly should receive more attention. In the Opera House, which is the design of Mr. Phipps (whose merits as a theatrical architect are known to our readers), axed granite is used in combination with red freestone, with very good effect: and in the Marischal College, which is a building in late Gothic style, the windows are filled with red stone tracery; though this seems to have resulted from no desire for effect, but simply from the impossibility of cutting thin tracery bars in granite. This same building, in which the meeeings of the Congress are being held, is not the Marischal College that was dear to Dugald Dalgetty, but a rebuilding thirty or forty years ago, by the late Mr. Simpson, whose abilities, notable in dealing with Classic design, seem to have utterly failed him when he came to treat Gothic; for the design is thin and wiry to a degree, and shows no attempt to turn to account the special qualities of granite: but then Gothic was not rightly understood by any one at the period when this was erected, so that it would be hardly fair to bear on the memory of its architect.

The differences of level and quick declivities of Aberdeen remind one at times of Edinburgh, and furnish opportunity and suggestion for something of a more piquant and characteristic architectural treatment than is to be found in the square solid style of building most generally adopted, which, as we have observed, suits the material well, but not always the nature of the locality. There is, however, another side to the architectural and picturesque qualities of Aberdeen; one which came home to us forcibly when walking down the winding street called the Gallowgate, where we might have said, as Coleridge did of Cologne, "we counted fifty different stinks," conveying each its own tale of unhealthy conditions of life. If such a state of things as is thus indicated is allowed to remain, there will be little real credit in the neatness, cleanliness, and finish of Union-street, and Aberdeen will have to be considered as a whited sepulchre. We recommend earnestly to the consideration of the local authorities an investigation of these tell-tale odours and their causes, followed by swift and uncompromising action, unless they wish to stand discredited in the eyes of those who regard the provision for healthful living as one of the first duties of an incorporated community.

We must defer till next week any consideration of the special subjects, some of which will have been discussed in the various departments by the time these remarks are published. We give a portion of the President's opening address, which was delivered in the Music-hall on Wednesday evening.

THE PRESIDENT'S ADDRESS AT THE SOCIAL SCIENCE CONGRESS.

In the general address at the opening of the Social Science Congress at Aberdeen, on the 19th, the President (the Earl of Aberdeen), after mentioning that he passed over intentionally the subject of education, as no new occasion for reviewing its progress had arisen since it was so ably treated by the Marquis of Huntly at the last Congress, proceeded to consider the subject of prison labour, and the reform of prison discipline, from which he proceeded to those of workhouse reform, and the improvement of labourers' dwellings,—subjects between which there exists, perhaps, a connexion closer than was on this occasion definitely pointed out. Possibly, not a few inmates of the workhouse could trace their reduction to that last resort as a consequence of the habits of body and mind engendered by a comfortless and unwholesome dwelling. In speaking on these subjects, the Earl of Aberdeen remarked, after quitting the topic of prison discipline, that in regard to workhouses a reform was probably somewhat remote, the question being beset with many difficulties, including that of the relative functions of local and imperial taxation:—

"And yet it is to be feared that in the administration of our Poor Laws abuses exist as great as those which have led to the new Prison Acts. The idle, and those who are scarcely deserving of pity, are allowed to be a serious burden upon the rates, while our poor-houses seem to be, in many respects, conducted on the assumption that such as those alone will claim admittance. The unfortunate who lapse into poverty through no fault of their own are thus repelled, and, as the result, the public sense is occasionally shocked by the record of bitter privations, and even of deaths, incurred to avoid the workhouse. Is it reasonable to hope that some day the masters of our large workhouses will be men of the same calibre as the governors of our best ordered prisons, and that the constant supervision of visiting committees of magistrates will further insure due discrimination in the administration of such institutions, not forgetting the sad but certain fact that 'the poor shall never cease out of the land,' and that there are some whose poverty ought to command unmingled pity, and secure to them compassionate relief? As a single illustration of my meaning, I may mention the enforced separation of married paupers. Such a requirement, for instance, though generally necessary for the maintenance of order and discipline, might surely be dispensed with, at all events, in the case of the aged and infirm. To sum up the matter in a word, while for the many the workhouse properly partakes of the character of a reformatory, there are those for whom it ought rather to be regarded as an asylum.

There is another subject, somewhat akin to this, to which I wish here to make brief but special reference,—namely, that of increased house accommodation for the labouring classes and for the poor. The recognition of a great want in this respect, as regards towns, led to the formation, years ago, of the Metropolitan Association for Improving the Dwellings of the Working Classes. This society, founded by several enlightened men, from purely philanthropic motives, has accomplished much useful work, and continues to-day in a flourishing condition; while it has been the pioneer, if not the agent, in promoting a number of schemes having ostensibly the same object. The general recognition of the need of further steps in the same direction, which led so many to co operate in this movement, took shape as regards legislation in the Labourers' Dwellings Act of 1875. This Act, while it endorses and adopts much that has been attempted by private or voluntary effort, gives increased scope and facility for similar exertions in the future, and at the same time it provides safeguards against their failure or miscarriage. Turning to another aspect of the same subject, namely, the want of improved dwellings in rural districts, we find that in this department also the need has been to some extent recognised by the Legislature; for the loans which are administered under the management of the Inland Enclosures Commission have special reference to the building of cottages, as well as to other agricultural improvements.

But in speaking of the recognition of a need in this respect, whether in urban or rural districts, we are reminded somewhat sadly that such recognition has not availed to lead to an energetic and comprehensive effort to provide a remedy. In this particular district the need of improved cottage accommodation exists probably to as great an extent as in any other part of the kingdom, and it has accordingly been the subject of a good deal of attention and of much discussion. But it seems clear that before any extensive improvement can be effected there must be more co-operation between all the parties concerned. The landlord, the tenant-farmer, and the labourer must all contribute. It is not enough for a landlord to make up his mind that he will not look for a mere money return from expenditure incurred in the building of farm cottages. The farmer must rise to take an interest, in some measure at least, in the moral and physical well-being of his men, and surely the responsibility accruing from the position of a master applies here as well as in other cases. While, lastly, the farm labourer must recognise the advantages offered by an opportunity of forming a settled home in contrast with the roving and independent life which in this country is unfortunately too characteristic of that class.

There is another topic upon which I have not yet touched, which, while it has an important bearing upon each of the social questions I have alluded to, surpasses them all in magnitude, affecting, as it does most seriously, our national well-being, and therefore deserving in a special degree the attention of an Association which has for its object the promotion of the moral and physical welfare of the people. I refer to intemperance in the use of intoxicating drinks. The claim which this question has upon the notice of your Association will appear still more plainly by analysing the various heads of inquiry under which the subjects which are to receive consideration at this Congress are grouped.

Thus, in dealing with the state of our laws—especially the criminal law—the treatment of criminals, and questions connected with prisons, the question arises, Whether there is any one tendency or influence which more than any other brings that criminal law into operation, and fills our prisons with inmates of both sexes, and all ages, drawn from every class of life? Or, turning to the department of education, is there any special influence which mars our progress in this respect, especially as regards the humbler classes of society, rendering them either indifferent to the opportunities afforded them of educating their children, or incapable of giving free scope to such opportunities,—an influence, moreover, which at the same time often reduces to the lowest social grade those who have received an elaborate education, and pass as men of culture. And once more, under the subject of health, I would ask, is there any one habit or vice which has unquestionably caused an overwhelming amount of disease and debility,—debility which is often transmitted to future generations? The answer given to these inquiries by the vast majority of those who are qualified to form an opinion on the subject differs only as to the extent to which other causes in addition to the one now before my mind have contributed to the mischief. Whether we appeal to those by whom the criminal law is administered or enforced, or to physicians, philanthropists, and ministers of religion, their voice is unanimous in declaring that these evils must very largely be attributed to one definite source,—intemperance in the use of strong drink.

Here I wish to state plainly that I do not

come before you as the author of any panacea, or the advocate or representative of any special scheme for eradicating this plague and pest in our social life. The very fact that so large a number of schemes have been devised for this end is in itself a proof of the magnitude of the evil; but I am at present unpledged, either by conviction or by promise, to any project of the kind; and, moreover, my connexion with the committee appointed by the House of Lords to consider this very subject would preclude me from pronouncing a definite preference for any particular line of action. My desire and purpose is rather to suggest whether it would not be both appropriate and opportune that your Association should consider this great subject,—a subject which, so far as I know, has not hitherto formed a special topic for discussion at your meetings, though, as I have endeavoured to show, it must be regarded as coming directly within the scope of your deliberations.

I have referred incidentally to the opinions held upon this matter by those who are responsible for the enforcement and administration of the law, under which general terms I would include functionaries of every rank, from the judge of assize down to the police officials of the kingdom. Their opinions cannot be regarded as a mere general impression, attributable to professional or individual prejudices. They are undoubtedly based upon the special opportunities of observation which belong to their professions, and on the facts and figures which it is part of their duty to collect or to consider.

As regards the physical effects of strong drink, ample opportunities have been afforded for obtaining the opinions of the most eminent physicians on the subject, and the preponderance of the testimony is very decided,—that the health of the community is seriously prejudiced by the prevailing excess in the use of alcohol.

It is wholly unnecessary that I should weary you by appeals to statistics upon this subject, or to the opinions concerning it expressed by persons whose judgment is entitled to respect. In no controversy of our day are facts and figures collected and tabulated with greater diligence, or the dicta of eminent persons recorded with more care; and the results are within the reach of all. Indeed, it may fairly be assumed that the wide differences which exist in the views held upon the Drink Question are due in a very small degree, if at all, to any doubt respecting the facts, but mainly, if not altogether, to diversity of opinion as to the nature and extent of the responsibilities of the community and the State, in view of those facts. The petulant retort, "Am I my brother's keeper?" is indigenous to our breasts, and in some form or other springs to our lips whenever the misfortunes or the faults of others around us seem to demand from us either cost or self-denial. But the practical answer comes back to us again and again, in language which all can appreciate, teaching us that such a position is not more selfish than it is foolish. The ties which bind us to our fellow-men are not of our own making, and it does not rest with us to decide whether we shall acknowledge or repudiate them. If the State neglects the social and moral welfare of the masses of the people, and, as Lord Beaconsfield, I think, has expressed it, allows Government to become a mere matter of police, it will not fail to reap the natural fruit of its neglect in an ever-increasing amount of pauperism, disease, and crime. True enlightenment in the government of a nation will not display itself in the erection of hospitals, lunatic asylums, workhouses, and gaols—institutions which no civilised community can dispense with; but in dealing with the evil causes which tend to undermine the health, prosperity, and virtue of the people. I am not about to abandon the position I have already taken, or to proceed to indicate or even to suggest means by which the national evils of intemperance may be mitigated. My object is purely to justify the plea I have ventured to offer, that the subject is entitled to a prominent place in the deliberations of a Society such as yours. I do not dissemble my conviction that Christianity in its deeper sense is the only panacea for moral as well as for spiritual disease among a people. But when, as in this case, a national vice attains such a development as to assume the proportions of a great social question, affecting the wellbeing and prosperity of the community, it is but right that it should claim the attention of an Association formed expressly to deal with questions of this character. Your past Congresses have operated sometimes to promote, often to expedite, amendments of the law, which have helped on social reform, but nothing you have accomplished in the past could more justly secure for your Association the respect and gratitude of wise and good men than would your success in this respect, if by taking up this question, without regard to the dreams of enthusiasts, or the projects of specialists, and grappling with it, not in its religious or even in its moral bearings, but solely in its social aspect, you succeeded in attracting to it the due attention of Parliament, and, above all, if you secured for it, for the first time, the consideration of the House of Commons, on a basis and in a manner worthy of the magnitude of the subject and the high position and character of that great assembly."

IS ART CAUSE OR EFFECT?

THOUGH it may seem late in the day to ask such a question, now that all the forms of art that we as yet know anything of have had their period of highest development, yet in one sense the question is very pertinent to the time, since there has been in the present generation probably more talk about the influence of art in raising the moral tone and civilisation of the people, and a more earnest and well-intentioned desire to see that influence widely and rightly applied, than at any other time. The idea that the arts were civilising and refining agents is, indeed, asold (at least) as the axiom of the Roman poet, with which we are so terribly familiar,—

"*Ingenuas didicisse fideliter artes*
Emollit mores," &c.,

though probably the "*ingenuæ artes*" hardly signified precisely what we used to mean by "the fine arts." This latter phraseology is also now more or less obsolete; and instead of speaking of "the arts," we speak in a more broad and general phrase of "art," as a kind of entity or influence not easily to be defined, but the character of which we are all supposed to be agreed about, and which we regard as a powerful agent in the amelioration of society.

It will not be supposed that we mean to question this latter creed in the main; but it can hardly be overlooked that this talk about the influence of art has a tendency to lead to a one-sided and radically erroneous view as to the relation of art to society and to morals and manners, as if art were a kind of extraneous influence, a gospel *ab extra*, moulding the thoughts and tastes of its generation. That it is an important influence upon these, often, if not always, is true in the sense to which we mean to confine the expression. But when people talk generally and vaguely about the influence of art, they seem often to forget entirely that the art of any period is itself in a great measure a part of the result of the civilisation, the tastes, and the aspirations of that period, and of the endeavour to express these; and not an independent influence acting upon them.

Looking at the subject historically, we can hardly fail to see this; and it may be observed, in fact, that in speaking of the art of past periods, we seldom use language in accordance with the "influence" theory. This is especially the case in regard to architecture, which modern criticism has long ago recognised as the art most of all dependent on and moulded by the wants and civilisation of the people practising it. Scarcely any one, we imagine, would think of dwelling upon the influence exercised by Mediæval architecture upon the religious thought and aspirations of its time, taken collectively. Mediæval architecture was, in fact, a much less sentimental thing,—much more a matter of practical problems and difficulties than we, looking at it through "the mist of passed years," have been usually accustomed to think: and so far as it was sentimental, it reproduced and illustrated, it did not itself create the sentiment. There is an extraordinary similarity of expression and impulse to be traced between, for instance, the Hymn of Bernard of Clugny (a part of which has become popularised in English translation) and the mounting, aspiring character and multiplicity of repeated detail in a great Late Gothic Cathedral: but the hymn, and the religious spirit which it represented, long preceded the building. And so on through the various prominent architectural styles of the world: in each it is all but self-evident that the style, as we know it now, was the result of the civilisation of the day and of the conditions of the country and habits of society; and that these influenced, and were not influenced by, the architecture of the period. Even in regard to such details as the sculptured accessories of the Parthenon, we cannot regard these as intended to instruct or elevate those who would see them; they were the representation or expression in sculpture of ideas then and for some time before current in the Greek mind. The notion of the contest of Athene and Poseidon, of the battles of the Centaurs and the Lapithæ, preceded the sculpture of these subjects on the Parthenon; and the procession of the frieze was in all probability as nearly as possible a literal representation of a fête previously celebrated, and to which the people were habituated. The uncouth and grotesque carvings which decorate Hindu architecture represent in concrete form the wild imaginings of Hindu mythology; no one would dream of supposing that the process was the reverse, and that the Hindu mythology was derived from the Hindu sculptors and architects. It may be true, of course, that all the works spoken of, when executed, did afford interest and instruction to the less educated classes of their day; that the Hindu did realise the qualities of Vishnu and Siva more vividly from contemplating their representation in stone, that the Mediæval worshipper was solemnised by the majesty and vastness of the cathedral. But that influence in detail and upon individuals is another part of the question altogether, to be considered separately. What we are just now concerned with is the fact that, in all these and other cases, the pervading intellectual and religious spirit of the day influenced the art, and was not influenced by it.

To turn to an epoch of art in which the element of individual genius was stronger, perhaps, than in any other time and place: are we to think that Michelangelo, and Titian, and Raffaelle, the more influenced contemporary feeling and taste in art, or were influenced by it? In regard to Titian there can be little question: his art was the outcome of the Venetian life of his time, the highest expression of that intellectual luxury, mental and material, which reached its fullest development in Venice; his very choice of subjects was determined, as his latest biographers have been at some pains to show, by the taste and morality of the day and the neighbourhood. Raffaelle, again, formed the crowning figure in a school which had been gradually developed up to the point where he found it; he was the perfector rather than the creator of a style. And in the case of the Renaissance, as in that of the Greek and Hindu myths, the literary expression preceded the artistic, and the latter would hardly have been possible, or at all events would have met with no demand, without the former. Michelangelo alone seems to stand on different ground. The influence of the revived classic taste of the day was, of course, more or less felt by him, but he gave his own translation of it into his own style; and in regard to social and moral feeling he was apart in great measure from his own time and from the habits of mind of his contemporaries. He was one of those exceptional and rare geniuses who have sufficient strength of individuality to stand apart from the life of their contemporaries, and even to influence contemporary feeling and taste to some extent by the force of their own personal intellectual power. But the men of whom this can be said are so rare that they may be regarded as the exceptions which illustrate the rule.

Historically, then, it would seem unquestionable that the art of any epoch has been an effect rather than a cause of the civilisation and moral character of that epoch; that it can hardly be said to have influenced the general character of the people among whom it was produced, since it was rather the offspring of that character; and that although the eminent artists of any period were men of superior intellect to the average of their contemporaries, they were not and could not be to any great extent independent of contemporary feeling and habits of life and of thought, but were rather the persons qualified to give to these the best and most intense expression. And if this was the case even with those highly intellectual forms of art, such as sculpture and painting, in which the individuality of the artist most asserts itself, much more must it have been so in the case of the less expressive forms of art connected with ornamental design and furniture and *objets de luxe*, in which there is less opportunity for the expression of definite ideas and for the influence of personal intellectual character. The ornamental art of a country is a part of the taste of the country, the origin of which can be traced to

no special moment and no special originators. As a proverb is said to be "the wisdom of many and the wit of one," so a specimen of ornamental art in any national style is the taste of many and the handicraft of one; but, as in the case of the proverb, the individuality of the worker is almost or quite lost in the nationality of style and feeling. It would be utterly impossible to trace in detail the influences by which such a characteristic art as that of Japan, for instance (almost the last example left of unaffected national character in art, and it is fast getting contaminated by the influence of self-conscious European taste), came into being and acquired its peculiar character. It is the offspring of a thousand influences of climate and circumstance which have formed the national character and habit, and through this the national art.

Considering all this, it might seem that there is a sense in which the idea, much dwelt upon in the present day, of the influence of art upon the people, the desirability of its further development as a path to a higher civilisation, and so on, does involve a fallacy; as if we were to achieve by means of art the development of those qualities which in fact are themselves the basis and the cause of artistic expression. In place of the spontaneous artistic expression of the great epochs of art in the past, we have now a kind of deliberate resolution propounded: "Let us be artistic: our ancestors were artistic, why are not we? Let us endeavour to be artistic, and all kinds of good will follow."

Those who think the proposition, thus reduced to its simplest form, is entirely fatile, must, however, be asked to discriminate a little. It is probably true that we cannot produce a real art merely by talking about it and directing the attention of the nation to the subject; or even by establishing schools of art. Unless there is an innate desire for artistic expression, unless there is some distinct national character and feeling struggling for expression in artistic form, anything we can produce can only be a kind of repetition of the art of some other period. And there is no doubt that with increased means of communication marked character tends to disappear from nations, as in the conventionalities of society the distinctive character of individual men tends to be smoothed down to a conventional type. We are losing, or have already lost, that natural and unaffected taste which results in the production of a natural and unaffected art: and we cannot, of course, artificially make this taste again by deliberately setting before men the products of a former period of spontaneous production. To do so with this object is to encourage the pretence and unreality which are so unfortunately characteristic of much of the art and art-criticism of the day. But there is something to be done, in the first place, by promoting a more general and intelligent comprehension of the productions of art which exist for us: and it is not certain that this is not, so far as "the masses" are concerned, almost a new object, never before realised or attempted. Although the art of the Renaissance arose, as has been observed, from the literature and general state of feeling of the period, as represented among the more educated classes, it is somewhat doubtful whether the lower orders understood or appreciated the higher forms of art then, any more than now; or whether their taste were any purer than now. There is something, therefore, to be done, even if we produce no original art now, in recommending the study of what exists to the less educated classes, with the view of giving them higher interests and wider sympathies than they have at present; and in this respect art, though originally an effect, may become in its turn a cause of civilisation; for it is impossible to deny that an intelligent interest in its productions, a capability of understanding wherein their beauty lies, give and must give a new interest to life, and give birth to a desire for something beyond mere material comfort and well-being. That this study of past artistic work will not make a people into artists, and that it is even liable to be abused for the encouragement of unreal and insincere imitations, cannot be too carefully borne in mind. But the mere capacity for enjoying and appreciating works of art makes an immense difference in the life of the man who has it, over him who has it not; and it is almost impossible to overrate the change which would take place in the mental tone, the culture, the interests, and therefore, in the highest sense, the civilisation of the bulk of the people, if they were brought into that condition of familiarity with the artistic aspect of things which this fuller comprehension of art would imply. In this sense, then, art may be, in a most important degree, an influence on national character and culture. We might say, looking at it in this light, that the art which, in its own generation, was an effect, an offspring, of a high civilisation and an intellectual aspiration, finding expression through the most gifted individuals of its generation, becomes, in its turn, a cause of civilisation to succeeding generations, and even includes the possibility of an entirely new mission in refining and raising the tastes of a later generation, though at the time of its development it was in reality the offspring and expression, not the cause, of the tastes and feelings of the more cultured portion of the community of the period.

It is in looking at the matter from this point of view that we recognise the real value of magazines of art, as we may call them, such as museums and art-galleries. For we believe that, after all said and done, there is no more certain (though it be a slow) method of bringing the popular mind *en rapport* with art and with the intellectual enjoyments which it furnishes, than by simply letting them see as much of it as possible. Lectures and treatises on principles of art have their value and interest to those who have begun to think on the subject; but the first point is to get the people to care about it, and sympathise with it; and in regard to this aim, habitude of eye and mind is a most powerful influence. Every one must have noticed, both in himself and in others, how the perception becomes enlarged and extended by mere acquaintance with a higher class of productions than the mind has been previously habituated to; how that which formerly semed good, and interesting, and satisfying, comes to seem commonplace and unworthy of attention when the mind has become accustomed to what is better; and that, even, without any study of principles or reading up of art-history. It may seem to some a very lax and primitive method of raising the national culture, simply to give people the run of art-galleries; but we believe that experience shows that there is no better method of creating and stimulating a taste for whatsoever things are excellent and whatsoever things are lovely than by accustoming people to see and contemplate them. The reasoning out of the matter comes, if necessary, at a more advanced stage. It may be difficult to tabulate in detail the nature and extent of the mental improvement radiated from art-galleries and art-unions within a certain specified time; the progress may be almost imperceptible: *e pur si muóve*.

So, to go a stage further, the wider spread of what may be called an artistic habit of contemplation, derived from these influences, is the natural basis for the desire for active artistic creation. The influence of the Renaissance movement was really, in its earlier stage, of this nature. It was the action upon the modern Italian mind of the influence of antique literature and antique art, that mainly stirred up that intellectual excitement which, dreaming at first of reviving the classic age, ended in evolving out of classic art and literature an art and literature of its own. So it may be with us in this latter phase of the nineteenth century. We are yet *in transitu*; we must not try to hurry things too much; we must not expect to artificially force an original modern school of art by the mere institution of mural painting and fresco. We have first to revive the spirit under which such forms of art become a real expression of the feeling of their day; we have to feed the springs of artistic creation from the sources of the former great periods of art. Our art-schools and other means of technical training are indeed valuable in preparing means to an end, and in assisting the study and comprehension of "the Arts" considered as separate forms of artistic language and expression. But with this, or before this, we want that development of the spirit which underlies these various arts, which we sometimes speak of as "art" in the abstract; an expression which, if we look into it, really seems to mean the presence of the imaginative faculty. When that faculty is once more awakened and stimulated to activity in the mind of a people who have learned the spirit of the art of the past, it may find its spontaneous expression in forms special to modern habits and modern feeling. In this view, the art of the past stands to us in the relation of Cause, the art of the future, we hope, in that of Effect.

To sum up: we do not in any sense, as we hope we have made obvious, intend to question the desirability of doing all that is possible to popularise the study and comprehension of art, or to deny the efficacy of such study as a means of promoting a higher culture among the people at large; as, in fact, a civilising influence. But this only relates to art, or rather to artistic productions, which already exist, which are the legacy to us of previous generations. An art which is to be the art *par excellence* of the present day must have just the reverse relation to the highest civilisation of the day, must be not its cause, but its effect and expression, which cannot be forced by art-schools or exhibitions, or by the arbitrary resuscitation of any form or process of art in which great things have once been done, but can only arise spontaneously from the existence of a desire for such expression, innate in the national mind.

THE CHARING CROSS HOTEL EXTENSION.

The enlargement of the Charing-cross Hotel, by the erection of a separate block of buildings on a site which has been cleared between Villiers-street and Buckingham-street, is now actively proceeding, and the intention of the hotel company is to have the building completed and ready for occupation by the time fixed for the opening of the French International Exhibition next year. The building will have three main frontages, one to the south, facing Duke-street, and two others to the east and west, facing Buckingham-street and Villiers-street respectively. The principal elevation will be that to Duke-street, which will closely resemble the main frontage of the existing hotel. The Duke-street frontage will be 120 ft. in length, and 100 ft. in height. It will contain seven stories in addition to the basement, each story having a range of nine windows, varied in their architectural character, some having pediment heads, and others circular. The lower portion of the elevation, up to the first-floor windows, will be in Portland stone rusticated, whilst the upper part of the frontage will be in white Suffolk brick, with Portland stone window-dressings, string-courses, and cornices, with a free introduction of ornamental carving. Above the fifth story there will be a bold cornice, surmounted by an iron cresting, the two upper stories forming part of a lofty and ornamental Mansard roof. There will be an entrance about 6 ft. in width, in the centre of the elevation. The Buckingham-street and Villiers-street frontages will each be 63 ft. in length, with a range of five windows to each floor, and architecturally uniform with the Duke-street elevation. The basement, and the ground and first and second floors, are intended to be let off as wine-cellars and offices, the portion of the building forming the extended hotel being confined to the four upper floors. The offices in the lower portion of the building, exclusive of the basement, will be forty in number. The enlarged hotel will not contain any entertaining or day rooms, the main object of the enlargement being an increased number of bedrooms, of which there will be eighteen on each floor, the total number of bedrooms in the new building being seventy-two. The added structure will be connected with the present hotel by an ornamental bridge carried across Villiers-street at an elevation of 35 ft. above the roadway, and on a level with the third floor. This bridge will be closed in, so as to form a corridor, giving access internally from one portion of the hotel to the other.

The architect is Mr. J. Fish, and Messrs. Lucas Brothers are the contractors. Mr. Roome is clerk of the works.

Building Society "Appropriations."—The Registrar of Friendly Societies has just settled a case of great importance to the members of the "Starr-Bowkett" and other similar building societies. At a recent ballot-meeting of the Rochester Starr-Bowkett Building Society the appropriation fell to a mere child, too young to write her name, and who had been entered as a member of the society by her father. The father wished to sell the appropriation, but the committee objected that he could not do so unless the child signified in writing her assent to the course. Mr. Stephenson ruled that under the sixteenth rule of Starr-Bowkett Societies the father as a guardian had full power to dispose of the appropriation for the benefit of the child.

THE HOUSEHOLD AT DIFFERENT ERAS.*

LOUIS QUATORZE.

"Toute l'Europe, MONSEIGNEUR, est dans l'attente des prodiges que promettent les premières années de votre Enfance: Elle ne peut concevoir quel sera le haut du jour d'une aurore si brillante; et quand elle jette les yeux sur le courage, sur la vivacité, et sur la magnanimité qui se font admirer en Vous avant le temps, elle prend plaisir à se flatter qu'un jour elle Vous aura pour son Maître. Fasse le Ciel que les Peuples puissent seconder de si grandes destinées, et que toute la Terre reconnoisse en Vous un digne Fils de LOUIS XIII. Ce sont les vœux que fait tous les jours, MONSEIGNEUR, Votre très-humble, très-obeissant, et très-fidèle serviteur,

PERRAULT."†

VOLTAIRE, in consonance with the thought of his time, reckoned the history of the world to consist of four eras only: that of Philip and Alexander, that of Cæsar and Augustus, that of the Medicis, and that of Louis Quatorze. Such a division not only ignored the Middle Ages of Europe, but excluded England from the honour of having ever taken a leading—we should rather say royal—part in the development of human happiness; and we are not quite sure that he was illiberal. Though, if Voltaire were alive now and appreciative of the researches of the present century, he might, perhaps, accord a fifth age to the historical world, it is certain that Mediæval England could not claim pre-eminence over France in the twelfth, thirteenth, and even fourteenth centuries. There are many people still, thoroughly acquainted with all that is now known of the arts and literature of the Middle Ages, who believe that, if a fifth epoch is to be added to Voltaire's reckoning, it must comprise a time to come, not one that is past. Their argument is, that the Middle Ages are to France, England, and Germany of to-day, what the period which elapsed between the building of the City and the first century was to the ultimate magnificence of Rome,—what the period which preceded Pericles was to the men who built the Parthenon and the Propylæa of the Acropolis. Perhaps, moreover, we hardly evinced sufficient respect for, or acknowledgment of, the practice of the last thirty years by our somewhat rapid review of the Mediæval era. Perhaps, on the conviction that almost too much has lately been written about it, we followed the example of those historians who ignored or passed it over in a haze of generalities. It would require a very bold man—for the time of reaction has only just set in—to say that the accepted age of faith was not entirely the era of domestic virtue and industrial excellence which the typical historian of art is zealous to maintain. The researches an archæologist makes into the history of the past are necessarily confined to the substantial remains still existing upon the earth. Of the castles and cathedrals he can take stock with minuteness, and judge them, doubtless, with accuracy; but of the huts of the peasantry, of the homes of the people, of the refuse of Mediæval construction, he can only surmise, for every vestige has disappeared. He consequently surmises with impunity. Something is known of the condition of the poorer inhabitants of cities in the sixteenth century; a great deal is known of Paris and London, and of the condition of the people in both those capitals, during the seventeenth century. The picture of both is anything but agreeable; it is pleasant, therefore, to imagine England and France to have been happier places to live in before the Reformation than after it. As far as the arts go, the tendency of modern teaching in this country is to show that architecture before the days of Elizabeth was perpetually right, and that since then it has been perpetually wrong. But, if architecture is a science, of which modes, methods, and principles of construction form only a portion, though an important portion—if it is a science which concerns the health and happiness of all sorts and conditions of people, then we venture to believe that a greater number of Frenchmen and Englishmen were better housed after rather than before the building traditions of Western Europe were confounded in the advent of reform, and the consequent diffusion of education.

For twenty years, the great authority upon all matters connected with the house and household of the Middle Ages has been M. Viollet-le-Duc. His facile pen, his still more facile pencil, his array of "facts" and "authorities" which it is never the interest of a true believer to verify, have been accepted by the majority of people who in this country think about the subject. Further, his Dictionary has not yet been translated; and though all educated Englishmen can read French, it is not every reader's privilege to distinguish a glaring contradiction, an incomplete or imperfect inference, when either occurs in the descriptions and deductions which few archæologists better than M. Viollet-le-Duc can render interesting. Take, for instance, the close of the article upon *Architecture*, in which, with an ever-ready flow of words, the author describes the general points of the "palace" as well as of the "house" in the thirteenth, fourteenth, and fifteenth centuries. The margin of three hundred years is a wide one, but still it will hardly be disputed that all the time both Paris and London were not only extremely small cities, according to modern notions, but also that the burgesses inhabited within the walls, or at least within a very short distance of the centre. M. Viollet-le-Duc's description of the houses of the rich burgess (one of the gentry as we should now designate him in England) and of the tradesman (or petty burgess, as he would be called in France) is perfectly lucid. The principle of the Mediæval town house, as far as the plan goes, is not different from that of a small house in Soho and the neighbourhood of Golden-square at the present day; only the shape and details of the external wall are altered. The *petit bourgeois* or tradesman is generally credited with the ambition—laudable doubtless, and implying that many of his equals were compelled to live up narrow and obscure, perhaps barely penetrable alleys—to possess a gable facing the street. Beneath this gable on the ground-floor was the shop through which very often all the inhabitants of the house passed to reach the upper stories. Sometimes alongside the shop there was a narrow passage leading to a circular stair and a small back court; sometimes this winding stair was close to the street and entered immediately from it. This tradesman lived over his shop, and the whole of the first floor was occupied by a Hall or *Salle* which served as kitchen, dining, and sitting room for himself, his family, and his apprentices, and as a sleeping room for his servants. The same or another stair communicated with the second floor, in which were the chambers. One was occupied by the master and mistress with their younger children; another was a dormitory for the assistants and apprentices; another, perhaps, in the roof, was a granary. The house of the gentleman, the rich *bourgeois*, sometimes possessed an entrance from the street wide and high enough to admit a cart and a man on horseback into the courtyard at the back. There was a shop on the ground story, and frequently no doubt this shop was sublet by the proprietor of the house, who in such a case lived over it with his family. The entrance to the shop was from the street, and the means of reaching the first floor was by a winding stair approached from the courtyard. Sometimes there were kitchen-offices in this court; but, as in the smaller houses, the common Hall was on the first floor, and the chambers were on the second floor. Such houses were principally composed of wood and plaster; sometimes the front wall of the ground story was of stone. Counting the ground-floor as one, they consisted of three stories, and sometimes a storeroom in the pointed roof; while below the level of the ground there was a cellar, and this cellar was often approached through a trap in the public street, much like the descents into the cellars of beershops in London at the present day. The obstructions to which every chronicler alludes were not confined to cellar-traps, for the shopkeeper then used his shop very much as shops are now used east of the Adriatic; he placed his goods for sale outside upon the public path, and used the interior as a sitting, a dining, and doubtless a sleeping room. Yet in those days of naïve and picturesque comfort, as the veracious historian in this century informs us, each family possessed its house. "Dans les villes," writes M. Viollet-le-Duc, "chaque famille possédait sa maison."*

But the people, the human beings who were neither big nor petty burgesses, who professed no occupation in any service whatever; the people who represented the hewers of wood and drawers of water of Scripture; the people who even in France are still comparatively prolific and bring forth numerous children,—did the families of that people each possess a whole house, or even a whole hut? The people, we repeat,—were there any in the age of Faith? If so, where and how did they reside? M. Viollet-le-Duc admits that there were "lower orders," "dangerous classes," "*bouches inutiles*," in those days. He admits that at a time when the different grades of the community were distinctly defined there must have been a large number of persons who were members neither of a religious nor a trade fraternity, who belonged neither to a nobleman's nor a citizen's household, who were neither artisans nor labourers, but who formed "a vagabond mass living somewhere." Undoubtedly; and if we disagree with the French writer's method of describing the inevitable fact, it is because we do not think that "vagabond mass" to have been so entirely insignificant or so entirely amenable to internal discipline as M. Viollet-le-Duc complacently suggests. In spite of the grandeur and comprehensive character of the great households, in spite of the care of a paternal and maternal church, in spite of the practical co-operation amongst bodies of men in the Middle Ages, the "*residuum*" must have been not only large, but sensibly important; and its amelioration or its decrease was hindered by the system of monopoly which characterised the industry of the time. That the beggars and roughs of Paris could in the fifteenth century form themselves into a "*corporation*" or guild, that they could establish agencies in different parts of the country, is evidence of the numerical importance of the lower or lowest orders at that time. In fact, judging by the modern standard of results in indiscriminate almsgiving, the promiscuous charity which was, and still is, one of the great features of monastic life, must have maintained an infinite number of families in a career of idleness if not of dissipation.

Enough is known of the aspect of a Mediæval city in Western Europe to enable us to assert—and enough remains in Eastern countries to form some sort of judgment thereon by analogy of manners and customs,—that both rich and poor did very much as they chose with regard to such modern refinements as height, projection, and situation of buildings. Here and there was a church, an abbey, a college; here and there a large hôtel or an inn, a palace perhaps, or a tower; here was the castle; there the bridge or the market-place; but everywhere,—around and between them,—the masses found some kind of shelter. We do not say that the miserable wooden huts and penthouses (*appentis*), which used to environ the cathedrals and churches existed before the great movement of the sixteenth century; but we do believe that the habit of obtaining shelter in the porches, against the buttresses, under the deep recesses of the sacred buildings, was not only tolerated, but probably encouraged by the clergy in very early times. The state of the Cour des Miracles, a Paris slum, in the seventeenth century has been often described and quoted; Alsatia, in the neighbourhood of Whitefriars, during the reign of Charles II., has formed the subject of much graphic tale-telling. Sauval devoted some space to the various quarters of Paris occupied by the masses; in his history and description printed during the first quarter of the last century, he enters fully,—perhaps with a little temerity,—into the habits and contraband education of the criminal population. His tales of cutpurses and thieves read as if they had been written within our own time, for Fagin and Sikes were not more scientifically expert than—so Sauval would lead his readers to believe—their French prototypes of the seventeenth century. A similar eulogium, for it is really little else, of Paris, written at the close of that century, entirely avoids any but the most distant reference to the slums. Germain Brice treats only of the grand things; of the public buildings, churches, and noblemen's hôtels. He is eloquent upon the orders of architecture and their application; he objects to the *entresol* which was to be seen in many of the new houses of the nobility, and which to him presented an appearance of tradesmanlike meanness. The *bourgeois* is the lowest grade of the community with which he will have to do. Boileau, on the contrary, delights in denouncing the noise, confusion, and injustice of the crowd. With Horace, Juvenal, and Martial as his models, he draws a picture of life in the streets in his own time even more graphic than the earlier satires with which Englishmen are more familiar. Boileau, who lived, according to one of his biographers,—not in a garret, but above one,—in a small tower approached from the "leads," indignantly exclaims against the thieves who took possession of the town as soon as the peaceable shopkeeper had closed his shutters

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* See p. 778, *ante*: "The Reformation."

† Charles Perrault—not Claude Perrault, the architect.

* The late Emperor Napoleon once paid a distinguished compliment to London by stating to an English nobleman that here every house is occupied by a single family! Yet he had inhabited more than one bye street.

with a "double padlock," and had retired to his rooms to re-read his letters and re-count his money. Those thieves are the men to whom M. Viollet-le-Duc alludes in his notice, from Sauval, of the "Corporation des Gueux." M. Viollet-le-Duc offers thanks to the "spirit of association" which undoubtedly existed in the Middle Ages, for this *corporation*. It is said to have been formed in the fifteenth century, and to have been composed of men whose occupation was gone after the pacification of the country at the close of the fourteenth century. Without entering into the details of its formation, and without inquiring whether the *corporation* existed in the time of Sauval,—or whether it ever existed at all,—it is certain that the class of men and families of which it was said to be composed existed not only during, but long before his time. He describes one of the slums in which such people lived, and which he visited. The inhabitants bade defiance to taxes, police, and law. To reach its heart it was necessary to penetrate tortuous, narrow, and filthy (what must have been the character of the filth which, in the *grand siècle* was called "filthy"?) streets. There Sauval saw a "house of mud" half interred, rotten and old, about 27 ft. square, within which fifty families were lodged with their medley of children, legitimate, natural, and naked. There and around lived some five hundred families huddled together and piled one over another.

Quite apart from the story of those slums contemporary evidence of all kinds, and from people of all nations, is at the disposal of every one to show that the cities of Paris and London, about the middle of the seventeenth century, were dilapidated, infected, and filthy; and that the inhabitants of the former capital,— not to mention London,—were crowded together in houses totally unfit, and not intended, for the mode of occupation to which the Parisians subjected themselves. Yet that had been the state of the French capital for a period beyond the memory of men upon whose evidence the world relies; and the question is, Does that state represent the culminating degradation of a hundred or of two hundred years, during which a so-called renascence of literature, learning, and social civilisation had risen and developed? In Western Europe the great building era, linked with the forms of civilisation and spirit of thought now actually in vogue, is the reign of Louis Quatorze. Comparatively speaking, Paris was rebuilt then as it has been lately rebuilt by the Third Napoleon; and London was effectually destroyed by fire. It is, therefore, a very fair question to ask revivalists whether, as regards plan and arrangement,—as regards general convenience,—the houses which in Paris were pulled down about the time when London lay smouldering in ruins, were better, healthier, and more comfortable than those which Louis Quatorze and Charles II. ordered to be built.

It was the great age, fairly renowned for the glorification of a few great men and of many small things; a time when France, the centre of Europe, united almost every species of ascendency.* The Château de Richelieu—and a monography of it, drawn by Jean Marot, is to be found in the British Museum—gives a by no means exaggerated idea of the kind of domain which a nobleman, especially if he had any post of importance in the government of the country, not only built but inhabited. Broad roads led, in a straight line, to the external gates. Thence, to the drawbridge of the château itself, a distance of some 800 English feet had to be traversed, through a *Basse Cour* more than 500 ft. by 300 ft. in size, and lined with buildings of two stories; after that through an *Anti-Cour* some 300 ft. square, with buildings (principally stables) of three stories on either side. The courtyard of the castle proper was nearly 200 ft. in width; buildings of four and three stories enclosed three sides of it. Surrounded on one side by masses of forest, the immediate vicinity of the long lines of building was adorned with gardens laid out in every shape and combination of pattern; roads, avenues, and alleys led through them. Towards the close of the sixteenth and the beginning of the seventeenth centuries, similar châteaux were to be seen over all parts of France; in some, as late, indeed, as the days of Louis Philippe, the perfect and scientific order of their arrangement, even after an age of neglect, contrasted singularly with the rickety character of the town or village near them. No country can show so many monuments of the building genius of almost all reigns as France; and it may be added that no reign is even now,—after the fury of the first Revolution,—so nobly and fully represented as that of Louis Quatorze; ignoring, of course, the unpleasant recollection that a systematic pillage of the nation supplied the building funds in too many cases. The story of Fouquet in the early days of the king, of his letter containing the boast that he was at "his fourteenth million," of his disgrace and dismissal from the care of the national exchequer, are all told in Voltaire's most instructive history of the time. "Proud Versailles" is familiar to every one who has visited Paris and its suburbs. Marly, however, is no more; for the favourite retreat of Louis Quatorze, known to the present generation by drawings only, has seen, as it was prophesied of Cannons, the well-remembered Timon's villa of the satire,—

"Deep harvests bury all his pride has plann'd,
And laughing Ceres reassume the land."

Never was a paradise more painfully obliterated than that upon which the younger Mansard and a host of accomplished—even if mistaken—artists lavished their knowledge, skill, and refinement. It was the last whim of the royal constructor to build a "hermitage" in the woods away from all the pomp and circumstance of state. The château at Versailles was too large and too exposed; the king made several journeys in the neighbourhood of St. Germain and along the banks of the Seine to find a more quiet site. He hit upon a secluded spot which had once been the home of a Louis de Montmorency, who was lord of Marly in the fourteenth century. There was Marly-le-Châtel, a village close to the castle upon the hill; there was Marly-le-Bourg, containing the abbey situated in the valley. They were removed, and the site cleared for the new palace, gardens and watercourses, which formed the labour of six or seven years—between 1676 and 1683. The author of the "Lettres Persanes" probably referred to Marly rather than to Versailles, when he satirically described the king as "magnificent principally in his buildings." "There are more statues," wrote Montesquieu, "in the gardens of his palace than there are inhabitants in a large city." The great *Place*, so to speak, on three sides of which the pavilions of Marly were erected, measures, in round numbers, about 1,650 ft. by 975 ft. At the top was the Royal Pavilion, which contained simply the apartments of the king, of some of his family, and of his immediate attendants. On either side, and at a distance of some 250 ft., were the household offices and lodgings of the servants, the stables, the riding-house, the chapel and other buildings. Twelve smaller pavilions, arranged six on a side, held the guests, who were specially invited to spend a day, or pass Saturday till Monday, at the royal retreat. Those pavilions, each two stories high, nearly 50 ft. square, and placed at a distance of about 190 ft. from each other, were connected by covered bowers

* Macaulay: State of England in 1685.

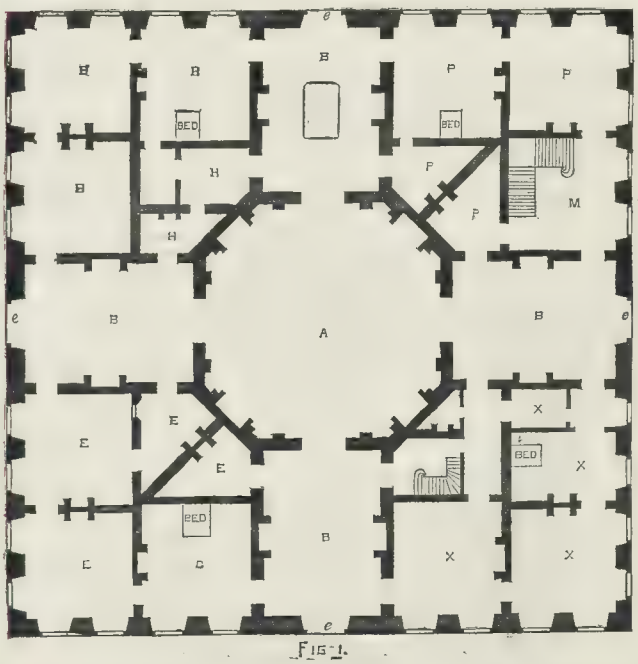


FIG 1.

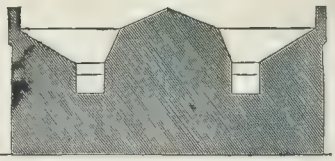


FIG 3.

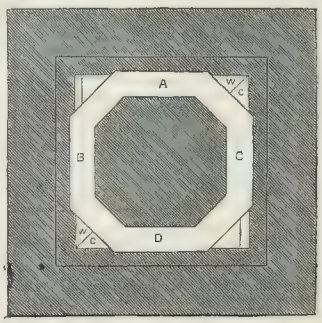


FIG 2.

Note.—Our figs. 1 and 4 are drawn to the scale of a 32nd part of an inch to the foot. An obvious error in our plans of "The Reformation" reversed this scale to the "32nd of a *foot* to the *inch*."

of masonry and foliage; they were reached under an avenue of trees, trimmed into the outline of a groined vault. Our fig. 1 gives the plan of the king's pavilion, which was raised upon a vast terrace, for there was no basement story; it was approached by degrees of three and four steps extending entirely round the building. The entrances were through the rooms B B B B, which were called the "Salons des Seigneurs." One of these, at the top of the plan, was used as a billiard-room, and each probably served as an antechamber to the four divisions of the ground-floor. At the bottom of the plan, at C, was the king's bedroom, and E E E E formed the rest of the king's set of rooms. The rooms marked H were the apartments of "Madame";* the rooms P were those of Madame de Berry; and the rooms marked X were those nominally of the Queen. The staircase, M, led to the upper floor, which was divided into rooms for a few ladies and gentlemen of the Court. A, was the Hall, or, as it was called, the "*grand salon*"; and this method of arranging a large room common to the whole house, and in which the dinner was served, is explained in our smaller diagrams. In fig. 2, A, B, C, D, represent a terrace covered with lead, and level with the first-floor of the house. This terrace was open to the sky; by this means the central room, A, was lighted by windows penetrating the roof. The section (fig. 3) will explain, better than words, the manner in which the younger Mansard succeeded in concealing with four façades the internal shape of a house. Four closets, for the accommodation of the guests who occupied the upper story are shown at W C (see fig. 2), and they were approached from the open internal terrace. The sets of apartments on the ground-story were not provided with anything of the kind. In the king's set the triangular rooms were probably used as "*garde-robes*," and in these the necessary unpleasantnesses of even royal nature were performed. The whole interior of this pavilion was studied with care, and elaborated with profusion. The walls were covered with paintings of the great events and successes of the reign. All was marble without; the external form of the building may still be traced in the foundation-walls. The stone wall surrounding a part of the park, the undulating site of the terraces and fountains, the paved roads, and an *abreuvoir* robbed of its marble covering, still attest the magnificence which Louis Quatorze knew at least how to order, to inaugurate, and to maintain.

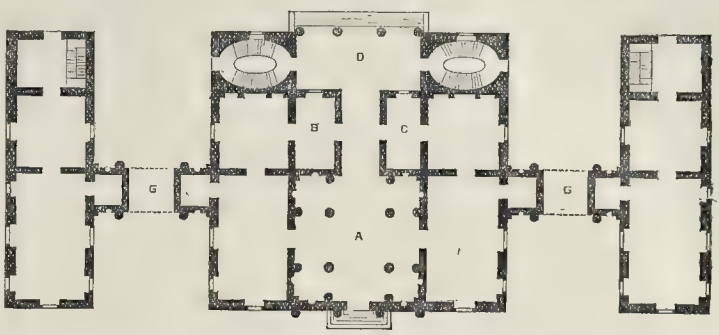


FIG 4.

It is very much the fashion among architects to describe the period of the Reformation and the early years of the seventeenth century as purely an Italian renascence; and M. Viollet-le-Duc has been good enough to affirm that the English have preserved their original form of habitation from Italian influence more successfully than the French. This may be true as regards the people, but as regards the nobility and gentry it is not true. The French signorial domain never completely lost its national and distinctive character. Even at Marly, in the midst of rococo influences, the arrangement of the rooms, of the offices, and of all the external accessories, was still French. In England, on the contrary, the palace and, ultimately, the country mansion were planned according to the accepted Italian method. It is worth while to go back a little. Our fig. 4 is the plan of a villa designed by Palladio upon the ancient model. Vitruvius might very plausibly have described B and C as the *thalamus* and *antithalamus*; and Becker's editor could say that in D the Grecian wife "sat enthroned" in the midst of the spinsters. The house was the residence of an Italian nobleman, and it was situated in Padua; the owner "passed into a better life" before the building was completely finished. The entrance-hall A embraces the entire height of the two stories of which the house is composed. At G, G, are archways over which passages connect the three divisions on the upper floor. The centre pavilion was the residence of the master and his family; the wings held the kitchen-offices and the other dependencies of the household. The ground-floor communication between the wings and the centre was maintained through the open air in the ancient manner, which was perfectly consistent with practical convenience under a warm and propitious sky; and it is habitual in hot climates at the present day. Palladio's description of his work is neither uninteresting nor uninstructive. Referring to the house shown in fig. 4, he says*:—"The great chambers are a square and three-quarters long; the arches are schemed and in our second manner. The second size rooms are square. . . . The closets and the passage between are of the same breadth: their arches are two squares high. The entry has four columns a fifth less than those which are without; and they support the floor of the hall (or saloon on the upper floor), besides that the height of the arch is much finer and surer with them. The four niches which you perceive there have each a statue representing the four seasons of the year. . . . . The first order of columns is Doric, and the second Ionic. The upper rooms are ceiled. . . . . On the flanks of this house there are two wings, joined to the house by two passages which lead into the kitchen and to some other offices; and in the middle of each of them there are two arched gates which open into two streets." The façades of the house are exactly what the taste of this country approved, but never improved, during the whole course of the last century and the beginning of the present one. In spite of all the affectation of French life under Louis Quatorze, in spite of the attempted emulation of Roman art, in spite of the extravagant reception of Bernini—which turned the man's head—it is only justice to say that nowhere in France can be found any private buildings so completely the travesty of Palladian adaptation as those still to be seen in all parts of our own island.

It is perhaps not unreasonable to suppose that Louis, who really said, and he probably said it well, "L'Etat—c'est Moi," formed his notions of sovereign power not entirely unaided by the advice of his elders and immediate counsellors; and also from the literature offered for his study and perusal. The Court programme of manners and etiquette, which lasted during the lifetime of the great king, but not continued in its integrity by his successor, was introduced and invented by himself. Some of the details seem extraordinary to any one habituated to the comparative simplicity of a modern European sovereign; but about 230 years ago the Courts of Europe were deeply interested in the wonders of the East. The "Great Mogul's" country was a fertile topic of inquiry among the learned who were favoured at intervals with stories of Akbar and Shâh Jahâu. Though at that time the commerce of Europe with India was principally carried in Portuguese, Dutch, and English vessels, it was France that read, profited, theorised; it was the French traveller who sent the best letters from Agra and Delhi, and the most frequently. According to Voltaire, the king read greedily in his youth; Anne of Austria possessed much of the "Spanish genius" rife in those days. The Spanish and Portuguese Indies, and the stories which then reached Europe concerning them, were likely to fire the sentiment of self-importance and grandeur which a young man, great from his cradle, naturally nursed. The "Great Mogul," the personification of absolute and irresponsible pre-eminence, was the ideal sovereign whom Louis ultimately surpassed. Nor is the parallel inapplicable to the other estates of the French and Indian realms; in both countries the king was absolute, the nobility were extravagantly rich, a middle-class hardly existed, and the people were miserably poor. The palaces of the king and the houses of the nobility were marvels of design, regularity, and, in their particular fashion, of beauty. In France the houses of the people were found in the discarded and rickety tenements of a former age and state of civilisation; in India they were not entitled even to the name.

During any inquiry into the condition of different classes in France, it should be remembered that the "noblesse" comprised in the seventeenth century a great many families which at the present day would not be included in a list of nobility. The *bourgeois* had become, or rather was deemed, despicable from one point of view before Molière burlesqued him in the celebrated *M. Jourdain*. Evelyn noted in his Diary that the gentry were part of the French *noblesse*; and that of the king's subjects, the *noblesse* appeared to be the sole power, in a political sense, in the kingdom. Fifty years after, in 1698, Dr. Lister, who accompanied the English ambassador to Paris, and made a host of profound observations,—marvellous notes of travel, considering the short time at his disposal, and the circumstance of the visit,—encountered a multitude of poor and miserable wretches in every quarter of the city. Evelyn, in 1649, maintained that the plebeians were of a far more vile and naturally slavish genius than in any other part of Christendom. To use his words, Paris was so pestered that it appeared a miracle to him how so many backs were clothed and bellies maintained as you might behold in one day if you walked the streets: most of the houses ordinarily harbouring six, as often ten, families, betwixt heaven and hell, the garrets, and the cellars. "This I take to be," said he, "the true cause of that nastiness which we usually impute to the nation: persons of quality and such as have room enough being far more proper and sumptuous in their houses than the best of us in England, however we arrogate to the contrary."

About the time of Evelyn's early travels, the only paved route in France—the road between Paris and Orleans—was thought a marvel of the age. Not only were the great routes difficult to follow, but the few that existed even in the neighbourhood of Paris and Lyons, and even in Flanders, were hardly such as a traveller of to-day would call a road.* A carriage drawn

* "Madame" was an Englishwoman, the first wife of Philippe, Duke of Orleans. He was the only brother of the king, and called simply "Monsieur." His ill-fated wife has been tenderly mentioned by Voltaire, who loved this country. She was the daughter of Charles I. of England, and grand-daughter of Henri IV. of France, consequently her husband's cousin. She was sister of two English kings and one English queen, and sister-in-law of the "*roi très-chrétien*." She was mother of two princesses, who married, one, the reigning head of the House of Spain, and the other, the reigning head of the House of Savoy; but she was not the mother of the Regent Orleans,—of abominable memory,—who was her husband's son by a second wife.

* Leoni's edition of Palladio, with notes by Inigo Jones.

* Macaulay entered minutely into the "difficulty of travelling" and the "badness of the roads" in England during the latter half of the seventeenth century. Thackeray also took pains to ascertain the truth, and a graphic description of our highways at that and a little later period may be found here and there in "Esmond," "The Virginians," and smaller places. The roads of France may then have been better tended, but during no part of this or the last century were they superior or even equal to those of England. Macaulay's description, in his "State of England in 1685," is too long to quote. Suffice it for our purpose to transfer his reference to the "coach and six," which, "in our time, is never seen except as part of some pageant. The frequent mention, therefore, of such equipages is likely to mislead us. We attribute to magnificence what was really the effect of a very disagreeable necessity. People, in the time of Charles II., travelled with six horses, because, with a smaller number,

by six horses was a necessity, not a luxury; any edict to restrain the use of carriages in the streets was more a benefit to the populace than an obstacle to innovation. Of Paris and London, at the close of the seventeenth century, and of the ordinary houses and hôtels of the former capital, we shall speak hereafter. The two cities compared by Evelyn afford an amusing instance of the contradictions and turns which Time offers to different communities at successive periods. The River Seine was then "nothing comparable for sweetness to the Royal River of Thames." It was full of huge vessels of burden, though not sea-going ships, which brought provisions to Paris. In the streets were "multitudes of coaches and laquays," and "throngs of mankind," but the French capital was inferior to London in the matter of shops and taverns. These, according to Evelyn, rendered London so "open by day and cheerful in the night." So mad and lewd a town as the English metropolis Evelyn had not found in the whole world; yet had the Parisians so far imitated the Londoners as to form their night-watches of responsible persons, the murders and villanies which constantly occurred in Paris might have been prevented! He had seen in the course of his travels Naples, Rome, Florence, Genoa, and Venice, but the "princely fabrics" in those cities were surpassed by the noblemen's hôtels in Paris, and, to use his words:—"for the streets, suburbs, and common buildings it infinitely excels any city else in Europe." In 1657, James Howel would not admit Paris to be comparable to London for neatness of streets and sweetness of site. "London," said he, "hath far better blood in her veins," meaning the conduits and springs of water the city contained. Yet about the time when Evelyn and Howel wrote, an amusement much practised by the young "bloods" of Paris consisted in jumping from a house on one side of the street to a house on the other; and in Pudding-lane, in which the Great Fire of London began, opposing tenements touched each other at the top.

FROM FRANCE.

To the novice in the ability of the nineteenth-century contractor to accomplish easily astounding works, and to those unacquainted with the contractors' reliance on the never-failing stream of willing workmen, the present condition of the palace of the Trocadero and the leviathan sheds of the Champ de Mars would seem to render it almost impossible that within the present period of pleasant partridge-shooting and Alpine climbing, the dazzling heaps of obedient stone and sturdy iron can, within seven short months, become a hunting-field for the lounger and the pleasure-seeker.

There is some prospect, however, that those who visit this Exhibition for pleasure or instruction may meet with more than ordinary weariness, and there are pessimists who look forward to this Exhibition being the death-blow to all such future undertakings; as far as size and extent go, this Exhibition will certainly culminate in its hugeness.

It is only by what we have seen accomplished within the last eleven months that we can have faith in what has yet to be done before the 1st of next May.

It must have been with some allowable pride that M. Krantz, the hard-working commissioner-general, was able to announce not long since that by the fifteenth of this month the architects of the different foreign sections were at liberty to take possession of those portions of ground respectively allotted to their countries. In compliance with this permission, already the flags of more than one nation have been planted by right of possession, and the different foreign sections are advancing apace.

The architect of the British section, Mr. Gilbert Redgrave, has lately been in Paris, and other foreign nations have not been behindhand. It may be mentioned that, notwithstanding the difficulties in the East, the architect of the Russian section has not long since arrived, and if the same spirit that has reigned throughout all the works till this date be continued, we may feel certain that by the 1st of May next the Great Exhibition will be completely thrown open to the world.

It is not difficult at the present moment to find interesting matter connected with the name of Thiers, whose sadly sudden death and solemn funeral were lately the one subject of conversation. With M. Thiers's political opinions we have no business, but of his artistic and critical judgment we are disposed to join with those who have doubted his ability to lead the public taste. Certainly, in the following correspondence, the painter, Horace Vernet, appears better able than the minister to instruct the uninformed in matters of art, nor can we quite agree with M. Thiers's opinion of the romantic painter Eugène Delacroix, who, fifty-five years since, received at one time M. Thiers's unqualified laudation, and later on his still hasty adverse criticism. It will be remembered by some readers with what passion the minister had adopted the project of a museum of copies, conceived by M. Charles Blanc, a project which realised a dream in which M. Thiers had long indulged, and which he had already tried to put into execution when he was, in 1831, minister of Public Works, a proposal that Horace Vernet, then director of the School of Rome, had energetically combated. The controversy which took place between the artist and the minister is interesting. Sigalon had just been charged with executing a copy of the famous "Last Judgment." Horace Vernet regarded this commission as useless, in consequence of the insurmountable difficulties which it presented, and in a letter addressed to the minister he had submitted his observations to him, at the same time seeking to protect the interests of Sigalon, his colleague and friend. Vernet had already differed with the minister, as appears from the following reply:—

"MY DEAR MONSIEUR VERNET,—I am annoyed to see you in such disposition with regard to the enterprise confided to Sigalon. I am not a painter, but I know enough about it to be certain that, if a literal copy is not possible, a free translation is thoroughly executable, and would be very useful. The reasoning that you make upon a copy of Michelangelo has been made about translations of Homer and Virgil. I have read and heard stated particularly that neither Dante, Shakspeare, nor Aristophanes could be translated; yet their translation, to me who knew but badly Italian, and nothing of English and Greek, has given me profound pleasure. I wish, then, absolutely a copy such as this of the 'Last Judgment.' I shall be infinitely obliged to you not to communicate your sentiments to Sigalon; this would be disastrous to my enterprise. . . . .

Adieu. I renew to you the assurance of my esteem and attachment. A. THIERS."

This letter, far too administrative for a man of the worth of the artist to whom it was addressed, irritated Horace Vernet, who did not allow a long time to elapse without replying. Here is the portion of the letter which relates to the question in dispute:—

"As to the affair of the 'Last Judgment,' that is another matter. On this ground I am no more a subordinate. 1st. There never was any connivance between myself and Sigalon: he is more impatient than ever to fulfil the mission. 2nd. Far from seeking to diminish his ardour, as your Excellency would seem to fear, I have aided him with all my power to get over the innumerable difficulties which the Court of Rome raises each day. However, if I do not, out of respect for the Government, make known all my sentiments with a *confrère* whose talent I esteem, it does not follow that I may not give my opinion on the *uselessness for the arts* of the work with which he is charged, and the *immorality* (if I dare use such an expression) of giving to a new posterity a new picture, and then compromising the reputation of its first author. There are certain prestiges which ought to be respected. The state of degradation of the 'Last Judgment' obliges the copyist to re-establish a great part; even in ameliorating it, if such were possible, never could he give but a false idea of this masterpiece to those who have never seen it, and those who know it will not discover it. Permit me to say, sir, a copy is not feasible; the comparison to a translation is an error, one interprets no more when one has to create. To wish to replace in a work of Michelangelo what three centuries have effaced, is to wish to fill in, in their own language, the gaps of the Greek and Latin authors of whose works only fragments have been handed down to us. Michelangelo himself, as if he foresaw the danger which he would run some day, refused to restore the arm of the 'Venus,' and to restore the *Torso of the Belvedere*, which he had drawn more than thirty times: and it is the author of the 'Moses' and of the Medici Chapel who gave this lesson of respect and modesty. I think that we may profit by the circumstance to have conscientiously executed what has remained intact in the chapel. It is necessary to save the remains of the finest work that has illustrated the great century which saw the master born, to collect scrupulously the fragments of this skeleton, and not to paint it flesh colour to rejuvenate it.—I have, &c.,
HORACE VERNET."

In the debate the strongest arguments are undoubtedly those of the artist; however the affair was terminated by the execution of the copy, which may be seen at the École des Beaux Arts, and which it must be admitted is not good.

Among the properties injured by the piercing of the Boulevard St. Germain, the most important, from an architectural, as also from an historical, point of view, is without doubt the Hôtel de Luynes. The building, erected in the seventeenth century by Lemuet for the beautiful Duchesse de Chevreuse, is of truly princely aspect. Owing to the harmony of their sober lines, these old buildings, with their grey tinge, have a stamp of severe grandeur; and the *cour d'honneur* had the proportions of that of a royal palace; it is this court alone which has been destroyed by the line of the new boulevard. The principal buildings remain intact, and there may still be seen the magnificent and well-known staircase, decorated by the hand of Brunetti. This staircase, the revolutions of which are at right angles, as in all the great dwellings of the epoch, is ornamented by a stone balustrade of the Louis Treize style, while the walls, painted in fresco, have preserved all their original freshness. On the walls of the balustrade, bas-reliefs, painted in grisailles, represent mythological subjects,—Apollo, Hercules, Bacchus,—with their usual accessories. But it is at the landing-place that the artist has put forth all his ingenuity. There, in the intervals of a perfectly imitated colonnade, may be seen a crowd of personages, of life-size, who crowd together to see those who come upstairs. Behind this multitude are peeps of distant gardens and pavilions. The ceiling of the cage of the stair is painted to represent the heaven, and an allegorical personage looks down from the midst of the clouds. This staircase by Brunetti is the only specimen of this kind which still exists in Paris. It was, before the Revolution, one of the curiosities of the capital, and Germain Brice, when he was a *cicerone*, never failed to show it to strangers passing through Paris.

Paris.

LONDON ONE HUNDRED YEARS AGO.

THE other day we had to refer to one of the old London directories of a century ago, and the facts contained therein, as well as a view of the metropolis as shown in an old plan of London of that date, and the newspapers of the period, appeared to be of such an interesting nature that we venture to give a few notes about the City and suburbs as they existed in the year 1777.

The Directory of that date is simply entitled, "The New Complete Guide to all Persons who have any Trade or Concern with the City of London and Parts adjacent." It comprises 294 pages, compressed into a small 8vo. volume, and the publishers boast it to be "the exactest piece of the kind hitherto published." Anyway it was printed for the still-celebrated publishing houses of Longman, Rivington, and others, at the nominal price of 1s. 6d., and judging from its many annual editions it must have obtained a very encouraging support. Seventy-seven pages are devoted to a list of streets and places; one hundred and four pages to post-office and carriage news, and over one hundred pages to "the names and places of abode of the most eminent merchants and traders in and about London."

London, one hundred years ago, contained a population of under 650,000 persons, or two and a half millions less than it contained at the last census in 1871! Its size in 1777 may be judged when we state that on the west, beyond Hyde Park was all in the fields, Park-lane was known as Tyburn-lane, which led to the road to Uxbridge and the Edgware roads, the west side of which was merely open country, as was also the ground north of Manchester-square and Baker-street. The present Marylebone and Euston roads were then dignified by the name of "The New Road from Paddington," which had only then been formed some twenty years. The celebrated Marylebone Gardens was on the eve of dissolution,—being suppressed in 1778, and upon the site were erected Beaumont and Devonshire streets and Devonshire-place. Marylebone Park extended from the new road northwards, and the site is now the Regent's Park, while a turnpike not only existed at the corner of the High-street in the same new road, but also at Tottenham Court. A little eastward of the present Portland-road station was the suburban tavern, called the "Green Man" (a still existing sign), while just opposite, and in the meadows, stood the farm called Gardner's. The old Adam and Eve at Tottenham Court was truly rural, on the road to Highgate; it was the scene of Hogarth's celebrated picture of "The March to Finchley," and from the gardens here (in 1785) Lunardi made one of his balloon ascents. From Tottenham Court to Battle Bridge (now King's-cross), the road on each side was skirted by open country; on the south by the Lambs-conduit-fields (where the Foundling Hospital stood by itself), and on

there was great danger of sticking fast in the mire. Nor were even six horses always sufficient. Vanbrugh, *in the succeeding generation*, described with great humour, the way in which a country gentleman, newly chosen a member of Parliament, went up to London. On that occasion, all the exertions of six beasts, two of which had been taken from the plough, could not save the family coach from being imbedded in a quagmire."

the north by the St. Pancras Fields. The present Gower-street was then called "The Duke of Bedford's new road," and was of course an open thoroughfare through the fields.

Further eastwards the site of Battle Bridge was then surrounded by the White Conduit Fields, all open country. The ground that witnessed the decisive battle between the Romans and the Ancient Britons, in A.D. 61, had not yet become celebrated by Dickens's dust-heap, or its name dignified by the more enticing one of King's-cross,—which the late Mr. W. F. Bray (the builder of the houses now known as Liverpool, Derby, and Chesterfield streets, &c., on the site of the said dust-heap) gave to it, half a century later. The upper portion of the old river Fleet ran its course through the fields here, and by the side of "Black Mary's Hole" (now called King's Cross-road), and was a continuation of Coppice-row. As for the White Conduit House and tea-gardens (now a modern tavern in the Barnsbury-road), they were surrounded by fields, as were Sadler's Wells and the new Tunbridge Wells, also houses of resort for the Cockneys. Hereabouts the New River terminated its open-air flow; and of the foundation of the reservoir in Claremont-square,—in 1777, called the "New Pond,"—a very interesting discovery was made among the State papers of the reign of James I. (for which see the *Builder*, January 22, 1876).

The City-road had the Finsbury, or Shepherd and Shepherdess Fields, on its north, and between here and Old-street, although there were buildings, they were not of an extensive nature. The celebrated resort of the Christ's Hospital boys,—Peerless Pool,—was then in existence; the site is now covered by houses. A continuation of the City-road through Moorfields was then called "Royal-row," while Old-street to the Curtain-road was "St. Agnes le Clare." The district of Hoxton and Shoreditch, long celebrated for its market gardens, was also all open fields, with a few houses here and there, north-west of the Haberdashers' Almshouses, and the "Newington-road," now Kingsland-road, had open straggling buildings after the Ironmongers' Almshouses were passed; as was the case with the Hackney-road on both sides,—the present Bethnal-green-road being a "new road."

When we get into the neighbourhood of Mile-end, houses are more numerous; the Whitechapel end of the present Cambridge (Heath) road was then called "Dog Row," and Cleveland-road "Red Cow-lane." Several original deeds before us give interesting particulars about the Wentworth and Cleveland property in this district—some relating to "Bishops Hall in Bethnall Greene" and the manor; while one letter, dated Old Ford, 7th of January, 1677 (1678), which gives "a foresight of some trouble which may befall the manor of Stepney att the next sitting of this Parliament from my lady Poole, who pretends to bee a great creditor of my Lo: of Cleveland's," notifies that the writer will dine on the morrow at the Nag's Head and Woolsack over against Whitechapel Church. The Nag's Head is still the sign of a tavern opposite the church. Bethnal-green, a century ago, was open fields between the old church there and Whitechapel-road, as was also the ground from thence to Cable-street, St. George's East, a "new road" having been made through them, crossing "White Horse-lane," which lane has since been "improved" into the Commercial-road. Where the docks now stand, and in the vicinity of Old Gravel-lane, were numerous gardens, and beyond, more eastward, were the Sun Tavern fields.

We now cross the river, and find that Southwark, Bermondsey, and Rotherhithe proper, are pretty thickly covered with houses. A fire in Rotherhithe had burnt down over 200 houses in 1765, so that there must have been new building going on on the eve of a century ago. From the swampy and dangerous course of the road, between two ditches hereabouts, one of the main thoroughfares was called "the devil's neck in danger." This was corrupted in due course into the "devil's neckerchief," and subsequently into the "Neckinger-road"! In 1777, Paradise-street, Cherry-gardens, and Marygold-street, give us at least pleasant thoughts of its more primitive state. The Grange, Long-lane, and Snow-fields, had adjoining "open spaces" and gardens, and south of Kent-street the open fields commenced. Newington-causeway was called the road to Croydon, and close to where the railway now crosses the road stood a windmill. St. George's-fields were truly fields, across which were footpaths in various directions, the chief roads across being Great Surrey-street (now Blackfriars-road), the Borough-road, with the obelisk to Lord Mayor Crosby in the centre (as now), the London and the Lambeth (now St. George's) roads. The well-known "Dog and Duck" tea-gardens stood where Bethlehem Hospital now stands (see a print in the *London Magazine*, November, 1791). The only other buildings "in the fields," beyond a few houses here and there, were the King's Bench Prison (having by its north side "Dirty-lane"), "the New Magdalen" (where the Peabody-buildings, Blackfriars-road, now stands), and "the Asylum" (where the Rev. Newman Hall's Christ Church now stands). Between Blackfriars-road and Lambeth Palace continuous fields and market grounds were to be seen. Of course the houses were closer as the river was neared; but the new road to Kennington-common was like other roads newly cut, not yet in the builder's hands. Turnpikes stood not only at the south ends of Newington-causeway and Great Surrey-street, but also at the corner of the Westminster and Borough roads near the Asylum. Opposite Lambeth Palace was the Horse-ferry, and crossing the river were the Tothill-fields.

Such, then, were the boundaries of brick-and-mortar 100 years ago. We have not gone so minutely into the description of the "suburbs" as we should like to, but the facts are sufficiently startling, we think, to cause something more than an ordinary reflection upon the history of the progress of "still-increasing" London since A.D. 1777.

Let us now turn to the little Directory, and see what our guide says about carriages and the means of transit. First, as to hackney coaches. Out of 800 licensed, 200 were to ply on Sundays, taking their turn, under a penalty of 5*l.* for each one plying out of his turn; a licence to cost 50*l.*; no horse, mare, or gelding to be used under fourteen hands high. Their rates of charges were, for a day of twelve hours, 12*s.* 6*d.*, or 1*s.* 6*d.* an hour, and 1*s.* after the first hour. For any distance under 1½ mile, 1*s.*, and 6*d.* for every mile after. The rates for "hackney chairmen" were 1*s.* per mile. "They were obliged to go the same distance for 1*s.* 6*d.* which the coaches perform for 1*s.*," under a penalty of 40*s.* The porters in the City were called "ticket," "fellowship" (700), and "tackle," otherwise messengers, ship goods unloaders, and goods weighers. They had their rates of charges, and the fellowship porters had a very peculiar custom worth noticing. The next Sunday after Midsummer-day a sermon was preached to them at St. Mary-at-Hill Church, which was usually fully attended by the men, each having a nosegay in his hand, and each passing in procession through the middle aisle to the Communion-table, where he deposited a mite for the relief of the poor. After them the citizens and their families about Bishopsgate, also with nosegays, provided by the men, passed in possession, and made the like offering. "The charges of their nosegays," says the account, "have amounted sometimes to near 20*l.* in one year." The watermen's rates were: between London Bridge and Westminster, oars, 6*d.*; skullers, 3*d.*; and the same from Whitehall to Lambeth or Vauxhall, and from London Bridge to Rotherhithe. From London to Gravesend, 4*s.* 6*d.* for the whole fare, and 9*d.* company; Greenwich, 1*s.* 6*d.*, and 3*d.*; Purfleet or Erith, 3*s.*, and 6*d.*; Windsor, 14*s.*, and 1*s.*; Hampton Court, 6*s.*, and 1*s.*; Richmond, 3*s.* 6*d.*, and 6*d.* Chelsea or Wandsworth, 1*s.* 6*d.*, or 3*d.*

The Post-office regulations are curious: country letters were sent and received once a day, but to and from Tunbridge, Margate, Ramsgate, and Sevenoaks "bags every night from Midsummer to Michaelmas only." Sussex posts were four times a week, viz., Arundel, Brightbelmstone (Brighton), Chichester, Shoreham, &c. Postage of a single letter in Great Britain and Ireland "not exceeding one stage," one penny, and 2*d.* for two stages; 3*d.* not exceeding eighty miles; 4*d.* above eighty: all of the three latter "not passing through London." From London to Scotland, 6*d.*; to Dublin, 6*d.*; and Donaghadee, in Ireland, 10*d.* To America, 1*s.*; Spain and Portugal, 1*s.* 6*d.*; Russia, &c., 1*s.*; Italy, 1*s.* 3*d.* These items will give some ideas of the rates. It may not be generally known that a "penny post" was a very early establishment in London. De Laune, in 1681, says,—"This profitable and useful undertaking was the invention of the most ingenious Mr. Murray, and Mr. Dockwra, merchant, by whom it was first set up with much labour and expense before it could be made to answer the end of the undertakers." When it did succeed, the Crown took possession of it as part of the "rights and privileges" of the General Post-office. "The penny post," says De Laune, "is an extraordinary advantage both to the city and country towns adjacent, and is a mighty encouragement to trade and commerce; for, by this ingenious and useful post a man may send a letter or packet not exceeding *a pound weight* for one penny to any part of London, or to any of the towns or villages round about it for fifteen miles compass and upwards." In 1681 the rate was one penny upon posting the letter or parcel, and "the messenger is allowed, for his own pains and care, to take a penny for each parcel or letter at the delivery." In 1777 the same rate was in existence except that the weight had been reduced to *four ounces* (except a general-post letter, which was still a pound), and the penny on delivery was charged only beyond London and suburbs. At all places within London, Westminster, and Southwark the deliveries were hourly, from eight in the morning till ten at night, except Sunday and Christmas-day. In the suburbs there were one or two deliveries daily, according to distance. It was this question of suburbs that raised the important argument in the King's Bench in June, 1777, when the Court decided that Old-street, St. Luke's, was to be considered part of the suburbs, and exempt from the payment of the penny upon delivery. At this date, too, there appears to have been regular district offices, whereby letters were sorted, &c., instead of having to pass through the chief general office in Lombard-street. The head penny post-office was in Throgmorton-street, opposite St. Bartholomew-lane, and four branches, in Clare Market, Coventry-street, Little Tower-hill, and St. Saviour's Churchyard, Southwark. Letters intended for the morning delivery had to be posted at these offices before ten o'clock the night before. All letters for lodgers had to bear the name of their landlord, or the sign of his house; those not delivered would be returned to the writers gratis at the end of three days. "To discover any delay, the triangular stamp on all letters and parcels shows the day they were brought to a principal office, and the round stamp the hour they were given to the letter-carrier." Then, again, we read,—"These offices have suffered impositions and aspersions by money and things of value said to be sent by this conveyance: notice is given, that unless such letters be left *open*, to be so carried to one of the five principal offices, *there seen and entered*, the letter-carrier will noways be made *answerable for their miscarriage*." These notes of a century ago may be interesting to our readers a hundred years later.

Coming now to the Directory proper, a hasty glance through the list of names may, perhaps, be of more than usual interest:—

Angerstein, John Julius, Insurance Office, 24, Throgmorton-street. The celebrated underwriter and founder of a well-known gallery of pictures.

Baker & Leigh, booksellers, York-street, Covent-garden. Ancestors of the present auctioneering firm of Sotheby, Wilkinson, & Hodge.

Barclay, D. and John, merchants, 108, Cheapside. The house opposite Bow Church from the windows of which George III. and his queen saw the Lord Mayor's Show, 1761.

Baring, John Francis, & Co., 6, Mincing-lane.

Bentley, Nathaniel, hardwareman and jeweller, 46, Leadenhall-street. The celebrated "Dirty Dick."

Boydell, John, printseller and engraver, 90, Cheapside. Proprietor of "The Boydell Gallery."

Bray, Benjamin, haberdasher, 9½, Fore-street. Grandfather of W. F. Bray, the builder and originator of the name of King's-cross, and the purchaser of the Gray's-inn-lane Dust-heap, which he sold to the Emperor of Russia after the burning of Moscow.

Calvert, Felix, & Co., Brewers, Campion-lane, Thames-street. Ancestors of the present City of London Brewery Company.

Child, Coles, toyman, 123, Upper Thames-street. Ancestor of the late respected owner of "Bromley Palace."

Cox, James, jeweller, 103, Shoe-lane. Owner of the world-famous "Museum" disposed of by lottery by a special Act of Parliament.

Dilly, Edward and Charles, booksellers, 22, Poultry.

Dollond, P. and John, opticians, 59, St. Paul's Churchyard.

Gurney, Joseph, shorthand-writer, Southampton-buildings.

Harley, the Right Hon. Thomas, alderman and merchant, 152, Aldersgate-street. The house is

the present Albion Tavern. He was son of the third Earl of Oxford.

Kenton, Benjamin, wine merchant, 152, Minories. A benefactor to the Vintners' Company and their almshouses at Mile-end. He died 1802.

Longman, Thomas, bookseller, 39, Paternoster-row.

Martin, Benjamin, optician, 171, Fleet-street. The well-known editor of some fifty historical and scientific works.

Mawbey, Sir Joseph, bart., distiller, Vauxhall. The distillery occupied the site of the ancient Manor House, where, it has often been erroneously reported that Guy Fawkes, of Gunpowder Plot celebrity, lived. Sir Joseph Mawbey was M.P. for Southwark.

Murray John, bookseller and stationer, 32, Fleet-street. The founder of the firm of "Murray," publishers, of Albemarle-street. He died Nov. 9, 1793.

Noble, Francis, bookseller, 325, Holborn. His daughter obtained a share of the first 30,000*l.* prize in the lottery, ever sold. He died in 1792.

Pridden, John, bookseller, 100, Fleet-street. His son, the curate of St. Bride's, devoted thirty mornings, before six o'clock, in surveying and planning the bridging of Holborn-valley, which three-quarters of a century later became an accomplished work under Mr. Haywood's skilful hands.

Sterry, Richard, oilman, 156, Borough. His son Anthony and Thomas Sturge, of Newington, were the great supporters to Joseph Lancaster in his educational work.

Strahan, William, printer, Little New-street. Predecessor of the present firm of Eyre & Spottiswoode, the Queen's printers. In the Caxton Exhibition was exhibited a remarkable letter from Benjamin Franklin (his former brother workman) to him, dated Philadelphia, 1775. At this date Strahan was M.P., for Malmsbury, and Charles James Fox his fellow member. He died in New-street, 1785.

Thrale, Henry, brewer, Southwark. Predecessor of Barclay & Perkins (see Boswell's "Johnson").

Warner, John, & Janson, brass-founders, 108, Fore-street.

Wilkes, John, Alderman, 7, Prince's-court, George-street, Westminster. In 1777, he unsuccessfully contested the office of chamberlain of the City, and in the same year a debate in the Court of Common Council upon the proposal to give him an annuity of 500*l.* to assist him in paying his creditors resulted in its being negatived by a majority of eighty to seventy-three. In Bridge-street, Blackfriars, is an obelisk to his memory.

There are a few out of the many names of 1777 whose descendants or successors still flourish in our city and suburbs. We could augment them, but space prevents it. A few notes of London events during the year may not, however, be unacceptable.

In January, a duel was fought in the Adelphi Tavern, Strand, between a captain and the editor of the *Morning Post* newspaper. It was rather a desperate affair, for pistols were first used, then swords, and both men were wounded. It was all about a lady, to whom the captain was married shortly after!

In February Dr. Dodd was tried for his forgery on the Earl of Chesterfield. He was convicted, and all hopes of saving him proved unavailing. He was hanged at Tyburn.

In May, two prisoners sentenced to death, bricklayers by trade, managed to make a hole in the 6 ft. wall of Newgate and escape. They were, however, soon captured and executed. In August, the same prison was the scene of a terrible riot among the prisoners. In the same month the City freedom was voted, in a gold box, to Sir Fletcher Norton, Speaker of the House of Commons, "for having declared in manly terms *the real state of the nation* to his Majesty on the throne."

In June died two centenarians,—Mrs. Jane Davis, of Hackney, aged 113, and Mrs. Margaret Boise, of Stockwell, aged 107.

In July, H. S. Woodfall, the printer of the *Public Advertiser*, was fined 40*s.* and costs for libel; and in the same month a woman named Anne Marrow was tried and convicted for having married (while in men's clothes) three other women for the purpose of stealing their clothing. She was sentenced to stand in the pillory at Charing-cross, and to be imprisoned for six months. In the pillory, on the 22nd, she lost both eyes through the treatment of the indignant populace.

In September, the Lord Mayor proclaimed Bartholomew's fair as usual, and on his way thither partook of a cool tankard with the Sheriff and Mr. Akerman at Newgate.

In October a man was convicted and fined 100*l.*, ordered imprisonment for two years, and to find good security for three years after for causing a noxious vapour to arise at his factory in Clerkenwell, where he killed and boiled horses. This was the kind of punishment that was inflicted in the good old times upon such offenders.

In November died, aged 78, William Bowyer, of Whitefriars fame, "the learned printer."

The election for sheriffs of London and Middlesex this year was rather startling. No less than a dozen citizens were elected at six elections. Of the dozen, six were fined 600*l.* each for not serving, one died, three declared themselves not worth 15,000*l.*, and the two who served were Robert Peckham and Richard Clarke, both aldermen. It was a custom at that date to elect wealthy men without their consent, who it was known would rather pay fine than serve.

The criminal statistics for the year are by no means cheering to us of a century later. About every other month a cartload of poor humanity, some half a dozen in number, were regularly taken to Tyburn and hanged. There were few offences which were not capital. Occasionally the benefit of the pillory was substituted, as in December, when a perjurer stood at Westminster Hall gate. In May, two prisoners were sentenced to death for robbing the Islington stage-coach on the king's highway near the City-road. Another man just escaped death through the confession of a fellow convict; while another sentenced to death was happily saved through the discovery that the foreman of the jury had made the record a capital charge instead of a minor one!

The last, but not the least interesting of our notes is one on the then lottery mania. Every trade had its "little go," but perhaps the most curious ways of "raising the wind," were the following:—Among the aspirants for public favour were "lottery barbers," where a man for a 1½*d.* shave stood a chance of winning 10*l.*, and "lottery eating-houses," at one of which in Wych-street, Strand, upon calling for a 6*d.* plate of meat you had a note of hand, and a number and a chance in a prize of sixty guineas! Again for threepennyworth of oysters, you stood in a fair way of realising 5*l.*; while in a little alley leading out of Smithfield an old lady who kept a stall chalked up "Lottery sausages, or five shillings gain for a farthing relish."

Such was London one hundred years ago.

THE BAUGEWERKESCHULE, STUTTGART.

A FEW years ago, those knowing Stuttgart will remember, on walking through the Kanzleistrasse, a place was reached, called in the map of Stuttgart the "Alleenplatz." What had once been a shallow lake had by degrees been converted into a drill-ground. For a whole decade, masons had then been busy finishing huge blocks of stone for large public buildings. At the present day, what was once a wilderness of rubbish and stone has become charming ornamental grounds, known as the "Stadtgarten," the Town Park, surrounded by artistically important buildings. In the adjoining Kriegsbergstrasse, we see a long series of private residences erected in the Renaissance style; and from the surrounding hills numerous suburban villas, forming a charming girdle, increasing in number from year to year, and projecting, as it were, with their green parks, from the vine-clad heights, beckon to us. And when a visitor casts his astonished eyes at these representatives of modern Stuttgart, when he contrasts the former monotonous square-framed buildings with the new and elegant erections, rich and massive in form, and when he asks for the reason of this change for the better, every intelligent native will give him only one answer. He will tell him that on this spot the two nurseries are reared which have given to Stuttgart its architects, the Polytechnikum, and the Baugewerkeschule (Building Trades' School). From the first have sprung the designing architects; from the latter their working agents, the master masons, the foremen masons, &c. A new generation of architects and working builders has sprung up under the care of excellent instructors, the more modern streets of Stuttgart being witnesses of their ability and the soundness of their instruction.

The Building Trades' School of Stuttgart was founded in 1845, at a time when its elder sister establishments at München and Holzminden (Brunswick) were already in a flourishing state. Like these, it consisted at first of only three classes; but its course of teaching, slowly but surely guided by experience, soon assumed larger dimensions. It includes at present the Building Trades' School proper with six classes, the Engineers' School with five, and the Surveyors' School with four classes, of which some are again divided into sections. The total number of the sections is now twenty, in which, during a week, in 807 hours of instruction, eighteen professors and eighteen assistant masters teach 644 pupils. During the summer term the number of pupils is only 150, and that of sections only eight. There may at present, besides those above mentioned, be about twenty other building trades' schools in existence in Germany; but, except that of Holzminden, none has such a large number of students as that of Stuttgart, and, as regards the course of instruction, the latter is said to be superior to all the rest.

The rise of the Stuttgart school dates from the time when its present director was appointed. On his return from extensive travels in France, England, Italy, &c., a young architect, about thirty years ago, made the remark in Stuttgart, a town in which massive building for private dwellings was as good as unknown, that he intended to build only massively. Indeed, in 1849–50, at a time when building operations were almost at a standstill through revolution and war, misery and high prices, the first massive house was being erected after the designs of the architect whose present work we are considering. But almost another decade and a half elapsed before in the new Polytechnikum a building was completed in which noble forms of architecture and beauty of native material were vividly brought before the Stuttgarters. It is only about ten years since that substantial construction in ashlar stone and brick became more general for private residences.

The careful, not to say parsimonious, finance administration of Würtemberg had refused to the Baugewerkeschule for a long time the means for a new building, and, when the latter had become an imperative necessity, had granted insufficient funds, because it was of opinion that the school had reached its highest point with 570 pupils. Two additional halls provided for in the plan were omitted as unnecessary. But during erection it was found, in consequence of the increasing number of students, that it was necessary to enlarge the design—a step which has not been without influence on the outward appearance of the building.

The oblong building consists of four wings, divided by a centre block in such a manner as to form two courts, almost square in shape. The ground-floor, rising upon a powerful socle, is of red heavily-bossed sandstone; the two upper stories being of yellowish-grey sandstone. The windows of the ground-floor are circular-headed, those of the first-floor have segmental arches, while the upper story has rectangular window openings. The high roofs, which have taken the place of the originally projected flat roofs, because only in this way could the at first denied extent of useful space be secured, became necessary in consequence of the limited means granted. The corner turrets project slightly; the central projection is especially effective, forming an independent part of the building, and being closed by a powerful square cupola. The walls of the projecting parts are adorned with decorated escutcheons. They are, like the principal frieze, designed to receive the heads, names, and masons' signs of eminent masters, architects, *savants*, and such like.

The four wings of the building cover an area of about 23,000 square feet, and this space is completely utilised in the three floors. Inclusive of the attic story, an available space for class-rooms, rooms for collections, offices, &c., of nearly 56,000 square feet has been obtained.

On entering the porch through the vestibule, the principal staircase, carried through two stories, is facing us. In the centre block are the great halls; the corridors, facing the courts, are in no wise interrupted by them, but run right through, thus connecting all the rooms of one floor. Between every two school-rooms there is a room for the masters and the storing of school appliances.

The courts, built after the manner of the courts of Italian palaces, offer, in their application for



THE BUILDING-TRADES' SCHOOL, STUTTGART.—Oberbaurath von Egle, Architect.



DESIGN FOR THE PROPOSED BYRON MEMORIAL: TO WHICH THE COMMITTEE AWARDED THE SECOND PLACE.
MR. H. HEATHCOTE STATHAM, ARCHITECT; MR. E. R. MULLINS, SCULPTOR.

chool purposes, a new phenomenon,—a feature he excellence of which will be apparent at the irst glance. Being covered over, they may be warmed in winter, and, while serving as places of recreation for pupils, are at the same time designed to be used as a museum, displaying interesting parts of architecture, able productions of the scholars, &c. This purpose is greatly seconded by an abundant flow of light from above. Three sides of these courts are each divided horizontally into three bays; the arches of the ground-floor resting upon solid, finely-formed columns; the arches of the first story being supported on coupled Doric pillars; while in the upper story the bays, cut off rectangularly, are doubled; delicate Ionic pillars, and between them columns, rising above the arches of the lower stories.

The friezes of the courts contain, in chronological order, and continued to the present day, a number of ornate inscriptions serving as monuments for a large number of architects, sculptors, painters, and men of science renowned in the annals of architecture. Likewise divided into three panels, we find on the walls of the central block, capitally represented, the six principal epochs of architecture: the Pyramids of Egypt, the Acropolis of Athens, the Forum Romanum on one side, the Romanesque and Gothic architecture, and works of the Renaissance, on the other side.

The space, one side of which is occupied by this Baugewerkeschule, the other side being taken up by the Kriegsbergstrasse, is yet awaiting its architectural completion. The next step in this direction is the enlargement of the Polytechnikum, which has become imperatively necessary. On the fourth side of this space will probably be reared the new Gewerbehalle, or Trade Hall.

A DESIGN FOR THE PROPOSED BYRON MEMORIAL.

OUR readers will remember the recent competition of the designs for the Memorial of Byron intended to be erected in London. We depart a little from our usual course in illustrating a design which is not to be carried out, and we do so because at any rate it presents an idea, and an idea that is satisfactory.

The general form of the monument was adopted with the object of producing something which would give a background for the principal figure (thus avoiding the almost invariably unsightly effect of an open-air statue seen from the rear), and would bear looking at all round. An erection of the nature of an obelisk or stele seemed to fulfil this object practically, and to be suitable from its association with monumental design. The idea of the whole design is to commemorate Byron in the double character of English poet and Greek patriot. The stele is surmounted by the head of the tutelary goddess of Athens, whose shield, suspended below, forms a kind of nimbus behind the head of the poet; and the figures on either side represent respectively Poetry and Chivalry. On the fourth side of the stele was to be the inscription, "England and Greece to Byron"; the marble for the pedestal having been offered, as will be remembered, by the Greek Government. The helmet and shield of Pallas were intended to be gilt; the three figures of bronze.

The principal figure was designed and modelled, and the subordinate figures sketched in clay, by Mr. E. R. Mullins; and Mr. H. Heathcote Statham supplied the architectural design and the general idea and grouping of the whole.

Royal Architectural Museum.—The art classes at the Royal Architectural Museum will re-open on Monday, October 1st. The men's "Life" study class resumes its study on the following Saturday, October 6th, on which day the Ladies' class meets. The Art Workmen's class occupies the evenings of Mondays, Wednesdays, and Fridays in each week. These classes are held in connexion with the Science and Art Department, and are under the direction of a fully certificated master, while the students enjoy the advantage of using the extensive collection of casts and examples in the Museum. The new sketching club will also commence its duties. The Council of the Museum offer prizes and an annual exhibition will be held in connexion with the club. Full particulars may be obtained of the curator, at the Museum, Tufton-street, Westminster.

THE HALF-YEARLY MEETINGS OF THE RAILWAY COMPANIES.

THE official reports presented to the shareholders at the summer half-yearly meetings of the several railway companies reveal the fact that new works on a scale of great magnitude continue to be projected, and are in progress on many of the leading and other lines, at an enormous outlay of capital. Some interesting statements on this head were made at the meetings of many of the companies, the Midland amongst others. The report of the *Midland* stated that the total revenue receipts for the half-year amounted to 3,017,290*l.*, being an increase as compared with the corresponding half-year of 1876 of 65,684*l.* This increase applies to every source of traffic, the increase from passengers being 47,648*l.*, merchandise 10,338*l.*, minerals 4,870*l.*, and cattle 2,828*l.* With the exceptions of the London and North-Western and the North-Eastern Companies, this sum represents a larger amount in traffic than that of any other railway in the country. At the meeting, the chairman, Mr. Ellis, adverting to the enormous expansion of the company and its ramifications, said that in 1844 the Midland Company, which had now completed one-third of a century, was formed by the amalgamation of the North-Midland, the Midland Counties, and the Birmingham and Derby railways. The capital of the united company at that time amounted to 6,327,000*l.*, whilst at the present time it amounted to 65,747,000*l.* The revenue at the time of the amalgamation was 555,000*l.* annually, or a little more than 10,000*l.* a week, whereas now it was 6,217,000*l.*, or about 120,000*l.* a week. The capital expenditure during the past half-year had been 1,462,000*l.*, of which 705,000*l.* had been expended on lines open for traffic; 373,000*l.* on lines in course of construction; and on other lines in which the company had an interest, 311,000*l.* In addition 114,000*l.* had been expended for land at Bradford; 58,000*l.* of a further expenditure on the Derby locomotive and carriage shops; and 122,000*l.* in London, principally for land at Blackwall. The estimated further expenditure for the current half-year was one million sterling,—viz., on lines open, 312,000*l.*; lines in course of construction, 466,000*l.*; and on joint lines in which the company had an interest, 222,000*l.* The chairman added that the directors were not able to assure the shareholders that this estimated expenditure would be less than a million. Beyond this the company obtained powers in the late session of Parliament to expend an additional sum of 1,921,500*l.* in still further new works. The company now maintained 2,227 miles of single line, of which 1,032 miles were laid with steel rails. The engineer reported at length upon the progress which is being made on the several new lines in course of construction.

The *Great Northern Company's* report showed that the traffic receipts during the half-year amounted to 1,413,642*l.*, as compared with 1,399,484*l.* in the corresponding half-year of 1876. The report further stated that the expenditure on capital account during the half-year, namely, 1,039,113*l.*, had been unusually heavy, owing chiefly to the progress made with the new lines in Derbyshire, Staffordshire, and Leicestershire, on which 506,572*l.* were spent during the last six months. The sanction of the proprietors was required for a further expenditure of 83,126*l.* for the enlargement of stations at different points along the line, in addition to the heavy new works in progress. The chairman stated at the meeting that the two unfortunate accidents at Abbot's Rippon and Arlesey Siding had cost the company no less than 100,000*l.* for personal compensation. Adverting to the new works going forward in different portions of their district, he pointed these out from a map of the Great Northern system, which was for the first time exhibited in the room. These works included the several new lines in the counties respectively of Derbyshire, Northamptonshire, Lincolnshire, Leicestershire, Yorkshire, and Staffordshire, comprising a total mileage of about 140 miles. He also observed that the first two tunnels leading out of King's-cross Station had been doubled. The widening of the Maiden-lane tunnel, he added, was very difficult, as the tunnel passed under the Cattle Market and Regent's Canal, and consequently the works had occupied a considerable time. The Copenhagen tunnel was finished, and in working order, and the goods trains now left the passenger lines at a point five or six miles north of King's-cross, and ran over the goods lines from that point, completely cutting off the passenger-lines, into the goods station. Speaking of the block system and interlocking signals, upon which they had spent 309,886*l.*, he said that they had to maintain 568 miles of railway, and that on those 568 miles they had 444 signal-boxes, the cost of which, including the signals and interlocking apparatus, averaged from 500*l.* to 850*l.* per box.

In the *Builder* of the 1st of this month we gave some detailed and interesting statistics as to the extent and ramifications of the London and North-Western Company, showing, amongst other things, that the half-yearly traffic returns amounted to 4,800,000*l.* At the recent meeting of the company the sum of 1,431,383*l.* was authorised to be expended on new lines and additional works, under the Act obtained last session, in addition to the extensive works now in progress. The engineer reported that the new tunnel at Primrose-hill, 1,181 yards in length, was successfully completed on the 30th of June last; also that the new stations at London-road and Kilburn, and the enlargement of the Willesden Station, were in progress, and that upon these works being finished the several stations between London and Bletchley will be complete. The engineer also gives detailed particulars as to the progress of the several new lines and works in various parts of the country which the railway intersects. Amongst the most important of these is the widening of the line between Longsight and Ardwick at Manchester, in order to form six lines of railway. This work involves the construction of a viaduct of great length, and the engineer states that the whole of the piers on the east side of the viaduct, and twenty-five out of the forty-four on the west side, are already built to the required height, and the arches are being turned. Of the thirty-five bridges to be built in connexion with the Seaton and Wansford line, fifteen are now in course of construction. All the bridges for carrying the various streets over the four lines of rails, in connexion with the enlargement of the Lime-street Station, at Liverpool, are completed, and the scaffolding for the large roof of the station is ready to receive the ironwork, which is in course of delivery. Considerable progress has likewise been made with the excavation and arching on the branch to the north docks at Liverpool. The harbour and dock works at Holyhead are also making great progress. Of the 800 lineal yards of quay walling, 600 yards are completed, and the graving dock is likewise going forward. The erection of the new station and hotel at the south end of the quay are to be commenced in the autumn. The estimated cost of the station and hotel is 60,000*l.* The large goods warehouse at Broad-street Station, in the City, is in an advanced state, and tenders have been received for the erection of a new goods warehouse at the Poplar Dock Station. The engineer further observes that the contractors for the new and enlarged station at Preston are making fair progress with the works, considering the difficulties that have to be contended with owing to the heavy traffic passing through the station. In his address at the meeting the chairman made a pointed reference to the Artisans' Dwellings Act in connexion with rates and taxes, which were increasing upon them. "I am afraid," he said, "that this Artisans' Dwellings Act may,—I will not express any opinion as to its advantage or disadvantage,—but it will make the burdens on the lines going through all the large towns enormously heavy for some years to come. How far we shall be worse off than anybody else is a different thing, but we still, under our unfair modes of assessment, are made to pay more than any one else, and we believe that nothing will cure it but the burden which is clearly coming upon the inhabitants of the great towns themselves."

The *Great Western Company's* report showed a net increase in the traffic receipts during the half-year, as compared with 1876, of 39,907*l.*, made up of an increase in merchandise and minerals amounting to 56,289*l.*, but a decrease in passengers of 16,382*l.*, which the Chairman attributed to the widespread depression in trade. The report stated that the heading of the Severn tunnel had been driven to a distance of 1,600 yards. The formation through which the work was now passing was still the Pennant sandstone rock, which was found in strong beds, and almost free from water. The works on the new wharf and depôt of the Bristol Harbour Railway had been completed, and were in use. The Chairman, remarking upon the Severn tunnel, said that

having had no tenders for the whole work which they could accept, they contemplated doing the work by smaller contracts for particular parts of the undertaking. The large contractors put down sums which the Board thought far too large for contingencies, which, considering the strength and compactness of the beds to be tunnelled, must be very small. A great deal had been spent on the works at Bristol, and he believed that the result would be great satisfaction and goodwill from the citizens, and profit to the company. The sum of 322,720*l.* was granted at the meeting for additional new works, which, amongst others, embraced 20,000*l.* for a new line at Paddington, between Bishop's-road and Westbourne Park stations; also 15,300*l.* for new stables, and 16,000*l.* for extension of wagon-shops, both at Paddington. Also, 14,000*l.* for new gasworks and extensive workshops at Swindon; 20,000*l.* for the Plymouth Great Western Docks; 15,000*l.* for new passenger stations at Brierley-hill, Landore, and Smethwick; 60,000*l.* for the Netherton and Halesowen branch; 6,100*l.* for new goods station at Bath; and 100,000*l.* for additional lands.

From the proceedings at the *Great Eastern* meeting it appeared that the gross revenue from all sources during the half-year was 1,294,770*l.*, against a gross revenue of 1,289,303*l.* in the corresponding half-year of 1876. The report stated that during the last three years a large expenditure had been incurred in the renewal of permanent way, and in the conversion of timber bridges and viaducts into brick and iron structures. The line had been specially inspected by direction of the board, and on the recommendation of the engineers, and with a view of taking advantage of the exceptional state of the steel and iron market, it was proposed to purchase at the present low prices permanent way materials largely in excess of the quantity required, for the ordinary maintenance, and to push on more quickly the process of relaying the line and the reconstruction of bridges than the directors would have considered it desirable to do if the price of steel and iron had not been so favourable for the purchaser. The chairman, adverting to the works at Stratford, said that during the last four years 20,000*l.* had been expended in getting new machinery, so that a boy with 16s. a week would do the work of six or eight men taking 6s. or 7s. a day each, and would do the work much faster. Referring to steel rails, he said that up to 1872 they had only put 3,000 tons of steel rails into the line, and a single line of railway required for each mile about 125 tons 10 cwt. of steel rails of 80 lb. a yard run. But since 1872, in addition to the lines they had newly opened, they had put in 21,150 tons of steel rails, and they had now steel rails laid upon more than 200 single miles of their railway. They had tested a line of steel rails upon the centre line of the Blackwall railway, over which more trains ran than over any other railway in the kingdom, and they found, after three years, that the wear of those steel rails was one-twelfth of an inch, and that at that rate of working the steel rails would last over thirty years, whereas the iron rails would only last for three years. If they were to go on laying their line as they had done during the last half-year, in six years they would have a line which would last far beyond the memory and knowledge of the youngest shareholder present. The chairman next dwelt upon the necessity of the company having a communication with the north, and with the manufacturing districts, and with the Midland districts of England. They communicated with the docks and direct with the river, and there was being made in the neighbourhood of London, in extension of the Victoria Dock, a dock unexampled in the world in point of size and of the accommodation it would give, and he would venture to say, though he was chairman of one of the London docks, that there would be at that dock one of the largest trades which was brought to any port in the world. That being so, they ought to get such an access to the north as would utilise their head, and if the Great Northern Company were not prepared to come to terms with them to effect this object they had no option but to seek independent access, or access by means of some other company.

The report of the *London and South-Western Company* stated that the net revenue of the company for the half-year was 207,309*l.* as compared with 204,938*l.* in 1876. The report at some length detailed the progress which was being made in the various works going forward. The Chairman, in the course of his remarks, said that the principal works in which they were now engaged were the enlargement of the Waterloo terminus and the diversion of the main line at Nine Elms. As soon as these works were finished, they would give them very great facility in working the important traffic there. At Nine Elms they had been obliged to divert traffic in order to take in a part of their property to meet the requirements of the goods traffic. They had been subjected to two floods during the last exceptional winter. Some people said they were caused by the Thames Embankment; some assigned one reason and some another; but there was this fact, the water came up to the top of their wharfs, and they had now taken measures to prevent a recurrence of this.

The *North Eastern Company's* report showed that the present capital of the company stood at 53,972,222*l.* The gross traffic receipts for the half-year amounted to 3,058,816*l.* as compared with 3,142,245*l.* in 1876, showing a decrease of 83,429*l.*, which was attributed to the great depression, more particularly in the iron trade. The outlay on new works during the half-year amounted to 616,322*l.* Mr. Leeman, the chairman, in referring to the new station at York, which was opened in June last, observes that there were few stations in this or in any other country which could compare with that station, whether in regard to its elegance of design or its thorough adaptation to the wants it was intended to meet. For that station the company was greatly indebted to Mr. Harrison, their engineer, who had designed it. The structure had been well carried out, both architecturally, engineeringly, and economically, and whilst the building was one of great elegance and attraction, utility had formed its leading feature. The hotel was expected to be completed and opened next year. The engineer's report described the progress of the several new works in hand, and stated that the Hartlepool Dock Works were expected to be completed and opened next year, as well as the Leeds joint station extension, and several other new extenston lines.

With respect to the *South-Eastern* and *London, Chatham, and Dover Companies*, the receipts of the former showed a slight decrease, while there was an increase in the latter amounting to 29,243*l.* In the course of his speech the chairman of the South-Eastern Company said that the state of the measures for improving Boulogne Harbour looked very favourable, and he believed it would be effected by French capital and by French skill and engineering, in a way that would be satisfactory, when they (the South-Eastern Company) would put on new and more powerful boats between Folkestone and Boulogne. The report of the *London, Brighton, and South Coast Company* showed that the capital expenditure during the half-year was 236,128*l.*, of which 52,932*l.* was on account of the Clifton-ville spur line, and 50,520*l.* for the purchase of Deptford Wharf. The receipts for the half-year showed an increase of 21,891*l.* as compared with the corresponding half-year of 1876.

The report of the *North London Company* stated that the works in connexion with the new docks and warehouses at Poplar had been retarded by the wet weather in the early part of the year, but were now proceeding rapidly, and were expected to be completed next spring. The chairman stated that they had expended 113,000*l.* during the half-year for constructing the dock and warehouse, and apparatus round the dock to make provision for some of their neighbours—the London and North-Western, the Great Western, and the Great Northern—and those companies had engaged to use the dock, warehouse, and apparatus, and to pay the company six per cent. for the entire outlay. The traffic receipts of the company showed an increase of 7,999*l.*

At the meeting of the *Metropolitan Company* the Chairman stated that there had been an increase in the year of passengers carried, of about one million and a half, and an increase of money of 11,400*l.*, the increase of expenses to earn that money being only 1,685*l.* Powers were granted to the Board, under the Authorised Act, to extend the Metropolitan and St. John's Wood line in the direction of Kingsbury and Harrow, the Chairman stating that there were lying around there valuable pieces of land which would be built over and produce a new source of traffic.—— The *Metropolitan District Company* at their meeting, agreed at once to proceed with the construction of the Ealing Extension line, for which powers were granted in the last session of Parliament, and also passed a resolutio guaranteeing the promoters of the Inner Circ Completion Line (between the Mansion Hou Station and Aldgate) 64,000*l.* per annum on th line being finished and opened. The increase i traffic receipts, as compared with 1876, was 4,278

The *Lancashire and Yorkshire Company* report showed that 676,050*l.* had been ex pended on new works during the half-year, an that the traffic receipts amounted to 1,738,371*l* as against 1,724,271*l.* during the correspondin half-year of 1876. The Chairman stated tha the new dock and timber-pond at Fleetwood which is to be opened this month, is excellentl adapted for accommodating ships, and that th timber accommodation in the large pond wa extensive and convenient. Several firms o good position had already applied for timbe accommodation and other traffic.

A MASON TO MASONS.

SIR,—A retrospect of the past has often tendency to improve the future. Pray give m space to attempt it.

That man or that society that will neve acknowledge a wrong is not very likely t improve. Between forty and fifty years since there were in London three classes of masons viz., White, Black, and Grey.

The Greys, as a matter of course, were th oldest. These were a society before the Operative Stone Masons' Society came into existence. The Greys were the masons of London exercising very little influence beyond home.

The Whites were called by the Greys "Long Roaders," by reason of their being so fond o striking and tramping. When the construction of railways commenced, the "Long Roaders" Society soon began to exercise a great influence in the trade. A London mason would have been very ill-fitted in those days to perform the work done by these Long Roaders,—to tumble rough huge stones about in the mud and mire, roughly hewing them to turn arches in tunnels, and to work in those tunnels under centres often, feebly constructed, splitting and cracking during the time you were working, and oft times by the fal of heading on the centres, crushing centres masons, and labourers in one confused mass.

It was but the natural course of things tha these Long Roaders should be under the necessity of tramping. A tunnel or a bridge finished in one locality, their services would next be re quired some forty or fifty miles distant. It was of such materials as this that formed what is now called the Operative Stonemasons' Society The old society of the Greys has long been absorbed in the O. S. M. Society, so that masons are now either called society or non-society men.

It is now just forty years since that those remarkable buildings that we call the Houses o Parliament were commenced. Messrs. Peto & Grissell were the contractors, Mr. G. Allen the principal foreman. A very important lesson might be learned by the masters of the present day in studying the precedents of the great strike which took place just thirty-six years ago. Mr. G. Allen was a very good mason, and I will also add a very good foreman; a little of the rough-and-ready about him, but the masons did him a monstrous injustice by striking against him Mr. G. Allen did not display that discrimination of human nature that was calculated to preserve peace. He knew all about White, Black, and Grey; he knew that Greys were opposed to strikes, fond of home, and did not like to leave London unless sent out by the masters. He knew, also, that the Blacks were of an inde pendent spirit, and would not be brought under the tyranny of the Long Roaders if they could avoid it. If the Whites began the Houses of Parliament the Blacks finished them. If Mr. G Allen had properly mixed his colours there would have been no strike. Say, for instance, a mason applied to Mr. G. A. for a job, he would often ask the question,—"Have you got your card? If not it is no good to come here." Hundreds joined the O. S. M. Society purposely to get a job at the Houses. Mr. G. A. was thus nursing a viper that afterwards darted its poisonous fangs in his bosom. A deputation waited on Peto & Grissell to demand Mr. G. A.'s removal or discharge. Here was a combination of impu dence and ignorance unequalled, one might think Peto & Grissell refused compliance. The masons at the Houses withdrew. After a week or two the granite masons at Nelson's Monument were commanded to withdraw also. Peto & Grissell

remained obstinate or firm, whichever you like to call it. The same firm had also a large contract at Woolwich Dockyard. To use Mr. Nisbet's language, they were "compelled," in self-defence, to command the masons of Woolwich to withdraw.

The most heartless and cowardly act committed by the O. S. M. on this occasion was the calling out of a large number of granite masons on the Forest of Dartmoor. These rough-hewers of granite were, with their wives and families, living in cottages provided for them by the Messrs. Johnson, proprietors of the granite quarries. These rustics knew no more about Mr. G. Allen than they did about the Emperor of China. But they were roughly squaring blocks of granite for the Nelson Monument and also for Woolwich Dockyard. These foresters were turned out of house and home. Men from Scotland and Cornwall filling their places. In three months this warlike strike was at its height. Peto & Grissell's agents, at great expense, were gathering masons from different counties. The O. S. M. Society's pickets were waylaying those recruits and bribing them to return home. On the fourth and fifth months things began to look gloomy,—a total eclipse,—this so-called white job became black. Peto & Grissell remained masters of the situation. The influence of the O. S. M. Society was for many years completely crippled. The victory cost the firm 15,000*l.* They sacrificed interest to principle.

The lesson to be learned from this strike is this,—if Mr. G. Allen had kept his job open to all applicants the O. S. M. Society men would have been in the minority, and such a monstrous demand as this would never have occurred. For the next sixteen years, from 1842 to 1858, the London masons enjoyed a peace. The four o'clock movement on Saturdays was given generally by the majority of the masters freely in 1848. Soon after this the wages were raised from 5s. to 5s. 6d. per day. After these sixteen years of comparative peace, the next movement was called the nine-hours movement, and to leave off at one on Saturdays, making eight hours deduction from the usual time. This request the masters refused to grant. A strike against one firm was the consequence, viz., Messrs. Trollope's. A general lock-out followed. This inflicted great privations on thousands of families. Whose fault was this, men's or masters'? We may answer this question by another. Who struck the first blow? To heal this strife the masters proposed payment by the hour. This was refused by the O. S. M. Society with great indignation. A host of writers were sending letters to the papers on this new form of cruelty and oppression. Two or three barristers who have generally a good stock of vituperative language poured their vials of wrath on the heads of the masters.

Let us pause and ask the question, could any thing better than the hour system have been adopted? Ten hours had been called a day up to 1861. The O. S. M. wanted nine hours to be called a day. Had the masters any right to have a voice in the matter? Their proposition was 7d. the hour: working the same amount of hours would have been 1s. 1½d. per week in advance of past payments of 5s. 6d. per day. The O. S. M. did not want this extra money; they wanted more time to improve their mental and intellectual faculties. That those mental powers required improvement I will admit, but the improvement made since then I very much doubt.

In conclusion, let us contemplate the present strike. Go into some low neighbourhood. Look into the apartments of the houses here: you will find a wife and four or five children, the husband, a hard-working man, working twelve or thirteen hours per day for wages varying from 20s. to 30s. per week.

There is a strike among the colliers in the North of England. Through this strike coals are raised in price from 1*l.* to 2*l.* per ton. Instead of having the cwt. of coal, this poor family must make ½ cwt. do; the family feels the effects of that strike bitterly if it be winter. Say the bread-tax were re-imposed as it was previously to 1848, and bread became 1s. the quartern loaf, the family must do with less. Or a combination among cattle-dealers and butchers, and animal food became 8s. 3d. per pound. Coals, 3*l.* per ton, bread 8s. 3d. the quartern, animal food 1s. 6d. the pound, would scarcely be felt by the upper ten thousand: they would still have enough and to spare. But the upper ten form a very small part of the public; the great bulk of the public are those that are far worse off than the operative stonemasons. Coals, bread, and animal food are the necessaries of life for the poor. And is not a good home of equal necessity? What ought to be had by way of a home for 5s. you want to make cost 7s. 6d. If you could make the extra cost of homes fall solely on the upper classes you would have some excuse; if you had 1s. 6d. per hour they would scarcely feel it. But the man that labours to build a cottage for the poor expects as much wages as the man that is engaged to help build a palace for the rich and great. The O. S. M. are dependent on the produce of others for those articles that are requisite to sustain life and make it comfortable. Suppose all these various classes follow your example and strike for an advance, your strike in this case would be useless,—you would gain nothing. Are you worse off, more heavily oppressed, work harder, and worse paid than those classes on whom you have to depend for a supply? You seem to me like a lot of over-indulged children, sulking and refusing to eat your bread and butter, crying and whining for some sugar to put on the top of the butter. Look at your bread: it is really well buttered.

If you do not believe me listen to your chairman, Mr. Broadhurst, who boasts that the O. S. M. are in a position to sustain a six months' strike. You can either go and work for 9d. per hour during the coming winter, or walk about like gentlemen on strike-pay. Being a mason myself I want to teach you one lesson: I want you to perform the most noble deed that can be performed by men:—1. Acknowledge that you are wrong; 2. do the utmost that you can to repair that wrong; say you have made a mistake, to which all men are liable. Go to work quietly and in good order; it will be better for yourselves, better for your families, better for your employers, and better for the public at large, and you will prove that you are wiser than your fathers, who conducted previous strikes.

JOHN GRIFFIN.

"PEERAGE PROPERTY."

SIR,—I am glad that your correspondent, the gallant defender of the aristocracy in general, and the Duke of Devonshire in particular, calls himself "Fair Play." Fair play is all that I ask from the great landholders to the people of this country. Fair play is just what I complain of the poor land-drudges, and all the other struggling classes of this country, never getting, and I am, therefore, delighted to be placed in correspondence with one who fights under that flag, especially through the columns of the *Builder*, the great organ and mouthpiece of the building trade, in which I am bound to say there is more sound, genuine, honest fair play than in any other trade or profession in England. Now, in answer to "Fair Play" (page 916), I beg to state that I never mentioned the name of the Duke of Devonshire. I am not often so bold as to mention the names of my "betters," and I am sure I would not say a word against a great member of the Liberal party for the world; but as "Fair Play" *will* name the Duke of Devonshire, I must take him up upon his own example, and I ask if it is fair play that Chatsworth Palace,—the king of palaces and paradises,—should pay about 50*l.* a year for taxes,—less than an ordinary London house pays?

Eastbourne, I dare say, owes a great deal to his Grace the Duke of Devonshire, and if he has so improved that delightful watering-place entirely on account of his good feelings to the people of the place, I should be the last man to refuse to give him credit for it. Even if he is merely making a good speculation,—even if he is making fifty times as much of his land as he would do for agricultural purposes under a rotten tenure system,—he is doubtless doing good to others for the time being; but after so many years every brick, stone, beam, roof, and fixture of every kind, for which his Grace has never paid one penny, will have to go into his Grace's family, and the posterity of the builders and purchasers of this property will have to set to work again, because they do not belong to the charmed circle of the landowners. I think the grateful investors of Eastbourne will pay rather dearly in the end for the Duke's generosity. I may admit that his policy with regard to his Eastbourne property is "wise and liberal," but it is especially so towards the interests of his own family, and I cannot say that I blame his Grace for this. I rather admire his enterprising spirit, but would rather not leave the whole country to the generosity and good feelings of dukes, lords, and squires. But the Duke of Devonshire builds churches as well as houses! His Grace is wise in his generation,—he knows that when you want to create a neighbourhood, you have first to build a church. Only build a church, and you have an excuse for a number of other buildings,—public-houses, for instance,—for, sir, you know the adage,—

> "Where'er God rears a house of prayer
> The devil builds a gin-shop near."

However, I do not object to any sort of building whatsoever, whether for beer or Bible, and I quite agree with the policy of building churches as centres of neighbourhoods. Only our friend "Fair Play" seems to think that "the duke merits the gratitude of the whole country," which I do not quite agree with. Again, the noble duke has founded a college in order to supply these churches with ministers. I think that is very wise of his grace, for I am quite sure that the existing colleges do not supply parsons at all likely to attract congregations to the new churches. But I ask, is the college mentioned intended for young gentlemen or the sons of labourers? I am afraid few of the latter class will ever find their way into them. But never mind,—we have popular education, which is destined to give a help to the people, and is bound to be a blessing to the country at large.

"Fair Play" says, "That England, on the whole, has great cause for thankfulness that it possesses a wealthy aristocracy, surely any reasonable and cultivated man will not deny." Well, perhaps I am not a reasonable or cultivated man, but I most certainly deny *that*. I am reasonable enough to admit that there have been some noble exceptions to the rule of idle, vicious, and tyrannical nobility and squirearchy. I am enough of a liberal to be thankful for such an aristocrat as Lord Russell, and I am evangelical enough to be thankful for such another as Lord Shaftesbury, but that cannot be a sufficient reason why England, *as a whole*, should be thankful for a wealthy aristocracy. England as a whole cannot thank a few families for monopolising the land of the country while they leave the majority of those who toil upon it to semi-starvation, enforced ignorance, and hovels to live in scarcely fit for pigs, through which the most horrible immorality prevails in our rural districts.* Why, sir, many of the inhabitants of our towns think our villages to be the very homes of immaculate virtue, cleanliness, and health, when in reality they are mostly composed of overcrowded fever-dens, in which all ages and sexes lie huddled together at night, in which are to be found the swaddling clothes of birth and the grim casket of death in the same room with the supper of the tired labourer when he comes to his "home."

GEORGE MITCHELL,
"One from the Plough."

ANCIENT GREEK ART.

THE productions of Greek genius are all marked by the same great characteristics. That element of the graceful and beautiful, of the tranquil and stately, which is set forth in the masterpieces of Greek sculpture, is also the highest merit of Greek mythology, philosophy, and poetry. In no other country has the literature been so pervaded with the fine arts which grew up along with it, or have the fine arts so embodied the spirit of the literature. To realise this fact is of the first importance to a classical student. The boy that comes without previous preparation to read the Attic tragedies is sure, however talented, to find much that to his taste is insupportably stilted and austere. Nor can we wonder if, even when he has acquired a tolerable mastery over the Greek language, he is still unable to appreciate properly the Attic drama. Few, indeed, are the English scholars who penetrate far into it, despite the excellence to which the composition of Iambic verse has been brought at our universities. The reader of Plato and Aristotle studies auxiliary manuals and text-books as a matter of course, but it would be

* The Rev. Canon Girdlestone at the Church Congress held at Bath in the autumn of 1873, spoke of our rural districts as being "covered with cottages which were in too many instances hovels in which not one of those present would consent to stable their horses,—hovels without ventilation, drainage, or the surroundings necessary for ordinary decency; hovels which bred a race of men who, from want of domestic comfort, spent their lives in the pot-house, and who had nothing to look forward to but to be buried in a pauper's grave! hovels which bred a race of women whose maidenly blushes were blotched through the scenes they were obliged to witness, in consequence of the want of proper sleeping accommodation."

less irrational for him to read those philosophers without any such help than to attempt to understand the equally profound tragedians, as is now generally the case, with no support but a barrel knowledge of their language.

Much of this seems unavoidable. Though we can appreciate Homer and Plato without much difficulty, yet the drama was so eminently national, so akin to the peculiar genius of a people whose manners and education were as different as possible from ours, that we can hardly hope to enter fully into its spirit. But we can imagine nothing more likely to lead us onwards than the study of Greek sculpture Here, too, are written the thoughts which we are to find in the drama written in a language which all true lovers of beauty can read. Unhappily, Greek painting has been long since lost. We have little means of ascertaining its merit; the ancient critics themselves probably spoke with little knowledge. But the renown in which the names of Apollodorus, Zeuxis, Parrhasius, and others were held, the many traditions of their skill, the perfection of form and colour on all pottery and coins still preserved, justify us in believing that in many respects the Greek painters at least rivalled the moderns. We know, however, from the descriptions left us, that their compositions, like the scenes in the tragedies, either represented one person generally in a dramatic situation, or a small group engaged in some simple action, also that, like sculpture, they never admitted anything ungraceful or vulgar.

But if anything could console us for this loss, it would be the preservation of those masterpieces of sculpture which have never been rivalled in modern times. It is true that, in all probability, these were not the greatest works of antiquity. The authors of Belvedere Apollo, the Venus of Milo, the family of Niobe, and other statues, which seem to us faultless, are entirely unknown. The Hercules Farnese of Glycon, the Venus de Medici by Cleomenes, the Borghese Gladiator of Agasias, are certainly not by artists who filled the world with their fame; they are not even mentioned in the comprehensive lists of Pausanias, Pliny, & others. Again, nearly all our statues are of marble, whilst Polycletus, Phidias, and, in general, Praxiteles, worked in bronze, ivory, or precious metals. It is, therefore, almost certain that the statues which have come down to us were not of the first rank, and that such statues as the Discobolus of Myron, and the Faun of Praxiteles, the originals of which we know were in bronze, can only be copies. The Elgin marbles, purchased by the English Government for 36,000*l.*, though belonging to the era of Phidias, were not the work of his hands. These creations, which rank higher than the Laocoon or the Apollo, were from his pupils. The Parthenon Minerva, and the Olympian Zeus, with all the other master-pieces that were composed of valuable materials, were destroyed by the vandalism of the Goths and the Franks.

Such was the genius of Greek sculpture. It reached its highest point during the administration of Pericles. It partakes largely of the literary spirit of that glorious time. As the epics of Homer resemble bas-relief, which may be supposed to go on *ad infinitum* at either end, and where the figures are not grouped together, so does Greek tragedy resemble Greek sculpture, where the figures stand apart from all foreign accessories. As in sculpture, real and substantial figures are set before us—not simple outlines decked out with colour—so in tragedy are the figures shown us as living and doing, not merely described. In general, Greek tragedy and sculpture illustrated the same subjects. Both were devoted to the ideal; neither tolerated anything unpleasing to the senses. The end of both was the same,—the expression of the deepest emotions without the loss of grace or beauty. In the agony of Laocoon, the despair of Niobe, the suffering of the Dying Gladiator, there is the same forbearance which is diffused over the drama; so that we admire, whilst we fear and pity. It is remarkable that Euripides the tragedian, and Timanthes the painter, both expressed this same feeling in representing Agamemnon at the sacrifice of Iphigenia hiding his face with his hands. The grief of the hero was too great to be seen by common eyes, nor was it natural that the father should look upon his daughter's death. So Tennyson—

"My father held his hand upon his face."

Whoever really feels in his own heart this noble characteristic of Greek sculpture, will be capable of appreciating that stately sweetness, so difficult for a modern to understand which won Sophocles the name of the Attic Bee.

Sculpture is practically, as far as new inventions go, dead. Once in the history of the world has it risen and attained, in our eyes, perfection; but the combination of events which produced this effect was such as we can never hope for again. It grew in one of the most beautiful countries of the world, amongst a people most sensitive to all that was beautiful both in thought and nature; it attained its highest development in a city adorned by fame, power, and genius; it was encouraged by all political and religious powers; the finest athletes and the most beautiful women took a pride in being the artist's models. Wherever modern art has risen in Italy, in Spain, in Flanders, it has soon fallen again; but between Phidias and the author of Apollo there were many centuries, each adorned by a crowd of unequalled master-pieces. Such was the impulse—great and lasting—given to art by the Greek mind; for their religion resolved itself into the worship of the beautiful. But the conditions of our life are different. It is as impossible for us to execute a statue in the Greek style as a tragedy in the Greek style. Both would be anomalies at a time when Greek simplicity has passed away. Nothing shows this more plainly than the modern imitations. The positions are agreeable, the execution may be faultless, but they can never make a man think, as all Greek statues should do. The Attic tragedies are cast in such a mould that nothing but unfailing labour and faith in their excellence can master their difficulties. But these statues will excite the emotions of all whose understanding is not utterly degraded, and it was by this road that the greatest critics, confined to the Continent we are sorry to say, have fathomed the Greek genius in all its productions. This was the school of Winckelmann, Lessing, and Schlegel.

T. L.

WORKING GIRLS' HOMES AND WORKROOMS.

SIR,—I was glad to see the paragraph in the *Builder* (p. 919), referring to the plea for working-girls' homes, put forth by Mr. Shrimpton, and supported by Miss Emily Faithfull. As your journal has ever been foremost in promoting the social and physical well-being of our working classes, I venture to ask space for the following remarks, with the object of doing something towards helping on a movement for the amelioration of the condition of a large number of young girls and women who are unable to help themselves. Many of them are orphans,—some, indeed, may be said to be worse than orphans, for their parents are addicted to drink and vice to an extent which makes their "homes" veritable "hells upon earth." Indeed, I speak only of what I know when I say that but for the drink-curse thousands of young girls (many of them delicate in health) would not be driven to get their living in our city work-rooms (I say "work-rooms," although some of them would be better designated as "pest-holes"). To add to the family income (which in thousands of cases would be sufficient if one or both of the parents did not squander a great deal of it in drink), young girls are sent to the City to earn their living as best they may. The parents, although lacking proper self-respect, are puffed up with a false pride, which makes them scorn the idea of sending their girls "out to service," and the girls very naturally imbibe the prejudice. Hence the scarcity of domestic servants, and hence, too, the almost utter incapacity of girls so brought up to make good wives and mothers, this incapacity resulting in wretched homes, made still more wretched through the husband seeking a mistaken refuge in the public-house. Many of the "hands" employed in City workrooms are young married women, driven from their domestic duties to seek bread for themselves and little ones, some of their "husbands,"—manly fellows!—only choosing to work two or three days a week, and spending in drink and "pleasure" nearly all, and sometimes *all*, they earn. Some of these very men will talk authoritatively in defence of trade unions, and say, "the price of labour must be kept up!" and yet, by causing their wives and daughters to go into the labour market they are, in some branches of trade, doing the very thing to send men's wages down.

But, whatever may be the causes which send so large a number of young females into our City work-rooms, the fact remains that every morning from (say) seven o'clock until nine streams of girls and women may be seen hurrying Citywards along our leading thoroughfares and over the bridges. They are mostly bound to arrive at their work-rooms by a certain fixed time, and if a few minutes late are either fined or shut out until after dinner; or, if admitted are kept without work for a certain time if the work is "piece-work." No doubt these conditions are necessary for discipline in large establishments, but their fulfilment often entails much suffering. Most of the girls have to walk two or three miles before they arrive at their destination, and this in all weathers. No matter how keen the early morning air may be, no matter how thick may be the fog, how heavily it may rain, how thick may be the snow and slush of the streets, time has to be kept, if the workers do not wish to find their earnings sensibly diminished at the end of the week. In order to keep time, they very often rush off without stopping to take breakfast, and, consequently, without being fortified against the inclemency of the weather. Poorly-clad and thinly-shod, they arrive at the workroom sometimes literally "wet through to the skin," and in the majority of instances, have to sit in their wet clothes and boots. If prudence would lead some of them to keep a few clothes at the workroom for change, such foresight would be wasted in most of the smaller establishments, in which not only is there no convenience for drying the wet clothes and boots, but no private room to which the workers could retire to change clothes. Compelled thus to sit and steam in their wet clothes, what wonder is it that a large number of City work-girls die of consumption every year? The want of ventilation of such places is often execrable. To add to the contamination of the atmosphere caused by the wet clothes of the workers, there is often the offensive smell of the cloth or other materials used, to say nothing of the impurities given off by burning gas-jets. In many so-called workrooms gas has to be burnt all day to give light, for it seems to be accepted as a fact by some of those "manufacturers" who are thus living on the life's blood of their *employés*, that any hole or corner is good enough for a work-room. In some of these wretched places the only ventilation afforded is by means of accidentally broken skylights, which being left unrepaired add to the general discomfort by letting in the rain. In a room of this sort hard by Cripplegate Church a "mantle manufacturer" carried on business a few years ago,—and may do so now for all I know. Whenever the rain came down, the forewoman would sing out, "Mind your work, young ladies!" whereupon one of the bolder spirits amongst them was wont to say, "Mind *yourselves*, girls, never mind the work!" Into this same workroom a very offensive water-closet opened direct, and several of the girls were seated all day within a few inches of its door. Under such conditions it is not difficult to account for the pallid countenances and bodily weakness of many of the class of whom I am writing.

Then, again, with regard to meals, in a large number of City workrooms not the slightest convenience exists for even the simple cookery which would meet the requirements and add to the comfort of the work-girls. Two or three boiled eggs, or a couple of rashers of bacon, fried, with potatoes or bread, would serve as a cheap and wholesome "dinner" for a poor work-girl, if she could but have the means afforded her on the premises of boiling or frying. In the absence of such accommodation she often puts up with a "makeshift" dinner of dry bread-and-butter brought from home, being unable to pay for a dinner from the cook's shop,—although it may be quite true that many girls will, by reason of deficient domestic training, stint themselves of food rather than deprive themselves of some tawdry article of dress. In many establishments, the utmost convenience afforded is a supply of hot water for making tea; but even this commodity is sometimes so limited and so grudgingly given that it has to be augmented surreptitiously,—the cook or housekeeper, perhaps, levying "black mail" to the extent of a few pence per week from each girl in consideration of the increased quantity of hot water allowed to be taken.

No doubt there are many honourable exceptions to this state of things, but in most cases little or no heed is paid by employers to the health and comfort of their *employés*. A bright exception is to be found at Messrs. Waterlow's new buildings in Finsbury Market, visited by the

Architectural Association a few months ago. There each of the floors occupied by the female bookfolders and sewers is provided with its kitchen, with capacious oven and boiler; plates, pie-dishes, knives and forks, spoons, teapots, cups and saucers, and kettles and saucepans of all sizes are provided; and there is a kitchen-maid to keep things in order. Why is it that such considerateness towards *employés* is not more general? In some cases, no doubt, because a mercenary view is taken of the matter; in many others, because it is not thought of.

"Evil is wrought for want of head
As well as want of heart."

There is, I believe, a "Ladies' Sanitary Association," which might well take up this question of the sanitary condition of workrooms in which girls and young women are employed under some of the conditions I have pointed out. In the meantime I hope that the movement for providing homes for working girls will eventuate in much good work, morally and physically. If they have to work in discomfort, let them, at all events, take their ease amidst peaceful and healthy surroundings. DELTA.

GLENGARRIFF, BANTRY BAY, SANATORIUM.

LATE in the last year some observations were published in the *Builder** respecting this newly-discovered resort for invalids during the winter months, and the great advantages of its dry and warm climate, especially in laryngial or pectoral disorders, were set forth; the average temperature being 7° over that of London, and 6° over that of Torquay; but as regards the foreign and more popular places of resort, the temperature at Glengarriff during the months of winter and spring is registered at 3½° above that of Montpellier; and is not only higher, but much more equable than that of Nice, which is fitfully visited by the dreadful ravages of the mistrale, the bise, and the sirocco,—the register of rainfall being recorded as over 5 in. less than even at Nice, or the other refuges for invalids on the south coast. The peculiar warmth and dryness of the air upon the south-west coast of Ireland is owing to the influence of the Gulf Stream, which flows continuously from the Gulf of Mexico, nearly parallel to the American coast, northward, and washes the whole south-western promontory of the Irish coast, from Mizen Head to Dingle Bay, Bantry Bay opening out to the warm tide, and receiving the full tribute of ozone, which it imparts to the grand and picturesque mountain-bound districts, extending over twenty-five miles from the ocean entrance to Glengarriff and its surroundings.

From Killarney, by road, the distance is but forty-two miles,—a picturesque route, which may be done by cars; but the whole journey from London, *viâ* Cork, may be made in eighteen hours, the railway having been recently completed to Drimoleague, which is only fifteen miles from Glengarriff. That interval, like all the surrounding country, abounds in varying scenery of the most romantic description, presenting mountains, scarped precipices, lakes, the bay and its numerous islets; besides a richness of shrub, evergreens, and flowers, unequalled in any other locality.

The luxuriance of vegetation in shrub and flower attest the mildness of climate, for here throughout the winter flourish the arbutus and rhododendron, the myrtle, laurestina, and other shrubs, besides flowers which decorate the wilds throughout the year.

In addition to all these advantages there is a spacious and well-appointed hotel on the border of the bay at Glengarriff, situated in the most charming position, where every comfort and luxury can be had, at the most moderate charge; and within the last two years that establishment has brought the locality (hitherto a *terra incognita*) into notice, more particularly within the last season, when it was used by several noble and aristocratic visitors; so that the possession of a sanatorium in such a climate, within the limits of the British Isles, will no longer be allowed to slumber unknown and in obscurity. T. H. H.

Other Towns, please Copy.—The Glasgow Improvement Trust have given instructions that a book of photographs shall be prepared, showing "old and historical parts of the city" demolished by the city improvements, with explanatory letterpress by Mr. Carrick, the master of works.

* See vol. xxxiv., pp. 1103, 1226.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

A VISIT was paid by this Society on Friday, the 7th inst., to the new Courts of Law, now building at Temple-bar. The members were received by the clerk of the works, and after a brief inspection of the great quadrangle, the members went to the architect's temporary office, and there the general scheme of the buildings was explained. The members were then taken to the eastern block, facing Bell-alley, which is now rapidly approaching completion, and begins to give a very fair idea of what the completed buildings will be like. From this point the visitors were taken to the main block of buildings, which will contain the central hall, surrounded by the courts. This part of the works is at the present time but little above the main floor level of the central hall. The clerk of works then led the way to the western part of the site, where is situated the machinery and sheds, in which the stone is sawn, moulded, and worked, in readiness for fixing, and from which tramways lead to all parts of the works.

BIRMINGHAM SECULAR CLUB AND INSTITUTE.

SOME time ago the premises, 18, The Crescent, Birmingham, were purchased for a club-house or home for the Secular Party in Birmingham, and alterations have been effected so as to render the house convenient for its purpose. In addition, a lecture-theatre or hall has been erected in the rear of the club-house, to accommodate about 300 persons. The proportions of Baskerville Hall, as it is termed, were governed by the site: the total length of the same, inclusive of the stage or platform, and ante-room, is 83 ft., by a width of 20 ft.; the platform, with proscenium, is 20 ft. deep, arranged at a suitable height from the floor, and having a sloping stage. The hall and its adjuncts have been so planned that they may be convenient for use as a miniature theatre, and under the stage are arranged dressing-rooms and lavatories, with separate approaches. There is also a large lumber or storage room. The interior of the hall has a range of side pilasters, with composite carved caps and bases, and between the pilasters the wall-space is divided by moulded panels suitable for decoration. The pilasters carry semicircular ribbed and moulded members of the principals, the hall being ceiled at the collar height, which is 21 ft. from the floor level; the compartments of the ceiling have intersecting mouldings, and there are skylights on either side, whilst in the flat compartments are circular ventilators, and from the principals depend coronæ for light; at the entrance end of the hall is an ante-room, having movable partitions for throwing the space into the hall, when required. Over the ante-room in that end of the hall is a triplet window, and at the other end of the hall is the proscenium, semicircular-headed, panelled in devices, and supported by composite columns; there are also stage-doors on either side.

It is mainly through the munificence of Mr. Daniel Baker, of Birmingham, who is a warm supporter of secularism in that town, that Baskerville Hall and the Club House attached to it are in existence, and the Free Thought party cannot be too grateful to him for his unselfish exertions.

The total outlay for the works spoken of, including the original purchase, may be called 1,350*l*. The builder, Mr. John Loughton, has carried out the works under the superintendence of the architects, Messrs. Foulkes & Ryland, of Birmingham.

CADGING.

SIR,—I enclose you a copy of a choice "bit," cut from the *Surrey and Hants News*, a weekly paper, circulated not a hundred miles from town:—

"TO PERSONS ABOUT TO BUILD.—If you want a good plan of a Cottage or Villa, &c., combined with economy, apply to ——, ——, Aldershott. *N.B.—References given if required.*"

Name and address might I think be left blank, as the enterprising architect in question would not be obliged for a gratuitous advertisement. It is frequently asked, "What is the profession coming to?" Well, if this style of seeking business in the provinces is to be taken as a criterion, there, at any rate, it is fast approaching a mere trade. J. W. S.

ON THE MECHANICAL GENERATION OF THE EGG-SHAPE FROM THREE FOCI.

THE egg-shape has always been recognised as one of, if not, the most agreeable of forms. This is due to the greater contrariety which it contains in comparison with either the circle or the ellipse. The ellipse contains a less amount of equality than the circle, and the egg-shape a less amount than the ellipse. The differentiation of the two ends of the egg-form produces a moderate contrariety in its constitution which is most agreeable to human taste. The delineation of the egg-shape, however, has hitherto only been imperfectly accomplished by a composition of segments of circles, produced by compasses, and not as the ellipse, that I am aware of,—by continuous motion. The object of this communication is to suggest a means of doing this which will produce two series of most beautiful oviform curves, which may possibly be of some use to the ornamental arts. I have not myself the slightest doubt that the forms of the trunks of the Grecian vases were determined by similar means to those I am about to suggest, and I also feel convinced that this matter may ultimately lead to the unravelment of other mysteries connected with Grecian art, and more especially of those connected with Grecian architecture.

We all understand the rude method of describing an ellipse with a continuous cord, working about two pins placed in the foci of the curve to be described. By such means it would be possible to, approximately, describe the whole series of ellipses between the limit of greatest symmetry, which is the circle, and that of greatest eccentricity, which is parallelism.

To describe an egg-shape,—an oval having a larger and a smaller end,—we must work with three foci, and employ three pins instead of two, as in describing an ellipse. Round these three pins should be placed the continuous string which is to guide either the pencil or the stylus. The series of egg-shapes produced from the *acute*-angled isosceles triangles would describe the series of *vase* forms, and the series of oviforms produced from *obtuse*-angled isosceles triangles would describe the *basin* or *bowl* forms. The central arrangement of the three foci is when these stand to each other as the extremities of the three sides of an *equilateral* triangle. If from this central condition we differentiate the relative position of three foci, or of the pins, preserving the sum of the sides of the isosceles triangles, which these foci or pins should represent, constant,—and the circumference of the continuous string, also constant,—we should be able to approximately describe the whole series of egg forms, differentiating them from that trivate or central form of greatest symmetry to that of greatest eccentricity which ultimately merges into parallelism.

The mathematical elements, and the rule for placing the foci in order to describe an egg-shape of any given diameter, must be subsequent. W. CAVE THOMAS.

CONCRETE WALLS.

ON Friday, the 14th inst., an inquest was held before Dr. Diplock, at the West London Hospital, on the body of Richard Terry, a labourer employed by Mr. Mark Levi, builder, on the Baron Court Estate, near West Kensington Station on the District Railway. A concrete wall runs along the Embankment between this station and Hammersmith, and large houses are being erected on the above estate, close to the embankment. To give more light to the areas and basements, about 60 ft. of the wall has been taken down; the earth was removed from the estate side, close up to the wall, for the foundations of the houses; pickaxes and chisels had little or no effect on the wall, and planks were used as battering-rams, but Mr. Levi declared it to be "as hard as iron." Two of the men were engaged in battering the wall, when the earth beneath and the wall both "slided" down into the hollow cleared for the foundations. Deceased was kept in position by a spade he held in his hand, which was fixed in the earth, and caused him to go down beneath the wall and be crushed to death. One of the men employed thought the trains had shaken the earth. The coroner said he had held several inquiries on deaths caused by the breaking of concrete walls; concrete was very uncertain in quality, for sometimes it was "as hard as iron," and sometimes as soft as sand. Mr. Levi said he had put struts where required, and the jury returned a verdict of accidental death.

COMPETITION, WESLEYAN CHAPEL, GREENWICH.

SIR,—The history of this competition is another warning to the architectural profession. The committee commenced by coquetting with two architects for about nine months, during which period several sketch designs were obtained from, and much encouragement given to, the architects in question. In November, '76, however, they were thrown over, and the competition launched, advantage being taken in the "instructions" of some of the suggestions previously obtained so cheaply. Six architects (Messrs. C. Bell, T. Dinwiddy, Banister Fletcher, A. Lauder, E. R. Robson, and Weir) were invited to submit designs. These were duly received, and retained, with occasional apologies, for five or six months, when the committee's deliberate choice fell upon Mr. Lauder, of Barnstaple. He has, I understand, since submitted a new design, journeyed to London to attend the committee, and incurred further expense and loss of time.

I think the close of this little history is utterly opposed to the commonest principles of justice and fair play. A few days since, I am informed, the committee finally rejected Mr. Lauder's designs, both original and amended, and suddenly adopted a volunteered design, introduced within the last week, by an architect not included in the original list of competitors, and quite a newcomer in the field.

I recommend a prompt meeting of the original competitors to consider whether the conditions of the competition have been violated, and urge them to endeavour for once to set an example of fraternal combination to the profession in these frequent cases of injustice.

AN ARCHITECT.

A NEW DOCK IN THE THAMES.

A NEW dock has been lately completed for the North London Railway Company at Poplar. It has a water area of 2¼ acres, and is formed parallel to the west side of the company's old Collier Dock, and connected with it by a short canal at the southern end, immediately contiguous to the West India Dock (Blackwall) Basin, and near the lock entrance from the Thames.

In the preliminary arrangement for the work a temporary coffer-dam, about 260 ft. long, was placed across the point where the entrance from the Collier Dock was to be formed. This coffer-dam was entirely of two rows of piles, 14 in. square, with caulked joints, and the space between the inner and outer rows was filled with clay puddle well rammed.

The wall is built upon a foundation of concrete, 13 ft. wide and 4 ft. thick, with stock bricks in blue lias mortar, and is 9 ft. 6 in. thick at the base and 5 ft. 3 in. at the top. The brickwork decreases at the back by steps, and batters in front 1½ in. to a foot from bottom to top. The wall is faced throughout with Staffordshire blue bricks, in cement mortar, to a depth below the coping of 14 ft. The coping, of Cornish granite, is 4 ft. wide and 2 ft. thick. The total height of the wall, from the bottom of the concrete to the top of the coping, is 31 ft., the latter being 6 ft. above Trinity high water. The average depth of water in the dock is 18 ft. The wharf frontage of the dock is 1,650 ft.

This dock extension, although of so limited an area, is shown to be of sufficient importance to induce three of the principal railway companies already to utilise its advantageous position.

The Company's engineer is Mr. T. Matthews, and the contractor is Mr. John Cardus, of Acton, whose contract also includes raising the timber quay 2 ft. 6 in. higher along the entire east side of the old dock, and the removal from the west side and re-erection on the east side thereof of a 30-ton crane. The contract further embraces the erection of a warehouse, clerks' offices, and stabling, on the west side of the dock, for the use of the Great Western Railway Company. The warehouse consists of ground-floor, 218 ft. by 130 ft. by 20 ft., headway, and two floors over, each 218 ft. by 84 ft., with basement under the platform. Large hollow cast-iron columns, placed upon Cornish granite bed-stones, 5 ft. 6 in. square and 2 ft. thick, the foundations for which are sunk 30 ft. below the ground surface, carry the upper floors upon wrought-iron girders, some of which are above 30 tons weight each. The upper floors are continued in a similar manner of construction. The warehouse intended for the Great Northern Railway Company is commenced under another contract, and will consist of a ground-floor, 180 ft. by 125 ft., with basement under the platform, and one floor over, 180 ft. by 93 ft. A warehouse for the London and North-Western Railway Company, of far larger dimensions and cost, will shortly be commenced.

Stationary steam engines and boilers and hydraulic machinery and apparatus are provided for working the whole of the cranes and capstans round the dock and in the warehouses. Horses for shunting wagons will be dispensed with.

On account of the peculiar and somewhat limited space for passing the goods and mineral traffic after leaving the Poplar Station of the North London Railway, the course of the line thence to the dock is into sidings placed on the north side of the Blackwall Railway, and thence by a zig-zag course over that line by a bridge of two spans of 25 ft. each, with wrought-iron girders and timber floor, carrying sixteen lines of rails; the foundations of this bridge are 18 ft. below the rail level of the Blackwall line. Approach-roads paved with granite pitching are formed under the second opening to allow the cartage of goods, &c., between the West India Dock, the new dock, and the public highway at the Preston-road.

The entire length of the several lines of railway, with their sidings (after leaving the Poplar Station), to accommodate the London and North-Western, the Great Northern, the Great Western, and the North London Railway companies to the docks, is upwards of twelve miles; and the total acreage occupied thereby, including the old and new docks, is about 28 acres.

We understand the total cost of the works within this area will, when complete, exceed 250,000*l.*

DEFECTIVE HOUSE DRAINAGE AT HORNSEY.

FROM a North London paper which has been forwarded to us, we learn that two or three weeks ago Mr. H. Aubrey Husband, M.B., addressed a letter to the Hornsey Local Board, directing attention to the defective state of the house drainage of some new roads to the north of Stroud-green-road. In reply to his letter, Mr. Husband received a visit from Mr. Deane, the inspector of nuisances, who made a report to the Board stating that there was little or no fault to be found with the drainage. Mr. Husband writes to say, however, that at the same meeting of the Board the Chairman made the following statement, on the authority of Mr. Rogers, the surveyor,—"that there were no joints better than putty joints for soil-pipes." Mr. Husband says he was so "astounded" at this information that he at once wrote to Mr. Bailey Denton, who replied :—

"I do not think it possible to prescribe with safety the sort of jointing material to be used for soil-pipes descending *inside* a dwelling, for I think such an arrangement altogether wrong. All soil-pipes from w.c.'s should be conducted to the outside and down the outside wall in the most direct way to the sewer, and ventilated by a continuation of the pipes to a height above all windows. I quite agree with you that nothing can be more culpable to defect than putty daubed with paint; and if the joints are *inside* the house, it is a long time before defects are discovered, particularly when the pipe is cased with boards."

Mr. Husband, in his letter to the Local Board, called attention to the following defects :—

"1. The soil-pipe is carried inside the houses, generally down the kitchen wall, the joints in the pipes being made with putty daubed with black paint.

2. The drain-pipes are carried under the houses, are not bedded in concrete, and with open joints, they being also used for subsoil drainage.

3. There are no disconnecting traps between the houses and the main-street drain, and no provisions for ventilation."

Mr. Husband also hints that road sweepings have entered largely into the composition of the "mortar" used in running up the houses in question, and that, in short, they are "built to sell," and likely to become fever-nests when occupied.

THE OBELISK.

SIR,—Permit me to correct some errors in my letter published in your issue of the 15th inst. The most important is my misapprehension of the word "crab." I find that Mr. Dixon used the term in its technical sense for metal claws, such support being necessary owing to the base of the obelisk being very much rounded.

The second is a clerical error, "low relief" instead of high relief,—the north and south sides of the pedestal of the Luxor obelisk being sculptured in high relief, and the east and west sides in *incuso* relief. JOSEPH BONOMI.

Walsall.—Mr. J. H. Shaw, of Wakefield, has been unanimously appointed assistant surveyor of Walsall.

THE TRADE UNIONS CONGRESS AT LEICESTER.

THE tenth annual congress of trade unions was opened in Leicester on Monday last, Mr J. D. Pride, of Manchester, presiding.

Mr. Broadhurst submitted the report of the Parliamentary Committee, which, dealing with the subject of employers' liability for injuries to their servants, says :—

"The amendments recommended by the Select Committee are so vague and so totally inadequate to the evident justice of the case, that your committee can place no value upon them, and would recommend the Congress to authorise the re-introduction of the Bill of last year with some slight modification, if that should be deemed necessary. The report submitted by Mr. Lowe was much clearer in its conclusions, and its recommendations much more liberal. Your committee have always maintained that the only logical sequence to the present law is that an employer should be liable for injuries negligently caused to a fellow workman as he now is for injuries caused by one of his workmen to a person not in his employ. The justice of this proposition is evident to all who are acquainted with the conditions of every-day work, and your committee feel satisfaction in having their views on this question confirmed by so eminent a judge as Sir W. B. Brett, whose evidence was not only the most valuable, but the most clear and definite of any given to the committee. Mr. Meldon's report contained recommendations far in advance of either of the two already noticed, but it was presented too late for consideration."

On the Factory and Workshop Acts Consolidation Bill the committee remarked that on the whole they approved of it, and as it was likely when passed to settle this class of legislation for many years, it was of the utmost importance that every effort should be put forth to make it a complete measure.

On Tuesday, Mr. Daniel Merrick, of Leicester the president of the Congress, delivered his opening address, in the course of which he said :—

"The right of working men to combine has been legally conceded; but I question whether the last Act upon intimidation gives them the liberty to which they have a right. Unionists are men and citizens, and as such must be placed in an equal position before the law to other classes. We want this; neither shall we rest satisfied till we have obtained it. We denounce in the strongest and most emphatic manner possible any attempt to destroy property or to injure persons and the rights of property. We revere the law and honour its administrators, and therefore we have a right to the privileges claimed by other bodies. Some employers are never easy without having their goods produced at a cheaper rate than their neighbours and underselling the more honourable. The result is clear; either the trade unions must take the men out on strike, or else the honourable employers must reduce their workpeople to the same level. Workmen would be wanting in their duty to themselves, their families, and the nation, if they did not combine to prevent the evil as much as possible. The motto of trade unions is 'United to protect, but not to injure.' We have no desire to limit the number of employers or to restrict the amount of capital employed in labour. The more money there is used in labour the greater the number of labourers that will be required, and the better will be the prospect of good wages. We want to make the workers themselves capitalists, and our organisations have done a little towards that object. . . . . Some of the restrictions which employers put upon workmen are relics of the old system that sprang up in the dark ages; but workmen, as a rule, have used their power with prudence and discretion. However, a better mode of settling disputes than strikes and lock-outs can be found. Both modes of adjusting differences are barbarous, and belong in spirit to a past age."

The President went on to advocate Boards of conciliation and arbitration, composed of an equal number from each side, with an umpire versed in the technicalities of the trade, adding that such Boards had been found of much value in the hosiery trade in Leicester. These Boards would not do away with unions, which would still be needed, and under an increased necessity to enforce the decisions of the boards when given in favour of the workmen.

DRINKING FOUNTAIN, BRIDGNORTH.

SIR,—In last week's *Builder* (p. 940), the reference made to the "Whitmore Memorial Drinking Fountain," Bridgnorth, is incorrectly given. Competition designs were invited some few weeks ago, and two were selected by the committee to be submitted to the adjudication of Mr. R. Herbert Carpenter, architect, who ultimately reported to the committee in favour of my design, which will be executed in Aberdeen grey and red granite, Sicilian marble, and bronze. The figure of Sabrina will be the principal object in the last-named material. The four sides will be taken up by portrait medallion shields, with coats of arms in bronze, and inscriptions.

Kentish-town. JAMES MILO GRIFFITH, Sculptor.

THE RIVER DEE.

SIR,—I should esteem it a favour if any of your readers would inform me where any account is to be found of the works of reclamation and embankment of this river.

The embankment extends for some twelve or fifteen miles below the city of Chester, and must have been a very important undertaking.

I should be glad, also, to know if any such reclamation continues to be made on the Cheshire side of the estuary.

Bath. G.

MR. JOSEPH LIONEL WILLIAMS.

The death of this able artist took p'ace at residence, 22, Victoria-road, Kensington, on nday, the 9th inst. He was the second surving son of the late celebrated draughtsman d engraver on wood, Mr. Samuel Williams, d like him showed early signs of love for art. his boyhood's days he was fond of grouping diers in the battle-field, taking his scenes m history, and even writing plays embracing bjects from Mediæval history. Costume, bæology, and topography were his favourite dies. In engraving, he with his brothers isted his father at an early age, some of work appearing in Hone's "Every Day ok" and "Table Book," the months being most prominent. The "Olio and Parre" contain much of his labour. Sharpe's British Peerage" contains a vast amount of work. He drew the ornamental borders to bjects drawn by his father for a "Thomson's asons," published by Mr. Bogue, of Fleetset. In these his love of detail is fully seen. en engaged on the *Illustrated London News*, some of the large interiors of the Houses of rliament his detail was marvellous. Whilst gaged on that journal he had the full control all the illustrations for the Great Exhibition 1851. The death of the Duke of Wellington, Walmer Castle, drawn by John Gilbert, now John, was a perfect gem, the head of the ke being entirely engraved by Williams. He engraved some subjects copied from the old sters, in a valuable Bible published by Messrs. ngman.

n early years he exhibited a picture in oil, ut three-quarter size, of "Othello relating Adventures to Desdemona," in the British titution, Pall-mall. Later in life he painted water-colours, and exhibited in the Royal ademy, the Dudley Gallery, and at Manchester l Liverpool. Almost the last of his water-our productions finished (a pedlar vending wares) was sold from the Gallery.

He had latterly been getting together a mber of sketches for a large picture he had contemplation. Besides the various things ntioned, he has for many years been engaged conducting, as well as drawing and engraving, illustrations to several works for Messrs. ckie, of Glasgow, such as the "Imperial Bible ctionary," "Imperial Gazetteer," "Imperial ctionary," Beveridge's "History of India," and hool Dictionary, &c.

He was born at Colchester, in Essex, on the h of January, 1815. He was twice married, st to Jane, eldest daughter of the late Mr. harles Herring; and secondly to Harriett, niece the late General William Miller, who survives m. He leaves four sons.

WATER SUPPLY.

SIR,—My attention has been drawn to an icle in the *Builder* of September 8th, headed ew Incidents in the Battle for Life," in ich notice is taken of a letter of mine which peared in the *Times* of August 28th. The iter professes to quote my *exact* words,—that "That the volume of these rivers is the ge of the yield of their several watersheds beyond dispute, except where, in the latter ers, they have their outfalls into the bed of stream." This is, unfortunately, a misotation. My letter, as printed in the *Times*, lds, "That the volume of these rivers is the ge of the yield of their several watersheds beyond dispute, except where, in the latter ers, they have their outfalls into the bed the *Thames*." No wonder the writer did not ch the meaning of these latter words.

f my own words require further explanation, ugh, I think it is given when I say that the fall of the Ravensbourn and Darent is into bed of the Thames. It is that forms the eption, namely, that the volume of these ers is not the gauge of their several waterds. This is also known to be the case where chalk formation is bounded by the sea; and s the case more or less in the Thames valley, ere the river between Moulsford and Maidenad passes through the chalk formation. In locality the greatest part of the drainage he chalk, amounting to a large percentage of whole volume reaching the tideway, is disrged into the bed of the Thames, and in such portion increasing the purity of its waters.

My object is rather to correct a mistake than nter further into this important subject.

J. C. CLUTTERBUCK.

CAVENDISH COLLEGE, CAMBRIDGE.

SIR,—My attention has been called to a letter of "Fair Play," in your impression of September 8th, in which "Cavendish College, Cambridge," is mentioned as being "for the benefit of young men unable to meet the expenses of a university education in existing colleges," and "a monument of his" (the Duke of Devonshire's) "liberality."

Both statements are incorrect. It is true the fees of Cavendish College are less than those of other colleges, but they are on a fair and liberal scale, and the object is not so much to *cheapen* university education as to take students at an age of about sixteen, and to enable them after three years of the college to leave Cambridge, and at the age of nineteen, properly qualified M.A.s, to commence life as architects, lawyers, or men of business.

With regard to the Duke of Devonshire and the College, permit me to say that the scheme is (like the county schools of the same founder,—the Rev. Canon Brereton) a joint-stock one, the Duke being a trustee, and one of those most anxious that there should be no flavour of either "charity" or "patronage" about it.

The County Schools already do what the Rev. Mr. Brereton said they ought to do,—that is, "pay a dividend on the capital, after doing their proper work in the best possible manner." Cavendish College, I have no doubt, will do the same.

My apology for troubling you with this explanation is that it is important to the success of the effort being made to improve middle-class education that it should not be misunderstood. The Duke of Devonshire has most generously given his name and much valuable time and help to the matter, but his efforts will only be half successful unless the capital employed is proved to be remunerative in a commercial sense.

JOHN GILES.

MASTERS AND MEN.

London.—We learn that within the last day or two the concession of the 10d. an hour demanded by the masons of the metropolis has been granted by two West-end building firms,—Messrs. Wheeler & Warren, and Messrs. Hook & Oldrey.

Manchester.—The weekly meeting of the Manchester Master Builders' Association was held on the 18th inst. at the Palatine Hotel. Several of the members stated that joiners had been applying at their shops for work which they were unable to give, being already full of hands. Reference was made to a letter recommending arbitration, and the fact was referred to that the employers offered to arbitrate the whole dispute last April, and named as referees several of the leading public men of the city; but the workmen refused, and decided to strike. The employers having, it is stated, in the meantime, "by much expenditure of time and money, succeeded in filling their shops with workmen, are now decidedly averse to entertaining any proposal for bringing the Union men back, being satisfied to keep the joiners they have, who are on the whole respectable, industrious workmen, anxious to do their duty, and civil and obliging to those placed over them." It was reported that twenty-four more joiners were on the way from America. It was resolved to give orders for stopping any further importation, the shops being practically full. It was further resolved to take permanent offices for the Association in the city, and to appoint a paid secretary. In the meantime Mr. Robert Neill, jun., undertook to act as hon. secretary.

CHURCH-BUILDING NEWS.

Blackmore.—The parish church of Blackmore, Essex, was lately re-opened by the Bishop of St. Alban's, after restoration. By the neglect of generations the church had been suffered to fall into a sad state of dilapidation and decay, insomuch that in the winter time service was only held within its walls under extreme inconvenience. In the east wall there were cracks and fissures which permitted the ivy to force itself through and grow inside the church. The work of restoration has been carried out by Mr. Barlow, who has acted both as builder and architect, and considering (says the *Chelmsford Chronicle*) that the total outlay will not exceed more than about 900*l*., the restoration he has wrought is "quite wonderful."

Harby.—The new parish church at Harby has been consecrated by the Bishop Suffragan of Nottingham. It is cruciform on plan, and consists of chancel, nave, north chapel (used as a vestry), and organ-chamber, south porch, tower and spire,—which rises to a height of 120 ft. The tower contains five bells, and a clock-dial in the east face. Under the clock are a niche and canopy, containing a statue of Queen Eleanor, wife of Edward I., who died close to the site of the church, A.D. 1290, at the house of Richard de Weston, the foundation of whose house may still be traced. The statue,—a *fac simile* of that on her tomb in Westminster Abbey,—is by Earp, of London. Mr. G. Freeth built the spire at his own expense. He also gave the statue of Queen Eleanor, the clock, the organ, the stonework of the pulpit, and the heraldic tiles in the chancel floor. Mrs. Freeth gave the east window, which is by Heaton, Butler, & Bayne, of London, the altar-cloth, made at Bruges, and the brass eagle lectern. The whole cost was about 1,500*l*.

Weston-on-Trent.—The ancient parish church of Weston-on-Trent has been re-opened, after restoration. The whole of the work has been done by Messrs. Bullock & Barton, of Melbourne, from the plans of Messrs. Evans & Jolley, architects, Nottingham. The total cost has been about 1,200*l*.

Colerne.—The parish church of St. John the Baptist, Colerne, has been re-opened, after restoration. The church is of somewhat extensive dimensions. Its nave, chancel, and chantry chapel date from the thirteenth century, while the tower is a good example of the Somersetshire Perpendicular. The clearstory on the south side, which was in a weak condition and much out of the upright, has been rebuilt. The chancel and chantry arches above the organ-chamber have been completely renovated. On the north side of the chantry chapel a new vestry has been built. The roof of the north aisle having been in a very decayed condition, it has been entirely renewed with oak panelling, copied as closely as possible from the original. The screen which has hitherto filled the position formerly occupied by the rood-screen and loft now divides the lower lobby from the nave. On the exterior of the tower the pinnacles and all the upper part have been renewed, while a new flight of Pennant stairs has been erected inside. The architects were Messrs. Wilson, Willcox, & Wilson, of Bath, and the builder was Mr. Bladwell, of Bath.

Condover.—Condover parish church is about to be restored. Some years ago there was a lantern tower over the transept, but it fell and damaged a part of the building. This will be re-erected, and a new organ chamber and vestry will also be built. The plaster has been removed from the interior of the church, and the Norman masonry laid bare. As much of the old roof as possible has been retained. The architect is Mr. Fairfax Wade. The total cost of the work will be about 1,200*l*.

Stonehaven, N.B.—A new Episcopal chapel has been erected in Arbuthnott-street, Stonehaven, by the congregation of St. James's. It stands at the west end of Arbuthnott-street. It is a large building, built of purplish-grey freestone got from the Bervie quarries, some ten miles distant. The style of architecture is Norman, passing into Early English. When fully completed, the building will consist of a nave, two aisles, chancel, tower, and spire. As it stands, the nave and aisles form the building; the chancel, tower, and spire being intended to be built at a future period, when an additional sum shall have been raised to cover the necessary outlay. Accommodation will be provided for about 500 persons. The spire, which, according to the plan, will rise to a height of 85 ft., is intended to be built at the north-west corner, next to Arbuthnott-street. The cost has been about 3,600*l*. The contractors for the work are:—Mason work, Alex. James, Bervie; carpenter work, Robert Weir, Stonehaven; plasterer work, Alexander Cormack, Stonehaven; painter work, Alex. M'Kenzie, Stonehaven; plumber work, John Nicol; slater work, Robert Burness, Stonehaven.

DISSENTING CHURCH BUILDING NEWS.

Romford.—A new Congregational Church has lately been opened in South-street, the direct thoroughfare from the railway station to the market-place. It is from the designs of Mr. E. C. Allam, of that town, and has been built by Messrs. Staines & Son, of Great St. Helen's and Finsbury, at a cost of somewhat under 3,500*l*. The building is Gothic in character, and rectangular on plan, 61 ft. by 37 ft. internally, with a tower and slated spire at the south-east angle. It will accommodate 340 persons on the ground-floor, and 130 persons in the gallery. The ceiling is wagon-headed, and is boarded diagonally and varnished, only the timbers forming the panels being stained. The walls are faced externally with Kentish rag stone, with dressings of Bath stone. One of the lobbies at the back, and a class-room under the organ-gallery, will eventually be connected with proposed new school-rooms.

Towcester.—The memorial stones of a new Baptist Chapel at Towcester have been laid.

The new building, which is being erected in the lower part of the town, at a cost of about 1,350*l.*, will include vestry, with class and school rooms attached. The chapel is 45 ft. by 30 ft. Mr. Ingman is the architect, and Messrs. Taylor & Grist, Aylesbury, the contractors.

Frosterley.—The foundation-stones of a new Wesleyan Chapel at Frosterley have been laid. The building is being erected from designs by Mr. Blessley, architect, Middlesbrough, and is Gothic in style.

Oxford.—The memorial stones of a new Wesleyan Chapel in New Inn Hall-street, Oxford, were recently laid. The front elevation, including a tower and spire 130 ft. in height, will be visible from Cornmarket-street. Accommodation will be provided for 850 persons. The style is Decorated Gothic, polished granite being used for the columns of nave arcade. The contract has been undertaken by Messrs. Symm & Co., at 6,500*l.*, and the architect is Mr. Charles Bell, of London.

Watford.—The memorial stone of the new Beechen-grove Chapel, Watford, was recently laid. The building will provide sittings for 850 persons, and room for additional sittings, when needed, to accommodate 150 persons more, making, in the whole, provision for 1,000 persons. Mr. J. Wallis Chapman is the architect; and the total cost, including site, will be about 7,500*l.*

Spalding.—The Free Methodists of Spalding have resolved to take down their present chapel and erect a new one on a larger scale upon the same site, at a cost of about 2,000*l.*, using up the old materials as far as available. Mr. Bellamy, of Lincoln, is the architect employed.

Steyning.—The memorial stones of a new Wesleyan chapel in the High-street, Steyning, Sussex, have been laid. The chapel is being built by Mr. C. B. Oxley, of Steyning, in accordance with plans prepared by Messrs. Lund & Sons, architects, Worthing. It will be in the modern Gothic style, and will accommodate about 300 persons. The front is of white bricks, filled up with random flint work with a vein joint. At the back there is to be erected a schoolroom, which will provide room for some 200 children.

Innerleithen.—The foundation-stone of a new United Presbyterian Church at Innerleithen has been laid. The building is to be erected on the south-side of the Walkerburn-road, at the east end of the town, and will be a Gothic structure, built with whinstone faced with white freestone, and with massive buttresses. The church is seated to accommodate 600. The estimated cost is a little over 2,000*l.* The contractor for the mason work is Mr. Robert Mathieson, builder, Innerleithen; and for the joiner work, Mr. John Forsyth, Innerleithen.

Crich.—The foundation-stone of a new Baptist chapel at Crich, near Ambergate Junction, Derbyshire, has been laid. The building will provide accommodation for 300 people on the ground-floor, with space for galleries when needed, and will cost 1,500*l.* Mr. Isaac Betts, of Crich, is both architect and builder of the chapel.

Langton-on-Swale.—The memorial stones have been laid of a new Wesleyan Chapel in the village of Langton-on-Swale, near Northallerton. The chapel, which is to seat 103, is to be built of brick, with stone dressings, and with open seats in the interior. The architect is Mr. Alfred J. Martin, of Darlington; the builder is Mr. Lynes, of Darlington; and the cost of the building is estimated at a little over 300*l.*

Stitchel.—The foundation-stone of a new United Presbyterian Church at Stitchel has been laid. The building will cost about 2,000*l.*, and is to be erected in the Early Decorated style, according to designs prepared by Mr. Stevenson, architect, Berwick. It is to be built of whinstone, with freestone dressings. The church is to be seated for 320, a gallery at the north end being intended to hold sixty people. The stone-work is being executed by Mr. Wood, Ayton.

Abergavenny.—The foundation-stone of a new Baptist Chapel for Abergavenny has been laid. The site of the chapel is an angle at the bottom of Frogmore-street, towards which the façade will front. Accommodation will be provided for nearly 800 persons, and the cost of erection will be about 3,650*l.* The style adopted is a sort of modified Gothic, and all the masonry will be executed in native stone. The architect is Mr. George Morgan, Carmarthen; and the contractors are Messrs. Foster, Brothers, Abergavenny. The clerk of the works is Mr. Hoskins.

Gillingham.—A new Wesleyan Chapel has been opened at Gillingham. The building is of Mendip grey-stone, with Bath-stone dressings, relieved with Ham-hill bands and arches over the upper windows. There is a spire 100 ft. high on the side towards the street. The aisles and lobbies are paved with tesselated stone, of mosaic pattern, and there are three entrances to the building. There is a schoolroom, 52 ft. by 22 ft., at the rear of the building. The architect was Mr. Ridout, of Gillingham, and the style is Early Gothic.

Dronfield.—A new Wesleyan Chapel was lately opened at Dronfield. The building, which is centrally situated on the Sheffield and Chesterfield turnpike-road, is constructed of white stone. The contract for masonry has been carried out by Mr. W. Tomlinson, and that for the woodwork by Mr. Bramhall, of Dronfield. The entire cost of the building is estimated at 1,000*l.*

Highfield.—The memorial-stones of a new Wesleyan Chapel at Highfield, Sheffield, have been laid. The building will be Early Gothic in style, and will be constructed of Dunford Bridge wall stone, with Hollington stone dressings. In the basement there will be a schoolroom, with four class-rooms, and other conveniences. Accommodation will be provided in the chapel for 907 persons. At the corner of the road formed by the intersection of Highfield-place with the London-road there will be a tower and spire 140 ft. high. The buildings will cost about 8,000*l.* Mr. J. D. Webster is the architect.

Newcastle-on-Tyne.—The new chapel at Bulman village, erected by the United Methodist Free Church, has been completed and opened. It is built of stone, of Early English Gothic design, and affords sittings for 730. In plan the building consists of a nave with side aisles, and apsidal organ gallery behind the pulpit at the west end. There are galleries all round the interior, the fronts of which are panelled, each panel containing a conventional floral design cut in the woodwork. All the internal fittings are of pitch-pine. The principal front faces the north turnpike-road, and comprises the lofty east gable of the chapel, flanked by transeptal projections containing the gallery staircases, and by an octagonal tower and turret spire 70 ft. high. The east gable contains the principal entrance doorway, and above it a triplet of lancet-lights surmounted by a circular six-foil window, the details of the whole being enriched by moulded and carved work. The flank walls of the chapel have two tiers of lights with lancet and trefoil heads respectively, except in the transept gables, which have large two-light windows, with simple tracery in the heads. At the west end of the building are provided vestries, class-rooms, &c. The extreme internal dimensions are 82 ft. by 43 ft. by 38 ft. high. The cost of the building alone approaches 4,500*l.*, exclusive of the price of the large site, which affords ample space for the future erection of school buildings, minister's residence, &c., and has yet to be enclosed by suitable boundary walls and palisading. The architects of the chapel are Messrs. Septimus Oswald & Son, of Newcastle-on-Tyne. The contractors for the structural works were Messrs. Henry Hudspeth & Son, various firms working under them.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Ancoats.—The foundation-stone of a new Roman Catholic Church in Fawcett-street, Ancoats, has lately been laid. The church, which is to be dedicated to St. Alban, is to be provided with vestry, confessionals, &c., and will be 78 ft. long by 30 ft. wide, having at the west end a gallery affording accommodation for one hundred persons, and giving room for an organ and choir. Externally it will be of brick, relieved by blue stringcourses and plinths, the doors and windows having pointed moulded arches. Inside, the edifice will be plastered, the woodwork and furniture being of pitch pine. The principals of the roof will be of similar material. The west gable will be surmounted by a bell turret 30 ft. high. Mr. John L. Ward, of Manchester, is the contractor for the whole of the work.

Washington (Durham).—The foundation-stone of a new Roman Catholic Church at Washington, Durham, has been laid by the Right Rev. Dr. Chadwick, the Roman Catholic bishop of Hexham. The new building, which is placed east and west, is to consist of a nave, two side aisles, a chancel, and north and south transepts. At the end of the north aisle will be a chapel, and at the end of the south aisle will be the sacristy. At the end of the chancel there will be an apse with an arcade. The nave will be wide, so as to contain the whole of the congregation, the aisles being used simply for sages. At the west end of each aisle there be a porch with doors for exit and entr There will be sittings for five hundred p besides children, in the north transept, the and organ being placed in the south tran On the south transept will be a bell gable. tached to the church will be a presbytery h and the whole will occupy an area of upwa two acres. The buildings will be of stone, i Decorated Gothic style, the dressings bei red sandstone, from Dean's quarry, Tyne I The architects are Messrs. Dunn & Hanson, castle, and the contractor is Mr. G. E. Foost Washington; the cost, exclusive of the site, about 5,000*l.*

Market Harborough.—The new Roman Cat church and schools at Market Harborough opened on the 15th ult. The building which we gave an illustration in our numb April 7th last (p. 347), have been erected the designs of Mr. C. G. Wray, architect, Lo Mr. Haines acting as clerk of the works. builders were Messrs. Halliday & Cav Stamford.

Stonehaven, N.B.—A new Roman Cat chapel has been erected in Arbuthnott-st Stonehaven. It is in the Decorated sty Gothic architecture, and is designed in form of a cross, with nave, transept, apsidal chancel, on one side of which i sacristy, and on the other, under the base o tower, a small room. The nave is 33 ft. by and the chancel 17 ft. by 14 ft.; while the h of the building, from the base to the apex o roof, is 28 ft. The interior is seated for e persons, but additional sittings can be a The building has been designed by Mr. Mackenzie, architect, Aberdeen.

Liverpool.—The new Roman Catholic ch of St. Thomas of Canterbury, Great Geor road, Waterloo, has been opened for p worship. Owing to the peculiarities of site, the church stands north and south, departing from the usual custom of turnin altar end to the east. A bold porch leads i small narthex, doors at each side of which direct ingress to the nave. On entering nave the attention is attracted by the gr columns which separate the nave from the a The grey and the purple were procured Shap, Westmoreland, and the red columns Mull, Scotland. The chancel arch, of bold portions, separates the chancel from the The chancel is lofty, and is terminated by a sided apsidal end. The organ transept and chapel are on either side of the chancel. chief feature of the church is the unus large and elaborate high altar and rer The reredos follows the shape of the apse sides being composed in rich arcading, ca on various coloured marble columns. Fig in niches of the four Evangelists, St. Tho and St. George, occupy the junctions of th angles which form the apse. Each figur nearly life-size, and stands on a base suppo by a group of Devonshire marble colu carved with the emblem of the saint pl above. Each niche is covered by a richly-c rated canopy. The high altar stands compl separated from the reredos by a passag around it. It is built of various kind polished alabaster, with columns of Irish Devonshire marble. The tabernacle is ca out of a block of white alabaster, ornam with red jasper columns. The canopy, for the centre and crown of the whole desig carried over the tabernacle by Irish m columns. The whole of the altar and rer has been executed from full-size cartoons plied by the architect, by Mr. Boulton, of C tenham, who also did the rest of the carvin the church. The position of the font is nea of the entrance-doors. Granite, polished, f the bowl, which rests on a cluster of m columns. The oak and metal top was sup by Messrs. Hardman, who also made and the gasfittings. Specially made carpets procured from Messrs. Crace & Co., Lon Heating pipes for the hot-water system been laid by Messrs. Harlow, Macclesf The benches have been executed by Webster, of Miller's Bridge. In the end partment of the apse, a stained-windo been painted and fixed by Messrs. Hardman is erected as a memorial window by Mrs. S Mr. John Francis acted as clerk of works t buildings, which have been carried out by James Leslie, builder, of Miller's-bridge, L pool, from the designs of Mr. Edmund Kir architect, Liverpool. The style is Early Eng

SCHOOL BUILDING NEWS.

ley.—A new apse or small chancel which en added to the school church at Gorsley t been opened. The building, which has esigned by Mr. Harris, jun., is in the Early n style. The contractors were Messrs. Brothers, of Newent.

rport. — The managers of the Stourport al schools have decided upon enlarging ildings, and Mr. Meredith, architect, has ed a plan showing what alterations are ary to give accommodation for 200 more n. The estimated cost is 1,700*l.*

ingford. — The foundation-stone of new al Schools at Poslingford has been laid. ildings have been designed by Mr. A. A. G. s, and are intended to accommodate seventy n, a residence for the mistress being pro- The contract has been taken by Messrs. & Son, of Haverhill, and the total cost nated at about 800*l.*

worth (*Derbyshire*).—Memorial stones were re on the 18th ult., of a Church of England in course of erection by Mr. D. Drink- from designs prepared by Mr. J. Lowe, ect, Manchester. The building is of plain nction, and will accommodate 150 children, ordance with the requirements of the tion Department, at a cost of about 600*l.*

on Valence.—A new range of buildings at Valence Grammar School was lately d. The work has been carried out by Mr. r, of Rochester, under the direction of . W. Porter, architect, of London. The ent forms a large hall, 54 ft. by 30 ft., can be divided into three spacious class- by a double sliding partition. The corre- ng large hall above is to be used as the pal schoolroom. The dining-hall will be up with partitioned desks for separate and the present school-room will be used lining-hall. There is also a corridor of , each 7 ft. by 5 ft., built for the senior

STAINED GLASS.

s.—A stained-glass window, the work of ohn Davies, Wyle-cop, Shrewsbury, has placed in the Primitive Methodist Chapel, to the memory of the late Mr. W. Powell. bject is "The Good Shepherd."

yton. — A stained-glass window has just placed in Drayton Church, Norfolk, to the y of the late Mr. James Winter. The t is "The Good Samaritan." The window work of Messrs. Clayton & Bell.

fermline.—A new stained-glass window en placed on the south side of the Abbey , Dunfermline, by Mr. David Douglas, Edinburgh, in memory of Mr. James s, his father. The work was executed by . Ballantyne & Son.

nouth.—A design for stained glass for the window of St. Nicholas Church, Great uth, has been prepared. The new window epresent five principal subjects connected he life of our Lord, viz., the Nativity, the m, the Crucifixion, the Resurrection, and cension. These will occupy the upper and prominent part of the window. Beneath will be five other smaller paintings of five nts in the life of our Lord. The new win- to be erected in memory of Mr. and Mrs. ve.

estone.—A stained-glass window has just nveiled in the parish church, Folkestone, nmemoration of some children's services here last year. The work has been ed by Mr. C. E. Kempe.

hore.—The Abbey Church at Pershore has eceived an addition in the shape of a l-glass window, which has been placed in rth aisle as a memorial of the late Colonel Sales Scobell, of the Abbey, by his n. The window has been executed by , Clayton & Bell.

bury (*Bristol*).— There has just been d in this church a four-light window of an al treatment. It is entirely composed of ades of green with black outlines of the ts, the Holy Women at the Tomb and pearance of the Saviour to Mary Magdalen. the work of Messrs. Mayer & Co., of h.

ndsworth.—The Handsworth Local Board appointed Mr. Edward Kenworthy, of ey, as their surveyor, at a salary of 300*l.*

VARIORUM.

THE latter numbers of the periodical *L'Art*, 139, 140, 141, and 142, are devoted mainly to treatises by able hands on Rubens and his works, with a large number of interesting illustrations, mostly fac-similes of sketches by him. This review, which has taken a high place in periodical literature, has now an office in London (135, New Bond-street) and an English editor for matters which relate to this country.——The recently-issued part of "Transactions of the Statistical Society," 1876-7, includes an interesting paper by Mr. E. T. Bellhouse on "Baths and Wash-houses for the People in Manchester."

Miscellanea.

Mortar: and Piece Work.—At the first meeting of the session of the Liverpool Engineering Society, held on Wednesday, September 12, Mr. Wilkinson, hon. secretary, called attention to some interesting samples of mortar. A piece of mortar from Sandown Castle, Kent, upwards of 300 years old, sustained a tensile strain when tested by him of 263 lb. per square inch; and a sample of mortar lately brought from Nicopolis by Mr. Alfred Holt, member, appeared to be as hard as stone, and much honey-combed. The president thought that its rough and honeycombed appearance clearly bore out his theory that the goodness of ancient mortar is more due to the high quality of the materials then employed than to any special qualifications which the ancients possessed for mixing mortar. A paper on "Piece Work *v.* Day Work," was then read by Mr. R. F. Pitt, member. In considering his subject, he divided it into six heads,—1. General View; 2. Co-operation; 3. Mechanical Engineering; 4. Civil Engineering; 5. Miscellaneous; 6. Conclusion. He advocated piece-work under most circumstances in the rougher classes of work. On the question of co-operation, or labour participation in the profits, he thought there had not been sufficient experience to justify him in forming an opinion. He said piece-work decidedly has the advantage over all other systems, inasmuch as it enables men to make higher wages, and principals to turn over their capital more quickly than they otherwise could do. He quoted instances of masons making double the current rates by piece-work, and at the same time stated that men working beside them under similar conditions could barely earn their living. At day wages, or according to "Union" rules, these men would be classed at the same rate, which, of course, tends to lower the skill of the artisan.

Underground Water.—The committee of the British Association for investigating the circulation of underground water in the new red and permian rocks has been re-appointed, and the inquiry extended to the oolites. At the Plymouth Congress, the hon. secretary, Mr. De Rance, F.G.S., read an elaborate report of the work done by the committee during the last year. Mr. T. Mellard Reade, C.E., F.G.S., followed with an individual report upon the wells of South-West Lancashire, in which he analysed the information he had collected during the last three years, and sought to demonstrate by calculation of the water yielded by certain wells and bore-holes that the yield of a well is dependent upon striking certain fissures or channels which ramify through the sandstone, forming ducts, conveying the underground water to the pumping stations. These ducts, which may be vertical fissures, or may be channels along the planes of bedding, like arteries, conveyed the water from large areas of sandstone that have absorbed the rainfall from surface percolation. He also showed that the wells are nearly all affected by local percolation, and insisted on the necessity in most cases of excluding water from the strata immediately surrounding the well, as it is liable to all sorts of organic contamination, by water-tight cylinders or tubbing.

Removing Tree Stumps.—In the backwoods of America, as stated in the *Indian Agriculturist*, the following method of removing stumps of trees has proved very efficacious. In the autumn a hole, 1 in. or 2 in. in diameter, and 11 in. deep, is bored into the stump, and filled with 1½ oz. of saltpetre, dissolved in water, and the aperture closed. In the following spring half a gill of kerosene oil is put into the same hole and lighted. The stump is said to smoulder away without blazing, and the fire extends to part of the roots, leaving nothing but ashes.

Granite-dressing Machinery.—The *Aberdeen Free Press* gives an account of a new machine just introduced into the granite trade of the city, viz., Brunton & Trier's patent stone-dressing machine, the makers of which are Messrs. Ransome & Co., of London. Some time ago there was introduced a machine for the dressing of circular stone columns in the lathes in use at the granite-polishing yards, whereby a large saving of skilled manual labour was effected; but it is stated that up to this time the dressing of square or flat-surfaced stones has been entirely done by hand. The new machine promises to revolutionise this system to a very great extent, as by means of it the dressing operation can be performed with far greater speed and efficiency than by manual labour. The stone intended to be dressed is placed on a travelling iron table, upon which it is tightly wedged. Above this table, and depending from the centre framework, is a chuck, to which the cutting-machinery is attached. The cutters, which are circular steel discs, are driven by means of bevel gearing, worked by a spindle passing through the chuck shaft. The cutters and chuck revolve simultaneously at a rapid rate, the former making 1,200 revolutions and the latter 500 revolutions per minute. The table carrying the stone is made to travel at the rate of from 2 ft. per minute for granite, to 6 ft. per minute for sandstone.

Explosion in a Liverpool Sewer.—On the 12th inst., an alarming explosion took place in Feacher-street, Liverpool, in a sewer, followed by the upheaval of the pavement, and the issuing forth of flame, to the consternation of the inhabitants. Such was the force of the explosion, that a large stone, weighing over 4 cwt., was hurled upwards, though, fortunately, no personal injury was sustained. The flames raged in the sewer for some time, and it was ultimately discovered that the explosion was caused by an accumulation of gas from a fractured main gas-pipe, the ignition being caused by a passer-by throwing a lighted match down the sewer grid.

Stanford's Library Map of London and its Suburbs.—A new edition of this map comes to us on twenty-four sheets, in a portfolio, and is a very useful possession. It embraces an area of nearly 120 square miles, and has been re-surveyed. The alterations which have been made in London since the last edition was issued in 1865 are striking. The map extends on the north to Finchley, Crouch-end, and Leyton; on the south to Mitcham, Norwood, and Beckenham; on the east to Stratford, Blackwall, and Blackheath; and on the west to Willesden, Shepherd's-bush, and Putney. We have looked over it carefully, and can give it a first-rate character.

"Gas from Wood."—Referring to the paragraph with this heading in last week's *Builder*, a correspondent writes:—"I have given gas made from wood a fair trial, and can say that excellent gas for heating purposes can be made in like manner that coal gas is produced, at little cost, but the flame burns blue, producing a bad atmosphere. The question is how to purify such gas for general use. I may observe that the wood before use was worth not more than 4*d.*, but the charcoal produced from it was worth fully three times the amount. The gas is produced very rapidly."

The New Town Hall, Manchester, was formally opened on the 13th inst. The building, of which,—as many of our readers will know,—Mr. Waterhouse is the architect, has formed the subject of illustrations and numerous critical and descriptive articles in previous volumes of the *Builder*. The architect, some months ago, read a paper descriptive of the building before the Royal Institute of British Architects, and the substance of the paper appeared in our columns at the time.

Iron and Asphalt.—The Brunswick Rock Asphalt Paving Company are covering the large 24-in. and 30-in. main gaspipes for the Phœnix Gas Company with 1-in. thick rock asphalt, and the pipes are being laid under the bed of the Quaggy river at Lee. We believe this is the first time this method has been tried. The company claim that it has the following advantages:—Prevents all leakage, is a protection against explosion, and prevents the pipe rusting.

Safe Safes.—Messrs. Chubb are rather proud that some burglars were foiled last month at Buenos Ayres in attempting to cut a hole in one of their old safes. So much evidence has been given that these makers *can* produce good safes, that it is scarcely necessary to print the anecdote.

A Big Block of Granite.—There was recently quarried, without the use of powder, at the Barre, Vt., U.S., granite quarries, for the use of the Oliver granite works at Rutland, a block weighing about 618 tons,—being 40 ft. long, 17 ft. high, and 10 ft. thick. This stone is believed to be the largest block of granite ever quarried in the State.

TENDERS.

For alterations to the Crown Tavern, Upper Holloway. Mr. John Heath, architect. Quantities supplied:—

Apley	£695 0 0
Vears & Co.	663 0 0
Terrey	620 0 0
Channing (accepted)	527 0 0

For proposed additions to the Old Ford Mission Hall, Tredegar-road, Bow, for Mr. Arthur Farnan. Messrs. Hills & Fletcher, architects. Quantities supplied:—

Sheffield & Prebble	£593 0 0
Helby	585 0 0
Coleman	555 0 0
Robey	529 0 0
Johnson (accepted)	493 0 0

For shops and warehouse in Basinghall-street and Mason's-avenue. Messrs. Ford & Hesketh, architects:—

Ashby & Horner	£6,947 0 0
Killby	6,770 0 0
Boyce	6,768 0 0
Asnby, Brothers	6,633 0 0
Lawrance	6,60) 0 0
Brass	6,528 0 0
Scrivener & White	6,516 0 0
Browne & Robinson	6,5 5 0 0
Newman & Mann	6,346 0 0
Crabb	6,317 0 0
Nightingale	6,(86 0 0
Mark (accepted)	6,000 0 0

For a pair of semi-detached houses, Blackheath, for Mr. H. E. Joyce:—

Staines & Son (accepted)	£2,160 0 0

For warehouse, No. 40, Gresham-street, City. Messrs. Ford, Hesketh, & Nere, architects:—

Liscelles	£3,633 0 0
Scrivener & White	3,515 0 0
Boyce	3,493 0 0
M'Lachlan	3,452 0 0
Lawrence	3,452 0 0
Perry & Co.	3,447 0 0
Ashby, Brothers	3,400 0 0
Brass	3,382 0 0
Browne & Robinson	3,357 0 0
Mark	3,199 0 0
Crabb (accepted)	3,053 0 0

For new roads and sewers, Denmark Park Estate, Camberwell. Messrs. Tunley & Boyle, surveyors:—

Julian & Co.	£3,835 0 0
Bell	3,102 0 0
Keeble	3,026 0 0
Richardson	2,950 0 0
Rigby & Co.	2,918 0 0
Thompson	2,745 0 0
Jackson	2,710 0 0
Lyons	2,650 0 0
Pizzey	2,584 0 0
Ford & Morris	2,575 0 0
Harris	2,536 0 0
Wainwright & Co.	2,430 0 0
Pearson	2,383 0 0
Mayo	2,350 0 0
Love	2,346 0 0
Oliver	2,290 0 0
Hare	2,289 10 0
Garrett	2,199 0 0
Simmons & Co.	2,181 8 4
Batch	2,099 0 0
Broome	2,035 0 0

For the erection of two chapels, gatekeeper's lodge, and inclosures, to the new cemetery for the Wandsworth Burial Board. Mr. Keith D. Young, architect. Quantities by Mr. Morgan Young:—

Nightingale	£5,146 0 0
Beale	4,784 0 0
Avis	4,736 0 0
Prout	4,585 0 0
Parsons (accepted)	4,675 0 0

For roads and drains to a portion of the new cemetery for the Wandsworth Burial Board. Mr. Keith D. Young, architect. Quantities by Mr. Morgan Young:—

M'Kenzie	£1,780 0 0
Prout	1,395 0 0
Nicholson	1,335 0 0
Blackmore	1,333 0 0
Nea' (accepted)	1,197 0 0

For rebuilding premises, Buckingham Palace-road, for Mr. H. Gorringe. Mr. J. P. Walford, architect:—

	Contract No. 1.	Contract No. 2.
Hill, Higgs, & Co.	£24,740	£23,480
Dove, Brothers	23,960	1,690
Smith & Co.	23,350	1,500
Lawrence	23,275	1,475
Chappell	23,230	1,380
Nightingale	20,976	1,197
Scrivener & White	24,797	1,542
Shaw	19,820	1,253

For new public-house at Shepperton-green, for Messrs. Nevile, Reid, & Co. Mr. G. Carey, architect:—

Knight & Sons	£920 0 0
Gray	895 15 0
Reavell	870 0 0
Hogg	850 0 0
Fursey	850 0 0

For the erection of municipal buildings at Wakefield. Mr. T. E. Collcutt, architect. Quantities by M. James Gandy.

	Warwick Stone.	Spinkwell Stone.
Kimberly	£66,214	£68,808
Lovatt	47,681	49,631
Whitely	46,807	51,307
Ives & Sons	46,543	50,142
Booth	46,000	47,200
Wood	45,380	47,000
J. & W. Beanland	44,577	45,777
Thorpe	44,2 0	45,900
Brier & Sons	43,999	45,367
Holdsworth*	42,800	43,7 0
Graham & Sons	41,293	——
Baker & Firbank	40,020	41,720

* Accepted in Spinkwell stone.

For new hot-water boiler, setting, connexions, and valves, at Shoreditch Workhouse. Mr. J. Wallace Pegg, engineer:—

May	£235 0 0
Smith, Son, & Co.	228 0 0
Pontifex & Wood	210 0 0
Ladd	178 0 0

For new warehouse, Church-lane, Aldgate. Mr. W. Lambert, architect. Quantities by Mr. W. H. Barber:—

Perry & Co.	£3,650 0 0
Stevenson	3,630 0 0
Pritchard	3,411 0 0
Elkington	3,330 0 0
Phillipson	3,298 0 0
Downs & Co.	3,212 0 0

For mission-room and Sunday-school, Fleet-road, Haverstock-hill. Messrs. Batterbury & Huxley, architects:—

Scrivener & White	£2,535 0 0
Downs & Co.	2,490 0 0
Newman & Mann	2,441 0 0
Manley & Rogers	2,328 0 0

For two villa residences, Forest-hill. Mr. R. E. Crossland, architect:—

		Extra for Fencing.
Bowyer & Son	£2,190	£90
Downs & Co.	2,130	90
Rider & Son	2,038	98
Larke	1,859	77

For "Royal" livery stables, Hulme, for Mr. S. Grange. Mr. T. R. Williams, architect:—

Credland	£1,915 8 11
Wharton (too late)	1,848 0 0
Wood	1,735 0 0
Hodkinson	1,544 10 0
Ellis (accepted)	1,430 0 0

Advertisements cannot be received for the current week's issue later than **THREE o'clock p.m.** *on THURSDAY.*

TO CORRESPONDENTS.

J. J. W. (thanks: the block might be purchased by any o wishing to circulate impressions) T. & B.—W. W. T.— J. E.—J. P.—R. T.—H. H.—T. B.—F. R. (position has alr suggested. We adhere to the Embankment) —T. L. (in J. C. C.—E. H. L. B.—M. & T.—W. W. & W.—J. G.—J. L.— W. W. L.—F. C.—H. & R. P.—C. C. H.—G. G.

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[*See also p.* xxiv.
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Town Clerk's Office, Town-hall, Bradford, September 14th, 1877.

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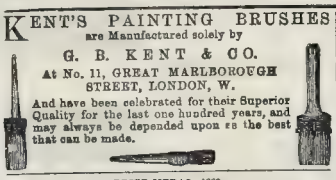
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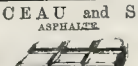
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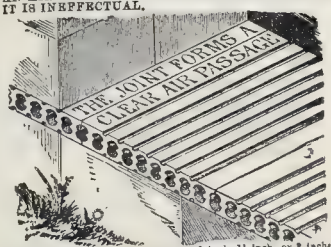
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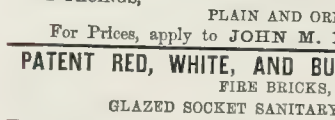
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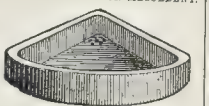
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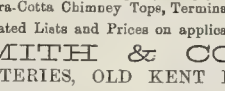
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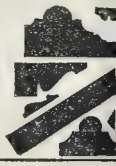
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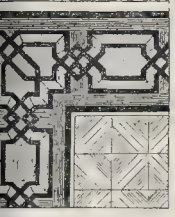
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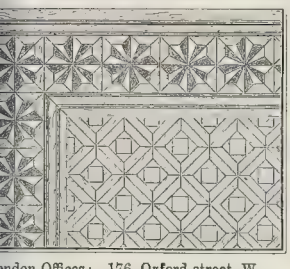
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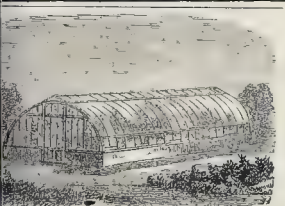
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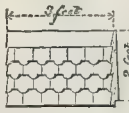


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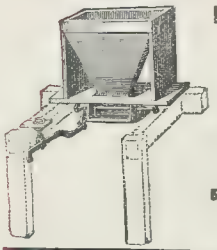
I have much pleasure in stating that the No. 9 Pulsometer Pump lately purchased from you is doing its work **most admirably.** using it for the purpose of drying the cill of our dock gates during repairs, the total lift of water being about 32 ft. At the comme of the work we simply hung it from the jib of a travelling crane, and were thus enabled to swing it out of the way of vessels at ev We have it fixed now in the lock, on a trestle, and it works with the utmost regularity, ejecting the water through the 6-in. delivery p surprising force at every pulsation. The facility with which the Pump can be shifted about, hung down amongst scaffolding, and that it requires no foundation, must commend it strongly for the use of contractors and colliery proprietors for shaft sinking, bridge fou &c. **Thick muddy water, chips** (inseparable nuisances in such works), **which would choke any ordinary pump, pass through in any way affecting the working of the Pulsometer.**—Yours faithfully, E. H. LLO

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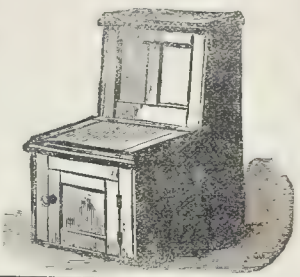
APPARATUS FOR USE IN CLOSETS, No. 4.

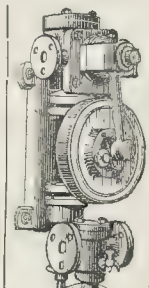


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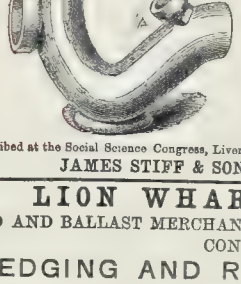
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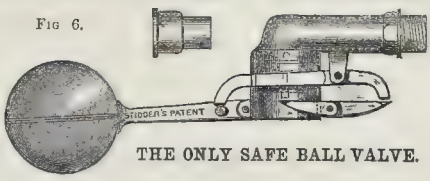
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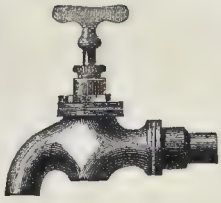
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MESSRS. HORNE, EVERSFIELD, & CO. are instructed to SELL by AUCTION, on the PREMISES, Henry street, Gray's-inn road, on TUESDAY, SEPTEMBER 25th, at ELEVEN without reserve (by order of the proprietor, relinquishing the premises), the valuable MACHINERY, PLANT, and STOCK: comprising a capital nearly new 12-horse power portable steam-engine, by Fowle & Co.; an 8-horse power ditto, by Clayton & Shuttleworth; circular saw-benches, a band saw-bench, two band mortising machines, two underneath-motion mortar-mills, circular and band-saws, planing blands, grindstones, weighing-machines, 30 carpenters' benches, a large quantity of scaffolding, ladders, steps, trestles, tools, screw-jacks, floor dogs, gin-wheels, pumps, crabs, blocks, iron girders, lead, tiles, bricks, the contents of painters', plumbers', and smiths' shops and ironmongery store, dry deals and boards, pine planks, 50 new four panelled doors, cut stuff, useful stone, two strong cart-horses, dog-cart, mail phaeton, two builder's spring-carts, a ditto van, a timber-carriage, trucks, harness, stable utensils, and a large quantity of useful materials; also a few lots of office furniture.—May be viewed the day previous and catalogues had on the Premises, and of HORNE, EVERSFIELD, & CO. 80, Fore-street, E.C. and 17, Great George-street, S.W.

KENSINGTON.—Building Materials of the Vicarage.

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, on the PREMISES, on WEDNESDAY, the 3rd day of OCTOBER, 1877, at ONE o'clock, the valuable BUILDING MATERIALS of the house and premises known as the Vicarage, Church-street, Kensington: comprising a large quantity of useful bricks, tiles, slates, rafters, joists, floor boards, plate-glass, and other sashes, doors, marble and other chimney pieces (some with carved wood dressings), lead gutters, cisterns and pipes, stone paving, coping and cills, stoves, grates, folding coach house and other gates, a large horse-chestnut tree, and numerous other fixtures and fittings up.—May be viewed the day previous (Saturday) and had on the Premises, and of HORNE, EVERSFIELD, & CO. 80, Fore-street, E.C. and 17, Great George-street, S.W.

PIMLICO. To Sculptors, Marble Masons, Builders, and Others.

MESSRS. HORNE, EVERSFIELD, & CO. are instructed by Mr. J. Wren, to SELL by AUCTION, at the WHARF, 195, Buckingham Palace road, S.W. on TUESDAY, OCTOBER 16th, and following day, at ONE o'clock precisely (without reserve), the valuable STOCK of MARBLE, consisting of statuary, Sicilian and vein marble blocks, (including about 250 bust blocks, suitable for statuettes,) several thousand feet of English sawn slab, in vein, Sicilian, black, blue and gold, St. Anna's, Egyptian, Genoa green, Bardilla Lamartine, and other coloured marbles, monuments and pedestals, and other effects.—May be viewed one day previous to the sale and catalogues had on the Premises, and of HORNE, EVERSFIELD, & CO. 17, Great George-street, S.W. and 80, Fore-street, E.C.—Approved bills at four and six months.

The De Lank Granite Quarries for Sale.—In the High Court of Justice, Chancery Division. Bolitho v. Harrison, 1877, B. 114. TO BE SOLD by AUCTION, on SATURDAY, the 29th SEPTEMBER, 1877, at FOUR o'clock in the afternoon, in One Lot, at the ROYAL HOTEL, Bodmin, by

MR. WILLIAM PHILP (the person appointed for that purpose), pursuant to an order of the Vice-Chancellor, Sir Richard Malins, the Judge to whose Court the above action is attached, the verdor's estate and interest in all those valuable and extensive GRANITE QUARRIES distinguished as the De Lank Quarries, in the parishes of St. Breward and Bisland, in the county of Cornwall, about six miles from Bodmin, the lake distance from Camelford, and about 14 miles from the Bodmin and Wadebridge Railway, under certain indentures of lease for terms of years, granted to Mr. Charles Goodyear, by whom the quarries have been partially developed and worked. The reputation of this granite stands high in the estimation of contractors and builders, and large quantities have been supplied for the Thames Embankment and other large contracts. The quarries are well laid for working, and the deposit of granite appears inexhaustible. The cranes and other machinery (if any), and fixtures (a schedule of which will be produced at the sale), are to be taken at a valuation, as provided in the Conditions of Sale.—Particulars and conditions of Sale may be obtained (gratis) at the place of Sale; of Mr. JOHN BASSET COLLINS, Solicitor, Bodmin; of the following Solicitors in London,—namely, Messrs COODE, KINGDON, & COOPER, 7, Bedford-row; Messrs. Farrer & Co. 66, Lincoln's-inn-fields; Mr. E. A. DOW, 12, Regent-street, Piccadilly; and Mr. W. E. PHILP, 30, Budge-row, Cannon-street; and of the Auctioneer, at Bodmin, and at St. Austell.

PECKHAM.—Peremptory Sale of Builder's Stock, Plant, and Machinery. By order of the Mortgagee.

WEATHERALL & GREEN will SELL by AUCTION, at BANGOR WHARF, Langdale road, Peckham, on TUESDAY, SEPTEMBER 25, at TWELVE o'clock punctually, the PLANT and STOCK of a BUILDER: comprising timber, 20 brick piers, a steam engine and boiler, circular saw, moulding machinery, horses, cows, and numerous useful effects.—May be viewed the day preceding the Sale; and catalogues obtained of the Auctioneer, 22, Chancery lane.

STRATFORD GREEN. Valuable Freehold Residential Property, with extensive grounds, with important frontages to Stratford green and Cedars road in the rear and offering an excellent opportunity for building purposes in this thickly populated neighbourhood. With possession.

MESSRS. VENTOM, BULL, & COOPER will SELL by AUCTION at the MART 1 Tokenhouse yard, London, on FRIDAY, OCTOBER 12th, 1877, at ONE o'clock precisely, the FREEHOLD PROPERTY, known as The Ferns, facing Stratford-green, comprising recent detached residence, stabling, greenhouses, outbuildings, and extensive grounds, in all la. 1r. 33p., extending and having frontage to the Cedars road in the rear.—Particulars and plans may be had of C. F. BIRCHALL, Esq. Solicitor, No. 2, Cowper's-court, Cornhill; at the Mart; and of the Auctioneers, No. 53, Old Jewry, E.C.

On THURSDAY, OCTOBER 11th—OXFORD ROAD, Reading.—Important Notice of Sale.—Just beyond the Borough Boundary, on the West Side of Reading, and fronting the main Oxford-road. Conveniently near the heart of the town and adjoining one of the principal factories. Freehold Building Land, subdivided into Plots suitable for small houses, which in this neighbourhood very speedily let.

MESSRS. J. OMER COOPER & SON have received instructions from the Directors of the Berkshire Estates Company, Limited, to SELL by Auction, at the UPPER SHIP HOTEL, Reading, on THURSDAY, OCTOBER 11th, 1877, at THREE o'clock in the Afternoon, Numerous BUILDING PLOTS, Situate on the Groveland's Estate, near the Government Barracks, and fronting the main Oxford-road and a new road of good width to be shortly made.

The Auctioneers desire to direct attention to this Property as the land offered for sale is especially adapted for building; the distance from the Barracks; the Plots are of square frontage and good depths, many of them fronting the Oxford-road.

The number of good dwelling-houses in and around Reading is still quite below the requirements of the population, and an opportunity will be afforded by this sale of meeting the still increasing demand for cottages and small houses.

Particulars and conditions of Sale, with lithographed plans, may be had on application to Messrs. BLANDY & WITHERINGTON, Solicitors, No. 1, Friar-street, Reading; or to Messrs. J. OMER COOPER & SON, Land Agents and Valuers, No. 162, Friar street, Reading.

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Belts,	Old Blankets, Rugs, and
Serge Cuttings,	Sheets,
Waterproof Covers,	Wagons and Carts,
Steel (Old),	Wheels,
Bedsteads (Iron),	Wood Staves, &c.
Bolsters,	

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[See also p. xiii.

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Offices—6, Charing-cross, S.W.
Works—Queen's Wharf, Hammersmith, W.

BROWN & GREEN'S KITCHEN-RANGES, with close or open fire, roast in front, and are unsurpassed for economy, cleanliness, general convenience, heating baths, and prevention of smoky chimneys.—Prize medals—London, Dublin, and Paris, 1872, Bishopsgate Within.

ORNAMENTAL IRONWORK.
Lamp Pillars, Gas Lamps, Gates, Railings, Fountains, Vases, Verandahs, Conservatories, Hatstands, &c. Established 1847.
TURNER & ALLEN (W. T. Allen & Co.).
New and choice Designs, with prices, are forwarded to any part of the world on receipt of twelve stamps. Estimates for works at home and abroad.—3, Somerset Buildings, Lambeth-hill, Upper Thames-street, late of 206, Upper Thames street.

MUSEUM of DECORATIVE ART,
Halkin street West, Belgrave square, S.W
Liverpool Branch, 2, Minster-buildings, Church-street.
Messrs. TROLLOPE & SONS have engaged the exclusive services of the artist who has executed works in
SGRAFFITO
South Kensington and elsewhere, and are prepared to undertake this beautiful branch of art for the external or internal Decorations of either Mediæval or Classic buildings.
MARBLE MOSAIC FLOORS.
Messrs. TROLLOPE & SONS have made special arrangements for a quick supply of material for the above, and have a large staff of Italian workmen for laying the same.
MEXICAN ONYX,
Messrs. TROLLOPE & SONS having secured all the large blocks imported into Europe, beg to call the attention of Architects and others to this very beautiful material, and its applicability for Columns, Pilasters, Pedestals, Balusters, Panels for Wall-linings, &c.
PARQUET FLOORING.
Messrs. TROLLOPE & SONS have accepted the Agency of the largest and best manufacturer of Parquetry on the Continent. The specimens will be found very superior to those in ordinary use, not only in artistic design, but in quality of wood and workmanship.
NEAPOLITAN AND FRENCH TILES.
Messrs. TROLLOPE & SONS are Sole Agents for the principal manufacturers in Italy and the South of France, and have a large variety of samples of these artistic and cheap productions.
The Museum contains specimens of all the above; also Chimney-pieces in all styles, and other varieties of Marble Work for Decorative purposes. Constructive Woodwork, Ancient and Modern. Thin Veneering of real wood in lieu of painting and paper-hanging. Xylotechnography, or the Stained Wood process, Carpets, Tapestries, Embroideries. Ancient and Modern Furniture in Queen Anne and other styles, and all kinds of Architectural and Decorative accessories.
G. T. ROBINSON, Art Director.

LONSDALE'S PATENT
VENTILATING STENCH TRAP
and ALEXANDER'S PATENT VENTILATING GUILY
form a complete System of Ventilation. Approved and adopted by the Leeds Corporation and others.
Manufactured in Glazed Earthenware solely by
THE FARNLEY IRON COMPANY (Limited), near Leeds.

SWANSEA UNION.—To ARCHITECTS.
The Guardians of the above Union invite application from Architects desirous of being APPOINTED to advise the Guardians as to the best means of carrying out an ENLARGEMENT of the WORKHOUSE.—Applications, stating terms and experience, to be sent to the undersigned, on or before WEDNESDAY, the 10th of OCTOBER next.—By order,
G. B. RAYNES, Clerk.
No. 5, Fisher-street, Swansea, September 21, 1877.

[*Competitions and Contracts see next page.*

DOULTON & CO. LAMBETH,

MANUFACTURERS OF

Faience for Art Decoration, Plain and Ornamental Stoneware

Architectural and Horticultural Terra Cotta, Sanitary Ware, Plumbago Crucibles, &c.

HAVE OBTAINED AWARDS AT VARIOUS EXHIBITIONS

Including Five Medals at Vienna, Five at Philadelphia,

AND THE DIPLOMA OF HONOUR WITH GOLD MEDAL AT THE SOUTH AFRICAN INTERNATIONAL EXHIBITION, 1877.

Chief Offices: HIGH STREET, LAMBETH, LONDON, S.E. Manufactories: LAMBETH, STAFFORDSHIRE, and LANCASHI

Depots: LIVERPOOL, MANCHESTER, BIRMINGHAM, and PARIS.

GRANITE ROCK AND SEYSSEL ASPHALTE.

For Floors, Paving, &c. A certain Preventive of Damp and Vermin.

For Prices and Specimens, apply at the Offices of the Company, 57, GRACECHURCH STREET, E.C.

COMPETITIONS.

TO ARCHITECTS.—WANTED by the Corporation of Swansea ELEVATIONS for JUDGES' RESIDENCE. Copies of the plans of the several floors and proposed site, together with instructions and conditions, can be obtained on application to Mr. EDWARD COUSINS, Borough Engineer, Guildhall, Swansea. A premium of £5l. is offered for the Elevation that is accepted and adopted by the Council.

JNO. THOMAS, Town Clerk.

Guildhall, Swansea, 23rd August, 1877.

TO ARCHITECTS and OTHERS.—BOROUGH of CHIPPENHAM, Herts. — The Drinking Fountain Committee invite DESIGNS for a GRANITE DRINKING FOUNTAIN, to be erected at a cost not exceeding 20l., in the centre of the market-place of the town of Chippenham, to be furnished with a lamp or lamps, and facilities for allowing a full jet to be occasionally used, with a drinking-bowl, troughs for horses, cattle, sheep, and pigs. A premium of 5l. 5s. is offered for the best design, with working plans, which shall be accepted by the Committee. Designs, with working plans, to be sent to the undersigned, on or before the 31st day of OCTOBER next. FRANK H. PHILLIPS, Town Clerk.

Chippenham, Wilts, September 24, 1877.

BOROUGH of BOLTON.—The Council of the Borough of Bolton invite DESIGNS for a MUSEUM to be erected in Bolton Park.

Plans and sections of the site, with further particulars, may be had from the Borough Surveyor, Town hall, Bolton, on payment of 5s. which sum will be returned after receipt of Design.

For the best Design, in the opinion of the Council a premium of 50l. will be offered, and for the second best 25l. but no payment will be made for any other Design.

Designs to bear seal, with or signature, but with a motto or device, and a letter (a so under cea) containing the corresponding motto or device and the designer's name and address, must be sent to the undersigned on or before the 29th day of OCTOBER next.

By order,

R. G. HINNELL, Town Clerk.

Town-hall, Bolton, 17th August, 1877.

KILMARNOCK BURNS STATUE.—The Committee are prepared to receive COMPETING MODELS for a STATUE of BURNS to be placed in an Ornamental Building.

The Models not to be less than 2ft. 6in. in height, nor more than 4 ft. to be lodged by 30th of NOVEMBER.

A premium of 50l. and another of 25l. offered.

Particulars from

JAMES ROSE, } Joint Secretaries,
JAMES M'KIE, }

CONTRACTS.

WAR DEPARTMENT CONTRACTS.—To BUILDERS and CONTRACTORS.—Triennial Contracts, Northern District.

TENDERS are required for the performance of such WORKS and REPAIRS, and for the SUPPLY of such BUILDING MATERIALS as may be required by War Department Buildings and property at the undermentioned station, from the 1st of November, 1877, to the 31st of March, 1880:—Wrexham

Persons wishing to Tender for the above Station may obtain forms of Tender and schedules of prices on application at the Royal Engineer Office, Manchester, up to OCTOBER 10th, 1877.

The contract will embrace bricklayers', masons', paviors', carpenters', plasterers', plumbers', slaters', smiths', painters', and gasfitters' work.

A sum of 18s. 6d. will be charged for the schedules, or the schedules of prices can be seen at the Barrack Serjeants Office, Liverpool and Wrexham, or at the Royal Engineer Office, Chester. Post Office Orders to be made payable to Lieutenant-Colonel Phelps, Chief Clerk, R.E. at the Chester-road Post office, Manchester.

Candidates are requested to send testimonials of competency with their application.

Tenders to be delivered at the War Office, London, on or before OCTOBER 20th, 1877.

The Secretary of State for War reserves the right of rejecting any or all of the Tenders.

Royal Engineer Office, 12, Princes-street, Cornbrook, Manchester, September 19th, 1877.

WAR DEPARTMENT CONTRACT.—NOTICE TO BUILDERS.

TENDERS are required for WORKS to be done in CONSTRUCTING a BATTERY and Work in connection therewith at Maker Heights near Devonport.

Parties desirous to Tender for these works must leave their names at the Office, before SATURDAY, the 6th day of OCTOBER next, and put the sum of 10s. 6d. either in cash or by post-office order for the specification and schedule of prices which, with form of Tender, will be furnished to each applicant.

The works are to be executed by measurement, on the schedule of prices.

The Secretary of State does not bind himself to accept the lowest or any Tender

(Signed) JOHN Y. MOGGRIDGE, Colonel,
Commanding Royal Engineer Western District.

Royal Engineer Office, Devonport, 21st September, 1877.

NOTICE to TIMBER DEALERS and OTHERS.—WORKS DEPARTMENT, ROYAL ARSENAL WOOLWICH, 25th SEPTEMBER, 1877. TENDERS are invited for the PURCHASE and REMOVAL of a WOODEN SHED (or Shops No. 3, Royal Dockyard, Woolwich, covering an area of about 12,000 to 13,000 Square Feet), the Timber of which is to be taken away from the Office from the 29th SEPTEMBER to 1st OCTOBER next, where forms of Tender and all information can be obtained

W. HATT NOBLE, Lieut.-Colonel R.E.
And Chief, Inspector of Works.

TO BUILDERS.—Parties desirous of TENDERING for the ERECTION of TWO SHOPS in Orford road, Walthamstow, are requested to send in their names at once

ROBERT BLAKEMORE, Architect and Surveyor,
No. 75, Mark-lane, E.C.

THE KING'S SCHOOLS, WARWICK.

The Governors of the King's Schools are prepared to receive TENDERS for the ERECTION of NEW BUILDINGS for the Middle School. Plans and specifications may be seen at my office, No. 1 New-street, Warwick, on and after MONDAY, the 24th inst.

TENDERS must be sent to me, not later than (by post) on the 1st of OCTOBER. The Governors will not be bound to accept the lowest or any Tender.

R. C. HEATH, Clerk to the Governors.

BRIDGWATER CORPORATION WATERWORKS.—To PIPE FOUNDERS.—The Waterworks Committee of the Corporation of Bridgwater are prepared to receive TENDERS for making and delivering certain CAST-IRON SOCKET PIPES, of 12 inches diameter and under, and for other Pipe Castings. Tenders, sealed, and marked on the outside "Tenders for Pipes" are to be sent to my Office, at King's-square Bridgwater, at or before TEN o'clock in the forenoon of MONDAY, the 8th day of OCTOBER, 1877. Specifications and forms of Tender may be had, and any further information required may be obtained, on application to me, or to Messrs. THOMAS & CHARLES HAWKSLEY, Civil Engineers, No. 30 Great George street, Westminster, S.W. The Corporation do not pledge themselves to accept the lowest or other Tender.

JAMES COOK, Jun. Town Clerk.

King's-square, Bridgwater, September 17, 1877.

ENFIELD LOCAL BOARD of HEALTH. SEWAGE WORKS.—Notice is hereby given that the Enfield Local Board intend to enter into CONTRACTS for the following WORKS, and are prepared to receive TENDERS for the same, viz:—

Contract No. 4.—The Construction of Straining Tanks, Storage Tanks, Engine Boiler House, and other Works in connexion therewith. Plans, specifications, and conditions of the Works to be done may be seen, and forms of Tender and bills of quantities may be had, at the Office of R. B. BANTHAM, M. Inst. C.E. 22, Whitehall-place, London, S.W. Engineer to the said Board, on and after SATURDAY, the 22nd SEPTEMBER inst. Sealed Tenders, which are required to be sent in on printed forms, and endorsed "Tender for Tanks and Engine-house, &c." must be sent to the Office of the Board, in Enfield Town, on or before WEDNESDAY, OCTOBER the 3rd.—By order of the Board,

F. LETCHWORTH, Clerk.

HOLBORN UNION.—To BUILDERS.—The Guardians of the Poor of the Holborn Union require TENDERS for PAINTING and REPAIRING the WORKS at their Workhouse in Shepherdess-walk, City-road. A specification, prepared by the Guardians' Architect, Mr. H. SAXON SNELL, lies for inspection in the Master's Office at the Building. Tenders are to be sealed and endorsed "Tender for Works, St. Luke's Workhouse," addressed to J. W. HILL, Esq. and delivered at his Office at the Workhouse, Gray's-inn-road, W.C. (not Shepherdess-walk) on TUESDAY, the 2nd day of OCTOBER next. The Guardians do not bind themselves to accept the lowest or any Tender.—By order,

JAMES W. HILL, Clerk to the Guardians.

THE Corporation of Middlesbrough are prepared to receive TENDERS for BUILDING a CASHIOBER TANK, proposed to be erected near the North Eastern Railway Goods Station, at Middlesbrough. There will be plans showing two schemes prepared by Mr RICHARD CAIL, of Newcastle and Mr GEORGE LIVESEY, of London, respectively, for building the Tank, and intending-tenderers are at liberty to Tender for either or both. Plans and specifications are now ready, and may be seen at the Gas Manager's Office, Gas Works, Middlesbrough. Plans and specifications and quantities, showing Mr. Cail's Scheme, may also be seen at his Office, Dean-street, Newcastle-on-Tyne. Tenders, endorsed "Tenders for Gas Tank, to be sent addressed to the Town Clerk, not later than THURSDAY, OCTOBER 3rd, 1877. It is to be understood that the Corporation do not pledge themselves to accept the lowest or any Tender, nor will anything be allowed to parties Tendering.—By order,

GEORGE BAINBRIDGE, Town Clerk.

Corporation Hall, Middlesbrough, 8th Sept. 12th, 1877.

IRON TANKS.—The Managers of the Metropolitan Asylum District are prepared to receive TENDERS for PROVIDING and FIXING the CAST and WROUGHT IRON WATER TANKS required for the School for Imbecile Children in course of erection at Darenth, near Dartford, Kent. The plans may be inspected, and specifications and forms of Tender obtained, at the Offices of the Managers, 37, Norfolk-street, Strand (between the hours of TEN and FIVE), where plans must be delivered not later than ELEVEN o'clock in THURSDAY, the 11th OCTOBER next. The Managers do not bind themselves to accept the lowest or any Tender. By order,

W. F. JEBB, Clerk.

20th September, 1877.

TWICKENHAM SEWERAGE WORKS. To BUILDERS and CONTRACTORS. The Local Board of the above Parish are desirous of receiving TENDERS from persons willing to enter into a Contract for the ERECTION of ENGINE-HOUSE and OFFICES, at the Sewage Pumping Station of the said Board. Plans and specification may be seen, and forms of Tender, obtained on payment of 2l. 2s. (which will be returned on receipt of a bona fide Tender, at the Surveyor's Office, Early Lodge Cottage, Twickenham, on and after MONDAY, the 1st of OCTOBER next. Sealed Tenders and endorsed "Tender for Engine-house and Offices" and addressed to me, to be delivered at the Offices of the Local Board, on or before WEDNESDAY, the 10th day of OCTOBER next. The person whose Tender is accepted must be required to provide two responsible sureties, willing to be bound with him jointly and severally in the sum of 500l. for the due and satisfactory completion of the work specified. The Board do not bind themselves to accept the lowest or any tender.—By order,

WILLIAM REDMAN, C.E. Clerk to the Board.

Local Board Offices, Queen-street Twickenham, London, September 17th, 1877.

TO CONTRACTORS and OTHERS.—BRANCH RAILWAY and TURN TABLES.—The Corporation of Walsall give NOTICE for the CONSTRUCTION of a BRANCH RAILWAY from their sidings adjoining the line of the London and North Western Railway Company to the New Gasworks at the Pleck, near the Cemetery, Walsall, in accordance with plans, specifications, and conditions which may be seen at the Office. Tenders, sealed and marked outside "Tender for Railway," are to be sent to the undersigned on or before MONDAY, the 8th of OCTOBER next.—By order,

SAML. WILKINSON, Town Clerk.

Walsall, September 22nd, 1877.

TO BUILDERS.—Trinity House, London E.C. September 13th, 1877. Trinity Corporation being desirous receiving TENDERS for the ERECTION of a LIGHTHOUSE Signal House, Dwellings, Outbuildings, and other Works, a "Bull" Rock Pembrokeshire, in the county of Devon, hereby give that the plans may be inspected, and forms of Tender and conditions obtained on application at the Store Department at this H or to the Chief Coastguard Boatman at Morte, near Ilfracom any day between the hours of TEN a.m. and FOUR p.m. Te sealed, and marked outside "Tender for Bull Point Lighth must be addressed to the Secretary, and delivered at this Ho or before MONDAY, OCTOBER 8th next, and no Tender c entertained that is not made on the form provided. The Corpo does not pledge itself to accept the lowest or any Tender.—By c

ROBIN ALLEN, Secret

TO BUILDERS.—The Chepstow Sc Board are prepared to receive TENDERS for ERECTI SCHOOL-HOUSES on Crapston Plan and specification and contract to be entered into, may be seen at the School Board Beaufort-square, Chepstow, between the hours of TEN a.m. and p.m. daily (except Sundays). Sealed Tenders, endorsed "Tend Erection of Schools," to be addressed "To the Chepstow Board" by post, and be at the office above-mentioned on or NOON of MONDAY, the 8th day of OCTOBER next. The Bo not bind themselves to accept the lowest or any Tender. The address, or names and addresses, and description of a goo sufficient surety or sureties, to join the contractor in a bond f due fulfilment of the contract, must accompany the Tender.

Dated September 12th, 1877

THOS. GRIFFITHS, Clerk to the Bo

TO BUILDERS.—POSTPONEMENT TENDERS are invited for the ERECTION and COMPLE of a NEW BUILDING at the Pale Ale BREWERY, Maidstone Messrs. Premin Brothers. The plans and specification may be at the Brewery, on and after TUESDAY, SEPTEMBER 25th, and a copy of bills of quantities obtained on payment of guinea, which will be returned on receipt of a bona fide Tender. Tenders are to be delivered not later than TEN o'clock, on THU DAY MORNING OCTOBER 4th (Postponed from SEPTEMBE as previously advertised). The Proprietors do not bind themselv accept the lowest or any Tender

Pale Ale Brewery, Maidstone, 6th September, 1877.

TO BUILDERS.—The West Ham Lo Board hereby invite TENDERS for the ERECTION o ENGINEER'S RESIDENCE in the West Ham Pumping Sta Canning Town. The plans may be inspected, and further particu obtained on application to Mr. LEWIS ANGELL, C.E. Town-hall, Stratford. and after MONDAY, the 24th SEPTEMBER, 1877. The Board do not bind themselves to accept the lowest or any Ten Sureties will be required for the due performance of the cont Tenders, endorsed "Tender for Engineer's Residence" to be deliv not later than THREE o'clock on TUESDAY, OCTOBER 9th, 1 By order of the Board,

FRED. R. HILLEARY, Cler

Town-hall, Stratford, E. September 17, 1877.

TO BUILDERS.—The West Ham Lo Board hereby invite TENDERS for the ERECTION of T FIRE BRIGADE STATIONS,—one at the Town-hall, Stratford, one in the Barking-road, near the Canning-town Railway Stati The plans may be inspected, and further particulars obtained, on plication to Mr. LEWIS ANGELL, C.E. Town-hall, Stratford, and after MONDAY, the 24th SEPTEMBER, 1877. The Board do bind themselves to accept the lowest or any Tender. Sureties will required for the due performance of the contract. Separate Tend endorsed "Tender for Fire Brigade Station," to be delivered later than THREE o'clock on TUESDAY, OCTOBER 9th, 1877. order of the Board,

FRED. R. HILLEARY, Clerk

Town hall, Stratford, E. September 17, 1877.

THE BOARD of WORKS for the Lewisham District.—TAR PAVING, CHANNELLING, &c.—Notice hereby given, that this Board is prepared to receive TENDERS TAR PAVING, CHANNELLING, and METAL ING Watlington grove and Raymond street, Sydenham, and Mayberley road, Pen Sealed Tenders, endorsed "Tender for " to be delivered on before TUESDAY, the 16th proximo, at the offices of the Boa where specifications of the work may be seen, and forms of Ten and other particulars may be obtained, on or after the 8th OCTOBER. The Board does not bind itself to accept the lowest any Tender.—By order,

SAMUEL EDWARDS, Clerk to the Board

Catford, S.E. September 19th, 1877.

TO CONTRACTORS and OTHERS.—T Board of Works for the Wandsworth District are desirous receiving TENDERS for the MAKING UP of LAUREL STREET, ST. JAMES'S GROVE, and JAMES'S STREET, in the Parish Battersea. The specifications may be seen, and forms Tender obtained at the Offices of the Board, Battersea rise, between hours of TEN and FOUR (on Sundays TEN until TWO). Tenders are to send in, under seal to the undersigned "Tender for Making —," on or before TUESDAY, the 9th of OCTOBER next, must contain the names and addresses of two responsible persons join their signature to a contract for the due execution of the sam No Tender will be received unless it is made up on one of the print forms issued from the Office. The Board do not pledge themsel to accept any Tender.—By order of the Board of Wor for the Wandsworth District.

ARTHUR ALEXR. CORSELLIS, Clerk to the Board.

Battersea rise, S.W. 20th September, 1877.

TO CONTRACTORS and OTHERS.—LEDBURY SEWERAGE.—The Rural Sanitary Authority of the Ledbury Union are prepared to receive TENDERS for t SEWERAGE of Ledbury. Plans, sections, and conditions may be seen at the Workhouse, Ledbury; or at the Office of the Engineer to t Authority, Mr. G. H. ROBERTS, C.E. Canon House Chambers, 3 Fisher-gate, Preston. Tenders to be sent to the undersigned before TUESDAY, the 23rd of OCTOBER, 1877. The Authority do n bind themselves to accept the lowest or any Tender.

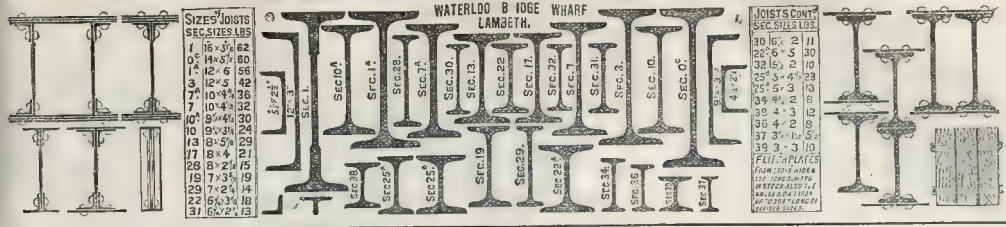
RICHARD HOMER, Clerk to the said Authority.

Ledbury, September 25, 1877.

[Contracts continued on p. xv.

MATTW. T. SHAW & CO.

ENGINEERS, IRONFOUNDERS, & CONTRACTORS. **CHIEF OFFICES:** 141, CANNON STREET, E.C.
MANUFACTURERS OF RIVETTED GIRDERS, ROLLED JOISTS. BRIDGES, ROOFS, TANKS, COLUMNS, CASTINGS, &c.
THE LARGEST TOWN STOCK OF ROLLED BEAMS, PLATES, TEE & ANGLE IRON KEPT AT



RICHARD MORELAND & SON,

MILLWRIGHTS AND ENGINEERS,

MANUFACTURERS OF

CONSTRUCTIONAL IRON WORK,

"Messrs. R. Moreland & Son, Engineers, 3, Old-street, E.C. October 30th, 1876.
We are pleased to inform you that your Patent Fire-Proof Flooring was the means of Saving the Steam Engine and Boiler from destruction in the fire that occurred at our Albert Oil Mills, Hammersmith.—Yours faithfully,
(Signed) PINCHIN, JOHNSON, & CO."

3, Old-street, London, E.C., Corner of Goswell-road.

ZINC ROOFING.

Vieille Montagne Co.'s Manufacturing Agents, F. BRABY & CO. Limd.

By the adoption of our Patent Solid Ridge Plates the use of solder is entirely dispensed with, and consequently the danger incurred by the use of fire-pots is avoided.

F. BRABY & CO.

Have recently introduced New Ornamental Zinc "FISH SCALE TILES," which are now being very extensively used on the Continent, they being specially adapted for ROOFS, MANSARDS, TOWERS, and CIRCULAR TURRETS; having a Groove Lap, they are more ornamental and weather-proof than Slates.

Ornamental Stamped Zinc for Cornices, String Courses, Entablatures, &c. to any Design.

Estimates for every description of Zinc Work forwarded on application.

FITZROY WORKS, EUSTON ROAD, LONDON, N.W.; HATTON GARDEN, LIVERPOOL; GREAT CLYDE STREET, GLASGOW.

MEASURES BROTHERS & CO. Southwark St., London, S.E.

Proprietors of Phillips's Patent Rights, and Manufacturers of Patent Girders, Rolled Iron Joists, Riveted Girders, Flitch Plates, Columns, Fire-proof Floors, Tee, Angle, and Sash Iron, &c.

Have always in their **TOWN STOCK** about **3,000 TONS** of the following sizes, from which orders can be immediately executed at low prices. Section Sheets and Book free on application.

MANCHESTER OFFICE: 6, BOND STREET.

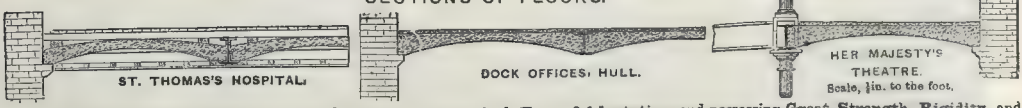
3″ × 3″=10 lb. per ft.	5″ × 3″=13 lb. per ft.	7″ × 2″=14 lb. per ft.	9″ × 3½″=24 lb. per ft.	12″ × 6″ =42 lb. per ft.
3 × 1½= 5 ,, ,,	5 × 4½=23 ,, ,,	7 × 3½=20 ,, ,,	9½ × 4½ =29 ,, ,,	12 × 6 =56 ,, ,,
4 × 1½= 7 ,, ,,	6 × 2 =11 ,, ,,	8 × 4 =23 ,, ,,	10 × 4½ =32 ,, ,,	14 × 6 =60 ,, ,,
4 × 3 =12 ,, ,,	6 × 3 =16 ,, ,,	8 × 5 =29 ,, ,,	10 × 5 =36 to 43 ,,	16 × 6½ & 6 =60 & 62 ,,
5 × 2 = 8 ,, ,,	6 × 5 =29 ,, ,,	8 × 6 =34 ,, ,,	10 × 6 =56 ,, ,,	19½ × 7 =100 ,, ,,

JOISTS—Length from 10 feet to 36 feet. PLATES—Width 6″ to 19″; Length, 12 feet to 30 feet; Thickness, ¼″ to ¾″.

DENNETT'S FIRE-PROOF CONSTRUCTION

As Patented in Great Britain, Canada and the United States.

SECTIONS OF FLOORS.



This method of construction has been found to be most **Economical, Easy of Adaptation,** and possessing **Great Strength, Rigidity,** and highly **Fire-proof** character. It has been subjected at various times to severe tests, and is now generally adopted by the first architects of the day

TESTIMONIAL.

"I have made use of Messrs. Dennett & Co.'s material for Fire-proof Arching, and though I have, happily, had no practical experience of its efficiency as against fire, I can bear witness to its strength, and its extreme convenience of application. I have made use of it in positions in which I should have found it difficult to introduce any other fire-proof material, and it has this advantage, that the arches constructed of it are so entirely in one mass, that they cover the space like a compact shell or inverted basin, and are, consequently, almost wholly free from lateral pressure. GEO. GILBERT SCOTT, 20, Spring Gardens."

ROBERT DENNETT & CO.

No. 5, WHITEHALL, LONDON, S.W.; STATION STREET, NOTTINGHAM.

Drawings, Estimates, and full Particulars will be furnished without charge by the Patentees, on application to either of the above addresses. Rough Sketches or Tracings of Plans should accompany the application.



ORIGINAL MANUFACTURERS OF

The "NORWICH" STOVES.

"Excellent in every way."

See the *Times*, Jan. 30, 1877.

WIRE NETTING, LAWN MOWERS, ROLLERS, CHAIRS, and all GARDEN REQUISITES.

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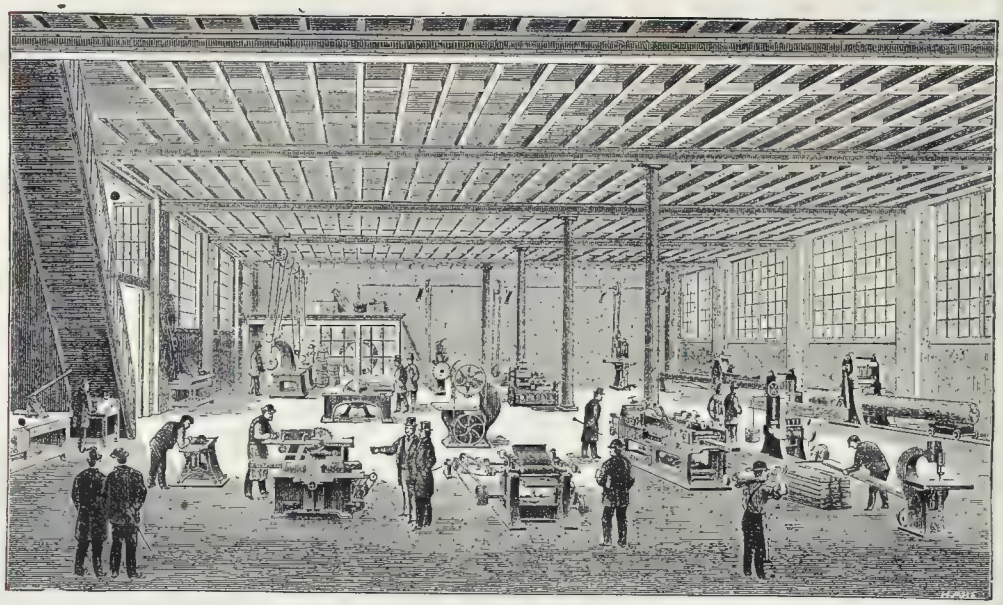


THE ABOVE FIRST-CLASS MEDALS HAVE BEEN AWARDED TO

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SUPERIOR WOOD-WORKING MACHINES.



A. RANSOME & CO.'S SHOW-ROOM FOR MACHINERY IN MOTION.

The above engraving represents the interior of a large building which has been recently erected at the Stanley Works for the purpose of thoroughly testing all new machines, and also for giving intending purchasers the opportunity of judging of their merits by seeing them actually at work.

As new machines are from time to time brought out, they are fixed in this shop, and worked for the purpose of showing them to those interested; and thus, at any time, a selection of the most novel and improved machines may always be seen in operation by application at the Works. Besides a number of new and special machines temporarily fixed for trial, an assortment of those which are in more general demand are kept constantly at work in this building, such as Timber and Deal Frames, Circular and Band Saws, Planing, Moulding, Mortising, and Tenoning Machines, Patent Complete Joiner, Saw-Sharpening Machines, &c.

Competent men are always in attendance to work the machines and explain their action and capabilities, and they will also give instructions how to work them to the best advantage, to men who may be sent by purchasers for that purpose.

The rapid increase in the demand for A. RANSOME & CO.'S MACHINES has induced them

To PURCHASE the extensive PREMISES and PLANT of the late BATTERSEA FOUNDRY COMPANY,

Where in future a portion of their work will be carried on. These works, which comprise nearly an acre of Shops, including one of the largest Foundries in London, will enable A. RANSOME & CO. to execute the most extensive orders in a very short time; but their chief Works and Offices will continue to be the

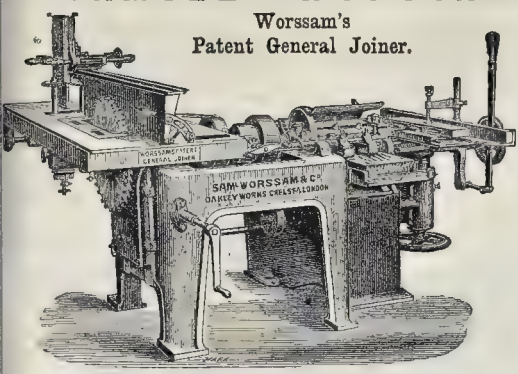
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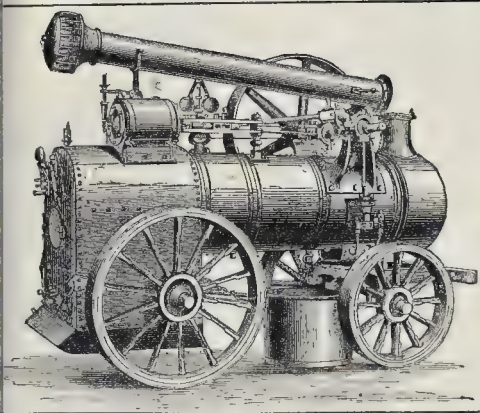
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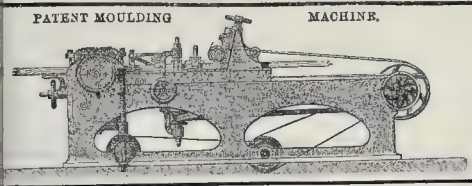
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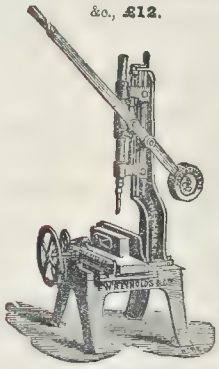
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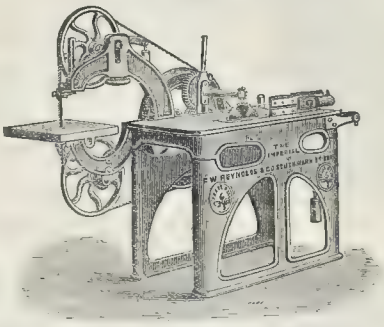
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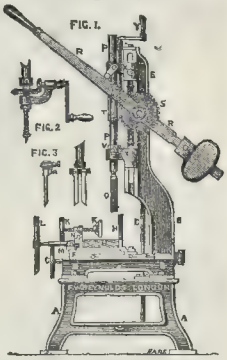
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Combining Simplicity with Strength, and Fire Resistance practically unlimited.

Extract from the "Times," April 20th, 1877, after Public Test of Trial Floor.—"In a very short time there was a fierce furnace blazing in the buildi which, for a long time, had no perceptible effect upon the floor, which externally remained perfectly cool. . . . In order to test and compare the action of the fire . . . an ordin 7-in. rolled iron joist had been previously placed on supports inside the building, directly over the fire, and within a foot of the ceiling, a weight of about 3 cwt. being placed its centre: after being exposed for about one hour to the flames, the iron joist became bent and twisted, and finally toppled over into the fire in a crippled condition. . . . . flooring was exposed to such an intense heat, and under such conditions, as it is hardly possible to imagine could occur at an ordinary fire. . . . . Messrs. Evans & Swain are be congratulated on the success of their experiment."

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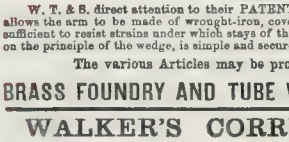


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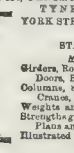
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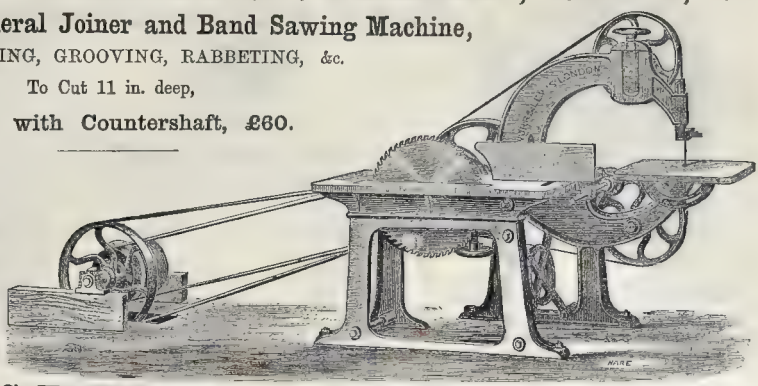
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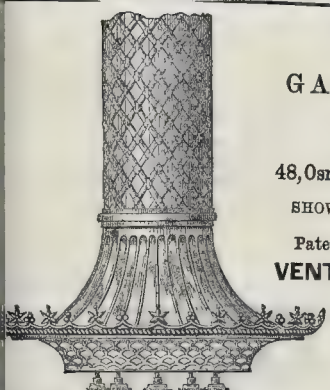
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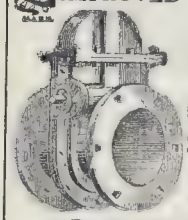
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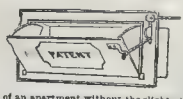
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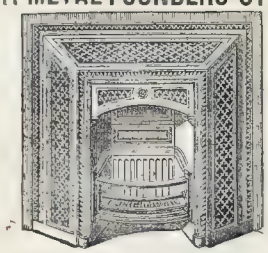
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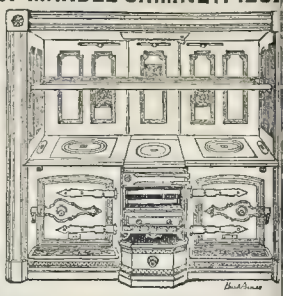


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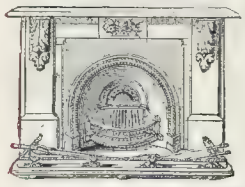


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A MODERN INVENTION.

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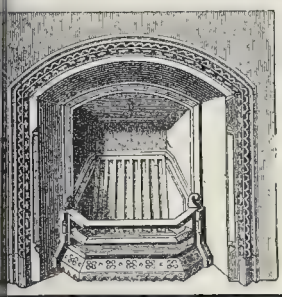
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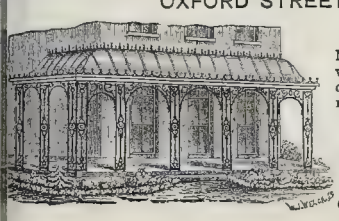
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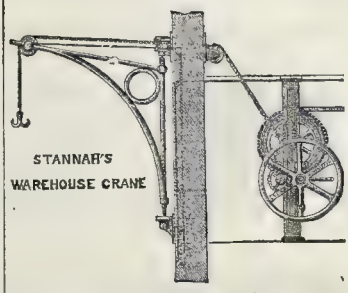
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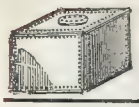
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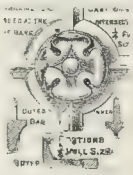
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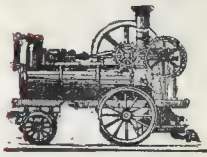
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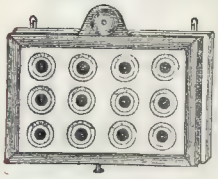


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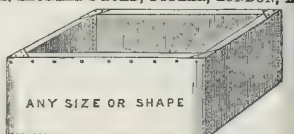
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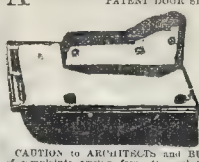
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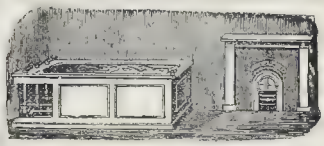
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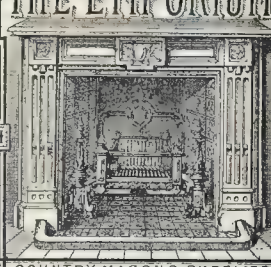
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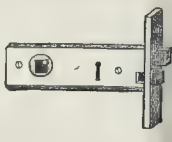
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The National Recognition v. The National Repudiation of Art.



AT the recent dinner at Liverpool to the Lancashire, — the Lancashire and Roman, —sculptor, Mr. Warrington Wood, the toast, "The National Recognition of Art," was coupled with the name of Lord Sandon: the suggestion was not unnatural that one who was recognised as "a faithful, painstaking, and able representative of the city" might be called upon and counted on to vindicate his representative character by worthily appreciating the most comprehensive form of those artistic aspirations which his constituents at that centre of commerce had so recently and generously announced. The present to the city of the Walker Art Gallery, which had been opened by Lord Derby the day before, was, notwithstanding the official position of the donor as Mayor, not even municipal, but strictly an act of individual munificence; but truly municipal, however, was the spirit with which it was responded to; and the promise that was manifested of widely-spread sympathy with its elevating purposes was calculated naturally enough to invite a prospect,—or a dream, if it must be so,—beyond. When an individual is content,—is eager,—to merge his private ambition in the promotion of the artistic dignity of his city, it is amongst the most appropriate recognitions, and such as he may welcome most, that the city should seize the occasion to declare again as loyal a subordination of its pride to the largest national interests. Such an impulse found expression with frankness and every fitting limitation, in the words of Mr. J. A. Picton, who, among other pertinent observations, affirmed that "there are some points of view in which the recognition of art and science by Government would be desirable,—there ought to be a national recognition of art, but in a fair, true, legitimate, and proper manner."

From the reported response of Lord Sandon, it seems pretty clear that the theme which was presented to him apparently unexpectedly seemed if not quite so unpromising as the heading of the chapter, "On the Snakes of Ireland," which only allowed of the sentence, "In Ireland there are no snakes," at least on a par with that; "On the Manners and Customs of the —— Islanders," which only admitted the moderately qualified remark, "These islanders have no manners, and their customs are unspeakable." He "put aside Government recognition of art because it had evidently dropped," and he "looked in vain for any great result produced by State patronage either in the present time or in the past." His lordship certainly piled one difficulty upon another until it might seem, at last, that we had better not enter the maze of perplexities at all, when no better result is before our most sanguine exertions than the alternative of choice between a pitfall or a cul-de-sac. The remark that "there is at present no minister who represents science and art in the country," provoked an exclamation from "a voice,"—that anonymous voice which will from time to time in all meetings turn a wrong switch in front of a speech in full career, and endanger an upset or a divergence as fatal. "There ought to be," said the voice. The challenge was taken up with no lack of confidence and self-possession, but the reasons why there ought not to be were collected rather from the point of view of a Government office than of those for whose behoof Government offices and officials are constituted at all. Such a minister, as it was set forth rather touchingly, would have a hard time of it; let the condition of a minister be only imagined, who, "with funds to dispose of," would be in danger of being torn to pieces by Schools of Art, classes of art, divisions of science many and multifarious, and all the towns of the country in full cry after him. This is bad enough, but worse is behind; and even the troubles that beset the administrators of imperial politics seemed to be merely ordinary vexations, as compared with what a Minister would be exposed to between the harassing complaints of scientific intellect on one side and the shafts of embittered criticism and the onset of Fine-Art, riding its very highest horse, on the other. And of a truth we may willingly admit that a Minister of Science and Art would be likely enough to have his tranquillity and repose disturbed by something more than the occasional irritation of a crumpled rose-leaf, would be roused pertinaciously enough by applicants "wanting to know" what, even with the best will, he might find a difficulty of telling; and would have his ingenuity taxed to the utmost to find out how handsomely "not to do" even what ought not to be done; supposing in charity that he was unofficial enough to adopt such a limitation to masterly inactivity. Devote himself as he might to deliberately emulate that accomplished linguist, who, from genuine inability to converse, was renowned for being "silent in five-and-twenty languages," he would find himself goaded perforce into replies, into correspondence, and worst, and most hated and dreaded of all, into decisions. Invulnerable if he could only keep unmoved, the very first change of attitude would open some chink in his armour, and of the hundred pointed and barbed imputations that would leap out at once with better aim or worse, but all with like intent, it were strange indeed if some did not draw blood and fret intolerably, though never deeply penetrating a tolerably thick official skin, to say nothing of reaching a vital part.

But, to meet a public demand, an objection which resolves itself into difficulties of this character is, must it be said, just a little trifling: it is to trifle with the public, whether the demand which so many consider it worth while to support is regarded as reasonable or not. A better reply is due, in any case, than that what is required would give, whoever were charged with the duties, some very unpleasant hours. Private duties are not always the pleasantest parts of our daily occupations; and public functions, ardently as they are aspired to by the best men of the time, are not anticipated by the best men as the less desirable because they understand it to be "a serious matter if they are to be charged with so grave and responsible a thing." In short, there are, and will be, those who do not hesitate to recognise in such arguments another sign of that too eager abnegation of administrative duty,—

> "A thought which quartered hath but one part wisdom,
> And ever three parts"——idleness.

—if, indeed, by an application of the modern chemical theory of substitution, we are not to replace the single aliquot of wisdom by an equivalent of timorousness. It is not in the matter of the arts alone,—and pity it is if now in the arts also,—that the social tone is becoming relaxed, because it seems easier, so long as Government functions will *go on*, to let them go on without further interference, under a previous but declining impulse,—time enough when that is exhausted to consider whether it were not as well that their vigour should be sustained and reinforced by being systematically *carried on*. And so, when business comes to that stage at which the first point, "Can't we leave it alone?" must be negatived, the nearest approach to a healthy "categorical imperative" that we are left to hope for, is at best a permissive solution.

But the fact is, that to reduce the subject to its most limited form, a nation cannot escape, though with the best will, from the necessity of sometimes dealing with art as a nation, and so far being committed, with better results or worse, to a national recognition of art,—a recognition which must needs have immediate relation to the national Government, whether to a "Ministry of the day," or something less ephemeral in duration or purposes, or not. For example, there is no form of what should be a work of art that comes more constantly under the eyes of the entire population than the coinage of the realm. The adoption of types for our money of all forms is certainly a matter of national interest, and can only be controlled by an authority delegated by the national Government. Whether our present current coin is better or worse in an artistic point of view than it might be,—whether a single specimen of a single English coin, since the days of Pistrucci, has such merit that it is worthy to be sought for simply as a work of admirable art, does not matter to our argument. That our coins might and should have such merit is to be accepted unsaid,—that it is not well to leave them to the chances of a happy accident is equally clear; and this throws us upon the consideration of how such a case of national recognition of art

which may be forced upon any Ministry of any day, can be most satisfactorily provided for. That "Governments of the day" are apt to be but "humdrum" may be conceded to those members of them, or those officials who think to serve them, by assuring us of a fact so unartistic and so unpoetical. With somewhat more reluctance we listen to the avowed probability or something more that a minister of science and art will be a bigoted partisan, and "throw the whole scale of his influence on one side,"—the Mediæval or the Classical,—will have eyes and ears exclusively for a clique, or at most a school,—the rising school, or the obsolete and out of date. All this only leads us to an illusory indication of why and how not to do it,—not to do what we all know must of necessity be done better or worse, and has been done before and ought to be done again very well indeed. It is a necessity that certain national works—coinage is only one—should be done under and by national sanction,—done in a manner honourable to the nation as confronting all other nations, as well as appealing to the applause and sympathy of its own sections and parties collectively. The nation recognises, and should be proud to recognise, merit in art, in science, in literature, by some public signs, whether knighthood, baronetcy, pension, or a trickle of suffixed initials are the best contrivances for the purpose or not. It is one of the rising difficulties of the time that such distributions, however often conscientiously guided no doubt, do get astray sometimes, and perhaps too often. So it is that a lack of coincidence may unhappily ensue between the lists which are selected for honour by the nation as a Government, or by its corporate delegates, and by the nation as moved by independent sympathies. That the truly national recognition of art especially is becoming more and more at odds with the official, reduces the dignity of the unfairly-preferred even more seriously than it discourages the excluded; the more need that the difficulty should be dealt with. Of all national recognitions of merit that of a statue in a public place seems most characteristic, and the assignment, it would seem, should, therefore, in most instances, be a national act, and in most important cases it will and must be so. If the desert so honoured is scientific or artistic, and whether the size given be the interior or exterior of a public building, the nation and authorising Government are doubly committed to the recognition contended for; or whether, as more frequently has been the case, the honour has been earned by services in war or in the senate,—the responsibility is thrown upon the Government of making such a selection of the statue to be erected that the world shall be spared one more irritating eyesore. It were well that even in the case of statues to be erected in public places by private subscriptions more or less comprehensive, the nation should be able to rely upon a power in some quarter to put a veto at least on an abuse of the accorded privilege, or even to redress a grievance, once too indulgently admitted.

So, again, our great national structures must remain without the least adornment by painting; by that art which has for its endowment the power of adding interest in the most popular way to the record of history,—if Governments are to be condemned to be for ever not only form but colour-blind. And what of architecture? If Governments have, indeed, hitherto so often failed in the convenience, suitability, or general aspect of the buildings which they have selected and sanctioned, we shall not escape from the dilemma we are involved in of necessity, by declaring that henceforth they shall eschew fine art, and repudiate artists utterly. Governments must be housed,—cannot but be housed conspicuously,—and if the buildings which are in such national occupation are not beautiful or dignified, they will of necessity be vulgar and ugly. That common-place utility is both father and mother of architectural beauty is about as valuable a maxim as that strict adherence to truth is eloquence, poetry, politeness, and even grammar.

Lord Sandon has "yet to learn that the support of the State had ever produced artistic genius or success." But so far as this avowal does not involve an equivocal intimation, it may be said that no such lesson is proposed by any one in his senses as requisite or possible to be learnt. "Fine art," said Sir Edwin Landseer, to a Parliamentary committee, "cannot be taught," and genius cannot be produced by State support, or what has been tried more lavishly may be, by State starvation. But if the lesson that is still to be learnt is,—"that the support of the State has ever been the means, as it was the indispensable means, of enabling artistic genius to produce success," the sooner and the more assiduously the tiro betakes himself to his historical studies the better; and then it will probably be time enough for him to present himself again for examination on the subject, whether as a toast or a thesis, of the national recognition of art.

CURRENT CONVERSATION.

THE LOCAL GOVERNMENT BOARD and its president, Mr. Sclater-Booth, in their recent tentative achievements, which may yet infuse harmony and order into the conflicting regulations of building laws, of metropolitan and provincial management, and of sanitary rules throughout the country, deserve recognition. If we have contented ourselves with simply mentioning the difficult and useful task in which, with every promise of ultimate success, they have been for some time engaged, it is partly because the subject is one eminently associated with the professional and private occupations of a large number of our readers whose opinions thereon, far from requiring to be "formed," as the foolish phrase goes, must be ascertained, sifted, and compared with our own before public writers, hoping to speak with authority, can express satisfaction or offer objection as to the heads of an important administrative code. At the same time, our own opinions are so well known, from the almost hebdomadal criticism of metropolitan and provincial building as it is at present carried out, and our constant reference to the many defects and omissions in the laws now in force, that the comments we should make upon suggested modifications in the details of local government technicalities are sure to be divined by attentive readers or regular correspondents. The "Model Bye-laws," only lately issued to the public, have been for some months,—in a fragmentary state for much more than a year,—in the hands of people whose advice has been sought and obtained by the compilers. Though completed and published, they are, however, in their relation to various urban sanitary forces, only memoranda,—not bye-laws, but suggestions for bye-laws; and it depends upon the good sense and good will of Englishmen whether eventually there shall continue to be a jumble of contradictory statutes by which in the country local government can do on one side of a river precisely the contrary to what is done on the other side, and by which in a town one district may successfully neutralise the reforms of another; or whether the official regulations necessary for the proper management of towns, the control of building construction, and for public health, and enforced by local powers far and near, shall assist or impede the possible purification of town and country. Long before the passing of the Public Health Act in 1875 a vast deal of information had been, often voluntarily, collected; a great deal of it, interspersed with good advice, was diffused over the country. Since then progress has been made; and, more, it is apparent. In a paper* read at Oxford by Dr. Acland, graceful acknowledgment was offered to the "highly instructed" periodical literature by which sound knowledge on the subject was becoming common property possessed by persons in even remote districts. Dr. Acland's words are well worth reading again; his references to Mr. Edwin Chadwick and to Mr. Rawlinson were and are thoroughly deserved. "Above all," he said, "the good sense of the country is embarked in the work. Every place has its Sanitary Authority, composed of elected residents,—would they were always selected also,—and every place has but one Authority." The importance and utility of a free technical discussion in the matter of "model bye-laws" and in the leading items of what must lead to the amendment of the actual Building Act, has been acknowledged by Mr. Sclater-Booth and others on the part of the Government. We so often hear, even from professional men, doubts concerning the propriety of publicly discussing measures in embryo, fears lest the newspapers should get hold of some of the crudest of crude suggestions, that the value of discussion may be usefully re-urged. Neither the Government nor the people direct public opinion or make public laws. It is discussion,—action and reaction between the two,—which brings about stable progress.

* See *Builder*, vol. xxxiv., p. 210.

THE PUBLIC HEALTH ACT permits the local Authority to make bye-laws with respect to certain matters connected with local government: thus, a bye-law made in Manchester and a bye-law made in Liverpool, both referring to the same subject, may be needlessly dissimilar, and even contradictory. To mitigate this obvious evil the Local Government Board have compiled a series of eight model forms for the use and guidance of every Urban Sanitary Authority in the preparation of local bye-laws. The first refers to bye-laws which are intended for operation where the Local Authority do not themselves undertake the cleansing of footways, the removal of house refuse, and the cleansing of closets or cesspools,—where such duties are imposed upon the individual occupiers of premises. The second refers to bye-laws for the prevention of nuisances arising from filth of all kinds. The third refers to bye-laws for the well ordering of common lodging-houses. The fourth, of more immediate importance to architects and builders, treats of bye-laws relating to new streets and buildings. The fifth consists of bye-laws relating to markets; the sixth of those relating to slaughter-houses; the seventh to hackney carriages; and the eighth is a comprehensive model of rules for public bathing-places both on the seashore and at inland establishments. This series may be considered invaluable as a guide to local Boards, seeing that no bye-laws the latter choose to make can take effect until they have been submitted to and confirmed by the Local Government Board; and the facilities offered by the central administration are of a most practical character. The whole of the clauses comprised in the model series are now printed on foolscap paper, with an ample margin for quotations, and placed at the disposal of any and every local Authority. Where alterations are required to suit special circumstances in a particular district the necessary variations can be shown in manuscript on the margin of the draft and submitted to Imperial authority. After the final revision of the draft and the concurrent consent of the Board and the local Authority, after due consideration of any objections made by persons locally interested, the bye-laws of a district will then be officially confirmed at Whitehall. Up to the present hour the art of driving through an Act of Parliament, or a bye-law deduced from it, has by no means been confined to any particular part of town or country. Both legal and technical flaws have invited insidious and even open assault. The fact that dwelling-houses are erected all over the country, in the suburbs of the metropolis, and in London itself, which the common sense of passers by, not architects, unhesitatingly condemns,—and that such houses are occupied to the detriment of health and comfort,—has been too often admitted to deny the need of some central guiding control like that which the Local Government Board have shown themselves not indisposed to exercise.

AT THE LAST BIENNIAL CONFERENCE of architects, the necessity for some combined action in the matter of local building regulations was made apparent. Mr. J. Honeyman, of Glasgow, prepared a valuable code of amendments on the present Building Act. Mr. J. Clarke, of Liverpool, read a paper on the same subject, regarded from a different standpoint; and he described the anomalous condition of local rule in Liverpool. There the prescribed thickness of internal walls is made to depend upon the length and height of the front wall of a building: the party-wall of two houses may be 9 in. thick if the front wall does not exceed 39 ft. in width of frontage and 36 ft. in height. This absurd rule, of course, permits all sorts of inconsistencies; indeed, a party-wall is not officially defined in Liverpool, nor is there any compunction to carry one above the slates of a roof. If good and strong buildings have accumulated there it is due mainly to the determination of practitioners and the good sense of their clients. In Dublin it appears from the remarks of Mr. Drew that not only is the Irish capital innocent of any Building Act, but no rules respecting party-walls are in force there. Often also where a hierarchy of inspection is supposed to be at work, flagrant contempt of the most elementary principles of precaution occurs. In the important town of Greenock, to follow Mr. Honeyman's description, there is a "master of works," and there are bye-laws in full operation; but in

t town last year a building was completed ich set at defiance every sound principle of angement and construction. Eleven shops upied the ground story and the superstructure sisted of three floors of dwellings, in all nt thirty separate houses. The three floors approached by a single staircase at one end the building, which is 145 ft. long. The ircase is constructed of lath and standard titions supporting stone steps, while nearly the partitions dividing the houses are of lath d plaster. The floors are of naked wood, and external galleries or balconies, by which the parate dwellings or flats are reached, are med by allowing the joists of each floor to pass ough the back wall and project to the required dth. The imperfect nature of local bye-laws ating to building has been pointed out by rious architectural societies in the provinces, d the objections to the present system have en enumerated in several reports. An im-rtant memorandum was forwarded to the uncil of the Royal Institute of British Archi-ts by the Manchester Society; and soon after-rds a comprehensive statement of professional inion was forwarded by the Institute to Mr. later-Booth.

THE MANCHESTER SOCIETY OF ARCHITECTS epared a synopsis of Local Board bye-laws owing the variations and discrepancies between anchester and Salford, and between places in e immediate neighbourhood. Thus in the atter of wood at chimney flues, Manchester ys that timbers must not be laid within 4½ in., d Salford 5 in., of the inside of a flue. Crump-ll, Stretford, Barton, and Heaton-Norris say t within 6 in.; while Openshaw, Prestwich, adford, Gorton, and Newton-Heath say not thin 9 in., "unless rendered." For the sizes joists, Openshaw prescribes, over a span of om 12 ft. to 15 ft., joists of 6 in. by 2½ in., aced at a distance of 16 in. from centre to ntre. Stretford, Barton, Newton-Heath, and lford, for a span not exceeding 14 ft. prescribe ists of 7 in. by 3 in.; Heaton-Norris, for a nilar span, 9 in. by 3 in.; Bradford, 6 in. by in.; Prestwich, Crumpsall, Gorton, and Man-hester prescribe no scantlings of joists at all. s for beams, the variations are more than tire-me: Openshaw, Prestwich, Crumpsall, Brad-rd, Gorton, and Manchester preserve a sublime difference; Stretford and Salford, on the con-rary, declare that for a span of 15 ft. a beam hall be 15 in. by 12 in. Barton, however, says shall be 14 in. by 9 in.; Heaton-Norris, 12 in. y 9 in.; Newton-Heath, 14 in. by 11 in., and ll for the same span of 15 ft. The height of ooms in the neighbourhood of Manchester is lso subject to some divergence of opinion. The Corporation of that city require them to be 9 ft. igh, but Salford prefers 8 ft.; if in a roof Manchester asks for 7 ft. 6 in., Salford is satis-ied with 7 ft. Openshaw, Stretford, Barton, Heaton-Norris, and Newton-Heath agree with Manchester; Prestwich and Crumpsall agree with Salford, but Bradford and Gorton are dip-omatic enough to split the difference, and they ay 8 ft. 6 in. will suffice. Petty differences imilar to these occurring in Manchester and its neighbourhood are to be encountered all over the country; and often while such important things as the contact of wood with chimney flues, and the proper thickness or composition of horizontal divisions in dwelling-houses are dis-regarded, while party-walls are ignored alto-gether, the most ridiculous restrictions abound and flourish for the mere gratification of official conceit or parochial whim.

A BUILDING ACT IN UTOPIA* is the title of a half-satirical reference we made, more than three years ago, to some of the inconsistencies of the present Building Act, the least defective in tech-nical details of the many similar Acts which the wisdom of Parliament has devised. We pre-tended to see a city where the rain fell to clean, not soil, the streets; where the smoke of chim-neys, instead of polluting the houses of the rich, helped to comfort those of the poor; where there was a government to rule, not merely a local board to misgovern. We described the stairs which *used to exist* even in the expensive quarters of the metropolis,—stairs of specially inflammable material, about twice the width of a builder's ladder; we implied that as incendiary fires occurred every night in London, and as these stairs are often the first things to burn, Londoners depended for safety upon the external "fire-escape" which was to be seen every night in the streets. We explained that such fire-escapes are useless for the purpose of assisting thousands of persons who are located in the upper floors of large hotels and private houses. We declared that the Building Act, having been framed in the palmy days of jocular legislation, it had been enacted that every habitable room should be 7 ft. high from floor to ceiling,—for a minimum dimen-sion allowed by law is, in many cases, made the maximum,—the joke being that no room of such a height could possibly be habitable. We laughed at a system which permitted rain-water pipes to discharge the drainage of a roof upon the street-pavement, as in the Strand and other highways, and even on part of the Crown land in the me-tropolis. We spoke of the unwritten rule by which in England one half of the com-munity is occupied,—often in an hono-rary capacity,—in making life unpleasant to the other half. We maintained that the great mass of the metropolitan population whose incomes did not exceed 300*l.* per annum, and who paid income-tax, incurred nightly risk of destruction by fire, while those whose incomes did not exceed 100*l.* per annum, and who did not pay income-tax, experienced certain death in the event of an incendiary outbreak. That was in 1874, and since then hardly a fire has broken out in certain dwelling-houses,—originally built to hold a single family, yet filled indiscriminately with several families and groups,—where death has not resulted. Moreover, we said that drains and waterclosets were not ventilated; that the railway tunnels under London streets were pesti-ferous; that by the law dilapidated structures, if only proved dilapidated, could be mended up with dilapidated materials; that no official regulations concerning the use of iron girders and joists existed; that, in fine, the Building Act we wished to see would be as much an assistance to good architects as the actual Building Act is at times an annoyance to straightforward builders. In other articles we have treated of necessary modifications and absolute alterations in the current legalised method of building "fireproof" warehouses, theatres, hospitals, &c.; we have condemned the continued, unprofitable, and dangerous use of naked iron; and we have described the foetid nature of the soil upon which in and around London new houses are erected with impunity and commercial success.

THE MODEL BYE-LAWS in certain clauses relating to foundations admit the necessity of an untainted and a concrete platform beneath every new building. None shall be planted upon any site which has been filled in with material impregnated with fœcal matter, with animal or vegetable matter. It will, therefore, be com-pulsory on the part of speculators to remove by excavating, burning, or otherwise, any refuse of the kind with which accident or design may have contaminated the land. Another suggested bye-law is equally important, and one that, even if the site of a new building be the surface of a quarry, must not be deemed extravagant: the site of every new building is to be properly asphalted or covered with a layer of cement concrete, at least 6 in. thick. We may add to this that ingenious minds will doubtless find a means of complying with this bye-law, without accomplishing the desired result, for an asphalte covering is of little use unless laid upon a surface of solid and compact material. It is also proposed to make compulsory the insertion of a damp proof-course in the walls beneath the lowest timbers and at a height of not less than 6 in. above the surface of the soil. This is very well so far as the prevention of rising damp in the wall itself is concerned; but a thin layer of lead, slate, or even asphalte, is not sufficient to defend a plinth of stone or unpolished granite from the injurious effects of damp earth or turf, or by falling rain, which often rebounds against the horizontal face of the plinth. It has been found in France, where huge blocks of stone are often used for the *socle* of a building,—through the entire thickness of the external wall,—that two courses of brick laid in bitumen and gravel form the best damp insulator under a façade, and for more than one reason: the weight of 60 ft. or 70 ft. of stone or brick wall has been known to squeeze out a simple layer of asphalte on either side; and the rolling of big stones upon it frequently cracks it. But the homo-geneous course, formed by two rounds or even one round, of brick, laid in asphalte, is inde-structible by the accidents of age or even the ordinary efforts of man.

We must break off, however, for a time.

* See *Builder*, vol. xxxii. p. 148.

FREE LIBRARIES.

A FEW years since a committee of the Society of Arts, a body that cherishes enlightened and liberal designs, and exercises its activities over a wide range in the promotion of education, art, and science, was appointed and took action, in an attempt to encourage the establishment of free libraries and museums under the provisions of the Acts of 1850, 1855, *et seq.* The *vis inertiæ* of corporations and communities stood in the way of the committee's success, and little or nothing resulted from the meetings held and the correspondence they directed. It is to be hoped that they may resume their functions, the exer-cise of which is fitted to prove highly advan-tageous to the cause of education, and in the interests of the nation.

The Free Libraries Act had a twenty years' start of the Elementary Education Act, by which, however, it has been far outstripped in the extent and promptitude with which the pro-visions of the latter have been adopted. During the twenty-seven years that have elapsed since Mr. Ewart's Act was passed, it has been adopted by the authorities of sixty-one cities, boroughs, and other places in England; four in Wales, and five in Scotland. London is a remarkable ex-ception among the cities and towns under the Free Library Act. It is true that the City proper has its fine new library at the Guildhall, and the metropolis has its vast and valuable repository of learning in the British Museum, both being available as reading-rooms and places for reference and study, but neither of them serving one of the most important purposes of free libraries under the Act,—lending of books to readers to be read in their own homes. At the Guildhall, indeed, an exception in the matter of lending books is made in favour of members of the corporation of the city of London and their families, but this exception is not of any advantage to the general public. The only free library in or near London established under the Act is that of Westminster, for the united parishes of St. Margaret and St. John. This library, situated in Great Smith-street, serves a population of 66,259; there are 10,212 volumes in the library, and about 4,000 borrowers use it; the total issue for a year is 69,000 volumes. There is a branch lending-library at Knights-bridge connected with the principal library in Great Smith-street. The number of visitors to the reading-room for the year last reported upon was 113,369. In this library the difficulty of the attempt to classify human knowledge ap-pears to have been fully experienced; "me-chanical science" and "fiction" are the only two out of seventeen classes into which the books are divided that have not the equivocal tag of "&c." appended.

Vast fields in the metropolis remain open for the adoption of the Free Libraries Act; amongst others Chelsea, with a population of 260,000; Marylebone, with 500,000; Finsbury, with 460,000; Southwark, with 210,000; Tower Hamlets, with 400,000; Woolwich *cum* Plum-stead, with 80,000; Greenwich and Deptford, 100,000; Lewisham, Sydenham, &c., 52,000.

In some of these districts the proposal to adopt the provisions of the Free Libraries Act has been rejected by the economists, amongst others at Woolwich, where the establishment of an efficiently furnished and conducted free Reference and Lending Library could not fail to exercise the most important educational and moral influence upon the artisans at the Royal Arsenal, their families, and others. A number of the cities and towns in England and Wales having the largest populations are under the Act, and, notably Manchester, Liverpool, Bir-mingham, and Newcastle-on-Tyne, but amongst the large cities and towns that have not as yet adopted it, are "proud Preston," Huddersfield, Wigan, Stafford, Cheltenham, Macclesfield, Bed-ford, Worcester, Reading, Devonport, York, Durham, Portsmouth, St. Helen's, Lancas., Guildford, Croydon, Dover, &c. In Wales there are four public libraries, at Aberystwith, Cardiff, Swansea, and Newport, Mon.; but none at Merthyr Tydfil, Carmarthen, or Pembroke. Among the towns that have School Boards but no free public libraries, are Gateshead, Burnley, Hastings, Hanley, Bath, Wakefield, Oldham, and Carlisle.

In Glasgow, that arrogates to itself the title o capital, and claims to be the second city in the United Kingdom, the Free Libraries Act does not find favour with the economists, who have successfully resisted its proposed adoption. Lanarkshire, wealthy and populous, so prolific

of volunteers who compete for the prizes at Wimbledon, has only one free public library, at Airdrie, of 3,284 volumes; the annual cost of the institution being under 100*l.* A joke of the Paisley folks (or "seestus," "see-est thou us," as they sometimes designate themselves) is to refer to the neighbouring pretentious city as "Glasgow, near Paisley." Paisley is certainly the superior of Glasgow in free museum and library provision: they have a valuable museum, a lending library of 11,651 volumes, and a reference library of 4,870 volumes. The lending library is used by 3,310 borrowers, and 270 persons use tickets for the reference department. The united departments are maintained at an annual cost of a little more than 500*l.* The only other free libraries in Scotland under the Act are Dundee, 30,000 volumes; annual issues, 136,162 volumes; annual cost, about 2,500*l.* Forfar, 3,183 volumes; annual issues, 9,166 volumes; annual expenditure, 78*l.* Galashiels, 2,420 volumes; annual issues, 14,448, including 75 volumes in the reference department; expenditure, 165*l.* per annum. It will be seen that of thirty-three Scottish counties only four have free lending libraries, viz., Forfarshire, two; and Lanarkshire, Renfrewshire, and Roxburghshire, one each. Aberdeen, Edinburgh, Glasgow, Hawick, Inverness, Perth, Kilmarnock, Stirling, Dunfermline, Ayr, Leith, and Berwick-upon-Tweed are not provided for. It should be mentioned, however, that there is a goodly number of foundation libraries in Scotland, some of them, such as the Advocates' and Signet libraries of Edinburgh, being highly valuable collections.

The liberality and enlightenment that have been displayed by some of the comparatively small communities that have adopted the Act ought to put to shame the inhabitants of many corporate towns and other places, who have not only regarded this important educational provision with indifference, but have from motives of mistaken economy actively opposed its application. Aberystwith with 6,720 inhabitants; Bangor and Hertford with under 8,000 each of population; Warwick, Chesterfield, and Bridgwater, with from 11,000 to 13,000 each, voluntarily pay a small price to secure great advantages not attainable by other means. The 1d. or 1½d. in the pound is the last straw of taxation that breaks the back of the anti-light or at least the anti-free library camels in communities of ten times the wealth and numbers of those named. The cost, as compared with the amount and value of the work done, and with the gratification and profit to the users of free libraries and museums, must surely be considered very moderate. There are seventy-five public free libraries in England and Wales that have an aggregate of above one million volumes, that are used five million times per annum, the borrowers or readers being 802,000. The payments on account of these libraries is 60,000*l.* per annum, or about 1*s.* 6*d.* per annum per borrower, or 1*l.* 4*s.* per 100 volumes issued per annum. The five free libraries in Scotland have 54,500 volumes, that are issued 340,500 times per annum, at a total cost of less than, 5,000*l.* per annum.

The analyses of the ages and occupations of borrowers from free libraries and readers are interesting, as showing the classes using these institutions. At Birmingham, for example, the classes include 1,088 scholars and students; 881 clerks and book-keepers; 215 apprentices, errand, and office boys; 167 teachers; 439 jewellers and goldsmiths; 137 warehousemen; 122 milliners and dressmakers; 138 printers; 35 artists; 11 clergymen; 27 button-makers; 8 actors; 141 salesmen; 67 gunmakers; 10 pen-makers; 95 electro-platers; 6 pearl-workers; 122 engravers, chasers, &c.; 15 policemen; 14 surgeons; 8 gold-cutters, and 18 gold-beaters; with a very large number of readers of a great variety of occupations. As regards ages of readers, 3,057 are from fourteen to twenty; 2,700 from twenty-one to thirty; 1,026 from thirty-one to forty; 476 from forty-one to fifty; with diminishing numbers for more advanced ages. The borrowers classified under about 300 professions and occupations are 7,500 in number for the six lending libraries and reading-rooms; the ages of users of the reference department embrace 7,688 readers, who have been served during the year with 96,732 volumes; the issues in the lending departments were during the year 305,958 to 16,948 borrowers, admitted in the course of two years. The professions and occupations of those using the reference department include 17 actors and actresses [that is, books were given out 17 times to actors and actresses]; 27 apprentices; 153 artists; 141 brass workers; 167 clergymen; 1,562 clerks; 360 engineers; 247 engravers; 491 jewellers, gold and silver smiths; 47 in the law; 27 librarians; 14 literary men, and 32 reporters; 88 physicians, surgeons, &c.; 12 opticians; 468 scholars, students, &c.; 388 schoolmasters and teachers; &c. At Bolton the library is used by 12,719 artisans; 9,701 cotton operatives; 4,094 teachers and pupils; 3,247 clergy and professional men, with remainder of 71,430 various. Young people enter largely into all the returns. At Bradford there are 447 apprentices, mill, office, warehouse, shop, and school boys, and school girls, with 55 school masters and teachers, 13 clergymen, 5 surgeons, 400 clerks, 14 artists, &c., in the lending department; in the reference department the classification includes 22 clergymen, 71 schoolmasters and teachers, 115 schoolboys and students, 230 warehousemen, and 248 clerks. At Cambridge the classification includes 2 clergymen, 33 clerks, 68 females of no occupation, 11 gentlemen, 75 juveniles and 47 schoolboys, 2 school-masters and 17 school-mistresses, 2 librarians, 2 reporters, 36 students, with many others, various. Leeds divides the readers into 13 groups, but gives, not their numbers, but the number of volumes issued to each class:—12,007 are put down to clerks, 7,721 to artisans, 3 868 to pupils, 3,804 to professional men, 2,941 to metal-workers, the remainder various. Leicester, in both departments, serves large numbers,—clickers, clerks, elastic web weavers, framework knitters, hosiers, scourers, stocking-makers, wool-sorters, with 9 musicians, 84 pupil-teachers, 137 scholars and students, 22 teachers, 30 architects, 35 artists, &c. The Manchester borrowers from six lending-libraries are classified under about 500 groups. They include among that large number 86 accountants, 20 actors, 278 agents, 452 apprentices, 111 architects, 44 artists, 4,784 office, school, shop, and warehouse boys, 3,235 clerks, 116 law clerks, 4 editors, 10 journalists, and 19 reporters; 213 drapers, 104 draughtsmen, 255 engineers, 40 gentlemen, 312 school-girls, 354 hookers, 57 nippers and cart-boys, 512 makers-up and packers, 411 pupil-teachers, 1,572 warehousemen, 279 travellers, 483 salesmen, 35 missionaries, 39 military men, 8 scripture-readers, 12 secretaries, 585 printers, 128 school masters and mistresses, &c.

Some of the classifications of occupations are embarrassingly minute, others are so vague as to be worthless. Of the former class are Birmingham, Bradford, Manchester, and Liverpool. Of the latter class Stockport is an illustration, where artisans and labourers, clerks and warehousemen, gentlemen and professionals, mechanics and engineers, pupils and teachers, are bracketed together. The small selection of examples given should suffice to show that the use and advantages of free libraries are not confined to any section of the community; they are absolutely open to all persons cleanly and well-behaved, and of good character. The value of such institutions must be apparent from the classes of persons who use them. Every free library throughout the country is taken advantage of, to a greater or less extent, by clergymen and ministers of religion, schoolmasters, school-mistresses, teachers of various kinds, professional men, pupil teachers, and many others whose object is presumably to increase their own powers for public usefulness. It is to the interest of the nation at large to aid them ungrudgingly in this laudable object, and to equip them as completely as may be possible for the discharge of their vitally-important functions.

It is a daily occurrence for men of acknowledged literary reputation, including dignitaries of the church, either to make the reading-room of the British Museum, the Guildhall library, the Record Office, or other valuable collection of literary treasures, their own workshop, or to employ deputies to work these mines on their behalf, for the materials wherewith to construct their works. And wherefore is this? Simply because the valuable works of reference available in such libraries are inaccessible to persons of ordinary, or even large means. How few clergymen, desirous to enlighten thier congregations concerning "Nineveh," could afford to purchase Botta's splendid work in 5 vols. folio, or Layard's "Monuments" in two, or even Buckingham's "Ruins"? What writer on Mexico could afford to purchase, even if it were in the market, Kingsborough's 9 vols. folio on the "Antiquities"? What ardent naturalist of humble means, and there are many such, can obtain access, except in a public free library, to such gorgeous works as Gould's "Mollusca and Shells," Dana "Crustacea and Zoophytes," Audubon's "Birds of America," and the works, generally, of the United States Exploring Expedition; or Curtis "Flora Londoniensis," with a host of others that might be named? Some time since a copy of Hussey's beautiful work on "British Mycology" was added to the reference department of a public free library. A working man, enthusiastic student of fungi, took to it with the greatest avidity, and for weeks spent upon it all the time he had to spare. Who again, among historical students, has a deep enough purse or a big enough house, for the publications of the Camden, Cheetham, Surtees, and other publishing societies, for Somers's and Force's tracts, the *Harleian Miscellany*, a file of the *London Gazette* or of the *Times*? Such works the literary man and the student can only meet with in a well-appointed free library efficiently maintained at the public cost.

Since 1870 there have been 1,600 Board schools established in England and Wales, against the seventy-five free libraries, which should be the auxiliaries and corollary of the elementary schools,—"These things ought ye to do, and not leave the other undone."

THE LANCASHIRE LUNATIC ASYLUMS.

EXTENSIVE ENLARGEMENTS.

THE whole of the four county asylums in Lancashire, already of unusually large dimensions, are about to be still further extended in size to meet the constantly-increasing demand for lunatic accommodation. At the annual meeting of the county magistrates last week it was stated that accommodation was required for 2,000 more lunatics, the asylums being completely full on the 1st of January in the present year, when the number of inmates was 6,419. The committee of magistrates having charge of the asylums reported that the necessary accommodation might be obtained by building, in close proximity to the existing asylums, annexes capable of holding not less than 500 or 600 patients of the chronic class. Such buildings could be erected at a small cost as compared with erecting a new asylum. The committee added that for the erection of such buildings or annexes there was ample space on the lands attached to the asylums at Lancaster, Prestwich, and Whittingham, in the south-eastern divisions of the county respectively, and as to the asylum at Rainhill, in the Liverpool or south-western division, they recommended that if the land in the immediate neighbourhood could be obtained for a similar purpose, it should at once be acquired. It should be stated that Rainhill is fast becoming a favourite suburban district of Liverpool, where mansions and other residences of a high-class character are being rapidly built, and land is fast increasing in value. The magistrates unanimously confirmed the recommendations of the committee, resolving at once to enlarge all the asylums, and that the best and most economical mode of carrying out this object was by the erection of the several annexes, as proposed. It was also resolved that the new annexes when completed shall be occupied exclusively by harmless and chronic patients. In the course of the discussion on the subject, Mr. Hibbert, M.P., expressed regret that no allusion was made to the accommodation of that class of lunatics called idiots, and he incidentally stated that at the present time there were no less than 3,000 idiots within the county, between the ages of five and thirteen, a great number of whom were in the workhouses, where they were badly treated and teased by the inmates. He strongly urged that new county asylum buildings should be erected for juvenile idiots in Lancashire. The estimated cost of the several enlargements about to be made in the different asylums is upwards of 100,000*l.*

A Cemetery for Sheffield. — The Burial Board of the Sheffield township has arranged for the purchase, from the Duke of Norfolk, of a piece of ground fifty acres in extent, for the purposes of a cemetery. The proposed site is a short distance from Norfolk Park, and only a mile and a quarter from the parish church. It is pleasantly situated on an elevation, and it is intended to lay out the grounds with some pretensions to beauty. The cost of the land is nearly 15,000*l.*, and the chapels and other buildings, and the necessary alterations to the grounds, will entail an additional outlay of 13,000*l.*

NOTES AT THE SOCIAL SCIENCE CONGRESS.

IT seems to be generally admitted that the Social Science Association has seldom had a more successful or interesting session than that which has been held on the banks of the Dee; and this has been not least the case in regard to some of the subjects with which we are most especially concerned. The central point of the proceedings, regarded in the light of an intellectual entertainment, was perhaps the brilliant and remarkable address of Lord Gifford, as president of the Jurisprudence Section; but the Health Section has been doing good practical work, and the Art Section, which we noted as being rather on its trial in this second year of its existence, has excited a degree of interest, and been marked for the most part by a practical character, which seems to give a satisfactory assurance that it is not a superfluous invention, but is likely to become an integral portion of the project of the Association. We proceed to note some of the points in connexion with those portions of the proceedings which seem to suggest comment or criticism.

The Health Section on the 20th (under the presidency of Mr. Chadwick), was partly occupied, and let us hope not unprofitably in regard to future results, with the health of Aberdeen, a subject in regard to which, as we have already shown, there is a good deal to be said and done. Dr. Beveridge's paper on the subject, however, was medical rather than sanitary, in the sense we have lately come to attach to the latter word, and consisted chiefly in a more or less tabulated statement of the prevalent forms of disease in the town; from which it may be gathered that the keen air and cold winds of Aberdeen, which in the present season are health-giving rather than otherwise, become, when more intensified in winter, a source of a seriously high average of lung disease in its various forms. Two noticeable facts were, the great prevalence of typhoid disease among the workers in the rag department connected with the paper works, which is so general and apparently inevitable as to lead to the conclusion that contagion is brought in with the rag stuffs imported from abroad. In connexion with another and greater Aberdeen industry, it is satisfactory to hear that the health average among the granite workers is high, especially that they are singularly free from consumption, a marked contrast in this respect to other trades in which the workmen were exposed to the effects of dust. We should rather have liked to see, in reference to the consumptive class of diseases, some statement of the proportionate average of sufferers in groups classified according to house-rental, as a broad but probably pretty correct way of showing the connexion between this disease and the class of dwellings. Union-street, when swept by an east wind from end to end, must certainly be the coldest street in Aberdeen; but then the solidly-built granite houses with which it is lined must prove better protectors against the enemy than can be found in many of the lower portions of the town, where the habitations are so much more pervious to wind and weather. A classified scale of this kind might prove a simple method of showing practically the extent of influence of dwellings upon the health of the inmates.

Dr. Hardwicke's paper on the same day, on the question, "What is the best way of providing suitable accommodation for the labouring classes, and utilising open spaces in towns, made some important suggestions, *apropos* of his description of M. Godin's "Familistere" at Guise. A notice of this paper, as of some others, we print separately. This establishment is nearly the same thing which was proposed, and for which elaborate schemes were drawn out, long ago by a French social reformer of probably equally good intentions, but very different social views, namely, St. Simon, who became, in this country at any rate, notorious rather than famous for his ideas of social regeneration, based on the abolition of the family and the conjugal tie. In all but this portentous social feature, M. Godin's establishment reminds us of St. Simon and Fourier, the whole of the inhabitants congregated in the block of building being united not only by topographical contiguity and enclosure within the same walls and roofs, but by the system by which one nursery is provided for the children, a covered courtyard for amusements and even (as it seems to be conveyed) "receptions" to be given by the inhabitants *en masse*, as one community. We can hardly feel surprised that an objection should have been raised (by Mr. Esslemont, of Aberdeen) to the idea of a system which tends so much to sink individuality of habits, and even ultimately of moral character, in the general habits and character of the community. For ourselves, we can scarcely wish (or hope) to see such a system frankly accepted by the English labouring classes; it may, no doubt, solve some material difficulties, but almost gives rise to graver social ones. The court in the centre, covered with a glass roof, is a material feature in the scheme open to much objection. In places where a number of inhabitants are collected whose occupations do not conduce to cleanliness, and whom it is difficult to induce to look sufficiently after ventilation, the securing of plenty of air is always one of the very first considerations, and a contrivance which prevents the free circulation of fresh air seems likely to create more evils than the convenience of a covered court, in some respects great, will at all counterbalance. We cannot but feel some sympathy also with Mr. Raper (of Manchester), who deprecated so strongly the idea that the Social Science Association should appear to the public as having a mission to dispossess the working man of his home. The consideration is a most serious one in regard to its influence on social life, though, of course, we are the last to deny the immense difficulties in the way of providing healthy homes for the poor, and can hardly deny that it is better to live with a certain loss of privacy in a healthy building than to take bad air and drainage with all the privacy possible.

We may digress from sanitary matters for a moment to take notice of the discussion on the 20th, in the Economy and Trade Department, of the question of the social effects of trade-unions, strikes, and lock-outs. This was treated in two papers by Dr. Watts (who, however, was not present at the meeting) and by Mr. John Grey, and succeeded by a discussion, the result of which was not incorrectly summed up by the chairman as showing that the difference between the two parties concerned in strikes was not so great as was supposed. This is what every one is beginning to see, at least if we take it to refer to the real difference between what is for the interests of masters and of men; but as to the ostensible difference in their demands, it appears to us that this is about as distinct and marked as it well can be, in the attitude assumed by the bodies or the officials of the bodies representing them respectively in the strife of strikes. It may be true, as Mr. Chadwick observed, that a little pressure from a secretary of a union upon a capitalist was a healthy thing, though it might perhaps be questioned which of the two parties to the proceeding, the capitalist or the secretary, experienced the healthy influence. Our impression has been that the kind of hostile, bitter, and uncourteous tone which this sort of "healthy influence" generally seems to take is a thing very disagreeable to witness, and not calculated to bless either him that gives or him that takes. Turning to the papers read, to see if any new light is thrown upon the difficulty, and the way out of it, we observe that the first paper is obviously written with an anti-strike feeling, and that of Mr. Grey with the reverse tendency, and that the main feeling of the meeting seems to have been with the former. A clerical speaker on the occasion made some very disjointed complaints against Dr. Watts's paper as a furbishing up of old arguments against strikes; the arguments may be old, but in so far as they were good at starting, they are none the worse for keeping. We may draw special attention to two observations made in the course of the discussion, which acquired an additional point from the quarters from which they respectively came. Mr. W. Hoyle (Tottington) had been both a labourer and an employer of labour, at different periods of his life, and gave this as the result of his observations, that "while trade-unions assist to raise wages, yet by keeping people out of employment the effect was, on the whole, to keep wages down in another direction. The result was not useful, but, on the contrary, detrimental. Combination should be directed towards the benefit of the general public, and not of a section of it." This was capped by the remarks of Mr. Lindsay, a barrister, who observed that trade-unions seemed to have set their faces against the right of every man to make as much by his labour as he could. "Every collier, like every barrister, should be allowed to earn as much money as he could without the interference of any union." There is no doubt another side to be considered in reference to these points, but we cannot help observing that the apparent concurrence of an important meeting in views such as were here expressed is a fact of some significance, which the organisers of unions would do well to ponder. The special method of meeting the question which was proposed in Dr. Watts's paper was that of compulsory arbitration. We give his conclusion in his own words:—

He thought that, while union amongst working people for good objects,—such as the support of the sick or accident fund, or fund for the removal from place to place according to the state of trade,—was very commendable; still, on the other hand, when the principal object is to raise the price of wages and shorten the hours of labour, these objects are very questionable, because all that could be said in their favour was that they had only accelerated by a very short time a rise in wages, which, from an influx of capital, would take place in the course of events; and as to strikes as a *dernier ressort*, the demoralisation is wholesale, the employment of the capital is dissipated, families become disorganised and driven into debt and penury, and an evident breakdown of all self-respect when obliged to seek parochial relief. The only practical relief out of the difficulty seems to rest in *compulsory* arbitration. Then strikes would be at once abolished, and workmen would give up the restrictive rules which have not protected them, and ultimately the workman would rise to the level of an employer. Then it would be that workmen would work with zeal and energy, and learn that work is not only worship, but progress also,—is development, civilisation, and that in working with enthusiasm they will find that these principles are applied and made fruitful for the good of the many.

In the Art Section the question as to the restoration of ancient buildings was opened in an able paper by Mr. Aitchison, who has won golden opinions among the lovers of art in Aberdeen for the ability, good sense, and artistic feeling which he has shown in his contributions to the discussions on art. The paper, which we print elsewhere, speaks for itself; the line it takes is one which is quite right as far as it goes, but may be complained of as emphasising one side of the question at the expense of the other,—regarding the buildings from an almost exclusively historical point of view, as records to be preserved, and almost ignoring the practical and architectural side of the subject. The paper, in fact, represented the views of the new anti-restoration Society, which views seemed, on the whole, to be in the ascendant at the meeting. Mr. E. M. Ward, however, in commenting on the paper, went so far in the other direction as to wish for the removal of some of the Westminister Abbey monuments, as disfigurements of the architecture; a view which is quite open to consideration, though we are inclined to think that there are objections to the removal of monuments too strong to overweigh their unsuitability as works of art. There is, however, the other side of the matter to be considered, the aspect of buildings as architectural designs, their practical use (which necessitates keeping them in proper repair), and the right of those who occupy them to beautify and decorate them when they become worn and dilapidated even in appearance. This side of the question was brought forward by Mr. Statham, in the course of the discussion, while Mr. J. J. Stevenson, on the other hand, upheld uncompromisingly the theory that so long as a building represented history it should be left entirely untouched, and brought forward, among other things, as an example, the determination of the decorative firm of which Mr. W. Morris is the head, to refuse to put even any new stained glass into ancient buildings. The firm in question, it appears, have a printed circular prepared which they send round to every one who invites them to put a window into an old building, stating their reasons for declining, out of reverence for the ancient work. They have, of course, lost commissions in this way, and no doubt the decision is in one sense honourable to them, but their position seems to us wholly untenable. Mr. John F. White, of Aberdeen, whose enthusiasm for art, combined with his knowledge and cultivated taste, made him an invaluable ally in the art-section, urged a much more reasonable and moderate view of this stained-glass question, only recommending that glass put into old buildings should be not only of good design but of fine and rich texture and material, and denouncing the "thin

glass" which had been inserted into many buildings. Mr. W. Brodie, the sculptor, and member of the Royal Scottish Academy, made some very sensible observations, comparing the case of an old building with that of an old piece of sculpture, which might be weatherworn and nearly obliterated, but which he would nevertheless wish to see left, to tell its own tale in its own way, while if a new statue on the same subject was for any reason desirable, he would erect one beside the old one, without touching the latter: and asked, why could not the same principle be followed out in regard to old buildings? Well, a building is not exactly the same thing as a statue; it covers more ground, and, if of any size, costs much more, and was put up for use; still, there are cases in which such a method as this might well have been adopted,—cases in which an amount of money has been spent in destroying an old building, as an historical monument, which would have sufficed to build a new one, and save many heart-burnings and lamentations over the loss of what cannot be replaced. But such cases are very few.

A feature in the discussions of the Art Department was the attempt made by Mr. Lindsay, who spoke very ably and with evident interest in his subject, to recommend the religious or "Catholic" aspect of art, and to deprecate the use of Pagan and sensuous subjects as material for artistic creation. This was *apropos* of Dr. Phené's paper on "The Humanising Influence of Art," Mr. Lindsay urging that art could only in truth exercise such an influence when it had a basis of moral and religious feeling, and was not regarded as a mere æsthetic recreation. His remarks were received with considerable applause; but our impression is that most of the audience did not see exactly what the speaker was aiming at. Mr. Lindsay's recommendations included the opening of museums, &c., on Sundays, of course on grounds and in a spirit different from that on which the same system is urged in some other quarters. As to that we presume no sensible people have any real difference of opinion, except in regard to the practical difficulty of providing adequately for the day of rest for the attendants at public places; but the main question which was thus urged, that art should be essentially religious and moral, is based on a fundamental error in regard to the object of art, and the manner in which it appeals to us. A work of art may incidentally be a tonic to the moral feelings, — perhaps we may say that every really great work must and should be so—but its office is not didactic; and when works of art were really didactic, and were made the means of conveying truths, or supposed truths, to the people, it was when they were not really regarded as art at all in the sense in which the word is now used, and always has been used, in the literature of cultured nations. So much on a subject which we have often had occasion to touch upon, and which is far too large to be gone into argumentatively in the course of an article of this kind.

We will resume the general summary in our next.

THE METRICAL SYSTEM.

THE usual fortnightly meeting of the Liverpool Engineering Society was held on Wednesday evening last, Mr. H. O. Baldry, vice-president, in the chair. Mr. E. Dukinfield Jones read a paper on "Some of the Advantages of the Metrical System." The object of the paper was to show the saving of time and labour in calculating quantities, heights, and distances when measured by the metrical system, as compared with the standard English measures. As a practical illustration, the author prepared two working sections of the same piece of railway, with the distances and heights plotted in one case to the English, and in the other to the metrical, system. From these diagrams the difference of the two systems, as regards the horizontal distances, was not very striking, but the vertical heights showed at least 20 per cent. more figures in the English than in the metrical system. If the cubical contents of cuttings and embankments had been marked on each section, the difference would have been even greater. As regards the compulsory introduction of the system into England, Mr. Jones anticipated no insuperable difficulty. He was himself in Brazil during the introduction of the metrical system into that country, and he stated that it was adopted quite easily, and without complaint.

THE LATE MR. FOX TALBOT, F.R.S.

By the death of Mr. Fox Talbot, which took place at Lacock Abbey, Wilts, on the 17th inst., in his seventy-eighth year, science has lost a distinguished votary and the world a benefactor. He had nearly perfected his invention of practical photography when M. Daguerre announced his invention and received immediately a pension from the French Government. We can remember the reading at the Royal Society of Mr. Fox Talbot's first paper describing his system, and the annoyance caused by his being to a certain extent superseded. In some of the first published accounts of the science Mr. Talbot's name was not even mentioned. Speedily, however, other inventions having been added, Mr. Talbot's system was everywhere adopted. In the first instance he took out a number of patents with a considerable expenditure of money, but he ultimately threw the whole matter open to the public, creating a new industry; and thus enabled thousands of persons to maintain themselves and to delight the world. He well deserved some public expression of gratitude. His first glass house set up on the residence of Mr. Murray, the optician, in Regent-street, was arranged and superintended for Mr. Talbot by the conductor of this journal, as was afterwards a larger one in the Kensal Green-road. Of later years Mr. Talbot had resided chiefly at his country seat, varying his experiments in chemistry and photography with the study of the various dialects of the East, and especially of the cuneiform inscriptions made familiar since the discoveries of Layard and Rawlinson.

"THE STORY OF OUR GOVERNMENT OFFICES."

SIR JOHN ST. AUBYN, M.P., opened a fine-art exhibition at Penzance on the 10th inst., and in the course of an address he remarked that Lord Sandon, recently, at Liverpool, speaking against the appointment of a Minister for Science and Art, said it was much better that science and art should always be independent of the State. No doubt this was true. It was perfectly true that art was independent of Government and of the forms of government; but if the establishment of a Department of Science and Art in this country could do no good, it was, at any rate, quite possible that it might prevent a great deal of harm. The position of art in this country, considered in relation to the State, was not a satisfactory one. Let them, for instance, consider what took place in London at this moment. If a public edifice was to be erected or a monument set up, there was a department of the Government known as the Board of Works, which took cognisance of those things; but this was done in an indirect, irresponsible, and unsatisfactory manner, and when anything had to be done the Government, or even the Prime Minister himself, had to interfere and set things right. He remembered perfectly well when the new Government Offices were in course of erection. There were numerous plans suggested for the consideration of the Government, and the Board of Works fixed upon those which they thought would be best for the purpose. But then Lord Palmerston himself came down and said he would have nothing of the kind, and that there should be no Gothic architecture; that it was all very well for a cathedral, but it was not fit for Government buildings. Let them take another instance. A gentleman of large means and patriotic motives and intentions had presented this country with Cleopatra's Needle. It was now on its way home. But when we had got it we really did not know where on earth to put it. All kinds of suggestions on the subject had been, and were still being made, and those suggestions would doubtless have to be taken into consideration; the Government in this instance being represented by a gentleman who held the office of First Commissioner of Woods and Forests, and who was not selected on account of any special knowledge which he had of works of art. There had been lately established a society for the protection of churches from restoration, and what was now wanted was a society which should be supplemented by Parliament to protect London from being "adorned" with the buildings that were every day being put up.

A New Reservoir, at the top of Headington-hill, to supply the University and City of Oxford with water, was opened on Wednesday last.

THE ART OF PORTRAITURE IN SCOTLAND.

LORD RONALD LEVESON GOWER'S address, as President of the Art Department of the Aberdeen Congress, dealt with the interesting subject of the rise and progress of the art of portraiture in Scotland. Few royal houses, he said, had shown greater appreciation of the arts than that of Stuart. One of the earliest portraits of the royal race of Scotland is in the city of Aberdeen: it is a head in fresco of William the Lyon, and is a work undoubtedly of the thirteenth century. It is supposed to have been painted for the monastery of the Trinity Friars; and this fact attests that even at so early a period the kings of Scotland patronised the arts. The wars and religious feuds that raged in Scotland in the latter part of the sixteenth century scared for the time all attempt at art from the country, and buildings, such as the cathedrals, were laid in ruins. Under the reign of James VI., however, art again appeared. It was at this period that Scotland at length produced an artist worthy of her name and fame—George Jamesone, and on visiting Aberdeen for the first time, he (Lord Gower) must confess to a feeling of some surprise and disappointment to find no memorial commemorating the name of an artist of whom all Scotchmen should be proud, and especially his own townsmen. For with George Jamesone commences the grand muster-roll of Scottish artists. He was the precursor of such men as Ramsay and Raeburn, Wilkie and Allan, Watson, Gordon, and Dyer, and John Phillip, and of two living Scottish artists, Sir Daniel Macnee, and one who was present that evening—George Reid, who, although still young, had already given proofs of high talent in portraiture as well as landscape painting. Aberdeen had much reason to be proud of this her foremost living painter. I believe, continued his lordship, descendants of this old painter are still living, and it seems strange that none of them should have commemorated by some token in his native city the name of one who has been justly termed the Vandyck of Scotland. (There is a fine window named "The Painters," in the cathedral of Aberdeen, but this is not sufficient for such a town to be content with in reference to George Jamesone.) It appears that even in his lifetime his native city did not do him much honour, as a tradition reports that he was offered so paltry a sum for a fine full-length portrait he had painted of Charles I. by the Corporation of Aberdeen, that he refused the shabby offer in disgust, and soon after left Aberdeen to settle in Edinburgh. He had married a fair Aberdonian, one Isabel Tosh, and through his daughter, who was three times married, his descendants are still found in the land. Jamesone's principal patrons were the family of Marr and that of the Campbells of Taymouth. For the latter he painted a huge genealogical tree, with representations of the chiefs of the house of Bullock up to very pre-historic times. His fame does not rest upon such fanciful works, but on the portraits of the greatest and best-known men of his day, many of whom figured in the civil wars. The termination of these wars and the tragic end of his sovereign Jamesone was spared the sorrow of witnessing. Charles, one of the best judges of a good painter, was delighted to sit to a native artist, and you all probably know the story of the courteous king insisting on Jamesone (who suffered from some complaint in his head) remaining covered in the presence. More than a century intervenes after Jamesone's death before a Scottish portrait-painter becomes conspicuous. Although many artists of a certain calibre exercised their trade in the north, it was only at the accession of George III. that a Scottish portrait-painter becomes fashionable in both kingdoms. Up to that time Lely and Kneller had kept out all artists from reaping a golden harvest at the court of St. James. The court painter of the third group was born at Edinburgh in 1713. His father was the well-known poet, Allan Ramsay, and young Ramsay was also proud of his blood-relationship to the noble house of Dalhousie. Few artists' lives have been so conspicuous for their great and immediate success as that of Allan Ramsay. In a few years our painter had amassed a handsome fortune, and life seemed to have showered all its best gifts on him, when an unlucky accident shattered his constitution, and after in vain visiting Italy in search of health, he died in Paris on his return homewards, 1784. Ramsay has left few portraits of excellence. He was a refined, and to use an abominable expres-

ion, but one which qualifies his style of art, an elegant" painter; he almost rivalled Nattier, nd Drouais, and other French artists of that ra of powder and patches in his skilful imitation f the lustre of silks, and the richness of satins, ut he failed where failure to a portrait-painter s most disastrous: he could not paint flesh; his ortraits are weak and chalky in colour, and ntirely lack animation and expression. To sum pin one sentence Ramsay's merits and demerits, should call him the Scottish Winterhalter. While Ramsay was painting at St. James's, nother Edinburgh artist was making a name orth of the Tweed,—this was Alexander Runciman, who was distinguished for the power and rilliancy of his colouring, but he painted for and with the fashions of his day, and the result has been that he has left no abiding name in the nnals of the art. To his praise, however, it must be conceded that he was an excellent eacher, and like poor Haydon in England, must have understood the science of painting better han its practice. Two of his pupils turned out very well, one as a landscape-painter, the clever father of a cleverer son, namely, Alexander Nasmyth; the other David Martin, whose portraits were in great vogue in Edinburgh some seventy-six years ago. Referring to Henry Raeburn, his lordship said,—Until the exhibition last winter in London of works of the old masters, where a large number of Raeburn's works were seen, few who had not visited the Scottish National Gallery knew what manner of painter Raeburn was,—and to many this discovery came almost as a revelation. Seldom has a portrait-painter been more fortunate in the subjects whose lineaments he has handed down to posterity. Raeburn was eminently gifted in the power of expressing the intellect of a head, and when we remember who the men were who sat to him, we recall the names and faces of those who earned for Edinburgh the appellation of the "Modern Athens." While Raeburn was engaged in his work of portraiture, another Scotch artist was illustrating the history of his country, and in Sir William Allan Scotland may claim a talent and a reputation which I can give no higher praise than in ranking with that of one of the greatest of England's historical painters—to Edward Matthew Ward—whom we have the pleasure of seeing among our distinguished guests on this occasion. I come now to the name of one of the most original, if not the most popular and original artists, that the isles have produced, for, with the exception of Hogarth, no painter has shown greater originality in his works, nor have those works been more deservedly appreciated, than David Wilkie. That Wilkie, however, with all his talent, had failings in his art, not even his greatest admirers will deny. His colouring was not of the best kind, and, like Landseer after him, his pictures look better in the black and white of the engravings than when seen even in the original colour in which they were painted. He too, like Sir Joshua, had a most unfortunate habit of using all kinds of ashpaltums and mediums, which, especially in his later pictures, have been the means of almost destroying them. Wilkie too, was essentially, to use an untranslateable French idiom, a painter of "*genre*." This he ought to have known; but as you are all aware, after his visit to Spain, he changed his style, and painted historical subjects. Talking of this reminds me of a pithy remark which Mr. Carlyle made not many days ago. He was speaking to me about Sir David Wilkie, and he said, "Ah, poor fellow, they made him paint historical subjects which did not suit him." I believe Wilkie's works—his portraits and historical subjects not included—will be remembered long after the actual paintings have disappeared. The engravings, from the finest steel impressions to the roughest of wood blocks, have sown them broadcast through the land. I doubt if there is a house, or even a cottage, however humble, in Scotland, on the walls of which you may not find a print after his "Village Politician," his "Reading the Will," "The Blind Fiddler," or "The Rent Day." I believe a more truthful, a more guiltless, or a more loveable character than that of David Wilkie never breathed; his is a household name in Scotland, a name which is loved and honoured wherever a Scotsman has settled,—and what corner of this earth has not improved or been improved by such a happy event? After alluding to three artists of Scotland who attained celebrity in painting in miniature—John Bogle, Stewart, and Sir William Ross — Lord Gower referred to the deaths of Sir John Watson Gordon and Mr. Wm. Dyce, and continued,—I come now to another name, to another celebrity, born in this city—alas! John Phillip, he too is numbered with the dead. It seems to me that in re-capitulating these honoured names, my feet, like the friar's in "Romeo and Juliet," "stumble at graves." Within a very few years we have lost Watson, Gordon, and Dyce, John Phillip, and Edwin Landseer—in less than ten years all these have died. Dead, but not entirely dead, for surely the artist's work, which is his mind, his soul, his strength, and his renown, live after "the mortal coil" has been shuffled off. I should like to have said a few words to you regarding your great townsman, John Phillip, but time forbids. I believe he will be regarded as one of the greatest painters of his time—where Wilkie was weakest Phillip was strongest—in colour. As a portrait-painter, he has left some fine works, two of the most successful of these, portraits of the Prince Consort and Provost Blaikie, adorn your Town-hall. My remarks on the principal artists of this country will perhaps have appeared somewhat meaningless on an occasion like the present, but I have had some reason in alluding to their careers, for I have found that, with but rare exceptions, those who have succeeded best have studied in Rome. Does this not point to the desirability of our young and rising artists being enabled to make that voyage,—so easy, comparatively, in these days of steam,—and to prosecute their studies on that artistic soil? In France we have an example to follow—in Paris, which has greater advantages in the way of public galleries and museums than any other Continental city, the ambition of every young artist is to gain that prize which will enable him to visit Rome, and to be maintained there for a time sufficient for him to benefit by the visit. Why, I demand, should this country not do the same, and by enabling the student (however poor his means and humble his station) to study the masterpieces of the ancient and modern world, strengthen and maintain the spark of genius which, if left to struggle on in a less artistic soil, might never burn clear. How many, perhaps, for want of such assistance, have been "born to blush unseen, and waste their sweetness on the desert air." Who can say? Before I conclude these, I fear somewhat disjointed remarks, I would add in conclusion that it seems to me desirable that a town such as this, with its population of over 80,000 souls, ranking third in Scotland, with a history and traditions dating back 700 years, and above all with its proud list of artists born within its walls—a list second, I believe, in importance to no city in the kingdom, London excepted, including names eminent in the arts of architecture, of sculpture, and of painting; in the former, Archibald Simpson, who has left monuments in this city of his skill imperishable as the granite of which they are formed; in sculpture, the name of the lamented Alexander Brodie, whose early death may be considered a national loss, and another name, that of Sir John Steell, the sculptor of some of the finest statues in Scotland, long may he be spared to add fresh honour to this art, and new works to those with which for half a century he has adorned his country; and in the art of painting in the past such names as Jamesone, and in our own day those first-rate artists, John Phillip and William Dyce. I say that, recollecting all this, I cannot but marvel that Aberdeen possesses as yet no local museums for sculpture and painting worthy of the memory of her distinguished citizens. Is it too much to hope that the effects of this Congress may be borne out in forming a gallery worthy the ancient fame of this city; and that future generations of Aberdonians may be enabled to study the works of their former townsmen, collected and treasured in the city which they loved so well, a city which owes so deep a gratitude to those its illustrious sons? We have seen such a building at Liverpool—the gift of a single individual. Could not a town like Aberdeen do likewise? Is it then, I repeat, to be too sanguine to imagine a stately building rising by the shores of your beautiful Dee, which shall contain art-treasures to prove that in a northern city, and under a sullen sky, artists of high merit have lived and wrought, artists of whom Italy might have been proud, and to whom Scotland should be grateful?

Lord Aberdeen having proposed a hearty vote of thanks to the reader,

Lord Ronald Gower, in reply, said he was very much touched by the kind way in which Lord Aberdeen had spoken of him. It had been a pleasure and an honour to him to appear in so magnificent a city under such circumstances, and, as he had said, he felt utterly unworthy of the place. It seemed more like a dream than anything else, being there as President of the Art Department. To have given satisfaction this evening was the greatest honour and delight to him.

HOW CAN ART BE BEST INTRODUCED INTO THE HOUSES OF PERSONS OF LIMITED INCOME?*

WE all know that wealth is not necessary to the perception and enjoyment of art. But there is an impression among many that the possession of beautiful things is a luxury of the rich, and it is a very common saying, "I have not money enough to indulge in art." Now, if this impression were correct, art should occupy a second-rate position among the aims and objects of study. It would be undeserving of the attention of any except of *dilettanti*; interesting undoubtedly to a few, but, from its narrowness, without any claim to the sympathy of a wider circle. The pleasures, however noble, of a limited class cannot be attractive to those that are shut out from a share in them, and art, if so restricted, would deserve to forfeit the love and interest of those that care for the general good of society. But it is not so; and the existence of an Art Section in the Association for the Promotion of Social Science shows that here at least this error does not obtain. It does not, therefore, require proof from me that art must be for all, if it is to have any real interest for us, and be catholic and universal, like mother Nature, whose image and superscription she bears. Nor shall I spend time in proving that, even for the sake of art itself, the love of it must be widespread and deeply penetrating in many directions if it is to have a real vital existence. The roots of the tree must strike far into the soil if it is to bear noble branches and rich fruit. On this point I shall content myself with saying that, in the palmy days of art in Greece, everything was made beautiful, from the statue down to the chair in common use, and to the coin that passed from hand to hand, and that in Florence and Venice, in the fifteenth and sixteenth centuries, the best artists not only painted beautiful pictures, but also the panels of marriage coffers; nor did they disdain to ornament earthenware plates or to work in gold and silver. In our own country we know with what love and zeal Josiah Wedgwood shaped and decorated the commonest jugs for every-day use.

Why, then, should it be impossible for us to attain to the level of these ages? There is but one obstacle, the want of a hearty love for and sympathy with art, among all classes of the community. There would be no lack of artists even in our northern climate, for our race has not degenerated, though men like Phidias and Michelangelo will always be rare gifts to the world. If we could only have the pride which the Greeks had in the ornamentation of their cities, or the triumphant joy of the fellow-citizens of Cimabué when they carried his Madonna on their shoulders to its resting-place in the Church of Santa Maria Novella, fit men would soon be forthcoming. The artist is the outcome of the spirit of the time, moulded by it, but himself creative of a still higher order of things. This has ever been the course of events in the history of art; aspiration, enthusiasm, progressing till the love decays, and then come mannerism, affectation, feebleness, and ultimately death.

I assume, therefore, in this paper that there must be a deep love for art, a passion for beautiful things of all sorts. If this exists in the individual, all will be well, however limited his means, just as we have seen in the case of nations and cities. The title of this paper, "How can Art be best Introduced into the Houses of Persons of Limited Means?" is misleading unless the love is already there. Art cannot be introduced into houses like water and gas. In one and the highest sense, it must be already in the house, seeking only how it can best manifest itself and clothe itself in visible form. I should, therefore, prefer to speak of "Art in relation to limited incomes," and attempt to show that there is not a room of the humblest mechanic that may not be made a beautiful home.

I have assumed, as a necessary postulate, that the love exists, ignorant, it may be, but seeking

* By Mr. John Forbes White. Read at the Aberdeen Social Science Congress, September 25th.

for light. How is this to be attained? There is but one answer,—By using our eyes. We must learn to enjoy the beautiful things around us in every-day life, to note the beauty of the passing cloud, and of the world of colour at our feet, to observe them both analytically and synthetically. Close examination will reveal beauties of colour and of form with which the man of science does not concern himself, for they are variable, and therefore excluded by him in his classification; while, by noticing the relation of the component parts of the landscape, the harmony of form and colour, and the distribution of light and shadow, all uniting to make up one whole, we shall come to understand what the greatest artists have put before us in their representations of the breadth and simplicity of nature, as also of its variety, subtlety, and mystery. We must note specially the action of light and air in everything, giving here sharp accent and there delicate shading or vigorous relief, varying, for example, what seems a self-coloured petal into many shades of the same hue, full of delicate gradations. By observing carefully the play of light on the objects around us, we shall come to understand what artists mean when they speak of "quality," which tries to give us the changes of local colour that are produced by the influence of the light and air. Thus, if we look carefully at any face, the more unobserved the better, and watch how the modelling of the muscles is produced by the varying degrees of light and shade, much more than by outline, we shall come to understand the aims as well as the difficulties of the sculptor and of the painter in their portraiture of character without too much emphasis, or in seizing a passing expression without exaggeration. We must, in fact, set to work in viewing the common things around us as an artist or as a student would, and, even if we do not use a pencil, we shall at least come to understand the principles that have guided great artists, and be able to sympathise with their work, the next best thing to producing it. As Mr. Ruskin has well said, "All judgment of art finally founds itself on knowledge of nature." If to this careful study of nature we add, as we have opportunity, an equally careful study of the best of the old masters, and of the best workers in every material, we shall gradually arrive at some knowledge of what is best in art.

But, with so high a standard, how can the man of ordinary means expect to find anything that is good in point of art, and at the same time within his reach? I hope to be able to show that it is possible to make a house beautiful, and to enrich it with things that will gratify a cultivated taste, without any large expenditure, though, of course, fine pictures cannot be promised on these terms.

And first as to the colour of the walls. On this point I cannot do better than refer to the most recent scientific treatises. Mr. Church, for example, tells us that for walls nothing is better than the tertiary hues, of which the number is almost innumerable. They afford a quiet background, which may be enriched to any extent by complementary colours, and he adds, that the effect of the *dulled* colours—that is, more or less mingled with grey—is to relieve the fatigue experienced by the eye when occupied too exclusively with others of great brightness and saturation, enabling these bright colours, when used sparingly, to give their maximum of pleasurable sensation. Here we have science confirming all we have learned in our study of Nature, which is so sparing in her employment of bright colours, using them only as enrichments. We should be shocked if we saw a gaudy background in a picture, and yet we are content to live in rooms so hideously painted or papered that even our ladies' complexions are robbed of their beauty by the background against which they are set. As this is demonstrable by science, our ladies should look to it, and prefer colour that will enhance rather than destroy their good looks. Any quiet tertiary colour that will suit *them* will consort well with the furniture, and with anything we may hang on the walls. The lower plinth or dado should be painted in oil colour, as being more lasting, but the upper part may be in distemper, which is cheap enough, and it has the advantage, as the *Lancet* has been telling us lately, of being more conducive to health than wall-paper. This method of decoration has a special claim on our consideration to-day, for the reason that a room treated in good colours, *however simple the scheme may be*, will be in equally good taste with a more splendid one, in which the ornamentation, on the same principles, has been carried to a higher point.

We are apt in this country to neglect the ceiling, and to leave it of a ghastly white colour, forgetting that it is a most important feature of the room. But it should be remembered that in the best periods of Classic, Italian, and French decoration, the ceiling received special attention. If we cannot afford to decorate, we can at least tone it to a pleasant colour. Into details on these points I do not enter, as they do not come within the scope of this paper. But there is one point that requires to be mentioned as bearing on cost, and that is the use, or rather the abuse, of gold. Nothing is more beautiful than gilding in moderation; its value is great in enriching an incised line or giving sparkle to the projecting edge of a surface in relief, or in heightening the effect of neighbouring colour; but when used in large masses it becomes vulgar, from the ostentatious use of the most precious metal. Here, as in many other parts of domestic arrangements, economy and good taste go together.

It is not necessary to go into details about furniture, as the subject has been well handled by Mr. Eastlake and other writers. But, from the point of view of this paper, it is well to insist on simplicity and suitability. If the forms are simple and the ornamentation structural, we *ought* to be able to get beautiful things at a moderate cost. But this sort of work is not in demand, and there is little temptation to the makers of furniture to produce it, since meaningless curves and ornaments stuck on here and there meet the general taste. All this exuberance of misapplied ornamentation means money, though machinery and the constant repetition of the work tend to cheapen it. It is surprising how enduring is the vulgar rococo style of Louis Quatorze, while that of the better periods has left little trace on the general taste, and this, too, in spite of the fact that all those contortions of wood, more or less cut against the grain, are necessarily weak. It should be remembered that in the best periods of Greek, Italian, French, and English furniture, the style has been architectural, that is to say, reproducing the forms, mouldings, and ornaments characteristic of the time.

Regarding the floor, we must keep in view that it is a plane surface, and we should not in our carpets go in for elaborate effects of light and shade. There should be no representation of objects in relief, to make us feel as if we might trip over a bunch of roses or a heap of ferns. Nor need I say much about hangings and such like. As to curtains, they may be plain enough, if the material and colours are well chosen, and they may be best and most cheaply hung from a brass rod, as in the old times, to answer the purpose for which they were intended, viz., to modify the light and exclude draughts. The gilt valances that are so common are both ugly and costly, and are a mere make-believe, as they have no connexion with the curtains which are suspended from a concealed iron rod. If the materials of the curtains are suitable, they may be worked on and embroidered by the clever fingers of the ladies of the household, who will find this occupation full of interest, and affording abundant room for fancy in carrying out designs that can easily be got. This remark leads me to observe further in regard to ladies' work generally, that there is no reason why they should not aim at making their own dresses artistic and beautiful. The difficulty here is not that arising from limited means, but from the iron rule of fashion, which compels all, whether short or tall, stout or thin, brunette or blonde, to dress more or less in the same style. The subject deserves careful consideration, and has been thought worthy of very full treatment by so eminent an art-critic as M. Charles Blanc.

In such a household as that which we have been describing, there will naturally be a craving to adorn it, and to sweeten life by the gathering together of beautiful things. How is this to be best accomplished? What should be chosen and what avoided? Much will depend on the amount that can be prudently expended; but whether this is much or little, the same principle should guide us, and that is, that what we select should be the best of its sort, avoiding everything that is an imitation of what it is not, or which does not, in its own department, reach a high degree of excellence. Of course, no one would mistake a plaster bust for the original marble; still less can there be deception if the original is well known to be in the British Museum or in the Louvre. Only one museum can possess the original; others must be content with plas casts, but these are so perfect that they fin place in every national collection of Euro And they are so cheap, that we can get th from the South Kensington authorities, or fr the well-known *atelier* of Mr. Brucciani, Covent-garden, for sums varying from a f shillings to a few pounds. Any of the slabs the Elgin marbles, containing the horses Phidias, one or two of which would be an orn ment to any hall, may be had for twenty-fo shillings, and these are noble examples of Gre art. Or a copy of the Venus de Milo, reduc in size, may be got for half a guinea. The choic is, practically speaking, unlimited. If the te ture of the marble is not there, we have at lea the dream of the sculptor,—everything that c satisfy the most fastidious taste.

It is very different, however, with reprodu tions in colour. It is impossible, by any numb of successive printings from blocks charged wi colour, to convey to paper the infinite touches the painter, each laid on with a special purpos Oil pictures and water-colour drawings are t subtle, at least if they resemble nature, to b copied in this mechanical fashion. The print ing-press of the producer of chromo-lithograph and of the still more objectionable oleographs, ca never compete with the brains and heart of th artist, for both of these share in the productio of every good work of art. These spurious imitations are, therefore, to be avoided. It i true that some chromo-lithographs are not to b distinguished at a glance from the copied water-coloured drawing, but then it must be remembered that such a drawing has generally been painted with a view to this process, and is therefore more or less unlike nature. Nor does the evil end here; for these chromos are in their turn used as copies in many drawing-schools, to the utter destruction of our sense of the beauty of nature and of the power of comprehending it. One or two exceptions must be made to this statement, as in the case of the coloured woodcuts of Mr. Marks and Mr. Walter Crane, which, though intended for children, yet give delight to older people. It would be difficult to praise too highly "The Baby's Opera," by Mr. Crane, the cuts for which have been so admirably engraved and printed in colours by Edmund Evans; but it must be observed that they are quaintly conventional, and that they do not pretend to imitate nature.

In all reproductions we must remember that the nearer we can get to the artist the better, and this getting close to the first conception is within our reach in the very case where we most desire it. There are no more valued treasures of the galleries of Europe than the drawings of the old masters, and these are at our service for a few shillings each, permanently printed by the autotype process, which reproduces the originals exactly in every respect, except as regards the quality and texture of the paper. So far as the spirit and intention of the artist are concerned, there is little wanting. The choice here is very large, and we may select, according to our preference for certain artists or schools, any of the most famous masterpieces. And, though paintings cannot, as a rule, be photographed without losing much of the beauty of relative tones, red and yellow becoming too dark, while blue passes into grey, yet, luckily for us, the palette of one of the greatest, Velasquez, was so simple that we can study in the photograph his wonderful execution, and see with what consummate skill he handled his brush and applied his colours, at the same time enjoying to the full his masterly grasp of character, the portraits being apparently mirrored in the painter's mind.

Photography is a valuable auxiliary, but we must be careful not to rely on it too much, especially in views taken from nature. The greens, which form so large a part of the landscape, come out much too dark, so that the whole scheme of colour is thrown out of joint. Still, for studies of form, especially of foreground and of animals, for old buildings, and for memoranda of cloud shapes too transient to be seized by the pencil, the records of the camera are useful to the artist and pleasant to look on. As to coloured portraits, it should be kept in mind that the beauty of a photograph lies in its delicate gradations, which are pretty sure to disappear unless the painting is undertaken by the really good artist, and it is more than likely that he would refuse to touch it. I need hardly say that life-sized photographic portraits, with all their exaggerations, are to be viewed with horror.

Photography has led to the discovery of many processes by which admirable copies of costly

drawings in black and white may be obtained for a trifling cost. Such are the processes of heliogravure and photogravure, and the like, which are well adapted for the reproduction of such works as the beautiful but costly woodcuts of Albert Dürer. They thus enable a man of very ordinary means, but who is at the same time a lover of Dürer's art, to obtain excellent copies from fine impressions at a very moderate price. So close are they to the originals that M. Durand puts a special trade-mark on the back of the print to prevent the frauds that might naturally arise. For all artistic effect these copies are much superior to ordinary but costly impressions from a worn-out block, such as are generally in the market.

From many causes, to which it is unnecessary now to refer, the art of line-engraving has long ago passed its best, and it seems likely to die away after the present generation of old engravers is gone. Hence we must be careful in our selection of modern line-engraving, which is generally tame mechanical work, dexterous enough in its way, but without spirit or spark of genius. It must be allowed, however, that some of the mezzotint engravers of the present day have done excellent work, though it cannot be said that they come up to the splendour of the great men of Sir Joshua's day. For line-engravings, if we can afford the price of fair examples, we must turn to the great old masters of Italy, France, Germany, and England, and, luckily for us, the number of these is so large that we may acquire, at a moderate cost, fair impressions of our favourite style and subject. Those that are absolutely beyond our reach are the rare impressions from the plate in certain states. These are indispensable to a museum, and are hunted after by collectors, not always from a love of art, but from the desire to possess what other people cannot have. Frequently these rarities have no special value from an artistic point of view, so that the eager pursuit of them does not necessarily imply any special love for the beautiful. Mr. Hamerton has well distinguished between the collector and the amateur,—the one searching after the *rare*, while the other seeks the *beautiful*, and Dr. Willshire and Mr. Seymour Haden have both insisted strongly on this point in reference to the etchings of Rembrandt and other great masters. With buyers of moderate means, as indeed with all, the supreme test must always be excellence and brilliancy of impression. Judgment and caution must be rigorously exercised against forgeries and worked-up plates, and in all cases feeble and worn-out prints must be carefully avoided.

Of etchings by the great masters it is needless to speak here, as they are now-a-days beyond our reach. But if we wish to see how Rembrandt worked on copper either in portraiture, Bible subjects, or in landscape, if we are anxious to learn by what simple means he accomplished great results, and if we wish to study the mind of this great master of expression, even a shilling photograph of any of his etchings will not be without its value.

It is fortunate for us, however, that the art of etching has been revived with great vigour in our own time, and that we can avail ourselves of the works of excellent artists at a very moderate cost. The art is too abstract to be popular, the work being suggestive rather than imitative, interpretive rather than realistic. Still it requires but little education to appreciate the freedom and decision of a great etcher. He works by his needle on a copper plate, and every line he draws is there once and for ever, subject only to slight modification. He must know what is essential to the carrying out of his idea, and what he may leave out as of little importance. Hence there must be decision and firmness as well as ease and spirit. The limitations of his art must tell him when to hold his hand. All this has been explained with great fulness by Mr. Hamerton in his delightful book on "Etchers and Etching," and we in this country owe to the same writer our first acquaintance with the great movement in this art which began in France about twenty-five years ago. We have admirable etchers in this country, such as Cruikshank, Seymour Haden, and Whistler, but the first of these is chiefly regarded by us as a caricaturist, and we have been apt to overlook his wonderful skill in the use of the etching-needle. His book illustrations are very numerous, as his industry has been unwearied. Of those in Grimm's "German Stories," Mr. Ruskin says that "they are the finest things, next to Rembrandt's, that have been done since etching was invented." The public have gradually been coming to see the beauty of an art which gives us the work of the master directly from his own hand, without the intervention of any engraver, and our English artists are beginning to use the needle in greater numbers, though it cannot be said that hitherto they have applied themselves to copper, as they have, with such marked success, to the wood-block. It is to France that we owe the revival of the art. For many years the French Society of Aquafortists published every month a portfolio of five etchings for an annual contribution of fifty shillings. Of the sixty that appeared every year many were worthless, some were fair, and a few excellent; but these last were worth more than the amount of subscription. The names of Daubigny, Jacquemart, Legros, Lalanne, Appian, Jacque, and many more, have since become famous. Méryon and Millet might have been attainable for moderate sums within a few years back, but these men are dead, and their work, at one time neglected, is now much sought after. But the number of clever etchers is daily increasing, and in the "Gazette des Beaux-Arts," "L'Art," and our own "Portfolio," we frequently have etchings that are worth much more than the cost of the part. The impressions are carefully printed, but if finer prints on better paper are desired, they can be had from the publishers at an extra cost of some shillings.

Besides being an admirable means of expressing the original conceptions of the artist in a purely artistic manner, etching is rapidly taking the place of line engraving as an excellent method of translating pictures into black and white. One great advantage it has, in giving us the impression of the picture as it appears to the eye and mind of the accomplished etcher. In this branch of art we owe almost everything to the foreign schools, the names of Rajon, Flameng, Unge, and Lalauze being the most prominent.

But even if the moderate cost of these etchings is too much for our limited income, our aim is not yet hopeless. The art of engraving on wood is as genuine as that on metal; it has its own excellences and its own limitations, both arising from the nature of the wood-block. It is obviously impossible to cut on wood with the same delicacy as on steel or copper, as its texture would not stand such work, and the difficulty is increased when we remember that the dark lines of an etching or of an engraving on metal are produced by incisions or cuts into the plate. In a wood engraving, on the other hand, the lines are produced by the ridges or projecting surface of the block, from which the parts that are intended to give whites in the print have been cut away. Hence in true genuine wood-cutting there should be no attempt to rival the refinements of the engraving on metal; but, in lieu of these, we have a vigour of effect rarely reached in the other art. It is true that the cutting is seldom done by the hands of the designer; for the best authorities hold that even Dürer and Holbein did not cut their own blocks; but, still, in the best work there is always perfect harmony between the designer and the wood-cutter, so that little, if any, of the spirit of the artist is lost. We have had, however, in our own country one great engraver on wood, who also drew for himself on the block,—our own "matchless, incomparable" Bewick. It is to this untrained artist that we owe the revival of the art in the end of last century. Bred to the trade of a goldsmith (one of the best of schools), he instinctively felt that wood must be treated as wood, and accordingly he availed himself of the simplest methods of work, his effects being produced by single lines and by masses of black, slightly intersected or broken with white. His great book on the British birds has never been surpassed for truly refined work, and it has this rare advantage, that it is almost entirely his own, both in drawing and cutting. A simple man and an intense lover of nature, he bestowed all his heart on the work he had undertaken, while the tail-pieces show him to have been a man of genuine humour and pathos. Living among rough people, his humour is sometimes broad and contrary to our ideas of delicacy, but no coarse conception ever entered Bewick's mind. After his death in 1828, the art was continued by his pupils, Clennell, Nisbet, and other able engravers, the fishes of John Thompson being worthy of being compared with the birds of Bewick. Our English school was so famous in those days that French publishers used to send work to be executed in this country for their best illustrated books. After drifting into more or less of an imitation of line-engraving, the art became again simpler, and of this new style the work of W. J. Linton is, perhaps, the most original. Excellent examples of his work are to be found in the illustrations to "Romola," from drawings by Mr. Leighton. Fine impressions of these were published in "The Cornhill Gallery" of 1862, a portfolio containing thirty woodcuts after Millais, twenty-seven by Trighton, and as many by Fred. Walker, with some by Du Maurier, making up the number to 100, all cut by Linton, Swain, and Dalziel Brothers, and costing only one guinea, so that these wonderful prints were sold for little more than 2d. each. Pinwell, Walker, Houghton, and Hughes have also done beautiful drawings for volumes and portfolios, published by Routledge & Sons, the wood-cutting being executed by Dalziel Brothers. They are perfect *fac similes* of the work of the artists, and each cost about 2d., so that for a couple of pounds almost a gallery of fine drawings, after our most eminent painters, could be obtained.

The establishment of the *Illustrated London News*, of *Once a Week*, and of *Punch*, undoubtedly did much to advance the art; the names of Sir John Gilbert, George Thomas, and Birket Foster readily occurring among those that have helped to raise it to a higher level in point of design. When we take up *Punch* for a few moments' amusement, we are apt to overlook the extraordinary artistic treat that has been provided for us by Tenniel, Leech, Du Maurier, and Keene. The original drawings by these men when they come into the market bring high prices, and yet the ordinary impressions, which we have for a fraction of threepence, are by the skill of the engraver nearly as fine for all artistic purposes, barring any imperfections that may arise from hasty cutting.

It is, however, to the *Graphic* that we owe the greatest development of the art in our country. Its managers have the courage to pay for their drawings sums that would formerly have been thought good prices for oil-paintings, sixty guineas being no uncommon price for a single drawing. They have thus gathered round them some of the best painters of the day, for Herkomer, Pinwell, Fildes, Small, Gregory, Miss Thompson, and many more, have all supplied them with drawings. The result has been very favourable to the development of these artists when they have taken to oil-painting, and we see the good results of the school in which they were trained in a more consummate knowledge of the human figure and a more perfect command of expression than is common in our English school. And not only may we get for a merely nominal sum excellent examples of the work of our English painters, but in the best illustrated papers we find translations of pictures by foreign artists, interpreted by the broader and more suggestive style of wood-cutting, as practised by Pannemaker and Pisan, Froment, and Uhlrich. Even in papers costing no more than a penny, we frequently find cuts that are worth preserving. Still better results may be looked for in the future, for Mr. Roberts, one of the best engravers for the *Graphic*, is at present conducting at South Kensington a class for woodcutting, composed of well-trained draughtsmen and draughtswomen.

Before concluding this already too long paper, I shall pass at once to another art that is again reviving, after a long period of decay,—one of the oldest of the arts,—pottery. The desire to make beautiful the common ware of everyday use is as old as our race; nations and peoples have stamped on it their individuality. Few of the South Kensington collections have been more interesting than that of the ware in common use in different countries, which was exhibited a few years ago. In the midst of much that is bad among us, from its machine-made tameness or vulgar ornament, a factory has sprung up within the past few years that is turning out at moderate cost work that is already finding its way into national museums. I refer to the Lambeth ware of Messrs. Doulton. It cannot be called a revival of the old Grès de Flandres, because it is thoroughly original, though inspired by the manner of the old Rhenish workers. The principles on which the factory is conducted deserve to be known, as they are so completely in accordance with those that have produced good art in all ages. While the artists study the best examples of the best schools, they imitate none, trying rather to work in the spirit of the original than to copy. No duplicates are produced; when the piece is finished, it is not repeated, but new designs are taken and new experiments made, so that the skill of the workman is always creative.

And last, but not least important, full credit is given to the work of each designer, his or her monogram being stamped on the piece, thus encouraging the individuality of the artists. These are educated at the Lambeth School of Art, a very modest institution founded in 1854 by Canon Gregory, in which drawing from the life, without which there can be no good modelling, is specially studied.

Factories having a similar object in view are at work in other countries, their aim being to produce good form and colour at a low price, as, for example, in the soft ornamental pottery of Vallauris, near Cannes, and the more rude but effective cheap pottery of Alsace, which is intended for domestic use, such as jugs, basins for milk, &c. I refer to these merely because I have been able to lay before you examples of their ware.

In all the illustrations I have given to-day, art is to be measured, not by money value, but by its own standard. Rarity, fashion, love of supposed good investment, are apt to lead us astray, while mere "prettiness" is a dangerous test. The liking of to-day may be displaced by the dislike or indifference of to-morrow. Real admiration and love must rest on something more permanent than a passing whim. We must remember also that neatness of execution, which comes from the working of a machine, is less valuable than what may appear the ruder work of human hands. Tame regularity is dearly bought at the cost of the spirit that a good honest workman is able to put into his labour, in which we should be able to trace his motive and his skill.

A house, or even a room, furnished and enriched on the principles I have tried to advocate, is pretty sure to be beautiful even in spite of mistakes, and it is certain to be characteristic and free from common-place. The humblest artisan will find that it is not beyond his reach to surround himself with beautiful things, the collecting and the care of which, as in the mounting and framing of his etchings and woodcuts, would be a constant source of pleasure, and a means of giving him a higher education. It was to workers of all classes that Mr. Huxley says truly, in one of his "Lay Sermons," lamenting the want of a wider and higher training, "You will have to weary your soul with work, and many a time eat your bread in sorrow and in bitterness, and you shall not have learned to take refuge in the great source of pleasure without alloy, the serene resting-place for worn-out human nature—the World of Art."

A NEW "TEMPLE" IN PARIS.

A FEW days since was inaugurated in the Rue Buffault the temple built by the Israelites of Paris who belong to the rite called the *Portuguese* or *Hispano-Portuguese*, the ordinary rite being improperly termed the German. The followers of the rite for the observance of which this new temple has been erected are descendants of those Jews so cruelly and wantonly driven from Spain at the close of the fifteenth century, by the order of their Catholic Majesties, Ferdinand and Isabella, and this Spanish origin is plainly discernible in the character of the religious ceremony, much more gorgeous and pompous than with the followers of the German rite.

In spite of the difficulties which have been met with in the ground on which the new temple has been built, the works have been ably terminated with in the short period of a year, thanks to the activity and zeal of M. Ferrand, the architect, seconded by M. Tabanon, his contractor. The style chosen by M. Ferrand is the Romanesque of the second period of the twelfth century.

The upper portion of the façade, which is elegantly flanked by two pavilions, is formed by two great arches supporting a pediment crowned by the Tables of the Law. The two principal pilasters to right and left are surmounted by pyramids. The centre is occupied by a large rose of great lightness. Between the two arches are placed twelve *œils de bœuf*, and round these runs the Hebrew inscription, "Be blest in entering and blessed in issuing." Three principal doors lead to the porch, then to the vestibule, and, finally, to the interior; this is composed of a nave and side aisles, with galleries (for the ladies), supported by six marble columns united by means of arches. The key of the vault of each of these arches is in the form of the Tables of the Law. The ladies' tribune is also raised on bays separated by columns; the balustrade is in carved stonework, the design recalling, as everywhere, the form of the Tables of the Law, and repeating constantly the six-pointed star, the traditional Israelitish ornament. The whole is terminated by a full vault pierced with four *œils de bœuf*. The lustres placed in the bays of each story are in the form of the traditional seven-branched candlestick. The tribune in which the officiating minister and the choir find place is situated in the midst of the nave, and lighted by six candlelabra and an eight-branched candlestick. The tabernacle, in which are deposited the five sacred books of Moses, is reached by seven broad steps, the balustrade of which is richly carved; in the foreground is an arch the exact repetition of that of the façade; upon the dark background stands out a marble framing supported by columns and pilasters; from the lintel descends a magnificent curtain of crimson velvet, which permits one to see, lower, the true tabernacle in carved wood relieving on a blue firmament. Above, the Tables of the Law stand out in the midst of clouds and rays, allowing the light to pass through innumerable pieces of coloured glass. Above the entry to the temple is the organ-loft, formed of a large arch, supported by two columns, whose capitals are richly sculptured. Between this arch and the vault are the words, "Thou shalt love thy neighbour as thyself." The loft is lighted by the rose-window we have already referred to, and which is surrounded by these holy words, "Hark, Israel! the Eternal, our God, the Eternal is one." The whole building, undoubtedly does great honour to M. Stanilas Ferrand, the architect, whose plans have been carried out by M. Leroy, to whom are due especially the disposition of the details, the happy choice of the ornament, &c. The sculpture is the work of M. Bloche, an Israelite artist. The expenses of the whole, which amount to more than 24,000*l.*, have been paid, a third by M. Osiris Ifa, the rest by the members of the Israelite community. On Monday, the 3rd inst., the temple was solemnly inaugurated with all the pomp usual to the Spanish rite.

NEW BUILDINGS IN VIENNA.

THE TOWN-HALL.

WE have had occasion to illustrate the progress of architecture in the capital of the Austrian empire, the selection from among its new buildings being almost inexhaustible. In our present number we give a view of the new Town-hall, which occupies a position between the University and the Houses of Parliament, both also new erections. The illustration is taken from a drawing forming part of the Album presented by the city of Vienna to the Grand Duchess Gisela at her marriage.

The construction of a new Town-hall had been long planned, and the project had to undergo many changes before its execution was finally resolved upon. The growth of Vienna had made it apparent that the old Rathhaus, situate in the Wipplinger Strasse, and dating from the fourteenth century, although repeatedly altered and enlarged, was too small at a time even when no one had the remotest idea of the enormous increase of the city, both in size and number of inhabitants, that would occur. This growth has taken place within the last quarter of a century; and in the plans for enlarging the city provision was made for a new Town-hall. Twice had sites been fixed upon, and twice they had to be abandoned because they were not large enough for the yearly increasing requirements; the principle having been originally laid down that every branch of the municipality should be united under one roof. It need not be explained how great the difficulties were that in consequence presented themselves to the architect; waste of space for lobbies, staircases, courts, &c., was unavoidable; and even the richest fancy of the artist and a style of architecture permitting of the greatest variation cannot prevent the monotony of long fronte.

The international competition invited in 1868 resulted in eighty-five designs being sent in from Austria, France, Germany, and Italy. Eight of them received prizes, three of them first prizes: those of Friedrich Schmidt, of Vienna; Baudry, of Paris; and Chandon & Lambert, of Paris. The first-named architect was selected to carry out his design.

Friedrich Schmidt, looked upon in Germany as the first master of Gothic architecture of our age, was born in 1825, in the village of Frickenhofen, in the Jaxt district of the kingdom of Würtemberg. He received his technical training in the Polytechnikum of Stuttgart, and was afterwards apprenticed as a mason to Zwirner, of Cologne. In 1848 he was made a master stone-mason (*Steinmetzmeister*), and eight years later passed his examinations as architect (*Baumeister*). In 1857 he was appointed Professor at the Academy of Milan, and, Lombardy being ceded to Italy, transferred in like capacity to the Academy of Vienna. After the death of Leopold Ernst, he was called to fill the latter's post of architect of the cathedral (*Dombaumeister*). At present Herr Schmidt is also Rector of the Vienna Academy of Arts. His works are extremely numerous. Besides the restoration of St. Stephen's (including the partial rebuilding of the tower), which he brought to its completion, he is the architect of most of the new churches of Vienna, such as the Church of the Lazarists, St. Margarethe, Brigittenau, and Fünfhausen. The plans for restoring the castles of Vajda Hunyad in Transylvania and Karlstein in Bohemia are also by him.

The Vienna Rathhaus, which was commenced as early as 1872, forms a parallelogram 505 ft. long and 407 ft. broad, and occupies an area of 205,535 square feet (nearly five acres). The space inclosed by the four façades is divided by two larger and four smaller blocks into seven courts, of which the inner one extends in a length of 260 ft. and a breadth of 115 ft. throughout the entire depth of the interior space, while both to the right and left are placed three courts of various sizes. The style of the building is Gothic, with a leaning towards that development which Gothic architecture presents in Upper Italy. All the blocks have five stories, ground-floor, raised ground-floor, entresol, principal story, upper story; in the principal façade the two ground stories are combined into one by an arcade. The distribution of the disposable space is such that in the lower stories are located the various offices most used by the public, while the principal floor contains the banqueting and other public halls, with refreshment-rooms, as well as the meeting-halls of the town council and the executive. The upper story is occupied by the museum of arms of the city, the archives, &c. The principal staircases are in the centre blocks.

The centre of the building projects from the front by a second row of arcades, and is raised upon a flight of fourteen steps. The tower, 351 ft. high, juts out further from the middle part. Passing through the arcades, a vaulted hall of 112 ft. long and 36 ft. wide is entered. Remarkable for their size are also the banqueting-hall, of an area of 11,645 square feet, and 44 ft. high, with an open loggia along its whole length, and a smaller room in the tower; and the great meeting-hall of the town council, of an area of 3,714 square feet, extending through two stories, with galleries on three sides.

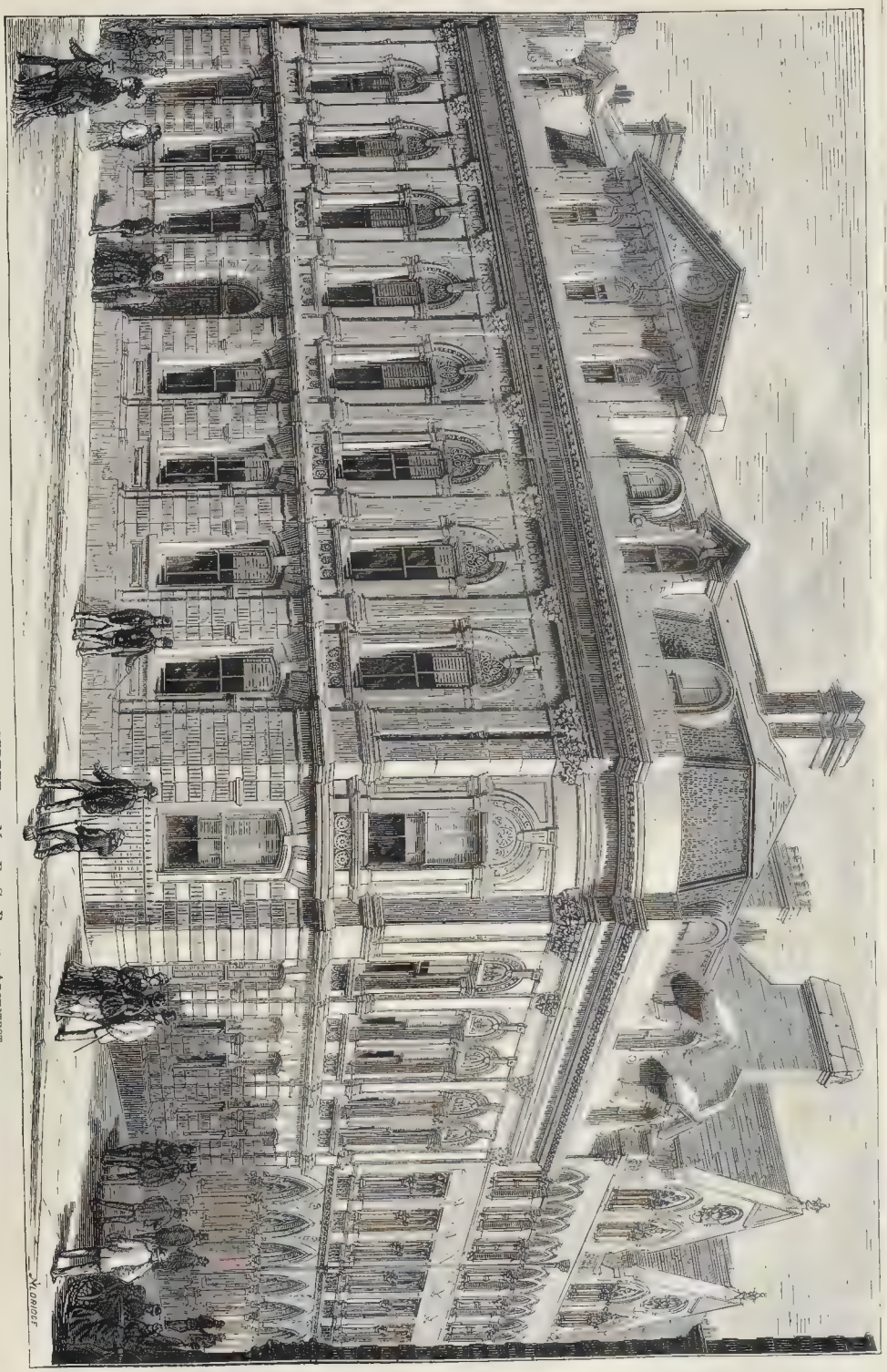
All the outside façades are erected in freestone, those of the courts, from the entresol upwards, in brick with terra-cotta ornaments. All the roofs and ceilings, with the exception of those of the halls and corridors, which are spanned by groined vaulting, are of iron.

It is estimated that it will take till 1882 to complete the new building; the calculated cost being eight and a half million florins (850,000*l.*).

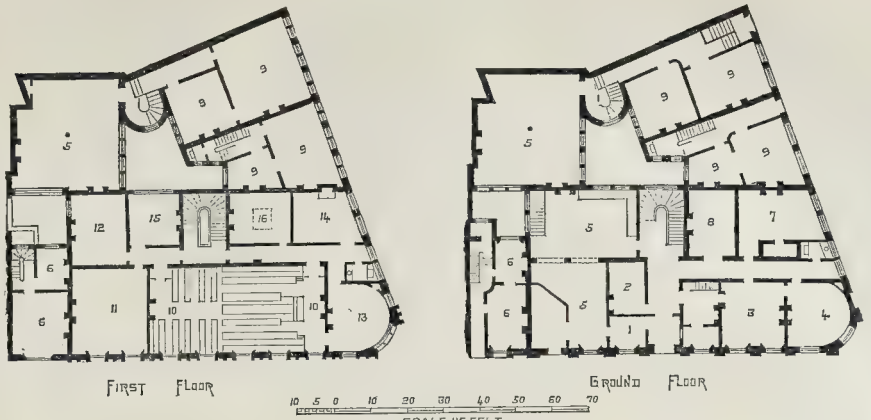
Japanese Competition with England.—The *Birmingham Post* publishes an extract from a letter received by a large manufacturing house in Birmingham from its agent in Japan. The writer says:—"The Japanese are now making a number of articles which I formerly purchased from you, and at prices beyond the possibility of European competition. In fact, quite a number of different classes of merchandise are being made in this country, and Europeans are obliged to discontinue importing in consequence. This may appear somewhat strange to you; nevertheless, it is a fact. Bear in mind, Asiatics live as no other races can, and upon food which would not sustain a European house-dog. Frugal as badgers, industrious as bees, they undersell every labour market which they enter, and outdo every civilised artisan at his own trade. Any one who sees a Japanese carpenter at work, with his toes for a vice, and his thighs and stomach for a bench, has seen tools well used, and goods equal to European turned out. They will, in fact, become formidable rivals of all kinds of Western manufactures. The Japanese are always ready to learn, and to outvie everything that the West does, and this they do with less food, less air, less clothing, and less comfort than any civilised workman."



THE NEW TOWN-HALL, VIENNA.—Herr Friedrich Schmidt, Architect.



THE LONDON MISSION HOUSE, NEW BROAD STREET.—MR. E. C. ROBINS, ARCHITECT.



Scale, 30 ft. to the inch.

1. Porter.
2. Waiting-room.
3. General office.
4. Home secretary.
5. Warehouse.
6. House adjoining.
7. Accountant's office.
8. Store-room.
9. Office.
10. Board-room.
11. Committee-room.
12. Tea-room.
13. Foreign secretary.
14. Foreign clerks' office.
15. Travelling secretary.
16. Lavatory.

THE LONDON MISSION HOUSE, NEW BROAD STREET.—*Plans.*

THE LONDON MISSION HOUSE.

SOME forty years ago the London Missionary Society instructed the late Sir William Tite to prepare plans for the offices of the Society, upon an irregular site, at the corner of Blomfield-street and New Broad-street. Accordingly, a rectangular block of buildings was erected by him, with an Italian façade towards Blomfield-street. The surplus land was enclosed with railings, a museum was placed in the midst of the back land, and offices for the Peace Society were afterwards added at the south-east corner, with a front towards New Broad-street.

This accommodation becoming too limited for the growing importance of the Society's operations, it was recently determined to increase it, and at the same time to utilise the vacant portions of the site by the erection of office buildings.

By the advice of its present architect, Mr. E. C. Robins, energetically supported by Mr. G. F. White, it was eventually determined to clear the site of the existing buildings, excepting the main block facing Blomfield-street, which it was decided to raise by an additional story, and to extend southwards to the boundary of the site. This decision, involving the removal of the old museum building, and the premises occupied by the Peace Society, the former was transferred to the upper floor of the main building, and the latter was accommodated in the new offices proposed to be built. It was further agreed that the main building, or Mission House proper, should be designed in a similar style to that employed by Sir William Tite, but that the office buildings should be made distinct by the adoption of a different style.

The perspective view which we give exhibits the southern and western façades of the combined buildings as designed and executed, except so far as questions of "light and air" (which subsequently arose, and ended adversely to the Society), prevented their being fully carried out. Thus the upper story of the office buildings had to be set back, and the gables omitted.

The plans of the ground and first floor of the completed buildings, appended, will sufficiently explain the additions and improvements made, which have cost upwards of 12,000*l.*

Mr. Brass was the builder, and Mr. Woodley the clerk of works. The fittings of the Board-room were executed by Messrs. Collinson & Lock.

The very interesting museum, accumulated during a long course of years by the agents of the Society in all lands, is unique of its kind, and has been carefully arranged in the new cases provided for it, under the direction of the versatile foreign secretary, Dr. Mullens.

The Blue Bricks, used in the New Dock in the Thames, recently described by us, were supplied by Mr. Hamblet, of West Bromwich.

ANCIENT BUILDINGS:

WHAT PRINCIPLES SHOULD GOVERN THEIR RESTORATION OR THEIR PRESERVATION AS MEMORIALS?*

MOST ancient buildings are common property; it is, therefore, useful for us to know its value, the extent of our rights in it, whether it can be improved, and by what acts or neglect of ours it can be deteriorated or destroyed.

When I say that ancient buildings are common property, I use the words in a double sense. They are not only open books on a grand scale which force their lessons on us, and are our property in the sense in which Emerson speaks of a landscape,—"The fields may be farmer Hodge's, but the landscape belongs to him who can appreciate it"; but they very generally are common property in the sense that the public have common rights in them. Many of our ancient buildings are public buildings, and are exempt from taxation. Many we are taxed to keep up, and the mansions of the great are not taxed upon the interest of their cost, but upon their letting value (a mere trifle), it being considered that their magnificence is a public benefit.

Let us consider, first, the value of ancient buildings:—

The plainest are storehouses of many arts and sciences. If properly studied they tell us what foundations, what materials, what cements, what methods of construction, will resist those constant forces of nature that will eventually level them with the dust. There is not a crumbling stone that is not fraught with instruction, even if it be only the evidence of the stone's unfitness for its place. And that you should not think these advantages frivolous, I may tell you that the present Building Act of London, in fixing the ratio of thickness to height in a wall, has been guided by a wall now standing, and built 1,800 years ago, at Tivoli, for the Emperor Hadrian. As far as the art of construction is concerned, the buildings of the thirteenth century, and in fact of the whole Gothic period, have never been surpassed in invention, daring, and subtlety, even if they have been equalled by the engineering triumphs of our own day. But in addition to the science and handicraft, there is generally enshrined in ancient buildings the fine arts of architecture, carving, and sculpture, and occasionally that of painting, and as the science exercises our intellect, so does the fine art excite our emotion.

Besides these abstractions, I may say that another spirit animated the handicraftsmen of Mediæval times. What we call art pervaded every craft as electricity does the air. I do not suppose that every craftsman was an original designer; on the contrary, I suppose this gift was confined to very few, and these usually became the masters; but probably every man knew by rote a certain number of stock patterns and stock shapes; probably the pure designer, who is no handicraftsman, and the pure workman who is no artist, but makes things "without form and void," did not exist. Every craftsman learnt more or less to draw or to model, and there being but one form of ornament in fashion at each particular time and place, the mousetrap man ornamented his trap as well as made it; the master mason carved the stone image as well as cut the stone; the master carpenter carved* the wooden image as well as the timber; the master tile-maker designed the tiles as well as made them; the master mosaic-worker found the design as well as put up the work; and this conjunction of artistic and mechanical skill in the same person only died out gradually. In Scotland, at least, it existed in the middle of the last century. The carpenter's apprentice there carved a chest as his masterpiece (the marriage-chest in which the bride brought to her husband those clothes the thread for which had earned her the name of spinster). The old plumbers' shops of London that I recollect in my childhood were adorned with the masterpieces of their master or their former master—ornamental cistern-fronts, leaden vases, and leaden statues.

The nobler buildings, and particularly the more important cathedrals and churches, are, like the Talmud, collections of the arts and sciences, the laws and history, the pathos and humour, of many centuries. Many cathedrals are enriched with sculpture or mosaic, not only representing Scripture history from the Creation to the end of the New Testament, and scenes from the lives of the saints and martyrs, but Old-

* By Mr. George Aitchison. Read at the Aberdeen Social Science Congress.

* From the Old Testament:—Isaiah xliv. 10, "Who hath formed a god, or molten a graven image that is profitable for nothing?" Verse 12: "The smith with the tongs both worketh in the coals and fashioneth it with hammers, and worketh it with the strength of his arms." Verse 13: "The carpenter stretcheth out his rule; he marketh it out with a line; he fitteth it with planes, and he marketh it out with the compass, and maketh it after the figure of a man, according to the beauty of a man."

From "Thousand and One Nights":—"The old woman answered when she understood the affair, "Know, O my mistress, that the return of the Khaleefeh is near; *but I will send to a carpenter and desire him to make a wooden image of a corpse*, and they shall dig for it a grave," &c.—"*Ghanim the Distracted Slave of Love*," Lane's translation.

"On the morrow, the Wezeer caused a whitewasher to be brought, and a painter, and an excellent goldsmith; and having provided them with all the implements that they required, introduced them into the garden, and ordered them to whitewash that pavilion, and to decorate it with various kinds of paintings; after which he gave orders to bring the gold, and the ultramarine pigment, and said to the painter, 'Delineate at the upper end of this saloon the figure of a fowler as though he had set his snare, and a female pigeon had fallen into it, and had become entangled in it by her bill.'"—*Taj-el Melook and the Lady Duniya*," Lane's translation.

World stories, "the Anthropophagi, and men whose heads do grow beneath their shoulders," and probably illustrations from the lives and caricatures of the adventures of some of the most noticeable contemporaries of the artists. We know at least that the very bullocks that drew the stone were represented in one of the French cathedrals.

Few of us are grateful enough for the benefits that the sublime art of architecture has conferred on us. The whole literature of Europe and of Asia is tinged with the reflections of architectural magnificence, and we hardly realise what splendid passages of eloquence, what deathless metaphors of the poets, owe their existence to architecture; but beyond this there are new sciences springing up every day, to whose progress ancient buildings are absolutely necessary. We are trying to make a natural history of man, to construct a science of life, and of the soul,—every chipped flint or sharpened bone man used when he was a troglodite,—every polished celt and bit of wickerwork he used in a more advanced state,—every broken potsherd that he had pitted with his fingers or scored with his nails,—is seized with avidity, and hoarded by private students, or exposed in public museums. To some minds it is as interesting to elucidate the thoughts of more civilised man from his works, as to rake in a midden mound; but the monograph of each student will eventually be woven into a perfect piece, that will represent man from his earliest to his latest development. There is a comparative architecture, comparative sculpture, comparative costume, as well as comparative anatomy, and none can tell what help may be given to history, to folklore, to philology, to the mysterious traces of race,* to a thousand future sciences that at present we do not even dream of, by the preservation of ancient buildings, ancient carving, and ancient sculpture, but it is necessary that these records should not be tampered with.

At any rate, we should regard all architecture in the same light as Dr. Deutsch did all literature. "We look upon all literature, religious, legal, and otherwise, whensoever and whereso-ever produced, as part and parcel of humanity. We in a manner feel a kind of responsibility for it. We seek to understand the phase of culture which begot these items of our inheritance, the spirit that moves upon their face. And while we bury that which is dead in them, we rejoice in that which lives in them. We enrich our stores of knowledge from them, we are stirred by their poetry, we are moved to high and holy thoughts when they touch the Divine chord in hearts."

Having pointed out some of the advantages which ancient buildings offer us, the next point is to consider their restoration or preservation; as far as the latter is concerned, I should unhesitatingly say preserve as many as you can, and where there is only a chance of preserving one out of many, preserve the best, but in the case of choice you want to consult many experts,—at least a painter, an architect, and an antiquary, and the architect must be one who appreciates as well as understands the work of the age or ages to which the buildings belong.

I have often been tempted to ask myself whether Englishmen of the present day are the most superb or the most insensible of mankind. I see the houses of the poets and philosophers, the houses of Thompson, of Pope, of Milton, and of Newton, the stately mansions and the churches of Wren that gave character to London, pulled down without a protest, to make way for a pot-house or a usurer's parlour. I wonder whether it is through the belief in a more splendid destiny: "England has many a worthier son than he," or whether it is through that crass ignorance and brutality which make men like the "beasts that perish." Be that as it may, many a fine old church or mansion might be saved by using it as a museum, a library, a warehouse, a cab shelter, or a stable. In France how many churches have been preserved by being turned into storehouses or markets!

Although the principles that should govern the treatment of our property are the same, yet the application of them is sometimes rendered difficult by circumstances. Our property consists of cathedrals, churches, castles, and hospitals; of town-halls and monuments; of colleges, conventual buildings, and mansions; of granges, cottages, and barns. We can hardly ask the occupants of some of these to keep them untouched, particularly if they are unhealthy, or so inconvenient as to be unfit for their purpose; but I think we may ask those who are the possessors of very fine examples to spare, and not to spoil them. Let us take a fanciful example. Suppose the Parthenon had been turned into a gentleman's house, I think we might ask him not to remove a column, to make a more convenient carriage-entrance, and not to cut holes in the panathenaic frieze for garret windows. As to the improvement of our property, we can keep it wind and water tight; we can tile, slate, lead, zinc, or cement it; we can glaze its windows; and we may reinstate rotten or ruinous plain-work with new marble, stone, brick, or woodwork. We can put in ties, and arrest the decay of carving and sculpture by solution of silica; we may even restore in this fashion. We may remove a wall or a partition; we may cut down plastering that hides a sculptured face. We may unstop a door or a window; we may scrape whitewash out of carving; we may replace a plain shaft of a column. If we care to do it, we may replace mouldings that have partly perished, provided we have a bit of the original, with the chisel-marks upon it; we may even replace lost features where there is no doubt of their absolute similarity to those which remain. We may restore a battlement, a buttress, a window, a piece of panelling, but we can never replace sculpture, carving, or a lost feature, except in the case of our being absolutely certain that it was an exact repetition of that which remains.

I say we may restore these things if we care to do so; for the very lichens, weather stains, and markings of Time's finger, give a venerable hoariness to old buildings which our new patching must necessarily spoil. The look of newness unfits a building for the painter, and robs it of that poetic tinge that great antiquity bestows. How can we deteriorate or destroy? We can rework mouldings; we can scrape carving or retouch sculpture; we can sometimes spoil the whole design by a little addition or by the alteration of a feature; and we can replace all the features, and all the carving and sculpture, with nineteenth-century work in imitation of old, and the nearer we can imitate the original work the greater is our misdoing, as that bad money is the worst that most readily resembles the good.

The architectural tinkers and tailors have less to answer for than the highly-skilled Mediævalists of the present day; the work of the former has a kind of twang about it that could mystify no good archæologist, but he might be hopelessly confused or misled by the latter. Twenty years ago young hobnailed masons by the legion were employed in cutting out the decayed or decaying sculpture of Rouen Cathedral, and if the one I spoke to was to be believed he was introducing his own designs. Had these been fine and original sculpture we might have set the gain against the loss. Had he even represented the "Apostles in their swallow-tailed coats" future ages might have admired the beauty of our dress; but what present or future beholder could get either pleasure or profit from the imitation work of a butcher? Most of us have seen dozens of churches from which every flavour of antiquity has evaporated under the hands of the restorer, and at a greater cost, too, than would have built a new church and left the old one a beautiful ruin. I once saw a little sea-side church the body of which had been hopelessly ruined; the tower towards the sea was of most picturesque outline, with sloping buttresses yards wide at the bottom; a cresset tower at one angle rising above the square-topped tower, the face of which was almost plain, with mere pigeon-holes for light, and the small double belfry window nestled up under a narrow string-course below the battlements; the restorer had put a great circular cusped window in its middle, making it look like a man with a set of grinning teeth in his stomach.

I have pointed out to you the value that old art has now, and what it may have for the future, and I will now point out how impossible it is to reproduce it. If any one has the misfortune to lose a leg or an eye, he can have it restored by a wooden leg or a glass eye; but were surgeons like architectural restorers they would persuade him to have two wooden legs or two glass eyes, for the sake of uniformity.

Whatever talent a man may have, however severely he may have studied, however he may have twisted his mind into a Mediæval attitude, he must remain a nineteenth-century man; he can neither give himself the influence and surroundings of another age, nor can he wholly divest himself of the influences of this; his schooling has been that of the nineteenth century; he must have heard of electricity, chemistry, geology, and the Eastern Question; he must have read *Punch* and the *Times*; he must have seen a rifle and an Armstrong gun, an omnibus, a policeman, an umbrella, and a meerschaum-pipe; he must have travelled on a steamboat and a railroad; he must have read printed books, received a telegram and a photograph. It would be tedious to recount the influences he has not felt, and the things he has not seen, but your knowledge will convince you that the seething thoughts and stirring actions of the thirteenth century are not those of the nineteenth. It is the very quintessence of bad taste and folly to destroy the invaluable records you have to get a colourable imitation of something that has been.

I am far from denying the use or the charm of such restorations in their proper place, but the fields for the exercise of this antiquarian knowledge, and this restoring talent, are the playhouse or the Crystal Palace. To show you that the very authors are aware of their anachronisms, you will find that the interior perspectives of their restored buildings are not filled with persons of the present day, but with mailed knights, wimpled ladies, ragged villains, sturdy yeomen, stout burgesses, and cowled monks. There are other evils, too, which this so-called restoration entails. Almost every ancient building that is still used for its original purpose is a museum of successive phases of art. You may see, for instance, in one church a Norman nave, a thirteenth-century aisle, a Tudor chancel, an Elizabethan pulpit, an altar of "neat Ionick work," pews with the tops carved by Grinling Gibbons, and scrolled ironwork of the seventeenth century, a font and monuments after the style of Roubiliac. If you put this into the hands of a thirteenth-century restorer, he will restore all the subsequent work off the face of the earth, and you will get a brand new nineteenth-century thirteenth-century church.

In any other century but this, if you wanted your church enlarged, restored, and beautified, it would have been done in this wise,—the main features would have been kept, and the architect, the carver, and the sculptor would have given their best work, and of their time too, to the new, and you would have found, had you lived in that century, that this new work was more appropriate and more beautiful than the old.

You will probably ask why you cannot get the same thing now. The reason is simple. You do not want it. There is nothing beautiful that any of you really care for. You can get, however, real nineteenth-century architecture if you go rightly about it. Go to an engineer: tell him what you want altered and what enlarged; tell him you do not care what you spend to make the place convenient, solid, and lasting, but that you will not lay out a shilling on ornament, as you would tell him if he were building you a shop, a house, or a warehouse, and you will get a true piece of nineteenth-century architecture.

It would be too long and beside the purpose to enter on the discussion of why there is no real architecture now,—in fact, no art organised to an end anywhere in the civilised world. The painters, architects, and sculptors seem as clever, as well-informed, as industrious, and as energetic as the doctors, the engineers, or the men of science. The several artists are almost as accomplished in their several arts as the Mediævals, the Greeks, or the Cinque-centists; but all their skill seems to end in imitation or in isolated effort. Victor Hugo said it was the invention of printing that killed architecture; and not simple architecture alone, but where it was enriched with all the arts the sculptor, the painter, the workers in glass, metal, and mosaic had to bestow; but, it seems to me, that it is due to the turning of men's minds to physical science rather than to beauty. There was a regular rhythmic ebb and flow of all the arts through Egypt, Greece, Rome, and Byzantium, interrupted by the Arabic and Gothic, renewed by the Renaissance in Italy, and passing thereon through the Western world, dying out again in this century. The pirate and robber hordes of the North and East, converted to different religions, threw their burning energies into raising fit temples for the faiths they had embraced, and in a few short centuries raised from the same or cognate models two different arts only comparable to each other by their daring, their invention, their originality, and their sublimity, one of which at least utterly withered

* A sort of curious zigzag on an old Persian carpet was pointed out to me the other day as an evidence of Tartar predominance, as the Tartars always introduced this cloud form into their work.

away and died as the old arts revived, and now we have nothing left but engineering or the application of science to building without beauty.

What you are compassing by the so-called restoration of ancient buildings is the destruction of the records which are committed to your safe-keeping, and, in my opinion, your are destroying them with the same right that you have to destroy one of Shakspeare's plays, or a book of the Bible. You, too, are driving the best architects and carvers of the day into "the vile herd of imitators." And you are getting something that you only pretend to like, for no one can really like anything that is opposed to every instinct he has. Good construction, good proportion, and simplicity can be had if you only want them; and if you could get to love anything beautiful, you might have that as an ornament. Even if your love was not very high, you might have the honesty to show it. There would be more hope in seeing a house ornamented with pots of beer than with crockets, cusps, and gurgoyles.

The imitated art of any other period can never be the real art of this. It can never touch those chords in *you* which it touched in those for whom it was created. The artist, be he poet, painter, architect, or sculptor, must have the hand to shape or the voice to utter those feelings that exist within your breasts. If you passionately love the beautiful things in nature that you see, I believe you will have the artists who will create things for you that are beautiful. It must not only be a nineteenth-century man, but a man of this very generation appealing to men of this generation. We cannot possibly believe that if the Greeks had not loved beauty, and been accurate judges of the human form, Greek artists could have carved those masterpieces of the chisel; and if there is no love for beauty in the people, there will be no artists.

Wealth alone will not purchase art, though you cannot have it without; there must be that love and honour for its producers that is instinctively given to the Faradays, the Huxleys, the Tyndalls, and the Spencers; but a pretended or faint liking will not produce it. This year there was at the Royal Academy a piece of sculpture that in former days and amongst other nations might have procured its author a triumphal procession, but it merely produced a few notices in the newspapers.

You have got in your ancient buildings real art which the age that erected them loved; it would be reasonable, though it might be wrong, to let them be destroyed if you despised them; but as you do pretend to love them, keep them free from the hand of the worst Vandal the world has yet seen—the restorer.

NOTES ON TIMBER.

IT is exceedingly probable that timber was the principal, if it was not the sole, material used in early periods for the construction of dwelling-places. David, we are told, built himself a house of cedar, and it was the ambition of many of the early kings to embellish their palaces with rare and costly woods. Solomon covered his temple with beams and boards of cedar. "All was cedar, there was no stone seen,"—and the ships of the mighty Egyptian conqueror Sesostris were constructed of this celebrated wood. It was in those times that buildings were erected to last, and to defy time, for the exceeding bitterness of the wood is such that no insect whatever will touch it. In the temple of Apollo, at Utica, a beam was found undecayed after the lapse of 2,000 years. The cedar of Lebanon is now, however, a plant of comparative rarity, and the interminable tracts of pines in the forests of Europe and North America alone furnish the building timber of modern use. Of the pines there exist above twenty distinct species, and they are mostly, but not all, evergreens. The various species of fir come under the head of pines.

The largest trees are found in California (North America), and many writers have furnished descriptions of their enormous size. Although those of Europe are not so large, the lofty and perfectly straight trees of Norway spruce have long been celebrated, and they present a very striking appearance seen as the coast of that rugged country is approached.

> "Pines on the coast, through mists their tops uprear,
> That like to leaning masts of stranded ships appear."

It was from the pines of the Scandinavian mountains that the Norwegians and the Danes built their first ships, and the loftiest trees have since that time furnished masts for many an admiral. Much argument has been used as to whether the pine is indigenous to England, but it is conclusively shown that the ancient forests of Brittany were largely composed of it, as specimens of its roots have been unearthed from under the old Roman roads, doubtless preserved by the turpentine they contained.

The centre of a growing tree is occupied by the pithwood, which, as the tree matures, gradually closes, and becomes perfect wood, for then its duty ceases; next to the pith is situated the heartwood, and it is this alone which is of service to the builder; a belt of more recent growth surrounds the heartwood, which is called the alburnum or sapwood: this, in time, matures, and becomes heartwood; again, there is another belt, termed the inner bark; and, lastly, the tree is surrounded by the outer bark, from the appearance of which the quality or nature of the inner wood may be readily judged. In the case of a tree grown too quickly, it will present a coarse, rugged, appearance, corresponding with the fibres of the wood.

There exists communication between the pith and the bark, called the medullary rays; these radiate from the centre of the pith to the covering or bark, and their hardness and compactness afford sufficient resistance to keep open a passage for the sap to the interior of the tree. Pine trees add their wood externally,—the inner bark is the younger and the pithwood the older portion. Then leaves act as the feeders of a tree, and its increase in size is much dependent on them,—for the sap finding its way through the leaves, and becoming affected by the influence of light and atmosphere, contributes in the change greatly to its nourishment, and almost a third part of the carbon, of which the wood is largely composed, is inhaled by its leaves from the atmosphere. The age of a tree is sometimes reckoned by counting the number of its rings, termed, in consequence, annular rings, but this system of arriving at its age is not altogether reliable, as, in a varying season, its growth may be so augmented that it will add in one year several rings,—but the wood thus quickly grown is of inferior quality. In some species, such as Memel fir and pitch-pine, the annular rings are distinctly marked. The period at which the alburnum or sapwood matures into heartwood cannot be accurately arrived at, and, indeed, no perceptible change can be discovered at all, for while one layer is seen perfected, the next one to it is sapwood. Buffon and Du Hamel, two French philosophers, have furnished much information respecting the physiology of trees, and, by the aid of their experiments, was discovered the sympathy which exists between the branches and the roots growing from the same side: they found that when the branches displayed symptoms of decay the corresponding roots were invariably diseased. Fir thrives best in a climate of low temperature, and a long cold winter followed by a short hot summer, is most favourable to the production of the best fir-wood. The Scotch fir is, in most respects, similar to the redwood imported from the north of Europe, but the quality of the wood is inferior,—this probably arises from the difference in climate; the soil in Scotland being too rich for it may have something to do with its inferiority. So much does a cold situation influence the growth of the fir, that trees grown on the northern side of a hill are superior to those grown on the southern side, and those with a northern aspect better than those with a southern one. It is not an unusual thing to see the northern half of a common pine well grown, red, and hard, and the southern half, although considerably thicker from the pith to the bark, white and spongy. The heart of a tree is never in its centre, but always nearer to the northern side, and that because the wood being better grown on that side the annular rings are finer. The best part of a fir is that which is nearest to its roots, and, when a use can be discovered to which their size and shape are favourable, the roots themselves may be of service. Nature is an excellent husbandman, and trees planted by it thrive the best. Pines like a light soil, but it is not the surface so much as the under soil which is of primary importance. It is remarkable when two qualities of soil are present to what extent the roots will push themselves into the one most congenial to their nature. Pines thrive but indifferently on strong clayey land; on rich loams they mature rapidly, but the wood is inferior, and the trees contain an undue proportion of sapwood,—a light soil is preferable. There are two diseases to which converted timber is liable, and they are termed the common rot and the dry rot: the former is a malady produced by the variations of the climate acting on its surface and destroying its fibres by external action; dry rot in timber is caused by its being placed in a situation which is warm, moist, and close, the effect being to destroy its fibres by an internal action,—the want of proper circulation and the presence of damp are causes which effect the juices to putrefy, by which means the fibres of the wood are reduced to dust, and hence the term of dry-rot. Like the human frame, a tree when growing is subject to accident; if one of its branches be broken off, the injured and exposed limb becomes decayed, or if sodden with the rains before the wound is covered by the new growth of wood, rottenness will infect the roots which correspond to the injured branch, and presently it will decline, and in a few years become a tree

> "Dry and dead,
> Still clad with reliques of its trophies old,
> Lifting to Heaven its aged, hoary head,
> Whose foot on earth hath got but feeble hold."

Logs exposed to the action of sea-water are much injured by the ravages of an animal called the *Limnoria terebrans*, and so numerously will these small but destructive animals congregate on one log, that piles have been reduced from 10 inches to 7 inches square within the space of four years. The protection used is a sheathing of copper, or by submitting the logs to the process of creosoting. Wood is strong in ratio to its weight, and, as the heaviest and densest will prove the most durable, this should be selected for weight-carrying purposes, such as the ties of bridges, where the two qualities of strength and durability are desirable. Strong-baited wood weighs the heaviest, and, as it contains more resin than that of a finer grain, is especially adapted for a position which has to contend with any degree of dampness.

Timber changes but little in the process of seasoning in the direction of its length, but it shrinks considerably in the direction of its thickness. Much economy may be practised, and great waste prevented, by builders having sheds of sufficient extent; the ventilation should be whole, and without partial draught, which might affect the ends or any portion of the drying wood, more than another; and, as timber rots so much more rapidly by the ends than by the sides, the roof should hang well over to protect them. The advantages of shedding wood are very evident, for, left exposed at one time to the scorching heat of a noonday sun, at another time to the effect of drenching rains, and in the winter split, shaken, and riven, by the freezing of the water which has insinuated itself into the pores, it is but short work to destroy it. Although the question of price forms no part of the object of this article, it may be pointed out that much economy might be practised by the more general introduction of whitewood for internal joinery work. The whitewood shipped in such abundant quantities from Riga and St. Petersburg is superior to those common qualities of redwood fir and yellow pine so frequently introduced; it is easily worked, it readily unites with glue, and is capable of bearing a high state of finish. The enormous waste which was caused in the forests of Sweden and Norway by the indiscriminate cutting down of young trees, has been to a great extent stopped by the enactment of laws forbidding those being felled which are under a given size. A history of the lives of those men who, penetrating the forests of Sweden, remain at their vocation through the long and dreary winter, hewing the trees in readiness for the spring, which is to render the rivers navigable for their rafts, would be most interesting,—nor should we expect to hear that the hard-toiling peasants possess the drunken and undisciplined habits which characterise the North American lumberman.

The old system of conveying the trees from the forests of Sweden and Norway to the saw-mills was, after they had been sledged or trucked to the nearest river, to affix the owner's mark upon the logs, and then to consign them to the swift-running stream, men being stationed at the bends of the river to liberate any which might fasten themselves in the banks. In their course they were shot over the various cataracts. At the falls of Trollhætta, in Sweden,

> "Where with loud voice the power of water shakes
> The leafy wood,"

the force with which the logs were hurled over the rapids was so great that they were frequently so split and rent as to entirely spoil them; they

are now, however, sent by the canal, which passes by the falls, rafted or in lighters to their destination. When the system of casting the logs loose upon the stream was in vogue, in certain places they were stopped and examined, each owner taking those marked as belonging to him, and allowing his neighbour's to pursue its way, robbery being punished by very stringent laws.

An extensive business is carried on in North America by the tapping of pine-trees for turpentine, and those who engage their capital in this occupation are called "turpentine farmers." The incisions are made in the trees about the middle of March, and the flow of turpentine continues until about the end of October; the trees are afterwards felled and converted into logs, and shipped to this and to other countries, but the process of tapping very considerably weakens the wood. The young shoots of the common fir are edible, and, stripped of their leaves when they first appear, and properly prepared, furnish an excellent salad.

The inhabitants of Lapland convert the inner bark of the tree into a kind of bread: it is first thoroughly dried, afterwards ground into a fine dust, and then, having been kneaded into thin cakes, is baked in the usual manner; these cakes, however, at their best, are but very insipid. Nature has conferred upon mankind few gifts more precious, or more appreciable, than that of timber. An unwooded country is bleak, uninteresting, and most desolate.

The ancient Britons, the Gauls, and the Germans, in that state of society which Julius Cæsar describes to us in his histories, lived in the recesses of their forests, and the trees supplied the main wants of these rude people.

The landowner who neglects to plant the oak, or the elm, as a legacy for his children's children, should bear in mind the exhortation of the dying Scotch laird to his son, "Be aye sticking in a tree, Jock, it will be growing whilst you are sleeping."

HENRY SALES.

ARE ART COMPETITIONS FAVOURABLE TO ART PROGRESS?

In the Art Department of the Aberdeen Congress, Mr. J. Forbes Robertson, of the *Art Journal*, who was introduced by the chairman as a distinguished native of Aberdeen, opened the question,—Are Art Competitions favourable or unfavourable to Art Progress? He began by remarking that competition in its grosser, more imminent, and strongly-pronounced phases, when it assumes the form of life-rivalry and pretension, and becomes a perpetually-sustained contest for leave to live, is a law of the universe, and pervades the whole of cosmical life. He then proceeded to say that examinations, whether written or *viva voce*, before Civil Service authorities, bring out no doubt the best book-learned men; but in the case of a diplomatist, a general, a ruler, or a magistrate of any kind, it is not so much profound erudition that is wanted as an instinctive knowledge of men, and how to manage them. No familiarity with languages, either ancient or modern, no mastery of higher mathematics, will avail that man who, when called on, is not quick to see the supreme moment of a crisis, and whose soul cannot rise to its height. One may carry everything before him in a Civil Service competition, and yet when called upon for the prompt and practical application of all he knows,—when brought face to face with the Titans of circumstances, and compelled to show his mettle in an hour pregnant with the destinies of men and mayhap of nations, some defect in his nature may make itself painfully manifest, and blast in a moment the reputation of a life. In a fine-art competition, on the other hand, there was no necessity for the judges to argue from the intellectual to the moral, or, at all events, to decide as if they did so. There were no unknown quantities to be guessed at, no complexity of conditions to be cleared up. The painter, the sculptor, the architect, the musician, or the poet is comparatively out of the world; his field of operations is confined to the sacred area of his own study, and when he enters on the peaceful strife of competition, there can be no mistake as to his merits, if his judges have any right to their office. The facility of comparing and pronouncing on works of art ought to be conditioned by the capacity and character of the judges. Excellence in any branch of art presupposes a life's devotion; and one to be a judge of such excellence must not only have been born with the art-instinct, but his natural perceptions must have been quickened by travel, and his knowledge extended by much study. It would be at once perceived, therefore, that if a public competition in a great commercial city like Aberdeen, for a building, a statue, or a mural painting, take place, there cannot be very many men in the city capable of pronouncing on the respective merits of the various works. The ten righteous men—that is, the ten cultured men—who have probably hitherto saved that city from all sorts of blunders and mishaps—may be outvoted by a set of well-meaning busy-bodies, who, because they have been successful in trade, think they must necessarily be judges of art. These were the men who, in city corporations, cause fine-art competitions to end in *fiasco*. Within the walls of the Royal Academy of England one would expect to find immaculate judges; but, strange to say, not only are its doors shut against works of surpassing merit, but, in the grand biennial competition, the gold medal itself was not invariably given to the best picture. Individual predilections, keeping out of view altogether influences of another kind, play an important part. It was argued that in art competitions judges are too often unfairly influenced, that the effect on the unsuccessful competitors is painful to the emotional and almost disastrous to their moral nature, and that there is no compensation for a fruitless waste of imagination, of thought, labour, time, and money. Did we conclude then that art competitions are prejudicial to art progress? Far from it. We had seen the antiquity and universality of competition, and it was our duty to utilise and free from all unnecessary restrictions what is evidently a law of our nature. Having instanced several cases in the history of art in which competition had produced the best results, Mr. Robertson went on to say that he should probably be opposed in his view of the case by the old Roman adage, "De gustibus non est disputandum"; but, like many other old sayings, this contained only a partial truth, for all the variable elements of taste must bear a certain relation to those which are permanent, and which, by the general consensus of cultured men, have in all ages been recognised as the canons. Let all art contests be open and free—let the judges be the most cultured men within the city, whether they be poor or rich, and if an expert from afar, whose judgment in things æsthetic has received the imprimatur of public recognition be within reach, let not the circumstances of his being a stranger prove a bar to the acceptance of his services. Above all, let the interest of the citizens at large be enlisted—let the general community be educated up to feeling that they, too, have a stake in what concerns the adornment of their native city, and the art success of her children in the world. And while the works are on view, let the press devote a daily column to the expression of the people's opinion, and then we may rest fully assured that art competitions so conducted are beneficial to art progress.

Mr. E. M. Ward, R.A., congratulated Mr. Robertson on his eloquent, instructive, poetical, but yet strictly practical paper. It involved, however, so many considerations, that it was almost bewildering; in fact, it involved the very grave consideration, namely, the weakness of human nature; but there were certain reflections on the Royal Academy to which he must allude. He was not going to cry out "Long live Diana of the Ephesians;" but he must say a word in defence of that body. He remembered many years ago, when he was quite a youth, sending in a magnificent historical work in a competition, and it was refused. He said,—"Bribery and corruption." That happened every year at the Royal Academy. He perfectly agreed with Mr. Robertson that competition would be a fine thing if the judges could be depended on. On this subject a few practical experiences were worth a great deal of theory. Now, he remembered that when many of those immortal works by himself and other artists were executed in the Houses of Parliament, there was a tremendous row in the House, and people were very uneasy and uncomfortable at the idea that foreigners should come and see such abominable specimens of art. A committee was duly formed on which he thought there were the Lord Chancellor and others with great political names, but there was scarcely a man that knew anything at all about fresco, and some of them were not aware even that the colour required to be put on fresh, and the part finished in one day. They had to come to the artists themselves to learn something about fresco, and the whole thing ended in this,—that there was a great deal said on both sides of the matter. With regard to competition he was not quite sure that if the work was given to men of reputation,—men who had won their spurs,—it would not come to the same issue. It was a very curious thing, at all events, that almost all the men who carried out the works in the Houses of Parliament were men whose reputation stood very high before.

THE PROVISION OF ACCOMMODATION FOR THE LABOURING CLASSES.

This was one of the special subjects in the Health department of the Aberdeen Congress.

Dr. Hardwicke, late medical officer to the parish of Paddington, and now coroner for Central Middlesex, introduced the subject with an interesting paper, in which he described the condition of the dwellings of the working classes in the metropolis and in the large manufacturing districts in England, and the methods which had been adopted in his experience to improve them. He said it was well known that the population was increasing to a great extent, and that no adequate provision in the way of providing additional house-accommodation was being made, this neglect resulting in an amount of demoralisation that ought not and could not be tolerated. After fifteen years' experience and observation he had come to be of opinion that the best style of houses for the accommodation of the working classes was the block buildings which had been erected on the Continent, and particularly those which had been constructed at Guise, in France, by M. Godin.* His *familistere*, as it has been named, presented all the features that combined sanitary, educational, co-operative, and social advantages. The *familistere* consisted of two large buildings, five stories in height, and inclosing a court-yard covered with a glass roof. The court possessed many advantages and secured many purposes. It was paved with asphalte, and surrounded with corridors and galleries. It served as a playground for the children, a dancing-room, &c. It was well ventilated, and curiously enough, the temperature was cooler in summer and warmer in winter than the external atmosphere. The blocks were arranged in two rooms separately, or in suites of three or five rooms, with everything complete for a family. The watercloseets and urinals were situated at the corners of the block, and these as well as the court, corridors, and galleries were swept and kept thoroughly clean by women who were specially engaged for the purpose. The blocks accommodated from 700 to 800 persons. Bath-rooms with warm and cold water, washing and ironing rooms, smoking and cooking rooms, a restaurant, a library, and reading-room, &c., were provided in each block, and everything was conducted in the most quiet and orderly manner, and with much greater harmony and propriety than would be observed in the courts and closes in this country. An interesting and useful feature of the block was the establishment of an infant nursery, under the charge of a competent nurse, where children might be left during the day and taken away at night. There were also night schools for boys and girls, and co-operative shops have been established, the shareholders being the tenants of the blocks, and the profits going to maintain the female cleaners and nurses, as well as the doctor, who visited the block every morning. The rooms were let in suites of three or four at about 8s. per week, or in one single dormitory at 2s. per week. He contrasted this rate with the price paid for accommodation by the industrial classes in London, which was about 1d. per square yard per week, or equal to the rent paid in proportion to space for the best mansions in the metropolis. He then noticed various objections which had been stated against the block system, and argued that, on the whole, it was the best which had been devised, notwithstanding certain minor drawbacks. He said that a *familistere* could be erected in London at a cost of 10,000*l.*, each separate dwelling-house of three or four rooms costing about 100*l.* Ten per cent. interest on the capital would amount to about 1,000*l.* a year, but the block would actually bring in from 1,200*l.* to 1,300*l.* of rent. He deprecated the erection of private suburban dwellings for the working classes, chiefly on the ground that proper attention was not paid to sanitary matters in these dwellings, and also because

* A description of this building by Mr. Godwin, with Illustrations, will be found in the Transactions of the Social Science Association,—the Sheffield volume.

ey were too far removed from the centres of dustry, and difficult of access to tradesmen. e concluded this part of his paper by advocating ne erection in large towns of blocks of houses n the *familistere* principle. In regard to the rovíding of open spaces in towns he recom-ended that besides the acquirement of pleasure rounds and public parks in large cities, emeteries should be utilised as ornamental ecreation ground, with mortuaries for the recep-on of the dead, the latter being specially ecessary, as great hardship was often occasioned y corpses being kept for several days in small ooms in which families were living. He said ne clergy had always thrown the greatest bstacle in the way of opening the church-ards, which they seemed to claim as their xclusive property, and which they used for their wn private purposes.

Mr. William Botly agreed with Dr. Hardwicke hat the block system was the best, and suggested arious alterations as to the covering of the court, nd the position of the buildings. He said it vas high time that Parliament adopted measures or restricting the population from increasing eyond a certain number within given areas.

Mr. Baldwin Latham, Croydon, referred to the reat amount of infant mortality caused by over-rowding in towns, and recommended the erec-ion of houses in the suburbs for the working lasses, either in blocks or singly. He agreed vith Dr. Hardwicke as to the desirability of onverting the intra-mural churchyards into ecreation-grounds.

Mr. P. Esslemont, Aberdeen, remarked that he subject under consideration derived special ocal interest and importance from the fact that t present the citizens of Aberdeen were con-idering the question of providing dwelling-ouses for the working classes, and had in-ugurated the other day a company for the urpose of undertaking that work. He conceived hat the greatest objection to the block system vas that it would be considered as violating the atural independence of character inherent in Englishmen, more perhaps in Scotchmen, and ery particularly in Aberdonians. It would be onsidered inconsistent with the sacredness of he family relationship, with the divine institu-ion of the family, and with the feelings and nstincts of the industrial classes of this country. On the other hand, he agreed with Dr. Hard-wicke that it was not desirable to have the vorking classes living in the suburbs in detached ottages which were usually kept in a very un-anitary condition. On the whole, he considered hat the ordinary description of dwelling-houses to be found in Aberdeen and elsewhere were the best if proper attention was paid to ventilation, cleanliness, &c. He concurred with Mr. Botly that something should be done for the prevention of undue increase of the population within given spaces.

Mr. Raper, of Manchester, pointed out that although Dr. Hardwicke had confined himself almost exclusively to the subject of providing houses for the working-classes in the metropolis, the question which formed the foundation of the discussion was meant to include the dwelling-houses of the labouring classes in every part of the country. He decidedly demurred to several of the propositions put forward by Dr. Hard-wicke, and especially to his sweeping condemna-tion of the self-contained houses in the outskirts of towns, and he would not like it to go forth that this Department sanctioned the idea of discouraging the possession of their own houses by the working-classes.

Dr. Stevenson Macadam said that the air space provided for prisoners nowadays was about double the amount possessed by honest trades-men and their families, the one class getting far too much of a good thing and the other far too little. In regard to the block system, he was afraid that the covered courts would tend to cause stagnation of air, and would prevent thorough cleansing. He approved of the system, however, for large towns.

Mr. H. H. Collins, the secretary of the depart-ment, thought that Dr. Hardwicke had taken a rather rosy and favourable view of the *familistere* system, which he was afraid would not be found to be so admirable on critical examination. Then the doctor was totally wrong with regard to figures, for instead of building working men's houses, or any other description of dwelling-houses, in London at a rate of 6d. per foot, as he had stated, he was perfectly certain that it could not be done under 10d.; and that the block indi-cated by the doctor would cost 17,000*l.* or 18,000*l.*, instead of 10,000*l.* He then pointed out and criticised various defects of the block system, and concluded by trusting that it would never become part of our national characteristics to live in houses similar to those advocated by Dr. Hardwicke.

The President (Mr. Chadwick) briefly went over the various points brought out in the paper and discussion, speaking generally in favour of the block system, although he thought it was susceptible of great amendment. He especially objected to the thick, damp, absorbent walls which existed in these buildings. He thought that this dampness might, perhaps, be obviated by means of concrete walls, constructed on the old Roman principle.

PEERAGE PROPERTY.

SIR,—We read the letter of Mr. George Mitchell in your impression of August 25th, and ask permission to reply. He gives a formidable array of "facts" on the income and acreage of peers, but whence he got those facts we know not.

However, though Mr. Mitchell may be much mistaken in his data, there is yet a certain moderation in his general tone compared with many Radical writers that induces us to reply with equal temperateness. He commences his attack with "five men own one-fourth of Scot-land." We never heard that before, but it is well known that Government has had a survey made of the kingdom, and the results published in a "New Domesday Book" last year, and a very copious summary of that was given in the *Times* of last spring. It is there stated that one-fourth of Scotland was owned not by five but by *twenty-four* different persons! And, which is more important, it adds that 1,371,144 acres of land are held by no less than the immense number of 130,471 different owners, or about ten acres each on the average.

With respect to England and Wales, it appears that nearly one-half of the available land is held by 2,689 persons, but also that there are nearly *one million landlords* owning less than 100 acres each. So much for Mr. Mitchell's statement that all the lands of England, Scotland, Wales, and Ireland, are owned by less than 60,000 persons! a statement more remote from the truth never was uttered. Now, out of all this mass of landowners, only some 500 can be peers by the published lists. But Mr. Mitchell seems to think nearly all the country belongs to peers, and that all the land is locked up in perpetuity, so much so as to invite a revolution! What can be more far-fetched? So long as there are a million landowners in the United Kingdom, there can be no real difficulty in buying land. There is only one obstacle (which prevails in all trade transactions), the article must be *paid* for, and it so happens that land returns the smallest rate of interest: consequently, as a rule, poor people do not like to invest in it, but they are perfectly free to do so if they like. Generally they prefer to open a little shop with 100*l.* or 200*l.*, on which they could live, rather than buy two or three acres of land on which they could not live.

A sweeping fallacy underlies the whole of Mr. Mitchell's letter. He thinks that noblemen prevent the land being used, and will not allow it to be turned to any account. How amusing! Why only a portion, and sometimes a small portion, of a nobleman's estate is laid out as park: the bulk is let in farms, and every single farm supports a farmer, a number of labourers, with wives and children, and gives work to butchers, bakers, millers, implement-makers, &c. Mr. Mitchell seems to consider that every nobleman's estate supports nothing but game and two or three upper servants! We know that twenty years ago Mechi wrote books to prove that the most was got out of land by putting it all under the plough, but all practical farmers now say that arable land scarcely pays in these times, and their only resource is to turn it into grass and grow meat rather than grain. Further, Londoners should be informed that much of the uncultivated land in this country which is supposed to be offering such mines of latent wealth, will simply not pay for the ex-penses of cultivation any more than it would pay a builder to erect a large house on Salisbury Plain or the Lincolnshire Fens.

Respecting a marquis with 1,000,000*l.* a year from land alone, and a duke with 1,600,000*l.* a year from land, we do not credit either state-ment. Who told Mr. M. that another duke invests 80,000*l.* a year of surplus income in land? We never heard a well-informed educated man hold out seriously that any nobleman in the country had more than 500,000*l.* a year, if that. Let it be remembered that in all nations, where there is a population of millions, and especially a working or commercial population, there always is, and always will be, great discrepancies of wealth. Even now, in America, the model Republic, with no peers at all, there are many thousands of abject poor, and also an "upper ten thousand" of wealth. The last term, indeed, arose in America. Mr. Stewart, dying in 1876, held two millions sterling of freehold property in that city, and as much more of personal estate. Mr. Jacob Astor, also, died lately, leaving several millions sterling in New York freeholds, and had been buying land there, block after block, for many years. A man in California has just died, leaving immense wealth. There are numerous gentlemen in America with very large landed estates, and any one of them may become a mil-lionaire in the event of a prosperous city or a Chicago springing up on his property, which, in a growing young country, might easily happen. We ourselves know a family, now in England, who hold 100,000 acres in one block in America.

Finally, let us ask this question,—What peer in England would refuse to turn his estate to a better account than at present, short of damage to his residence, if he were able to do so?

H. & R. POWELL.

SIR,—You have lately printed, from the pen of Mr. George Mitchell, two letters as revolutionary in spirit as any Continental enthusiast would desire; and with the stake you have in our country,—the dependence that capitalists, large and small, have in its tranquillity,—you are not likely to encourage any unprovoked antagonism between class and class that might lead to the disruption of society in the broad sense of a misused term. Had a French periodical of reputation equal to the *Builder*,—circulated in all the clubs and coffee-houses, and read by the best educated of the working masses,—printed a state-ment like that of Mr. George Mitchell, I really believe, from an intimate acquaintance with Paris and the Parisians, that the general excitement would have culmi-nated in rebellion; and more especially at a moment of strikes and smothered discontent like the present. If Mr. Mitchell's statement regarding the unfairness or inequality of land taxation is not exact,—and with all deference to him I cannot but think he is misinformed,—some one on behalf of noblemen like the Marquis of Salisbury and the Dukes of Marlborough and Bedford should contradict it; for, unless an important error is immediately contradicted, people are apt to think, if the journal in which it appears be respectable, that it is not an error, but the truth.

What, sir? The rates and taxes of Hatfield House amount to 35*l.* 15*s.* per annum! The Palace of Blenheim is rated at 17*l.* 7*s.* 6*d.* per annum! The mansion of Woburn at 28*l.* 8*s.*! and the London tenants of these noblemen are now earnestly discussing this anomaly! "Why, just take home this fact," said to me one who holds the lease of a strip of land in Covent-garden, "I positively pay for my premises, in land-tax alone, 10*l.* per annum more than my noble and hereditary landlord pays for Woburn!"

The principal object of this letter, however, is to depre-cate the style in which your correspondent betrays *animus* against what is undoubtedly, in a European point of view, a highly cultivated class—a model class as far as manners and even muscles go; to oppose emphatically his inference that a wealthy aristocracy is of no use to this country. Though I want to see the tenure of British land modified, if not altered, in principle and details—because I think that without such modification, and even alter-ation, the greater number of the inhabitants will not obtain proper and fairly-priced dwellings,—I do not desire to see the good feeling which has existed for so long a time between all classes of Englishmen, and which has made England the only really secure country in the world, de-stroyed or impaired. When the fight comes, and that it may come soon I sincerely trust, both the owners and borrowers of land must pursue the old "give and take" policy of conciliation. I fear radical reformers of our land system have nothing to hope either from the old Liberals or from Lord Beaconsfield's Government. The earlier attempts will probably be introduced by new "Liberal" and "Radical" parties when their members are sufficiently rallied to be defined; and the earlier Bills will be lost. "Conservatives" will return to office, with a request from the press and the people to "do something"; and after a little educating on the part of some incipient father-of-his-country, an incomplete measure will keep people quiet until the ultimate success of a Reform Bill, involving the suppression of entail, and the division of large useless estates, passes a House of Commons deter-mined to alleviate at any cost the increasing burden of the middle classes, and to efface the spreading blot of aggravated pauperism.

W. H. W.

PROPOSED TOWN HALL FOR PAISLEY.

SIR,—A model for the Town hall has been exhibited for a few days in the Museum, Paisley, for inspection, to enable the citizens to judge of its merits as a model of a public building. This model, which is well finished, has been made by the workmen of the Messrs. Clark, of the Anchor Thread Works, from designs and plans prepared by Mr. Davidson. From a careful examination of this model, I have been unable to discover any artistic excel-lence in it. . . . . There is something rather strange in the present course adopted by employing a man to draw a new design and plans, and having a model prepared under his superintendence. I have been informed, on reliable authority, that Messrs. Rennison & Scott, architects, Paisley, prepared plans some time since, which were approved of, and have been accepted by the Messrs. Clark as the plans for the Town-hall. I would ask the question, Is it fair or just to ignore them, as professional men, in such a manner?

JOHN LEMON.

ARTISANS' DWELLINGS.

THE Improved Industrial Dwellings Company (of which Sir Sidney Waterlow is the chairman), have erected, on about two acres of land lying between the Goswell-road and St. John-street-road, Clerkenwell, a large number of dwellings for the artisan and labouring classes. Less than three years ago the site was occupied by old buildings, consisting of shops, sheds, barns, cattle lairs, and courts of the worst description. The improvement has been effected at a cost of upwards of 75,000*l*. The estate is in the centre of a densely-crowded manufacturing district, where numberless industries are carried on, and, as illustrating the great demand for proper house accommodation in this neighbourhood, we are informed that for 190 dwellings recently opened there were no fewer than 1,269 applications. On the main front in Goswell-road the ground floor consists of a row of shops. The company, which has been at work for about fourteen years, has now twenty-three estates in various parts of London, which accommodate nearly 3,000 families, or about 15,000 persons; and in course of construction there are over 600 dwellings, which will house about 3,000 persons, making 18,000 in all. We must make an opportunity to look at the new buildings. All is not gold that glitters.

"IS ART CAUSE OR EFFECT?"

SIR,—I was very glad to find in last week's issue of the *Builder* that, with your usual enlightened and progressive spirit, you recognised the important fact that art in the past was not the *cause* of, but the *effect* of civilisation. This is a thesis that I have long maintained, which I maintained in my paper on "Mural Decoration," read at the Social Science Congress at Liverpool. But I not only maintain thus much, but more than you at present seem to be prepared to admit, viz., that not only was art not the *cause* but the effect of civilisation in the past, but that it must still be so, before art attains to a healthy state,—to safe lines of progression; for it is NOT in the order of nature to reverse her plan, and to substitute effect for cause, and cause for effect. It is to this prevalent misconception regarding the true place of art in the economy of nature, this placing of the cart before the horse, that I attribute our mistaken, and ineffective art-policy, and the diversion of Government subsidies into wrong channels. To what end? But to see, after all these years of mistaken endeavours and misexpenditure, our English art-manufactures entering foreign marts bearing the unmistakable stamp of French designers upon them.

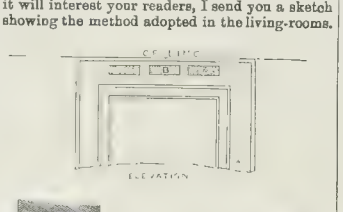
The Romans had "living" Greece before them with all her wondrous art-treasures intact, and, more than this, they had living Grecian artists working for them. The Romans had, then, more available means than we for turning effect into cause, but notwithstanding all these invaluable educational means, as we misconceive those to be, those means were unequal to making the Roman era a great art era. Again, turn to very different and comparatively modern times, to the art of the period of Louis XIV., and we find the mental characteristics of the period unmistakably stamped upon it; the art did not give form to society, but the social characteristics gave form to the art. Look also at the art development in the Netherlands, with all the art aptitude, the lavish encouragement of painting by the merchant princes, the era of Italian art lying fresh and open before the painters and the people, and yet the art of the Netherlands never passed beyond exuberance, a certain realism and wondrous technical skill: it was entirely destitute of the impress of the highest order of thought, and the highest forms of design. Yet again, there is a most noticeable example that effect cannot be converted into cause. For three hundred years or more Italy has been one vast museum of the Fine Arts. Not only her great cities, but her provincial towns have teemed with great examples: if museums could teach she ought to have been taught. For more than three hundred years, let us recollect, she has had these supposed-to-be great advantages, for a period, indeed, longer than a living Italy took to create all those art-treasures which we have been told, *ad nauseum*, are so absolutely necessary to develope art and civilisation; and with what result? The presence of all these invaluable art-treasures was powerless either to restore civilisation in Italy or to restore art. Italy will doubtless again assert herself, both in civilisation and in art, but that must come as the result of new political foundations and of education, as was the case in all time.

The fact is, the eye is blind till it is coached by the understanding. There are none so blind as the ignorant. Art falls upon the optical sense of the ignorant in vain. I heard of a circumstance which strikingly corroborates this. A friend who was for some time in India, and who had some choice engravings sent out to him, entrusted their disposition in his house to a hanging committee of natives. What was the result? To his utter astonishment, in nine cases out of ten they were hung upside down. This seems very ridiculous; but we, also, in our ignorance, hang cause and effect upside down, and think we are rendering a great service to civilisation and to art. Some day we shall know better. No, sir, depend upon it, our art era—if we are to have a great English art era—must come by the progress of education, and by the enlightened encouragement of artists by men of the highest culture: all other methods are indirect, mistaken, and ineffective, and the money lavished upon them is worse than thrown away,—it is misapplied.

W. CAVE THOMAS.

VENTILATION: GOLDSMITH RESIDENCES.

SIR,—I notice you give a description of these buildings, which have been erected under my superintendence, and mention that the ventilation "has not been neglected," and, as I think it will interest your readers, I send you a sketch showing the method adopted in the living-rooms.



B } Openings covered with perforated zinc.
C }

The problem was, how to obtain ventilation day and night in such a position as to be unnoticed by the tenants; for, as you are well aware, the first thing that is done by the majority of tenants of the class for which these residences are intended, is to paste paper over, or otherwise block up, all ventilators.

The sketch will show how I have tried to avoid the tenant noticing the apertures. The air comes in through the many circular openings in the top of the sash-frame C. On the inside lining of the sash-frame are panels, B, covered with perforated zinc; and as these panels are small, and close to the ceiling, there is no down-draught, and yet day and night there is pure air entering the room, the fire acting as the extractor of the bad. When there is no fire one or more of the panels will probably be an exit for foul, and the remainder inlets for fresh, air, as I have had the divisions carried through, well knowing how uncertain is the action of air, and that what at one time is an inlet, at another time becomes an exit.

As the cost is almost nominal, and there is nothing to get out of order, probably this method may become general. I have only to add I have neither registered nor patented the system, and therefore all are free to use it.

BANISTER FLETCHER.

Death of a Welsh Sculptor.—The death is announced of Mr. Meredydd Thomas, at his residence in Buckingham Palace-road, Pimlico, London. Mr. Meredydd Thomas was a pupil of Chantrey, and enjoyed very considerable success as a sculptor. Both he and his brother, the late Mr. Evan Thomas, who was the elder, had attained some eminence. Their works adorn many of the principal towns in South Wales.

A NEWCASTLE GRAIN ELEVATOR AND WAREHOUSE.

THE new grain warehouse which is being constructed upon Newcastle Quay, for a company recently formed in the town, has now made considerable progress. The company was formed with a capital of 200,000*l*., for the purpose of erecting a warehouse for grain, bread stuffs, and general merchandise, to be fitted with hydraulic machinery for the rapid discharge of vessels, and for afterwards handling and delivering grain, flour, and other merchandise, with economy and despatch. Hitherto the port has been destitute of these appliances. The situation of the new warehouse, being upon the Quay, and connected with the Quayside branch of the North-Eastern Railway, will altogether avoid the item of cartage between ship and warehouse, and warehouse and rail. The ship's cargo will be conveyed direct into the warehouse by means of an elevator, which will dredge it out of the ship's hold, and place it on endless bands running along a light iron bridge into the warehouse. Arrived there, it will be accurately weighed by machinery, a ton at a time; and then, by means of other travelling bands, it will be conveyed to the place it is to occupy. The grain will not be put into sacks at all; but worked through in bulk. This will not only effect a great saving in cost, but the airing and friction of the grain will (according to the *Newcastle Courant*, to whom we are indebted for these particulars) so far improve its condition, that it will be found possible to store it, as at Liverpool, to a much greater depth on each floor than can be done in the old description of warehouse; so that a large amount of grain can be stored on a given site. The present import of grain, flour, and bread-stuffs into the Tyne is equivalent to about 700,000 quarters per annum; and of this quantity the new warehouse will deal with about two-thirds.

The site of the building, which is now in full course of erection, is to the east of the junction of the Swirle Burn and the river Tyne; and has an area of about 4,842 square yards, with a separate site of 640½ square yards for engine and boiler house. The building will be six stories above the ground-floor, and, with the necessary deductions, will afford storage for about 120,000 quarters of grain. There will be five separate divisions in the warehouse to confine the risk in case of fire; and hydrants supplied by hydraulic power will be placed on every floor of each division. The ground-floor will be partly occupied by the railway siding and space for loading carts, and there will be an area of about 3,000 square yards for storing general merchandise. The cellars will be occupied chiefly for storing provisions, &c. On account of the great weight of such a building when filled with grain, the construction of the new warehouse involved the carrying of the foundations through the ballast and river deposit down to the substratum of clay, which has been proved to be 22 ft. thick, and lying upon solid rock.

The warehouse is being built in five sections, and the work was begun from the west end. The first thing to be done after the proving of the ground was, of course, the sinking of the foundations. Cylinders were sunk down to the clay, and filled up with cement concrete, in order to carry the main walls of the building, the depth to which the cylinders have been carried being about 40 ft. from the ground-level. The main walls will be built upon arches thrown from one cylinder to another. For the support of the columns which have to carry the floors, clusters of piles, nine in a cluster, in three rows, and with spaces of about 6 in. between them, are driven through the ballast and river-deposit about 5 ft. into the clay, and are bound to each other and to the cylinders by walings at the top. Above the ground-level the floors are to be carried upon very strong cast-iron columns. The main double beams will be 15 in. deep by 7½ in. wide, and will be joisted with 11 in. by 3 in. joists, planked over by 1¼-in. feathered and grooved planking. A special arrangement about the floors is that if a piece of timber in any part fails in any way, it can be removed without disturbing the floor generally. The building will consist of a cellar-floor, a ground-floor, six grain-floors, and a machine-floor, the latter partly in the roof, and access from the bottom of the building to the top will be by four staircases up the ends of the division-walls, between the sections. There is no idea of making any part of the building what is called "fireproof," that

mode of construction having too often proved only a snare and a delusion. What is aimed at is to localise a fire, should one unfortunately occur, confining it to one section, and letting it burn out. In each of the five sections the whole of the floors, in the event of destruction by a fire, would fall away, without doing any damage to the walls; whereas if built on the so-called fireproof system, the ironwork would give way, and in all probability bring down the brickwork with it. The staircases have fireproof doors separating them from the different floors, to enable the firemen, in case of fire, to have as long as possible access to the different parts of the building; and, on account of the danger arising from the ordinary steps fracturing from the heat, and falling to the bottom of the staircase, thus not only preventing access, but endangering the lives of the firemen, solid oak steps are used, they having been proved by experiment to resist the action of fire for a considerable time, becoming charred on the surface, but perfectly sound within, thus enabling the firemen to pass up and down stairs long after stone steps would have fallen to the ground. With the further object of preventing fire communicating from one section to another, the division walls are all to be carried about 6 ft. above the roof; and although the timbers will be placed nearly opposite to each other, there will never be less than 9 in. of solid brickwork between the timbers built into the division walls. The roof will be a plain timber one of the ordinary construction, to be sarked and slated with the best Lancashire slates. Some idea of the vast extent of the building may be formed when it is stated that no less than six millions of bricks will be used in its construction. It will, in fact, be by far the largest work hitherto constructed in the town.

The contractor for the whole of the erection is Mr. W. E. Jackson, and the work is being carried out under the superintendence of Mr. Charles Jackson, both of Newcastle, Mr. Brewis acting as clerk of works. The cylinders for the foundations have been constructed by Sir Wm. Armstrong & Co., at the Elswick Engine Works; and the columns by Messrs. Bells, Lightfoot, & Co., Walker Engine Works. The bricks are supplied by the Eltringham Coal Company and Messrs. Todd, Barlison, & Co., of Birtley, and have been selected as affording special security against moisture. The engineer for the company is Mr. John Thompson, Newcastle, who designed the building, and is superintending its construction.

THE NEW GUILDHALL AT LOOE, CORNWALL.

On the 13th inst., while Manchester was *en fête* in celebration of the opening of the splendid municipal palace which has been erected from the designs of Mr. Waterhouse, the little borough of Looe, in Cornwall, was, in a humbler way, rejoicing in the opening of its new guildhall, —the building of which is referred to in the *Western Daily Mercury* as "the last act of reform on the part of the unreformed corporation." The building is of some interest to antiquaries, the pillory forming a conspicuous feature in the gable of the curious wooden porch.

The building is situated on the right-hand side of the principal street, near the entrance to the town, and stands on a site about 120 ft. in length and 75 ft. in width. It is in the early Gothic style, and is entirely detached, having a considerable open space around three of the sides, the fourth, or east front, facing the street, and having a wide footpath between it and the roadway. The principal feature in front is the tower, rising some 64 ft. in height, and surmounted by a slated spire. The whole height to the point of the rod above the vane is about 90 ft. The upper stage of the tower is intended to receive a clock, and four large circular openings at this level in wrought stone are formed to receive illuminated dials, each about 5 ft. in diameter. The principal entrance is through a bold doorway in the tower on the east front, with a pointed head having in the tympanum a shield boldly carved, with a representation of the arms of Looe taken from the quaint old borough seal. The walls are of local stone, dressed and squared for the front wall. The dressings of the several doors, windows, chimney cappings, copings, and other portions, are of hard Portland stone. All the roofs are covered with Delabole slate, and finished with red tile cresting. The buildings are compactly arranged, containing on the ground floor a drill-hall 45 ft. by 20 ft., armoury, harbour commissioner's office, police-cells, and entrance-lobbies. On the first floor are the large hall (the same size as the drill-hall), council chamber, and other rooms. The open arched roof of the large hall is of pitch pine, with panels of yellow deal and pitch-pine boarding, pierced for ventilation.

The windows of every room of importance are filled with stained glass, the gifts of residents in the locality. The medallion style of window has been adopted, and in the great hall there are thirteen windows. The three at the higher end are the generous gift of the mayor, Mr. Bishop. The centre one of the three represents "Ye *George* leaving Looe Harbour to join ye fleet against ye Spanish Armada." The window at the left has a portrait of De Bodrigan, founder of Looe. At the top are the arms of Looe copied from an old seal; under are the arms of Bodrigan. The window on the right has a portrait of Sir Walter Raleigh, as Lord Warden of the Stannaries. The centre window at the opposite end is perhaps the most elaborate in the whole series. It represents the landing of the *Nicholas*, at Looe, on the Revocation of the Edict of Nantes. One of the brothers is upon the quay, being welcomed by the mayor of Looe, who is introducing him to the hostess of the neighbouring hostelry. In front of the quay is a boat with the other brother stepping from the boat on to the quay, being assisted to disembark by sailors who have rowed them ashore. Quaint houses and shipping in the distance complete the picture. The window to the right of this contains a portrait of Carew, author of "Ye Survey of Cornwall." The window to the left of the centre light in the end has a representation of King Arthur of "Ye Round Table." The centre window in the side represents, in the centre, Queen Elizabeth with the Charter which she granted to Looe in the year 1574. To the right and left are King James II. and Edward III. The window to the extreme right shows De Tallifer, ancestor of the Borlase family, the first knight killed at the battle of Hastings. Under are the arms of Mr. Borlase Childs.

The contract for the erection of the building was taken by Mr. Samuel Honey, of West Looe; the stained-glass windows were designed by Messrs. Fouracre & Watson, of Stonehouse; the mayor's chair, of carved oak, and the shield over the entrance-doorway, are the work of Mr. Harry Heme, of Exeter; and the building has been erected from the designs and under the superintendence of Mr. J. F. Gould, of the firm of Gould & Sons, architects, of Barnstaple.

THE NEW THEATRE ROYAL, CORK.

THE new Theatre Royal and Opera-house, Cork, was opened on the 17th inst. It stands on a site having the river quay on one side, the large open area of Nelson-place in front, and on the other side an open inclosure and roadway, so that practically it is an isolated building. Nothing remains of the former building except the main outside walls and roof (which has received a new covering of slate). Entering at the centre vestibule there are three large double doorways affording entrance for those going to the dress-circle, private boxes, and upper circle. The vestibule, which is level with the footway, is 52 ft. long by 15 ft. wide, and 16 ft. high. Immediately opposite the external entrance are three pairs of folding doors opening into an inner corridor 11 ft. wide, the entrance to the dress circle being by a staircase on the right hand, and to the upper circle by one on the left. These two staircases meet on a wide landing at the level of the dress-circle corridor, divided by a low partition in which is a wicket-gate, so that there is every facility for transfer from the upper to the dress circle. An enclosed corridor runs at the back and sides of the dress-circle with additional staircases at the end of each to lead to the boxes in the proscenium, and by pass-doors to the corridors on either side of the pit. On the river quay side, immediately on top of the steps, is a corridor 26 ft. long by 9 ft. wide, affording standing-room under cover before the inner doors are opened. From this entrance a corridor, 7 ft. wide, facing the river quay, runs the whole side of the pit, out of which opens no fewer than four doorways. The entrance to the gallery is by an exactly-similar covered arcade on the side of the frontage next the Royal Cork Institution, from which a stone staircase, 6 ft. wide, with broad landings at frequent intervals, leads up to the gallery, which is seated for 700 persons. The dress-circle is entered from its corridor by double swing-doors and avenues, 3 ft. 6 in. wide. There are 125 seats, in four rows, fitted with arm-chairs, upholstered in maroon-colour cloth. These are the architect's registered chairs, and are manufactured specially by Wadman Brothers, of Bath. Each seat turns up to allow facility in passing. On either side of the dress-circle are three private boxes and two proscenium boxes, making in all ten boxes to hold seventy persons. Behind the dress-circle, and, having its own separate staircase, is the upper circle of five rows fitted with chairs and affording seating for about 200, while in the corridor at the back, separated by a low division, is a lounge and promenade which will hold at least 100 persons. On the level with this lounge is the rotunda saloon, a spacious hall, 52 ft. in diameter and 35 ft. high to the top of the dome. A separate staircase leads up from the corridor of the dress-circle to this saloon. This room will be available not only as a *foyer* for refreshment and promenade, but also for balls, small chamber concerts, and bazaars. The pit extends under the dress-circle, and will seat 1,000 persons.

The auditorium is surmounted, at a height of 41 ft. above the pit floor, by a domed ceiling, which, with the ornamental front to the gallery tier, the proscenium arch, and box fronts, were erected by Messrs. Jackson & Sons, of London, in carton pierre. The front of the dress-circle is of open ironwork, richly gilded. The decorations of the theatre were entrusted by the architect to Mr. Edward Bell, of London. The ceiling, pillars of proscenium, and box fronts, have a ground tone of very light cream colour. The flat part of the ceiling and the cove are painted in Romanesque ornament in gold and colours, while the raised ornamentation of the gallery and stage-box fronts is picked out in gold upon a ground colour of delicate Wedgwood blue. The stage-boxes are flanked by two fluted columns, having Corinthian capitals, richly gilded and picked out in colour. The walls are covered with a warm sage-green paper, having gold ornamentation on it, and the curtains to the private boxes, and the drapery hangings, are of crimson rep, with gold borders. These, with the carpets and upholstery generally, have been supplied by Messrs. Lyons & Co., Cork. The lighting is by a sun-burner in the centre of the ceiling, by Strode & Co. The act-drop represents the Doge's Palace at Venice, and is the work of Mr. George Gordon, of the firm of Gordon & Harford, of London. The stage opening is 30 ft. wide, the depth from the foot-lights to the back wall is 48 ft., and there is sufficient height above the stage to take up scenery out of sight. Attached to the stage are a suite of seven dressing-rooms, with property-room, scene-drop, scene painting-room, and other adjuncts to a theatre,—and all level with the stage. The stock scenery is all new, and has been painted by Mr. Barraud, of the Theatre Royal, Bristol, and Mr. Chapman, from the studio of Gordon & Harford, of London, has now taken his place as the resident artist of the theatre. The whole of the works in every department have been designed by and executed entirely under the direction of Mr. C. J. Phipps, F.S.A., architect, of London. It is stated that this is the twentieth theatre Mr. Phipps has constructed. Mr. Maximilian Clarke, from Mr. Phipps's office, has had charge of the works during their progress.

The general builders' work has been executed by Mr. Terence O'Flynn, of Cork, who only had possession of the interior of the old theatre on July 1st last.

The gasfitting has been done by Mr. William Goodman, of Cork.

THE OBELISK.

SIR,—As the site of the obelisk has not as yet been decided upon, may I suggest the Piccadilly side of the Green Park? There is a slight mound opposite Clarges-street, at present occupied by a few poplar-trees, which I think would meet all requirements, as it would throw up the monument, and not dwarf any of the surrounding buildings. W. SMITH.

"LONDON IN 1777."

SIR,—Our house, "Gillow & Co.," was in existence at the above date on the identical spot we now occupy in Oxford-street. Our first lease has a plan with "Ye footpath to Kilburn" marked in front of the premises.
SAMUEL J. HARRIS.

Society of Engineers.—The first ordinary meeting of this society for session 1877-8, will be held on Monday next, the 1st of October, when a paper will be read by Mr. G. W. Usill on "Rural Sanitation."

ASPHYXIATION BY ASPHALTE.

At the Thames Police Court, on the 19th inst, Mr. George Nolan, of Gracechurch-street, secretary of the Limmer Asphalte Works, carrying on business at Orchard-street, Poplar, appeared to answer a summons taken out by William Raymond (one of the officers of health to the Poplar Board of Works) "for that on the morning of the 10th ult. and on several other occasions there was a quantity of vapour arising from a large cauldron on the defendant's premises, the said cauldron being used for mixing purposes, and that the effluvium proceeding from the said vapour was of an offensive nature and injurious to health."

Mr. Raymond, Inspector of Factories for the Poplar District Board of Works, said that he served a notice on July 26th on the defendant with respect to the nuisance in question. Nothing had been done since that time to secure an abatement of it. On the 10th of last month witness visited the works; the cauldron complained of was then discharging a quantity of vapour. In November, 1875, notice was served on the company respecting the nuisance caused to the neighbourhood by the effluvium from the cauldrons, in consequence of which one of them was altered in such a way as to stop the nuisance. The other might be altered in a similar way at a trifling expense.

Mr. James Johnson, a master shipwright, of 20, Orchard-road, said that his house was within a hundred yards of defendant's premises. The smell of the vapour that came from the mixing cauldrons was very offensive and obnoxious, and had a very bad effect on the health of witness, his wife, and family.

Dr. Samuel Ellison, medical officer of health to the Poplar Board, stated that his attention had been drawn to defendant's premises. He had seen the vapour arising from the cauldron and smelt the effluvium it threw off. In witness's opinion it was a nuisance and injurious to health.

Mr. de Rutzen said he should inflict a fine of 5*l.* on the present occasion, and if the necessary alterations for abating the nuisance were not made, and any further proceedings were taken, the penalty would be doubled, and that would go on until the fine would amount to 200*l.*

SURVEYORSHIP ITEMS.

Wimbledon.—At a recent meeting of the Wimbledon Local Board, the road committee reported that they had received sixty-seven applications for the office of surveyor, vacant by the resignation of Mr. Rowell, and they had selected three of the candidates to attend,—viz., Mr. T. H. Gabbicorn, C.E., assistant surveyor and engineer, Bristol; Mr. T. Mason, general manager to the Goux Sanitary and Engineers' Company; and Mr. G. Watson, Surveyor to the Crewe Local Board. The two former only attended at the appointed hour, and having been respectively interviewed, the Board evinced a decided preference for Mr. Mason; but at the request of Messrs. Ashley and Stride, the election was postponed till the close of the sitting in order to see Mr. Watson, should that gentleman put in an appearance. Mr. Watson did not, however, appear, and upon the motion of Mr. Mellin, seconded by Mr. Elliott, Mr. Mason was elected.

St. Luke's.—The salary of Mr. Allen, the surveyor of St. Luke's, Middlesex, has been raised from 250*l.* to 350*l.* a year.

COMPETITIONS.

Sydenham Recreation-Ground.—At the meeting of the Lewisham District Board of Works on the 19th inst., it was reported that thirty-four designs had been received for erecting a lodge for the recreation-ground, the total outlay not to exceed 1,000*l.* The committee had carefully considered each design, and had selected those marked "Respice Finem," "Spes," "X.X.X," "Rustious," and one of three designs marked "Pro Bono Publico," as the best five for selection of one by the Board. The design of "X.X.X." was not accompanied by specifications as required. The Board having disqualified "X.X.X.," proceeded to consider the remaining four designs, and finally selected that of "Respice Finem," who, it transpired, was Mr. Robert Walker, of Moorgate-street. It was also resolved that the designs should remain in the Board-room for one week for the inspection of the competitors and the general public.

Kensington Vestry-hall.—The joint committees have reported that after fully going into the matter, they found that neither of the accepted designs of Mr. Walker, Mr. Thomson, Mr. Robins, or Mr. Mew, for the new Vestry-hall offices, could be carried out for less than 20,000*l.*, and only a small difference in cost would be found in the execution of either. The committee recommend that it be referred to them to consider what steps should be taken. Major-General Boileau moved, and Mr. Liggins seconded, the adoption of the report. Mr. Fisher thought it would be unfair to the other competitors. They ought to have a fresh competition. Mr. Bontcher said all the plans, accepted and rejected, were alike as to costing at least 20,000*l.* for execution. The recommendation of the committee was then adopted.

Books Received.

Outlines of Landed Estates Management. By ROBERT SCOTT BURN. With Illustrations. London: Crosby Lockwood & Co. 1877.

THIS is too small a book for so large a subject. Still it contains a considerable amount of useful information, and, moreover, refers the reader to various other books containing fuller particulars. The time, it is to be hoped, has gone by when it was thought that any one, no matter what his training and previous occupation had been, could turn farmer. A farm is a great manufactory, and to be a good farmer, with a reasonable chance of success, demands a combination of qualities and an amount of acquired knowledge not found every day. If those who still have doubt on this point will look through Mr. Scott Burn's Outlines, the doubt will probably be removed. Mr. Burn has studied his subject for some years, and has it well in hand.

Miscellanea.

"Jerry" Building at Hackney-Wick.—At the meeting of the Hackney District Board of Works on the 14th inst., the clerk read a correspondence which had taken place on a letter addressed to the Board by the Local Government Board, enclosing a copy of a complaint that there were some streets of new houses of the speculative class in Hackney-wick whose character required the closest attention, being "far worse in parts than those which formed the subject of a recent action at law." The clerk replied to the Local Government Board by saying that the matter was not within the jurisdiction of the Hackney Board, but that the complaint had been forwarded to the Metropolitan Board, by whom it had been referred to the district surveyor. The district surveyor's report was to the effect that most of the houses complained of were of such a character as to require the closest attention. In the case of some of these erections, the surveyor had cautioned the builder as to the quality of the brickwork, and required that a portion be taken down, course by course, and had extracted a pledge that not less than half the bricks in the walls should be whole bricks. Mr. Holmes said he had visited the locality that morning, and could fully corroborate the complaints. The mortar used was composed of cinder-siftings, and did not contain a particle of sand; and the sewers were very inadequate, there being only a 12-in. pipe in a long street, while the road was in process of making itself of the dust and refuse which had been shot there.

The Masons' Strike in London.—In consequence of the strike, the work upon the new Law Courts at Temple Bar has now been at a standstill for several weeks. There was a clause in the contract providing that in case a strike occurred among the workmen, six months' grace should be allowed the contractors. However, Messrs. Bull determined to procure men from Germany, that the work might be proceeded with without further delay. On Saturday twenty-six German masons arrived, and twenty-four of them commenced work on Monday, and continued at work on Tuesday. It was anticipated, however, that the masons on strike would offer to pay the expenses of the Germans who had come over, and that they would be sent back. This anticipation seems to have been well-founded, for on Wednesday morning the foreman of Messrs. Bull & Sons, after waiting half an hour after the usual time for the arrival of the German masons, went to the Sussex Hotel, Bouverie-street, where they had been lodging. Upon inquiry, he found to his astonishment that after having breakfasted the Germans had left the hotel before six a.m. in two vans, one of which contained their luggage. Upon further inquiry it was ascertained that the men had gone to the Hamburg steamer, which, it was stated, had been delayed an hour beyond its time of sailing in order to take them away.——It is stated that Messrs. Killby, of Limehouse, on Monday conceded the terms asked by the men, and took on sixty masons at 10d. per hour.

Proposed Bridge Across the Bosphorus.—Captain James B. Eads, an American engineer in conjunction with Mr. A. O. Lambert, has (according to a New York paper) completed plans for a bridge across the Bosphorus, connecting Pera, European Constantinople, with the Asiatic shore. The bridge, which, with the exception of the masonry and flooring, will be constructed of iron, will be 100 ft. wide, 6,000 ft. long, and will consist of fifteen spans of which the central one will cover 750 ft., the longest span in the world. The height of the roadway above the surface of the water will be 120 ft. The chief difficulty in the erection of the bridge will be encountered in the construction of the great central arch. The current at this point is very strong, and it will be necessary in building the piers to sink two great caissons in water more than 100 ft. deep. The piers of the arch will be 50 ft. thick, and will be constructed of granite blocks locked together with iron braces. By a new invention of the engineer, the weight of any heavy objects, such as troops or steam cars passing over the arches, will be equally distributed among all the supports, so that the danger arising from the concentration of weight upon any one point will be averted. A careful survey of the bed of the Bosphorus shows that it consists of 3 ft. of alluvial mud over about 15 ft. of sandy strata. Beneath them is a foundation of solid rock. It is estimated that the bridge can be constructed at a cost of $25,000,000, labour being uncommonly cheap in Constantinople.

Improvement in Glazing Roofs.—We are informed that the authorities of the War Office have adopted Mr. W. Edgcumbe Rendle's system of roof-glazing, in which the use of putty is dispensed with. The maintenance in repair of the roof-lights of the shops and sheds at the Royal Arsenal, Woolwich, has always been costly, tedious, and troublesome, from the difficulty of removing the hard putty. Some time ago Mr. Rendle submitted a specimen of his glazing at the Arsenal. To test the efficiency of his system, under the direction of the authorities a hose was attached to a hydrant, and a heavy deluge let down vertically upon the glass. It not only successfully resisted the attack, but proved impervious, no drip falling on the inside. The result of this trial, and the success that has attended the adoption of Mr. Rendle's system in numerous other places, has led to its adoption in the Arsenal, where the old roofs are being gradually displaced by others glazed according to Mr. Rendle's method. The railway companies are also adopting the improved method. The Caledonian new station roof at Glasgow has 120,840 square feet of glass placed—it may not be said fixed—on Mr. Rendle's system, a chief merit of which is that a broken square can be at once replaced by sliding another into the metal rests placed to receive and hold it, without either removing putty from the bed of the old pane, or applying it in any way to the new one.

Street-Cleansing Machine.—On the 12th inst. several members of the Vestry of Clerkenwell witnessed the trial of a street-sweeper, the invention of Mr. Warren, of Cheltenham. The machine was first tried in Corporation-row, on a surface of sand and shingle, worn into ruts and hardened by the traffic and rain. This was speedily worn smooth, and the sweepings conveyed to St. John-street. Here a move was made to Goswell-road, where some 200 yards in length, including tram-rails, had been thoroughly saturated with water. These, it is stated, were speedily cleansed, no surface water being visible. The machine consists of a rotary band of brushes feeding a shallop on wheels. This shallop, which will contain the same quantity as any ordinary slop-cart, can be detached instantly when full and a fresh one substituted without deranging the sweeping power. In wet weather (so it is stated) it fills itself in two minutes, and, with one attendant, completes the work of twenty men. The vestry have its adoption under consideration.

London Wall.—The *City Press* says that a piece of the old Roman wall has been removed during the past few days, whilst workmen have been pulling down a house in London-wall, near the corner of Cripplegate-buildings. Close by the site of the premises referred to lies the small but carefully-tended closed burial-ground of St. Alphage, at the back of which a part of the old Roman wall still exists, and is visible to every passer-by, though it is mostly overgrown with ivy.

The Lochburn Ironworks.—The erection of e works for Messrs. Macfarlane, Strang, & (Limited), for the manufacture of cast-iron s, valves, and other apparatus connected n water and gas works, is now so far com- ed that casting operations were begun on the inst. The works are built on a site of ards of twelve acres in extent on the Possil ate. They are bounded on the south by the th and Clyde Canal, on the north and north- by Lochburnie and the Helensburgh section he North British Railway, and on the east by estate of Lambhill. The foundry is 300 ft. ad by 110 ft. long. In the meantime, there two cupolas erected, each capable of melting tons per hour,—the blast for these being plied by a Roots's blowing-machine, with ine combined, made by Messrs. Thwaites & butt, Bradford. The works can (we learn n the *North British Daily Mail*) produce es from the smallest to the largest diameter anufactured or required, and when they are in operation the firm will be in a position to ke 100 tons of pipes daily, besides other work. first castings made on the 17th inst. were beginning of a contract for water-pipes for Liverpool Corporation.

Civil and Mechanical Engineers' Society. the 22nd inst. some of the members of this iety paid a visit to Lloyd's Paper Mills, Bow. . C. Waite, the foreman, took considerable ns to explain the manufacture throughout, from delivery of the English and Belgian straw, arto grass, palm-leaves, and waste paper at arf on the premises, to the cutting up of the getable matter and the separating from it of knotty substances unfitted for paper-making, ting the paper, filling the revolving boilers th the various materials and the necessary antity of caustic soda, emptying the boilers, d converting the boiled straw, &c., into pulp, aching it with chloride of lime, and finally ssing it as pulp in at one end of the machine d seeing it come out at the other,—paper. The rks find employment for 180 men, women, d boys. The mechanical power is supplied by e boilers to ten steam engines, giving 300-h.p. llectively, and the quantity of paper manu- ctured weekly at this establishment is forty-two ns,—the proprietor having other mills at ttingbourne.

The Transport of Colossal Monoliths by the Ancients.—At the last meeting of the ademy of Sciences, a communication from M. bert was read relative to the means employed the ancients to transport the large stones of e Celtic period. He says :—

"When the colossal monoliths of that age are examined, e question naturally arises, How could such enormous asses have been removed, often from a great distance, to a country which possesses no similar rock, such as, r example, Champagne? The transport of the menhirs easily understood, as all that was necessary was to ll them over. But the great flat stones, such as those the barrows and the dolmens, required other means removal. In examining a monument of that nature the sandy and pebbly fields of Nuisy, near ernay (Marne), I found in its neighbourhood a ock of roughly-rounded gritstone, about 15 in. or in. in diameter. The mass, was not, however, so great at it could not be easily moved. I began to consider hether this rough globular stone had not been used for e transport of the great flat masses of the monument. we think of the manner in which the granitic rock hich supports the horse of Peter the Great at St. Peters- rg was brought from Finland, the removal of the large ones of Nuisy from the plateau of Brie, whence they ere evidently taken, as far as the cretaceous plains of hampagne, becomes conceivable; the balls of grit stone e find at their feet probably played the part of the annon-balls on which the Russians pushed along the normous Finlandic block across frozen marshes, rivers, nd lakes."

The Liverpool Water Supply.—The *Liverpool Post* says that a new scheme is about to be aid before the public for the water supply of iverpool. It is proposed to make Wales the ountain-head, by impounding the waters of the iver Vyrnwy, at Llanwddyn, Montgomeryshire, nd those of the River Tarratt, at Llangedwyn, mbracing a watershed of quite 80,000 acres, nd capable of yielding more than eight times he quantity of water now daily supplied to iverpool. The distance the water will have to e brought is sixty-six miles. It is represented hat the engineering features are very favour- ble. The originator of the scheme, Mr. H. Williams, C.E., of Wigan, has devoted two years o maturing his plans.

Cleopatra's Needle is now fairly on its way rom Alexandria to the Thames. The obelisk hip or cylinder was christened the "Cleopatra" n the 19th inst., and at 9 a.m. on the 21st he left for England, towed by the steamer *Olga*.

Street Gases.—Mr. Edward Bellamy, Fellow of the College of Surgeons of England, writes as follows from 59, Margaret-street, Cavendish-square, W. :—

"As a surgeon to a London hospital, and therefore one able to form an opinion on the matter, may I not ask why, in all humanity, when the wholesale upturning of our main thoroughfares is contemplated, the inhabitants are not informed thereof, that their families may have, at all events, the option of leaving, and escaping infection? I have been a sufferer in the loss of an eldest child, entirely due to the exposure of the abominable mephitic atmosphere engendered by the digging up of old sewers and ancient drains, the works being open opposite my house for six weeks. I am not the only one who has suffered loss—many have done so from precisely the same cause; and illness of an enteric type has been, with more or less severity, noticeable in all the West-end streets during this presumably sanitary improvement. We pay taxes, sir, as you well know, in no proportion to our means or deserts. I do not argue for or against that, but I do hope that in future some notice may be given inhabitants of what is likely to be done, that they may escape, if possible, the chance of illness or death."

The Price of Bricks.—James Dinnage sued, in Cuckfield County Court, William Lipscombe for 9l. 3s. 7d., a balance for brickmaking since last spring. Mr. Hardwicke appeared for plaintiff, whose case was that he agreed to make, burn, and clamp bricks at 10s. per 1,000, and 4d. per 1,000 was to be left over for carting. He had been discharged from defendant's employ "because he could not make bricks fast enough." Defendant stated that when Dinnage asked for employment he agreed to accept 6s. per 1,000 for making, 1s. 9d. burning, and 6d. to be left for fine money. Judgment for defendant.

A Great Lion.—A colossal lion (according to *La Semaine*) will shortly be constructed on the top of the dam (*burrage*) of Gileppe, in Belgium; it is to consist of 203 huge blocks of stone, weighing on an average 2,000 to 3,000 kilogrammes each. Its height will be about 12 50 mètres, and its length 16 m. Placed on a pedestal of granite 8 m. high, this monumental lion will be a conspicuous object throughout the valley of Gileppe. The paws of the animal will measure 1·40 m. in width, the eye 0·40 m., and the nostrils 0 80 m. each.

Sanitary Congress at Leamington.—The Congress of the Sanitary Institute at Leamington will be opened on October 3, by Dr. Richardson, F.R.S. The exhibition in connexion with the Congress will be opened on the same day by the Mayor of Leamington, when Councillor Lawson Tait, F.R.C.S., will give an account of the work of the interception sub-committee of the Birmingham corporation, illustrated by working models and plans.

Manley Park, Manchester.—The directors of the Manley Park (Manchester) Company have decided to lay out fifty-five acres of the land for building purposes. This will leave the present Hall gardens and ferneries as they are. Mr. J. T. Robinson, the successful competitor for the winter-garden and palace for the same company, has prepared plans for laying out the estate, which have been approved by the directors.

Birkbeck Institution, Chancery-lane.—The fifty-fifth session of this Institution will commence on Monday next. The inaugural address will be delivered by Dr. B. W. Richardson, F.R.S. The past session is stated to have been the most successful in the Institution's experience. Of the six "Whitworth Scholarships," open to the whole kingdom, the first and third were obtained by Birkbeck students.

Trade Unions Congress.—We postpone our report of the proceedings till our next. Mr. Brassey, M.P., has informed Mr. Broadhurst, the secretary of the Trades Congress Parliamentary Committee, that he will present to each of the delegates at Leicester a copy of his father's "Life," and a copy of his own book, "Work and Wages."

Lighting of Towns.—Mr. E. B. Ellice-Clark, C.E., the town surveyor of Hove, has just now published a report on the lighting of that town (adjoining Brighton) which is interesting beyond the locality.

Asphalte *v.* Wood.—The wood pavement in Limehouse has been condemned, and replaced with Val de Travers Rock Pavement, the same material as laid in Poultry, Cheapside, &c.

TENDERS.

For main drain and inlets, West-road, Eastdown Park, Lewisham. Mr. Wm. C. Banks, architect :—

Merritt	£302 10 0
Woodham, Bros.	215 0 0

For houses at Eastdown Park, Lewisham. Contract No. 1, comprising eighteen semi-detached houses, and Contract No. 2 comprising seventeen houses in three terraces. Mr. Wm. C. Banks, architect. Quantities not supplied :—

	No. 1.	No. 2.
Oliver	£10,800	£8,500
W. & F. Croaker	8,460	9,775
Sharpe & Everard	9,270	7,850
Marriage	8,800	8,500
Banks	7,100	7,050
Gorrum	£14,287 together.	

For farmhouse to be built at Haddenham, on the estate of the Earl of Hardwicke. Mr. George Ernst, architect :—

Th[illegible]day	£1,476	0	0
Feast	1,460	0	0

For stabling at Park-lane, Croydon, for Mr. C. Brown. Messrs. Elkington & Son, architects :—

Jarrett	£930	0	0
Smith	914	0	0
J. & C. Bowyer	900	0	0
W. & E. Nottle (accepted)	861	0	0

For houses at Coombe Hill, Kingston, for Mr. G. F. Rogers. Messrs. Giles & Gough, architects :—

Hook & Oldrey	£4,625	0	0
Avis	4,431	0	0
Nightingale	4,383	0	0
Bayes & Allen	4,344	0	0
Sharman	4,253	0	0
Oldridge	4,147	0	0
Adamson	4,045	0	0
Jocelyne (accepted)	3,784	0	0

[Corrected List.]

For the erection of new premises, &c., at Buckingham Palace-road, Pimlico, for Mr. Frederick Gorringe. Mr. J. T. Walford, architect. Quantities supplied :—

	No. 1.	No. 2.
Higgs & Hill	£24,740	£2,469
Dove Brothers	22,960	1,660
Smith	22,360	1,500
Lawrence	22 275	1,475
Nightingale	20,976	1,470
Chappell	20,850	1,380
Scrivener & White	20,794	1,342
Browne & Robinson	20,170	1,428
Shaw (accepted)	19,823	1,253

For a pair of semi-detached houses at Blackheath, for Messrs. Bond & Butcher :—

Jerrard	£2,498	0	0
Gorrum	2,450	0	0
Rush	2,200	0	0
Staines & Son	2,686	0	0

For proposed extension of shop at 57, Loampit-vale, Lewisham, for Mr. J. Smith. Mr. W. Theobald, architect :—

D. & R. Kennard	£180	0	0
Jeal & Harryman	115	0	0
Hoare	105	0	0
Banks	58	10	0

For building a house in Romford-road, for Mr. Symmons. Mr. C. R. Peters, architect :—

Read & Son	£2,063	0	0
Moyle	1,950	0	0
F. F. & J. Wood	1,943	0	0
Tillett	1,920	0	0
Palmer	1,850	0	0
Judd & Hawkings	1,697	0	0
Hearle	1,693	0	0

For new stables (exclusive of fittings) at Church House, Oatlands Park, Surrey, for Mr. Gaskell. Mr. John Jeffkins, architect :—

Lee	£740	0	0
Farley	630	0	0
Brown	577	0	0

For the erection of factory and business premises in High-street, Shoreditch, for Messrs. Wells & Co. Messrs. Fowler & Hill, architects. Quantities by Messrs. Fowler & Hugman :—

Morter	£9,643	0	0
Oliver	9,660	0	0
Kirk & Randall	9,540	0	0
Perry & Co.	9,530	0	0
Bangs	9,453	0	0
Brass	9,430	0	0
Ashby, Brothers	9,375	0	0
Wagner	9,269	0	0
Crockett	8,951	0	0

For the erection of schools, residence, boundary-walls, &c., at Gorse-hill, near Swindon, Wilts, for the Stratton Saint Margaret School Board. Messrs. W. H. Read and W. Drew, joint architects :—

Thomas	£4,509	0	0
Barrett	4,378	0	0
Wiltshire*	4,248	0	0
Forshaw	4,245	0	0

* Accepted at 4,150*l.*

For laying pipes, &c. (Contract No. 3) in connexion with water supply for Devizes, Wilts :—

Bell	£2,837	6	6
Cutler & Sons	2,100	0	0
Laidlaw & Sons	2,059	0	0
Jowett	1,874	3	7
Green	1,857	12	3
Bailey	1,796	1	2
Bugbird	1,611	0	0
Davies (accepted)	1,195	10	0

For road-making and pipe sewers at Peckham :—

Crockett	£2,326	0	0
Pearson	2,320	0	0
Pizzey	2,200	0	0
Richson	2,000	0	0
Mayo	1,787	10	0
Harris (accepted)	1,643	0	0

For roads and sewers at Hadley:—

Killingback	£3,269	16	0
Thompson	2,700	0	0
Bloomfield	2,331	0	0
Dunmoor	2,282	0	0
Crockett	2,224	0	0
Woodham	2,130	0	0
Pizzey (accepted)	2,100	0	0

For roads and pipe sewers at Acton:—

Baker	£715	0	0
Fizzey (accepted)	400	0	0
Jackson	399	10	0

For construction of sewer and road, to be called Netherhall-terrace, at Hampstead. Messrs. Farebrother, Ellis, Clark, & Co., surveyors:—

Anderson	£3,350	0	0
Hiscock	3,3 0	0	0
Culverhouse	3,150	0	0
Nowell & Robson	3,059	0	0
Killingback (accepted)	2,880	0	0

For construction of a road in extension of Frognal, at Hampstead. Messrs. Farebrother, Ellis, Clark, & Co., surveyors:—

Anderson	£3,700	0	0
Hiscock	3,590	0	0
Culverhouse	3,180	0	0
Nowell & Robson	3,103	0	0
Killingback (accepted)	2,985	0	0

TO CORRESPONDENTS.

W. H. W.—D.—W. & E. N.—Q. S.—J. R.—C. H.—M. G.—R. S.—J. H.—C. H. W.—W. L.—W. H. B.—Dr. F.—S. G.—W. C. T.—L. W.—B. F.—E. A.—J. E. & Sons.—C. G.—M. & S.—E. H. S.—T. R. S.—C. K.—M. H. J.—G. G. (if a bill for the party wall properly made out, has been served on him and payment refused, summon him to the county court).—T. K. (contract, &c., must be seen for proper answer. Take advice on the spot).—F. A. W. W. (the address of sepha te companies will be found in our advertising columns. A cement floor would be cheaper).—J. T. next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

Advertisements cannot be received for the current week's issue later than **THREE** o'clock p.m. *on* THURSDAY.

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Asphalte.
Seyssel, Patent Metallic Lava and White Asphaltes.
M. STODART & CO.
Office:
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GENERAL FOREMAN of BRICKLAYERS (not Working), or CLERK of WORKS, wants a RE-ENGAGEMENT. Good reference.—B. GOODMAN, 24, Stamford-road, Kingsland, N.

GENERAL FOREMAN wants Re-Engagement. Been five years in present employ. Good experience in bank and office fitting. Carpenter and joiner by trade.—T. W. No. 129, Rutland-street, Commercial-road, E.

GENERAL FOREMAN seeks immediate ENGAGEMENT. Thoroughly practical First class references. Joiner by trade.—S. P. H care of Mr York, 10, Paradise-road, Clapham, S.W

GENERAL FOREMAN (Builder's) wants a RE-ENGAGEMENT, to Take Charge of a Job. Good manager of men First-class London references. Town or country. —G. S. 14, Roury Buildings, Pimlico.

GENERAL FOREMAN of WORKS. Carpenter and Joiner by trade. Thoroughly experienced, or would take Charge of Joiner's Shop. First-class reference. No objection to country.—J. P. 35, Queen Margaret's-grove, Mildmay-park, N.

GENERAL FOREMAN or FOREMAN of BRICKLAYERS (steady and energetic) wants a RE-ENGAGEMENT. Carried out several public jobs in London. References.—Mr. J. LA ROCHE, 39, Acorn street, Southampton-street, Camberwell, S E.

WORKING FOREMAN (Painter, Decorator, &c) wan's EMPLOYMENT. Care of job, &c.—Box 123, Office of "The Builder."

WORKING FOREMAN of PAINTERS. Sixteen years with present employer.—H. W. 25, Meadow-road, South Lambeth, S E.

WORKING FOREMAN of PLUMBERS, age 34, wants a SITUATION. Two years' references from last employer.—J. H. 2, Princes terrace, Bonner-road, Victoria-park.

WORKING FOREMAN of PLUMBERS (experienced) wants a permanent ENGAGEMENT or Charge of a good Job, under a Sanitary Engineer. Can be well recommended.—Plumber, 13, Lawrence street, Chelsea, S.W.

WORKING SHOP FOREMAN of Joiners requires an ENGAGEMENT. Large practice in church and other works Well up in prime cost. No objection to the provinces.—Box 132, Office of "The Builder."

WORKING SHOP or GENERAL FOREMAN wants RE ENGAGEMENT or Charge of a Job Thoroughly practical Good references. Aged 40. Wages moderate. —F. D. 9, Lumley-buildings, Pimlico-road, S.W.

SHOP FOREMAN or MANAGER.—WANTED, by a thoroughly practical Man, carpenter and joiner by trade, an ENGAGEMENT as above. Good references.—Box 194, Office of "The Builder."

SHOP FOREMAN of JOINERS or STAIRCASE HAND (first-class) wants a RE-ENGAGEMENT. P. J. 5, Phene-street, Oakley-street, Chelsea, S.W.

SHOP FOREMAN of JOINERS.—WANTED, RE-ENGAGEMENT. Thoroughly practical and experienced Good manager of men and machinery. Age 40. Good references.—Box 131, Office of "The Builder."

SHOP FOREMAN of JOINERS wants a RE-ENGAGEMENT. Thoroughly practical and competent Joiner Capable of carrying out any description of work. For some time shop foreman to an extensive manufacturing Joiner of London. Town or country.—Box 131, Office of "The Builder."

FOREMAN of JOINERS seeks RE-ENGAGEMENT. Quick at setting out, and accustomed to the Management of men.—A. R. C. 24, Sherborne-street, Blandford-square, N.W.

FOREMAN of PAINTERS, PAPER-HANGERS, and DECORATORS (experienced) wants a CONSTANCY. Town or country. Eight years' reference from last employer.—T. STARK, 4, Highgate Centre, Highgate, N.

FOREMAN (Bricklayers') or Brickwork by the Rod, wants a RE-ENGAGEMENT. Well up in drawings and setting out.—A. B. 94, Hereford-place, St. Mark's-road, Kennington Park.

MANAGER, or GENERAL FOREMAN to BUILDER or CONTRACTOR. Experienced in the control of large public and other works. Competent to take entire responsibility.—B. A. 102, Waterloo-road, S E.

MANAGER (Builder and Decorator's) seeks an ENGAGEMENT. Fair practical draughtsman, and used to entire charge of accounts, estimating, &c.—Box 130, Office of "The Builder."

TIMEKEEPER, STOREKEEPER, &c. wants a RE-ENGAGEMENT, in Town or country. Thoroughly acquainted with the building trade. Seven years' character. Aged 23.—H. P. 488 New-cross-road, S.E.

TIME and ASSISTANT STORE KEEPER (used to keeping shop joiners' time and work-books) desires an ENGAGEMENT.—R. W. T. 20, Oakley-crescent, Manor-street, Chelsea.

FRENCH POLISHING, &c.—BUILDERS' WORK CONTRACTED for CABINET WORK and EBONISING, FLOORS WAXED and FRENCH POLISHED. Estimates given.
W. H. LAMBERT,
No. 49A, Dorset-street, Portman-square, W.

ORNAMENTAL PAINTING and DESIGNING in the Italian and French styles.—A first-class Artist is open to an ENGAGEMENT, on Piece Work, or otherwise.—Box 129, Office of "The Builder."

GRAINING by the Yard WANTED. Town or Country.—B. YOUNG, 186, Vauxhall Bridge-road Pimlico, S.W.

GRAINER and WRITER wants Constancy in London. No objection to fill up time.—F. STREETER No 184, Grays-inn road, W C.

IMPROVER (Decorator's).—WANTED, by a young Man, aged 21, to ARTICLE himself to a firm where good work is done, as Improver.—C. B. 8, New-street, Vincent-square Westminster.

IMPROVER (Joiner's), aged 18, wishes for a SITUATION in a Shop. Has been three years at the trade. Wages 6d. per hour. -J. S. 36, Greek street, Soho, W.

IMPROVER (Carpenter and Joiner's).—WANTED, by a Youth, aged 19, a SITUATION as an Improver. He has had some experience in office work, and can give good references.—For particulars, write to Mr. C H. SAMSON, Dunster.

JOINER'S WORK WANTED by two experienced Men, having good workshop. Any quantity, large or small Estimates, labour only or with materials.—PHYLOS, 19, Beresford-road, Highbury New Park.

CARPENTER, 25 years of age, is desirous of EMPLOYMENT in or near London. Used to general work.—W. M. 18, Ashburnham-grove, Greenwich, S.E.

CARPENTER and JOINER (good) wants constant EMPLOYMENT at BENCH. Suburbs or country. Sober and respectable.—State terms, &c. to JOINER, Post-office, Beckenham, S E.

STAIRCASE and HANDRAILS, or JOINER'S WORK WANTED, by the Piece, or would take the whole of Carpenter's Work of houses.—A. C. 30, Bondel-street, Orkney-street, Battersea Park.

MASON'S WORK WANTED. Good references.—Address, MASON, 8, Albert-street, St. George's-road, Peckham.

MACHINIST wants EMPLOYMENT to work general joiner or trying-up machine. Can make and temper irons, and sharpen own saw.—A. B. 21, William-street, Newroad, Wandsworth-road, S E.

MACHINERY, care of (thoroughly practical Smith and Fitter). All repairs including boiler repairs, &c. Country preferred.—J. C care of Mr. Cox, Bolingbroke-road School, Bridge-road, Battersea, S.W.

ENGINE DRIVER wants a SITUATION. Well up in stone and wood machinery. Twelve years in last employment.—J. HAWKINS, 13, Church-road, Battersea.

BELLHANGER, GAS, and HOT-WATER FITTER, wants a SITUATION or JOB in a London firm.—W. 110, East-street, Kennington road.

PLUMBER, PAINTER, PAPERHANGER (good), and very useful at other branches, wants PIECEWORK or Constancy. Good reference.—J. P. 11, The Clyde, Ilford, Essex.

PLUMBER wants a CONSTANCY or JOB. Can fill up time in other branches, or painting.—P. L No 10, Great James-street, Lisson-grove, N.W.

PLUMBER (good) wants a JOB or CONSTANCY Well up in new and old work.—A. B. Plumber, Victoria street, Englefield green, Egham.

PLUMBER (good) wants a JOB, in Town or country. Permanent or otherwise.—Box 137, Office of "The Builder."

IMPROVER (Plumber's), or to ASSIST, wants a PLACE. Has served four years.—A. B. 26, Saville-street, Marylebone.

IMPROVER (Plumber, Gasfitter, and Painter).—Young Man wants a SITUATION as LABOURER, where he could improve. Five years in trade. Very handy. Good references. 5s per hour.—MORGAN, 11, Little George-street, Hammersmith.

GLASS-CUTTER and GLAZIER (experienced) wants a JOB or PIECEWORK. Town or country Good references.—J. WHILEY, 17, Kempsford-road, Kennington, S E.

BRICKWORK WANTED by the PIECE. Labour only, or as Working or General Foreman. Good references.—B. A 85, Murray-street, Hoxton, N.

PLASTERING WANTED to any amount. Good references.—J. W. 62, Justan-street, Old Kent-road.

YOUTH.—WANTED to PLACE OUT, with a Builder, Architect, Land Surveyor, or Engineer, a well educated YOUTH, aged 17.—Apply, F. BICKERTON, 3, Burycourt, St. Mary-axe.

50,000 FEET GILT O-G ROOM BORDERING, from 1d. per foot.
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HAVELOCK WORKS, HANLEY, STAFFORDSHIRE,
Manufacturers of Floor, Hearth, and Wall Tiles of every description.
New Designs for Floors and Hearths furnished on application.

CONTRACTS, *continued from page* ii.

CHISWICK MAIN DRAINAGE.—CONTRACT No. 2.—The Chiswick Improvement Commissioners are prepared to receive TENDERS for Contracting, Delivering, Fixing, and Setting to Work Two STEAM PUMPING ENGINES, with Boilers and all Appliances complete, together with various other Machinery, at their Pumping Station at Corney, Chiswick, Middlesex. Also for Supplying and Fixing Gratings, Girders, Tide flaps, Penstocks, Sluice-valves, &c. in connexion with their Sewage Works. A lithographed set of drawings of the buildings in which it is proposed to erect the engines, pumps, &c and other particulars, together with a printed copy of the specification and conditions, may be obtained at the Office of Mr. H. O. SMITH, C.E. the Engineer to the Commissioners, Vestry-hall, Turnham green, W daily, between the hours of NINE and ELEVEN a.m. on and after MONDAY, the 15th day of OCTOBER next. A sum of 5l. will be charged for a copy of the drawings and specification, which sum will be returned upon receipt of a bonâ fide Tender. After a Tender has been accepted security will be required for the due performance of the contract, the cost of the contract and bond being defrayed by the Contractor. Sealed Tenders, endorsed "Tender for Engine, Pumps &c" are to be delivered to Mr. FINNIS, Prospect House, Turnham-green, Middlesex, W. on or before TUESDAY, the 6th day of NOVEMBER next The Commissioners do not bind themselves to accept the lowest or any Tender.—By order,

ROBERT F. FINNIS, Clerk to the Commissioners.

25th September, 1877.

CHISWICK PARISH.—To ROAD CONTRACTORS and OTHERS.—The Chiswick Improvement Commissioners are prepared to receive TENDERS for the FORMING and MAKING UP of the following ROADS and FOOTPATHS (stating the price of each work separately), viz :—

1. The Oxford-road.
2. The Cambridge-road

Both in the above Parish, and in accordance with plans and specifications prepared by the Surveyor to the Commissioners. Bills of quantities of the work may be obtained, together with full particulars, at the Office of the Surveyor, Vestry-hall, Turnham-green, daily, between the hours of NINE and ELEVEN a.m. on and after WEDNESDAY, the 3rd of OCTOBER next. A sum of 10s. will be charged for a copy of the quantities, which sum will be returned upon receipt of a bonâ fide Tender, after a Tender has been accepted. Security will be required for the due performance of the works, the cost of contract and bond being defrayed by the contractor. Sealed Tenders, endorsed "Tender for Road Making," to be delivered to Mr. FINNIS Prospect House, Turnham-green, W. on or before TUESDAY, the 16th of OCTOBER next. The Commissioners do not bind themselves to accept the lowest or any Tender.—By order,

ROBERT F. FINNIS, Clerk to the Commissioners.

25th September, 1877.

CHISWICK PARISH.—The Chiswick Improvement Commissioners are prepared to receive TENDERS for the CLEANSING and SLOPING of the Turnham green and Brentford roads, from the New-road, Hammersmith, to Sion Hall, near Kew Bridge, from the 20th day of October next to the 1st day of April, 1878. The Tender to include the providing of all necessary men, horses, carts, barrows, &c. Further particulars may be had on application at the Surveyor's Office, the Vestry-hall, Turnham-green. Security will be required by the Commissioners for the due performance of the contract, the cost of the contract and bond being defrayed by the contractor. Tenders, endorsed "Tender for Slopping," together with the names, addresses, and descriptions of the proposed sureties, to be delivered to Mr. FINNIS, at Prospect House, Turnham-green, W. on or before the 16th day of OCTOBER instant No Tender will be read which does not contain a 5l. Bank of England note in evidence that the same is made bonâ fide, which sum will be returned on application to the respective persons whose Tenders are not accepted. The Commissioners do not bind themselves to accept the lowest or any Tender.—By order,

ROBERT FINNIS, Clerk to the Commissioners.

September 26th, 1877.

BRISTOL WATER WORKS COMPANY. To BUILDERS and CONTRACTORS.—With reference to an advertisement which appeared in this paper on the 8th instant, requesting Tenders for the Erection of Engine and Boiler Houses and other Works for the Pumping Station at Chelvey, this is to notify that that the TIME for SENDING in the TENDERS is EXTENDED to FRIDAY, the 12th OCTOBER, on which day they are to be delivered at the Company's Offices, Small-street, Bristol. In the meantime the quantities of the different classes of work will be prepared, and will be ready for delivery to intending Contractors at the above Offices, or at those of JOHN TAYLOR, Esq. the Company's Consulting Engineer, 37, Great Queen-street, Westminster, on and after THURSDAY, the 4th OCTOBER.—By order of the Board,

(Signed) A. J. ALEXANDER, Secretary.

September 26th, 1877.

SCARBOROUGH CLIFF BRIDGE COMPANY.—TENDERS are required for EXCAVATING for and BUILDING the RETAINING WALLS and FOUNDATIONS of the new SPA SALOON. The drawings may be seen at the Manager's Office, from the 1st to the 4th days of OCTOBER next, inclusive, from the hours of TEN a.m. to FOUR p.m. The quantities may be obtained, either from the Manager or the Architect, Messrs VERITY & HUNT, at their Offices, 37, Regent-street, London, upon the payment of three guineas, which will be returned to all Contractors submitting a bonâ fide Tender Each Tender to be delivered or sent by post, addressed to Mr. PERCEVAL GOODRICKE, Cliffe Bridge Company's Offices, Scarborough, and endorsed "Tender for Spa Saloon Foundations," to reach him not later than TEN a.m. on the 6th day of OCTOBER next.—By order,

PERCEVAL GOODRICKE, Manager and Secretary.

September 26th, 1877.

DEWSBURY and HECKMONDWIKE WATERWORKS.—RESERVOIR at WHITLEY, near DEWSBURY. The Working Committee of the Dewsbury and Heckmondwike Waterworks Board are prepared to receive TENDERS for the MAKING a new RESERVOIR at Whitley, near Dewsbury, including the earthwork, puddle, stone pitching, masonry, concrete, pipe laying, fencing, and other work of detail connected therewith Plans may be seen, and specification and quantities obtained, on payment of 2l. 2s. at the Offices of J. F. BATEMAN, C.E. 31, Albert Chambers, Albert-square, Manchester, on and after the 1st day of OCTOBER, 1877. Sealed Tenders, endorsed, "Tender for Whitley Reservoir," must be delivered to JESSE SMITH, Esq. Town Clerk, Dewsbury, on or before TUESDAY, the 23rd day of OCTOBER, 1877. The Committee do not bind themselves to accept the lowest or any Tender. —By order,

JESSE SMITH, } Joint Clerks to the Dewsbury and
WILLIAM SYKES, } Heckmondwike Waterworks Board.

Waterworks Board Office, Dewsbury, September 25, 1877.

GREENWICH DISTRICT BOARD of WORKS.—To PAVING CONTRACTORS and OTHERS.—The Board of Works for the Greenwich District is prepared to receive TENDERS for PAVING the FOOTWAYS of River-terrace (from the Pilot P.H. to the River Bank), Upper Tyler-street (from Walnut Tree-road to New-road), the portion of Edward-street South which extends from Walnut Tree-road to New-road, and New-road (from Conduit-lane to Edward street South), in the Parish of Greenwich, with TAR COMPOSITION and Asphalte PAVEMENT, with GRANITE and GUERNSEY GRANITE KERB; and Making up the Roadways with Bombay Granite and Kentish Rag Stone; and for Paving the Channels with Aberdeen Granite Setts, other works according to the specifications Also, for Paving the Footways of Somerville-road and Frederick-street, Hatcham, in the Parish of St. Paul, Deptford, with Bombay Stone and York Stone and Aberdeen Granite, and Guernsey Granite Kerb, and for Making up the roadways with Kentish ragstone and Luton flints, and paving the channels with Aberdeen granite setts, other works according to the specification. The specification and plans can be seen, and particulars obtained, at the Offices of the Board, in the Greenwich road, Greenwich, between TEN and FOUR o'clock (on Saturdays between TEN and ONE). A separate Tender (which must be made on the form to be supplied at the Board's Offices) for the works in each street, sealed up and endorsed with the name of the street to which it refers, must be sent into the Board's Offices, as above, before FOUR p.m. on WEDNESDAY, the 10th of OCTOBER next, and parties tendering or their agents should attend at the said Offices at SEVEN p.m. on that day. The Board does not bind itself to accept the lowest or any Tender. J. SPENCER, Clerk to the Board.

Greenwich, September 27th, 1877.

NOTTINGHAM and LEEN DISTRICT SEWERAGE BOARD (35 and 36 Vict. Cap. 103).—OUTFALL WORKS.—To CONTRACTORS and IRONFOUNDERS.—Notice is hereby given that the Board are prepared to receive TENDERS from competent and experienced Contractors for the EXECUTION of the OUTFALL SEWER WORKS from Nottingham and Sneinton to Stoke Meadows, in the parish of Gedling, and for the SUPPLY of IRON PIPES in connexion therewith.

CONTRACT No. 1 comprises the Construction of Brick and Concrete Sewers, about 13,650 feet in length, in Embankment, in Cutting, and in Tunnel; also the Excavation for, and Laying of, about 9,332 feet in length of Iron Sewers, from 24 inches to 44 inches in diameter.

CONTRACT No. 2 comprises the Supply of the Iron Pipes and other Ironwork.

Plans, specifications, and conditions may be seen at my Offices, where also forms of Tender may be obtained on payment of 5l. 5s. (which sum will be returned to each competing Contractor on receipt of a bonâ fide Tender). Contractors proposing to submit Tenders for the Works, are requested to forward their names and addresses to me, when particulars will be sent as to the time fixed for inspecting the plans and sending in Tenders. The Board will not necessarily accept the lowest or any Tender, and no allowance will be made for estimates.—By order of the Board,

M. OGLE TARBOTTON, Engineer.

Municipal Offices, Nottingham, September, 1877.

J. & W. E. ARCHBUTT, 201, Westminster Bridge-road Lambeth, near Astley's Theatre



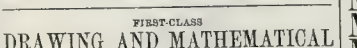
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Revised List of Prices:—Best 10-inch Dumpy Level, complete, 10l. 10s.; ditto with compass, 11l. 11s.; 14-inch ditto, 12l. 12s. and 13l. 13s. Theodolites equally low An inspection will prove the instruments cannot be surpassed in quality, accuracy, or price. Illustrated priced catalogues forwarded on receipt of three stamps. N.B.—Levels and Theodolites on hire, Established 1796. Stencil Plates in great variety

STANLEY, Manufacturer of MATHEMATICAL INSTRUMENTS to H.M. Government, Science and Art Department, Council of Jud a, Admiralty, &c. Only Prize Medal awarded at the Exhibition, 1862, for excellence of construction of Mathematical Instruments. Drawing and Surveying Instruments of every description of the best possible workmanship and highest finish, with many important improvements, at the most moderate cash prices. List post free. These goods can be had by ordering direct only.—Address, Great Turnstile, Holborn, London.

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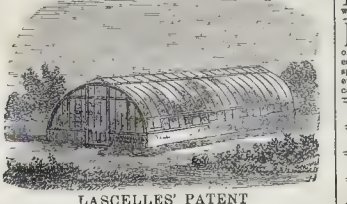
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BED-ROOM SUITES, the Early English style, in solid Ash, inlaid with real wood, large plate-glass door wardrobe, 38 guineas.

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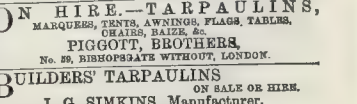
DECCAN.

MAPLE & CO. have just received a large consignment of very fine CARPETS from Hyderabad and Deccan, per ships *City of Baltimore* and the *Lahia*, from Bombay. These Carpets were ready for inspection on WEDNESDAY, AUGUST 1. Quality very fine, some very curious in colour and design. Prices remarkably low, and must astonish.—MAPLE & Co. Tottenham-court-road London.

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FOR THE JOINTS OF HOT-WATER PIPES.



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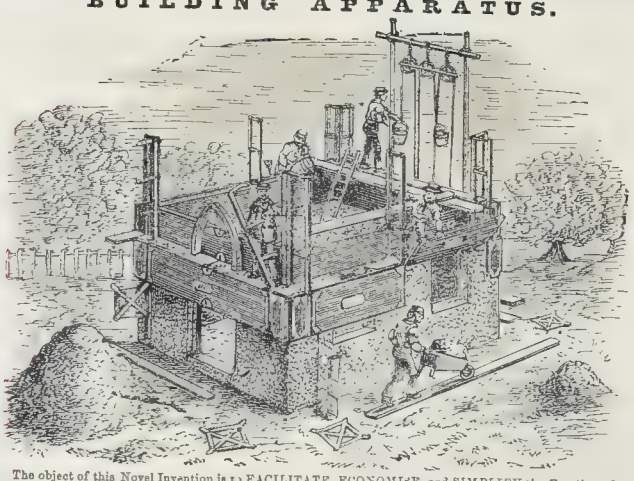
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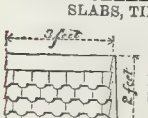
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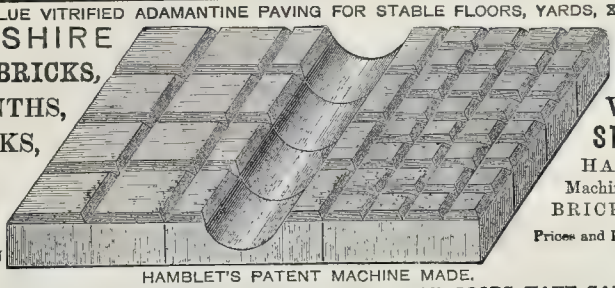
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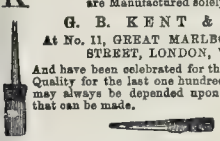
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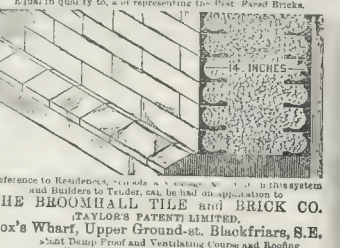
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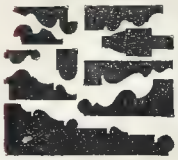
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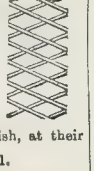
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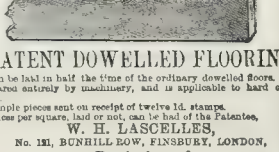
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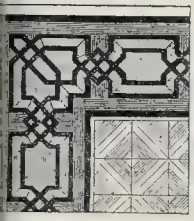
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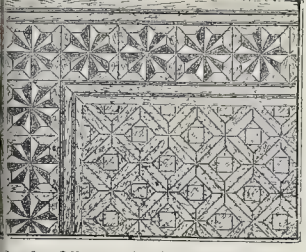
Agents Wanted in principal Towns of the United Kingdom and Colonies.

GILLOW'S PARQUET FLOORS.

GILLOW & CO.

CONSTRUCTIVE WOOD WORKS,

LANCASTER.



London Offices:—176, Oxford-street, W.



FLOORING! DEALS! MAHOGANY!

AT THE LOWEST PRICES FOR CASH.

SAMUEL PUTNEY,

Baltic Wharf, Great Western Railway Bridge, Paddington, W.; Elm-street, Gray's-inn-road, W.C. and Borough-road, S.E.

NEW ATLAS SAW-MILLS, at HATCHAM.

MANAGER—MR. W. LLOYD.

These Saw-Mills are now completed, and are fitted with greatly-increased Steam-power, so that any quantity of work can be executed with rapidity and punctuality.

PENARTH STREET, ORMSIDE STREET, OLD KENT ROAD, S.E.

NOTICE TO ARCHITECTS, BUILDERS, AND OTHERS.

HIGHBURY STEAM JOINERY WORKS AND SAW MILLS

56, BENWELL ROAD, HOLLOWAY.

ESTIMATES GIVEN FOR ALL KINDS OF JOINERY.

Circular, Frame, and Band Saw Work done for the Trade.

W. BARNARD, Manager.

KAMPTULICON FLOOR CLOTH,

A WARM, SOFT, AND NOISELESS FLOOR CLOTH,

For Hotels and Clubs, For Counting-houses and Shops, For Churches and Public Buildings, For Libraries and Studios, For Halls and Stone Floors, For Billiard-rooms and Passages.

PLAIN AND IN THE CHOICEST DESIGNS.

Soft as an ordinary Carpet, and specially recommended for the Nursery. Will wash and does not absorb dust.

India-rubber Macintosh Coats of superior make in every material, style, and quality.

Ladies' Waterproof Mantles. Waterproof Leggings and Overshoes. Coachmen's Driving Coats. Waterproof Driving Aprons and Rugs.

India-rubber Hot-water Bottles, Air and Water Beds, Cushions, &c.

VULCANISED INDIA-RUBBER MATS,

For Carriages, Warehouses, Offices, Conservatories, and Entrance-halls, &c. Made any size and thickness.

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No. 32, CANNON-STREET, LONDON, E.C.

GREEN TALLY SLATES from EUREKA QUARRY.

ROBERTS, ADLARD, & CO. SLATE MERCHANTS

To Her Majesty's Navy and Ordnance Boards, 18, LITTLE TOWER STREET, LONDON,

Sole Agents for the Supply of these beautiful new GREEN SLATES.

Granular Green, Bangor, Festiniog, Carnarvon, and all other Slates and Slate Slabs kept in Stock.

PRICES AND SAMPLES FORWARDED ON APPLICATION.

EUREKA-GREEN, RED-BROWN, PURPLE, AND BLUE SLATES.

SIZES FROM 24 by 14 to 16 by 8: A CHOICE SELECTION.

DOULTON & CO.,

GROVE ROAD VICTORIA PARK, LONDON, E

AGENTS FOR THE GLENBOIG STAR FIRE BRICKS.

No other FIRE BRICK combines such a high degree of Infusibility, with the entire absence (practically) of Expansion and Contraction.

ALL OTHER KINDS OF BRICKS, TILES, LIMES, AND CEMENTS.

EDWARD BROOKE & SONS,

HUDDERSFIELD.

SANITARY TUBES from 2 inches to 42 inches DIAMETER.

PATENT SEWER VENTILATORS.

PRIZE MEDALS: PARIS, 1867: LONDON, 1874.

Goods Shipped at London, Liverpool, Goole, or Hull

ESTABLISHED 1790.



JAMES WOODWARD,

SWADLINCOTE, NEAR BURTON-ON-TRENT.

Manufacturer of Superior Glazed STONEWARE SEWAGE PIPES, Gullies, Invert and Junction Blocks for Brick Sewers, &c.

TERRA-COTTA Chimney Tops, Vases, &c.

FIRE-BRICKS of very superior quality in every size and description, Boiler Sealing Blocks, Lining Bricks for Locomotive Fire-holes, Furnace Lumps, &c.

FIRE CLAY, Ground, and in Lump for Crucibles, &c., as supplied to the principal Steel-melting firms in Sheffield, &c. This Clay has been used by Messrs. Jessop & Sons for the past quarter of a century.

Sole Manufacturer of the Patent "Wash-Out" Water-Closet.

PRICES and FULL PARTICULARS on APPLICATION.

MAW & CO.'S REGISTERED
MAJOLICA FIRE-PLACES, FENDERS, &c. in three sizes, are highly ornamental, easily cleaned, and economical in the consumption of fuel. Coloured Engravings and prices on application.



FIRST-CLASS MEDALS TO MAW & CO.
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and numerous others.

IMPERISHABLE TESSELATED PAVEMENTS,

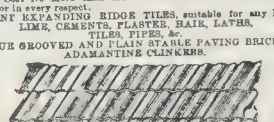
Combining a highly decorated and economical substitute for ordinary floors and their perishable coverings. MAW & CO.'S Pattern Book, the work of the first designers of the day, forwarded, together with special designs and estimates for every kind of floor and wall tiling. Specimens may be seen at MAW & CO.'S Manchester Agents, WILLIAM DALE, 50, John Dalton-street.
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MAW & CO. BENTHALL WORKS, BROSELEY.

NOTICE OF REMOVAL.
PRIZE MEDAL, EXHIBITION OF 1862.
ARCHITECTURAL POTTERY COMPANY, POOLE, DORSET, and 11, Adam-street, Adelphi, late 48, St. Martin's-lane, London, W.C.
Manufacturers of
MOSAIC, ENCAUSTIC, AND TESSELATED TILES in various colours for Church and Hall Pavements, &c.
WHITE AND COLOURED GLAZED WALL TILES, For Baths, Dairies, &c.
Patterns and Prices, Special Designs and Estimates free.
Tile Pavements fixed complete by experienced Workmen. Shipping Orders promptly executed.

SILVER MEDAL, PARIS EXHIBITION, 1867.
PEAKE'S TERRO-METALLIC TILES, PIPES, &c. Notice is hereby most respectfully given, that the LONDON DEPOT for this WARE is REMOVED to No. 21 Wharf, Macclesfield-street North, City-road Basin, N.; thirdly, that the trade term, "TERRO-METALLIC" is the exclusive right of the Proprietor; and thirdly, that the "Reports of the Juries," page 351, of the Great Exhibition, 1851, note the grant of a First-class Medal, and name the Manufactories known so long as "The Tileries," Cannock, Stafford shire, as the first of the kind in the world.

PORT VALE TERRA-METALLIC TILERIES, WOLSTANTON, STOKE-ON-TRENT.
TOMKINSON, HOLLINS, & BASFORD,
Manufacturers of Terra-Metallic Blue and Ornamental Ridge, Roof, and Floor Tiles, of all descriptions. Building and Paving Bricks, Stable Clinkers, Garden Tiles. Quotations upon application.

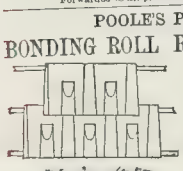
PANTILES SUPERSEDED.
BUFF CORRUGATED ROOFING TILES
Cost No More than the common Pantiles, although vastly superior in every respect.
PATENT EXPANDING RIDGE TILES, suitable for any Pitch
LIME, CEMENTS, PLASTER, HAIR, LATHS, TILES, PIPES, &c.
BLUE GROOVED AND PLAIN STABLE PAVING BRICKS.
ADAMANTINE CLINKERS.



RED CORRUGATED ROOFING TILES.
A LARGE QUANTITY OF THE ABOVE IN STOCK.
W. C. HAWKER,
BELMONT LIME WHARF, YORK ROAD (on the Canal Basin, KING'S CROSS, N. nearly opposite entrance to Goods Station, Great Northern Railway).

RED CORRUGATED ROOFING TILES.
A. H. LAVERS,
NINE-ELMS, LONDON
RED, BLUE, and BROSELEY RIDGE and ROOFING TILES.
WHITE GLAZED TILES and GLAZED BRICKS.
ADAMANTINE CLINKERS
RED, BLUE BUFF, and BLAUK FLOORING TILES and Quarries,
BLUE STAFFORDSHIRE BRICKS of every description
Forwarded to all parts direct from the Works.

POOLE'S PATENT
BONDING ROLL ROOFING TILES

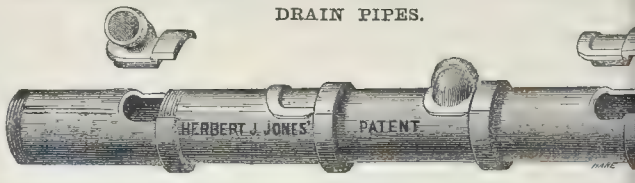


Are superior to all others are Square-cornered, like Slate;
are perfect in lap:
also in bonding one another by break-joint.
For particulars and prices, apply to
JOHN MATTHEWS,
ROYAL POTTERY,
WESTON-SUPER-MARE
Sole Assignee of Patent.

LONDON PATENT FELT COMPANY'S
IMPROVED ASPHALTIC ROOFING FELTS
DRY HAIR FELTS
And PATENT SHIP SHEATHING FELTS
Delivered Free, at lowest Prices.
Ices: Sussex place, 94, Leadenhall-street, London, E.C.

London, 1862. ESTABLISHED 1795. Paris,
JOSEPH CLIFF & SONS
WORTLEY, LEEDS.
DRAIN PIPES, highly glazed, true in form, and good thickness,—Circular, from 2 in. to 3
Egg or Oval shape, from 8 in. by 6 in. to 36 in. by 24 in. INVERT BLOCKS, &c.
FIRE BRICKS for resisting the most intense heats, Blast Furnace Lumps, Patent Gas Re
Chimney Tops.
ARCHITECTURAL AND OTHER TERRA-COTTA, White or Red.
FACING BRICKS.—These are of a Warm Buff colour, and are largely specified by Archi
because of their great hardness.
GLAZED BRICKS, White and all colours. Blue Bricks. Paving Tiles. Adamantine Clink
London Depot.....2 & 4 WHARFS, KING'S CROSS GOODS STATION.
Liverpool ..... 1, Back Leeds Street. Leeds ..... Queen Street

THOMAS SMITH & CO.
CANAL POTTERIES OLD KENT ROAD LONDON, S.
(Late of the Original Lambeth Potteries. Established 1749),
SOLE MANUFACTURERS OF HERBERT J. JONES'S PATE
DRAIN PIPES.



These Pipes afford every facility for making examinations and junctions at any time, wi
interfering with the flow of sewage. Especial attention is called to this advantage, as, i
usual manner of making connections, a hole is either knocked in the Pipe for the insertion
end of the intended subsidiary drain, or several pipes are displaced to allow the usual junct
be put in. The latter method is almost as objectionable as the former, as the work cann
performed without chipping the ends of the pipes, thus causing short bearings and imp
joints.
HERBERT J. JONES'S PIPES are made of the thickness approved by the Metrop
Board of Works, and are supplied at the London tariff prices. References can be given to
eminent District and other Surveyors.

KINSON POTTERY COMPANY. John Phillips & Compan
GLAZED STONEWARE SOCKET PIPES.
Phillips's Improved Access Pipe and Vitreous Invert Bricks.



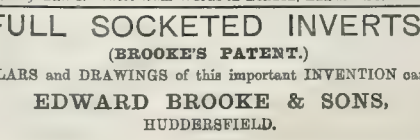
Terra-Cotta Chimne
Fire Bricks, Fire
Tiles, &c.
Architectural Terra-Cotta Window Heads, String, Ridge Cresting, Finials
POTTERIES:—POOLE, Dorset; NEWTON ABBOT, Devon.
DEPOTS:—LONDON, Albert Embankment, Lambeth, S.E.; PLYMOUTH, Great W
Docks; CORNWALL, Par Harbour.



Fig. "D."

DOULTON & CO. High Street, Lambeth,
WERE AWARDED FIVE PRIZE MEDALS at the
PHILADELPHIA EXHIBITION.
Messrs. D. & Co. call attention to their CLOSET PANS and T
in STRONG VITRIFIED STONEWARE.
Cottage Pan and Trap at 4s. 6d. (as Illustra
FIG. "D."
Manufacturers of FOWLER'S PATENT CLOSI
DEPOTS:—61 & 63, South John-st. and 100, Soho-st. Liv
Granville Wharf, Birmingham; and Hope-st. Salford.

DOULTON'S Superior Glazed Stoneware DRAIN PI
EXTRACT from JUDGES' REPORTS of PHILADELPHIA EXHIBITION.
"Medal for Improved Sanitary Stoneware and Sewer-pipes of Special Construc
STANFORD'S PATENT JOINT FOR PIPES
This Joint is absolutely Water-tight; and needs no skilled labour in fixin



HENRY DOULTON & CO. HIGH STREET, LAMBETH,
Goods delivered by Rail or Water from Works in London, Lancashire, and Staffordshi

FULL SOCKETED INVERTS.
(BROOKE'S PATENT.)
Full PARTICULARS and DRAWINGS of this important INVENTION can be obtain
EDWARD BROOKE & SONS,
HUDDERSFIELD.

SUPERIOR GLAZED STONEWARE DRAIN PIPES.

PATENT COMPO.

W. INGHAM & SONS

PAT. COMPO

This Joint is absolutely Water-tight. Needs no skilled labour in fixing.

Requires neither Cement nor Clay.

Manufacturers of

STANFORD'S PATENT JOINT FOR PIPES

ALSO OF

Fire Bricks, Terra-cotta, Chimney Pots, Glazed Bricks and Tiles, Gas Retorts, Invert Blocks.

Works—WORTLEY, near Leeds. LONDON—19, Laurence Pountney-lane, E.C.



JOHN BOLDING & SONS,

SANITARY ENGINEERS

AND

BRASS FOUNDERS,

GROSVENOR WORKS,

19, SOUTH MOLTON STREET,

LONDON, W.

MANUFACTURERS OF

Plumbers' Brass Work, Sanitary Earthenware, Baths, Pumps, Water Closets, Urinals, Water-Waste Preventers, and all Sanitary Appliances.

Illustrated Catalogue, bound in Cloth, containing 177 pages, Free by Post on receipt of Business Card.

WASTE WATER METER SYSTEM.

This system was first introduced in Liverpool, where

Water to the value of more than £40,000 per annum has been saved,

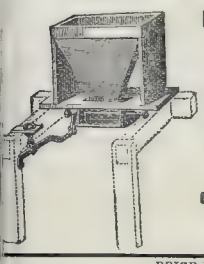
AND CONSTANT SERVICE GIVEN IN ADDITION.

It is now being extended to other Towns both in this country and abroad, with equally satisfactory results.

Engineers and Corporate Authorities supplied with details on application to

THE SECRETARY, WASTE WATER METER CO., LIM., 4, COOK-STREET, LIVERPOOL.

APPARATUS FOR USE IN CLOSETS, No. 4.



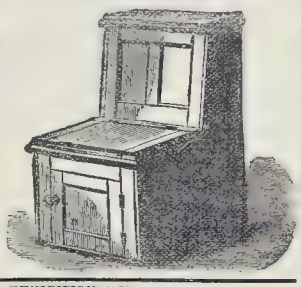
MOULE'S EARTH CLOSETS

APPLY TO

MOULE'S PATENT EARTH CLOSET COMPANY (Limited),

64, GARRICK STREET, COVENT-GARDEN, LONDON, W.C.

COMMODE, No. 10.



PRIZE MEDAL PHILADELPHIA EXHIBITION, 1876.

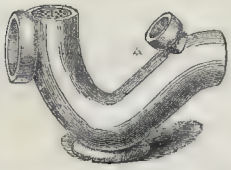
JAMES STIFF & SONS,

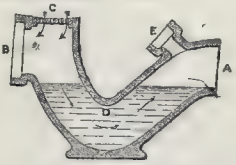
MANUFACTURERS OF

Glazed Stoneware Drain Pipes, Sewer Traps, Architectural Terra Cotta,

LONDON POTTERY, LAMBETH, S.E.

WEAVER'S VENTILATING SEWER-AIR TRAP.





described at the Social Science Congress, Liverpool, 1876. For Illustrated and Descriptive Price Lists, apply JAMES STIFF & SONS, High-street, Lambeth, London.

GLAZED SOCKETED SANITARY TUBES,

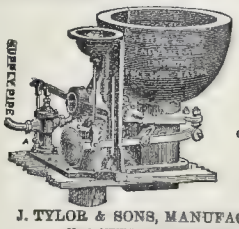
CHIMNEY POTS, &c. Goods Shipped at Hull and other Ports.

T. W. HICK, Sanitary Tube Works Hunslet Carr, LEEDS.

J. TYLOR & SONS

PATENT REGULATOR VALVE CLOSET,

WITH FULL-SIZE BASIN TRAPPED ABOVE FLOOR LEVEL WITH AFTER-FLUSH



PATENT "WASTE NOT" VALVE, WHICH CLOSES OF ITSELF, CAN BE FITTED TO THIS CLOSET.

J. TYLOR & SONS, MANUFACTURERS,

No. 2, NEWGATE STREET, LONDON.

Sluice Valves, Hydrants,

STAND-POSTS,

PUMPS, STEAM FITTINGS,

WROUGHT-IRON PIPES AND FITTINGS,

WATER-WASTE PREVENTERS,

And every description of

PLUMBERS' BRASS & SANITARY WORK,

MANUFACTURED BY

THOS. LAMBERT & SONS,

SHORT STREET, LAMBETH,

LONDON.

Catalogues post free on application.

CARTS, LADDERS, BARROWS, &c.—GEORGE ELL & CO. Builders of Carts, Vans, Wagons, Trucks, Trolleys, &c. Contractors' and Builders' Plant. LADDERS, BARROWS, TRESTLES, STEPS, SWINGING SCAFFOLDS, PICK-HELVES, HAMMER HANDLES, &c. Wheels made by Improved Machinery on the Premises. Barrows, Dobbin and other Carts, intended for exportation, made by machinery so as to be interchangeable in their parts. Scaffolding, Ladders, Barrows, Trestles, Steps, &c. Lent on Hire. ENGLISH TIMBER, SPOKES, FELLOES, STOCKS, FENCING, &c. Price Lists on Application.

GEORGE ELL & CO.

EUSTON WORKS, 279 and 280, EUSTON ROAD, N.W. and BRIDGE WHARF, BISHOP'S ROAD, LONDON, W.

CARTS, WAGONS,

VANS, DRAYS, AND BARROWS,

for Contractors and Builders

Vans of every description for Timber Merchants, &c. for Town and Country purposes.



Catalogues on application to

HAYES & SON, Stamford and Peterborough.

GRAVEL and SAND FOR SALE,

At STONE COURT PITS, GREENHITHE.

Also FLINTS and CHALK.

Delivered anywhere on the Thames by arrangement, at 2s. per ton for Gravel, f.o.b.

Apply to Mr. JUPP, Stone, near Dartford

SAND.—500,000 Tons of best clean, sharp, white, red, and yellow PIT SAND FOR SALE. Special contracts entered into for prices and samples.—Apply to E. ROBERTSON, Wet Dock-yard, Ipswich.

To Iron Merchants, Contractors, Builders, and Others.

MESSRS. FULLER, HORSEY, SON, & CO. are instructed by the Proprietor, who is entering into other business arrangements, to SELL by AUCTION, on the PREMISES, 11 and 12, Wharf-road, City road, on THURSDAY, OCTOBER 18th at ONE precisely, the STOCK-IN TRADE of an IRON MERCHANT, including 50 tons new, square, round, and flat, best Staffordshire bars, 22 tons angle, half-round, and channel iron, 110 rolled joists, 17 tons flitch plates, 4 tons hoop iron, 5 tons best cast, shear, and spring steel, 12 tons bolts, nuts, rivets, cosch, and set screws, 2 bar-iron racks, 40 feet long; plate-iron rack, wrought-iron wharf crane, 26 cwt.; Avery's weighing-machine, Mann's fire-resisting safe, 26 by 24 by 40 inches; office furniture, and other effects. At the same time will be offered the Lease of the desirable Premises, having a waterside frontage of 97 feet to the Wenlock Basin, and a ground area of 6 45 square feet. Barges can load alongside. The Premises may be viewed by orders to be had of the Auctioneers, and the Stock the day preceding the Sale.—Particulars and catalogues may be had on the Premises, and of Messrs. FULLER, HORSEY, SON, & CO. 11, Billiter square, E.C.

To Builders, Carpenters, and Others.—Quantity of BUILDING MATERIALS, comprising 200 yellow and white Fir boards, 100 deals, joists, rafters, sashes and frames, doors, 200 scaffold poles, twenty dozen cords, lacding, and puttogs, York paving, chimney pieces, window cills, coping, slates, 10,000 plain tiles, stoves, ranges, and effects

MR. W. KNOX will SELL the above by AUCTION, on the PREMISES, Pomeroy street, New Cross, on TUESDAY OCTOBER 2nd, at TWELVE, without reserve On view.—Catalogues as above, and 13, Old Kent-road.

KINGSLAND.—Horses and Plant of a Parish Contractor.

MR. RYMILL will SELL by AUCTION, at No. 7 WHARF, Hertford-road, Kingsland, on THURSDAY next, OCTOBER 4th, at ONE o'clock, by order of Mr. Henry Crane, whose contracts with Shoreditch parish have expired, 50 powerful CART-HORSES, 15 Brick and Dust Carts, 2 Spring Vans, Slop Waggons, 20 sets of Thill, and Chain Harness, and sundry useful Plant.—On view day prior. Catalogues of the Auctioneer, Repository, Barbican.

Near Aldgate Railway Station.—To Contractors, Druggists, Clothiers, Printers, Packing-case Makers, and Others.

MR. NOTLEY will SELL, at the MART, on MONDAY, OCTOBER 15, the LEASE of MANUFACTURING PREMISES, covering an area of about 7,000 feet, situate in Goulston-square, Whitechapel; with the Plant, including a spacious workshop of three floors; another building used as a drying-shed, stables for four horses, yard, &c Held for nineteen years to run, at a low rent.—May be viewed, and particulars had of Messrs. ELLIS & CROSSFIELD, Solicitors, 16, Mark-lane; and of the Auctioneer, 80, Cornhill.

CAMBERWELL.—Building Materials.—By order of the School Board for London.

MR. DOUGLAS YOUNG will SELL by AUCTION, on the PREMISES, George-street, Camberwell, at the rear of the school, on TUESDAY, OCTOBER 9, 1877, at TWELVE, a quantity of excellent BUILDING MATERIALS, including large quantity of sound bricks, excellent York paving and cills, sound rafters, joists, flooring boards, and other useful timber, slates, pantiles stoves, sashes and doors with frames, and other materials comprised in seven lots.—Catalogues at the School Board Offices, Victoria Embankment, and of the Auctioneer, 213A, Clapham-road.

FOREST GATE.—Seventh Sale of Freehold Building Land, five minutes' walk from two railway stations

MESSRS. PHILIP D. TUCKETT & CO. are instructed by John Gurney, esq. to SELL by AUCTION, at the SWAN HOTEL, Stratford, on THURSDAY, OCTOBER 4, at SIX o'clock, in 66 lots, a further portion of very eligible FREEHOLD LAND, with long depths, having 250 feet frontage to Norwich-road, an important thoroughfare, 50 feet wide, planted as an avenue, and 23 feet frontages to Clova-road, where a smaller class of house may be erected. The position is the best in the neighbourhood, being near the new public park, Wanstead Flats, between Maryland Point and Forest Gate Railway Stations, about three-quarters of a mile from Stratford, five miles from the City, and where additional villa residences are greatly needed to meet the demand. Free conveyance and payment by half yearly instalments extending over ten years.—Particulars of Messrs. YOUNG, JONES, ROBERTS, & HALE, Solicitors, No. 2, St. Mildred's-court, E.C.; of Messrs. PHILIP D. TUCKETT & CO. Land Agents, Surveyors, &c. 10A, Old Broad-street, E.C.

On THURSDAY, OCTOBER 11th.—OXFORD-ROAD, Reading.—Important Notice of Sale—Just beyond the Borough Boundary, on the West Side of Reading, and fronting the main Oxford-road Conveniently near the heart of the town, within easy distance of the principal factories Freehold Building Land subdivided into Plots suitable for small houses, which in the neighbourhood very speedily let

MESSRS. J. OMER COOPER & SON have received instructions from the Directors of the Berkshire Estates Company, Limited, to SELL by Auction at the TURK'S HEAD HOTEL, Reading, on THURSDAY, OCTOBER 11th, 1877, at THREE o'clock in the Afternoon precisely, Numerous BUILDING PLOTS on the Groveland's Estate, near the Government Barracks, and fronting the main Oxford-road and a new road of good width to be shortly made

The Auctioneers desire to direct attention to this Property as the Land offered for sale is specially adapted for building; the distance from the town is very moderate; the Plots are of square frontage and good depths, many of them fronting the main road.

The number of good dwellings for artisans in and around Reading is still greatly below the requirements of the population, and an opportunity will be afforded by this sale of meeting the still increasing demand for cottages and small houses

Particulars and conditions of Sale, with lithographed plans, may be had on application to Messrs. BLANDY & WITHERINGTON, Solicitors, No. 1, Friar-street, Reading; or to Messrs. J. OMER COOPER & SON, Land Agents and Valuers, No. 162, Friar-street, Reading

CITY of LONDON, HOUNDSDITCH.—Commanding Freehold Building Site for Shops or Warehouse, with a frontage of over 70 ft.

MESSRS. EDWIN FOX & BOUSFIELD will SELL, at the MART, on WEDNESDAY, OCTOBER 17th, at TWO precisely, in one lot an important and valuable FREEHOLD ESTATE, comprising Nos. 87, 88, 89, and 90, on the north and preferable side of Houndsditch, and adjoining the most flourishing thoroughfares in the City of London, containing a superficial area of about 1,140 feet with the unusually extensive and conspicuous frontage of 72 feet, admirably adapted for the erection of shops or warehouse The proximity of the property to the various railway terminus and stations especially adapts it for a great number of commercial purposes.—Particulars of Messrs. SYDNEY & SON Solicitors, 46, Finsbury-circus; at the Mart; and of Messrs. EDWIN FOX and BOUSFIELD 24 Gresham street, Bank, E.C.

FINSBURY, on the borders of the City of London.—Capital Freehold Property, comprising an area of 4 000 superficial feet close to the Goods Station of the London and North-Western Railway, and nearly abutting on the North London Line

MESSRS. EDWIN FOX & BOUSFIELD will SELL, at the MART, on WEDNESDAY, OCTOBER 17th, at TWO precisely, a valuable FREEHOLD PROPERTY, situate as well, and in the grand new Goods Station of the North Western Railway, now in course of erection The estate comprises about 4,2 feet of land, and is well placed in Horse Shoe-alley, Wilson-street, Finsbury, with a substantial modern range of workshops and two dwelling-houses thereon, admirably adapted for the erection of shops or of factory or warehouse, which are much in demand at the spot, and as positions so on all probability, to be absorbed in the vast improvements now occurring thereat. Possession will be given on completion of the purchase Particulars of Messrs. CRICK & FREEMAN Solicitors, Maldon, Essex; and of Messrs. FREEMAN & BOTHAMLEY, Solicitors, No 13 Queen-street Chepside; at the Mart; and of Messrs EDWIN FOX & BOUSFIELD, No 24, Gresham-street, Bank, E.C.

BUILDING MATERIALS comprising 20,000 pantiles, 1 000 sound rafters, a quantity of tie-beams, wall-plates, oak posts, &c. and the brick erection of stable

MR. HERBERT BEAN will SELL the above by AUCTION, on the ROPE-WALK, known as Dilston grove, adjoining 145, James-street, Rotherhithe on FRIDAY, OCTOBER 5th, at TWELVE for ONE precisely

May be viewed, and catalogues had of the Auctioneer, 6, King William-street, E.C.

KENSINGTON.—Building Materials of the Vicarage.

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, on the PREMISES, on WEDNESDAY, OCTOBER 3, at ONE, the valuable BUILDING MATERIALS of the WORKSHOPS and PREMISES on the West Side of King's Arms-yard, Bishopsgate, in the City of London, for 13½ years, from Michaelmas, 1877, the Rent to commence at Christmas, 1877.

Plans of the property may be seen, and further particulars and forms of tender obtained, upon application at the Office of the City Architect, Guildhall.

FERD. BRAND, Comptroller.

THE Committee for LETTING the BRIDGE HOUSE ESTATES will meet at GUILDHALL, on FRIDAY, the 12th day of OCTOBER next, at ONE o'clock precisely, to receive PROPOSALS for taking on Lease the Premises Nos. 1, 2, and 3, Barton buildings, and Nos. 10, 11, 12 13, and 14, in Friar-street, Blackfriars-road, either upon a repairing lease for 20½ years from Christmas, 1877, or upon a building lease for 80 years from the same period Further particulars may be obtained upon application at the Architect's Office, Guildhall

FERDINAND BRAND, Comptroller

Guildhall, September 27, 1877

WEST HAM PARK.—TO BE LET by the Corporation of London a HOUSE and GROUNDS, known as the Cedars, 32, Romford Wes Ham Park, Essex, and containing about four acres Parties desirous of taking the same may send in proposals to the City Architect, Guildhall, stating the use to which they intend to appropriate the same, the term of years required, and the rent proposed to be given

FERD. BRAND, Comptroller.

Guildhall, 27th September, 1877

WEST HAM.—FREEHOLD BUILDING LAND.—TO BE LET or SOLD, about 6½ acres, with long frontages to Stephens and Manor roads, opposite the Leather-cloth Works, and five minutes' walk from the Plaistow and Stratford Bridge Railway stations.—Apply to Mr. V. BUCKLAND, Surveyor, No. 66, Cannon-street, City.

BISHOPSGATE, City of London.—7,400 superficial feet of FREEHOLD LAND TO BE LET upon Building Lease It will be divided if required. Ground-rent for the whole, 1s. 6d per square foot.—Particulars of REYNOLDS & EASON, Land Agents, 44, Bishopsgate-street Without, E.C.

ELTHAM, KENT.—TO BE SOLD, a very desirable DETACHED RESIDENCE, standing in about 15 acres of ground, and approached by a sweeping carriage-drive with two entrances. The house contains four reception rooms, eight bedrooms, bath rooms, and spacious offices, a conservatory, greenhouse, vinery, fruit, &c Held on lease direct from the Crown for ninety years, at a very low ground-rent.—Apply, H. P. FOSTER, No. 5, John-street, Adelphi, London.

BECKENHAM LODGE ESTATE, Beckenham.—BUILDING SITES near Station for Detached Houses in great demand Liberal advances made.

Also for FIVE HOUSES in Nightingale lane, Clapham common, with advances.—Apply to W. NEWTON DUNN, 1 and 2, Bucklersbury, E.C.

TO BUILDERS.—An excellent opportunity for Profitable Speculation.—CARCASSES of two large SEMI-DETACHED HOUSES for immediate SALE, with capital Freehold Site (which may be rented). Bricks and timber of good quality, and sufficient for two good-sized houses.—May be seen, and particulars obtained, of Messrs. J. O. COOPER & SON, Surveyors, 162, Friar-street, Reading

TO BUILDERS and OTHERS.—Sydenham, TO BE LET or SOLD, on most advantageous terms, about Six Acres of valuable FREEHOLD LAND. Advertiser will lend money to respectable party who will build.—Address, BONA NOTE, Messrs. Deacon's, Leadenhall-street.

TO BUILDERS and OTHERS.—LOWER-PLACE FARM, Acton, and STONEBRIDGE FARM, Willesden, TO BE LET, in sections varying from 10 acres to one-quarter of an acre, or less if required, for building purposes. Quite in the country, and within a quarter of an hour's walk of Acton and Willesden Junction Stations, from whence hundreds of trains run daily to all parts of London Broad street, City in thirty-two minutes; Aldgate in twenty minutes; Charing-cross, thirty minutes.—Full particulars of PHILIP WILKINSON, Esq. Surveyor, 151, Edgware-road, Hyde Park, W.; and of Messrs. BOLTON, ROBBINS, & BUSK, No 1, Lincoln's-inn.

MAIDA VALE.—Sutherland Gardens.—FOR SALE, an advantageous BUILDING AGREEMENT, Two Frontages, each 100 feet, to Sutherland gardens, Held under the Bishop of London's Trustees. The land is ripe for building No ghost-ground first class For price and particulars apply to JOSEPH EBBS, 9, Northwick-terrace, Maida-vale; or to Messrs. ALLEN & EDWARDS, Solicitors, 8, Old Jewry, E.C.

MAIDA HILL, NORTHWICK MEWS.—FOR SALE, Extensive WORKSHOPS and PREMISES, fitted with Steam-power and Machinery for a Carpenter and Builder, Frontage, 87 feet. Depth, 20 feet 7 inches, being Nos. 4, 5, and 6, Northwick mews. Term about 46 years unexpired Apportioned ground-rent, 4l. 10s. Apply to JOSEPH EBBS, 9 Northwick-terrace, Maida vale, or to Messrs. ALLEN & EDWARDS, Solicitors, 8, Old Jewry, E.C.

NORTHWICK MEWS, NORTHWICK TERRACE, MAIDA HILL.—FOR SALE, 15 and 16, Northwick-mews, frontage 47 ft. 1 in. at a return frontage of 20 ft. comprising private residence, clerk's office, stream, livery warehouse, and 4 lock-up stables, on the floor 45 ft. by 20 ft. Term about fifty-six years unexpired Ground rent 8l.—Apply to JOSEPH EBBS, 9, Northwick-terrace, Maida-vale; or to Messrs ALLEN & EDWARDS, Solicitors, 8, Old Jewry, E.C.

OAKLEIGH PARK ESTATE.—FIFTY Acres of FREEHOLD LAND TO BE SOLD, or LET on Building Lease, either as a whole or in portions. Liberal advances will be made The Estate is beautifully situated on elevated ground, 300 feet above the Thames level, commanding extensive views. The Alexandra Palace is within a short distance, with easy access by rail or road. The roads are made, gas and water mains are laid down, and a system of sewerage arranged, and the sides of roads ornamental planted, and there are trees and wood on the Estate. Oakleigh Park Station, on the Great Northern main line, is on the property, and the Totteridge Station on the High Barnet Branch Railway is within a quarter of a mile; between these stations and the City there are upwards of 100 trains daily For further particulars, apply to JOHAS SMITH, Building Works, Belvedere-road Lambeth, S.E.

TO STONE MERCHANTS, BUILDERS, TIMBER MERCHANTS (CONTRACTORS), and Others, requiring STONE TO BE LET on Lease for seven years, or otherwise a large PART OF LAND, well inclosed, containing upwards of 15 000 feet super with stabling for nine horses, near the Midland and Great Northern Goods stations, and the Canal —Apply to CHAS GOODALL & SONS, Great College-street, Camden Town, N.W.

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[See also p. xiii]

KENTISH TOWN, N.W.—To Builders, Carpenters, and others

MESSRS. LEREW & RANDALL will SELL by AUCTION, on the PREMISES, Junction-road, on MONDAY, OCTOBER 8, at ONE for TWO the surplus STOCK, comprising Deals and Battens (whole and cut) 4,500 feet mahogany 5½ inches flooring, 3,000 feet quartering, wide pine, 18,000 feet garden palings 7,000 feet slating battens, deal and featheredge boards, cut scuff, joists, and other materials, &c.—Auction Offices, Cardington-street, Hampstead-road, N.W.

MAIDA HILL.—The capital and extensive Plant and Stock of a Contractor and Builder.

MESSRS. LEREW & RANDALL will SELL by AUCTION, on the PREMISES, Northwick-terrace-mews, Northwick-terrace, and Sutherland gardens, Maida-hill, on THURSDAY, OCTOBER 4th, at TWELVE for ONE, the PLANT and STOCK: comprising 600 scaffle poles, 400 ditto boards, 20 dozen cords, 50 dozen puttogs, 60 wheeling planks, 20 ladders, steps and trestles, crab jack, winding-machine, barrows, portable office, 20 carpenters' benches, iron ranges, 2,000 pine planks, deals, and battens, boards; 150 squares 1½ inch, 1 inch, and ¾ inch flooring; match lining, quartering, large quantity of Portland and York stone, 9,000 bricks, 150 tons of plain pipes, and ironmongery; contents of painter's, plumber's, and plasterer's shops; also two powerful cart horses, two builder's carts, dog cart, waggonette, harness, chaff-cutting machine, &c.—Auction Offices, Cardington-street, Hampstead-road, N.W.

To Contractors, Brewers, Timber Merchants, and Others.

MESSRS. VANDEWATER & FRENCH will SELL by AUCTION, on WEDNESDAY next, OCTOBER 3rd, 1877, on the PREMISES, at the Railway Arches, Clifton-road, Asylum-road, Old Kent-road, the property of Messrs. A. C. Hobman, Paving Contractors, in consequence of their partnership contract being completed, Twenty-five ENGLISH CART and VAN HORSES, six-year brougham mare, quiet in harness and very fast; one-horse carts, excellent van, waggonettes, chaise, and various; chill, chains, and pair horse harness, and sundry other effects —On view two days prior of Sale.—Catalogues of the Auctioneers, at their Repository, New Kent-road.

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BUILDING LAND.—TO BE LET, at Hoxton, a valuable SITE, of about 18,000 superficial feet, suitable for warehouses, manufactories, or model dwellings —For full particulars, apply to Mr. THOMAS CRATFERIA CLARKE, Architect and Surveyor, 63, Bishopsgate-street Within, City.

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GUILDHALL, 27th September, 1877.—The City Lands Committee will meet at the GUILDHALL, on WEDNESDAY, the 10th of OCTOBER next, at HALF-PAST ONE o'clock precisely, to receive PROPOSALS for Taking on Lease the WORKSHOPS and PREMISES on the West Side of King's Arms-yard, Bishopsgate, in the City of London, for 13½ years, from Michaelmas, 1877, the Rent to commence at Christmas, 1877.

Plans of the property may be seen, and further particulars and forms of tender obtained, upon application at the Office of the City Architect, Guildhall.

FERD. BRAND, Comptroller.

London: Printed by CHARLES WYMAN, Printer, at the Printing-office of Wyman & Sons, Nos. 74 and 75, Great Queen street, Lincoln's-inn-fields, in the Parish of St. Giles-in-the-fields; and Published by DOUGLAS FOXBRUNER, at the Office of "THE BUILDER," 46, CATHERINE-STREET, in the Parish of St. Paul, Covent-garden, both in the county of Middlesex.—Saturday, September 29th, 1877.

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Vol. XXXV. No. 1809. OCTOBER 6, 1877. PRICE FOURPENCE.

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e public will be admitted on payment of 10s. for each Sessional s of Twenty Lectures or 17s. for the complete Annual Course of y Lectures, or 1s. each Lecture.

HE ROYAL INSTITUTE of BRITISH ARCHITECTS hereby give notice that an EXAMINATION rsons desirous of obtaining a Certificate of Competency to per- the duties of District Surveyor, will take place at the Rooms of nstitute, 9, Conduit-street, Hanover square, W. on THURSDAY FRIDAY, the 25th and 26th OCTOBER. Candidates will be uired to attend on THURSDAY, the 25th inst. for the purpose of ering the written questions, from TEN a.m. until TWO p.m. on FRIDAY, the 26th inst. for the Oral Examination, at ILY Rooms. Persons desirous of being examined must, on or e FRIDAY, the 19th inst. send an application, which must be mpanied by a statement according to a form to be previously ined at the Rooms of the Institute.

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Messrs. TROLLOPE & SONS have accepted the Agency of the largest and best manufacturer of Parquetry on the Continent. The specimens will be found very superior to those in ordinary use, not only in artistic design, but in quality of wood and workmanship
NEAPOLITAN AND FRENCH TILES.
Messrs. TROLLOPE & SONS are Sole Agents for the principal manufacturers in Italy and the South of France, and have a large variety of samples of these artistic and cheap productions.
The Museum contains specimens of all the above; also Chimney-pieces in all styles, and other varieties of Marble Work for Decorative purposes. Constructive Woodwork, Ancient and Modern. Thin Veneering of real wood in lieu of painting and paperhanging. Xylotechnography, or the Stained Wood process. Carpets, Tapestries, Embroideries. Ancient and Modern Furniture in Queen Anne and other styles, and all kinds of Architectural and Decorative accessories.
G. T. ROBINSON, Art Director.

COMPETITIONS.

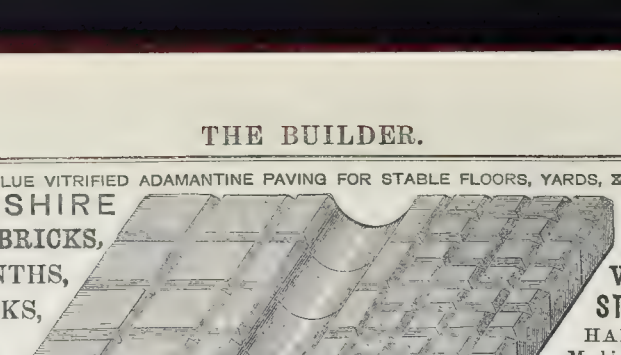
TO ARCHITECTS and OTHERS.—BOROUGH of CHIPPENHAM, Wilts. — The Drinking Fountain Committee invite DESIGNS for a GRANITE DRINKING FOUNTAIN, to be erected at a cost not exceeding £60. In the centre of the market-place of the town of Chippenham, to be furnished with a lamp or lamps, with a drinking-basin, troughs for horses, cattle, sheep, under it. A premium of 5l. 5s. is offered for the best design, with working plans, which shall be accepted by the Committee Designs, with working plans, to be sent to the undersigned, on or before the 31st day of OCTOBER next. FRANK H. PHILLIPS, Town Clerk.
Chippenham, Wilts, September 24, 1877.

SKEGNESS, LINCOLNSHIRE.—To GAS ENGINEERS.—The Directors of the Skegness Gas Light and Coke Company, Limited, invite Gas Engineers to furnish PLANS of GAS WORKS, with specifications and estimates of the cost thereof, for the Parish of Skegness, in the County of Lincoln. The Engineer whose plans are accepted will be appointed to superintend the erection of the works till completion. The plans and specifications must be accompanied by a statement of the commission required, and such commission will be inclusive of the cost of preparing plans, specifications, and estimates. No premium or honorarium will be paid to any gentleman whose plans are rejected. The plans, &c. are to be sent to the Managing Director of the Company, Mr. HOBSON DUNKLEY, Sea View Hotel, Skegness, on or before the 1st NOVEMBER next. The Directors reserve to themselves the right to reject any or all of the plans, specifications, and estimates, and they do not bind themselves to accept the lowest or any other Estimate or Tender by way of commission. The Managing Director will furnish any further information on application.
TWEED & STEPHEN, Secretaries to the Company.
Lincoln, 28th September, 1877.

[*Contracts see next page.*

BLUE VITRIFIED ADAMANTINE PAVING FOR STABLE FLOORS, YARDS, &c.

STAFFORDSHIRE
Vitrified BLUE BRICKS,
COPINGS, PLINTHS,
STABLE BRICKS,
AND
Terra-Metallic
Pavings, &c.
OF EVERY DESCRIPTION



JOSEPH HAMBLET
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STAFFORDSHIRE
HAMBLET'S PATENT
Machine-made BRINDLE
BRICKS now largely used.
Prices and Illustrated Book of Design on application.

HAMBLET'S PATENT MACHINE MADE.

THROUGH THE WIDE-SPREAD REPUTATION WHICH THESE GOODS HAVE GAINED, many Makers ha been induced to send into the London and other markets Spurious Imitations, which are only Coloured by a chemical process, a will not bear any comparison, for Strength, Durability, &c., with the Genuine Article.

CONTRACTS.

BRIDGWATER CORPORATION WATERWORKS. — To PIPE FOUNDERS. The Waterworks Committee of the Corporation of Bridgwater are prepared to receive TENDERS for making and delivering certain CAST IRON SOCKET PIPES, of 12 inches diameter and under, and for other Pipe Castings. Tenders, sealed and marked on the outside "Tenders for Pipes," to be sent to my office at King-square, Bridgwater, at or before TEN o'clock in the forenoon of MONDAY, the 8th day of OCTOBER 1877. Specifications and Forms of Tender may be had, and all further information required may be obtained, by application to me or to Messrs. THOMAS & CHARLES HAWKSLEY, Civil Engineers, No. 30 Great George-street, Westminster, S.W. The Corporation do not pledge themselves to accept the lowest or other Tender

JAMES COOK, Jun. Town Clerk.

King's-square, Bridgwater, September 17, 1877.

THE BOARD of WORKS for the Lewisham District. — TAR PAVING, CHANNELLING, &c. — Notice is hereby given, that this Board is prepared to receive TENDERS for TAR PAVING, CHANNELLING and MACADAMIZING Nightingale-grove and Rangoon-street, Sydenham, and Molesley-road, Penge. Sealed Tenders, endorsed "Tender for ," to be delivered on or before TUESDAY, the 16th proximo, at the Office of the Board, where specifications of the work may be seen, and forms of Tender and other particulars may be obtained, on or after the 8th OCTOBER. The Board do not bind itself to accept the lowest or any Tender. By order

SAMUEL EDWARDS, Clerk to the Board.

Catford, S.E. September 19th, 1877.

TO CONTRACTORS and OTHERS.—The Board of Works for the Wandsworth District are desirous of receiving TENDERS for the MAKING UP of LAUDERDALE-ROAD, ST. JAMES'S GROVE, and PARKHAM-STREET, in the Parish of Battersea. The specifications and plans may be seen, and forms of Tender obtained at the Offices of the Board, Battersea-rise, between the hours of TEN and FOUR, on and after TUESDAY. Tenders to be sent in, under seal, to the Board, endorsed "Tender for Making up ——," on or before TUESDAY the 9th of OCTOBER next, and must contain the name and address of the person proposed to join the Contractor in a contract for the due execution of the same. No Tender will be received unless it is made up on the printed forms issued from the Offices. The Board do not bind themselves to accept the lowest or any Tender.—By order of the Board of Works for the Wandsworth District.

ARTHUR ALEXR. CORSELLIS, Clerk to the Board.

Battersea-rise, S.W. 25th September, 1877.

TO CONTRACTORS and OTHERS.—LEDBURY SEWERAGE. — The Rural Sanitary Authority of the Ledbury Union are prepared to receive TENDERS for the SEWERAGE of Ledbury Parish, as shown, and drawn to a scale, at the Workhouse, Ledbury, or at the Office of the Engineer to the Authority, Mr. G. H. ROBERTS, C.E. Caxton House Chambers, 36, Parliament-st. Westminster, on or before the 15th inst. Sealed Tenders, marked "Tenders for Engine Shed," must be in the hands of the undersigned not later than NINE a.m. on WEDNESDAY, the 17th of OCTOBER, 1877.—By order.

EDWARD ROSS, Secretary.

London-road Station, Manchester, October 2nd, 1877.

CHISWICK MAIN DRAINAGE.—CONTRACT No. 2.—The Chiswick Improvement Commissioners are prepared to receive TENDERS for Constructing, Delivering, Fixing, and Setting to Work Two STEAM PUMPING ENGINES, with Boilers and all Appliances complete, together with various other Machinery, at their Pumping Station at Corney Cha'wick, Middlesex. Also for Supplying and Fixing Cast Iron Girders, Tie Bolts, Pen tocks, Sluice Valves, &c. in connexion with their Sewage Works. A lithographed set of drawings of the buildings in which it is proposed to erect the engines, and a specification, may be obtained together with a printed copy of the specification and conditions, may be obtained at the Office of Mr. H. O. SMITH, C.E. the Engineer to the Commissioners, Arterial Drainage Office, Westminster, between the hours of NINE and ELEVEN a.m. on and after MONDAY, the 8th day of OCTOBER next. A sum of 5l. will be charged for a copy of the drawings and specification, which sum will be returned upon receipt of a bonâ fide Tender. After a Tender has been accepted security will be required for the due performance of the contract, the cost of the contract and bond to be prepared by the Contractor. Sealed Tenders, endorsed "Tender for Engine, Pumps, &c." are to be delivered to Mr. FINNIS, Project House, Turnham-green, Middlesex, WEDNESDAY, the 24th day of NOVEMBER next. The Commissioners do not bind themselves to accept the lowest or any Tender.—By order,

ROBERT F. FINNIS, Clerk to the Commissioners.

25th September, 1877.

CHISWICK PARISH.—To ROAD CONTRACTORS and OTHERS.—The Chiswick Improvement Commissioners are prepared to receive TENDERS for the FORMING and MAKING UP of the following ROADS and FOOTPATHS, stating the price of each work separately, viz.:—

1. The Oxford-road.
2. The Cambridge-road.

Both in the above Parish, and in accordance with plans and specifications prepared by the Surveyor to the Commissioners. Bills of quantities of the work may be obtained, together with full particulars, at the Office of the Surveyor, Vestry Hall, Turnham-green, daily, between the hours of NINE and ELEVEN a.m. on and after WEDNESDAY, the 3rd of OCTOBER next. A sum of 10s. will be charged for a copy of the quantities, which sum will be returned upon receipt of a bonâ fide Tender, after Tender has been accepted. Security will be required for the due performance of the works, the cost of contract and bond being defrayed by the contractor. Sealed Tenders, to be endorsed "Tender for Road Making," to be delivered to Mr. FINNIS, Prospect House, Turnham-green, W. on or before TUESDAY, the 16th of OCTOBER next. The Commissioners do not bind themselves to accept the lowest or any Tender.—By order,

ROBERT F. FINNIS, Clerk to the Commissioners.

25th September, 1877.

DEWSBURY and HECKMONDWIKE WATERWORKS.—RESERVOIR at WHITLEY near DEWSBURY. The Waterworks Committee of the Dewsbury and Heckmondwike Waterworks Board are prepared to receive TENDERS for the MAKING a new RESERVOIR at Whitley, near Dewsbury, including the earthwork; puddle, stone pitching, masonry, concrete, pipe laying, fencing, and other work of detail connected therewith. Plans may be seen, and specification and quantities obtained on payment of 2l. at the Offices of J. F. BATEMAN, Esq. F.R.S. Albert Chambers, Albert-square, Manchester, on and after the 1st day of OCTOBER, 1877. Sealed Tenders, endorsed, "Tender for Whitley Reservoir," must be delivered to JESSE SMITH, Esq. Town Clerk, Dewsbury, on or before TUESDAY, the 23rd day of OCTOBER, 1877. The Committee do not bind themselves to accept the lowest or any Tender—by order.

JESSE SMITH, } Joint Clerks to the Dewsbury and
WILLIAM SYKES, } Heckmondwike Waterworks Board

Waterworks Board Office, Dewsbury, September 25, 1877.

CITY of WINCHESTER. — MAIN SEWERAGE CONTRACT, No. 4. — TO BUILDERS, CONTRACTORS, and OTHERS. The Corporation of Winchester, acting as the Urban Sanitary Authority, are prepared to receive TENDERS for the ERECTION of an ENGINE and BOILER HOUSE and CHIMNEY-SHAFT. Plans and specifications may be seen at the Office of the Engineer, Mr. JAMES LEMON, Southampton-buildings, Chancery-lane, London. The Commissioners do not have separate Tenders for the construction of the sewer of 1,000 Tubes of the three following sizes, viz.:—Diameter, 2 feet, 9 feet 6 inches, and 3 feet. Tenders, marked "Sewer Outfall," and addressed to the Clerk, to be delivered at the Office of the Commissioners, on or before FRIDAY, OCTOBER 12th.

Dated this 18th day of September 1877

JAMES DRIVER, Clerk.

EXMOUTH and BUDLEIGH-SALTERTON WATERWORKS.—The Directors of the Exmouth and Budleigh-Salterton Waterworks Company are prepared to receive TENDERS for the CONSTRUCTION of a BRICKWORK LINED RESERVOIR, with Iron Roof, in Sandy Bottom, Tipcott, and Laying of about 1,140 yards of 9 inch Cast-Iron Piping, and other Works. Drawings and specification may be seen at the Secretary's Office, Exmouth, Devon, on and after MONDAY, the 1st of OCTOBER next, and information may be obtained by applying to the Engineer, Mr. SHERATON HOLMES, Newcastle-upon-Tyne. Sealed Tenders to be addressed to the Secretary of the Company not later than SATURDAY, the 13th of OCTOBER. The Directors do not bind themselves to accept the lowest or any Tender.—By order,

Dated September 27, 1877. H. C. ADAMS, Secretary.

TO ENGINEERS and GASFITTERS.—The Guardians of the Poor of the Parishes of St. Giles and St. George Bloomsbury, are desirous of receiving TENDERS for ENGINEERS' WORK and GASFITTERS' WORK at their New Casual Wards, in Charlesstreet, Drurylane. Printed forms of Tender and Conditions may be obtained upon application to Messrs. GARDENER, SON, & THEOBALD, 110, Great Russell-street, W.C. and the Tenders must be addressed to me, at the Guardians' Offices, 27, Broad-street, W.C. at or before TEN a.m. on TUESDAY, the 13th inst. sealed and endorsed with the name of the Work Tendered for. The Guardians do not bind themselves to accept the lowest or any Tender.—By order

J. ROBINSON, Clerk to the Guardians.

Guardians' Office 27, Broad-street, W.C.

TO ENGINEERS and OTHERS.—The Guardians of the Poor of the Parish of St. Leonard, Shoreditch, are desirous to receive TENDERS, and enter into a CONTRACT for REPAIRING and Dividing into Two Compartments the large WATER TANK at the Workhouse, Kingsland-road. E. and for Supplying, and Fixing Connexions and Valves to same. Plans and specification may be seen, and all information obtained upon applying to Mr. J. W. PEGG, C.E. 4, Queen Victoria-street, Westminster, S.W. on and after the 1st of OCTOBER next, with whom a sum of 5l. Bank of England note must be deposited, which will be returned to persons sending in a bonâ fide Tender. Sealed Tenders, endorsed "Tender for Repairs to Tank, &c." must be delivered personally to the Guardians at their Board room, No. 204, Hoxton-street on WEDNESDAY the 10th day of OCTOBER next, at HALF-PAST ELEVEN o'clock in the forenoon precisely. Security will be required for the due performance of the contract. The Guardians do not pledge themselves to accept the lowest or any Tender. By order,

EDWARD S. PARKER Clerk to the Guardians.

Clerk's Offices, 215, Kings-land-road, 8 September 26th, 1877.

TO STONE MERCHANTS and OTHERS. The Vestry of the Hamlet of Mile-end-old-Town will meet at the Vestry hall, Palestine-road, on WEDNESDAY, the 10th of OCTOBER, 1877, at SEVEN o'clock p.m. precisely, to receive TENDERS for 100 tons of 4-inch by 5-inch PITCHING and 50 tons of 4-inch by 7-inch Pitching, to be supplied and delivered according to the terms of a specification, which may be seen at the Office of Mr. J. M. KNIGHT, the Surveyor, at the Vestry hall, between the hours of TEN and ONE. The contractor will be required to enter into a contract, to be prepared by the Clerk to the Vestry, and find two approved sureties to join him in a bond, in the sum of £200, for the due performance thereof. Tenders, containing the names and addresses of proposed sureties are to be delivered at my Office, endorsed "Tender for Pitching," before THREE o'clock in the afternoon of the day of meeting. The Vestry do not bind themselves to accept the lowest or any Tender.

WILLIAM BUTLER TUTSUM, Clerk to the Vestry.

Vestry hall, Baker-street, Mile-end-road,
October 4th, 1877.

BAND SAW BLADES, extra tough.—For Price List of FRENCH SAWS made from our Patent "Double Diamond" Steel, apply to

M. POWIS BALE & CO.
Saw-mill Engineers, 99, Bridge-row, London.

ROLLER for MAKING ROADS. WANTED, to Hire or Buy, a Modern, Second-hand HORSE ROLLER, weight, when loaded, about one ton per foot.—State price and particulars to Lg WIS DEWEY, Chesthunt, Herts.

BUILDERS' & CONTRACTORS' PLANT

TO BE SOLD, CHEAP, VIZ.:—

6-h.p. Vertical Engine, Boiler, and 6-ft. P
Mortar Mill, on carriage work and wheels
6-h.p. Winding Engine and Drum combined.
6-h.p. Mortar Mill, on travelling wheels.
Saw Table, 5 ft. by 2 ft. 6 in.; saw, 30 in.
Portable Engine, 12-h.p., with reversing gear.
" " 18-h.p., without ditto.
Vertical Engine, 6-h.p.
" " 9 h.p., with reversing gear.
Mortar Mill, 6 ft., with friction rollers.
" " with 7 ft. Pan.

SECOND-HAND PORTABLE ENGINES

12-h.p., by Clayton & Co., in excellent conditio
7-h.p., by Ruston & Proctor, " "
4-h.p., by Hornsby,] " "

TO BE SEEN AT

BARROWS & STEWART'S ENGINEERS, BANBURY.

PORTABLE STEAM ENGINE (excelle Second hand), by Clayton & Co. suitable for driving a Brick making Machine, &c.
Also, a capital Second hand PORTABLE ENGINE Mortar Mi Saw Table, &c.
BARROWS & STEWART, Engineers, Banbur

PORTABLE ENGINES (Secondhand) 6, 7, 8, 9, and 10 h.p. TO BE SOLD Cheap. Guaranteed to in a thorough state of repair
For particulars and prices, apply to
ROBEY & CO. Engineers, Lincoln.

FOR HIRE or SALE, Cheap, a capit 7-H.P. PORTABLE ENGINE, and a 6 feet MORTAR MI Only used two months, and quite equal to new.
WURR & LEWIS,
No. 16, Walbrook, London.

ENGINES.—Two 8 h.p. Portable ENGINE and 7 ft. 6 in. MORTAR MILL FOR SALE or HIRE, or other Machinery which may be required.—Address, C. FISHER, Bradford-road, Upper Sydenham.

LOCOMOTIVE TANK ENGINES.—MANNING, WARDLE, & CO.
BOYNE ENGINE WORKS, LEEDS,
Have several now ready for immediate delivery, of various sizes suitable for design and workmanship suitable for Contractors, Docks, Collieries, Works, and Branch Lines of Railway, &c.
Photographs, Specifications, and Prices sent on application.

MORTAR MILL.—FOR SALE, a Second hand HORSE MORTAR MILL 7 feet Pan, with delivery, all complete and in capital condition, price 16l. Messrs. Patent Concrete Mixer, nearly new, 5l. One cittle, One Set Boring Gear and Augers, complete, 5l.—Can be inspected H. GREENE & COMPANY'S, Rupert-street, Bristol.

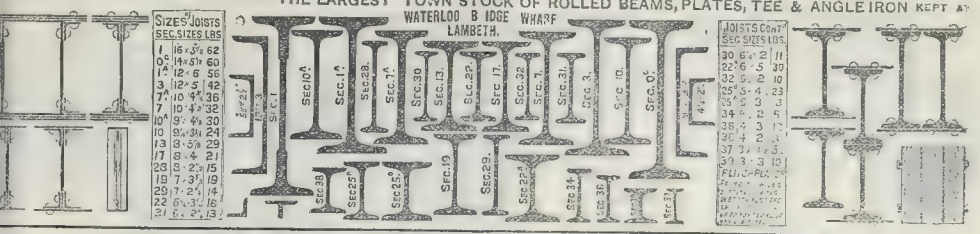
WROUGHT-IRON BOX GIRDERS.—Eleven 22 ft. 4 in.; Forty-four 15 ft. 9 in.; Eleven 10 ft. 2 All 17 in. deep, by 8½ in. flange. New EX LIQUIDATION St. p ton on Rail. Also WROUGHT IRON ROLLED BEAMS to mate 16 in. and 12 in. deep, 6 in. and 5 in. flange, 6l. per ton on Rail.
LEES & WOOD, 27, King-street, Mancheste

TO CONTRACTORS, BUILDERS, an MANUFACTURERS.—Messrs. CHAPMAN & SUTTON ha FOR SALE, or HIRE with option of Purchase, a quantity ENGINES, BOILERS, and GENERAL PLANT, suitable for any the above trades, including Cranes, Hoists, Winches, Pumps, Sa Benches, Mortar Mills, Shafting, Pulleys, Plummer Blocks, &c. Apply Vulcan Ironworks, Rhodeswell-road, Limehouse (near Stepn Station), Lond. n E.

FOR SALE, one TRYING-UP MACHINE 22 feet bed by 16 inches wide, with counters, shafts, &c.; o GENERAL JOINERS, and GENERAL PLANT, suitable for any Powis & Co. Also, one SAW BENCH, 6 feet by 3 feet 2 inches, Jackson; and one MORTAR MILL, with 7 feet pan. A very good o by Clayton & Co.
For particulars, apply on the works, Lambeth New Infirmar near the Elephant and Castle, S.E. to Mr. JAMES TAYLOR, Co tractor.

PATENT GILL STOVE (B) to B SOLD, a Bargain. Suitable for warming a public buildin Originally cost 35l. Has been in use two years.—Apply to Mr. J. TAYLOR, Clifton Cottage, Somerset-road, New Barne.

ATTW. T. SHAW & CO. ENGINEERS, IRONFOUNDERS, & CONTRACTORS. CHIEF OFFICES: 141, CANNON STREET, E.C.
MANUFACTURERS OF RIVETTED GIRDERS, ROLLED JOISTS, BRIDGES, ROOFS, TANKS, COLUMNS, CASTINGS, &c.
THE LARGEST TOWN STOCK OF ROLLED BEAMS, PLATES, TEE & ANGLE IRON KEPT AT
WATERLOO BRIDGE WHARF, LAMBETH.



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MILLWRIGHTS AND ENGINEERS,
MANUFACTURERS OF
CONSTRUCTIONAL IRON WORK,
"Messrs. R. Moreland & Son, Engineers, 3, Old-street, E.C. October 30th, 1876.
We are pleased to inform you that your Patent Fire-Proof Flooring was the means of Saving the Steam Engine and Boiler from destruction in the fire that occurred at our Albert Od Mills, Hammersmith.—Yours faithfully,
(Signed) PINCHIN, JOHNSON, & CO."
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INODOROUS, SARKING, and OTHER SHEATHING FELTS KEPT ALWAYS IN STOCK. Manufacturers of
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ROUGHT IRON TANKS.
PAINTED and GALVANIZED, OF IMPROVED MANUFACTURE.
ORRUGATED IRON.
GALVANIZED and BLACK, IN ALL GAUGES, KEPT IN STOCK. ZINC WORK OF ALL KINDS.
ZBOY WORKS, EUSTON ROAD, LONDON, N.W.; HATTON GARDEN, LIVERPOOL; GREAT CLYDE STREET, GLASGOW

MEASURES BROTHERS & CO. Southwark St., London, S.E.
Proprietors of Phillips's Patent Rights, and Manufacturers of Patent Girders, Rolled Iron Joists, Riveted Girders, Flitch Plates, Columns, Fire-proof Floors, Tee, Angle, and Sash Iron, &c.
Have always in their TOWN STOCK about 3,000 TONS of the following sizes, from which orders can be immediately executed at low prices. Section Sheets and Book free on application.
MANCHESTER OFFICE: 6, BOND STREET.

3" × 3" = 10 lb. per ft.	5" × 3" = 18 lb. per ft.	7" × 2" = 14½ lb. per ft.	9" × 3½" = 25 lb. per ft.
3 × 1½ = 5 ,, ,,	5 × 4½ = 23 ,, ,,	7 × 3½ = 20 ,, ,,	9½ × 4½ = 29 ,, ,,
4 × 1½ = 7 ,, ,,	6 × 2 = 11 ,, ,,	8 × 4 = 22 ,, ,,	10 × 4½ = 32 ,, ,,
4 × 3 = 12 ,, ,,	6 × 3 = 16 ,, ,,	8 × 5 = 29 ,, ,,	10 × 5 = 36 to 48 ,, ,,
5 × 2 - 8 ,, ,,	6 × 5 = 29 ,, ,,	8 × 6 = 34 ,, ,,	10 × 6 = 56 ,, ,,

12" × 5"	= 45 lb. per ft.
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14 × 6	= 61 ,, ,,
16 × 6½ & 6	= 61 & 62 ,, ,,
16½ × 7	= 100 ,, ,,

JOISTS—Length from 10 feet to 36 feet. PLATES—Width 6" to 18"; Length, 12 feet to 30 feet; Thickness, ¼" to ⅜".

ROWNSON DREW & CO.
225 UPPER THAMES STREET, 113 QUEEN VICTORIA STREET, and PAUL'S WHARF, E.C.
ROLLED JOISTS,
From 3 in. to 16 in. deep, and FLITCH PLATES in various widths up to 30 ft. long,
IN STOCK at LEOPOLD WHARF, UPPER GROUND STREET, BLACKFRIARS BRIDGE.
Sheets of Sections and Tables of Strength on application.
Riveted Girders, Columns, and General Castings, Bar Iron, Steel Tools, &c.
RAILWAY AND CONTRACTORS' STORES AND PLANT.] PATENT CYCLOPS FORGES. [NAILS AND BUILDERS' IRONMONGERY.

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TURNER & CO.
Established A.D. 1818.
Engineers, Smiths, and Founders.
Makers of all Kinds of Steam, Hydraulic, or Hand Power
LIFTS AND HOISTS
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ORNAMENTAL AND CONSTRUCTIONAL IRONWORK OF ALL KINDS, FOR ARCHITECTS AND BUILDERS.

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SLOW COMBUSTION STOVES.
DESCRIPTIVE CATALOGUES POST-FREE.
"Excellent in every way." See the *Times*, Jan. 30, 1877.
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New London Show-rooms now open—93 & 95, Queen Victoria-street, E.C.
Large Selection also at the Museum of Building Appliances, 23A, Maddox-street, Regent-street, W.
B. & B. are also MANUFACTURERS of the "DIAMOND," "COTTAGE," "NORFOLK," and "UNIVERSAL" RANGES and will be happy to furnish Comprehensive Price Lists upon application.

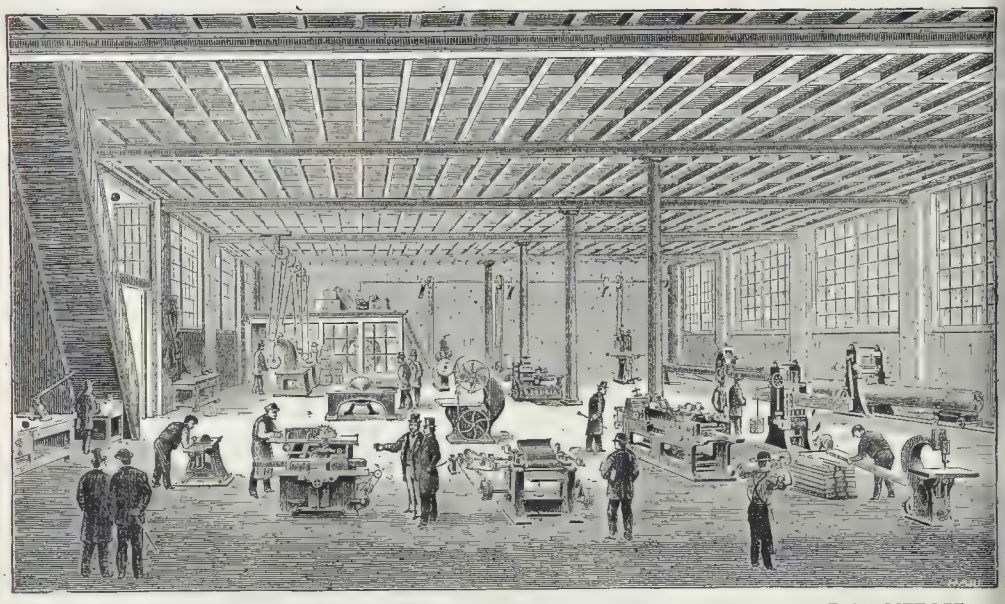


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SUPERIOR WOOD-WORKING MACHINES.



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The above engraving represents the interior of a large building which has been recently erected at the Stanley Works fo the purpose of thoroughly testing all new machines, and also for giving intending purchasers the opportunity of judging o their merits by seeing them actually at work.

As new machines are from time to time brought out, they are fixed in this shop, and worked for the purpose o showing them to those interested; and thus, at any time, a selection of the most novel and improved machines may alway be seen in operation by application at the Works. Besides a number of new and special machines temporarily fixed fo trial, an assortment of those which are in more general demand are kept constantly at work in this building, such a Timber and Deal Frames, Circular and Band Saws, Planing, Moulding, Mortising, and Tenoning Machines, Patent Complet Joiner, Saw-Sharpening Machines, &c.

Competent men are always in attendance to work the machines and explain their action and capabilities, and they wil also give instructions how to work them to the best advantage, to men who may be sent by purchasers for that purpose.

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To PURCHASE the extensive PREMISES and PLANT of the late BATTERSEA FOUNDRY COMPANY

Where in future a portion of their work will be carried on. These works, which comprise nearly an acre of Shops, includin one of the largest Foundries in London, will enable A. RANSOME & CO. to execute the most extensive orders in a very short time; but their chief Works and Offices will continue to be the

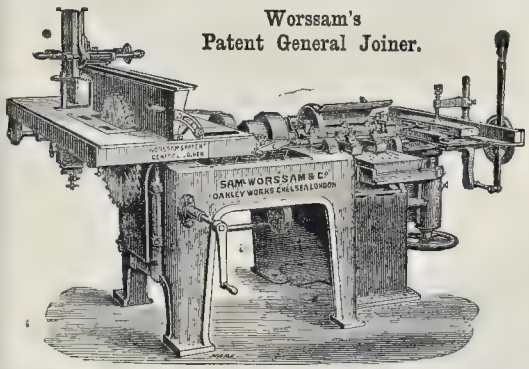
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Patent General Joiner.



WOOD-WORKING MACHINES.

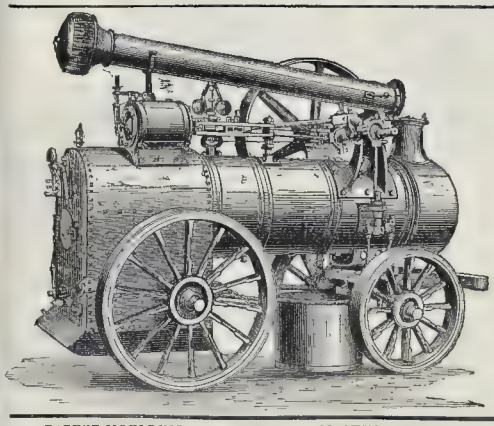
OAKLEY WORKS,
KING'S ROAD, CHELSEA, S.W.

MANUFACTURERS OF
Every Description of Machine for Saw Mills, Builders, Contractors, Cabinet and Pianoforte Manufacturers, Ship-builders, Carriage and Wagon Works, Government Dockyards, &c.

PRIZE MEDALS—
LONDON, PARIS, VIENNA, INDIA, SANTIAGO, STOCKHOLM, GOTHENBURG, and NORRKOPING.

PERIN'S FRENCH PERIN BAND SAWS.

ILLUSTRATED CATALOGUES ON APPLICATION.



CHARLES POWIS & CO.

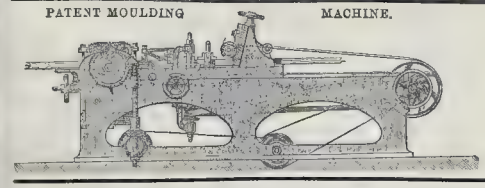
Engineers, LONDON,
60, GRACECHURCH STREET, E.C. and
CYCLOPS WORKS, MILLWALL, E.

PORTABLE ENGINES
With Enlarged Fire-boxes for Burning Wood, &c.
STATIONARY STEAM ENGINES,
Sawing and Wood-Working Machinery,
STEAM CRANES AND HOISTS,
STONE SAWING MACHINERY, MORTAR MILLS,
AND CONTRACTORS' PLANT GENERALLY.

The above can be secured by Twelve Monthly Payments.

CATALOGUES FREE on APPLICATION.

PATENT MOULDING MACHINE.

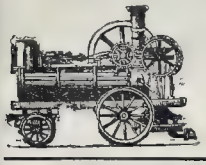


PRIZE MEDALS—LONDON, 1862. VIENNA, 1873. PARIS, 1867.

THOMAS ROBINSON & SON,

The Largest Saw Mill Engineers and Wood-Cutting Machinists,
RAILWAY WORKS, ROCHDALE, near MANCHESTER,
And 145, CANNON STREET, LONDON, E.C.

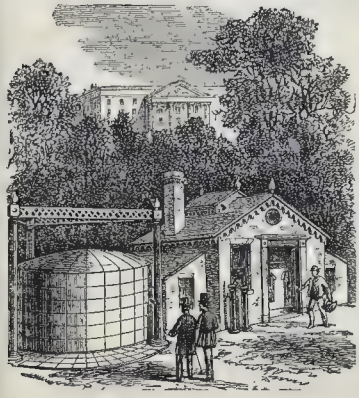
EVERY DESCRIPTION OF WOOD-CUTTING MACHINERY,
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Special Machines for Cask-Making, Wheel-Making, Railway Carriage, & Wagon Building, &c
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32, Cockspur-street, S.W.

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VENTILATING SUN BURNER
With SELF-ACTING VALVE for
PREVENTING DOWN-DRAUGHT.

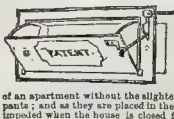
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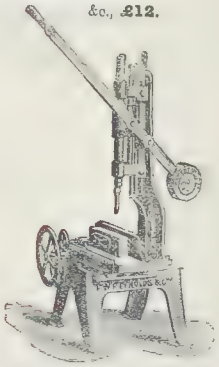
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PURE AIR.
Sheringham's Day and Night Ventilator, for the admission of Pure Air through the External Wall. These Ventilators are arranged so that the requisite quantity of air may be admitted for the due ventilation of an apartment without the slightest draught being felt by the occupants; and as they are placed in the external wall, their action is not impeded when the house is closed for the evening, at which time a constant supply of fresh air is most required. — HAYWARD BROTHERS, Sole Manufacturers, 137 and 139 (late 117 and 118) Union-street, Borough.

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The "MONARCH" PATENT MORTISING MACHINE.

Price, complete with Chisels, &c., £12.

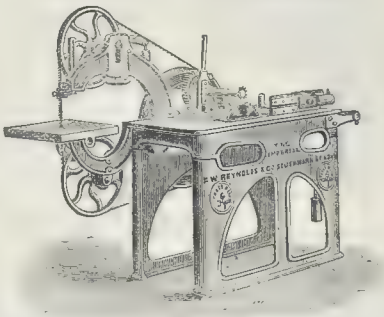


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SPECIALLY DESIGNED FOR HAND-POWER.

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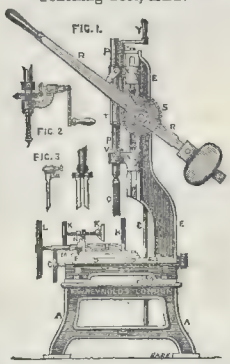
Without Band Saw Apparatus, £14. 10s.



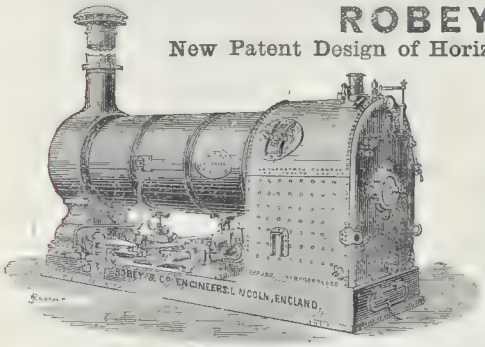
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Can be Supplied with Special Fireboxes for Burning Wood, Saw-Dust, Turf, and every description of Inferior Fuel.

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IMPROVED SELF-ACTING WOOD REVOLVING SHUTTERS, WITH HARDENED STEEL BANDS,

STEEL REVOLVING SHUTTERS, Fire and Thief Proof. Require no Machinery.

CURVILINEAR IRON SHUTTERS, WITH GEAR, SUITABLE FOR BANKS OR SHOPS.

BRASS SASH-BARS and STALL-BOARD PLATES. NO ADVANCE IN PRICES. PRICE LIST FREE.

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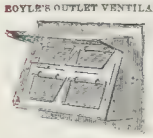
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PARIS—Rue Notre Dame des Victoires, 40.
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NEW YORK—162, West 27th-street.
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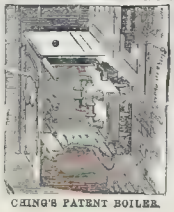
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No springs self-opening fitted by any one.



Is malleable iron for Entrance and Field Gates, 2s. 9d. each.
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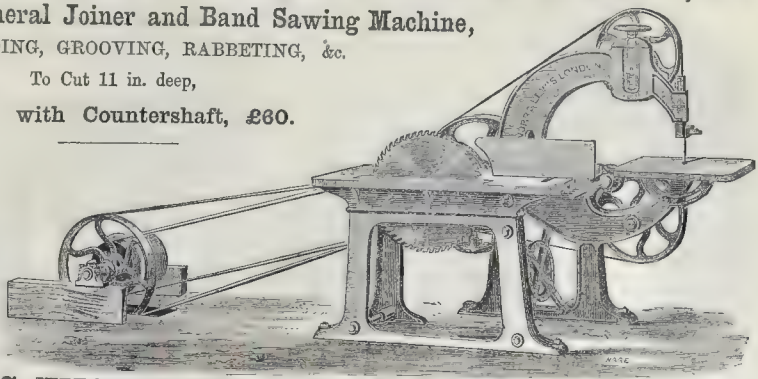
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To Cut 11 in. deep,

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This Machine, with a 4-horse Engine and Boiler, delivered and Fixed, £195.

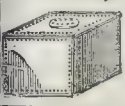
Can be seen at any time.



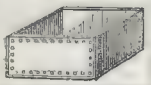
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A large Assortment always in Stock.
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Bins of every description made to order. Racks for Mineral Waters, &c.

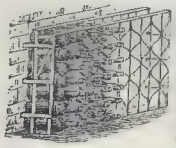
WROUGHT IRON WINE BINS.

As fitted at Her Majesty's llars, St. James's Palace; the Prince of Wales's unsion, Sandringham; and the Refreshment Department, Houses of Parliament. dapted either for brick ched vaults or cellars with k ceilings; combine great ength with lightness and onomy of space, and their rability has been satisfactorily proved during fifty ars.



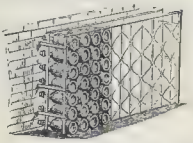
REGISTERED CELLULAR IRON BINS, With separate Rest for each Bottle.

THE NEW "EXHIBIT" BIN.

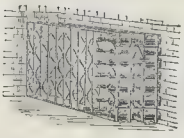


So arranged that the necks of the bottles are placed outwards, convenient to the grasp, displaying the seals, capsules, or tickets on the corks, and which obviates the difficulty in distinguishing the different sorts of wine. This is the only form of Bin which offers this advantage, and readers it an almost perfect mode of storing Wine.

These Bins will be found ry useful; they are kept tock in various sizes, from o 30 dozen, or made to fit any size or shape, to any space or corner. They e peculiarly adapted for vate cellars, as no laths required, and the trouble bbining is avoided. The dles may be taken out or placed by a child without r of breakage.



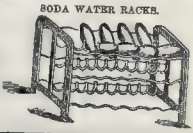
NEW PATENT DOUBLE BIN.



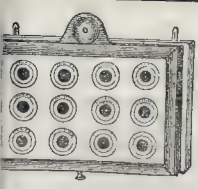
These Bins have all the advantages of the "Exhibit" Bins, which have proved a great success, combined with that of taking two bottles in depth, each having a separate rest, and having its neck outwards convenient to the grasp.

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These Racks are so arranged as to hold the bottles, of whatever shape, firmly in their place, from which they are readily lifted.



They are peculiarly suitable for Soda Water bottles, &c. which for want of a proper Rack are often broken in rolling about the floor.



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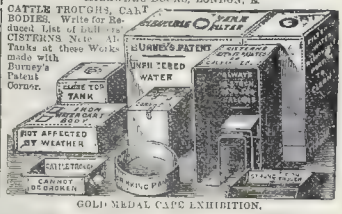
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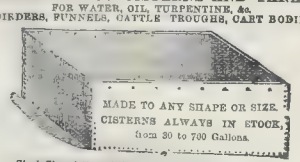
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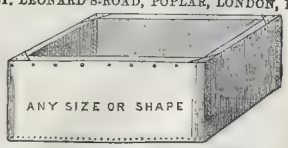


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GEORGE ELL & CO.

EUSTON WORKS, 279 and 280, EUSTON ROAD, N.W. and BRIDGE WHARF, BISHOP'S ROAD, LONDON, W.

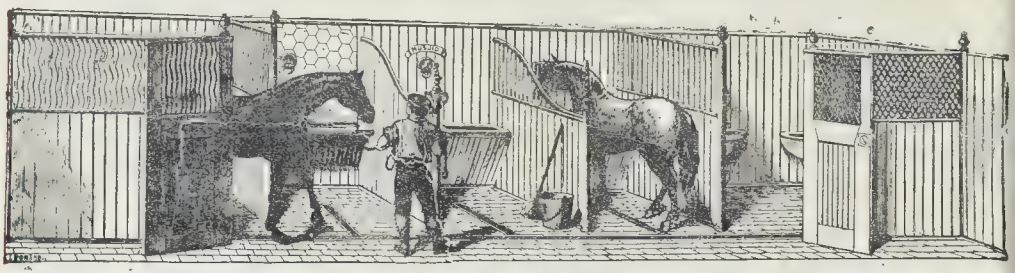
ST. PANCRAS IRON WORK COMPANY,

OLD SAINT PANCRAS ROAD, LONDON, N.W.

APPROVAL OF THE ROYAL VETERINARY COLLEGE.

The Medals of England and France, and the Medals and High Recommendation of the Royal Agricultural Societies of England and Ireland.

SECURED BY EIGHT SEPARATE PATENTS.



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Should be adopted for the following reasons, viz.:—That the Breakages in Cast-iron Fittings are numerous, and that one fracture from a kick or other cause, may occasion an injury to a Horse, and involve a loss equal to the entire expense of fitting up the Stable. The fear of this has led to the use of wood, and, in the case of Cast-iron Gutters, to the adoption of another and less effective mode of draining.

Patent Enamelled Top Plate Manger, with Rack and Water-Trough, the whole of which, except the Rack, being enamelled, can be kept as clean as a Dinner Plate. The Halter Ball, attached by a new improvement, works noiselessly, and almost without friction.

Patent Fastenings for the Doors of Loose Boxes.—These Catches and Hangings work easily, are self-acting, and cannot be put out of order: by their use all projections by which horses are often blemished are rendered impossible,—advantages peculiarly their own.

The Patent Harness Fittings keep the Harness and Saddles in shape, and are constructed so as to admit the air getting to the underside of them when hung up, thereby insuring a quick and perfect airing from any wet or moisture.

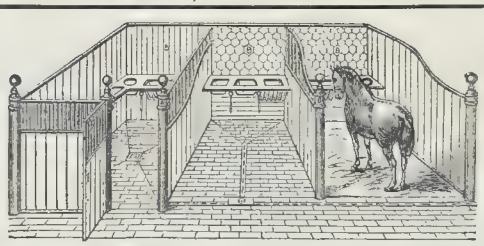
Every description of Stable Furniture.—Illustrated Lists on Application.—Inspection of Show-room requested.

ST. PANCRAS IRON WORK COMPANY, OLD SAINT PANCRAS ROAD, LONDON, N.W.

MARSHALL & HATCH,

BINGFIELD IRON WORKS,
YORK ROAD, KING'S CROSS,
LONDON.

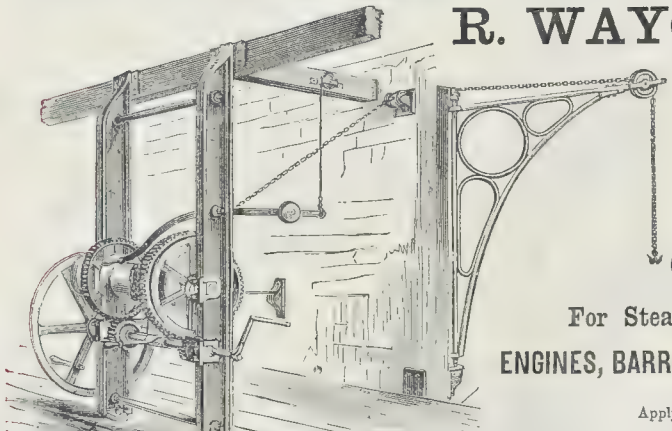
ESTIMATES FREE.
PROMPT EXECUTION.



PATENT
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IRON ROOFS,
STAIRCASES,
SASHES, AND DOORS,
STRUCTURAL
IRON WORK.

HIGH CLASS WORK.
MODERATE PRICES.

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CRANES,

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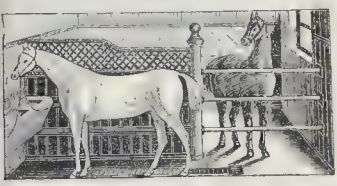
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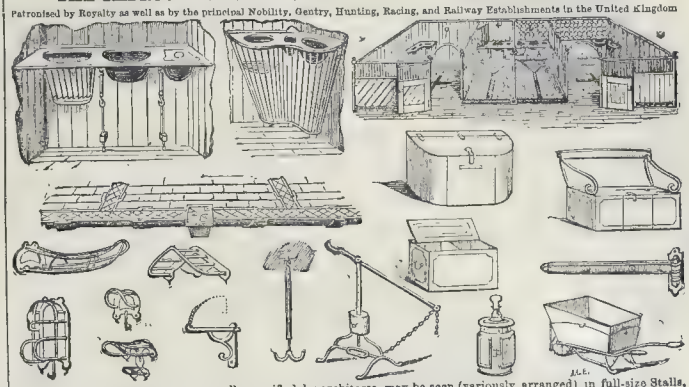
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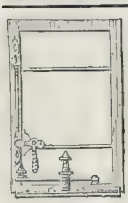
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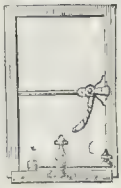
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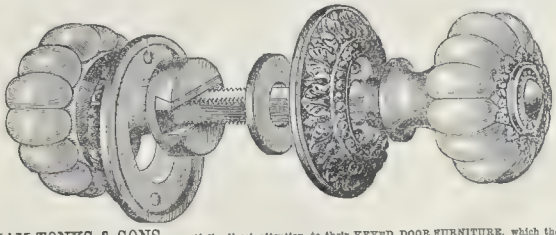
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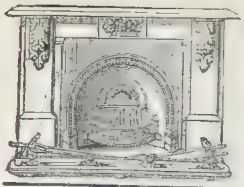
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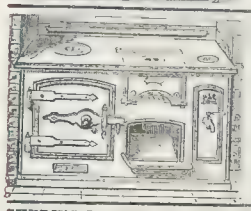
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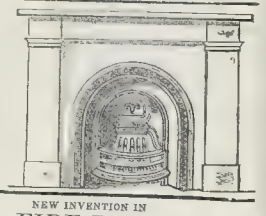




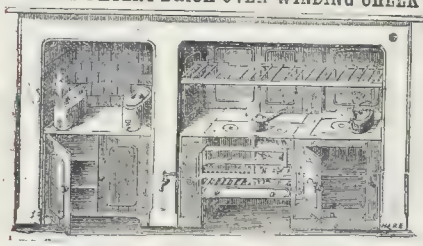
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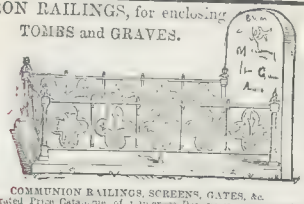
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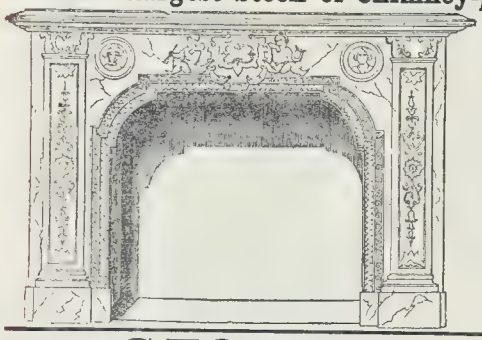
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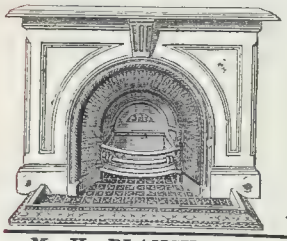
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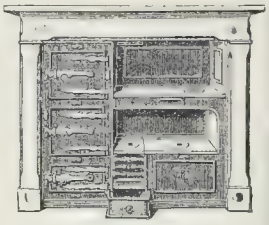
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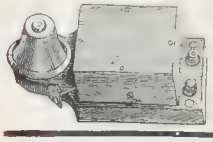
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VOL. XXXV. No. 1809. SATURDAY, OCTOBER 6, 1877.

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The "National" Opera-house, the Metropolitan Board of Works, and the Public.



BY the reported collapse of the scheme for another Opera-house a valuable piece of land on the Victoria Embankment reverts to the metropolitan ratepayers, who become absolute owners of all the buildings which in an incomplete state now stand thereon; while the whole of the second year's rental of that land deposited by the terms of the contract with the Metropolitan Board is forfeited to them, or to the Board acting on behalf of the ratepayers above mentioned. It is doubtless in the memory of the public that since this same land was transferred to Mr. Mapleson and the new building commenced, a war of words has been carried on in some of the daily newspapers, strong charges have been made in barely unequivocal language in the House of Commons, and an under-current of scandal has kept the waves of contemplation and expectation in perpetual movement, without, however, becoming boisterous or rough. From the very beginning the undertaking appears not to have thrived; yet the whole story of it, as a matter of principle both in the tendering for, and the letting of, metropolitan land, is one of extreme importance to many classes of the public: we will therefore endeavour to state, as shortly as possible, the facts of the case.

In the month of November, 1873, the Metropolitan Board of Works advertised for tenders from any persons desirous of taking on building lease two plots of land between the Victoria Embankment and Cannon-row. According to Sir James Hogg, only one tender was received, and it was declined. On the 15th of August, 1874, an advertisement appeared in our columns re-inviting tenders for the same land; and the following words formed part of the notice:—"The Metropolitan Board of Works hereby give notice that they will be prepared, on Monday, the 28th of September, 1874, to open tenders from persons who may be disposed to take on building lease for 80 years, two plots of land, situate between the Victoria Embankment and Cannon-row, Westminster." The advertisement continued:—"Plot 1 comprises a building area of about 16,278 superficial feet, and an area of ground *to be laid out as a garden only*, of about 10,725 superficial feet." Plot 2 was described as having a building area of about 20,100 superficial feet, and *an area of garden ground* of about 12,630 ft. Several responses to this invitation were received, we believe, and a tender made by Mr. Bulmer (and, we think, others with him), amounting to 3,000*l.* per annum, was accepted by the Board. This sum, according to Sir James Hogg, was in excess of the Superintending Architect's estimate. The tender, as is the custom, was made upon a printed form supplied by the Board, and containing, besides a plan of the land, the conditions of the contract. It is asserted that no copies of that "Form of Tender" and "Conditions" are extant, but we happen at the present moment to have one well-thumbed copy of the same lying before us. The plan annexed to that form of tender also lies before us. The two plots of land are distinctly indicated, and the division between the portion to be devoted to building and the portion to be devoted to garden is made by pink and green colours, by figures, and by a line marked "line of building frontage." Clause 7 of the "Conditions" says,—"The intended lessee shall not erect or maintain on that part of the plot which is coloured green on the plan hereto annexed any building or erection whatever, but shall lay out and at all times maintain the same part as an ornamental garden or shrubbery, to the satisfaction of the Board." Every person who tendered for those two plots was bound by those conditions, and made his price in accordance with the fact that only a portion of the land could be used for building purposes,—a restriction which seriously diminished the value of the property. Mr. Bulmer, the lessee accepted by the Board, did not make use of his acquisition: he sold his right—according to a statement made in Parliament, for 10,000*l.* premium—to Mr. Mapleson, and he asked permission of the Board to make the necessary transfer. This, after Mr. Bulmer had fulfilled the preliminary conditions of the contract, was granted; and Mr. Mapleson became the lessee of the two plots, subject to the conditions under which the lease of them was granted to Mr. Bulmer.

Mr. Mapleson's intention to erect a new opera-house was well known. A certain number of architects sent him designs for the building; he chose two, which, by a mere fluke, happened to be, one, the work of a member of the Board, and the other, that of his friend, Mr. Phipps. We say a mere fluke, because Sir James Hogg explained in the House of Commons that Mr. F. H. Fowler, the member of the Board, sent his design "under an initial," and was taken by surprise on learning that it had been accepted. Soon afterwards Mr. Mapleson or his agents explained to the Board that he could not build his Opera-house if he were compelled to comply with the restriction under which the land had been let,* and for which a much smaller sum than it was really worth had been perforce accepted. He asked permission to build upon the space stipulated in the contract to be left as public garden, and he offered in compensation to leave a passage, of 15 ft. in width, on either flank of the new building, for the use of the public,—passages, in fact, which were absolutely necessary in order to afford access to the various parts of the suggested theatre. In the month of April, 1875, the Works and General Purposes Committee reported to the Metropolitan Board as follows:—"Your committee have reasons to believe that the proposed alteration in the plan will not be objected to on behalf of the Government, and provided the intended streets are increased in width from 15 ft. to 20 ft." The recommendation was adopted. On September 7th, 1875, the first brick of the new edifice was laid, in the presence of a distinguished lady, whose melancholy death is but just announced; and on the 16th of December following the first stone was formally placed by the Duke of Edinburgh.

Now, a question has been put to us by a correspondent which has been probably more than once asked by those gentlemen who tendered for the land, and who were outbid by Mr. Bulmer. The question is: Whether, when the restriction which affected the letting of the land was removed by the discretionary power of the Board, and with the consent of the Government, the two plots ought not to have been put up again to public tender? According to the original notice of the Metropolitan Board inviting the public to tender, the two plots comprised an area of building land amounting to about 36,378 ft.; and an area of garden-ground (upon which no building was to be put, but which, on the contrary, the intended lessee was to maintain for public use during eighty years) amounting to 23,355 ft. In consideration for being allowed to build upon this garden area, Mr. Mapleson gave to the public two inevitably necessary passages, containing an area of 11,920 ft., in compensation for the 23,355 ft. which, according to his contract, he and his heirs were to maintain as a public garden for eighty years,—the 11,920 ft. being given to the public to maintain at the public expense. Nor was Mr. Mapleson asked to make any additional payment for the surplus,—about 11,435 superficial feet,—which he obtained.

We will put the question in another way. Two plots of land containing 36,000 superficial feet of building-ground and 23,000 superficial feet of garden-ground were let for eighty years at an annual rental of 3,000*l.* After the letting, the Metropolitan Board allowed the lessee to devote the whole 59,000 ft. to building purposes *minus* 12,000 ft. given to the public for roadways.

* One of his reasons was based upon the impossibility of buying two small houses on the edge of the land in Cannon-row. These, after the consent of the Board to his proposal to build upon public land had been obtained, were purchased by Mr. Mapleson. This is only another and an early instance of the strange method pursued by the Board. The two houses ought to have been secured before the land was offered to public tender. An immense addition to its value would have resulted. It would be curious, moreover, to know the name of that shrewd person who secured or who *owned* those two houses before the advent of a lessee of the two plots.

Might not those who tendered unsuccessfully against Mr. Bulmer have offered more than 3,000*l.* per annum for the two plots freed from the restriction caused by the obligation, due to Parliamentary enactment, to maintain a public garden for eighty years upon two-fifths of the plots in question?

We say Parliamentary enactment, and we have it on the authority of Sir James Hogg, chairman of the Metropolitan Board, that the Board's discretionary powers in this matter were subject to the approval of her Majesty's Board of Works. This opens out another question. If the Metropolitan Board can at discretion build upon land which is the property of the public, what is to prevent her Majesty's Board from building upon that part of the Crown land on the Embankment which is also the property of the public, and by indubitable authority?

We must again weary our readers with facts. On the 8th of July, 1870, Mr. W. H. Smith referred, in his place in Parliament, to the long series of negotiations and Royal Commissions which preceded the Act of 1862, and which produced the Thames Embankment more than did the operations of any distinct body of men. In that year a Select Committee sat on the Bill of Mr. Cowper-Temple, and then, to quote Mr. W. H. Smith, though the Metropolitan Board was represented by counsel, one interest was entirely unrepresented,—that of the metropolitan ratepayers. The question at issue was whether a block of Government offices should be built upon land which, ostensibly the property of the Crown, was really land reclaimed from the Thames at the expense of the ratepayers. A clause in Mr. Cowper-Temple's Bill ran as follows:—

"That after payment had been made to the Crown for the foreshore, and to the Conservators of the Thames, all land which lay between the property of ordinary owners and the fore-shore of the river was vested in the Metropolitan Board of Works, who were charged with the duty of maintaining it for ever as land for the purpose of public recreation and amusement," and further, that "all open spaces possible were to be retained in the metropolis."

We are quoting from "Hansard," and we urge that when the Metropolitan Board drew the "line of building frontage" upon the plan of 1874, to which we have referred, it simply and honestly carried out the spirit of the law of 1862, and the precedent of 1870. In that year last-named, an humble address was suggested for presentation to the Queen, which the Government of Messrs. Gladstone and Lowe resisted, but which was carried by a majority of fifty members, amongst whom were several members of the present Government. That address prayed that no public offices be erected on the portion of the Embankment which has been reclaimed from the river at the cost of the metropolitan ratepayers, and it especially referred to the Crown land. Now, the "garden area" of the two plots between the Embankment and Cannon-row, to which we have been referring, is really land reclaimed from the river at the expense of the ratepayers, and though, at the present moment, it is a small spot, isolated from existing public gardens, it may not always be so. It skirts that part of the Crown land reclaimed by the ratepayers from the Thames, and if, as is not improbable, a scheme to which we have recently alluded is carried out, the garden area in question will be immensely useful in adding to the recreation grounds of the people.

It will be in the remembrance of our readers that we made a practical conclusion to "The Story of the Government Offices" by submitting a block plan for buildings to be erected upon the site of Whitehall Palace. We kept to the frontage laid down by the law, and originally approved by the Metropolitan Board; and if public offices be built on the Embankment it is almost inevitable that an extension of those offices will be made upon the site of Whitehall-gardens and Richmond-terrace when the houses actually on it revert, at the conclusion of their leases, to the Crown, or more properly the nation. The public garden, a part of which already exists, will then extend from the angle of Whitehall-place to the furthest boundary of the Crown land at the angle of Richmond terrace, and thereby the public portion of the two plots of land on which the foundations of an Opera-house now rest will form the proper continuation of that garden. The same can even now be further continued in front of the building used by the Civil Service Commission, and appropriately terminated by the cutting of the Underground Railway. A contemplated addition to St. Stephen's Club can easily palliate the present unfinished and fragmentary appearance of the buildings fronting Bridge-street and Westminster Bridge.

It is now within the power of the Metropolitan Board, with the consent of her Majesty's Board of Works, to secure respect for the provisions, as well as the letter, of an Act of Parliament. On the other hand, it is equally within their power to obtain for the ratepayers of the metropolis an adequate sum for the rental per annum of 59,000 superficial feet of building land, in a most prominent position, during eighty years. We repeat, if the sum of 3,000*l.* per annum was easily obtained for a superficies of 36,000 ft., saddled with an expensive restriction, surely a superficies of 59,000 ft. *minus* that restriction, and *plus* a noble frontage on the Victoria Embankment, must be worth at least 5,000*l.* a year.

We have alluded, in preceding articles, to our misgivings concerning the method employed by the Metropolitan Board in letting land by tender. The distrust felt by several who tendered, and by several who, in consequence, did *not* tender, for the land on Northumberland-avenue is no secret; nor is a certain circumstance connected with a building now in course of erection there at all likely to allay probably an unfounded suspicion. By a wholesome rule, enforced by the Metropolis Local Management Act, 1863, section 64,—"No officer or servant of the Board shall, in any wise be concerned or interested in any contract or work made with, or executed for, such Board." But gentlemen specially engaged in building operations are prominent members of the Metropolitan Board, and no artificial rule of morality can prevent men from being interested in matters which they may be ultimately called upon to control in a professional capacity. Further, it cannot have escaped our readers that, in connexion with the proceedings which we have imperfectly described, there is more than one reference to "the consent of the Government"; and that to all appearances "Government" has consented to approve just the contrary to what Parliament has enacted. Like "The Story of the Government Offices," this story of the Opera-house seems to call for some one,—some particular individual possessing, unlike a Department or a Board, both a soul and a body,—to whom the metropolitan ratepayers in particular, and the British public generally, can appeal for redress, or point responsibility. We tremble often lest some new hoarding should conceal a fresh public monstrosity; we sometimes wonder, almost in despair, if amongst the obligations under which the owners and builders of new edifices are placed with regard to Parliament, the Metropolitan Board, and their immediate neighbours, there be any which they legally owe to the growing taste, the improved inclinations, and the acknowledged rights of the people.

ST. JAMES'S-STREET.

This street has been the fashionable lounging-place of London Society for nearly 200 years, and when Pall-mall was a small street of little account St. James's-street was the site of the chocolate-houses and clubs that gave a special character to this part of town. Probably no other street can compare with it in regard to its thronging associations with the great of past days, and Mr. Frederick Locker has registered several of these in his lively lines beginning,—

"St. James's-street, of classic fame!
The finest people throng it!
St. James's-street? I know the name!
I think I've pass'd along it!
Why that's where Sacharissa sigh'd
When Waller read his ditty;
Where Byron lived, and Gibbon died,
And Alvanley was witty."

Sir Christopher Wren died in the street on February 25, 1723, and Pope lived for a time "at Mr. Digby's, next door to ye Golden Ball, on ye second terras." Steele lived in a house opposite Park-place, from 1714 to 1724, when he retired to Wales, as Swift says, "in peril of a thousand jails." Among the early inhabitants were several noblemen. Charles, Duke of Bolton, lived here in 1699, as did Henry Somerset, second Duke of Beaufort, and Sir Thomas Thynne, Lord Viscount Weymouth, in 1708; but the greatest of these was the old Countess of Northumberland, whose peculiarities are described by Walpole in a letter to Bishop Percy. She lived in the house now occupied by White's Club-house, and was the last who kept up the ceremonious state of the old peerage. When she went out to visit, a bareheaded footman walked on each side of her coach, and a second coach with her women attended her. Lady Suffolk, her niece by marriage, told Walpole that the Countess's daughter-in-law, the Duchess of Somerset, never sat down before her without leave to do so.

The road which led up to the great western way out of London (now Piccadilly) was first made when the hospital of St. James (which preceded the palace) was founded by some citizens of London, a few years before the Conquest. The Sieur de la Serre, historiographer of France, who came over to Charles I.'s court in the suite of Maria de Medicis, describes it as a long street in front of the great gate of the palace, "reaching almost out of sight, seemingly joining to the fields." It was in this long street, not then entirely built upon, that the Duke of Ormonde was seized and nearly murdered by the infamous Colonel Blood and his ruffianly associates, as he was returning home to Clarendon House,—then standing on the site of Albemarle-street. This was the only historical incident connected with the insecurity of the street, but there were many attacks upon less remarkable persons. At the end of the eighteenth century a ruffian named Renwick Williams caused a panic among the inhabitants of London by his brutal attacks upon women in the street. He was known as "the Monster," and in 1790 he assaulted Miss Porter, of St. James's-street; but this was his last outrage, for shortly afterwards he was captured by Mr. John Coleman, of Berkeley-square. Coleman was rewarded for his courage and success by obtaining the hand of Miss Porter, and the two were married on the 28th of April, 1791.

When Hannah More describes the occupation of her hero, "Florio," she writes:—

"His mornings were not spent in vice,
'Twas lounging, sauntering, eating ice;
Walk up and down St. James's-street,
Full fifty times the youth you'd meet."

It was about the middle of the eighteenth century when the shops began to make a better show in their windows, that the street became the fashionable lounge *par excellence*. Fox was one of the most noted of the loungers, and in Tickell's clever lines he is made to express to Lord John Townshend his regret at "the long-lost pleasures of St. James's-street." Fox, although negligent and slovenly in later life, was, when young, one of the greatest bucks of his day, and one of his biographers describes "Bean Fox" as "strutting up and down St. James's-street in a suit of French embroidery, a little silk hat, red-heeled shoes, and a bouquet nearly large enough for a maypole." Sheridan sings of,—

"The Campus Martius of St. James's-street,
Where the beaux' cavalry pace to and fro
Before they take the field in Rotten-row;
Where Brookes's Blues and Weltze's light dragoons,
Dismount in flies and ogle in platoons;"

and the statesman Windham relates of himself and friends that returning one night from the House of Commons they amused themselves with throwing stones at each other in the park, and oranges when they came into St. James's-street. The chief characteristic of this street is to be found in the number and importance of its clubs. Some of these grew out of the coffee and chocolate houses that were once so popular,—as, for instance, White's, and the Cocoa Tree.

The immense change that has taken place in the habits of fashionable society is very strikingly brought before us when we find that the very sober and aristocratic club—White's—has grown out of the gaming-house denounced by Pope and Swift as the rendezvous of infamous blacklegs, and introduced by Hogarth into his "Rake's Progress," as a likely place for a highwayman to frequent. About the year 1698, White's Chocolate House was founded, near the bottom of the west side of the street, on the site of the present "Arthur's Club-house," and a few years afterwards Steele announced, in the opening number of the *Tatler* (1709), that "All accounts of gallantry, pleasure, and entertainment shall be under the article of 'White's Chocolate-house.'" On April 28th, 1733, the house was entirely destroyed by fire, and Arthur, the proprietor, moved to Gaunt's Coffee-house, next door to the St. James's Coffee-house, where he begged that the noblemen and gentlemen would "favour him with their company as usual." Much valuable property was destroyed in the fire, notably the collection of paintings belonging to Sir Andrew Fountaine, valued at 3,000*l.* King George II. and the Prince of Wales were among the spectators on this occasion. Soon afterwards the club was formed, in order to keep out the

mmon herd of gamblers, but the change did result in a higher tone of morality, as may be ssed from the following picture :—

"From hence to White's our virtuous Cato flies ;
There sits with countenance erect and wise,
And talks of games and whist, and pigtail ties ;
Plays all the night, nor doubts each law to break,
Himself, unknowingly, has help'd to make ;
Trembling and anxious, stakes his utmost groat,
Peeps o'er his cards, and looks as if he thought ;
Next morn disowns the losses of the night,
Because the fool would fain be thought a bite."

Colonel Lyttelton, brother of Sir George ttelton, wrote, in 1752, the "Gamester's Address the King on his Return from Hanover," which s supposed to be presented by the members White's Club. In 1755, the Club was removed the present house (Nos. 37 and 38), on the st side of the street, the front being designed James Wyatt. Various alterations were de by Lockyer in 1850, when the four bas-iefs of the Seasons were added, from the signs of George Scharf. When Almack rted his club (afterwards Brooks's), in 1764, e worst gamblers went off there,—

"From White's we'll move the expensive scene,"

d the remaining members were jealous of the w rival. The Earl of Carlisle wrote to Selwyn on nuary 9th, 1768, asking him to put the Marquis Kildare up as a candidate, but added, "Take re he is not put up first at Almack's, as that cludes him from White's." The list of cele-ated men who have been members would be a ng one, but a few names may be mentioned re, such as those of the Earl of Chesterfield, bb Dodington, Prime Minister Pelham, George lwyn, Colley Cibber, Fox, Wilberforce, Pitt, d Rodney. Arthur was the first proprietor at we know anything of, for no particulars of hite have come down to us. Arthur died in 61, and was succeeded by his son-in-law, obert Mackreth, the well-known "Bob." Mar-ndale was the proprietor in 1784, and became bankrupt in September, 1797. Ragget kept e club in 1812, and afterwards left it to his n. The freehold of the house was sold by ction on March 7th, 1871, by Messrs. Chinnock, alesworthy, & Chinnock, of Waterloo-place, and xcited considerable competition. The rental erived from the club was fixed at 2,100*l.* for even years, after which the lease expires. The roperty realised the large sum of 46,000*l.*, and he purchaser was Mr. H. W. Eaton, M.P.

The "Cocoa Tree" was a famous chocolate ouse in the reign of Queen Anne, chiefly nown as the resort of the Tories and Jacobites. fter it had been turned into a club, Gibbon oined it, and he describes the appearance of the embers in the year 1762 as follows :—"This espectable body, of which I have the honour of eing a member, affords every evening a sight ruly English. Twenty or thirty, perhaps of the rst men in the kingdom in point of fortune and ashion, supping at little tables covered with a apkin, in the middle of a coffee-room, upon a bit of cold meat or a sandwich, and drinking a lass of punch. At present, we are full of ing's counsellors and lords of the bedchamber, who having jumped into the ministry, make a very ingular medley of their old principles and lan-guage with their modern ones." The Club was t one time a favourite resort of the Prince of Wales (afterwards George IV.). Samuel Spring, waiter, once had occasion to write to the Prince, nd commenced his letter as follows :—"Sam, he waiter at the Cocoa Tree, presents his com-pliments to the Prince of Wales," &c.

As already stated, Brooks's Club (No. 60) was riginally established, in 1764, in Pall-mall, on he site lately occupied by the British Institution, nd upon which the house of the Marlborough Club was built in 1868. Almack's was noted or its deep play, and Horace Walpole tells us hat the members played only for rouleaus of 50*l.* each, and 10,000*l.* in specie was often on the table at one time. In 1770, when C. J. Fox was a Lord of the Admiralty in Lord North's Government, the clerks were forced to wait upon him at the club to obtain his signature to warrants and orders. He is said to have preferred losing to not playing at all, and he was often gratified in this way, as appears from some verses written at the time of his greatest losses :—

"At Almack's of pigeons I'm told there are flocks,
But it's thought the completest is one Mr. Fox,
If he touches a card, if he rattles a box,
Away fly the guineas of this Mr. Fox."

One year after the opening of the club, Almack built the Assembly-rooms in King-street (now Willis's), and in 1778 Brooks, a wine-merchant and money-lender, took Almack's Club, and removed it to St. James's-street. The old house in Pall Mall continued to be occupied as a club, and was known as "Goosetrees." The new house was built at Brooks's expense from the designs of Henry Holland, but soon afterwards Brooks retired from the management because the club did not pay, and he died poor in 1782. Burke, Garrick, Hume, Horace Walpole, Gibbon, Topham Beauclerc, Reynolds, Sheridan, Wilberforce, Pitt, Fox, Windham, Sir Philip Francis, George Selwyn, Dunning, the Duke of Queensberry, and George IV. (when Prince of Wales) were members. On one occasion two friends of the Prince's were blackballed, which so offended his royal highness, that in 1783 he founded (in conjunction with his brother the Duke of York) Weltzie's Club on the west side of the street, in opposition to the old club. Weltzie was the Prince's cook, and from him Peter Pindar (Dr. Wolcot) obtained his chief anecdotes of George III. for the "Lousiad," &c. Brooks's has always been the rendezvous of the Whigs, and, in spite of the Reform Club, it still remains so. A few days after Pitt's first speech in the House of Commons on February 26, 1781, Fox brought him into the club, and in spite of his change in politics, he continued a member and paid his subscriptions up il his death.

Boodle's Club, known as the "Savoir vivre" (No. 28) was established soon after Brooks's. Gibbon and Wilberforce were both members, and the first time the latter entered the house he won twenty-five guineas from the Duke of Norfolk.

Crockford's (No. 50) was called a club, and such men as the Duke of Wellington, Prince Polignac, Talleyrand, Pozzo di Borgo, Esterhazy, D'Orsay, and Horace Twiss were members; but it was unlike the clubs already noticed, and nothing more than a gorgeous "hell." The members played against the proprietor, who kept the bank. John Crockford originally kept a small fishmonger's shop in the Strand, near Temple Bar. He then became a player at the silver hazard-tables and at No. 28, Haymarket, then called Dirty Shirt Coffee-house. About 1802 he began to bet at Newmarket, and in 1827, he built the most splendid "hell" in London, and "won all the disposable money of the men of fashion in London," which allowed him to "cash a cheque for 100,000*l.* with as much ease to himself as the Bank of England would." Some members did not play, and they were mostly induced to join the club by the elegance of the *cuisine*. Ude, the *chef* of *chefs*, was cook for a time, and was succeeded by Francatelli. The Hon. Grantley Berkeley relates an amusing story of Ude's coolness. One day a member ordered some new potatoes from the bill of fare, but as they were not forthcoming, he directed the waiter to tell the great man that he required his presence. Ude came, and the member blew him up for not having furnished what was ordered. The cook defended himself with amusing volubility, and insisting that there were new potatoes, he disappeared. He shortly returned with a covered dish in his hand, which he opened, and, letting out the steam, discovered to the member the vegetables he had ordered, all the time protesting against his being accused of neglect. In the midst of his protestations he backed towards the door, through which he and the potatoes disappeared, leaving the member to admire the audacity of the cook in taking away the delicacy he was longing to enjoy. Crockford retired in 1840, and soon after died worth 700,000*l.*, after having lost as large a sum in mining and other speculations. His death is said to have been accelerated by fears as to the issue of the "Derby." The club-house was sold, and on the closure of the old club a Junior Crockford's was started in Bury-street with the object of replacing it. In the year 1849 the house was occupied by the "Military, Naval, and County Service Club," which had a short life, and was closed in 1851. Then came the "Wellington Dining-rooms" and the "St. George's Club," and in 1873 the appearance of the front was entirely changed by the substitution of a new coating of stone for the old stucco, which was cleared away. This new house was opened by the Crockford's Auction Hall Company, which opened with an imposing list of patrons and directors, but enjoyed a very short life. The building is now occupied by a new club called the Devonshire Club. When Crockford's was at the height of its prosperity, the next door (at the corner of Bennett-street) was taken by Ephraim Bond and his brothers, and opened as a gaming-house, called "Ragget's Junior." Bond, whose doings are sketched in the Prime Minister's novel, "Henrietta's Temple," first kept a "hell" in Duke-street, which he moved to 26, St. James's-street, and called "The Athenæum." From the latter house he moved to the immediate neighbourhood of Crockford. It was once said by an admirer of these two men that Crockford was the Napoleon and Bond the Wellington of the play world.

The modern clubs are much more luxurious resorts than the mean houses that satisfied our forefathers, but the mansions of Pall-mall and St. James's-street will probably never gather around themselves a tithe of the associations that cling to the Old Thatched House Tavern. The name recalls the time when the street was but little built upon, and when the house itself was a wayside inn, with a common thatched roof. This tavern was long the favourite meeting-place of convival societies. The Brothers' Club, a literary society, which preceded the Scriblerus Club, consisting of Swift, Arbuthnot, Harley, St. John, and the Tory magnates met here in 1713. The Dilettanti Society, established in 1734 by Viscount Harcourt, the second Duke of Dorset, Sir Francis Dashwood, and other noblemen and gentlemen to the number of fifty, met here till the house was pulled down a few years ago. Fines and penalties were here rampant; thus any member who called the Society a club was fined a guinea, and a payment was to be made "on increase of income by inheritance, legacy, marriage, or preferment." When Lord Grosvenor married Miss Leveson Gower he paid five guineas, Lord Sandwich was twenty guineas the poorer on account of his accepting the office of Ambassador to the Congress of Aix-la-Chapelle, and Bubb Dodington was mulcted of ten guineas when he was installed as Treasurer of the Navy. When Fox was made a Lord of the Admiralty he was fined nine pounds nineteen shillings and sixpence.

The Noblemen's Catch Club, established by the nobility and gentry for the improvement of vocal harmony, met at the Thatched House, in 1762, and flourished for many years. It was a law that each of the forty-four members should possess 500*l.* a year in land, and sufficient talent to take part in a glee. The members dined together every Tuesday from January to June, and twenty-one of the first professional singers were admitted as honorary members.

Johnson's Club, the Literary Club or *The* Club, removed here from Parsloe's on February 26, 1799, and in 1857 the Royal Society Club transferred their dinners from the Freemasons' Tavern on the removal of the Society from Somerset House to Burlington House. The Pow Wow Club, which numbered among its members John Hunter, Dr. Baillie, Sir Astley Cooper, Sir Everard Home, and Sir Gilbert Blane, held monthly meetings at the Thatched House. The club originated with Dr. Patrick Russell, author of a work on the serpents of India, and an intimate friend of John Hunter, who suggested the name as an appropriate one, the word "pow-wow" meaning a meeting of conjurors. Like the Dilettanti's, they expected that when any honours fell to a member he should treat the dinner party to champagne. Sir Astley Cooper gave the whole club a dinner on being made a baronet in 1821. In 1830 it was found that so many of the old associates had died off that the survivors determined to dissolve the club in 1830. Lord Campbell, in his Life of Lord Thurlow, gives an amusing anecdote of the rough chancellor's wit. In the debates on the Regency a certain prim peer, noted for his attention to etiquette, having pompously cited some resolutions passed by a party of noblemen and gentlemen at the Thatched House, Lord Thurlow, on rising, said, "As to what the noble lord in the red riband told us he had heard in the alehouse," &c. The poet Campbell saw Byron eating a hearty supper of meat and drinking a bottle of claret here just after he had left Rogers's dinner-table, where he would condescend to eat nothing but vegetables and drink nothing but water. A part of the tavern was cleared away to make room for the Conservative Club and the remainder for the Civil Service Club, which afterwards changed its name to the "Thatched House Club."

The St. James's Coffee House was the head quarters of the Whigs when the Tories frequented the Cocoa Tree. It was situated at the south-west corner of the street opposite to the palace, and has an interesting history, but it owes its chief glory to the fact that Goldsmith's remarkable piece of character painting called the *Retaliation* grew out of some meetings of the poet and his friends in its rooms.

Before concluding we have still to mention a few noteworthy houses, such as Pero's Bagnio (No. 63, now Fenton's Hotel), a fashionable bath-house set up about the year 1699; Siam's, an Indian house kept by a Mrs. Siam for the sale of teas, shawls, and Indian toys, which is mentioned by Southerne, Cibber, and other writers of Queen Anne's time; and Felix Rowland, the hairdresser's little shop, where he made a fortune by the sale of macassar oil, which nestled beneath the front of the old Thatched House Tavern.

In Horace Walpole's time, No. 62 was a favourite lounge of the men of fashion, who went to the shop of Mrs. Elizabeth Neale, the queen of applewomen, to learn the news,—

> "There at one glance, the royal eye shall meet
> Each varied beauty of St. James's-street;
> Stout Talbot there shall ply with hackney chair,
> And patriot Betty fix her fruit-shop there."

She died on the 30th of August, 1797, aged sixty-seven, at her house in Park-place, fourteen years after she had retired from business. Gillray lived at No. 29, and from his window watched the men he was so successful in caricaturing. His prints were exhibited in the shop below, which was kept by his indulgent landlady, Miss Humphry. These prints attracted so great a crowd that the pedestrian was often forced to quit the pavement for the carriage-way as he passed the house. From an upstairs window Gillray threw himself, in a fit of insanity, and he died of the wounds then received.

John Sherwin, the engraver, lived in St. James's-street, and here in 1782 he painted, engraved, and published a glorious portrait of Mrs. Siddons, in the character of the *Grecian Daughter*. J. T. Smith, the author of "A Book for a Rainy Day," relates how he as boy assisted Sherwin by pulling up and down the blinds, so as to throw the great actress into different lights. Much more might be added about the loungers in this street, and such inhabitants as Gibbon, who lodged at the house of Elmsley, the bookseller, afterwards pulled down to make room for the Conservative Club; but a book could easily be filled with the history of the street that looks down upon the royal palace of St. James. No more characteristic view is to be seen in London than that which meets the eye as one stands at the Piccadilly end of the street. There is here a remarkable mixture of architectural effects, and plain houses with red tiled roofs join on to the palatial fronts of the clubs, the old gate at the bottom filling up the view with happy effect.

CURRENT CONVERSATION.*

Still speaking of the "Model Bye-laws" issued by the Local Government Board:—

With respect to Party-walls the suggested amendments are of little if any importance. To continue our comparison with the French capital, the laws of the *mitoyenneté* are there very strict. No flues whatsoever are permitted *within* a party wall; they may be built against it, but the whole average thickness of 18 English inches, or thereabouts, must remain solid and intact from the foundations to a certain distance above the external line of the roof. There are relatively fewer party-walls in Paris than in London, for the narrow frontages of houses in this capital are unknown in Paris; and, obviously, thick party-walls from which flues and fireplaces are entirely excluded would be too extravagant in houses of 20 ft. or 25 ft. frontage. But in spite of what is averred to the contrary, party-walls in England and even in London are often subjected to much contemptuous manipulation by persons who, in a laudable desire to economise room, forget that they are breaking the law. The flue of one house is brought up in a party-wall to within 4½ in. of the inside of the other; and there are cases where in the fireplaces only half a brick separates one house from another. The "recessing" of party-walls is here also permitted under certain conditions, so that though 18 in. and even 23 in. may be the official thickness, large portions of a party-wall in a large building may be made much thinner, and with the consent of authority. The "Model Bye-laws" do not attempt to obtain the immunity from sharp practice which the Paris laws of *mitoyenneté* secure. Though one bye-law forbids any opening to be made or left in a party-wall,—and thus prevents the creation of lights,—another permits recesses both in party and external walls, provided the back of the recess be 9 in. thick, and that an arch be turned at every story over such recess. The English rules for party-walls may perhaps be deemed sufficient while houses both in and out of London continue to be arranged on the vertical plan of habitation; but if the erection of private dwellings of broad frontage and extreme height,—upon the horizontal system,—be imminent in Central London it may be convenient to inquire into the Parisian formula of *mitoyenneté* and the practice of maintaining a certain thickness of solid material perpendicularly between each block.

The Free Circulation of Air around, and the ventilation within, a new building are touched upon in the suggested bye-laws; and perhaps it is too much to expect that any law or series of laws will ever provide a complete remedy for the suffocating process which slowly but surely attacks an island of old houses in the heart of the metropolis. Originally, say, twenty private dwellings have been built upon a triangular or an oblong piece of land, so that the internal yard, divided among the twenty dwellings, is effectually hemmed in on all sides to a height of say 40 ft. The dwellings change hands, the use and character of the streets surrounding them change with the deterioration of the neighbouring highways. The private houses become shops; the floors over are let to lodgers as sets of chambers, as business offices, as warehouses, or as residences for small families. An extra story is added to one house; the neighbours follow the example, and soon the internal yard is more thoroughly enclosed by the walls and roofs of houses some 50 ft. or even 60 ft. high. Then the yard of one house receives a flat roof, with a skylight over; the extra ground-floor room is invaluable, and the neighbours are not slow to make use of the open space at the back of each house. Then leases fall in, and perhaps a "limited" company takes half a dozen houses at one corner of the triangle, and covers the whole of the ground-space occupied originally by the six yards of the six houses, not with a one-story building rising simply to the height of the yard wall, but with a big block some 30 ft. or 40 ft. high. This is done by arrangement with adjoining and opposite owners. The company does not build a new building; it simply makes an addition to an old one, and for that reason it is possible to block, bit by bit, the larger part of the interior of an island of old houses. This process has been going on for years, and it is still going on in and around highways like the Strand and Piccadilly, so that often the back rooms of London houses receive air which, without absolutely stagnating, circulates and re-circulates within a certain confined space,—a through draught being impossible Neither the actual Building Acts nor the "Model Bye-laws" cope with this constantly-recurring difficulty; and, as far as we can perceive, there seems to be nothing to prevent new buildings being erected in such a manner as to prevent the free draught of air in the internal yards. We should like to see some legislation directed against the practice of entirely closing an island of houses, thereby obstructing the admission to back rooms of fresh air, except, perhaps, that which can descend from between the chimneys and roofs. All that the "Model Bye-laws" do is to prescribe a certain amount of open space both before and behind a new building, and suggest that no alteration or addition shall at any future time diminish the extent of that open space.

While the Admission of Air to the required clear space of 3 in. between the under-side of the joists, beneath the lowest story of a building, and the upper surface of the asphalte or concrete which covers the site is the substance of a bye-law, nothing is said of the time-honoured custom of admitting air between the slender joists, between the unjointed boarding, and the cracked coat of ceiling which forms the horizontal division of domestic buildings in London, and, indeed, in England generally. Perhaps one bye-law, if taken literally, would partly prevent such floor ventilation: by it the open space inside any partition, or between the joists, in any wall, is to be stopped with brickwork, concrete, pugging, or other incombustible material at every floor and ceiling. This, of course, is what is always done in good building; but we should like to see a clause whereby it would be compulsory to fill up with concrete or pugging the space between each joist over the whole surface of each floor division. It is just this space, ventilated, as it usually is, in London houses, that increases the dangers of destruction when a fire has once broken out. Captain Shaw has laid great stress upon the fact in the books, pamphlets, and reports he has written; and we have quoted an opinion, officially recorded, of the "Associated Architects" in the year 1793. It was therein stated that in London fires were more frequent and destructive than anywhere abroad. "The great principle of prevention," said the Associated Architects, "is to stop the progress and circulation of the air in all parts of a building *concealed from the eye*." This remark, it would seem to reasonable men, is indubitably exact; but for nearly a hundred years after it was printed, the custom of keeping the concealed portions of buildings suicidally permeated with air, which is as much the breath of fire as of life, has continued.

The Fact that Central London is principally inhabited by separate floors,—not by whole houses,—is ignored by all the Acts in force relating to building and metropolitan management; no mention of it occurs in the "Model Bye-laws." New houses, intended to be let in "flats" or in separate sets of rooms, are in course of erection; many have not only been erected, but they are now filled with contented occupants. It is said that houses arranged in this manner,—that "associated homes" and "hotel-mansions" are taken by eager tenants before even the building itself is terminated. In such buildings the floors are really party walls horizontally instead of perpendicularly placed. The Building Act faces these eventualities in a magnificently contemptuous fashion. It implies, in its own technicalities, which we choose to translate into the language of men of the world, the following:—that, unless bachelors, families, or groups of individuals, inhabit a building containing more than 125,000 cubical feet of space, the floors of lobbies, corridors, passages, landings, and flights of stairs,—the horizontal party divisions generally,—shall consist of inflammable materials; and that unless sets of chambers or "flats" cover 3,600 ft. square in area they are not to be divided by party walls, party arches, or party floors. There is nothing suggested in the "Model Bye-laws" to remedy the above defect or rather absence of legislative acumen. New buildings intended to be let by floors have just risen in Parliament-street: their façades are of stone, and the Paris houses have served as models for their designers. They look substantial enough, but the party-floors are of the same character as that with which the Londoner for generations has been familiar. They are precisely the same as those which a hundred, fifty, ten, years ago,—and this year,—divided and divide the drawing and dining rooms from the bedrooms of a suburban villa. No account is taken of the fact that the different inhabitants of the house will be, in habits, occupation, and perhaps position, entirely distinct from, and opposed to, each other; yet the law says all these diverse groups are one family, and it proceeds to catalogue them as one "risk," to use the fireman's phrase. We repeat, on this score, the same words, almost from volume to volume; for we find that, with patience and the decent lapse of years, our suggestions are often recognised as exactly the right thing to do. We repeat, that in none of the great cities of Europe are floor-joists and boards, such as are daily constructed in London, to be found.* English joists, a few inches deep by 2 in. thick, are covered at the top with rough boards gaping at the joints, and at the bottom with strips of wood embedded in a coarse mixture of inflammable mortar. The inner space between the coat of the ceiling and the covering of the planks is hollow and ventilated. In Central London, as a rule, one floor division resembles another, and the ignition by fire of one implies the destruction of that above it.

Legislative Talent in the matter of building technicalities generally, and of fireproof materials in particular, has not reached a high state of development. The wits of St. Stephen's urge the use of "stone or any *other* fireproof material"; the "Model Bye-laws" prescribe stone (it may be inflammable limestone, or the softest and most perishable sandstone) as the proper material for a template, block or slab, on which still more treacherous iron is to be laid. We repeat that the British constructor has not yet succeeded in making an ordinary and a cheap

* See p. 970, *ante*.

* See "Concrete as a Building Material": *Builder*, vol. xxxv., p. 602; also "A Book on Building," same volume, p. 1160, third column.

party-floor division, even as imperfect as that which has long secured to the Parisian almost immunity from fire; and this is due, perhaps, as much to the predominance of native legislation as to the absence of native plaster or gypsum.

Listen to Captain Shaw:* "No fireman has ever seen a stone stair escape when subjected to much heat"; "no internal wall supported on iron can be relied on where there is much heat"; "at the present moment (1876) may be seen at the corner of two streets a new building, recently erected, 90 ft. long, 24 ft. deep, and from 70 ft. to 80 ft. high, supported entirely on iron columns without any wall, wood, or brick work reaching to the ground along the whole line of front. *At the ordinary temperature of from* 600° *to* 700° *Fahrenheit, the whole building must inevitably fall down*, and such a temperature could easily be created by the combustion of a small quantity of furniture." In fact, as we have rarely of late years ceased to reiterate, not only does rigorous custom, both in public and private buildings, make the task of a London fireman one of a needlessly dangerous character; but even the law of this country is ranged on the side of the destroyer. We fail to perceive that the "Model Bye-laws," from which undoubtedly a revised Building Act will soon spring, attempt to open the difficulty of fireproof construction. One or two expensive varieties of stone resist fire; but no structure is fireproof, or even fire-resisting, which depends for support upon ordinary stone or naked iron. Concrete composed of materials which have already passed through the fire, well-burnt bricks and plaster, are fire-resisting; indeed, to all purposes, fireproof. The framers of Building Acts and model bye-laws should really make a note of things generally known.

When a new Bill upon Building is presented to Parliament it would be well if the framers of it would try not only to simplify, but to combine the past laws, injunctions, and restrictions, which now have to be sought for in more than one place and one Act. If the authorities of districts throughout the United Kingdom are permitted to make their own bye-laws with the confirmation and approval of the Local Government Board in London, one imperial Act, embracing the general building regulations of Great Britain, will surely suffice. Mr. Honeyman, in his excellent suggestions for a new general Act, proposed to call it "The Boroughs General Building Act." He also proposed that "no buildings should be exempt from the operations of the Act"; and with reference to the necessity, more particularly in the provinces, of deposing whole sets of drawings at the offices of corporation or borough surveyors, he urged that the present system simply resulted in the accumulation of carefully-prepared drawings for no utility whatever; that, in fact, they were mere rubbish-heaps. Mr. Honeyman's paper is well worth re-reading by members of the profession before they begin a possible discussion on new and necessary laws. We quite agree with him that it is not wise to interfere with the building trade in too paternal a manner. That is an axiom of British rule almost everywhere; but, nevertheless, we would protect life at the risk of deviating a little from established custom. No Building Act yet devised has gone far enough to protect life in the heart of cities. A fair start upon right, sensible, general principles, and the power of local modification and application, are what is wanted,—not a whole array of abstruse details, which confound and astonish by their perverseness much more than they arouse respect for the learning, artistic and mathematical, of the legislator, at least, in the minds of those practically concerned with architecture and building.

PARK GATEWAYS.

Every one who is fortunate enough to appreciate the picturesque of effect and of association, knows how much of either kind of interest is contributed by the entrance gateways of old family estates which form incidents in a drive along an English country road. These are mostly in more or less classic taste, for it was only in post-Gothic times that the domestic landscape, as one may call it, of the private park, came into being as an essential feature in connexion with a country residence,—an appendage of the "mansion" which succeeded to the "castle." There are instances where attempts have been made to preserve the castellated style, the outer signs of feudalism, when the reality is extinct; and very unfortunate is the effect. If thoroughly carried out, the structure has a forbidding and inhospitable aspect; if badly and insufficiently done, it looks simply futile. But the old classic park-entrances exhibit a great deal of variety, and it is surprising how well they seem to group with English park scenery and foliage. We find sometimes a solid and dignified structure, like the one (no matter where) which suggested these desultory remarks; a mass of solid ashlar masonry on either side of the gateway, variously grey and green with lichen moss, divided out into regular cubes by the thin black lines of jointing, from which the pointing mortar has long disappeared; heavy solid-looking half-columns, with Ionic capitals, forming the main decorative feature in either block; and through this framework of masonry we look down the vista of a long straight drive thickly bordered with trees in the rich tints of autumn foliage, or interspersed with dark evergreens. The house to which it leads is concealed from view, so that there is about the effect something suggestive to the fancy,—a pleasant touch of theatrical unreality; the road may lead anywhere,—to some enchanted palace if we like. The columns seem to form a kind of proscenium ornament, and we might expect to see the hero and heroine of the romantic opera pass across between it and the back scene.

But perhaps we are getting a little too fanciful; all we mean to say is that the effec is very charming, both to the eye and mind, and that it is worth while to notice how much may be made out of such merely necessary facts as a gateway and a road to a house. And, in fact, the associations connected with these specimens of gateway architecture are really domestic rather than melo-dramatic. The family arms, the family motto, more or less ingeniously introduced on the piers, or in the design of the gate, constitute not a little of the picturesque sentiment connected with them. But there is a great deal of variety of architectural treatment and design to be met with amongst them. One shows a heavy and massive pediment with an arch under it for the gateway. Another aims at elegance and grace, not without a certain stateliness too, and the gate is flanked by a light, open colonnade, on a semicircular plan, terminating in the gate piers, the cornice and blocking of which are carried also round the semicircle, and form at either extremity of it the pedestal for a couchant stag, which will probably be found to be better carved and more artistic in feeling than one would at first expect. This semicircular type of entrance, providing a wide space between the public road and the gate, is a not uncommon form, and is always effective in general appearance, giving a look of spaciousness and dignity, whatever may be thought of the details. In another we find a different, a more homely but still dignified character imparted by a heavy rusticated architectural treatment, not so refined and stately certainly as the columnar architecture, but having a character of its own, peculiarly English; heavy piers crowned by an urn and a wreath, or a nondescript dog or lion with a shield, and more picturesque no doubt in its weather-stained green and black and grey condition than when fresh from the mason's hand. Yet in most of these show structures there is a largeness of scale in the detail, and a sort of execution entirely the reverse of "scamped," which gives them a satisfactory and thoroughly architectural expression: and the sculptured accessories generally are by no means despicable in style and execution. In regard to this last point we certainly have not improved upon our ancestors in decorative treatment of entrances, except in some very special cases in which ability of a high class has been employed upon the sculpture: and truly at this moment we hardly recal any such case. We do recal instances in which the effort to do something unusual in the way of sculptured decoration in such positions has resulted in the most dire vulgarities, though it is right to add that these are probably not chargeable upon the modern architect, but rather result from the desire to try how he can be dispensed with. It is a trifle off the line suggested by our title, but we cannot help noting a contrast between old and new taste in the matter of gateway decorations which may be seen in the once-Classic ground of Regent's Park. The older terraces along the east drive, parallel with Albany-street, exhibit a good deal of the old Classic and not over-convenient formality of design, but they are not without dignity of arrangement; and in the case of Chester-terrace, which stands back from the road, there is something really effective in the large entrance archway, flanked by Classic columns, through which access is obtained at either extremity to the terrace-drive. A little way below Chester-terrace, with its pediments, and "orders," and "attics," according to rule, is a large terrace of new houses, of a would-be-Gothic type, staring and obtrusive in style, also with its drive and its entrance gateways, on each of the piers of which have been set three wonderful females, back to back, in classic drapery, and depicted with what has evidently been intended for a smile of welcome on their lovely countenances; but, whether owing to the carver's (we cannot say "sculptor's") innate vulgarity of conception, or his inability to realise his intention, the smile takes the form of a leering smirk of enticement, which certainly would be, as we heard a lady resident of the neighbourhood complain, "absolutely improper" if it were not a little too ridiculous for that. Such a piece of vulgarity as this would, at all events, have been impossible in the period when the gateway designs of which we have been speaking were produced.

In recent days we have taken more to Gothic entrances, and these have this advantage, that if there is a house flanking the gate at either side, it can be obviously shown as a house or cottage, and not disguised behind a screen of Classic podium and column and cornice. The Gothic entrance may be said to be more domestic in character, and no doubt it may be so designed as to combine dignity with this, but too often it is but a mean and characterless erection, wanting in largeness and breadth of treatment; an impression still further emphasised by the effect of gates of elaborately twisted and spiky iron-work, which have an appearance quite out of keeping with the traditional sentiment of an English country mansion, importing into its environs suggestions of Birmingham, and an appearance of ostentation and unrest, a desire to be handsome, which is what the old style of gateway seldom or never suggests.

The entrance gateway is an opportunity for much that is novel and at the same time graceful and dignified in design; and towards realising these qualities in the approaches to modern mansions there is a good deal to be gathered from the study of those of the last and the early part of the present century. We may not imitate their details or the faded character (artistically speaking) of their ornamental accessories; but in regard to general treatment they afford much suggestion. Two things are to be observed in contriving park entrances,—that they should always be so planned as to give a wide space in front of the gate, and throw the latter well back from the road; and that if an arch is thrown over the gateway, necessitating somewhat large erection, it should be flanked in its immediate vicinity by walls sufficiently high and important to give something like an adequate support to the entrance, and give a kind of reason for the arch. A lofty arch set up to drive under, with only a low fence or wall on either side of it, looks absurdly pretentious and unreal, unless it be a *bonâ fide* triumphal arch. The addition of a lodge or house on either side as part of the design, and incorporated with it, gets over this difficulty, and furnishes the requisite *appui* to an arched entrance; but it is hardly justifiable to make houses which are not really wanted, for this purpose of mere effect, as we sometimes find them. On the whole, except in cases when the thing is done on rather a large and stately scale, it is perhaps well to let a gateway be simply a gateway, and trust for effect to the way it is arranged and led up to, and the manner in which the architectural details flanking it are treated.

By way of a new idea, however, for this kind of design, we have sometimes thought that the Indian gate-pyramids afforded a suggestion worth working out in another form, and with another class of detail. Such an idea would be only suitable, of course, in connexion with the grand entrance to a large and stately domain, in which case the pyramid might have an architectural meaning, as serving to indicate from a distance the position of the main entrance. There are many other forms of gateway design existing in the architecture of various countries and nations, which would afford opportunities for a fresh point of departure in the architectural embellishment of an entrance; but those of our own country merit more attention than they have received, and often afford very pleasing specimens of purely artistic architecture.

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* See p. 74, *ante*; "Theatres, the Law and the Lord Chamberlain."

NOTES IN THE ART DEPARTMENT AT THE ABERDEEN CONGRESS.*

The paper by Mr. Forbes Robertson on the question of competitions in art may be said to have been a very fairly successful attempt to make a good paper out of a very unpromising subject: the fact being that it is hardly possible to have any but one opinion on the main point, that the throwing open of artistic work to public competition has a healthy and stimulating effect, and has been the means in past and recent times of bringing forward great artists who might otherwise have had to wait many years for recognition, and of bringing about the production of great works which we might otherwise never have had at all. We need only refer to Stevens's Wellington monument as an instance in recent times. Mr. E. M. Ward brought forward instances in which all the successful competitors were men who had made a name previously; but these instances only show that there was no further genius waiting to be evoked in those special cases; that is, if we assume that these competitions were conducted with absolute freedom from partiality. Of course that is the really important point, about which a great deal of difference of opinion is possible as to the ways and means of securing the best result. Mr. Robertson rightly emphasised the importance of remunerating competing artists for their work, and not leaving them to the chance of entire throwing away of time and labour. Mr. Statham's paper on the subject of "Art-Furniture and *Bric-à-brac*," was a protest against reducing art to the level of mere decoration, placing china and furniture above the more intellectual arts of sculpture and painting; and was, we believe, partly suggested by the idea that this furniture notion of art was too much brought forward in the Art-Section of last year's congress at Liverpool. We print the paper, which may speak for itself. The second day's proceedings of the Department were closed by a short paper from Miss Burton, on the subject "Is Beauty incompatible with Labour?" which was a protest in favour of endeavouring to improve the æsthetic condition of the labouring classes, pointing out that in many parts of the Continent the ordinary working dress of the common people was highly picturesque, and was an object of study to artists on that account, while in England and Scotland it was in most cases quite the reverse. The point of Miss Burton's paper in regard to this topic was that in this country persons whose vocations compelled them to wear a special dress were troubled with a false shame of the working costume, did not care to be seen in it, and took no trouble to make it agreeable to the eye. The one exception was in the case of artists, who required a special dress for their labour, but had no objection to be seen in it, and took pains to make it picturesque. The conclusion to be drawn was that, if people were not ashamed of their labour, and did no labour that they need be ashamed of, they would probably be led to endeavour to render the conditions and surroundings of that labour picturesque and pleasing. Miss Burton also referred to the extreme ugliness of buildings for works of manufacture in Great Britain, and the squalid character of the homes of the operatives, in contrast with the palatial mansions of the proprietors of mills and employers of labour, and urged that it would be more fitting and more in accordance wish the demands of true philanthropy that a proportion of the wealth spent on beautifying the house of the owner should go to improving and rendering more picturesque the manufactories where the labourers worked, and the homes in which they lived. The paper, though short, and a little rambling in character, contained some important suggestions, and gave rise to an animated little discussion, chiefly carried on by the ladies, who here for the first time took a part in the proceedings of the Art Department, though the President had before invited their co-operation. Miss Becker in particular made an admirable speech, among other things referring to the desirability of artistic study of dress on the part of women, who, she complained, were expected to look ornamental in their surroundings, and yet were often most inconsistently found fault with, and charged with frivolity for caring about dress. Other ladies spoke well, and to the point,—not always (if we may be permitted to say so) illustrating their remarks by their own costumes, if artistically considered.

The paper by Mr. J. F. White on the question of the best means of introducing art into the homes of persons of limited income, was, perhaps, the best—it certainly was at once the most elaborate and the most directly practical—of all the papers read in the Art Department. We have already printed this paper, which was illustrated by a great number of specimens of various methods of producing works embodying true art—in many instances of a high character—at low prices. These included casts of sculptured work (concerning which Mr. White was a little more enthusiastic than we should be, as we cannot ourselves get over the disagreeable tone and surface of plaster, however faithfully it reproduces the forms of the original), engravings, etchings, photo-lithographs, photo-gravures, autotype reproductions, and pottery ware,—making quite an art-exhibition in themselves.

The meeting was by far the most fully attended of any of the departmental meetings; the large room in which the art section met—the largest in the building—being crowded, and the interest shown in the subject proved that the Art Department had got a hold over the attention of the visitors. A pretty long discussion followed; in the course of which Mr. E. M. Ward gave some particulars as to the intended formation of a school of tapestry design and manufacture at Windsor (which, perhaps, scarcely came under the head of art for "persons of limited income"), Mr. Aitchison made a pointed and clever speech, suggesting among other things that an even more difficult task than getting art *into* the houses of persons of limited income was that of getting vulgarity and bad taste *out* of the dwellings of many wealthy persons; and Mr. Statham added to some general comments on the paper a few words as to the Association, which had been formed by Miss Octavia Hill, in London, under the title of the "Kyrle Society," with the object of bringing beauty and decoration into the houses of the poor, and into hospitals and workmen's clubs, &c. The concluding paper of the Art Department, on the Treatment of Granite as an Architectural Material, fell a little flat, owing to the determined silence of the Aberdeen architects, who, with the single exception of Mr. Arthur Clyne (the local hon. secretary of the Art Department), seemed to regard the treatment of the subject by strangers as a kind of unwarrantable interference.* The paper was read by Mr. J. J. Stevenson, who in the main took the line of recommending the sternest and simplest treatment of the material, as one which was entirely unsuited to elaborate decorative design, though one of the grandest of building materials when treated simply. Mr. Clyne took exception to viewing granite as a material having any special difference from other building stones, except as regards mere hardness, or requiring any special treatment; a view in which we cannot quite concur with him. Mr. Statham agreed with Mr. Stevenson in deprecating the extensive use of polished granite in external architecture, and strongly urged more attention to the polychromatic effects to be attained from the use of granites of various qualities and tones; drawing attention to the admirable collection of specimens of granite in the Museum of Practical Geology in Jermyn-street, where almost all the existing varieties of granite, from all parts of the kingdom, could be seen and compared in contiguity and their capability for decorative effect estimated. Our own views on the Aberdeen granite architecture generally were expressed sufficiently not long ago. In concluding our remarks on the Art Department, it is only right to add a word in praise of the regularity and punctuality with which Lord Ronald Gower performed his duties as president, and which the local papers contrasted strongly with the irregularities and changes of chairmen in some other departments.

Among the special objects of architectural interest in the Old Town should be noted the chapel of King's College, less known, but even more interesting to the architectural eye, than the tower, whose remarkable crown finial makes it so conspicuous an object. The chapel is a quiet, small building of late date (*circa* 1500, the foundation of the college), but with architectural characteristics quite different from those which generally belong to Gothic architecture of this date in England. The external design shows, instead of the hard thin lines or over-florid ornament of English Perpendicular work, a plain solid massive bit of building in which the chief effect is given by the picturesque treatment of the buttresses in regard to outline and proportion.

An architectural question touched upon incidentally in the Art Department was the rebuilding of the spire of the West Church, a large cross church standing a little way off Union-street on the north side. This had a curious and very picturesque short timber spire on the crossing, which was burned not long since, and the project now is to build a large and lofty granite spire in place of it. This has involved casing and strengthening the old arches in order to fit them for the additional weight; and the conservative section of art-lovers in Aberdeen are very indignant both at the spoliation of the internal architecture and the substitution of a granite spire instead of the re-building of the old one in the same style as before. We had not opportunity to examine the interior of the church so as to pronounce any decided opinion as to the right or wrong of what is being done inside; but in regard to the mere question of external effect we think our Aberdeen friends are in the wrong. The old spire, judging from drawings, was very curious and picturesque, but quite out of keeping with the style of the substructure, and now that it has unfortunately perished, no good purpose, architectural or archæological, would be served by building an imitation of it. As a new spire has to be built, it will be better to build one in accordance with the style and material of the rest of the church; and the lamentations on this head seem to be misplaced.

Aberdeen seems to be well off for public entertaining rooms, in proportion to the size of the town. The "County Hall," contained in the Municipal Buildings, is a splendid room, with a lofty open timber roof, and the "Town-hall" (which term is here applied to a room, not, as usual, to a building), placed *en suite* with it, and in which the General Council meetings of the Congress were held, is a smaller but very good room, decorated with armorial bearings and portraits of eminent Aberdonians. But in connexion with these, and capable also of being thrown *en suite* with them, is the series of rooms belonging to Advocates' Hall; and at the *conversazione* of the 21st, when the President of the Art Department delivered his address, there seemed quite a maze of apartments and corridors for perambulation by the guests. The Music-hall buildings form another very large and commodious suite of apartments, whose capabilities were well tested at the *conversazione* on the 25th, when the guests were entertained with music, an exhibition of the telephone by its inventor, and an exhibition of microscopes and astronomical instruments; the latter lent and lectured on by Lord Lindsay. As to the various entertainments, public and private, much might be said. The Lord Provost's dinner in the County-hall, on the 20th, was one of the best of dinners, if not accompanied always by the best of speeches. Among the invitations issued on a large scale was one from the Earl of Aberdeen, who received some 200 of the visitors at Haddo House, on the afternoon of the 25th. The house is reached from Udny station by a long drive through the dreariest of countries over very heavy roads, but the park is a fine piece of enclosed scenery, and the house (*temp.* George II.) finely situated, and characteristic enough in its way as a piece of solid domestic architecture of the period. It abounds in Lawrence portraits; but the most interesting artistic object is the portrait of Guizot when a young man, painted by Delaroche, and presented by Guizot himself to the late Earl. The most successful of all the festivities of the week, however, was the excursion by a number of the visitors to Aboyne Castle, at the invitation of the Marquis of Huntly, whose courtesy and geniality, wherever he was concerned in the proceedings of the Congress, will be remembered with pleasure by all connected with it. After lunch at the Castle, a drive up Glen Tanner, through the deer forest, and along the banks of the beautiful Tanner stream, was organised and taken part in by a large number of the guests, who, on the return drive, were welcomed to tea at the pretty shooting-lodge of Mr. Cunliffe Brooks. These were only the more prominent instances of the open-handed and really magnificent hospitality which the members of the Congress met with on every hand during their stay, and which will not be forgotten by those who passed so pleasant a week in the fine old city which bears on its arms the (in this case at least) happily appropriate motto of "Bon Accord."

* See p. 973, *ante*.

* We are informed that the leading architects of Aberdeen had been solicited to read a paper on the subject, but all declined.

THE PROGRESS OF THE HEALTH QUESTION.

Mr. Edwin Chadwick, C.B., in his address, at Aberdeen, to which we have already alluded, submitted what he considered, from his own point of view, the present position of sanitary science, and its future practical advancement. We print some salient portions of it:—

A Stationary Death-rate with a Largely Increased Population, a Reduced Death-rate.

It has been recently put forward by a gentleman who held this chair at Liverpool that notwithstanding all the expense incurred by local authorities for sanitary works, there has been little alteration in the death-rate during the last forty years. In great part this is true, and I may show why it is so; but the figures are misleading, for with an increase of the population during that period, from about fifteen to twenty-two millions, with extensive conditions of overcrowding of dwellings of the wage classes, and of cottages which formerly served for one family, but which have now frequently one family to each room, there have been argumentations of death-rates at many points, insufficiently countervailed by reductions at others. It will be found that a stationary death-rate is relatively to a largely increased population, a reduced death-rate. But the statement is, as I shall show, so couched as unjustly to depreciate our increased power of sanitation. Then we have had the doctrines of Malthus raised against us, and it is held forth that by increasing the population we shall by division diminish its subsistence fund and intensify misery. In my service in poor-law administration I had to deal practically with those doctrines. In one county we at once struck off 10,000 able-bodied men from the pauper-roll of out-door relief in aid of wages. The Malthusians declared that wages must be reduced by that measure, and that its working must be horrible. But lo! wages, instead of falling, rose higher than they had ever been before. In the very county where the objection was raised the population had been increased during the last half-century from half a million to upwards of two millions, wages have been doubled, and until the late check to manufactures and population, productive population had become scarce, as I foretold it would be. I might add that if by sanitation the population were increased to the extent foreboded, why then, as it is estimated that of the habitable parts of the globe only one-sixth is really believed to be inhabited, we shall have sufficient outlets for the superabundance of a strengthened population. Noting the fact that at the period of the promulgation of the population doctrine, epidemic visitations were regarded as "positive checks," absolutely unpreventible and uncontrollable,—I beg attention to the progress made in the development of the powers of sanitation, especially as bearing on those visitations. In our first meeting at Birmingham in 1856, Lord Stanley, now the Earl of Derby, referred to my official Report of 1842, on the sanitary condition of the labouring population, in terms with which subsequent dedications to me of works on the subject,—of which I prize most the dedications by officers who have served with me,—have concurred, in accepting that Report as the starting-point of public effort in sanitation. I therefore propose to submit examples of the development of those powers since that period. Our general death registration is defective in itself, and it is yet more defective for this purpose, because in the same registration districts houses situate outside sanitary works which have had no amendment are mixed up with others in areas which have been so amended, and it is hence very difficult to obtain distinct and just conclusions in respect to the results of such works. We may, however, see more clearly the operation of principles, and obtain more satisfactory conclusions, by observing their working on similar classes of persons in similar conditions, as in the army and the navy; or in public institutions under professional observation and care. It is to such instances that I beg to solicit attention. And first as to the prevention of the greatest sources of preventible diseases, "the children's diseases" and "children's epidemics." . . . . .

Normals of Sanitation obtained by Improved Civic and Private Construction.

I now proceed to notice the normals of sanitation evolved by local or private effort.

In about thirty of the smaller towns sanitary works were attempted by local authorities, on lines laid down by the first General Board of Health, for systematic sanitation, namely, by the removal of damp by the drainage of sites with permeable agricultural drains,—by pure supplies of water, if possible from spring sources, delivered direct into houses on the constant system of supply, without cisterns and without waste,—by the constant removal from within the house of all putrescible or fœcal matter by the watercloset, together with all the fouled water from the kitchen and the laundry, from the house, through self-cleansing house-drains,—by the constant removal of such matter from beneath the site of the town through self-cleansing sewers, and by the constant and direct application of all such foul or waste matter as was removable in a liquified form (perfectly fresh) or free from advanced decomposition, as manure on to the land for agricultural production. There was to be no stagnation anywhere, no time given for advanced decomposition, and no production of putrid sewer-gases to be discharged either into the houses or into the streets, or above them into the general atmosphere. Normals of the self-cleansing sewers, and of the application of the sewage to the land, were separately considered, and separately established at great pains. Trial works were got, as to the forms, sizes, and inclinations of channels, that should be self-cleansing with the least quantity of water. Our objective points of sanitation were, first the house, next the street, then the town area, and last of all the river. It was established that as a rule pure supplies of water could be brought to the door for rates amounting to a penny a week, and carried into the house for another penny per week; and the waste water of the scullery or the laundry removed for another penny; and the cesspit abolished and the watercloset added for another halfpenny, or in the whole threepence per week, or a halfpenny per diem, for a complete system, in which there should be no putrid sewer gases, and in which you might test the competency of the sanitary engineer by the smell. We showed that three houses and three towns could be sewered well at the cost heretofore incurred for draining one town ill on the old plan of brick drains of deposit and large man-sized sewers of deposit, which were only extended cesspools for the generation of putrid-sewer gases. At these prices works were done then, and allowing for the advanced price of labour, may be done under competent administration now. To this work for the removal of putrescible matter from within houses and from beneath streets and towns, was added the covering of footways and the roadways of streets with some impermeable surface, and the cleansing of it by a jet of water from a hose and hydrant, to be used on occasions for the extinction of fires. In blocks of houses and whole towns cesspools have been removed, and water carriage through the water-closet, with self-cleansing drains and self-cleansing sewers have been substituted. Physicians in practice in such localities have testified on their experience, that house to house as the improvements were completed, and the atmosphere of the house was altered, low headaches were removed, the appetites improved, and the symptoms premonitory of advanced disease were abated, and that their practice was largely affected. But it is difficult to get satisfactory statistical estimates of the results, because they have not been regarded by the local authorities, and the returns are not available distinctly for the houses where sanitary alterations have been made, and even in respect to the towns where such works have been effected, the registration includes outlying houses and undrained detached villages, which are unimproved. Nevertheless, in the statistics for the places where the works have been carried out in principle, even in a rudimentary manner, reductions of death-rates by one-fourth, and even by one-third, are frequently shown. In 1866, an examination of twenty-five of these towns was made by the Medical Department of the Privy Council, but without a due knowledge, as it appeared to me, of the nature of the works or of what was to be expected from them, or of their defects. It came to my knowledge subsequently that the works of some of them were grossly defective, and wretched rooms and room tenements had remained unimproved. Nevertheless, the general results obtained were reductions of the general death-rates (after excluding smallpox and infantine epidemics) about 12 per cent., of typhus fever 41 per cent., of phthisis in a number of cases more than 40 per cent., and of diarrhœa a mean of 18 per cent., and a reduction of the general death-rate of more than 9 per cent. The commentary by Mr. Simon was, on these results, that "they may serve to fulfil very important provisional uses, not only to confute persons who have despaired, or affected to despair, of any great preventibility of disease, but still more to justify in the public eye and to encourage in some of the noblest of human labours those who for long weary years have been spending their powers in this endeavour, and to whom it will be the best of rewards to see the demonstration of the good they have wrought." More is to be lamented for the good that has been frustrated, than is to be rejoiced at for the shortcomings obtained, and it will be proper in the interest of the future, to display hereafter the obstructions continued against the extended applications of settled principles of sanitation. But for the present I must confine myself to the showing the progress of the power of sanitation, and the demonstrations of distinct normals. For the reasons heretofore stated, I deem the available statistical evidence derivable from the experience of whole, even of improved towns, at present insufficient to display the full power of sanitation. In my experience, however, the statistics may be inferred from the aspects of the places, and from the aspects of the people. After traversing different districts and observing the difference of their conditions as to cleanliness, drainage, and other sanitary points, when I have been enabled to get out the statistics of the death-rates street by street, I have found they have corresponded closely to what might have been anticipated from their relative conditions. Nay, from the contrasts of the classes of destitute orphan children in the district half-time schools, I could anticipate, where there were marked contrasts in their conditions, very much of the different death-rates of the places whence they came. And here I would mention an experience from my own observation. I have been in the habit of visiting those institutions at long intervals of time. At a late visit to one of them, I was struck with the improvement of the type of the children. I observed to the manager, "Why you have a different class of children to those I last saw here. Where do they come from?" The answer was, "They come from the same districts, the lower districts, but since sanitary improvements have been made in those districts, we are getting a different type of children, as you see." I found that the medical officers as well as managers of other institutions confirmed these observations by similar experiences. Others than myself have made the observation that since the clearances of bad dwellings, and the wider spreading of the wage classes in Paris, that they are changing that leathery complexion, so much like the inner soles of old shoes, which they formely had, for one clearer and fresher. This is in accordance with our anticipations, and it is satisfactory to observe distinct appearances of their realisation for future promise of large improvements in the types of populations.

I should anticipate with confidence from such appearances a reduction of the death-rates to be marked by statistics if they were got out. The blocks of model dwellings in London, erected by voluntary associations, present better observed and clearer instances, serving to some extent as normals of the preventive power of sanitation. In these, the death-rate ranges separately from 14 to 17 per 1,000. I assume that in the metropolis 16 per 1,000 may be taken as the mean death-rate of similar improved habitations; that, I need not say, is an important advance upon the general death-rate of 23 in 1,000. But a death-rate, which is a mean of the deaths of a large city, is almost always a delusive misrepresentation, especially of the extremes. Thus we have part of a sub-district in London, comprising houses in good condition, where the death-rate does not exceed 10 in 1,000, whilst there are adjacent dwellings chiefly occupied by the wage classes, where the death-rates from year to year keep up to the extent of 38 per 1,000. Important returns, with which I am favoured by Dr. Russell, the medical officer of health of Glasgow, show, for the last year, a range of death-rates, from one district at 15 in 1,000, to another district at 40 in 1,000. Now, a mean of these two, or the general mean (25 in 1,000, with sub-districts of 17 in 1,000, 24, 26, and 33 in 1,000), is a misrepresentation of each. It has lately been proved that in some of the dwellings condemned under Mr. Cross's Act, the death-rates were as high as 50 and 60 in 1,000. It has been objected to the conclusions from the lower death-rates in the model dwellings that the people living there are generally of a better

class in position and habits. The answer is, that if the same people were taken into inferior tenements their habits would deteriorate, as the habits of artisan families from the rural districts deteriorate, whatsoever may be the increased amount of wages they obtain. But the power of sanitation is displayed upon people of the lowest condition in the metropolis, namely, the tramps who occupy the common lodging-houses, regulated under Lord Shaftesbury's Act. These places were formerly distinguished for the first outbreaks of typhus and epidemic diseases. Drainage, water supply, and the means of cleanliness and ventilation are now enforced, and overcrowding is prevented in them, and they are now distinguished by an immunity from common epidemics. Medical officers of the districts where these lodging-houses are situated have testified to the better sanitary condition of their occupants than of the wage classes dwelling under the jurisdiction of the common vestries. Dr. Russell states to me that "in the large model lodging-houses of the Corporation a case of fever is the greatest rarity, and it never spreads. In the common lodging-houses belonging to private individuals, we have fever oftener, but there again it never spreads;" that is to say, as it does in defective houses of the wage classes. "We are informed of a case at once, and remove it immediately to the hospital. Fever of any kind never spreads in any of our institutions where I can do as I please to cut it short." Why should not similar protection be extended to the wage classes? Accepting my normal of sanitation in the prison, Dr. Russell says:—"If I had perfect command over all the Irish in Glasgow, as the governor of a prison, I would reduce the death-rate one-half in five years, and in less time than that, I expect." On the whole, death-rates in the model dwellings may be fairly placed in opposition to the common death-rates prevalent amongst the wage classes of the metropolis, where it is upwards of 30 in 1,000; or, as an example, of a gain of one-half upon that special death-rate by the power of sanitation. His Majesty the King of the Belgians has offered an international prize, which is calculated to be of high service, as conducing to a better determination of the power of sanitation, and its vindication before Europe. He offers "a gold cup of the value of 5,000 francs to that municipal or local authority, or private association, which shall, by an improvement of the dwellings of the wage classes, effect the greatest reduction of their death-rates at the lowest cost." So far as the powers of sanitation have been exercised, it would appear he adjudged that this prize might fairly at first view go to a private association at Frankfort, for their model dwellings, of which Dr. Varrentrapp, a leader of sanitation in Germany, gives me the statistics, showing an average death-rate under 10 in 1,000 for the last fifteen years. But an instance is stated by Dr. Latham, the medical officer of Salford, which, if correct, would gain the cup for England. It is of a block of model cottages, a model village, erected for the workpeople of Messrs. Price & Co., near Liverpool, where the average death-rate for the last five years has been 8 in 1,000.

On a review of the facts I have adduced, I think I have proved that by sanitary measures it is quite possible to reduce the death-rates under such regulations. I state that we can so arrange common conditions to multiply the most fatal orders of disease, and that we can command conditions as effectually to prevent them. If I might resort to the Hindoo mythology, as formulating or embodying maleficent and beneficent principles, I may say that if Siva the Destroyer were to require it, we could certainly build a city in which we could ensure a death-rate of 40 per 1,000, or far more than double the general mortality of the country. For that purpose we should copy literally and closely the old parts of Whitehaven, those of Newcastle-upon-Tyne, and the wynds of Glasgow and of Edinburgh, which I have heretofore traversed, and some edifices in Paris and Berlin, and some tenement houses and crowded slums reported of in New York and Boston. I have asked relieving officers in London whether they could take a dozen cabs and fill them with fever cases, of which particular cases they had received no special notice. Yes, they replied; they could readily find enough, though they might not be quite sure of the sort: the cases might be of typhus, they might be of scarlet fever, they might be measles, they might be small-pox. But some cases of eruptive diseases they were sure to find. Let those places be looked to and copied. There were, and are, instances even of particular houses, which the medical officers were sure would be the first to be attacked on any renewed epidemic visitation. There was one house, or street, in York, which we were informed by tradition was the first attacked by the great sweating sickness; then the first by the great plague; and lastly the place which cholera selected on its first visitation to this country. On the second visitation during my service we had an outlook whether the place would be true to its traditions, and it was so! Let that be copied. As a short cut to get at the places for sanitation, I have instructed sanitary inspectors to go into the primary schools, to put aside the most squalid and inferior children, ascertain their residences, and examine them. They have done so, and as a class they have found the most wretched tenements to be the fever nests of the city. I remember that Dr. Lyon Playfair, then a pupil in sanitation, told me that he had, with other visitors, acted on this suggestion, and noted amongst the class of squalid children two whose faces were blotched from disease. They found that their habitation was over the confluence of a discharge of putrid sewage. Let such places, too, be included. By copying these places, and repeating these conditions with fidelity, we may insure with certainty that more than half those born shall be in their graves by the fifth year, and that those who survive shall be stunted, squalid, and irritable and weakly. We may, by such insanitary conditions, reduce the proportion of the aged, and of the middle-aged, and of persons of mature experience, and increase the proportions of the young and of persons of immature experience, to the rest of the community. We may reduce the steadying influence of experience, and augment the preponderance of passion, and of blind impulse. We may, by the excessive sickness and death-rates, produce a sense of the shortness of life, of its pains, and its worthlessness, and generate a reckless avidity for immediate gratification; such as that which characterises inferior soldiers in time of war. We may, indeed, compound a "hell broth" of "powerful trouble" to the police, as well as to the administrators of relief to human misery. We may produce such results; for they are produced from such conditions, and are displayed in outbursts that alarm and endanger the negligent administrations under which they have arisen.

On the other hand, if the beneficent principle worshipped as "Vishnu the Preserver" should command, we can undertake to erect a city which shall in time be the reverse of all this, and in which the death-rate shall not exceed 10 in 1,000 or one-half of the general average of sickness and mortality, a city which shall be as fever-proof as we have made our orphan half-time asylums and our prisons, without, indeed, materially altering the popular habits, except as to overcrowding; with houses freed from the cesspool smell, from the bad drain and the sewer-gases, from the damp wall and from the foul wall-smell and from wall vermin, from stagnant and vitiated air, and from the too prevalent exclusion from sunlight,—houses that should, by their construction, be cool in summer and warm in winter, with good water-supplies undeteriorated by bad modes of delivery. I say with confidence that we might insure an advance upon the hitherto normal death-rate of 15 or 16 in 1,000 of the present model dwellings, because those dwellings are, in my view, not yet up to the principles of construction, as the Prince Consort's model dwellings were, in some important points.

Moreover, that reduced death-rate of 16 in 1,000, as against 40 or more, good though it is, must be considerably affected by the condition of the general urban atmosphere in which they are situated, as well as by particular insanitary conditions. As to the general urban atmosphere, surgeons will be well aware that if an accident requiring a serious operation were to occur to the occupier of any of those urban dwellings, his chances of recovery would be considerably improved by removal into a purer suburban atmosphere. With respect to the conditions of urban and country hospitals, a celebrated physician remarked, "In the city hospital-ward the most expert surgeon cannot cure, whilst in the country hospital-ward the greatest bungler cannot kill." Of the particular insanitary conditions to which the occupiers are mostly exposed, are air tainted with sewage-gas from bad general drainage, and, indeed, much sewer-tainted water, by the dung-dust of ill-cleansed streets, befouling skins and clothes, by the children being compelled to go to long-time schools, and to be massed together with filthy-skinned children, the centres of children's epidemics, and by the adults being compelled to labour in ill-conditioned workshops not under the Factories Regulation Act. By the elimination of these insanitary conditions, a reduction of the death-rates of the model dwellings by fully one-third may be confidently assured. It might, indeed, be anticipated that some approach might be made, as to children, to the condition of the half-time schools, or, as to the adults, to the sanitary conditions of those great normas of sanitation, our prisons,—that is to say, a condition in which, two years out of every three, there should be, as it were, a sanitary jubilee, in which there should be no disease and no death, a condition under which all men shall attain the promised term of three score years and ten.

It is not, however, necessary to wait for the construction of Hygeias, to make advances in urban sanitation. What has already been done in old cities, such as Salisbury, where the death-rate has been reduced from some 28 in 1,000 to 17 and 18 per 1,000; what has been done with the common lodging-houses; what has been done with blocks of buildings in the metropolis and in Glasgow, warrants the conclusion that specialists as sanitary engineers might now contract for the attainment of important sanitary results. I am confident that data might be given for the reduction of the death-rate of the metropolis, from 22 to at the most 17 in 1,000, and for the reduction of the death-rates of provincial cities in the manufacturing districts in yet greater proportion.

Excessive sickness involves premature working disability, as do premature mortality and excessive pain and misery involve definite pecuniary loss which the political economist may estimate. On definite data, I have heretofore estimated the money loss from insanitary conditions at about 15,000,000*l.* sterling per annum. It must, however, be much more than that. Happily, this sum capitalised would, under economic rule, amply suffice, in most cities, to defray the expenses of proper works by which the existing insanitary conditions might be removed and a pecuniary gain in productive power effected.* * * * *

Mr. Chadwick, in concluding his important address, submitted the following summary of the results obtained of the progress of the power of sanitation, deducible from the normal instances he had adduced, or of which, from want of space, he had been obliged to content himself with giving indications for examination:—

1. That we have gained the power of reducing the sickness and death-rates in most old cities by at least one-third; or, as a rule, of reducing the death-rates in old British urban districts to 16 or 17 in 1,000.

2. That in new districts, on sites apart from old urban sites, we may, with a complete arterial system of water supply and surface-cleansing,—including measures for the prevention of overcrowding,—ensure reduction of death-rates to less than one-half, or to a mean rate of 10 in 1,000, and the sickness in the like proportion.

3. That in well-provided and well-regulated institutions for children from three to fifteen years of age we may secure them an immunity from the common children's epidemics and reduce the death-rates to a mean of about 3 in 1,000, or to less than one-third of the death-rates prevalent amongst children of those ages in the general population.

4. That in prisons and places under effective sanitary control the death-rates (from disease) have been reduced amongst persons from the school ages and upwards to about three in 1,000, or to one-third of the death-rates prevalent amongst the general population of the same ages.

5. That to the persons in such institutions an immunity may be given as against all ordinary epidemics, typhus, and the eruptive diseases, diarrhœa, and dysentery, which ravage the general population.

6. That amongst the general population a reduction by full one-half of the diseases of the respiratory organs may be effected by general public sanitation.

7. That complete habits of skin cleanliness, alone and apart from general structural arrangements, or alterations of habits in other respects, constitute a factor of about one-third of the power of sanitation.

8. That, by a proper selection and a due sanitation of sites in tropical climates, and the sani-

tary care of the population, the birth-rates may be made to exceed the death-rates, and a healthy succession, for colonisation, for people of the British or of the white races.

9. That by the increased health and strength imparted by improved physical training under sanitary conditions, on the half-school-time principle, in the infantile and juvenile stages, the efficiency of three for productive occupation may be imparted to every two of the most depressed classes of the population.

10. That the death-rates from disease in the mercantile marine may, by the exercise of the like powers of sanitation that are exercised in the Royal Navy, be reduced by two-thirds, or to the general death-rate now prevalent in the Royal Navy, namely, of about six in 1,000.

11. That,—as indicated by existing normals,—the greatly reduced death-rates in the army at home and abroad admit of important further reductions, by a more complete application of tried and approved means of sanitation.

IS THE PREVALENT TASTE FOR "ART FURNITURE" AND BRIC-À-BRAC INDICATIVE OF A SOUND OR HEALTHY ÆSTHETIC CULTURE? *

It appears to be generally assumed that there has been no little advance in English society of late years in regard to what is called "good taste," an expression often very vaguely used, but which we may take to imply the critical perception of the distinction between what is graceful and suitable in form and harmonious in colour in all the objects with which we surround our daily lives, and what is the reverse of all this.

This movement in the direction of good taste is, perhaps, hardly as general as is sometimes supposed. As far as we can judge, it has hardly reached the mass of the trading classes at all; and perhaps there are not a few among the professedly more cultured classes who are still sublimely indifferent to the designs of their tables and chairs, their carpets and wall-papers. But even these have to swim with the stream; and this indifference to the æsthetics of house furniture and decoration can hardly be openly professed by any who have the hope of social salvation before their eyes.

It would be very untrue to say that there is nothing to congratulate ourselves upon in regard to this recent outbreak of "taste." It is certainly a fact that we now not infrequently see rooms the *ensemble* of which is harmonious and grateful to our sense of colour, and in which there is no object which can be said to be in a tawdry or vulgar taste, and this is wherefore to be thankful. It is when we come to consider these results not absolutely but relatively,—relatively to the principle from which they appear to spring, on the one hand, and to the ultimate ends of art on the other hand, that we seem to meet with that which must give us pause.

The theory underlying this movement, with those who think about reasons and principles at all, is what has become almost a "Shibboleth" among art-critics of the day, that art and artistic feeling are as much shown in the design of furniture and other accessories as in what have been hitherto considered the higher or "fine" arts of sculpture and painting. The practical corollary to this is found in the existence of numerous establishments devoted especially to the production of what is termed "art-furniture.'

Now this phrase alone, so familiar to us in print and in conversation, constitutes in itself a begging of the whole question, an indication of a view of the subject radically false and unreal. A great Scotchman, John Stuart Mill, in his memorable address at St. Andrews (which suggests to us more about the true relation of art to our intellectual life than can be found in whole volumes of "art-criticism"), observed that art might from one point of view be regarded as the endeavour after the perfection of execution. The definition, at all events, precisely covers the section of the subject which we are just now considering. So far as relates to furniture—to the class of articles which are in the first instance for practical use, and only in a secondary sense ornamental,—that is truly artistic which is made, firstly, in the best possible way in relation to the use for which it is intended, and the material of which it is constructed; and, secondly, which expresses in the best and most graceful manner, in the shape and treatment of each portion, the motive and use of the whole and the special character of the material. We might say that when an object, a sofa, for instance, has the first of these qualities, it is workmanlike; when to these is superadded that of expression, or expressive execution, it may rightly be called artistic; but, in fact, the two qualities can seldom be separated or divorced. What is truly workmanlike is almost always artistic; what is unworkmanlike is invariably inartistic—unsatisfactory to our sense of beauty and fitness.

There is not, therefore, and cannot be, rightly speaking, any such thing as "art furniture," considered as a separate species of article: and to go into a cabinet-maker's and ask for art-furniture is as reasonable as it would be to go into a bootmaker's shop and ask for a pair of art-boots. The request in either case would in reality be for something made for another object than that or which it professes to be made—for show and not for use. In any sense in which the expression is worth anything, all furniture ought to be "art-furniture," and if it is not it is badly made. What is actually meant by art-furniture, as sold in the æsthetic warehouse, is furniture which is a copy of something else that was in fashion at some former period of our history. Much of what is now made as art-furniture, for instance, is in the style which has lately been distinguished as that of the "Queen Anne" period, which has superseded the Modern-Mediæval type, though there is combined with this a taste for furniture of a simpler (and, to my thinking, better) Old English style. A good deal of the furniture of these types is far more artistic and tasteful than that which was in vogue in the last generation, so that the impression conveyed is of a more or less general improvement of taste. But that this is to a great extent a superficial appearance is shown by the fact that the bad is taken along with the good. Were there space here to go into details of criticism, it would be easy to show that while some of the furniture work referred to is good, some of it is as bad and vulgar in taste as it well could be; but it is all alike accepted by the public, and recommended not only by dealers, but by writers and critics who aspire to guide public taste.

Indolence of mind, coupled with a desire for show, is at the root of all this. That which might be rightly called *artistic* furniture is valuable precisely in proportion to the thought that has been put into it; every detail should bear the impress of having been thought out in reference to the material and the use to which it is to be put. If it were usual to have furniture and other accessories so designed as to represent the thought of the workman and the individual taste of the owner, it would have a real interest; but this involves too much trouble. The manufacturer is content to take a certain style and reproduce it, and say "this is artistic"; and the purchaser, instead of cultivating his individual taste, and endeavouring to gratify it considerately and thoughtfully, so as to make his dwelling-rooms a part, so to speak, of his own individuality, is content with the easier task of paying his money, and taking what is set before him, furnishing his rooms after a pattern of a hundred years back, and sitting down and flattering himself that he has succeeded in being artistic, even sometimes at the expense of common convenience. If, for instance, you drop in to afternoon tea at an "æsthetic" house, you have your tea in cups without handles. Supposing, for the sake of argument, that the tea were hot (which æsthetic tea seldom is), you burn your fingers and nearly drop the cup; and then you are told, for consolation, that it is an artistic cup. If it were it would have a handle, for the natural and proper way of making an object that is to be held in the hand is to give one something to hold it by. Even Macbeth, at a moment when his brain was in a very disordered and disturbed state, still preserved sense enough to see his visionary dagger with

> "The handle towards my hand":

but then Macbeth was not æsthetic.

Even supposing, however, that the prevalent taste in furniture were logical and real in itself, there is a more serious question suggested by the importance attached to this class of work in comparison with what used to be considered the more intellectual forms of art. As was observed just now, it is almost a commonplace at present to urge that art is not confined to sculpture and painting, but should be shown in all the objects collected in a room, and that we should aim at totality of effect. If this meant that we were to bring furniture and decoration up to the level of the phonetic arts, in intellectual interest, there could be nothing to be said against it, except that it is hardly possible to do so. But the theory seems practically to result in an attempt to bring down painting to the level of furniture. A painting is no longer, according to this school of critics, to be a separate creation of the imagination, having its own interest and embodying its own idea, but it is to be a means of filling a panel as part of a scheme of decoration. It is probably to this theory that we owe the existence of a peculiar school of painting which has arisen lately, in which the object seems to be to eliminate all distinctive idea or intellectual meaning from a picture, and all direct reference to Nature, and to make the whole a mere matter of decorative colouring. The most common development of this form of art is familiar to most of us in the shape of those long-limbed female figures of neo-Greek type, clad in semi-diaphanous drapery, whose handsome faces have all the same placid vacuity of expression, and by whose side always stands an "art-flower-pot," out of which grows a decorative plant. Very graceful are many of them (for, indeed, some of our finest draughtsmen have lent their talents to this style of painting); and very tired we get of their grace and their meaningless poses. Their faces are all alike; but their lack of distinctive character is compensated for by writing their names beside them, always remembering to jumble the letters about so as to make the reading of it as much of a puzzle as possible. They may be either the Months, or the Virtues, or anything else you like, they will do equally well for either, and the same figure may represent either "Chastity" or "November." But if we are inclined to feel bored at this repetition of a type, we are offered as a compensation any amount of old china. A lady who professes to be artistic is not happy till she has given her drawing-room the aspect of a crockery-shop. You feel afraid to move about for fear of knocking over or shaking down something which you will be assured no money can replace. You go to the theatre to see a domestic comedy, and the actors seem scarcely able to find their way amid the collection of Japanese jars and screens, and blue china, with which the stage is crowded; and, to add insult to injury, if you do not like all this you are called a Philistine.

The nameless opprobrium conveyed in that phrase might seem more applicable to a man who follows a multitude to hunt *bric-à-brac* than to those who fail to find this a sufficient motive for living. But, without calling names, and admitting that every one has a right to his own hobby, I protest against the assumption that this worship of furniture and china is an indication of an advanced perception in regard to art. As with furniture itself, so with art in its widest sense, the ultimate value to us is in proportion to the thought that is in it; and it is idle to pretend that the most piquant piece of china, the most artistically-designed cabinet or wall-paper, can by possibility have the same intellectual meaning and interest as the productions of an art which, like painting, can translate the poetry of Nature, can speak to us the language of the deepest human passion and emotion. To say that such an art as this is to be no more to us than a part of the furniture of our rooms; that upon some pretext of unity of effect our pictures are to be merely objects subordinate to a general scheme of decoration, is not to exalt art, but to degrade it, and is a view which could only be seriously held by those who have allowed their mental sympathies and perceptions to be narrowed and cramped to suit a conventional standard. One figure in which the passion or the hope, the joy or the grief, of the human soul is visibly symbolised, one landscape instinct with the light and air and the sentiment of Nature, does more to give interest and beauty to a room than all the sweepings of Wardour-street that can be collected in it. A picture that is worth anything is not a piece of decoration, but a separate poem in itself; and it is better to have such works even in company with bad furniture, than to have a room filled with decorative furniture and piquant knick-knacks, but bare of anything that can appeal to our highest sympathies and aspirations as intellectual beings.

Yet this is what is actually set before us now as the theory of an artistic dwelling, and what it is actually becoming more and more the fashion to put in practice. And the fact has an important significance in relation to social science, so far as that concerns the moral and

* By Mr. H. Heathcote Statham. Read at the Social Science Congress, Aberdeen, as already mentioned.

intellectual aspect of our national life. It is a sign of something very unsound in the artistic taste and sentiment of the day that we should be exhorted systematically and on principle to rank the lower and more material forms of art as equal to or even above those which appeal to our highest consciousness and perceptions. It seems a very false economical principle, so far as regards the encouragement of art, that people should be ready to give for an old jar, which may be ornamental, but which may as likely as not be ugly and grotesque in design, as much as would procure them a dozen drawings or etchings representing a far higher intellectual effort applied to a far higher end. But what is most serious is the moral aspect of the subject,—the falsity and pretentiousness of feeling which this artificial taste indicates. What was observed in regard to the art of the theatre is only a type of what we see in society. The acting is so tame and unreal that it hardly deceives any one; but the play is admirably mounted, and the decorations got up regardless of expense. Only unfortunately the decorations themselves are a sham. We need by no means be indifferent to furniture; on the contrary, I would like, if it were possible, to see everything in a dwelling designed with a direct relation to its purpose, its position, the style of its accompaniments, and the special fancy of the inmates. But this is hardly attempted, for this would cost thought, and people wish to be artistic without thought, and at the cost of money only. What is really done is to fix upon a particular fashion of a past generation or of another country, to brand that as artistic, and to purchase as much of it as you can afford. The phenomenon is not new. There have been other periods in the history of our own and other societies when this imitation fashion has prevailed, and they have always been periods of pretence and hollowness, of an indifference to the highest and most serious ends of life. When people are much in earnest they do not care about tricking themselves out in borrowed decorations; it is an amusement for an idle hour; and the corollary to be drawn from the characteristics of the prevalent artistic taste of contemporary society is not a satisfactory one. It was the complaint of Wordsworth, at an early period of this century, that,—

"Plain living and high thinking are no more."

He would hardly have considered that matters were much improved in this respect at present, when Art, which should be the expression of the highest thought and aspiration of a people, is coming to mean a mere arbitrarily chosen form of costly luxury, having no connexion with the serious thoughts and problems of life; when, as it has been remarked, you may break any moral law, but you must admire blue china; when English ladies can so far forget their traditions of true dignity, so far mistake the accidentals for the essentials of refinement, as to masquerade in modern-antique costumes which draw every eye, not, indeed, to the wearer, but to the costume. All this, done in the name of art, is evidence not of true artistic feeling, but of a show and pretence at variance with what is best and noblest in art, which, if it were a reality, should lead us, to quote again the words of Mill, to idealise not only every work we do, "but most of all our own characters and lives." This is hardly to be achieved by dressing out our life in a costume of borrowed finery, and dignifying it by the name of "art."

HOUSE ACCOMMODATION; VENTILATION OF DRAINS; WASTE OF WATER.

In the Health Department of the Aberdeen Social Science Congress the meeting discussed,—"The present State of House Accommodation in Rural Districts—Can its Evils be remedied?"

Dr. Haviland, officer of health, Northamptonshire, said he had 365 towns and villages in his supervision, and it was a painful part of his duty to see the large amount of misery which existed in the labourers' cottages or wretched hovels spread over the thousand square miles of his district. He said that the landlords were to blame for this state of matters, as so long as they obtained their rents they did not seem to care in what state their tenants were placed. In some cases, however, the landlords were unable, owing to pecuniary difficulties, to effect improvements although they were willing, and he suggested that loans should be granted to these impecunious proprietors by Government in the same way as had been done some years ago with regard to the drainage of land, for the purpose of assisting them to build proper houses for their tenants. He said that one of the improvements which was most urgently needed in connexion with labourers' cottages was the abolition of the present system of piggeries, and the granting of licences to those who wished to keep them, in order to ensure the styes being kept in a clean and sanitary condition, which was very far from their present state in most cases.

Principal Brown said that Dr. Haviland's remarks applied exclusively to England, and the circumstances in that country were so very different from those in Scotland that he feared they could not have a discussion of practical value unless some statement was given about the state of matters in Scotland.

Lord Aberdeen said that, with reference to one point in connexion with the subject, there had been a good deal of difference of opinion. This question was as to whether houses for the accommodation of the labouring classes in rural districts should consist of two stories or whether all the rooms should be situated on the ground-floor. He believed it was generally recognised in England that the houses should consist of two stories, and that, at the time when there was a considerable increase of cottage buildings in Scotland under the auspices of the Inland Inclosure Commissioners, the same feeling existed. The opinion which, in his short experience, he would be inclined to form was that there was no intrinsic objection to having all the rooms on the ground-floor, provided there was sufficient accommodation, and for the reason that if it was the custom of any district or county to have upper stories in the cottages, those not accustomed to have an upper story would be apt to use the upper rooms, not for useful purposes of habitation, but merely as store garrets, leading to additional crowding on the ground-floor. Therefore, in the cottages which he had built himself for some years, he had generally adopted the ground-floor plan only, and he was bound to say that he had as yet not seen any definite reason to regret that course. At the same time, however, it would be interesting to hear the opinions of gentlemen of experience who had examined both systems.

Dr. Stevenson Macadam, in reading a paper on this question, stated that the subject was one which in its full bearings concerned architects, medical men, and chemists, as well as proprietors, tenant-farmers, and workmen. It was arranged that this paper should consider the chemical factors on which healthy homes depend. The family house was not only required for protection from weather and accommodation for eating and sleeping, but still more so for air supply, which was at the very root or foundation of all theory and practice as to the remedy for the admittedly defective state of the house accommodation in rural districts. The importance of the air factor might be judged of from the fact that the amount of air inspired daily by an adult man was about a million cubic inches, being more than 500 cubic feet of air, or fully 3,000 gallons. A great part of such air was, in ordinary circumstances, obtained from the outside atmosphere directly during the day, but at night, and especially during sleep, must be obtained from the house. Considering the women and children in average households, the air factor for each member of a family might be taken on an average of 300 cubic feet per day. The quantity of air actually inspired was not, however, the only point to be considered, because changes occurred in the air during respiration which seriously affected the wholesomeness of the respired air, and rendered it unfit for being again breathed in. These changes were mainly in a large increase in the amount of carbonic acid, accompanied by organic *débris*, principally of a gaseous nature, and the air became thus of a more or less noxious character. This was enhanced by exhalations from the steam and from ill-washed clothing. Practically, the amount of carbonic acid might be taken as an index of the extent of the contamination, though it was not the only, or even the principal, cause of the mischief. In pure or normal air the proportion of carbonic acid was 1 part in 2,500, but in expired air the amount was about 1 in 25, and the air of crowded rooms became charged with the carbonic acid to the extent of 1 to 5 parts in the 1,000. Whenever these latter quantities were arrived at, the air of the room became close and fusty, and was beyond the limit of safety. Indeed, the proportion should not rise above 1 in 1,600, though, for short periods, a larger amount might be breathed. As each member of the population may be said to respire half a cubic foot of carbonic acid per hour, it would follow that such would bring to the specified limit of pollution about 2,500 cubic feet of air, provided that the apartment in which the person was placed was hermetically sealed. In all houses, however, the air was constantly on the move through the chinks in the doors and windows, porousness if the walls, draught in chimneys, &c.; and making allowance for such, the practical amount of air-space in houses might be limited to 800 cubic feet for each adult, or, at the lowest, to 500 cubic feet for each member of the family. Now, granting that an average family consisted of six members, then at least 3,000 cubic feet of house air space should be provided. This can be given in a house the inner capacity of which is 24 ft. long, 16 ft. broad, and 8 ft. high. Taking the length as 30 ft. the air space would be 3,500 cubic feet. No rural cottage for a family should have less than 3,000 cubic ft. of air space or air food. Other factors of importance in healthy houses were connected with water supply and drainage. Granting that the chemical factors are known to and acted upon by proprietors and others, there still remains the necessity of indoctrinating the people themselves with the knowledge that air which has been breathed is more or less hurtful, that fusty smells in houses are evidence of stagnation of air, and, indeed, of starvation in air; that windows are made not only to admit sunlight, but to admit air; and that whatever can tend to circulate air in houses, especially during the evening, as by throwing back the curtains of beds and leaving open the inner or room doors of all sleeping apartments, assists in supplying better and finer air food and in keeping the bodily system in a more thorough state of health.

The President (Mr. Chadwick) said that the question which had been raised by Lord Aberdeen was one of considerable difficulty, and was much affected by local conditions and circumstances as to the nature of the ground on which the cottages were built. In places where the ground was dry and the floors of the rooms and walls made impermeable to damp, it was perfectly safe to have all the rooms on the ground-floor, but in places where these circumstances did not exist, it was desirable that at least the bedrooms should be upstairs. As an illustration of the disinclination of the rural population to live upstairs, however, he mentioned that his father-in-law had erected two-storied cottages on his estate as an experiment, and had found shortly afterwards that the garrets were used as cock-lofts for the accommodation of the poultry. On expressing astonishment at that, the goodwife said that "Jock could not be fashed to go upstairs when he came home from his work at night." He recommended that concrete should be used in the construction of these cottages, as it was cheaper and more comfortable than stone.

The Rev. Dr. M'Leod, of Birkenhead, advocated the passing of a compulsory measure for the purpose of making landlords provide proper cottages for their tenants. He stated that in some districts where he had resided the people were obliged to live in habitations which were totally unfit for human beings to live in. These miserable huts should not be allowed to disfigure the land, and as the power for their removal could only come from Government, he urged that an Act was needed in order to compel landlords to do their duty. It would be unfair, however, to compel landlords to build houses which would not be reasonably remunerative, and therefore he suggested that the rents might be raised, and also the wages of the rural population, so that they could afford to pay higher rents.

Lord Aberdeen said that the paper which had been read by Dr. Macadam showed that the question under consideration was not so simple as it might seem at first sight. It looked very easy to feu a piece of land, and to employ a builder to erect a cottage at a certain figure, but there were in reality many difficulties and disappointments to be met with after the houses had been erected, including damp walls, smoky chimneys, &c. With regard to the former, he believed the evil could be remedied by what was called the "damp course," which consisted of a layer of asphalte or slates built into the wall, a few inches from the surface of the ground, and which prevented the damp from ascending. As to the difficulty of smoky chimneys, his lordship believed that it could often be obviated by putting the grate back a few inches further than

builders were in the habit of doing. With regard to concrete, his own experience was, that it was not so cheap in this district as to make it worth while using that material except where the gravel for the purpose was obtainable near the site of the building, because of the expense of cartage. His lordship said he had tried the system of wooden cottages with very satisfactory results so far as he could judge. The foundations were composed of brick or stone, the floor of asphalte, and the walls of two linings of wood filled in the middle with sawdust. He had been told by the people who resided in these wooden houses that they were warmer and drier than those built of masonry or of concrete. It might be objected that these houses were not sufficiently permanent, but certainly it appeared to him that if they could be built at about two-thirds the ordinary cost, they were worth being tried. In conclusion, the speaker said that it was quite true that landlords were disinclined to incur outlays in building cottages which would not yield a fair remuneration.

Principal Brown suggested that they should go to Parliament in the way of inquiry rather than of asking legislative compulsion on landlords to build houses.

Mr. W. Paul, advocate, entirely disapproved of the suggestion which had been made by Dr. M'Leod, that landlords should be compelled by Act of Parliament to build cottages on their estates, remarking that the proposal was very much like the operation of calling spirits from the vasty deep. If their deliberations were to be worth anything they must be practical, and the suggestion made by the rev. doctor was the very reverse of that.

Dr. Hardwicke moved—

"That this Department is of opinion that the Standing Committee of the Public Health Department should take into consideration what further legisiative measures are necessary for the extension and improvement of the cottage accommodation for the rural population, and report to the next annual meeting."

And this was carried.

The Ventilation of Drains and Sewers.

Dr. Stevenson Macadam read a paper on the above subject. He said:—The present system of the disposal of the sewage of houses and towns is open to question in a sanitary as well as an economic point of view, as it undoubtedly leads to the poisoning of our streams, and the contamination of the air in the vicinity thereof. Indeed, there is abundant evidence to demonstrate that the water carriage system, with its attendant foul deposits in badly-laid drains, is productive of much illness and disease in households. At present, however, there is no other process suggested for the disposal of sewage which is less liable to objections for town purposes. Taking matters as they are, certain preventive measures may be adopted to guard against the evils of this mode of the disposal of sewage. These evils are mainly due to the production of sewage gases in the drains and sewers, and to the passage or escape of these gases into our houses. The primary cause of all the mischief is the lodgment of sewage in the drains and sewers, especially at the bends and in the hollows and depressions formed by badly-laid drains or badly-founded drains and sewers, and where the levels are either originally not attended to, or the subjacent earth has sunk or yielded below. Another source of the mischief is where the drains are imperfectly jointed and luted, and sand and earth fall in, tending to choke up the drain more or less, and either forming an elongated cesspool, or even forcing the sewage out of the pipes altogether, and saturating the neighbouring ground, which may be close to or underneath the dwelling-house. The main preventive measure ought to be to look well to the levels and thorough and efficient jointing, which would ensure the rapid and complete fall or run of the sewage from the house to the main drain, and thence to the point of disposal, either on land or in the sea. Part of this work would fall on the individual householder or house proprietor,—so far as the private or service drain is concerned, and the other part on the municipal authorities, so far as the main sewers are concerned. There are many instances in which the private or service drain has been shown to be at fault, and there are no doubt many cases in which the evil may be traced to the putrefaction of foul deposits lying festering and decomposing in the main sewers. Fresh sewage is comparatively sweet and harmless, and were it to have free passage onwards, it would keep fresh till it escaped from our towns, owing partly to putrefaction not having set in, and to the aëration and oxydation due to the oxygen dissolved in the body of water accompanying the sewage, and which would at the moment of liberation tend to oxidise or consume the escaping gases, and thus render them innocuous. The chemical nature of the sewage gases is generally misunderstood. It is commonly said that hydrosulphuric acid (sulphuretted hydrogen) and carbonic acid, which are readily recognisable in the emanations from decomposing organic matter, are the types of the noxious sewage gases. No doubt these gases named are destructive to life when in quantity, but I am inclined to the belief that the more noxious of the sewage gases are evolved at an earlier stage in the putrefaccion of the organic matters, whilst the sulphuretted hydrogen and carbonic acid are produced at a later stage in the decomposition. In fact, I believe that the main danger lies in the earlier stages, when gases and vapours of a true organic and combustible nature are produced. In the investigations into the nature of the gases evolved from deposits in drains and sewers, which I carried out at the time of the Water of Leith drainage scheme, and which were embodied in one of the blue-books of the Sewage Commissioners, it was a rare thing to find sulphuretted hydrogen in the escaping gases, and the bulk of the sewage gases were found to burn readily, showing their carbo-hydrogen character. Moreover, any one who has inhaled sewage gas, either in our large sewers or when a drain is opened, knows that hydro-sulphuric acid (sulphuretted hydrogen) is seldom present; but, nevertheless, the gases exert a most debilitating effect upon the general health and spirits. In the majority of cases, and, in fact, with few exceptions, it may be said that generally no precautions are taken in the construction of house drains and their attachment to the main drains to prevent sewage-gas from falling back into our our houses. The water-closets have generally a direct connexion with the drains and sewers, and not only so, but the waste-pipes from the cisterns have in most instances a passage to the sewers either indirectly through the pan or bend of the closet or directly to the drains themselves. Taking the case of ordinary house service and connexion with drains as ordinarily practised, there is simply a bend put on the direct pipe laid to the main drain. The only security in such an arrangement lies in the water in the bend lying there in sufficient quantities, and not being forced by the pressure of gases in the main drain, or being emptied by the suction of the descending water, especially if there be two or more branch pipes discharging into the same house-drain. To remedy this evil it has been suggested, and is occasionally carried out into practice, that a ventilating tube is inserted in the service-drain. This single ventilation is a decided improvement, but taken by itself is not sufficient. Between the ventilating pipe and the sink or closet bend there should be placed in the service-drain a U-shaped trap, with upright drain-pipe leading to the surface, and in the throat of which there is inserted a wire cage containing fragments of dry charcoal. These upright pipes may rise above the surface when in open ground, or may be covered with a perforated iron plate when in outside passages or pavements. A still further improvement, where an open space or garden ground is at command, is to open up the drain for 1 ft., or so on the house side of the U-shaped trap. In all cases there should be a ventilating shaft or pipe carried from the bend of the closet or sink pipe to the roof of the house. This ventilating shaft or pipe may be a continuation of the service-drain. For the public ventilation of the street drains and sewers, the furnaces of public works, such as gasworks, should be utilised, where such are available, and open air-shafts should be carried from the main drains to the surface of the streets at numerous points. If the main drains are in good order, there need be no escape of noxious gases; but where deposits of foul matter are lying in the drains, charcoal cages may be used, though the true remedy would be the cleansing out and repair of the defectively-constructed main drain. Besides the ventilation proper of the main drains, there should be the periodic flushing of all main drains and sewers by the opening of sluices or valves connected with large cisterns placed at proper distances apart. A sudden rush or escape of a large volume of water down a sewer at a given time would float on all the solid *débris* lying in the bed of the sewer, and thus remove the cause of the production of the sewage gases. In regard to cisterns, the position of such is often objectionable, being placed over the water-closet, and the exhalations arising therefrom are absorbed by the water, which thus becomes tainted. Great mischief arises from the carrying of the waste-pipe directly or indirectly to the drains, and from the ventilation of the service-box into the cistern. Both the waste-pipe and the escape-pipe from the service-box should be carried to the open air.

Mr. Chadwick described a sewer as the bulb of a retort charged with decomposing matter, the neck of the retort being the drain carrying the products into the house, bringing disease into the premises, and strongly advocated the construction of entirely new sewers.

Mr. H. H. Collins, in the course of some interesting remarks, maintained that the proper system to adopt with regard to sewage was to separate the house entirely from the drains; and to have a separate cistern for water-closets. By a series of diagrams on the blackboard he explained his ideas, and his remarks were very cordially received.

Mr. Boulton, city surveyor, quite agreed with the remarks of Mr. Collins as to the construction of sewers. There was no doubt that many of their sewers were badly constructed both as regards size and level. In a flat running sewer where there was not a sufficient body of water the sediment deposited created sewer gas, which went generally to the highest point. He was, therefore, strongly in favour of the ventilation of sewers; and he had made up his mind that, in the proper laying of sewers, the first thing to be done was to cut off the house-drain from the sewer altogether.

Waste of Water in Towns.

Mr. Wm. Boulton, C.E., Aberdeen, read a paper on the above subject, confining his observations almost exclusively to the Aberdeen water supply. He commenced by stating that the present works were opened by the Queen in 1866, and that by the Act of Parliament empowering the construction of the works the Town Council were empowered to take from the river a maximum daily quantity of six millions of gallons. The population supplied is 90,000. The water, he explained, flows by gravitation to a reservoir and filters rather more than a mile distant from the intake. The reservoirs and filters have a joint available capacity of 13 millions of gallons. From the filters the water is conveyed by gravitation in a brick aqueduct a distance of nineteen miles and a half to the low-service reservoir, which is about two miles from the town. This reservoir, which has a capacity of 6¼ millions of gallons, supplies 98 per cent. of the inhabitants. It is 98 ft. above the part of the city which it supplies. For the supply of the higher districts of the town the water is pumped up by hydraulic power to a reservoir capable of containing 500,000 gallons. This reservoir is 380 ft. above Ordnance datum, and about 250 ft. above the average elevations of the districts supplied. The engines are wrought by the water from the aqueduct, and lift one gallon of water by an expenditure of 2¾ gallons. In passing, Mr. Boulton remarked that when the present supply became exhausted a considerable saving could be effected by employing steam instead of water-power, whereby the water used for driving the pumps would be entirely saved. The engine wastes daily 350,000 gallons, or 127,750,000 per annum. Estimating this quantity at prime cost, as supplied by gravitation, and adding the sum to the annual expense of maintaining the engines, the high-service water cost the town three times as much per gallon as that of the low-service, so that the inhabitants supplied with the high-service water were supplied at a great loss to the Corporation, the rate of assessment being the same in both cases. Up to the present date 166,000*l.* have been expended on the works, and the annual expenditure is about 12,000*l.* During the last ten years the consumption of water has increased to a very large extent, and out of all proportion to the population. Previously to the construction of the present works the supply for domestic purposes was only 16 gallons per head per day, the supply, however, not being equal to the requirements of the town; but in 1867, the first year after the new works were opened, it had risen to 24 gallons; in 1871, to 35 gallons; and now in 1877 it is nearly 40 gallons per head per day. Mr. Boulton submitted a table in proof of this, and went on to say that at the present rate of consumption, after allowing 500,000 gallons for flushing sewers, &c., there remained a total of 3,569,060 gallons consumed daily for domestic purposes. Of this

quan y at least one-half was wasted. Taking the total daily consumption within the city, which was 4,069,060 gallons, and adding 350,000 gallons wasted by the hydraulic engine, and 6,000 gallons supplied to various parties along the course of the aqueduct, there was a total daily consumption of nearly 4,500,000 gallons, or three-fourths of the whole supply authorised by Act of Parliament. The causes of the great increase in the consumption was mainly due to the introduction of water into the poorer classes of houses, and the fitting-up of water-closets, baths, &c. These and other sanitary arrangements had been going on for ten years past. With the extension of a better class of houses into the country, an increased consumption of water must be expected, over and above what is due to the increase of the population. If the consumption went on annually increasing at the average rate during the past four years, in twelve years the limit of supply will be reached. Mr. Boulton went on to point out that, in addition to the natural increase in the consumption arising from increased population, &c., there was a great waste of water by its lavish use for ordinary purposes, which he did not find fault with if these were of a sanitary nature. The waste he complained of was caused by persons allowing taps and water-closets to run during the night and all hours of the day. There was great difficulty in checking this waste, amongst other things, on account of the notion that the supply of water was inexhaustible, and that it improved the sanitary condition of the drains, which was a great mistake. But perhaps the greatest cause was defective services and fittings, such as service-pipes, taps, water-closets, &c. Mr. Boulton went on to show that the greatest consumption of water was at mid-day, and the smallest between the hours of one and five in the morning, the greatest being at the rate of 2·30 gallons, and the lowest 1·32 gallons per head per hour. The greater part of this was attributable to waste. As to the mode of preventing the waste, he showed that much could be done to detect and prevent waste by the adoption of a meter invented by Mr. Deacon, of Liverpool. The only method hitherto adopted in Aberdeen for checking waste was house-to-house visitation; and where the inspector went about his work in a proper manner good service was done. Mr. Boulton went on to point out that in all the more important towns there was a material change in regard to sewerage and water supply, but although these works had been constructed at the cost of the people themselves, and ought to be cared for by them, they forgot that waste of water and improper use of sanitary appliances often so thoughtlessly practised meant more taxation. With all our education there was a great want of training in the use of sanitary appliances, and he urged that this was a proper question to be taken up by the school boards. There is also, concluded Mr. Boulton, unfortunately a sort of antagonism existing between a large mass of the community and the authorities on such matters. A feeling exists in the minds of many that they are harshly treated when the conservators of the public interest put the law in force, which has been framed with the consent of all parties for their individual welfare as well as for that of the general community; and I am of opinion that if the corporations of our various towns, instead of employing inspectors, who are looked upon more as inquisitors or spies than as benefactors, would employ men with something in them akin to the missionary spirit, to instruct people in the use of sanitary appliances, pointing out to them the saving that would be effected in taxation by aiding the authorities in checking the waste of water, and abstaining from acts calculated to injure or interfere with the working of sanitary appliances, much might be done in this way by kindly explanations of what practices ought to be avoided, and what other things ought to be done and how to do them, in order to conserve public property of the nature under consideration; and thus a desire for co-operation and a feeling of mutual respect and regard would be engendered between the people and the authorities, and the social and moral status of the people elevated, which, I take it, is the aim and object of all social science.

Mr. Joseph Brown, Q.C., having elicited from the President, Mr. Chadwick, that he entirely disapproved of cisterns in cities, went on to say that it must be obvious to every one that if they had a cistern that would contain 100 to 150 gallons of water, and filled it, if the water was ever so foul if they let it stand it would precipitate its sediment to the bottom, and the water from the upper part could be used without any injurious consequences. He condemned as preposterous the method of drawing off water from the bottom; and maintained that the way to get pure water from the cistern was to have the pipe say 4 in. or 6 in. from the bottom. He expressed the opinion that there was not one poor man in 100 who ever cleaned out his cistern at all; and strongly denounced the system by which in the houses of the rich as well as of the poor the cisterns were placed by those "blockheads," the builders, in situations where they could not conveniently get at them to clean them out. His inclination, however, would be to retain the use of cisterns, but to have them cleaned out frequently, and to have the discharge-pipe several inches from the bottom. With reference to pipes for conveying the water, he did not see why iron should not be used instead of lead.

Mr. Boulton said that in Aberdeen they had three systems of water supply. Some persons got all their water from cisterns; others had cisterns for their water-closets, and drew their supply for culinary purposes direct from the mains; and others again took all their water direct from the pipes. In all well-regulated towns now rules were enforced by which cisterns must be placed where they could be easily seen and inspected.

Mr. Baldwin Latham defended the engineers from the charge that they were to blame with regard to matters of water. The view of the engineer, with reference to impure water, would be that the sediment in it would be better in the cistern than in the stomach of the consumer. Speaking of the waste of water in Croydon, where the consumption was at one time as high as 116 gallons per head per day, he showed that the waste arose from the taps being left outside the houses, and that whenever these taps were placed inside the houses, where water running to waste would be a nuisance, the consumption was reduced to fourteen gallons per head per day. As to cisterns, he did not think their use detrimental, except when in connexion with water-closets, &c. As to the use of iron pipes for conveying the water, they were too easily corroded, and if they were to have pure water they must have something more durable. The best substitute, but an expensive one, was lead pipes lined with tin.

Mr. Jamieson, lecturer on chemistry, Aberdeen, speaking with reference to the deposit of organic matter in cisterns, said that to a great extent the whole question resolved itself into a matter of cistern or no cistern. Since Mr. Boulton had shown that they had at command in Aberdeen a continuous supply of water, it would seem that there was no use for cisterns. Although a few careful people would clean them periodically, the great mass could not be expected to do so. One speaker had referred to the advantage of allowing the suspended matter to deposit in the cisterns, and thus render the water supply purer; but that was to forget that the contamination complained of by Dr. Macadam was due more to the action going on in the cistern and the development of vegetable germs conveyed in the supply than to the nature of the impurities in the original supply.

THE NEW INFIRMARY BUILDINGS, CASUAL WARDS, AND WATER TOWER, AT LAMBETH.

The new infirmary buildings at Lambeth which have been in course of erection during the past two years, on a large plot of land immediately adjoining the new workhouse, between Kennington-road and Kennington Park-road, are now fast approaching completion, and will be ready for the reception of patients in about a month. The buildings, and the grounds in connexion with them, cover an area of more than three acres in extent, and have an extreme length of 650 ft. The site is angular in form, the depth of the central portion, from front to back, being 280 ft. The buildings consist of six blocks, four of which contain the patients' wards,—two for males, and two for females,—with accommodation for 650 inmates, in addition to separate wards for patients suffering under special diseases. The several blocks contain three lofty stories each, in addition to the basement, and attached to those for the patients are three spacious airing and recreation grounds. The administrative block is in the central portion of the site, the front part consisting of the head surgeon's residence, the other portions of the block containing the under-medical officers' apartments, and the house-steward's and matron's rooms, together with the surgery, dispensary, and other rooms and offices, whilst the culinary department, including kitchens and other apartments in connexion, are at the extreme rear of the block. The principal entrance to the other portions of the building, including the male and female wards, is in the centre of the administrative block, and leads, right and left, to corridors 8 ft. in width and 450 ft. in length, from which the several wards are approached. The whole of the patients' wards are heated by Galton's stoves, in conjunction with hot-water pipes, carried round the walls of the several wards. The whole of the cooking is by gas, and in immediate connexion with the kitchens there are three lifts, one in the centre and the others at each end of the corridors, by which food is conveyed from the basement to all the upper portions of the building. There are also similar lifts for the conveyance of patients to and from the various wards on the upper floors. Each floor is well supplied with baths and lavatories, and at one end of all the wards there are nurses' kitchens and scullieries, commanding a view at one glance of the entire ward. The engine-house, boiler-house, and laundry buildings form a separate block at the extreme back of the premises, and contain an engine of eight-horse power, together with washing, wringing, mangling, and other machines in connexion with the laundry department. On one side of the entrance-gates there is a neat and ornamental porter's lodge, and on the opposite side a mortuary and dead-house.

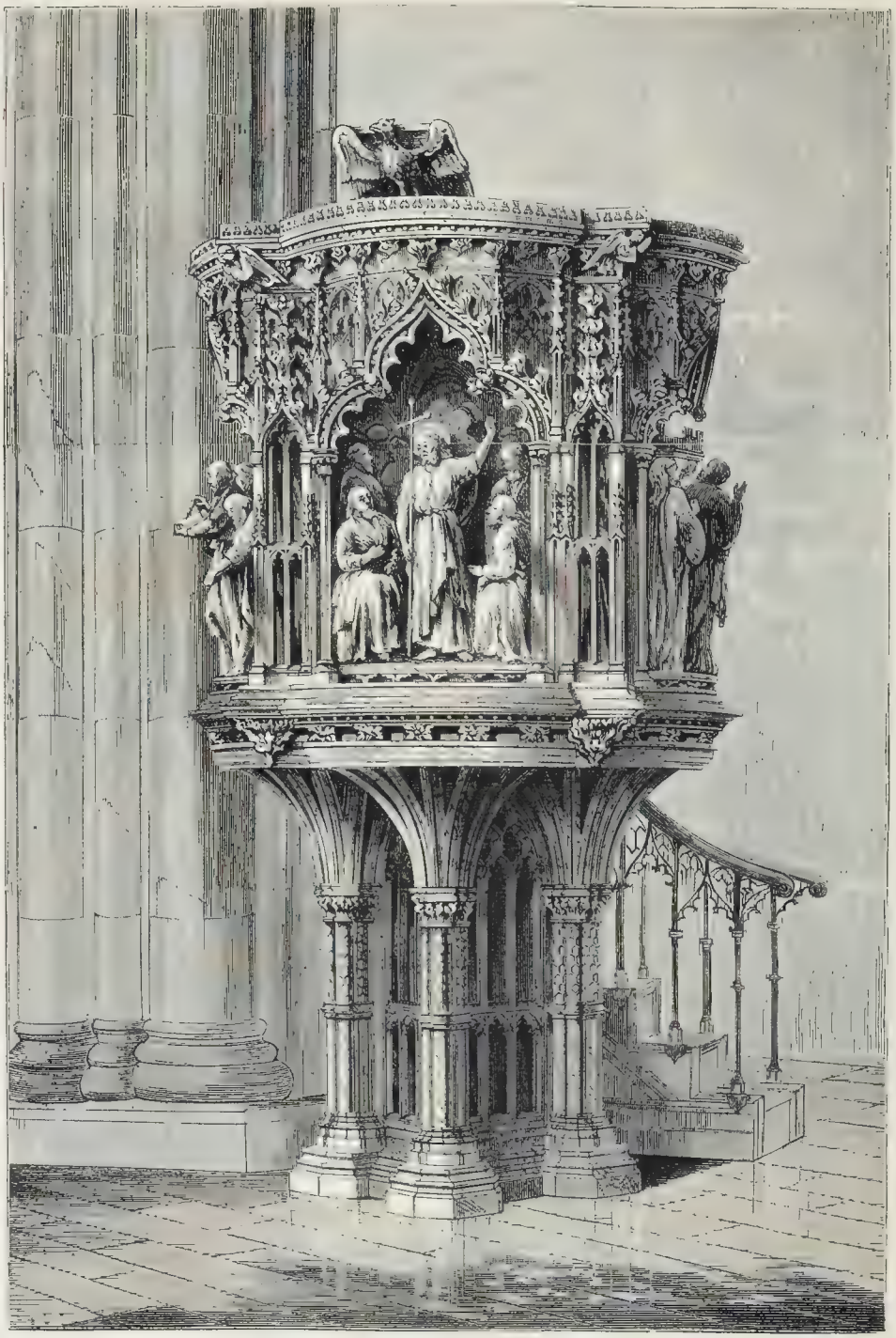
On the extreme west side of the infirmary buildings new casual wards are in course of erection, on a much-improved principle. They consist of a range of buildings two stories in height, having accommodation for seventy-eight casuals, male and female. The building is being erected on the separate system. On the ground floor there are wards for forty male casuals, divided from each other by partition-walls, and in front of each are the labour cells, where the casuals will be required to do certain work,—chiefly stone-breaking,—before leaving their wards. The female wards, thirty-eight in number, are on the upper floor. At the west end of the wards there is an administrative block, containing the residence of the superintendent and other officers of the wards. This department will also be fitted with baths, a disinfecting apparatus, and other sanitary appliances, one of the intended regulations being that each casual shall have a bath before going to his or her ward.

In addition to the above-named buildings, a lofty water-tower is also in course of erection at the south-east side of the new workhouse, which is intended to supply both that establishment and the infirmary. The dimensions of the tower at the base are 28 ft. by 20 ft., and it is carried up in seven stages to a height of a little more than 100 ft. At each angle there are strong buttresses, all the dressings and window-heads being in Portland stone, and the rest of the structure in stock and red brick, uniform with the workhouse and infirmary adjoining. At the top of the tower there is a cast-iron tank, which will contain 21,000 gallons of water, surmounted by a wrought-iron gabled roof, covered with red tiles. There is a stone staircase from the ground to the upper part of the tower, and the rooms on the different floors, seven in number, will be used for stores.

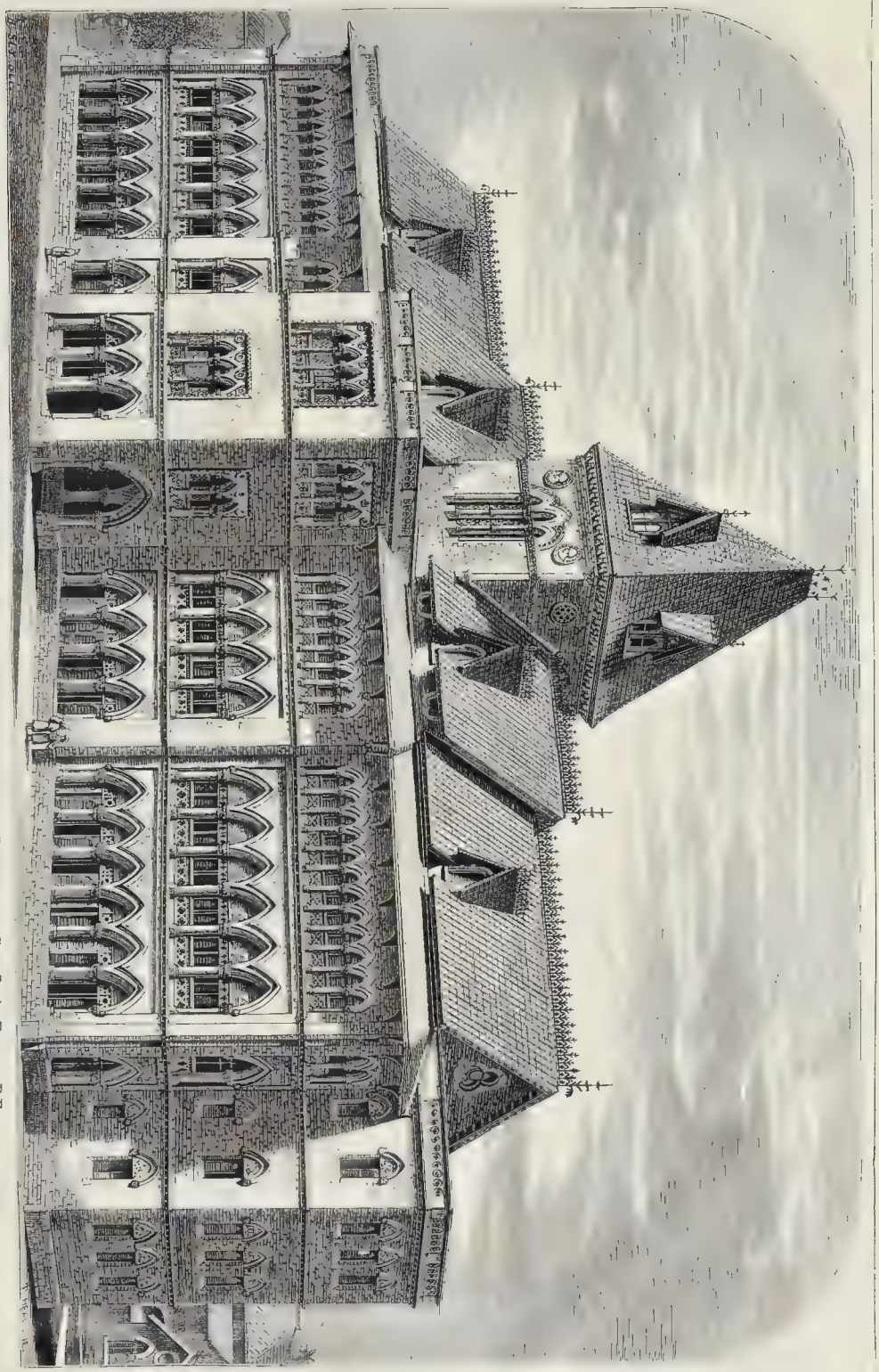
Messrs. Fowler & Hill are the architects for the whole of the buildings, the contractor for the infirmary and the casual wards being Mr. James Taylor, and for the water-tower Messrs. Crockett. Mr. W. Gooding has acted as clerk of works during the progress of the several buildings, the entire cost of which, including the water-tower, is estimated at upwards of 65,000*l*.

PULPIT, CHESTER CATHEDRAL.

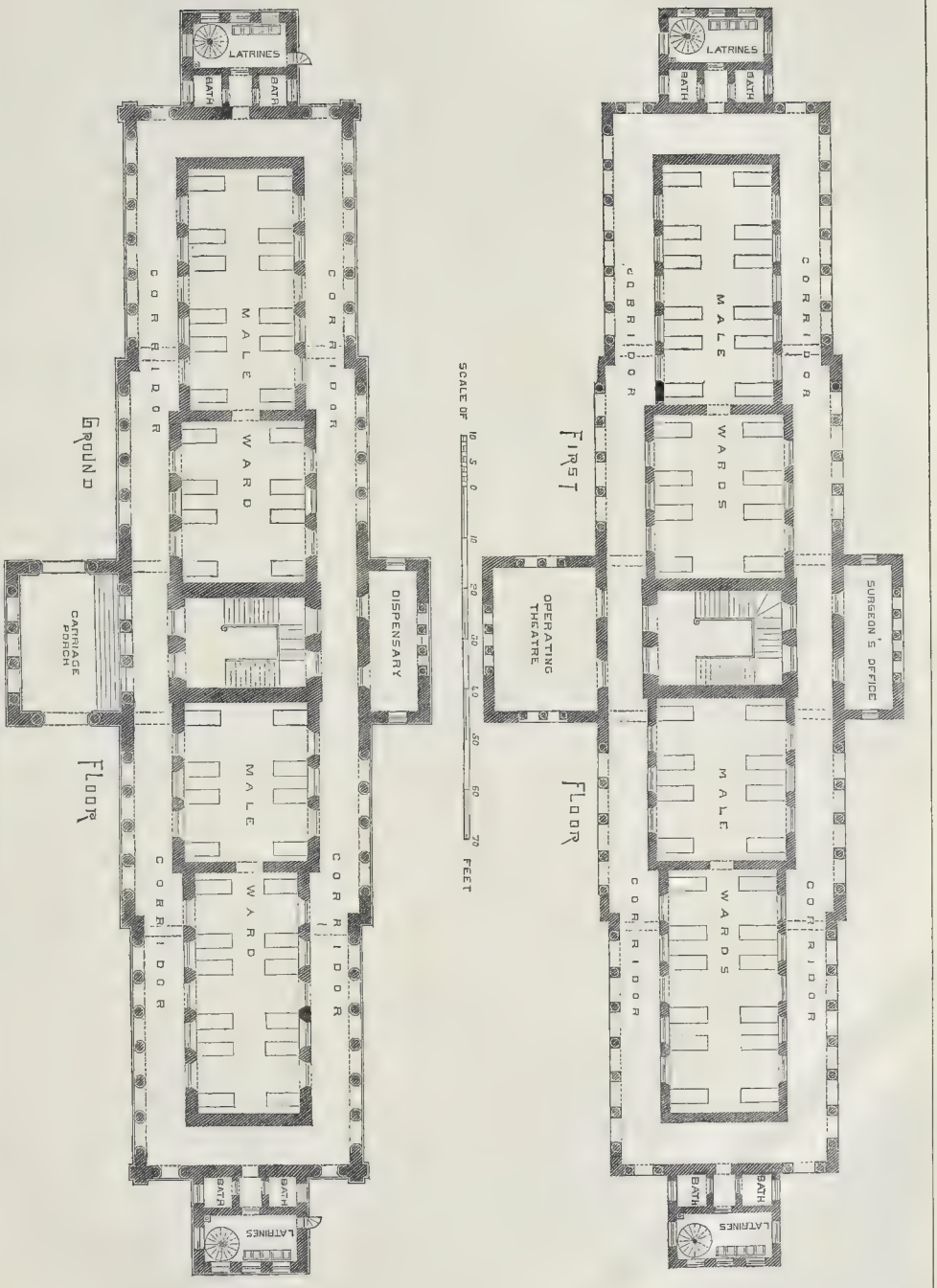
We add to the illustrations already given in our pages of the new works in Chester Cathedral a view of the pulpit. It is composed of oak; the panels represent St. John preaching in the Wilderness, the Vision of St. John, and the building of Solomon's Temple. It is the handsome gift of the Freemasons, and was executed by Messrs. Farmer & Brindley, from the design of Sir Gilbert Scott, R.A.



PULPIT, CHESTER CATHEDRAL.—Sir G. G. Scott, R.A., Architect.



THE GOCULDAS TEJPALL NATIVE GENERAL HOSPITAL, BOMBAY.—Designed by Col. J. A. Fuller, R.E.



THE GOCULDAS TEJPALL NATIVE GENERAL HOSPITAL, BOMBAY.—*Plans.*

THE GOCULDAS TEJPALL NATIVE GENERAL HOSPITAL, BOMBAY.

This building is erected at the northern part of the esplanade facing the south-east. The design is by Colonel J. A. Fuller, R.E.; the style is Early English Gothic. It affords accommodation for eighty-eight male and forty-four female patients, and the requisite dispensary, operating room, matron's room, surgery, bath-rooms, &c. The principal staircase is of blue basalt stone, and obtains its light and ventilation from two three-light windows in the central feature, and from four dormer windows in the roof above, as also from the corridors on the three floors. The two servants' staircases are of cast-iron, by Messrs. Macfarlane & Co., Glasgow. The general facing is of coursed blue basalt, roughly dressed, bases of blue basalt, columns and arches of Coorla (a buff-coloured basalt). Capitals, cornices, and parapets are of Porebunder stone (a calcareous sandstone). The rooms and corridors are paved with Minton's tiles.

The roof is covered with the Broomhall Company's patent red tiles on teak planking and framing.

There are four medallions in marble by Mr. Kipling, of the School of Arts, of the following castes—Bhatia, Purbhoo, Mussulman, and Parsee, erected on the south-east and south-west faces of the central feature.

The following detached buildings, covered in with the Broomhall Company's patent red tiles, have also been erected in the vicinity of the main building at a cost of 72,016 rupees:—Apothecary's and assistant apothecary's quarters, consisting of two floors; cholera and small-pox wards, consisting of one floor; servants' quarters; and dead-house.

The main building contains 702,038 cubic feet, and cost 2,95,074 rupees, at a rate of 6 annas and 9 pies (10¼d.) per cubic foot, including drainage, water supply, and gas.

There is a marble tablet in the main staircase vestibule, bearing the following inscription:—

THE GOCULDAS TEJPALL NATIVE GENERAL HOSPITAL.

The Main Building was erected from Designs by
Lieut.-Col. J. A. Fuller, R.E.,
And the Detailed Buildings from Designs by
Nusserwanjee Darsjee Mirjs, Overseer, P.W.D.,
And carried out by
The Government of India, on the 1st April, 1870.

The work was commenced on the 10th May, 1870; His Excellency the Rt. Honble. Sir Seymour Vesey Fitzgerald, G.C.S.I., Governor, and President in Council, and was completed on the 8th April, 1874, His Excellency the Honourable Sir Philip Edward Wodehouse, K.C.B., Governor, President in Council.

The work was carried out under the immediate orders of Lieut.-Col. J. A. Fuller, R.E., from May, 1870, to May, 1871; J. H. E. Hart, M. Inst. C.E., from May, 1871, to November, 1872; Col. J. A. Fuller, R.E., from November, 1872, to April, 1874; Muncherjee Cowasjee Muryban being Assistant-Engineer in charge.

Goculdas Tejpall contributed	Rs. 1,50,000
Estimate as sanctioned	3,67,494
Actual cost	3,67,485

Colonel M. K. Kennedy, R.E., Secretary to Government, Public Works Department.

THE STAINED WINDOWS OF FAIRFORD.*

I should only weary the patience of readers were I to attempt to say over again a tithe of what has been so well said as to these windows by the late Mr. Holt on the one side, and by Mr. Fuller Russell, Mr. Jackson, &c., on the other. Mr. Holt did extremely valuable service, by the very marked manner in which he actually spoke and wrote, in directing public attention, nine years ago, to this glass, and its extreme value, in protesting against misjudged and incompetent restorations, and even indirectly by his own warm-hearted enthusiasm and energetic advocacy of the claims of Albert Durer. Whether he was right or wrong on this point, at least he contributed to arouse public attention, and in regard to the revival of Mediæval art, and to the preservation of Mediæval monuments, merely to arouse attention is to do a great deal. It is for this reason I think we are deeply indebted to Mr. Holt, and that on the present occasion it is fitting that we should record the expression of our gratitude as a tribute to his memory, even though we cannot add our agreement with all his opinions. Speaking for myself, I may premise that the lamented gentleman expressed many opinions which I do not share, and this will be evident to any one who chooses to compare the course of his argument with my own. At the same time, and admitting that Mr. Holt made many mistakes, I do not think that, on the general question as to Dürer's having had a share in the designs, he was a fully competent judge. We all know how far bias is capable of deceiving us all, and Mr. Holt formed no exception to the general rule; but it does seem to me that, in the first place, familiar as he undoubtedly was with the works of his favourite master, as to the general character of these designs he was most unlikely to go wrong. Mr. Holt was then, in my opinion, previously to and apart from bias, a good critic as to what bears the stamp or not of Albert Dürer's mind. In addition to this, I have never seen him completely answered on several points; these points may be summed up under four heads. In the first place, we know from independent testimony of Dürer as a glass painter; secondly, there are the undoubtedly German characteristics; thirdly, the Nürnberg marks, pointing to a Nürnberg origin of the glass; fourthly, there are the marks of Dürer himself. Already in various articles and letters, and especially in a paper published in full in the *Builder* of March 18, 1876, I have endeavoured to show how completely the facts of the case bear out Mr. Holt's argument under the above heads. I will endeavour to break new ground, and to import a little novelty into a well-worn theme. I propose, then, to compare, as briefly as the interesting nature of the matter will allow, some few of the examples of stained and painted glass I have visited in the course of my researches into this question—to compare these with the Fairford windows; and I will commence with a few of the English examples visited. In the autumn of 1876, I visited Shrewsbury, and saw the Church of St. Mary, which is very interesting, and dates from Norman times downward. The windows are most interesting, though the greater part are modern copies of the Düreresque school, some, perhaps, rather close copies. Considering the difficulty I felt in hunting out the genuine old material from amidst its modern surroundings, I think that modern restorers, in their anxiety to clean and renew ancient designs, are not always as careful of the treasures they have charge of as could be wished. Besides some Flemish panels in the sacristy, old glass is seen on the north side, as well as in Trinity chapel. The most interesting of all are, perhaps, the fine Jesse (which has been restored in the lower range of panels, and partly in the tracery), and the three lancet lights forming a triple window to the north of the high altar of the choir, containing subjects from the life of St. Bernard, attributed to the designs of Dürer. In this window painted glass tends to supersede stained, and hence, although the rubies and gold are of extremely good tone, it is the pictorial character of the glass which chiefly attracts the eye. The style and accessories are German, and early in the sixteenth century, and whether actually the outcome of the mind and hand of Dürer himself, are certainly, I think, of his school. The architectural character of the ornament is late Gothic, mingled with Renaissance, in the style seen at Nürnberg, and five windows in Cologne. The nimbus is still retained, and the character of the figures and faces is rather Mediæval than Renaissance. The anatomy and drawing of the figures are superior to what is often seen at Fairford. The interlacing cusping is later than this detail at Fairford, and comes closer to Cologne and to some windows at Nürnberg. This fine window contains fourteen subjects from the life of St. Bernard, reckoned the last of the fathers of the Church; it is painted in small panels. It was brought, according to this and other authorities, from the vaults of the Church of St. Sevin at Cologne, whither it had been carried from the ruins of the great Abbey of Altenberg. The Jesse at Shrewsbury is likewise a fine window of a much earlier style, some 25 ft. or 30 ft. high; it is executed in the mosaic method, assisted as usual by enamel painting in the outlines and shadows; the date assigned to this is 1352–3, and it accords entirely with the style and general appearance. Tewkesbury Abbey Church contains seven windows in the choir, of a date approaching close to the Jesse just mentioned; they were bestowed by the Despencers about 1349. These Tewkesbury windows bear a remarkable likeness in tone of colour and general appearance to the beautiful glass at Chartres and Rouen, especially that seen in the Cathedral of Chartres and the Church of St. Ouen. The east window of Gloucester Cathedral is a fine one of the latter half of the fourteenth century, and contains some rich ruby and other colours. The decorated canopies, from the straight lines in which they are enclosed, have the look of having been made to order, and were from their appearance executed like most English Mediæval glass from the designs of foreign artists. This window, praised highly by Winston, is in my humble opinion not equal to the Tewkesbury or Malvern windows. The east window of the lady-chapel contains glass of several periods, and remains of a rod of Jesse among the rest: the greater portion comprise figure and canopy subject of Perpendicular appearance. The glass at Malvern, of the fifteenth century, I esteem very highly, and the look of the beautiful windows of the north side of the choir is extremely pleasing to the eye, so excellent is the tone of the white glass. Of the purely Mediæval glass just spoken of, I am inclined to place the Malvern and Tewkesbury examples in the highest position. The St. Bernard window at Shrewsbury is too late for fair comparison with pure Mediæval glass, and although it presents certain analogies to Fairford, is yet properly classified as Cinque Cento, which term Winston applies to the transition from the Middle Ages to the Renaissance. The Malvern windows are especially valuable as perfectly-preserved specimens of the art of the Middle Ages at different periods of the fifteenth century; the tone of the choir windows is extremely silvery and light,—just the sort of glass, I should say, to suit our Northern climate. The Tewkesbury Abbey windows exhibit rich colouring, especially in the crimson and green shades. The canopies, so extremely effective and beautiful in themselves, recall to mind the forest of pinnacles, such a prominent feature of Milan Cathedral, and the tabernacle-work of German art. Now for a brief comparison of the foregoing with Fairford windows. I may premise that before jotting down the opinion I am now expressing I had visited a fairly large number of examples of coloured glass in English cathedrals, churches, and chapels. Putting aside Cinque Cento and Renaissance glass, I must confess that I have come to the conclusion that the drawing of the figures, although defective, is yet ahead of that found elsewhere. The peculiar features of later work are in the windows at Fairford wonderfully well allied to the gem-like effect of ancient stained glass. The ruby, and its various shades, the gold stains, the ultramarine, and sometimes the green are noticeable for brilliancy or beauty of tint. The enamel used is darker than at Malvern, a warm reddish brown, as Winston notices. There is more variety of face and expression than at Malvern; while the canopies and accessories differ from any seen elsewhere in this country, and the general conclusion I came to last autumn accords with the one I have come to this, and it is one, too, which I have little doubt many are on the whole prepared to accept, viz., that as far as England is concerned, the Fairford windows are *unique*, and can only be paralleled in Germany, and in particular at Nurnberg and Cologne.

In proceeding to make a short comparison between these beautiful windows and five others in the north aisle of Cologne Cathedral, as well as with windows in the ancient town of Nürnberg, I may remark that Winston, the best English authority on coloured glass, prepares the way for such a comparison by grouping the windows together in more than one place in his works. He mentions the "panelled arrangements" seen in seven of the windows in St. Lawrence, Nürnberg, and says that similar arrangements are visible in the five windows at Cologne. In all these Winston observes that the art of glass-painting was making great progress, that the power of stipple-shading was developing, and that coloured glass was tending every day to assume a more pictorial character. Next Winston proceeds to speak of Fairford, and it is a remarkable fact that so much was he taken with the progress of the technical execution he saw there, as actually to place the Fairford windows later than the five at Cologne, which it is now generally agreed was a mistake, as the dates 1508 and 1509 are seen in two of the latter. Besides the remarkable fact that Winston thought that Fairford exhibited greater progress in the art of painting glass than those truly magnificent windows at Cologne, it will be observed that the "panelled arrangement" of subjects above mentioned in connexion with Cologne and Nürnberg, is a very noticeable feature in the Fairford windows. It is not merely visible in the figure and canopy series (wherein you see an Old or New Testament personage, or a saint or persecutor of the Church); but also in the picture-windows, where it may be observed,—as for instance in windows I., II., III., IV., VII., VIII.,

* From a paper by Mr. J. Powell.

id IX.,—that there are elegant banded pillars n either side supporting rather heavy canopies verhead, and that the various figures and details f the subjects, painted in the windows, appear the open panels left by the architectural ork. Now it is a most important circumstance, nd one having a special value in reference to ie origin of the glass, that not only have we ere the same panelled arrangement as at Nürnerg and Cologne, but that the character of the rchitecture of the panels under which the gures appear is similar in all three examples. hat character is wholly foreign to what is seen n English architecture of the end of the fifteenth entury; it may best be described as a Florid othic, with which many Romanesque details ombine. These Romanesque details are the ound arches, the squared abacus, and the heavy ppearance of the whole canopy. Some features, uch as the elegant little shafts supporting a videly spreading head, remind one of Indian rchitecture, and the Garden of Olives, and the pires of the gorgeous temple in another window re also of Eastern character. Now, this Eastern haracter was a feature of German architecture n the middle ages, and may be found to this day ot only in the interior of houses at Nürnberg, ut in the cities along the Rhine and elsewhere n Germany. . . . .

The similarity which actually exists between Nürnberg and Fairford is so close that I cannot magine any candid mind refusing to acknowledge it for a fact, so soon as it is fairly set forth in its rue light. I take one window as a sample of several in the Church of St. Sebald; of all the most characteristic in reference to the Fairford Crucifixion. Although this window in St. Sebald s probably older than these with which I am omparing it, yet as we have no record of the exact date of either,—nothing but the general haracter and the details to judge from,—no ertain inference as to the respective dates can be drawn. Four panels of the window are occupied with the Crucifixion, which bears a remarkable resemblance to the same subject here. In the first place, as in Dürer's Crucifixion at Bâsle, an angel is introduced over the cross of the Penitent Thief and receives his soul, represented by a small white body, while a demon receives the soul of the Impenitent, represented by a dark body. Secondly, there is another point specially emphasised by Mr. Holt in 1868,—and found in the Bâsle Crucifixion, if I mistake not,—and it is one not commonly seen; Christ our Lord is crucified with nails on a cross of sawn timber, whereas the thieves are bound with ropes to rude logs of unsawn wood,—thus to mark more emphatically their subordination to the central figure of the picture. The Blessed Virgin is supported in the arms of St. John and attended by the holy women present; and Magdalen embraces the cross with energy and fervour. These points are varied a little at Fairford, though the same idea reigns supreme; but they are found, not only in the famous Brussels Crucifixion, of which so much was made in the endeavour to crush poor Mr. Holt, but also in a small painting on panel, formerly in the possession of Lord Northwick, now belonging to Mr. Baillie, and as to the authorship of which there is no doubt, for besides the name of Dürer upon the frame, I have found its *fac-simile* among the works of the master, not only in general outlines, but also in the dog,—reproduction of one in St. Hubert, — and the executioner on the ladder, which is the reproduction of the same figure at Bâsle. Among other points of analogy between this picture and Fairford is that of representing the Virgin as in the act of fainting. Many more remarkable points of analogy between this window and the east window at Fairford might be added, but perhaps we have said enough to show that a very close similarity in composition and in detail does actually exist, so much so that there can be little doubt that, unless it be assumed that the designer of the two was the same person,—which as yet I have not done,—that the artist of the Crucifixion at Fairford must have been familiar with this window at Nürnberg, or with a design of exactly similar character. In taking leave of this window, I may add, for the sake of those who choose to pursue the question further, that it is briefly mentioned in a former paper, written for the Archæological Institute, and published in the *Builder*, as window IV. In fine, what makes the comparison between Fairford and Nürnberg so deeply interesting is the fact that in the latter city there are windows, just a little earlier, of the same period,—judging from internal evidence,—and a little later, than those of Fairford. Hence, for the sake of the progress of the science of archæology, it ought to be stated publicly that only a little more study and research is needed in order to clear up many points now in dispute, in reference to these beautiful windows at Fairford.

THE TRADE UNIONS CONGRESS AT LEICESTER.

MR. BRASSEY'S ADDRESSES.

We have already briefly noted the opening of the tenth annual Congress of trade unionists. On Wednesday, the 19th ult., the secretary of the Parliamentary Committee read a letter from the secretary of the Bureau of Labour Statistics, Columbus, Ohio, with respect to the great railway strikes, contending that, though they were attributable to many causes, yet "the hair that broke the camel's back" was a reduction of wages which was ordered to take effect on the several railroads of the State from the 1st until the 15th of July. He detailed the various grievances to which the workmen had been subjected, concluding that all these things together apparently drove the men to desperation; at least, it caused all of them to make a strike.

Mrs. Pattison, of the London Bookbinders' Union, then resumed the discussion on Mr. Halliday's motion:—

"That this Congress approves of the Factory and Workshops Bill introduced by the Government last session, with the amendments recommended by the Parliamentary Committee and others, and requests the next committee to do all they can to secure the passing of a satisfactory measure early next session, and we pledge ourselves to do all in our power to assist in securing this end. Further, this Congress expresses the hope that the Government will stand by the lines of their Bill of last session."

She said she did not intend to move an amendment, but she advocated at great length that women should have an equal right to earn wages in the field of labour with men, and that there should not be exceptional legislation for women, who should be enabled to earn their own living without the undue restrictions now imposed on them.

Mr. Davis (Birmingham Brassworkers) said men in his trade suffered materially from bad ventilation. Scarcely one man ever reached the age of fifty years. Birmingham women worked at the vice and the lathe, which was a disgrace to the country.

Mr. Causey said what was wanted was the reduction of the hours of labour for women.

Mr. Broadhurst reviewed the domestic relations of the sexes, and said some of the women of this country were being employed in work utterly unsuited for them, and they were powerless to drag themselves out of the condition in which they were placed, unless a hand was stretched to them from the outside. The great body of female labour in this country had not the chance of combination, and while he contended that Mrs. Pattison and others had done a great deal to promote unions, they would not even help themselves to drag mothers and sisters out of the hands of those who employed them.

Mr. Gilliver (Birmingham) said they wanted an Act to restrict, as far as possible, female labour.

Mr. Turner (Sheffield) said, if a poll was taken, a large majority of women would vote for working in the workshops.

Mr. Wright (Glasgow) would go for a Bill to regulate the working hours of men as well as of women.

Mrs. Pattison said some speakers thought women should work at appropriate trades. Women themselves thought men had no right to decide which was an appropriate trade. They wanted protection, but objected to Parliamentary protection.

Mr. Birtwhistle proposed:—

"That it be an instruction to the Parliamentary Committee, immediately upon the Factory and Workshop Acts Consolidation Bill becoming law, to call the attention of the Government to the present inefficient staff of inspectors, with a view to the appointment of an additional number of efficient and practical persons as inspectors or sub-inspectors."

He said there were 39,000 factories and 89,000 workshops, and therefore it was necessary that additional inspectors should be employed.

Mr. M'Allan (Edinburgh) seconded the resolution, and pointed out that in some places in the north of Scotland the inspectors were ignorant of the places where work was carried on.

Mr. Solmshaw (Sheffield), and Mr. J. Fox (Bristol), spoke in advocacy of the resolution, which was carried unanimously.

In connexion with the Congress was a largely-attended public meeting, held on the evening of the 19th, when Mr. Guile moved:—

"That this meeting is firmly convinced of the efficiency and power of trade-unions as a means of securing to the workpeople of the United Kingdom a fair share in the product of their labour, and therefore urges the men and women belonging to the various trades to exert themselves to the utmost to extend and strengthen their own particular organisations."

The motion was carried unanimously.

Mr. George Potter (London) moved:—

"That this meeting, regretting the frequent occurrence of strikes and lock-outs, desires to see all questions in dispute between employers and employed, which are not capable of amicable settlement between the parties concerned, referred to a properly constituted board of arbitration, in which the interests of both parties shall be fairly and adequately represented."

Mr. Burnett seconded the motion, and it was supported by

Mr. Thomas Brassey, M.P., who referred to the advantages of arbitration, and then proceeded to answer the self-proposed question, "Why am I here?" He said he felt he was associated more particularly with the capitalist view of the subject, and therefore if it were possible to view labour as an enemy when it was in truth intimately associated with capital, and on equal, fair, and just terms with capital, in order to production, then he might regard himself as in the camp of the enemy. But he did not take that view of labour, and therefore he considered himself at home and among his friends. He was there to express also in a practical form his grateful sense of the privileges he had enjoyed, in part through the faithful services of the working classes to his father. He also stood there because he felt a deep sense of the importance of a friendly personal contract between the various classes of society. It was one of the greatest dangers of the age in which we lived that increasingly large masses of workmen were gathered together under a single employer, who was necessarily a capitalist, and that thus there was an increasing social division between class and class which ought to be bridged over by every possible means. The modifications that had taken place in the industry of the country had rendered trade-unions an inevitable necessity. They had been guilty of some errors which he was not called upon to specify further than that they were an infringement of personal liberty, but their services were such that they deserved the grateful recognition of the country. They had been of great advantage in promoting arbitration and the peaceful solution of trade disputes, and their value had in this respect been endorsed by Mr. Redgrave, the inspector of factories. Capitalists ought to be reminded that trade-unions needed their help, because the great practical difficulty workmen experienced in the face of an increase or decrease in wages was their ignorance of the actual state of trade, which could only be ascertained by an inspection of their employers' books. The only manner in which this drawback could be surmounted would be by unions enlisting the services of men of superior intellectual attainments and of great experience to act on their behalf; men also who would devote their time to the investigation of the commercial aspects of trade, and in whom the workman could place implicit confidence. While, therefore, he could not be blind to the objectionable features of trade unions, he recognised them as embodying a noble, earnest, unselfish spirit of self-help, and as such he respected them, and commended them to the grateful appreciation of his fellow-countrymen.

The resolution was adopted.

At the sitting of the Congress on the 20th inst.,—

Mr. Thomas Brassey spoke on "Work and Wages in 1877." He denied that the volume of our trade had diminished while that of other nations had increased, and pointed out that wages might be higher here than elsewhere, but the labour performed was cheaper from its greater effectiveness, and from the saving of unnecessary supervision. What had been the results of the French treaty? Our imports from France had risen from 17,000,000*l.* to 47,000,000*l.*; but our exports to France, in spite of the heavy duties, had increased 185 per cent. Success could not have been attained except by the co-operation of skilful labour with well-directed capital. The English workman might claim to share with his employer the merit due to that combination of cheapness of cost with excellence of quality which had secured for us the pre-eminence we enjoyed in the export trade of the world. Grave faults were imputed to our working-classes,

and their conduct in many instances deserved censure; but when we looked abroad we heard exactly the same complaints, however low the wages. In those trades in which we were exposed to foreign competition the English workman had in the main performed work fully proportionate to the difference of wages in his favour, and the fact that we were running a close race in some branches with a country where higher wages prevailed than those earned in England was proof that the cost of labour was not correlative with the scale of wages. The American workmen were conscious of the necessity of working hard and well in order to keep up the higher wages which they were at present earning, and any regulations whereby the native vigour of the British workman was restrained must in the end prove fatal in their consequences. No doubt the effects were less baneful, in a commercial point of view, in the building and other trades, which were not brought face to face with foreign competitors; but, considering that improved dwellings were so urgently needed for the working classes, the unwisdom of imposing rules and restrictions tending to augment the cost of building must be patent to all. It was because it was so important to inspire workmen with the hope of bettering their condition that he had always advocated the principle of payment by results. Many trade-unions objected to it, on the ground that payment by the piece led to overwork and bad workmanship. The answer was, that whatever might be the particular form of payment, it was necessary to give to the workman a personal motive for exertion. This must come from the prospect of participation in the profits which had been earned by his labour. His share in those profits should, of course, be proportionate to the amount of labour which he had contributed. The present depression of trade could not be laid wholly, or, indeed, mainly, to the charge of the workmen. If they examined the recent labour movement historically it would be seen that in order of time the inflation of trade preceded the inflation of wages, and the capitalist must bear his share of the responsibility. In the discussions on the prolonged depression, the exorbitant price of labour was continually referred to. They heard but little, however, of the larger share of blame which rested upon the capitalists, the employers of labour, and the investors and lenders of money, who overstocked the markets and caused goods to be sold at ruinous prices, and who, by encouraging speculative building, had raised wages to the present level. In every country and in every line of business the same tendency to overtrading had been manifested. There was a striking instance in the steam communication between Liverpool and New York. New companies had been established, and the fleets of the older firms enlarged. The superfluous construction of numerous costly vessels on the Clyde had had more effect in making labour scarce, and therefore dear, than all the machinations of the local trade-unions. Again, the manufacturing industry of the country, especially in coal and iron, had been injured by the abuse of the facilities afforded by the Joint-Stock Companies Acts for the conversion of private business into corporate enterprises. Mr. Gladstone had denounced in telling language the folly of investors who deluded themselves with the belief that they could expect with shareholders in a company to reap all the profits which had before been earned by trained and experienced manufacturers, who had spent their early lives in the learning and their maturer years in the administration of a complicated industry. Sir E. Beckett had said that (1) unions were a combination to do less work for the given wages; (2) that they taught the fatal doctrine that it was the business of the working men to do no more than the least they could be paid for. These grave charges might be true in a measure, but were not the whole truth. With regard to the second charge, if it were true that bad workmanship was advocated by trade-unions, it must be admitted that the national reputation was still high for the production of many important articles of a quality far superior to that obtained abroad. The existence of trade-unions must be accepted as a necessary consequence of the new phases into which productive industry has entered. The only practical question is how to direct this important and extensive organisation into a useful channel. The working classes were more or less in uncertainty as to the profits employers were realising, and highly-qualified commercial advisers were needed to guide the deliberations of trade-unions on the subject, and they ought to receive an ample salary. It is one of the most regrettable incidents of the organisation of industry on a large scale that the personal relations between employers and their workmen had become less intimate than before. Yet how many prejudices might be removed by an honest interchange of ideas face to face in a spirit of conciliation, and with a mutual and sincere desire to declare the truth and to maintain justice.

Mr. Fitzpatrick (Liverpool) proposed:—

"That this Congress instructs the Parliamentary Committee to make every effort to induce the Government to fulfil their promises to introduce a Bill into Parliament to extend the Employers and Workmen Act, 1875, to British seamen whilst in British waters, and to endeavour to secure that the provisions so introduced are of a satisfactory nature."

Mr. Wheeler (London) seconded the resolution, which was carried.

Mr. Memmott (Sheffield) moved:—

"That this Congress regrets the delay in placing the patent laws of the country upon a satisfactory footing, and desires the Parliamentary Committee to continue their efforts to secure to the inventor by reasonable payments the benefits of his invention."

The resolution was carried.

Mr. Rhodes (Stoke-on-Trent) proposed:—

"That, in consequence of the notorious fact that hundreds of men, and in some cases mere boys, are appointed to take charge of stationary and other steam engines and boilers, and who are in no respect fitted for such an important work, through the want of theoretical and practical knowledge, immense loss of life, injury to persons, and destruction to property occurs; this Congress, therefore, requests the Parliamentary Committee to render all the assistance in their power to any Bill that may be introduced before Parliament to prevent any person taking charge of either steam engines or boilers unless he be in possession of a certificate of competency, which he shall have obtained from a properly-constituted Board of Examiners, appointed by Government for that purpose."

Mr. Juggins (Darlaston) seconded the resolution.

Mr. Waldman (Ashton-under-Lyne) moved as an amendment that a clause be inserted in the resolution including stokers and tenders of engines. This was seconded by Mr. Inglis (Glasgow), but the original motion was adopted.

At the sitting on the 21st, Mr. Broadhurst was re-elected as Secretary of the Parliamentary Committee.

Mr. Shorrocks (Manchester) moved:—

"That in the opinion of this Congress the system known as the 'sweating system' in the tailoring, shoemaking, and other domestic trades is highly detrimental to the best interests of those engaged in them, and being convinced of the danger attendant on the same from a moral, physical, and sanitary point of view; and, moreover, seeing that the system is calculated to spread infectious diseases, we hereby declare our conviction that it becomes a question for imperial and local legislation; and further, we hold it to be the duty of all employers to provide workshop accommodation for those they employ; but where such is not the case, that any part or parts of a dwelling-house so occupied should be a workshop, and registered and inspected as such."

The resolution was adopted.

Mr. T. Brassey, M.P., in the evening addressed a large assemblage of the delegates and others interested in the subject, upon "Labour at Home and Abroad." Mr. Brassey said his conclusion was that to minimise wages was by no means the most effectual method of securing economy of production. It was cheaper and a happier rule to give a fair day's wages for a fair day's work. The prosperity of trade must be a thing little to be desired if it could only be attained at the price of misery and destitution. While there had been considerable advance in the wages of all classes of workmen employed in the construction of railways, the average cost per mile of railway open had remained approximately the same. The inference was that the pressure of the high price of labour had stimulated in the utmost degree the contriving and organising faculties of employers, and profits had been reduced to a minimum. The reaction from the unstable prosperity of 1871-3 had been even more marked in North America, Germany, Austria, Russia, and Belgium than in this country. In the United Kingdom, though the depression had been extreme, there was an increase in production in 1876 in the Cleveland district and in Scotland, and the indications for the future were decidedly more hopeful. In the same spirit of reckless competition which had been exhibited in the coal and iron trades at home, all the foreign markets had been overstocked with British goods, and, in order to encourage sales in a glutted market, prices were reduced. To cover the reduction, manufacturers exercised their ingenuity to produce a showy article of inferior quality. The profits derived from the recently inflated prices gave sudden and colossal fortunes to employers, and unexampled wages to workmen; but the cost of production speedily exhausted the spending power of the consumers, and we saw the result in the number of furnaces idle, and in the reduction of wages. The returns upon capital had been diminished at least as much by rash speculation as by the aggression of trade-unions. Not that the savings of the country were fortunately no longer invested in shares of bubble companies and loans to foreign states, a difficulty had been experienced in finding suitable channels of investment. Money was being advanced to speculative builders which fully explained the maintenance of wages at the present rates. It was not the trade-unions, but the people who lent money to builders, who really regulated wages. The trade-unions, on the other hand, must acknowledge that this was not all. It had been proposed by the unions that the depreciation of prices should be resisted by a limitation of supply, and that the mill operatives should work short time. Such a suggestion must be received with caution, lest by making production more costly they raised the price of British goods in the neutral markets to such a point that we should be undersold by the foreign manufacturers. Again, if so restricting its use prevented the money invested in costly machinery from being reproductive, the result must be that capital would be diverted from manufacturing to other branches of business, where a more satisfactory return could be obtained. In all cases an advance of wages must be made subject to two conditions. First, the cost of foreign labour; second, the scale of prices might be raised beyond the capacity of the consumer to bear them. On the other hand, if the working men offered no resistance to the downward pressure the reduction would continue until wages had been reduced to the minimum required to cover the cost of subsistence. If labour were cheaper in England, then the workmen would enjoy some advantages as consumers from the reduced cost of living; but how far that reduction would compensate for the reduction of wages it was not possible to say. All political economists were agreed that a high standard of living was a stimulant to industry, and that a low standard of living tended to indolence. A demand for higher wages was only the aspiration to a higher standard of living in another form, and, provided that it were recognised that, for the higher wages, an equivalent must be given in better work and more work, there could be no abstract objection to the demand. The concession of more wages without the equivalent in work was only possible where there was a margin of profit available for division among the workmen. It was the business of trade-unions to gather materials for forming a judgment as to whether such a margin existed. Where it did not exist, and the workman knew that he must do more work or better in order to secure an advance of wages, the aspiration for a higher standard of living was distinctly beneficial both to capital and labour. Having spoken of the condition of labour in the United States, Mr. Brassey proceeded to say that in England there were two great evils with which the working class had to contend—first, overcrowded dwellings; and, second, an overcrowded labour-market. In conclusion, Mr. Brassey remarked that, in every state of life in which men were able to get their own living, there were special consolations, and certainly the wealthy had not a monopoly of happiness. To the wise man riches were a weighty responsibility, and to the weak man a sore temptation; and while the follies of the one were contemptible, the anxieties of the other might sometimes deserve the sympathy of the independent artisan, far as they were apart. The various classes of society depended on one another. In their union consisted our national strength and individual happiness. It was to promote that union he had come among them.

The Congress terminated its sittings on Saturday, the 22nd of September, on which day communications were read from the Universal Socialist Congress of Ghent, and from the Federation of German Trade Unions at Berlin, the latter acknowledging that the English trade-unions had been their models and predecessors, and that their wise organisation, their sound principles, their energy in maintaining the rights of the working men, elicited their admiration.

Stone Carvers' Society.—A dinner took place at the Green Man, St. Martin's-lane, on the 28th ult., to celebrate the fifth anniversary of the establishment of the Stone Carvers' Society. This association, established in September, 1872, has met, we are told, with continued success.

SANITARY INSTITUTE OF GREAT BRITAIN.

A Sanitary Congress, under the auspices of is Institute, was opened at Leamington on ednesday last, when the president, Dr. B. W. ichardson, F.R.S., delivered an inaugural ad-ess, mainly devoted to an exposition of his eory as to the origin and course of the various idemic diseases or spreading pestilences which fect mankind. This theory, which he advanced any years ago, and described in a lecture the Sewage Congress at Leamington in 1867, s been overshadowed by the subsequent troduction of the German theory. The presi-nt's object was again to give publicity to s view, and to prove it to be more practical d demonstrative in character than the German eory. The latter theory supposed that spread-g diseases are produced by the introduction of e germs of disease into the body. It is assumed at these germs lie outside the body, and are rried into the organism, which absorbs them d enables them to act as ferments from which e specific disease arises, each disease having enumably its own germ. The theory which r. Richardson expounded is that these diseases e produced by poisons, springing simply out of e animal secretions of the affected body. He sisted that instead of looking for a living self-oductive organisation like a germ as the use of maladies, the force of production of e poisons was the force of secretion of the ving animal, and that just as an animal like e cobra is always producing poisons by cretion, so a person affected with a con-gious disease poisons by virtue of a similar tion. Each secretion of the body produces its rticular poison under conditions unfavourable its healthy action, or under conditions when receives into itself actual poisonous matter by rect contact. He held that this view accounts r the production of all the existing poisons using communicable diseases, also for the mber of those diseases and the limitation of e number. An interesting portion of the dis-ourse related to the spontaneous origin of the mmunicable diseases as distinct from origin direct exposure to poisonous matter. The esident argued that as all the glandular cretions are under direct nervous influence, in some cases extreme depression of the rvous power, as from starvation, bad food, ercrowding or other similar depressing uses, may give rise to such a change in the cretion that it becomes poisonous, independently the idea of inoculation by poisons introduced om without. He showed that in London a erson thus affected may become a centre of con-gion because he is himself producing a poison, hich, coming in contact with the secretions of her persons not previously affected, is capable communicating the specific disease; and he rged that for a similar reason as to the origin ere is a hereditary tendency to the epidemic iseases in many persons. This was due to the ervous impression made by the disease on the arent, which impression is transmitted to the ffspring so as to affect the glandular function, and redispose to disturbance of function, which leads production of the disease. He believed that yphoid fever, diphtheria, scarlet fever, and robably small-pox, were distinctly of this here-itary character. Concluding with the practical pplication of the knowledge of glandular theory relation to sanitation, the President said:—If he *contagium vivum* view be true, the air around s is charged with invisible germs which come re know not whence, which have unlimited ower to fertilise, and which need never cease o fertilise and multiply. What hope was there or the skill of man to overcome these hidden oes? Why on some occasions may not a plague pread over the whole world and destroy life niversally? My theory presents a different spect. I say to men and women, it is you who re producers of communicable disease, or it is ne of your lower earthmates in creation. I look n the man or other animal affected with a con-agious disease as one in the position of the obra, and I see the danger is all but limited to he person affected. Isolate that person from he rest of mankind, take care his secretions do ot come in contact with those of susceptible ealthy persons, and the danger is over. With is recovery the poison is destroyed. If my heory be true, we sanitarians have a complete astery over the diffusion of poisons of all com-unicable diseases. We can limit the action to he propagating power of the affected body all ut completely. Beyond this we must expect to reduce the tendency to communicable diseases in succeeding generations, until in time the here-ditary susceptibility to a particular spreading disease shall be thoroughly wiped out. The theory suggests a profitable line of research on the production and reproduction of some poisons by inferior animals, and their trans-mission in due course to man. The theory finally suggests to those engaged in treating diseases of a communicable kind the best means of arresting the progress of a com-municable disease, even when the phenomena of it have been developed in an individual; it leads us to take a precise view of each case of the nervous and glandular processes, and one out of the natural order of work; it suggests to us to seek for remedies and chemical agents which affect special secretions; and it shows us how to place the sick under such conditions that they may avoid the second absorption of their own poisonous secretions, which is the actual cause of death in the majority of cases of con-tagious disease. In fine, in every direction, in prevention or cure, the glandular theory of the origin of communicable diseases opens out practical and hopeful work.

In connexion with the Congress there was an exhibition of sanitary appliances, of which there were 300 entries.

THE MASONS' STRIKE IN LONDON.

According to the *Standard* of the 2nd inst., out of 1,700 operative masons who turned out on strike nine weeks ago, there now only remain about 600 out of work, and there are at the present time between 1,300 and 1,400 men at work at the advanced pay.

The Master Builders' Association say in reply to this statement that it is open to various interpretations, but they altogether deny its correctness. The *Standard* goes on to say:—

> One hundred and nineteen masters in London have acceded to the demands of the men, and paid the additional penny per hour. Of these are the firms of Scrivener & White, who employ now about thirty masons; Peto's firm, who employ about the same number; and Newman & Mann. Kilby, of Limehouse, has also conceded the demand, and the firm employ about sixty masons. The largest concession, however, has been that of a private firm engaged in building operations in Victoria-street, who are now employing about 100 work-men, each of whom is receiving 10d. per hour and pays the levy to the society.

The master builders say, in reply to this, that the above-named building firms have altogether about 100 masons employed on very urgent matters only; and as to the private firm alluded to, they have no knowledge of it. The "private firm" is stated to be a solicitor, who probably has no sympathy with one side or the other. The masters express their intention of waiting the return to London of the masons who are now scattered over the country, and they hope (from information they are said to have received) that this will take place shortly. It is stated, however, on behalf of the masters, that they are now becoming indifferent as to getting on with work during the next three or four months, as "they know by experience that mason's work done in the short days of winter is never profitable." Their shops are now open at 9d. per hour, or about 2*l*. per week, to good ordinary masons, and they are prepared to pay good fixers an increase, and also to enable skilful men to earn more money by piecework if they please. They consider that 9d. per hour is excessive for many so-called masons. The cessation of masonry is now beginning to cause a slackness in other branches, and with the winter coming on prospects are not very bright for many men who will have "no work to do" from the obstinacy of others.

BRIGHTON AQUARIUM.

A much-needed improvement is in progress in the Brighton Aquarium. For some time past the stage for the musical and dramatic entertainments,—with which experience shows it is necessary to supplement the science of the establishment, — has occupied the rockwork-fernery, and conservatory at the east end of the building,—one of its prettiest parts. A stage is now being formed in a recess on the north side of the conservatory, so as to restore the fernery to the general promenade. It is to be regretted, but it nevertheless is a fact, that popular science alone will not pay a dividend; the Panopticon becomes the Alhambra, the Educational Courts at the Crystal Palace are insufficient without farces and fireworks; and an aquarium, whether at Brighton or elsewhere, to succeed financially must provide music with the mollusks, and songs as well as sea lions. It is satisfactory, however, to observe at Brighton that the real purpose of the Aquarium is well thought of. The fish are kept in splendid condition, and fresh subjects for study are constantly provided. It is evidently a very popular institution, and the Corporation might wisely withhold a little of the opposition to its development which they seem always ready to exhibit. There is a wonderful tank just now full of anemones, jelly-fish, and such like, a perfect garden of sea flowers; and in another a shoal of herrings serves to make clear that whitebait consists mainly of the young of that family, as Mr. Reeves Smith, the general manager, traces its origin to a netful of that favourite succulent.

THE WALLS OF ST. ALBAN'S ABBEY.

We have already mentioned that it is proposed to restore the clearstory and triforium on the south side of the nave to an upright position. The course to be adopted, speaking in the broadest way, is this:—The north wall of the nave will be securely shored inside; iron rods and screw-nuts will tie this and the southern wall together; raking shores will be placed against the south wall outside; and under the foot of these hydraulic pressure will be applied, while the screw-nuts are made to operate on the rods. A description of the intended process, with illustrations, will be found in the *Engineer* of September 21st (p. 199, &c.). Mr. Chapple, the clerk of the works here, under Sir Gilbert Scott, has had much experience in dealing with enormous weights, having been recently engaged on the works at the tower of the church of St. Nicolai at Hamburg, the height of which is 485 ft. 6 in. In restoring it to a vertical position, over 2,000 tons of brickwork had to be put into the foundation to secure a firm footing on the shifting sands which exist in the neighbourhood of the Elbe and upon which the church stands.

THE ROAN SCHOOLS, GREENWICH.

If an Elementary Education Act had been in existence some generations back, and School Boards in operation, it is probable that some of the benefactions devoted to the education and maintenance of "pore and miserable youth" would have been otherwise directed. Board schools, in so far as elementary education is concerned, are now performing, to a large extent, the duties hitherto fulfilled by charities, and the increasing funds of a number of educational charities are in consequence released, and applicable to altered uses. Under the provisions of the Endowed Schools Act of 1869 these funds have been in numerous instances diverted to the establishment of middle-class schools for secondary education; so it has been in the case of Robert Aske's charity, in the new schools provided at Hoxton, and at New-cross. Another instance is presented in the new schools, one just completed, in connexion with John Roan's Charity at Greenwich. The beneficiaries of the Roan's Charity have hitherto been a certain number of boys and girls born in the parish, and orphans, or the children of indigent parents, who have received instruction and clothing at the expense of the funds of the charity, which, coming within the operation of the Act of 1869, has been remodelled, under a scheme by the Endowed Schools Commissioners.

By the new scheme all rights of the former governors were transferred to the Queen, and their powers abolished. The new governors are, *ex officio*, the four local members of the London School Board, or persons nominated by them; eight governors elected by the ratepayers of East and West Greenwich; and four co-optative governors, appointed by the feoffees and trustees in the first instance, and afterwards by the other governors; it is provided that two of the co-optative governors, who hold office for six years, are to be women. Provision is made to satisfy "vested interests." The fees are to be paid for present scholars in such elementary schools as their parents may select, an equivalent for clothing is also to be allowed. The present master is to receive an annuity of 150*l*. per annum, unless he obtain employment, concerning the value and suitability of which the Charity Commissioners are to be the judges, their decision to be binding. The new governors are to apply 150*l*.

per annum towards public elementary schools in Greenwich, in one or more of the following ways:—1. Free places or prizes to meritorious scholars; 2. Exhibitions to enable scholars to remain longer at school; 3. Lending-libraries for the use of scholars; 4. Maps for teaching physical geography, drawing lessons and models, scientific apparatus; 5. Lectures or evening classes for the elder scholars; 6. Additional playground accommodation, gymnastic apparatus, extension of military drill, musical instruments for band, &c.; 7. Industrial instruction, tools, carpenters' shed, and field gardens for boys; kitchen and laundry for girls.

The scholars may be exempted from attendance on religious worship and prayer, under the new scheme. Candidates for admission undergo an examination embracing reading easy narrative, writing text-hand, and sums in the first two rules of arithmetic. The fees are to be 2*l.* per term, with 1*l.* entrance-fee, to be divided into three terms; vacations, eight weeks in all. Books and teaching apparatus are supplied by the governors. The course of instruction, in addition to teaching in the Holy Scriptures (optional with parents), will include for boys, reading, writing, arithmetic, algebra, history, and geography; grammar, composition, and literature; political economy; book-keeping; and vocal music. Latin, French, or German, or any two of these languages. Free-hand, model, and perspective drawing; practical plane geometry, and machine drawing. Mathematics, mechanics, inorganic chemistry, acoustics, light and heat. The Governors may also direct that the following, in lieu of some of the preceding, may be taught,—navigation, practical and experimental science, and drawing, with particular reference to mechanics and engineering. In the girls' school household management, the laws of health, and needlework will be subjects of instruction. There will be an annual examination of the schools by examiners from the English universities or from the College of Preceptors. Provision is made for training student teachers in the schools, and a sum of 500*l.* per annum will be applied for scholarships to meritorious scholars, with an additional 300*l.* for scholarships to scholars of Roan's Schools to be available for other schools.

The two schools are designed to accommodate 300 scholars each. They will cost about 6,000*l.* each. Fifty pounds per annum is to be set apart for repairs and improvements. The schools are to be for day-scholars only. The head-master and head-mistress are to receive salaries of 100*l.* per annum each, and capitation allowances of not less than 20*s.* for each scholar. They must not hold any other benefice, and the master must not have a "cure of souls." The head-master and head-mistress, on engagement, sign an agreement providing that they may be discharged by the governors without any reason assigned, and relinquishing all claim upon them.

The boys' school in East-street is from the designs of Mr. Robert Walker, architect. It is to be regretted that the building should be immured in a narrow street, affording no point of sight from which it can be seen to advantage. It is near the southern border of Greenwich Park and Maze-hill, in a street that connects Maze-hill with East Greenwich chief thoroughfare.

The main entrance leads to a paved vestibule, 10 ft. wide and 23 ft. long, that contains also the staircase. Behind the vestibule is a corridor with a glass screen, that is extended upwards on the first floor. The corridor conducts on the right to three class-rooms, each 23 ft. by 19 ft., and on the left to a dining-hall, and a cloak-room and lavatory, each of the same dimensions as the class-rooms. To the rear of the central building is a lofty hall, 44 ft. by 30 ft., furnished with a platform at the inner end. The hall is lighted by a large three-light window, a smaller window on each side, and by a glazed louvre in the roof. It has an open roof of pitch pine, springing from stone corbels, the principals and boarding being stained and varnished. The artificial lighting of the hall is by inverted ⊥ pendants. The other appropriations of the site on the ground level are a spacious playground, of which a space—50 ft. by 15 ft.,—is covered, and has a bench fixed along the back wall. The further corner has the boys' latrines. The front has the caretaker's living-room, 13 ft. by 11 ft., and over it a chamber, considerably larger. On the first floor are the head master's room, with retiring-room, closets for stationery, books, &c., and four class-rooms; these rooms are of the uniform dimensions of 23 ft. by 19 ft. A second floor in the central building has a room for drawing, 25 ft. by 19 ft., lighted chiefly from the roof. The windows and frames are of pitch pine, the doors, dados, and other timber work are of red deal, stained and varnished. Above the dados, which are 4 ft. 3 in. high, the brick walls are coloured in distemper; the colours are French grey and cream colour. The windows are glazed with roiled plate, and are fitted with Shadbolt's patent for ventilation; Steers's patent grates are used; and Jennings's tip-up basins and fittings in the lavatories. Hobbs & Co.'s patent mortise locks are fixed on all the doors. Mr. Hammer has supplied the school-desks and furniture.

The principal fronts are in white Suffolk brick, relieved with red brick, and at the entrance with Bath stone. The stairs are of Yorkshire stone, with plain iron rail. The work has been executed by Mr. Andrew Killby, contractor, with Mr. Robert Pattison as clerk of the works, and Mr. S. T. Scott, contractor's foreman.*

The school was formally opened on Friday evening of last week by a meeting in the hall, over which Dr. Prior Purvis, chairman of the Board of Governors, presided. The meeting got together by Mr. Wm. Buck, the energetic secretary of the Greenwich School Board Division, and of the Roan Schools, was numerously attended. On the platform and in the room we noticed Sir G. B. Airy, Astronomer Royal; Mr. Jno. M'Gregor ("Rob Roy"); Mr. T. W. Boord, M.P.; the Rev. Dr. Hill, Greenwich Hospital; Mr. Batchelor, clerk to the trust; and, of the governors, Mrs. Hooper, Messrs. Henry Gover, Dannatt, Smith, Bromley, Mitchell, Coomber, Bookham, Ridger, the master of the school, &c. Interesting and appropriate addresses were delivered by a number of the gentlemen named. From a statement of the chairman it appears that the site of the new schools cost 700*l.*, against which is a rental of 60*l.* per annum for the old school and property in Roan-street. The proceedings were, on the whole, although not perfectly harmonious, satisfactory. The school was opened for the reception of scholars on Monday last.

* On another page will be found a letter from Mr. Dinwiddy, the architect of the girls' school, complaining that his design has been made use of by the architect of the boys' school, which he considers especially hard upon him, as the latter has been erected first. He forwards at the same time, with copies of correspondence, views and plans of both schools, which certainly exhibit a strong family likeness. Mr. Walker, in one letter, denies having seen Mr. Dinwiddy's plans, and in another says, with amusing frankness that he does not claim credit for any great originality as an architect; that his design in the present case was founded to a considerable extent on a school illustrated in Mr. Robson's "School Architecture" (pp. 301, &c.); and that he thinks the design for the girls' school resembles this even more than his own!

NEW HOTELS IN GLASGOW.

If Of the tourists and business men who are in the habit of making a periodical journey north of the Tweed, many, either from chance or necessity, make the great metropolis of the western district of Scotland one of their chief halting-places. To such, the vicinity of George-square, with its lines of handsome hotels and conclave of statuary, will be quite familiar. The future visitor to Glasgow, however, who may feel disposed to do so will find no difficulty in changing the *locale* of his temporary residence in that populous city, inasmuch as in the hotel department building enterprise is fully keeping pace with the rapid development of the trade generally,—several large structures devoted to the purpose indicated being now in course of erection in the west end and elsewhere. Perhaps the most commodious and imposing of the new hotels is that entitled the Charing Cross, built by Mr. Duncanson, in Sauchiehall-street, the frontage, extending from Falkland-place to Woodside-crescent, a distance of 144 ft. in Sauchiehall-street, 155 ft. along Falkland-place, and 101 ft. along Woodside-crescent. The height above the street level is about 83 ft.; the building has four stories and basement, the style being Modern Italian. The leading feature in the exterior is the appearance of the south front, Ionic pillars projecting from the line of building flank the principal entrance, from the top of which latter spring four Corinthian columns, plain and fluted, with a window between, filled in at the top with ornamental shell-work. These columns support a carved balcony, the level of which is somewhat above that of the second floor, and from the balcony spring two other columns, surmounted by a carved entablature, with ornamental recess for a clock. Windows are placed between the various columns, and a semicircul dome, with cast-iron fretwork, forms what ma be called the central tower. The main front also ornamented with bay windows, balconie and cornices, a heavy balustrade, divided b dormer windows, running along the top of th wall. Turning to the Woodside-crescent fron age, we find a porch with columns, large ba windows with fluted columns and Corinthia capitals, springing from a heavy cornice, whic runs along the whole length of the buildin These windows are carried up to the level of th third floor, the fourth story being finished wit Venetian windows, circled windows, and balconie resting on heavy corbels. The Falkland-plac frontage is more simple. In the interior, the larg dining-hall is a prominent feature, being reache from the grand corridor communicating with th main entrance by a flight of marble steps. Th dining-hall is more than 67 ft. in length by 40 f in width, the height from floor to ceiling bein 24 ft. Columns with Corinthian capitals ar ranged along the side walls, while at each end i a Corinthian pediment, with four supportin columns. The windows on the southern side o the hall are plain, light being admitted from th corridor, but those on the north will be filled i with stained glass from the studio of Messrs Kier, St. Vincent-street. These northern window are six in number,—three being embellishe with portrait heads of Shakspeare, Burns, an Moore, as the representative poets of England Scotland, and Ireland, and scrolls with quota tions and illustrative designs. The main corridor which is about 100 ft. in length, with a breadth of 16 ft., is roofed with stained glass by th same artists. At the western end in the nex floor is the grand drawing-room, an apartmen some 56 ft. long by 30 ft. broad, and having height of 15 ft. The decorative work is rich i character, and at the northern end of the roo is a fine chimney-piece in white marble sup ported by columns of the same material, wit Corinthian capitals. The architects are Messrs Baird & Thomson, Bath-street. Mr. Duncanson the proprietor, has undertaken the mason work and the contract for joiner work has been carrie out by Messrs. Miller & Bannerman, Glasgow It is expected that the new hotel will be ready for occupancy at the end of two or three months.

A fine new hotel is also in course of erection by a limited liability company on a portion o the ground acquired by the Caledonian Railway Company for their new central station in Hope street and Gordon-street. The frontage of the new hotel will extend 216 ft. along Hope-street where the principal entrance will be placed, and 127 ft. along Bothwell and Waterloo streets respectively. While the designs for the exterior are of an effective character, there will be no lavish display of ornamentation. The frontage wall will rise to a height of four stories above the street level. It is intended that a spacious arched glass-roofed arcade shall run along the centre of the buildings. The length of this arcade will be 129 ft., the breadth 30 ft., and the whole of the ground-floor will be occupied by ranges of shops. There will be three entrances to the arcade on different levels from Hope-street, Bothwell-street, and Waterloo-street, respectively. The ground-floor of the hotel facing these three streets will also consist of ranges of shops. The main hotel entrance will be from Hope-street, leading up through a handsome corridor to the principal apartments. The dining-room will be 56 ft. in length by 22 ft. in width, with a height of about 16 ft. At the opposite and farther end of the corridor the vista approaches the coffee-room, an apartment 45 ft. by 25 ft. The plans include numerous parlours, sitting-rooms, and bedrooms, and all conveniences for carrying on an extensive business. The architects of the new building are Messrs. Peddie & Kinnear, Edinburgh.

A third new hotel is the Alexandra, at the corner of Bath-street and Campbell-street, just off Sauchiehall-street, and recently opened by Mr. John Macrae. The structure is from designs by Messrs. A. and G. Thomson & Turnbull, architects, Wellington-street, and has been in course of erection for about two years. The frontage to Bath-street is 45 ft. in length, the height here being five stories with basements, but the building running back for 97 ft. along Campbell-street to Sauchiehall-lane, the fall in the ground towards Sauchiehall-street has necessitated a sub-basement. In treating the building the architects have adopted the Greek style, the exterior walls being plain, with the exception of the upper story, which consists of

pilasters and a well-proportioned truss, the whole surmounted by a massive cornice. Mounting the flight of stairs from Bath-street, the visitor finds himself in a handsome reception-room, lighted by two large windows of plate-glass, reaching almost from floor to roof, a height of 16 ft., and all the decorations and appointments of which are appropriate and luxurious. The coffee-room is placed at the end of the hall, the extremity of the room near Bath-street being a sort of continuous window, in front of which runs a balcony supporting evergreen plants. This room is 40 ft. in length, 28 ft. in width, and 16 ft. high. The bedrooms are sixty-four in number.

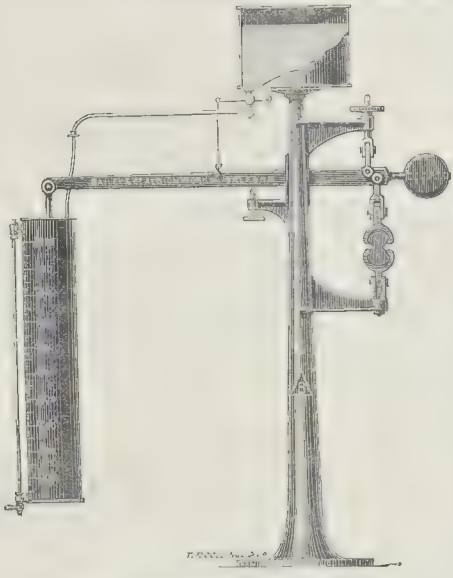
RURAL SANITATION.

This was the subject of a paper read before the Society of Engineers on Monday evening last (Mr. Thomas Cargill, president, in the chair), by Mr. G. W. Usill. The author divided his subject into three heads, namely, drainage, cottage buildings, and water supply. He dwelt on the repeatedly-told catalogue of evils following in the wake of neglected sanitation in rural districts, and sought to show that in many villages a good system of sewage-disposal and a pure water-supply might be obtained for a few hundred pounds, so that the bugbear of cost need not stand in the way where there was the will to undertake the work. Wherever possible, he would remove the sewage by water-carriage, as that mode of removal was at once the most natural, and the one that needed no supervision whatever. Where the sewage could not be utilised in irrigation, he would conduct it by pipes to an hermetically-sealed and water-tight reservoir some little distance from the villages, thence to be pumped up and sold to the farmers for manure. Such means of disposal of the sewage need create no nuisance if properly carried out. The ordinary midden and cesspool system should, however, be at once and for ever abolished. He was opposed to the earth-closet system, and to pail systems generally, on the ground that the labour of removing the pails would be repugnant to any one of delicate susceptibilities. The cost, too, was against the use of earth-closets, as the cheapest contrivance of the kind would cost 1*l.* 10*s.* In addition to this, the earth-closet system rendered constant and efficient supervision a *sine quâ non*. For isolated mansions and large institutions in the country, or in similar situations where intelligent supervision could be given them, earth-closets might be very good things, but it was a mistake to suppose that they would be a success if applied to the dwellings of the mass of the rural population. With regard to cottage building, the author strongly condemned the smallness of the rooms in which agricultural labourers and their wives were "cabinn'd, cribb'd, confined." Until landowners seriously asked themselves how they, with their wives and children, would like to live in such small, low-ceiled rooms, the rural population would not cease to be badly housed. Want of ventilation was one of the most notable defects in the cottages, such as they were, of our agricultural labourers. As a rule, it would be better to erect cottages with two or three large and lofty rooms than with three or four small ones. As to water supply, the author strongly condemned the apathy shown by landowners and others in permitting villagers to draw their water from shallow wells saturated with pollutions percolating from adjacent cesspools, or from brooks and streams which were made the receptacles for sewage and manufacturing refuse, as well as being used for sheep-washing and similar purposes. Deep wells and proper mechanical appliances would at a very low cost afford an abundant supply of pure water to most villages, and in this connexion such simple contrivances as those supplied by Messrs. Gwynne & Co. deserved attention. The roofs of cottages, farm-houses, churches, and schools should be utilised in the collection of the rain-fall, which should be conducted to properly cemented impervious underground storage reservoirs. In this way an ample supply of water sufficiently pure for most purposes would be secured at a very trifling cost.

A discussion followed, in which Messrs. Rigg, Schönheyder, Allen, Vaughan Pendred, Jabez Church, Perry F. Nursey, Bernard Dyer, F.C.S., and the president, took part. In the course of this discussion it was pointed out (especially by Mr. Pendred) that although it might be quite true that a capitalist or a benevolent landowner could, for a few hundred pounds, supply the means of efficient water supply, there was more to be done after that. The works had to be maintained and kept going; organisation,—local government, in fact,—was wanted to take advantage of the means afforded by the capitalist or landowner. Mr. Bernard Dyer remarked upon the defective way in which deep wells were lined. Wells that, were they provided with an impervious lining, would yield pure water, were turned into media of contagion, through the ignorance or parsimony which would allow the contents of cesspools to drain into the wells whence potable water was drawn.

A CEMENT TESTER.

At the Exhibition of Sanitary Appliances recently held at Owens College, Manchester, Messrs. W. H. Bailey & Co., of the Albion Works, Salford, exhibited one of Reid & Bailey's cement testers. This instrument, which we illustrate, differs from most other testers in the way in which the breaking pressure is brought to bear. All other testers have the pressure exerted



upon the material under experiment by means of a screw, or by separate weights, which are placed upon a beam. These methods create a slight vibration of the instrument, which interferes with the accuracy of the test. A novel principle has been introduced by the designers of this machine. A small stream of water descends slowly into a graduated cistern, which is fixed at the end of the beam, and indicates the weight of the water in it. The moment the material under test is broken a trigger is released which stops the water and the graduated scale shows what pressure has been exerted. The section of cement tested by this machine is one square inch in area. It will be seen that the operator may place the cement in the jaws of the instrument, and he may quietly sit down after turning on a tap, and, after waiting a few minutes, see the test automatically performed, without in any way interfering with its accuracy by imparting any undue vibration to the instrument.

This machine has been made at the suggestion of Mr. Reid, who has experimented upon it, and whose name is known in connexion with Portland cement from his work published by Spon.

The Channel Tunnel.—Operations connected with the submarine tunnel have been commenced on the other side of the Channel, several pits having been sunk to the depth of about 110 yards. At the same time the French and English committees have definitively drawn up the conditions of working for the route. The property of the tunnel is to be divided in half by the length,—that is to say, each company will possess half of the line, reckoning the distance from coast to coast at low tide. Each company will cover the expenses of its portion.

THE INNER CIRCLE RAILWAY.

Sir,—From a plan which has been published of the route to be taken by the short line which is now to be constructed, after years of delay, to connect the Metropolitan District Railway at the Mansion House Station with the Metropolitan Railway at Aldgate, I notice that the present Aldgate Station is to be "left out in the cold," in other words, isolated at the end of a short spur of line jutting out from the "inner circle" system, so that trains running in either direction will not pass through it. This isolation will be caused by the new connecting link being made to curve northwards slightly to the west of the present Aldgate Station, joining the existing line between Aldgate and Bishopsgate-street, near the Clothes Exchange in Houndsditch.

Surely this is a serious mistake. By continuing the connecting line rather more to the eastward it might be made to pass through the existing station at Aldgate. Whatever extra cost might be incurred through interference with property in Aldgate High-street would be counterbalanced, I should think, by the non-interference with property in Mitre-street, Duke's-place, and Houndsditch, under which latter thoroughfare the line as at present proposed would be carried in an oblique direction, involving the demolition of a great deal of expensive property.

The line is to be carried eastward from the present Mansion House Station under Cannon-street, the first station being between Walbrook and St. Swithin's-lane, to allow of an interchange of traffic with the South-Eastern Railway. The next station will be at the corner of Gracechurch-street and Eastcheap, and so will involve the demolition of the offices of the National Provident Institution, newly erected a few years ago under the direction of Professor Kerr. From the corner of Eastcheap to Fenchurch-street a new street will be made, underneath which the new line will be constructed, and towards the cost of which the Corporation of London and the Metropolitan Board of Works have jointly undertaken to pay half a million sterling. The street will be 1¼ furlong in length, and the line will be continued beneath Fenchurch-street to Aldgate, where it is proposed to have a new station between the site of the Old Pump and Jewry-street.

That it will be a mistake to have two stations within so short a distance of each other, when one would suffice, is obvious, even though (as will not be the case in this instance) both should be on the line of through traffic. An example of this is afforded by the Ludgate-hill branch of the Chatham and Dover Railway. The Borough-road Station and the Elephant and Castle Station are almost within a stone's throw of each other. The first is like a deserted wilderness, being almost destitute of traffic, whilst the last is hidden away in a slum. One station midway between the existing stations, and at a point within sight of each, namely, where the line crosses Newington-causeway, would have been more accessible, and would have paid better than the other two stations combined, as it would have had access to and from a busy main thoroughfare. If, then, it is a mistake to have two stations so close together even when they are both on the line of through traffic, how much greater will be the blunder in the case of the Aldgate stations, one of which will be completely cut off from the circular traffic north and south of the City? Certainly the short spur with the existing station at the end of it might serve as the commencement of a new trunk line to be carried eastward beneath the Mile-end and Bow roads to Stratford, but unless such a line is constructed, the *raison d'être* of the present Aldgate Station will be gone if the new connecting-line is made as it is proposed to make it,—which I hope, in the interests of the public, the company will not be allowed to do. D.

COUNTY OF DURHAM.

SEDGEFIELD NEW AUXILIARY ASYLUM FOR 402 CHRONIC PATIENTS.

In response to advertisements, asking tenders for the superstructure of these buildings, no less than 130 tenders were received, containing 411 distinct offers. Of these, twenty-two were sole tenders for the main buildings, and twenty-three for the lodges and entrance-gates, while eighty-five were for the separate trade sections, in each contract. The competition seems to have been very keen, and shows that builders in the district are anxious to secure work, if not to realise profits, to keep their establishments together till better times are forthcoming. 40,000*l.* was the amount voted by Quarter Sessions for the work, but it will be completed considerably under that sum. The work is of a plain yet neat and substantial character. Every improvement has been adopted that could in any way add to the comfort and convenience of the patients; and, irrespective of the administrative block, containing assistant-surgeon's house, committee-rooms, large dining and amusement hall, kitchens, sculleries, &c., and all connecting corridors. The patients within their wards will have a united day and night air-space of 1,640 cubic feet.

Mr. William Crozier, C.E., architect for the county of Durham, has designed and will superintend the carrying out of the works.

THE HIGH-ART LOVER, AND THE ARTIST.

HENNING'S MODELS OF THE "ELGIN MARBLES."

About five years ago I was desirous to get framed a collection in my cabinet drawers (which had been stored up for nearly forty years), of Henning's miniature models of these exquisite figures (with all the damaged or missing parts restored), and which for number, grace, and variety, are not equalled by any other artist in the world. Beautiful as they are, I had only met them in *one private hand* and *one public* institution. The former had gone abroad, and so was inaccessible for the purpose I aimed at. My object was to ascertain the best mode of banding together such delicate compositions (each group about 9 in. long and 2½ in. wide), so as to be neither too slight nor too heavy. The Public Institution I knew to be the "Society of Arts" in the Adelphi, where I had seen them for years hanging upon the walls of their staircase. However, upon applying there I was disappointed, they had been removed to make way for other good things, and it was not known where they were deposited at that time.* Upon this I went to the British Museum, where they must have been modelled, to make inquiries as to who possessed the original works or a copy of them. The custodian referred me to one of their number much older than the rest, who although he could not satisfy my object, related the following anecdote concerning them. He said (speaking of the past), "One day a gentleman who had been at the museum several times, brought with him a number of these models and laid them down on the floor in front of the corresponding groups of the Elgin collection to note and admire their fidelity, so far as the mutilated figures afforded comparison. It so happened that whilst the stranger was absorbed in this critical occupation Henning himself passed through the gallery, and struck by the sight of his models spread on the ground, asked to whom they belonged? The stranger replied, with some complacency, that they belonged to him. 'How did you obtain them?' was the rejoinder! 'I *bought* and paid for them! But what right have *you* to question me?' Henning said no more, but deliberately stamped his foot upon the face of one group, and another, and another, until nearly the whole were smashed into a thousand atoms! 'Custodian! I give this man in charge, he has wilfully destroyed my property; I will have him taken into custody, and go before a magistrate!' was the stranger's excited raving at his injury. 'Sir,' said the attendant, 'I *know this gentleman*' (pointing to Henning), 'and he is much respected here, and I *don't know you!* You must go to the keeper or principal librarian of the Museum.'" To the keeper the stranger accordingly went, and upon relating his diatress was told that the attendant was quite right, that he (the stranger himself) was the offender against law and order: he had trespassed in bringing his property, occupying the space devoted to the public, and creating great disturbance on the premises; he might appeal in any way he thought proper, but must not rely on any aid from him! Now, as no more was heard of the catastrophe, it is reasonable to conclude that the high-art lover had discovered that the casts he possessed were indeed true casts of the artist's own wax models, but the matrix moulds had been dishonestly used, perhaps by the journeyman he had employed to assist him in the mechanical labour of preparing them, and forgave the talented author more for the abuse of confidence to which he had been subject than for his own personal loss. J. Thomson.

* At a later period, by courtesy of Mr. Foster, Henning's models were found.

THE OBELISK AND ITS PEDESTAL.

Sir,—Will you allow me to suggest the propriety of designing the pedestal for the obelisk from the terms of the ancient cubits, and not the English foot? For the absolute lengths of the cubits and their numerical relations, or, at least, some of them, see my letter in the *Builder* of June 16th last. W. Hayden.

Sir,—The principal entrance to Rome, by the Piazza del Popolo, is marked by the well-known Obelisk. It is suggested that the main approach from the west by the court end of this, our, metropolis, should be rendered conspicuous, in like manner, by placing the so-called Cleopatra's Needle on the site now marked by lamps, and serving as a refuge, opposite to the south front of Apsley House.

It would stand full in view on fairly elevated ground, not sunk in a hollow; with well-thronged thoroughfares of approach rising to it; and the horizontal lines desired to give effect, by contrast, to the vertical ones of the Monolith, would be given by those of the two entrances to the parks on either hand, and, of Apsley House.

Last week's *Builder* teaches us how the removal of the Needle from the river side, through St. James's and the Green Park, could be effected. N.

"T. R. S.," while personally approving the Parliament-square site, suggests, as many have done before, the parade-ground west of the Horse Guards. The objection to this, interference with parade, is final. A site adjoining it, however, might be taken from the east end of the enclosed park. Half a dozen correspondents foolishly reiterate Primrose-hill. Our own opinion has been several times mentioned, and we adhere to it.

DESIGNED COINCIDENCES.

Sir,—Having allowed full time for any objection since advising Mr. Walker that I proposed publishing our correspondence, I now beg to submit the accompanying letters and sketches to you for consideration, as conductor of our leading professional journal, the questions involved appearing to me of interest to our profession. There is, moreover, matter for interesting speculation in considering how such coincidences in design may arise,—particularly unfortunate for the architects in a case like the present, where their designs are for twin undertakings for the same body and in the same district.

Briefly, the architectural history is as follows:—In 1874 designs were invited from six selected architects for the Roan Girls' School, resulting in the selection of my design, and in September following my prize design was published. In 1876 the Governors of the Charity advertised for competitive designs for the proposed Boys' School, and upwards of twenty designs were the prolific result, more than one of which were, I am told, recognised even by the non-professional judges as parodies upon my published prize design.

In this second competition my work was awarded second premium, Mr. Walker being placed first. Protracted discussions between the Governors and the Charity Commissioners had meanwhile delayed the erection of my girls' school, whereby the boys' school, although two years later on paper, obtained several months' start in bricks and mortar. Thos. Dinwiddy.

BUILDING ON LEASED LAND.

Sir,—It would appear from recent articles and correspondence in your paper that there are quarters in which the system of letting land on building leases is considered a grievance which must and will some day be suppressed, either by fair means or by foul. Is it not rather a question of demand and supply, which should be allowed to adjust itself?

I will not say that a landowner is entitled to dispose of his land to the best advantage, but that, if a person chooses to take land on an expiring lease, whether it be for 80, 99, or 200 years, or as the case may be, who has a right to prevent him? And if he chooses to build a house calculated to last a thousand years on a fifty years' lease, who has the right to prevent him?

There is no compulsion about the matter,—it is all perfectly voluntary on his part,—he can either take the land or let it alone. It is not a question of if you do not accept a lease for so many years at so much rent your head shall be cut off, but the probability is that if he do not take the land somebody else will.

Instead of the system of leasing being a thing to be deprecated, it is surely a great advantage, as it enables a man to build his house for half, and, in some instances, a quarter, of what it would otherwise cost, as the land is often the most expensive part of the undertaking.

The high price of land, too, seems to be a grievance: that, however, is not the fault of the landowners, but the result of competition; and if a man chooses to give 1,000*l.* an acre, or 100*l.* a foot, for his land,—again, I say, who has the right to prevent him? C. K.

CHURCH-BUILDING NEWS.

Esclusham (near Wrexham).—The church of the Holy Trinity, Esclusham, situate about a mile and a half from Wrexham, was opened for service on the 12th ult. The building consists of nave, chancel, north and south transepts, organ-chamber and vestry, with heating apparatus under the latter. Accommodation is provided for 350 worshippers. The walls and masonry generally are of local stone, the interior face being rough stuccoed. The paved floors in the nave, transepts, vestry, and organ-chambers are of blue and red Staffordshire tiles. The chancel is laid with Messrs. Maw & Co.'s encaustic tiles. The roof is open, of Baltic fir, stained, and covered with red and green slates. The style of the building is Early Geometrical. The future extension of the church will be effected by adding large north and south aisles, for which special provision has been made. The building is heated with hot water by Messrs. Jones & Sons, of London, and the reading-desk, lectern, and other articles of furniture were supplied by Messrs. Jones & Willis, of Birmingham. The general contractors were Messrs. Phennah & Davies, of Rhostyllen, whose contract was 2,541*l.* Mr. J. E. Lash, of Wrexham, was the architect.

Ponder's-end.—The memorial stone of the new district church of St. Matthew, Ponder's-end, was laid on the 17th ult. by Mr. James Meyer. The present contract comprises the nave and north aisle only, with accommodation for 304 adults and 38 children; a portion of the east end of the nave being appropriated as a temporary chancel. The complete design includes a nave of five bays, with clearstory and north and south aisles, a north porch, a tower 20 ft. square and spire 140 ft. high, a south transept, apsidal chancel, and two vestries; the total ultimate accommodation being for 530 adults and 60 children. The amount of the present contract is under 4,000*l.*, inclusive of all expenses except the site, which is a free gift. The walls are of rubble stone, faced externally with Kentish rag in random work; the dressings are of Bath stone; and the roof will be slated. The style adopted is thirteenth-century English Gothic. The architect is Mr. H. J. Paull. The contractors are Messrs. Higgs & Hill, of Lambeth, and the clerk of works is Mr. H. Crocker.

Nolton.—Nolton Church, Pembrokeshire, dedicated to St. Medog, and situated in a romantic glen on the shore of St. Bride's Bay, was re-opened by the Bishop of St. David's on the 13th ult., after restoration. With the exception of some small portions of the east wall of the chancel, and the south wall of the porch, which it was found absolutely necessary to remove and rebuild, the old walls have been left standing. The interesting double-bell turret at the west end unfortunately leaned outwards very considerably, but, notwithstanding this, it was hoped it might have been preserved; but the works incidental to putting the new roof over the nave rendered its reconstruction unavoidable. It was accordingly rebuilt upon the former lines, and the old bell rehung. A new vestry has been built on the north side of the nave, the old north door being utilised as an entrance to it. New slated roofs, of increased pitch and of open timber work, plastered between the rafters, have been provided over the chancel and nave, the ridge cresting being of white ornamental Staffordshire tile, with corresponding terra-cotta crosses from Messrs. Johnson's works, near Burgess-hill, Sussex. The outside of the walls generally have been pointed and the inside plastered. A new encaustic floor has been laid in the chancel. The tiles, which are partly glazed in the Sacrarium, came from Messrs. Webb's works at Worcester, and the remainder from Mr. T. Peake, of Tunstall, in Staffordshire. Substantial open seats have taken the place of the old pews, while the rickety western gallery, too dangerous to use, has been removed. A new pulpit and reading-desk are placed against the north wall. The present accommodation is for 111 persons, eighty-five of whom are seated in the nave. Originally the number was for only seventy-four irrespective of the gallery. The works have been carried out from the plans and under the direction of the architect, Mr. E. H. Lingen Barker, by Messrs. Jones & Jenkins, of Haverfordwest.

Sandhutton.—A new church is at present in course of construction at the village of Sandhutton, near Thirsk, on the site of the old one. The old church of St. Peter had got into such a dilapidated condition, and the walls in winter,

ng of sandstone, became so saturated with e wet, that it had become totally unfit for rship, and it was deemed advisable, rather an restore the old building, to build a new urch. The architect is Mr. J. P. Pritchett, of rlington, and the total cost of the rebuilding about 800*l*. The old east window and one of the ndows on the southern side of the chancel w.] retained in the new edifice, which is expected be completed in November.

Miscellanea.

Art on Sundays.—On the question, "How n Art be best introduced into the houses of ersons of limited means?" discussed at Aber- en, a paper was read by Mr. Mark H. Judge, the Sunday Society, London. In this he id,—Is the best possible use made of the in- itutions we now possess? Or, again, are they en, available for those of the community who e not their own masters, at the most advan- geous times and seasons? From experience oth these questions must be replied to nega- vely, for experience has long ago convinced en observers on the subject that a few hours ach evening is not the most convenient time for ousands to avail themselves of the treat of isiting these collections; neither is the Satur- ay afternoon, though that period is admittedly ore favourable than the evenings preceding . What then is the most attractive time to ffer these seekers after knowledge, beauty, efinement, and recreation? The answer is,— unday! Though many may question this fact, ot it still remains, that on Sunday thou- ands would thankfully enter the dominions of ure recreation and instruction; yet these thou- and, hungering for a higher life, are denied the rivilege of entering the beautiful, artistic draw- ng-rooms, which art-galleries are, at the only ime when they are free to leave their dark, irty, wretched sitting-rooms, or may be bed- ooms,—at the only time when the mind can escape from the chain of sordidness with which has been securely bound during the week,— nd attempt to entertain a thought of anything pproaching to art. The time when people, with ew exceptions, are free from the engrossing ares of business, when their minds are open to eceive impressions that might brighten future ays, and ease the burden which so many have o carry through life, is the time of all others hen museums should be opened; and until uch and similar places of a refining and elevating haracter are available during a portion of that nost valuable time, the weekly day of rest, a heavy rake will remain upon the van of art-progress; he demand for art-work will not increase, and, s a consequence, art will be too costly to be introduced into the houses of persons of limited ncome."

The Church Congress Hall, Croydon.—The temporary hall which has been constructed for the Church Congress at Croydon, in the Fair Field, is 160 ft. in length, 90 ft. in width, and 60 ft. high in the centre, its form being an oblong hexagon. It has a gallery running round three sides, the fourth side being occupied by the platform. It is calculated to seat 3,500 persons, but it is said that if closely packed an audience of 4,000 can assemble in it. There are seven entrances to the hall, four to the galleries, and two to the platform. The sides and roof are match-boarded, and covered with felt out- side, the inside being hung with canvas. The platform represents a semicircle, and is raised about 4 ft. at its base. The structure has not been erected by an ordinary builder, but by the well-known drapery firm of Messrs. Whiteley & Co., of Westbourne-grove, Bayswater, who en- tered into the contract, as we are informed, under somewhat peculiar circumstances. It appears that several builders, who were desirous of sending in tenders, stipulated for the insertion of a clause in the contract, under which they would not have been held responsible for the completion of the building within a given time, in the event of a strike taking place. The introduction of this clause is said to have been objected to by the committee, the consequence being that the several builders declined to tender. Subse- quently it appears that Messrs. Whiteley under- took the contract without the clause in question, and during the period of the erection of the several buildings, between 250 and 300 workmen have been engaged, under the personal superin- tendence of a practical builder, representing Messrs. Whiteley.

Crown Lands.—The annual report of the Commissioners of her Majesty's Woods, Forests, and Land Revenues shows a still in- creasing product paid into the exchequer from the excess of receipts over expenditure. The amount was 375,000*l*. in the year ending with March, 1874; 385,000*l*., in the year, 1874–5; 395,000*l*., in 1875–6; and now, 410,000*l*. in the year ending last March. From these sums must be deducted the cost of the official establishment, voted annually by Parliament, and that deduc- tion leaves the net income for the year 1876–77 almost exactly equal to the 385,000*l*. which was granted on her Majesty's accession as the civi list proper, that is to say, without including the life pensions for merit granted annually to the extent of 1,200*l*. a year, and of course, without including annuities which have been granted by Parliament from time to time to members of the Royal Family other than her Majesty. The Commissioners report that in the past year they have made purchases to the amount of nearly 50,000*l*. for the investment of moneys derived from sales of estates which it was not desirable to retain. The largest purchase was that of a freehold ground-rent of 1,105*l*. a year, charged upon the building known as 65 and 67, Ludgate- hill, with the reversion to the building at the termination of the subsisting lease in 1935, and for this the price paid (to the City Commis- sioners of Sewers) was 28,300*l*.

Business Premises, Worcester.—New premises, for Messrs. Stallard & Sons, wine merchants, High-street, Worcester, have lately been completed. The building is in the Italian style, and is divided into three floors. The material used on the ground-floor is Bath stone, the plinths and bases being of Forest of Dean stone. A central entrance gives access to the various offices of the establishment, while a side entrance forms the approach to the newly- arranged Masonic hall and chambers. The want of such a hall had long been felt in the city, but no suitable place presented itself. Messrs. Stallard have erected a hall, 40 ft. long by 21 ft. wide. Adjoining the hall is a dining-room, admirably fitted up, and attached there are two ante-rooms, with lavatory, &c., while beneath there are kitchens, wine-cellars, &c. The work was executed by Mr. Thomas Collins, builder, of Tewkesbury, the carving being entrusted to Mr. H. Martin (Messrs. Martin & Emms, Chelten- ham), formerly of this city; the whole being carried out according to designs furnished by Mr. Henry Rowe, architect.

A Mayor of Oxford.—We record with unfeigned sorrow the death of Mr. R. J. Spiers, F.S.A., which took place on the 28th inst., at Huntercombe, in his seventy-second year. To many connected with Freemasonry, whether in London or the Provinces, Mr. Spiers was well known, and he has been associated all his life, more or less, with artists and literary men. As mayor of Oxford, some years ago, his long term of office was a remarkable one. It has been stated that he entertained, during that period, 30,000 persons, including all grades of his townsmen, and did much to bring together "town and gown." With reference to this latter point, we remember hearing H.R.H. the late Prince Consort, at one of the entertainments in Oxford during that time, say, "We want just such a mayor as Mr. Spiers in Cambridge." Several of Mr. Spiers's family, both sons and daughters, have commenced what promises to be an honourable career in the field of art.

Testimonial to a Borough Engineer.—On the 29th ult. the leading officials of the corporation of Salford, the engineering staff, and several others, met in the Council Chamber, at the Town-hall of that borough, and presented Mr. A. M. Fowler, who has succeeded to the post of borough engineer and town surveyor of Newcastle-upon-Tyne, with a tea service, con- sisting of six pieces of silver plate, value 107*l*. The Town Clerk, in presenting the service, expressed his regret, on the part of the corpora- tion, at Mr. Fowler leaving them. The New- castle corporation were to be congratulated on obtaining his services.

Memorial of George Stephenson.—At Chesterfield, on the 17th inst., the Marquis of Hartington will lay the foundation-stone of a hall to be erected in that town to the memory of George Stephenson. The hall, which is from the designs of Messrs. Smith & Woodhouse, of Manchester, will cost about 12,000*l*. It will be used for purposes of higher education, special arrangements having been made for science and art teaching.

An Overhead Steam Tramway for Liver- pool.—At a recent meeting of the Mersey Docks Board, the Works Committee presented a favourable report on a project by Mr. Alfred Holt to construct a high-level railway along the line of docks, the road to be three miles 1,150 yards in length, and supported on iron columns, and supplied with nine stations. At present the traffic along the line of docks is very great, and it is anticipated that the overhead steam tram- way will not only relieve the street below, but will greatly facilitate business people in moving from point to point. The estimated expense of the scheme, including rolling-stock, is 146,000*l*. Plans were submitted to the Board, and Mr. Holt gave notice of his intention to move a formal resolution authorising the Parliamentary Committee to seek legislative sanction for the scheme.

The Nottingham University Buildings. The ceremony of laying the foundation-stone of the University buildings at Nottingham took place on Thursday, the 27th ult. The cost of the buildings, including the land, will be 60,000*l*. Of this sum an anonymous donor has contributed 10,000*l*., and the remainder will be found by the corporation, who have given the site. There will be lecture and class rooms for the promotion of the Cambridge University Extension Scheme, which, it will be remembered, was first incor- porated at Nottingham, which has since been carried out successfully in several centres of industry. There will also be class-rooms, labo- ratory, &c., for the use of the students in the science classes in connexion with the local Mechanics' Institution, as well as rooms for the Free Library and the Natural History Museum. The architects are Messrs. Lockwood & Mawson, of London and Bradford.

New Church at Rattoo.—On the 20th ult. the foundation stone of a new church was laid at Rattoo, by Mr. Wilson Gun, D.L., in the presence of many of the parishioners, the Rev. Mr. M'Ewen, vicar of Listowel, officiating. This building, which has been designed by Mr. J. F. Fuller, F.S.A., of Dublin, architect, is Gothic in design, and will be composed of uncoursed rubble masonry, with Portland stone dressings in the buttresses, tracery, mullions, &c., of windows. The amount of the present contract, which does not include the tower or belfry, has been given by Mr. Gun himself, and the site chosen is within the shadow of the ancient round tower, still in a fair state of preservation, which is chiefly due to the watchful care of Mr. and Mrs. Gun, upon whose property this interesting monument stands. The erection of the new church has been confided to Mr. A. Crosbie, of Tralee, Mr. John Dooner being the clerk of works.

The Proposed Town-hall for Southamp- ton.—The proposal of the Public Offices Com- mittee of the Corporation of Southampton to erect a new Town-hall and Public Offices on the Audit House site, at a cost of 15,000*l*., has been rejected. At the last meeting of the Town Council, Mr. Lemon, the surveyor, as instructed, submitted plans and specifications, first for an entirely new building, estimated to cost the above- named sum; and, secondly, an alternative scheme, whereby the present Council-chamber would be retained, the estimate in that case being 14,000*l*. The committee approved of the former plan, and the Council were asked to sanction it. Those in favour of the proposition were, however, few in number, and an amendment was carried to effect alterations in the present offices at a cost of about 3,000*l*., which, it is thought by the majority of the Council, will satisfy all reasonable require- ments for the present.

A Large Stick.—There is at present to be seen in the timber-yard of Messrs. M'Kay & Milne, Hutcheon-street West, Aberdeen, one of the largest blocks of mahogany ever imported into this country. It has been imported from Tobasco, and at the one end it measures 7 ft. 10 in. in diameter, while at the other the measurement is 4 ft. 6 in. As usual with mahogany logs brought to this country, it has been squared; but if it had been imported in its original form, it would have presented a far larger bulk.

Property in Brighton.—Mr. Alfred Morris, clerk to the Guardians, states that the total rentals of Brighton for the past half-year to September 29th were of the value of 652,400*l*. 19*s*.; the rateable value, 519,312*l*.; the 1*s*. poor-rate had produced 25,965*l*. 12*s*.; there was due 238*l*. 15*s*. 10*d*.; and the whole collection would amount to 26,204*l*. 7*s*. 10*d*.; the rateable value of the Western district was 302,561*l*. 10*s*.; Eastern, 216,750*l*. 10*s*.

"Deserving Reward."—We have received 2s. 6d. from Mr. C. C. Hoey and 10s. from Mr. Harry Hems, for George Cross, mason, whose brave conduct in saving the life of a fellow-workman we mentioned some time ago. We will send the little total now in our hands to Cross on receiving from his employer (in Exeter, we believe) a correct address.

A Cast-iron Staircase.—Messrs. Newton, Chambers, & Co., Thorncliffe Ironworks, have just completed an order for an ornamental but substantial cast-iron staircase, for the head office of the Liverpool, London, and Globe Insurance Company, Liverpool. The staircase has been erected in one of the large fitting-shops at the works, and stands 15 ft. high, measures 4 ft. wide, and forms three sides of a square. There are three short flights and two landings, which are supported by eight columns. The treads are made of "green heart," sunk into the cast iron, and the underside is finished with panelled work in mahogany. The design is by Mr. William Froggatt, head draughtsman of the company. The ironwork will be painted in gold and colour, and the cost is about 350*l.*

Board School Sites.—In accordance with a resolution adopted by the London School Board in March last, a return has been prepared, and just issued, showing the cost of the sites of schools purchased by the Board up to the 24th of March, 1877. The total amount of accommodation secured by the sites is for 172,914 children; the purchase-money, including land-tax redemption, was 836,769*l.* 3s. 9d.; the surveyors' fees on both sides amounted to 19,252*l.* 6s. 4d.; the vendors' solicitors' costs were 43,301*l.* 4s. 8d.; the Board solicitors' costs, 41,936*l.* 10s. 7d.; the cost of scheduling, 12,692*l.* 4s.; and the total costs of purchases reached 117,182*l.* These totals, however, include schools for which the accounts of the purchase of the site are not yet completed, as well as those for which the accounts are completed.

TENDERS.

For new house, 94, Ockendon-road, Essex-road, Islington, for Mr. J. Joy. Mr. W. J. Worthington, architect. Messrs. Perry & Reed, surveyors:—

Langmead & Way	£1,620 0 0
Allen	1,595 0 0
Williams & Son	1,585 0 0
Lingrel	1,577 0 0
Jay	1,550 0 0
Cowland	1,534 0 0
Channing	1,375 0 0

For Little Highfield, Hendon, for the Misses Metcalfe. Messrs. Joseph & Pearson, architects. Messrs. Rayner & Shum, surveyors:—

Brass	£5,633 0 0
Foster	5,475 0 0
Twelvetrees	5,410 0 0
Langmead & Way	5,370 0 0
Scrivener & White	5,315 0 0
Axford	5,185 0 0
Williams & Son	5,163 0 0
Browne & Robinson	5,140 0 0
Adamson	5,030 0 0

For alterations and additions to Baptist chapel, Bromley, Kent. Mr. James Barnett, architect:—

Staines & Son (accepted)	£540 0 0

For alterations to the Park-road Hotel, North End, Finchley, for Mr. W. Woolley. Mr. H. R. Cotton, architect:—

Judd & Hawkings	£879 0 0
Petley	889 0 0
Toms	864 0 0
Andrews (accepted)	857 0 0

For making various alterations at the Canterbury Arms, Bomore-road, Notting-hill, for Mr. Sage. Mr. J. R. Furniss, architect:—

Durnford	£246 0 0
Parker	203 0 0
Hartwell	180 0 0
Schlater	178 0 0

For alterations at the Bricklayers' Arms, Collingwood-street, Bethnal-green, for Mr. Higgins. Mr. Edward Brown, architect:—

Stamp & Bowtle	£199 0 0
Marr	191 0 0
Salt	181 0 0

For labour only in the erection of six cottages at Hayes Bridge, Southall, Middlesex, for Mr. F. Newell. Mr. Thomas Newell, architect:—

Shields	£450 0 0
J. Edwards	435 0 0
G. Edwards	420 0 0
Perks	395 0 0
Atkinson (accepted)	310 0 0

For additions to St. Mark's College, Chelsea, for the Rev. Canon Cromwell. Mr. E. H. Lingen-Barker, architect:—

Bradley (accepted)	£407 0 0

For the erection of power-loom shed, warehouse, offices, &c., in Denton Holme, Carlisle. Messrs. Hetherington & Oliver, architects. Quantities supplied:—

Armstrong (accepted)	£7,000 0 0

Accepted for alterations to premises and new shops, Corn Market, Penrith. Messrs. Hetherington & Oliver, architects:—

Joiner's Work.

Richardson	£420 1 3

Plumber, Plasterer, and Painter's Work.

Porter & Dixon	119 3 9

For alterations to premises in King-street, Botchergate, Carlisle. Messrs. Hetherington & Oliver, architects. Quantities supplied:—

Batey & Forster	£341 0 0
Hewitt (accepted)	330 0 0
Guiness & Lister	315 0 0
Hill & Beaty	301 0 0

For residence, stores, and stable, for Mr. Tite. Mr. Burgess J. Reeve, architect. Quantities supplied. (Residence to be measured and valued):—

	For Stores only.
Saunders	£985 0 0
Payne	912 0 0
Butler	777 0 0
Holdom	754 10 0
Webster	736 0 0
Baker	700 0 0
Hoad	698 0 0
Slade (accepted)	642 17 0

For building a workshop and other works at No. 16, Princes-street, Spitalfields, for Mr. J. Davidson. Mr. John Hudson, architect:—

Sparks	£1,310 0 0
Little	1,153 0 0
Read & Son	955 0 0

For the erection of stables at Monkham's Hall, Waltham Abbey, for Mr. R. B. Colvin. Mr. John Hudson, architect:—

Field & Son	£2,316 0 0
Little	2,213 0 0
Patman	2,148 0 0
Gardener	2,061 0 0
Bentley	1,790 0 0

For draining the surface and paving the footways of Guerin-street and Trellis-street with Patent Victoria Stone, for the Poplar Board of Works:—

	Guerin-street.	Trellis-street.
Knight	£173	£163
Rutty	160	147
Turner	164	142
Patent Victoria Stone Co.*	146	113

* Accepted.

For the erection of engine and boiler house, coal-stores and other works at Combe Down, for the Burgess Hill Water Works Company:—

Doowra (accepted).

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DEATH.—ALLDRIDGE, Sept. 29th, at Handsworth, near Birmingham. — DAVID HORACE, ALLDRIDGE, aged 37, son of the late David Alldridge, of that town, and the late Mrs. Pereira, of Oxford, and grandson of the late William Attwood, esq of Birchfield, near Birmingham.

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No 13, Gresham street London, E.C. J. R. SMITH, Secretary.
2 p.m. yesterday.

HADHAM HIGHWAY DISTRICT.—Notice is hereby given that the Highway Board for the above district requires the SERVICES of a competent SURVEYOR of the HIGHWAYS, salary £—per annum, to enter upon his duties about the 1st of NOVEMBER next. He will be required to give security for £— by the bond of himself and a third party, or the bond of a Guarantee Society, and will be required to devote himself to the office forthwith after being appointed, and to prove himself to the satisfaction of the Board to be the person most qualified for the appointment, and to have had experience in the management and repair of roads, and in the works and accounts connected therewith. Applications in the handwriting of the applicants, stating age, and present position, and to be sent to me at my office, Ware, Herts, free of expense, not later than FRIDAY, 12th OCTOBER, and be accompanied by testimonials of a recent date. Letters to be addressed "Surveyor." The Board will, at their meeting on FRIDAY, 19th OCTOBER, make a selection of such candidate as they may think most eligible. Such other wards to be given to the successful candidate as the Board may think fit. Attendance before the Board at the first Meeting, if practicable, also required, but candidates are desired not to canvass the Board on behalf of the appointment.
Dated, 26th September, 1877. JNO MOTT RICHARDSON, Clerk

THE GOVERNMENT of SOUTH AUSTRALIA is desirous of securing the services of an ENGINEER, to proceed to and reside in the city of Adelaide, who would be fully qualified to take charge of the existing gravitation Water-Works that have been in use to supply the City of Adelaide, Port Adelaide, and others adjoining districts, during the last twenty years on the constant system, at high pressure; and to design and carry out such extensions as from time to time may become necessary in connection with the present works, and to design and carry out New Works for the supply of water to districts adjacent to Adelaide, or to such parts of the Government may require to be supplied in other parts of South Australia
It is considered desirable that the person appointed should have been educated in the workshops and drawing office of a mechanical Engineer; should possess a good practical knowledge of mechanical engineering, of surveying and of levelling, and should be grounded in the principles of geology and chemistry, and should be from twenty-eight to thirty-eight years of age, or thereabouts. That he should subsequently have had experience in the construction of works in brick, masonry, and earthwork, the construction of both impounding and covered service reservoirs, the laying and jointing of cast-iron mains and pipes, and the fixing of screw-cocks, hydrants, &c. in connexion with the same
That he should be capable of selecting suitable sites, where any such exist for the construction of wells, bore-holes, and other subterranean works that would yield a supply of water fitted for domestic uses, and be able to design and superintend the carrying out the necessary works to procure an adequate supply to the intended consumers from such selected subterranean, as well as from other more obvious sources
That he should be able to advise the Government with regard to works for irrigation and other kindred subjects.
The salary that the South Australian Government would be prepared to pay to the gentleman appointed would be at the rate of 900l. per annum
Application, to be made in writing, should be addressed to Sir ARTHUR BLYTH, K.C.M.G. the Agent-General for South Australia, and be delivered on or before the 8th day of OCTOBER next, at No. 8, Victoria chambers, Westminster, accompanied by short particulars, stating where the candidate has been educated, and how he has been employed from year to year since his eighteenth birthday to the present time.
No private application can be entertained

BOROUGH of BARNSLEY.—SURVEYOR WANTED. The Council are desirous of receiving APPLICATIONS from persons duly qualified to act as BOROUGH SURVEYOR. The person appointed will have to devote the whole of his time to the duties of the office, and will not be allowed to practise in his profession, either privately or in partnership. Salary, 250l. per annum with an office coals, gas, and proper professional instruments provided. All applications (with testimonials) must be sent not later than FOUR o'clock on MONDAY, the 22nd day of OCTOBER next, to the Town Clerk, of whom any information can be had with the duties of the office may be obtained. Canvassing by applicants for the office will be fatal to the application.—By order,
WM. H. HADCOCK, Town Clerk.
Barnsley, September 26th, 1877.

AGENTS WANTED, for the Sale of superior Grey Dressed and Polished GRANITE, STREET CURBING, PITCHING, DOCK WORK, &c. supplied direct from the quarries, possessing great advantages in delivery.—Address, GRANITE COMPANY, Messrs. Deacons, 154, Leadenhall street, London, E.C.

DRAUGHTSMAN (experienced) Wanted, to PREPARE WORKING DRAWINGS of Houses &c. and to Measure up Work. Apply stating experience and salary required, to Messrs GIBBS & FLEW, Builders, The Cedars Estate, West Kensington, W.

TEMPORARY ASSISTANT WANTED, for about Six Weeks, in a Surveyor's Office, to make up arrears in book keeping and accounts, stating terms, to A. B 65, Wilberforce road, Finsbury Park

ASSISTANT (Gothic, competent) required. Apply to R. W. D 7, Queen Anne's gate, S.W

ASSISTANT (practical) WANTED, in an Architect's Office in London, for a temporary engagement. One who can be highly recommended preferred.—Address, age, salary expected, and references, to Box 144, Office of "The Builder."

CLERK of WORKS WANTED immediately (thoroughly practical and experienced), for the country Carpenter's price list.—Apply, stating full particulars and references, to be addressed to JOHN M. HOOKER, Architect, Sevenoaks

WORKING FOREMAN (Carpenter and Joiner's) WANTED, for a job in a small town. Good reference required State wages.—Box 142, Office of "The Builder

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GLASS EMBOSSING. — First-class PIPED HANDS WANTED.—Apply WALTER GIBBS, Railway Arch, Blackfriars-road, S.

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PLUMBER WANTED, for a constancy. Must be well experienced in new and old work, to take leading position in an old established shop.—State wages wanted, and references, to B 8, 47, Offices of "The Builder

PLUMBER WANTED (first-class and practical), who can make up his spare time to get a full work Problems referred to gained both as to character and practical experience. Married (no family) preferred. Wages 30s. Address, stating wages required, with references, to Messrs H & C HUGHES, Builders, at their Offices Mercer's row, No 6, Mercer's Hill, Gerrard st, Leicester square

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PLUMBER, GASFITTER, and BELLHANGER WANTED, for an extensive Building Estate in the suburbs of London, a MAN, competent to do Plumber work [illegible], Gasfitting and Bell-hanging. Thoroughly respectable man [illegible] Apply, by letter, stating age, wages required, and references, to Mr. Andrews, 6, Southwark bridge street, S.E.

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APPRENTICE to the COOPERING. WANTED, a steady Lad about 16 Apply to A. W. BRINCKMAN, The Co-perage, Great Berkhampstead Herts.

APPRENTICES (Outdoor) WANTED.—One in the Coach building trade. Premium required. Also to the Carpenter and Joiners, Masons and Slaters' trades, with out premium.—Address to WARD & SON, Builders and Contractors, Dorchester.

APPRENTICE to the CARPENTERING and JOINERY WANTED, where he can gain a thorough practical knowledge of every branch of the trade. Premium required and two years.—Address, 72, Aylesham [illegible] Kentish Town

JOINERS (Two or Three) WANTED immediately.—Apply to Messrs HANSON, Southall.

MASON.—WANTED, at once, a first-class FIXER, for a soft stone job, in Connemara, Ireland, middle aged man; must give good reference. Wages, 50s per week. Constant work would be found for a suitable man. All expenses would be paid.—Address, at once, to A. P. SHARP, 17, Great Brunswick street, Dublin.

PARLIAMENTARY SURVEYS. — A expeditious and accurate LAND SURVEYOR and LEVELLER wishes EMPLOYMENT on projected Railways, Canals, Tramways, &c.—E. MARITIME, The Priory, Peckham, S.E

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SPECIFICATIONS, &c.—Fair Copies, in a good clear hand, at Architect's or Surveyor's own price, by an Architect's Assistant.—Box 143, Office of "The Builder."

NEGLECTED ACCOUNTS POSTED UP on Mdlers's Terms, in Town or Country. Work measured, extras and omissions worked up, estimates priced, rents collected, and general dilapidations surveyed, by a Builder's Clerk, of fourteen years' experience at Bench, and in leading London Contractors' Offices.—W. A., 7, Cottage row, Wilmore, 24, De Quincy street, Regent's Park, N.W.

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ASSISTANT (Surveyor's, Architect's, and Contractor's) Versed in office routine and construction experienced in quantities, &c. and [illegible] would be well informed as to material and quality of same, competent with plans, quantities, and [illegible] of the whole correspondent, an [illegible] accountant, [illegible] Builder.—T. Builder

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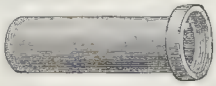
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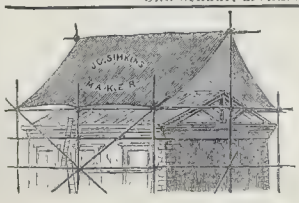
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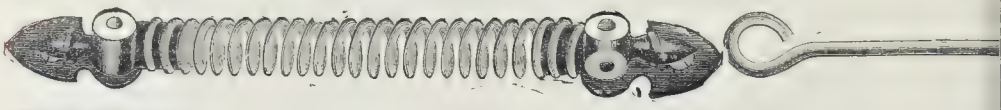
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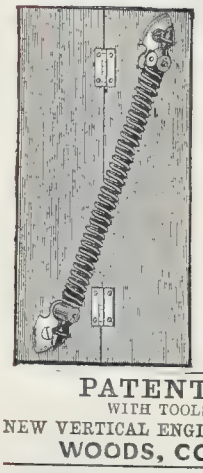
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AGENTS—ALEXR. KELLY, Washington Chambers, Wolverhampton; W. S. W. ASTBURY & Co., 48, King-stre Manchester; D. & D. F. DALZIEL, City Rope Works, 22, Howard-street, Glasgow; EDWARD JONES, Contract Caerphilly, Cardiff; GEORGE SEAGRAVE, 3, Cope-street, Dublin. Agents Wanted.

PATENT ASPHALTE CALDRONS,

WITH TOOLS COMPLETE, for LAYING ASPHALTE FLOORS.

NEW VERTICAL ENGINES, CIRCULAR SAWS, CARTS FOR BUILDERS' USE.

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PATENT DOOR SPRINGS,



ESTABLISHED UPWARDS OF A CENTURY

CAUTION to ARCHITECTS and BUILDERS.—In consequence of complaints arising from the substitution of INFERIOR and SPURIOUS ARTICLES

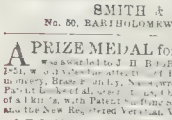
ARCHD. SMITH & CO.'S PATENT DOUBLE ACTION DOOR SPRINGS,

ARCHD. SMITH & CO.'S PATENT WEATHER TIGHT WARD LOCK,

ARCHD. SMITH & CO.'S PATENT WEATHER TIGHT CASEMENT FASTENING for PREVENTING WIND, &c.

The above are strongly recommended to observe that the GENUINE ARTICLES are stamped with the NAME, OR TRADE MARK, and ADDRESS, of the SOLE MAKERS, 19, NEW CHURCH STREET, BLACKFRIARS ROAD, LONDON, and SUCH ONLY ARE WARRANTED.

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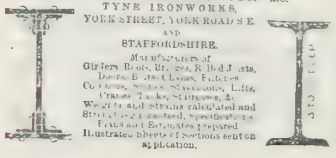
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Wellington Foundry, 68, Charles-street, City-road, E.C.
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IMPROVED PATENT FLOOR SPRINGS, SINGLE OR DOUBLE ACTING.



With Improved Shifting Pivots, particularly adapted for Doors requiring to be set to different angles without unhanging the door, as the chief power of the spring is exerted when the door is first opened, as the door is opened the power of the spring is lessened, so that the greatest power is exerted when the door is first opened, and the least power when the door is fully open.

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REGISTERED TRADE MARKS.
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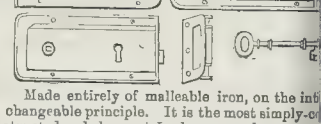
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FOX & BARRETT'S PATENT.

This improved system of fire-proof construction has been m extensively adopted, and its application has been extended to mos EVERY DESCRIPTION OF BUILDING, whether public or private

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Some of the largest and most important buildings in the kingd are now in course of erection upon this principle, which is reco mended by the notice of all who are interested in building, both ... perseding the necessity for cast-iron girders and brick arches, ... ad ing to the great desideratum of fire-proof construction, even ... ordinary dwelling-houses and domestic buildings, within the reach every one.

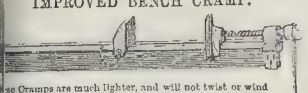
Further information may be obtained of the Proprietor of the Patent,

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No. 12, YORK BUILDINGS ADELPHI



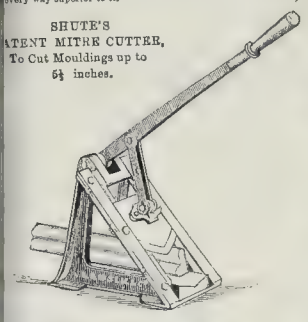
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(Late WILLIAM BISSELL),
BUILDERS' IRONMONGERS, AND
MANUFACTURERS OF HARDWARE,
ION STREET, WOLVERHAMPTON.
IMPROVED BENCH CRAMP.

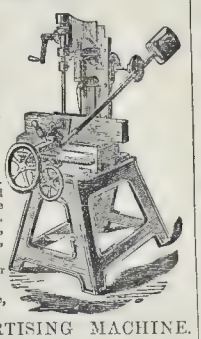


se Cramps are much lighter, and will not twist or wind reak the Tenons, as the old form of Cramp does, and very way superior to it.

SHUTE'S
ATENT MITRE CUTTER,
To Cut Mouldings up to
5½ inches.



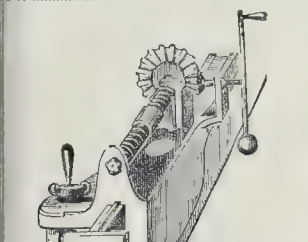
SOME
HOUSANDS NOW
IN USE
the United King-
m and in different
rts of the World
ce first introduced
W. B. in 1856.



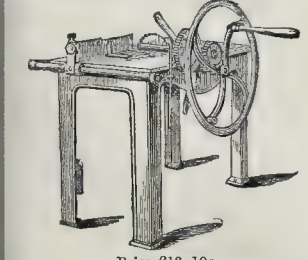
This Machine will mor-
e 6 inches deep, and
ll take on the table
rk 18 in. by 8 in.
ght Chisels to the set,
m ¼ inch to ½ inch,
d one Core Driver.
Chisels made to order
to 3 inches.
Weight of Machine,
cwt.

ATENT MORTISING MACHINE.

	Without Drill.	With Drill.
No. 0.....	£12 0 0	£13 0 0
No. 1.....	12 10 0	13 10 0



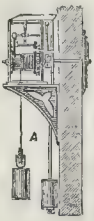
None genuine without the Brass Label, "W. Bissell, Patentee.
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BEWARE OF CAST-IRON IMITATIONS.



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It is 4 feet by 2 feet, with Rising and Falling Spindle, and is supplied with one each 9-inch and 14-inch Circular Saw.



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With Cast-iron Dial, 2 feet diameter.
Gilt Figures, and Blue Ground.

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To strike hours on a Bell of 56 lb.
Dial 2 feet, including Bell.

A3. The £35 CLOCK.
As above, with Dial 3 ft. in diameter.

The £50 CLOCK,
Strikes hours on a Bell of 10 cwt. with Dial 5 feet in diameter; not including Bell.



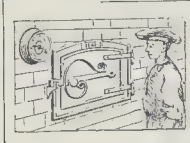
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COMPLETE, WITH YOKE AND LEVER

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12 inches	..	..	80s. 6d.
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16 inches	..	..	184s.

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BUILDERS WANTED as AGENTS.

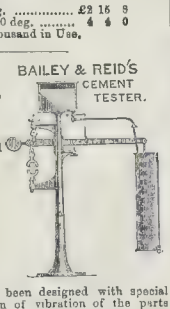


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Over One Thousand in Use.

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IMPORTANT to CIVIL ENGINEERS, ARCHITECTS, TOWN SURVEYORS, and CONTRACTORS.



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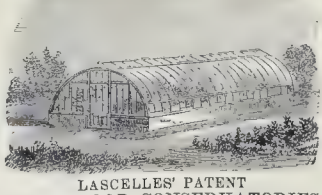
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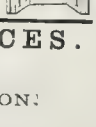
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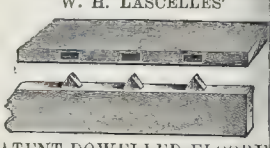
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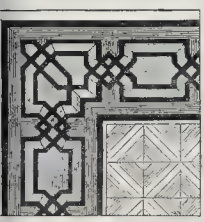
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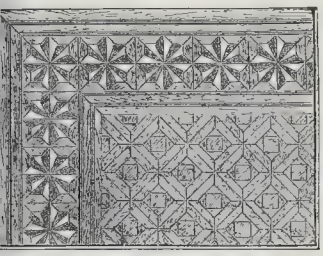
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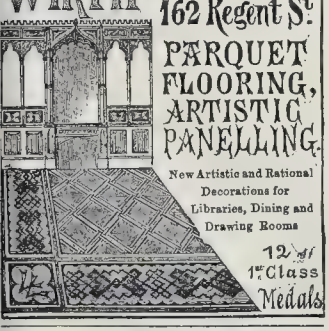
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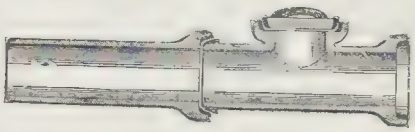
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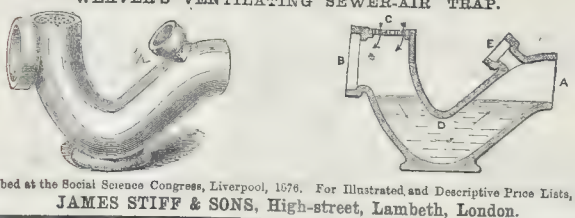
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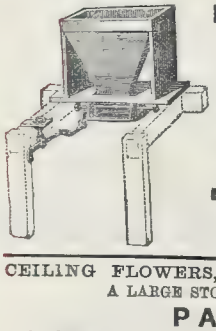
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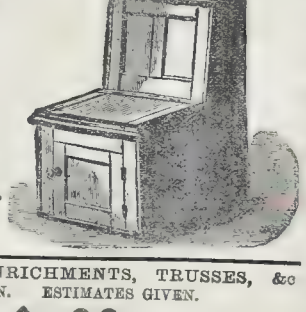
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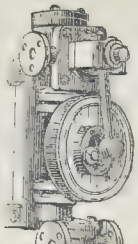
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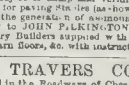
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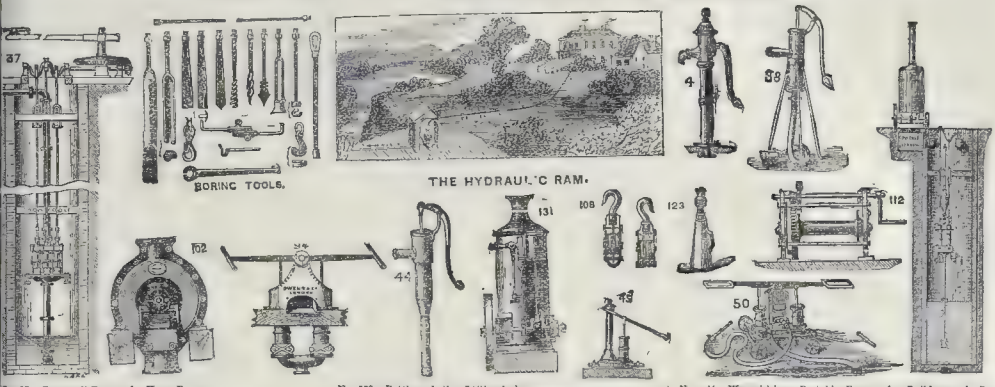
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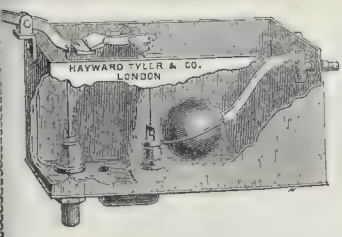
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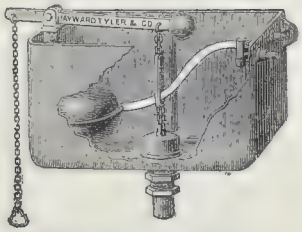


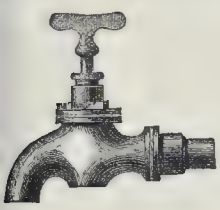
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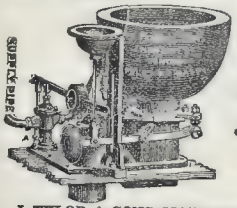
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CAMBERWELL.—Building Materials.—By order of the School Board for Lond.n.

MR. DOUGLAS YOUNG will SELL by AUCTION, on the PREMISES George-street, Camberwell, at the rear of the school, on TUESDAY, OCTOBER 2nd, at TWELVE precisely (unless previously disposed of by private treaty), in large quantity of sound bricks, excellent York paving and cills, sound rafters, joists, floor-boards, and other useful timber, slates, panelled doors, sash-and-case doors with frames, and other materials comprised in seven houses Catalogues at the School Board Offices, Victoria Embankment, and of the Auctioneer, 213a, Clapham-road.

ROTHERHITHE.

MR. F. J. BISLEY will SELL by AUCTION, on TUESDAY, OCTOBER 9, at ONE for TWO o'clock, at UNION ROAD, ROTHERHITHE, by order of the EGYPTIAN SUGAR REFINERS, 20 000 puttogs, 500 long & by 9 yellow deals, 1,500 3 by 9 ditto, 2 000 3 by 11 yellow planks, sawn pitch-pine boards, quarter-inc. 20,000 battens, match-lining, flooring, &c.—On view. Catalogues of the Auctioneer, Chester House, Rotherhithe.

Thursday Next.—Middlesex.—Feltham Park Estate, near the Station, an hour's forty minutes from London by rail.—An important Free hold Building Property, of about 17 Acres, ripe for immediate development, having a long frontage to the high road, and possessing a deep and valuable subsoil of gravel.

MESSRS. MARSH, MILNER, & CO. will SELL by AUCTION, at the MART, Tokenhouse yard, on THURSDAY next, OCTOBER 11th, at ONE for TWO o'clock, in numerous lots, to suit purchasers, the above valuable FREEHOLD PROPERTY — Particulars of Messrs. BROWN & DONALDSON, Solicitors, 70, Lincoln's inn-fields; and of the Auctioneers, 54, Cannon-street, E.C.

UPPER EAST SHEEN, close to the entrance to Richmond Park, and a short distance from Mortlake Railway Station, and six miles from Hyde Park. A valuable piece of Freehold Land, commanding an important frontage of about 145 feet to the high road leading to the park, having an average depth of 230 feet, and containing an area of about 1¼ acre, most admirably situate on high ground, and one of the most fashionable suburbs near London.

MR. CHANCELLOR has been favoured with instructions to SELL by AUCTION, during the Autumn, in one or more lots (unless previously disposed of by private treaty) an important BLOCK of FREEHOLD BUILDING LAND Particulars with plans and conditions of sale, are being prepared, and may be obtained, when ready at the Auction Mart, Tokenhouse-yard, City; and of Mr. A CHANCELLOR, Auctioneer, Land Agent, and Surveyor 1, King-street, Richmond, Surrey

RAMSGATE — WINGHAM LODGE.—To Builders and Others.

MESSRS. RULE & HEAD have been favoured with instructions from the purchaser of the Freehold (the ground having been leased for building purposes) to SELL by AUCTION, upon the PREMISES, known as Wingham Lodge, Ramsgate (immediately in the rear of the Granville Hotel), on TUESDAY, OCTOBER 16th, 1877, at TWO o'clock precisely, the valuable BUILDING MATERIALS, comprising sound bricks, stone dressings, a quantity of lead, superior marble mantelpieces, joists, flooring boards, panel doors, sashes, frames, fox-wedged sashes, stoves, ranges, apparatus complete, a quantity of small timber and out door effects, large iron door, a spacious conservatory, of elegant design, with heating To be viewed by orders only, to be obtained at the Auctioneers Offices, Bank-chambers, 76A, Westbourne-grove, and 10, Bills-place, Oxford-street, London, W. N.B.—Catalogues will shortly be ready. Second class railway fare allowed to purchasers over 25s

Re Thomas Fenner, deceased.—Stoneyard Railway Arches, Cowley-street, St. George's, East.

MR. DALE is instructed by the Executors to SELL by AUCTION, on the PREMISES, as above, on THURSDAY OCTOBER 11th, 1877, at ONE o'clock precisely, the remaining STOCK of useful STONE: comprising 970 feet of York paving, 1,200 feet of blue stone sets, and 2,000 feet of curbstone paving and coping, Green Moor landings, York cills, templets, corbels, &c.; Kentish pile jambs and shelves, granite tramway and pitchers, tooled York and Portland sinks, grooved stone, slate slabs, 2,000 pan and plain tiles, foreman's counting house, and numerous items.—May be viewed day prior to morning of Sale, and catalogues obtained on the Premises, and of the Auctioneer, 84, Mile End-road, E.

Re Thomas Fenner, deceased.—242, Commercial road East.

MR. DALE will SELL by AUCTION, on the PREMISES, as above, on TUESDAY, OCTOBER 16th, 1877, and Two following days at ONE o'clock precisely on each day, by direction of the Executors, the valuable BUILDER'S STOCK and PLANT: comprising 17,000 feet of yellow boards, 2,100 feet of yellow battens, 12,000 feet of pitch pine boards and planks, 6,000 feet yellow planks, 9,000 feet white boards, 9,500 white planks, 140 squares of match-lining, 2,200 feet prepared flooring, 5,000 feet of sash bars, &c.; 120 deal and scaffold boards, 40 deal scaffold poles, 100 scaffold-boards, 700 puttogs, 8 carpenters' benches, 3 capital double-purchase crabs, 2 single-purchase crabs, valuable engine-hoist, by Manning; patent hoist, by Stanbury; blocks and falls, two tons of iron hooping, two tons of nails, various; capital cart horses, one cart, a lovely cover, three builder's carts, 2 tan vans, superior troughan and park phaeton, by Heffer; hansom cab, light cart, two trucks, seven sets of harness, three chaff-cutting machines, navvies and hand barrows, a quantity of chain, stove-bricks, tiles, firewood, ladders, sashes, frames, doors, and numerous items and effects.

At TWO o'clock on TUESDAY, 16th OCTOBER, the valuable beneficial LEASE of the Premises will be sold, 20½ years unexpired at the low rent of £80. May be viewed Saturday and Monday, 13th and 15th inst., and Catalogues obtained on the Premises; of Messrs. BLAKE & SNOW, Solicitors, 22, College-hill, E.C.; and of the Auctioneer, 84, Mile End-road, E.

BATEMAN-STREET and BARLOW-STREET, London road, Derby To Contractors, Builders, and Others.

MR. DOUGHTY has received instructions from Mr. Humphreys, esq., Builder, Contractor, &c., who is declining business, to SELL by AUCTION, on THURSDAY, OCTOBER 11th, 1877 (upon Lots as above), the whole of the UNDERTAKER'S PLANT and BUILDING MATERIALS and other Effects, comprising in part,—3 portable engines, 2 mortar-mills, circular saw benches and saws, about 30 hurdlers, 2 stone trolleys, 2 timber drops, heavy carts, crabs, double and single purchase wood and iron pulley blocks, with ropes and chains, small travel ing hoist for stone setting, 500 cubic feet of timber and wrought uprights, large wood pump barrel and pumping machinery, 2 new pumps, quantity of buckets, derricks, 30 to 40 squares of pitch pine, floor boards, large quantity of well seasoned timber in various lengths, widths, and thicknesses; quantity of short lengths, sashes, glazed lights and window frames, tar casks, joiners' benches, a number of ornamental cast iron posts, ornamental cottage girders, window frames and gratings, stove piping, iron conduct pipes, white enamelled bricks, sanitary pipes and junctions, chimney-pots, portable benches of iron, &c. Sale to commence at HALF-PAST TEN. The Engines, Mortar-mills, &c. will be Sold at TWELVE o'clock prompt. Full particulars on bills, to be had at the Office of the Auctioneer, Mount-road, Derby.

On THURSDAY, OCTOBER 25th.—OXFORD-ROAD, Reading.—Important Notice of Sale.—Just issued the Seventh Portion of the West Side of Reading, and fronting the main Oxford road. Conveniently near the heart of the town, within easy distance of the principal factories. Freehold Building Land, subdivided into Plots suitable for small houses, which in the neighbourhood very speedily let.

MESSRS. J. OMER COOPER & SON have received instructions from the Directors of the Berkshire Estates Company, Limited, to SELL by AUCTION, at the UPPER SHIP HOTEL, Reading, on THURSDAY, OCTOBER 25th, 1877, at THREE o'clock in the Afternoon, precisely, Numerous BUILDING PLOTS on the Oxford road's Estate, near the Government Factories, and fronting the main Oxford-road and a new road of good width to be shortly made.

The Auctioneers desire to direct attention to this Property as the Land offered for sale is specially adapted for building; the distance from the town is very moderate; the Plots are of square frontage and good depth, many of them fronting the main road.

The number of good dwellings for artizans to and around Reading is still greatly below the requirements of the population, and an opportunity will be afforded by this sale of meeting the still increasing demand for cottages and small houses.

Particulars and conditions of sale, with lithographed plans, may be had on application to Messrs. BLANDY & WITHERINGTON, Solicitors, No. 1, Friar-street, Reading; or to Messrs. J. OMER COOPER & SON, Land Agents and Valuers, No. 162, Friar street, Reading.

PIMLICO.—To Smiths, Marble Masons, Builders, and Others.

MESSRS. HORNE, EVERSFIELD, & CO. are instructed by Mr. J. Wren, to SELL by AUCTION, at the WHARF, 185, Buckingham Palace-road, SW, on TUESDAY OCTOBER 16th, and following day, at ONE o'clock precisely (the greater part without reserve), the valuable STOCK of MARBLE, consisting of statuary slabs, veins and Sicilian, black, black and gilt St. Ann's, red griotte, Genoa green, Bardiglio, Lias, languedoc, Connaught, and other coloured marbles, monuments, figures, garden vases pedestals, and other effects May be viewed one day previous, and catalogues had on the Premises, and of HORNE, EVERSFIELD, & CO. No. 17, Great George-street, S W and 80, Fore-street, E.C.—Approved bills at four and six months.

LUDGATE HILL.—Building Materials.—By order of the Worshipful Company of Turners.

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, on the PREMISES, on WEDNESDAY, OCTOBER 17th, at ELEVEN, all the valuable BUILDING MATERIALS, of the thirteen houses, workshops, and premises, situate Nos. 58 to 74, on the north side of Carter-lane, and Nos 1, 2, and 3, Cobb's-court, adjoining: comprising capital brickwork, rafters, joists, girders, and other timber; floor-boards, plate-glass shop fronts, sashes and lights, doors, partitions, marble and other chimney-pieces and inner grates; lead flats, gutters, cisterns and pipes, iron columns, folding gates, stable fittings and pebble paving, coppings and cills, stoves, ranges, and various fixtures and fittings on May be viewed the day previous. Catalogues had on the Premises of GEORGE BARNES WILLIAMS, Esq. Architect, Frederick's-place, Old Jewry, E.C.; and of HORNE, EVERSFIELD, & CO 80, Fore-street, E.C. and 17, Great George-street, S.W.

BISHOPSGATE STREET.—Building Materials.—By order of the Committee of the Metropolitan Free Hospital.

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, on the PREMISES, on FRIDAY, OCTOBER 19th, at ONE, for the purpose of clearing the site for the new hospital, the BUILDING MATERIALS, FIXTURES, and FITTINGS UP of the usual description, of the houses and shops Nos 170 and 172, Bishopsgate-street Without, and a block of houses and premises in Halfmoon-street, in rear.—May be viewed the day previous. Catalogues had on the Premises, and of HORNE, EVERSFIELD, & CO. 80, Fore-street, E.C. and 17, Great George-street, S.W.

WESTMINSTER.—To Builders, Cabinet Makers, and Others.

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, on the PREMISES, 38, York-street and at Gardener's-lane, Westminster, on MONDAY, OCTOBER 22nd, at TWELVE precisely, by order of the proprietors, Thomas Mills & Son, who are retiring from the business the well-selected and dry seasoned STOCK of a Builder: comprising 300 long dry 3 by 9 deals, large quantity of cut stuff in 3 by 9 planks and deals, 9 in. pine plank, in boards of various thicknesses several thousand feet fir quartering, and useful timber, small quantity of dry walnut and mahogany, American and English cut in cills and moulding, 50 scaffold-poles, 500 scaffold-boards, putlogs, cords, rope falls, ladders, screw jacks, crab and eng ines, and other useful builder's plant, about 1 ton of cut and other nails, assortment of ironmongery, useful stone, pantiles, and other effects. May be viewed on Saturday and morning of Sale. Catalogues had on the Premises; and of HORNE, EVERSFIELD, & CO. 17, Great George-street, S.W. and 80, Fore-street, E.C. Note. The HOUSE, OFFICES, and WORKSHOPS, York street, and the YARD in Gardener's-lane, TO BE LET on Lease, or the FREEHOLD TO BE SOLD.

GRAY'S INN ROAD.—Remaining Portion of the Plant and Stock of a Builder and Contractor.

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, will on the PREMISES, on THURSDAY, OCTOBER 25th, at ONE o'clock, on the PREMISES 12 Henry-street, an 8-HP. PORTABLE ENGINE, a mortar mill, large quantity of sash bars, office fittings, deal and board, prepared flooring, various stores, and also a few lots of Building Materials. Details in future advertisements. 80, Fore-street, E.C. and 17, Great George-street, S.W.

Metropolitan Street Improvements. Extensive Sale of Building Materials.—By order of the Metropolitan Board of Works.

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, during the Month, the valuable BUILDING MATERIALS, PANELLING, and FITTINGS OF the Free Italian Ragged Schools, Farringdon road, and of about thirty houses, shops, and premises, in the immediate neighbourhood of Detail in future advertisements. 17, Great George-street, S.W. and 80, Fore-street, E.C.

BALHAM.—Valuable Freehold Building Land.—On THURSDAY, OCTOBER 11th, 1877.

MR. CARTER & CO. will SELL, at the BEDFORD HOTEL, Balham, at SEVEN p.m. precisely, Fifteen Plots of FREEHOLD BUILDING LAND, situate on the Bedford Estate, in the Bedford-hill road, Balham (late the Cricket Field).

The land fronts a new road, called Lurch-road, leading from the Bedford Hill road, is well drained, and has a gravel soil, and each plot will have a frontage of 25 feet by a depth of 100 feet.

The position of the estate is extremely good for building purposes, being close to the Balham Railway Station, and within five minutes' walk of Tooting Bec Common, and well adapted for the erection of first-class villa residences, the demand for which in the immediate neighbourhood is very great. A free conveyance will be given to each Purchaser (if required) by the Vendors' solicitor.

Plans, with full particulars and conditions of sale, can be had at the Place of Sale; of Messrs. SAUNDERS, BRAYWOOD, & BENNETT, Solicitors, 7, King-street, Cheapside, E.C.; and at the Auctioneers' offices, 6, Balham-terrace, Balham, S.W.

Properties. Middlesex and Surrey

MR. W. H. COLLIER is instructed to OFFER by AUCTION the following eligible PROPERTIES viz.:—

HAMPSTEAD-HEATH, Middlesex.—At the WILLIAM THE FOURTH, High-street, Hampstead, on MONDAY, OCTOBER 15th, at SIX for SEVEN in the evening, in lots, exceedingly valuable FREEHOLD BUILDING LAND, having a frontage of the Parade House Estate having excellent frontages to Rudall-crescent, and Willoughby's, Worsley, Carlingford, and Kenilay roads pleasantly situate, leading from Hollybush-hill to the Heath, and within five minutes' walk of the Hampstead-heath Railway Station, from whence a good service of trains run to the City and West End every fifteen minutes.

TOOTING, Surrey.—At the MITRE HOTEL, Tooting, on TUESDAY, OCTOBER 16th, at SIX for SEVEN in the Evening, in lots, a PIECE of FREEHOLD BUILDING LAND, having frontages to Brightwell-crescent, and Hanley, Chatmont, Longley, Tregelyan and Beckersteth roads, leading from the Church to the Tooting Junction Station on the Tooting, Merton, and Wimbledon Extension Railway.

The properties will be sold tithe-free and land-tax redeemed. Nine-tenths of the purchase money may remain on mortgage or bond at 5 per cent. for seven years, or will be repaid by equal half-yearly instalments, but the whole or any part of the balance may be paid off at any time without notice. Free conveyance will be given on the vendor's title being accepted. Particulars, plans, and conditions of Sale may be obtained, about ten days previous to each Sale; at the principal Inns in the neighbourhood; of Messrs. R. & A. RUSSELL, Solicitors, 59, Coleman-street, E.C.; of the Auctioneer No 25, Moorgate-street, London, E.C.; and at the Places of Sale

Contractors and Builders' Plant.—700 scaffold poles, 270 dozen cords, 500 boards, putlogs, eight h.p. portable steam engine, saw bench and mortar mill, compiete (by Sykes), crabs, 2 to 5 cwt. 3 fleet chain runners, sets of blocks and falls, hoist, timber and stone trolleys, barrows, screens, benches, cart, and harness, &c.

MR. H. MALLETT has been favoured with Instructions to SELL at the above, on TUESDAY next, at TWO o'clock, OCTOBER 9th, at 8, ELSBURD-STREET, Summer-road, Peckham, the whole having been removed from the Midland Railway Goods Depôt, Wharncross-street, City, the contract being completed.

Catalogues of the Auctioneer, 112 Westminster road, S.E.

To Sale Merchants, Builders, &c.—15,000 SLATES of superior quality and sizes, will BE SOLD by AUCTION, at Acorn Timber Wharf Canal Bridge, Old Kent-road, London, on WEDNESDAY, OCTOBER 10th, at TWELVE for ONE o'clock, by

MESSRS. RICHARDSON & WHARTON. May be seen the day prior and morning of Sale.—Catalogues on the Premises; or of the Auctioneers, 15, Walbrook, E.C.

MAIDA-HILL.—ALTERATION of DATE of SALE from OCTOBER 9th to 11th.—The capital and extensive Plant and Stock of a Contractor and Builder.

MESSRS. LEREW & RANDALL will SELL by AUCTION, on the PREMISES, Northwick-terrace mews, Northwick-terrace, and Sutherland gardens, Maida-hill, on TUESDAY, OCTOBER 11th, at TWELVE for One precisely, the PLANT and STOCK: comprising 600 scaffold-poles, 400 ditto boards, 50 dozen cords, 50 dozen putlogs, 10 wheelbarrows, 20 ladders, steps and trestles, crab jack, barrows, portable office, carpenters' benches, iron cramp, 2,000 pine, plank, deal, and batten boards; 150 squares 1¼ inch, 1 inch, and 4 inch flooring, 70 squares flooring, 3,000 feet quartering, weather boarding, 18,000 feet gas 6,000 bricks, 500 drain pipes, builders' ironmongery; contents of painter's, plumber's, and plasterer's shops; also two powerful cart horses, two trucks, carts, dog cart, waggonette, harness, chaff cutting machine, &c.—Auction Offices, Cardington-street, Hampstead-road, N.W.

KENTISH TOWN, N.W.—To Builders, Carpenters, and Others.

MESSRS. LEREW & RANDALL will SELL by AUCTION, on the PREMISES, Junction-road, on MONDAY, OCTOBER 8, at ONE for TWO, the surplus STOCK comprising Deals and Battens (whole and cut), 4,500 feet mahogany, 70 squares flooring, 3,000 feet quartering, weather boarding, 18,000 feet gas 6,000 bricks, 500 drain pipes, builders' ironmongery; contents of painter's, plumber's, and plasterer's shops; also two powerful cart horses, two trucks, carts, dog cart, waggonette, harness, chaff cutting machine, &c.—Auction Offices, Cardington-street, Hampstead-road, N.W.

To Builders, Carpenters, and Others

MR. W. KNOX has been instructed by the Contractor to SELL by AUCTION on the PREMISES, rear of the Rectory Tavern, Meeting house lane, Peckham, on WEDNESDAY NEXT, at TWELVE o'clock, without reserve, a quantity of BUILDING MATERIALS: comprising Joists, rafters, girders, flooring, feacing and matched boards, quartering, battens, plate glass sashes and frames, doors and frames, York paving, chimney pieces, stoves, ranges, hot water apparatus, and effects.—On view Catalogues as above, and 13, Old Kent-road.

BARBICAN REPOSITORY.—Horses, Carts and Harness that has been employed on the works of the Highgate Asylum

MR. RYMILL will SELL by AUCTION on FRIDAY next, OCTOBER 12 h, by order of Mr. Walter Clarkson, of Uckfield, Twenty fine young, active CART and VAN HORSES (from very hard work, all warranted good workers), The One horse Brick or Rubbish Carts, Thill and Chain Harness, and fine Bay Cob.

On view two days.

THE BUILDERS' SUPPLY STORES, 148 HOLBORN BARS, City, established 20 years. Show-rooms for White and Coloured Marble and Enamelled Slate Chimney pieces, French and English Paper hangings, Ceiling Centre Flowers, and numerous other items for House Finishing and Decorating Price Lists free. EDWIN J. WHITE, Manager.

YARD and WORKSHOPS WANTED suitable for a Builder.—Box 132, Office of "The Builder."

THE Commissioners of Her Majesty's Works and Public Buildings are prepared to receive PROPOSALS for the SALE of a PLOT of LAND within a radius of one furlong of the Deptford Railway Station, for the Erection thereon of a New Sorting Office.

The frontage required is about 30 feet, with a depth of about 130 feet.

The Proposals are to state the price required for purchase of freehold or for building lease, and must be accompanied with plans and full particulars. They should be addressed to the Secretary, H.M. Office of Works, 12, Whitehall place, and be sent in before TWELVE o'clock on THURSDAY, the 11th of OCTOBER, 1877.

A. B. MITFORD, Secretary.

H.M. Office of Works, October 1st, 1877

GUILDHALL, 27th September, 1877.—The City Lands Committee will meet at the GUILDHALL on WEDNESDAY, the 10th of OCTOBER next, at HALF-PAST ONE o'clock precisely, to receive PROPOSALS for Taking on Lease the WORKSHOPS and PREMISES on the West Side of Kings-arms yard, Bishopsgate, in the City of London, for 13½ years, from Michaelmas, 1877, the Rent to commence at Christmas, 1877.

Plans of the property may be seen, and further particulars and Forms of Tender obtained, upon application at the Office of the City Architect, Guildhall FERD. BRAND, Comptroller.

THE Committee for LETTING the BRIDGE HOUSE ESTATES will meet at GUILDHALL on FRIDAY the 12th day of OCTOBER next, at ONE o'clock precisely, to receive PROPOSALS for taking on Lease the Premises Nos. 1, 2, and 3, Burton-buildings, Nos. 18, 19, 20, 21, 22, 23, and 24, in Friar-street, Blackfriars-road, either upon a repairing lease for 20½ years from Christmas, 1877, or upon a building lease for 80 years from the same period.—Further particulars may be obtained upon application at the Architect's Office, Guildhall.

FERDINAND BRAND, Comptroller.

Guildhall September 27, 1877

BUILDING LAND TO BE LET.—At WEST HILL, Sydenham, for Detached Villas, to cost not less than 1,000l. each

At CATFORD, Catford, for Detached Villas, cost not less than 1,000l. each at first.

At CATFORD BRIDGE, for small Villas, with Advances.

At ARTHUR GROVE, WANDSWORTH COMMON, for Detached Villas, with Advances.

At EDMONTON, for Cottages. Advances at the rate of 100l. per house.

At STAMFORD HILL, for Cottages. Advances at the rate of 100l. per house.

Apply to F. S. BREERETON, Architect and Surveyor, No. 36, Lincoln's-inn-fields.

BUILDING LAND.—To be LET, at Boxton, a valuable SITE, of about 18,000 superficial feet suitable for warehouses, manufactories, or model dwellings.—For full particulars, apply to Mr. THOMAS CHAFFIELD CLARKE, Architect and Surveyor, 63, Bishopsgate street Within, City.

FREEHOLD BUILDING LAND TO BE LET, in large or small quantities. Charming position, overlooking beautiful gardens. Seven minutes from London Bridge.—TUNLEY & BOYLE, 14, Clement's-lane, Lombard-street, E.C.

WEST HAM PARK.—TO BE LET by the Corporation of London a HOUSE and GROUNDS known as the "Grove," adjoining West Ham Park, Essex, and containing about four acres. Parties desirous of taking the same may send in proposals to the City Architect, Guildhall stating the use to which they intend to appropriate the same, the term of years required, and the rent proposed to be given. FERD. BRAND, Comptroller.

Guildhall, 27th September, 1877

WEST HAM.—FREEHOLD BUILDING LAND.—TO BE LET or SOLD, about 8½ acres, with long frontages to Stephens and Manor roads, opposite the Leather cloth Works, at five minutes' walk from the Plaistow and Stratford Bridge Railway station. Apply to Mr. V. BUCKLAND, Surveyor, No. 86, Cannon-street, City.

BISHOPSGATE, City of London.—7,100 superficial feet of FREEHOLD LAND TO BE LET upon Building Lease. It will be divided if required. Ground rent for the whole, 1s. 6d. per square foot.—Particulars of REYNOLDS & EASON, Land Agents, 43, Bishopsgate-street Within, E.C.

[See also p xv.

London: Printed by CHARLES WYMAN, Printer, at the Printing-office of WYMAN & SONS, Nos. 74 and 75, Great Queen-street, Lincoln's-inn-fields, in the Parish of St. Giles-in-the-fields; and Published by DOUGLAS FOTHERINGHAM, at the Office of "THE BUILDER," 46, CATHERINE-STREET, in the Parish of St. Paul, Covent-garden both in the county of Middlesex.—Saturday, October 6th, 1877.

The Builder

A JOURNAL FOR THE

Architect, Engineer, Operative & Artist.

Vol. XXXV. No. 1810. OCTOBER 13, 1877. PRICE FOURPENCE.

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TION.—THE THIRTIETH ANNUAL DINNER in aid of the
of this Charity will be held at WILLIS'S ROOMS, King-
St. James's, on THURSDAY, the 8th NOVEMBER next,
IAM HIGGS, Esq. President, in the Chair. Tickets, 21s. each.
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e obtained, or of the Treasurer, GEORGE PLUCKNETT, Esq.
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[*Competitions and Contracts see next page.*

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COMPETITIONS.

TO ARCHITECTS and OTHERS.—BOROUGH of CHIPPENHAM, Wilts.—The Drinking Fountain Committee invite DESIGNS for a GRANITE DRINKING FOUNTAIN to be erected at a cost not exceeding £300, in the centre of the market-place of the town of Chippenham, to be furnished with a lamp or lamp-post, with a trough for horses' cattle, sheep, and dogs. A premium of £5 will be offered for the best design, with working plans to be sent to the undersigned, on or before the 31st day of OCTOBER next. FRANK H. PHILLIPS, Town Clerk.

Chippenham, Wilts, September 24, 1877.

BOROUGH of MAIDENHEAD.—To ARCHITECTS.—COMPETITION PLANS are INVITED by the Maidenhead Urban Sanitary Authority for a HOSPITAL for INFECTIOUS DISEASES, to accommodate eight patients, four male and four female, with the necessary offices. The building not to exceed the sum of £600. The Sanitary Authority offers a premium of £10 for the best plans, and £5 for the second best. The architect who's plans are accepted will be engaged to superintend the work. Plans to be sent to me, on or before the 8th of NOVEMBER next.—By order,

E. DAVEY, Town Clerk.

Oct. 3rd, 1877.

SKEGNESS, LINCOLNSHIRE.—To GAS ENGINEERS.—The Directors of the Skegness Gas Light and Coke Company intend, in the Gas Engineers to furnish PLANS of GAS WORKS, with specifications and estimates of the cost thereof, for the Parish of Skegness, in the County of Lincoln. The Engineer whose plans are accepted will be appointed to superintend the erection of the works to full completion. The plans and specifications must be accompanied by a statement of the commission required and such commission will be inclusive of the cost of preparing plans, specifications, and estimates. No premium or other sum will be paid to any gentleman whose plans are rejected. The plans, &c are to be sent to the Managing Director of the Company, Mr HOBSON DUNKLEY, Sea View Hotel, Skegness, on or before the 1st NOVEMBER next. The Directors reserve to themselves the right to reject any or all of the plans specifications, and estimates, and they do not bind themselves to accept the lowest or any other Estimate or Tender by way of commission. The Managing Director will furnish any further information on application

TWEED & STEPHEN, Secretaries to the Company.

Lincoln, 28th September 1877.

CONTRACTS.

WAR DEPARTMENT CONTRACTS.—To BUILDERS and CONTRACTORS.—Triennial Contracts, Northern District.

TENDERS are required for the performance of such WORKS and REPAIRS, and for the SUPPLY of such BUILDING MATERIALS as may be required to War Department buildings and property at the undermentioned station, from the 1st of December, 1877, to the 31st of March, 1880:—

Sunbeam I, including Water Basin Battery, South Dock Battery, Abbs Point Battery, and Seaham.

Persons wishing to Tender for the above Station may obtain forms of Tender and schedules of prices on application to the Commanding Royal Engineer, Royal Engineer Office, Manchester.

The contract will embrace bricklayers', masons', paviors', carpenters', plasterers', plumbers', slaters', smiths', painters', and gasfitters' work.

A sum of 18s 6d will be charged for the schedules, or the schedules of prices can be seen at the Barrack Serjeant's Office, Stanedland, or at the Royal Engineer Office, Newcastle. Post Office Orders to be made payable to B. Polkinghorne, Chief Clerk, R.E. at Chester-road Post-office, Manchester.

Candidates are requested to send testimonials of competency with their applications.

Tenders to be delivered at the War Office, London, on or before NOVEMBER 2nd, 1877.

The Secretary of State for War reserves the right of rejecting any or all of the Tenders.

Royal Engineer Office, 12, Princess-street, Cornbrook, Manchester, October 9th 1877.

TO BUILDERS, CONTRACTORS, and OTHERS.—The Metropolitan Board of Works hereby give notice that they will meet at the Office of the Board, Spring-gardens, S.W. on FRIDAY, the 2nd day of NOVEMBER next, at TWELVE o'clock at noon precisely, and will then be prepared to open TENDERS by parties who may be willing to Contract for the formation of CARRIAGE and FOOTWAYS, SEWERS, ALTERATION of ROADS, and other WORKS in connexion therewith, between Farringdon-road and Wilderness-row, in the Parish of Saint John, Clerkenwell, in the County of Middlesex. Parties desirous to submit Tenders may inspect drawings, and on payment of 5s. obtain specifications, form of Tender, and other particulars, on application to Sir J. W. BAZALGETTE, C.B. Engineer of the Board, at the Office, Spring-gardens, between the hours of NINE a.m. and FOUR p.m. or on Saturdays between the hours of NINE a.m. and TWO p.m. until THURSDAY, the 1st day of NOVEMBER next. The Tenders, which must be on the form supplied from this Office, and addressed to the Clerk of the Board, are to be delivered at this Office before FOUR o'clock on the last-mentioned day, and no Tender will be received after that hour. The parties tendering must be in attendance at the Board at TWELVE o'clock on the day appointed for opening Tenders, and any Tender which is not fully filled up in every particular will be rejected. The Board do not bind themselves to accept the lowest or any Tender.

J. E. WAKEFIELD, Clerk of the Board.

Spring Gardens, S.W. 10th October, 1877.

THE BOARD of WORKS for the Lewisham District.—To BUILDERS and OTHERS.—Notice is hereby given that the Board is prepared to receive TENDERS for the ERECTION of a LODGE and WAITING ROOM, at the Recreation ground, Sydenham. The drawings and specification can be seen, and full particulars obtained on or after the 17th inst, at the Offices of Mr. ROBERT WALKER, Architect, 10a, King's-arms-yard, E.C. Tenders, endorsed "Tender for Lodge, &c." to be delivered at the Board's Offices, Catford, on or before the 30th instant. The Board does not bind itself to accept the lowest or any Tender.—By order,

SAMI. EDWARDS, Clerk to the Board.

Catford, S.E. 10th October, 1877.

TO BUILDERS.—Trinity House, London. September 13th, 1877.

This Corporation being desirous of receiving TENDERS for the ERECTION of a LIGHT-HOUSE, FOG SIGNAL-HOUSE, Dwellings, Outbuildings, and other Works at Bull Point, near Ilfracombe, in the county of Devon, Hereby give notice that the Plans may be inspected, and forms of Tender and specification obtained on application at the Store Department of this House, or by the Chief Coastguard Boatman, at Morte, near Ilfracombe, on any day between the hours of TEN a.m. and FOUR p.m. Tenders, sealed and marked outside "Tender for Bull Point Lighthouse," must be addressed to the Secretary, and delivered at this House on or before MONDAY, NOVEMBER 5th next, and no Tender can be entertained that is not made on the form provided. The Corporation does not pledge itself to accept the lowest or any Tender.—By order,

ROBIN ALLEN, Secretary

TO STONE MERCHANTS and OTHERS.—The Vestry of the Hamlet of Mile-end Old Town will meet at the Vestry-hall, Bancroft-road, on WEDNESDAY, the 17th of OCTOBER, 1877, at SEVEN o'clock p.m. precisely, to receive TENDERS for 100 tons of 4-inch by 3-inch PITCHING and 50 tons of 4-inch by 7-inch Pitching, to be supplied and delivered according to the terms of a specification, which may be seen at the Office of Mr. J. M. KNIGHT, the Surveyor, at the Vestry-hall, between the hours of TEN and ONE. The contractor will be required to enter into a contract, to be prepared by the Clerk to the Vestry, and find two approved sureties to join him in a bond, in half the amount of the contract, for the due performance thereof. Tenders, containing the names and addresses of proposed sureties, are to be delivered at my Office, endorsed "Tender for Pitching," before THREE o'clock in the afternoon of the day of meeting. The Vestry do not bind themselves to accept the lowest or any Tender.

MILLNER JUTSUM, Clerk to the Vestry.

Vestry-hall, Bancroft-road, Mile-end-road,

October 4th, 1877.

TO STONE MERCHANTS and OTHERS.—The Town Council of the Borough of Dover invite TENDERS for the SUPPLY of 1,000 Tons of BLUE GUERNSEY GRANITE, 150 Tons of GRANITE SIFTINGS, and 6,000 Square Feet of YORK PAVING.

The Broken Granite to be of a size to pass through a 2½-inch mesh; the Siftings to be of the same Granite, free from dust, and of a size not less than ¼-inch, nor more than ¾-inch cube; the Paving Stone to be of not less thickness in any part than 9 inches and no stone less than 6 feet superficial. The whole to be of the best quality.

Delivery—Half of each material before the 30th of November, and remainder before the end of February, 1878, into carts to be provided by Council on the Quay at Dover.

Price to include all charges except Dover Local and Harbour Dues, which will be paid by Council.

Surveyor to have power to reject, if in his opinion materials or any portion thereof are not in accordance with contract.

Payment within two months of Surveyor's certificate.

Penalty on default of delivery 1l per day. And Council may procure similar material or any other kind elsewhere at expense of contractor and deduct cost from moneys due to him, or recover same as a liquidated demand.

Contract in accordance with above terms, and bond in one fourth of the amount of Tender to be executed by contractor and sureties.

Sealed Tenders on form to be obtained on application to me, signed by sureties, to be sent to my Office on or before TWO p.m. on WEDNESDAY, the 17th day of OCTOBER inst.

The Council do not bind themselves to accept the lowest or any Tender, and may accept part of any Tender.

WOLLASTON KNOCKER, Town Clerk.

Town Clerk's Office, Dover, 4th October, 1877.

BOROUGH of LONGTON.—The Town Council are desirous of receiving TENDERS for the ERECTION of two CHAPELS, and an ENTRANCE LODGE, to be constructed of Limber, in the new cemetery. Plans and specification may be seen, and forms of Tender obtained at the Office of the Borough Surveyor, Court House, Longton, on or after MONDAY, OCTOBER 15th. Tenders to be sent in on or before TUESDAY, OCTOBER 30th, endorsed "Tenders for Chapels." The Town Council do not bind themselves to accept the lowest or any Tender.—By order,

ARDEN HARDWICKE, Borough Surveyor.

October 10th, 1877.

BOROUGH of NOTTINGHAM.—NEW UNIVERSITY COLLEGE BUILDINGS.—To CONTRACTORS. The Corporation of Nottingham are desirous of receiving TENDERS for the ERECTION of the New UNIVERSITY COLLEGE BUILDINGS at Nottingham. Persons willing to Tender are requested to send their Names to the Architects, Messrs. LOCKWOOD & MAWSON, The Exchange, Bradford. Plans and specifications may be seen at the Office of the Borough Engineer, Municipal Offices, Nottingham, from FRIDAY, the 12th, until MONDAY, the 22nd day of OCTOBER. Sealed Tenders, endorsed "Tender for University College Buildings," must be sent to me not later than the 22nd inst. The Corporation do not bind themselves to accept the lowest or any other Tender.—By order,

JOHNSON, Town Clerk.

Municipal Offices, Nottingham, October 8th, 1877.

BOROUGH of WOLVERHAMPTON.—The Corporation of the Borough of Wolverhampton are prepared to receive TENDERS for the EXECUTION of PRIVATE DRAINAGE WORKS for a period of twelve months. Copies of the specification, form of Tender, and schedule of prices may be obtained from Mr. R. EASTLAKE THOMS, C.E. the Borough Engineer, on payment of one guinea, which will be returned on receipt of a bona-fide Tender.

Sealed Tenders to be delivered at the Borough Engineer's Office, Town-hall, Wolverhampton, on or before SATURDAY, 27th OCTOBER instant, addressed to the Chairman of the Sewerage Committee, and endorsed "Tender for Private Drainage."

The Corporation do not bind themselves to accept the lowest or any Tender.

H. UNDERHILL, Town Clerk.

Town-hall, Wolverhampton, 4th October, 1877

TO BUILDERS.—TENDERS are required for Two small DETACHED HOUSES, of similar design, to be erected at Hertford, on the Bayley Hall Estate. Plans can be seen at the Offices of T. TAYLOR SMITH, Architect, 4, Circus-place, Finsbury, and Messrs. SMITH & AUSTIN, Hertford, on and after MONDAY next, the 15th inst.

TO CONTRACTORS and OTHERS.—The Cheshire Lines Committee are prepared to receive TENDERS for the ERECTION of an ENGINE SHED at the Brunswick Station, Liverpool. Plans, specifications, and other particulars can be obtained on application to W. G. SCOTT, Esq. Engineer's Office, Central Station, Liverpool, on and after the 21st inst. Sealed Tenders, marked "Tenders for Engine-Shed," must be in the hands of the undersigned not later than NINE a.m. on WEDNESDAY, the 17th of OCTOBER, 1877.—By order,

EDWARD ROSS, Secretary

London road Station, Manchester, October 2nd, 1877

TO CONTRACTORS.—TENDERS are invited for the Formation and Construction of NEW ROADS on the Addison Park Estate, in the parish of Fulham, for the Middlesex Land Corporation, Birmingham. The drawings can be seen, and the quantities obtained, at the Offices of ROBERT KEIRLE, Esq. Architect and Surveyor, 111, Victoria-street, Westminster, at the charge of 5s.

Tenders, endorsed "New Road, Addison Park Estate," to be sent in, on or before the 31st inst. addressed to the Chairman of the Midland Land Corporation, Birmingham.

TO BUILDERS and CONTRACTORS.—WANTED, TENDERS for about 2,000 cubic yards, of CONCRETE FOUNDATIONS, on the Thames, exclusive of pump room timber.—Apply for particulars to Mr. J. W. COLE, Engineer, 3, Westminster-chambers, Westminster, on and after MONDAY, 15th instant.

TO BUILDERS.—The Building Committee formed for the purpose of carrying out the complete RESTORATION of the PARISH CHURCH of Ashby de la Zouch, and the building of Two New Aisles thereto, are prepared to receive applications from Builders willing hereafter to offer TENDERS for the execution of the Works.

Builders are requested to signify such wish to the Architect, Mr. J. P. ST. AUBYN, Lamb Building, Temple, London.

ERECTION of a COTTAGE HOSPITAL.—BERKHAMPSTEAD UNION, HERTS.—The Rural Sanitary Authority for the District invite TENDERS for BUILDING a HOSPITAL in the Parish of Aldbury, near Tring Station. The plans and specification may be seen in the Board room, at the Union House, Great Berkhampstead on any week day, between TEN and FOUR o'clock, after the 22nd instant, and the form of Tender, with all further information relative thereto, may be obtained at the Office of Mr. JOHN LADDS, Architect, 4, Chapel-street, Bedford-row, London, W.C. Tenders to be sent to the Undersigned on or before the 12th NOVEMBER next, by TEN a.m. at the Board-room, Berkhampstead. The lowest or any Tender will not necessarily be accepted.

By order of the Authority, SAML. STALLON, Clerk.

Hemel Hempstead, 8th October, 1877.

VESTRY of ST. MARY, ISLINGTON.—CONSTRUCTION of SEWER.—Notice is hereby given that the Vestry is prepared to receive TENDERS for the CONSTRUCTION of about 866 feet of Half-brick SEWER (3 feet 4 inches by 2 feet 4 inches), and about 650 feet of 12-inch PIPE SEWER, in the Arch-way-road, Upper Holloway. Full particulars may be obtained on application at the Vestry Offices (Surveyor of Sewers Department), where plans and specification may be inspected. Tenders to be delivered, addressed to the Vestry Clerk, by TEN o'clock on WEDNESDAY, 24th OCTOBER inst. when persons Tendering are expected to be in attendance. The Vestry does not bind itself to accept the lowest or any Tender.—By order,

JOHN LAYTON, Vestry Clerk.

Vestry Offices, Islington, October, 1877.

PORTABLE STEAM ENGINE (excellent Second-hand), by Clayton & Co. suitable for driving a Brick-making Machine, &c.

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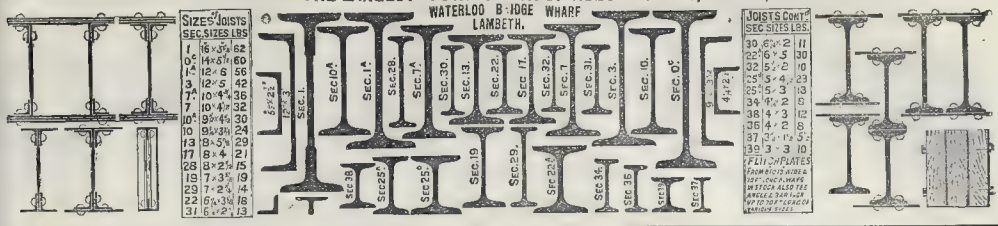
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(Signed) FINCHIN, JOHNSON, & CO."

3, Old-street, London, E.C., Corner of Goswell-road.

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F. BRABY & CO.

Have recently introduced New Ornamental Zinc "FISH SCALE TILES," which are now being very extensively used on the Continent, they being specially adapted for ROOFS, MANSARDS, TOWERS, and CIRCULAR TURRETS; having a Groove Lap, they are more ornamental and weather-proof than Slates.

Ornamental Stamped Zinc for Cornices, String Courses, Entablatures, &c. to any Design.

Estimates for every description of Zinc Work forwarded on application.

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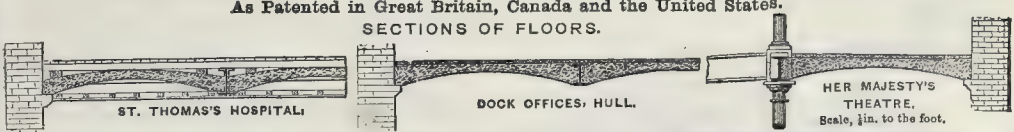
3" × 3"=10 lb. per ft.	5" × 3"=13 lb. per ft.	7" × 2"=14 lb. per ft.	9" × 3½"=24 lb. per ft.	12" × 5" =42 lb. per ft.
3 × 1½= 5 „ „	5 × 4½=23 „ „	7 × 3½=20 „ „	9½ × 4½ =29 „ „	12 × 6 =56 „ „
4 × 1½= 7 „ „	6 × 2 =11 „ „	8 × 4 =22 „ „	10 × 4½ =32 „ „	14 × 8 =60 „ „
4 × 3 =12 „ „	6 × 3 =16 „ „	8 × 5 =29 „ „	10 × 5 =36 to 48 „ „	16 × 5½ & 6 =60 & 63 „
5 × 3 = 8 „ „	6 × 5 =29 „ „	8 × 6 =34 „ „	10 × 6 =58 „ „	19½ × 7 =100 „ „

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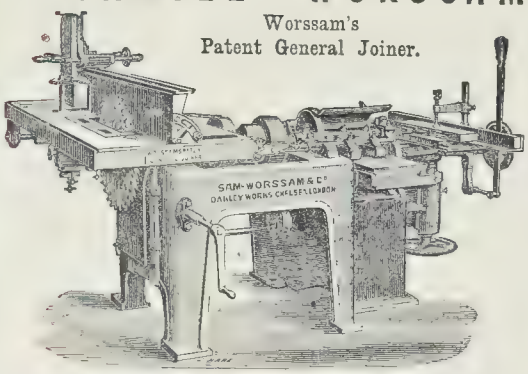
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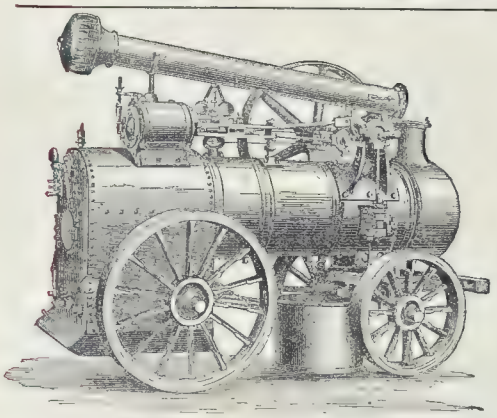
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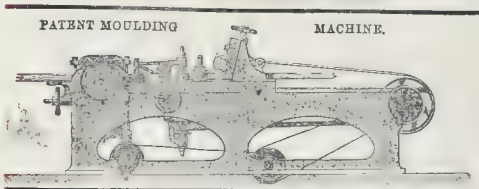
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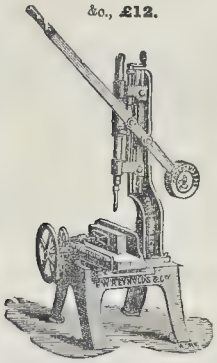
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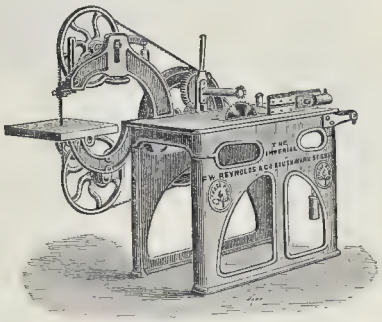
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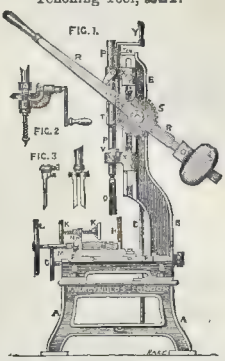
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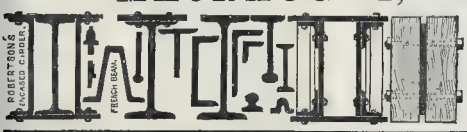
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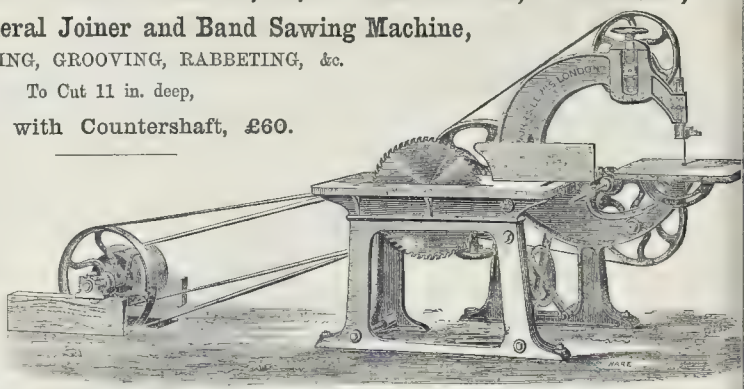
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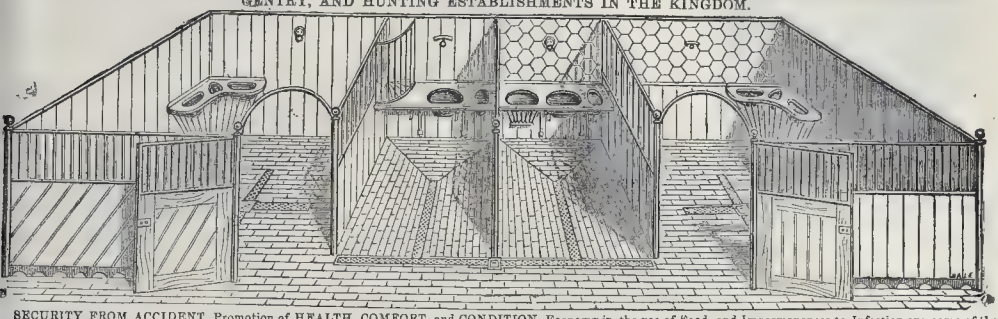
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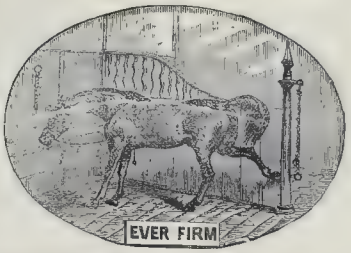
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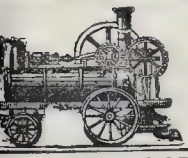
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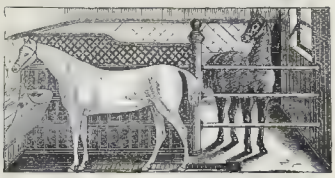
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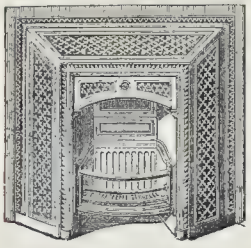
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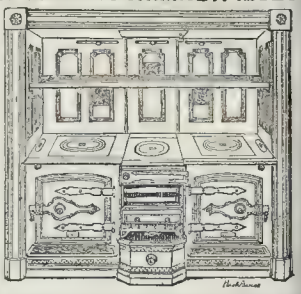


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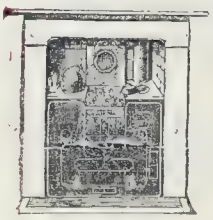
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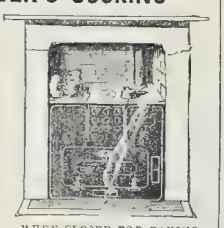


WHEN USED OPEN.

These Engravings represent the Smallest size Stove, viz. 24 in. long, 24 in. high, and 15 in. deep. The Oven is 18 in. long, 14 in. deep, and 11 in. high. The Boiler contains three pails of water.

This Stove, also CUNDY'S PATENT BRICK OVEN, Double Fall-down Bar KITCHEN RANGE, and Patent BRICK OVEN, Semi-close Range, also CUNDY'S Patent Original FIRE-BRICK Warm-air Ventilating STOVE, suitable for Churches, Halls, Schools, and Staircases, can be seen in operation daily at the SHOW-ROOMS of the Manufacturer,

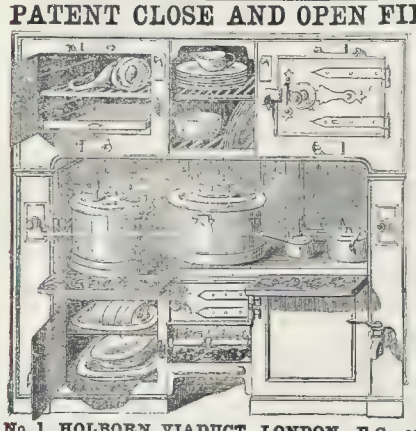
WM. ADDIS,
6, 7, & 15, LEICESTER STREET,
LEICESTER SQUARE, LONDON.



WHEN CLOSED FOR BAKING.

Prospectus, with full Description and Price of the above, will be sent per Post on application.

PATENT CLOSE AND OPEN FIRE COOKING RANGE



(No. 220), Manufactured by the Patentees,

NEWTON, CHAMBERS, & CO.
THORNCLIFFE IRON WORKS,
NEAR SHEFFIELD.

A MODERN INVENTION.

The high price of coal has induced Messrs. NEWTON, CHAMBERS, & CO to direct their attention to the ECONOMISING OF FUEL IN COOKING RANGES, and they have now Patented an Apparatus which they believe to be the most efficient, simple, and economical of anything ever yet invented.

It consists of a small Fire Range, which may be used as an open or close fire at pleasure, and is changed from one to the other in a moment. A Hot Closet is placed at one side of the fire, and a Hot Plate for Boiling, Stewing, or Grilling extends to nearly the full width of the fireplace. Above the Hot Plate, at about the level of the eye, there are two large sheet-iron Ovens, which are quickly heated, and are most conveniently placed for the cook to attend to what is in them.

Behind the Hot Plate is a wrought-iron boiler, which supplies hot water for all purposes. It will be seen from this that all flues ascend, and consequently do not require such a quick draught as those which descend. It is impossible for them to get out of order; they can be regulated to the greatest nicety, and managed by the most inexperienced person, and the commonest coal can be used.

Messrs. NEWTON, CHAMBERS, & CO have the fullest confidence in recommending this Apparatus to the notice of their friends; the saving of coal will, in a very short time, repay the whole cost, and the coolness and comfort of the kitchen, compared with the ranges hitherto used, are alone sufficient to insure its adoption in all well-regulated households.

The Apparatus may be seen at work, and full particulars obtained, by applying as above, or at the Branch Establishments,

No. 1, HOLBORN VIADUCT LONDON, E.C., and 47, Sheffield Moor, Sheffield.



THE LEAMINGTON PRIZE KITCHENER.

These Ranges are strongly recommended for Economy, Cleanliness, and a Cure for Smoky Chimneys.

The Top forms an entire and efficient Hot Plate, and having an Open Fire, removes all the objections of a Close Fire-range.

A large STOCK of SELF-ACTING and other RANGES, REGISTER STOVES, and every description of Builders' IRONMONGERY, at Wholesale Prices.

All Goods delivered free within Five Miles.

BURT & POTTS,
WHOLESALE AND MANUFACTURING IRONMONGERS,
Nos. 38 & 65, York-street, Westminster.

STOVES! PORTABLE! TERRA COTTA!

ROBERTS'S PATENT FOR COAL!

Emit pure Heat Twenty-four hours for about One Penny, without attention. For bed-rooms, greenhouses, or almost any purpose Prospectus, drawings, and authenticated testimonials can be had.

In use daily at Offices of Patentee,

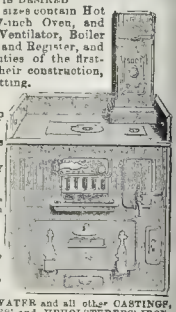
THOMAS ROBERTS, 112, VICTORIA STREET, WESTMINSTER.

IMPROVED CHEAP KITCHENER,

SUITABLE TO COTTAGES AND PLACES WHERE ECONOMY IN SPACE IS DESIRED

The 24-inch and 30-inch sizes contain Hot Plate, Ironing Stove, 17-inch Oven, and Roaster, with Shelves and Ventilator, Boiler and Brass Tap, Flue Pipe and Register, and thus possess all the qualities of the first-class Ranges, while, from their construction, they requires little or no setting.

Price complete,
24 in...51s. } Improved Cheap
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Liberal Discount to Builders and the Trade.

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AND
Wholesale Ironmongers,
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91 & 93, DAVIES STREET, OXFORD STREET, W.

STOVES and RANGES, RAIN-WATER and all other CASTINGS, STABLE FITTINGS, BUILDERS' and UPHOLSTERERS' IRONMONGERY in GREAT VARIETY

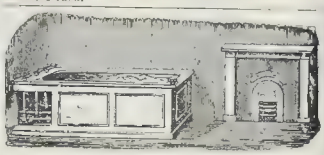
STOVES, RANGES,

RAIN-WATER GOODS, and
BUILDERS' IRONMONGERY.

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Having taken the extensive Premises 12 & 13, Chiswell-street, and 1 and 2, Artillery-court, is enabled to keep a much larger stock of above.

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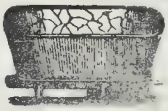
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Bath and Heating Apparatus erected in Public and Private Buildings in London and Country.

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ECLIPSE GAS RANGE, With Open Fire, £10. 0s. 0d.

GAS CONSERVATORY BOILERS.

REFLECTOR COOKING STOVES from 16s. 6d.

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FACTORY: 98, BARRINGTON ROAD, EAST BRIXTON, S.W.

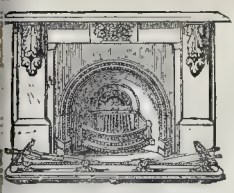
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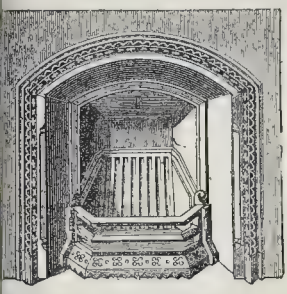
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Supply promptly from their large Stocks,
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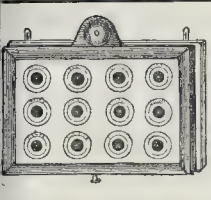


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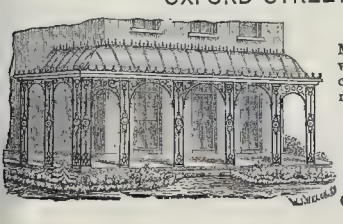


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Sheringham's Day and Night Ventilator, for the admission of Pure Air through the External Wall. These Ventilators are arranged so that the requisite quantity of air may be admitted for the due ventilation of an apartment without the slightest draught being felt by the occupants; and as they are placed in the external wall, their action is not impeded when the house is closed for the evening, at which time a constant supply of fresh air is most required. — HAYWARD BROTHERS, Sole Manufacturers, 187 and 189 (late 117 and 118), Union-street, Borough



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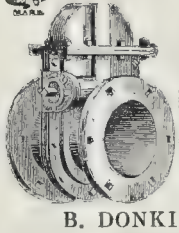
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A reduction by the dozen
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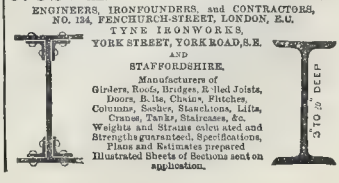
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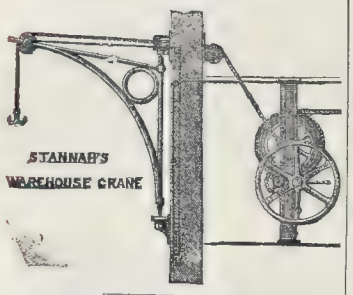
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Late W. H. SISTERSON,
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STEAM or HAND CRANES.
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BASEMENT
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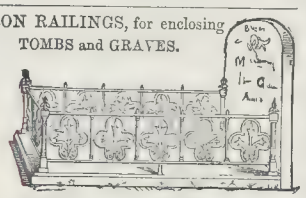
To Prevent the Box or Cage Falling, in the event of the Main Rope or Chain Breaking.

Should be applied to all Lifts used for raising Passengers or valuable Goods.

It is applicable to Lifts with Wood or Iron Guides.

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This Line, which is formed of several bands of watch-spring steel, covered with a binding of copper wire, and so prepared as to resist corrosion, supplies a want long felt of a material for hanging safely all kinds of, but more especially heavy, Sashes.

It can be used with the ordinary Pulleys, and fixed in the ordinary way.

It is very neat in appearance, perfectly flexible, almost frictionless, does not stretch, and being practically indestructible, is in the end

Much Cheaper than the ordinary Lines and Chains.



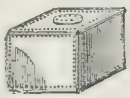
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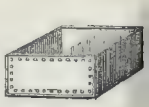
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BRASS FOUNDRY AND TUBE WORKS,
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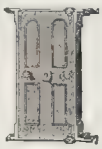
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Cattle-Troughs, &c., Galvanized or Painted.
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A large Assortment always in Stock.
Estimates free on application.





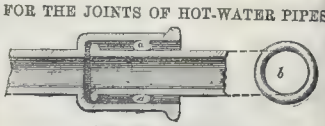
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PARTY WALL DOORS, Plain and Sliding.
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RELIANCE SAFE, 25 in. by 19 in. by 18 in. £5 5s. Carriage Paid.
LISTS FREE.

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JAMES LYNE HANCOCK'S
Improved India-Rubber Socket-Rings,
FOR THE JOINTS OF HOT-WATER PIPES.



Description of Sketch:—
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These Rings are made any size to order. All ordinary sizes are kept in Stock.
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BURNEY & COMPANY,
MILLWALL DOCKS, LONDON, E.

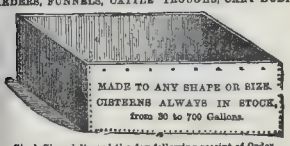
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WROUGHT-IRON CISTERNS AND TANKS
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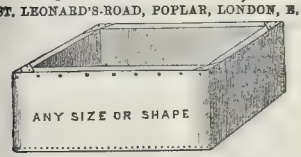
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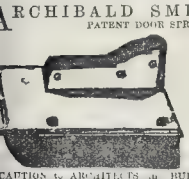
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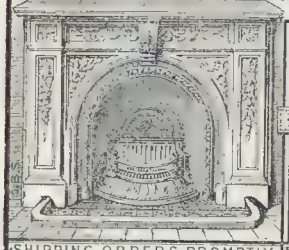
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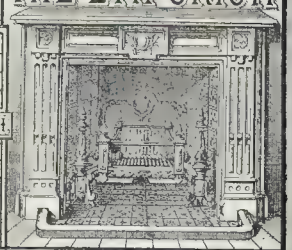
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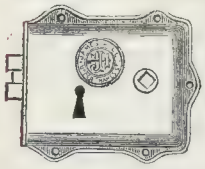
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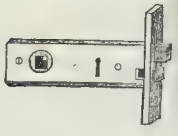
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The Builder.

Vol. XXXV. No. 1810. Saturday, October 13, 1877.

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Granite in the Workshop.

As we have been exercised a good deal upon granite and its architectural treatment lately, a few words as to the method of working it may be of interest, and may furnish hints to those who have not as yet had much to do with the material as a medium for architectural design.

A granite quarry is, as may be supposed, much the same as any other quarry; and considering the extensive use of the material and the great name it has in engineering operations, one is surprised to find that Rubislaw Quarry, from which comes the Aberdeen grey granite which has, perhaps, been more largely used than any other variety, is of such comparatively limited extent as it is. A great deal of stuff, however, has been sent from this hole in the ground to all parts of the world, and arrangements were being made, at the time of our visit, for a deep cut below the present general level, to get at some more of the best material. The sections of rock exposed show considerable variation in tint and surface, representing corresponding variations in quality and value; the different qualities do not, however, occur in a stratified form, but in irregular patches. The first breaking up of the material is made by blasting with dynamite, which is inserted in the form of cartridges 2 in. or 3 in. long, by about ½ in. or ¾ in. thick; innocent-looking little paper packages containing a flakey yellowish powder, into which is inserted the end of the "match" with a metal cap over it, which explodes when the match is fired; as dynamite, despite its tremendous qualities, requires something in the nature of a percussion in firing it to arouse its own energies effectively. A small hut in a corner of the quarry contains dynamite enough, we should imagine, to blow up Aberdeen, if all the wonderful stories are true about the enormous power of this explosive. The small cartridges must do immense execution on the rock; for granite, the hardest of building stones, is also one of the most brittle, and is easily split. The method employed in splitting a large block in two pieces is to drill a few holes, about 2 in. deep, along the intended line of cleavage, and then insert iron wedges and drive them with a hammer, an operation which separates a block of considerable size very easily. This is almost the only operation at the quarry which seems at all special to the material, and that is only so in the make and shape of the wedges employed, which are circular, as it is much easier to drill a hole in granite than to cut one square. The smaller pieces which are the result of the blasting and subsequent operations are used a good deal as backing for ashlar walls; attempts have been made to use them as the material for a rubble architecture in granite, but from what we saw of the peculiarly sharp-pointed wedge-like forms which the stones that split off seem to assume, we should hardly suppose that the material as got from the quarry could lend itself very well to anything that could be called architectural work in this form. Rubble building in granite has been more generally done, when done at all, not with quarry stuff but with the loose stone which is found on the surface in many granite districts, in forms more or less rounded by attrition under the action of water and ice countless ages ago. Some of our readers may not be aware that the Eddystone lighthouse, which is soon to be displaced, was in great measure built in this way, of "moor-stone," as it was called, from being found lying about on the moors of the district, in rounded boulders, which were used unworked in combination with mortar. No stone could probably be so hard and practically indestructible as this pebble granite, with its surface rendered additionally impervious by the weathering of centuries.

But we will step from the quarry to the workshop, which in this case shall be that known as the "Aberdeen Granite Works," to the proprietors of which our thanks are due for their courtesy in enabling us to see as much of the *modus operandi* as could well be seen in an afternoon's visit of necessarily limited duration. Over a considerable portion of the area occupied by the works, we find the raw material piled in large roughly-shaped cubes of granite placed in horizontal layers one over another, and capable of being readily lifted about, when required, by a travelling crane. These blocks are first very roughly shaped at the quarry into a sufficiently regular form to be convenient for stacking; after that, everything is done at the works; and in the sheds around we find the material under different stages of treatment. The stone is got into approximate shapes by the blows of short heavy-headed axes, which might be better described as hammers with the striking portion worked into a sharp edge instead of a superficies, the instrument having to be weighted with much heavier metal than is the case with the style of weapon usually called an axe, in order to give the weight and momentum requisite to make any impression on the material. After this operation, it is "axed granite," and is in the state in which it is used for rusticated work in architectural design; and, indeed, occasionally for the entire facing of buildings. There is a terrace of houses on the way out to Rubislaw quarries, treated in this way, and which looks very well. The next stage in the mason's part of the work is the further shaping and finishing of the surface with the cold chisel and mallet; the chisel being again a thicker and heavier implement, and rather more blunt in shape, than that used for ordinary masons' work. Mere sharpness of metal will hardly touch granite; it requires weight and force in the blow to break up the particles at all. And in looking at this part of the work we realise, better than when it is under machinery, the extreme hardness of the material. There is something in the sound of the blows upon the stone which is most peculiar, and conveys to the ear the notion that the task of shaping a material which gives such a dull iron sound as that when struck must be one requiring an unlimited stock of patience, and a very strong frame to stand the perpetual jar of the blows on the apparently unyielding surface. It will give some idea of the tough character of the work if we mention, what we were assured was the fact, that the same chisel cannot be used on the granite for more than two or three minutes' work with any effect; after that it becomes too dulled to touch the surface, and has to be re-ground. In consequence, the business of taking the chisels in bundles to the grindstone, and bringing them back to the workshop, is an occupation employing a small staff of labourers, who are told off for this duty only. The tools are touched up on the grindstone sufficiently for another bout; and when by a series of grindings the chisel begins to get too thick at the end, it then goes to the smith's to be regularly re-set. After the chisel comes the "fine-axe," which is another implement of hammer-headed appearance and shape, but in which the head carries half a dozen or so of parallel steel blades with a little space between them; and with this implement the surface is dressed to the finest finish it is capable of, short of polishing.

In dealing with circular columns, for which granite is so much (perhaps too much) used, the turning-lathe, in a modified and purely mechanical form, is used. The block which is to be made into a shaft is got into as near a true circular form by hand as can be, and is then fixed in a lathe, and operated upon by a kind of plate-shaped circular blade on either side, placed in a vice so as to present its cutting edge at about an angle of 45° with the shaft; water is kept dripping on the granite at the point where the cutters work, and the frames or vices in which they are fixed move automatically along the length of the shaft at a very slow rate, and after reaching the end are set fresh for another journey along the shaft, till it is brought to the dimensions and the surface to be ready for the polisher. With this exception, the working of the granite up to the polishing point is almost entirely by hand; there is little or nothing of cutting and planing surfaces by machinery, for the material is too stubborn for these rapid methods of working, and only yields to time and patient labour. As an instance of its stubbornness under the action of machinery, we may mention an operation in which machinery is necessarily employed,—that, namely, of sawing a block into thin slabs to be subsequently

polished for use in a decorative manner. This is done by a frame full of parallel bands of iron working backwards and forwards on the edge of the block to be sawn up, and we were shown a slab, some 4 ft. or 5 ft. in width, the sawing through of which had occupied twelve months, though a piece of Sicilian marble of the same size would be got through in less than that number of days. In reference to this we notice again a fact illustrating the incapability of iron or steel by mere sharpness or hardness to make itself felt against granite. Contrary to what most persons would expect, the iron bands used for this sawing process are not of the hardest iron or steel; the special object is to have them as soft as possible, and the iron is even softened by a special process; the result of which is that the blade takes up the particles of quartz which are disintegrated by its first attack, which form the hardest ingredient of the granite, and which become imbedded in the blade and in reality do most of the cutting. The granite, which would be impervious to mere iron or steel, however hard and sharp, is thus made literally to cut itself, and the iron blade becomes merely the medium for carrying the friction of the quartz particles backwards and forwards. There is one other form of cutting by machinery which is done on much the same principle, the cutting out of circular holes in crosses and monument stones for example, as a portion of their ornamental design: this is done by a revolving iron pipe working vertically against the surface of the granite, weighted above, and gradually cutting into the slab till it gets through, when the central portion of the stone can of course be taken out and may become a section of a circular shaft, while its place remains as a circular hole, forming perhaps the separation to between the arms of a cross or other such design. This, we confess, is a method of designing in granite which had better be more sparingly used than it is: it is an exceedingly mechanical way of producing ornamental work, and if carried far, must necessarily lead to a sort of "shop" appearance in the designs thus produced, quite in opposition to really artistic treatment or feeling.

So far we have considered granite working apart from the polishing. When we come to this portion of the work, we pass almost entirely from manual labour to machinery. The polishing of granite differs in no way in principle from the polishing of marble or other material of that description; it is a progressive use of more and more delicate materials on the surface, so as to bring it up by degrees to a glass-like finish. We have already hinted our opinion that the advantage of polished granite in external architecture has been greatly overrated, in the south especially (in Aberdeen itself external polish is really little used). It belongs to the purely mechanical sources of effect, and tends to give a showy and splashy appearance to external architecture by no means agreeable, unless it is used with great moderation and judgment. Still there is no doubt that the decorative effect of the material, especially in its chromatic aspect, is only half brought out until it has received at least a certain amount of polish. The blocks piled in the yards of the works, just as they come from the quarry, have none of that sharply distinctive colour and character, by which, when polished, every one can at once see the distinction between Rubislaw and Peterhead, Cairngall and Kemnay; and so different, indeed, is the tone assumed by the material under different treatment, that you may see an apparently polychromatic effect in three tints, all produced from the same granite, in its several stages of axed, fine-axed, and polished; and it would be possible to introduce a fourth tone from the material in an intermediate state of polish, and before the final gloss is on. The principal medium in polishing is emery powder, and the final finish in delicate work is given by oxide of tin. The machines for applying the polish to different sorts of surfaces are various in their construction and operation, and one or two of them somewhat singular in their appearance and the method of applying the power. The polishing of large flat slabs is carried on by a series of concentric iron rings turned round horizontally upon the surface of the granite, the turning power being applied to a vertical axle rising from them. As the rings turn rapidly, the slab at the same time is moved slowly backwards and forwards to the extent of 2 ft. or 3 ft. each way, on a timber framework, the whole reminding one of an old-fashioned mangle at work. As in the case of the cutting-bands for sawing, the rings which do the work are made of soft iron, and emery powder in water is liberally served on to the surface of the stone. This mixture runs off by degrees into a trough at the side of the stone, and is then carefully collected and served on to the stone again; the economising of the emery being a point of some importance in the conduct of the operation, and affecting the gains of the workman more or less, who is paid by piece-work. The emery in the process gets gradually ground smaller and finer, so that the material makes its own adjustment to the object in view, the getting a gradually higher and finer polish. The polishing of mouldings is carried on in another house, by means of a series of planes cut to the section of the mouldings, and working on them with emery: the stone, supposing it to be a piece of a cornice, is placed on the floor of the shed in such a position that the moulded portion which is to be polished is brought between the slides on which the plane works, and the plane is pushed backwards and forwards over it, the motion being communicated to the plane by a rod connecting it horizontally with a large heavy piece of triangular timber framing standing upright and working backwards and forwards on a centre as far beneath the floor as can be got, so as to make the action on the rod as nearly horizontal as possible: the movement further adjusting itself by a joint in the rod which gives it a play something like the piston and connecting-rod of an engine. The appearance of these large tall frames jerking backwards and forwards all along one side of the room is odd enough. They were formerly hung downwards from the ceiling, but the alteration was made of placing them in the floor in order to get a travelling crane and tackle to work along the ceiling for shifting the blocks of granite under operation; a matter of consequence, as in the case, for instance, of a square pier-capping moulded on every side, the block will have to be shifted four times in the course of polishing, to bring each side under the plane. The cylindrical shafts are polished by turning, as in a lathe, and passing under iron weights placed upon them, mostly cut approximately to fit the curve of the cylinder, though this is not a necessity of the operation; the revolving cylinders are kept served with emery, and the finishing is given frequently with sacking or fibrous cloth interposed between the granite surface and the polishers. It may be observed that thin columns will not bear polishing in very long lengths, they would break under it; so that if architects design very thin and delicate shafts of polished granite, they must not expect to get them in one length. It may be here noted also that polishing reduces the surface by about one-tenth of an inch, which is accordingly allowed for in preparing sizes for polished work. It is also to be remembered that the polishing-machines will not work into angles or under-cuttings, so that all such portions, such as mitres of mouldings in re-entering angles, &c., have to be polished up afterwards by hand; but this is so thoroughly done that it is impossible, as far as we observed, for the minutest inspection to tell where the machine-polish ends, and the hand-polish begins.

A separate branch of ornamentation recently practised, and made almost a speciality by some firms, is the production of a flat ornament formed by cutting into the surface of a polished slab just deep enough to break away the polish, the contrasted surfaces forming the design. We saw some very pleasing tombstones ornamented with an interlaced design of Celtic type, which had an admirable effect for this class of object, and on a small scale. We must say, however, that when this kind of ornament is applied to form salient portions of the decoration of a building, as we have sometimes seen it, it has a very teaddy effect, quite at variance with the genius of granite; but we should suggest that it might be used with good effect in external architecture as a surface diaper on the retiring faces and not on the emphatic lines of a building. The lettering of tombstones is another of the more delicate pieces of work in a granite workshop: the slab to be lettered is first painted white where the lettering is to come, and the lettering drawn on the white pigment and then chiselled into the granite; in the case, that is to say, of a polished slab, as it would be impossible to draw the letters legibly on the polished surface. In regard to the sandblast, about which a good deal has been said as a great shortener of this kind of labour on granite, we found that in the Aberdeen Granite Works it was not in favour at all, for the reason that it would not work evenly, and that, according to our informant, almost as much trouble was expended in dressing up the work and levelling the cuttings afterwards as would have sufficed to cut the work by hand from the beginning.

In referring to the subject of polish, we should have drawn more attention to the fact that a very fine surface and a good effect of colour and marking can be elicited from the granite when it has reached its intermediate stage of polish, when the surface is smooth, and the markings clearly brought out, but before the glassy lustre is put on it. Having regard to the showy and over-glittering effect of fully-polished granite in external architecture, before noted, we recommend those who employ granite ornamentally in this way to turn their attention more to the half-polished stage, when almost all the fine effects of polish, architecturally speaking, are realised without the glitter which detracts so much from the repose of a design. Another point which the survey of the Aberdeen granite works forces on our notice is the importance of designing mouldings and other architectural ornaments in a broad and simple style, without too many curves, and without undercuttings, which the material does not require in order to produce effect, since its durability and brightness of surface enable the designer to produce both a good and a permanent effect without deep cutting. There are one or two houses in Union-street, by the Aberdeen architect of the last generation, Simpson, who has left so much of the impress of his taste upon the architecture of the town, in which an application of that severe classic treatment called in our old text-books "the Tuscan order" has been made with very good effect, and seems entirely in harmony with the material. Referring to what we said as to the system of cutting circular holes as a source of decorative effect, we should be inclined to reprobate also the practice, which seems to be coming in, of letting in polished knobs projecting from the face of the work; we have seen designs for tombstones and other objects ornamented in this way, and cannot but think it is a degradation of a splendid material to piece it in this way to produce a supposed ornamental effect. There is in the Museum of Practical Geology in Jermyn-street, for example, a splendid colossal tazza turned in polished Peterhead granite, which is entirely spoiled by the handles, which are obviously and necessarily let in, and destroy at once our sense of the durability and homogeneous character of the whole. It is worth while to draw attention to these points, because there is a move at present for doing more in the way of decorative treatment with granite than has been done before, and it is very desirable that such an attempt should be made with the greatest caution and judgment, lest we have a grand material more or less vulgarised in the attempt to do pretty things with it. We must humbly confess that what we saw of æsthetics at the Aberdeen granite works, as exhibited in various executed designs, did not impress us with the same sense of satisfaction as did the workmanship expended on the material. It is more than probable that much of this represents concessions to public taste, or want of taste; but surely the accomplished gentlemen who preside over this large granite workshop might do something to guide public taste a little, rather than succumb to it.

LABOUR AND WEALTH.

The question of the relation of labour to wealth has forced itself upon the attention of the public, during the present Parliamentary recess, notwithstanding the absorbing interest of the sanguinary struggle in the East. Congresses and public meetings, at home and abroad, have discussed various branches of the subject. But the most noticeable effort to bring the matter within the limits of certitude is, perhaps, that which has been made by Sir Edmund Beckett, whose letter in the *Times* of the 13th September has led to further correspondence. The proceedings of the Socialist Congress at Ghent, about the same time, tend to throw some light on the same subject.

Sir Edmund Beckett postulates the fact of the decline of trade in the United Kingdom, and attributes this to the diminished production on the part of the working men, which he holds to be encouraged by the trade unions. Mr. Potter, four days later, comments unfavourably on Sir Edmund's letter, without, however, making any such definite statement as it is possible to grasp with precision. Mr. Lloyd Jones, in the *Times* of the 21st September, denies Sir Edmund Beckett's postulate. He states that the working

n will deny that nearly every trade is in a g-continued and still increasing state of pression. The building trade, Mr. Jones says, been better than at any previous period. e cotton exports for 1876 were the largest own up to that time. The raw cotton held in ad for home consumption in that year was re than in the singularly prosperous year 72. The woollen trade has increased. The rking men do not ask to do half work; nor s any one proved that production has fallen to the extent of a penny. (This deficiency we ll presently supply.) Finally, Mr. Jones gives comparison between the exports and assess- nts of 1846 and of 1876,—periods divided by irty years of the activity called into play by e railway system, which may be summarised follows :—

	1846.	1876.
	Millions Ster.	Mills.Ster.
otton manufactures: Exports	26	65
ool „ „	7	18½
gines and machinery „	1	7
etals..... „	4	21
ner ..... „	3½	7
sessed property	335½	571

here can be no doubt that a marked and mag- ficent development in the productive power of e United Kingdom within thirty years, is own by these figures. It does not, however, llow that Mr. Jones benefits his own case by inging them under discussion. It is admitted all hands that it is to the adoption of the rinciples of free trade, coincident with the ractical freedom given to trade by steam tran- port by land and by sea, and by the immediate ansmission of intelligence by telegraphy, that is great bound in our productive power is due. is true that this advance has co-existed with rade-unions. But it does not follow that it has een due to them; that it has been aided by hem; or that it has not been impeded by them. t is *post hoc*,—it does not follow that it is *ropter hoc*. On the contrary, the contention of he opponents of trade-unions is, that they in- erfere with free trade in labour. Unless this osition be disproved, the figures cited by Mr. loyd Jones tell heavily against the cause he dvocates.

It is well, however, to go to the marrow of the natter. Sir Edmund Beckett assumes that the nfluence of the trade-unions is in the direction f inducing each workman to do as little work s possible, and to obtain as much money as ossible for that work. He also adds,—to con- ume as much as possible. This item may be laid aside for the present, with the observation that the more he consumes, the better supporter he is of trade and production in general, provided (which is not questioned) he pays for what he consumes. This opinion of Sir Edmund Beckett is shared by a very considerable number of those who have devoted study and thought to the subject. It is not, however, supported by any citation of facts. And to this opinion applies the contradiction (equally unsupported) of Mr. Jones, that it has not been proved that production has fallen off "by one penny."

As to this it must be remarked, that it is merely puerile to assert that the productive power of each unit of the working classes has not been diminished by the reduction of the hours of labour. That there may be a maximum number of hours in the day during which a man can work with the most effect per hour may be admitted. But no one familiar with the employment of labour will hold that we are at present anywhere near that limit. From forty-two to forty-eight hours per week may be taken as the time now worked on an average,—or rather as the maximum. We can all remember when sixty hours was the rule. It may be that a man can, with equal regard to his own health and strength, work as sturdily and as well for the longer number of hours as for the shorter. It may be, on the contrary, that he can work with somewhat more vigour for eight than for ten hours per day. But that he can do a fifth more work per hour in the shorter than in the longer time we suppose there is no one who will assert. While, then, it is possible, but not proved, that productive power has not fallen off by the entire proportion of the shortening of the hours of labour, it is certain that the diminution cannot be very much less than the deficit thus measured.

But we can take a step further. We can supply Sir Edmund Beckett with a definite piece of evidence. We can fill up the hiatus pointed out by Mr. Lloyd Jones; not only by circumstantial, but by direct, testimony. The number of men employed in the coal mines of this country (we learn from the *Pall Mall Gazette* of the 18th of March last), in 1875, was 525,843*l.*; being 80 per cent. more than the number employed in 1861. But while the number of hands thus employed was increased at the rate of 80 per cent., the output only increased at the rate of 54 per cent. In 1861, 305 tons of coal were raised, on the average, by every man employed. In 1874 this rate of production had sunk to 249 tons of coal per man. Thus comparing the first year for which we have definite returns as to the statistics of the coal industry, with that which immediately followed the highest inflation of prices, there has been a reduction of more than one-sixth in the mechanical value of the work of every man employed in winning coal. This is an exceptionally accurate test. It is one not complicated by any question of price. In other industries we may ascertain how much has been earned,—but the differences of price, from time to time, render it very difficult to say how much more or less work has been done to secure that earning. Here, on the contrary, we have a definite measure, in the simplest and least disputable form. Supposing a man to work for 260 days in the year, which we take to be quite as much as can be assumed to be the case with the majority of colliers, in 1861 each of such 260 days' work won a ton and a third of coal. In 1874 each of such 260 days' work won less than a ton of coal. There is no escaping from the conviction that the productive power of the colliery industry has fallen off by something like one-sixth between the two specified dates.

Thus, unquestionably, the country is so much the poorer. In 1874 there were 13 per cent., or thereabout, more mouths to be fed in the United Kingdom than was the case in 1861. The persons employed in industry and agriculture, in England and Wales, were taken in the census of 1871 at 6,800,000. A thirteenth part, therefore, of the industry of England depends on coal, or, rather, depends on the winning of coal. Of that thirteenth part, more than a sixth of the productive power has been wasted. Is it likely that this loss is confined to this special industry? Is it not most significant that, in the one instance in which it is possible to put the finger on the amount of work actually done, it so nearly coincides with the proportion of time abstracted from labour? Is there not good reason to conclude that the statement that the productive power of the country has been diminished 10 per cent. by the short-time movement is considerably under the mark? And is this anything less serious than a 10 per cent. income-tax, imposed by the working classes themselves on their income in the very source, for the benefit of no human being whatever, unless it be the brewer and the collectors of the revenue from the consumption of beer and spirits?

If we could point to a steady advance of civilisation, comfort, and prospects, all round, the case might be different. If England were the only workshop to supply the world with metal manufactures, with textile manufactures, with coal,—with every or with any industrial product, she might say,—"I can afford an extra day in the week's play-time"; for that is what the change pretty nearly amounts to. But such is far from being the fact. In no branch of industry are we now so supreme as to fear no rivals. What do we find stated in the *Times* of the 28th of September? "The Dudley Cut Nail Company has, it would appear, been driven out of the field by its competitors. The business of which Wolverhampton is thus deprived falls in part to Leeds, but in part, too, to Belgium." This is a most significant statement. If there was anything as to which Wolverhampton and its neighbourhood might be supposed likely to maintain the command it would have been the nail trade. Iron is handy. Coal is handy. The labour is so simple that it used to be carried on, at Redditch and elsewhere in the country, chiefly by women and children. The machinery that has superseded this low-priced labour must, of course, be more advantageous to those who employ it than was the low cost of the cheapest manual labour. Yet this industry is now driven "in part to Belgium." This ugly bit of news comes in as an unpleasant clincher on the foregoing remarks.

Another branch of the same great national question, which has not yet been brought forward in this part of the discussion, is aptly recalled to mind by the proceedings of the Socialist Congress at Ghent, reported in the *Times* of the 18th of September. After it had been "unanimously agreed, on Barry's motion, to offer fraternal greeting to the English brethren assembled in Congress at Leicester, on September 17th, 1877, and to commend to their friendly consideration the resolution adopted by the Congress of Ghent concerning the federation of trade-unions," it was resolved practically, with unanimity, as follows:—"Considering that trade-unions, in their struggle against the *exploitation* of man by man, constitute one of the most powerful levers of the emancipation of working men, the Congress engages all categories of working men, who are not yet organised, to form themselves into trade-unions, recognising at the same time that it must be the aim of the association to abolish the wages system." It is not at the Congress of Ghent alone that the guides and counsellors of the workmen have come to the resolution to saw off the branch of the tree on which they are sitting. At the Convention of the working men's party, at Cincinnati, reported in the *Times* of the 4th of September, it was resolved (13), "for the purpose of abolishing the wages system, all industrial enterprises to be placed under the control of the Government as fast as possible, and operated by free co-operative unions for the good of the whole people." What the Government control is to be is indicated in the ensuing resolution (14):—"That the constitution be so amended as to require that all officers of the General and States Governments shall be elected by a direct vote of the people." Who these officers and who the "people" are to be, is indicated by another resolution; *e.g.*, "the officers of these bureaux (for the compilation of labour statistics) to be taken from the ranks of the labour organisations, and elected by them."

Thus from Ghent to Leicester, and from Leicester to Cincinnati, the word has been given for a declared movement for the abolition of wages. It might have been thought that this would be the very last proposal which would have emanated from those who desired to be thought the friends of the working man. So grotesque is the project, that it is hard to understand its true meaning. We take it, however, to be this. In the existing state of things it has been found that certain informal associations, protected by law, but so spontaneous in their growth as to have attracted little attention as social phenomena, have sprung up all over the civilised world. These associations consist of one or more men of brains, together with a larger number of men of working ability. The men of brains, either as the fruit of their own talent and industry, or as the legacy of the talent and industry of those who have gone before them, have had the command of a certain amount of money. This they have employed to build workshops, to buy machines, to buy materials, and to support a certain number of workpeople till such time as the result of their combined industry could be brought into the market. Then, and then only, it becomes just self-supporting and actually profitable. When this latter time comes, the man of brains, having had the main trouble, risk, and care of the association on his shoulders, has generally taken the lion's share. And so long as men of this commanding ability are comparatively rare, and men of only ordinary or working ability are common, these institutions will flourish, and the disproportionate gains of the brain, as compared with the hands, will continue.

The hands, being discontented with the division of the spoil, propose to do without the brains. Thus, they conclude, all the profit will be divided among them; they will not, then, claim wages; that is to say, the fixed and certain support which they have been in the habit of enjoying. They will take upon themselves all the risk, and divide all the profit, of the business.

They leave out of sight the fact, that the profits which have made the man of brains disproportionately rich, would be a very small addition to the riches of each of the hands if divided among them. And, what is even more directly to the point, they take it for granted that they could contribute the brains as well as the labour. It is true that all efforts in that direction have for the most part hopelessly broken down. But what the workmen shut their eyes to is the fact that it is according to human nature that they must break down. For nothing can be more certain than that no association of human beings can make the best of their abilities and energy except under wise guidance and definite control. All history is full of the proof of this. All proverbial wisdom repeats it. "Too many cooks spoil the broth." The management of an army, of a factory, or of any great mass of men by a committee, is a certain road to ridiculous disaster. The first thing that the association has to do is

to appoint a manager. This manager must be either their servant or their master. If the former, if he is controlled by each member of the association, or by each member of a committee of the association, he is simply useless. He is only a bell-rope, without a bell at the end of it. If he is to do his work, he must be clothed with enough power to make every one obey him. In this case, how does he differ from the master, whom it is the object of the co-operative association to abolish? In many ways he really does differ. He is probably less educated, less able, less experienced. He has not grown little by little into his position. He has not had the salutary teaching of his own mistakes, made in small matters, and giving him wisdom as to larger matters. Above all, he has not the unsleeping spirit of personal interest, leading him to postpone leisure, to affront surly looks, to encounter opposition,—in a word, to devote his whole energy to that success of what he indeed desires a large share of the benefit, but which is in fact the success of the association.

An instance within the personal knowledge of the writer, which occurred about thirty years ago, may be cited with advantage. It was at the time of the early introduction of the railway system. An Act of Parliament had been obtained for a line between a commercial and an industrial centre of great magnitude. The greater part of the distance was singularly free from engineering obstacles. The line might have been let, in the ordinary way, to great contractors, for a very moderate sum per mile. But the engineer was not content with this. He was aware that great contractors made great profits. That they could do so, and at the same time guarantee the company against great losses, did not enter into his calculations. Like the working men in the convention we have cited, he kept only one eye open. He persuaded the directors that if, instead of arranging for the work in the usual way, he was allowed to make directly, on behalf of the company, small sub-contracts with little men, as he understood that the large contractors did, he should save some 10 per cent. on the work. It is right to say that the honourable dealing of the man was past question. It was only a case of amateur or doctrinaire blundering. Small contracts were made, and in saying by thousands we are within the mark. The first contracts were let at unusually low prices,—5d. per cube yard for earth work, instead of 1½d. But the 5d. work was soon done. The cream was soon taken off. Month by month new and more onerous contracts had to be made. At last, in one instance alone, a cutting,—which might have been let for 14d., but which was commenced at 5d., was finished at 3s. 6d. per cubic yard; the engineer being only too thankful to the large contractor who came forward and undertook to finish the work at that extravagant price. The excess over the original estimate caused by this attempt to economise was more than 30 per cent. This little bit of experience, familiar to the writer, is a fair specimen of what might be expected to ensue on the abolition of the wage system; or, rather, it is a favourable specimen. Late, but not too late, a man of iron will and brains, to organise and direct, was called in to knit up the ravelled threads. Had this not been the case, had the quasi-co-operative system been carried out to the ultimate close, the cost would have been far more serious than the large bill actually paid.

It is entirely baseless and false to say that the working classes lie under any artificial disadvantage in this country. The shiftless, the thriftless, the poor, either from their own idleness, or from inherited ignorance and thriftlessness, remain poor, or grow poorer. But the poor child who has in him the stuff of which a true workman is made, soon makes his way from the dust. Look at Stephenson! Look at the large fortunes that were made, when work was plentiful on railways, by great contractors, almost all of whom were men of very humble origin. We have seen cheques for thousands of pounds signed —we will not say by A. B., his mark, but by an autograph of but little higher order. These men possessed the rare advantages of an intimate knowledge of their own class, and of an intelligence above their fellows. By the latter they rose to positions of command; by the former they became organisers, providers, employers of labour. Rise was rapid. A man wielded the pick, or wheeled the barrow for a month or two. His steady capacity for work pointed him out to the master as a foreman, or to the men as a butty ganger. The butty gang made a good month's work. The writer has known as much as 17s. per man per day made by one of these associations. Nine of the men drank out their earnings at the end of the month. The tenth, whose wages came to a little more as ganger,—say 28*l.* for the month, banked his profits in a stocking instead of melting them in the alehouse. Two or three months of this work made a little capitalist. Boldly the man tendered for a small job. The power that some of these men possessed, without the knowledge of plans, or sections, or estimates,—of how much it would cost to do a bit of work, was instinctive. In two or three years the man—we could give names of more than one—was on a level to tender for a first-hand contract. In a little longer time he was on the way to become a millionnaire.

While some men who have made their money as contractors have been men of education, most of those who became rich on our railways were not. They were able labourers who rose to commanding positions in the army of labour. They did not pull up all their mates with them. That is out of the question. But they improved the status of the labourers as representative men. At the same time they were always stern and exacting masters. Whether very mild or very violent, they had the eyes of lynxes. It was in the wasted or well-applied minutes that they knew that profit was lost or won. These men, the commanders of the army of labour, risen from the ranks, are the first of those whom the resolutions of the Congress of Ghent, and the Congress of Cincinnati, would abolish and extirpate.

THINGS IN LIVERPOOL.

The annual picture exhibition at Liverpool, held this year for the first time in the new Art Gallery, includes a great number of works; and though hardly any of what could be called the leading pictures of the year seem to have found their way there, the average excellence of the collection is, all things considered, very high. If there is nothing brilliantly attractive, there is a large proportion of works of solid merit, and well worth looking at. The principal suite of rooms, on the first floor, the whole of which is occupied by the annual exhibition, is very successful in regard to the most important quality of a picture-gallery—good light. The ground-story rooms are unhappy-looking, cavernous and ill-lighted, and eminently unsuited for any purposes of exhibition. They are at present occupied, on the one side by works of art belonging to the Liverpool Corporation, and on the other side by a loan collection of Japanese ware and by the collection of paintings by Mignot, which were for some time exhibited in Bond-street recently. We understand that it is not intended to use these lower rooms permanently as picture-galleries; we presume the permanent collection will be transferred to the upper rooms when the annual exhibition is over. It is to be hoped so, for any attempt to see pictures properly in the lower rooms is out of the question; and although the corporation collection is of very unequal value, and would be much the better for some judicious weeding and exchanging, the works, good, bad, or indifferent, had better be put where they can be seen. Of the exterior of the building we gave a view some time since; it is further embellished now by two seated figures, of heroic, not to say colossal scale, of Raffaelle and Michelangelo, by Mr. Warrington Wood, which are placed on pedestals flanking the steps; as well as a fine allegorical figure of "Liverpool," by the same sculptor, which crowns the pediment. The figure of Raffaelle we cannot accept as a representation of the man as known to us in portraits; the head is quite deficient in the *spiritual* beauty which we associate with his name: as specimens of sculpture both figures are, we need hardly say, much above the mark of the decorative sculpture commonly associated with architecture in this country, and the figure of Michelangelo is treated with considerable power. That the figures look, nevertheless, unsatisfactory and uncomfortable, we fear cannot be denied; and it is worth while to note this and the reason for it, in connexion with the important subject of the combination of sculpture and architecture. The fact is, we take it, that Mr. Wood's figures are neither sufficiently combined with the architecture to be regarded as architectural accessories, nor sufficiently removed from it to be regarded as sculpture pure and simple. Their treatment fits them for consideration from the latter point of view; they are hardly conventional or quiescent enough to b regarded as accessories to the architecture. B they sit close up against the columns of t portico, to which they do not seem in any wa to belong, and which they succeed in complete dwarfing as to scale. If it were intended bring them into such close proximity with th architecture, they should have been made appear more distinctly as designed for the position in the building, and the building designed for them. As it is, they might, so f as appearances go, have been statues boug independently of the site, and placed where the are, merely because there was room for them They might perhaps yet be removed further from the building, or be set in the spac opposite the recessed wing, on either side the portico, and, to our thinking, both buildin and statues would be the gainers.

While on the subject of architecture an sculpture on the site in question, we cannot bu again urge what has been more than once brought forward in our columns already, th completion by the Liverpool public of their fines building (for so, with all its practical faults, i is), St. George's Hall, by the addition of th sculpture contemplated by its architect as the necessary completion of the building, and with out which it is really unfinished. If the Liver pool Corporation wish to appear before the worl as possessed of a real interest in the artistic beautifying of their city, the very first thing they ought to do is to make at least a commence ment of the sculptural embellishment of Elmes's building, which has stood for a quarter of a century bare and unfinished,—a reproach to the town. The sculpture which has been added to the Art Gallery would have been far better applied to the Hall, where it would have been easy to find a place really fitted for it, because the Hall externally is designed throughout with direct reference to the combination of sculpture and architecture, by an architect who thoroughly understood the matter.

Next to the Art Gallery, the "Picton Reading-room" is now nearly completed,—a circular colonnaded building, with a low domed roof, which, however, only shows from a distance, the composition being crowned with a balustrade, and the dome set back. A circular building of this type is not very often seen now, and it has a pretty and unusual effect, though standing a little awkwardly between the square blocks of the Free Library and the Art Gallery, with the former of which it is combined. The Reading-room is not, like its neighbour, the Art Gallery, the gift of the gentleman whose name it bears, but was called after him as a slight acknowledgment of his having given something even better than money, namely, many years of intelligent and active assistance, as chairman of the Free Library Committee, in the ordering and improvement of the institution. In alluding to the Art Gallery as bearing the name of its donor, we speak literally, since the frieze is decorated, for the benefit of the inquiring visitor, with the words, "Walker Art Gallery," in enormous capitals. That is one way of doing it, no doubt.

Building operations in Liverpool take rather a railway turn just now, as two large stations may be said to be in progress. The one is the enlargement of the terminus of the London and North Western Railway Company in Lime-street, which is so extensive as to amount to making a new station as large as the old one alongside of it. How the new extent of street front is to be treated there is no sign as yet, as the majority of the houses that will have to be displaced are still standing; an immense amount of work has been done in enlarging the outlet from the station at the tunnel mouth, and the new platforms are laid, and the travelling stage for putting on the roof is in position. On the other side of the river the new station for the Birkenhead and Chester Railway, the connexions of which with main lines are now very extensive, is approaching completion, the iron roofs being nearly up. Birkenhead has long had a very dingy mean-looking incommodious terminus a little higher up the river than the new site, at the point known as "Monk's Ferry"; a name which, like "Blackfriars" on the Thames, recals the old history of the place in the monastic ages. The new terminus is being built close to the splendidly ordered and managed "Woodside Ferry," the property of the Birkenhead Commissioners (now to merge in the Municipality of Birkenhead), so that the main river traffic between Liverpool and Birkenhead will be concentrated at one spot, from which also the omnibus traffic into Birkenhead and the neigh-

bourhood radiates. The station buildings present nothing very special in the way of architectural effect: there is a certain degree of what may be called Gothic treatment, so far as the ornamental carving of capitals to pilasters, &c., gives a key to the style. Looking at the conglomeration of traffic here, and the provision for it, and at the dock-works, and Messrs. Laird's great shipbuilding-yard, which line the river on either hand, it is difficult to realise that within the memory of people now living this was a wooded river bank, with fields behind, to which occasional passengers were conveyed over from the Liverpool side of the river in a rowing-boat. There have been few such instances of rapid growth of a town in England.

The street architecture of Liverpool is gradually and bit by bit getting rebuilt, in the main almost entirely for the better; for, in truth, in the commercial parts of the town (not to speak of other neighbourhoods) the existing street architecture could hardly be more dull and uninteresting. Some new buildings in Castle-street, among the most recent, are very elegant, in a modified Italian style. At the corner of the same street appears the first bit, as far as we observed, of best genuine Revived Queen Anne that Liverpool has to boast of. This is the new building for Messrs. Agnew, the well-known picture-dealers, who seem to have been carrying out simultaneously in Liverpool a parallel building to that which has lately become a conspicuous object in Old Bond-street, London. We grieve to say that some Liverpool critics are profane enough to call this architecture, so much approved in the capital, the "Red-raddle style": a sad indication of the fact that—

"They do not know everything down in Judee."

The new Liberal Club, in Dale-street, is a large brick building, at present in little more than a shell state, and not sufficiently complete as to its front to enable one to judge quite of its ultimate effect; but, so far, we must confess, it appears to our eyes somewhat heavy in treatment.

The Liverpool Art Club have at present a collection of fans on view, containing some very interesting and pretty specimens, and with an intelligent catalogue. The collection is not, however, quite so large or important as the local press make it out to be. Messrs. Agnew have on view in their local gallery a large collection of fine impressions from the works of the veteran engraver Cousins, affording remarkable evidence of untiring industry and splendid workmanship, extending over a long lifetime.

THE ROMAN WALL BETWEEN THE FORTH AND THE CLYDE.

ITS ORIGIN: ITS PRESERVATION THROUGH THE DARK AGES: ITS PRESENT CONDITION, AND ITS PROBABLE FUTURE.

A STRANGELY neglected but really magnificent monument of the era of the Roman occupation of Britain stretches its silent length from sea to sea across the Scottish midland counties, in the wall of Antoninus Pius, built A.D. 140. It is magnificent not only when regarded from the standpoints of its original design and execution, but still more so in the fact of its present wonderful condition of preservation, after coming down to us through nearly seventeen centuries and a half of popular indifference (or ill-usage) and imperial neglect. From a variety of causes, which shall appear presently, this famous barrier — that once marked the north-west limit of the great Roman empire at a time when theriver Euphrates did a like duty for it on the south-east—is but little known even to the dwellers in the neighbourhood of its route. It is, perhaps, familiar enough as a feature in the landscape to the rustics attached to the farms which the great military work bounds or intersects; but even to them its best parts are all but unknown, hidden as they are in the waste places and bye-paths of the country, and oftentimes shut out from the light of day, even, by a luxurious undergrowth of dwarfwood. The enthusiastic antiquary alone feels incited to the task of days of patient exploration in the depths of old woods, and across bogs and morasses; but he rarely possesses the youth and strength necessary for an expedition of this kind. The antiquarian fever does not commonly set in very badly until after middle age has been passed, when the knee-joints begin to stiffen, and by that time an exploration of the Scottish Roman wall, or any other enterprise of the kind, is out of the question, unless it is undertaken by proxy,—and, unfortunately, it is but rarely that such a proxy can be endowed with the observant eye and the understanding mind of the principal in the expedition. He who would become familiar with the most perfect parts of the grand old relic of which we are treating, must seek for them in out-of-the-way places which cannot be traversed, or reached even, except by persevering dint of leg exercise, varied by ever-recurring climbing and bush-ranging. If he have an awkward dread of being pinned in the leg by the dog of a stray gamekeeper here and there, or of being caught and laid by the heels for trespass, it were better that he should abandon the idea at once, and confine himself henceforth to explorations and researches which can be engaged in on pony-back at the least.

Known to farm people who cannot estimate its value, and but vaguely known to antiquaries, who have been obliged to found their conceptions on obscure hearsay alone, it has thus come to pass that a relic, perhaps the most generally interesting of which Scotland can boast, is now almost entirely neglected and ignored. The writer has duly qualified himself for the task by patient personal inspection, and he proposes to set down the results of his explorations, and of the speculations and conclusions to which these explorations have given rise.

Apart from the military roads and causeways with which the Roman engineers covered our island as with a net-work, the military rampart or barrier formed another distinct class of Roman engineering, of which the island of Great Britain offers no less than four specimens,—our present subject being one of them. The military barrier or rampart had for its general design and scope the barring of the way to the more civilised parts of the conquered territory, against the inroads of the aboriginal inhabitants from beyond the pale of subjugation. The history of this class of Roman work in Britain may be briefly sketched.

The Emperor Julius Agricola was the first of the Roman invaders who penetrated much into the interior of the country, and in his fourth campaign (as we gather from the narration of his son-in-law, Tacitus) he threw up a chain of stone forts across the isthmus between Bodotria and Glota (Forth and Clyde), for the purpose of securing and consolidating the conquests which his eagles had achieved in the northern parts of the island. This formed the first Roman barrier; and as at this crossing the country was entirely divided between forest and morass, it is almost certain that to supply the means of the necessary intercommunication, the eighteen forts thus thrown up were connected by one of those roadways for the construction of which the Romans possessed so powerful a passion. This chain of forts was begun and finished in the summer of A.D. 81; but it does not appear that the purpose for which the barrier was designed had thereby been accomplished, for we find a few years afterwards, that the Emperor Adrian, after some unsuccessful campaigns in the further part of the island, came to the conclusion that he must, in the meantime, rest contented with a frontier line further south, and accordingly in the year 121 he threw up from the Tyne to the Solway a wall of earth, strengthened by a deep ditch, and flanked with numerous garrison-stations, forts, and towers. But Antoninus Pius (surnamed the Father of his Country), who succeeded Adrian, gradually became discontented with the restricted boundary line to which his predecessor's Tyne and Solway wall confined him; and accordingly we discover him by his General, Lollius Urbicus, pushing the Roman eagles northward again, with the result that after a successful campaign, that general, by instructions from Rome, built a wall of earth from the Forth to the Clyde, in the line of the chain of forts which Julius Agricola had formerly constructed, but which, fifty years previously, the incursions of the aborigines of the northern hill country had compelled the Romans for a time to abandon. But a deadly canker was already beginning to attack the vital seats of the overgrown empire, and it is not to be marvelled at, therefore, that the attention bestowed upon the course and cure of comparatively trifling sores at the extremities should be but fitful and ineffectual. The wall of Antoninus Pius, though abounding in all the accessories usually added to defensive works of the kind, such as stations, towers, turrets, double walls, and a protected causeway for the swift massing of troops upon desired points, did not (as we learn from the writings of Julii Capitolinus) long remain an effective barrier against the inroads of the barbarians; and after seventy years of unsatisfactory struggle,—unsatisfactory because not adequately sustained by necessary reinforcements from home,—we find, for the second time, and this time finally, the Romans abandoning the line of the Forth and Clyde, to resume that of the Solway and the Tyne. The Emperor Severus, then in Britain, thus resolved reluctantly to relinquish all hopes of substantial conquest northwards, but in doing so he determined to erect, from the Tyne to the Solway, such a barrier as could not fail to secure the safety of at least everything to the south of that line for some centuries to come. Accordingly, in the year 209–210, the elaborate structure of mortared masonry, subsequently known as the Wall of Severus, was erected by that monarch between Bowness on the Solway, and Wallsend on the lower Tyne. Not that the abandonment of all the country to the north of this wall was final and definite. Probably a kind of fitful sovereignty was long afterwards kept up over the country situated between the Wall of Severus and that of Antoninus Pius. Indeed, Roman historians speak of various reparations of the Scottish wall,—one even so late as the fifth century; but it is at least open to suspicion that the work thus renovated was not the earthwork of Antoninus, but the more elaborate and later stone structure of Severus. Briefly these defensive works may be stated as follows:—

	A.D.
1. A chain of forts from the Forth to the Clyde, by Julius Agricola	81
2. An earthen wall and ditch from the Tyne to the Solway, by Adrian	121
3. An earthen wall, ditch, and military causeway, from the Forth to the Clyde, by Antoninus Pius	140
4. A wall of stone from the Tyne at Wallsend to the Solway, by Severus	210

It is with the third of these barriers we shall have henceforth to do.

Across the narrow neck or isthmus of land lying between the estuaries of the Forth and Clyde there stretches a natural valley, whose summit-level is comparatively low,—so low as to have induced in later times the construction through it of the large navigable canal known as the Forth and Clyde Canal. This valley pursues its course across the country in a tolerably straight line; but its concavity is interrupted here and there by the uprising of abrupt hills and hillocks, which, were the valley under a moderate depth of water, would stand up as some half a dozen islands and islets. Anciently, much, if not all, of the bottom of this pass from sea to sea was hopeless morass, while the lower slopes of both the northern and southern rise were covered with portions of the great Caledonian forest. This natural cut from sea to sea could hardly long escape the critical eyes of civil engineers so accomplished and so enterprising as the Romans were, and it cannot have failed to strike the earliest pioneers of Roman conquest in Britain as a line capable of the most thorough-going defence, if supplemented by those artificial accessories in which the Roman military engineers were so markedly adepts. The forts of Agricola (eighteen in number, and all still perfectly capable of identification so far as situation is concerned) hugged—to use a fitting nautical expression—the southern rise of the valley, and were generally erected at no very great elevation above the general level of the bottom of the plain. The sites were invariably chosen, however, for their commanding views to the northwards; sometimes they occupy the summits of the island-like hillocks which dot the general surface, and in fixing upon them it is evident that the Roman military engineers have not set much store by the preservation of a straight line. These forts were planted at intervals, roughly speaking, of two miles apart; and, as already conjectured, the military causeway, the remains of which are still in many places clearly visible, was probably built at the same time, although not finished, perhaps, to the extent afterwards attained when Lollius Urbicus carried through his *vallum* and double *agger*. The chain of forts, however, was but a small undertaking, when compared to the latter continuous barrier. Of this wall of Antoninus Pius (using the word "wall" in its comprehensive sense), the measurements put down at various epochs, and adduced by various authorities, are divergent and conflicting. But any one at all well acquainted (that is to say, personally acquainted) with the now obscure byeways which this relic of hoar antiquity pursues, can have no difficulty in accounting for so apparently curious a diversity of statement and opinion. The truth is, that the work was of various degrees of strength

and size,—a fact which is perfectly apparent to any one who will pursue the course of the trench at the present day. Along the entire length of forty Roman or thirty-seven English miles, to which the barrier ran, the strength of the line varies according to the natural surroundings of the country, and it would not have been like the finished strategists which the Romans undoubtedly were, to have expended unnecessary forces of defensive work on positions which were already well nigh impregnable of themselves. The vallum, or ditch, with its accompanying agger, on the southern brink, was continuous from sea to sea; but at some passes of great natural strength, the top width of the trench did not originally exceed 12 ft., while at other places of extraordinary exposure, it expanded into a huge rift of from 60 ft. to 70 ft. in width, and offering all the appearance of a sizeable ravine or small glen. Its depth also varied in like proportions, although that probably never decreased to anything under 12 ft., while at other points it may have been double or treble that depth.

We know that a force of nearly 8,000 men was employed in flinging up this great work, and although, unfortunately, beyond the memorial stones which each detachment of workers set up on the completion of the portion allotted to them, many of which are now to be seen in the University of Glasgow and elsewhere, we have no written memorial of the progress of the work, it is not difficult to conjecture how it was carried on. And although it is now 1,737 years since the work was executed, and nearly 1,500 years since it was given up to total neglect, we can tell, by means of the information conveyed by these tablet stones, by what regiments of the Roman army the work was executed, and how much of it each performed. If we reflect at the same time on the many national undertakings which have sprung into existence, fallen to decay, and sunk into oblivion complete and hopeless, during comparatively recent centuries, we shall be able the more sincerely to prize the little light thus thrown upon a great work which would otherwise have been mainly left in the region of conjecture. The amount of certain and probable data offered by these stones may be thus stated:—

	Paces.
Length constructed by the Second Legion	11,603
Ditto ditto vexillation of the Sixth Legion	7,411
Length constructed by the vexillation of the Twentieth Legion	7,801
Certain	26,815
Additional by the vexillation of the Twentieth Legion, probable, though not certain, owing to indistinctness of figures	6,911
The Sixth Legion, a monument, but no number, supposed	3,000
A cohort of auxiliaries (*Cohors prima Cugerorum*)	3,000
	39,726

or 39 miles 726 paces, which was probably the whole length of the wall.

From the eastern termination at Caeriden (the fort at the wing) near the modern seaport of Borrowstouness, the wall ran westwards at but a short distance from the sea-line of the Firth of Forth, at which place there is a somewhat steep rise of the shore. For half a dozen miles of this part of the track, until the comparatively modern town of Falkirk is reached, the line of the wall looked down upon the Firth of Forth, with, originally, a bleak strip of waste foreshore in front. This foreshore is now reclaimed into the highly-cultivated Carse of Falkirk, but it is still only a few feet elevated above high-water level, and at the epoch of the Roman invasion it was undoubtedly a swampy region of half sea, half land, with the deep Firth as a background, and the whole forming a tolerably sufficient barrier against the incursions of the wild natives from the opposite shores of Fife and Clackmannan. We are not astonished to find, therefore, that the artificial wall was here of about its smallest dimensions; and, indeed, so small has it been, comparatively, that but very slight traces of it remain for as much as four or five miles from its eastern termination. For this portion of the works we can imagine much of the excavating tools and the greater part of the provisions for the workmen must have been landed from the imperial galleys anchored off the Ness of Borrowstoun, where water comparatively deep is found closer in-shore than at any other point for some miles, either up or down.

Four or five miles farther up the Firth, the River Carron joins its waters to the larger estuary at the modern port of Grangemouth. The Carron is still navigable for a considerable distance from its embouchure, but in the time of the Romans it was navigable for a much larger part of its course, and at the ancient port of Camelon (the site of which is now at a considerable distance from the highest point which even small ships are able to reach), where the river takes a bend to the southwards and approaches to within half a mile of the line of the wall, it amounts to a clear certainty that the Romans had their second shipping station for the discharging of the men and material required in the construction of the wall. Many Roman remains have been found at ancient Camelon (the modern village does not occupy precisely the same site), and, amongst others, the anchors of some of their galleys have in recent times been dug up. Now, long anterior to the rise of modern navigation in this country,—at least, long anterior to its rise above the stage of wicker coracles or dug-out canoes,—the gradual upheaval of the southern coast-line of the Firth of Forth, along with the vast accumulations of sedimentary deposits by the Firth itself and by its numerous turbid tributaries, totally rubbed out Camelon from all floating communication with the sea. The position is therefore incontrovertible that the anchors thus dug out of the deposit are those used by the Roman galleys which frequented the upper Carron and its port, Camelon, during the construction of the wall of Antoninus Pius, and also during the period immediately following, during which it was maintained and upheld as an effective military barrier. A military causeway, of finished construction, the remains of which are still visible, stretched from the port of Camelon to the vallum, at a point about a mile and a half to the westwards of the spot where the town of Falkirk now stands, and there joined the lateral military causeway which accompanied the wall along the whole length of its course, from sea to sea. Camelon, also, as an advanced post to the northward of the wall, and as probably the most important Caledonian harbour which the Romans possessed, was elaborately defended by stonework, which, so recently as the time of the Scottish historian, George Buchanan (middle of the sixteenth century), showed ruins so extensive as to give rise to the assumption that Camelon had been a Roman city of grand dimensions. The stone relics of ancient Camelon, however, like all the rest of the open stonework of the Romans in this part of the country, have long since utterly disappeared from the immediate neighbourhood of the site where they once stood erect; but many of them may still be traced in incongruous positions in the rude structures of the cottages of modern Camelon, in the stonework of farmsteadings, and in the stone fences of the farms themselves.

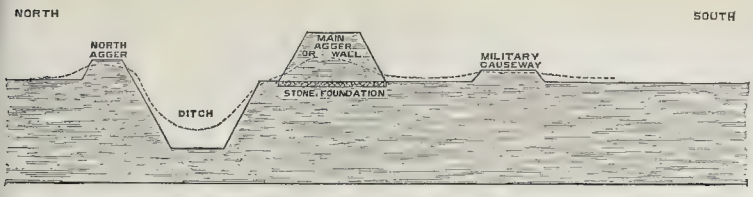
As Lollius Urbicus and his sappers and miners worked their way westward from the base of supplies which the port of Camelon constituted, they began to feel that they were now in the tug of war. Directly to the northward, an exceedingly level and therefore very dangerous country presented itself for the incursions southwards of the savage but warlike tribes of the trans-Grampian region. The comparatively puny dimensions with which the wall and its appendages had started from its eastern end at Caeriden now no longer sufficed; and accordingly as it proceeds to the westward of Falkirk the vallum becomes wider and deeper, while the agger on the south brink becomes broader and higher, and it is not unnatural therefore that it is here that we now find the great work in its highest state of preservation.

It is at least doubtful whether even a mere pretence of an agger on the north brink of the ditch was ever carried unbroken from sea to sea; but at this portion, at all events, such a thing *was* considered indispensable; and when complete at this point, the north agger must have vied in dimensions with its *vis-à-vis* on the south.

Simultaneously with the construction of the rampart from its east end, doubtless began the same work at its western extreme point, where it strikes the shores of the estuary of the Clyde. Here, in the neighbourhood of Dumbarton (for it is still a moot point whether the wall terminated at Dumbarton or at another point jutting into the water a little farther to the eastwards) the Roman galleys would find a safe mooring-ground for the landing of the implements and stones involved in the construction of the major portion of the western half of the wall. Thus working from both ends and with a heavy force of military artificers at command, the full stretch of the distance involved must have been accomplished in a space of time which, to those who have been accustomed to witness such operations on no greater a scale than that demanding the presence of a few hundreds of unskilled navvies, must seem incredibly short. We have nothing, on the point of time, to guide us but inference; but bearing in mind to what a high perfection of efficiency and rapidity the Roman engineers had elsewhere attained in the throwing up of intrenched camps, and such like, it can hardly be asserted that the Caledonian rampart occupied in its construction more than one calendar month, while some critics,—professing to judge solely from the time occupied in the construction of similar works, regarding which we possess an abundant supply of data,—incline to the opinion that a fortnight may have sufficed for its completion. There was unquestionably a spirit of emulation at work amongst the various divisions of the Roman army sent from Italy to do this bit of civil engineering on the remote north-west frontier line. We can gather as much from the inscriptions on the tablet stones which were set upon the face of the wall by each division as their portion of the work was finished; but, independently of the spirit of ordinary emulation, there was probably a more peremptory necessity for rapidity of execution, viz., that of danger from the warlike tribes to the northwards, if time were given to them to descend in anything like numbers upon the work and the workers before the finish was fully reached.

The course which Lollius Urbicus took with his barrier was, generally speaking, along the southern slope of the great valley of which we have spoken. His orders from Rome evidently were to fetch up each of the forts of Agricola in turn, and this was an injunction which must have cost him no little scheming and trouble. But for the fancied necessity of catching up these forts, a much more advantageous route for the great wall might have been selected than the somewhat erratic one which it actually pursues. We find it constantly dipping down to one of the lower-levelled forts, or again reaching up to one of those planted at a higher level. It takes also some curious turns and bends even between the forts, for the purpose, doubtless, of avoiding very hard rock, or a soil of a softness incompatible with the degree of durability which was considered indispensable. At one point the wall comes down very close to the lowest dip of the great valley, for the purpose of catching up a fort situated at an unusually low level. During much of its course it must in ancient times have skirted the southern brink of the morass-land which, to a great extent, occupied the bottom of the valley. It intersects many brooks, and some considerable streams, but by what means these were crossed, if crossed at all, it is impossible definitely now to say. No vestiges of any bridges are to be found, although if such ever did exist they would have been very much liable to be carried away during heavy rains or after severe snowstorms. The probability rather is, however, that the difficulty therein experienced by Lollius Urbicus was overcome by simply leaving the requisite gap in the works. Where very small runlets were intersected, little drain-conduits of masonry were introduced; and as the ditch is nearly always following the deviations in level of the surface, its bottom, though most commonly quite dry, sometimes became itself the course followed by the surface drainage. The theory that no bridges were used is strengthened by the fact that wherever a sizeable stream is to be intersected, the rampart invariably strikes the water at a point where the bank of the stream had become precipitous, and therefore impracticable for the maintenance of foothold by any enemy who might form the intention of using the water gap for the purpose of making a hostile incursion southwards of the barrier.

At the first blush it might have been fancied that a work into the construction of which so friable a substance as that of earth, or even turf, almost solely entered, would prove but ephemeral, unless being constantly looked to by gangs of engineers, and having instantly remade any observable breaches caused by the slow operations of unaided time, by the weather, or through the destructive propensities, or love of change, of the two-legged agencies upon its borders. Such a fancy is badly founded, however. Doubtless the wall of Antoninus Pius has suffered, and suffered severely, through each and every of the agencies just quoted; but what there is left of it may give thanks for its present wonderful state of preservation to the fact that it was built of soft friable earth, and not of hard durable stone. Many grand portions of this fine old relic are preserved almost intact,



SECTION OF ANTONINE'S BARRIER WHEN PERFECT.

The dotted line shows its present contour at well-preserved portions.

save from the beating-down and filling-up tendencies of over seventeen centuries of the variable weather of North Britain; but if the structure had been solely of stone, it would have gone the way, long ere this, of all the early stone-work of countries which pass from one great civilisation to another with a gap between of some centuries in width of utter barbarism and neglect. Not that there enters no stone whatever into the construction of the wall of Antoninus Pius, but what stone there is is hidden, and has, generally speaking, remained so, except to the spade and probing iron of the explorer. The plan of construction seems to have been as follows:—

A survey of the surface from one fort to another having been made and a route fixed upon, a squad of soldiers with proper implements pioneered the course by clearing of trees and brushwood a sufficient width to admit passage for the military causeway, the vallum or ditch, the south agger and its smaller companion on the north. Immediately on the heels of this trenching party followed a squad of masons, laying down a surface foundation of freestone for the reception of the earthen agger, while last of all came the main body of the workers, excavating the great ditch, and heaping up the *débris* thereby won upon the stone foundation being laid down in front. Only a few weeks ago, the writer inspected a small portion of this foundation which has just been laid bare for inspection by the intelligent proprietor, about two miles to the west of the town of Falkirk, and at a place where the barrier approaches to within a few yards of the banks of the Forth and Clyde canal. The foundation now exposed proves to be of rough blocks of freestone, most of the blocks bearing marks of having been broken off from the parent strata by the agency of wedges. These are laid in without any cement, and they form one course only of from 14 in. to 18 in. in thickness, and with a uniform breadth of 14 ft. The earthen wall, though of course much flattened down by rain and other influences, still stands 6 ft. high in some places closely adjoining, and although the stone foundation is on the same level as the neighbouring surface of the untouched ground it is everywhere concealed from view. Directly adjoining this little bit of exposed foundation, the great vallum itself yawns in almost unimpaired perfection with a breadth at top of 40 ft. across, and a depth from the now depressed summit of the agger of 25 ft.

Antoninus's wall, therefore, owes its present wonderful state of preservation to the fact that it was built of earth, and not of anything to try very severely the cupidity of the many generations of needy dwellers upon its banks and in its vicinity. For many centuries, too, the work was buried within the recesses of a primeval forest tract in a region barren and thinly populated; and to this, also, is doubtless owing much of that immunity from wanton outrage which it has enjoyed. Its value as a defensible military rampart must in those days have been very high, though it is very questionable whether the Romans were ever—for anything but a short period comparatively—in a position, because of troubles at home, to do its qualities in this respect justice. A critical inspection of this military work at the present day affords evidence of not a little intelligent appreciation of the relic on the part of land proprietors even in times somewhat remote. There may be found here and there very fine bits carefully enclosed; while on either side a high cultivation comes close up to the very brink. In some places the ground has been ruthlessly levelled by the unappreciative rustic; but so gigantic have the various works originally been, that hardly in any place, except where the site is now covered by the streets and buildings of a town, is it totally impossible for the knowing eye to catch up a few unobliterated traces.

To the inhabitants of the Forth and Clyde valley the barrier is known as the Roman wall, Graham's Dyke, and Graham's Sheugh. By one or another of these three names it is known pretty extensively by hearsay; but there is little of intelligent interest in the relic to be encountered anywhere amongst the natives, many of whom have never even had the curiosity to go and see a bit of it. A few miles of the barrier are still quite intact; and nothing for the intelligent and appreciative mind can be more impressive or even solemn than a visit to one of these copse-hidden retreats. In many places we have the work in a condition pretty much that in which Roman spade and mattock left it more than seventeen centuries ago, the sides of the great trench clean cut still, and the southern agger quite distinct, though weather-beaten down to half its original height. More frequently this agger has been clean cut away to admit of the plough coming right up to the brink, and in a very few places the huge rift has been carefully refilled and levelled. Here and there, along the route, a low stone wall creeps along the bottom of the trench, and forms the march line between one property and another; in some level places water filled to the brim has occupied the ditch for ages, while in others soft and spongy moss has crept down into its bed and partially filled it up. In one or two places the ancient reclaimer of the ground, loath apparently to obliterate all traces entirely, but more unwilling still to lose, purely from excess of æsthetic motive, so much valuable space, has rounded off the brinks of the vallum, and boldly ploughed down one side of it and up the other, thereby cropping the whole without injuring much the relic itself. That such a thing *can* be done will be proof of itself, to the practical surveyor, of the very considerable proportions of the original work. In portions of its track it assumes very much the appearance of a modern railway cutting permitted for some reason or other to run wholly to seed. Wherever the trench has not been much molested, trees and shrubs now spring up from its bottom and from its sides; and wherever this occurs, the thing looks so thoroughly natural and ravine-like, that even the most intelligent stranger accidentally crashing through the brushwood and suddenly presenting himself on the brink would naturally turn away as from nothing remarkable. Where the wall passes through demesnes of very old standing, such as notably in the case of Callendar Park, near Falkirk, a part of it is usually carefully preserved. Where the site passes through a country thoroughly cleared and open, its course may almost invariably be traced by a more or less gentle lateral concavity of the surface, and by the sudden dip of the stone dykes and hedges which traverse it at right angles. In the neighbourhood of the rising town of Falkirk, the south brink of the vallum has become a favourite site for the erection of modern villas, the owners of which are drawn thereto partly by the attraction of historical association, and partly by the magnificent view to the northwards which the summit of the wall affords to the spectator along the whole of its course. The route of the rampart through the Scottish midland counties has recently been discovered to be abounding in mineral wealth. The prosperity to which this gives rise is growing apace, and any day may see the finest parts of the glorious old relic sacrificed to the unintelligent indifference of a go-ahead coke-burner, or to the race after wealth of an enterprising ironmaster, who know little and care less concerning the Antiquarian Society. Where the rampart approaches to within five miles of the already great and still swiftly-growing city of Glasgow, much of it has of late years been mercilessly wiped out by clusters of *parvenus* suburbs, by new street-lines and roadways. The great wall of Antoninus Pius is not yet so dilapidated but that it may legitimately be regarded still as a grand whole. Any explorer, with a knowing eye for its fading points, may yet trace it from sea to sea without encountering more than a mile regarding which he has to appeal either to local history or tradition for assistance in identification; but, undoubtedly, without the aid of some legislative conservatism, our descendants a hundred or even fifty years hence will not be able to say the same.

Possibly, if Sir John Lubbock's proposal for the preservation of national monuments should fructify anything bountifully, something may be done to ward off the complete obliteration of the great work of Antoninus, as well as of many other works of a kindred nature. If it be objected that Roman remains are not, strictly speaking, national remains, it may be answered that precisely the same objection may be raised against Druidical, Celtic, Danish, Anglo-Saxon, and Norman relics. Moreover, there is still a slight trickling of the blood of Romulus and Remus in our veins, and one may very safely venture to assert that that same trickling is not the most ignoble part of what is a very fine blend,—if we may be pardoned for saying so. But there is another avenue open for at least a partial alleviation of the calamity threatened, should there be no prospect of imperial interference of a salutary kind. There are many intelligent land proprietors between the Forth and Clyde through whose grounds fine portions of the old wall run. If one or more of these gentlemen will restore a short strip of the rampart to its pristine condition when Lollius Urbicus with his sappers and miners left it nearly seventeen centuries and a half ago,—if they will enclose this renovated portion along with an adjoining untouched part of equal size, and take such steps for the preservation of the whole in perpetuity as their various sagacities may suggest,—we venture to assert that in doing so they will not be performing the least meritorious act of their lives.

EGYPTIAN ARCHITECTURE AND ITS EXPRESSIONAL POWER.

It happens, perhaps fortunately, every now and then, that some fortuitous circumstance or event occurs which attracts an amount of attention to some art or science, or special phase of it, which would not otherwise be accorded. It is so most certainly in fine art and in architecture, for the accidental discovery of some mere fragment, perhaps, of an antique and forgotten, or well-nigh forgotten, style of architectural art, will draw the attention of the art-loving world to matters all but passed away, even from remembrance. We could name many such, but it must be needless. We would revert to it simply for the purpose of calling a moment's attention to a style of art and architecture which but seldom comes into "practical" consideration, and but rarely into the artistic thought of more than a very few. We allude to the *Egyptian*,—to that style of art and architecture which once on a time prevailed, and had sway over so large an extent of country, and was the *sole* mode of artistic and architectural expression then and there in vogue. This may at first glance seem somewhat common-place, and to suggest but little that is not now well known; but it is not so, and the appearance in the modern Babylon, in the open air, and always exposed to public view, of a genuine specimen, and not a copy, of antique Egyptian art, may well raise in the minds of the thoughtful few some, and not a few, novel thoughts. Old Egypt borrowed nothing and copied nothing, not even her own work.

The obelisk now on its way, and a model of which, to show its exact size, stands in Parliament-square, close to the Gothic walls of Westminster Abbey, would now in the proposed site, if unfortunately it were allowed finally to stand there, puzzle not a little its architect and sculptor; hardly less so, may be, than would the Abbey itself and the Palace of Westminster, and its towers round about it. He could but call to mind its antique place and position and use, for it assuredly had one. He might, perhaps, even be thought to ask where the "Temple" itself was, of which it formed a component, though but a small, item, and to wonder why a part at

least of it was not near it, thus to show its antique significance!

It may, therefore, be of some interest to glance for a brief moment at an ancient Egyptian temple, its arrangements, and at the special place in it which the obelisk commonly occupied. If the obelisk be placed in Parliament-square, if it be not surrounded in veritable fact by the architecture and accessories which it had when in its original place on Egyptian ground, it may be useful to bear these in mind while looking at it, and may help to render it an object of yet greater and more profound interest than it is likely otherwise to be. An obelisk always formed part of what may conveniently be termed the furniture of a temple; just, indeed, and as much so, as the furniture in it forms a part of a church nowadays. It must, therefore, be of interest to have some general idea of what an antique Egyptian temple was,—its general plan and arrangements, as far, indeed, as these can be come at after so many ages have passed, and so much beyond hope of recovery has perished, even to the very memory of it.

Not to speak of the religious ideas of the old Egyptians, it may be noted that one great leading idea which must have always been present to the mind of an Egyptian architect in the planning of a temple was to provide adequately for the passage and display of those long and gorgeous processions of which the Egyptians were so particularly fond, and which played so important a part in their ceremonial worship. Within a grove of trees, wall-surrounded, the temple was placed, and was approached by the procession through a somewhat low doorway in this outer and protecting wall of it, after having passed, at some distance from it, through an open portico, an arrangement not a little conducive to the effect desired to be produced. We are here speaking of the larger and more imposing and perfectly-arranged temples, the details differing and the parts becoming fewer as the temple diminished in size and importance. After passing thus through this first doorway, comparatively low and narrow, the procession saw before it, may be, the most generally imposing part of the entire structure or group of buildings,—the first "pylon," sculpture-covered, with its central gateway, through which it must needs pass. On either side of the central pathway or avenue along which the procession passed were rows of sphinxes, more or less in number, and between the ends of these lines of so strangely animated forms and the pylon stood the emblematic obelisks, for there were two of them, one on either side of the pylon doorway, and close to it, as lamps standing before the portico of a London church or public building. They were thus seen profiled against the pylon wall, and cast their long shadows on it, and more effectively and judiciously they could not be placed. May not this consideration among others afford a hint in the selection of a position for this London obelisk?

But to our outline of the Temple arrangements, from which obelisks come. Before the pylon, and near the obelisks, were the seated Colossi, of which busts and fragments may be seen in the British Museum, and these formed certainly no insignificant part of the imposing architectural picture. Much more here might be hinted at, but we are simply indicating plan and arrangements. Beyond the first pylon was a second one, with all but the same arrangements, though differing in details. A court-yard, a striking part of an Egyptian temple, with open-columned covered ways right and left, followed. There were flagstaffs here as before the first pylon, with banners. Through the narrow gateway of this second pylon we come next to a second open courtyard, or cloister, we might almost term it, like the first, but in front, instead of another pylon or gateway, there was the *entrance* to the temple itself,—a vast square or oblong of columns, covered with hieroglyphics and emblematic devices, bounded by solid walls, and covered over by a flat roof. It is rather an excavation than a building, and the probability is that the original idea for it came from the rock-cut caves so common on the banks of the Nile river. Within this strange and darkened temple was the inner sanctuary, containing the statue of the divinity or "attribute," to which the temple was especially dedicated. We know but little or nothing of details beyond what can be got from the hieroglyphics, and from an occasional antique historic note, but there is enough to make generally intelligible the uses to which an Egyptian temple was put, and to learn,—which is the great lesson to be learnt from a study of it,—how the architecture and sculpture of it *grew up* out of necessity, and that all and every part and detail had a practical use and symbolic meaning and import which made of it an ever-open book!

We must not omit to mention that a large water-tank occupied a considerable space in the *grove* of trees surrounding the temple. And may we not here usefully glance for a moment at that special faculty through and by which the old Egyptian did so many of his greatest works, and which compelled him to feel satisfied and pleased with such simple lines as those which bounded the pylons of his temples, his pyramids, and obelisks. No people, certainly, who ever existed have surpassed, or even equalled, the ancient Egyptians in the power of expressing the sublime in architecture,—an art expression to be seen and felt in architecture, but hardly to be explained in words, however carefully chosen or cautiously used. It is only, therefore, by actual observation and long looking at and study that it can be duly seen and appreciated, but a timely word may still help. Nothing can well be simpler than the bounding lines of this very obelisk standing on its simple platform of steps as it originally stood. No "ornamentation" of any kind interfered with the simplicity of its outlines, the "hieroglyphics," or, in plainer language, the hand-writing or inscription on its plain faces, not interfering in any way with its outline. As an architectural feature, to use a convenient word, it would be hard to surpass it in simplicity and grandeur of expression. It is enough in itself, and does not need any of those incongruous additions which have been but too often made to it. The might of Egyptian work comes of its very simplicity, and, we had almost said, obviousness of expression. It speaks for itself!

There is another element, among many more, in the architecture of Ancient Egypt, which served to make it expressionally grand and imposing, viz., the fewness and plainness of its minor parts and details—details which went to make it up after the simple outlines were drawn. Nothing but hieroglyphics on the obelisk, nothing but equally simple flat outline drawing on the pylons and walls, scenes and memories of its past history and famous deeds. The crowning cornices and wall cappings are but plain curves and beadings, and the whole rises from the ground or area on which the building stands in the plainest possible way, the grand and massive outlines doing all the work—artistic outlines, if ever there were any such, with strong effects of light and shade. And the columns, too, what can be simpler? and the capitals, how few the parts which compose them, all depending on the majesty of outline, and power of drawing, and, it may be added, consummate excellence of work by the art-workmen who wrought them. And a great, a very great lesson, indeed, is here to be read. How little power has even originality and capacity of design if it be not followed up, and embodied in excellence and power of workmanship? Very much more might be added, for rarely has the hand of man made so fine and durable an impression on the formless materials provided for him by nature as in Egypt.

ST. GERMAN'S CATHEDRAL, ISLE OF MAN.

The desire to restore decaying ecclesiastical buildings which is so marked a feature of the present day has extended to the Isle of Man. The Cathedral of St. German is here its object. The cathedral itself gains in interest just at the present time, when public attention has been lately attracted to this spot by the recent appointment of a new bishop to the ancient see of Sodor and Man, whose consecration has just taken place. The building is dedicated to and called after one St. German or Germanus, of whom tradition with great exactness relates many things which at the present day may be noted with interest, but not with any particular belief in their truth. It is said that German was the first bishop of the island in A.D. 447, and that he was sent to the island by St. Patrick, or left by this converter of the heathen, to carry out the work which the latter had begun. But, as a matter of fact, it is now impossible to say who Germanus was,—whether there ever was such a person,—though the mere fact of a cathedral being dedicated to such a saint shows that a person of that name must in some way have been connected with the ancient Manx church.

Let us, however, touch briefly on the actual building, leaving its patron saint the reputation with which tradition has endowed him. As an architectural structure, St. German's Cathedral is in no way remarkable, it has no intrinsic beauty of detail or grandness of mass, such as we witness in so many ecclesiastical buildings. But its situation is remarkable and striking, and very fitting for the metropolitan church of a sea-girt diocese. It is built on the island of Peel, within the walls of the old castle, and side by side with turrets and guard-houses. This islet is a mass of rock rising above the town of Peel, and connected with the main land only by a narrow wall or breakwater, barely wide enough for two persons to pass along. Thus it stands, overlooking the wide bay of Peel, which is encircled by the far-stretching point of Jurby on the north-east, and is ended on the other by the rocky island on which the cathedral is placed. On a bright summer day there is no sight more picturesque or characteristic than to see the scores of brown-sailed herring-boats beating out of the bay and dancing on the bright waves beneath the ancient shrine. But it requires, on the other hand, no very vivid imagination to picture the cathedral enveloped in the clouds of spray from the Atlantic waves broken against the rocks in a stormy night in winter. The cathedral is cruciform in shape, without aisles, and consists of a chancel, north and south transepts, with a central tower and a nave. There has apparently been a south aisle; for whilst the northern wall of the nave is an ordinary wall with ordinary windows, on the south there are three arches, with rounded pillars as the present boundary. The building has been formed of the common grey stone of the island very roughly worked, whilst the pillars and facings of the windows have been made of red sandstone, which is now much decayed and worn by the weather. The building is supposed to have been commenced by Bishop Simon in 1229, and the chancel, the earliest part, shows clear signs of the Early English style in its three plain lancet windows at the east end, and the same kind of windows five in number on each side. At some subsequent time the floor of the chancel has been raised for the purpose of forming the crypt beneath, which is noticeable for its ceiling composed of broad flat ribs springing from pillars with broad square capitals. It was in this dismal cell that various ecclesiastical and political offenders, both Manx and English, were confined. Here Eleanor, Duchess of Gloucester, was, in 1447, placed for the rest of her existence, and condemned to live, as Shakspeare writes,—

> "In banishment
> With Sir John Stanley in the Isle of Man."

The nave and transepts belong, it is supposed, to a somewhat later period than the chancel, though the windows have, from time to time, been altered, so that they are very little test of the age of the building. The pillars of the tower are square, with the edges flattened, and built into the wall. As we have already said, there is absolutely no detail in the building; the square tower rises simply above the grey edifice beneath, and the ruined battlements of the south transept give it, from one side, the appearance rather of a warlike than an ecclesiastical pile. But it is in harmony with the surroundings of nature, the green, bare hills, the cold rocks, and the wide-stretching Atlantic.

As time has gone on, the building has grown more ruinous. When Grose wrote his "Antiquities of England and Wales," in 1773 and 1787, part of the roof was still remaining, for he speaks of it as being "now externally ruinous, much of it unroofed, and the remainder so much out of repair, that it would not be over-safe for a congregation to assemble in it." In 1859 subscriptions were collected in order to prevent this time-honoured building from becoming completely effaced, and at the commencement of the present year a more vigorous attempt at actual restoration has been made under the superintendence of Mr. Anderson, the architect who has had charge of the Iona and Jedburgh restorations. The work is now apparently proceeding with some activity, and as there is absolutely nothing to be done but to replace very plain work, or to repair old work, there seems to be no reason why, with patience, St. German's Cathedral should not be completely fitted for its original purpose as a cathedral church. There is something wanting to the proper fitness of things when a diocese does not possess a cathedral church, and though St. German's cannot be considered as in any way

remarkable for beauty of form, it is a characteristic structure considered in regard to the place where it is erected and the place of which it once was the chief church, and to the particular portion of British ecclesiastical history with which it is so closely connected. With general ecclesiastical history it may also be said in many ways to be allied, since the prelates of Sodor and Man have numbered among them men so well known as Lake, afterwards Bishop of Chichester, one of the non-jurors; Isaac Barrow, and Bishop Wilson.

We append some dimensions which may add to the usefulness of this sketch:—Length of chancel, 36 ft. 4 in.; of the nave, 52 ft. 3 in.; of the tower from east to west, 25 ft. 11 in.; total length of interior, 114 ft. 6 in.

SCIENCE IN THE TRENCH.

An interesting discovery, and one which may, perhaps, lead to important results in geological speculation, has recently been made in carrying out some excavations for a new dock at Penhoët, near Saint Nazaire, at the mouth of the Loire, an account of which, abstracted from the last number of the *Revue Générale de l'Architecture*, will, we think, be interesting to our readers.

It appears that as far back as August, 1875, M. Kerviler, the engineer in charge, from the number of human bones, bronze arms and utensils, fragments of pottery, &c., which were turned up at various depths during the process of excavation, became convinced that he was working on the site of an old seaport, once inhabited by an ancient maritime people of Gaul, of an age in which polished stone implements were used contemporaneously with those of bronze. At a later date this seaport, the position of which is marked by the bay or creek of Penhoët, was the Corbilo of Polybius, and afterwards the Brivates Portus of Ptolemy. For a time these discoveries were interesting only from an archæological point of view, but an attentive study of the nature of the silty deposit in which the various remains had so long lain hidden started M. Kerviler on a track of the highest scientific importance, and which, as we have above stated, may lead to very valuable geological and palæontological results. Up to the present, although science has been able unhesitatingly to fix the order of succession and relative ages of the strata forming the crust of the globe, still a positive estimate, anything like a rigorous determination of these ages, expressed in centuries or in hundreds of thousands of centuries, remained a matter of conjecture.

Taking, for example, only the most recent epochs, those within which the quaternary strata and modern deposits must have been laid down, calculations by geologists of the greatest authority give figures, the exactitude of which must be considered more than problematical, since though merely relative, the dates suggested vary in the proportion of *one* to *ten*. The observations, however, of M. Kerviler, allow of a much more exact determination of the time necessary for the deposition of the strata in question; up to a certain point, indeed, such determinations may be made with mathematical rigour.

The facts are as follow:—Mr. Kerviler noticed the vertical face of a cutting about 25 ft. deep, exfoliated uniformly under the rains and frosts of the past winter in a series of thin laminæ of a mean thickness of 1-10th of an inch (3 millimètres). An examination of these thin beds revealed that each of them represented the various matters brought down by the rivers Loire and Brivet in the course of a year. Each bed was found to be invariably made up of three layers, superposed in regular order,—one vegetable, one clayey, and one sandy, representing beyond all possible doubt an autumn deposit (*i.e.*, the fall of leaves), a spring and summer deposit (*i.e.*, when the greater quietness of the waters is specially favourable to the deposition of a clayey sediment), and a winter deposit (when storms and floods load the stream with sand torn from its banks). The number of the beds, then, between any two points is an index of the number of years which must have elapsed while that depth of deposit was accumulating, just as the age of a tree may be determined from its concentric rings. There is nothing hypothetical, — no guessing: the age can be settled rigorously. M. Kerviler has determined in this way the age of the Gallo-Roman deposits to which we have referred, and the date he fixes corresponds with that furnished by history: the end of the third century of our era (between 280 and 300). The bronze swords discovered at a depth of about 6 ft. below the Gallo-Roman remains must date back to about the year 450 B.C.; but we have not yet reached the commencement of this new sort of almanack, for by sinking numerous shafts and borings, M. Kerviler has ascertained that for a depth of over 60 ft. below the position of the bronze weapons, down, in fact, to a bed of flints which rest on granite, the annual layers continue, and the deposit is, in fact, sensibly similar to the upper part, as we have described it. The commencement of this recent epoch is thus fixed at 8,000 years ago, say 6,000 years before the Christian era.

These conclusions are unquestionably of very great interest, and we as Englishmen may feel a certain satisfaction that it was M. Waddington, as Minister of Public Instruction, who placed funds at the disposal of the engineer for the sinking of shafts, &c., for carrying on the investigation after he had so cleverly seen what many men would have passed unnoticed. At the same time, the conclusions must not be pressed beyond their legitimate consequences. In this case, for instance, we can only say that the deposit in question was commenced 8,000 years ago, but the rivers may have then changed their courses, and may possibly have carried down silt and *débris* to their *embouchures* through long preceding ages. This consideration, however, in no way detracts from the value of the discovery, and its method is, we think, likely to be fruitful of results now that it has been suggested to geologists. It is of importance, at least, in fixing a minimum to any formation; and is a striking instance of the way in which pure science and the ordinary pursuits of life may forward and benefit each other, while it seems to us to furnish an unanswerable argument in favour of science being more generally included in what is called a liberal education, especially in the education of those who follow the professions with which we are more immediately concerned.

BRIGHTON SCHOOL OF SCIENCE AND ART.

The distribution of prizes to the successful students took place in the Dome on Thursday, the 4th inst., the Mayor presiding. Dr. Carpenter, F.R.S., who presented the prizes, and made a lengthened address to the meeting, commenced by saying that he knew nothing about art. He was so good as not to say exactly that he was proud of this ignorance, as some eminent speakers have said before now, but still said, in a pleasant and jaunty tone, that he knew nothing about it. A number of prizes were given, and there was a considerable flourish of trumpets, to which we should have attached more importance, probably, if we had not happened to visit the collection of works of art (save the mark!) set forth in the commodious new school building, illustrated some little time ago in our pages. With some few exceptions, the specimens exhibited were of a very indifferent character, and would have done no credit to a Peckham boarding-school for young ladies. Looking at this exhibition in connexion with the following summary of the "balance-sheet of the working account," the result seemed melancholy indeed:—

"Dr.: Balance, August 1st, 1876, 221*l.* 9*s.* 8*d.*; art fees, 653*l.* 6*s.*; art fees due, 4*l.* 18*s.*; science fees, 72*l.* 5*s.*; music (Committee's share of fees), 8*l.* 7*s.* 5*d.*; Government grants—for art, 163*l.*; for science—Mr. Fisher's classes, 99*l.* 9*s.* 6*d.*; Mr. Jago's classes, 48*l.*; total, 1,272*l.* 15*s.* 7*d.*—Cr.: Art masters, 614*l.* 14*s.*; ditto science classes, 84*l.* 6*s.* 4*d.*; Mr. Jago, 62*l.* 10*s.*; printing, rent, and sundries, 216*l.* 11*s.* 7*d.*; balance in hand, 294*l.* 13*s.* 8*d.*"

An active and well-known inhabitant of the town tells us that the actual results in the Science Department are even less satisfactory. The committee must look about them.

SWEDISH CASEMENT WINDOWS.

The use of hinged casements instead of hung sashes is almost universal in Sweden, Norway, and Denmark, and the accompanying illustration shows their usual construction for medium and better class houses. In houses of inferior class, the transom and upper casements are generally omitted. The sash-bar is now generally omitted in better class windows of modern construction. The curvature of head varies from flat to semicircular.

The brickwork round the frames is flush the whole thickness of wall, so that the frames do not rest in a rebate. The jambs are splayed on inside of the frames. The frames are wedged in position and spiked to plugs. The external reveal of brickwork is always narrow, generally 1 in. to 1½ in., and scarcely ever exceeds 2½ in. There are no stone cills or projecting brick cills, the usual finish being a broad strip of stout sheet-iron, chased into or tacked to the cill of the frame and bent down over the brickwork. The drips or flashings to the head and transom are of the same material.

The rebates of the frame to receive the casements rarely exceed $\frac{7}{16}$ in. The sashes are held tightly against the frames when closed, by the hooked fasteners. The finger-hook is sometimes turned round to join the shank near the eye, forming a ring, which is an improvement, as it prevents the hook being drawn out of shape by pulling. These fastenings are perfectly thief-proof, it being impossible to open them from the outside, except by breaking or taking out a pane. The casements are usually held open by the stays shown. But in windy weather, or when the casements are required to be only slightly open, it is usual to secure them by a loose stay-bar of stout wire, having an eye to fit on the pin of the sash-fastener on the muntin, and a hook to go into the eye of the staple on the casement. Jamb and soffit linings are not used except in wooden houses, but the window-seat has a lining flush with the top of the sill of the frame, and finished on the inside with a bead or moulding to conceal its joint with the wall.

The casements, being light and handy, can be easily unhung and lifted into the room, when repairs to the glass are required or for other purposes.

The weathertightness of these windows is remarkable. Draught or leakage between the frame and brickwork is practically unknown, and the casements shut so closely in the frames that, despite the shallowness of the rebates, it is quite exceptional for the heaviest rain to drive in, even when a strong wind is blowing against the window.

The rebates shown on the inside of the frame are intended to receive the inner or double windows, used in winter to exclude the cold. These are of 1 in. or 1¼ in. stuff, divided vertically into two halves, meeting on the muntin, and secured either by brads or by special lugs and screws not shown in the illustration. One or more casements are made to open for purposes of ventilation. The value of double windows as a protection against cold is, or ought to be, too well known to require notice.

The cost in Gothenburg, of windows such as shown in the illustration, with frame, sashes, linings, inner or double windows, and fastenings complete, but exclusive of erection, painting, and glazing, is about 25s. sterling; windows, 4 ft. 6 in. by 3 ft., complete as above, but with two casements instead of four, about 15s. 6d.

Alex. Beazeley, M. Inst. C.E.

Halmstad, Sweden.

LONDON STREET ARCHITECTURE.

NEW PREMISES, No. 8 BUCKLERSBURY.

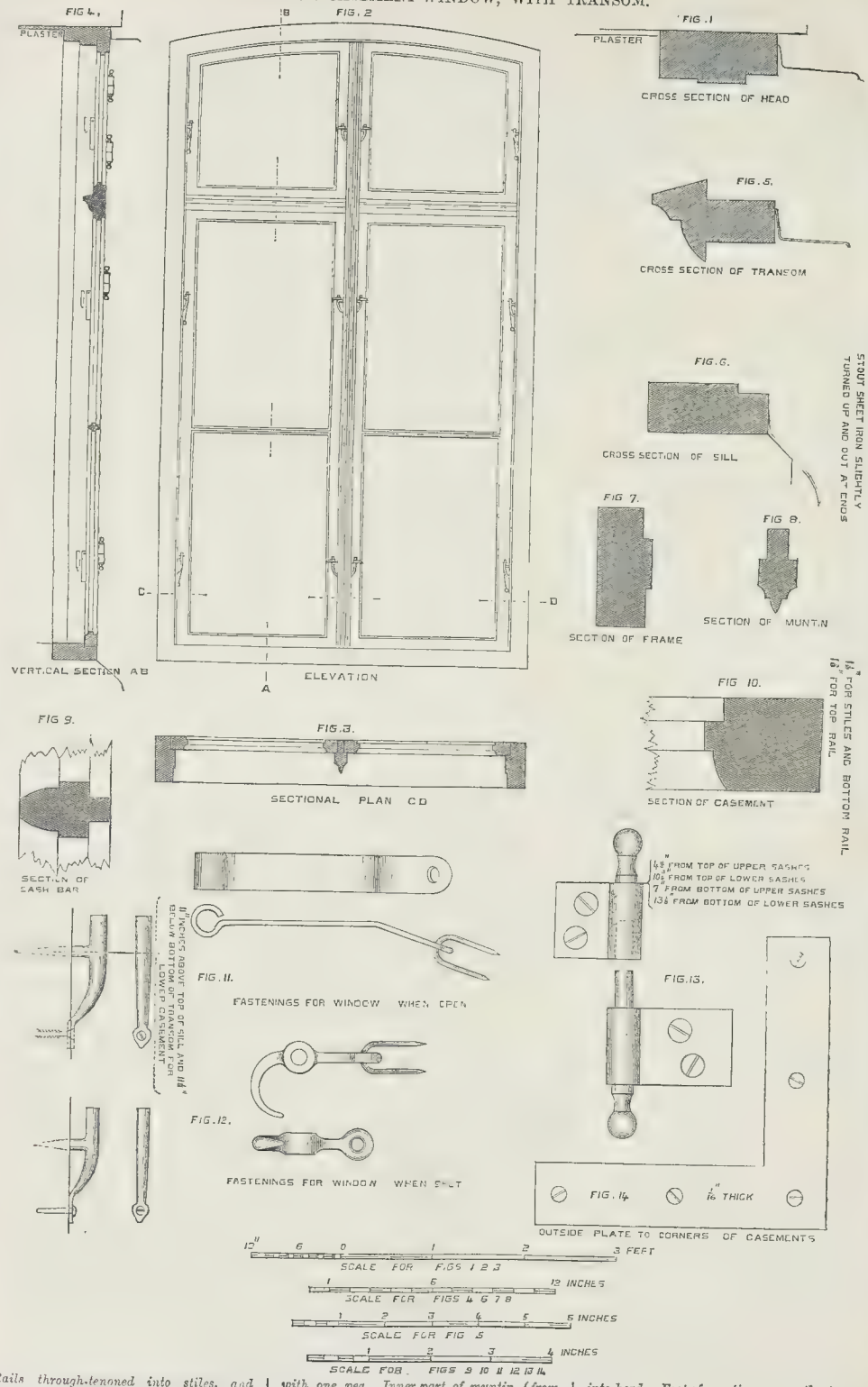
These premises occupy a good position, having frontages to Bucklersbury, Pancras-lane, and the circular corner being in Queen Victoria-street. The building is specially adapted either for a bank or insurance company, and has basement, ground floor, second and third floor stories, and attic, and is about 51 ft. 6 in. high from the pavement to the top of parapet. The ground upon which the building stands comprises only 684 superficial feet, thereby rendering close attention necessary in laying out the plan, so as to obtain the greatest amount of floor space for offices, without in any way impinging upon the staircase, which has been carefully designed to occupy as little room as possible. The basement floor is well lighted, and arranged for offices, on account of the great value of the land.

The exterior is of stone. The principal doorway at the corner has two Shap granite columns. The smaller columns above have red Mansfield shafts, with foliated caps.

The building has been carried out under the superintendence of Mr. E. Woodthorpe, architect, and the work was executed by Messrs. Perry, Brothers.

Fresh Air.—Mr. Madox Brown, the painter, suggests that when particularly pure air is required, a balloon should be used bearing a tube aloft through which the air of a higher elevation should be pumped down.

SWEDISH CASEMENT-WINDOW, WITH TRANSOM.



Rails through-tenoned into stiles, and pegged through with two pegs. Sash-bar stump-tenoned into stiles, and pegged through with one peg. Inner part of muntin (from sash-rebate inwards), cut off to fit inside head and sill. Outer part head of muntin notched into head. Foot of muntin apparently stump-tenoned into sill; Outer part of transom notched into frame and muntin.



LONDON STREET ARCHITECTURE: PREMISES, No. 8, BUCKLERSBURY.

Mr. Edmund Woodthorpe, Architect.



DWELLINGS FOR GOVERNMENT WORKPEOPLE AT STUTTGART.

OBERBAURATH VON MORLOK, ARCHITECT.

WORKING-CLASS DWELLINGS ABROAD.

HOUSES FOR GOVERNMENT WORKPEOPLE AT STUTTGART.

What has been done in England towards the provision of improved homes for the wage-classes of the community is tolerably well known to our readers, but the result of endeavours abroad with the same end in view is not so well known, and a few details will doubtlessly be read with interest.

As regards France, the movement presents a special aspect. There, working-men's dwellings have been mostly erected by large manufacturers, who have formed among themselves societies for the purpose of supplying the wants of their workpeople, in the first place, for house accommodation, but also for working men not employed in their establishments.

One of the largest associations of this nature is the so-called Société d'Immobiliers de Beaucourt (dept. Haut-Rhin). It is a joint-stock company, under the management of Messrs. Jappy Brothers & Co., of Beaucourt, and was established for the purpose of erecting dwellings to be let or sold to the workmen of Messrs. Jappy & Co., or to inhabitants of Beaucourt. The buildings of this society, constructed on the principle of single dwellings, are detached, and stand each in a small piece of garden-land. The separation of the several families is here most completely carried out, for each household inhabits a house by itself. This arrangement contributes much towards fostering family life and encouraging thrift and order, as it engenders in the working-man individually a sense of independence and self-confidence. The houses contain, on the ground-floor, three rooms and a kitchen; in the upper story, two bedrooms and a closet; and below the kitchen, a small cellar. They offer, consequently, enough space even for larger families. Part of the accommodation serves as a workroom to workmen of the firm, as they carry on their trade (watchmaking and fine locksmith's work) at home. But the agreeable feeling of a separate, commodious, and cheap dwelling, with a pretty garden to it, is still further enhanced by the possibility held out to the tenant of becoming, sooner or later, the proprietor of the whole. As in the case of our ordinary building societies, by paying regular instalments, each individual may in time acquire a house of his own,—only in the case under consideration the workmen may choose the intervals at which payment is to be made; the whole must, however, be paid within eleven years, the price being 2,300 francs (92*l.*) per house. The shares of the company being as low as 100 francs (4*l.*) each, the workmen may also become shareholders. The great interest taken by the men in the company and the continual demand for new houses at Beaucourt show that the undertaking of Messrs. Jappy supplied a real want among the people employed by them. More than a hundred houses have been built at Beaucourt, Badevel, and Lafeschotte, and nearly all have been sold; so that further new ones are only erected if a buyer comes forward.

As in Beaucourt, so in Creuzot, the well-known manufacturing town of the Department of the Saône-et-Loire, a company has been formed for the erection of working-men's dwellings, at the head of which are Messrs. Schneider & Co., the eminent firm of ironfounders and engineers. The houses of the company contain either one or four dwellings. Those of one dwelling correspond in their essentials with the houses of Beaucourt, a small stable for cattle and fowls being added. The houses for four families include four dwellings of the same size, completely separated from each other, two in the lower and two in the upper story, to the latter of which lead staircases outside the gable-fronts of the houses. The dwellings, each consisting of two rooms and the necessary offices, are much appreciated by the workmen.

It is, however, in Mühlhausen, Alsace, that the erection of working-men's dwellings has been carried out on the largest scale on the Continent. Here we do not find simply isolated instances of such houses, but whole quarters; indeed, a whole working-men's town has risen up outside Mühlhausen proper. This town numbered already in 1867 about 800 houses; it has squares and broad streets, its own gasworks, its own sewers, waterworks, &c. Buildings of various descriptions are most picturesquely grouped together, some one story, some two stories high, some with cellars and some without, with attics and without. The older houses contain ten, eighteen, and even twenty dwellings, in a row, under one roof; but those built later consist of only four dwellings, grouped round a centre. Each of the dwellings extends through the whole height of the building, and has generally a living-room and kitchen on the ground-floor, bedrooms on the first floor, attic, closet, and a spacious cellar. A small garden is attached to each dwelling.

All the buildings have been erected by a joint-stock company, started by Herr Dollfus, the largest manufacturer at Mühlhausen, in 1852. This "Society for Workmen's Colonies," as it calls itself, lets or sells the separate dwellings at a low price to the workmen employed in the many factories of Mühlhausen and neighbourhood. Only the small sum of 200 to 300 francs (8*l.* to 12*l.*) is required at the first purchase; the remainder is paid off in the shape of a somewhat raised rent. In from fifteen to seventeen years the tenant is able to call his house his own. In this manner, most of the houses have been sold, and a great many are already paid for.

But the colony at Mühlhausen offers to the workmen not only healthy and comfortable dwellings; great attention has also been bestowed upon the advancement of the physical and intellectual welfare of the inhabitants of the colony. The society has erected an hotel, a bakery, and a general provision-shop. The workmen are able to obtain there at low rates a well-prepared meal, nutritious bread, and all other articles required for daily use. There are further two public baths and wash-houses, where a refreshing bath may be had cheap, and where the women may wash and dry the family linen. Care is taken of the young children of the workmen in an infants' school, where from 250 to 300 children of the ages of from three to six years are admitted. The older children are instructed in two elementary schools, erected by the town of Mühlhausen, in the immediate neighbourhood of the colony. Old and invalid workmen are assisted with pecuniary aid by the society; or they find a home in the asylum expressly provided by the society, in case they do not gain admittance anywhere else. Further, there is a free public library. These benefits have not been bestowed in vain. They have borne good fruit. It may give to the founders and members of the society satisfaction to know that their institutions and principles have found numerous imitations in other cities and countries.

Other societies in Elsass, at Gebweiler and at Kolmar, for example, have built workmen's dwellings on the model of those erected at Mühlhausen. Those erections continue to grow in extent, Gebweiler numbering as many as 150, and Kolmar as many as 100 of them.

A society for the erection of working-men's dwellings at Verviers, in Belgium, has, after repeated failures, finally adopted the Mühlhausen buildings. It is especially the detached house with four dwellings which proves itself most suitable, and which, consequently, finds most favour also in Verviers. While, however, at Mühlhausen the four dwellings are distributed round a centre, in the Belgian workmen's houses they lie in a row. The dwellings are spacious, suitable therefore for large families, and are completely separated from each other, so that they may be sold separately. They contain on the ground-floor a forecourt, a living-room, and kitchen; and three bed-rooms above; also an attic, a cellar, and a closet outside the house. A piece of garden 65 ft. long belongs to each dwelling. The houses are well finished both inside and out.

The works for the welfare of the working classes hitherto mentioned all owe their origin to the efforts of large building societies or the co-operation of extensive manufacturers and employers; but the following examples will show how also individual persons have been able, of course at the expense of time and money, to contribute by themselves something towards the improvement of the condition of the working classes, and to effect great good in this direction.

We may mention, in the first place, the laudable exertions of Napoleon III. for the erection of cheap and healthy dwellings for workmen. The most practical illustration of his philanthropic efforts are the houses built by him at Vincennes, and before now mentioned in our pages. Those houses, forty-two in number, are three stories high, two being covered by one common roof. The increase in the price of the soil round the French capital had to be compensated for by the addition of another story, and under those conditions a perfect separation of families was no longer obtainable; consequently the families use the staircase and yard in common, but each household inhabits its own story. The separate dwellings consist of two rooms, kitchen, cellar, attic, and closet, water being laid on. The walls of these houses are of concrete, and they were erected in the short space of four months.

Of greater importance than these houses near Paris are the buildings which Herr J. von Liebig, one of the largest proprietors of factories in Austria, has had erected, in the interest of his workmen, at Reichenberg (Bohemia) and its neighbourhood. At his own expense and risk he has built, near his numerous factories, a great number of dwelling-houses for them. On account of the want of space, expensive building material, and high taxes, the greater part of those buildings are arranged for the accommodation of eight families. Only where the conditions of the place permitted it, for instance at Schwarzwald, in Hungary, Herr von Liebig has had detached houses, for single families, erected. The houses with eight family dwellings have two stories, of four rooms each house and story, so that each dwelling consists of only one room; but to each room are added a small cellar, an attic, a safe in the lobby for keeping provisions, a closet in an outhouse, and behind the house, in a shed, a place for storing coals and wood. This is the sole example of family dwellings of only one room; but the surrounding circumstances necessitated such an arrangement, and it seems to meet the requirements of the poor and frugal people of those districts. Of course, the father of a numerous family has the option of renting a second room. The separate dwellings are not sold here to the workpeople, but only rented, the proprietor undertaking all repairs.

In connexion with these dwellings, Herr von Liebig has originated establishments and provided accommodation which tend to form ties of the most effective nature between the employer and his workmen, and to give their relations to each other somewhat of a patriarchal nature. In the first place, the care of the workmen for the maintenance of their families is lightened as much as possible. For this purpose, the necessaries of life are purchased for them in large quantities, and consequently more cheaply, and sold to them at the cost of purchase; kitchens and bakeries have been established, supplying the workpeople, at cheap rates, with wholesome food and nourishing bread. The most important of these cookeries is that of the Reichenberg factory, where daily 2,000 simple meals with coffee may be furnished; the bakery supplying 100,000 lb. of bread per month.

As care is taken for these requirements of the healthy, so are the wants of the sick looked after. Medical treatment and medicine are given gratuitously, the sick workman at the same time receiving half his wages. In case of death, the greater portion of the funeral expenses is borne by the firm.

The children are not forgotten. Near the workmen's dwellings a building has been erected for receiving 150 children from three to six years of age, to board them and to instruct them, while the parents are at work. The house contains a large play-ground, and several class-rooms, provided with all requirements for teaching, and also with a natural history collection. The house also furnishes accommodation for the steward and the teachers, one of which latter is the daughter of Herr von Liebig. For those of his factories which are too far distant from existing schools, he has had new ones erected on purpose, providing space for eighty children, and has furnished them with all school necessaries. In those places where there are already convenient schools, Sunday schools have been established.

Another similar creation, having for its object the welfare of the workman and his material as well as intellectual advancement, we find at Kuchen, near Geislingen, in the kingdom of Würtemberg, where Herr A. Staub, the proprietor of the extensive spinning and weaving mills there, has erected dwelling-houses and similar institutions, especially characterised by careful execution. As regards the dwellings, there are four or five of them united in one house, either grouped round a centre or built side by side under one common roof. The buildings are two-storied; the ground story containing living-room and kitchen, the bedrooms, to which a staircase leads from the kitchen, being upstairs. Nearly all the houses are the property of the mill-owner; only a few of them have been sold to workmen. The buildings were designed by the architect Morlok of Stuttgart, partly after plans supplied by Herr Staub himself.

There are also baths and wash-houses, a restaurant, and a bakery. Herr Staub has also provided an infant school and an elementary school, as well as a reading-room with a library for adults. There are also a free hospital and dispensary; and besides all these institutions there is a fire brigade, a musical and harmonic society, a savings-bank, and a sick-fund.

In the preceding we have given details respecting several important institutions for the proper housing of workmen and their families and for promoting their welfare generally. In some cases these desirable objects have been attained by associations or societies, in others by individual philanthropists. To these examples we may now add one instance, which is at present unique, of the State taking upon itself to provide proper house accommodation for its officials and *employés*. This instance is furnished by the government of Würtemberg, which a few years ago gained honourable distinction by erecting a number of dwellings for the workmen and officials employed in its ironworks and workshops at Aalen and Wasseralfingen. Quite recently it has constructed a whole quarter for the lower grades of its officials employed in the post-office and railways at Stuttgart. Our illustration represents that picturesque quarter.

The buildings in the two first-named places are arranged for twelve, nine, six, or only two families. A complete separation of the different dwellings in one house is carried out only in the case of the smaller houses with but two family residences. In the other houses, the different families use a common staircase, but each residence is parted off by a door from the landings.

The houses in Aalen and Wasseralfingen, as those of Stuttgart, were erected after the plans and under the special direction of Oberbaurath von Morlok, architect. The principle of keeping the different dwellings separate has been observed as much as possible also in Stuttgart. However, in order to save expense, six family dwellings were united under one roof, and all the houses are three stories high. In order to further utilise the disposable space, in most instances two buildings with six dwellings each, and in one instance a pair with five, have been brought under one roof. In this manner, houses with twelve dwellings have been erected; but a staircase in no instance serves for more than six families. The dwellings themselves are lofty, properly divided for domestic purposes, and well ventilated. Each contains a large living-room, one or two bed-rooms, a shut-off lobby, kitchen, closet, cellar, place for keeping wood and coals, and a room in the attic. (The official dwellings in Aalen and Wasseralfingen are similarly arranged.) To most of the residences galleries and balconies are added, much to the comfort of the inhabitants. The spaces between the buildings are laid out in gardens, and each family is apportioned a part to its own use. The dwellings can only be rented by subaltern officials of the public offices mentioned. The rents are very moderate; for the high rents at Stuttgart were the cause which, in connexion with the steady increase in the price of the necessaries of life, induced the government to build those official dwellings. By their erection two hundred families have been accommodated. But in order to enable its denizens to obtain every-day requirements at moderate charges, the government has erected a large kitchen, baths, and wash-houses. The public kitchen is able to supply daily a thousand portions of well-prepared food. The baths and wash-houses contain the requirements which are now generally found in all similar public establishments. On the whole, those institutions, and the dwellings provided for its *employés* by the government, not to mention the charming and healthy situation of the whole quarter, are a great boon to those occupying them.

DURHAM.

Durham is one of the comparatively few towns which combine a past that is historic with a present which is busy and wealth-creative, for it has had the singular gift of extracting fame and wealth from all its possessions and surroundings. Dating back to the tenth century, and finding its first reason for being in the anxiety of monks to find some place of rest for the bones of St. Cuthbert, the town arose from the influx of visitors to the "lordly seat" of that dead wanderer. Alike from its association with the church, from its naturally-beautiful situation, from the mineral treasures that lie beneath, and from its being the centre and the titular town of a large and prolific county, Durham has largely derived importance. Successive bishops of the see which takes its title from Durham, have left memories enduring of their prelacies in the additions they have made to the cathedral, commenced nearly eight centuries ago by William de Carilepho, sixth bishop of Durham, and which in proportions "huge and vast" looks "down upon the Wear," as in Scott's days, except for the restorations that have long been going on. The massive grandeur of the proportions of the cathedral, the beauty of its towers, chapels, altars, and shrines, have long been noted as perhaps "the most perfect example of the splendour" of the Anglo-Norman architecture: but space forbids, and intention prevents, dilation on these. As the head of the see, Durham boasts of a fitting number of churches: St. Nicholas, St. Oswald, St. Margaret, St. Cuthbert, St. Giles, St. Mary-le-Bow, and St. Mary-the-Less. In addition, Dissent sustains some seven places of worship in Durham, so that the faith of the town should be proved and public. In addition, there are ornate specimens of architecture in the Assize Courts, in the Town and Masonic Halls, in the Miners' Association Hall and Offices, and in other similar buildings. From the universities, colleges, and associations, gathering in or connected with these erections, Durham derives one part of her fame, and one large portion of her revenue. But whilst to her ecclesiastical and scholastic institutions Durham may perhaps date her rise and early growth, and whilst to those of another class—connected with her position as county and assize town—there may be something of her later growth due, yet her importance of recent years is due to the growth of vast industries in and around her. This may, perhaps, be best shown by a comparison of the city as it was about forty years ago, and as it is at present, though, as the growth has been to a large extent outside the bounds, there is only a type of the whole in the municipality. In 1831, the town (which had, ten years previously, 10,282 inhabitants) had only 10,520 inhabitants, so that its ratio was very small. They included many professional men: attorneys, clergymen, and others; the tradesmen were tolerably numerous; there were manufactories for carpets, and establishments, on a small scale, for wool-combing and worsted spinning, but, except for minor trades, these were the only notable industries.

The coal trade at that time was, comparatively speaking, in its infancy, and, except near Brancepeth, there was no adequate development of the immense resources of long-hidden fuel near Durham. Since that time, the railway system has opened out a market for these hidden resources, and the development in the county of Durham was considerable in the first score of years, but it has been far more than equalled by the extraordinary growth that has been known since the uprising of the iron trade of Cleveland, and the consequential demands on the collieries of Durham. The result has been the sinking of pits to an extent undreamt of, and now Durham may be said to be belted loosely round with a girdle of coal-mines and of coke-ovens; and each of these has been the parent of colliery villages, or has caused the growth of the ancient hamlets into embryo towns. The population of the city itself has not advanced as might have been looked for, it being at the last census between 14,000 and 15,000, but this is because the growth of population has been out of urban bounds, and it may be seen in fuller detail in the returns of the union. By 1861, the population in that comparatively small union was 42,462; it had increased to 51,468 in 1871, and there has been a large increase since. Its pauperism has been for years steadily declining, on account of the prosperity of its great industry, and, at the beginning of this year, it had of indoor and out-door paupers 1,117, or 1 to 46 of the population. In the city itself, the deaths in a quarter number nearly 100, and the births are, in the same period, about 140. In the wider bounds of the surrounding rural sanitary authority, the births are in a quarter between 600 and 700, and the deaths are nearly half of the first number. As containing the place of imprisonment for the county, Durham encloses in its prison during the year over 1,300 persons for periods of not more than seven days, and over 4,000 for periods of above that length. And generally it may be said, that whilst the county has acquired the unenviable reputation of being the most criminal county in England, the city has of late contributed largely, over 1,300 persons being proceeded against in a year. It may be here said that the municipal borough stands on 880 acres, and that it includes between 2,000 and 3,000 houses, the population of which has been previously stated.

Certainly the great contributory cause of late years to the growth and prosperity of the city has been its central situation in what is probably the richest of our coal-fields, and at present undoubtedly the most productive of our English coal-yielding counties. A score or two of years ago the coal deposits were chiefly extracted from the north, north-east, and south-western portions of the county, but now the central part is a large contributor, and the district round about Durham is not one of the least. In twenty-six years the coal produce of the county has been doubled; and in the same period the coal and coke carried by the great monopolist railway—the North-Eastern—has been quadrupled; to both of which vast growths the Durham district has been a large contributor. The villages near, such as Tudhoe, Brancepeth, Esk, and others, noted if at all for their importance in the past, have become colliery towns, the valleys near, such as that of the Flass, the Dearness, and others, have become populated and productive, and have tended to swell that great increase of the inhabitants of the county they form a part of—from about a quarter of a million forty years ago to probably three-quarters of a million now. In the Durham part of the county this growth has not shown itself by the formation of vast towns, as it has on the south and on the coast, but it has been shown by the creation of new villages and the extension of old ones, until it might almost be said that that central portion is now a congeries of collieries. And, whilst this growth, this development has its satisfactory side, it has also its unsatisfactory one, for there has been no corresponding growth or extension of the provision for the sanitary needs of the increasing population. And thus the condition of villages like Cothoe, and towns like Spennymoor, is deplorable, although of late something has been done to remedy this, and to sweep away some of the most prominent of the evils, as well as to make a commencement with that work of drainage provision which is the beginning of the cleansing out of that Augean stable. By the private enterprise of the Weardale and Shildon Water Company, also, something is being done to provide the great colliery district with one of the necessaries of life; but much yet remains to be done before the district can become what it should be, and before the abnormal death-rate has been reduced to proportions more in accordance with the conditions under which in their favourable natural position such communities should live. It is not wholly to the coal-mines, however, that Durham owes its commercial importance, for it has large carpet and other manufactories, noted alike for their extent, production, and for the mode in which they have influenced their branches of manufacture in the north.

Looking down on Durham from near the magnificent viaduct which, on the Team Valley branch of the North-Eastern Railway, connects it with the great south line, the gazer will find it difficult to find a more picturesque scene in any district which is at once a centre of ecclesiasticism, of mining, and of manufactures. Down on the winding Wear frowns the cathedral, and near to the "Gothic shade," a mass of streets struggle up hill-sides, uneven and irregular, whilst from the mingled red of tiles, and grey and blue of slates, the spires of churches start upwards, the gaol grimly protrudes itself, the long low roofs of the carpet factories are seen near the river side, and, dispersed over the scene, is the green hue of poplars and other trees, which congregate in masses by the river side and on the steep banks below the cathedral. On the bank of the river, on the hills beyond the town, and far down in the southern distance, there are the tall chimneys and mine-mouth machinery which tell of the omnipresent industry whose minions pour into Durham's crooked and narrow streets and fill her public-houses, and glut her trains on the Saturday after the pay. Behind us is a newer part of the town, and the small but beautiful park which forms one of the lions of the town; to the north, the streets stretch, and to the south they struggle up the hill to where Neville's Cross is the remembrancer—now decaying—of a memorable battle. Thus prodigally gifted by Nature, and thus favoured of late by the result of commercial enterprise, the future of Durham seems secure. It was distinguished of old in an alliterative phrase for its "wood and water, for its maids and mustard," but it may be now doubtful

whether it is not now more remarkable for its being the gathering-place alike of priests, pitmen, and publicans, as well as of judges and justices. Finding all fish that comes to its net, its bounds are extending, its influence is widening, and its relative position to the county of which it is the capital—one which is perhaps showing more than most the results of commercial skill and enterprise—is, at least, not retrogressive.

THE QUEEN ANNE STYLE.

LIVERPOOL ARCHITECTURAL SOCIETY.

On Wednesday, the 3rd inst., the thirtieth session of this society was opened, and the president, Mr. J. M. Hay, delivered as usual an address. After reviewing a recent excursion to Whalley Abbey, the reader said:—

Coeval with the decline of Gothic art a new order of things began, for with the revival of letters in Italy arose a feeling for the Classic which speedily spread itself over Europe and produced a style of architecture known in Italy as the Cinque-cento, and in France as the Renaissance. Here it produced the peculiar architecture of the time of Elizabeth and James I., a style inheriting much of the spirit and picturesqueness of the ancient Gothic, which was partly eliminated or merged in the pure Classic Italian of the works of Inigo Jones, Sir Christopher Wren, and their immediate successors; a style which, though every style has had its admirers, and been reproduced in modern works, has, gradually modernised and localised, held its own to the present time. Of all these revivals, the most interesting and important is that of the Gothic. Let us look at its history, how it was prepared for by the writings and advocacy of men of eminent literary attainments, how we were familiarised with the aspect of Mediæval buildings by such illustrated works as those of John Britton, how the popular sympathy was awakened, and how encouragement was given to the new style. It is curious also to observe that it was the style lowest down in the historic scale that first found favour in our sight, viz., the Rectilineal, or Perpendicular as it was then called. After more study and research our admiration ascended to the next in order, viz., the Decorated; first, the flowing, and then the geometrical. We rested long there; it was the period when Gothic art had reached the very summit of its perfection, and it was advocated as the best style for our imitation and adoption, and as a point of departure for a new style of our own. However, we cannot wait to develop any new style, we are too restless and impatient. We go back a little further, higher up the scale, into the period when tracery was in embryo. We do not tarry even there, we have actually imitated the transition, from Norman to Lancet. But worse remains behind, for where are we now? Some of us remember well how vigorously some twenty-five years ago the battle of styles was fought,—Classic *versus* Gothic,—and how we thought the preponderance of argument to be in favour of Gothic. But time has brought its revenge, the Classics have it at last, and by desertion from the opposite side too. For is it not by a section of the Gothic party that the reign of Queen Anne has been introduced? How long will it last? She reigned twelve years. Her revived dominion I suspect will have ceased ere a similar time has elapsed. But, to speak seriously, surely there is nothing in the architecture of Queen Anne's reign but what might be readily and harmoniously infused into and assimilated with the Classic architecture of the nineteenth century. In the name of common sense what are we to have next? To be consistent we should go on and revive the style of the Georges, or the ghosts of their Majesties may be jealous. But we have arrears of history to bring up. After the Elizabethan and Jacobean should have come the Carlovingian, and then the William and Mary style. Why cannot we have the Bloody Mary style? That would be an elegant sensational name for a style that would strongly recommend it to the present generation. Let us take what is characteristic of the architecture of Queen Anne's reign and throw it into the great secular style of the present century, which is broad and plastic enough to absorb it, and to which, indeed, it properly belongs, to be employed or rejected according to the taste of the practitioner or the needs of his subject.

What is this style, do you ask? It is the style I have just mentioned,—the English branch of the great Italian group of styles; the style in which Wren built St. Paul's Cathedral, and which in the hands of Vanbrugh, Gibbs, Hawksmoor, the Earl of Burlington, Chambers, Dance, the four Adams, Wyatt, Holland, Sir Robert Taylor, Soane, and others, was carried down to the present century. Throw these Queen Anne elements into this style, for they are properly accidental phenomena of it, of this same style as it existed in the reign of Anne, in the early part of the eighteenth century, and was practised by Wren, Vanbrugh, and some others I have just named, in palatial and ecclesiastical edifices. The style has grown since then, and we have no more to do with the particular phase of it that characterised the domestic architecture of the reign of Anne than our living poets have to do with the style of Cato or the "Essay on Man"; and it would be quite as sensible for Mr. Tennyson to hamper his muse to reproduce the heroic couplets of Pope as for an architect of our day to copy the door-cases and windows of Queen Anne. As a style, or phase of a style, what there can be in it to attract us from our present broad and grand one, I cannot imagine. There was something to recommend the pure Greek revival, there was something to recommend the Gothic. There was something in the fourteenth-century Italian painting to entice the "Pre-Raffaelite Brethren,"—religious feeling, namely, and other estimable qualities which Raffaelle and the great Roman and Florentine schools had not transmitted to our times. But what is there in the architecture of Queen Anne that is worth our travelling over more than a century and a half of time and history to fetch? Echo answers, What is there?

It is time to have done with this unceasing revival of defunct styles. Everything we do should have something of the latter part of the nineteenth century about it; something that nineteenth century about it; something that yesterday could not have produced. By retaining of the past only what has relation to all time, and is intransitory, and wedding it to what is best of our own can we worthily develop architectural thought, and produce original works. Yet, fully admitting the great and widespread architectural activity of the present day, and notwithstanding our possession of numerous magnificent buildings, the fruits of that activity, there is an undefined feeling abroad that we have no national style. With that feeling I do not altogether sympathise, and I have no doubt that with due appreciation of our glorious heritage in the past, fidelity to the trust reposed in us by the present, and a wise use and application of the varied resources now at our command, we need not despair of producing works capable of exciting the same exalted pleasure as did the noble cathedrals of York, Lincoln, and Salisbury, when first they passed from the workmen's hands. The mention of these buildings reminds me of a remarkable movement that has taken place within the last few months, the establishment, namely, of a Society for the Protection of Ancient Buildings, with reference chiefly, I believe, to our Mediæval cathedrals and churches. The establishment of such a society cannot fail to have an interest of some kind for all persons of taste and culture, for assuredly than such buildings as Durham and Lincoln Cathedrals, York Minster or Westminster Abbey, in their present venerable state, no structures can be more worthy of preservation from every species of injury, from everything calculated to lessen their artistic value or phonetic utterances to us. No structures seem to me so worthy to enshrine the pure and sublime form of Christianity. More interesting are they, more enriched by time, more pregnant to the mind with historic and ecclesiastical associations, than anything carefully preserved in national museums. The British Museum, it is true, contains capitals of columns and sculptures from the Parthenon and other renowned edifices, and alabaster slabs that ined the Assyrian palaces. But these are only fragments of celebrated buildings, while the works to which I am now calling your attention are entire works of art,—organic and breathing wholes. What is more, they are essentially English works, distinct from the Gothic of the Continent. They possess a character of their own, assimilated only to French, German, and Spanish Gothic by the same religious aims, and in having taken a tinge from the romantic ages of chivalry and the Crusades.

In referring to the establishment of the Society for the Protection of Ancient Buildings, the sentiments of which, as expressed in their prospectus, I was glad to see supported in an able leader of *Punch*, a week or two ago, I feel it a pleasure to recognise the fact that, so far as I know, it owes its existence to a great extent to the writings of a member and ex-president of this society, Mr. Samuel Huggins, whose first paper on the subject, as well as one so late as last November, was read to this society.

WATER FOR LONDON.

METROPOLITAN BOARD OF WORKS.

At a meeting of the Board on the 5th inst., Mr. Leslie, in accordance with previous notice, proceeded to propose that the Board should take into consideration the advantage of obtaining a supply of sea water for fire brigade purposes, for baths, and for watering roads and streets. In his opinion, the question affected the whole of the ratepayers of the metropolis. The cost of watering the streets was estimated at from 40*l.* to 60*l.* per mile per annum; and Capt. Shaw estimated that 75,000 hydrants placed at convenient distances in the streets, with full pressure, would be sufficient to extinguish fires without the use of fire-engines. He held that sea water was better than river water for extinguishing fires, and for that reason he proposed that sea water should be used for the purposes mentioned. Sea water could be brought from Colehaven, Sea Reach, and Canvey Island to the Bow Station in the Mile End-road, a distance of twenty-two miles. Assuming the water was taken from Canvey Island, it was only four miles from the highest point in Essex, where it would have to be pumped up to the distance of 738 ft. He thought the cost of bringing sea water to London in the necessary quantity would be about 500,000*l.*, but he claimed for his scheme a saving of 90,000*l.* to the ratepayers of the metropolis.

The motion was seconded by Sir W. Codrington, and on a division there appeared for the motion 3, against it 23.

The Brunel Statue.

Mr. Meaden proposed the adoption of a report of the Parks, Commons, and Open Spaces Committee, recommending that the railings of the garden inclosure next the Brunel Statue, on the Victoria Embankment, be brought forward, so as to surround the base of the pedestal, and protect it from damage.

Mr. Deputy J. E. Saunders said he hoped the Board would hesitate before they consented to what at that moment, it appeared to him, would be a very ridiculous proceeding. The statue itself might be a very good one, and perhaps the base also, but the masonry which had been erected on each side gave it a most extraordinary appearance altogether. As it at present stood, it was about the ugliest and most horrid structure of the kind he had ever seen. If it had one merit, however, it was that seats had been provided for the accommodation of the public, and now it was proposed that railings should be put up so that those seats could not be used. He would move as an amendment that the whole subject should be referred to the Works and General Purposes Committee, with a view of ascertaining if some improvement of the present state of things could not be secured.

Mr. Dresser-Rogers seconded the amendment, which was accepted by Mr. Meaden, and carried.

We have never heard who takes the responsibility of this very ugly affair. As a matter of course it must be re-arranged.

Foundations of Houses.

A report from the Building Act Committee was brought up with reference to the letter from the Local Government Board, transmitting copies of letters from Mr. C. Clinton Hoey, calling attention to the character, foundations, and materials, of certain dwellings for the working classes, being erected at Hackney Wick; that in reply thereto a copy of the letter of Mr. F. R. Meeson, district surveyor for East Hackney (North), be sent to the Local Government Board for transmission to Mr. Hoey. This reply was to the effect that at present the district surveyor had no power to interfere with the buildings as to the materials used in the foundations of houses.

It was explained that a Bill had been prepared which would give the Board power to direct surveyors to see that the foundations of houses were sufficient, and that the materials used in the erection of the buildings were sound and

sufficient. That Bill had not been passed in the last session of Parliament for want of time, but in the next session the Chairman would introduce it. However, up to that time, nothing more could be done than that which was recommended by the Committee.

We understand that a committee reported on Monday in favour of Messrs. Bazalgette, Bramwell, & Easton's proposition, coupled with another for purchasing the whole metropolitan water companies' interest at twenty-five years' purchase on the average dividends of the last three years, with 10 per cent. addition for compulsory purchase. Some who had signed, however, afterwards withdrew, and the report was referred back for further consideration. Inquiries are already being made as to sites for the four reservoirs.

THE SANITARY CONGRESS AT LEAMINGTON.

At the second day's sittings (Oct. 4) of the Leamington Congress of the Sanitary Institute of Great Britain (Dr. Richardson, F.R.S., president, in the chair), Dr. Wilson (medical officer of health for Mid-Warwickshire) read a paper on "The Past and Future of Sanitary Science." Dr. Wilson, at the outset, said sanitary science in the broad sense of the term was knit up with the life history of every nation. He pointed to the importance with which it was viewed by the Jews and the ancient Greeks. Although the Romans, the other powerful nation of antiquity, contributed but little to sanitary science, they had left behind them some wonderful examples of sanitary engineering on a large scale. If we looked to the habits of our forefathers we had no difficulty in accounting for the fearful mortality which prevailed among them. Personal cleanliness was utterly neglected, clothing was immoderately thick and warm, and was seldom changed night or day. Their diet and dwellings were unwholesome; the streets were unpaved, and the rural population was scattered in hovels over wild woods, dreary wastes, and undrained marshes. Cities and large towns were walled in like fortresses, which were highly favourable to overcrowding, and the large armies conduced greatly to the spread of epidemic disease. He alluded to the numerous plagues and pestilences that had devasted Europe as they had devastated the East, and said it was not until the plague, which was the next great pestilence after the sweating sickness, had repeatedly attacked this country, and the great fire which swept away the crowded and filthy houses of London in 1666 occurred, that people began to appreciate, though in a faint and glimmering way, the principles of prevention. Coming to the eighteenth century, they found that three terrible scourges, namely, the black death, the sweating sickness, and the plague, had finally disappeared from the bills of mortality, and their disappearance was mainly attributable to the silent influence of the onward progress of civilisation. Foremost among the pioneers of sanitary science they found the honoured names of Sir George Baker, Captain Cook, John Howard, and the immortal Dr. Jenner. The population of England and Wales, which in round numbers was only ten millions in 1810, had now increased to over twenty-four millions, and that numerous increase had taken place almost exclusively in already populous towns or at centres of industry which speedily became populous. But that great increase of population had taken place under the worst and most unfavourable conditions. Even in the construction of the better-class houses the veriest rudiments of sanitation were neglected. Instead of municipal control, there was general apathy. Meanwhile the Legislature had done nothing, or next to nothing, to mitigate or prevent the terrible evils which were fast accumulating. With the exception of the Factory Act of 1833, and the Poor-law Amendment Act of the following year, no public measure of any importance had been attempted. At last, thanks to the incessant labours of Dr. Farr, Edwin Chadwick, Dr. Southwood Smith, Dr. Guy, and other pioneers of sanitary progress, the Health of Towns Commission was appointed, and their first report appeared in 1844,—a report in which the revelations of cause and effect, as applied to disease, were made so glaring and manifest, that among the intelligent few was a loud cry for legislative interference. So powerful were vested interests, so strong was the opposition to interfere with the liberty of the subject, or of corporate bodies, that it was not till the country was again threatened with the ravages of a cholera epidemic,—it had been visited by one in 1831,—that Parliament became alarmed, and passed the Public Health Act of 1848. Under this Act the General Board of Health was constituted, with a staff of inspectors who were empowered to hold public inquiries, and report on the sanitary condition of towns which showed an excessive rate of mortality. The Act itself was adopted or enforced in a great many towns throughout the country, but as it was of a peculiar nature, like the vast majority of the Sanitary Acts which have followed it, the beneficial results which might have been expected to accrue from it were long in appearing, and were by no means general. Nevertheless, it originated an era of active sanitary improvements in most of our large towns, and it merits special notice as the first outspoken recognition on the part of the Legislature that the health of the State concerns the statesman. In order to maintain a sustained and successful raid against the large classes of disease which had their origin in filth, whether it be polluted water or tainted air, they wanted, in the first place, hospital accommodation within easy distance for the isolation of infectious diseases, they wanted compulsory and early information of such cases, and what was very hard to get, the active and intelligent co-operation of the public in the abatement of those local conditions of filth and nuisance to which he had alluded. So long as medical men were paid solely and simply for attempting to cure, it was obvious that it was not to their interest to prevent it, and he asked whether it would not be a wiser policy to pay the family medical attendant so much a year, and thereby enlist his services in conserving the health of the household. In conclusion, Dr. Wilson said the average death-rate for England and Wales, for years back,—indeed, he might say, from the time when the returns of the Registrar-General began to be published,—had, with slight fluctuations, remained stationary, at a little over 22 per 1,000, and there were some pessimists who argued that because the average death-rate had not been lowered during the long period of forty years, sanitary improvements were powerless to combat against the death-roll entailed by over-crowding and over-population. With regard to the possibility of lowering the general death-rate and prolonging the average duration of life there was no doubt.

Mr. W. White read a paper on the treatment of sewage, based upon experiments made at Stoke Workhouse. He said the sewage of no two towns was identical, nor the sewage of the same town at different times of the day. Hence until the constituents of sewage were determined it was idle to ask or quote a price for its treatment. One of the favourite prescriptions for the treatment of sewage was lime, and the question had often occurred to him what possible efficacy could lime have over alkaline sewage. He had treated Stoke Workhouse sewage with lime in small quantities and large, but towards purification and even clarification it contributed little or nothing. The indiscriminate employment of lime had done much to discredit and retard precipitation. In the case of domestic sewage it was not an alkali but an acid that was wanted, or, better, an acid salt, and after innumerable experiments the favour of chemists tended to concentrate upon sulphate of aluminum. In that recommendation of sulphate of aluminum modern science re-enforced ancient experience. Charcoal or coke reduced to fine dust and saturated with chlor-oxide of calcium was, in conjunction with sulphate of aluminum, perhaps the most powerful combination of material for sewage purification yet devised.

Mr. Baldwin Latham, C.E., F.G.S., gave a paper "On the Influence of the Movement of Subterraneous Water on Health." Mr. Latham sought to show how important was the effect which the various conditions of subterraneous water had upon health. As its height decreased from meteorological causes or drought they found that diarrhœa, dysentery, and enteric diseases generally were multiplied, and concurrent with the increase of the water they diminished. It had been further demonstrated that the prevalence of phthisis depended upon the quality of surface water supply.

Dr. Horace Swete, analyst to the borough of Leamington, county and city of Worcester, &c., read a paper on the new artesian water supply at Leamington. Commencing with a history of the new artesian supply of water, he said the impurity of the filtered river supply and private well supply led to the determination of a few to discover, at any reasonable cost, a supply of deep spring-water. The very fact of Leamington owing its existence as a town to its saline springs added difficulties which seemed to be insurmountable. The first experimental boring was not long in tapping, not water, but salt; fresh borings were, however, made, and success had attended them from the first. A pure water, more copious as the borings went deeper, demonstrated the scientific correctness of the inference that Leamington was on a great water-bearing stratum, and ultimately to achieve the triumphant success of being able to pump up two and a quarter millions of gallons of water in the twenty-four hours. Turning to the old well-water supply, he said little or nothing that was good could be said of it. Of 139 wells analysed by him during the last two years, 104 were so bad that they had been closed by the authorities. It could not be said that Leamington was alone in the possession of filthy wells. Ordinary house wells were invariably bad, and he fully agreed with the advice given by Dr. Hill at Birmingham,—"If you are unfortunately obliged to drink well-water—boil it." The paper next dealt with the chemical properties of the water supply of Leamington, and in conclusion Dr. Swete said that although the present water supply was not satisfactory, the future was that of a good, wholesome, and sparkling water, and copious in quantity. On the completion of the engines which were to pump the water to the reservoir on the Campian Hills, which would not be many months hence, Leamington would have a supply second to none in the kingdom.

A short discussion followed the reading of the paper.

Dr. Bartlett (London) argued that very soft water was not necessarily the best, and he supported his argument by producing an example of its corrosive effect on lead piping.

Dr. Bond questioned whether they were entitled to condemn well-water so indiscriminately. He was convinced that in rural districts it was possible to drink for years well-water contaminated with certain definite sources of contamination. It was only when they got specific germs that there was real danger, and in many cases such contamination was impossible.

The Chairman (Dr. Richardson) said water containing a fair amount of saline matter made no impression upon lead, and he had seen soft water which did not have the effect described by Dr. Bartlett. He admitted, however, that as a rule soft water had a corrosive effect. The only way to arrive at a correct conclusion was to fully investigate each case.

Surgeon-Major De Chaumont, M.D., Professor of Military Hygiene, read a paper on the effects of climate upon health.

Dr. H. C. Bartlett, of London, followed with a paper on "Water for Domestic Use." He pointed out that living organic matter of low organisation was not checked by any excess of water, unless there were extensive matters, either in solution or suspension, which proved chemically inimical to the vitality of those organisms. Unless those organisms, animal or vegetable, died out or were deprived of life by the mineral or other matters brought in contact with them in the water, they could not be resolved into their elements by any simple power of oxidation. Hence it was a very fatal error to believe that mere excessive dilution would rapidly eliminate the specific poisonous matters which found their way into wells, streams, and other sources of water supply. Pure water, strictly speaking, was almost unattainable. That was to say, pure hydrogen combined with oxygen to form hydric oxide, or chemically pure water, was so solvent of almost all matters with which it came in contact that, be they solid or gaseous, some portion was carried away in the water. Water condensed from steam might be obtained, by using very great precaution, of all the needful purity to enable them to observe the characteristics of water free from adventitious influences. It was flat and insipid to the taste, and beyond being recommended for its solvent properties as an agent for the elimination of unwholesome depesits in the body in certain diseases, could only be required for domestic use when all the water otherwise obtainable was found to be altogether unsuitable. Rain-water, the distilled water of nature, was not to be regarded at any time as absolutely pure; and although in great request for its softness, or the absence of the salts of the alkaline earths, was frequently collected by such means as ren-

ered it dangerous to drink, becoming sometimes quite poisonous. No mere chemical nalysis would detect the presence of injurious erms in water, any more than they could xpect pure chemistry to give them any evience of specific typhoid poison, whether it xisted as germs conveyed direct from patients o the water, or if it were carried by gaseous manations as *aërozoa*. Neither could they btain from any microscopical examination of vater, without the assistance of chemical nalysis, any reliable data which, in themselves, were comprehensive enough to guide hem in discriminating between wholesome nd unwholesome drinking-water.

The next paper was read by Mr. W. Eassie, C.E., London, on "Growing Vegetation and its Effects upon Human Health."

Miss Rose Adams read a paper, entitled "Woman's Work in Relation to Sanitary Science." She stated, in the first place, that although many people thought that man's province lay outside the house and woman's within, she did not agree with that theory. It was a grave truth that it was essential to its success that women should work on sanitary reform. She pointed out how, in many ways, women could assist in sanitary work better than men. The Ladies' Sanitary Association had, however, much prejudice to overcome. They were endeavouring to teach the women of England all that was necessary in connexion with the due preservation of health, and she laid stress upon the great importance, for instance, of women knowing how to prevent the spread of epidemic disease. She also pointed out many other ways in which women, with a thorough knowledge of sanitary requirements, could confer great benefits not only upon themselves, but upon the community at large.

The last paper read was by Dr. Slade King, the subject being "Sanitary Work in English Watering Places and Summer Resorts." The writer pointed out the absolute disregard of sanitary precautions which existed at hotels and lodging-houses in many seaside towns, and recommended a system of licensing and a stringent supervision by the governing authorities of the places.

In the evening a *conversazione* was held at the public hall, Windsor-street.

On the 5th inst. Dr. R. Brudenell Carter gave a long and able address on the present possibilities of sanitary legislation. Alluding to the importance of and great necessity for sanitary legislation, he said one of the things they must ask the Legislature was to give them adequate assistance in inclosing or curbing those channels, such as soil-pipes or water-courses, through which diseases most familiar to them were daily distributed. It could not be said that in making such a request they should ask the Legislature to interfere in small matters, or undertake duties that were unworthy of an imperial assembly, but one of the first lessons in politics he ever learnt was the maxim of Lord Macaulay, that the business of a Government was to protect the lives and the property of the governed. It could not be denied that the lives and property of the governed were sorely in need of protection from sanitary evils. In an address he gave at London some three or four years ago he took occasion to point out that the seven principal zymotic diseases in the preceding twenty-five years had destroyed in England and Wales the lives of two and a half millions of people out of a total mortality of eleven millions. If they added to that another half million for another five years, they arrived at a total mortality from zymotic diseases of three millions, or nearly equal to the present population of London. He took the average annual mortality of 100,000, and multiplied it by six, in order to obtain a very low estimate of the average annual sickness, and he divided the result into classes —adult males, adult females, and children —according to the census proportions. Dr. Buchanan was good enough to furnish him with an estimate of the average duration of the different forms of disease, calculated, of course, from the first appearance, and Dr. Buchanan had given it as his opinion that four weeks and a half was a reasonable average. He estimated the loss that was caused to each male adult by his illness at 1*l.* a week, and the cost of his maintenance, nursing and medical attendance at the same sum, thus giving a total of 9*l.* an illness. In the case of each female adult he estimated the cost of such an illness at 6*l.*, and of children at 1*l.* Those estimates amounted to a total of more than two millions and a half sterling, representing the cost or loss every year occasioned by the zymotic diseases in England and Wales if they fell upon the wage-earning classes alone. The greater loss caused by their incidence on the upper class could not be estimated from any data that were known to him. The loss caused by these attacks of epidemic disease fell partly upon the relatives and friends, partly upon clubs and burial societies, and partly upon the savings of the sufferers. The 100,000 premature interments that took place annually must cost at least 2*l.* each, and that brought up the total loss to 2,796,402*l.* But the estimate did not take the widows and orphans who were left without the care of their protectors into account, and they must also reckon the loss to the community which resulted from imperfect recoveries. It was his lot in the London hospitals to see large numbers of children who were suffering from diseases of the eye, and the constant reply to his questions was that they had been previously suffering from scarlet fever and measles. It was too much, of course, to say that all zymotic diseases could be prevented by improved legislation and adequate care, but they knew the great reduction that had taken place in the zymotic mortality of England coincident with the improved removal of night-soil. The impediments which stood in the way of a permanent and complete reform were due to four causes (1st), the degree in which legislation had reference to the needs of party instead of the requirements of the State; (2) the degree in which local self-government was impeded by centralisation; (3) the real or apparent inequality of the incidence of local taxation, from which the cost of all sanitary reforms must be defrayed; and (4) the apathy, which was the result of almost inconceivable ignorance, largely engendered by superstition. He need hardly point out that the apathy which was engendered by ignorance and superstition was the cause which permitted the existence of the others. He recommended the registration of every case of infectious disease that fell under the notice, in his official capacity, of any public practitioner. He should like to see far more than that,—he should like every practitioner to report on every case of infectious disease to which he was called. But they must not ask too much at once, and the benefits which would follow from the registration of infectious disease among public patients would soon lead to registration among private patients also. Whenever an outbreak of infectious disease occurred an inspector should be sent down from the central office to discover how the disease was introduced there, and by what channel it came. He wished to say that by an inspector he did not mean a barrister, nor an engineer, nor a surveyor, nor a person who did not know scarlet fever from measles, nor one whose report from mere stress of ignorance would be certain to contain as many blunders as words. He meant a physician thoroughly trained in the difficult art of sanitary inquiry, and thoroughly conversant with every branch of the subject to which his attention would be directed. The report of the inspector, after it had been approved by his chief, would be made public, and would appear in the local newspapers. He thought it would be wise if the Central Health Authority for some time confined its efforts to the one disease of typhoid fever, which would afford employment to a considerable staff, and as it was known to proceed from two very simple causes,—sewer gas in towns, and polluted water in all places. If what he suggested could be carried out, local authorities would not be over-ridden, and the time would come when the sewers would be ventilated and the pollution of water prevented. Politicians should also turn their attention to the question of the incidence of rating, with a view of revising and re-arranging a system which the nation had long since outgrown. Speaking of centralisation, he said its effect was that they could only find inferior persons to hold offices which entailed considerable trouble, and which gave them very little authority. Boards of Guardians had no more control over the funds which they had to administer than if they were so many automata. They could not give an extra shilling a week to a porter, or a half-pint of beer to an inmate, or engage a servant without the sanction of the Local Government Board. The supposed reason for that was that there was a necessity for protecting the ratepayer against the extravagance of his own nominees. Would it not be much better in the long run if he had to protect himself, and so be forced to be careful about the abilities and character of the men for whom his votes were recorded? Under the present system, members of Boards of Guardians were often elected by a party vote, without any reference to their capabilities, and in municipal boroughs it was not uncommon for them to be persons who could not aspire to be town councillors, but whose services to their party were rewarded by a seat on the Board of Guardians to give them a claim to have their speeches reported in the paper. Would it not be better if such bodies were empowered to pass any bye-laws not in contravention to the laws of the kingdom, which their local circumstances might render desirable? Why should not their great towns be prepared to act as pioneers in the great work of sanitary progress? At present they saw Parliament every year unable to accomplish its work, and that was, to a great extent, due to the time occupied by the discussion of questions which might be practically and well settled by local bodies. He felt sure that the gradual emancipation of those bodies was a direction in which their steps must lead. Local self-government would render the election of incapable men impossible, and whatever blunders occurred would furnish warning to be avoided, and a successful administration would furnish an example to be imitated.

At a meeting at the Town-hall, presided over by Mr. E. Chadwick, Mr. Burton Green read a paper on sewage disposal and sanitary carbon. He said "dry" systems were all costly, and depended to a great extent upon the sale of the "manure" they produced; they were, moreover, repugnant to their sentiments of delicacy. It was universally admitted that no chemical process could *per se* efficiently purify sewage, and it was suggested that the effluent water after precipitation, subsidence, or straining, should be passed through filter beds of "sanitary carbon," the *débris* remaining after the destructive distillation of Kimmeridge shale, and which was really an animal charcoal. Its efficacy had been proved by practical experience at Hurstpierpoint, at Daventry, and at the Marquis of Exeter's mansion; and it might advantageously be employed for many of the purposes for which animal charcoal, costing four or five times as much, was used, the price of this "sanitary carbon" being about 4*l.* per ton. The exhausted filter beds mixed with the sludge form a portable, cheap, and rich manure, the application of which to the land had been proved by the experience of centuries to be absolutely fatal to the existence of grub and wire-worm. It was also applicable to various other purposes, among them, as an absorbent in the "dry" systems, and in earth closets, in hospitals and sick-rooms, as well as a deodorant of slaughter-house and other refuse.

Mr. Lawson Tait, F.R.C.S., gave an account of the work of the Interception Sub-committee in connexion with the Birmingham Corporation, his address being illustrated by working models and plans. Mr. Tait explained at some length the working of the pan system, and what is known as Fryer's process of sewage treatment. He said they were only at present treating one-sixth of the population with the experimental process, and if it turned out as well as they had hopes of its doing, the results would be most valuable. The expense of horse-hire, which was the most costly item, would be greatly diminished by the establishment of wharfs.

Papers were afterwards read by Dr. Stevenson (Paddington), "On Public Conveyances for the Infected Sick," suggesting a uniform system for the country at large; and Dr. James Russell (Edinburgh), "On the necessity of Plumbers and Builders possessing a competent Knowledge of the Laws of Health as bearing on their Respective Occupations."

At a meeting of the second section in the Pump-rooms, Dr. Richardson presiding,

Mr. J. S. Baly, F.L.S., medical officer of health for Leamington, gave an address on the sanitary condition of Leamington. He said the average death-rate from all causes during the past four years was 16·8. The birth-rate, 25·8, was low, owing to the absence of manufactories and to the comparatively small number of artisans living in the district. The mortality during the last quarter was very much below the average, and gavera death-rate of 10·7; and the fact of no death from diarrhœa having occurred during the summer quarter of 1877 was very remarkable. He ventured to predict that Leamington, with its new water-supply, its sanitary arrangements, and low death-rate, would retain as it had hitherto its place in the first rank of inland watering-places.

Mr. W. Eassie, C.E., read a paper on cremation as a sanitary institution.

Mr. H. C. Burdett, late of Birmingham, read a paper, entitled "The Dwellings of the Poor in Large Towns." The paper set forth Mr. Burdett's experience among the dwellings of the poorer classes in London and Dublin. He drew a picture of fearful misery and squalor. In Dublin, he said, he found the houses for the most part in a dirty and dilapidated condition, with bad water-supply and imperfect drainage. In London, as a rule, the houses were comparatively clean; but the rents being often enormous, the overcrowding in some places was appalling. He advised all who had money to spare to take shares in the Victoria, Artisans', or Industrial Dwellings Companies, and other similar associations, without delay, as the directors needed more capital to enable them to extend their crusade against such vile dens as he had seen.

Papers were afterwards read by Mr. Ernest Turner, London, on "Home, Sweet Home;" Mr. T. J. Dyke, F.R.C.S., on "The Missing Links in the Sanitary Administrative Service;" and the Rev. E. Wyatt Edgell, B.A., on "The Diminution of Insanity which took place during the Political Commotion in France."

This concluded the sectional business, and the proceedings terminated with votes of thanks to the mayor and corporation of Leamington for having so cordially entertained the Congress.

In the evening the members dined together at the Regent Hotel.

Saturday last was devoted to excursions, one party going to Coventry to see the sewage works there. Of these works we give a special account below.

SEWAGE PURIFICATION AT COVENTRY.

In connexion with the Sanitary Congress held last week at Leamington, the chairman and directors of the Rivers Purification Association (Limited) on Saturday last invited the members of the Sanitary Institute of Great Britain, and the Corporations of Leamington and Coventry, to visit their works at Coventry. The Association, of which the Right Hon. Lord Elibank is chairman, has been formed for the purpose of carrying out the requirements of the Rivers Pollution Prevention Act, by which undefecated sewage is prohibited from being discharged into streams and rivers. The Association offers to assist Town Councils, Local Boards, and Sanitary Authorities, to purify the water-carried sewage and manufacturing refuse of their districts, either by the execution of new works, or the adaptation of existing works for the purpose. The Association does not confine its operations to any particular system, but will adopt either chemical treatment, irrigation, or a combination of both, according to the special circumstances of each case. It recognises the advantages of irrigation where sufficient land can be obtained under favourable conditions, but expresses the opinion that as such conditions are only met with in practice in exceptional instances, most cases will involve chemical treatment either *per se*, or in combination with a comparatively small area of land. In May of the present year the Association entered into a contract with the Corporation of Coventry to purify the sewage of the city by their precipitation process, undertaking to indemnify the corporation against legal proceedings for the discharge of their sewage into the river Sherbourne. The good results attending their operations are evidenced by the fact that the principal landowner on the river-banks (the high sheriff of Warwickshire), who had previously been at variance with the corporation on account of the pollution of the river, has recently expressed his satisfaction with its condition. The Sherbourne is a very small stream, and frequently during dry weather contains little other water than the effluent from the sewage works. It is, therefore, necessary to purify the sewage to a much higher standard than is practically required for discharge into large rivers. The process adopted by the Association has been in operation for more than three years* (previously to May last under the auspices of another company, and for a time under the management of the Corporation), and the Corporation have certified that they are well satisfied with its sanitary success, and have entered into a contract with the Association, by which the latter body undertakes to continue the purification of the sewage in consideration of being subsidised by the Corporation. The amount of the subsidy is, it is stated, 2,000*l.* per annum; besides this, the Corporation gives the sewage, the use of the buildings in which the work is carried on, and the use of the land (about nine acres in extent) over which the effluent is passed before entering the river. Thus, the Association does not base its operations on the assumption that the sewage is a highly valuable, and therefore marketable commodity,—an assumption which has led to the failure of other undertakings of the kind. It proceeds on the basis that sewage is a nuisance to be got rid of in the best way possible without creating other nuisances. It claims to have solved the problem, and offers to indemnify against legal proceedings under the Rivers Pollution Prevention Act any corporate body or health authority with whom it may contract for the rendering of town sewage innocuous. It asserts that for the performance of this work the ratepayers must expect to pay, and indeed, will be glad to pay, if the nuisance is effectually got rid of.

So far as to the general principles upon which the operations of the Association are based. As to the particular instance of Coventry, the details were explained to the visitors on Saturday by Messrs. Henry Robinson and J. C. Melliss, the engineers to the Association, and by Mr. E. F. Coddington, the manager of the works. The city of Coventry has a population of 40,000. It has a water-supply of about 25 gallons per day, and 5,000 water-closets. The daily volume of sewage in dry weather amounts, inclusive of subsoil water leaking into the sewers, to 2,000,000 gallons in twenty-four hours, or 50 gallons per head per diem. The character of the sewage is extremely foul, owing to the presence of large quantities of refuse liquids from the numerous silk-dyeing works, breweries, oil and varnish works, &c. The sewage is, therefore, more costly and difficult to purify than ordinary domestic sewage. The sewage flows by gravitation to the works at Whitley, about a mile from the city, and all solid matters are strained by the ingenious extractor invented by Mr. Baldwin Latham, and of which the Association has acquired the patent-right. This extractor may be described as a wheel 16 ft. in diameter, having a periphery projecting on one side of the edge to a distance of about 1 ft. or 1 ft. 6 in. The wheel is actuated by steam-power, and is vertically mounted. From the centre radiate six spokes or arms, of the same width as the periphery, and made of iron perforated with numerous holes. Each of these spokes or arms forms in reality a shelf or tray, having its outer or front edge turned up so as to prevent solid matters falling off. The whole of the space of what may be called the back of the wheel is covered with a large disc of perforated iron of the same diameter as the wheel. The wheel is continually revolving (there are a pair, in case of accident to one), with its lower portion submerged in the sewage as received from the town. Each of the arms or spokes as it emerges from the sewage brings up a quantity of solid matter, and this, as the wheel continues to rotate, falls by its own gravity into a fixed receptacle placed for it at the centre of the wheel. From this receptacle it is carried up by an archimedean screw into boxes or skips provided for it, which are removed as often as necessary. The solid matter obtained in this way is not very considerable in amount, and all that has hitherto been obtained Mr. Coddington has dug into some garden-ground within the precincts of the works. The strained sewage is then mixed with a solution of sulphate of alumina, prepared in a cheap way by treating the shale of the coal and ironstone formations with sulphuric acid. The necessary engine-power, boilers, mixers, and other apparatus, are provided, both for the admixture of the chemicals with the sewage, and also for the manufacture of some of the chemicals themselves. The sewage next receives a small quantity of milk of lime, and then flows to one of the precipitating tanks, of which there are four, worked on the continuous principle. The period allowed for subsidence is from four to five days. The effluent water passes from the settanks through about nine acres of land, forming filter-beds, 5 ft. deep, planted with rye-grass. This land is divided into two nearly equal portions, one of which is used by day, and the other by night. The effluent water passes into the Sherbourne at the rate of about 80,000 gallons per hour, and apparently in a satisfactory condition as to purity, and certainly much better than the water of the river above the outfall. It is stated that fish have been seen at the outfall, and that cows will drink of the effluent water in preference to the water of the river itself. The sludge produced at the Coventry sewage works has been assigned, by Dr. Voelcker, a higher value than any other sludge, as he states, in the Local Government Board Blue Book that it (containing 47 per cent. of moisture) is theoretically worth 16s. 9½d. per ton, and has a market value of from 5s. 6d. to 8s. 4d. per ton. It does not, however, fetch this alleged value at present, and the Association does not rely on it as affording any immediate return for the cost of purifying the sewage. During the present year about 2,000 tons of partially dried sludge (equivalent to a year's production) have been sold, at from 1s. 6d. to 2s. 6d. per load, according to the number of loads taken. The cost for chemicals at Coventry is stated by the Association to be four-tenths of a penny per thousand gallons of manufacturing sewage, or twenty-seven-hundredths of a penny per thousand gallons of domestic sewage. (This latter has been ascertained at Fair-time during Whitsuntide week, and on Sundays, when the manufacturing refuse is absent from the sewage).

The visitors, among them many sanitary engineers and borough surveyors, seemed to be favourably impressed with the works and their apparently successful operation, and the opinion was expressed that if the Association had really solved the problem of how to get rid of town sewage without creating a nuisance, it might be sure of a prosperous and enlarged sphere of usefulness. It was stated that several corporations or local authorities were in treaty with the Association for the disposal of their sewage. It was also stated that, though the Coventry works constitute at present the only establishment under the control of the Association, and that they are, therefore, necessarily to some extent a "show-place," no exceptional means are taken to make the works successful in a sanitary sense, other than those demanded by the peculiar foulness of the sewage, and the extreme smallness of the stream into which the effluent is discharged. We may add that the effluent, as it passes into the river after filtration through the nine acres of land referred to, contains (according to analysis by Dr. Voelcker) only 0·6 of albuminoid ammonia in one million parts.

* Some particulars of the works as formerly carried on, with plans and view, were given in the *Builder* for Feb. 26th, 1876 (vol. xxxiv., pp. 191, 192).

THE SOUTHPORT NEW COVERED MARKET.

COMPETITION DESIGNS.

To the many public buildings which have been erected in Southport within the last few years another is about to be added. In July last the corporation decided to invite architects to send in designs and plans for a new market building, and premiums of 100*l.*, 50*l.*, and 25*l.* were offered for the best, second best, and third best, respectively. The conditions of the competition provided that the cost of the building should not exceed 15,000*l.*, the committee laying down certain requisites which they thought necessary. In other respects, as to style of architecture and mode of internal arrangement, the competitors were left free to follow their own ideas. In answer to the advertisement inviting competition twenty-five sets of designs have been sent in, which are stated to represent a very large amount of architectural ability and experience. The plans have been arranged for inspection in the large room of the Town-hall, and also in the council chamber, one room not being large enough to contain the whole. The designs differ from each other considerably as to the treatment of the building so far as the external architectural features are concerned, but resemble each other closely in the arrangement of the interior. Some of the plans cover the whole of the land with one large market, whilst others divide the hall into two, three, or four divisions, in order to accommodate the several departments of trade. The whole of the plans, with one exception, it is said, provide for a basement floor for cellars and store-rooms, and a ground floor for the market proper, whilst many of the plans show a first floor over a portion of the building for use as offices. In all the designs the materials recommended are brick, with stone dressings. The several designs are at present under the consideration of a committee of selection, and we understand that the list of twenty-five has already been reduced to six, out of which the best three have yet to be chosen.

HOVE SCHOOL BOARD COMPETITION.

Thirteen designs were received by the Hove School Board, Brighton, in open competition for their first school, to be erected in Ellen-street, Cliftonville, and, after consideration, that submitted under the motto "MENS" was accepted, the authors being Mr. Thomas Simpson, of Brighton, and Mr. Frederick W. Roper, of Adam-street, Adelphi, joint architects. The schools will accommodate 800 children, viz., 150 boys, 250 girls, and 400 infants, and are designed two stories in height; the lower being apportioned to the infants, in two compartments, and the upper floor to the boys and girls. A kitchen is provided in connexion with the girls' school, for instruction in cookery. The building has a façade towards Ellen-street of 160 ft., and the style is a simple treatment of "Queen Anne," with gables and a central turret of two stages. The materials will be red brick, with tile roofs and the turret of wood, leaded.

SCIENCE AND ART IN ITALY.

On Thursday evening, the 27th ult., Professor Leone Levi delivered a lecture on "Science and Art in Italy" at the Surrey Association for the Advancement of Literature, Science, and Art, at Camberwell New-road. After reviewing at some length what Italy had done in science and art, the lecturer said: And what of the present? Alas! let it be admitted, Italy has greatly fallen from her glorious past; centuries of political and commercial decadence have had a grievous influence on Italian art and science. It is not to Italy that we can now look for the highest manifestation of human genius. The prodigies of chemistry and mechanics, the wonders of the steam-engine, and many of those inventions which reflect the greatest lustre on the present century, and which has rendered it so conspicuous for progress and civilisation, received but little assistance from Italy, and though labourers have not been wanting who have pursued the paths of science in the midst of the greatest discouragements and difficulties, and who have striven hard to maintain the noble name of Italian science on a pinnacle of glory and reputation, they have not been able to keep pace with the greater advance of France, England, and other more favoured countries. And yet science and art have not altogether departed from Italy. There, too, men of science have their Congresses in the same manner as the British Association in this country. There, too, the learned societies meet for the promotion of special branches of science, and there academies exist for art, science, and letters. The art contributions of Italy to the Universal Exhibitions in London, Paris, and Vienna, especially in sculpture, were in many respects highly satisfactory. In inventions, Italy is not far behind other countries, a large number of patents being yearly claimed and granted, though not certainly to be compared, either in number or in actual merit, with the United Kingdom and the United States. But, after all, we must consider this as only a time of transition. The most encouraging and promising feature of the present constitutional government of Italy is the thoroughness with which the present state of the country, economically and intellectually, has been investigated and exposed. What we have before us is only the result of labour performed during centuries of divisions and misgovernment, at a time when the arms of the Church and State were alike directed against all manner of progress, and when the highest minds were either driven away from the country or immured in State prisons or convent cells; and though it is so far true that genius and talent are intuitive within us, and that they are often developed under most adverse influences, yet, as a rule, roses do not well thrive in a soil rugged and wild. Prepare the ground; offer to science and art a safe asylum and a kindly hospitality. Let wealth reward them, and honour encourage them. Let peace have her victories and war her desolations, and art and science will once more show their wonders in the far-famed soil of Italy. May this the sowing-time of Italy's future greatness be followed by the glorious sunshine of happy influences from within and without, and in due time may an abounding harvest be gathered in the Italian soil from scientific inquiry and artistic inspiration. If Italy should ascend once more to the high position she once attained in science and art, religion and morals may also rise to an equal height. Let her remember that science and art must be consecrated to God ere it can render any essential service to a nation. A Galileo and a Newton may scan the heavens, but we need a Chalmers to direct the mind across that expanse to the Great Architect. Painting and sculpture may enliven and embellish our existence; but have they not been made to foster human passions, instead of subserving to the higher objects of quickening and expanding our conceptions of God's mighty works? And poetry, the great vehicle by which we may burst forth in sentiments of adoration, is it not too often prostituted so as to raise the warrior and the freebooter to the height of a hero? Let us remember that whilst the mind is the great engine, the heart is the motive power of human progress, and science does but little for a nation when it stops at the threshold of our mental faculties. However enthusiastic we may be in the cultivation of science, and however proud of its achievements, we should not forget the great maxim that it is "Righteousness that exalteth a nation."

THE SEVERN BRIDGE RAILWAY.

The progress of the Severn Bridge Railway is week by week becoming more apparent. Of the work of constructing the bridge, assigned to the Hamilton's Windsor Iron Company, at a contract price of 190,000*l.*, some interesting particulars are given in the *Gloucester Mercury*. Two-thirds of the width of the river have already been spanned. The approach to the bridge on the Forest shore is made by a viaduct, while the abutments are being constructed of native stone. There will be twelve arches, carried to an altitude of 70 ft. Immediately connected with this is the first span of the bridge, 134 ft., the piers of which are being founded. There are four of these in a cluster, each cylinder having to be taken 16 ft. into the solid rock. For this purpose an engine and air-pressure apparatus are employed. The cylinders are fitted in lifts of 4 ft. in depth, and great as is the weight of a series of these, each being at least four tons, some eighty tons of ballast are required upon each column to counteract the pressure of the air to displace the water from the interior. After the first span comes two of 327 ft.; a fourth of 171 ft., and the remainder (13) 134 ft. each. For the heavier spans there will be a cluster of cylinders as indicated, each 10 ft. in diameter, and are to be founded 44 ft. below low-water mark. Seventeen of the piers have been founded in the bed of the Severn, and dangerous and difficult as the work appears, under the direction of Mr. Earle, the resident manager, and the Hamilton's Windsor Iron Company, together with the engineers, so far it has been carried out without accident to the persons employed. In addition to the seventeen piers named, it may be added that the whole of the 134 ft. spans are erected, and the scaffolding nearly prepared for the first of the 171 ft. spans, the foundations being completed and the piers finished for three of these. The spans are raised in pieces from the vessels by a "Goliath," which powerful machinery is constructed so as to run with double carriage outside the bridge, on a line of rails, and they are lifted some 80 ft. above low-water mark. Two-thirds of the bridge are so far complete as to be ready for laying the permanent way. An interesting feature is the provision made for expansion and contraction. One end is secured upon a plate of cast-iron bolted to a large block of Forest stone, the other end being connected with a system of rollers, space being left at the extremities of the girders to meet the action of atmospheric influences. The columns are filled with concrete, three parts slag from the Parkend furnaces, and the other part Aberthaw lime, prepared at the contractors' kilns, on the banks of the Severn, at Lydney. Some idea of this item of cost alone may be gathered when it is mentioned a single column of the larger piers consumes 800 tons of concrete. From the centre of the bridge extensive and charming views of forest and river are commanded. Down Channel this extends to the Bristol river, and the up-view embraces a sweeping range of the Valley of Gloucester, with Robin's Wood-hill and Stroud Vale forming a picturesque background. On the opposite banks of the Severn is the old canal running from Sharpness, and this will be crossed with a swing bridge, to be worked from a centre tower of Forest stone masonry. The engineers who designed the structure, and who are now carrying out the work, are Mr. G. W. Keeling, jun., C.E., of Lydney, and Mr. George Wells Owen, C.E., Westminster; and Mr. Reichenbach is the resident engineer. The railway works, which are being executed by Messrs. Vickers & Cooke, of London, whose contract was 90,000*l.*, are progressing.

PEERAGE PROPERTY.

Sir,—Messrs. H. & R. Powell, than whom, I am sure, no gentlemen have a better right to speak upon the land question, desire further information from my point of view upon "peerage property." Nothing delights me more than to satisfy the minds of inquirers after the truth, and I will now mention the names of some peers who hold properties gigantic enough to be a nuisance and a danger to the country. Your correspondents not being satisfied about the five men that I said owned a quarter of Scotland, I will give them their names, and if they can prove me wrong, I shall be glad to know wherein my error lies. They are the Dukes of Atholl, Argyll, Buccleugh, Sutherland, and the Earl of Breadalbane, the latter peer being able to ride 100 miles in a straight line on his own land, it is said, without coming across a single dwelling; but I do not vouch for that, though I suspect it is much too near the truth. That another quarter is owned by twenty-four men is not unlikely, and it is quite possible that 130 millions of acres are owned by 130,000 persons. A country which contains such towns as Edinburgh, Glasgow, Paisley, Stirling, Leith, Greenock, Dundee, Aberdeen, &c., could not be without great numbers of small proprietors of houses, gardens, yards, and other business premises, besides church and school property, freehold graves in churchyards, cemeteries, &c. But this does not alter the very much too patent fact that the great food-producing areas of England, Scotland, Ireland, and Wales are in comparatively few hands. Messrs. Powell object to my statistics of 60,000 men being the landowners of the United Kingdom, but I think I might have named 6,000 or 60, or even 6, who have the lion's share; but I have very little doubt that the Blue Book is quite enough on the Powell side of the question in naming 60,000 as the only landowners. I have some freehold property myself, but I am not a landowner for all that. I suppose the gentlemen would count me as one of the owners of land, because I am the proprietor of "six feet of earth" in Brompton Cemetery. Then they say "Mr. Mitchell seems to think nearly all the country belongs to peers," and they inform me that "out of all this mass of landowners (that is the 60,000, as they seem after all to admit), only some 590 can be peers."

Now I never said that peers owned most of the country, but I hold up "peerage property" as samples of the worst kind. There are lots of baronets and squires who are nearly as big land monopolists as the peers, but the peers are the worst offenders. I heartily wish that the peers had it all, for then there would be a chance of some wholesome legislation in the House of Commons, whereas more than half the present House have gone there to batten up the corrupt land system which is starving and ruining the country. Messrs. H. & R. Powell say that there is no difficulty about purchasing land in this country. Very well, gentlemen, I say; will you obtain for me a piece of freehold property in my native village from the squire and I will buy it to pay me only 2 per cent.! Why, there was an old gentleman who died in his own freehold house in that village a few months ago, and I heard that his freehold house and garden were to be put up to auction. I made up my mind to purchase it, but I find that the squire's agent was there long before any auction could take place, and the property was bought for him. Owning nearly everything in the village, I suppose he thought he would have it quite all. Landowners in England find their appetite for land

"Grow on what it feeds on."

They are like the sailor who, when the captain asked what would be his three greatest wishes, replied,—

"1. All the rum in the world.
2. All the baccy in the world."

Then he paused, but when pressed by the master for his third wish, he said, "Well, Cap'n, let's have a little more rum!" That is why I suppose the Duke of Northumberland, as a very good authority states, invests 80,000*l.* per annum in adding adjoining estates to his already enormous property.

The Messrs. Powell say that a sweeping fallacy underlies the whole of my letter. Well, these gentlemen only assert this, they do not condescend to prove it; but I think I can show the following statement of theirs to be fallacious enough, viz., that "a small portion of a nobleman's estate is laid out as a park." Now, I happened last week to have passed by two miles of the wall of Woburn Park, and I understand the whole length of the Duke of Bedford's park wall is fourteen miles! I have calculated that thirty thousand human beings could live in plenty out of this park, if cultivated by the people! Now, I would not deprive the Duke of a bit of park round about his mansion, not I; but I would like to see an Act of Parliament limiting the extent of parks, woods, and pleasure-grounds to a moderate area, especially as these immense properties are virtually untaxed, and yield nothing to the revenue; I say *nothing* advisedly, for if the taxes paid by the nobility and gentry are put against the pensions and salaries paid to their class for doing nothing, or worse, I find that it is just three millions of money in their favour and against the people's, so that in reality all the taxation they pay goes to a club for keeping their poor relations, to which those whom they despise and will not associate nor intermarry with, yearly add 3,000,000*l.*! And Messrs. H. & R. Powell say also, that "every single farm supports a farmer, a number of labourers with wives and children, and gives work to butchers," &c. I should like to ask these gentlemen if they know what an amount of political bribery there is going on in the letting of these large farms. No man can get a big farm who is not prepared to be the political agent of the landlord. Mr. John Bright told me in the inner lobby of the House of Commons that the land of this country was used by its owners as a gigantic tool of bribery and corruption, and I have found it to be perfectly true. It is these large farmers who are the curse of the country. They get their land for less than its value in order to do the landowner's corrupt and dirty work. Small farmers are honest men, who would be Radicals if allowed to be, and would make their landlords pay their taxes, but the big farmer overawes them, and makes slaves of them.

Now, let us take any estate under the Messrs. Powell's system, and see what it produces. Well, it grows a few ricks of nice hay, a few mows of good wheat and barley, some decent rooks, and a magnificent crop of game, weeds, and vermin. It supports my Lord, or Sir John, or Squire, as the case may be, in a great temple, fit receptacle for the local god. It supports a score or two of servants, it supports a scanty population of needy people, dwelling in thatched mud fever-dens, save and except a few farmers who are the political followers of their landowner, and are, in fact, a part of his property, body and soul, placed there to feed his game, to echo his opinions, and to starve the people on his estate. As to butchers, surely the gentlemen are not in earnest in believing that farm-labourers deal with butchers! Why, they do not taste meat much more than once a year, many of them. Nine-tenths of the rural population in England seldom taste meat. Butchers, excepting those in the towns, ten miles apart mostly, are scarcely to be found,—their services are not required. The butchers only call once a week, and many of them find it does not pay to go so often, and make it once a fortnight. English people residing on the great areas of land right away from the towns do not eat meat. No, they are wisely kept on a regimen of prayer and fasting in order to sow them well down, or they would never submit to the slavery and degradation in which they have to exist.

But supposing that the land question had developed into practice, that the land had been nationalised, that my Lord, or Sir John, or Squire, had been quietly pensioned and confined within moderate limits, and all their game driven into a sort of zoological garden for the swells' amusement, what would be the result for the people around? Why, the farmer class would increase tenfold. The labourers would have good pay, and a four-acre plot attached to their dwellings. They would retire as little farmers by and by, and a new race of stalwart labourers would grow up, to whom good wages could be paid. The population would increase enormously. Instead of our villages decaying and gradually going down and down as they now do, they would grow up into townships, with gas, and town-halls, and public baths, and all the appliances of civilised life. Trade would flourish wonderfully, independent of any Eldorados abroad. Butchers and other tradesmen would drive a roaring trade. The people would require, and could then afford to pay for, decent food, clothing, and furniture. As they would also demand a different sort of house to live in than they possess at present, there would be enough building required to employ all the builders for some generations to come; in fact, the nationalisation of the land is all that is required to bring back prosperity to the country. I must offer Messrs. Powell the advice to study the whole land question, read Blue Books, as I do, and every author from John Stuart Mill downwards who has written upon this subject, and they will find the fallacies that underlie the apologies for the present system, unless it suits personal interests to become apologists. I dare say it would suit my private interests to row in with the "big-wigs," but I will not have the pillow of my death-bed stuffed with thorns if I know it. I will speak the truth, and shame the—dukes. Your correspondents doubt the fact that any nobleman has an income of 1,500,000 *l.* per annum. Now it is notorious that a paragraph went the round of the papers uncontradicted that the Westminster property had increased fourfold in value in a quarter of a century. If four times four are not sixteen, will the gentlemen tell me what it is? As to 600,000*l.* a-year, that is the income of more than one peer of the realm; but anyhow, they have more of the space allotted to the children of men than is necessary or proper, and they will have to give some of it up one day, or, as I said before, a revolution is inevitable.

With regard to America, I may state that I often receive American papers, and that I constantly read jeremiads on the grinding capitalists and land-sharks of the Transatlantic Republic. That there are scoundrels in America who would bring about the same abominable land monopoly as this country groans under, there can be no doubt, and it is not unlikely that some very stringent land laws will be shortly passed. One thing is in favour of the Yankees,—they have not any laws of primogeniture and entail, and the Stewart, Astor, and other properties will soon fall to pieces by a natural process, as our "peerage property" would do in this country but for our absurd land laws. Another advantage the American has over us is that he can have an acre or a hundred acres of land transferred to him as easily as if he were buying a horse or a piano, while in this country it is such a fuss and expense to buy land that people are afraid to invest when they might otherwise do so; and this reminds me that your correspondents ask, "What peer would refuse to turn his estate to better account?" Why, I venture to say that if Messrs. H. & R. Powell were to make proposals to any agents of the nobility to purchase or take on lease any one estate for the purpose of dividing it into small farms, they would find if they did not actually get a curt refusal, that there were such innumerable obstacles in the way of getting a slice of any of these parchment-hampered desert-warrens that the thing would fall to the ground. I cut from the *Bridport News* the following advertisement:—"This is to give notice, that any person or persons found trespassing or nutting in Powerstock Common, or any of the woods belonging to the Right Hon. Earl of Sandwich, will be prosecuted as the law directs.—By order, John Howe."

You see, Sir, the Earl of Sandwich declares in this advertisement that he has defied all law, honour, citizen rights, and national custom in order to absorb Powerstock Common. If he succeeds in keeping a cowed and starving people from asserting their rights for a few years longer, Powerstock Common will be certainly peerage property; but how is the Earl of Sandwich to sell or lease that which is not his own? The fact is, and I must take the risk of loosing my good character for moderation with Messrs. H. & R. Powell when I say it, that most of the peers have *no title* to their property good enough to transfer, and that is why they cannot and will not hear of leases, and that is why the Parliaments of the United Kingdom, the one wholly, and the other mostly composed of landowners, cannot, dare not, and will not pass a compulsory Tenant Right Bill. Your correspondents have mentioned Mr. Mechi as an authority on the land question. I will accept him as such, and I will tell them just one or two things which that able man has said in support of my theory. In September, 1857, Alderman Mechi declared in a speech delivered in London, that his own men made of their allotments forty times as much as the large farmers, and that there are 22,000,000 acres of poor permanent pasture yielding next to nothing, which might be turned into rich garden allotments for the working classes; and I say that I can confirm Mr. Mechi's words, for I went into an allotment ground in Somerset not long ago, and I found that men with one-eighth of an acre were growing stuff worth 20*l.* This shows 160*l.* per acre. Lord Derby in a speech at Liverpool said the land could yield double the food it does, and I say in the hands of the people it would yield tenfold, twentyfold, ay, fortyfold what it does now.

As to your correspondent, "W. H. W.," I think he is not far from the political kingdom of heaven, but he must not be afraid of "setting class against class." The robbed ought to be set against the robbers. I can assure him that my figures are right enough about the rating of mansions, and I hope he will thoroughly investigate this matter.

George Mitchell, "One from the Plough."

PERCEPTION OF COLOUR.

Reading Mr. Wallace's paper in *Macmillan*, I paused for reflection, and, looking round the room, where many diversities of colour were open to view, I found that the eye rested instinctively upon and recognised the greens; I then said that I would pick out the reds, which required a distinct mental effort: bright scarlet coming first. I now know that this choice came naturally, because of the obvious contrast.

I then tried the browns, and found them too closely associated with and graduating into the reds to be satisfactorily distinguished. Here I became sensible of a want, and looked around for blue, but bright blue was conspicuous by its absence, and such as I saw appeared hazy; the darker shades inclining, as Mr. Gladstone suggests, to black, the lighter shades fading into white.

The whites glared in the bright sunshine: they dazed my sight like glass roofing; the blacks shone as though they had a white surface, and only became recognised as blacks by means of their background, which threw them into relief. Clearly, if all other colours were removed, the room would show light and darkness only, but there would be glittering discs wherever the rays impinged.

The yellows and golds were the last to be distinguished, having at first involuntarily classed them with the browns; the walnuts, mahoganies, and rosewoods serve as a neutral tint, showing the wisdom of such choice for our domestic furniture, and its adaptability in nature.

My sight recognises each shade of known colours, and the order quoted above is due to preference or natural selection only. The perception of colour affords a very useful means of distinguishing different objects and its advantages are manifold; there is primarily, the sensuous gratification of the optical faculty, elevated by some favoured individuals into an intellectual power of supernal effect; we derive from it also definition of outline, order, use, gradation in workmanship, increased grace of construction, and, above all, the association of ideas, embracing all the powers of memory, affection, life. The eye drinks in light, and all that follows is an appurtenance or adjunct of the sense of sight in man, dependent, however, on what is called "the education of the eye."

Obviously, those undulations of light which produce in us the perception of colour have an effect which we find gratifying, this apparently concerns the sensorium; we do not at present know whether this pleasurable sensation results from the momentum of these undulations, or from the eyes' own power of reproducing exact pictures by reflection; but of these sensations the green effects are found most soothing, the blues most stimulating, reds most violent, yellow the most equable, white the most natural, being merely the sensation of light, while black is true quiescence or darkness itself. The perception of colour is therefore as much a distinct sensation as is the handling of a chair. A. H.

CLEOPATRA'S NEEDLE.

The expected arrival of this ancient relic excites so much public interest as to the site of its allocation, that a few remarks may not at the moment be inopportune.

It must be apparent to every one that, first of all, the position chosen should be upon a more than ordinarily public thoroughfare, and open to view; besides that, it should not conflict with any other public monument, nor be overshadowed by any lofty edifice.

As to the allocation of the model, close to the Houses of Parliament, St. Margaret's Church, and Abbey, surrounded by artistically sculptured modern memorials, and some ancient statuary, it would convert the pretty gardens into a dreamy "Campo Santo," where the character of the treasure would be perverted, if not wholly effaced. Leaving out of question other sites already put forward, that in the Green Park, on the highest elevation close to Piccadilly (nearly opposite the Club), is ostensibly the best; but another position, much more appropriate, as being close to the South Kensington Museum, and near to the splendid new buildings, now nearly completed, is here suggested: it is the interval between the Old Museum and Thurloe-square, where the Cromwell-road is at the junction over 160 ft. wide, and where the open planted grounds of the Museum on one side, and of Thurloe-square on the other, would lend dignity to the object in view. If it were decided to adopt this position, the obelisk might be placed either in the mid road, or else in the garden of the Exhibition, close to the Cromwell-road, north side, where it would be equally conspicuous in all directions.

If placed upon a pedestal, this ought not to exceed 6 ft. in height; and if a monolith of granite could be procured, of, say, 3 ft. or 4 ft. in thickness, to cap the base, it would be more appropriate.

As an additional tribute of dignity to our unequalled National Institution, few will disagree with the allocation as recommended by

T. H. H.

VENTILATION: GOLDSMITH RESIDENCES.

Sir,—Mr. Banister Fletcher's ventilation of these buildings will most assuredly not answer, if by ventilation we are to understand the admission of fresh air without discomfort. True enough fresh air will enter the rooms as he has shown (*i.e.* through perforations in the head of the sash, and perforated zinc panels in the top architrave), but in winter, owing to its density and coldness, together with the suctional power of the flue from the fire, it will be a nuisance to the occupants of the rooms—the perforated zinc notwithstanding. Mr. F. tells us that "the problem was how to obtain ventilation day and night in such a position as to be unnoticed by the tenants; for as you are well aware, the first thing that is done by the majority of tenants of the class for which these residences are intended, is to paste over or otherwise block up all ventilators." And this will be the fate of Mr. F.'s ventilators. I wonder whether Mr. F. has treated the windows of his own house in the manner he suggests, and has enjoyed the benefit of a winter's experience under them. If he has not—and I am sure he has not—I advise him to do so before he again adopts it. The thing is radically wrong, and the perforated zinc merely modifies the nuisance. Can Mr. F. tell your readers where it has been tried and approved?

Hygeia.

*** Five other correspondents object to the plan.

CUTTING OFF THE GAS TOO SOON.

Blake *v.* the London Gas Company.

This case was heard in the Brompton County Court the other day. The plaintiff, a painter and gas-fitter, of Walton-street, Chelsea, sought to recover damages against the defendants for improperly cutting off his gas and removing the meter.

It appeared from the evidence that the plaintiff had been but a very small customer of the defendants, and on the 8th of July last, two of the defendants' servants passed the premises in Walton-street, and discovered that brokers were in possession. Fearful that the meter should be lost or damaged, they went in, and without any notice, detached it from the pipes and took it away.

On behalf of the plaintiff it was not denied that he was in a very impecunious position, but it was contended that the loss of the gas, under the circumstances, made his affairs worse; also that the Gas Company were bound, under Act of Parliament, to give twenty-four hours' notice of the removal of the meter.

The jury returned a verdict for the plaintiff for 5*l.*

OVERCROWDING IN CHELSEA.

A LESSON TO LANDLORDS.

At the Westminster Police Court, on the 5th inst., Mr. Charles Edney, the owner of the premises, 10, Symond's-street, Chelsea, was summoned to show cause why an order should not be made on him requiring him to do away with certain existing nuisances at the house in question.

Mr. Jonathan Young, the sanitary inspector of the parish of Chelsea, said the defendant had notice on the 6th of last month to abate nuisances that existed on the premises, viz., that the drains were untrapped, water of a fœtid character percolating the foundations, and other neglect of sanitary precautions. The notice had been totally disregarded, and on the 29th ult. the summons was taken out, to which the defendant did not now appear. It was a six-roomed house, occupied by no less than six families, amounting to twenty-three souls; the ground of the yard was rotten, and the soil from the neglected drains, which were opened on the 29th ult., and had not been closed, was lying about the yard, and the basement was in a filthy state, so much so that Dr. Barclay, the medical officer, was of opinion that epidemic disorders would be spread. Already the parish had taken proceedings against the owner for overcrowding the premises.

Mr. D'Eyncourt said he should make an order that the work be done in twenty-one days.

Mr. Young said the matter was a serious one. The

ns were stopped and could be unstopped in a day or , and the whole of the work done in three or four s with due attention.
Ir. D'Eyncourt made the order for the work to be e in seven days, and the costs of the proceedings to paid.

Miscellanea.

The Importance of Training the Senses. 'he importance of training or educating the ises becomes evident when we reflect that it from impressions received through the eye d the ear that men are enabled to bear witness what passes in the external world; and iohers of drawing and of music only fully ow what false witnesses, without any *mal epense*, these senses are before they have been operly trained. Let it not be forgotten either at it is upon the testimony of these two senses at character and life are frequently at stake. ie desire to obey the commandment, 'Thou alt not bear false witness," may be strengthened, t evidence, nevertheless, cannot be guaranteed a man being put upon his oath. For if a wit- ss be an imperfect observer by eye and by ear, he commonly is, in default of his not having ceived that sense-training upon which we are sisting, he may quite conscientiously swear to e absolute truth of his false impressions, of s imperfect perceptions. There is an art- acher who frequently points this moral in his ass,—'If,' he says, 'you misapprehend the uth with respect to the model immediately efore you, and biding your own time to be eliberately inspected, how can you expect to ocurately observe and recollect the moving enes and occurrences of every-day life?' It , however, not only in the witness-box that rained senses are required, but for the recogni- on and appreciation of beauty in nature to pre- ide watchfully over all kinds of work, and to ndow the arts and the manufactures of a nation ith those excellent qualities which would ensure eir appreciation throughout the civilised world. 'e are now, of course, referring more imme- iately to the sense of sight. You will find that ainters and sculptors can more readily turn heir hands to any kind of work than any other ien,—and why? Not solely because their pro- essions require the greatest nicety of touch, but ecause their sense of vision having been better rained they see more correctly. . . . . Drawing, nodelling, and instrumental music contribute espectively to the perfecting of sight and of ouch, and of hearing and of touch,—to the per- ections of those three most important senses by vhich all work is compassed. They are to those enses what gymnastics are to the general hysique."*

Suggested National Collection of Photographs.—"One of the Many" writes to the *Daily News* proposing that the National Gallery Authorities should "make and exhibit for public benefit a national collection of photographs that should show by means of permanent fair-sized photographs, taken from the objects themselves—as complete a collection as possible of the time-honoured treasures of painting, sculpture, and architecture—the relics of the best times of art that those who travel go abroad to see. Thus, the collection should comprehend photographs of each of the famous buildings and valued ruins; those of a kind hung together, and grouped according to their style, with photographs again of rich details enlarged. It should show the famous pictures, each artist's works being hung together, and grouped by their subjects. The antique statues and bas-reliefs; those of the same personages together and grouped by their attitudes. And Michelangelo's statuary. Lastly, the whole number of photographs should be repeated on a small scale, grouping them according to the towns to which each object belongs. Such a school as this collection would be ought to improve gradually the art of the country, when architects and those who employ them—painters and sculptors, and those who judge their work—have the power of seeing and growing familiar with the best samples of the sublime and beautiful in art that the world boasts."

Lectures on Health.—Under the auspices of the Trades Guild of Learning, a course of twelve lectures on "Life and Health" will be delivered in the Town-hall, Shoreditch, by Dr. Richardson, F.R.S., commencing on Monday evening next, to be continued on subsequent Tuesdays and Fridays.

* "Symmetrical Education." By W. Cave Thomas. Smith, Elder, & Co. 1873.

The Rivers Pollution Act, 1876.—The first public inquiry under the Rivers Pollution Act of 1876 was held at Canterbury on the 24th ult. by Mr. Robert Rawlinson, C.B., who attended to hear an application by the local sanitary authority for a certificate under the Act in question, to the effect that the means used by them for rendering harmless the sewage matter flowing or carried into the river Stour from their sewage outfall works are the best or only practicable and available means under the circumstances of the case. The application was opposed by the Commissioners of Sewers for East Kent. Evidence was called to show that since the completion of the Canterbury sewage works in 1868 the river below the outfall, for a distance of about eight miles, was constantly in an impure state, the water being discoloured, and there being a thick black sediment at the bed of the stream; also that a most offensive smell arose from the water, and that some of the men who work in a boat used by the Commissioners of Sewers had been stricken down with typhoid fever, caused presumably by the "abominable stench," as one witness termed it. The town council have adopted a crude form of filtration, which, according to the witnesses for the commissioners, is utterly incapable of purifying the sewage matter so as to render it harmless. It was shown, also, that irrigation could be conveniently carried on in connexion with the works. After hearing the evidence, the inspector said he would make a personal inspection of the works and the river, and would then report the result of his inquiry to the Local Government Board.

The Labour Question in America.—An American paper says that the A. & W. Sprague estate, New York, now employs about 10,000 hands, and Mr. Cheffee, the trustee and manager, says that, although the men are now receiving less wages than at any period since the establishment of the Sprague Works, nearly half a century since, he has never seen them so contented. He ascribes the cheerful condition of his working people under low wages and the general labour disturbances mainly to the fact that the estate furnishes each head of a family enough ground for a good-sized garden, or from a quarter to half an acre of tillable ground. The scant wages have forced them to carefully cultivate these little plots, and the people find that they can almost raise subsistence for their families. So, instead of want, they have fair support, and even many luxuries, for their families, and from the lowest wages are able to lay by. Besides, the care of cultivating these gardens, and keeping a pig or cow, or both, not only holds the men from the dissipation incident to idle hours, but furnishes healthful recreation, and inculcates a home sentiment and sense of security and proprietorship that eminently improves the *morale* of the labourer.

New Non-Pauper Hospital for Paying Patients.—Last week the memorial-stone of the first permanent hospital for the reception of poor, but non-pauper, patients, under the 37th section of the Sanitary Act, was laid. On Thursday, the members of the District Board met at the offices in High-street, Poplar, whence they were conveyed to Plaistow. Mr. E. L. Bracebridge, a member of the Board, is honorary architect of the building. The clerk of the works is Mr. C. Brown; the builder and contractor, Mr. J. W. Martin, of Stratford. The ground measures 196 ft. by 170 ft., and with the building will cost 14,000*l*. There will be two blocks or pavilions, two stories in height, each block to accommodate thirty-six patients. A third block will contain the administrative department. The cost is to be spread over twenty years, and a halfpenny rate on the present assessment will more than repay principal and interest.

New Sessions-Room at Northop, near Mold.—A picturesque gabled structure has just been erected in the village of Northop, to serve as a new sessions-room and police-station. The lower portion up to the first floor is of red brick, and the windows have mullions of brick, but above that there is black and white timber framing, with wood casement windows. The building is roofed with green slates, and has been lately erected by Mr. J. Scott Bankes, from the designs of Mr. John Douglas, architect, of Chester, at a total cost of 750*l*. It is customary in this part of the country to hold Petty Sessions in hotels and public-houses, but this, it has been thought, is hardly consistent with the dignity of the bench, and hence the erection of these new buildings.

Victorian Schools of Design.—At the sixth annual distribution of prizes to the pupils of Schools of Design associated with the Technological Commission, Judge Bindon, who presided, congratulated the pupils, teachers, and committees of the Schools of Design on the progress that it was evident had been made. It was a general opinion that the exhibition this year was the best that had yet been held. The committee had feared that in design and ornamental and mechanical drawing there might be failure, but in those subjects the pupils had been better than in others. The President concluded by remarking that there was an examination of competitors for prizes at every exhibition, and it was most thorough. This year 206 submitted themselves. There were now twenty-two schools, and 1,458 scholars attending them. Professor M'Coy also addressed the assemblage shortly. The distribution of prizes then took place. The successful competitors were from many schools, the teachers whose scholars succeeded best being Messrs. Brunn (Ballarat), Sasse and Pye (Geelong), Oldham (Ballarat West), Roberts (Trades' Hall), Carter, &c.

House Ventilation.—At the invitation of Mr. John Westmorland, a large party attended at the residence of Mr. Emil Quack, Greenbank House, Mossley-hill, Liverpool, to inspect a new method of house ventilation patented by him. The ventilator is constructed of an iron frame, which fulfils a double purpose. The object obtained is the rapid abstraction of air from its position in the ceiling of a room. In the presence of the company experiments were made, and, with the windows and doors closed, by the application of an anemometer to the extraction flue, it was shown that it registered 560 cubic feet of air per minute, which is equivalent to changing the entire atmosphere of the room every six minutes. With the door open, allowing greater inlet, the anemometer registered 1,440 ft. per minute, equivalent to changing the entire air of the room in three minutes. In this room a brisk fire was burning at the time. There were other experiments made in the library, without a fire, when the anemometer registered 320 cubic feet per minute, being equivalent to changing the air of the room every five minutes.

Intimidation by a Joiner.—Before the Oldham magistrates, the other day, Joseph Wharmby was charged with intimidation. The evidence went to show that the defendant and a number of other joiners out on strike formed a picket and went to the works of Mr. E. Whittaker, joiner and builder, to catch the workmen as they were leaving for their homes. Defendant threatened one of the workmen, and afterwards went into the yard of the works, and was ordered out by Mr. Nathan Rucroft, the manager, whom he said he would "remember," and he afterwards threatened to stick a knife into him. William Clegg, a workman in the employ of Mr. Whittaker, further stated that he was going home on the night in question, and was met by the defendant, who asked him if he was "knobsticking." Witness replied that he was not, but merely looking after his own interests. Defendant thereupon challenged him to fight, and said he would "do for him." Defendant was committed to prison for one month.

Dispute regarding Plans.—At the Sheriff Small Debt Court, Wick, on the 2nd inst., an action was raised before Sheriff Russel, by Mr. Alexander M'Tavish, architect, Inverness, against the managers of the United Presbyterian Church, Pulteneytown, for payment (5*l*. 5s.) of designs submitted in competition for the new United Presbyterian Church, now in course of erection. The question was whether the pursuer was entitled to payment on the plans being opened and exhibited; or whether they were to be exhibited in competition with others, and, if approved of, retained. The Sheriff having heard parties, found that the managers of the church had dealt in good faith with the pursuer, and that the plans could never come into competition without being opened, and therefore assoilzied the defenders from the conclusions of the action.

Suicide of Mr. Raphael Brandon.—We regret to announce that Mr. Raphael Brandon architect, committed suicide on Monday afternoon at his chambers, Clement's-inn, by shooting himself in the temple with a pistol. The deceased gentleman's manner of late is said to have been sufficiently strange to cause some anxiety to his friends. Mr. Brandon leaves behind him a widow and one child.

The Pneumatic Clocks of Vienna.—Mr. John Fattorini, of Bradford, a practical clock and watch maker, states that on a recent visit to Vienna he had the opportunity of thoroughly inspecting the system adopted by an Austrian engineer, Herr C. A. Mayrhofer, who has hit upon the expedient of pneumatic tubes as a means of securing uniformity in the time of clocks in any part of the city. Tubes are laid in the streets from the central station in which is the "master clock," or rather two clocks working together, and should one get wrong the other keeps in motion, and an alarm-bell is rung to indicate to the attendant that something is wrong, and he at once rectifies it. The air is pumped from the station; and just as gas or water can be taken into houses by means of pipes, so can the pneumatic tubes be laid, and people can receive their time just as they get their water and gas, the tubes being always kept fully charged with air. Branches can be taken in any direction. Housekeepers and others can be relieved of the trouble of winding up their clocks, as nothing of the kind is required in the pneumatic system. A small yearly charge is made for the clocks, and there is no further expense or trouble.

Sewer Ventilation in Gloucester.—Mr. Mansergh, the borough engineer of Gloucester, has issued a report on the ventilation of the city sewers. He defends the system he has carried out in the added parts of the city of ventilating the sewers as the most effective method of preventing the accumulation of injurious gases. He recommends that the ventilators be increased in number, and that house-drain branches should be ventilated by having soil-pipes carried up above the roofs in suitable places. He says the greater the number of ventilators the better, and he advises that all the old sewers be kept clean and free from deposit, the renewal of old sewers through which the sewage penetrates, and to carry out through the sewers in the old city a system of ventilation similar in principle and extent to that in operation in the added districts. Ventilators, he says, ought to be applied to the seventy existing manholes, and 300 ought to be added.

Excavations at Trier.—At Trier fresh excavations have been made near the so-called Roman Emperor's palace. A great number of marble slabs turned up, as well as a marble torso which once belonged to a life-size draped figure. Near by, one half of a sculptured female head, and a fragment of drapery which may have belonged to the figure, were dug up. Fragments of a wall covered with fresco paintings were also laid bare. Excavations made by way of trial near the city wall produced surprisingly rich results, such as the sculptured head of a satyr; a very expressive head of a winged Morpheus, with closed eyes; the head of a woman and one of a youth; a great many fragments of arms, various torsos, and pieces of drapery. Other antiquities are expected to come up.

Fire.—We are asked to say that the damage done by the fire which occurred last Sunday morning, on the premises of the Patent Concrete Building Apparatus Company, in the Blackfriars-road, will in no way interfere with the works, and that business will be carried on as usual.

TENDERS.

For the erection of the Victoria Ironworks and Implement Warehouse, Bristol, for Mr. W. Baker, Temple-street, Bristol. Mr. W. Clothman, architect:—

Waters	£960 0 0
Thompson	954 0 0
Crick	870 0 0
Church	869 0 0
Munro	860 0 0
Kidner	845 0 0
Veals	840 0 0
Eastabrooke & Sons	831 0 0
Hatherley	818 0 0
Humphreys	812 0 0
Bateman	781 0 0
Banner	780 0 0
Lewis & Edbrooke	778 0 0
Philips & Jefferies	766 0 0
Stevens & Bastow	759 0 0
Davis	755 0 0
Cowlin	742 0 0
Hill (accepted)	737 0 0
Stephens & Gardiner	669 0 0

For a residence at Enfield for Mr. M. Latham, Clay Hill. Mr. T. J. Hill, architect. Quantities by Messrs. Osborne & Russell:—

Downs & Co.	£8,602 0 0
Moreland & Nixon	8,570 0 0
Browne & Robinson	8,490 0 0
Sabey & Son	8,150 0 0
Bayes, Brothers, & Allen	7,736 0 0
Sewell & Son	7,573 0 0
Linzell & Son	7,560 0 0
Patman	7,466 0 0

For painting and decorative works at 54, Cleveland-square, for the Union Fire Office. Mr. J. Tavenor Perry, architect:—

Pitman & Cuthbertson	£580 0 0
Clements	487 0 0
Clark & Bracey (accepted)	417 0 0

For building a house and shop at No. 64, Chalk Farm-road, for Mr. O. Bacon. Mr. J. R. Furniss, architect:—

King	£1,138 0 0
Sommerville & Smith	998 0 0
Drew	930 0 0
Chessum	911 0 0
Harris & Wardrop	897 0 0
Manley & Rogers	888 0 0
Wall Brothers (accepted)	847 0 0

For the erection of a coachman's residence, stables, and coach houses at The Cedars, Harrow Weald, Middlesex, for Mr. T. F. Blackwell. The late Mr. R. L. Roumieu & Messrs. Roumieu & Kesteven Hill, architects:—

Lawford (accepted)	£2,341 10 0

For the erection of a gardener's shed at the French Protestant Hospital, Victoria Park, for the governor and directors. Mr Reginald St. A. Roumieu, honorary architect. No quantities supplied:—

Bartholomew	£395 0 0
Longmire & Burge	339 0 0
Macey & Son (accepted)	310 0 0

For new barracks, Shorncliffe.

Clemmans (accepted).

For retaining walls and forming and making Albany-street, Ashley Hill, Bristol. Mr. Herbert J. Jones, surveyor:—

Ford	£408 11 0
Mereweather	377 5 0
Yalland & Son	310 0 0
Humphreys (accepted)	295 0 0

For rebuilding houses in Lincoln's-inn-fields. Mr. W. Beeston, architect:—

Moyle & Son	£3,627 0 0
Kinnimont	2,806 0 0
Green	2,788 0 0
Beastead & Son	2,750 0 0
Downs & Co.	2,720 0 0
Staines & Son	2,686 0 0

For houses at Acton for Mr. W. M. Read:—

Wild	£3,375 0 0
Macfarlane & Co.	3,034 0 0
Lawrence	3,026 0 0
Pickersgill	2,885 0 0
Kellaway	2,254 0 0
Robinson	2,212 0 0

For road making and sewers for the British Land Company, Limited, on their estate at Stratford:—

Killingback	£2,900 0 0
Pearson	2,627 0 0
Crockett	2,167 0 0
Jackson	1,909 0 0
Pizzey	1,865 0 0
Richardson (accepted)	1,850 0 0

For erection of parish room for St. Mary's Church, Newington. Mr. J. E. K. Catts, architect. Quantities by Mr. F. W. Hunt:—

Riley	£1,390 0 0
Marsland	1,248 0 0
Tyerman	1,230 0 0
Downs & Co.	1,190 0 0

For the construction of adits and shafts for the Droitwich water supply. Mr. E. Pritchard, engineer. Quantities by Mr. C. J. Purnell:—

Contract No. 1.

Lovatt	£2,102 5 6
Bourne	1,943 0 0
Wood	1,685 0 0
Brazier & Weaver	1,093 0 0
Robinson	1,090 0 0
Dixon	962 18 0
Hudson & Co.	873 0 0
Everest	850 0 0
Low (accepted)	734 0 0

For works required in the extension of the Royal Masonic Institution for boys, Wood-green. Mr. S. B. Wilson, architect:—

Brooks	£3,768 0 0
Pritchard	3,518 0 0
Fish	3,356 0 0
Morter	3,250 0 0
Patrick & Son	3,245 0 0
Kirby	3,172 0 0
Wallaram & Co.	3,075 0 0
Higgs & Hill	3,040 0 0
Brass	2,947 0 0
Larter & Son	2,895 0 0
Wagner	2,749 0 0
Mattock Brothers	2,671 0 0
Prout	2,497 0 0

For new schools, Shepperton-road, Islington, for the London School Board. Mr. E. R. Robson, architect. Mr. T. Thornton Green, surveyor:—

Higgs & Hill	£8,511 0 0
Boyce	8,333 0 0
Sheffield	8,129 0 0
Torgue	8,123 0 0
Thompson	7,962 0 0
Downs	7,915 0 0
Pritchard	7,812 0 0
Nightingale	7,816 0 0
Tyerman	7,687 0 0
Grover	7,627 0 0
Kirk & Randall	7,296 0 0

For part building and completing of six houses in Castle-lane, Battersea, for Mr. J. Trott. Mr. Henry J. Hansom, architect:—

Picking	£960 0 0
Isaacs (accepted)	950 0 0

For stable, hay and corn store, in rear of 71, Bridge-road, Battersea, for Mr. Birchall. Mr. Henry J. Hansom, architect:—

Turtle & Appleton	£155 0 0
Baker (accepted)	125 0 0

For warehouse and offices, Church-road, Battersea, for Messrs. May & Baker. Mr. Henry J. Hansom, architect. Quantities supplied:—

Muxey	£1,553 0 0
Gregory	1,523 0 0
Lathey Brothers	1,510 0 0
Macey & Sons	1,526 0 0
Baker	1,499 0 0
Hammond	1,410 0 0
Hobson	1,399 0 0
Turtle & Appleton (accepted)	1,275 0 0

For new schools, Tooley-street, for the Rev. Canon Bamber. Mr. Henry J. Hansom, architect. Quantities by Mr. H. Smith:—

Smith	£1,895 0 0
Lathey Brothers	1,814 0 0
Gregory	1,817 0 0
Stimpson & Co.	1,782 0 0
Turtle & Appleton	1,765 0 0

For laundry in rear of 77 and 79, Bridge-road West, Battersea, for Mr. Francis. Mr. Henry J. Hansom, architect:—

Appleton & Turtle	£365 0 0
Stimpson & Co.	318 0 0
Baker	311 0 0
Hammond (accepted)	310 0 0

TO CORRESPONDENTS.

A S R (must decide on the published testimonials. We cannot find space for what would be merely an advertising correspondence. Our opinion would be in favour of the dog-cart).—H S—P—S G—T.—J. H G—S D.—R E. R—W. W L—J M—Mrs. L—T L—H U McK.—T L—E. J. H.—T T—J. A. B.—J. B—F Z (No).—G. W. U (next week).

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It is considered desirable that the person appointed should have been educated in the workshops and drawing office of a mechanical Engineer; should possess a good practical knowledge of mechanical engineering, of surveying and levelling, and should be grounded in the principles of geology and chemistry, and should be from twenty eight to thirty-eight years of age, or thereabouts. That he should subsequently have had experience in the construction of works in brick, masonry, and earthwork, the construction of both impounding and covered service reservoirs, the laying and jointing of cast-iron mains and pipes, and the fixing of screw-cocks, hydrants, &c. in connexion with the same.
That he should be capable of selecting suitable sites, where any such exist, for the construction of wells, bore holes, and other subterranean works that would yield a supply of water fitted for domestic uses, and be able to design and superintend the carrying out the necessary works to procure and convey water to the interested consumers from such selected subterranean, as well as from other more obvious sources.
That he should be able to advise the Government with regard to works for irrigation and other kindred subjects.
The salary that the South Australian Government would be prepared to pay to the gentleman appointed would be at the rate of 900l. per annum.
Application, to be made in writing, should be addressed to Sir ARTHUR BLYTH, K.C.M.G. the Agent-General for South Australia, and be delivered on or before the 25th of OCTOBER next, at his Office, 8, Victoria-chambers, Westminster, accompanied by short particulars, stating where the candidate has been educated, and how he has been occupied from year to year since his eighteenth birthday to the present time.
No personal application can be entertained.

BOROUGH of BARNSLEY. — SURVEYOR WANTED.—The Council are desirous of receiving APPLICATIONS from persons duly qualified to act as BOROUGH SURVEYOR. The person appointed will have to devote the whole of his time to the duties of the office, and will not be allowed to practise in his profession, either privately or in partnership. Salary, 250l. per annum, with an office, coals, gas, and proper professional instruments provided. All applications (with testimonials) must be sent not later than FOUR o'clock on MONDAY, the 22nd day of OCTOBER next, to the Town Clerk, of whom any information connected with the duties of the office may be obtained. Canvassing by applicants for the office will not be allowed.—By order,
WM. H. PEACOCK, Town Clerk.
Barnsley, September 26th, 1877.

VESTRY of ST. GILES, CAMBERWELL. To CLERKS of WORKS.—The General Purposes Committee of this Vestry will meet on MONDAY, the 29th day of OCTOBER instant, to select for approval of the Vestry the name of three candidates (not exceeding forty years of age) for the APPOINTMENT of a CLERK of the WORKS to this Vestry.
Candidates must be well and practically acquainted with the setting out and the quality and use of materials, and superintendence and construction of roads, road repairs, masons' and paviors' work, &c. to measure up the same, and be able to keep accounts of the delivery and use of materials, and generally carry out the supervision of all works, labour, &c. under the direction of the Surveyor; also to be competent to make Sketches, Plans, &c. and generally to have a thorough knowledge of all matters appertaining to the duties of a Clerk of the Works, and must write a clear, legible, and business-like hand, and must devote his whole time to the duties of his office. Salary 2l. 2s. per week.
Applications to be addressed "For Clerk of the Works—Chairman of the General Purposes Committee, Vestry-hall, Camberwell," to be received up to ONE p.m. on SATURDAY, the 27th inst. such applications to include testimonials as to age, character, efficiency, and previous occupation.
Candidates to be in attendance at the Vestry hall on MONDAY, the 29th instant, at SEVEN p.m.—By order,
GEO. W. MARSDEN, Vestry Clerk.
Vestry-hall, Peckham-road, October 11th, 1877.

PUPIL WANTED.—A Town Surveyor near London has a VACANCY for a PUPIL. A small premium required.—Address, in the first instance, to Box 159, Office of "The Builder."

AGENT WANTED in London, to undertake the SALE of BEST RED STOCKS and all kinds of Red Moulded, Pollated, and Arch BRICKS. Must have a good connexion amongst architects and contractors, and be centrally situated.—State terms to Box 168 Office of "The Builder."

SURVEYOR, CLERK of WORKS, &c.—WANTED, an active Man, with knowledge of materials, builders, &c. for outdoor gentlemanly employment, on salary and commission.—Address, stating age, salary, and previous employment, B. A. care of Mr. Rogers, 16, Borough, S.E.

CLERK (Builder's) WANTED. Used to the general routine of the office. Good reference.—Address, stating terms, D. S. Post-office, Waltham Abbey.

WORKING SHOP FOREMAN of CARPENTERS and JOINERS (energetic) REQUIRED, able to set out and superintend all classes of work. Must be a good staircase hand. A provincial man preferred.—Apply to H. WELSH, Builder, Hereford.

WORKING FOREMAN WANTED, to Take Charge of a Job. Carpenter and Joiner by Trade.—Address with reference, and stating terms, D. S. Post-office, Waltham Abbey.

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BUILDER'S FOREMAN (good, practical, and energetic) WANTED, immediately. Must be thoroughly acquainted with construction and capable of undertaking (if required) the entire management in erection of buildings. Must be well acquainted with the trade in all its branches, steady, and industrious. Good reference required.—Address, stating salary, Messrs. F. & H. S, High-street, Oxford.

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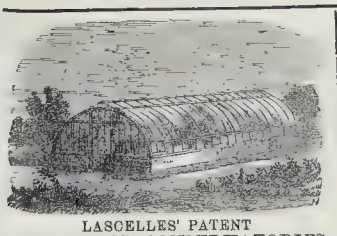
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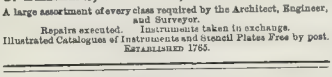
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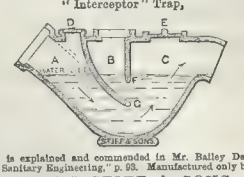


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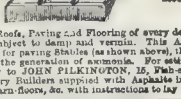
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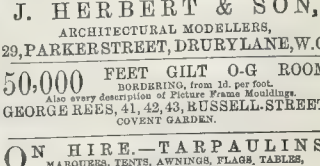
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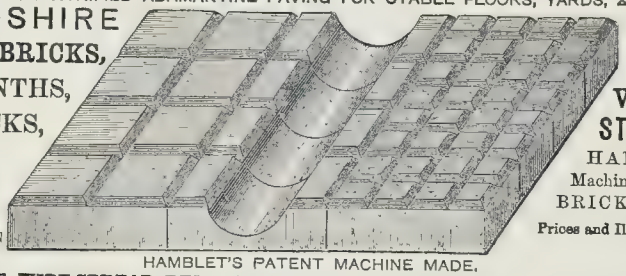
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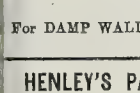
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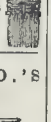
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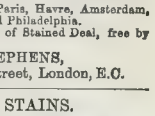
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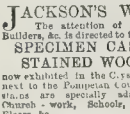
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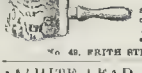
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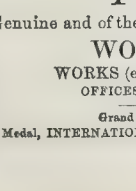
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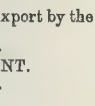
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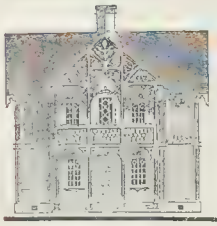
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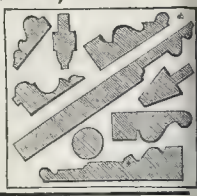
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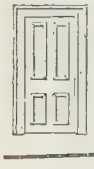
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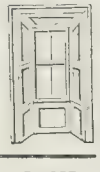
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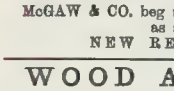
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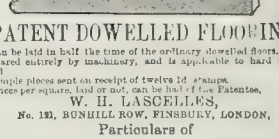
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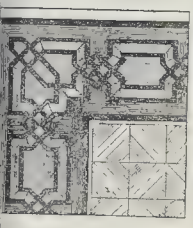
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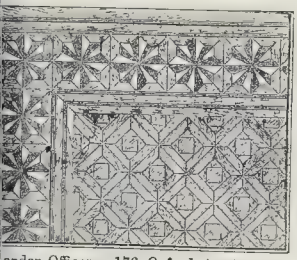
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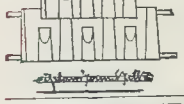
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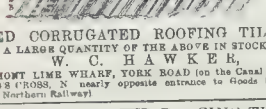
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PANTILES SUPERSEDED.
BUFF CORRUGATED ROOFING TILES
Cost No More than the common Pantiles, although vastly superior in every respect.
PATENT EXPANDING RIDGE TILES, suitable for any Pitch, LIME CEMENTS, PLASTER, HAIR, LATHS, TILES, PIPES, &c
BLUE GROOVED AND PLAIN STABLE PAVING BRICKS, ADAMANTINE CLINKERS.



RED CORRUGATED ROOFING TILES.
A LARGE QUANTITY OF THE ABOVE IN STOCK.
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A. H. LAVERS,
NINE-ELMS, LONDON
RED, BLUE, and BROSELEY RIDGE and ROOFING TILES
WHITE GLAZED TILES and GLAZED BRICKS
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RED, BLUE BUFF, and BLACK FLOORING TILES and Quarries,
BLUE STAFFORDSHIRE BRICKS of every description
Forwarded to all parts direct from the Works.

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JAS. STIFF & SONS, London Pottery, Lambeth, S.E.
SANITARY STONEWARE & ARCHITECTURAL TERRA-COTTA MANUFACTURERS.



For Illustrated and Descriptive Price Lists of Drain Pipes, Sewer-Air Traps, Chimney T Ventilating Bricks, Kitchen Sinks, &c. apply to
J. STIFF & SONS, LAMBETH, LONDON.

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JOSEPH CLIFF & SONS
WORTLEY, LEEDS.
DRAIN PIPES, highly glazed, true in form, and good thickness,—Circular, from 2 in. to 3 Egg or Oval shape, from 6 in. by 6 in. to 36 in. by 24 in. INVERT BLOCKS, &c.
FIRE BRICKS for resisting the most intense heats, Blast Furnace Lumps, Patent Gas Re Chimney Tops.
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SANITARY TUBES from 2 inches to 42 inches DIAMETER.
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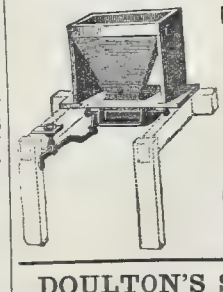
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Full PARTICULARS and DRAWINGS of this important INVENTION can be obtaine
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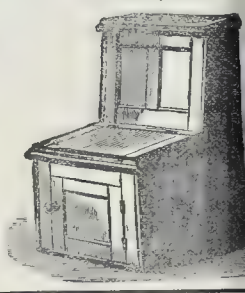
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FIRE-BRICKS of very superior quality in every size and description Sealing Blocks, Lining Bricks for Locomotive Fire-holes, Furnace Lump
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PRICES and FULL PARTICULARS on APPLICATION.

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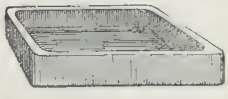


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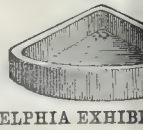
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DOULTON'S STONEWARE KITCHEN SIN
ARE UNEQUALLED FOR STRENGTH AND CLEANLINESS.
They are made of a new kind of Stoneware, very highly glazed, and are perfectly INCORROSIVE and NON-A







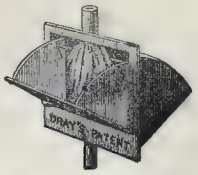
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The above Apparatus is an article much needed in Water-closets, particularly in private houses. Its purpose will be at once seen from the sketches. It is fitted with water inlet and waste. The front, by a simple movement, can be taken out, so that any person can cleanse or unstop it. This article supersedes the unsightly and exposed Urinals hitherto used, being placed in and lying flush with the wall.

Price 28s. 6d. each.



WILLIAM JONES, DRAY, & CO., Wholesale Braziers,
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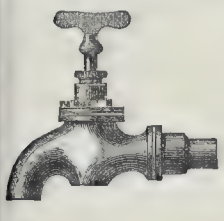
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This Joint is absolutely Water-tight. Needs no skilled labour in fixing.
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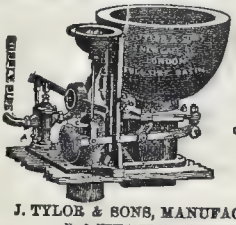
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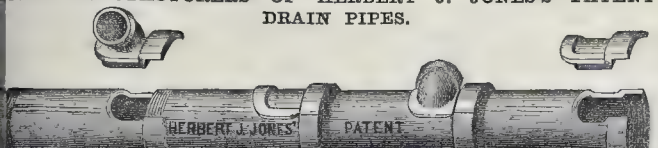
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PATENT REGULATOR VALVE CLOSET,
WITH FULL-SIZE BASIN TRAPPED ABOVE FLOOR LEVEL WITH AFTER-FLUSH.



PATENT "WASTE NOT" VALVE, WHICH CLOSES OF ITSELF, CAN BE FITTED TO THIS CLOSET.

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CANAL POTTERIES OLD KENT ROAD LONDON, S.E.
(Late of the Original Lambeth Potteries. Established 1749),
SOLE MANUFACTURERS OF HERBERT J. JONES'S PATENT DRAIN PIPES.



These Pipes afford every facility for making examinations and junctions at any time, without interfering with the flow of sewage. Especial attention is called to this advantage, as, in the usual manner of making connections, a hole is either knocked in the Pipe for the insertion of the end of the intended subsidiary drain, or several pipes are displaced to allow the usual junction to be put in. The latter method is almost as objectionable as the former, as the work cannot be performed without chipping the ends of the pipes, thus causing short bearings and imperfect joints.

HERBERT J. JONES'S PIPES are made of the thickness approved by the Metropolitan Board of Works, and are supplied at the London tariff prices. References can be given to many Eminent District and other Surveyors.

CARTS, LADDERS, BARROWS, &c.—GEORGE ELL & CO. Builders of Carts, Vans, Wagons Trucks, Trolleys, &c. Contractors' and Builders' Plant. LADDERS, BARROWS, TRESTLES, STEPS, SWINGING SCAFFOLDS, PICK-HELVES, HAMMER HANDLES, &c. Wheels made by Improved Machinery on the Premises. Barrows, Dobbin and other Carts, intended for exportation, made by machinery so as to be interchangeable in their parts. Scaffolding, Ladders, Barrows, Trestles, Steps, &c. Lent on Hire. ENGLISH TIMBER, SPOKES, FELLOES, STOCKS, FENCING, &c. Price Lists on Application.
GEORGE ELL & CO.
EUSTON WORKS, 279 and 280, EUSTON ROAD, N.W. and BRIDGE WHARF, BISHOP'S ROAD, LONDON, W.

GLAZED TERRA-COTTA (Lipscombe's Patent).—The Great Improvement; cleaned by every shower of rain beating against it. Beautiful colour and texture imperishable, extremely hard, moulded to any design, moderate price. Specimens at LIPSCOMBE & CO.'S Charcoal Filter Office, No. 44, Queen Victoria-street, E.C. (removing from Temple-bar).

TERRA-COTTA.
J. M. BLASHFIELD respectfully informs Architects, Builders, and his other Patrons that he has OPENED an OFFICE at No. 43, BERNERS-STREET, OXFORD-STREET, W. where samples and prices may be obtained.
Works; ALBERT-ROAD, STAMFORD, LINCOLNSHIRE.

Properties.—Middlesex, Surrey, Kent, and Herts.

MR. W. H. COLLIER is instructed to OFFER by AUCTION the following eligible PROPERTIES, viz.:—

HAMPSTEAD-HEATH, Middlesex.—At the WILLIAM THE FOURTH, High street, Hampstead, on MONDAY, OCTOBER 15th, at SIX for SEVEN in the evening, in lots, exceedingly valuable FREEHOLD BUILDING LAND, being a portion of the Carlisle House Estate, having excellent frontages to Rudall crescent, and Wilmington, Worsley, Carlingford, and Kemplay roads, pleasantly situate, leading from Hampstead-heath to the High-street, within five minutes' walk of the Hampstead-heath Railway Station, from whence a good service of trains run to the City and West End every fifteen minutes.

TOOTING, Surrey.—At the MITRE HOTEL, Tooting, on TUESDAY, OCTOBER 16th, at SIX for SEVEN in the Evening, in lots, eligible FREEHOLD BUILDING LAND, having frontages to Brightwell-crescent, and Hinton, Claude, Dalmeny, Longley, Trevelyan, and Bickersteth roads, leading from the Church to the Tooting Junction Station on the Tooting, Merton, and Wimbledon Extension Railway

BROMLEY, Kent.—At the WHITE HART HOTEL, Bromley, Kent, on THURSDAY, OCTOBER 18, at SIX for SEVEN in the Evening, in Lots, eligible FREEHOLD BUILDING LAND, possessing excellent frontages to Addison, Blomfield, Cowper, Chatterton, and Pope roads, leading from the high road from London to Sevenoaks, situate about midway between the Bromley and Bickley Stations, being within easy access of the City and West End.

DULWICH, Surrey.—At the VICTORIA TAVERN, Choumert-road, Peckham, on MONDAY, OCTOBER 22, at SIX for SEVEN in the Evening, in Lots, eligible FREEHOLD BUILDING LAND, having frontages to Friern, Upland, Underhill, and Overhill roads, leading from Peckham rye to Lordship lane, and situate between Lordship-lane and Honor Oak Stations on the Crystal Palace Railway.

HADLEY, Middlesex, and HIGH BARNET, Herts.—At the RED LION HOTEL, Barnet, on TUESDAY, OCTOBER 23, at SIX for SEVEN in the Evening, in Lots, eligible FREEHOLD BUILDING LAND, having frontages to King Edward's, Prospect, Warwick, and Potter's roads, close to the High Barnet Station; and several Lots with frontages to Hadley and Woodville roads, leading from the Barnet Railway Station to Hadley-common.

The properties will be sold tithe-free and land-tax redeemed; Nine-tenths of the purchase-money may remain on mortgage or contract at 5 per cent. interest, by nine years equal half-yearly instalments, but the whole or any part of the balance may be paid off at any time without notice. Free conveyance will be given on the vendor's title being accepted.—Particulars, plans, and conditions of Sale may be obtained ten days previous to the Day of Sale; at the principal Inns in the neighbourhood; of Messrs. R. & A. RUSSELL, Solicitors, 39, Coleman street, E.C.; of the Auctioneer, No. 35, Moorgate-street, London, E.C.; and at the Places of Sale.

RAMSGATE WINGHAM LODGE.—To Builders and Others.

MESSRS. RULE & HEAD have been favoured with instructions from the purchaser of the Freehold (the ground having to be cleared for building purposes) to SELL by AUCTION, upon the PREMISES, known as Wingham Lodge, Ramsgate (immediately in the rear of the Granville Hotel), on TUESDAY, OCTOBER 30th, 1877, at TWO o'clock precisely, the valuable BUILDING MATERIALS, comprising sound bricks, stone dressings, a quantity of lead, superior marble mantelpieces, joists, flooring boards, panel doors, sashes, raves bo-kcase, stoves, ranges, apparatus complete, a quantity of small timber and out-door effects, large iron door, a spacious conservatory, of elegant design, with heating To be viewed by orders only, to be obtained at the Auctioneers' Offices, Bank-chambers, 76A, Westbourne grove, and 10, Hills-place, Oxford-street, London, W. N.B.—Catalogues will shortly be ready. Second-class railway fare allowed to purchasers over 25l.

Re Thomas Ennor, Esq. deceased.—242, COMMERCIAL ROAD, E.

MR. DALE will SELL by AUCTION, on the PREMISES, on TUESDAY, OCTOBER 16th, and Two following days, at ONE o'clock precisely each day, by direction of the Executors, the valuable BUILDERS STOCK and PLANT of the deceased: comprising 86,500 feet of prime white and yellow deal, pitch pine deals and battens, 1,200 lineal feet prepared flooring, 140 squares of matched lining, 5,000 feet of sash bars, rails, &c.; 120 dozen scaffold-boards, 40 dozen scaffold poles, 20 dozen scaffold cords 670 putlogs, carpenters' benches, and frames, doors and fencing, four tons iron hooping and nails, a valuable engine-hoist, three excellent double purchase crabs, one simple purchase ditto, blocks and falls, brass pumps, rakes, hods, stone, &c.; useful cart-horses, one carriage-horse, three builder's spring carts, two-ton van, superior brougham and park phaeton, by Heffer, of Long-acre, hansom cab, light cart, trucks, seven sets harness, nawvies' barrows, three chaff-cutting machines, and numerous items.

On view Saturday and Monday, October 13th and 15th, and Catalogues may be had on the Premises, of Messrs BLAKE & SNOW, Solicitors, 23, College-hill, E.C.; and of the Auctioneer, 84, Mile End-road, E.

Re Thomas Ennor, esq., deceased.

MR. DALE will SELL by AUCTION, on TUESDAY next, OCTOBER 16 h, 1877, at TWO o'clock precisely, by order of the Executors, the valuable PEASEHOLD LEASE of the extensive BUILDERS PREMISES, No. 242, Commercial-road East (late in the occupation of the deceased), comprising private dwelling-house and office, large yard, range of workshops of two floors for forty men, stabling for seven horses with loft over, large open drying shed, drying stores, saw pit, painter's shop, monument, and extensive covering an area of about 11,000 superficial feet. Unexpired term 21 years less ten days at Michaelmas Day last, at the moderate rental of 130l. per annum. May be viewed, and particulars, &c. obtained on the Premises; of Messrs. BLAKE & SNOW, Solicitors, 22, College-hill, E.C.; and of the Auctioneer, 84, Mile End-road, E.

Hale Farm Nurseries, Tottenham.—Important Sale of beautifully grown Nursery Stock, including 500 standard limes, 8 feet to 10 feet; fine standard planes, 10 feet; 250 standard, half standard, and dwarf acer negundo variegata, Lombardy poplars, fine trees suitable for forming blinds. A magnificent lot of ornamental shrubs, including copper beeches, and silver vitis, a splendid lot of fruit trees and roses; also, various other shrubs, plants, and bulbs, the whole being particularly well adapted for the formation of new gardens.

MESSRS. PROTHEROE & MORRIS are instructed by the Proprietor to SELL by AUCTION, without reserve, on the PREMISES, as above, on WEDNESDAY, the 17th of OCTOBER, and Two Following Days, at ELEVEN for TWELVE o'clock precisely each day, a considerable quantity of valuable NURSERY STOCK, comprising handsome specimen evergreens, evergreen shrubs, herbaceous and ornamental trees, fruit-trees, 1,500 camellias, large and small azaleas together with 18 greenhouses and pits, containing about 8,000 ft. super 20 ft. of hot-water piping, 3 fine and 4 inch, capital saddle boiler, 6 feet by 2 feet, &c.—May be viewed. Catalogues may be had of Mr. SHEPHERD, on the Premises.

PLUMSTEAD, KENT.—Freehold Building Land, in lots, to suit small capitalists and persons desirous of building their own houses.

MESSRS. HARDS, VAUGHAN, & JENKINSON will SELL by AUCTION, at the STAR and GARTER, PLUMSTEAD, on THURSDAY and FRIDAY and WEDNESDAY evenings, OCTOBER 18th and 31st, at SIX o'clock precisely each evening, 99 lots of FREEHOLD BUILDING LAND, very eligibly situate on the Plumstead-road, adjoining the Plumstead Brewery-road Park Estate, Plumstead; within three minutes walk of the railway station. The land is now being set out for roads, and is ripe for immediate development, the surrounding and adjoining houses being all occupied. The situation is a most rising one, and very healthy, and within an easy distance of the town of Woolwich, where so many thousands of hands find regular employment in the Royal Arsenal, military and other large establishments. The erection of cottage property which lets at a good rental, would prove a most remunerative investment. A part of the purchase-money of each lot may remain on easy terms.—Particulars &c., at the place of Sale; of Messrs. SANDOM, KERSEY, & KNIGHT, Solicitors, Deptford, S.E. and 32, Gracechurch street, E.C.; and of the Auctioneers 6, Moorgate-street, E.C. and Greenwich Kent, S.E.

PIMLICO.—To Sculptors, Marble Masons, Builders, and Others.

MESSRS. HORNE, EVERSFIELD, & CO. are instructed by Mr. J. Wren, to SELL by AUCTION, at his WHARF, 195, Buckingham Palace-road, S.W. on TUESDAY, OCTOBER 16th, and following day, at ONE o'clock precisely the greater part without reserve the valuable STOCK of MARBLE consisting of statuary, Sicilian and vein marble blocks, including about 200 bust blocks, suitable for statuettes, &c.; several thousand feet of English sawn slab, in vein, Sicilian, black, black and gold, St. Ann's, rouge royal, Genoa green, Bardi, Advye, Languedoc, Lunarine, and other coloured marbles, monuments, figures, garden vases, pedestals, a number of polished marble counter tops, 35 ft. long (suitable for a restaurant), and other effects.—May be viewed one day previous, and catalogues had on the Premises, and of HORNE, EVERSFIELD, & CO. 17, Great George-street, S.W. and 80, Fore-street, E.C.—Approved bills at four and six months.

LUDGATE-HILL.—Building Materials. By order of the Worshipful Company of Vintners.

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, on the PREMISES, on WEDNESDAY, OCTOBER 17th, at ELEVEN, all the valuable BUILDING MATERIALS, of the thirteen houses, workshops, and premises, situate Nos. 54 to 74, on the north side of Carter-lane, and Nos. 1, 2, and 3, Cobb's-court, adjoining: comprising capital brickwork, rafters, joists, girders, and other timber, floor boards, slate-glazed shop-fronts, sashes skylights, doors, partitions, marble and other chimneypieces and interior fittings; lead flats, gutters, cisterns and pipes, iron columns, folding gates, stable fittings and pebble paving, coping and sills, stoves, ranges, and various fixtures and fittings up May be viewed the day previous. Catalogues had on the Premises; of GEORGE BARNES WILLIAMS, Esq. architect, Fowler's-row, Old Jewry, E.C.; and of HORNE, EVERSFIELD, & CO. 80, Fore-street, E.C. and 17, Great George-street, S.W.

BISHOPSGATE-STREET.—Building Materials.—By order of the Committee of the Metropolitan Free Hospital

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, on the PREMISES, on FRIDAY, OCTOBER 19th, at ONE, for the purpose of clearing the Site for the new hospital, the VALUABLE MATERIALS, FIXTURES, and FITTINGS UP of the usual description, of the houses and shops, Nos. 170 and 172, Bishopsgate-street Without, and a block of houses and premises in Hollywell-street in rear.—May be viewed the day previous. Catalogues had on the Premises; and of HORNE, EVERSFIELD, & CO. 80, Fore-street, E.C. and 17, Great George-street, S.W.

WESTMINSTER.—To Builders, Cabinet Makers, and Others.

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, on the PREMISES, 38, York-street, and at Gardener's-lane, Westminster, on MONDAY, OCTOBER 22nd, at TWELVE precisely, by order of the proprietors, Thomas Mills & Son, who are retiring from the business, the well-selected and dry seasoned STOCK of a Builder: comprising 300 long dry 3 by 9 deals, large quantity of cut stuff in dry planks and deals, wide pine plank, in boards of various thicknesses, several thousand feet fir quartering, and useful timber, small quantity of dry walnut and mahogany, American and English oak in culls and scantling, 300 scaffold poles, 500 scaffold boards, putlogs, cards, rope falls, ladders, screw jacks, crab-engines, and other useful builder's plant, about a ton of cut and other nails, assortment of ironmongery, useful stone, pantiles, and other effects May be viewed on Saturday and morning of Sale. Catalogues had on the Premises; and of HORNE, EVERSFIELD, & CO. 17, Great George-street, S.W. and 80, Fore-street, E.C. Note.—The HOUSE, OFFICES, and YARD to be SOLD. 38, York-street, and the YARD in Gardener's-lane, TO BE LET on Lease, or the FREEHOLD TO BE SOLD.

GRAY'S-INN-ROAD.—Remaining Portion of the Plant and Stock of a Builder and Contractor.

MESSRS. HORNE, EVERSFIELD, & CO will SELL by AUCTION, without reserve, on THURSDAY, OCTOBER 25th, at ONE o'clock, on the PREMISES, 74, Featherstone-street (by order of the proprietor, relinquishing the premises), an 8-h.p. PORTABLE ENGINE, a mortar-mill, large quantity of capital scaffolding, dry yellow deals and planks, useful cart-horses, various stores, and also a few lots of office furniture. Details in future advertisements.—80, Fore-street, E.C. and 17, Great George-street.

Metropolitan Street Improvements.—Extensive Sale of Building Materials.—By order of the Metropolitan Board of Works

MESSRS. HORNE, EVERSFIELD, & CO. will SELL by AUCTION, on the PREMISES on TUESDAY, OCTOBER 30th, at ONE o'clock, the valuable BUILDING MATERIALS of the Five Large Rugged Schools and Appurtenant Buildings in Hatton-wall and Little Saffron-hill, Nos. 21, 22, 23, 33, 34, 36, and 38, Hatton-wall; the dwelling-houses in rear of No. 32 and the outbuildings in Georgeyard; Nos. 21, 22, 23, 24, and 25, Back-hill, and tenements in rear; Nos. 1, 2, 3, 32, 33, 34, 35, 36, 37, and 38, Eyre-street-hill, of the usual description. May be viewed the day previous. Catalogues had on the Premises, and of Messrs. HORNE, EVERSFIELD, & CO 17, Great George-street, S.W. and 80, Fore-street, E.C.

FOR SALE by PUBLIC AUCTION, in the SALE-ROOM, at G. M. BARNES & KING'S TIMBER YARD, Canons' Marsh, Bristol, on WEDNESDAY, OCTOBER 17th, 1877, at ONE o'clock precisely.

Luncheon at Half-past Twelve o'clock.

For Account of Importers.

413 Logs Fresh P.E. Island Birch
14,300 P.E. Island Spruce Deals and Battens and Ends
10,000 Unassorted Rich Quebec Pine Deals and Planks
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FINSBURY, on the borders of the City of London.—Capital Freehold Property, comprising an area of 4,200 superficial feet, close to the Goods Station of the London and North-Western Railway, and nearly abutting on the North Junction line

MESSRS. EDWIN FOX & BOUSFIELD will SELL, at the MART, on WEDNESDAY, OCTOBER 17th, at TWO precisely, a valuable FREEHOLD PROPERTY, situate almost adjacent to the grand new Goods Station of the North Western Railway, and known as Nos. 4 and 5, Horse Shoe-alley, Wilson-street, Finsbury, with a substantial modern range of workshops and two dwelling-houses, admirably adapted for the erection of a factory or warehouse, which are much in demand at this spot, and so positioned as in all probability to be absorbed in the various improvements now occurring thereon, and which will be given on completion of the purchase.—Particulars of Messrs. CRICK & FREEMAN, Solicitors, Maldon, Essex; of Messrs. FREEMAN & BOTHAMLEY, Solicitors, No. 13, Queen street, E.C.; and of the Mart; and of Messrs. EDWIN FOX & BOUSFIELD, No. 24, Gresham-street, Bank, E.C.

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MESSRS. EDWIN FOX & BOUSFIELD will SELL the above at the MART, Tokenhouse yard, London, on WEDNESDAY next, OCTOBER 17th, at TWO o'clock.—Particulars of Messrs. THOMAS WHITE & SONS, Solicitors, 11, Bedford-row, W.C.; at the Mart; and of Messrs. EDWIN FOX & BOUSFIELD, No. 24, Gresham street, Bank, London, E.C.

SURREY.—A Freehold Residence, with stabling, outbuildings, beautiful pasture grounds, at Hook like pasture land, in all upwards of 8 acres, to be LET, with immediate possession, the Property formerly occupied by Mrs. Holland Rose, esq. (whose tenancy expires at Michaelmas), and is fully convenient for residence having business in London or Westminster, as it has unusual facilities of approach both, being within a drive of 5½ miles of the Royal Exchange, and five of Whitehall, and but a few minutes' walk from Balham Station, between which and London Bridge, Lavender, Victoria Docks are numerous trains each way. The property has a long frontage to the main Balham-road, and a considerable frontage to Cavendish-road in the rear, affording great scope for building operations should a purchaser desire to make use of any part of it.

MESSRS. DEBENHAM, TEWSON, & FARMER will SELL, at the MART, on TUESDAY, the 23rd of OCTOBER, at TWO, with possession (unless previously disposed of by private contract), the FREEHOLD PROPERTY, Balcam House, situate at Balham-hill, in the parish of Streatham. The residence is in excellent condition, and comprises twelve bedrooms, three with dressing rooms, one of which contains a bath with supply of hot and cold water, a large lumber or box room, a drawing-room or lady's boudoir, a dining room about 36 ft. long, an elegant modern drawing room, about 30 ft. by 20 ft. 6 in. and about 13 feet 6 inches high; an entrance hall (available for a morning room), a library, about 24 feet by 17 feet (including bay), and about 13 feet 6 inches high; lofty store room, butler's pantry, larder, a very superior kitchen, and other excellent domestic offices; stabling for four horses, harness-room, coachhouse and lofts, conservatory, gardener's lodge of four rooms, piggeries, cow house, &c. The pleasure grounds contain a large number of fine trees, and there is a capital kitchen garden. The pasture land is surrounded on three sides by a walk shaded by plantation of many years' growth, and the property presents an agreeable and picturesque aspect while the land measures about 8a. 2r. 0p.—Particulars may be had of Mr. BODMAN, Solicitor, 123, Cannon-street; and of the Auctioneers, 80, Cheapside, where a series of photographic views may be seen.

On THURSDAY, OCTOBER 25th, OXFORD ROAD, Reading.—Important Notice of Sale. Just beyond the Borough Boundary, on the West side of Reading, and fronting the main Oxford-road. Conveniently near the heart of the town, within easy distance of the principal factories. Freehold Building Land, subdivided into Plots suitable for small houses, which in this neighbourhood very speedily let.

MESSRS. J. OMER COOPER & SON have received instructions from the Directors of the Berkshire Estates Company, Limited, to SELL by Auction, at the UPPER SHIP HOTEL, READING, on THURSDAY, OCTOBER 25th, 1877, at THREE o'clock in the Afternoon precisely, Numerous BUILDING PLOTS on the Grove and Estate, near the Government Barracks, and fronting the main Oxford-road and a new road of good width to be shortly made.

The Auctioneers desire to direct attention to this Property as the Land is offered for sale in plots adapted for building; the distance from the town is very moderate; the Plots are of square frontage and good depths, many of them fronting the main road

The number of good dwellings for artisans in and around Reading is still greatly below the requirements of the population, and an opportunity will be afforded by this sale of meeting the still increasing demand for cottages and small houses.

Particulars and conditions of Sale, with lithographed plans, may be had on application to Messrs. BLANDY & WITHERINGTON, Solicitors, No. 1, Friar-street, Reading; or to Messrs. J. OMER COOPER & SON, Land Agents and Valuers, No. 182, Friar-street, Reading.

CARBICAN REPOSITORY.—Railway Cart Horses, the property of Mr. Joseph Firbank, the extensive contractor.

MR. RYMILL will SELL by AUCTION, at BARBICAN, on FRIDAY next, OCTOBER 19 (portions of the railway works at Holloway and Sutton Oakfield being completed), 20 valuable upstanding CART and VAN HORSES, having great weight and power, direct from very heavy work, and in good hard-working condition; also 8 one-horse brick carts, and 8 sets of thill harness.—On view two days

[*See also p* xiv.

London: Printed by CHARLES WYMAN, Printer, at the Printing-office of Wyman & Sons, Nos. 74 and 75, Great Queen-street, Lincoln's-inn-fields, in the Parish of St. Giles-in-the-fields; and Published by DOUGLAS FOXBRIDGER, at the Office of "THE BUILDER," 46, CATHERINE-STREET, in the Parish of St. Paul, Covent-garden, both in the county of Middlesex.—Saturday, October 13th, 1877.

The Builder.

Vol. XXXV. No. 1811. Saturday, October 20, 1877.

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Ben Jonson's London.

ENGLISH writers of old gloried in their connexion with the great city of London, and they could not have understood the feelings of those who in later times tried to make the Londoner ashamed of his birthright by styling him a Cockney. From among these lovers of the capital Ben Jonson stands out most prominently, and his works are full of allusions to London, both within and without the walls, such as no other writer has equalled. We propose to make a few notes on some of these references, first treating of those places with which the poet was himself connected.

It is not certainly known where Jonson was born, but his earliest years were spent in the parish of St. Martin, of the rural character of which we are constantly reminded by the affix "in the fields." About this time there were only one hundred persons in the parish who were liable to be rated to the poor, and the chief of these lived in the Strand, by the waterside. The first church was built in the reign of Henry VIII., and amongst the early entries in the registers may be found the record of the baptism of Francis Bacon, who first saw the light at York House, afterwards the residence of the Duke of Buckingham, who rebuilt it and set up the Water-gate of Inigo Jones, which still stands at the end of Buckingham-street. Fuller traced Jonson as a little child to Hartshorne-lane, Charing-cross, which was also called Christopher-alley. In 1760 the houses were pulled down and Northumberland-street was built on the site. Within a century of the time when one hundred persons only were rated to the poor, the parish of St. Martin had become "the greatest cure in England," with a population of over forty thousand. In Jonson's day the district was growing fast, and he introduced into "Bartholomew Fair" a notice of that nest of alleys that grew up under the shadow of the tower of the church, and was only destroyed in the present century. Justice Overdo says, "Look into any angle of the town, the Streights or the Bermudas, where the quarrelling lesson is read, and how do they entertain the time, but with bottle, ale, and tobacco?" The old name of Bermudas was at a later period changed for that of the Caribbee Islands, which was again corrupted to Cribbee Islands, with a very evident allusion to the predominant occupation of the inhabitants. Through the help of a friend the boy Jonson was placed upon the foundation of Westminster School, and here he obtained the inestimable advantage of an education under the eye of the learned Camden. The poet cherished through life a sincere respect for his schoolmaster,—

> "To whom I owe
> All that I am in arts, all that I know."

On leaving the "publique Schoole for Grammar, Rethoricke, Poetrie, and for the Latin and Greek languages," founded by Queen Elizabeth, Jonson had nothing to depend upon except his learning, and that not being a very marketable commodity he took to bricklaying to obtain a living. According to a tradition preserved by Aubrey, he was engaged upon the garden-wall of Lincoln's Inn, and worked there with a trowel in his hand and a book in his pocket; it is further reported that he was heard to repeat "Greek verses out of Homer," and that a bencher discoursing with him gave him an exhibition at Trinity College, Cambridge. It cannot, however, be proved that he went to the University at all, and he told Drummond of Hawthornden, that he was "Master of Arts in both the Universities by their favour, not his studie." Although we cannot be certain as to the places where Jonson was employed, there can be no doubt that for a time he worked as a bricklayer, and builders may well be proud to claim so great a poet as one of themselves. His early occupation is frequently alluded to by his contemporaries, and in Dekker's "Satiromastix," we read of the "bricklayer in a play," the "mortar-treader," and Ovid's "Mortarmorphosist." This manual work was not to his mind, and to escape from it he turned soldier, and joined the army in the Low Countries. On his return from the Continental wars, he fought a duel with Gabriel Spenser, the actor, in Hoxton, and killed his antagonist. This place, which is now almost in the heart of London, was in Jonson's time a country place, cut off from the City by the swampy ground of Moorfields. Some of the scenes of "Every Man in his Humour" are placed at Hoxton, which was then, according to Stow, "a large street, with houses on both sides."

During Jonson's earliest struggles, and after he had become famous, he worked for Philip Henslow, the owner of the Rose and Fortune Theatres, and of the bears at Paris Garden. At the latter place, which was sometimes used as a theatre, he acted the character of *Zuliman*, in some lost play,—that is, if we are to trust Dekker's "Satiromastix." With most of the play houses on the Bankside Jonson is intimately connected. His "Sejanus" was acted at the Globe in 1603, and his "Bartholomew Fair" at the Hope in 1614. In his "Execration upon Vulcan" he describes the burning of the Globe, which he styles "the glory of the Bank."

We know little of Ben Jonson's habitations further than this, that he lived at different times in the City, in St. Martin's parish, and at Westminster. Mr. Payne Collier supposes that he was living at Cripplegate in 1599, and in Bishopsgate in 1600, but we have it under his own hand, in the "Dedication to the Fox," that in February, 1607–8, he was living in Blackfriars. In 1628, he was in Westminster, and frequenting Cotton House, the residence of his friend Sir Robert Cotton, situated at the west end of Westminster Hall, and in 1637 his death took place, according to Aubrey, "in the house under which you passe as you goe out of the churchyard into the old palace" of Westminster.

The poet's love of good liquor and of social intercourse made him a frequenter of inns. His history is therefore more mixed up with them than with the several residences. His acquaintance with the two rival taverns of Cheapside—the Mermaid and the Mitre—must have commenced early, because the names of both occur in the first quarto edition of "Every Man in his Humour" (1601); in the later folio edition, the Mitre is changed to the Star, and the Mermaid to the Windmill. The renown of the Mermaid is world-wide, for here it was that Sir Walter Raleigh founded the literary club, which included among its members Shakspeare, Jonson, Beaumont, Fletcher, Cotton, Carew, Donne, and Selden. With such men as these to talk, who can suppose that Beaumont's well-known lines are exaggerated:—

> "What things have we seen
> Done at the Mermaid! heard words that have been
> So nimble, and so full of subtle flame,
> As if that every one from whom they came
> Had meant'd to put his whole wit in a jest."

The Mitre was a rival house, and some authors tried to write it up at the expense of the Mermaid. Thus Middleton has the following dialogue in his comedy, "Your Five Gallants" (1608):—

> "*Goldstone.* Where sup we, gallants?
> *Pursenet.* At Mermaid.
> *Gold.* Sup there who list, I have forsworne the house.
> *Pur.* Faith! I'm indifferent.
> *Bungler.* So are we, gentlemen.
> *Pur.* Name the place, Master Goldstone.
> *Gold.* Why, the Mitre, in my mind, for neat attendance, diligent boys, and—Push! excels it far.
> *All.* Agreed; the Mitre then."

One of the scenes in "Every Man out of his Humour" is a room at the Mitre.

The Windmill in the Old Jewry, which occupies so prominent a position in the revised edition of "Every Man in his Humour," was a house with a long history. It was first of all a synagogue for the Jews of the neighbourhood; then it was granted by Henry III. to the prior and brethren of an order of friars called the Fratres de Sacca; and in 1439 it was occupied by Lord Mayor Robert Large. In 1492, Hugh Clopton, the worthy who built the fine old Clopton Bridge at Stratford-upon-Avon, kept his mayoralty in the mansion, which a hundred years afterwards was turned into a tavern. In the "Alchemist" (1610) *Face* describes *Dapper* to *Doll Common* as a lawyer's clerk he had met on the preceding night "in Holborn, at the Dagger," which was then a low ordinary and gaming-house. There was a more famous house with the sign of the Dagger, in Foster-lane, Cheap-

side, which was famous for its pies, then known as "Dagger-pies." The Devil Tavern, in Fleet-street, within Temple Bar, is peculiarly associated with Jonson:—

"Thence to the Devil,—
Thus to the place where Jonson sat we climb,
Leaning on the same rail that guided him."*

At the Apollo Club, which met in the great room he ruled with undisputed sway. The host was Simon Wadlow, called by the poet, "Old Sym, the King of Skinkers," and the old song with the burden of "Old Simon, the king," was adapted to suit him. Aubrey reports that his uncle-Danvers said that "Ben Jonson, to be near the Devil Tavern, in King James's time, lived without Temple Bar, at a comb-maker's shop, about the Elephant and Castle." The Swan at Charing Cross was one of the houses frequented by Jonson, who has left us the name of the drawer. Aubrey tells a tale respecting this man which was probably true. At some Court conviviality that followed the marriage of James I.'s daughter Elizabeth to the Palgrave of the Rhine, Jonson was required to say an extemporaneous grace, which he did in these words:—

"Our king and queen, the Lord God blesse!
The palsgrave and the Lady Besse;
And God blesse every living thing
That lives and breathes, and loves the king.

God b'esse the Councill of estate,
And Buckingham the fortunate.
God blesse them all and keep them safe,
And God blesse me, and God blesse Rafe."

The king was inquisitive to know who this Ralph was, and Ben told him he was the drawer who drew good canary at the Swan. Aubrey adds that the king gave the poet 100*l.* for this drollery, but it is by no means certain that he received the money. In Jonson's later days, when he resided in Westminster, his infirmities prevented him from getting so far as Fleet-street to the Devil, and the Dog in King-street became the rendezvous of the jovial spirits who looked up to Ben as their chief. Here, surrounded by his adopted sons, he ruled the roast, as he had formerly done at the more eastern tavern. Herrick, in his address to Jonson, mentions also the "lyric feasts" at the Sun and the Triple Tun. The Sun tavern, also in King-street, was of considerable antiquity, and is referred to in the steward's account of the expenses of Sir John Howard in 1464.

With all these places Jonson was personally connected, but there is scarcely a spot in old London that is not in some way referred to in his works. The two centres of town—St. Paul's and the Exchange—are pictured for us in all their salient points. Captain Bobadill was a Paul's man, or lounger in the nave of the old cathedral. At this time the appearance of the chief church of London must have greatly resembled that of the Temple at Jerusalem before Christ thrust out the money-changers and those that sold doves. In the English place of worship gallants walked about, as all readers know, to show their fashionable clothes, merchants with their hats on transacted business in the aisles; lawyers received their clients at the various pillars. The Royal Exchange was another favourite lounge that almost rivalled the attractions of St. Paul's. At the beginning of the seventeenth century a formidable competitor arose in the New Exchange or Britain's Burse in the Strand. In 1608 Robert Cecil, Earl of Salisbury, erected a handsome stone building on the stables attached to Durham House. It contained two long galleries, one above the other, in which were arranged all kinds of objects for sale. The ground-floor was occupied by shops, and was called "the lower walk." London was then too small for two such similar resorts, and the citizens were so dissatisfied with their young rival that they induced the Lord Mayor to petition Lord Salisbury to shut up the New Exchange, but the only answer to be got from the Lord Treasurer was "that Westminster being the place where he was born, and of his abode, he sees not but that he may seek to benefit and beautify it by all means he can." Jonson makes Lafoole in "The Silent Woman," take a lodging in the Strand in order "to watch when ladies are gone to the china-houses or the Exchange, that he may meet them by chance and give them presents."

The outdoor life of his time, with the men and women who frequented the streets, is brought vividly before our eyes in Jonson's plays. The useful and the useless members of society pass across his stage. The water-carriers who congregated around the conduits are represented by Cob in "Every Man in his Humour." Before Sir Hugh Myddelton made the New River, and brought it to men's houses, all the water that was wanted had to be fetched from the conduits. The men who supplied the town drew off the water into large wooden tankards, broad at the bottom, but narrow at the top, which held about three gallons. This vessel was borne upon the shoulder, and to keep the carrier dry two towels were fastened over him, one to fall in front, and the other to cover his back. One of the first buildings in London to be supplied with water from the New River was the old Bethlem Hospital, that stood in Bishopsgate-street, near St. Botolph's Church. This was in 1626; but as late 1711 it had not become general to lay on the water into the houses, for in Tempest's "Cries of London" there is a plate of a man with two tubs suspended from his shoulders, with the inscription, "Any New River Water, Water here?"

London has always been famous for its cries, and one of Jonson's epigrams is on the new cry:—

"Ere 'Cherries ripe!' and 'Strawberries!' be gone,
Unto the cries of London I'll add one.
'Ripe Statesmen, ripe!' they grow in every street;
At six-and twenty, ripe."

In the play of "Bartholomew Fair" mention is made of the sausages, which, with roast pig, formed the favourite article of refreshment for the frequenters of the fair. Sausages were sold also in the streets, and these lines were sung by the sellers:—

"Who buys my sausages? Sausages fine
I ha' fine sausages of the best,
As good they are as e'er were eat,
If they be finely drest.
Come, mistris, buy this dainty pound,
About a capon roast them round."

The narrowness of the old London streets is strikingly shown in "The Devil is an Ass," where the lady and her lover speak gentle nothings to each other from the windows of two contiguous buildings. All the fashions of his time,—the rapier-fighting of the gallants, the smoking madness of all classes at a time when tobacco was supposed to be a panacea for all the ills of human nature, the custom of garnishing conversation with oaths,—are introduced into the works of Ben Jonson. But if the poet was at home in the streets he was even more at home in the suburbs, which were more distinctly marked off from the City than they are at present. Of the northern suburbs the fullest mention is to be found in "A Tale of a Tub," where we read of Totten Court, Kentish Town, Marlbone, Kil borne, Islington, and Belsize, and the fields near Pancras. In "Every Man in his Humour," we find Turnbull mentioned, among other disreputable places, as one of the "skirts of the town." Turnbull, or more properly Turnmill, street, was situated near Clerkenwell-green, and was known as the haunt of ruffians, thieves, and disorderly persons. Justice Shallow boasted to Falstaff "of the wildness of his youth and the feats he had done in Turnbull-street." On the west the suburbs commenced in a part that we now esteem the heart of London. The Oxford-road, that began at the turnpike by St. Giles's, was in the country when Jonson lived, and where Stratford-place now stands was a cottage, among trees and hedges, called the Lord Mayor's Banqueting House. This is alluded to in "The Devil is an Ass,"—

"But got the gentlewoman to go with me
And carry her bedding to a conduit-head,
Hard by the place toward Tyburn which they call
My Lord Mayor's banqueting-house."

Some remains, probably, of this building were discovered not long ago, in the course of some underground works in Oxford-street, as we mentioned at the time.

"Eastward for Ratcliff!" is a cry in the *Alchemist*. Ratcliffe, which Stow remembered as a highway with fair elm trees on each side, in later times became the synonym of all that is dangerous and disreputable in London streets. The musters at Mile-end are mentioned in "Every Man in his Humour." This place was then a common on the great eastern road out of London, frequently used as a rendezvous for the troops. When Henry VIII. chartered the Honourable Artillery Company, he also gave his sanction to another fraternity of archers at Mile-end, the chief of which was honoured with the name of *King Arthur*. The other members were known by the various names of Arthur's Knights, thus Justice Shallow boasts of what he did when he was Sir Dagonet in Arthur's Show. From Mile-end to Bow is no long journey, and the actor Kemp, in describing his remarkable Morrice dance, writes,—"Being past Whitechappel, and having left fair London, multitudes of Londoners left not me; eyther to keepe a custome which many holde, that Mile-end is no walke without a recreation at Stratford Bow with cream and cakes, or else for love they beare toward me, or perhaps to make themselves merry if I should chance (as many thought) to give over my Morrice within a mile of Mile-end." At Stratford-le-Bow was a Benedictine nunnery dedicated to St. Leonard for a prioress and nine nuns. Here it was that Chaucer's Prioress obtained her knowledge of the French language.

"And Frensch she spak ful faire and fetysly,
After the scole of Stratford atte Bowe,
For Frensch of Parys was to hire unknowe."

Jonson parodies this in "The New Inn," where Lord Beaufort speaks,—

"Of Stratford o' the Bow:
For Lillie's Latin is to him unknown."

There were but few suburbs in the south of London, besides Bankside and the adjoining Lambeth Marsh, which bore a very ill name. When London was a walled city, the streets within and the liberties beyond the walls were carefully looked after by the magistrates, so that the disreputable persons were forced to seek shelter in the suburbs. In consequence, the very word obtained an objectionable meaning. Stubbes denounced suburb gardens and garden houses in his "Anatomy of Abuses," and another writer observed, "how happy were cities if they had no suburbs." Chettle, in his "Kind Hart's Dreame," 1592, writes, "the suburbs of the citie are in many places no other but dark dennes for adulterers, theeves, murderers, and every mischief-worker: daily experience before the magistrates confirmes this for truth." Jonson was acknowledged in his own time as a representative Londoner, and when James I. entered London on his accession to the English throne, it was Jonson who was employed to arrange the street entertainments with which he was greeted. When, in 1607, the Merchant Taylors' Company were about to be honoured by a visit from the king, they requested Sir John Swinnerton "to confer with Master Benjamin Jonson, the poet, about a speech to be made to welcome his Majestie, and about music and other invencions which may give lyking and delight; by reason that the Company doubt that their schoolmasters and scholleres be not acquainted with such kinde of entertaynments." In 1616, Alderman Cockayne and the Company of Merchant Adventurers feasted the king. "Dyers, cloth-dressers with their shuttles, and Hamburgians, were presented to the king, and spake such language as Ben Jonson put in their mouths." In 1628 Jonson was rewarded by the appointment of City Chronologer, with a salary of one hundred nobles, but as he did not do any work, the City authorities determined to stop his pay, and in 1631 the Chamberlain was ordered to forbear paying "any more fee or wages" until "some fruits of his labours" were presented to them. A few years before the poet's death, however, the salary was again voted to him, with the arrears, through the influence of King Charles I. Soon after this the life of one of our greatest authors ended in that London which he loved, not far from the spot where he is supposed to have first seen the light.

We have thus rapidly noticed a few of the chief points of interest in the old city of London, at a time when some of the great glories of our literature were living in its streets, and will conclude with the hope that as the London of to-day becomes more worthy in appearance of its long and noble history, the men of the nineteenth century may become as proud of it as those of the seventeenth century were of their London.

* Prior and Montagu's "Hind and Panther Transversed."

Builders' Benevolent Institution.—The thirtieth anniversary dinner of this Institution will take place at Willis's Rooms on the 8th November, Mr. William Higgs, president, in the chair, on which occasion we hope there will be a goodly muster of the friends of the Institution. Although it is now well established, and is doing and has done much good work, we would point out (as we have done in previous years) that the Institution is hardly so liberally supported as it ought to be, considering the magnitude and importance of the trades with which it is identified. Our readers will do well to note this, and better still if they do what they can to augment the income of the Institution.

WANTED, A CONCERT-ROOM FOR LONDON.

The Londoner, *pur sang*, is a patient and long-suffering person under inconveniences which would be much more speedily and practically resented in half a dozen at least of the large provincial towns of the kingdom. One may go further, indeed, and say that there is existent a kind of satisfaction, sometimes approaching to pride, in the way things are done in the capital, merely because it is and has for long been the habit of the capital to do thus and thus. It must be this kind of domestic pride in all the arrangements of London *per se* which has induced the inhabitants of what now is, as far as concert-giving goes, one of the most musical of all the capital cities of Europe, to put up for so long and uncomplainingly with one of the worst and most inconvenient rooms to be found anywhere, as the site of the best musical performances, for what are in the main, both socially and æsthetically, the best audiences; to be content to have no one room in the whole of their great and wealthy city which can have any pretension to be called, in regard to comfort, appearance, and acoustic properties, a first-class concert-room.

The deficiency is, perhaps, the more remarkable, when we compare the concert-rooms of London with its opera-houses. The lyric drama could hardly be more satisfactorily housed than at Covent-garden, with the acoustic properties of which also there is little fault to be found; and Drury-lane, though less ambitious in scale and style, is quite passable, when used for the purpose, as to comfort, and in no way inferior to the other house in regard to acoustics; while "Her Majesty's" in the Haymarket (now rebuilt) long enjoyed the fame of being one of the best-planned opera-houses in existence. Now let us look at the principal rooms available and in common use in London for the best musical performances apart from the stage. The ancient institution of oratorio finds its chief home in Exeter Hall, a building which will certainly not be cited as a model of convenient arrangement either in regard to access to the room or comfort when it is attained; still less can it be praised for architectural beauty. Acoustically, however, there is less to be said against it. The architect, whether empirically or by scientific intent, came rather near to what has been said by the best scientific authorities to be the model arrangement for an auditorium in regard to section: the seats rising contiuuously from the orchestra afford good opportunity for hearing and seeing for all the audience; though, of course, they should by rights take a curve determinable by certain proportions between the elevation whence the sound proceeds and the distance of the auditor, according to the rule laid down by Mr. Scott Russell for finding what he termed the "isacoustic curve." And practically it may be said that not infrequently one hears almost too much at Exeter Hall; in other words, the room is not so long as it might favourably be made in proportion to the size of the orchestra and the power of sound to be obtained from the phalanx of performers. This is a fault, no doubt, on the right side; but we cannot, of course, regard Exeter Hall as in any way a possible centre for London society to draw its music from. It is too far east for that, and labours, besides, under a partially "brimstone and treacle" repute which is sufficient to render its associations distasteful to the modern æsthetic world. It is *par excellence* a place where people go to hear oratorios; and æsthetic London, whether wisely or no, is cool towards this class of performance. The Royal Albert Hall is the other and more recent home of oratorio, and in some points is manifestly superior to Exeter Hall. It is really comfortable and roomy in regard to seating arrangements; it has at least the basis for fine architectural effect in its great spaces and long elliptic lines; and the approaches, considered as the means of getting a number of people into and away from the place without either delay or crushing, are about as good as they could be, so far as concerns mere means of access; though in regard to cloak-rooms and other necessary departments, it may be said that these are not merely deficient, but for all practical purposes non-existent. Acoustically the Albert Hall is, as before observed in these columns, a very remarkable success, considering its size; but this "consideration" is an important one. As a place for the performance of choral and orchestral music on a great scale, there is no reason why the Albert Hall should not have been,—no reason perhaps why it should not now be,—a great success; but this must involve alteration and re-arrangement. The general plan is, of course, wrong to begin with, since it is a purely spectacular plan applied to the purpose of an auditorium, and the seats are arranged as if the attention of the audience was to be concentrated on something in the centre of the apartment, when in fact it is expected to be concentrated on the end of the ellipse. In addition to this initial mistake, the orchestra would require re-planning and re-constructing, in order to accommodate a chorus large enough to produce a really telling effect, and to place them in the most favourable manner for this. As a passing suggestion, it may be noted that the plan of the room as it exists might prove entirely suitable for enabling a large audience to hear an instrumental concert from a band placed in the middle of the Hall, on the principle that was adopted at M. Pasdeloup's Sunday concerts at Paris, though that would necessitate further raising the level of the "arena," or erecting a stage or orchestra upon it.

This, however, would only be a provision for what may be termed "popular concerts" on a great scale, where the object is to find room for as numerous an audience as can have any chance of hearing. But none of those who constitute the more educated class of listeners will ever care to hear high-class instrumental music in so large a place, knowing that the *nuances* of composition and execution have no chance under such circumstances: so that the Albert Hall, remarkable as it is in some ways as a concert-room, cannot fill the gap. When we quit the region of popular concerts, and the somewhat antiquated shrine of oratorio, and turn to the class of performances which really interest the advanced musical public of London, we find that a popular place of amusement, built for general purposes of holiday pleasuring, and with no special regard of any kind to efficiency as a concert-room, forms the site of one of the most important series of concerts that is given. Concerning the Handel Festivals, which perhaps can hardly be spoken of as a series of concerts, being only an occasionally recurrent event on a great scale, and concerning the suitability of the site in which they are held, some remarks were made in this journal in reference to the Festival of this summer (see *Builder*, p. 677, *ante*). But the "Crystal Palace Concerts," given on Saturday afternoons during the autumn and winter, have attained a European celebrity. It is here that the best orchestral playing available in England is to be heard; it is here that important instrumental works by new composers are commonly introduced to an English audience; and on some such occasions all musical London may be found *en route* for Sydenham, by rail or carriage, on a Saturday afternoon, to do honour to some great man or his work. And what is the room in which these worshippings at the shrine of music are held? It is little more than a corner of the big building, divided off by a glazed partition, and having nearly every defect that a concert-room could have. The access to the best part of the room is through tortuous and narrow entrances, where there is always a regular block on getting away. Cloak-room accommodation is non-existent, but this is less felt than elsewhere, as the concerts are not in the evening, and the disposal of wraps and overcoats forms no necessary portion of the ceremonial. The whole of the large floor area is perfectly flat, the very worst section on which to arrange an audience for hearing, and, to make matters worse, a large proportion of it is caverned under galleries, which shut out both light and sound. How bad this flat-floor arrangement is for hearing may be inferred from the fact,—of which the present writer has had ample opportunity of judging,—that the music can be far better heard in the end gallery the whole length of the room from the orchestra than at a point on the floor-level at only one-half the distance. The audience sit on small chairs, packed as closely as they will go; the orchestra is cramped and ill-arranged; the prevalence of glass and iron in the construction tends to impart a degree of harsh and tinny reverberation to the sounds of the louder brass instruments; while the extent to which the music can be heard through the glass partition, outside the sacred area, shows how much of the sound is thrown to waste. The audience on the floor area experience all the inconveniences arising from an apparently utter neglect of ventilation, insomuch that listeners, full of enthusiasm for the music, have been known to complain nevertheless of an irresistible drowsiness, the natural result of the paralysing influence of a vitiated atmosphere. With the exception of this last defect, which ought at once to be seen to and remedied, the deficiencies of the concert-room can hardly be considered as matter for complaint against the managers of the Crystal Palace: the building was not erected for music, and the celebrity attained by the Saturday concerts was almost an accidental and unlooked-for development, arising mainly out of the personal influence and enthusiasm of the last secretary of the company. But the fact remains that one of the most important and high-class series of concerts provided for the inhabitants of and visitors to the capital is given in a room in every respect utterly unsuitable in regard to comfort, planning, and acoustic capabilities; and it says something for the genuine character of the musical partialities of Londoners, that all these drawbacks seem to have little effect on the numbers of the audiences, and none whatever on their interest and attention. Perhaps all these practical drawbacks would hardly have been surmounted but for the prestige which has long and in the main most deservedly attached to the great holiday palace at Sydenham, which we are glad to think has just entered on a probably new lease of life and prosperity after an interval of rather clouded circumstances. Of the concert-room at the Alexandra Palace, intended for concerts of a similar high character (which were for a time given under the late management), we cannot speak from actual experience of the effect of music in it, never having been present at a concert there; but it looks in every way a far better place for such entertainments than the roughly appointed room, or rather fenced-in space at Sydenham, being specially built as a concert-room, and of a shape and proportion which, theoretically at least, seem to promise a very satisfactory music-room. But here the prestige seems to have been wanting, or there were not enough enthusiasts to fill two concert-rooms so far out of town; from whatever cause, the concert-hall at Muswell-hill failed to attract, and the concerts, of this class at least, have dropped.

It remains to see what there is provided in the way of a concert-room for the musical section of London society within its own special topographical boundaries: none of the places already mentioned being within, most of them being far without, the portion of the town recognised by long tradition as the special parade-ground of social London. Gone are the old Hanover-square Rooms, the scene of so many great appearances of eminent players and composers; and their prestige had to a great extent disappeared before them, on account probably of their incapacity to accommodate the increasing audiences. Willis's Rooms, where the Musical Union used to hold its afternoons, till its audiences also began to overflow the space, are still available and used on occasion for small and semi-private concerts, and the principal room is a good one for chamber music, though with nothing very attractive either in comfort or appearance, nor any special provision as a music-room. In the upper part of Regent-street is the moderate-sized room known as St. George's Hall, and now to most of us associated chiefly with the performances of Mr. and Mrs. German Reed and their company; and truly it needs all the talent and liveliness of those clever artists, and of their witty associate Mr. Corney Grain, to keep the spirits of an auditor up to pitch against the deadening effect of that cheerless, comfortless, and dingy-looking place of amusement. This also is a small room, however, and therefore only partially available, even were its quality better than its quantity. For our leading and central temple of music we must go down to Regent-quadrant, and there we find in St. James's Hall a music-room built by an architect eminent in his day for his artistic attainments at all events, and specially intended as a room for first-class concerts. It is here that we find the central musical entertainments of London: here the Philharmonic Society, the "Monday Popular Concerts," and the Musical Union, find shelter; here breathless crowds hung upon Rubenstein's recitals, and fair girls might be seen standing patiently for a long hour or more in the crush of the corridor to get a seat near the piano when the doors opened: here are to be found the most "advanced" of London connoisseurs, and here that especial product of modern æsthetic London, Miss

Bilderbogey, the lady who, as *Punch* observed, is "physically, morally, and intellectually perfect," and is serenely conscious of the fact, is to be found in great force. This hall is the centre, in short, of the musical life of the largest and on the whole the most intellectual capital of Europe,—and what sort of place is it?

When we enter from the Regent-street side (the best entrance), say on a Philharmonic night, the first thing a new visitor would notice is the sound probably of a very "rowdy" tune played somewhere well within hearing by a band of some kind, and he will begin to think he has got to the wrong place, until he understands that the temple of classical music forms the upper story over another room dedicated to that particular nigger minstrelsy which "never performs out of London." The mind is hardly put in tune for Beethoven or Brahms by this arrangement, economical as it doubtless is; and the promise of comfort for the body is scarcely better assured by the discovery that the gentlemen's cloak-room is represented by a counter in the open lobby, to which attention is directed by a cry of "Cloaks an' 'ats this side!" in a voice and style rather suggesting a transpontine theatre than a place of gathering for educated persons in pursuit of high art. The unfortunate visitor who yields to the invitation and leaves his *impedimenta* in the lobby, will find he has the probability of catching a bad cold after the concert by standing in the draught through a door opening directly from the street, while waiting for his outer coverings. The ladies' room appears to be represented by a sort of closet under the stairs, to which a handbill directs attention. If the visitor has happened to come in from the Piccadilly side, he will have had the additional pleasure first of having mounted a narrow mean-looking staircase, and traversed a half-lighted passage with chairs and benches piled on one side of it. However, let us get past all these *agrémens* and enter the room: we have the usual flat floor which all architects will persist in building, though all science and experience are against such an arrangement for seating persons who are to hear anything, whether it be music or oratory; and as usual one portion of this flat area will be under the shadow of overhanging galleries. The seats are cramped, uncomfortable, leaving no adequate room for the knees, and covered with a dirty-green stuff which looks equally bad and mean whether by daylight or gaslight. The orchestra before us is squeezed into too small a space, a recess at one end of the hall, so that even the band look as if crowded and incommoded, and when a chorus has to be seated there as well, the result is a mere and sheer cram. The centre of the niche in which the performers are accommodated is occupied by a small organ in a singularly ugly case, and which from the way it is designed looks as if it had been in danger of falling, and had been propped by temporary timber supports. The one good architectural point in the building is the circular perforated ceiling with hanging lights, which has a good effect; but a circular ceiling or barrel-vault is not the shape for an auditorium; it focuses echo. There is but one inlet and outlet for the whole of 'the stalls," which form the major part of the area, and the difficulty of getting out of this is further enhanced by the tortuous course the outgoers are involved in before they can reach the street entrance. They, however, are hardly so badly off as the occupants of the two galleries, who, like those in the Exeter Hall galleries (upon which the gallery approaches of St. James's Hall would seem to have been modelled), are fairly in a trap from which exit is only possible down narrow staircases full of corners and sticking-places. If the visitor happen to go for the first time to an afternoon concert of the Musical Union, and sees the room by daylight, he will lose the one pretty effect of the hall, the lighting, and will be in a position to appreciate the peculiar refinement of the decorations which have been recently revived and touched up,—the bits of what is supposed to be "stained glass" in the windows, the big fat naked cherubs in the window-beads, which have recently, by a refinement of good taste, been painted what is supposed to be flesh colour, with pea-green draperies. The seating is re-arranged for the Musical Union concerts, which consist entirely of the more delicate forms of instrumental music, quartets, and trios for stringed instruments: it is important that all the auditors should be tolerably near the players for this class of music, and so the seats are arranged on the four sides of a square surrounding a temporary central platform, on which the performers are grouped, and a grand piano is oddly balanced with one extra long leg on the lower floor. The arrangement giving a central position to the executants is good in itself for this class of concert, but as it has to be done *extempore* for the purpose, the derangement of seats, leaving a bare space behind them all round, results in giving the room a most untidy appearance, as if it had just been "cleared for action" on some unexpected occasion. "Upstairs" consists of a narrow gallery called "the balcony" with two rows of seats, and here the audience, though much smaller than the downstairs audience, have two outlets, and a better chance of hearing; indeed, the best place for hearing in the whole interior is in the centre seats of the balcony facing the orchestra; but the adventurous person who tries this must expect to find himself exposed to a cross draught from the two doors flanking his position whenever they are opened. The next best place for hearing,—if, indeed, it be not the best of all,—is the upper gallery at the end of the hall, which has also the advantage of being much less draughty; and it is a significant illustration of the manner in which our music-rooms are planned, that hearers with whom the price of seats is "no object," prefer not unfrequently to go to this end gallery, the cheapest and therefore supposed to be the least desirable part of the house, because they can hear so much better there than elsewhere. Such are the conveniences and such the scientific planning and arrangement of the only concert-room available in the west end of London for the highest class of concerts.

The apparent indifference with which this state of things in regard to the housing of music in London is accepted, compared with the unquestionable and widespread interest in the art, seems singularly inconsistent, and can perhaps only be explained, as aforesaid, by the traditional satisfaction which Londoners seem to feel in regard to whatever has become accepted by the habit and custom of the capital. It probably does not occur to the audience to notice that St. James's Hall is ugly, uncomfortable, and ill-arranged; it is the place where they are for some time past accustomed to go for their music, and they take it as a matter of course; and so long as the public voice does not audibly demand a better room, the present one will no doubt be made to serve. It is worth remark that the art of painting has received no less than three separate acquisitions in the way of architectural enshrinement since the present central concert-room was built: the Royal Academy rooms, the additions to the National Gallery, and the Grosvenor Gallery. None of these, however, can be said to have originated to any extent under pressure from public opinion or demand for accommodation. The National Gallery is a Government affair; the Academy rooms a semi-private institution backed by Government; the Grosvenor Gallery a private investment. If the builder of the latter institution had, instead of a new picture-gallery, given London a new concert-room, he would perhaps, so far as the public are concerned, have supplied a much more crying deficiency. There is, however, room for some other capitalist to immortalise himself by undertaking the task.

Such a room, if built, should not be too large; not appreciably larger than the present St. James's Hall,—a point to be insisted upon, because of the tendency there is now to build very large rooms, in which the music gets lost, and no really intelligent enjoyment of it is possible. It should once for all break through the heresy of the flat floor for an audience, and aim at realising the best position for hearing for every individual, by the employment of the fitting curvature of floor-line. To gain this result conjointly with architectural effect, satisfactory arrangement of entrances, and economy of space, would be a difficult task for the architect,—it would have also the interest of a new problem, to be worked out without the influence or assistance of precedent. The orchestra should be deliberately and carefully planned, and constructed so as to furnish opportunity for the most effective arrangement of the performers without crowding, and of such materials as to aid, as much as possible, in the reinforcement of sound: the latter object is more understood than it used to be, and is not often overlooked; the former is, almost invariably, and orchestras are still planned and arranged mostly by chance. And along with such a room as this should be grouped one specially built and arranged for performances of chamber music, such as those of the Musical Union, on a smaller scale and planned for a central position of the executants, which is always the best for this class of concert, and should be attainable without having to disarrange and throw into disorder a whole room for the purpose every time the occasion comes round; always remembering also that a room larger than is absolutely required is a positive injury to the music. In the case of the "Monday Popular Concerts," the large audience is of course necessary to secure a remunerative return at such low prices; but people must not flatter themselves that, in a room of that size, they hear string quartettes as the composers intended them to be heard. It would be possible, however, to secure a much better result even with a room capable of holding an equally large audience, if it were purposely planned to give a central position to the players, and to place all the audience under the most favourable conditions for hearing. Still, it should be understood that compositions of the class referred to were meant for a small room, and are not properly heard in a large one.

When and where there may be opportunity for carrying out such a building it is not possible just now to suggest; but there can be no question that it is much wanted, and that there could be little real difficulty in finding site and capital for it, if the eyes and ears of the public were once opened to the necessity. The real difficulty would lie in obtaining a thoroughly satisfactory result; but this, it may be hoped (in spite of past failures), is not insuperable.

H. H. Statham.

WHAT IS THE PLACE OF THE "DILETTANTE" IN RELATION TO ART?

In the speech of the Earl of Derby at the opening of the Walker Art Gallery, at Liverpool, we find one suggestion of the occasion stated as "that very wide question,—What is the real attitude of this country towards Art, and what are the prospects of Art in England?" but the question was only stated for any attempt at answering it to be declined, on grounds that, so far as they are pertinent, are, on the other hand, incongruous with the position occupied by the speaker, who did not "dare to enter on that field." That "these are not days for *dilettanti* in any line of business," suggests a certain impropriety in a confessed *dilettante* allowing himself to be placed in a chair from which some observations in point on the question so distinctly enunciated would be more appropriate than any others. But, in truth, it is not only in these days, but in all days, that the *dilettante*, in the original and right sense of the title, has a just claim to express himself in regard to every branch of liberal art and every public institution for its furtherance; to speak about "line of business" in the present connexion is, we apprehend, nothing to any other purpose, if even fairly to that, than to carry home the maxim to the business and bosoms of an audience chiefly mercantile. *Dilettanti*,—those who delight in art,—are first the amateurs who give time to the exercise of art as a luxury; these are men who, very often indeed, not to say usually, do little more or little better than, as it is called, "dabble" in art; but some of whom sometimes, as we all know, in certain arts at least, do much more and much better; the class of amateur glides by degrees into another class of *dilettanti*, the critics, and has ever contributed to it its better ornaments, though by no means always from its own highest ranks. The time-honoured cavil that the critics are also or chiefly recruited from those who have failed professionally in art, should affect but lightly as many of them as have given the world the rare advantage of success in criticism.

Beyond the amateurs and critics lies still a third most important class of those who delight in art,—the patrons, if the word is allowable,—the true—the specific—*dilettanti*, who long for art as a delight,—as Plato would say, "itself by itself"; who do not pretend to emulate professional knowledge or skill, who cannot know anything of the delight of producing beautiful art, and are very much farther indeed from sympathy with the critic's enjoyment of detecting failure and analysing its causes. Now the endowments and cultivation of this class cannot but ever be important factors in the vital development of art. Let the professional artist be as skilful as he may in instilling his own predilections first, and in asserting his independence afterwards,—the tastes as well as the needs, to say nothing of predilections that are obstinate prejudices, of

the purseholder who commissions art in order to enjoy it, must tell at last. If he cannot regulate the art, he at least is all-powerful in his selection of an artist; at this point the issues of success and failure rest with him alone, even as life and death depend on the judiciousness of one who would not think of either writing or reading a prescription, but is absolute in his selection of a physician.

True it is that it is only when the accomplishments of a patron of art reach a certain standard, that he is entitled,—however munificent his outlay,—to the honourable title of a *dilettante*. Not such is one who regards his collections as a cabinet of simple curiosities,—as a monument of pride on the thoroughly unartistic score of rarity, extent, and costliness, or, last of all, as a commercial investment. It has been ill for English art that the collection, or even the possession, of a picture-gallery, associated with social position and rank, has been before now accepted far too readily as a certificate of a *dilettante*,—of the possession of refined and critical taste. We may now walk through the unweeded Peel collection, as exhibited at the National Gallery, and, after viewing it as a whole, come away in amazement at the authority with which the collector,—the agglomerator, rather,—was credited in art. But what were not the services to art of such *dilettanti* burgesses in Italy as gave their voices when great works were resolved on, for Nicolo Pisano, or Donatello, or Brunelleschi, or Giotto, or the sculptor of the bronze doors of the Florentine Baptistery? What do we not still owe as posterity to the Italian noblemen and prelates whose passion for art is represented by one who owned that his great reward in reaching, after long years of waiting, the papal chair, was that he was in time at last to command the services of Michelangelo?

The best powers of man can only achieve their best results under a combination of happy circumstances, many of which are beyond all power of deliberate arrangement by even a national exertion, let a nation assume what attitude it may. Still, it is something for liberal-minded legislation to remove what must be stumbling-blocks in the path of genius struggling for a chance of development, to open the ways to technical instruction, and at the same time to that wider instruction apart from which the very best natural faculty for form or colour or elaborate design will never put that into its works which will give them hold on more than ephemeral sympathies with the fleeting and the superficial. But when all is done by schools of art and other schools, we have but turned and prepared the soil, and sown, it may be, some well-chosen seed;—the glory of the harvest at last will be dependent on the social atmosphere amidst which the hopefullest plants have to spring up and strive, and take their chance to ripen. Material resources, as in most of our doings, are indispensable for most arts, of which the very materials, to say nothing of the labour and rare study bestowed on them, must needs be costly; but the moral influences are the true radiance that overcomes crudity,—the ruling climatic power that gives the healthful and immortal fragrance to the Hesperian fruit. From this point of view it becomes of far less interest to inquire what is the present attitude of England in relation to art than what it should be; for the ideal, as a standard, is ever what is first to be recognised in the mind before we attempt either to appreciate or adjust the actual. Even as regards the actual, the speaker to whom we have already referred believes that "the question is one to which, perhaps, not a dozen men in this country are capable of giving an authoritative answer." Of the "authoritative" assuredly we have no lack; but assuming that the reference was intended to men who could justly speak "with authority," a smaller number of the worthy would ere now have sufficed to save a city, and might do so still if the city only had the wit to find them, and the independence to put them in their proper places. Are we secure that the result of a poll would not now give us a tale of noblemen with inherited galleries; of voluble critics, possessed themselves by paradoxical crotchets; and picture-dealers, who have justified their agency by their purchases having shown a handsome profit when realised at a not too long delayed re-sale? It is to be feared that at such a board any accidentally better elements would have as little influence as the late Mr. Rogers found he could exert when he was customarily added to a Parliamentary Committee of taste as a becoming tribute, but only a powerless symbol, of culture independent of politics and rank; the remedy is manifestly to be sought in a livelier and more resolute sense of art in the public at its point of contact with the professional.

It is, therefore, to the strengthening of true and diffused dilettantism that we must look for one main reinforcement at least of a sound and prolific development of art;—to such a refinement of taste among those with whom it rests whether a work is undertaken or not and by whom, as to ensure encouragement where encouragement will really have valuable results. Such a demand by no means encroaches on the rights or the dignities of the artist,—of the genius; it is, on the contrary, the great security that genius shall have its fair, its full, and, quite as important, its early field. At present, the substitute for the worthily *dilettante*, in one art at least, is the art-dealer. True it is that there is no necessary reason why even he, the commercial agent, should not have all the qualities which he is desired and supposed to represent. But how far this too frequently is from being the case is notorious, or we mistake, in many a studio. He is too often known, and, again, if we mistake not, dreaded, for all his use and his convenience, as a tempter from the straight and narrow path,—though into narrowness enough at last, good sooth. There is no harm in an appeal to consciousness, not to confession, that to his door must often be laid the degradation—the vulgarisation—of better work by some tawdry addition enforced in the interest of instant saleableness, and at other times the disappointment of labour forfeited to obscurity as the penalty of more obstinate artistic self-respect.

It would be an unhappy proof of the hopelessness of the culture that we aspire to, as diffused among the wealthier community, if the maxim became general among architects or other artists, and could be put in practice, that those who commission works have nothing to do but to pay for them, must be shut out from the very first, if possible, or at least as soon and as completely as possible from any control over any part or detail in them. We might as well go back in politics at once to the Stuart principle, that the people have nothing to do with the laws but to obey them. Immediate contact with sound taste within a certain range, on the part of the unprofessional, is, for artists, the very strength-restoring contact with earth, that Antæus perished in the gripe of Hercules from not being able to renew; but that the taste to which a hearing is thus admitted should have the characteristics of culture grafted on a strong if wild stock of native good sense, is a condition of its value that must heighten that of exemption from professional "idols of the tribe," as well as "idols of the den,"—from the habits and superstitions that will gradually tend to establish themselves in a school and in a closet equally,—to accrue to a class and to an isolated student. Assuredly it is no slight advance in the nobler dilettantism, when power is acquired which enables the non-professional to recognise not alone the comparative value of an executed work, but even the character of a structure from a geometrical elevation, or even from a small model or perspective view; it is, in fact, from the difficulty of doing this, that committees of taste are exposed to the mistakes and disappointments which are so rife, and are the victims of the unlucky skill that is perfect up to the point of contriving a taking design on paper, and does not reach, or perhaps aspire to reach, very far beyond. But fallacy ever lies hidden in extremes. It is not too much to hope that with more habituation to aspects of art and improved capability of following the expositions and the courses of thought of artists, it may be possible for the non-professional to do themselves that justice, a failure in which involves so much wrong to those well-deserving who would lead them aright. Until this is the case, the world and its architects will still too often find that all their care and study has only involved them in a game of cross purposes or forfeits. Let an illustration be permitted. We once were present at a conference over an architectural design in which the owner of the house that was to be transformed pleaded somewhat persistently for the substitution of one section of the front, according to a notion of his own, as an improvement in effect. He was assured, and most certainly with truth, that the design, as it stood, would be found to justify itself by continuing to please far longer than what he proposed; it was fortunate that, to a moderate sensibility to art, he united a good sense that enabled him to follow the very distinct indications of incongruity that the question turned upon, and willingly, at last, renounced his proposal. Nevertheless, when the elevation was executed, it appeared improved by some changes in the challenged section which had not been mooted on either part, but certainly were due to the stimulus of the lively discussion upon an inventive imagination and candid mind.

No better attitude, then, of a country towards art can be desired than one which promises to the artist that prompt recognition of his art at its best that can only be hoped from a public that is worthily and genuinely "dilettante."

It certainly cannot be said of our country at the present time that it displays a lack of interest in art,—we may almost say, in any art; but it may be questioned whether this interest is not less that of the *dilettante* than of the *cognoscente;* whether there is not more of a desire to understand or be thought to understand art than of a capability really to feel and to enjoy it. So it is that disquisitions on art have a tendency to be, if not silent, merely vague or declamatory, on the truly animating soul of art and to become above all things historical or scientific,—historical it may be, in preference, because this point of view seems to command most plentifully an array of facts which have an easy scientific attribute of verifiable accuracy. The tendency in consequence is for devotion to art to drift into a study of archæology. Is it certain that in our visitations and surveys of cathedrals, disproportionate attention is not usually bestowed on the dates of its successive additions and alterations; and that a voice would not be lifted up in vain which should, however worthily, divert attentionto the properly æsthetic characteristics of the structures, to identify and emphasise them? If this is so, what chance of a hearing remains for one who should reasonably venture to damp archæological fervour by indicating, as it often might, the in all directions signs of Mediæval endeavours after effect, "overdone or come short of." Yet it would be by rising to such observations either way, that the existence of an enthusiasm would declare itself, which is the outcome of a culture that harmonises the intellectual with the sympathetic energies in seemingly spontaneous union.

"I would go fifty miles on foot," says Sterne, "to kiss the hand of that man who can resign the reins of his imagination into the hands of his author,—be pleased he knows not why and cares not wherefore." Naturally this is said by an author; Yorick himself, however, would certainly spare himself the journey unless he could count on the imagination which resigned itself to delight so unreservedly being that of an accomplished if not a severely discriminative *dilettante*. The English language has no serviceable equivalent of this word "*dilettante*," in its best sense; if it is ever to be rescued from the disparaging sense which has clung to it parasitically, it must be by the heartily-to-be-prayed-for requirement to express as positive a regeneration of the tone of public taste.

THE CASTLE AND BARONY OF CLUN: HOPTON CASTLE.

The church, village, and castle of Clun are situated near the centre of a spacious amphitheatre of lofty but fertile hills, the summits and upper slopes of which are covered with young and luxuriant plantations, while in the lower parts are occasionally single trees, chiefly oak, elm, and beech, of vast size and great age, the reliques of an ancient demesne, and still standing out and to be distinguished amidst the denizens of the hedgerows, which, though often of large size, all belong to the period of enclosures and cultivation. Across this rich and smiling land, amidst hamlets, churches, manor-places, farmhouses, and cottages, with frequent orchards and gardens, green pastures and root crops, and waving corn-fields, the river Clun pursues its sinuous course, giving life and fertility to the scene, which, indeed, is throughout imbued with an aspect of peace and,—perhaps rather indolent,—prosperity.

The ancient forest of Clun covered a large tract of upland, extending with a radius of about five miles to the north and west of the seat of the barony. Its border is that of the county of Salop, and runs along the elevated ridge which, from Bishop's Moat on the east to Castell-cefn-fron on the west, divides that county from Montgomery, and the water-shed of the Clun from that of the Hafren or Upper Severn. From this latter river the ridge is distant about five

miles, and the intervening country is mountainous and broken. The natural division is in part strengthened by an artificial work, known as Saeson bank, and placed considerably to the west of Offa's Dyke, which, here very perfect, runs north and south about three miles west of Clun, and thus bisects the forest and the barony. Which of these earthworks is the earlier is doubtful, but probably the Dyke. Connected with the Saeson bank, and at right angles to it, are two short spurs, the age and object of which are not very evident.

The forest was never very thickly wooded in its upper and more exposed parts, but that it was always scantily inhabited is evident from the fact that it contains but one parish church, that of Mainstone, which stands on the very line of the Dyke, about six miles north of Clun, on the edge of a small brook,—the Ffridd. From its singular position may be drawn the inference that it is later than the Dyke.

The water-courses of the forest contribute to form four rather considerable streams, which finally unite to become the river Clun, which thence descends eastwards down a deep and rather narrow valley, by Clunton, Clunbury, and Clungunford, to Leintwardine, where, after a course of about twelve miles, it joins the Teme, the river of Ludlow and Tenbury.

The Barony of Clun, called also the Honour and the Hundred, was more extensive than the forest, and included lands of a more settled character to the east and south. Obley, Pentrehobre, Hobendrid, Hobbaris, Larkenhope, Ellesto, and Manulton, were members of the manor of Clun, which was coextensive with the Hundred; and in the "Welshery" attached to it were the hamlets of Aderdely and Bickton, Hodicote, and Newcastle. It appears, in the twelfth century, to have contained five vills and submanors, the borough town of Clun, and the manor of Tempsett. Clun was also an ecclesiastical centre. Its noble parish church of St. George was set over the chapels of St. Thomas of Clun, St. Mary of Waterden, St. Swithun of Clunbury, St. Mary of Clunton, St. Mary of Opperton, and the chapels of Edgton and Sibdon. The whole were attached to the great abbey of Wenlock. Many of these chapelries have become independent parishes, and the hundred of Clun has disappeared as a county division, being absorbed in that of Purslow. In 1837, 8,600 acres of the old forest were inclosed by Act of Parliament, and in 1869, 1,700 more.

About a furlong below the point at which the collective waters from the forest combine to form the Clun, that stream, now of considerable volume, makes a sharp and sudden bend, in the hollow of which, upon its left or convex bank, is placed the castle. The space thus partially enclosed and protected by the river is about 600 yards in length, and is occupied by a cluster of knolls or tumps of a soft, friable rock, which has been carved and scarped for the purposes of defence, so as to present, with its decomposed and grass-grown surface, much of an artificial aspect. Amongst these knolls stands out one higher and of even a more artificial appearance than the rest. It forms a conical mound, about forty yards in diameter at its table top, with very steep sides, and in height above its surrounding ditch about 60 ft.; and the ditch, again, is about 30 ft. above the bed of the river. The ditch covers the mound upon its southern and eastern sides, but to the north and west the slope descends direct to the river level, presenting a very formidable appearance. The part not so exposed is further protected by three works in earth, beyond the ditch; of which the larger, to the south-west, is of irregular figure, and about forty yards deep by seventy yards broad, having four irregular sides, of which the inner is concave, and forms the counterscarp of the main ditch. Towards the river this platform is scarped towards the mound and the adjacent platform; its protection is a ditch, about seven yards deep by sixteen to eighteen yards broad. The top is level, save that along the edges of the three outer sides is a narrow bank,—a sort of parapet, on which was probably a stockade. At one point, where the platform approaches the mound, is a small spur, as though the ruin of the pier of a bridge, and which was evidently the main entrance to the keep or principal mound. The road to this bridge ascended the platform from the village on the south.

To the east of this is a second platform, of the same height, and about 14 yards deep by 30 yards broad, its larger face being concave, and applied to the main ditch. Its top is level, and has no trace of bank or parapet.

The third earthwork, of no great size, stands to the east of the keep mound, and abuts upon its ditch to the west, and on the river to the north. These two sides are prolonged, and the fork or hollow angle between them is occupied by a depression, formerly a large pool, having a sluice-gate towards the river. Between the bank of this pool and the southern platform is a ditch, which seems to have been used as a hollow way leading to the river front of the mound.

Between the mound and the west platform and the river are two lunated patches of meadow about 90 yards deep, the one 70 yards and the other 140 yards long; they were probably employed as a safe pasture in ordinary times for the garrison cattle, which, in case of attack, could readily be taken up the platforms, or driven along the castle ditches into the precincts of the town.

Such are the earthworks as they are now seen, and in general features much, no doubt, as they were seen when the Norman Picot took possession of his dangerous grant. They belong to the class known as burhs, or moated mounds, and date from the ninth or tenth century. By whom they were thrown up, or, rather, carved out, is unknown; but it may safely be asserted that they represent the chief residence of one of those Englishmen who invaded and settled upon the Welsh territory, and whose duty it was to defend the western and often-attacked border of the Mercian kingdom. The occupant of such a position must have been a bold and powerful leader; though whether he lived before or after the formation of Offa's Dyke is doubtful. Possibly a careful examination of the Saeson bank ridge where it is crossed by the Dyke might throw a light upon this point, and the researches should extend to Crugyn or Castle Hill, on Bishop's Castle racecourse, to Bishop's Moat, Caer-din, Tomen, Castell-cefn-fron or Bryn Amlwg, and some other camps and tumuli on each side the border. Besides these are others, both camps and tumuli, and a remarkable upright stone or maenhir within the forest, all no doubt of British date. It must be borne in mind that Clun, though an exposed part of the Mercian territory, was covered to the north-west and north by the English settlements along the Upper Severn, of which there are ample traces from Kerry to Welshpool, on both sides of the Dyke. Looking at the extension of the barony of Clun, westward of the Dyke, to a natural boundary, it seems probable that the barony was founded when the Dyke was no longer the Mercian border, and the English had pushed their settlements up the valley of the Severn. This also would be more consistent with the figure of the earthworks of Clun and of the adjacent district, which resemble those thrown up by Æthelfleda and Edward the Elder early in the tenth century, and of which Wigmore is a recorded example.

The position and estate of Clun, like those of many similar domains in England and within the Marches, were at once taken possession of by the Norman followers of the Conqueror, and held by Picot de Say as a military fief dependent upon Roger de Montgomery at Shrewsbury. Whether De Say or his immediate successors fortified the mounds with masonry after the manner then coming into use in Normandy, or whether they contented themselves with such defences, probably of timber, as they found ready to hand, is not known, but if they had at once built a keep and walls in the Norman manner, it is exceedingly improbable that no trace of works usually so substantial should even now remain, and still more so that they should have been decayed by the middle of the twelfth century, which is probably the date of the older part of the masonry now standing, and which it will be proper next to describe.

The Keep.—This is a large rectangular tower built on the lower edge and up the eastern slope of the mound, and therein resembling Guildford. Its dimensions are 42 ft. north and south by 68 ft. east and west, and the walls at the base are about 11 ft. thick, and rise to about 6 ft. at the summit. It is of three stages; the first resting on the basement, with its sill about 5 ft. below the top level of the mound. The floors are of timber, resting upon sets-off in the side-walls. The whole tower is about 80 ft. high, its base being about 30 ft. above the river. The west wall is entirely gone. The two eastern angles are capped each by two pilasters, 14 ft. broad and 1 ft. projection, meeting at a solid angle, and carried up without break or diminution to the summit, where they may have supported square turrets. The eastern curtain, between them, has a battering base, and a plain cordon at the first-floor level. The walls are perfectly plain, of coursed masonry, the stones probably hammer-dressed, but being of a perishable character they are much blistered and decayed. The basement, 40 ft. by 45 ft., has a floor about 20 ft. above the outer-ground level, now covered up with rubbish. There is a small window to the south, and a small square airhole to the north, high up, as from a dungeon. In the same side, near the middle, is a full-centred doorway, 2 ft. 2 in. broad, once closed by a stout door, and opening upon the slope of the mound. It leads into a passage 3 ft. 6 in. broad, which entered the chamber, but had on its left a mural staircase of sixteen steps, which led to the first floor. Many of the steps remain, but the inner wall, and most of the hanging arches of the vault, are gone.

The first floor, 23 ft. by 45 ft., had two windows to the south, one to the east, and to the north two, with a fireplace between them. The windows are broken into mere apertures, but the recesses are 5 ft. to 6 ft. broad. The fireplace has a round back and a vertical tunnel. The hood is broken away. There are no mural chambers, but outside, on each face of the eastern angles, are two sham loops.

The second floor has also five windows above, rather larger than those below, and a fireplace in the same position. In each jamb of the east window recess is a small door, which, by a passage, leads into a mural chamber in the two eastern angles. Each, on each of its two outer faces, has a small window.

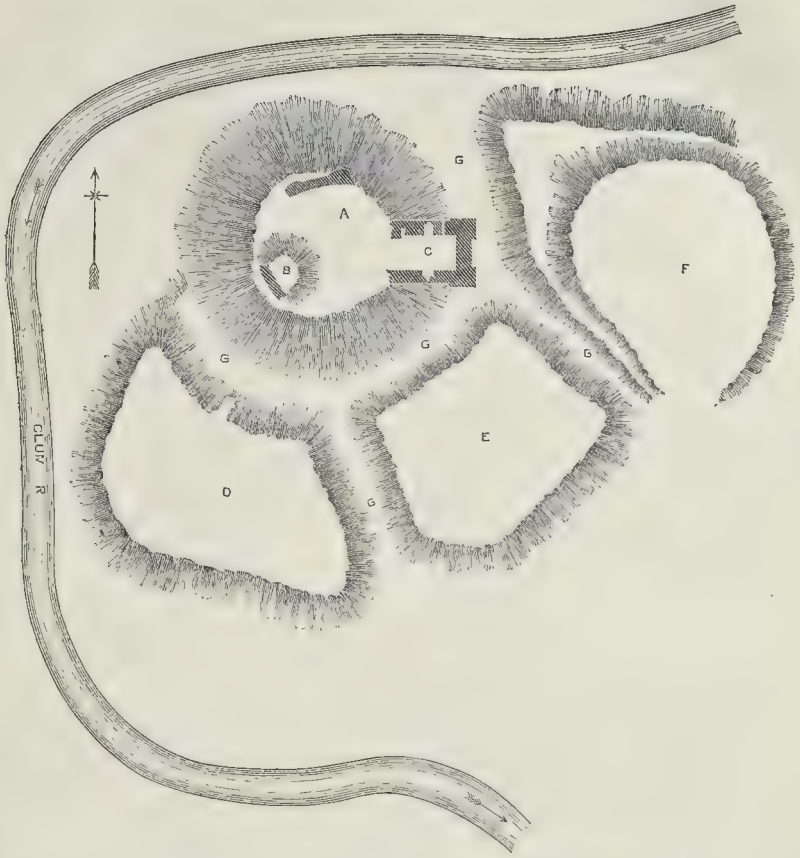
The third floor has two windows to the north, one to the east, and two to the south, but here the position of the fireplace is between them. From the east window recess are two passages, opening into two chambers, each with two small windows above those of the second floor. The second floor was the state-room, and the third apparently bedrooms belonging to it. The staircase may have been in the west wall. Of the window recesses, some have arches obtusely pointed, others are segmental. No doubt there was a door in the west wall, opening from the mound. The recesses of the windows of the second and third floors had each an ashlar rib, the only sort of ornament now visible. The keep, though of large size and substantially built, suffers in appearance from the badness of its material, its rough workmanship, and the very sparing use of ashlar in its details.

The summit of the mound was encircled by a curtain wall, of which the upper part of the keep formed a part, so that with the rectangular seems to have been combined a shell keep, a most unusual arrangement. Of this shell there remain two fragments; one, a considerable one, towards the north-west, is composed of two nearly half-round towers, or rather bastions, with their converse faces outwards, and a short curtain connecting them, which seems to have been the end of a hall, and to contain some later insertions. The bastions are no doubt later than the keep. The other fragment is to the south-west, about 12 ft. long by 6 ft. thick, and 20 ft. high. This also formed part of the general *enceinte*, but connected with it is a small circular mound, thrown up on the edge of the greater one, and wholly artificial. It is about 21 ft. across at the top, and 12 ft. to 13 ft. high, and possibly carried a small tower; near it a depression seems to indicate the position of the well. The whole surface of the mound is rough and scarred, as though the area had been covered with buildings, as at Tamworth, and of which the foundations had been dug up.

The entrance to the mound could only have been on the western side, ascending from the south-west. All the other sides are absolutely impracticable, and this has been so cut about that every vestige of a road is gone. On the platforms are no traces of walls. They may have had gatehouses of some sort, but the outer defences were probably always of timber.

The greater part of the borough, town, or rather village of Clun, is placed to the east—that is, in the rear of the castle; but there are houses on both banks of the river, which is spanned by an ancient bridge of five ribbed arches, with recesses above over the projecting piers. In this direction, a furlong from the castle, is the fine and mainly Norman church of St. George, with a western tower, strong enough to stand a siege, and in pattern resembling those of More and Hope-Say. About a hundred yards beyond or south of the church is a very remarkable ravine, natural, but which has, at that point, been scarped, and the earth thrown inwards to form

THE CASTLE OF CLUN.



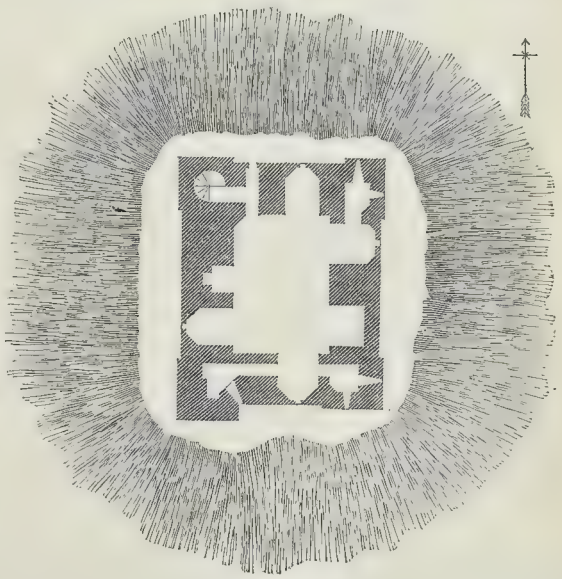
A. Great Mound. B. Little Mound. C. Keep. D. 2nd Platform. E. 3rd Platform. F. The Pool. G. Ditches.

a bank. This ravine commences some way above the church, and, becoming deeper and more steep, conveys a very considerable brook into the Clun, a little below the town. This ravine adds immensely to the strength of the place.

Clun is a borough by prescription, having two bailiffs and a recorder. Recently it possessed a hundred court for the recovery of small debts, and a court leet. The bailiffs, also, held a civil court. The Fitz-Alan charter, recognising its prescriptive rights, dates from the reign of Edward II. In the town is an ancient almshouse, founded by Henry Howard, Earl of Northampton, in 1614; and below it, upon the river, the traces of a very considerable millpool, now dry.

Clun is entered in Domesday as held by Picot. Edric had held it. Picot held large possessions (twenty-seven mansions) in the then hundred of Rinlau, besides Conodovre, Basechero, and Lentevrde, under Earl Roger de Montgomery. It appears from Mr. Eyton's researches that Picot was a to-name, and that the grantee, as Robert de Say, with Adeloya his wife, and Robert and Henry, his sons, is named in a charter relating to St. Martin of Seez, of the probable date of 1060, and is there described as "Robertus de Sai qui cognominabatur Ficot." Sai was a vill near Exmes, the chief seat of the Norman viscounty of Earl Roger, who was the patron of the House of Seez.

That which in 1060 was a cognomen, in 1086 had become a nomen. In 1074 Odericus refers to him simply as Picod, one of the five whom Earl Roger



HOPTON CASTLE.—*Ground-Plan.*
Scale—1-20th inch = 1 foot.

placed over his new earldom of Shrewsbury, and again as Picot de Say, when in 1083 the Earl vowed to found Shrewsbury Abbey. Edric, Picot's predecessor at Clun, was without doubt the Edric Silvaticus, or the Wild, so well known on the Welsh marches. Picot lived till about 1098, and was succeeded by his son, *Henry* de Say, who flourished in the reign of Henry I., and seems to have been alive as late as 1129-30 In his time, or that of his successor, and probably son, *Helias* de Say, Clun and Obley were eliminated from Ringau, and erected into an independent hundred and honour; becoming, in fact, a marcher lordship, such as Oswestry. Helias left a sole child, *Isabel* de Say, Lady of Clun, who married—first, William FitzAlan; second, Geoffrey de Vere, when the barony contained 11¾ knights' fees; and third, William Boterell, in whose time it seems to have been that the castle was stormed and burned by Llewellyn and his Welshmen.

William Fitz Alan was the son of Alan, son of Flaald, who obtained from the Conqueror the manor of Oswaldestre or Blancminster, which in 1148 had belonged to Meredith ap Blethyn, a somewhat singular instance of a Welsh landholder so far to the east of Offa's Dyke. Meredith built a castle there, which, on Fitz Alan's death in 1160, was in the custody of the sheriff, who sank a well there, and provided it with stores and palisades for defence. William Fitz Alan's next brother, Walter, was ancestor of the House of Stewart. William's first wife was a niece of Robert Earl of Gloucester. His second, Isabel de Say, by whom he left,—

William Fitz Alan, who inherited Clun and Oswestry. He obtained an annual fair from King John for Clun. It seems probable that the Castle of Clun burned by the Welsh was the timber structure inhabited by Edric, and that it was replaced by works in masonry, including the existing keep, by this William, who, dying 1210, left

William Fitz Alan, who died at Clun about 1215, and was succeeded by his brother,

John Fitz Alan, Lord of Clun and Oswestry, who held the Barony but not the Castle of Clun, and who died about 1243, leaving a son,

John FitzAlan, who acquired Arundel Castle from his mother, and died 1267, leaving

John FitzAlan, Lord of Clun and Oswestry, and Earl of Arundel, who died 1272.

It was upon his death that an inquisition was ordered into the condition of Clun Castle, which was reported to be small, but pretty well built. The roof of the tower wanted lead, and the bridge to be repaired. Outside the castle was a bailey, enclosed with a foss, and a gate not yet finished. In the bailey stood a grange, stable, and bakehouse. In the town were 183 burgages. The tenants held by castle guard, each finding a serviens and horse for forty days at 4½d. per day. The burgesses were to provide twenty men when the lord hunted.

In 1293 Richard, Earl of Arundel, received 20 *l.* from his Welsh tenants in Tempsett for a charter. At his death in 1301, Clun Castle was worth no more than the expenses of its maintenance, or 20*l.* per annum. There were two water mills.

Clun continued to be held by a long succession of Fitz-Alans, few of whom were likely to have resided, until, the male line failing, Mary, daughter and coheir of Henry Fitz-Alan, married Thomas Howard, Duke of Norfolk, and carried the Earldom of Arundel and the Barony and Castle of Clun into that family in the person of her son Philip, Earl of Arundel, who died 1595, under an attainder. Thomas, his son and successor, was restored in blood, but only partially in property, so that though titular Lord of Clun and Oswaldestre, he never possessed the estates, which were granted by King James to his grandfather's brother, Henry Howard, Earl of Northampton, who founded the Almshouse at Clun. From Henry Howard, Clun and Oswestry passed by will to his nephew, Thomas Howard, Earl of Suffolk, whose younger son, Sir Robert, has a monument in the Church of Clun, and by whose descendants the property was sold.

HOPTON CASTLE.

About five miles east-south-east of Clun, upon a tributary of the Teme, is placed the parish and castle of Hopton, the Opetune of Domesday, when it was, like Clun, held by Picot as the successor of Edric. It was a fief of Clun. In 1165 it was held by Walter de Opton as two knights' fees under Geoffrey de Vere, one of the three husbands of Isabel de Say; and Peter de Opton held it in 1201. William de Hopton may have followed, but Mr. Eyton is not clear whether he may not have been of Monk-Hopton in the same county.

However this may be, Walter de Hopton held the fief in 1223, as did another Walter, 1255-1272, and was bound to provide for the defence of Clun Castle one soldier all the year round, and a second for forty days in time of war. In 1304-5, upon the death of Walter de Hopton, he was seized of the Vill of Hopton with its hamlets, and a considerable property about it, chiefly held under Clun, as continued to be the original two fees, by Sir John de Hopton, in the twenty-first of Richard II. The family seem to have remained at Hopton till the reign of Elizabeth, but the castle was still standing and of sufficient strength to be held for King Charles in the seventeenth century. It was taken after a gallant resistance, and dismantled.

Hopton Castle or Tower stands about half a mile south of the parish church. It occupies a knoll or patch of gravel which rises out of a marshy bottom, caused by the waters of the brooks which here fall into the main stream. There is a central mound, low but well defined, and which is surrounded by a circular ditch, beyond which are the traces of two or three platforms, but slightly elevated, and which have been fortified by ditches, fed with water by a streamlet from the west. Probably the place was occupied by some tenant of Edric's, for its earthworks are certainly præ-Norman, and probably of the tenth century. It is probable that its Norman tenant and his descendants, who derived their names from the place, were for some centuries content with such defences as they found ready to their hands, for there is no trace of masonry, either of the eleventh or twelfth centuries.

The castle consists of a single tower, quadrangular, 48 ft. by 50 ft., with walls 10 ft. thick. It stands upon the mound, which is not above 6 ft. high, and through which the foundations are no doubt carried. It has a basement at the ground level, a first or main floor, and an attic in the roof. The exterior is plain, having a double-scroll string-course from 4 ft. to 6 ft. from the ground. Each angle is capped by a pair of broad pilasters of slight projection, which ascend to the summit, and probably carried four square turrets. The doorway is on the north side, not far from its west end, and nearly at the ground-floor level, ascended from the exterior by three or four steps. The south front has a square projection at its west end, in which is a garderobe. The doorway, the only entrance, is 6 ft. wide, and has an equilateral arched head. Its mouldings are two convex quarter circles divided by a step. Their character is plain but excellent Decorated. Over the doorway was a triangular hood, now broken away. There is no portcullis, only a strong door.

Entering, a vaulted passage leading to the basement has a small door on the right, which leads into a well stair, 6 ft. in diameter, which occupies the north-west angle of the building and ascends to the roof. At the first-floor is a lobby, with a small window above the outer door. This is the only staircase. The basement chamber is 29 ft. by 21 ft. In the north wall is a deep recess, 7 ft. wide, containing a small square-headed loop. Opposite, in the south wall, is a similar recess and window, but in the jambs are two doors, which by short passages lead into two chambers in the two southern angles. That in the south-east angle is 7 ft. by 6 ft., with two loops. The other is a garderobe, with one loop. Both are covered in with overhanging slabs. In the west side is another window, in a recess, similar to those above described, and a fireplace with a vertical tunnel. In the east wall are two recesses, one blank and one pierced with a loop. From the jamb of this latter a door opens into a small chamber in the north-east angle.

The first-floor is lofty. The joists and boards are gone, and the walls and window-recesses are so thick with brambles and so inaccessible that the details are not to be seen. This floor seems to resemble the basement, save that it is higher, and the windows are larger.

The remains of two gables in the north and south fronts show that there was a ridge roof, with a small window at each end. Altogether this is a very peculiar building, much more like a Scottish than an English castle. It is all of one date, probably the work of Walter de Hopton, who died in 1304-5, and seems to have been a man of considerable wealth and power.

G. T. C.

BUILDING IN EDINBURGH.

While no new building of any importance has been commenced during the summer, there is considerable activity in the building trade, owing to several great works in progress, and the general extension of the city.

The new cathedral begins to bulk largely; the nave is in course of being roofed, and the central tower is built up to the height of the roof ridge, so that some idea may be formed of the dimensions of that important feature which will, when completed, form the most striking object at the west end.

The filling in of the windows of St. Giles's with painted glass is being proceeded with, and the great east window, the gift of the Lord Provost, is being fitted up by the Messrs. Ballantyne. The same firm have also placed the first of a series in the clearstory, which are to be commemorative of the trades and craftsmen of the city. It is the gift of the Incorporation of Mary's Chapel, and contains shields and emblems of the wrights and masons upon a lightly-outlined diaper background.

The pathological department of the new Infirmary is in progress; it is to have a frontage of 87 ft. to the north, and consists of a pavilion two stories in height, with a high-pitched roof and a one-story block running westward. The theatre, which is to occupy the centre of the block, is 43 ft. long by 30 ft. wide, and 23 ft. high, and is calculated to accommodate 200 students. To the east of the theatre is the demonstrating-room, 29 ft. square, above which is a room of similar dimensions, appropriated to microscopic observations. To the west of the theatre is a post-mortem room, with waiting-rooms, &c., attached. To the south of these buildings, and to the west of the surgical wards, is a spacious court-yard, surrounded by stores and workshops; and to the south of these is placed the washing-house and laundry, having a large bleaching-green with a southern exposure. The superintendent's house is almost completed; it has the semblance of a comfortable villa residence, with gables and mullioned windows, and occupies a site at the extreme east of the ground adjoining the meadow-walk. The Infirmary buildings impress one by their great extent; they occupy a space of about 12 acres, and contain every modern improvement devised for such institutions. The arrangements seem highly satisfactory, but in so large and complicated a group of buildings nothing definite can be said till they are put to the practical test. The style, as we have formerly stated, is an adaptation of the Scottish Baronial, with considerable variety in the treatment of the various parts.

The spire and chancel of All Saints', Morningside, are completed so far as the exterior is concerned. The spire is a graceful production, crocketed in the upper stage. The chancel consists of an octagonal apse and aisles. The clearstory windows of two lights have rich tracery, and are surmounted by gables between pinnacled buttresses. The aisle is also buttressed, and from these flying buttresses are thrown to the clearstory. The effect of the whole is somewhat florid, and hardly unites satisfactorily with the body of the church, which consists of a nave of wide span, without aisles. The church was designed and carried out under the superintendence of Mr. H. J. Blanc.

The Baptist church in Marshall-street is completed and occupied. It contains on the ground-floor a hall and other apartments; the church being placed above, is approached by two staircases. There are three doorways, with windows between. The centre of the upper stage is occupied by a large four-light window with circular tracery supported by shafts with foliated caps, this is flanked by two-light windows with similar tracery. The centre compartment is elevated above the side divisions, and is crowned by a very bold raking cornice. In the interior the church is surrounded on three sides by galleries, panelled and enriched with carved bosses; above the side galleries the roof is flat and boarded, but the central roof is wagon-shaped, and is also boarded and divided into compartments by trussed principals, springing from iron shafts. The pulpit takes the form of a platform, with a wood canopy in the centre. The style is Lombardic, the openings throughout are circular-headed, and spring from carved imposts. The building possesses a marked individuality of character, and has been carried out consistently.

The Free Tron Church, in Chambers-street, is

nearly completed. It exhibits a different phase of the Lombardic style. The tracery consists of circular pierced openings, and the detail has somewhat of a classical leaning. The front elevation is very rich in carved detail, but this is not carried out in the east elevation, which is open to observation from the thoroughfare, and should have had more attention bestowed upon it, and had some of the lavish detail of the one elevation been dispersed over the other it would have been to the advantage of each. As a church the aspect of the building is somewhat peculiar, owing to the feuing plan, which restricted the architect to a predetermined outline designed for buildings devoted to other purposes; still, however, the building cannot be mistaken for other than it is. The interior, which is fitted up with galleries, is lofty and spacious. It is roofed in by a vaulted stucco ceiling, having a small dome at the west end. The fronts of the galleries are to be richly moulded and panelled, and the pulpit is to consist of a broad platform with a decorated backing against the wall under the great east window. The interior presents a good field for coloured decoration, which may be carried out in the future when sufficient funds are forthcoming. These two churches are designed by Mr. R. Thornton Shiells.

In a limited competition for a new United Presbyterian church at Dalkeith-road, Messrs. Sutherland & Walker were the successful architects. It is to be a Gothic edifice of considerable dimensions.

At Fountainbridge a new church for the Evangelical Union was opened a short time ago. It was designed by the Messrs. Hay, of Liverpool, and is of a very simple early Gothic style. The doorway is flanked by triplet windows lighting the schoolrooms, and three triplet windows light a hall above. The church is placed out of sight in the rear; it is seated for a congregation of 400, partly accommodated in a gallery supported by iron shafts.

At St. Leonard's-street an Established Church is in course of erection from the designs of Mr. Lessels. It is to be a plain example of Early Gothic.

In Edinburgh theatrical enterprise appears doomed to failure. The Edinburgh Theatre, Castle-terrace, one of the finest in the kingdom, the building of which was carried out with so much vigour, was not, when completed, vigorously managed, and was ultimately carried on at a loss. The building, which cost somewhere about 80,000*l.*, has been sold for 26,700*l.*, a sum said to be only sufficient to meet the liabilities of the shareholders. The purchasers are the synod of the United Presbyterian Church, and the purpose to which the building is to be adapted is a theological college and synod-hall. Plans for the proposed adaptation have been prepared by Mr. Dick Peddie. The whole of the thick internal walls may be retained, allowing space for an ample hall, with an area of 7,320 ft., to which a floor space of 3,014 square feet may be added by erecting a gallery. Around this hall would run two stories, affording a sufficient accommodation for class-rooms, library, mission-board and professors' rooms. The cost of the proposed alterations is estimated at about 10,000*l.* At either side there is ground extending to 65 ft., with two frontages still unbuilt upon, and such portion as is not required for ecclesiastical purposes remains to be disposed of by the purchasers.

Some old tenements to the west of the Corn Exchange are being demolished to admit of an extension of that building, the plans of which have been prepared by Mr. Moreham, city superintendent.

The western portion of the new vegetable markets is to be appropriated to the purposes of an aquarium, the remaining space being considered sufficient for market purposes.

The internal fittings of the Union Bank buildings are being pushed on, and it is expected the bank officials will be able to gain possession in the ensuing spring.

No start has yet been made with the new University buildings; an active canvass is going on for the purpose of raising the voluntary contributions to the sum necessary to secure the Government grant.

The new Board Schools at Dalry are nearly completed; those at Marshall-street are occupied, and those at Canongate in progress. New schools are contemplated at St. Leonard's, those at Marshall-street not having been found sufficient to meet the requirements of the district.

Upon the grounds of Warrenden Park new streets and terraces are springing up; the elevations show a departure from the stereotyped style, the sky-lines being broken up by gables and peaked roofs, and the respective blocks are not mere repetitions of each other, as is too often the case.

Operations proceed steadily at the West End. The grounds of Dean, Drumsheugh, and Coats are gradually being covered with fashionable dwellings of the vernacular type.

The environs of the city begin to assume a new aspect. Green pastures are now being studded with villas, some of them interesting examples of that class of residences, but the majority commonplace.

A portion of the lands of Coltbridge, to the south of the Glasgow-road, is being rapidly taken up, and here we see specimens of each class, one at the south-west angle being more curious than beautiful.

The farthest plot of the grounds of Merchiston, which extend about a mile westward from Morningside, has one large villa in course of completion, most of the sites to the eastward being already occupied.

A start has been made upon the lands of Craiglockhart, which bound those of Merchiston on the west, and upon these grounds, and to the north of Spyelaw-hill, a hydropathic establishment is in progress, from the designs of Messrs. Peddie & Kinnear. Beyond this, again, upon the estate of Dreghorn, a villa is nearly completed for Mr. Alexander Ballantyne, glass-stainer. Ere long the pretty village of Colinton, so lately three miles from the city, will be united to it by a range of suburban residences.

Immediately to the south of Morningside, beyond the city boundary, and between the highway and the site of the Metropolitan Cemetery, a new street is in progress.

Upon the lands of Blackford several first-class villas have been erected, and others are in progress; and the southern portion of the Grange Estate is for the most part in the hands of building speculators.

Active operations are going on to the south of Newington. Facing the old Liberton-road are four new terraces of two-storied residences, with garden plots in front. Two of these are of the usual dull, monotonous sort, but the other two are pleasing examples of their class, one being the first example here of the half-timber style.

On the new Liberton-road the villas extend as far as the toll-bar, and on the lands of Prestonfield, overlooking the Queen's Park, the builders are actively at work.

It is painful to observe that some speculative builders have got hold of part of Arniston-place, Newington, and are building shops upon the garden plots in front of them. It is much to be regretted that the feu charter contains no prohibition against such a procedure, so that in course of time this respectable suburb, which forms an appropriate entry to the city from the south, may assume the unattractive aspect of the New Cut.

Sir Walter Scott states that, when a boy, as he was proceeding in company with relatives from Edinburgh to Leith, he ventured to express an opinion that the seaport might one day be united to the city, and was snubbed for talking nonsense. No one now would be considered as doing so were he to predict that the villages of Corstorphine, Colinton, and Liberton would ultimately be absorbed in the city.

Such being the state of matters, the civic authorities intend to apply for an extension of the municipal boundaries.

THE LATE MR. RAPHAEL BRANDON, AND HIS WORKS.

The most unhappy end of the really useful life of the late Mr. Raphael Brandon, a name so widely known, calls attention, and painfully, to many things which, we must suppose, attach unavoidably to professional life, as it is generally termed. In Mr. Brandon's case it has certainly come to a more than usually unhappy ending, but it must not be thought that his special troubles and disappointments were peculiar to himself, though, may be, he was affected more keenly by them than others might have been. Many have had, and have, troubles quite as great as his, and indeed greater, and painful indeed would it be to set them forth; but a little good may perhaps be done by calling a moment's attention to the work which in this life Mr. Brandon did, and to remind the architectural world what it owes to him,—Mr. Brandon, or rather we might perhaps more correctly say to the Brothers Brandon, for while his brother lived they constantly worked together, and what they did passed under the joint names always as the work of both of them.

Mr. Raphael Brandon was articled in 1836 to Mr. W. Parkinson, of Sackville-street. In conjunction with his brother, Mr. Arthur Brandon, he was the author of several books well known, and indispensable, at least at one time, to the professional architect, and in memory of him we may usefully call attention to them. They were, and yet are, most useful books, and supply information not elsewhere to be met with. We take them as we have them before us. There is first their useful book on "Parish Churches," consisting of plans and perspective views of English ecclesiastical structures, the plans being drawn to a uniform scale, with short letter-press descriptions. The last number of this book was at press when Arthur died, in December, 1847. It was dedicated afterwards by Mr. Brandon to the memory of his "one brother." It contains a list of sixty-three churches from most of the counties of England, with short descriptions, perhaps too short, with the leading dimensions of each building. It is but a few who can personally visit the old churches of England, our "antiquities," and the gratitude of those who cannot must be accorded to men like Raphael Brandon and his brother, who enable such to get but a glimpse, however slight, of what they hear of, but can hardly expect to see. There is no attempt here to go out of the plain practical way, and no effort to make of these useful sketches "pictures," but all is carefully and conscientiously done, and both views and plans are strictly "practical."

The other book which the brothers produced, and which has proved useful to architects in many ways, is their so-called "Analysis of Gothic Architecture." This book is industriously illustrated by more than 700 examples of doorways, windows, and details of Ecclesiastical buildings. It was dedicated to the father of the late Marquis of Northampton. The book was produced, say the authors, to be a practical rather than an historical work on English Church architecture. Unyielding Gothic men were the brothers Brandon, for their preface tells that Saxon architecture, though curious, is but rude and barbarous as a constructional system; and that even its successor, the Anglo-Norman, has but few if any claims to our regard and adoption, and that in it is to be traced all the impress of a lingering barbarism! And they further say, and it is useful to note this,—that "Continental Gothic," beautiful as it is, cannot be consistently associated with English details, each possessing distinctive features which it is impossible to blend together without serious injury to both of them. The illustrations in this book of windows, tracery, mouldings, doorways, piers, and arches, woodwork and metal work, afford proof of the work done by these industrious architects. It is, indeed, a pity, and a thing to mourn over, that so much of painstaking in life should end in disappointment, and worse than disappointment.

Another of the two brothers' useful books is the "Open Timber Roofs of the Middle Ages," with perspective and working drawings of some of the best of these church roofs. There are thirty-five roofs illustrated in this book, from Herts, Suffolk, Norfolk, Gloucestershire, Cambridgeshire, Lincolnshire, Leicestershire, Warwickshire, and Northamptonshire. In the introduction are some useful hints and information as to the timber roofing of the Middle Ages, and the brothers urge in it that the churches built by our forefathers bear all the impress of the typical and elevating spirit of Christianity: they were built for the glory of God, not merely for the convenience of man, and we can but regard the wrecks that remain of them with a feeling that,—

> "They dreamt not of a perishable home who thus could build."

The book begins with simple beam roofs, and contains, by the way, the most useful architectural drawings,—geometrical drawings,—so that the form and the principle on which the roof is constructed is plainly and at a glance visible. The professional world owes a debt to the brothers Brandon for this book especially, for it serves the one useful and necessary purpose of showing practically and constructively what the builders of the Middle Ages really did with the materials they had at hand, and how all these materials, whatever they were, were made to harmonise. The extent to which the "Analysis"

and the "Roofs" have been used as mere pattern-books is enormous.

Without giving a complete list of the buildings designed by Mr. Brandon, there are three especially in London, and within easy sight, which may be enough to remind the reader of his mode of design, and of what he endeavoured to realise in Gothic architecture as practised in these modern days. There is the large church in Gordon-square, built for the members of the Catholic Apostolic Church, which he executed in conjunction with Mr. Ritchie; it is not even yet, we believe, quite finished. There is the small church or chapel in Great Windmill-street, close to the Haymarket; and a third in Knightsbridge, unhappily wedged in between two public-houses. These three ecclesiastical edifices are, perhaps, enough to enable any careful observer to form an idea of the mode of design in the way of Gothic church building practised by Raphael Brandon, and they are outcomes of the books we have above called to mind, and which, indeed, may be said to be the preparations for them. The Gordon-square church was certainly a fortunate opportunity. It is, as is well known, most solidly built, and stone has been used throughout it, so that the material, and that is no slight advantage, called for a little more than usual painstaking. This is not the opportunity for the looking at it critically. We would here but cite it as a noteworthy example of the endeavour of the architects to reproduce the ancient forms, and that they took a good deal of pains and expended a good deal of thought on it no one will dispute who will *in memoriam* look at it.

The church in Windmill-street, St. Peter's, we would say a few words further about, and would instance it as a work showing more than his ordinary fancy, and a departure from conventional and standing rules. With so much detail, and with some carving above the average, it might be asked why does such a building as this fail, from the hands of so careful an architect, to impress the looker-on with as much awe and respect as a veritable *old* church, so many of which Mr. Brandon studied and measured, and thus so thoroughly understood? The answer must be,—and there is, in reality, no other,—it fails in detail, or rather in the practical working out of that detail, and consequently in expressional power over the mind; and this not only over the mind of the professional and learned spectator, but that of the uneducated and unlearned looker-on. In justice to Mr. Brandon, we must needs say that he did see this shortcoming in modern architectural work, and thus it was that he was among the first of those who united in the effort to help to remove it, if possible, or at least to make the attempt to do so. He could not but see, after examining and carefully measuring so many buildings full of this power over material, that a something was wanting, and he was always ready to give a kindly help to any effort made to remedy present shortcomings.

Upon his melancholy death we hardly like to dwell; still it should be made to call attention to the uncertain phases of professional life, and to the sometimes unexpected termination of an apparently prosperous beginning. But it is easy to talk. Who, says the great play-writer, can control his fate? and what strange, and at times, all but incredible accidents,—accidents of a moment,—happen to dull, and at times to destroy, the brightest prospects! It is, indeed, melancholy to think of how slight the causes have been which have in some cases disturbed, or even brought to an end, the fairest commencements. Men of genius, and with exceptional powers, have in how many cases failed, while seemingly duller minds have achieved a successful career. In Mr. Brandon's case, it is perhaps a little difficult to see *why* he failed professionally. And yet we have heard him more than once regret his inability to do all, or even a jot, to use his own words, of what he intended and wished to do. But is not this a common feeling in all those who try to do their best in professional and more than all in artistic life? The life of the artist is always uncertain, every way; and much might, indeed, here be urged about it, and its perils and uncertainties, but we must forbear, and learn a lesson from this unhappy event. All cannot prosper equally well: it requires more qualities than ability to make a successful man.

Conversazione.—The Architectural Association will, as usual, open the architectural season. The *conversazione* will be held at the House in Conduit-street, on Friday next, the 26th inst.

INTERNATIONAL CONGRESS OF ARCHITECTS.

Some members of the Paris *Société Centrale des Architectes* are engaged, we understand, in arranging for an International Congress of Architects, to be held about the time of the presentation of medals and rewards in connexion with the Exhibition of 1878. Mr. Charles Lucas, of 8, Boulevard Denain, Paris, would give any information that might be asked for.

ST. JOHN'S CHURCH, UPPER HOLLOWAY.

BRACING WALLS.

An interesting experiment has just been tried at Holloway, and having been attended with success we lay the particulars before our readers.

St. John's Church was designed by the late Sir Charles Barry, and is of Gothic design, consisting of a nave supported upon six arches, with side aisles, each containing a gallery. The tower is at the west end of the nave, having on either side staircases leading to the galleries, and there is a small chancel at the east end. The church is constructed of brickwork, with stone dressings, and internally is lined with stucco. The stratum beneath the church is clay, with beds of "slipper" between, and for some years the appearance of cracks above the eastern arches and walls has given cause for great anxiety. Within a few yards of the chancel the South Tottenham Railway has been constructed in open cutting, and there is no doubt but that this work has greatly weakened the foundations of the structure.

So great has been the progress of the cracks lately that the authorities became very much alarmed for the safety of the congregation, and at last it was deemed necessary to close the church.

Mr. R. M. Ordish, C.E., having been consulted, that gentleman conceived the idea that further progress of the giving way of the brickwork might be prevented by bracing up the walls with wrought-iron rods, and consequently he decided to introduce on either side of each longitudinal wall, just above the arches, a wrought-iron rod, 3 in. diameter, and having at each end a bed-plate the full thickness of the walls. The rods and cast-iron bed-plates were entrusted to Messrs. Handyside, of Derby, whilst the fixing and general arrangements were carried out by Messrs. Dove Brothers, of Islington, the whole being under the personal superintendence of Mr. Ordish.

The rods having been attached to the bed-plates, the process of screwing up was commenced on Wednesday week in the presence of many professional gentlemen. Mr. Ordish was of opinion that, in order to equalise the strain upon the walls, the four rods, in length about 125 ft. each, should be merely attached at each end, and for a bearing of 84 ft. should be allowed to sag by their own weight, and in screwing up, the amount of strain would thus easily be ascertained. It was decided that the rods should be tightened up to within 1½ in. of their horizontal line.

The whole operation took about five hours, and gradually the ugly cracks were observed to close, and by evening the screwing up was satisfactorily accomplished.

As we have said, Mr. Ordish personally superintended the work, assisted by Mr. Hess, who watched the behaviour of the rods and internal structures.

LARGE BLOCK OF SHOP AND OFFICE BUILDINGS IN FINSBURY.

When the extension of the Metropolitan Railway from Moorgate-street to Bishopsgate was in progress, the railway company contemplated the erection of an extensive new hotel on the site belonging to them in front of the Moorgate-street Station, under which the railway passes. The project was, however, abandoned, and the land has been leased to Mr. E. J. Cave, builder, who is at present erecting a very extensive block of shop and office property on the site, which, when completed, will be a very prominent feature in the architectural character of the locality. The block will have three distinct frontages, all containing shops on the ground floor, with offices or other places of business on the upper floors. The principal elevation in Finsbury-pavement, immediately opposite the Circus, will be 185 ft. in length, and 60 ft. in height to the cornice, the central portion of the elevation, which will be surmounted by a clock-tower, being 76 ft. high. The building will contain four stories above the ground-floor portion of the structure, the latter being carried up in Portland stone, with polished red granite columns. The upper portion of the elevation is in Bath stone. Each story above the ground floor has a range of sixteen lofty windows, the dormers being alternately pedimented and arched, with vases between them. The main cornice, projecting 2 ft. beyond the general frontage-line, will be supported on ornamentally-carved trusses, and there will also be a free introduction of carving in other portions of the elevation. At each end of the elevation there is a Mansard roof, surmounted by iron cresting. At the north and south of the elevation, on each side of the shop frontages, there are two open passages, 10 ft. in width, forming arcades, leading into Little Moorfields, and which will also form the approach to the Moorgate-street Station from Finsbury-pavement, and on each side of these arcades there will be shops in addition to those in the several frontages of the building. With the exception of the central clock-tower, the Little Moorfields frontage is uniform with that facing the Pavement, and of the same length, with an equal number of shops on the ground floor. The return elevation at the north end, in Short-street, is also of the same character, and 58 ft. in depth, the depth of the building at the south end being 70 ft., and the whole containing a ground area of about 11,000 superficial feet. The entire number of shops on the ground floor in the several frontages and arcades will be thirty, whilst each of the upper floors will contain ten suites of offices, of four and five rooms each, there being forty-five apartments on each floor, or an aggregate on the several floors of 200 in number. In the centre of the building there is an open space or well-hole, carried up from the ground to the roof, in order to give light to different apartments.

The architects are Messrs. Joseph & Pearson, of Coleman-street, and, as already stated, the buildings are being erected by Mr. Cave, the owner, under the superintendence of Mr. Stocking as foreman. The estimated cost is from 45,000*l.* to 50,000*l.*

NEW STREET IN KENSINGTON.

A street improvement of some importance is about to be effected in Kensington. In the arrangements for the erection of the new vicarage-house which has just been completed, the Kensington Vestry obtained possession of the old vicarage site, and a quantity of the adjoining grounds, near the junction of Church-street and Church-lane, for the purpose of constructing a new main thoroughfare northwards, in the direction of Notting-hill and Uxbridge-road. During the last few days the materials of the old vicarage-house have been sold by Messrs. Eversfield & Co., and the building is now in course of demolition, preparatory to the laying-out of the new thoroughfare, which is intended to be of considerable width, and will be the means of opening out an improved communication for vehicular traffic between High-street, Kensington, and the neighbourhood of Notting-hill-gate. A portion of the land which formed a portion of the vicarage-grounds, immediately adjoining the intended new thoroughfare, is, we understand, to be laid out for the erection of residences of a high class.

COMPETITIONS.

Wellingborough Second Grade Schools.—Upwards of thirty designs were sent in for the above. After careful consideration by the governors, the number was reduced to three, those by Mr. W. T. Brown, Mr. R. Speechly, and another, when the final selection was made in favour of Mr. Brown. The designs have been publicly exhibited in Wellingborough.

New Church of St. Philip, Trippett, Hull.—By invitation, a limited number of architects recently submitted designs in competition, under motto, for the above church, which is to seat 600 persons. The design marked "*Experto crede*" has been selected by the committee as the best, and it is to be carried into execution. Its authors are Messrs. W. Botterill & Son, of Hull, architects.

Trade Book.—The General Catalogue issued by the well-known engineers, Hayward Tyler & Co., of Upper Whitecross-street, is illustrated, and includes prices, so that it would be found useful by many of our readers.



NEW CUMBERLAND UNION BANK, HALTWHISTLE.—Mr. D. Birkett, Architect.

NEW CUMBERLAND UNION BANK, HALTWHISTLE.

This building, just erected, is one of the several branch establishments of the Cumberland Union Banking Company, whose head offices are in Carlisle. It occupies a fine business position in the very centre of Haltwhistle. The style of architecture adopted is a modification of Elizabethan, the materials being white local stone, with red base and string-courses. The building is admitted to be a great improvement in Haltwhistle.

The builders were Messrs. Turner & Hodgson, of Alston, Mr. Liddell, of Haltwhistle, doing the joiner's work and fittings, which are chiefly of pitch pine, mahogany, and oak. The architect was Mr. D. Birkett, of Carlisle. The cost was about 2,000*l*.

MONUMENT OF BISHOP RODOLPH VON SCHERENBERG, WÜRZBURG CATHEDRAL.

Of all the various kinds of monuments erected to commemorate the dead in the Middle Ages, there is perhaps none which lent itself so well to the display of the sculptor's skill as the upright effigy so common in the churches of Southern and Eastern Germany. The example which we illustrate in our present number is a remarkably noble and interesting one. It is to be seen in the Cathedral of Würzburg, in Bavaria, and represents one of the former Prince-Bishops, who for nearly eight centuries ruled the town and principality of Würzburg. The person here presented is Prince-Bishop Rodolph-von-Scherenberg. The monument is composed of red Salzburg marble, with the exception of the canopy and basement, which are of lithographic stone. The date of this fine work is 1495, and the sculptor was Tilman Rhiemenschneider, a native of the town, who is best known by his chief work, the monument of the Emperor Henry II. in the Cathedral of Bamberg. His works, however, are frequently to be met with in this part of Germany; those which we know best are, in addition to the two before named, the statues of the apostles round the columns of the Marienkapelle at Würzburg; the group of "The Fourteen Saints-Defenders" in the Hof-Spital-Kirche; the monument of Prince-Bishop L. von Bibra, in Würzburg Cathedral; the altar of the Holy Cross in St. James's Church, Rothenberg; a "Piets," in the church at Heidingsfeld; and the "Last Judgment," over the doorway to the Charnel-chapel at Ochsenfurth.

The monument of Bishop von Scherenberg shows several peculiarities of ecclesiastical costume which are worthy of notice. The first of these is the singular fact that the mitre is not of the usual Gothic form, but of what we are in the habit of supposing to be the modern Roman form. It is very wide and large, and the two points are joined at the top. The mitre is adorned with a representation of the Annunciation. The chasuble is *quite plain*, which is very remarkable, and has no collar, so that the amice is very clearly seen above it. *Over* the chasuble, which is very large, and pointed in front, is a very peculiar ornament, similar in shape to the pallium worn by archbishops, only instead of being marked by five crosses, it has upon one arm the monogram "I.H.S."; on the other, the word "Maria"; and upon the straight piece which hangs down, the name "Killianus,"—in reference to St. Killian, an Irish monk who converted Würzburg to Christianity, and suffered martyrdom here. This singular pallium is seen upon all the old monuments of the Prince-Bishops of Würzburg, but we are unable to account for the existence of this singular ornament of ecclesiastical costume. Below the chasuble is seen the dalmatic; but as it is shown the same length as the tunic, the two vestments look like one. Below this is seen the alb, which is very long and perfectly plain. The crosier, which is very large, is held in the left hand, and has a veil attached to it. The right hand of the figure rests upon a large two-handed



MONUMENT OF BISHOP RODOLPH VON SCHERENBERG, WÜRZBURG CATHEDRAL: A.D. 1495.

word. The sword and the crosier denote that e person represented had both spiritual and mporal jurisdiction. The face, which is unoubtedly a portrait, and a very life-like one, is ightly coloured, and the borders and fringes e gilded.

The other monument in the same cathedral, by lman Rhienenschneider,—that, namely, to ishop von Bibra,—dates from the year 1521; id though the outline is very similar to that of ishop von Scherenberg, the detail is quite enaissance in character.

THE PRESENT STATE OF BALLOONING.

Now and then we hear of ostensible flying-achines, to be, however, only disappointed. f a more practical nature are the various xperiments carried on with balloons; and the sit to Europe of the American aëronaut Lewis ith a "manageable" balloon, *i.e.*, a balloon at may be steered, has once more directed tention to ballooning. An account by Herr ohusler, lieutenant of Engineers, on the present ate of aërial navigation and the use of balloons r war purposes, recently published, will conseiently be read with interest. We do not intend enter as fully as the writer has done on the ilitary aspect of the question, merely confining urselves to his remarks as far as they are of terest to non-military readers.

The balloons of the present day, as used by oxwell, the brothers Godard, and Professor iese, and such as have up to the present also en applied for war purposes, are large pear-aped sacks, made of silk, rendered air-tight by yers of especially-prepared varnish, and which e filled with ordinary coal-gas or hydrogen-gas, id covered, with a view to greater resistance, r a network of ropes. The latter carries at the wer end of the balloon a ring, to which is spended the car containing the aëronant. At e top of the balloon is a valve regulated by a pe, below is a supply-pipe which may be closed. ie car is provided with sand-bags as ballast, at ast two grappling irons or anchors with ropes, height-measuring barometer, and, as a means escape, a parachute for each passenger. The tter is in the form of an umbrella, is made of rong taffety, opens out to a breadth of about) ft., and carries on cords a small car, which ceives the aëronaut. The parachute opens out it descends, and arrives slowly, and, in consetence of a pipe fixed in the centre, also at a iiform speed, at the ground.

If the total weight of such a balloon, when led, is less than the volume of air displaced by it rises in accordance with the Archimedian rinciple. The power propelling the balloon wards requires practically an excess of 3 per nt., so as to prevent, by a sufficient velocity of arting, its being thrown against houses or trees. he air becomes more rarefied the higher the lloon ascends, the gas in the balloon expanding the same degree. The aëronaut, consequently, ust, before starting, fill his balloon only two-irds of its volume. Arrived at a certain height, e balloon is tightly expanded, without losing s rising tendency. If the supply-pipe is now osed, a pressure arises; if it is open, as is ually the case, the gas in excess escapes. In th cases, the balloon arrives finally at a height which an equilibrium is established between e balloon and the volume of air displaced. It en ceases to ascend, but it continues to float and down in slow, wave-like motions. If the ronaut desires to rise still higher, he throws t ballast. If he wishes to descend, he opens e valve, part of the gas escapes, and the lloon falls, until, by throwing out ballast, it is ain made to ascend. This proceeding may be ntinued as long as there is a sufficient store of s and ballast, but of course not for very long, cause, besides by opening the valve, loss takes ace also by imperfect air-tightness and diffusion.

As long as no steering apparatus is invented, e balloon can be directed solely by seeking r corresponding air-currents, consequently by ell-timed ascending or descending in contrary rections. It follows from this that aërial navi-ation, as long as no greater control over the ovements of the balloon is obtained than has en done up to the present, will be of little ractical use in warfare.

The author enters upon a history of the ap-ication of balloons for war purposes, into hich, as has been observed already, it is not r intention to follow him closely. But the lloon became of such great practical use during e late Franco-German war, and especially in the siege of Paris, when it served to the besieged as the only practicable means for communicating with the outer world—though the latter, after several failures, had to abandon the attempt to reach the invested city by balloons—that we may be permitted to shortly describe the way in which they were utilised for postal intercourse. The close investment of Paris depriving the city of all other means of communicating with the provinces except by the air, the postmaster-general of Paris, M. Rampon, assisted by experienced aëronauts, such as Godard, father and son, Nadar, and others, organised already at the end of September a postal service by balloon on the largest scale. The balloons were made of a material similar to home-made linen, and called "percaline," saturated with linseed-oil varnish; they were provided with a network of tarred rope, a car, and the required apparatus, and had a contents of 70,000 cubic feet. Their cost was 4,000 francs (160*l.*) each, and they were manufactured at the rate of one every other day, a sufficient number of aëronants being provided by the training institution especially established for the purpose. Each balloon was capable of carrying two or three persons, from 440 to 880 lb. of letters, and a few carrier pigeons, after the employment of dogs, trusting to their instinct for finding their homes, and loading them with despatches, had turned out a failure.

In this manner, in the time from September 23, 1870, to January 28, 1871, consequently, in about a hundred days, sixty-four balloons with 358 carrier pigeons were sent off. Of these balloons, 46 arrived safely, of which four in Belgium and one in Holland; ten were partly lost, *i.e.*, the balloon was lost, letters and crew being saved; eight were entirely lost, six falling into the hands of the enemy, two into the sea. Of the 358 carrier pigeons, altogether but fifty-six (of which only thirty proved effective) returned to Paris. This unfavourable result must be ascribed to the unusually severe winter, the continual discharges within the line of outposts, as well as to the fact that only a very limited number of really good and trained carrier pigeons was available in Paris. At first only small despatches could be entrusted to the pigeons, which were written on pieces of extremely fine taffeta, put into a quill, and tied to a tail feather, until M. Dragron succeeded in utilising his invention of producing microscopic photographs. He left for this purpose the capital, on November 21, 1870, by a balloon, and established at Tours a large *atelier* for microphotography. By means of his instruments he was enabled to reduce, within two seconds, twelve to sixteen printed folio pages, with from 4,000 to 5,000 despatches of twenty letters each, on a despatch leaf of skin paper, 1·3 in. by 2 in. large, and weighing 0·77 grain. Twenty of these skins were despatched by a carrier-pigeon in the manner described to the address of the central telegraph-office at Paris, where they were, after arrival, magnified 500 times on a white wall by means of the electric light, copied, and forwarded to the persons addressed.

Though the balloon was thus practically utilised by the besieged city, it has failed hitherto almost entirely as an engine of war, as the author points out. We learn from him that its application as such is practicable only in two forms: (1) as the captive balloon, either for reconnoitring and observation of the enemy, or as a station for photographic survey; (2) the freely-moving balloon, either as a means of communication, where the latter cannot be effected on the ground, or as a destructive engine of war, from which explosive materials are thrown. But to be perfectly safe and practicable, four conditions have to be fulfilled. It must, in the first place, be made of a material proof against all atmospheric influences. It must next be easy of transport and readily filled. It must carry at least two persons and the necessary apparatus. Finally, and most essentially, it must be provided with an efficient steering apparatus for directing and controlling its movements. The first of those conditions has not yet been fulfilled. The second has only partially been secured, while for war purposes the difficulty of filling the balloon whenever required has yet to be surmounted. The third condition has been successfully accomplished. As regards the final and essential condition, that of directing and controlling its movements, some progress has been made, as we, with the help of the writer, hope to be able to demonstrate.

In investigating the present state of aërial navigation and the perfection at which ballooning has attained, we are guided by two considerations. In the first place, we have to see how far it has been found practicable so to regulate the rising and falling of the balloon within a range of, say, 500 ft. to 1,000 ft. as to be able to dispense with the discharge of gas or ballast. Next—and this, as we have already pointed out, is a very important principle—what has been done in the direction of guiding or "navigating" the balloon in the air? The first of these conditions has been approached in a practical manner by two Frenchmen, MM. Meusnier and Joulie, who have thrown out suggestions which have already been practically tested. The first-named aëronaut proposes to close up the lower opening of the supply-hose of the balloon entirely, and to maintain a permanent super-pressure, thus preserving the volume of the balloon in all positions. To effect the rising or falling of the balloon by increasing or reducing respectively its specific weight, he introduces in the balloon an entirely independent space, or a second balloon, into which atmospheric air is either pumped or from which it is let out by a valve. The engineer Joulie, on the contrary, instead of carrying ballast, introduces into the car an iron reservoir, the sides of which are capable of resisting a pressure of from twenty to thirty atmospheres. In order to reduce the rising propensity of the balloon, gas is forced from the balloon into the reservoir, by means of a condensing pump. On the other hand, by opening a valve, the condensed gas is permitted to return into the balloon, and the latter rises again.

The second requirement, the means of guiding the balloon, is more difficult to provide. The first question that suggests itself is how to guide a freely-suspended balloon. Like a soap-bubble, it will follow each current of the atmospheric strata in which it may happen to be. The aëronant does not feel even the highest wind, as long as it does not occur in gusts, and only notices the progress of the balloon by observing the earth's surface below him. To provide such a balloon with sails and steering apparatus would be perfectly useless.

But the case changes entirely if a velocity of its own, if ever so small, but independent of the surrounding air—or, in other words, steering power—is imparted to the floating apparatus. The rudder, if it may be so called, meets with resistance in the air, the latter exercising a pressure upon it. It follows from this that the manageableness of a balloon is intimately connected with its movement. It has lately been demonstrated, both theoretically by calculation and practically by experiment, that it is possible to propel as well as steer the balloon by means of a motor similar to a ship's screw. The following will show how it has been tried to solve the problem. The balloon of Dupuy de Lôme is constructed with an inner air-bag on Meusnier's principle; it has the form of a round body pointed at the bow and stern, a length of 131 ft., its largest cross-section being 47 ft. The principal balloon (*ballon porteur*) has two valves, the smaller one only one. The ends of the network surrounding the balloon are connected with two poles running in the direction of its length, to which the car is suspended. Above the latter, between it and the poles, the screw is fastened in a frame, and is moved by means of gearing from the car by hand. The screw has a diameter of 26 ft., an equal elevation, and four blades 3 ft. 3 in. wide. The blades consist of a wooden frame covered with silk taffety. In the car is a ventilator, connected with the small balloon by a hose. A sail is fastened at the farther end of the balloon, by which the latter is steered, and which is worked from the car by a running rope. The total volume of the balloon is 136,000 cubic feet; from this a tenth part, or 13,600 cubic feet, must be deducted for the bag, and there remain 122,400 cubic feet, which, if filled with coal-gas, represent a lifting-power of 5,623 lb. The total burden carried by the balloon, including the screw, six men for turning it, a helmsman, a captain, and an observer, is 5,463 lb., thus leaving the 3 per cent. of rising power required for the start. To prevent the wind from changing the form of the balloon, a certain excess of pressure is always maintained.

In a calm the balloon moves with a speed of about 7 ft. per second, equal to a force of about 200 foot-pounds. At a speed of twenty-one revolutions the screw attains the force exerted by four men, with two men as a shift. If there is no wind, or only a wind the velocity of which is less than 7 ft. per second, the balloon may be moved in any direction; in a strong wind, however, only a certain deviation is possible, decreasing with the force of the wind.

The air-bag is filled at starting with atmospheric air, the large balloon with ordinary gas. The higher the balloon rises, the less becomes the atmospheric pressure; consequently the pressure in the interior of the balloon must also be diminished. This is effected by allowing the air to escape from the bag, until, arrived at a certain height (2,822 ft.) it is quite empty. The balloon continues rising, its power exceeding the weight it carries by 3 per cent. The excess of pressure of the gas taking place now is compensated for by allowing escape at the valves. The rising will continue until the propelling force becomes equal to the burden, *i.e.*, if a height of 3,600 ft. is reached. If through any cause a decrease of the power to rise takes place, the apparatus begins to fall; in consequence of which the gas in the balloon becomes condensed. To keep it expanded, air must be introduced into the bag. If it is desired to ascend again, ballast must be thrown out.

The first trial with such a balloon took place on February 12, 1872, during a strong gale from the south-west. An ordinary compass was fixed in the car for the helmsman; a mariner's compass served for observing the course. The report of the trial was satisfactory. The balloon travelled sixty-six English miles in two hours.

Herr Hänlein, of Mainz, constructed a balloon on the same principle; only he employed, instead of hand-power, a gas-engine by Lenoir. Full particulars of his balloon have already appeared in these columns,* but its principal features may be recalled. The Lenoir engine requires no boiler, no water for feeding the latter, and no fuel; it moves the piston in the cylinder by means of a mixture of air and hydrogen-gas, exploded by an electric spark. The spark is produced by an induction apparatus. Hanlein's machine has four such cylinders, of together 4 horse-power, weighs 440 lb., and is made of cast steel, with the exception of the cylinders, which are of copper. It is fed with gas from the balloon, the ascending power of which is thereby not affected. The cooling of the cylinders, which soon get hot, is effected by 33 gallons of water, taken on one side from the cylinders by a pump moved by the machine, conducted round the car over fine wirework, and thus replenishing continually the heated water.

The model tried in 1871 at Mainz answered all requirements. Unfortunately, the larger balloon, constructed on the same principles, was totally destroyed a few years ago, during a storm, at Brunn (Moravia), and want of means has hitherto prevented Herr Hänlein from attempting the construction of another one. It might be mentioned that the idea of a fish-bellied balloon, provided with screw and rudder, is not the invention of M. de Lome, but was carried into practical effect several times before him. The idea made its appearance in Germany, already twenty-five years ago, and in 1852 was turned to practical use in France, by M. Giffard.

The new world also has contributed to the efforts of solving the difficult problem of aërial navigation. Mr. Rufus Porter built a model of the form of a cigar, 27 ft. long and 4 ft. 6 in. broad, and provided with an ordinary small steam-engine moving two ships' screws. It was steered by a four-bladed rudder. The balloon was made of varnished linen, its form being preserved from inside by twelve poles. The trials were so successful that Porter built a balloon of large dimensions. Everything was ready for filling when it turned out that the varnish had destroyed the linen to such a degree as to render it incapable of resisting the pressure from within. Mr. Mariotte, of San Francisco, also constructed a balloon, 38 ft. long and 11 ft. broad, which was provided on both sides with sails, and moved by a small steam-engine. The model turned out so successful that an aërial steam navigation company was started at once. Although the company intended to have a large balloon constructed after Porter's model, and the latter was said to have discovered a more suitable varnish, nothing further has transpired respecting them. It seems hardly possible that his invention will stand a practical test, since the placing of a steam-engine directly under a balloon filled with gas must be extremely dangerous.

One more construction, that of Dr. Andrews, remains to be mentioned, if only on account of its novelty; it differs entirely in its principle of propulsion from all former designs. Dr. Andrews's aërial machine consists of three cylindrical balloons, pointed at the bow, each 98 ft. long, and of a diameter of 20 ft., which are fastened together horizontally, side by side, thus forming a raft. This raft is provided with a rudder and a car, on the floor of which a pair of rails is fastened, upon which runs a wagon carrying the ballast. If the wagon is pushed towards the stern of the car, the effect is to place the whole apparatus at an angle of from ten to twenty degrees towards the horizon. On throwing out ballast, the balloon, in rising, is propelled, because it offers to the air an oblique plane. Arrived at a certain height, gas is allowed to escape, and the apparatus, like a hawk with steadily extended wings, shoots forward while falling. The first trial is said to have been extremely successful, but nothing further has become known.

From what has been stated above, the conclusion must be drawn that the problem of aërial navigation is still in its experimental stage, that no results enabling us to turn it to practical uses have been attained, although some considerable progress has been made. In the first place, it has been demonstrated that movement, and consequently steering power, may be imparted to the balloon; and, secondly, it has been shown that the balloon may be made to rise and fall without loss of ballast and gas. If we ask ourselves whether a solution of the problem of aërial navigation is possible in our present state of experience, the answer must be doubtful. Ballooning has not yet got beyond its infancy; profiting, however, by past experience, it may be possible to construct a means of movement of the greatest value in certain exceptional cases. The balloon will play an important part only when it has been so far perfected as to enable us to steer it like a ship, even in the most unfavourable winds, in all directions. As long as this problem is not thoroughly solved, the balloon will, at best, only remain what it is—a makeshift. This does not prevent, however, its being employed, as in the Franco-German war, as a means of communication between an invested fortress and the army in the field, in which capacity it may be made to perform important services. But to use it even for this purpose profitably, it is absolutely necessary, not only to construct practicable balloons, but to train up a number of efficient aëronauts.

* See *Builder*, vol. xxxiv., p. 117.

GRANITE BUILDINGS, ABERDEEN AND LONDON.

Sir,—In your description of the granite buildings of Aberdeen (p. 945), I observe that after remarking upon their generally favourable appearance, you notice that there is little polished work to be seen,—a mode of treatment which you remind your readers has been recommended for granite buildings in London. The right thing in the right place is an important point, if not the essence, in all good architecture. Aberdeen is by no means such a smoky city as London, nor are there manufactories as in London, producing gases which are most destructive to ordinary freestone buildings. If we could transplant the clear pure white granite buildings of Aberdeen to London, they would be so besmirched in six months with fuliginous deposit from being unpolished that their owners would not recognise them. There is much axe-faced granite in the City to illustrate this defect, just as there is much polished work to show the necessity of that process. Unpolished granite, in short, is no better in appearance as a building-stone in London than Portland or other free stone. Like marble, the beauty of granite is only revealed by polishing. Then,—and this is more important still as a London question,—it is the hard polished surface of granite alone, that is capable of resisting the damaging effect of the sooty atmosphere, and the destructive power of hydrochloric and other gases, which are so ruinous to freestone buildings. There need be no fear of disagreeable glare or refraction from a polished surface. A glance at the Crystal Palace at Sydenham or our plate-glass shop-fronts will sufficiently convince any one of this.

Of course, polished granite must be allied with an appropriate style of architecture in which carving—not to be thought of in granite building—is unnecessary. Thus Gothic and Renaissance are out of the question, but Byzantine, Romanesque, and Saracenic, would require very few modifications to adapt them to the purpose. Possibly, in the course of time, a new and original style might be evolved.

A very pleasing effect might be produced by very simple means, because granite varies so much in colour. Rose colour from Mull; red from Peterhead; gray and blue from Dalbeattie; white from Kemnay, near Aberdeen, and from Cheesewring, in Wales; black from Castlewellan, in Ireland; and, according to Dr. Borlase, a yellow variety from Wales. Using polished white granite for the general surface, and with such a variety of tints applied with judgment, to bases, strings, jambs, and cornices, it is clear that a complete and fairly satisfactory façade could be constructed without any ornament whatever, the mere polished material giving a certain sumptuous character. Of course, a first-class structure would require decoration, which to be appropriate and characteristic would take one or other or a combination of the following forms:—

(1) Flat Geometric inlay of the different colours of granite, or of encaustic tiles, or tiles of coloured glass; (2) incised work gilt,—which I imagine, would be in perfect harmony with the general polished surface; and (3) sunk ornament (*intaglio relievato*), executed with the aid of the steam sand-blast, which cuts into the hardest materials,—corundum, glass, &c.,—with wonderful rapidity. An ornamental marble panel exhibited by Mr. Newton when reading his paper on this discovery at the Society of Arts was cut through in thirty minutes with a pressure of only 60 lb. steam. Pressure, however, up to 400 lb. can be used with proportionately increased cutting-power. To complete the resources of decoration, I may mention five figures in friezes and panels of mosaic.

It will be observed that not only the façade generally, but all the details proposed above would be flat. There would be no nooks and crannies to collect soot and dirt to be converted into mud and deposited with despoiling effect upon the surface of a building by every shower of rain. On the contrary, the work proposed would be, as far as possible, self-cleansing which, I think, may be said to be an architectural desideratum in London, with its but too liberal allowance of fog, smoke, and rain. Architectural effect would be mainly due to colour, the very thing we want in this dull climate of ours, and it is clear that the richest and most sumptuous effect would be at our command.

Moreover, perfect durability,—the destructive gases of London air notwithstanding,—would distinguish the work. I yield to no one in admiration of the beauty of Bath, Portland, and other freestone buildings, with their very effective carvings, but I think that if we will let experience teach us they should, for the future, be relegated to the country. If we examine a few London buildings, what do we see? There is not an ancient stone existing of Henry VII.'s Chapel, nor of the Temple Church, nor scarcely of the Abbey or Lambeth Palace and of modern buildings, which we have actually seen erected, the Houses of Parliament, Buckingham Palace, the Buxton Memorial, and many others, have already been restored.

Then, how utterly does the smoke of London ruin the architectural effect of all freestone buildings, owing to the soft absorbent nature of the material, and the carvings forming so many traps for catching and accumulating soot and dirt. The walls of the new Law Courts are beautifully white as they rise under the hands of the masons, but those parts that have been finished only a few months are almost black with fuliginous deposit. It is no exaggeration of language to say of the Strand front of Somerset House that it is absolutely black.

As to extra cost, it does not appear to me after as careful an investigation as is possible under the circumstances, that the fear of this need stand in the way of realising the suggestion, which I should scarcely venture to make if I did not know that many members of the profession admit that some reform is very desirable.

I have offers from Aberdeen for the delivery in London of granite blocks of the usual size for ashlar facing, and 6 in. thick, at 1s. 6d. per foot super., and I have tenders for polishing at 3s. 6d. per foot super.; *i.e.*, 5s. for material and polishing.

Now, in your journal there is a detailed description of the new Post-office,—a somewhat rich freestone building,—giving dimensions and cost; and I am able, therefore, with sufficient accuracy for a comparative estimate, to conclude that the two architectural façades cost 35s. per foot super. Thus, then, my granite and polishing costing 5s., I have 30s. in hand for carriage of material in London, for decorative work, hoisting, scaffolding, setting, architect's commission, and contractor's profit, and I think that

m not unreasonably sanguine in believing
t 30s. per foot,—thousands of which would
absolutely plain,—would be ample for the
enses named.

n conclusion, I think that some distinction
ild accrue to the architect who should first
sent to the practical English public such a
lding as I have attempted to sketch. I can-
help thinking,—and I have thought about
matter a good deal,—that it would be the
nt thing in the right place. H. T.

ARCHAIC GREEK ART.

On Saturday evening, the 13th inst., Mr. C. T.
wton, C.B., delivered a lecture at the College
Men and Women, 29, Queen-square, Bloomsy, on "Archaic Greek Art." The chair was
en by the Hon. Auberon Herbert, and there
s a large attendance.

Mr. Newton said that some years ago he gave
ecture at that institution on the same subject
had now chosen, but its conditions had been
anged very materially since, by reason of
ny recent discoveries, especially those at
prus and also those at Mycenæ by Dr. Schlieann. He meant by "Archaic Greek art"
at which seemed ancient to the ancients themves; that which Herodotus would have thought
, living in the century immediately after the
rsian War. If they took the age of Phidias
representing the perfection of Greek art, it
s synonymous with the age of Pericles, and
was the latter half of that century, 450 to
0 B.C., which represented the time of Phidias
d the full perfection and bloom of maturity of
e Greek art, therefore before that date might
in some sense closed as archaic; but as they
proached the year 450 B.C., the art improved
ry much, and the quaintness, the stiffness, and
e shortcomings in the sculpture disappeared,
d ,became very near to a perfect style. He
s going to talk to them about the middle
haic art, which fell somewhere between the
st Olympiads and the year 540 B.C. With
gard to the period before the Olympiads,
owledge had certainly been given to them by
se wonderful discoveries of Dr. Schliemann
Mycenæ, which had sent a ray of electric
ht into the gloom of the heroic age. How
back Greek art reached was a question
ry difficult to answer, and which he
s afraid no living person could. He
d exhibited before them two specimens of
lpture, both of which were in the British
seum, which he brought from Branchidæ, the
e of the Temple of Apollo, near Miletus, and
se were a lion and a sphinx. They were not
w properly exhibited in the British Museum,
d in the course of next year there was to be a
om built which would be especially set apart to
haic sculpture. The great and peculiar inrest of these very early specimens of Greek
lpture was that they bore inscriptions to the
ect that they were dedicated by certain perns to Apollo. In one of these figures they had
e earliest portrait statue produced by the Greek
isel, but the head being broken off they had
t the means of knowing how far successful
e attempt was as to likeness, and probably it
s very small. The importance of the evidence
ich these inscriptions gave to archæologists
s very great, not merely that they were
erings to Apollo, but because they gave the
ound for fixing the date of the sculptures
emselves. One of the heads exhibited came
m the Temple of Diana at Ephesus, the ruins
which were discussed some time ago by Mr.
ood, who, after working hard, came across
e very earliest foundations of the first temple,
ere he found a quantity of sculpture which
arly belonged to the earliest temple, which was
ilt in the time of Cræsus, who, Herodotus told
em, contributed columns to it. This head was
t carved in round, by which term he meant the
ad would be free from, and not attached in relief.
this early temple there were found columns,
th relief sculptured round them. With refere to the fictile vases and the art of drawing
d painting upon baked clay, that class of antiities was one of the most valuable for archæogists, because it underwent very little change
the earth. The style which was contemporary
th the remains before them was now called
iatic. The style of decoration in which
himxes and other monsters were depicted as
reering along was characteristic of this age,
e greater part of the vases that were
covered had no inscriptions upon them, and
e first indication of writing upon them was all
e more precious from its exceeding rarity.
One of the warriors from Camirus represented two warriors, Menelaus and Hector, fighting, and this was one of the earliest instances of dramatic action as a subject for painting combined with writing. From that time forth, as they traced the history of fictile art, they found numerous specimens of that style coming in, and it afterwards purified itself, and they got a plain background. As to the general style to be observed in the sculpture from Branchidæ and Ephesus, there were certain peculiarities about it. To begin with the seated figures, they repelled at first, owing to there being about them a certain woodenness combined with dignity of repose, which was their characteristic. In point of fact, these figures were part of the chairs upon which they were seated, the artists in the earlier specimens never being able to free the statue from its support. As it could not be determined where the human form began and the chair ended, it gave a lifelessness to the whole appearance. So, too, with regard to the sculpture of the hair, it was not natural, nor were the eyes properly sculptured, they generally having a fixed stare. As to the testimony of early Greek art, they had a number of scattered hints regarding the development of Greek art in Pliny, which marked the transition from utter rudeness to those great changes which were subsequently brought about. Respecting the characteristics of this period, taking it altogether it was the most cheering and encouraging of any in the history of human civilisation. He saw the Hellenic races asserting their unity in such institutions as the Olympian games, and he beheld them spreading with a vigour, they being great instruments of civilisation. The same period showed a greater development of literature, while old epic poetry disappeared and was succeeded by the rich lyrical poetry, of which they unfortunately possessed but a few fragments. Lastly, it was a period when Greek liberty had its hardest struggle, coming out triumphant at the end of the Persian war. He would ask them, whenever they read the history of that period, to connect it with the monuments that were to be found at the British Museum, and by that means they would enjoy the literature much more, and would find the monuments more useful than they were at present. In his next and concluding lecture he would deal with the problem of Mycenæ in connexion with certain other remains which had been found elsewhere, and which seemed to be of the same period or a little later.

The Hon. Auberon Herbert, in proposing a vote of thanks to the lecturer, said they owed a very great deal to those teachers at the present day who were leading them to the knowledge of art in this country. Their very great ignorance of art had been, he thought, a great loss to them as a nation; it was perhaps the simplest and widest of man's happiness in every section of society which might be derived from the pursuit of art, and nothing had been helping them more in its cultivation than public lectures on its history. He did not think the English as a nation were inartistic, though he knew it was generally supposed so by Continental nations, who, however, fully believed that the English were not utterly wanting in the recognition of that which was beautiful. Although he admitted as regarded art-culture that they were behind other countries, yet this one great quality of beauty belonged to them, and if they were true to themselves they would be able to recognise and reproduce that beauty more successfully than other nations. The strong love of the beautiful was exemplified in the way Englishmen took long walks into the country in order to enjoy fine scenery, and also by the number of schools of landscape-painting which were now so prevalent, showing that they were beginning at the right end for the love and enjoyment of all that was beautiful in nature. If they were simple in their lives, this would in time bear its own fruit. He did not believe that a nation ever could really reproduce what was beautiful, or that it could be artistic in the highest sense if it was not to a certain extent occupied with high and simple thoughts. If they were altogether under the influence of passing fashions, if they fell into the habit of copying, or became conventional, he did not believe they could ever achieve anything great in the reproduction of beauty; but if they were content to be true to themselves and follow out the line of their own existence, then he believed that gradually they would show themselves not altogether degenerate successors of those who had produced all that was beautiful in art.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

SENTIMENTS ON WINDOWS.

The opening by which the most glorious of material guests,—light,—enters our abodes is their most interesting feature, and should be the chief vehicle of beauty and expression. Its importance in the Gothic system I need not assert: the long walls of glazed tracery of the Mediæval cathedrals were triumphs of structural art and science, while the great, brilliantly-painted wheel-windows of the transept ends, and the colossal chancel windows were, more especially as interior features, among the most glorious works of man on the earth. The window is equally important in our Anglo-Classic style, and should be the central feature, indeed, round which as its nucleus all its other elements should grow, and with which they should be brought into harmony. They must be made to give place to the window, not the window to them; and no style could suffer in accommodating itself to the reception of the window; a feature that is susceptible of such refined and elevated treatment as to render it a worthy element of the purest and loftiest development of architecture. No baserelief or niche could be as effective in doing away with deadness, flatness, or the appearance of unreality in a wall, and investing it with human interest, as the window. The window admits the mind of the observer, as it were, to the human life within; which suggests the associations that, in southern climates, attach to it, of romance, Provençal song, and minstrelsy. Important as the eye is to the human face, the chief index, as the poet Shenstone expresses it, of temper, understanding, health, and love, it is scarcely more important to the countenance than the window is to the English character of a building.

The window is a feature the beauty of which nature has more to do with than with that of any other. She bestows the charm of light and shade everywhere else, but on the window she projects herself. Through its medium sun and sky, and all objects around, contribute to the adornment of architecture, and give it a species of beauty to which there is nothing analogous in the other arts of form. Windows, by their reflected rays, and ever-changing moods, seem possessed of intelligence and feeling, that invest the building they adorn with the interest of a living creature. I have always felt that there was no better way of dignifying an entrance doorway of any kind than by marrying it to the window, and giving it, so to say, a pair of crystal wings.

The window is susceptible of the minutest sculptural decoration, applied to jambs or reveals, and cannot be invested with too much dignity. The chief employment of precious marbles, or, in humbler buildings, of coloured and moulded brick, should be to intensify the artistic life and beauty of the window.

Though windows have no business under a portico, as they, so placed, convict it of obstructing the light, yet they will harmonise with, and prove themselves worthy of, any situation, however classical. The greatest mistake made by the architects of the Neo-Greek period was the supposing the window was too homely for introduction to Greek architecture, a mistake to which we owe a great number of buildings which may be said to be stone-blind, and which are as deficient of architectural beauty, by omission of the windows, as blind people must necessarily be of human beauty.

I mention this because, though the window, in some branches of architecture, more particularly, I think, the commercial branch, is now fully acknowledged as an architectural feature, fully admitted with all honours into decorative architecture, and the isolated "hole-in-the-wall" character of windows is disappearing, there is still proneness among architects to omit the window as unworthy of a place in grand architecture, and to bring in the light from above. This is, of course, needful in some buildings.

St. George's Hall, Liverpool, which is planned for the exclusion of the window on the principal fronts, may be said to have an English side and a Greek side. The latter repudiates the window, which has taken refuge at the less classic side of the building, the west or back. Now, such treatment of the window is equivalent to the assertion that Græco-Roman architecture is unfit for our uses, and that such pure phase of architecture has no business in this country. But the west side of the same building proves that windows on the east, or Greek side, would

have Anglicised it, and increased its beauty and harmony. The west windows, it is true, are within a portico or loggia, but it is roofless. The windows flanking the portico of the west front of St. Paul's Cathedral, while they stamp it as English, and add to the interest of the entire façade, detract nothing from its columnar grandeur. In that front, as in many others, the windows have a spiritualising power, and are one of the chief sources of beauty.

Our plate glass gives us, I conceive, an immense advantage over ancient architects. Had Pericles possessed such a material it would, perhaps, have modified the design of the Parthenon. The Roman Emperors Augustus and Hadrian, I fancy, would have given a king's ransom for a few of our colossal sheets of it. With such a beautiful substance an architect of discernment could get light almost anywhere through a façade, without disfiguring it, even if compelled to pierce its frieze and make glass metopes. With such a substance mezzanine windows become ornamental panels. It might be introduced in many places for which it has never been dreamt of,—the background of a niche, square on plan, for instance, by which the statue would be seen from within as well as from without.

The opening through which light is admitted one would expect generally to assume more elegant, and a greater variety of forms, in our buildings than it does; and it cannot but appear strange that the circle, so beautiful in churches, is not chosen for palaces and mansions, and wherever beauty is an object. A straight-sided and square-bottomed opening, for egress and ingress of human beings, is necessary. But light does not require this, and its ethereal nature dictates the most simple and elegant form of opening, while the circle or semicircle seems the most natural form through which to observe the landscape. Theoretically the circle is the true form for a window as it is of a picture; for it is a circular portion of nature's face we always see.

One of the best features of the Gothic style is that, in the formation of the window, fancy is at liberty to run riot and revel to its full content. But the Classic window may be as beautiful, if not so fanciful, as the Gothic. It has, I conceive, been kept in its infancy by the difficulty of designing geometric tracery without sliding into Gothic character, and by a prevailing impression that tracery is exclusively Gothic. But, save cusping, geometric tracery is surely at home anywhere. The Saracenic architects filled in their lattices with a beautiful maze of such tracery, which is applicable to any style, and might be executed by perforating the material. The Sicilian and Venetian Gothic windows offer valuable hints for the treatment of ours. But there are good lessons to be learned on this subject at home from the square-headed Tudor and Elizabethan windows, and bay and oriel windows. They suggest the kind of filling up that I contend for; and that division into two or three parts by mullions or slender shafts which, I believe, are indispensable features, the apple of the eye of any window, could not be out of keeping with the purest Classic.

It certainly adds nothing to the beauty of an exterior, whether palace or cottage, to form the window of one sheet of glass, or of very large squares; and it as certainly adds nothing to the pleasantness of a sitting-room, but, on the contrary, gives it a very uncomfortable air. A space of 24 in. between two mullions, or the width of a person standing opposite to it, seems sufficient. I believe the larger sheets of plate-glass would be employed to more ornamental purpose in mirrors, and in glass cases, shop-fronts, &c.

But if vertical divisions were inadmissible, there is nothing to forbid a beautiful tracery head, either in a square or a round-headed window. Nor is there any reason why windows should not be different in design from each other, as in Gothic, merely preserving a family resemblance; nor why stained glass should not be employed in their decoration. It would not be necessary that every window in a room, or that the whole of a window, should be ornamented; that would depend entirely upon circumstances. Supposing, for instance, there were windows on one side of a room, and central folding-doors on the opposite one, the middle window might be a painted one; or a Venetian window of plain glass might come in between two painted ones, which would have the desirable effect of concentrating the main light. Or, again, the heads of arched windows might be filled in with a differently-coloured glass; or else the narrow lateral openings of a Venetian window might have painted, and the central one plain, glass. It should be borne in mind that, in a country residence generally, perfectly plain windows, looking out from the drawing or dining room, are so many fine, ever-changing landscapes, by a *very eminent artist*.

I have already referred to the Elizabethan bay and oriel windows, as furnishing hints: but since they administer to pleasure and cheerfulness, by admitting a more extended view from the house, and a gleam of sunshine into apartments in positions in which it would be impossible otherwise to obtain it, the style would be deficient in scope if it could not clothe them with appropriate beauty. But these and all kinds of projecting windows,—circular, polygonal, triangular, or mixed,—may be made as agreeable and harmonious as a portico or porch.

A word about shop windows: the chief defect of these is that they give us rather too much of a good thing under the circumstances, with heavy masonic features above them. Some large fronts I have noticed in our large towns are one entire window, the entrance-door being merely a hinged panel in the centre of the length.

There is another species of window, the hypæthral, by which I mean all kinds of lights piercing a building or apartment from above, horizontal, inclined, curvilinear, vertical; and, notwithstanding what I have said against the omission of wall-windows, I think these hypæthral ones might be advantageously resorted to for schools and collegiate buildings, and even for city churches, for their exclusion of noise from without. The Madeleine at Paris offers an admirable example of the fine effect attainable by this mode of lighting, in which the glazed aperture is susceptible of a great variety of beautiful forms, dispositions, and kinds of embellishment; and of being rendered the chief feature in any species of ceiling, whether flat, cylindrical, spherical, or mixed, or formed on the clearstory principle of the Greeks. As regards interior effect, this mode of admitting light aided by stained glass leaves nothing to be desired.

Samuel Huggins.

RECENT DISCOVERIES: ST. ALBAN'S.

From Mr. J. Chapple's paper,* entitled "A few Remarks on the Recent Discoveries in and about St. Alban's Abbey," we extract what he said as to:—

1. *The South-west Angle of the Buildings.*—In anticipation of the repairs to the nave, it became necessary to excavate the earth on the outside of the south wall, in order to ascertain the state of the foundations and the amount of resistance which they were likely to offer in abutment to the shoring. The bases and parts of the shafts of five responds were discovered built against the south wall, showing the position of the forensic or outer parlour. These bases have been preserved, and although new buttresses are now being erected in immediate proximity, every facility will be given for examination. The foundations of the south-western tower, which was commenced about A.D. 1208, by Abbot John de Cella, have been laid open. It appears that John de Cella's successor, Trumpington, although he continued the building of the nave, stopped short in the erection of the western towers. The original scheme for the south-west tower was only carried so far as putting in foundations, and completion in an altered form of the piers and arch leading from the tower to the south aisle of the nave. This arch was afterwards made use of as an entrance from the nave to the forensic parlour. The height where the one abbot ceased to build and his successor recommenced is clearly defined in the work.

2. *The Narthex and West Porch.* — The Restoration Committee has decided to expose the buried works of Abbot John de Cella to view. Therefore the western bay of the nave and aisles will be excavated to a depth of about 3 ft., and steps put to lead to the higher level. The floor of the great western porch, where the sedilia and bases, for a period of four centuries, have been buried, will also be lowered. John de Cella's scheme was a grand and comprehensive one,—no less than the rebuilding of the west front, with three porches and two great towers; also the rebuilding of the nave and aisles. For this purpose the Norman work of Paul de Caen, at the west end, was entirely destroyed except the foundations, and the rebuilding commenced in the Early English style. It had been the intention of John de Cella to vault this portion of the building, and add flying buttresses to support the walls, but the work ceased under his hands, and his successor completed in a less costly way what had been so grandly designed, and up to a certain point so artistically executed.

3. *The Nave Floor.*—In excavating the nave floor for examination of foundations of the south piers, two mutilated stone coffins were found, the upper edges of which were at a depth of 3 ft. from the surface. Fragments of tiles were also turned up occasionally, showing the patterns used in that locality.

4. *The Chapter-house.*—In August last an important discovery was made while laying down gas-mains in the public way on the south side of the south transept. A trench was excavated from east to west throughout the whole length of the site of the destroyed Norman chapter-house. On the north side of this building, against the south wall of the slype or locutory, was found a stone seat, corresponding in position to a similar one in the slype. The north-west angle respond of the chapter-house was also laid bare. The west wall was followed for about 7 ft., and another respond found at an interval of 4 ft. 6 in. from the first mentioned. The architecture is elaborate, with zig-zag beaded mouldings. The internal length of the chapter-house was 95 ft.; the width must remain unknown until excavations can be made in the shrubbery adjoining. No doubt a perfect mine of wealth lies under the surface. When the destruction of the buildings took place, the *débris* covered the ground to a depth of several feet; from this came about the fortunate preservation of foundations, with moulded bases and parts of columns. This chapter-house, with the slype adjoining, was, according to Dr. Nicholson, the work of Robert de Gorham, eighteenth abbot (1151-66).

5. *The De la Mare Brass.*—In the Dom Kirche in Lübeck is a brass of about twice the size of that to the memory of Abbot Thomas de la Mare, now in the Wallingford Chantry, between the nave and aisle of the choir at St. Alban's. In the lower border is a representation of the legend of St. Dunstan, and the similarity of the engraving generally to the one here is very striking. It has been stated that the artist was lent from Bruges, and that he travelled to Lübeck and to St. Alban's to engrave these brasses.

A paper, by the Rev. H. Fowler, on "The Origin of the Cell of Tynemouth, and its Second Founder," was followed by one by Mr. R. R. Lloyd on "A Mediæval Pilgrimage to St. Alban's Abbey."

* Read at a meeting of the St. Alban's Architectural and Archæological Society, on the 11th instant.

A SCHEME OF CATHEDRAL RESTORATION.

At the meeting of the St. Alban's Architectural and Archæological Society already mentioned,

The Rev. O. W. Davys read a paper called "A Glance at the Restoration Works in St. Alban's Cathedral, finished (1), in progress (2), and to come (3)."

Of this we give the essence.

1. *Works finished.*—At a cost of some 20,000*l.* the church has been made structurally sound in its future cathedral portion, as far west as the ancient rood-screen. The roofs of presbytery and transepts have still to be raised to their ancient pitch, but this can be done at any time, without injury to the completed work within. The lady-chapel is nearly ready to be thrown open to the rest of the structure, whenever the pathway, which has hitherto cut it off, can be carried round the outside of the building. On the enthronement of the bishop a throne and choir fittings had to be provided. The temporary stalls are placed upon the ancient lines. When permanent stalls can be provided (which I trust may speedily be done), their form and appropriation will have to be discussed. Perhaps as canopies are so expensive it might be sufficient to provide them for the return stalls, and those terminating the principal lines of the western piers of the tower, only using arcading behind the others. When the nave is restored to the parishioners as their parish church, I trust that all appropriations of stalls, except to the members of the cathedral and choral establishment, may cease. Also, that stalls at any time left unoccupied by those in surplices may be used, as is nearly the universal custom in cathedrals, by male worshippers only.

2. *Works in Progress.*—The tide of repair has now left the eastern portion of the building, and

ne to the nave. The Early English bays of illiam de Trumpington on the south side were nounced some time ago to be in a dangerous ndition, owing in large part to the loss of those tural buttresses which the cloister and adjacent ildings had originally provided. The work to is part of the nave is swallowing up funds hich were urgently needed to advance the thedral arrangements. There is, however, no ternative but to save in its integrity the magni- ent nave, and restore it to serve as the church the parishioners of the cathedral parish. No e who attended the services which till recently re held in that nave, failed to be impressed th the fact that of all great naves this is one the best to see and hear in. I trust nothing ay be done which may hereafter be open to estion, or may preclude the idea of the resto- tion of such of the buildings adjacent to the ve as may be practicable for the use of the thedral. I trust, for instance, that windows ill not be inserted where none existed before or, however we may admire the generosity of talented proposer, we should then leave the rinciple of repair, which has hitherto guided us, d lay ourselves open to attack from the anti- storation party. Buildings, for the use of rsons, whether members of a college or other- ise, required for the services of the cathedral, ill have to be provided somewhere, and it will injudicious to exclude from such a use the ncient, if not the only available site.

3. *Works to come.*—The works to come are of character so important that we can hardly ope to accomplish them during this generation. athedrals took generations to build, and even in ese days of hurry the longest of them may well ke generations completely to restore. It seems be our duty to work on by the guidance of a rfect plan, making every step a step on the way wards the completion of that group of designs, which we have evidence in the building and s surroundings. We have in the present urch the designs of the great architects of bbots Paul, John de Cella, and (say) John de rtford, and of the lady-chapel of Hugo de versden. The first designed and apparently bished a vast Norman church, the largest in ngland; the second, as many Early English rchitects did, endeavoured to add to a Norman ve a western front of extraordinary beauty; e third, as was the case elsewhere, planned the moval of the Norman apse and sanctuary, and e substitution of richer work of his own day. complete St. Alban's, then, you must repair d complete the designs of these architects. e work of the first is now nearly all satisfac- rily repaired. The work of the third needs rther external reparation. As for the western ont of the second,—one of the most remark- ble designs in the kingdom,—we can hardly ope at present to get beyond the three western rtals,—a feature common in France, but, I lieve, peculiar to St. Alban's in England. I ve heard it said, that though St. Alban's, from s vast size, is a very grand building, its form is markably ugly. We certainly have not the mmetrical beauty here of Wells or Lichfield, ith three beautifully-balanced towers and spires spectively. Neither have we another Salis- ry, the work generally of one architect, ough crowned with the matchless spire of nother. We have a building more like Win- hester, vast, long, and unrelieved; though our wer is the higher of the two, and our site on a hill side, not deep in a valley. But those ho call St. Alban's ugly must remember that e have now to look upon a very incomplete ilding, with sunken roofs, the wreck of a west ont, and a presbytery,—the lofty clearstory of hich looks bare and gaunt without its flying ttresses. With restored roofs, and a completed est front, and these additions eastward, we ould have a cathedral second to none in randeur, dignity, and beauty. I think, too, I ould vote for the restoration of the short lead pire peculiar to this district which till lately rowned the central tower: we have plenty of ngth at St. Alban's, what we want is pro- rtionate height, and we should make every fort to obtain it. It seems the province of an chitectural society to sketch out suggestions us, and present them for discussion, so as to y down a plan which may in the course of me be carried out. We wish for a scheme hich, as a repair and completion of ancient esigns, we can defend against those anti- storationists who would let ancient buildings umble and fall rather than restore them, how- ver tenderly, to the condition which their first uilders designed for them. . . . I trust that it may not be long before St. Alban's is able to put on a distinctly cathedral character. Nothing will be grander than the restored choir. At present, looking above its temporary fittings, the structure, with its noble roofs of ancient decoration, is imposing in the extreme. I trust that the grand organ, now useless for the services, may be divided and arranged over each side of the ante-choir, so as to serve for choir and nave services. I trust also that a cathedral choir may be trained, provided, and paid to maintain, both on Sunday and week-days, that service for which our English cathedrals are so justly renowned. We want a real cathedral, with services of dignity and beauty, even if we have annually to ask the diocese to maintain them. We want a cathedral, the centre of its life and work,—not a mere parish church, however grand its dimensions, with a bishop's throne in it.

TREES IN KENSINGTON GARDENS.

The decayed condition of these noble and ancient forest glades, when contrasted with the forestry and the beautiful hortulan borders of the adjacent park, shows at once an utter neglect of public taste and feeling, as it regards the invaluable freedom of access to so extensive a scope of park and gardens, conjoined in an open expanse, and exceeding 800 acres. The sunken boundary of the ha-ha is unobtrusive and hardly perceptible; but the order and trim condition of Hyde Park, with its tasteful hortulan borders, its accurately cut edgings, and its noble growth of expansive foresters, at once demonstrates a careful superintendence; whilst the other, from the decaying palace to the park boundary, discloses only utter somnolence, waste, and neglect.

Originally there were three glades running from the Round Pond in a western, north-western, and south-western, direction; these, as laid out by Repton, still exist, and present beautiful, healthful, and effective openings from the old palace, which was founded on the western wall; but in the intervals, and upon all the open spaces of the whole area, stand foresters of nearly 200 years' growth, as at first planted; now of immense altitude, many of them bare poles, many dead at the top and rampiked, and nearly all in deadly conflict for freedom of "branchage."

When we examine the position and space left for each tree, we find 8 ft. and 10 ft. to be the ordinary interval; but in many instances these giant-trees stand at intervals of only 5 ft., 4 ft., or even 3 ft. apart! In very many cases the tops are dead and rampiked, but in most the stems grow up in nearly bare poles. How can it be otherwise when there is no space for lateral expansion? The branches interlace and conflict for freedom, which is, in fact, unattainable in a space so constricted.

It is now certainly too late to redress the evil of too close plantation, but still by cutting away damaged and deformed trees, room might be secured for lateral expansion of the survivors, and thus the aspect of a forest of masts would be less repulsive, whilst the woodland would be more agreeable for light and shade, and in a few seasons more naturally branched. Of the standing timber, a full fourth part might be cut down, which would amply repay expenses of improvements, and at the same time much benefit ramblers who, when frequenting the woods, are much incommoded by the plashy nature of the subsoil.

Is there no authority to inspect and rectify the defaults and growing decay of timber trees in Kensington-gardens? In Hyde Park there is a ranger, with a mansion and twenty acres inclosed; and that in the most valued centre; but there are also here various offices, repositories, stores, and cottages, together with a guardhouse, with an accumulated population, annually on the increase. Such is the freedom of open park and public liberties.

As this is the season for clearing off and cutting down timber trees, this notice of waste and decay *in extenso* throughout the foresters is given before they shed their last October leaves; and that remedial measures be taken is the hope of

T. H. H.

PLASTER OF PARIS.

Sir,—Can any of your readers inform us what mixture will dissolve or render soluble Plaster of Paris after it has once become set? Any information on the subject will be esteemed by

B. B. B.

AN ART GALLERY FOR WARRINGTON.

HONOURS TO A SCULPTOR.

On the 4th inst. a new art gallery, provided partly by subscription and partly by a grant from the funds of the borough, was opened with some ceremony at Warrington.

The gallery takes the form of an additional wing to the free museum and library, Lord Winmarleigh giving the site. Before the building was completed the Corporation were fortunate enough to secure several valuable gifts of art-treasures. The gallery is, we understand, mainly the outcome of a desire by the inhabitants of Warrington to do honour to their townsman, Mr. Warrington Wood, the sculptor, whose career is an instructive one. Mr. John Warrington Wood began life as a stonemason under his father, who for many years was a trustworthy official in the service of the Corporation. Young Mr. Wood, however, began in early life to show signs of artistic talent. He was fortunate enough to find kind and generous patrons. A few years ago, at the instigation of Lord Winmarleigh, a public movement was set on foot to recognise Mr. Wood's ability as a sculptor, and at the same time to commission him to execute a work of art which would reflect honour to the artist himself and also upon his native town. This was done, and at a cost of a thousand guineas, Mr. Wood has executed a colossal statue of "St. Michael overcoming Satan." The figure was cut from a block of Carrara marble, weighing fifteen tons, and, when sent to Warrington, it was found that no public building was sufficiently large in the town to receive the statue, and accordingly the art-gallery scheme, just consummated, was set on foot, and now the town possesses a building specially adapted to the reception of works of art.

The building has cost 3,000*l.*, of which 2,000*l.* have been publicly subscribed, the chief room being one of fine proportions, and somewhat similar in construction to the large room of the Walker Art Gallery at Liverpool. The principal object of attraction is, of course, Mr. Wood's "St. Michael overcoming Satan." St. Michael bears in his hand a flaming sword, and with the left hand holds the vanquished Satan, who crouches at the victor's feet. This is pronounced to be Mr. Wood's best work. His first work, an "Apollo Belvedere," which he presented to a friend, his "Sisters of Bethany" (executed for Mr. S. Rigby), his statue of "Elijah" (lent by Mr. W. Long), busts of local patrons, a finely-executed statue of "Rebecca," and other of his works, are exhibited. One of the first commissions was a bust of Mr. John Bright, M.P., which had been executed for Mr. John Crosfield, who intended it for presentation to President Lincoln, but the bust arrived in Liverpool from Rome the day the President was assassinated. Mr. Wood will shortly return to Rome, taking with him a number of commissions, amongst them being the statue of the Mayor of Liverpool, and busts of Sir Joseph Heron for the Manchester Townhall, Mr. Glazebrook Rylands, and Mr. Holbrook Gaskell, of Liverpool.

Another handsome gift to the Warrington Art Gallery has been the Robson collection. It consists chiefly of the works of the late Mr. Thomas Robson, a Warringtonian, together with several valuable pictures by the old masters. These are stated to include a veritable Titian, a Correggio, a Murillo, a Gainsborough, and a Reynolds. The whole has been renovated at a cost of 200*l.*, and presented to the gallery by Mr. Robson, of Lynn, the artist's brother.

The Cyfarthfa Ironworks.—A Merthyr workman having addressed a letter to Mr. Robert Crawshay upon a matter of business, took the opportunity of asking once more whether there was any hope of a resumption of activity at the vast ironworks at Cyfarthfa, and Mr. Crawshay has replied:—

"Trade is worse than ever it was, and I see not the slightest chance of Cyfarthfa starting again. I believe if ever it does start it will be under different circumstances to the present, as it will require a large sum to be laid out in improvements, such as making steel rails, &c. I am too near my grave to think of doing anything of the sort, and I think so badly of trade altogether that I have no wish to see my sons remain in it. I am feeling very poorly, and do not think I can possibly live very long, and if I am able I shall sell the works before I die. There is nothing now to bind me to them, for I have been estranged from them by the conduct of the men. I always hoped and expected to die with the works going, and the same feeling amongst the men for their employer; but things have changed, and all is different, and I go to my grave feeling I am a perfect stranger, as all my old men are gone, or nearly so."

CHIME CLOCK AND CARILLONS, MANCHESTER TOWN-HALL.

The great chime-clock and carillons for the Manchester Town-hall, which have been manufactured by Messrs. Gillett & Bland, of Croydon, are not yet fixed in the tower, owing to the delay in hanging the bells, as it was impossible to commence the work of fixing the machinery until all the bells were placed in position. The clock is constructed to strike the hours upon the great bell, of 7 tons, in the key of G, and to chime the four quarters on ten bells, the time to be shown upon the four illuminated dials of 16 ft. in diameter. The main frame is on the horizontal plan, of solid cast iron, 12 ft. long, 4 ft. 6 in. wide, and 4 ft. 2 in. high, and weighs 1¼ ton. All the wheels are of gun-metal, turned, cut, and polished. The main wheels of the striking and quarters are 2 ft. 6 in. diameter, and the main wheel of the going part is 2 ft. in diameter, all the rest of the wheels being in due proportion. The bosses in which the pivots run are also of gun-metal, screwed into the frames. There are engraved and silvered dials on the clock, showing hours, minutes, and seconds, for the purpose of regulating the outer hand and for taking observations. The pendulum is a compensated one, made of zinc and iron tubes to beat two seconds of time, with a cast-iron cylindrical bob of about 6 cwt., which is to be suspended from a cast-iron bracket fixed on a stone corbel built into the wall. The barrels are made of cast-iron, turned and grooved. From them will be suspended the weights, by patent steel lines, weighing over 2½ tons, which will drive the clock. The striking cams and levers are all hard-steel faced. The escapement is of the kind known as the "double three-legged gravity," which is said to be superior to all other kinds for perfect timekeeping. There is an automatic gas apparatus fitted to the clock for turning the gas up and down, and so contrived as to suit all seasons of the year, providing for long and short days, similar to a perpetual calendar, so that no attendance whatever will be required to turn the gas on and off, a considerable saving in time and gas being thus effected. Messrs. Gillett & Bland were the inventors of this apparatus, which they first applied to the Bradford Town-hall clock. The chime part of the clock is constructed on a new principle, so that the changes for the quarters can be altered at any time. Provision will be made for connecting the clock with the electric current for registering Greenwich mean time. The hour-bell G will be the largest struck upon by a clock in the United Kingdom, excepting the one at Westminster Palace, which was originally struck upon by a hammer of 8 cwt., until the bell was cracked, since when the hammer has been reduced to 4 cwt. As the hammer which will strike upon the Town-hall bell will be heavier than this, and as the quarter bells are also much heavier than those at Westminster, the hours and quarters will be heard at a much greater distance. The other two great bells in this country, at Oxford and York, are struck by hand, and not by the clock. The carillon machine, which is constructed on the makers' patented system, will play thirty-one tunes on twenty-one bells, weighing altogether about 32 tons, or double the weight of those at Worcester Cathedral and Bradford Town-hall.

MANUFACTURE OF IRON AND STEEL BY THE DIRECT PROCESS.

At the Newcastle meeting of the Iron and Steel Institute the other day, the president, Dr. Siemens, read "Some further remarks regarding the production of iron and steel by direct process." He said the practical objections to the direct process, as practised in former days, and as still used to a limited extent in the United States of America and in some European countries, were that:—1. Very rich ores only were applicable, of which about one-half was converted into iron, the remainder being lost in forming slag. 2. The fuel used in charcoal, of which between three and four tons were used in producing one ton of hammered blooms. 3. Expenditure of labour was great, being at the rate of thirty-three men, working twelve hours, in producing one ton of metal. Iron produced by direct process in the Catelon forge was therefore expensive iron, and could not compete with iron produced by modern processes except for special purposes, such as furnishing melting material for the tool-steel melter. But, it might be asked, could the advantages of the direct process not be combined with those of modern appliances for the production of pure and intense heats, and for dealing with materials in large masses, without expenditure of manual labour, and could not chemistry help us to larger yields and the faculty of using comparatively poor and impure ores? A careful consideration of these questions led him to the conclusion, some years ago, that here was a promising field for the experimental metallurgist, and that he possessed some advantage over others in the use of the regenerative gas furnace as a means of producing the requisite quality of heat without the use of charcoal and blowing apparatus. He engaged, accordingly, upon a series of experimental researches at his ample steel works, at Birmingham, and in 1873 he had the honour of submitting the first fruits of these inquiries to the Iron and Steel Institute, in a paper entitled "On the Manufacture of Iron and Steel by Direct Process." Encouraged by the results he had then obtained, he ventured with some others upon some larger applications, the principal one of which had been one at Towcester, in Northamptonshire. If viewed by the light of present experience, it would have been wiser to have fixed upon another locality with fuel, skilled labour, and better ores within easy reach; but in extenuation of the error committed, it might be urged that the site was fixed by force of circumstances rather than by selection, the chief temptation being an ample supply of small Northamptonshire ore at a very low cost. It was, however, soon discovered that this ore, although capable of producing iron of good quality, was too poor and irregular in quality to yield commercial results unless it was mixed with an equal weight of rich ore, such as Potery mine, Spanish ore, or Rolls cale, all of which, as well as the fuel, were expensive at Towcester, owing to high rates of carriage. It was in consequence of these untoward circumstances that the works at Towcester had not been completed by the addition of rolling-mills, the intention being to transfer the special machinery ultimately to existing ironworks when the process had been sufficiently matured for that purpose. The leading idea which guided him in these experiments was to operate upon such mixtures of ores, fluxes, and reducing agents as would, under the influence of intense heat, resolve themselves forthwith into metallic iron and a fluid cinder, differing essentially from the methods pursued by Chenat, Blair, and others, who prepared spongy metal in the first place by a slow process which was condensed into malleable iron or steel by after processes, but assimilating to some extent to the process first proposed by Mr. Wm. Clay.

THE HIGH-ART LOVER AND HIS ARTIST.

HENNING'S MODELS OF THE "ELGIN MARBLES."

Your readers must have been amused on reading Mr. J. Thomson's letter in your issue of the 6th inst., and his narrative of the angry artist's ebullition of temper on seeing his models laid down on the floor of the British Museum, as told by the aged custodian, who, I think, must have been a wag in his way, and invented a fable to amuse your correspondent.

Perhaps the following information may interest him, and prevent a most unlikely action of the talented sculptor from gaining currency.

Fully forty-five years ago I was on terms of intimacy with a young artist friend, now dead, and was very often in his father's house, who was a native of the same town as Henning (Paisley), and his friend from boyhood. He had a set of the friezes presented to him by Henning.

He told me,—and I have heard him repeat it frequently,—that Henning cut his models in *slate* during his leisure, for he was working as a stone-carver in London at the time.

This material gave him the opportunity of producing the sharpness of outline and delicacy of finish that give such a charm to his work, and that could not have been got had he modelled in *wax*.

I may further mention that they were published by subscription. I think the price was 15*l.* 15*s.*

My father-in-law,—the late M. A. Nicholson, architect, London,—was a subscriber, and his set is still in possession of his daughter, Mrs. Thomson, now widow of the late Alexander Thomson, Glasgow, known as "The Greek Thomson."

John Baird, F.R.I.B.A.

ARCHITECT'S CLAIM FOR PLANS.

STEWART *v.* NEWBURY.

This case was heard on the 29th ult. in the Brentford County Court. The plaintiff is of the firm of Stewart & Robinson, architects, Borough, Southwark, and he brought an action against the defendant, a gentleman residing in the Mall, Chiswick, for the sum of 26*l.* 16*s.* 6*d.* for professional services. The case had been sent down for trial from a superior Court (Exchequer Division).

Mr. J. E. Palmer (instructed by Mr. Durrant) appeared for the plaintiff, and Mr. Woodbridge for the defendant.

Defendant held the lease of some cottages at Chiswick and, intending to pull them down and build large villas on the ground, he asked the plaintiffs to prepare some plans to submit to the landlord. It appeared that Mr. Stewart had been preparing plans for another gentleman, and at the defendant's request he brought these plans home with him one evening, and in the presence of Miss Chatter, his sister-in-law, he handed the plans over to the defendant who showed them to his friends. In consequence of the defendant's landlord wanting an increased rental, he did not proceed with the proposed villas, and therefore contended that he did not require the plans. Plaintiff, however, stated that his services had been rendered, and that 2½ per cent. he had charged on the value of the building was a fair and reasonable charge according to the Institute of Architects. It appeared that the plaintiff was a tenant of the defendant, and that the latter put a distress into the house for rent.

Mr. Woodbridge contended that what the plaintiff had done for the defendant was done in a friendly way, and not to be charged for, and the plaintiff never would have charged the defendant anything for the plans had not the latter been compelled to put a distress into the plaintiff's house for rent.

The Judge found for the plaintiff, in the sum of 12*l.* 12*s.*, which sum he considered was due for the preparation of the plans.

CASES UNDER THE METROPOLITAN BUILDING ACT.

WHAT ARE REPAIRS?

Legg v. *Pritchard*.—At the Worship-street Police Court, before Mr. Hannay, Mr. Pritchard, builder, of Paul-street, Finsbury, was summoned by Mr. Legg, district surveyor for West Hackney, for not having given notice under section 38 of the Building Act. The defendant had been engaged in stripping and making good the defective slating, boarding, and battening, re-using the old slates, and making good the deficiency with new to the roof of a house in Stamford Hill, and had refused to give notice to the district surveyor on the ground that the works came within the exception as to repairs in Clause 9 of the Building Act.

Mr. Legg contended that the roof, having been stripped, and boarding substituted for battening, the defendant might have infringed the 19th section of the Act by covering it with some combustible material, and that, therefore, he was entitled to a notice of the intended work as an alteration.

Mr. Pritchard's solicitor contended that if the Act should be infringed in the covering of the roof, the builder would be liable to penalties under the Act, but that he was not bound to give notice of what was in reality a necessary repair within the meaning of the exception in clause 9 of the Act.

After hearing the evidence for the surveyor and without calling on the defendant for a reply the magistrate dismissed the summons with costs.

TREATMENT OF BUILDERS.

I do not think any other class of tradesmen are bound, hands and feet, as it were, by so many restrictions and conditions in the execution of their calling as contractors and builders; as a rule, I believe, they bear the shackles thus imposed on them in a very quiet and philosophical manner, accepting them as a requirement held and wielded by a body of honourable gentlemen who are therefore left entirely unfettered on their part in the several contracts. So far, then all is well, but I wish to draw attention to an abuse which I think only requires ventilation in your widely-read columns to at once receive correction in future; or perhaps some of the numerous readers of the *Builder* may know an antidote for the evil, which certainly bears unjustly on the building trade. I will quote two cases by way of illustration. The first is in Yorkshire, where contracts are let to each separate trade, whereby a building is carried out by as many contractors as there are different trades in it. The unfortunate victim here is the joiner, who finds to his sorrow that there is a shortness of funds of the owners from some

ise; the architect, to shield his client, withheld ails, and necessarily the joiner could not com- te and get a settlement, the delay eventually npelling him to ask for time from his creditors, ich was given. But such a case, I hold, should occur; details should have been furnished, d the owners must have raised the money: all uld then have been satisfactory. I grant ny things may arise about a building that y increase the cost above what was originally ended, but I think it hardly right that nocent persons should suffer for others' want of esight (if want of cash may be thus classed). The other case is about 100 miles from London, contractor there for a large building being ated with the same tactics. Details in this e for some trifling work in the contract, with- which the building will not be complete, are thheld, although numerous applications by ter, and also personally at the architect's office, ne thirty miles distant, have been made; thus contractor cannot demand a certificate, ther can he claim his balance, nearly 1,000*l.*, r charge interest thereon till it is paid I pre- ne, so that his capital is thus unproductive, ides the injury inflicted. JUSTITIA.

DICTIONARY OF ARCHITECTURE.

THE subscribers have just now received a nsiderable instalment of the "Dictionary," luding the letters M, N, and O, with title- ges, tables of contents, and so forth, for binding volumes of the work, and three volumes of strations. We will give some particulars on other occasion of the portion of the work now olished. Our present purpose is to mention efly the opportunity now afforded to members the profession and others to acquire the rk.

The committee, having a few copies available, er to new subscribers the whole of the text l illustrations of the Dictionary up to the ter P, as already issued to the present sub- ibers, and *the continuation as funds may per-* t, as fast as it can be produced, for twenty nneas in one payment, or spread over a limited iod, in instalments. There are only a few ies left, and the committee are pledged not at y time to allow the issue of copies at less than original subscription price, so as to guarantee subscribers against any depreciation in value. Arthur Cates, of 7, Whitehall-yard, kindly s as Honorary Secretary.

THE MASONS' STRIKE.

SIR,—So much misunderstanding appears to vail, on the part of architects and their nts as to the circumstances of this dispute, t I beg the favour of being allowed, through r columns, to repeat what no doubt to many your readers will be rather stale. Several ster builders have received letters from archi- ts to the following effect:—"The masons are a small body as compared to the building sans, and it would be much better to accede heir demands than to stop so many important ldings." But in thus writing it seems to be gotten that the masons made two demands, for a reduction in the hours of labour, and ther for a uniform rise of wages to 10d. per r, instead of 9d. It is obvious, and indeed erally admitted, that these changes could have been confined to masons, who of essity must work the same hours as brick- ers, &c.; and it was distinctly avowed that, he masons obtained a rise of wage, the car- ters were prepared immediately to strike for same.

The question, therefore, before the masters ,—a general reduction in the hours of labour an increase of 12½ per cent. in wages oughout the trade.

The Masons' Union sent a deputation to the ster builders to talk over the matters in dis- e, but the discussion turned very much on rules and practices of the Masons' Union. masters stated that there was a great erence in the skill and ability of masons, many of them, if unrestricted by their own s, could easily earn 10d., 11d., or even 1s. hour, whilst other masons were so unskilful dle that they were not worth half. What the answer of the union men? "Our prin- e is that the strong must support the weak," in other words, that the skilful and intel- t man must eke out his time so as not to ass the most unskilful and idle man on the work. And this principle has for some time past been most assiduously carried out, so that the cost of masons' labour has been brought to such a pitch as to defy all calculation of the most experienced estimators. I need hardly say that if such foolish, arbitrary, and immoral principles were made a part of the law of the land, a revolution would ensue.

During the last few days symptoms appear to show that many masons are dissatisfied. Two or three men at a time have been taken on at various jobs, and it is stated that the strike fund is very much lowered, while the demands on the same are very much on the increase, and that within the next week or two the strike may be at an end. There are vast numbers of masons unemployed in America, and it is only a question of cost as to getting them over. The masters have also letters from different parts of Germany from piece-master masons, who offer to bring over men and execute the stonework by contract; and in one way or another the master builders hope to bring about a reform of a system of rules which they believe to be a disgrace to the intelligence of the age, and at the same time to defeat demands which they know to be only a beginning of demands for a still further reduction in the hours of labour and a much larger increase in wages than is now sought to be enforced.

A MASTER BUILDER.

PROFESSIONAL QUERIES.

ONE of your experienced readers would confer a favour on a young architect by replying to the following, viz.:—Is an architect expected, and is it a part of his duty, to attend committee meetings at any moment and as often as called upon to do so without making any extra charge, no stipulations having been made beforehand that he would be required to do so? What is customary in this respect? And in the event of additional plans being required for sanction of Board of Works to permit proposed or parts of proposed alterations, after builder has signed contract, ought not the architect to be paid extra for same, having supplied such by special request from employer, after having declined to do so when applied to by builder for same? Employer being one of the legal profession prepared his own contract, and both parties entered into same without consulting architect, and without his having seen the said contract. In this instance who ought to pay for the plans, builder or employer? Or is it the duty of the architect to supply any and every drawing necessary in such a case without extra charge? Employer now declines to pay the extra charge.

JUSTITIA.

*** Architect is entitled to be paid extra. If the builder has contracted to obtain sanction of the Board, he should pay for the plans supplied for that purpose. If not, the employer should pay for them. The answer to the first question, as to committee meetings, would depend on circumstances.

NEW WATERWORKS.

Raphoe.—New waterworks here have been completed by the contractor, Mr. Oliphant, of Castlefin, under the superintendence of Mr. Henry Morrow, C.E., Lifford, and are stated to have proved in every way a complete success.

Lossiemouth.—New waterworks for Lossiemouth, N.B., were opened on the 29th ult. A local paper says:—Branderburgh being built on a rock, it was difficult to find a supply of water for the people who choose to take up their residence in the new and thriving village. The want of a good supply of water operated greatly against the extension of the town, and, in order to provide a supply, Lady Dunbar Brander, of Pitygaveny, the proprietress, sank a well, at a cost of 500*l.*, about half a mile from Branderburgh, in a plain some 200 ft. below the place where the reservoir now stands. After the well was built, fears were entertained by some as to whether the supply would be sufficient to meet the demand, and also whether the quality would satisfy, as the well is somewhat below the sea level and within a mile of the tide. Eminent engineers were employed to examine the subject, and after careful analyses of the water by chemists, and the supply the well yielded, it was deemed satisfactory in both respects. In the Branderburgh waterworks the reservoir, which is capable of containing 60,000 gallons of water, is placed on the top of the Coulard Hill, where water was not to be had. The cost to the ratepayers will not exceed 2*s.* per pound on the rental. The three villages of Lossiemouth, Branderburgh, and Stotfield are now supplied, each lying at equal distances from the reservoir.

Barnsley.—The proposed extension of the waterworks at Barnsley is exciting great opposition among a section of the townspeople. At a public meeting, held on the 1st inst., Mr. Councillor Marshall moved,—

"That this meeting enters its protests against the schemes for the extension of the waterworks, and for the town's improvement, which if carried into effect, must largely increase the present high rates, and must have an injurious effect on every trade carried on in the borough. And, in the present depressed state of trade, an attempt to obtain an Act of Parliament would be an unjustifiable act on the ratepayers."

He said that, from the published accounts of the borough up to the end of 1876, it appeared that the cost of the old waterworks was 35,000*l.*, and of the works at Ingbirchworth 107,000*l.* Since then another 1,000*l.* had been expended, which raised the total to 143,000*l.*; but this was not all. During the construction of the Ingbirchworth works, money had to be borrowed, from which for several years there was no income. Then, in the earlier years, they did not pay 3 per cent., and it was only in the last year that they paid five. During the construction of the works, the income from the water did not pay anything like the interest on the money borrowed, and they were obliged to subsidise it out of the District Rate to the extent of 24,000*l.*, so that the real cost of the works stood at 167,000*l.* The resolution was carried.

COATED IRON PIPES FOR WATER.

SIR,—In your impression of October 6th you gave an account of the meeting of the Health Department of the Social Science Congress at Aberdeen, and I noticed that Mr. J. Brown, Q.C., remarked with reference to pipes for conveying water, "he did not see why iron should not be used instead of lead." Mr. Baldwin Latham said,—"As to the use of iron pipes for conveying the water, they were too easily corroded, and if they were to have pure water, they must have something more durable. The best substitute, but an expensive one, was lead pipes lined with tin."

About twenty-four or twenty-five years ago, I carried out, under Mr. Rawlinson, the sanitary works of a town in the north of England, including the supply of water. In all the house-services executed by the Local Board of Health galvanised iron pipes were used, and I find from inquiry the other day that these are still in good working order. The iron pipes were strongly objected to at the time, and some of the owners of property, who preferred to do the work themselves, used lead pipes. These lead pipes in a great number of instances, where laid below the surface of the ground, have since been found corroded, and have been replaced by galvanised iron pipes.

This would tend to prove that iron pipes, when properly coated, are more durable than lead, and they have also the advantage of not bursting in frosty weather, whilst lead pipes occasion great trouble from this cause, and from corrosion.

In a house I occupied in Wales some time ago, I found the lead pipes corroded both inside and outside to such an extent as to make them useless for conveying water. I took all the old lead pipes up (they weighed over three-quarters of a ton), and substituted iron pipes.

Some engineers are greatly prejudiced against the use of anything but lead for the house service-pipes; but it is open to discussion whether properly-prepared and coated iron or steel pipes could not be used with greater economy, durability, and less risk to health. There is also a difficulty in fixing and keeping the waterway full bore in such a pliable substance as lead.

The improvements in the manufacturing of iron and steel, and the methods of coating so as to make them almost indestructible, lead me to the conviction that at some future date lead will be superseded by coated iron or steel pipes. The question at issue is,—Cannot pure water be conveyed in coated iron pipes as well as in the coated lead ones alluded to by Mr. Latham? The supplying of pure water by pipes being of the greatest importance, perhaps some of your numerous correspondents may be able to throw more light on the subject.

H. U. MCKIE.

New Building in Liverpool.—On the 10th Lord Shaftesbury formally opened the new premises of the Liverpool Young Men's Christian Association, which have been erected, at a cost of about 21,000*l.*, in Mount Pleasant, the street poetically lauded by Roscoe. The memorial stone was laid on the 2nd of March, 1875, by Mr. D. L. Moody, the Chicago revivalist. It was then estimated that the building would cost 16,500*l.*, towards which 9,000*l.* were in hand or promised. Thus the expense has exceeded the estimate by about 4,000*l.* or 5,000*l.*

CHURCH-BUILDING NEWS.

Bolton-upon-Swale. — For some time past various alterations, by way of modernising the chancel of the church of Bolton-upon-Swale, have been going on; and now they are being brought to a close. First, a chamber was made to receive the new organ. Then the flooring of the chancel has been raised, and laid with Minton's tiles, from a design of the architect, Mr. W. E. Nesfield. New and richly-carved seats for the choir have supplanted the former sittings; and an entirely new window, with rich tracery, has been put in. The subjects chosen represent "The Three Marys"—the birth, and some of the scenes in the life of the Saviour in which their love to Him was most conspicuously shown; the centre figure being that of the Crucifixion. The window contains three lights, and was supplied by Messrs. Heaton, Butler, & Bayne.

Sowerby Bridge. — Since the alteration and enlargement of Sowerby Bridge Church, it has presented an incongruous appearance, the nave having been handsomely decorated, while the chancel had bare walls. The chancel has now been decorated by Mr. Jonas Binns, of King Cross. Mr. Binns has finished the mural painting on the south wall of the chancel, representing the Lord's Supper. The following is a general description of the decorations:—The ground-work of the chancel-roof is painted a pale blue, with borders of light grey, the foliage between the borders being picked out in crimson, light brown and gold. The walls from the roof to the bottom of the windows are painted a warm drab, divided by rich borders in chocolate, lavender, crimson, pale buff, and gold. The spaces between the borders are filled in with stencilled diaper work, in chocolate and gold. On the south wall, between the windows, is painted in monotone the subject of the Lord's Supper. The stonework in the windows and the organ arch is left its natural colour, the crowns of the carved heads being picked out with gold.

Feniton.—Feniton Church, dedicated to St. Andrew, and built in the fifteenth century, is about to be restored; indeed, the work of renovation has already begun. Plans were prepared by Mr. R. Medley Fulford, architect, Exeter, some little time ago; and funds are being raised for carrying on the work. This embraces the removal of the unsightly gallery and pen-like pews, the insertion of new east and other windows, and the addition of a new vestry. Feniton Church is celebrated for its rich parclose and rood screens, and these are to be carefully restored and put back in the original positions, from which they were removed fully forty years ago. Many of the ancient bench-ends,—fine examples of Perpendicular Gothic carving,—are still preserved. There will also be new altar-stalls, pulpit, lectern, tower-screen, and stalls for the chancel, all of carved oak. The works throughout are being executed by Mr. Harry Hems, of Exeter, under the immediate supervision of the architect.

Simonburn.—The parish church of Simonburn, Northumberland, was reopened on the 12th ult., after restoration. The church is thought to date from about 1230, and has the special feature of many Northumbrian churches,—Mitford, Rothbury, Holy Island, and Hartburn, among others,—of a very long chancel, enriched by a priest's door and leper windows of elaborate workmanship, and a curious double piscina, in good preservation. The nave contains various monumental effigies of Cuthbert Ridley (rector 1604–1636) and his family, which have been carefully cleansed and replaced; and also a beautiful white marble monument, by Noble, erected by their children in memory of the late Mr. and Mrs. Allgood, of Nunwick and the Hermitage. The idea has been carried out, during the restoration, of replacing, as far as possible, each part in accordance with the architecture of the period of its erection. The church is seated throughout (with the exception of the west end, which, for the present, will be provided with chairs) with comfortable seats of oak, having in front two rows of stalls, while accommodation for the clergy and choir has been provided in the west end of the chancel. The restoration has been carried out under the superintendence of Mr. R. J. Johnson, Newcastle. The builder's work was contracted for by Mr. W. Wilson, Gilsland. The hot-water heating apparatus has been supplied by Messrs. Dinning & Cooke, Newcastle; the roof and joiner work by Messrs. Hedley, Stamfordham; slaters' and plumbers' work by Mr. Isaac Baty, Barrasford; and the seating and internal fittings by Messrs. Robson & Son, Durham. The total cost of the work will be upwards of 2,700*l.*, exclusive of many special gifts. Amongst these may be mentioned three stained-glass windows, designed and executed by Mr. Kemp, of London. The east chancel window has its centre lights filled by the Crucifixion, with angels at the head and foot of the cross; while in the side lights are portrayed the Virgin and St. John. The centre light represents the Saviour pointing upwards, and bearing a charged banner, emblematic of His crucifixion and triumph over death; while on one side is the figure of the Angel Raphael, leading by the hand a little child; and on the other Michael triumphing over the dragon. The altar-rails, made by Messrs. Longfield, Sheffield, are of brass, designed by Mr. Johnson from ancient Norwegian brass altar candlesticks in the possession of Miss Allgood. The font, which rests on four Cornish serpentine columns, is the gift of Miss Ridley, and is the work of Mr. James Forsyth, London; and the encaustic tiling is by Messrs. Minton & Co.

Minehead.—The foundation stone of a new church at Minehead, Somerset, has been laid. The building is intended to serve the purpose of a chapel of ease for the lower parts of the town. The new church will be built in a central position, in Wellington-square, and will consist of a nave, two aisles, a chancel, a vestry with an organ-loft over it, and a bell-turret with two bells. The style will be Decorated, and it is calculated that there will be accommodation for 324 worshippers. The stone to be used will be sandstone, from the Alcombe quarries, with Doulting stone dressings. The total cost will approach 4,000*l.* The architect is Mr. G. E. Street, R.A., and the builder Mr. John Pearse, of Minehead, the works being under the direction of Mr. C. H. Samson, of Dunster.

Miscellanea.

A Staunch Bricklayer.—Bricking up that portion of the King Pit, Pemberton, near Wigan, the scene of the recent terrible and fatal explosion, was a work of difficulty. It was done by one bricklayer at a time, he having with him two assistants, in case any of them should be struck by foul air. The bricklayer wore a respirator, and was consequently enabled to stay in some ten or fifteen minutes, but the other workmen had to be relieved every few minutes, it being impossible for them to remain longer in the vitiated atmosphere. The rest of the party stood in the fresh-air road, some hundred yards away, and these relieved their companions, and rendered aid when necessary. Gradually the number of them available for the work grew less, the stifling air overpowering them, and the party was reduced to some half-dozen. Finding their staff so low, Mr. Hedley and one of the men went into the place to assist the bricklayers. On Mr. Hedley's return, Mr. Hilton, of the Wigan Coal and Iron Company, proceeded with a man to the spot. The bricklayer working there was evidently greatly exhausted, but he refused to leave his post. There was only one trowel in use, but this did not prevent the pushing forward of the work, by the adoption of a suggestion of Mr. Hilton's, that hands should take the place of trowels. Immediately that the last brick was put in the bricklayer fell down exhausted. Mr. Hilton endeavoured to assist him out of the place, but he was also struck, and called for help. This was speedily rendered, and the sufferers were removed to the fresh air, where they soon recovered. The name of that staunch workman ought to be known.

New Barracks at Richmond and Beverley. For some time past new barracks have been in course of construction at Beverley and Richmond, and are nearly completed. The barracks are intended for brigade depôts, and besides supplying increased military accommodation in the East and North Ridings will benefit Beverley and Richmond to a considerable extent, as about 300 men will be thus brought into each neighbourhood. The barracks were planned, and have been carried out, by the Royal Engineers, under the supervision of Col. Graham, York. The barracks at Beverley have been erected at a cost of 52,000*l.*, and those at Richmond at a cost of 50,000*l.*, these sums not including the purchase of the land. Mr. W. Barritt, of Hull, is the contractor of the former, and Messrs. Parnell, of Rugby, of the latter.

Examination Schools in Oxford. — The increased requirements of the University and the growth of the Bodleian Library having necessitated a new suite of buildings for examination purposes, it was resolved a few years since that new schools should be built, and the University purchased a site in the High-street then occupied by the Angel Hotel, extending backwards to Merton-street and eastward to King-street. Plans were chosen by two successive delegacies, but afterwards rejected by Convocation. A third delegacy was appointed in 1875, which invited Messrs. Bodley & Garner, Mr. Champneys, Mr. Deane, Mr. Jackson, and Mr. J. O. Scott to prepare designs; each competitor was to receive 100 guineas, and the plans were to be estimated by a surveyor. The design chosen was that of Mr. T. G. Jackson, and this time the consent of Convocation was obtained to the plan selected. The building is now in progress, the past year having been spent in putting in the foundation. The plan consists of a quadrangle standing back from the High-street, surrounded with the examination buildings, or "Schools" on three sides, and open on the fourth side towards the east. Between the quadrangle and the High-street a block of buildings is interposed, containing a large hall, the offices of the Clerk of the Schools, some rooms for examiners, and residence for a porter. Nine *viva-voce* schools, with retiring-rooms for examiners, occupy the whole ground-floor round the quadrangle, from which all but one of them are lighted. The three large writing-schools and two *viva-voce* schools occupy the first floor and are lighted by both sides. The three great writing-schools accommodate 200, 200, and 120 candidates respectively, seated at separate tables; and the area is so great as to make supervision by the examiners difficult. To facilitate this the two larger rooms are broken into the shape of a "L" and a "T," and the examiner is placed at the junction of the arms of the figure. The great hall towards high-street forms a general vestibule, but there are also entrances in Merton-street and King-street. The great hall, with two subsidiary halls, form covered waiting spaces for candidates, for which purpose also the quadrangle in fine weather would be available. The whole building will be warmed and ventilated on Messrs. Haden's principle. The builder is Mr. A. Estcourt, of Gloucester.

Working Classes in New York.—The *New York Tribune*, of the 13th ult., in an article headed "The Town in September," says:—

"Our people are gathering home for the fall work in a more serious mood than usual. There is a deep-rooted feeling that worse dangers than lack of money are close at hand. Well-to-do church-going people are roused to the existence of a class who are not beggars and yet declare themselves to be starving. They perceive, for the first time, too, the existence of certain beliefs in this class which sermons and Sunday schools do not reach. Orderly folk, who have been used to think of Communism as a bloody-minded Jacques as belonging altogether to the other side of the water, are unduly astonished at their appearance in Pittsburg and Cincinnati. The fact is, there is no need of alarm, simply because the American working man, though in a hard strait, is neither a Frenchman nor a German. He does not trouble himself much with vague theories of human equality. He is in a hard strait because, when economy became necessary two years ago, his was the only class which refused to economise. Millionnaires retrenched; the clerk whose income was $1,000 brought down his expenses to $700; but the labourer who earned from $400 to $600 per annum, spent every penny of it. It is a fact, well known to everybody who has had dealings with the ignorant grade of labourers, that they are more extravagant in proportion to their means than any other class. As a rule, John who digs, when he has a dollar in his pocket, buys as choice a cut of meat with it as the man who pays him for digging. Before the war he lived on $1 a day. The coarser grades of flour and meat, which he ate then, are the same price now. Men of more culture than he are learning to do without things of far higher value to them than food. John will learn the same lesson this fall."

Sir Paul Pindar's House in Bishopsgate-street.—"A. M." writes,—"Many of your readers will be interested to learn that the houses, Nos. 170 and 171, Bishopsgate-street, which I believe there is no doubt were formerly part of Sir Paul Pindar's house, are about to be demolished, the sale of the materials being advertised for the 19th inst. Sir Paul's house was built towards the end of Elizabeth's reign in a style of unusual magnificence. The quaint front of the public-house which still bears his name is familiar to most Londoners, but it is not so generally known that the two adjoining houses I have mentioned contain ceilings of the greatest beauty. The attention of the authorities at South Kensington has been directed to these most interesting relics, and it is understood that the Metropolitan Free Hospital, to which the houses belong, will present one or more of the ceilings to the museum."

Destruction of a Lighthouse.—Works for lia are unlucky, or badly done. The *Times* ngoon correspondent gives an account of the appearance of the Krishna Shoal Lighthouse h seven occupants! The lighthouse was of n, manufactured by George Wells, of London, l cost, when put up and complete, about 000*l*. It was erected in September, 1869, and light itself was of a second order, showing a nt of 225 degrees with a dioptric mirror for degrees. The house itself was built on rteen screw piles, twelve of which were 7 in. the centre one 8 in. in diameter, and these re well supported and secured by lateral iron oings. The piles had been screwed into the d sand to the depth of 24 ft., and the height m the sand to the ridge of the dwelling-house 80 ft. Then rose the lantern above at the ght of from 20 ft. to 30 ft. Seven natives of lia were appointed to look after the light, and y were relieved by another gang once in ee months. No boat was allowed to the nthouse, and, therefore, the keepers had no ans of escape. Disasters never seem to come gly, for news has arrived that the embankents, on which lacs of rupees have been exded, for the purpose of keeping the water of Irrawaddy from the valleys lying between t river and the hills have been broken in fourn places, and that thousands of acres planted h paddy for the rice crop of the ensuing season e been submerged.

Building Frauds on the Midland Railway. the County Police-court, Carlisle, on the 12th ., Edwin Westerman, superintendent of the tle and Carlisle Railway; Thomas Errick, pector of the Carlisle and Newbiggen subtion of the same railway; John Lambert, tionmaster at Cumwhinton; and G. M. Tickle, kmaster and contractor, Maryport, were rged with stealing bricks, timber, and other es, the property of the Midland Railway mpany. The first charge was against Tickle, sterman, and Errick, of stealing about 50,000 ks, eighteen wheelbarrows, and a quantity of den staging. Tickle, who is a brick manurer residing at Maryport, held under a lease n the Midland Railway Company a brick-field Cumwhinton. The company having found it essary to line with bricks a tunnel at Barrow d, a few miles south of Cumwhinton, sent orders to various brickmakers to deliver ks at that place. These bricks were delivered rmathwaite Station for Barrow Wood; and first charge against the three prisoners, kle, Errick, and Westerman, was that some 00 of these bricks had been removed from athwaite Station with the connivance of terman and Errick, and taken to Howes g at Cumwhinton, and deposited in Tickle's k-yard, and used there for building brickand other buildings.

The Hovels of West Cheshire.—The con- n of some portions of West Cheshire is thus cribed by Mr. J. A. Davenport, inspector, in report to the Nantwich Rural Sanitary hority, which met on the 29th ult., at twich Workhouse:—

Dr. Fraser (the medical officer) and I have spent a in the township of Burwardsley. At one cottage we ed, the roof was precisely like a riddle, and the spars mildewed and rotting. A more miserable place for one to live in could hardly be imagined, the roof from inside having the appearance of a chessboard, the s forming the dark squares, and the holes the light Foul pits and nuisances abound at all the houses, he roofs of many are bad, though none quite equal e one referred to."

ppeared that the property owners concerned made some very indefinite promises of ndment, and these Mr. Davenport was to see put into practice.

iles.—The Art Exhibition held in Croydon week in connexion with the Church Conss, was visited by large numbers of people. of the leading art-metal firms and ch furnishers had their productions on view, Messrs. Chubb & Son, who have opened St. Paul's-churchyard premises for the sale special class of work, exhibited, in addition ecimens of ornamental brass and iron work, cartoons executed in tiles. The subjects copies of the prints issued by the Wesleyan lay School Union illustrating the life of st, and they attracted much attention.

Cutting off the Gas too Soon."—*Blake* v. *on Gas Light Company.*—With reference to hort report of this above cause, the plaintiff us as communication "to show the company o right to cut it off *at all.*" We cannot, ver, find space for it.

Cremorne.—Cremorne Gardens, as a place of entertainment, will, it is authoritatively announced, exist no longer. Dr. J. L. Hamilton writes suggesting that the site should be utilised for the re-building of one of our London hospitals. He says,—"Cremorne Gardens, with the adjoining estate of Ashburnham, cover about 18 acres of land, admirably suited for a general hospital and its medical school. Serve, perhaps, St. Thomas's Hospital, any of the other metropolitan hospitals would gain greatly by removal to so fortunate a situation. Thus, St. Barthlomew's, Guy's, King's College, Charing-cross, Middlesex, &c., is each surrounded in a sea of buildings. Any one of these hospitals could, if deemed necessary, retain its present out-patient department, with a few beds for grave accidents, whilst the remainder of its buildings and land, if sold, would probably more than cover the cost of removal to this oasis in Chelsea, that has a densely-populated poor district, notably distant from any general hospital."

Manchester Architectural Society.—The annual *conversazione* of the Manchester Architectural Association was held on the 9th inst. in the Memorial Hall, Albert-square. In the unavoidable absence of the president (Mr. F. H. Oldham) Mr. J. Corbett occupied the chair. The annual report of the society showed that twelve new members had joined during the past session, and that the total number now was sixty-five. The financial report stated that the total income, including 24*l*. from last session, was 60*l*. 10*s*., the total expenditure being 57*l*. 11*s*. The chairman opened the proceedings with a short speech, in the course of which he said the society was formed for the purpose of giving instruction to the younger members of the profession. He gave a brief sketch of the work of the society during the past session.

New Cemetery near Bath.—The new cemetery which has been provided for the parish of Weston, near Bath, was consecrated on the 25th ult. It is 2*a*. 2*r*. 27*p*. in extent, and adjoins, upon the north side, the Locksbrook Cemetery. The land was purchased for 1,440*l*., but the expense of building a wall, laying out, and other necessary costs, will bring up the total to something over 2,000*l*. An arrangement has been effected with the representatives of the parishes of Walcot and St. Saviour's, for the use of the present chapels for all interments from Weston, thus saving to the latter place the cost of providing extra chapels. One-seventh of the entire ground is appropriated for the burial of Dissenters. The ground was laid out from the designs of Mr. C. E. Davis, architect, Bath.

Fire at Inverary Castle.—Inverary Castle, the seat of the Duke of Argyll, was on the night of the 12th inst. in a great measure destroyed by fire, which broke out in the central tower. The castle was insured for 106,000*l*., of which 80,000*l*. applies to the building alone and the balance to the movables. The cost of restoration is variously estimated at from 15,000*l*. to 20,000*l*. As to the origin of the fire, the Duke of Argyll says he is convinced that it was caused by lightning.

Public Baths and Offices at Sowerby Bridge.—On the 3rd inst., after an inquiry held at the Sowerby Bridge town-hall, Mr. Arnold Taylor said he saw no objection to the application of the Sowerby Bridge Local Board for permission to borrow 5,000*l*. for the erection of public baths, and 2,000*l*. for providing offices for the transaction of the business of the Board.

The Late Mr. William Railton.—We regret to see the announcement of the death, on the 13th inst., at No. 140, Marine-parade, Brighton, of Mr. William Railton, of Onslow-square, South Kensington. He will be best remembered by our professional readers as the architect of the Nelson Column, Trafalgar-square.

Freemasons' Tavern, Great Queen-street, W.C.—The lease of these extensive premises has been purchased by Mr. Alfred Best, who is expending a large sum in the alterations, ventilation, and redecoration, the whole of which is being carried out under the supervision of Mr. John Pugh, surveyor.

Destruction of Property.—A heavy gale swept over the country on Monday last, and destroyed a large amount of property in many places. Many thousands of yards of walling have been blown down, roofs blown off, spires and chimney-stacks destroyed. The daily papers give long lists of the disasters.

The Wigan Free Library.—On Tuesday the Wigan Free Library, erected by Mr. Thomas Taylor, cotton-spinner, from designs by Mr. A. Waterhouse, was presented to the town by Mr. Taylor. A procession was formed, and walked to the Free Library, where the opening ceremony took place.

TENDERS.

For new schools for 500 children, and master's house, &c., at Benfieldside, for Benfieldside School Board, county Durham. Messrs. John Smith & Son, Stotley Bridge, architects. Quantities by Mr. G. D. Irwin:—

Stephenson	£6,126 0 0
Glaister	5,844 7 0
Elliott	5,776 5 0
Middlemiss, Bros.	5,406 5 0
Bell	5,243 11 6
Snowdon & Son	5,223 0 0
Armstrong	5,195 5 5
M'Adam	5,058 11 0
Knox	4,975 18 0
G. Westgarth	4,790 4 0
W. Westgarth	4,718 18 8
Eltringham	4,718 10 5
Shell	4,495 10 0

For stabling for fifty-four horses, coach-house, dwellings, &c., Nottingham. Mr. S. Dutton Walker, architect:—

Messom	£3,109 0 0
Fish & Son	2,999 10 0
Hodson & Facon	2,995 0 0
Vickers	2,940 0 0
Wheatley & Maule	2,939 0 0
Bell & Son	2,897 0 0
Hind	2,891 0 0
Jeley	2,885 0 0
Wood	2,875 0 0
Stevenson	2,870 0 0
Scott	2,847 0 0
Clarke	2,822 0 0
Daubeny	2,817 0 0
Doughty	2,800 0 0
Bailey (accepted)	2,765 0 0

For building four cottages, Helmsley-road, for Mr. Bett. Mr. C. R. Peters, architect:—

Bartram	£820 0 0
Stamp & Bowtle	803 0 0
Barmer	787 10 0
Judd & Hawkings	785 0 0
Weston	720 0 0
Thomason	696 0 0
Beale	679 0 0
Palmer	600 0 0
Walker	576 16 0

For erection of house and stable at Bromley, Kent, for Mr. A. T. Ellis. Mr. Wm. C. Banks, architect. Quantities by Mr. C. Stanger:—

Croaker	£3,168 0 0
Faulkner	2,898 0 0
Downs & Co.	2,895 0 0
Hart	2,787 0 0
Rider & Son	2,768 0 0
Nightingale	2,683 0 0
Cooke & Humphrey	2,650 0 0
Sharman	2,540 0 0
Sheffield & Prebble	2,533 0 0
Marriage	2,450 0 0
Cross (accepted)	2,393 0 0

For 400 ft. in length of iron roofing, covering retort-house and coal-store, and two high-service water-tanks, for the Tunbridge Wells Gas Company. Mr. R. F. Spice, architect:—

Abbott & Co.	£5,100 0 0
Horsley Iron Co.	5,000 0 0
Cutler & Sons	4,499 0 0
St. Pancras Iron Co.	4,462 0 0
Cockey & Son	4,400 0 0
Head, Wrighton, & Co.*	3,900 0 0

* Accepted.

For the erection of a pavilion, for the Gun Club, Nottingshill. Mr. Walter Emden, architect:—

Foulson	£1,152 0 0
Whiteley	1,047 0 0
Lascelles	910 0 0
Downs & Co.*	745 0 0
Johnson	697 0 0

* Accepted with revision.

For river walling at Kingston-on-Thames, for Mr. Robert Horne. Mr. James Bateman, engineer:—

Phillips, Graves, & Co.	£188 10 0
Voss (accepted)	169 0 0

For additions to the rectory, Long Melford, Suffolk, second portion, for the Rev. C. J. Martyn. Messrs. Spalding & Knight, architects. Mr. G. Helwood, surveyor:—

Grimwood & Sons (accepted)	£2,550 0 0

For the erection of the Lime-street School, Hull, for the Kingston-upon-Hull School Board. Messrs. W. Botterill & Son, architects. Quantities supplied:—

	Including old buildings.	Excluding old buildings.
Sergeant	8,050 0	8,250 0
Skinner	8,025 0	8,225 0
Drury & Harper	7,993 0	8,026 0
Habbershaw & Son	7,778 0	7,905 0
Brown	7,715 0	7,832 0
Barry	7,670 0	7,850 0
Stamp	7,650 0	7,855 0
Hockney & Liggins	7,518 17	7,698 17
Jackson & Son*	£7,260 0	£7,530 0

* Accepted.

For repairing and dividing into two compartments the large water-tank, and supplying and fixing connexions and valves thereto, Shoreditch Workhouse. Mr. J. Wallace Pegge, engineer:—

Ellis	£395 0 0
Jeakes & Co.	512 0 0
Pontifex & Wood (accepted)	360 0 0

For fire brigade station at Stratford, for the West Ham Local Board. Mr. Lewis Angell, architect:—

Rivett	£576	0	0
Charlton & Mansell	560	0	0
North, Bros.	550	0	0
Norton & Sons	417	0	0
Sheffield & Prebble	375	0	0
Hart	325	0	0
Judd & Hawkings (accepted)	287	0	0

For fire brigade station, Canning Town, for the West Ham Local Board. Mr. Lewis Angell, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Charlton & Mansell	£1,145	0	0
Rivett	1,139	0	0
North, Bros.	1,120	0	0
Atherton & Latta	1,115	0	0
Abraham	1,093	0	0
Boyd	1,050	0	0
Wood	1,039	0	0
Hart	995	0	0
Judd & Hawkings	899	0	0
Sheffield & Prebble	883	0	0
Horlock (accepted)	855	0	0

For engineer's residence at the Sewage Pumping Works, Canning Town, for the West Ham Local Board. Mr. Lewis Angell, architect. Quantities by Messrs. R. L. Curtis & Sons:—

Boyd	£1,585	0	0
Wood	1,494	0	0
Atherton & Latta	1,480	0	0
Abrahams	1,434	0	0
Horlock	1,424	13	0
Charlton & Mansell	1,375	0	0
Rivett	1,367	0	0
Hart	1,362	0	0
North, Bros.	1,350	0	0
Sheffield & Prebble	1,318	0	0
Judd & Hawkings	1,299	0	0

For alterations at the Queen's Head, Commercial-street, Spitalfields, for Mr. J. S. Cakebread. Mr. Edward Brown, architect:—

Eaton	£948	0	0
Outhwaite & Son	895	0	0
Kiddell & Son	833	0	0
Auley	850	0	0
Marr (accepted)	831	0	0
Pewterer's Work.			
Warne (accepted)	£103	0	0
Paddon	88	13	0
Gasfitter's Work.			
Winn	£48	0	0
Christian (accepted)	40	13	0
Steadman	40	0	0

For new offices and galleries, for the Art Union of London, Strand. Mr. Edward M. Barry, architect:—

Poole & Sons	£15,939	0	0
Holland & Hannen	15,087	0	0
Shaw	14,550	0	0
Trollope & Sons	13,990	0	0
Brass	13,975	0	0
Smith & Co.	13,830	0	0
Downs	13,560	0	0
Perry & Co.	13,184	0	0

[The lowest amount exceeding the intended expenditure, no decision was come to.]

For the erection of three houses on the Plumstead Park Estate. Mr. W. Seckham-Witherington, architect:—
Coombs (accepted) £825 0 0

For alterations at the Seven Stars, Fulham, for Messrs. Fuller, Smith, & Turner. Mr. W. Nunn, architect:—

Lucas	£279	0	0
Lamble	248	0	0
Henning & Son	217	0	0
Mansell	190	0	0

For repairs, &c., at the Plough, Little Ealing, for Messrs. Fuller, Smith, & Turner. Mr. W. Nunn, architect:—

Spicer	£203	0	0
Henning & Son	189	0	0
Nye	185	0	0
Lamble (accepted)	167	0	0

For building estate offices on the Poplars Estate, Shepherd's Bush. Mr. W. Nunn, architect:—
Lamble (accepted) £360 0 0

For the erection of twenty houses on the Chiswick Glebe Estate. Mr. Frede. Beeston, architect:—
Downs & Co. (accepted).

For bar fittings at the Red Lion, Lower Deptford, for Mr. Wilton. Mr. H. W. Budd, architect:—
Lamble (accepted) £190 0 0

For St. Paul's Church, Bow. Messrs. Newman & Billing, architects:—

Forrest	£9,258	0	0
Colls & Son	9,268	0	0
Bangs & Co.	8,873	0	0
Dove, Bros.	8,625	0	0
Perry & Co.	8,478	0	0
F. & F. J. Wood (accepted)	8,470	0	0

For alterations at house, Weybridge Common, Surrey. Mr. John Jeffkins, architect:—

Lee	£1,900	0	0
Brown	1,827	0	0

For engines, boilers, and pumps, for New Windsor Sewerage:—
Pontifex & Wood (accepted) ... £2,989 15 0

For wrought and cast-iron tanks, for new Imbecile Asylum at Darenth, near Dartford:—
Pontifex & Wood (accepted) £898 0 0

For pumping engines and boilers for Winchester Sewerage:—

Fowls & Co.	£6,650	0	0 !
Day, Summers, & Co.	6,100	0	0
Hawthorn & Co.	6,000	0	0
Dale	5,390	0	0
Butterley Co.	4,760	0	0
Pontifex & Wood	4,384	0	0
Bowling Co.	3,708	0	0
Stott & Co.	3,650	0	0
Gimson	3,498	0	0 !

For sinking well and pumps for the Uxbridge Union:—

Tilley	£1,420	0	0 !
Beasley	1,175	0	0
Baker	1,100	0	0
Kearley	795	0	0
Pontifex & Wood (accepted)	649	0	0
Gibson (withdrawn)	530	0	0 !

For building a mission-hall in Morning-lane, Hackney. Messrs. Parr & Strong, architects:—

Hanley	£685	0	0
Bays, Bros., & Allen	656	0	0
Shurmer (accepted)	639	0	0

For the erection of a gardener's residence on the Horton Estate, near Epsom, Surrey. Mr. Hatchard Smith, architect:—

Chutes, Bros.	£354	0	0
Jeal (accepted)	345	0	0
Laundry.			
Jeal (accepted)	200	0	0

For alterations and repairs at the Fountain public-house, Lower Sloane-street, Chelsea. Messrs. Drury & Lovejoy, architects:—
Shurmur (accepted) £337 0 0

TO CORRESPONDENTS.

"Peerage Property" (a large number of communications on this subject shall have consideration next week). Labour and Wealth (several communications on this subject, also, awa l consideration). —F. A W (we cannot insert tenders two months old) —Inquirer (an examination of persons proposing to be candidates for surveyorships is held by the Institute of Architects).—T. S—R. C. P. R. H—J. H. S.—D. & Co.—T. R. S.—J. A.—Jack Plane.—Smudge.—J. E. C. —H. F.—Mem.—Vendale.—E. G.—F. M.—W. G.—B. F.—R. S.—E. S. B.—K. & Co.—G. B.—G. T.—J. C.—A.—L. P.—P.—C. R.—Mrs. V. —B & Son.—S. B & Co.—Dr. R.—F. B.—J. P.—J. A.—J. M.—C. B.—K. & R.—J. B—E. D.—W. S. W.—Messrs. F.—T. B.—W. S.—Messrs. F.—C A. (no).—S. F. C. (thanks).—F. & Co. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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Vol. XXXV No. 1812. Saturday, October 27, 1877.

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Architectural Memorial.

PEN to serious question is the truth of the line "The world knows nothing of its greatest men." The assertion is, to say the least of it, by its very nature incapable of proof. Its probability is small. Its morality is questionable; inasmuch as its tendency is to lead to the encouragement of self-satisfied brooding rather than to that of vigorous effort. The point, however, of most interest to many of us is rather what are the indications of greatness given by our contemporaries or our immediate predecessors, and what is the most imposing, durable, and

itable form of memorial which should be ared to those who have earned the title of eat or of good.

Pre-eminently must this latter question be garded as one to be settled by the builder. Of memorials the most famous and most durable e those of architecture. Such was felt to be e case six thousand years ago. To that conption we owe the existence of the Pyramide, e obelisks, the temples, and the written stones Egypt. To the same feeling we owe most of e architectural wealth of our own country. or purely military building, the conviction of rategic importance may possibly have furshed ample motives for their erection. We ay admit that Julius Cæsar, or the early nders and fortifiers of the Tower of London, d only in view the military exigencies of their sition, and cared not to hand down their name posterity as founders and builders. Such ay, we say, have been the case; but there is no oof that it was so. But outside this narrow notural circle it is impossible to doubt that e idea of permanent remembrance underlies e activity of the great builders of past times. he very name of a tomb, *mnemeion*, implies is truth. "Sacred to the memory" is an scription read in Oscan as well as in Anglo-axon,—in hieroglyphics as well as in Roman ters. The tomb-stone is the very rudest, mplest, and poorest expression of this uniersal desire. The association of a tomb with a ace of worship, abhorrent as it is to the instiutions of the Law of Moses, is yet found to evail throughout Palestine. The numerous makams," or small houses which are at once onuments of saints and places for prayer, hich stud the Holy Land, are relics of a worship der than the law of Moses. Joshua was an intruder on the territory of a more ancient faith, which has still maintained its hold on the memories of the people. Its structural monuments have outlasted (at least in their local sanctity and fame) the flux and reflux of the waves of conquest. Jew, Christian, and Mussulman have successively won and ruled the Holy Land, without rooting out the simple buildings that commemorate to this day names that were revered long before the date of the Exodus.

It is the same throughout Christendom. The dedication of Christian cathedrals and churches to the name, or, as it is called, under the invocation, of a patron saint, is universally prevalent. Legend has not unfrequently perverted the message of history. The patron saint of England, St. George, is a personage of more than doubtful identity or sanctity. St. Martha now gives her name to a church, perched high on a commanding hill in Surrey, the Latin name of which commemorated the noble army of martyrs. But, rightly or wrongly, truly or falsely, the names of the great and the good in past times are best held in perpetual remembrance by the work of the builder, annexing their names to some devotional edifice.

When we come down from times that are earlier than the yet deciphered records of history, as in the case of the makams of Syria, through the darkness of Mediæval ignorance, when monkish memorials took root, to the great building centuries of Christian architects, we find a permanence, a lustre, and a truth, which it is hard to rival, attaching to our great Gothic buildings. Especially are they of interest, alike to the historian and to the architect, when they tell their own story. Such is the case with the cathedral of Christchurch at Oxford. Small as it is for a cathedral, it yet has a peculiar beauty. It is the memorial of a great churchman, with whose fame we are most familiar from the magic pages of Shakspeare. But whatever Wolsey may have been as a man, Christchurch tells, in tones not to be mistaken, what he was as a churchman, a statesman, and a founder. In the chancel of that cathedral the squat, round, substantial columns are surmounted by round arches. Over them, the triforium-range shows a round-headed arcade, or twin pairs of round arches. All is strong, simple, consistent, elegant in its unity of purpose, and redolent of the Norman builders. But from the graceful arcade springs, at one bound, the fretted and pendent roof-work of the time of Henry VIII. The building thus forms a truthful record. Over the unroofed chapel of the dispossessed monks the great cardinal spread the ægis of his protection. The monastery fell; the college rose, and stood,—and stands

> "Yet so famous,
> So excellent in art, and still so rising,
> That Christendom shall ever speak his virtue."

The prayers for the soul of the great founder of Christchurch are now replaced by the simple mention of his name in the bidding prayer. But while forms of words may alter, the durable record of the architect remains. We read in the compound architecture of Christchurch a more truthful chapter of English history than is to be found in the pages of Macaulay. We trace there the evidence that when, in the fulness of time, monasticism fell, because its work was done, a man had in his hand the helm of State who prevented the church from falling with the monastery. The grasp and foresight of Wolsey were those of the true statesman. From the fall of the ripe and rotten abuses of his day he rescued just so much as was capable of rescue. He aided the royal power to destroy, and even to rob, the regular clergy. But in so doing he provided a cradle and a school for the secular clergy, which is still one of the foremost in Europe.

In ages when all education was in the hands of the clergy, it was natural that theology should be held to be the master-science, and that ecclesiastical buildings should be regarded as at the same time those of which the erection was most acceptable to God, and most famous and meritorious for men. And of such structures, it must be remembered, the fame was not single; while the founder was commemorated, the builder was not forgotten. Some great churchmen combined the two functions. Plans were drawn by, or under the direction of, great abbots and bishops, whose ideas, wrought out in stone, yet live in our churches and cathedrals. At other times the name of the architect, sculptor, or brassfounder ranks side by side with that of the founder in a pecuniary sense. The spirit was everywhere the same. The Freemasons, of whom a duke's son was proud to be the spokesman at Chesterfield, ranged through Europe, and brought to the elevation of each new church, convent, or abbey, a knowledge that was in harmony with the utmost advance made in architecture in any part of the world. Thus while each country has its national style of architecture, and while each geological district has its special style, fixed on it to some extent by the nature of the accessible materials for buildings; and while, yet again, each architect had his own special style and favourite mode of treatment; there is a chronological harmony that runs throughout; and this harmony must, in great part, be due to the institution of the Freemasons.

With the fall of the Church of Rome in England one great class of motives for the foundation of noble memorial buildings fell also. Down to the time of the Reformation, the duty of praying for the soul of the founder was attached to the enjoyment of the fruits of his munificence. Even in the case of a bridge, or of a ferry, a small way-side chapel often recalled to the passenger the existence of this claim on his gratitude. It is instructive to trace the reflection, from the walls of our churches, of the change in theological dogma. In the reredos of the Chapel of University College, Oxford, fifty two canopied niches stand empty. Their once worshipped occupants were rudely hurled from their pedestals by the rough soldiers of Cromwell. The Christ of the Priory Church of Christ

Church, in Hampshire, is one of a very few images which escaped the fury of Presbyterian and Independent; and that escape may be held to be mainly due to the great height of the niche above the ground. With the saints went the prayers. But with the prayers went, there is no doubt, one main motive for structural memorial. It was not solely from charity to unborn generations that church or abbey was reared. It was not simply for the acquisition of a posthumous fame that windows were enriched with tracery, and filled with the wealth of colour of stained glass. The e motives existed, no doubt. But with them co-existed a more powerful incentive to build, to found, and to endow. The belief tl at the founder would, in the shadowy land to which he was about to depart, reap the benefit of priestly prayers, and that his purgatorial fires should be rendered tolerable by the sweet music of chanted psalms, was no doubt far more effective in the mind of every benefactor of the church. And, in point of fact, with the disturbance of this productive belief, churches ceased to be built. From the time of Charles I. to the present century the number of churches built in England could be reckoned on the fingers. The very traditions and habit of building were so lost, that it was necessary to appeal to Parliament for power to build a new church.

Of the noble and stirring activity which has replaced that great slumber of the church-builder we have not now to speak. It is to a memorial of another description that our attention has been called by the meeting at Chesterfield. The claims of the poor, the ignorant, and the unborn on private munificence are not less than was the case in the time of King Henry VIII. On the contrary, they are more imperative, in the proportion of the great increase in the population of our island in the last three hundred years. The wealth which can display itself in munificence is, again, even more largely increased. And recent instances of the devotion of wealth, honestly obtained, to national purposes, have been so numerous that we have some reason to look forward to another era of founding,—not of founding of churches alone, but of colleges, halls, museums, professorships, scholarships, and the various aids of sound and useful learning.

In work of this kind the erection of a public building as the memorial of a great man occupies a conspicuous part. It cannot be denied that there is something extremely apt in the erection of the Stephenson memorial at Chesterfield. So was that of the Wedgwood memorial at Burslem. But the question deserves mature consideration, how far should efforts of this kind be encouraged as purely local, or how far should they be rendered tenfold in their efficacy by combination into some general scheme. A mechanics' institute in each great town is a worthy and desirable object. But what would be the effect on the technical education and productive power of the nation of combining half the amount of effort, that is comparatively frittered away by distribution, in the founding of an industrial university?

The great feature of the century is the extraordinary advance of man in the knowledge and command of the powers of nature. While we must never forget that the name of Watt heads the illustrious roll of the pioneers of this advance, all honour is due to George Stephenson as one of the most famous of the leaders. Few who knew the two Stephensons but would have acknowledged the superiority of the son to the father. But, then, Robert Stephenson had an education; if not an education equal to that of his friend and rival, Brunel. The education of his father was home-made,—self-made,—that kind of education which it is only anxious energy and perseverance that enable a man to procure. It is well, for the sake of the young, that examples such as those of George Stephenson should be continually held in public honour. It is not very long since we reviewed the life of another man of the same grit and pith, a friend and associate of Stephenson, William Fairbairn. We hope it may be long before we are called on to render the same service to a third of the same group of national benefactors, Joseph Whitworth. But that name reminds us that there is such a thing as a cumulative claim to public honour. If the man who makes two blades of grass grow where one grew before is a national benefactor, what is he who has increased the rapidity of internal and external communication in a four-fold, or even a ten-fold, ratio? Or, rather, what are they who have taken separate and important parts in effecting that great revolution? Work of this kind is deservedly twice paid. It is paid in the material wealth with which, in the long run, it usually endows its performers. It is paid in the honour rendered to their names. But where a part of this wealth is devoted to giving a helping hand to those who have yet to place the foot on the first rung of the ladder by which such men as Stephenson, Fairbairn, and Whitworth climbed to wealth and to fame, the claim of the donor to honourable memory is more than doubled. To the intellectual triumph, which is the blue ribbon of the nineteenth century, such men add the moral worth which formed the jewel of the centuries before the Reformation. Few ancient foundations, whether chapel, convent, or monastery, had higher claims to veneration than have the noble hospitals which are now supported by private donations. With all but the very grandest of mediæval foundations the Peabody donation, at any rate in intention, may not unworthily compare. Men who leave their wealth for national purposes, who found professorships, or endow exhibitions, or scholarships, by their wills, are still honoured and remembered, although not publicly prayed for. But if their claims to public gratitude be duly admitted, and if, moreover, their wealth be not directed into a channel in which it will only flow after the death of the acquirer or owner, but be to some extent applied and distributed during his lifetime and under his own eyes, we may yet be proud to say that we find names of Englishmen of the present time worthy to be recorded with those of Waynflete, Chicheley, and Wolsey.

We shall rejoice if any remark of ours, either in the present paper or on former occasions, may lead to the careful consideration of the subject of the foundation of a scientific and industrial university. The wealth is not wanting. The charitable purpose has been often evinced of late. The desire for posthumous honour is not,—we would hope,—quenched with the silence of the voices that formerly chanted prayers for the soul of the benefactor. And there is one consideration which has not, so far as we are aware, yet been brought forward, which ought to have extraordinary weight.

It is, perhaps, difficult to measure the value of such centres of education as Oxford or Cambridge. During dark ages the lamp of learning was kept alive in the monasteries and universities. How much do we not owe to the Benedictines? But the main idea of all the theological universities was, not progress, but permanence. A new revelation was held to be impossible,—a matter for which it would be impiety to wish. At the same time it was held that the most perfect patterns and examples of human life were to be looked for in history. They were not to be found among the men of the time. Still less could the student be encouraged to hope to excel those who had gone before him. To conceive that he could do more than humbly tread in their venerated footsteps would be to encourage the mortal sin of pride. Permanence, rest, stability, were the chief aims of the great monkish universities. Their study was of the past. It was a fossil study. But it was not undertaken with the view of learning any law of development. And thus, even at the present moment, and in our most famous seats of learning, the fossil element is so powerful that many a hooded doctor or master may be thought to be almost semi-fossilised himself.

In the industrial universities, whenever the good time comes for their establishment, this leading feature will be reversed. The vanishing point of the perspective will be in the future, not in the past. A full and accurate knowledge of the conquests of human science during the present century must inspire the profoundest conviction of the immense area of the science of the future. The more instructed a man now is in any natural science, the more fully is he aware that we have hardly mastered the alphabet of scientific knowledge. As to its grammar, we have acquired but a very few rules. Such being the case, the effect of bringing together a body of scientific men who should be relieved from the necessity of any toil but that of the teacher and the explorer, would probably be something altogether without precedent. We are not anticipating a millennium, or imagining that the envies, and jealousies, and enmities of the scientific world would be at once destroyed by grouping together a certain number of gifted men as a faculty, and freeing them from the ignoble spur of a pecuniary reason for keeping their names before the public. But the experience of our ancient seats of learning shows that a strong influence in this direction would be exerted by the sole fact of juxtaposition. Wher the geologist had to meet, in the discharge o common functions, the physical philosopher, it would soon become impossible for him to dis regard the sound reasons adduced by the latte for the limitation of that immeasurable past o which the former is now wont so freely to draw It is rather with the view that science should check, limit, and inform science (using the term to denote a special branch of knowledge), that that professor should check and enlighten pro fessor, that the first effect of the concentration of study might be expected to become evident But the first action would induce the second While every aid that one discovery could give to the pursuit of another, such as that which the chemist could give to the metallurgist, or the mathematician to the mechanic, would be con stantly and readily available, the interchange between chemist, mechanic, physicist, geologist botanist, zoologist, and other specialists, of the common language of science would articulate those various pursuits into a magnificent philo sophical unity. We should be daily gaining a least scrap of that philosopher's stone which was the dream of the alchemists; and which is not likely to cease to be a dream until the com mon aims of the chiefs of the army of science are indicated by some more intimate association than is now possible between them.

We hope that the feeling stirred up by the appropriate ceremonial at Chesterfield will not be allowed to subside. We desire to call the attention of some of the leaders of thought and action amongst ourselves to the importance of making the best of our means and opportunities. To intending donors the subject is one of no small interest. A great collection, for example, of engravings and other information illustrating a special subject, such as the history of an art, the structural and architectural growth of the metropolis, or that of any ancient and important centre of industrial life, is one of those matters for which the donor may at present seek in vain a suitable spot to preserve his own memory, and to give the utmost utility to the treasures he has collected. The value of mutual illustration it is impossible to determine and hard to overrate. That it is very great there is no doubt. How many resources would become available were a common centre thus formed we cannot say. But there is evidence that they would be ample. The subject is not altogether new. Manchester is now stirring about it. But it would be more in accordance with what experience has shown to be advantageous to establish, after mature deliberation, a new centre for the higher industrial education, than it would be to graft it on the busy life of a great city. The results of the establishment of colleges in London, where, if anywhere, there seemed to be need for them, have hardly been such as to reverse the old opinion, that the metropolis of letters or of arts should not be that of commerce, of manufactures, or of political government. Some Cumberland, Westmoreland, Welsh, or Scottish valley, where pure streams might water the college glades, and water-power might be obtained at will to give to the student the same lesson which the Cumberland forces gave to Sir W. Armstrong when a boy, would seem to us to be the proper scene for an industrial university. But that is a question which it is premature now to discuss. What we wish to urge on our readers is the consideration of the mode in which architectural memorials, and those endowments which are associated with them, may be so directed in the future as to prove of most service to the country.

Stockton Surveyorship.—A special meeting of the Stockton Town Council has been held for the purpose of electing a surveyor for the borough, *vice* Mr. George Edwards, resigned. There were ninety-one applications for the office, and the sub-committee appointed to consider them reduced this number to four, the names being James Hall, surveyor to the South Stockton Local Board; John H. Hanson, assistant borough surveyor at Huddersfield; R. Telford, assistant to the borough surveyor, Newcastle; and L. Lloyd, surveyor to the Bilston Local Board. The voting, which was by ballot, showed twenty members in favour of Hall, and seven in favour of Hanson, and the former was declared duly elected. Mr. Hall has been surveyor of South Stockton about four years. The salary attached to the office to which he has just been elected is 300*l.* per annum. Mr. Edwards has been retained as consulting engineer at a salary of 100*l.* per year.

OME CHANGES AND ADDITIONS AT SOUTH KENSINGTON.

HE practice of every now and then shifting re-arranging the objects in the South sington Museum, which has been found with, not unreasonably, as increasing the usion and the difficulty of finding what one ts in that rather bewildering collection, has effect in bringing into a new light things ch have been overlooked and insufficiently bited previously. This is, we believe, the nce made by the authorities of their practice oving things about so often; and though is really a confession of weakness in regard er to the building or its management (as ything ought to be permanently arranged so be well seen), it must be confessed that system gives occasion to agreeable surprises mes. For example, on entering the North rt, the *habitué* is at first surprised at seeing, he west side, an apparently new and rather nsive collection of Della Robbia ware. In all the items here have been some time in Museum, but have been in the background dissociated from one another. They have been cleaned and brightened up, and the le of the Della Robbia collection is now to en at a glance arranged against the wall on screens along the west side of the court. brightness and freshness with which this comes out after being washed, suggesting idea of work just completed instead of , as it really is, nearly four hundred years is a hint as to the peculiar suitability of a mode of decoration for external archi- re in towns much oppressed with smoke and The present arrangement of the Della bia ware certainly conveys a new idea as to extent to which this art is represented in the eum, and the fine character of some of the imens. In particular there comes out with h brillancy the great circular medallion with heads in high relief, hung against the in one of the compartments. These obviously portrait heads, from their acteristic expression and style; the upper hat of a female, is of rather faded and placid ession, throwing out the more by contrast forcible character of the two heads below it, nen whose handsome regular features, and nse and by no means amiable expression, a like an epitome of the Italian life of the which produced them, with its ominous n of æsthetic refinement and moral cruelty. portion of an archivolt in another compart- t, decorated with cherubs' heads with un- ed faces on the glazed ground, and coloured s and yellow *nimbi*, is a charming piece of itectural decorative work, the little heads elled with real and living artistic feeling, mechanical work of an ornamental carver. ther the material was altogether a safe one the architectural ornamentist, whether the ity it affords for realistic treatment is not a er dangerous temptation, may be questioned. knots and festoons of fruit and flowers, y modelled and brilliantly coloured in direct ation of nature, would no doubt have a iant and festive effect on the face of a ding in bright weather; but the effect would aps be rather too much like the perpetuation permanent form of decorations only suitable igh-days and holidays, and inconsistent with very-day feeling of life. Of course there is ever-vexed question of real or conventional tation of nature, too, which the contempla- of these productions raises anew in the al mind: a question which is every now and brought up again, after one is disposed to k it is quite settled, by the allurements of such iant and successful imitative work as this. almost impossible to be coldly critical while ng at such charming productions; but if one e so, it must perhaps be admitted that this of art belongs rather to what may be termed playthings than the serious occupations t. The uncertainty in which Della Robbia is followers seem to have been as to the good d effect of glazing in the case of representa- of the human countenance is curious: in some e finest examples the head is covered with a ant white glaze, in others the features and s are unglazed and are left a neutral earthy while the garments shine in the most ant colour and glazing. The effect of the elling of the countenance is undoubtedly r in the unglazed work, considering the apart from the rest, but the dull tones of rface are too much thrown into the back- nd, rather than thrown out, by the glaze of the accompaniments. The effect of the glazed faces is rather too artificial, and interfered with by catching lights, but on the whole a more homogeneous and satisfactory effect is produced by glazing the whole, and if the art were ever revived for architectural ornament with us, it must be remembered how very important is the advantage of a completely glazed and washable surface in a town atmosphere. In this respect it is really desirable that some more thought should be turned to the employment of such a medium for high-class architectural ornament in London buildings. We have glazed bricks, indeed, though no one seems to like (or, perhaps, to be able to afford) to use them much; but we have no glazed ornament available for buildings, except of the merely mechanical class of work represented by moulded bricks for ornamental strings; terra cotta is almost always used unglazed, and though not holding smoke and dirt so much as stone does, it seems to afford no safeguard against a building growing dingy. As a matter of mere good taste and architectural effect, we should by no means recommend or prefer glazed surfaces on their own account, in the country, or in ordinary towns; but London smoke demands special provision against its effects. The amount of carved ornament, in buildings in the City especially, which is simply thrown away and lost from blackening and disintegration two or three years after its execution, it is almost melancholy to contemplate; though a good deal of it certainly is not very much worth preserving. It ought to be recognised that it is not worth while to put up any decoration on a London exterior, which has not been contrived so as to resist the action of smoke; and perhaps the architect who kept this before him would be incited to a more decided endeavour to have decoration which it would be worth while to preserve,—which might be a delight and interest to future generations, as these works of the Della-Robbia school are to us now.

Not far from this collection of the Della Robbia work, another re-arrangement has brought into prominent notice some specimens of Italo-Greek antiquities, some of which are of comparatively recent acquisition, to be found in three cases standing near the south wall of the same court. In one of these we find arranged round a circular drum the figures from a very spirited alto-relief from a tomb in Canosa, representing a hunting scene; figures of men on galloping horses, on a small scale, and a good deal knocked about, but in sufficient preservation to show the spirited action of the whole, effective in spite of clumsy and naïve modelling. What is particularly interesting in this case, also, is, that we here find two vases with high handles, which handles are decorated on the sides next the vessel with small draped female figures, about 6 in. or 8 in. high, which have formerly been brilliantly coloured (a great deal of bright pink tint is still left on them, and indications of other colouring), and which are exactly similar in style and execution to those numerous little statuettes from Tanagra, in the Greek vase-room of the British Museum, the object of which has been much discussed. It has been surmised that these Tanagra figures were intended as dolls; but the two vases in this case at Kensington seem to give the real interpretation; the statuettes of this kind were ornaments which have been applied to different objects from which they have become separated, or perhaps have never been fixed in their intended place. Most of the British Museum specimens, which stand free, appear at the back as if intended for fixing against some other surface; and it is possible that, in this collection from Tanagra, consisting of so many figures so much alike, we have the remains of a kind of art-manufactory where statuette ornaments of this description were turned out ready for application where they might be desired. In this evident fashion of using the figure of the lady of the period as a decoration, we find a sort of counterpart of the fashion now prevalent of using in a decorative manner not the lady of the period, certainly, but a particular type of female figure which is repeated and repeated, so that it becomes as much a mannerism of the day as these little coloured statuettes evidently were in their day. In the vases we are mentioning at South Kensington, the body of the vessel is formed by a fema'e head, much larger than, but otherwise exactly similar in style to the head of the little figure on the handle, and with the hair, &c., coloured in the same way. The case next to this contains Italo-Greek pottery of curious and, in some instances, very fine design, especially in the case of the large round vase which crowns the collection, with a short funnel-like spout standing up at one side of the circumference, in front of which is a head surrounded by coloured decoration; and on each side of the vase a little winged figure is modelled in high relief. We might go far before finding an antique vase more curious and characteristic than this fine specimen of earthenware art. The third case contains ancient Cyprian ware purchased last year from the Cesnola Collection, and remarkable as showing the amount of ornamental effect which may be obtained from the mere use of lines and circles, the latter used both vertically and horizontally on the bodies of the vases.

Near the same neighbourhood still, two cases of Italian work, clay and terra-cotta statuettes, of comparatively recent acquisition, and which formerly stood in a half-light in the corridor at the back, have been brought out into daylight in the centre of the court. There is a good deal of interesting work in these, but what is to be particularly noted in one of them is the rough clay model of a "River God" in the centre of the case, described on the card as "School of Michel-angelo," but which we cannot but think may be attributed with the highest probability to the master himself. This was bought only last year, and is one of the most interesting and remarkable specimens of Italian sculptural art in the building. It is a small roughly-sketched seated figure, with one hand on the conventional river-god's urn, from which the water pours; the head turned towards the left shoulder, the features only just indicated, with a long beard, of a half-seaweed character, hanging lankly from the chin. There is a power of abstract thought and expression in this figure which only genius of a high order can give. On the card, on which, as in every other case, the price paid for the specimen is named (so that every visitor may know how and for what the public money is spent here), we read "Bought, 1314." It is certainly a remarkably telling instance of the value of that art into which a great thought goes, that this rough small model or sketch, in a material absolutely valueless in itself, should be now well worth that sum, or even a larger amount, to secure it for the National Art Museum.

Before leaving the north court for the present, we may draw attention to the fact that the beautiful and refined bas-reliefs of Donatello in possession of the Museum are now arranged collectively on one stand, and a remarkable collection they make. There is no treatment of marble in sculpture more refined and intellectual in its character than this, in which the surface of the marble seems lightly engraved upon rather than carved, as if the sculptor wished to see with how little disturbance or removal of the surface he could express his idea, in a form which, in its necessarily extensive use of perspective, may be said to be half way between painting and sculpture, between delineation and modelling, and to partake of the character of both arts. But we have not time now to dwell upon this. To give a word to an art of the most utterly opposite kind, we may draw a little more attention to the splendid specimens of Chinese and Japanese art which are to be found in some of the cases in the south-east corner (more especially) of the centre court. Some of these are loans, and have not been here very long, if we remember rightly. The case of objects lent by Admiral Keppel contains some of the most characteristic specimens of what constitutes the real power of Japanese art that we have seen. This power consists, as it appears to us, not merely in that singularly original exercise of the fancy which is shown in their application of the forms of animal life to ornament, — in the lobsters and frogs and monkeys which in such piquant and half-grotesque forms do duty as paper-weights, and in other forms for practical use,—but in the instinctive way in which these clever, quick minds and cunning hands seize upon the salient point in the character of the object or animal they treat, and intensify it to the utmost. Look, for instance, at the carving in wood of an elephant in Admiral Keppel's contribution. It is not actually like an elephant, in a realistic sense; it is too broad and thick, the legs too short, the feet too large. But the artist has seized upon and intensified all the points which give to the elephant its peculiar character,—the massiveness of the frame, the great head and ears, the skin in great wrinkles hanging about the framework; and in doing this he produces, in a miniature form, the impression of the size

and weight and character of the animal, in a way which a merely realistic treatment, on this small scale, could not possibly effect. A fine illustration of the same thing is found in a very little ivory carving which lies in a corner of the case, a mere toy for the button-hole, representing an eagle with his claws fixed in some small animal which he is about to make his prey. The eagle is out of proportion, the head is too large and too massive; but it is just this exaggeration of the head, the beak, the red tongue, the ample talons, which at once gives a largeness of scale and effect to this tiny little carving, which, if the bird were treated in its actual proportions, would look fragile and ineffective. It is this kind of happy exaggeration which in almost all art is at the bottom of the quality called "character," though, of course, in works on a larger scale and with a more serious meaning it must be used in a much less pronounced and more considerate manner. The talent of the Japanese in miniature ivory carving, and their precise perception of the most effective treatment of ivory, is admirably exhibited in the numerous little productions of this class to be found in this interesting collection lent by Admiral Keppel. On the other hand, their utter want of perception as to the broader aspects of nature, and the treatment of these in art, is shown in painful and grotesque contrast in a piece of carving next to the elephant aforesaid, an extraordinary specimen of wood cut and dug into pits and scrolls, and smeared with red paint, labelled "Dragon among clouds." It would be impossible to imagine a specimen of worse and more barbarous taste than this, and the fact that such a thing is found in the very same case as the other objects we have been referring to, ought to be suggestive to those who are given to so foolishingly worshipping Japanese art as a thing superior and admirable in every way, merely because it displays such originality and excellence in one special direction. The study of some of these Japanese objects, and of the prices paid for them, is instructive too in regard to the relative value, ultimately, of finish in mere workmanship, as compared with that which embodies thought conveyed through the highest forms of nature. In an adjoining case, near to the works last mentioned, for instance, is a very fine Japanese lacquered bowl, representing in its interior surface two fish most beautifully finished in lacquer-work on gold ground, the folds of the gills admirably and truly modelled, the scales most minutely represented; about as perfect a piece of realistic art as could be desired, and showing the very highest finish. This was secured for 20*l.*; and though the price is not extravagant as the market goes, it can hardly be said to be worth more. Compare this with the 131*l.* given for the rough clay model just now mentioned, and which every one who can appreciate it must feel to be below, rather than above, its value, and it will be admitted that this is a striking example of the comparative worthlessness of mere execution alongside of truly intellectual art. There is a point of resemblance, on the other hand, between the objects of Chinese and Japanese art in the Museum, and those specimens of ancient Italo-Greek art which we noticed above, viz., that both show numerous examples of that kind of use of animal forms for utensils, such as vases and jugs, with a lid or a spout in the back for use, which has been stigmatised as the peculiar offspring of modern bad taste, but which appears in fact to be as old as any art that we have any record of; an argument that, after all, we are in some points no worse, if no better, than our forefathers.

In the Architectural Court we notice that the cast of the oak choir-stalls from Ulm Cathedral has received a coating of oak paint, preparatory we suppose to a realistic graining: of course quite legitimate, as the object is professedly imitation. A few new specimens of work have been added lately, the most recent being the stone fire-places, with oak panelling over, from a house in Lime-street, London (*circa* 1620), a very good specimen of refined and tasteful work of the period; and a reproduction of the brazen font in St. Bartholomew's, Liege, a work by Lambert Patras, of the date of 1112, sculptured round the sides with the subject of the Baptism of Christ in high relief, and supported upon the backs of twelve rather grotesquely modelled oxen, whose heads and bodies project all round the base. The effect of brass work is very well given in the reproduction, and the piece is singularly curious and interesting (rather than beautiful) as a specimen of the German art of the period to which it belongs.

BERLIN AND ITS BUILDINGS.*

The Berlin Society of Architects has deserved well of its co-citizens in laying before them the mass of information, carefully compiled under its direction by some of its members, in the work before us. We have endeavoured to glean from its pages some interesting particulars respecting the German capital, for the perusal of our readers, and warmly refer our readers to the work itself. We may say at starting that the book contains more information on its particular subject than has in similar works been laid before the reader; and even those who are not masters of the language in which it is written will find sufficient return in the illustrations with which it abounds.

A few words as to the origin of the work. Its publication was prompted by the first general meeting of the Association of Societies of German Architects and Engineers. Upon the Berlin Society of Architects devolved the duty of submitting to the meeting a report on the development of Berlin, and the principal buildings of the city. The society resolved upon the publication of a pamphlet, and appointed a commission for that purpose. That commission soon came to the conclusion that, considering the abundance of matter and the importance of the subject, it would be a mistake not to make use of the occasion for solving the task set before it in a more liberal sense. Instead of issuing merely an ephemeral production for the occasion, it was found that, by making use of the numerous able pens at the disposal of the society, and by slightly increasing the labour apportioned to each, a work of permanent value might be created, which would find readers in a much wider circle.

A programme issued to this effect met with the approval of the society, and the work was proceeded with in December, 1873. The Government and the municipality willingly permitted the inspection and use of the materials under their care, the various societies and also private persons interested also meeting the architects' committee in an obliging manner. But it was soon apparent, as the work proceeded, that the scope as well as the difficulty of the task had been underrated. The time first fixed upon for its completion was far too short. The society, however, rather than abandon its object, was willing to renounce a momentary success; and, instead of presenting the completed work, was content to submit to the meeting, in 1874, the first sheets of the work, as an earnest of what was to come, and to continue and conclude the work according to the programme originally laid down.

It need not here be gone into what obstacles had to be overcome. Those acquainted with similar work can well appreciate it. It took two years longer before the committee,—whose services, it should not be forgotten to add, were entirely voluntary,—had completed their labours, but they were at last able to submit their great work.

It will be necessary, in order to rightly judge the labour undergone, to point out first the plan followed, and then to consider *seriatim* the different subjects treated. In the first place, it was incumbent, in order to give such a complete view of the great subject under consideration as it was intended should be conveyed, to treat each as fully as possible. Although, of course, only the most valuable is selected, there is no style of architecture and no class of building left unmentioned. It is self-evident that the abundance of material required a systematic arrangement, and this, as will be shown, has been strictly carried out, and has been attended by a care and scrupulous exactness which deserves the highest praise. Here it may be remarked that it had been at first intended to add a view of the organisation of the different authorities connected with the architecture of Berlin, but the book had already assumed such a size that they were left unnoticed, especially as th organisation is on the eve of a comple revolution.

After these few preliminary remarks, wh are due to the work, we may proceed to discu it in detail. In this we cannot do better th follow the systematic arrangement of the mat in the book. It consists of two parts, divid into five sections. The first section gives, in t first place, a general description of Berlin; t next treats of its historical development.

(I.) The importance of the geographi position of Berlin, in the midst of the sands Brandenburg, is, even at the present day, mu under-estimated, especially by the inhabitan of the cities of Western and Southern Germa which possess an older history, and are situ in more charming or grander surroundin But the advantageous position of the Prussi and now German capital have long be acknowledged by competent critics, who ha at the same time, seen in it a guarantee fo still more brilliant future. Although it can be denied that Berlin is much indebted as to growth to the steady development of the Sta of Brandenburg and later Prussia, and t direct personal influence of some of its f seeing and energetic rulers, it could never ha risen to its present importance if it had n at the same time, possessed the natural con tions necessary for a favourable mater development. These conditions are its remai able central position, which mark Berlin as t natural point of gravitation not only for politi formations, but also, and still more, for co merce and intercourse. Irrespective of central position in Prussia herself, it is situat at almost an equal distance from Königsber Warsaw, Cracow, Vienna, München, Stuttga Carlsruhe, Strassburg, and Aachen; again, a wider circle from Paris, Dover, Christian Stockholm, Riga, Brody, Pola, Milan, a Geneva. The advantages of such a situati are enhanced by the favourable nature of surroundings, which offer few, if any, obstac to the construction and increase of artific means of intercourse. Besides being connect by canals with the Oder and Vistula on the e hand, and the Elbe, which it is intended to j to the Rhine, on the other, Berlin is the cen of fourteen high-roads and eight lines of railw to which shortly three more are to be added.

Thus much of the geographical position Berlin. As regards its topography, little can said of the surrounding landscape. The city situated in a rather low depression of the gre North German plain, the zero point of the lev of the Spree at Berlin being only 99 ft. abo the level of the Baltic. The neighbouri country is a uniform flat, with a few swe nearer Berlin, which, as they fall off pret sharply towards the valley of the river, lo like two ridges extending towards the north a south of the city. But even the highest elev tion, south of Berlin, the Kreuzberg, is on 112 feet above the level of the Spree. T latter, in its tortuous course through Berli divides into two arms, forming the island which the oldest part of the city, called Köln, situate. The greatest width of the Spree vall near Berlin is about 11,900 ft., and this width at present almost completely filled up by t buildings of Berlin, which, in some place extends over the edges of the valley into wh can hardly be called plateaux. Berlin is general described as being situate in a sandy pla This is a mistake, as the works for the drainin of Berlin have amply shown. The soil consis of a deposit of vegetable soil of an avera thickness of 5 ft., which, in some cases, increas to 20 ft., followed by alluvial deposits of general 33 ft. thickness. Consequently, the lower-lyi districts, so far as they are not yet covered b buildings, have been changed into fertile gard land, where vegetables are grown, the origin meadow-land having almost entirely disappeare There are still remnants of the extensive fores which once covered the ground, which, with th new parks which have been laid out round th city, relieve the monotony of the plain, while th great forest tracts known by the names of th Grunewald and the Köpnicker Forst rea within three miles of the boundary of the city

Under the name of Berlin as now understoo are included all those districts which are situa within the city boundaries as fixed in 1861. Th form a separate administrative district in th government of Potsdam, but it is intended organise the city as an independent provinc Its present division is a jumble of the mo various systems, all independent of each othe

* Berlin und seine Bauten. Herausgegeben vom Architecten-Verein zu Berlin. Mit 6 9 Holzschnitten nebst 8 Kupfer- und Karten-Beilagen. Zwei Theile. Berlin, 1877. Eigenthum des Vereins. London: Williams & Norgate.

d all acting as if there were no others co-istent, which leads, of course, to a most delight-l state of uncertainty and confusion, and a asbing of interests. London is not unique in is respect. But, of the two, Berlin is still worse , as it has no Metropolitan Board of Works yet. e best known and most popular division is at into quarters, of which it has sixteen. Of urse there are further and entirely different visions for purposes of taxation, there are police tricts, and there are twenty-nine parishes. sides this, the city is divided into different tricts of jurisdiction, there are postal districts, d there are fire brigade districts. Finally, ere are distinct parliamentary and municipal ction districts. All this confusion, it is hoped, ll be swept into the limbo of the past when the eat change already referred to takes place.

As in most old towns, side by side with the andest buildings of modern times, we find ics of the past. The latter, however, are tting scarce; there are very few buildings t from before 1688; but the period of transi-n from the seventeenth to the eighteenth tury is represented by a number of monu-ntal erections. The spirit of modern times s made itself felt most recklessly. Whole arters have been levelled in favour of public ldings and larger residences. Thus a mix-e of ancient and modern buildings meets eye, especially in the older parts of the y. Of important public erections, there are reat many; they are principally concentrated nd the Royal Castle, the Museums, and the moury. Though these give those quarters appearance of a capital, the general aspect Berlin is that of a great trading town. might dilate still further on the principal tures of the city, but must refer the reader the book itself, and remark only that Berlin, e all large cities, has its suburbs, their general racter being of a half rural, half urban nature. The area of the city boundary covers 14,629 es. Of this, much is owned by the State or Municipality; it is difficult to make even an proximate estimate of its value. But the ount to which the buildings are insured was en in 1872 at 980 million marks (49,000,000*l.*), ich is much below their real value; their able value being returned at 1,182 million rks (59,100,000*l.*). The prices given for dif-nt (freehold) plots vary with the locality. all plots, the purchase of which could not be ided because they were required for parti-r purposes, fetched as much as 2,500 marks 5*l.*) per square mètre (10·764 square feet). average price of ground in the best business lity of Berlin is at present 850 marks *l.* 10*s.*) per square mètre, or nearly 4*l.* per are foot; while in the fashionable quarter, nd the Zoological Gardens, the value per are foot ranges from 1*l.* 8*s.* to 3*l.*, and in e distant districts and in the workmen's rters 4*s.* 6*d.* to 7*s.* per square foot. Rents correspondingly high. The rental value in first quarter of 1872 (this period seems to e been selected because rents were then nest on account of the briskness of business; as the height of the *Gründerperiode*) of the 603 residences (flats they would be called e) was 88,750,000 marks (4,437,500*l.*), or on average 513·6 marks (25*l.* 10*s.*) per family dence. Rents have almost doubled since 0. The number of inhabitants was, on the of December, 1871, 826,341 persons, the two s being almost equally balanced, 50·4 per . of males to 49·6 per cent. of females. The of mortality compares favourably with that ther large towns. In 1872 there were regis-d 35,045 births and 27,800 deaths. The ease of the population since the last political nges, which made Berlin the capital of Ger-y, has been rapid, and it is calculated that December, 1875, its population was about a ion.

We have now reached the second division of first section, the historical development of in. The remote history of the Mark of ndenburg, and with it that of its capital, as as its name, are shrouded in profound tery. Reliable data are also wanting as to and when the town and surrounding dis-s were first taken from the Slavs and nised by the Germans. Even the period of -three years including the Government of first four Margraves since the re-conquest of ndenburg in 1157 A.D., and the overthrow of o of Köpenick, is almost a blank. It is only e second quarter of the thirteenth century more light is thrown on its history. The town of Köln on the island in the Spree and Berlin proper on its right bank became first known under the Margraves Johann I. and Otto III.; the oldest document, in which Berlin is mentioned as the seat of a dean and chapter, dating from the year 1244. We pass a great deal that is said respecting the early history of Berlin, not, however, without recommending this part of the book to the archæologist, and noting the fact that Berlin formed early one of the cities of the Hansa, and that under the fourth Hohenzollern, the Elector Johann Cicero (1486–1499), Berlin became the capital of Brandenburg. The brilliant court of the splendour-loving Elector Joachim II. (1535–71), under whom in 1539 the Reformation was introduced, brought to the town the more stirring life of a princely capital. It was then also that Berlin was enriched architecturally by the erection of several important public buildings. The old castle was enlarged to a handsome edifice. But of still greater benefit proved the reigns of the two next Electors, Johann Georg (1571–1598) and Joachim Friedrich (1598–1608). Berlin was visited by the plague in 1598, about a quarter of the population falling victims to the dreadful scourge, and it suffered severely during the Thirty Years' War. When in 1641 the young Elector Friedrich Wilhelm entered Berlin for the first time, the number of its inhabitants had dwindled down to 6,000 souls.

With the reign of the Great Elector (1640–1688), who is generally considered the founder of Prussia's greatness, Berlin also entered upon a new career, the beginning of its modern development. It took several decades before Berlin recovered its former prosperity, especially as the policy of its new ruler necessitated the burden of heavy taxes, and large sums were expended on converting Berlin into a regular fortress. When the Great Elector died, he had done much to raise his country and its capital, but it was left to his successor (Friedrich I., the first King of Prussia, 1688-1713), to make Berlin a comparatively handsome city. The reign of Friedrich Wilhelm I. (1713-1740) was of less importance to the development of Berlin; the benefit, however, conferred by his reign must not be sought in the number of public buildings erected by him (he was too parsimonious for that), but rather to the measures he inaugurated for raising and enlarging his capital. Under him two great undertakings were begun and almost completed: the enlargement of the Dorotheen- und Friedrichstadt, and the demolition of the fortification, which had for almost a century retarded the growth of Berlin. With regard to the first of these works, the measure of forcing those of the Berlin citizens who were thought to be possessed of a certain capital to build houses, whether they liked it or not, will long be remembered as perhaps the most arbitrary of that most despotic monarch Prussia has had. Some of those houses are still in existence in the southern part of the Friedrichstadt.

During the reigns of three monarchs (from 1640—1740), Berlin had increased fifteen times its number of inhabitants and in size. The next century witnessed its rise from a larger city of Germany to a capital of European importance. The merit of having effected this change belongs to the prince who raised the little kingdom of Prussia to a great power, Friedrich II., known in history as Frederick the Great (1740—1786). Although but seldom within the walls of his capital, the "Grand Monarque" of Prussia was as careful of its interests as his predecessors. The great king did already much for it during the eleven years between the Second Silesian War and the Seven Years' War; but after the final conclusion of peace, in 1763, and during the remaining twenty-three years of his reign, his activity for the welfare of his country and his capital was extraordinary. Berlin will ever honour his memory. Perhaps no monarch worked more laboriously than he did for healing the cruel wounds inflicted by the long, and, though victorious, yet ruinous wars. Berlin had also suffered much. The number of its inhabitants, which was 126,600 souls in 1756, had, in 1763, sunk to 119,300, including its garrison of 19,500 men. Frederick encouraged and aided the building of private houses in all possible ways, besides carrying on the construction of public buildings. We find most carefully recorded in the work before us all Frederick the Great did for his capital, and how all he had inaugurated continued to bear fruit after his death. The reign of his successor (Friedrich Wilhelm II., 1786–1797),—as little as it redounded to the credit of Prussian history, yet was of immense benefit to Berlin, and brought its prosperity to a point it had never before attained. But it experienced a most extraordinary change of fortune under its next king, Friedrich Wilhelm III. (1797–1840),—a still greater brilliancy of the artificial lustre shed upon the capital of the Prussian monarch, the rapid fall from this height under the oppression of a triumphant enemy, finally the beginning of a healthy and organic change to a real metropolis. During the French occupation the number of its inhabitants had declined by 30,000, and it took long years of patient work and economy before Berlin attained to its former height; however, it must be owned that the patient work was crowned with ultimate success. When Friedrich Wilhelm died, in 1840, the number of inhabitants of his capital was 328,692 souls,—it had been doubled within thirty years.

What Friedrich Wilhelm I. and Friedrich II. had prepared, what the counsellors of Friedrich Wilhelm III. had patiently worked for,—the elevation of Berlin to an important centre of trade and industry,—was accomplished with surprising rapidity and steadiness under the changed conditions wrought by the introduction of railways. This innovation in the mode of intercourse has perhaps contributed most to the enormous increase of Berlin, which has eclipsed in its growth since 1840 its rivals, Moscow, Naples, St. Petersburg, and Constantinople, and is now not far from vanquishing Vienna in the race for being the third great capital of Europe. In Friedrich Wilhelm IV. a king had ascended the throne whose ambition it was not to be behind his ancestors in the cultivation of arts and sciences, and whose beneficial influence on the development of Berlin was not fully recognised till after his unfortunate death. We have had occasion to refer to his great schemes for beautifying his capital,* some of which have been carried out, while many others left by the art-loving monarch, especially his plans for the rebuilding of nearly all the churches of Berlin dating from the eighteenth century, were doomed never to be realised. During his reign five railway termini were constructed, the great waterworks of Berlin were established, and the number of public and private buildings constructed during the same period is really something marvellous.

With the accession of the present King and Emperor, Wilhelm I., the last epoch of the development of Berlin was inaugurated. As short as this period may seem, it may be divided into three sections: the first, extending from 1861 to 1866, being named the "new era," in connexion with the regency of the present emperor,—which gave rise to so many hopes. Berlin kept on steadily increasing, and with this increase the population augmented rapidly. While the number of inhabitants had risen in the years from 1849 to 1860 by only 72,000 souls, the addition to it in the four years from 1860 to 1864,—in the latter of which years 632,395 inhabitants were counted,—was no less than 136,500 souls. The next section, including the years from 1866 to 1871, bears in many respects the stamp of a period of transition. Like the Prussian State, its capital had taken up a higher position, and continued steadily in the onward march of its development. The new laws of settlement and free trade of the German Empire sweeping away all the old restrictions imposed by the several puny states of the former Confederation on the free movement of their respective citizens, favoured in a great measure a steady influx of new elements into Berlin. The census of 1867 showed its number of inhabitants to be 702,437 souls; by 1870 it had reached nearly 800,000. The importance of Berlin as a centre of commerce and speculation of the first rank, as a nucleus for European trade and industry, increased amazingly. Yet there were unfavourable periods. Dreads of approaching political complications, stagnation of trade and industry in consequence of the rise in the price of labour and socialist movements amongst workmen, and other causes, all affected and impeded temporarily the prosperity of Berlin, and thus it happened that its material progress was behind just expectation and even the requirements of the time. The war of 1870-71 naturally did much to retard still more all advancement, and the important event which was the upshot of that great struggle, the union of victorious Germany into a new confederation of states under the leadership of Prussia, found Berlin in a state of unreadiness and slumbering projects both of a public and private nature. Then followed that

* See the *Builder* of May 27 and June 17, 1876.

period of an almost morbid self-confidence and speculation, of which naturally the new capital was the centre, the movement there being unfortunately seized upon and manipulated by unclean spirits, which ended in that senseless period of speculation and building from which Berlin is only now partially recovering, without having yet been able to realise completely its disastrous effects. Speculative building operations were only one, but a principal one, of the features which characterised that period. The sudden influx of population (55,000 souls in 1871) increased the want felt already in former years to a serious house famine. Numerous building societies were formed in consequence, the price of the soil increased fabulously, speculation seized the opportunity, bubble companies sprang up like mushrooms, and when, under the circumstances inevitable, the final crash came, the forty societies formed during 1873 alone had most of them advanced no farther than the first steps, whole estates had certainly been acquired, whole streets had been laid out, but the real want of houses had only been very partially supplied. Rents are still as exorbitant as ever, and it is only the future which promises to supply the remedy for all the evils produced by pernicious over-speculation.

We will carry on our review in another article.

A VISIT TO THE ROSLIN GUNPOWDER MILLS.

Sojourning some time ago near the beautiful and romantic village of Roslin, and while the public mind was still startled with the explosion of the first Turkish ironclad on the Danube, we chanced, in our solitary walks one morning, to come upon a gunpowder-mill. It at once occurred to us that most of our readers might not be displeased with some account of it. The ancient and honourable firm of "Hay, Merricks, & Co., Roslin Gunpowder Mills, near Edinburgh," —one of the largest in Scotland,—has recently merged into a limited liability company (like most of the staple manufactures of the country), and, of the members of this company, our thanks and acknowledgments are chiefly due to Mr. William Merricks, and to Mr. T. Morton Johnston, the manager, who not only gave us free ingress and egress to the works, but who also provided us with a qualified *cicerone* in the person of Mr. A. F. Hargreaves, the chemist to the establishment.

It would of course be out of place in this connexion to enter on the great question of the history of gunpowder, and more especially of its archæology; but a few preliminary paragraphs are absolutely necessary in order to render our descriptive matter intelligible.

As to the much-vexed question of the discovery of gunpowder, the Chinese are beyond all question entitled to precedence in the order of time,—although the Hindus, and even the Greeks, are probably each entitled to an equal share of originality. In point of fact, gunpowder, as invented by Berthold Schwartz and Roger Bacon, differed in no essential particular from the celebrated Greek fire of the Byzantine emperors, nor from the terrestrial thunder of China and Hindoostan. Nitre, as Sir George Staunton points out, is the natural and daily produce of China and India, and there, accordingly, the knowledge of gunpowder as an explosive compound seems to be coeval with that of the most distant historic events. When these people first applied this power as a propellant force with firearms, which they certainly did also in some half-barbarous fashion, is less easily determined. The question, however, is of no practical consequence; nor can we say much more with respect to its Mediæval relations under the Persians, the Arabs, or the Moors. The plain fact is, there is little importance in the history of gunpowder until it came to be used in guns; and, since the employment of firearms in Europe only dates from the beginning of the fourteenth century, it may be safely inferred that their employment in other quarters of the globe could not have been general at an earlier period. "Before that date," says Colonel Smith, in his able and recondite military treatise, "there is as little interest attached to gunpowder as to the history of steam before the days of Savory, Newcomen, and Watt.*

The introduction of the use of gunpowder with firearms had the effect, we need hardly point out, of revolutionising the whole art of European warfare. The mailed warrior and the mailed horse disappeared, as Carlyle has somewhere said, "into the hollow eternities!"—not without a howl of execration on the part of the feudal nobility. "The new arms," observes a recent French writer,* "were considered alike discreditable and dangerous to an army; and there was very little chivalry, if not positive disloyalty, in their usage." "Que nous sommes loin de ces temps!" he adds, with a philosophic shrug. On the other hand, as artillery became more general, so the actual slaughter of a battle diminished; just in proportion as the "shock of demoralisation" preponderated over the hand-to-hand conflicts where a victory was only won after there were no foes left to slay. A battle as great as that of Crecy it has been asserted might now be gained with a loss to the vanquished of not more than 1,000 men, instead of the 30,000 who are said to have fallen victims to the English sword, bill, or bow.† Finally, gunpowder, as Shakspeare uses it by the light of his genius, must have been a most potent corrective of cowardice,—as witness the foolish speech of the trimly-dressed, perfumed, and popinjay lord to Hotspur, on the battlefield of Holmedon, as to "that villanous saltpetre; dug out of the bowels of the harmless earth:"

> "And but for these vile guns,
> He would himself have been a soldier!"‡

We cannot, however, pursue this interesting subject; and can only add that most of the gunpowder used in England previously to the reign of Queen Elizabeth was imported from Flanders. But, about the year 1590, George Evelyn, grandfather of the celebrated author of the "Diary," received a licence to set up powder-works at Long Ditton and Godstone. Soon afterwards, the Evelyns were appointed sole makers of gunpowder in the South of England, on condition of delivering into the royal store every year a certain quantity of "good serviceable powder." The mills at Faversham, which afterwards became a royal factory, were established about the same time; and it appears that the present royal factory at Waltham Abbey can boast of as great an antiquity; which royal factory, by the way, as it stands at this moment, is unquestionably the model gunpowder-works of the whole civilised world. From England the manufacture spread to Scotland, and even, we believe, to Ireland, since there was for many years a Government gunpowder-mill at Ballincollig. Colonel Smith's official handbook, cited above, is our authority for these particulars; and we may as well add that it has been our chief guide through the somewhat sombre technicalities of the gunpowder manufacture.

Gunpowder, to give the best definition of it we can find, is an intimate mixture of certain proportions of nitrate of potash, sulphur, and carbon; or, if we must use the popular parlance of the powder-mills, of nitre, brimstone, and charcoal. The relative proportions of these ingredients vary with the quality,—but the constituents themselves never vary. "Although gunpowder," says an able writer,§ "is the oldest, it is still the best of all known explosives for warlike purposes, and, although with the exception of some improvements in the details of the manufacture it is the same as it was centuries ago, 'when a ground handful of nitre, sulphur, and charcoal drove monk Schwartz's pestle through the ceiling,' it is the only substance which chemistry has discovered that can be used with safety to propel a bullet from a gun. Amongst the many improvements which have been made in all the appliances for slaying human beings, gunpowder, the mainspring of them all, has remained unchanged. Many other explosives, most of them of recent date and more powerful in their action, have been brought forward and tried,—but the very intensity and suddenness of their explosions are the causes of their rejection." Even ordinary gunpowder is found too sudden and trying in its explosion for the monster guns of the day; and the problem with all good artillerymen at this moment is to devise some effective means of modifying and controlling its disruptive force. For example, a charge of dynamite or gun-cotton would instantaneously destroy the strongest gun it is possible to forge! We shall have to explain this phenomenon as we proceed. In the meantime, let us repeat that whatever may be the nature of the firearms, gunpowder, in some one or another of its forms, must always be the *motif*. Ships may improve their armour, guns may increase their calibre, but gunpowder has never changed its constitution. Like good bread and good wine, this formidable compound of combustible chemicals seems to have reached its perfection in the dim twilight of remote history. Sulphur, carbon, nitrate of potash: this "triple alliance," as it has been styled,—this unholy alliance, as some would say,—these three constitute gunpowder, and the greatest of these is the nitrate of potash.*

We will now proceed to take the reader with us in a glance through the mills at Roslin, premising that all attempts at a systematic or exhaustive description of them would be quite impossible within our prescribed limits.

The picturesque valley, or rather glen, in which the Roslin Gunpowder Mills lie embosomed is certainly one of the loveliest pieces of landscape we have come across in the whole of our rambles throughout Scotland. It forms one of a series of those exuberant woodland glades and dells full of picturesque beauty and true natural loveliness, through which the river Esk winds its devious and serpentine course from the Pentland Hills to the estuary of the Firth of Forth. This series of glens includes such delicious morceaux as Woodhouslee, the woods of Hawthornden, Dryden, Polton, Melville Castle, and other beautiful scenes familiar to every tourist in Scotland, and especially so to all true admirers of Scottish poetry and song.

Somewhere about a century ago the paternal ancestor of the present Messrs. Merrick pitched his warlike camp on the estate of Sir Norman Lockhart,—on which principle of tenure in the feudal law of Scotland we did not to curiously inquire. The water-power of the river Esk was, of course, the first consideration, the second, the great abundance of timber and coal. But the natural peculiarities of the ground were carefully taken advantage of to insure the surrounding population from the perils of an explosion. On the one side of the valley is a very steep natural declivity; on the opposite banks of the river the rocky and precipitous cliffs tower to an altitude of more than 100 ft. Indeed, the whole works are almost hidden from observation, and as completely buried in the beautiful valley glen as if a natural grave had been prepared for their reception. There are three gates to the works: first, the principal entrance (the east gate), on the road from Roslin to Rosewell; the upper gate, leading to the manager's house, abutting on the road to Pennicuick; and, finally, the Kirkettle gate, which lies about a mile to the westward.

The buildings, as we have said, are completely isolated (indeed, the pavilion system is here carried out, for obvious reasons, to its extreme consequence), and they resemble each other closely in general contour and construction. Most of them are built of stone, red tiled and slated, usually of one story, from 25 ft. to 40 ft. square on the plan, with very few window openings, and those extremely small. Here and there a picturesque chimney projects against the sky line, decorated on the corners and cornice as becometh the surrounding scenery. Some of the buildings are formed by a combination of stone and timber, according to the purpose of the house; some are built of brick, and others are wholly of timber. Indeed, it is preferable, we are informed, in gunpowder works to have slight timber buildings in some cases, especially for the mills, as in the too possible event of an explosion the timbers are simply scattered about, and may be reconstructed. But whatever may be their character, the whole buildings,—the magazines, even the very offices and gatekeepers' lodges,—have a sombre and *grave* appearance. A strange silence prevails, and seems to infuse its gloomy influence into the very hearts of the gunpowder artisans. Miss Muloch, who visited the Roslin Gunpowder Works some twenty years ago, has in her usually sweet descriptive style the following observations:—"The green lane broken into an open space, blackened with *débris* of an unknown kind; the running stream was caught and diverted into various mysterious channels, or led

* A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey. By Captain F. M. Smith, Royal Artillery Assistant Superintendent. Printed by Order of the Secretary of State for War. London: H.M. Stationery Office, &c. 1870.

* Fernand Papillon, in the *Revue des Deux Mondes*, Juillet, 1873, p. 409.

† See Chambers's Encyclopædia, and the authorities cited, vol. iii., p. 338.

‡ First Part of King Henry IV., act i., sc. 3.

§ In the *Quarterly Review*. Vide vol. cxxv., p. 109.

* The reader who wishes to pursue this subject should consult Sir William Congreve's works, *passim*; and also with great advantage the late Emperor Napoleon's "Etudes sur le Passé et l'Avenir de l'Artillerie," vol. iii. Paris. 4to. 1862.

nder water-wheels in dark buildings, of which
ne doors seemed sedulously kept half-closed.
nother peculiarity of these buildings was that
ach was planted separate within a considerable
istance of the other. Between them a few
orkmen were moving about with that grim
autiousness which seemed the characteristic of
ne place. There was none of the careless jollity
ne usually sees in a manufacturing community;
verybody seemed to go about as if he had
mething on his mind.*

Although by no means so dingy in their
xternal appearance as some other factory build-
gs we could call to recollection, the gunpowder
ouses have a singular resemblance in their
haracter to the pencil-mills at Keswick, which,
some of our readers may remember, we
escribed several years ago,† and as charcoal
nd plumbago are common to both industries,
here exists a certain, although remote, basis for
e likeness.

1. The first of these odd-looking gunpowder-
ouses to which we were introduced was the
harcoal-house. Charcoal, we need hardly say,
produced when any organic substance is
rongly and continuously heated out of contact
ith air,—a process, in fact, of destructive distil-
tion, or, to be more precise, in the present case
carbonisation of wood. The kinds of wood
hich are generally used for the manufacture of
unpowder-charcoal are the black dogwood
hamnus frangula), the willow (*Salix alba*), and
e alder (*Alnus glutinosa*). These woods are
well adapted for the purpose of conversion
to charcoal; but the dogwood alone, which is
ally the alder-buckthorn or berry-bearing alder,
always used for the best sporting gunpowder.
ech makes very bad charcoal; so does fir;
d oak is probably the worst timber for this
rpose under the sun.‡ Great stress is laid by
e makers on the cleanness of the wood used
r charcoal; any traces of bark adhering to it
nstitute an impurity. As we entered the
orks, we saw several cartloads of this green
ood being delivered; and the first process in
e manufacture is to strip it of its bark. After
ing stacked for a certain time, it is taken to
e charcoal-house (at the door of which we and
r readers have been standing for the last
arter of an hour), where it undergoes a
orough metamorphosis.

The charcoal-house consists of a large square
ick building, with a tall chimney, and contains
double range of huge iron retorts or cylinders
bedded in furnaces, and surrounded by flues
a peculiar construction. Here the wood is
roduced by means of sheet-iron slips, and the
linders sealed with iron doors secured by a
werful iron screw much in the same way as
e ends of gas retorts are fastened. The pro-
s of charring then goes on, which occupies
m sixteen to eighteen hours, depending on the
e of the wood, and the capacity of the cylinder.
e amount of charcoal produced is usually about
per cent.,—that is to say, one ton of timber
oduces five cwt. of charcoal. The waste gases
this process, it is important to observe, are
lised by passing them into the flues under-
ath an adjoining set of cylinders, and con-
tute, in fact, the most valuable part of the
l. After the charcoal is taken from the
inders it is placed in iron coolers provided
h tightly-fitting lids, and allowed to stand for
enty-four hours, by which time it is quite cold,
it is then shot into the store-bins. This
rcoal is next reduced to powder by grinding
a neighbouring mill exactly of the type and
ttern of a large coffee-mill, and is afterwards
sed through a wire reel, and then a silk sieve
xclude all foreign particles, such, for example,
a small piece of stone, or a rusty nail. It is
n ready for the mixing-house. The fitness of
rcoal for gunpowder depends alike on its
mical composition and its physical qualities.
en properly made it should be jet black in
our, its fracture should show a clear velvet-
surface, and it should be light and sonorous
en dropped on a hard surface. Underburnt
rcoal, however, it is proper to mention—that
harcoal prepared at a very low temperature,
easily distinguished by its reddish-brown

* See an article entitled "Through the Powder Mills," *bers's Journal*, vol. xv., p. 205.
† See "A Visit to the Keswick Pencil Mills" in our me for 1865.
‡ It is a curious fact that Marco Greco, a writer who ished before either Schwartz or Roger Bacon, recom-ded particularly the charcoal of *willow*. We also find, the same authority that as early as the year 1414, Henry V. ordered twenty pipes of *willow* charcoal to ade into gunpowder.—See the historical section of the le "Gunpowder," in the eighth edition of the cy. Brit."

colour—has recently been used with good effect for small-arm powders. It certainly renders the powder more inflammable, but it suffers under the disadvantage of being more hygroscopic than denser charcoal, and therefore of rendering the powder more liable to the influences of damp.* Charcoal is the only element of the compound which should be kept or "aged" before admixture, and is all the better for keeping, as they do at Roslin, for six days; otherwise it exhibits a strong tendency to spontaneous combustion.† To conclude this part of our subject, we shall just add that charcoal, although chemically a simple substance, is the ingredient of gunpowder which is least understood. "Chemical analysis fails to answer the question why one kind of wood affords a better charcoal for powder than another; so does microscopical examination. All that can be said is that the lighter woods generally yield lighter and more combustible charcoals: and yet the dog-wood (or wild cornel tree), which makes the strongest of all powders, and which is exclusively used for the fine powder employed with our breach-loading fire-arms, is a dense, comparatively-heavy, slow-growing wood. In the elaborate researches of Bunsen, Schischoff, and Von Karolyi, respecting the products of gunpowder, this question of different descriptions of charcoal seems to have been entirely overlooked; and unfortunately it appears to be one not easy of solution. For even the charcoal of a single species of wood is found to vary not only in density but in chemical composition with the temperature at which it has been produced.‡

2. The next ingredient of our triple alliance is sulphur; which, however, as its properties are so well understood, we may dismiss with little notice. Sulphur is found partly free and partly combined with other elements. At present by far the greatest quantity of our commercial supply comes from Girgenti, in Sicily; but it is well to know, and should never be lost sight of, that we are by no means dependent "on the foreigner" for sulphur, as the element can be easily extracted from the iron and copper pyrites, so abundant in this country.§ This crude sulphur is refined in the "brimstone-house" of the Powder Works by a process of distillation, or rather of sublimation, which we need not stay to describe, although it is one of the most beautiful processes in the whole range of practical chemistry. The crude sulphur is heated in a large cast-iron retort, about 5 ft. in diameter, to a temperature of about 700° Fahrenheit; when the sulphur passes over in vapour, and is condensed by means of coolers, it is then found to be almost absolutely pure. As an ingredient of gunpowder, sulphur is chiefly valuable on account of the low temperature (about 500° Fahrenheit) at which it inflames "thus facilitating ignition," as Professor Bloxam observes, "and accelerating combustion." This is not a distinction without a difference with respect to the explosion of gunpowder, as we shall presently see; on the contrary, it is a most important characteristic of the chemical action. The distilled and purified sulphur, after being removed from the "brimstone tubs," is broken up into large lumps, which are ground under a small pair of mill-stones. After being ground and sifted, it is ready for the mixing-house.

3. We now come to the third and last and most potent ingredient of our triple compound, the nitrate of potash or saltpetre. In order to study this deflagrating substance properly we must enter the "saltpetre-house," a large square stone building, with a pavilion roof and a tall, square, ornamented chimney-shaft, situated very near the centre of the works. Saltpetre, which constitutes three fourths of the mixture of gunpowder is properly regarded as its mainspring. Our chief supply is obtained from our Indian Empire, mostly from Bengal and Oude, where it occurs sometimes as a white encrustation or an efflorescence on the soil, and sometimes as disseminated through its upper stratum. In both of these cases the result, we were given to understand, is due to a peculiar electrical condition of the atmosphere acting on the potash salts contained in the soil which constitutes the nitre beds. The crude nitre as we import it is obtained by lixiviating this nitrified soil, and allowing the solution to crystallise; and this "group saltpetre," as it is technically termed, comes to us packed in bags of coarse sacking, which we observe plentifully strewed about. To refine and purify this group stuff constitutes the next process of the manufacture, which, although borrowed from the French, is a very simple and beautiful process; and depends entirely on the physical law, that nitre like many other salts is very much more soluble in hot than in cold water. The impurities always present consist generally of about five per cent. of chloride of sodium and various salts of lime (technically termed "the refraction") do not possess this peculiarity of solubility at different temperatures, and accordingly the saltpetre is crystallised and recrystallised from the saturated solution when cooling; while the impurities are left behind. We should mention here that the "saltpetre-house" is copiously supplied with water; and is so constructed on the evaporating-beds that the solutions of nitre gravitate from the first process to the last, where the liquid pumped out is almost perfectly pure nitrate of potassium. From this solution the final touch of crystallising is given; and after washing these crystals the saltpetre is transferred to the store-bins the day after it has been refined; where it remains (generally three or four days) until it is required for use in the mixing-house.

* See Captain Smith's "Handbook," cited above, p. 31, for some interesting experiments conducted at Waltham Abbey, in which it was found that red charcoal powder gave a higher velocity to the projectile. Comp. also Tomlinson's results obtained with rockets, p. 34.
† For some experiments on this subject see "The Analysis and Properties of Gunpowder, and its Crude Constituents." By Andrew Fuller Hargreaves, F.C.S. 8vo. London: Heywoods, 1875. p. 29.
‡ *Quarterly Review*, vol. 125., p. 110. Bunsen and Schischoff's investigations are detailed in Poggendorf's "Annalen," vol. 102, p. 321, et seq.
§ The method of obtaining sulphur from iron pyrites, a process usually performed on a very large scale, is described in Miller's "Inorganic Chemistry," 2nd edition, p. 154.

We should state here a circumstance with regard to which we made particular inquiry, that neither in this process of refining the nitrate of potash nor in any other in the whole manufacture does the slightest impurity arise which is capable of contaminating or polluting the river.

The intelligent reader will now perceive, on glancing over the three previous paragraphs, that we have got the tri-basic ingredients of gunpowder,—the charcoal, sulphur, and saltpetre,—properly pulverised, purified, refined, ground, and sifted to the requisite degree of fineness, all marshalled abreast of each other, like the three divisions of an army, and ready to be combined in their respective proportions. Our trio must now become *uno*, and this vital step in the process is effected in the "mixing-house." But, thereby hangs a tale. We are now to enter upon what the common and statute law of the country describes as *dangerous ground*, and thereupon exacts from us and all persons whomsoever certain wise precautions calculated to preserve our own lives and the lives of others of her Majesty's liege who may be concerned in the manufacture. In plain language, we have here for the first time to make some change in our costume. We had, in the first place, a dress furnished to us consisting of a woollen blouse and overalls, destitute of buttons or button-holes, but profusely supplied with latchets, in which garments we promptly enveloped ourselves; and secondly, a pair of the most monstrous boots we ever had the misfortune to encounter,—boots like those of a Russian Tartar of Kamschatka, or rather more like an Esquimaux snow-boot without the sealskin lining, the which boots we were enjoined to put on and take off every time we made our entrance or exit from a "dangerous place," or what is termed in powder-work phraseology, "a clean floor." Our *chapeau* we may mention, being of a mild and inoffensive character, was left *in situ* and untouched. We may add here that when we entered the gate, or, at least, on leaving the office, we were politely requested to divest ourselves of all such superfluities as lucifer-matches, vesuvians, cigar-lights, or any steel articles, such as a penknife or a pocket corkscrew, or a bunch of keys, or, in fact, of any material which could aid in producing fire, or any electrical conductor.

But we must hurry on. The process of mixing is a very simple one. The relative proportions of the three ingredients are weighed out in the respective ratios of—

Nitrate of Potash	75 per cent.
Charcoal	15 ,,
Sulphur	10 ,,
Gunpowder	100 centum.

Of these quantities about 50 lb. or 60 lb. at a time are transferred in bags to the "mixing machine," which consists of a hollow drum of gun metal, which is made to revolve at a speed of forty or fifty revolutions per minute. In the interior of this drum a series of arms or fliers are also made to revolve at twice that speed in the opposite direction. After revolving a few minutes this

drum is opened at the bottom, and the ingredients (now thoroughly mixed) are allowed to fall down a shoot into a tub, from which they are sifted, put into bags, tightly tied up, and then transferred to the incorporating mill. This "green charge," as it is called, of the fresh mixed ingredients which we must now speak of in the singular number is just a species of inchoate gunpowder, and differs from gunpowder simply from the circumstance of not being so easily ignited and being slower in combustion. Nevertheless, it is highly explosive; and an explosion in the mixing-house, when it does occur, is far more severe and terrible in its consequences to human life than one arising from any other cause, on account of the slower but deadlier action of the flame which burns into the very bone instead of scorching and dashing its victims to pieces, as the finished gunpowder does. This "mixing-house," we may observe, constitutes the first "danger building" in the highly expressive nomenclature of the Explosives Act (38 Vict., cap. 75), and although it is the dirtiest, dingiest, and dustiest house we saw in the whole manufactory, it is notwithstanding legally "intituled" "a clean floor," that is to say, a floor on which we dare not tread without the Patagonian boots and the relative costume we have described.

The next stage in this dangerous and explosive investigation is the process of "incorporating," which is, without doubt, the most important in the whole manufacture. In point of fact, it is the process of gunpowder-making *per se* and *par excellence*; for the green charge goes to the incorporating-mill a mere mixture of ingredients, but it leaves it in the form of gunpowder. And this transformation is due simply to an elaborate process of trituration,—in plainer language, to several hours of effective milling. Since gunpowder is a mechanical mixture of certain substances, and not a chemical compound (as many people suppose), it follows, by all the laws of physics, that the more thoroughly and intimately it is mixed the better. For this purpose, about 60 lb. of the green charge mixture is transferred at a time to the incorporating house, where it is placed on the cast-iron bed of a ponderous rolling-mill, with edge-runners constructed on precisely the same principles as our well known mortar-mills, where it is ground steadily and continuously from periods ranging from four to eight hours. Here, as we observed, the gunpowder is actually made; and made too in its strongest possible form, for really none of the subsequent processes add one single iota to its explosive powers.

The workmen on duty at this incorporating-mill do not require to give constant attendance, as the process is by far the most dangerous connected with the manufacture of gunpowder. It is only necessary, therefore, that they should enter the mill occasionally to moisten the charge with distilled water, or to rake it up from the cast-iron bed. Every possible precaution is taken to prevent explosion. The mill itself is driven by underneath gearing in order to prevent any portion of the machinery, such as a bolt or nut, from falling into the incorporating pan; and also with the view that if an explosion did occur the machinery *would escape injury*. For example, only a day or two before our visit, an iron nut was found on the floors of one of the danger houses, which caused great and immediate consternation throughout the whole factory. It was discovered in time to prevent any possible percussion, or the consequences might have been a dire explosion, with the loss perhaps of many lives. The incorporating runners are worked night and day; and the lamps burning during the night are properly protected by being recessed in the building, and uniformly lighted from the outside.

From the "incorporating-mill" which the powder leaves in the state of what is termed "milled cake" it is transferred in working barrels to the "press-house," where it is subjected to an enormous pressure in successive layers between copper plates by means of a powerful hydraulic press. The effect of this pressure on the powder, which contains sufficient moisture to make it cohere, is to reduce it to one half the volume, and to convert the "mill cake" into "press cake," a hard compact cake resembling slate in appearance, each of the layers producing one about 2 ft. 6 in. square and 1¼ in. in thickness. The use of this pressure is to give consistency and uniformity to the mass before granulation: in fact, it is on the amount of pressure which this press cake receives that the quickness or explosive qualities of the finished powder mainly depends.

The "press cakes" are next taken to the "breaking-down house," where they are broken down into pieces about the size of a small walnut by means of toothed rollers made of gun-metal; which walnuts are in their turn transferred to the "corning-house" for the purpose of being granulated.

This process of granulating, and the subsequent one of glazing we are afraid we cannot stay to describe in detail. The old-fashioned method of "corning" the gunpowder by means of a series of square sieves put in motion by a crank underneath, is now superseded by the improved granulating machine of Sir Wm. Congrave, the effect of which is to render the grains almost quite equal in point of size and density. But the granulating powder as it comes from the machine contains a large quantity of dust, which is the next object of the gunpowder maker to get rid of. The "foul grain" is therefore subjected to a careful process of sifting in revolving reels covered with cloth or wire mesh of various degrees of fineness through which the dust escapes. This granulated powder is now glazed by being put into a large wooden cylinder, about 12 ft. long and 3 ft. in diameter, making about ten revolutions per minute; and revolving all night (or at least sixteen hours at a time) by the motive power of an undershot wheel. A small quantity of black lead is added here in order to assist the glazing, and also for the purpose of giving the well-known brilliancy to the grains.

The necessity of gunpowder being *grained* is at once apparent if we consider the fact that if it were used in the form of an impalpable powder it would scarcely explode at all, at least when compressed. The ignition of gunpowder, as we have already indicated, must always be distinguished from its combustion, although these phenomena follow each other with such rapidity that they appear simultaneous. The heat evolved by each grain during its combustion, and the oxygen diffused throughout the interstices, suffices to ignite all other grains within a sphere of six times its own diameter. The granulation of the gunpowder has thus a great influence on the combustion, which means, in other words, on the strength of the explosion. In the second place, granulated powder is quite free from dust, and therefore more cleanly in its use for firearms; and, finally, it is more portable and merchantable. The uses of *glazing* the grains are threefold: the grains are rendered more symmetrical; not so liable to absorb moisture; and they acquire a better physical appearance. From this glazing operation the granulated and beautifully glazed gunpowder is transferred (always by means of the indispensible working barrels) to the "drying stores," a building about 26 ft. square, heated with steam pipes. The powder is here loosely placed on a series of wooden trays, arranged in a frame one above another, and covered with gauze. Here it remains for twenty-four hours, the powder of one day's "storing" always making way for the previous day's "glazing." After being dried in this way the powder is taken to the "dusting-house," where it is simply freed from any superfluous small-size grains and dust; after which it is packed in calico bags,—a precaution suggested by Major Majendie, the Government inspector,—inserted in gunpowder-barrels, which after being properly headed-up are ready for storage in the magazine, or for the immediate supply of the market. Where that market is; what price the commodity brings; how the home and foreign supplies are distributed; what good its consumption may do, and what harm,—these, and a multitude of such politico-economical questions, we must leave to the candid consideration of the courteous reader. Our business in this paper has lain more in the direction of production than of consumption; but a single word may be permitted to us even on this point, and that we shall give in the authoritative voice of Colonel Smith,—"No foreign nation has as yet been able to produce gunpowder which can compete with that which is made in the Government establishments, and by some of the private makers in this country," most of whom, we may add, are distinguished for their specialities in the production of particular qualities.

We had something to say about the explosive strength of the various descriptions of gunpowder. At the last operation, we saw (and heard!) it "proved" on the field by means of a mortar charged, every shot, with a certain definite quantity, loaded with a 68 lb. ball, and fired with the ordinary fuse. It was alike curious and instructive to observe the tremendous difference in the projectile power. Some sporting powder, for example, projecting the ball several hundred yards; and some blasting powder several yards only from the mouth of the gun. But this subject, as well as the nature and causes of gunpowder explosions, we must leave, with the reader's permission, for another occasion.

War, horrid war! is, over a large tract of Europe and Asia, at this moment the order of the day. Nor can it be said that warlike preparations on our own part are wholly unnecessary, for we hold it true, in common with all rational beings, that in our present state of civilisation (?) peace is alone possible, and best preserved by an intelligent and scientific state of *preparedness* for war. "Trust in God," said Oliver Cromwell, on one momentous occasion, "and keep your powder dry!" With which pithy aphorism we shall close these brief observations made at the Roslin Gunpowder Mills.

ANCIENT AND MODERN GYMNASTIC EXERCISES IN THEIR BEARING ON HEALTH.

The utility of gymnastic exercises has, in all ages, been more or less acknowledged in view of the promotion of human health and the development of agility and strength; but, like many modern exercises, the ancient ones were abused, and led to the demoralisation of human nature, and to the production of monsters instead of men. Bodily exercises, originally intended for one of the most elevating and life-sustaining ends, in time became degraded for greed and the barbaric pleasure of disgusting exhibitions.

So much was thought originally by the Greeks of gymnastic exercises that, like music and arms, they were reckoned among the liberal arts. As far back as the time of Homer, as his pages show, princes and other elevated personages exercised themselves in what was then, as well as in our own time, considered the "manly arts" of wrestling, boxing, leaping, running, and throwing quoits; and there is reason to believe that there were regular professors or masters for teaching these arts. The working or lower classes were prohibited from practising these exercises, for where princes and celebrated military heroes met and gloried in their gymnastic displays, the lower orders, who were little less than helots, were not admissible.

We find that the military heroes who were skilled in these ancient exercises did not confine themselves, like the wrestlers of a subsequent period, to one species of them, but were proficient in a number. Beautiful slaves, horses, mules, oxen, gold and silver flagons or other vessels, and articles of value were the rewards. At this time, properly speaking, there were no special gymnasiums; for the meeting was in the public forum, or other open space of sufficient size. After the Trojan war, owing to the strife that reigned, the exercises alluded to seem to have gone into disuse for some time. The Cretans and the Spartans are accredited by Plato and Aristotle as the inventors of the gymnastic arts; and the former remarks that not long ago to be a spectator of naked exercises appeared as ridiculous and indecent to the Greeks as it does now (in his time) to most of the barbarians. Aristotle observes that the Spartans were for a long time superior to the other Greeks; but when gymnasiums had been introduced by others, the Spartans were beaten easily by their rivals and imitators. About the commencement of the Olympiads prizes were given first to the runners, the wrestlers received prizes about the eighteenth, and the boxers in the twenty-third Olympiad. The pancratiastic art of combined wrestling and boxing received rewards at a much later date than the above; but it appears that neither this art nor that of boxing was allowed among the Spartans,—not, it is said, because one of the parties must confess himself conquered, but on account of the danger of being maimed and disfigured.

Aristotle, in detestation of these arts, praises the Spartans for not encouraging an athletic habit of body among their young men. Why Homer should place boxing first, wrestling second, and running last, has been a subject of inquiry among the Greeks; for it appears that the two latter were the most ancient exercises, and the Greeks were of opinion that wrestling was the most difficult, and required the greatest skill. Gymnastic exercises were promoted and encouraged throughout Greece shortly after the institution of solemn games, and the combaters, or combatants, had other inducements besides

prizes held out to them for reward. Most of the towns of Greece had gymnasiums erected, and these places were looked upon as ornaments; while those who conquered at the Olympic or other games were regarded as much as defenders of their country, freed from public burdens, fed at the public expense, or otherwise received annual premiums. These were certainly strong inducements, and no doubt led to not a few evils. We find Solon endeavouring to bring these expenses within due limits; but it has been remarked by Petit and Menage that conquering athletics soon after the time of Solon had a place in the Prytaneum. The return of these heroes from the games was celebrated with great pomp. It was declared by Cicero that the conqueror in the Olympic games was esteemed by the Greeks an honour almost superior to triumphs at Rome. It is not to be wondered at that the minds of the Greeks became eventually depraved; their attention becoming so absorbed in the contests of boxers and wrestlers. The object became soon not to develope into a hardier, stronger, or more noble race, but men only thought of throwing down an adversary and gaining a prize anyhow. People sat whole days viewing their games. The finances of the State became exhausted in providing for them, and as a consequence military virtue and patriotism declined. Galen was a bitter enemy to gymnastic exercise, though he commended moderate exercise, to give agility, strength, and beauty to the body, courage and fortitude to the mind. The gymnastic exercises he protests against were those that destroyed both and rendered men unfit for either peace or war. Galen says that the gymnastic arts sprang up not long before Plato's time, but the laws of Solon have been pointed to, and the testimony of ancient writers, to show that the dangerous consequences of them had been long foreseen. As Hippocrates, Euripides, Plato, Aristotle, and Galen inveigh severely against these exercises as they were carried on, we may conclude at least that the first four were well acquainted with the abuses in connexion, and that these gymnastic exercises must have been of considerable time in existence before their day. We find from one or more of the above authors that not only youths of a strong constitution were trained in the gymnasium, but those of a delicate frame of body, and hence they grew distorted, frequently oppressed with disorders, or carried away by a premature old age. These evils, of course, could only arise through an excess of the divers exercises gone through, and the methods by which they were encouraged, which we shall presently see. The precept of Hippocrates was despised or violated, as everything was not taken in moderation. Where the object was to throw down an adversary, or to bear the severest blows, the care was to give an immense size to the body. The pugilists of our modern days would appear to have taken a lesson out of the books of the Greek wrestlers of old. The latter were accustomed to devour flesh, and we are told particularly swine's flesh, in immense quantities, and then followed for several days immoderate exercises, uninterrupted by any sort of weather. Hours for sleep and labour became inverted, and, like brutes, they slept betimes for several nights and days together. In the effort to gain strength and bulk necessary for the prize, body and mind were impaired; and Galen, remarking upon this, declares none of them retained their strength above five years, and he compared them to walls, which having been often shaken by work like machines, fell down afterwards on a very slight attack. The changes of the weather had an effect upon them, and they were as little able to bear it as young children. The diseases they were subject to were apoplexy, bursting of blood-vessels, nervous disorders, the sudden loss of eyes, teeth, and speech. The boxing element, indeed, might be expected, in our days as well as in the times of Hippocrates or Galen, to expose its professors to the risk of losing eyesight, tongue, and speech, notwithstanding the exercise of their so-called "manly art." Galen thinks that it is better to dig, plough, carry burdens, hop, ride, and fight, doing all these things in moderation, than to have any concern with boxing and wrestling.

The reaction must have been great when what was once considered a liberal art was at last looked upon with aversion by philosophers and despised by the greatest generals. Alexander gave these combatants no encouragement, never celebrating any of their games, despising them as persons incapable of honour or profit. They were detested by Philopœmen for rendering the finest bodies unfit for war, and because of their excesses in sleep and food they were unable to bear the fatigue of a military life.

The gymnastic life of the Greek, which we have sketched on the authority of a number of ancient writers, had its defenders as well as its assailants. It found in Lucian a strenuous defender, who took no notice of the objections urged by Plato and Aristotle. It is thought that the opinion of Lucian may be excusable, as, in speaking in Solon's name, he describes the arts only known in Solon's time, when the disasters attending them were not so common. But if we allow that Lucian, says Meiners (see Commentaries of the Royal Society of Sciences at Gottingen, vol. xi.), is speaking of the combatants of his own time, his inconsistency is not greater than that of introducing, as he does, the names of philosophers and sophists as instructors of youth who were not known in the age of Solon.

The Romans, it is pretty generally known, erected gymnasia on a magnificent scale, and in consequence of the extensive baths which were attached thereto, they were subsequently called *thermæ*. The exercises here were wrestling, dancing, boxing, running, leaping, hurling, and quoit-throwing. In addition there were riding, swimming, driving, climbing ropes, rowing, swinging, and mock fights, and exhibitions of various kinds, and some of them of a very savage character. Among the Greeks, before the time of Hippocrates, gymnastics moderately indulged in were considered a part of medicine; but, as we have seen from the precepts of that ancient writer and others of his nation, that exercises in part that might have long existed in their purity as a boon were converted into a curse. Moderation is a soft expression, but since the days of Homer or Hippocrates to the present, human nature has been seldom content to apply it in practice, and hence bodily ills as well as worldly ones have been legion.

We have not left ourselves space on this occasion to treat of the modern aspects of gymnastics and their bearing on mental culture and physical health, the cognate exercise of British sports periodically practised, or the constant exercise of mind, body, and limb in connexion with human manual labour. This will form the subject of another paper.

EGYPTIAN OBELISKS.

It will surely be deemed an excusable conceit if the contributors to the *Builder* choose to remember that more than half a lifetime ago the conductor of this journal told the story of the Luxor Obelisk to the Institute of British Architects only a short time after its erection in the Place de la Concorde of Paris. Nor was it possible even at that moment to conceal a little sense of shame in the admiration of French enterprise, or to stifle a feeling of regret natural to artists and archæologists, that the prior gift of the Egyptians to England still lay half embedded on the shore of Alexandria. Indeed, the fact that the English had obtained the prostrate needle of the so-called Cleopatra pair induced the French to demand its fellow, still erect, from Mehemet Ali; and from this probably originated the report, even now reiterated, that the obelisk just arrived is simply the pendant of that which marks the centre of four vistas in Paris. Those two obelisks and the Column of Pompey, wrote M. de Verninac Saint Maur, in 1835, are the only monuments that Europe can possibly grudge of Alexandria. One of those obelisks, which was regarded as the property of the British forces after the naval victory of 1801, was formally presented to the Government of this country in 1820, and the compliment was treated with insular contumely, or, in homelier words, the gift horse was looked full in the mouth. Fifty-seven years after, — seventy-six years after Nelson's triumph,—when an English gentleman undertook to defray the expenses of its carriage to London, the offer was renewed at the request of her Majesty's ministers, by the present Khedive of Egypt. It must be difficult for foreigners,—at least for the French,—to discriminate in admiration for the British mode of procedure: the cool parsimony of power probably excites wonder, the public spirit of individuals commands respect. Historians of art may perhaps sum up the case with the assurance that Britain, superior to every form of ridicule, bore the laughter of the world for much more than half a century and saved to the State ten thousand pounds.

Mr. Erasmus Wilson, in his excellent attempt to give a popular account of "Our Egyptian Obelisk," may be similarly in need, perhaps, of excuse, different, however, from our own, when he associates the British trophy with the eyes of Abraham and Jacob, with the successes of Joseph, and with the education of Moses. According to the preface of his little book, he contemplates, and indeed has already prepared, a larger work upon obelisks, and this is to be published as soon as the imported monument is in its place.* There may, therefore, be yet time to suggest that mere speculation, which is too often permitted to undermine archæological research, should be carefully expunged from his coming book; and that though Moses may have handled his staff under the shadow of upright monoliths at the Egyptian Heliopolis, it is not at all likely that the "ancient sycamore-tree," now to be seen close by at Matarieh, is the identical sycamore-fig under which the Holy Family lay 1,900 years ago! An event like the arrival of the obelisk, especially after delay and vicissitudes, and, worse, after the loss of six lives, is sure to call forth masses of verbiage in which errors repeated from book to book will be farther mis-stated; and it is the duty of men who, like Mr. Erasmus Wilson, understand their subject, not to mar it with any recital of impossible probabilities. Not much is yet absolutely confirmed of obelisks, large and small, either carved or plain, or in a rude state, but enough is known to prevent essayists from increasing the confusion of the public mind on the subject. Oddly enough, the Part of the "Dictionary of Architecture," just published, contains the word "Obelisk," and the article thereon gives a reference to almost every writer upon the subject, thereby forming a collection of extremely valuable notes. We also have made a collection, and united in one engraving some of the important obelisks which are known to travellers, or which have been carried, through the zeal if not the cupidity of conquerors, over a thousand miles of land and more than a thousand miles of water. We have distinguished them by letters, and they are as follow:—

A.—The British Obelisk.

This monolith, of rose-coloured granite, is 68 ft. 5½ in. long from its lower extremity to the point of what is called the pyramidion. Its breadth at its widest part is 7 ft. 5 in. on two of its sides, and 7 ft. 10½ in. on its other two sides. These are the latest figures (given by Mr. Wilson), and the description is thus continued:—"From its greatest width near the base of the shaft it narrows, as it ascends to a breadth of 4 ft. or 5 ft., and then contracts into a tapering pyramid, 7 ft. 6 in., called the pyramidion. The base is rounded at the angles, possibly to give facilities for its erection. Its weight is 186 tons, and its cubical measurement 2 529 ft." This monolith had already travelled far before its departure from the African coast. Cut from the rock on the confines of Egypt and Nubia, in the quarries of Syené (the modern Assouan), just above the Tropic of Cancer, it was conveyed by water to where Cairo now stands; it was then carried over land to near the present Matarieh, called by the Greeks Heliopolis (just as Baalbec, in Syria, was called), and signifying a city of the Sun. On its way from the quarries it had passed through Thebes. To quote the Greek historian,—"From Heliopolis to Thebes is a voyage up of nine days; the length of this journey is in stades 4 860, ... and from Thebes to the city called Elephantine (almost in a line with Syené), 1,800 stades."† In this same Heliopolis our obelisk formed one of a pair placed before a temple dedicated to the Sun. From the inscription, or rather from certain hieroglyphics, it is known to have been set up by the pious command of Thothmes III. more than 1,600 years before Christ. When Egypt became a Roman province some of the obelisks at Heliopolis were carried away by the conquerors to adorn the city of Rome; and the pair of which the British obelisk formed one were taken to Alexandria, the new capital of Egypt, to be set up in front of a temple of the Cæsars. Placed there about twenty-three years before the Christian era, a few years after the death of Cleopatra, they have thus gained the popular appellation of "Cleopatra's Needles." This date is confirmed by a Roman inscription on one of the bronze supports of the obelisk still standing at Alexandria, and which refers to the eighth year of Augustus. It is now said, moreover, that certain granite foundations were

* "Our Egyptian Obelisk: Cleopatra's Needle." By Erasmus Wilson, F.R.S. Brain & Co. 1877.

† "Herodotus," ii. 9.

remarked by Mr. Dixon and his staff during the removal of the monolith; and these are presumed to be part of the ruins of the Roman temple with which the obelisks were connected. Our view is taken from a drawing by Denon in the great French work upon Egypt published at the beginning of the present century. The pedestal consists of a single block of granite placed upon three granite steps. The block is 6 ft. 6 in. (French) in height, and the three steps are together 5 ft. 2 in. (French) high. We prefer to give these dimensions direct from Denon, because it is well to keep in remembrance the fact that the "*pied de Paris*" contains more than thirteen English inches.

B.B.—Obelisks at Karnak.

The view represents one of each pair of obelisks at Karnak, near, or rather part of the ruins of Thebes. These obelisks were placed on either side, and in front, of great pyloned entrances. Their dimensions given by various writers are so conflicting that we hardly dare to mention figures. Mr. Fergusson alludes to one at Karnak, set up by Thothmes I., and he says it is 93 ft. 6 in. in height. Mr. Erasmus Wilson cites the authority of M. Mariette, and describes the great obelisk of Karnak as measuring little less than 105 ft. Dr. Birch, in his admirable "Notes upon Obelisks,"* refers to two about 70 ft. long; and to two others rising 90 ft. M. de Verninac St. Maur † makes some observations thereon which may be worth consideration at the present day, although they seem to have been disregarded when the Luxor Obelisk was set up in Paris. He remarked a certain difference between the apex of the Karnak obelisks, particularly that lying prostrate on the ground, and the apex of those of Luxor. In the former the pyramidion is "flush" ("*affleure*") at the bottom with the faces of the monolith, whereas in the latter there is a set-off of some centimètres. This leads to the inference that a gold or bronze capping originally covered the pyramidion at Luxor, and that at Karnac the granite was left bare. That a capping, if not a terminal, was usual, is certain from their inscriptions. One translated by Dr. Birch says, "He has set up an obelisk in his house of basalt, it is capped with black"; in others it is seen that some were "capped with gold" and "inlaid with gold." Some of the obelisks of Thothmes I. are said "to be gilded with pure gold." The use of the set-off remarked by M. de Verninac St. Maur is partly explained by the fact that the obelisks in Rome are capped with metal terminals, for it is not unlikely that the Romans carried with them not only the granite, but also its metallic adjuncts; and that the tradition was preserved by the Italian architects intrusted with their removal or re-erection.

C.—The French Obelisk.

If at all inclined to regard boastfully the carriage of an Egyptian obelisk from Alexandria to London, it may be advisable to remember that more than forty years ago the French not only accomplished an equal task, but they also carried their obelisk from Thebes to Alexandria. A vessel constructed for the purpose was sent from France in March, 1831, under the orders of M. Lebas, an engineer, who in a book of many pages described the whole proceeding. The vessel was taken up the Nile to Thebes, and, after three months' labour, with the aid of eight hundred men, one of the two obelisks in front of the Temple of Luxor was lowered on an inclined plane to the river where the vessel lay. The obelisk arrived safely in the Seine on the 23rd December, 1833, and it was deposited near the Pont de la Concorde. Three years elapsed; and only on the 25th of October, 1836, was it fixed in its present position. This Luxor monolith measures 76 ft. 6 in.; it was placed on the western side of a pyloned entrance to the Temple of Luxor. Ranged between these obelisks and the face of the Temple are or were four seated colossi. The sand had accumulated so as to cover the bases of the monoliths, and some time was spent in clearing the ground around them. M. de Verninac St. Maur has told us of what the bases consisted, and M. Champollion-Figeac‡ pretended that the view of the Luxor obelisk, in its original state, which he published, is the only correct one that had appeared up to that time. According to the former the obelisks rested each upon a single block of granite, and this reposed upon an inferior socle, composed of three pieces of "*grès très-dur placés de champ à coté les uns des autres.*" The height of the two socles together was not more than ten French feet, and an inscription ran all round the lower of the two. M. de Verninac St. Maur took occasion to add that the proportion of this base to the monolith seemed so good at Thebes that it was difficult to understand why the extravagant height it was then proposed to give to the pedestal, and which now exists, should be deemed necessary in France. We confess that the pedestal of the Obelisk in the Place de la Concorde, albeit the work of a man so justly celebrated as the late M. Hittorff, is the least satisfactory part of the splendid square of which it is the centre.

D.—Obelisk at Heliopolis.

Of the three pairs of monoliths which are said to have existed at Heliopolis one alone remains in its place, and this is declared to be the oldest known. It bears the name of Osirtesen. It is almost the sole relic of the ancient Egyptian City of the Sun a few miles north of Cairo, and it is thought to be 5,000 years old. One of the obelisks of Heliopolis now stands in Stamboul, another is in Rome; of the pair vulgarly called Cleopatra's Needles, one, as we said before, is erect in Alexandria, the other is to come to London. Of the fifth, of which little or nothing has been said, we may presume that man has destroyed it, or that the sands have preserved it from his touch. Three obelisks, however, are said to have been conveyed from Heliopolis to Rome.

The Obelisks in Rome.

In our view, E is the celebrated monument placed in front of St. Peter's. The obelisk itself was originally set up by Menephthah, the son of Rameses II., about 1,400 years before Christ. It is difficult to say if the stone be still in its entirety. The shaft is without hieroglyphics; of the Roman obelisks, it is only second in size to that erected by Fontana in front of the St. John Lateran Church. The obelisk at St. Peter's bears an inscription of the time of Caligula, dedicating it to the "god" Augustus, and to the "god" Tiberius. It is said to have been brought from Heliopolis in Egypt to Rome by Caligula, who placed it in the Vatican circus. The labour involved in raising it to its present position, during the reign of Pope Sixtus V., about 1590, was then qualified as miraculous. Fontana accomplished the task only after some five hundred plans were submitted to the Pope by architects and workmen. The obelisk now reposes upon four bronze quadrupeds, squeezed between the monolith and its base.

F,—the Obelisk of the Elephant, and the one from which Bernini, the guest of Louis XIV., obtained his nickname; for it was set up by that architect in the Piazza della Minerva during the reign of Pope Alexander VII., in the year 1667. This obelisk was made at the command of Pharaoh-Hophra, who reigned over Egypt B.C. 588—569, and it is therefore of the time of the burning of Solomon's Temple. Herein we quote Mr. J. H. Parker, not without fear and trembling, for he has given two dates (1660 and 1667), in his few pages about the Roman obelisks, for the second erection of this monolith. The whole monument as it now stands is about 40 ft. high; the shaft is marked with hieroglyphics, and is about 17 ft. long. Probably this elephantine erection* induced Napoleon's aspiration for a similar quadruped on the Place de la Bastille,—a work really designed by Alavoine for the site on which the present graceful column erected by M. Duc now stands. As for the origin of Bernini's idea, it is not difficult to trace a connexion with the stories brought home by travellers, and current in his time, of the "Portuguese Indies." The obelisk is made a little too lofty in our view.

G,—in the Piazza del Popolo, bears the name of Rameses II., and that of his father, Seti. It was brought to Rome by Augustus, and placed on the Spina of the Circus Maximus. It bears the Roman date equivalent to B.C. 10; and it was placed in its present position by Fontana during the reign of Pope Sixtus V., about A.D. 1589.

H,—That in the Piazza di Monte Citorio. According to Mr. Parker it was executed in Egypt by Psammeticus II., B.C. 594–588. It is said to have been brought to Rome by Augustus, and was first set up near the present Church of S. Lorenzo in Lucina to serve as the gnomon or pointer to throw the shadow on the great sun-dial which Augustus is said to have made there. It was placed in its present position during the reign of Pope Pius VI., in 1792.

I,—the Lateran Obelisk, so called because it is placed in the Piazza del Laterano. This it may be presumed is the loftiest in the world; or, at least, that it ranked with its fellow at Heliopolis, and with the celebrated obelisks of Karnak. The shaft is said to be 105 ft. 7 in. long; two sides of it are 9 ft. 8½ in. wide, and the two corresponding sides are 9 ft. It weighs about 445 tons. First brought from Heliopolis to Alexandria by Constantine, it was conveyed by the great Emperor's son, Constantius, to Rome, where it was erected in the Spina of the Circus Maximus. Now broken in three pieces, it was raised to its present position in front of the St. John Lateran Church, by Fontana, under Sixtus V., about A.D. 1588. The monolith is adorned with hieroglyphics. It should have appeared higher in our view. The draughtsman, however, is fully excused by the differences amongst authorities.

J, — Sometimes called the Pamphilian Obelisk, is inscribed with the name of Domitian. Marked with hieroglyphics, it once adorned the Circus of Maxentius. It was placed in its present position, in the Piazza Navona, by Bernini, during the reign of Innocent X., about A.D. 1651. There is a fountain round the base.

Of the twelve Egyptian obelisks in Rome two are believed to have originally formed a pair which were first set up in that city by Augustus, in front of his mausoleum. They are said to have been made about two thousand years before Christ. One is now placed in front of the Quirinal Palace, and the other behind the church of Sta. Maria Maggiore. The former was erected in its present position by Antinori during the reign of Pope Pius VI. about A.D. 1786; and the latter by Fontana, under Sixtus V., about A.D. 1587. Another obelisk, set up A.D. 1789, is at the Trinita de' Monte; another, once on the Spina of the Circus Maximus, was placed, about A.D. 1711, in front of the Pantheon. There is also a small obelisk in the garden of the Villa Mattei, on the Cœlian; and, lastly, a twelfth, of slight interest, was placed by Pius VII. on the Pincian.

France possesses two, one in Paris and another at Arles. The latter is without hieroglyphics, and it appears to have remained where it was landed at Arles for centuries. It was found half buried in the earth in the year 1389, and about three centuries after, a town council reared it upon a pedestal in 1675. The shaft is supported on four lions, and surmounted by a metal sun. That sun was the emblem of Louis XIV., and placed there in honour of the most Christian king. The four sides of the pedestal also contained inscriptions in praise of him, but these were removed by revolutionary ardour. A short time ago only one name remained upon the monument, that of Napoleon III., and at the present moment doubtless there is nothing left to identify it with past events, for it seems that in spite of all their financial success the French still perpetrate the folly of effacing history. Two obelisks, large and small, remain at Constantinople; the larger one, in the At Meidan, Stamboul, is about 50 ft high, and it is said to have been carried there by the Emperor Theodosius. The extraordinary Indo-Egyptian obelisk at Axum, in Abyssinia, cut out of a single block of granite, is about 60 ft. high. All these obelisks, with the exception, perhaps, of that of Axum, were quarried from the granite rocks of Syené near the First Cataract of the Nile; and originally they all doubtless bore at the apex a farther exemplification in metal of the symbol of life or creative power which they represented.

Many well-meaning and spotless people, who will probably inquire of better informed friends about the origin and early use of the obelisk, will be sadly shocked when, from some out-spoken reply, they learn the truth. The obelisks of which the world now takes note are marvellous results of quarrying and cutting; the largest as well, doubtless, as the earliest, are Egyptian

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* See Falkener's "Museum of Classical Antiquities." 1862. Vol. ii., pp. 203–39.
† "Voyage du Luxor en Egypte." Paris, 1835.
‡ L'Obélisque de Louqsor," Paris, 1833. 8vo.

* There is a polygonal obelisk placed on the back of an elephant, which is raised on a lofty pedestal, in front of the Cathedral of Catania, in Sicily.





A RENDEZVOUS OF EGYPTIAN OBELISKS.

But obelisks are found all over the globe, and the same devotion which caused them to be planted on Egyptian soil in fulfilment of a vow, or with religious intent, still actuates men in parts of India as it actuated them in Europe even as late as the period intervening between the fall of Rome and the rise of Mediæval civilisation. The worship of stocks and stones is even now a phrase not entirely expunged from the English vocabulary; and, as late as the year A.D. 692, a council at Rouen referred to the practice. Various councils in the fifth, sixth, and seventh centuries attempted to put down the veneration which existed of stones in remote and woody places, and where vows were made. At the present day the members of a tribe in India vow a stone to any deceased ancestor to whom prayer is offered; and a certain celebrated *lât* in Benares is still regarded, we believe, by sects of Hindús as the most precious relic of the sacred city. What Siva is to Indian theology Osiris was to that of Egypt; and what the *linga* was and still is to Hindús, the obelisk form was to the Egyptians. We cannot, however, pursue this subject further at present; it may appropriately make another article at a future time. We would only recommend those who are interested therein to read an excellent paper in the Transactions of the Institute of Architects by the late Dr. Barlow ("Symbolism in reference to Art," March 10, 1860); also Mr. Fergusson's "Rude Stone Monuments"; Mr. Sherring's "Sacred City of the Hindús"; and those passages in Herodotus which describe social and religious customs in Egypt almost analogous to many now rife among a vast number of our fellow subjects in India.

OMNIBUSES IN LONDON.

There can be no doubt that our grandchildren will hereafter look back with contemptuous pity upon the manner in which our omnibus traffic is conducted; and the omnibus travelling of the present day, when it comes to be remembered, will certainly not have about it that semi-adventurous kind of attraction which still rests over the coaching days of the past. It will only be thought of as an anachronism existing among modern improvements. We may imagine for a moment some of the criticisms which our descendant will pour out when the present state of things is brought before him. It is true he would find that the London General Omnibus Company pays a dividend at the rate of 12 per cent. per annum; but that would only prove to his mind that the interests of the shareholders are the sole care of the directors, and that the interests of the public are a matter of no concern to a body having the practical monopoly of the omnibus traffic of the metropolis. One of the first points on which the traveller of the future would naturally have a word or two to say, would be the fact that, except at the actual termini, there are no well-known ordinary stopping-places at which the various omnibuses call at stated times. There are, it is true, certain well-known spots where an omnibus is sure to be found halting—such as Oxford-circus, and which from their rareness form a kind of battle-ground for omnibus travellers, all of whom congregrate at the one particular place. Except at these places —few and far between—it is a mere chance where along the route or at what time an omnibus stops or may be found. One consequence of this is, as regards the street traffic, that omnibuses continually stop suddenly amid a throng of carriages, so that the people who are driving find the pole of the carriage immediately behind them appearing over their heads, and the temper of their own horses upset, all in consequence of an omnibus which stops the way. Nothing would be easier than for certain places to be fixed on as recognised omnibus stations, at which the omnibus on the various lines should stop at fixed times, so that people might always be able to catch a particular omnibus just as they may a particular train. People would also know where to expect passengers to alight, and where they might be likely to get a seat without a chase through the mud, or without wandering along a great part of the route in the hope of an omnibus appearing. If these stations were fixed at moderate intervals, they would not only be a great boon to passengers, but would also relieve the street traffic by preventing unexpected stoppings of omnibuses, and would also enable omnibuses to keep something like recognised times. Such places exist in Continental towns, and there is no reason (except the stupidity of the omnibus managers) why they should not also be found in England. If such a system were in vogue, it might also be possible to erect some kind of waiting-room or shelter for passengers, so that passers-by at frequented spots,—such as Piccadilly-circus,— would not have to fight their way through a block of expectant omnibus travellers. And, as far as the latter were concerned, it would prevent many illnesses caused by standing out in a drenching rain, or in a bitter March wind. Benevolent persons have provided hardy cabmen with shelters, and omnibus travellers may fairly expect their turn to come next. Our descendant will no doubt also inquiringly ask, why it is impossible to get tickets either for the single or return journey, or for several single journeys, at shops along the route; and why the dweller in Kensington cannot, if he pleases, obtain a contract-ticket to the Bank for the omnibuses just as much as for the trains? It would probably be difficult to give him any satisfactory answer to these inquiries, except that the directors consider such conveniences of travel as unnecessary as a decent rug on the floor in the winter instead of a bundle of straw, a portion of which every lady who leaves the vehicle carries with her. It will also be a matter of surprise to our critic that here in London outside travellers, whether old or young, portly or thin, are compelled to risk their lives daily by climbing up and down a small and awkward ladder instead of comfortably and securely walking up and down an easy stair with a handrail, as is the case in most of the Manchester and many of the Liverpool omnibuses. He might also be surprised to hear that whereas in London, when the traffic is the least brisk, the vehicles are so small that they become unendurably crowded, in the provincial towns they are large and roomy, and capable of holding many more passengers than those in use in the metropolis. Finally, he will come to the conclusion that we must be a very stupid set of people to let things continue to be so badly conducted as they are. He will wonder how we can quietly submit to a system under which there are no stations, no times kept, no tickets issued,—under which, too, it is impossible at any little distance to tell the route of the omnibus, except by the colour which it is painted. It will be a continual source of astonishment to him that at night-time a person's life may be several times risked in a crowded thoroughfare by endeavouring, often vainly, to ascertain in the darkness the destination of the passing omnibuses, when it would be above all things easy for each separate line to be distinguished by some kind of proper, distinct, and clearly visible light. He would think people very singular in days of co-operation and union not to unite together to obtain reforms in the omnibus traffic, every one of which each of the public is constantly wishing for. Leaving our descendant, however, to wonder, it is quite clear that the present system of omnibus traffic in the metropolis needs many improvements in order to bring it up to anything like the standard of comfort and punctuality attained by the train service of London. It may be doubted, however, whether without a real breakdown of the monopoly of the present company any of these needed improvements will take place, unless, indeed, some legislator, with good sense enough to leave universal arbitration or woman suffrage to the next generation, and desirous of benefiting his fellow citizens by practical and modest means, will endeavour to obtain legislative measures to regulate the management of the omnibus traffic of the city.

Babylonian Discoveries.—A series of relics of the early Babylonian Empire have arrived at the British Museum. They were found on the site of the ancient city of Zergul, which is now marked by the modern village of Zira, on the River Hye, in Babylonia. Their discovery is due to the excavations of Arabs working in the employ of a Jewish dealer in antiquities at Bagdad, the same person from whom the late Mr. George Smith obtained his last collection of tablets. The largest of these objects is a black basalt torso of a figure of large size, bearing the bi-lingual inscription of a king who reigned in the seventeenth century before the Christian era. This monarch bears the name of Hammurabi, and the inscription is of great philological importance, as it furnishes many new words and phrases. Along with this torso are a large number of bricks and cones, bearing inscriptions of various early monarchs.

SCIENCE OF HANDRAILING.

Sir,—Some years ago you published some extracts from Riddell's first work on handrailing, and commented favourably thereon. I looked through those extracts, but failed to find anything to admire. I recently looked through his more pretentious work, and found myself equally unsuccessful, even though he claims to be the first to reduce handrailing to the condition of an exact science. I did find a confusion of parts that must be very puzzling to a student. I also found that what he gives as a complete system is little more than an amplification of the simple cases given by Weston and Perry in a work published in London in 1856; that he distorts his stairs in order to partially fit his craze for keeping the central line of wreath in the centre of the plank; that his method is wholly inapplicable to a wreath of uniform pitch, or any wreath the central line of which cannot be made to lie wholly in a plane; that the only bevels he gives are next to useless in the cases to which his method is properly applicable; that, even in simplicity, he is inferior to Weston; that, in some very important particulars, he is inferior to Perry, Jacy, and Nicholson; and that, in general carpentry and joinery, he is infinitely inferior to the last. By the method employed by Riddell, which, though he claims it as his own, I claim as Weston's, it is easy to make a very beautiful job of a wreath of moderate pitch; but by the methods of Nicholson, Jacy, and Perry, it is possible to make an excellent job of a wreath of any pitch, if the errors inherent in the cylindric system be judiciously modified,—they cannot be wholly corrected.

My estimate of Riddell is, that he is no more a fully-finished handrailer than a smart arithmetician is a fully-accomplished mathematician. He has already done a great deal to eliminate all really artistic jobs; and he has only to make another step in the same direction, to declare that all rails should be straight, so that there might be no difficulty in their construction, and no training necessary for the constructors. Some of the earlier authors gave methods for finding the mutual inclination of the joint and plank-planes, when they do not happen to make right angles with each other: Riddell failed to do this, and he is therefore inferior to them in this respect. If Riddell were required to get a single wreath-piece to cover a whole quadrant and part of the two adjacent flyers, and still adhere to his notion of keeping the centre of the wreath in the centre of the plank, he would simply have to declare the job impossible, and he would be quite right,—for such a job is impossible. But, eliminating the one condition of coincidence of centres, the job is possible, and I have repeatedly accomplished it. I give an illustration of the deviation of centres further on; but I will not, in this paper, go fully into the matter. Riddell's assertion that the wreath may always be got out of stuff whose thickness does not exceed the breadth of the rail, is only an assertion copied from the older authors, and is not at all reliable; for, though, if the centre of rail be always kept in the centre of plank, the thickness of stuff need never exceed the length of the longest line that can be drawn within the section of the finished rail; yet, in case of deviation of centres, the necessary thickness of stuff may even exceed the diagonal of the section of the square rail. Riddell intimates that he has completely solved the grand problem; but he makes no mention of a system whereby a wreath may be formed, every right section of which shall be as truly rectangular as that of the straight rail itself, and therefore capable of being as truly moulded.

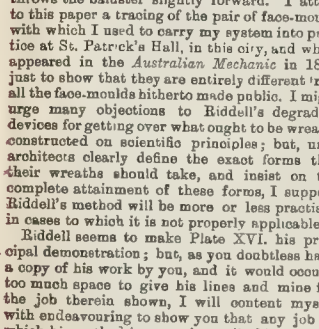
I believe Tarbuck is the only author that ever alluded to such a system. He mentions that it is very desirable that one should be discovered whereby the right sections of the squared wreath might be rectangular, like those of the straight rail, so as to obviate the concavity of one side and convexity of the other, and secure equality in the thickness of the sides. He noticed, and desired to correct, a defect in the cylindric system, which must now be well known to all accomplished handrailers, viz., that, whenever the system is rigorously adhered to, the concave side of the wreath must be thinner than the convex. I may add: the difference of thickness varies with the pitch; and the steeper the pitch the greater the difference,—and in very steep wreaths it is very great indeed.

I have discovered, investigated, and once practised the system desired by Tarbuck; and, though it requires more lines and a more profound knowledge of geometry than any other

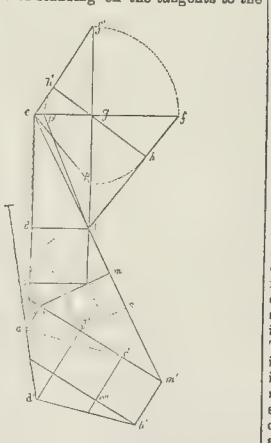
system, it makes the manual work easier and the result more satisfactory. According to this system, all four faces of the squared wreath are twisted: there is no such thing as a vertical side over the circular part of the plan, and the wreath will never fit any cylinder until it is moulded. Though this system is probably the most perfect that can be proposed, it still has its defects,—it is not easily adapted to steep wreaths, and, when the wreath is steep, it throws the baluster slightly forward. I attach to this paper a tracing of the pair of face-moulds with which I used to carry my system into practice at St. Patrick's Hall, in this city, and which appeared in the *Australian Mechanic* in 1872, just to show that they are entirely different from all the face-moulds hitherto made public. I might urge many objections to Riddell's degrading devices for getting over what ought to be wreaths constructed on scientific principles; but, until architects clearly define the exact forms that their wreaths should take, and insist on the complete attainment of these forms, I suppose Riddell's method will be more or less practised in cases to which it is not properly applicable.

Riddell seems to make Plate XVI. his principal demonstration; but, as you doubtless have a copy of his work by you, and it would occupy too much space to give his lines and mine for the job therein shown, I will content myself with endeavouring to show you that any job to which his method is properly applicable may be more lucidly explained with very much fewer lines than he employs.

Let *a b c* be the plan of the central line of rail, *a b* being the aggregate breadth of two



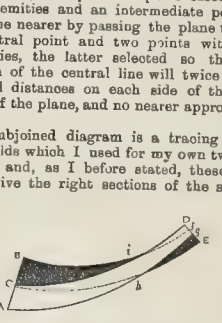
flyers, and there being three winders in the quadrant, *b c*; and, let A B *c'* be its elevation. If the central line of straight rail, A B, resting on the nosings, be produced, it will obviously somewhere attain the same height as *c'*; it is equally obvious it will attain this height at C', a point, the plan of which is C, exactly the breadth of three flyers to the right of *b*. *c'* and C' being then of the same height, they must necessarily be in the same horizontal plane, and *c* C, the plan of the straight line drawn between them, must be the horizontal projection of the trace of the inclined plane passing through the points of which *a b* and *c* are the plans, and A B and *c'* the elevations, on the horizontal plane passing through the point of which *c* C is the plan and *c'* C' the elevation: it is, therefore, the trace of the inclined plane on the horizontal plane passing through the upper extremity, *c c'*, of the wreath-piece, and it completely determines the plane that contains the central line of wreath and straight rail. Of course, the trace of the inclined plane on any horizontal plane being found, its trace on any other horizontal plane will be parallel thereto. (Let me remark: neither Riddell nor any other has ever determined, so far as I know, the exact nature of the falling line for this particular kind of wreath: it is a pure parabolic arc.) Having satisfied myself (and the most able geometer cannot controvert me) that *c* C is the horizontal projection of the trace of the inclined plane on the upper horizontal plane, I find the lines for this particular, simple kind of wreath, as follows:—I lay down the plan, *a b*, of the central line of the wreath-piece, and enclose it in the tangents and radii of its extremities, *a d*, *d b*, *a c*, and *b c*. I produce *a d*, and make *a e* equal to the breadth of as many flyers as there are winders to be covered by the wreath-piece. I draw *e b*, which is the horizontal projection of the trace of the inclined plane on the horizontal plane passing through the highest point of the central line, and produce it indefinitely downwards, and I draw *m n* perpendicular to it. I make *m m'* equal to the height of all the risers to be covered by the wreath-piece, and draw *c c'*, *d d'*, and *a n* parallel with *m m'*. I draw *m' n*, and I then have a right section of the inclined plane. I draw *m' b'*, *d'' d'*, and *n a'*, all perpendicular to *m' n*, and make them respectively equal to *m b*, *v d*, and *n a*. I draw *b' d'*, and I then have the tangent to the highest element of the central line in the wreath-piece. I draw *d'' a'*, producing it indefinitely, and I then have the tangent to the lowest element in the central line of wreath; this line is, moreover, common to the inclined plane (or the centre of the plank) and the centre of the straight rail, and may, consequently, be made of any desired length. The tangents and the limiting elements of the wreath-line being absolutely coincident, a line, or plane perpendicular to one, must of necessity be perpendicular to the other. I, therefore, draw the joint-lines perpendicular to the tangents. I draw the springing-line, *a' c'*, the semi-conjugate, *c' c''*, and determine the semi-transverse, *r c'*, and, as I require no bevels, I have all the lines I require. I almost invariably make my drawings to a small scale on a sheet of paper, and calculate the lengths of my lines. When I think it necessary, I calculate the angles. I then draw the axes, tangents, and joint-lines to their true lengths on the board from which I intend to cut the face-mould, and put in the curves with the trammel. I never trust the string; for, though true in theory, it is unreliable in practice, on account of its extensibility. On the mould, I draw the longest line I can parallel with the transverse, to use as a shift-line, and my mould is completely described. The stuff being cut out square to the outline of the face-mould, I plane it to a parallel thickness and make the joints perfectly square. I apply the mould again, shifting in the old reliable manner by the line parallel with the transverse, and transfer the tangents drawn thereon to the stuff; I then draw lines in the joints to connect the tangents drawn on the opposite faces, and I have the lines in which vertical planes standing on the tangents to the



plan would cut the solid in position,—thus making bevels wholly unnecessary. Lines perpendicular to these will be level lines in the joints. If I desire to use bevels, which I sometimes do as a check on the lines drawn in the joints, I generally find them outside of the essential drawing, thus:—I produce *c b* indefinitely, and from *e* I draw an indefinite line parallel with *d b*; I make the exterior segments, *g f*, *g f'*, each equal to *s m*, which is what the inclined plane rises from *e* to *g*, or *b* to *g*. I draw *b f*, and *g h* perpendicular thereto; make *g p* equal to *g h*; draw *e p*, and *g p e* is the bevel for the lower joint. I draw *e f'*, and *g h'* perpendicular thereto; make *g p* equal to *g h'*; draw *p b*, and *g p b* is the bevel for the upper joint. The lines *e f'* and *b f* are the traces of the inclined plane on the vertical planes standing on *e g* and *b g* respectively, and there can be little difficulty in seeing the truth of the construction. Though this method makes an excellent job of some wreaths, there are many to which it is wholly inapplicable. If the wreath be steep, it either pushes the soffit-line of the string towards the back of the well, or else it approaches too close to the nosing-line near the springing. If it be necessary that the wreath should be of uniform pitch, it will not do; for in this case the falling-line would be straight in development, and in position no plane can possibly coincide with it; and if it be desired that one wreath-piece should cover a whole quadrant, and part of the two adjacent flyers, the falling-line in position will be still further from coinciding with any possible plane. Even the method for making the joints would not do; for these, to be right, must be perpendicular to the joint element of the falling-line.

The nearest approach made by previous writers on handrailing to finding the best plane for a wreath-piece, is to pass the plane through the two extremities and an intermediate point. I have gone nearer by passing the plane through the central point and two points within the extremities, the latter selected so that the elevation of the central line will twice deviate by equal distances on each side of the right section of the plane, and no nearer approach can be made.

The subjoined diagram is a tracing of the face-moulds which I used for my own twist-cut wreath; and, as I before stated, these face-moulds give the right sections of the squared



wreath truly rectangular. These moulds are not sections of cylinders, but the traces on two parallel planes of lines moving so as to be always perpendicular to the twisted surface passing through the centre of the wreath.

P. Sinclair, Carpenter.

Carlton, Melbourne.

SPANISH CHESTNUT.

Sir,—On June 2nd I asked in your columns for information from any who might "certainly know" of the use of chestnut in Mediæval carpentry, and you printed two replies, neither of which, however, fulfilled this condition of certain knowledge. Mr. Hems referred me to the newspaper paragraph, then current, to the effect that the recently destroyed roof of Metz Cathedral had been of chestnut,—an assertion that has probably been made, at some time, of every large building in Christendom. Your other correspondent, Mr. Robert-, is in error in supposing that the microscope is the only effective test of the difference between oak and chestnut, the leading distinction between them being not only visible to the naked eye, but remarkably conspicuous. Mr. G. Wells, who is clerk of works at Shelswell Park, Oxon, has enabled me to see specimens of chestnuts used, intermixed with oak, in the roof and floors of old Shelswell House, erected about 200 years since, and although this is not of Mediæval date, it is of considerable interest as an old example. The timber seems to have stood fairly well (if it is, as he thinks, part of the original construction); it is decayed in places as any other timber might be if exposed to damp, and it is perfectly sound in other places, which might be expected of any ordinary wood that had been kept in a dry stall. Mr. Wells, who is practically acquainted with chestnut timber, says that if oak and chestnut are placed together it is not possible to make a mistake, and the truth of this will appear from a short description of the main point of distinction between them.

Neglecting minor matters, there is one great distinction,—the medullary rays which shoot out from the pith towards the bark of all woods are usually so indistinct as to require a microscope to detect them; though in a few kinds, as in beech, yellow pine, and laburnum, they can be clearly seen when the tree is cut across. But there is only one kind of wood used in building in which these rays are at all conspicuous, and that wood is oak. The bright, sharp lines of hard substance which we always find in the end grain of oak are sections of the thin plates of medullary rays, which, when the wood is cut down longitudinally through the centre, or nearly so, produce the flower, figure, or pattern which we see in oak or wainscot, and in nothing else. The modes of cutting up oak (which we call "quartering" it), so as to show this pattern on the face of the boards, are well illustrated in Viollet-le-Duc's Dictionary, article "Menuiserie," vol. vi., p. 346.

Now the Spanish chestnut is not even one of

those woods in which the medullary rays are faintly visible to the naked eye; thus a ready and sufficient means of discriminating between it and oak exists. For minor differences we have such as these:—Chestnut is very perceptibly lighter than oak,—softer, straighter in the grain; its annual rings of growth are larger; it has exceedingly little sap-wood, say, about three of its outer rings, which is less than exists in any timber that I know.

Having for many years endeavoured, without success, to find a genuine instance of the Mediæval use of chestnut in carpentry, I feel almost justified in concluding that all the cases in which its occurrence is asserted are unable to bear the test of strict examination. I am, however, aware that a few persons of experience are of opinion that they have found it, and they may be right. It would be of use if persons who take an interest in the question could get a specimen of chestnut wood from some reliable source, and study it for themselves. I should be glad to show to any one calling at my office (10, Old Jewry-chambers), a series of specimens of oak and chestnut obtained from many quarters, and, as attempts are now being made to sell chestnut as oak, and to use it in situations where nothing but oak will stand, it is worth while to be able to distinguish between the two.

I may add that your volume for 1858 (pp. 496 and 528) contains an excellent paper on this subject, read by Mr. Wyatt Papworth at the Institute of Architects. THOS. BLASHILL.

EXETER CATHEDRAL.

THE re-opening services at Exeter Cathedral, upon the completion of the restorations, commenced on the 18th inst. The work has been in progress for seven years, under the direction of Sir Gilbert Scott. Choir, nave, transepts, aisles, chapels, have all been cleansed, and their ancient beauties uncovered or restored. Outside, unfortunate excrescences have been swept away from their unpleasant contiguity, so as to afford an unrestricted view of the grand old pile from all directions. The noble west front, with its multitudinous sculptures of saints and martyrs, has alone been untouched. All this work has involved an expenditure of nearly 50,000*l.*, of which about 3,000*l.* remain to be contributed. The actual amount expended by the dean and chapter is something like 35,000*l.*, and the balance is made up by the costly gifts of special parts of the work which have been undertaken by several persons. The chapter fund amounts in all to about 21,000*l.*

The work was commenced in the spring of 1871, when Mr. Luscombe was appointed to carry out the builder's contract. At this time contracts were signed for the work in the choir, side-chapels, and aisles, to the amount of 6,000*l.*, in the lady-chapel and ambulatory to the amount of 3,000*l.*, and with Messrs. Farmer & Brindley for the woodwork of the stalls, another 6,000*l.* These contracts absorbed 15,000*l.*, and it was then seen that at least 20,000*l.* would have to be spent on this part of the cathedral, independent of the offers to defray the cost of special portions of the work, which began to come in. Operations were commenced in the lady-chapel, then carried on in the ambulatory, and last of all commenced in the choir, so as to leave it open for public worship as long as possible. At the end of June the choir was shut off by a wooden screen, erected so as to leave the organ free for use in the nave. The altar and sanctuary fittings were removed and placed in a position in front of the rood-screen, and afterwards all the services were held in the nave till the eastern portions of the cathedral were yielded up by the contractors in their completeness. Although for certain special features of the work the services of London workmen were requisitioned, it was made an express stipulation by the dean and chapter that local artisans should be employed wherever practicable. This arrangement has been carried out loyally and fairly. The architect took the deepest personal interest in the restoration, and had the carving for the new stalls and other wood work executed in London, in order that he might constantly be able to watch and direct the progress of the delicate and difficult work. While the work in the choir was going on, an interesting correspondence took place between Sir Gilbert Scott and Archdeacon Freeman, in regard to the screen. The Archdeacon was of opinion that the screen was an imitation work, while the architect contended that it must be the original work either of Bishop Stapeldon in 1325, or of Bishop Grandisson, during the next forty years. As the restoration proceeded, it became known that the original screen must, at any rate, have been considerably disturbed, and was probably reconstructed in the middle of the seventeenth century. The screen was allowed to remain *in situ*, with the organ still in position on it, but the screen itself was pierced so as to provide that view into the choir which was so much desired. The restoration went on satisfactorily until, in the latter part of the year 1873, arose the protracted controversy as to the reredos, which caused much delay.

In effecting the present restoration, attention has been called to the surface wash which seems to have covered the greater part of the building. Its removal has shown most of the sculpture work with greater distinctness, and also certain portions of the stonework of the structure—more especially the groining of the nave, where is noticed the incongruous use of stone of various tints, leading some to the conclusion that at least this portion of the building was intended to be covered by some uniform covering—while again, on the contrary, the careful dressing of the surface, would do away with such an idea. A large quantity of colouring has been exposed, and an interesting series of shields of arms of families in the city and neighbourhood on the interior wall of the south aisle of the nave. This removal of whitewash and restoration of the natural design both as regards pillars, roof, and walls, has been one of the principal parts of the work, both in choir and nave. Many of the beautiful pillars of Purbeck marble were found to be decayed a great deal outside, though the heart was good and sound. The decayed portions have all been renewed, and an idea of how much labour and patience has been involved in this is shown by the fact that over 100 tons of marble were so employed on ten pillars in the choir. The sacrarium is, of course, the most conspicuous object in the choir, by reason of the endeavours that have been made to render it "exceeding magnifical." The reredos, which was erected by Messrs. Farmer & Brindley, at a cost of about 2 000*l.*, is well known to be the gift of Dr. Blackall and Chancellor Harington. As an evidence of the nature of the work which has been done, and of the carefully elaborate manner in which it has been executed, it is mentioned by the *Exeter Gazette* that no fewer than 1,300 new pieces have been placed in the sedilia to make good dilapidated and decayed parts of carvings in this rare and valuable work, which dates from the fourteenth century. The Bishop's throne, erected in 1312, during the time of Bishop Stapeldon, with the beautiful carved work, has been cleansed. Its lofty pinnacled canopy rises to the height of over 50 ft. Notice may be taken of how carefully the new inclosure to the throne, which is fitted to accommodate two chaplains as well as the bishop, has been made to harmonise with the old work, and of the manner in which the portraits have been revived of Bishops Warelwast, Quivil, Stapeldon, and Grandisson, of which traces were discovered at the four corners. In the construction of the choir-stalls, Messrs. Farmer & Brindley have been able to approach closely to the old work in the "misereres," or seats, which in the chief stalls have been left intact. There are forty-nine stalls now, inclusive of the four at the end devoted to the dean, precentor, chancellor, and treasurer, which are respectively surmounted by the figures, in carved oak, of Bishops Marshall, Quivil, Stapeldon, and Grandisson. The whole of the stalls are of the finest, closest-grained oak, canopied and pinnacled, and richly and elaborately carved with foliage and figures of animals and men. The seats of the archdeacons are placed in the posts of honour next to the other dignitaries; the priest-vicars are placed in the centre, and the mayor and corporation on the north side. Choir-stalls, furnished with handsome book-rests of brass, and stalls for the families of the cathedral clergy, are in front of the principal stalls. The brass eagle lectern, and the handsome carved footstool (presented by Chancellor Harington) form no unfitting companions to the beautiful alabaster and marble pulpit, which, at a great cost, was presented for the choir by Mr. Edwin Force, the chapter clerk. From the transepts to the throne the floor is laid with Godwin's tiles Sicilian marble, and Pocombe stone; from the throne to the sanctuary steps Devonshire marble, Pocombe stone, and tiles are used, the tiles bearing on them the arms of Bishops Warelwast, Marshall, Bruere, Bronescombe, Quivil, Bitton, Stapeldon, Grandisson, and Oldham. The sanctuary steps are of Plymouth marble, and the remainder of the floor up to the altar-rails maintains the character of increasing richness as the altar is approached, being composed of Godwin's tiles, Plymouth, Anglesea, Genoa, and Sicilian marble, and Cornish porphyry, designed in twelve ornamental panels. The remainder of the floor approaching the altar is of specially designed Godwin's tiles, arranged in eight panels, representing prophets and evangelists. The reredos is at either side flanked with wing-walls of polished marble, surmounted by a light iron grille, richly gilded, and about 4 ft. in height. At the time the restoration was commenced in the choir, one of the main objects avowed was to give more room for the worshippers, who at morning service were restricted in the choir. It was hoped that at least 300 additional seats would be gained by removing the unsightly brick screens at the back of the stalls, and throwing open the choir aisles, so that persons sitting there could take some part in the worship in the choir.

In the chapels the work of restoration has been carried on as thoroughly as anywhere in the cathedral. Roofs have been re-coloured, pinnacles and delicate carvings of screens replaced where dilapidated, or otherwise injured, stonework and carvings alike cleaned and restored to their natural tint and form. The lady-chapel, now one of the glories of the cathedral, had been, up till nearly forty years ago, used as the cathedral library. The handsome screen has been restored, and access is gained through gates of polished brass. Devonshire marble and encaustic tiles form the floor. The magnificent east window, perhaps the best in the cathedral, is the gift of Chancellor Harington, and has been executed by Messrs. Clayton & Bell, of London, who have also painted the reredos beneath it. The principal subjects in the window are Our Lord enthroned in glory as the King of the World, with figures grouped around Him, representing the Blessed Virgin, St. Joseph, the Archangel Gabriel, St. John, Joseph of Arimathea, and St. Mary Magdalene. The smaller lights of the window are also filled with subjects connected with the life of Our Saviour on earth, such as the Annunciation, Nativity, Crucifixion, the Women at the Tomb, &c. The new east window in St. Gabriel's Chapel is in memory of the late Archdeacon Freeman. This window is elaborately worked out in rich designs. The tracery is filled with the monograms of SS. Matthew, Mark, Luke, and John, and with figures of angels. The principal lights depict such subjects as the appearance of the Angel to Zacharias, St. Gabriel, the Annunciation, the Maries at the Tomb, St. John at Patmos. There is one other coloured window in this chapel, which has been completed by Mr. Drake, of Exeter, filled with the glass taken out of the first-named, and re-arranged in pattern.

In the transepts, which since the piercing of the screen have been used for congregational purposes, by worshippers unable for lack of space to obtain admission to the choir, in addition to the ordinary work of reparation and cleansing, and the decoration of the bosses underneath the towers, in harmony with the roof of the choir, several special works have been carried out. The Chapel of St. John the Baptist, in the south transept, has been fitted up as a vestry for the priest-vicars, and St. Paul's Chapel, in the north transept, as a vestry for the vicars-choral. The Sykes chantry in the north transept has also undergone restoration. Other useful improvements in the transepts comprise a new chiming apparatus, which was ingeniously constructed under the direction of Mr. Edwin Luscombe. But the most important work to the transepts is probably the window to the memory of the late Sir John Taylor Coleridge, which has been placed in the south transept by Messrs. Clayton & Bell.

The nave itself, though a very large area, has necessarily fewer special features than the choir, and consequently the work in it has chiefly been confined to cleansing and renovating the pillars, roofs, walls, carvings, mouldings, &c., and endeavouring to restore it to the condition which it formerly occupied as the splendid body of an architectural design (of which the choir is the head) of singular beauty and completeness. There being less work in the nave, or work of a less expensive character, the sum expended has been much less than that on the choir, viz., a little under 10,000*l.* The removal of the yellow wash from the walls has brought to light several interesting traces of ancient decorations. On

the west wall, at each side of the great door, extensive fresco remains are to be seen, but the work is decayed, and the subjects undistinguishable. Mr. R. Dymond, F.S.A., has under his attention some heraldic bearings, rather more distinct, which have been found under the windows of the south aisle; and on the wall over the north porch fragments of an elaborate fresco have been brought to light, including one clear and distinct figure of a cherub. More important discoveries were found on the removal of the colour-wash from the walls of this north porch.

The chief feature in the nave is the new pulpit, which was erected by a few friends in memory of Bishop Patteson (Bishop of Melanesia), who lost his life while engaged in his sacred work at the Island of Nukapu, in 1871. The pulpit contains three sculptured panels, exhibiting—first, the Martyrdom of St. Alban, first British martyr; secondly, the Embarkation of St. Boniface, "The Apostle of Germany," whose missionary labours were so successful in that country; and thirdly, in the centre panel, is represented the placing of the body of Bishop Patteson in a canoe by the natives of Nukapu. The pulpit also contains, in the niches between the panels, carved figures of St. Paul, St. John the Baptist, and St. Stephen. With the exception of four Devonshire marble shafts among the clustered columns of the base, the pulpit is erected entirely of yellow Mansfield stone. The sculptures are by Messrs. Farmer & Brindley, but Mr. Luscombe has made and erected the pulpit from the designs of Sir Gilbert Scott.

THE STEPHENSON MEMORIAL HALL, CHESTERFIELD.

The Marquis of Hartington laid the first stone of the Stephenson Memorial Hall, Chesterfield, on the 17th inst. The hall, with its appointments, is expected to cost at least 13,000*l*. The building, which is Gothic in style, will be constructed of brickwork, relieved with stone dressings, and is situated at the junction of Corporation-street and St. Mary's-gate. In general arrangement it is divided into sections,—one, comprising the free library and science and art schools, is termed the "Institute" portion,—being reserved for the use of the Derbyshire Institute of Mining and Mechanical Engineers,—and the other, the public hall with its accessories, the "Public Hall" portion. The entrance to the Institute portion is in Corporation-street, beneath the tower. The ground floor is reached by a short flight of steps, and consists of a reading-room 34 ft. by 26 ft., library 38 ft. by 21 ft., lecture-hall 40 ft. by 33 ft., and two class-rooms. The first floor is devoted to science and art teaching, and consists of a laboratory, elementary art-teaching room, advanced art-teaching rooms, modelling-room, masters' room, store-room for models, and museum. In the basement floor are placed the keeper's rooms, store-room, serving-room, lavatory, and heating-chamber. The principal entrance to the public hall portion is in Corporation-street, a second entrance being provided in Back-lane; access to the gallery being obtained from each. The hall is 68 ft. by 47 ft., and including the gallery, which is continued round three sides, contains seats for 900 people. There are two retiring-rooms to be used as committee-rooms and ante-rooms for the artists, having a special entrance. The hot-water system of heating will be adopted, and thorough ventilation will be obtained by means of shafts from each room, connected with a main shaft, in which a current of air is inducted by the waste heat from the boiler. The architects are Messrs. Smith & Woodhouse, of Manchester.

Windows.—At the Ecclesiastical Art-Exhibition, in conjunction with the Church Congress at Croydon last week, Messrs. S. Belham & Co. exhibited a window executed by them for Sunningwell Church, near Abingdon, Berkshire, from designs by Mr. Seddon, architect, and Mr. Kennedy, artist. This comprised a representation of the Adoration of the Infant Saviour by the Magi, in three compartments in the upper part, and of our Lord bearing the Cross, with St. Ann on the left side and St. Mary on the right. Messrs. Belham also exhibited specimens of mosaic executed in Rust's glass, mosaic and modelled and coloured stoneware from Messrs. Bailey's Potteries of Fulham, and a mantelpiece of their own manufacture, with a panel of mosaic inserted therein.

PROPOSED AMENDMENT OF BUILDING ACT.

At the meeting of Metropolitan Board of Works on the 19th inst., Mr. J. Rantz proposed the following resolution:—"That it be referred to the Works and General Purposes Committee to consider and report what amendments are urgently required in the Metropolitan Building Act, 1855, the Metropolis Management Act, 1855, and the Acts amending the same respectively, with respect to houses and buildings, and especially to report what amendments are desirable with reference to the width of roads, foundations of houses, buildings, and erections, and recovery of expenses relating to dangerous structures, with power to instruct counsel to settle any Bill." The mover said he did not propose to go into the question, but he might state briefly that at the present time there was no law affecting the subject of the foundation of houses, and considerable mischief had resulted in consequence of the proceedings of the builders in digging out the gravel, and building on refuse and rubbish.

Mr. Selway seconded the motion, and after some remarks from Mr. Dresser-Rogers and Mr. Fell, it was put and carried.

MESSRS. REID & CO.'S BREWERY.

This large new building, extending as it does from Gray's-inn-road on the west, to within a few yards of Farringdon-street on the east, is now drawing near its completion. The fixing of the machinery, prodigious vats, and general plant, which is on a scale of great magnitude, has already been disposed of. The builders are Messrs. W. Cubitt & Co., Gray's-inn-road. The whole of the telegraph work, comprising ordinary telegraph communication, complete system of fire-alarms, lightning conductors, tell-tales, registering apparatus, electric bells, and indicating instruments for various purposes, has been placed in the hands of Francis & Co., of the Eagle Telegraph Works. The same firm, we are told, are also engaged in the manufacture of similar arrangements for the New Law Courts.

CONVALESCENT HOME, BELFAST.

The memorial-stone of the convalescent Home on the Throne Lands, Belfast, was laid on the 16th inst. by Sir Richard Wallace. The building, which is completed, occupies a commanding site on the lower escarpment of the Cave-hill, having a full view of the Belfast Lough, County Down Coast, and Carmoney hills. The cost of the entire block of buildings, comprising the convalescent home and children's hospital, amounted to about 14,000*l*. The style is Gothic, and the materials used consist chiefly of red perforated bricks, with black brick string-courses and bands. The dressings are of white sandstone, from the Scrabo quarries, county Down. The building is divided into two departments, that situated on the right being devoted to the children's hospital, and that on the left to the convalescent home. The former branch of the establishment will afford accommodation for thirty-two children, and the latter for upwards of thirty patients. This is the existing accommodation; but it is intended to enlarge the plan, so that upwards of 100 patients in the aggregate will eventually be provided for. Special provision has been made by the architect in planning the building for the accommodation of ten patients of the class who pay for their own attendance. These wards or rooms supply a want which has been long felt in Belfast by the middle class of the community. The entire buildings are spread over an area of about half an acre. The children's wing is about 160 ft. long by 36 ft. in width, and comprises, on the ground-plan, two large dormitories, matron's and nurses' bedrooms, board-room, pantries, water-closets, &c., and the upper, or chamber plan, is principally for dormitory accommodation. The convalescent home, which occupies the left of the block of buildings, is divided into various departments, provision having been made on the ground-floor for a dispensary, surgery, major and minor dormitories, and extensive culinary offices (the latter consisting of kitchen, 30 ft. by 20 ft., pantry, dairy, larder, knife-room, meal-house, store-room, &c.), with basement accommodation underneath, such as fuel and provision stores, &c. A spacious corridor, 240 ft. in length, extends from one end of the block to the other. This corridor is 10 ft. in width, and 18 ft. in height. The works, comprising all the accommodation, excepting the children's hospital, have been carried out from the designs and under the superintendence of Messrs. Thomas Jackson & Son, architects, Belfast. The contractors being Messrs. H. & J. Martin, Mr. James Martin having the personal supervision of the works under the contractors. The children's hospital, which was erected some time since, is from the designs of Mr. T. Hevey, architect.

ARCHITECTURAL DESIGNS IN THE PARIS EXHIBITION, 1878.

A memorandum has been prepared by the Paris Exhibition (1878) Architectural Committee of the Institute of British Architects, for the information of architects who may be desirous of exhibiting drawings, &c., at the forthcoming International Exhibition in Paris. Mr. T. Roger Smith, who acts as honorary secretary, will forward forms of application for space and any further information desired to any architects who may write to him at the rooms of the Institute.

The works of art admissible to the Exhibition are those of French or foreign artists, executed since 1st May, 1867. But H.R.H. the Prince of Wales, president, has obtained the following exception to this rule:—All works executed before the 1st January, 1867, by living artists, or by artists deceased since that date, can be exhibited, subject to the condition of bearing a label with the date of execution and the words "Hors Concours" as being excluded from competition. The works of art mentioned include architectural drawings and models, and restorations based upon existing ruins or documents.

PRIZES GIVEN BY THE MANCHESTER SOCIETY OF ARCHITECTS.

We have received the committee's report on the drawings and sketches submitted by students and assistants in competition for the prizes offered by and through the society. The committee regret that so few students have availed themselves of the opportunities offered by the society. They say, nevertheless:—

"Your committee have examined the different sketches and drawings submitted, and, with a few exceptions, find them executed in a careful and highly creditable manner. Those of the Manchester Cathedral, by John N. Horsfield, are most excellent in all respects; and your committee, while regretting that there was no other competitor, have no hesitation in recommending that the prize be given to him.

The sketches of the Assize Courts submitted by Alexander Bond are not of the character or merit which your committee think the prize warrants, and they hardly feel justified in recommending that it be awarded to him, but, in consideration of his industry and the short time during which he has been under articles, they suggest that a prize of the value of 2*l*. 2s. be given to him.

The set of measured drawings of the old Town Hall, Manchester, submitted by Peter Hesketh, are carefully and neatly drawn, and are highly creditable to him on the whole, and the committee consider that he is fairly entitled to the prize."

They award various other prizes in addition.

A LINE OF FRONT DISPUTE.

CLAPHAM.

At the meeting of the Wandsworth District Board of Works, last week, Mr. H. J. Brashier, builder, attended the Board to show cause why a building which he had erected in James-street, Clapham, should not be removed in consequence of his having advanced beyond the general line of frontage. Mr. Brashier produced a photograph which he contended proved that he had not gone beyond the general frontage line, but the chairman intimated that the photograph did nothing of the kind, and an animated dispute between them followed, the chairman observing that the Board was quite aware of the elevation, and that the building had been commenced without the proper notice having been given. He also intimated to Mr. Brashier that the Board required him to take it down, whereupon Mr. Brashier expressed his unwillingness to do so, stating that he had received notice from the freeholder not to remove the building, inasmuch as by doing so he would break a covenant in the lease. The chairman said if he did not remove it the Board would take proceedings. Time would be given for that purpose, and if not then done the Board would demolish it themselves. Mr. Brashier replied that he certainly should not do so, and he warned the Board that if they demolished it, they would do it on their own responsibility and at their own risk.

THE WAR OF CAPITAL AND ANTI-CAPITAL.

AN ANSWER TO SIR EDMUND BECKETT.*

Sir,—If a few facts of the following kind could be known to persons like Sir Edmund Beckett, I venture to think they would not all find the decline of workmanship and of "working will," that so justly alarm him and Carlyle, and all patriotic people, quite so mysterious as he does.

When the late Étienne Leclaire, master house finisher of Paris, above forty years ago, succeeded to his father's business, employing, I think, some fifty men, he found, exactly like Sir Edmund's "first-rate builder," his continual remonstrances at "acts of gross carelessness" met by the same true and obviously sufficient answer,—they were "not paid for thinking," and perhaps added, as they might, that already they gave him "better than the worst that could be paid for." Hereupon he did not complain to the country, or lecture all workmen on the shabbiness of counting just what is paid for, or not giving society more unstinted alms; but he was equal to the logic of considering whose fault it was if care required was not paid for, and inferring that, if they were to think, they *must* and *should* be paid for thinking, and proportionally to results thereof. So the next step was to devise *how*,—crudely at first, but yearly juster and juster modes of payment by results. Now remonstrances ceased to be needed as soon as the famous answer became unmakeable; his business improved and grew for more than a generation. He died in 1871, employer of about six times as many hands as his father; and if Sir Edmund examines their workmanship he will find no decline of quality at any time.

The secret was that in all this, while growing sixfold richer by the usury of this stock, and constantly gaining, too, more mastery over the hands, Leclaire had soon quite ceased to be a capitalist. Never was he called one, for his stock and gains were reckoned and regulated so differently, nay, oppositely, to all capitalist ways and principles, that I can only call them his anti-capital. The honesty of thought above hinted at is totally incompatible with capitalistry. Capital and workmen have *opposite* interests. Anticapital and workmen have *the same* interest. In other words, a capitalist is one who has chosen to make his interest antihuman. An anticapitalist chooses that his interest shall not be antihuman. Another small difference is that the one chooses open accounts; the other, secret ones. The one accountant works in light; the other, like burglars and nocturnal vermin, in darkness. Yet another contrast; under anticapital all work and "working will" steadily improve, but under capital constantly deteriorate. Nothing is more marvellous or creditable than the slowness of this decline among us, for Sir Edmund admits the possibility, I suppose, at any time he has known, of obtaining, by some trouble or expense, work equal to the average work of several years earlier; which possibility I call the greatest marvel in England.

When the *Times* wrote, and Mr. Potter quoted, that "the masters wish to reduce wages, and thus to increase their own share of the gains, by the amount they withhold from the men"; I beg to remark, the *Times* described the way of none but capitalist masters; or, rather, that the former word alone should have been used. For, after all, are capitalists ever really masters? Who decides what manner of machine or hand-made bricks your capitalists, or Queen, or Parliament shall be able to have? or whether wrought stone may be carried into Manchester? You see (by a hundred such cases) that if capital be "master," it has to give mobs of its most imbruted helotry the place of master's master! Now, Leclaire, by turning his father's capital into anticapital, became, because no capitalist, verily a master. For these two characters in their fulness, you will find to be incompatible, and exclude each other.

My capital (if I owned any) would be value employed in fetching me whatever it could of poorer men's earnings, or, as Locke said (in his "Essay on Interest"), "transferring the profit that is the fruit of one man's labour into another man's pocket." I have nothing knowingly so basely misused, but I have what has to be employed in hindering richer men thus pocketing earnings of mine. Anything, then, perverted in the former way being termed capital, what can I call the latter but anti-capital? If I hold some Government stock, whose dividends do not cover, or do but exactly cover my outgoing rates, ground-rent, and all taxes, direct or indirect, that is all anti-capital; but if I then purchase more stock, so as to derive income beyond those outgoings, I am guilty of capitalism, this latter stock alone being capital. Thus, investments both equally to my profit may socially be so radically opposed that all the use of one is to prevent or undo the other's effects. No capital is really a man's property or tool, but all is the Devil's (of whose existence it is the chief proof),—its devilish nightwork, the juggling away earning from earner to non-earner,—and all anti-capital is employed in hindering such transfer.

But leaving the little-known, though readily-knowable case of Parisian Leclaire, I would refer to a remote, but the largest and most widely told case. In everybody's hands, in the book esteemed your very oldest, and the life-story most told upon earth, we may read in chapter 47 of the richest monopolist on record, not, indeed, biggest specie-holder, but richest in the exact way capitalists desire. Quite unlike Solomon's making "silver to be as stones," this Pharaoh is famine-made sole stockbroker among paupers. Splendid and unlimited opportunity for capitalism! Will he not found the ever so many per cent. Consols, and initiate our glorious "strike and lock-out" system for ever? On the contrary, *his* "miraculous Hebrew Premier" (for he happened to resemble us in such a possession), gets him to do exactly like simpleton Leclaire,—and by a partnership with all the labourers, making his and their interests one, to exclude all possible "quarrels over the division of the joint spoil"; the phrases "division" and "share" being not as now, newspaper juggling words, but actualities. And this so successfully that, says the Genesis writer, professedly six centuries later (when there was a king in Israel, xxxvi. 31) the exact ratio of division subsisted unaltered "unto this day."

That premier's name was "Saviour of Society" (Zaphnath-paaneah), and every user of anti-capital, like him, his king, or Leclaire, is entitled to the holy socialist name, as helping or building human society, which every the best capitalist is actively burning down at all points. But if we are told the legend is unhistoric, does that deprive us of the reason? Your Bible-smashing comes too late. What if Egypt was never, as the story implies, made for a long time too hot for capitalists? Do you think we readers, our millions, can be stopped learning from it, to be fully resolved on seeing England made so by and by? Once there be that whose name is another of your conjuring words, "Popular Representation," that, as Mr. Greg warns you, England has not seen for many a century, and quickly as ever she cleared herself, in turn, of friars, highwaymen, and other broods of night, once swarming enough, she will cease to harbour capitalists. I never heard, till Sir Edmund Beckett told us, of any one classing these "with kings and priests"; but if kings, priests, or baronets like to class themselves in such company,—well, it is their affair. We mean to be shut of capital, and of capital's friends, be they kings or what not. And then, but not sooner, may he see his hoped-for check to the decline of workmanship. For no prophecy was ever truer than this from Chelsea, ten years ago,—"it is certain (though widely unknown) servantship, on the nomadic principle, at the rate of so many shillings per day, cannot be other than mis-done."

And no greater mistake probably was ever made than Sir Edmund's, that even the least "frantic" of us may be told any more "with advantage that a capitalist is *only* (!) a man who has not spent all that he ever had." The veriest muddlepates are now rather too old for that oft-repeated (as they call it) "stupendous whopper"; and he cannot but see, on giving it a minute's thought, that no less monstrous than saying a murderer is *only* a man not destitute of weapons, must it to be to ascribe to the mere touch of sixpences power to turn a creature of God into a capitalist! Plenty can hold, he may be sure, thousands of sixpences, without being sunk thereby low enough to make capital of them. Does that which goeth into the month (or hand) so defile a man? By no means. Capitalist makes capital, not the reverse. From within, out of the heart, proceeds what can alone turn wealth into "illth," as Ruskin terms it. Can sixpences or aught become capital till fallen into the paw of some creature already inwardly a capitalist?

The same prophecy above quoted says,—"Speech issuing in no deed is hateful and contemptible." I would invite Sir Edmund, then, to join in some humble undermining of the evil. I will do what little I can—undertake to contribute 1,000*l.*, if he, or any number of workmen, all of one trade, will make up other 5,000*l.* to start the first of the joint-stock companies that must get their usury by anti-capital instead of by capital, if England is to live. Our name, imitating the "Saint Georges," may be "*Sinner Pharaoh's Company*, for recovering true workmanship by excluding capitalists." We shall meet with no such registration difficulties as the modern St. George, because ours is to be, unlike his, a strictly trading company for profit; our exemplar not being recorded to have either received or given alms, so that neither will our company.

Whoever may deign to advise on this will please to write out and send me these two engagements:—

"1. I will claim no greater voice in this company's management than proportional to each one's investments, each divided by the number of complete half-years between 1876 and the time of investing.

2. (*The Holy Creed.*)—'Pharaoh's usury was good usury' (Gen. xlvii. 24), with which I will be content; and will get no other gain of the poorer members' labours, on pain of forfeiting all my capital if detected."

We shall be opener than St. George in matter of faith, because as much as is known of Pharaoh's is fixed of ours, and no more; or, rather, as much as can be found in our text-chapter, which, though one of the longest in Genesis, may surprise some by the fact of no more alluding than the strictest Comtist to any greater being than humanity.

Proposed inscription for the obelisk base:—

"*My Master took but a Fifth of their People's Earnings to govern, employ, direct, and defend them.*"

Edwd. L. Garbett.

* We cannot profess to agree with the writer of this in all his opinions, but he has well earned as a thinker a right to be heard, and the offer with which the letter concludes places it on a different footing from some others we have received.

PEERAGE PROPERTY.

Sir,—In former times I have, by your kind permission, called public attention to the "land question," and I therefore feel much interested in the discussion originated on the above subject by Mr. George Mitchell. It cannot be doubted that he is, in the main, right in his argument, although for want of the exact figures he has laid himself open to the strictures of the Messrs. Powell, whose letter, though hostile, is decidedly temperate and unargumentative. To assist in a fair understanding of the matter, in so far at least as Scotland is concerned, I propose to quote a few figures from the "Domesday Book of Scotland,"—a book issued by the Government, and correct probably, in so far as it relates to the land in actual possession, but, like its fellow relating to England, so manifestly wrong in that it classifies all leaseholders of ninety-nine years and upwards as proprietors, although their holdings may be of no greater extent than Mr. Mitchell's family-grave in Brompton Cemetery, or the little plot of land on which he has built his dwelling-house, and which will revert to the ground landlord, house and all, at the end of his lease. The effect of this classification is to add immensely to the numbers of so-called proprietors, and to reduce the acreage of those in the list who have thus let off their land. In no case, therefore, has any person less than the acreage set against his name, but he may, and if his land is partly in towns, will, have considerably more. The figures are as follow:—

The Duke and Duchess of Sutherland	1,326,222	acres
Sir J. and Mr. A. Matheson	626,503	,,
Earl of Breadalbane	437,696	,,
Duke of Buccleugh	432,183	,,
Earl of Seafield	306,000	,,
Mr. Evan Baillie	300,000	,,
Earl of Stair	270,000	,,
Duke of Richmond	255,000	,,
Duke of Atholle	194,000	,,
Duke of Hamilton	183,000	,,
Duke of Argyll	175,000	,,
Sir K. Mackenzie of Gairloch	164,680	,,
Macleod of Macleod	141,700	,,
Earl of Dalhousie	136,000	,,
Lord Macdonald	130,000	,,
The Mackintosh	124,000	,,
Earl of Fife	113,000	,,
Sir C. W. Ross	110,400	,,
Cameron of Lochiel	109,500	,,
Duke of Portland	106,000	,,
Sir G. M. Grant	103,000	,,
Total	5,743,884	,,

With two exceptions, the whole of the persons in the above list belong to the peerage, and deducting the land held by those two, we find that twenty-one men own nearly one-third, and one man and his wife own more than a fifteenth of the whole of the land in Scotland; 106 persons own 9,350,884 acres,—nearly half the extent of Scotland,—not one of whom has less than 20,000 acres, and most of these belong to the peerage. How they became possessed of these enormous properties I am not now too curiously about to inquire, but the frequent recurrence of purely Scotch names would seem to indicate that the right of the chiefs of clans to a part of the produce of the soil had somehow hardened in time to the possession of the soil itself.

The annual value of these immense estates is, as a matter of course, estimated at a very low figure, that of

the Duke of Sutherland being set down at 1s per acre Those of us who have had the advantage of seeing his well-known face as he has been wildly careering through the streets of London on a fire-engine, will need no assurance that the Duke is a man of wonderful energy and this energy he displays in the management of his estates. As much cannot be said of most of the other large proprietors, who are content to get as much out of their life interest as possible; but the Duke's estate is so large that he can no more cultivate it than he can pay the National Debt; and yet he cannot sell it, and the leasing of it is usually on such terms that few can touch it, so that, like the dog in the manger, these proprietors cannot enjoy their estates themselves, and they can and do prevent others. Capitalists will not touch them, because they have no security, and poor men are constantly emigrating to lands where they may find a constant supply of meat, instead of the perennial scarcity of oatmeal they are subject to at home. This condition of things keeps down cultivation and improvement generally. Just fancy what an alteration would soon take place if the law or custom of primogeniture and entail were abolished, and these estates became divided among families of relations who have to be provided for in other ways by a grateful country. If in addition tenures in perpetuity were granted, both for the surface and for minerals, there would grow up rights subordinate to the chief which would change the whole condition of things. Instead of as at present, when a once populous country of hardy, frugal, and warlike people is denuded of its population, and the country given over to the cultivation of the deer (and a most expensive production it has proved to be), we should, under the altered conditions, find that Scotchmen,—whose reluctance to go back to their native land is now proverbial,—would flock back from all parts of the world, and what is now a desert would become more populous than ever. Think of the amount of building of all kinds that would then be required.

The same condition of things obtains in England, but in a less degree, and it behoves every one who has the interest of his country at heart to endeavour to alter it.

E. Grimes.

LABOUR AND WEALTH.

Sir,—Pardon me, I pray, for taking up my pen to criticise the article under this title in your paper of the 13th inst. . . . . The whole of your article quietly assumes that self-interest must be always the most powerful motive among us. Need this be so? A man who has a special power of influencing his fellow-men, who can judge instinctively the cost of work, who can organise and direct, must love to exercise these powers; but may not the service of others, such powers enable us to perform, become, some future day, more pleasant than the service to ourselves we can wring out of them?

I do not wish in my remarks to trespass upon the labours of the Church Congress, but such a changed heart, and consequent new social order, appears, to my lay wisdom, as plainly to be expected, if Christianity be true, as the plant is to be expected from the seed.

You object to the efforts of the wage class to destroy wages, as an effort on their part to "saw off the branch on which they sit." Instead of thus turning to the men and breasting the stream, I would turn to the masters, and urge them to be more considerate of the men than even the men are of themselves, and while still assuring to them the branch on which they sit,—their certain weekly wage,—to add to it a bonus out of extra profit to be earned through extra industry on their part.

There is no novelty in my suggestion, you will say; and I answer, therein lies its chief merit.

"It has been tried and failed," you will say.

"And tried and succeeded," I answer.

"Briggs's colliery——!" "Quite true," I say. "At first a great success, afterwards a seemingly conspicuous failure." In this colliery (as we all know) the strikes of many years ago were ended by this very scheme. Under the *régime* which brought peace, the men were paid their wages as before, the interest on the capital employed was then deducted from the profits, and the balance divided between the masters and the men, the men's share being distributed among them in proportion to their wages.

This arrangement was commenced in 1865, and in place of such violent contention between masters and men, that at one time the aid of the police had to be invoked for the protection of the masters' lives and property, it produced a peace and prosperity so great that speaking of it in 1867, Messrs. Briggs say (Parliamentary Report, p. 109), "the adoption of these principles of industrial co-operation has changed the relation of employer and employed from a condition of mutual strife and antagonism to one of harmony and goodwill"; and again (p. 115), "a larger profit has been realised by the partners in the year gone by than during any previous year."

Here was grand success, followed by failure. But for what reason failure? I have no printed record of the failure before me, as I have of the success, but success painted in such glowing language as in the report in my hand does give a colour to the tale related to me of the cause of failure. The arrangement broke down, I am told, because, during the recent prosperous years of coal-mining, the profits, which would, by the arrangement, have been divided among the men, were so large, that their share of profits was reduced.

The reduced amount distributed was a great amount, and the men did not grumble at the time (thus runs my information); but they noted the change. The inflated price of coal fell, and with the fall came a desire on the part of the masters to reduce the wages. "No!" said the men, "in prosperous times you docked our profits, in bad times you shall not dock our wages"; and hence the break up of the arrangements.

I repeat in this what I am told; with the accuracy or inaccuracy of my information, I do not, however, regard myself as largely concerned. It is clear to my own reason that the union of men against masters must be met by union between masters and men,—that the seeming interest of the men in reducing the amount of work the day's labour produces, must be met by a conspicuous interest on the part of each to increase that amount,—it is so clear to me that this must be done without interfering with the law which brings the strong man to the top, that I cannot but think the next social step in which real progress is made must result in a wide infusion into all employments of such a principle as that embodied in Briggs & Co. in their days of bonus-giving.

The habit of unaudited management in business may be hard to part with, that of openness and even dealing with the employed still harder to acquire, but a willing co-operation between employer and employed were surely worth more than acquirements even of such great difficulty. Why should not a builder, on taking a contract, say to his men,—"I reckon to make such a profit on this contract in payment for my capital, labour, plant, and risk; if I make more than this, I will share the difference with you, and distribute your share among you in proportion to the gross wages I have paid each of you on the contract work. It lies with you to secure this extra profit by your own energy and industry."

And if a builder may thus deal with a contract, any employer may plainly deal similarly with any work which is capable of being divided into "piece-work." Such arrangements as this, moreover, can hardly damage the master pecuniarily. They may not operate largely at first in producing any extra profit, but if the master is not too grasping in determining his own share they will produce some; and the men, once assured by experience, the effect will grow, and the profits to both masters and men increase.

So matters appear to me; and when, with wonder that others cannot widely see as I see, I look round, I observe that besides succeeding temporarily with Briggs, the arrangements I have set forth have succeeded in many other cases often publicly described. Privately also, in professional forms, I have known the same arrangements adopted, and an energy, elasticity, and general interest thrown thereby into office work, producing in it a life and spirit beside which the profit, also undoubtedly realised, sinks into insignificance.

Such are the facts, and yet how sadly is such a failure as that of Briggs allowed to hide its success, how universally are all these promising possibilities of peace and prosperity ignored! Surely, I must think the love of an unchecked dominion blinds men's eyes to that cure for disputes and differences between masters and men which lies at our hands, and in recommending which appeal can be made, not to theory alone, but also to much brilliant success.

Horace Field.

With reference to the subject matter of 'Labour and Wealth" I wish to point out that it is now becoming a very expensive process to control the *wills* of educated men. I put it thus as a postulate, well knowing, however, that the same idea might be expressed in many different ways, but this seems to me the most effective way of putting it.

Education is a general term; we need not confine its meaning and application to that mental culture which is founded in the proverbial three R's, for there is the political education furnished by newspaper reading; an education which creates a mind and contracts while it creates: acting psychically as, physically, the flat-heads contract their skulls.

The schoolmaster is now abroad, and he does not preach submission; public prints must conciliate their supporters, and all do it more or less by flattering their readers' vanity: this takes the form of appeals to their judgment; each appeal serves by inflation to raise the suitor at a bound from floor to bench, the desire to judge is aroused, and the power to judge is taken for granted.

The real difficulty of controlling an educated man results from his progressive power. Sheep are the very stupidest things known, yet see how readily they follow one another through a hedge; this unanimity is no result of organisation. Such birds, insects, and animals as have a power of organisation do act in concert, but it cannot be shown that they agree by submission: take the bee, for instance; why, their queen is a prisoner! The bee has an instinctive capacity for secreting honey, but man is not a money spinner in the same instinctive way that the bee is a producer of honey; man has a producing power, and by it the wealth of nations is progressively advancing, but he has also an innate *will*, the exercise of which is with many people a stronger faculty than the desire to produce; and the will, thus exercised, too frequently becomes hostile to production. There is further, among men, an innate desire for each class to exalt itself at the expense of all other classes. We know, for instance, the jealousy for precedence that exists between army and navy, between the faculty of law and medicine, between clergy and laity; the scientist aspires to surpass all these, and a certain fifth estate sets itself above even the Lords and Commons. Truly it is an expensive thing to control the wills of educated men.

Now, this jealousy really has its rise in the idea of self-advancement, and it is self-advancement that prompts the action of these trade unions,—perhaps mistakably as an ultimate result, but with a temporary advantage: like besiegers who work by sap and mine, they may blow themselves up in the end, or be repulsed; but there is progress. The schoolmaster is abroad, the artisan is educated, and right or wrong he means to test his power of advancement as against *all* other classes. The result may work somewhat thus:—

I. The ultimate beneficiaries under the proposed system will, in the majority of cases, be of the lowest orders.

II. The individuals so benefited will jump more rapidly to the front rank in social life.

III. The seething of competition so generated must prevent centres of industry from remaining stationary; trades will necessarily shift from country to country, from people to people, according to the exigencies of the labour market.

IV. Such combinations of workmen to benefit themselves by labour unions is better than a combination of socialists to equalise property by force: the workmen, as bees, are still producers; socialists are the wasps of society.

V. The fortunate workmen who thus rise would become the aristocracy of future generations.

We have seen an aristocracy of mailed robbers, an aristocracy of landed proprietors, an aristocracy of commerce, or moneyocracy, as it has been contemptuously called; may we ever see an aristocracy of labour?

This result is not what the agitators promise, but it is a more likely result than the aristocracy of intellect which some people dream of: labour fills the pocket, whether it be the labour o artist or of artisan. The expression, aristocracy of talent, implies a body of men instinctively desirous of leading, and utterly unacquainted with submission. The *dignity* of labour is a mere windy expression if the labour be unsupported by income; give the income, and the motive for labour is taken away.

I cannot doubt that the operation of trade unions has injured some trades in England, but the agitators will not stick at that, for they work towards an ideal. And there are gain and progress towards the end they have in view; that is to say, they do thereby raise the working man in the scale of social life. Many artisans now rank above small shopkeepers; the next step would thrust them among the so-called middle class, and then——? Looked at from the employers' point of view, capital seeks to control labour; reverse the picture, and we find that labour is seeking a way to control capital. In the present day it is hopeless to put down trade unions by law. What we have to do is to control their action within proper limits. Rattening requires a special legislation. Picketing can be defined and restricted. Certain extreme combinations can be

stigmatised as conspiracy, and prosecuted accordingly. Let us show that we can be "cunning of fence," and the *Sir Tobys* will draw off.

VENDALE

ROYAL DUBLIN SOCIETY, AND LEINSTER LAWN.

SIR,—I have to ask your assistance (always given in a good cause) to defeat a project which has just been made public, and which must be stamped out at once and for ever. It is proposed by certain officials of South Kensington to build up the open air-space now left between the ends of the National Gallery and the Museum, thus closing up the splendid frontage of Leinster House, and one of the most effective city views which we possess, spoiling for ever the handsome well-kept lawn where the only ornamental gardening attempted in Dublin may be seen by all. The space is small, but it is a jem, well set in glorious colours, a "thing of beauty." And the flowers and the sunshine of the "lawn" will do more to humanise, to refine, to educate, to strengthen the sick, to cheer the weary, than all the glass cases, galleries, and specimens we may be promised in the far-off time to come.

There is a statue of the Prince Consort, by Foley, in the centre of the present lawn, duly unveiled by royalty. We are promised a peep at this, if we are good boys, through a "large archway" in the future building. Paddy will say they have obstructed Albert the Good, and put him in a dungeon. It will be, indeed, a prison-yard, shut out from sun and breeze, surrounded on all sides by lofty buildings. Only 440 ft. now in length, it will be reduced to a little square of 250 ft. or so, and the idea of flowers blooming in such an enclosed plot is absurd.

As a life member of the Royal Dublin Society, I should regret to see our beautiful lawn,—trim, neat, and tasteful,—crushed up with buildings of the "Brick-boiler-terra-cotta-style" now so vaunted, even with the addition of a "large archway," and a cabman's stand inside, "similar to Burlington House," and Albert the Good looking out through the gate "highly ornamental in structure."

There is plenty of room in Kildare-street. Let two wings be built, uniform in style and position with the National Gallery and Museum, now standing in Merrion-square. The ground already belongs to the Society, and any additional ground can be acquired. The buildings can all be connected by covered galleries, which can be effectively used in the architectural treatment to bring the entire into a uniform pile. The Agricultural Museum, of which so much is made, is an iron building, with pillars, glass, and timber, which a contractor would remove and re-erect in a month. The massive gates in Kildare-street would be taken down, and the gravel courtyard filled with flowers and grass. There would be ample room to extend the buildings north and south,—a thing impracticable on the Leinster Lawn site. Dublin would be improved by noble buildings and cleared ground, the citizen would be proud to admire their old historic "Lawn," preserved from the despoiler, and the Government, in the desire to present a handsome gift to Dublin, will find all to praise, instead of the perfect tempest which the present proposal has raised. Every one condemns, papers of every shade of opinion unite in assailing, the attempt to destroy the finest square in Dublin.

RICHD. W. WALSH, M.Inst.C.E I.

SITE OF THE OBELISK.

SIR,—When the model of the obelisk was placed in Parliament-square, there was some talk of repeating the experiment on points of the Embankment. There would be little practical difficulty in removing it to either the site you have suggested or to the Northumberland-avenue site, for temporary inspection. As regards the last-named site, there is one circumstance connected with it, besides the advantage of locality, which no other spot that has been proposed can possess,—that it will serve as a memorial of the late Duke of Northumberland, who was not only a liberal patron of Egyptian learning, but who was also himself among the earliest explorers and decipherers of the hieroglyphics. Some forty years ago he brought from Ethiopia,—when it was not easy to travel so far from the limits of civilisation,—a copy of the cartouch, or oval, containing the name of Queen Candace, which he had found among the ruins in the island of Meroe, perhaps the very Candace whose servant was baptised by Philip (Acts viii. 26); I say perhaps, because there may have been several queens of the name. Besides this, and various other services which he rendered to science, he made and placed in the museum at Alnwick Castle a collection of Egyptian tablets and other objects of antiquity, including a granite obelisk and a fragment of inscription from the Gebel Mokatteb, in the peninsula of Mount Sinai, which have only very recently been read and interpreted by Mr. Samuel Sharpe.

It may be well to mention that the word cartouch has been adopted to signify the oval in which the hieroglyphics of the names of royal personages are written. JOSEPH BONOMI.

A SEMICIRCULAR CEILING TO A CONCERT-ROOM.

SIR,—Mr. Statham, in the article from his pen in your issue of Oct. 20, headed "Wanted, a Concert-room for London," referring to St. James's Hall as an auditorium, says:—"A circular ceiling or barrel-vault is not the shape for an auditorium; it focusses echo." Will you allow me to ask whether as a fact echo is experienced in St. James's Hall? I have been there often, and have never myself noticed it. Had it occurred, I should expect to find it in the front of the balcony, which, as Mr. Statham points out, is one of the very best places.

Experiment is of more value than theory. Theoretically, I candidly confess, I should have been inclined to agree with Mr. Statham in condemning the shape of the ceiling of St. James's Hall, but the result seems to show that our very able and sadly-undervalued colleague, Mr. Owen Jones, knew what he was about when he built that ceiling. T. R. S.

LARGE BLOCK OF SHOP AND OFFICE BUILDINGS IN FINSBURY.

SIR,—I observe a description of the above buildings in your last issue, in which it is stated that the ground-floor consists of freestone and red granite columns, whereas it really is built entirely, on the Moorgate-street side and party on other sides, of polished purple granite from Shap in columns and pilasters.

By publishing this correction, and by allowing me to add to the list of coloured granites enumerated by your correspondent "H. T.," purple from Shap, yellow grey from Shap, and bright red from Mull, you will much oblige me, W. M.

*** We are also asked to mention that the width of the covered passages should have been stated as 15 ft., instead of 10 ft., as printed.

THE MASONS' REPLY.

SIR,—In your impression of October 20th there appears a letter which is signed "A Master Builder." This letter is in reference to the masons' strike. The object is, as far as I can understand, to clear away some misunderstanding in connexion with the strike. I, sir, should be glad if any one could make things sufficiently clear to settle the dispute in question. But as I was one of the delegates to meet the employers' representatives, I feel it to be my duty to contradict statements made by your correspondent, "A Master Builder"; likewise, to give an opinion on some of the matters he refers to, namely, the reduction in the hours of labour, and advance of wages. Now, sir, I beg to state that the chief point of discussion arose on the working hours, upon which, after a long debate, the chairman so far came to our views that he stated that any man or men starting half an hour later in the morning he did not in any way object to. Further, at any time should he have cause to discharge any of his men, they would not be the first to be discharged. Now, as the chairman acknowledged likewise that it did not in any way disarrange the business in the office, and being but a small body in the building trade, we fail to see the ground for opposition.

In reference to the hour question, I should further explain that another section of the building trade,—namely, the plumbers,—are working forty-seven hours per week, at the rate of 10d. per hour. There never appears to be any difficulty arising because they start later than other trades. I would say that I am at a loss to understand on what grounds they are entitled to 1d. per hour more than the masons. If it is extra skill, I think the mason requires as much as the plumber to be an efficient workman. In fact, we believe that in a public test it would be in our favour. "A Master Builder" says that directly we get the advance the carpenters are prepared to strike. Why did not they strike when the plumbers got their advance? Why have not they struck? We say why, because where there is any union existing, they always give a due notice for an advance, which they have not as yet sent in to the employers. In stating this I am not in a position to know that they have any intention of doing so. Further, I would say, the time we work does not meet with the views of the carpenters; why, I will try to explain. This is in the winter months, when we try to reduce our time; the carpenter, as a rule, has a nice warm shop to work in; he feels no effects of the cold, his shop being all closed in, and on that ground he prefers to work long hours during winter as well as in summer. Now the mason's shop is quite different; it is open in front, with a low roof, which causes it to be colder than being out of doors. If any one doubts this statement, let him go to the New Law Courts in the month of January. Now with regard to skill and wages paid. I beg to state that the question was asked, Would we allow any of our members to have more than the current rate? The answer was, Yes. But I should like to know of a case where it was offered, and to be shown when the union men objected to a member having it. The chief point was in reference to men being underpaid. We referred the employers to the New Law Courts, it being a strictly society shop. Previously to our present dispute there were numbers there of young men who were not getting the current rate of wages. The other workmen had sufficient knowledge to know that they were not worth it, and on that ground they were so far consistent to allow them to work for what they could get. Now, whilst writing on this matter, I should like to draw "A Master Builder's" attention to our rules, which state that a boy should be legally bound apprentice. If he would assist us, along with the other employers, in this important matter, by having all boys legally bound, we should not have many of the unskilled amongst us. With regard to the idle man, he, in my opinion, is worse than the drunkard,—not worth having at any price. If the society compels the employer to get rid of him, or pay him the current rate, they are doing the employer no harm, but are trying to make the drone reform, and not be a drag on society.

I likewise deny the assertion made, that a skilful man must eke out his time so as not to surpass the unskilful. How could such a system be carried out? Where would be the eyes of the foreman to allow such a scheme to be carried out? Can the master builders point out any rule in our Society's book that sanctions such a system as that?

The last matter referred to is that many masons are getting dissatisfied. So far, sir, I will allow that we are; but the reasons are these,—that the great majority of our men are getting the advance asked for, and a minority of some 500 or 600 have to depend on their Society for support, whilst there is plenty of work around them to do. In numbers of cases the employers are trying to sublet their work, and allow the sub-contractor to pay the advance, but will not acknowledge it themselves. Now, if they can get a profit and give a profit to another man, why or where is the reason they should not have both themselves? With regard to the funds, we are perfectly safe; we are now paying 3s. more than at the commencement of the dispute. I hope that "A Master Builder" has sufficient of foreign workmen, likewise a reform necessary to settle the dispute now existing between us.

C. B., One of the Deputation.

THE LONDON BUILDING TRADE.

A CROWDED meeting of the stonemasons on strike was held on the 18th inst., at Wilcocke's Assembly-rooms, Westminster Bridge-road. The chair was taken by Mr. H. Broadhurst, who said that the meeting held at Cannon-street Hotel had produced excellent results, and subscriptions were coming in from the other trades. During the last six weeks the committee had got on rapidly, and was fully supported by the central society. The position of the committee was now much better financially than it had been at the commencement of the strike. It had been stated that the employers in London were filling up the gaps in their employment with men from the ranks of those on strike and from the provinces. This, he could state, was entirely erroneous, and the men in the provinces would not in any way better themselves by coming to London to take the same wages as they were receiving at home. He blamed the secretary of the Employers' Association for preventing a meeting between the men and their employers, which would have, ere this, led to an understanding. It had been also stated in the papers that Mr. Webster would not pay the advance save to one special man; but he could tell them that every society man in Mr. Webster's employ had received the advance. Some fifty men from Italy and other countries had commenced work that day at the Law Courts, but he had little fear of their being long in the way. The employers had imported not only the men, but their families also. There were at present one or two American masons in London, who had not gone in to oppose the strike, and he had little fear of other Americans if they came over. It was stated that two additional firms had given the advance. It having been reported that some of the foreign masons had been mobbed and menaced by the English masons on strike, the officers of the London Strike Committee have written disclaiming all knowledge of or participation in this outrage. They "solemnly declare that no London mason has had anything to do with such proceedings," though how they are able to vouch so much does not appear. It is stated that huts have been erected within the works to accommodate the foreigners.

A meeting was held on Saturday evening at the Spread Eagle, Charles-street, Tottenham-court-road, comprised of delegates from the Amalgamated General Union and non-Society men of London belonging to the carpenters and joiners, for the purpose of obtaining from the employers a rise in wages and a diminution in the hours of work. The chair was occupied by Mr. Benton, who, in opening the proceedings, referred to the strike at present going on in the above trades at Manchester. Mr. Chandler moved,—"That in the opinion of this meeting, composed of delegates representing the carpenters and joiners of London, the time has arrived when we can ask for a reduction of the

hours of labour and an increase in our wages;" and in support of it he observed that they had not had an advance for four years. The resolution was carried by forty-five votes to ten.

MASTERS AND MEN.

Edinburgh.—The *Scotsman* publishes the following circular, which, it believes, has just been issued to the "Master Plasterers of Edinburgh, Leith, Portobello, and Vicinity," with a view to bring about a change in the working arrangements of the trade:—

"Edinburgh, October, 1877.

Gentlemen,—The United Operative Plasterers having had under consideration the manner in which the plaster work in a number of buildings in and around the city has been executed for some time back, resolved that it was their duty to do their utmost to prevent employers who may contract for work at an unremunerative rate, with the hope that they will get men to do the work in a manner at once detrimental to the best interests of masters, the public, and the trade, from underselling the employers who wish to execute their work in a fair and honest manner, at a fairly remunerative rate. I therefore state on behalf of the United Operative Plasterers, that on and after the above date they will decline to do three-cost plaster in any other manner than the following, viz.:—All angles properly straightened with a rule; walls and ceilings to be slack-floated and hand-floated with water; all the finishing coat to be hand floated and polished. Hoping this will meet your approval, and that we will have your earnest and hearty support in carrying this measure faithfully to the letter, I have the honour to be, in name and on behalf of the United Operative Plasterers of Edinburgh, your obedient servant,

THOS. AITCHISON, Secretary."

Preston.—In February last the Preston plasterers resolved "that no employer of plasterers be allowed to sub-let any portion of their plaster-work." According to a Birmingham paper, a joiner and builder has been infringing this rule, and a few days ago he received a letter from the Operative Plasterers' Committee, containing the following order:—"We, the committee of this district, write to inform you that you are not allowed to let any portion of our branch, such as pudging or cementing walls or floors, as it belongs to our trade. It is against the rules of our society, as long as you employ our members, and you will oblige us by putting a stop to it at once."

TECHNICAL TEACHING AT THE ARTISANS' INSTITUTE.

THE following resolution was recently passed by the Technical Teachers' Committee of the Artisans' Institute in reference to the question of admitting amateurs and labourers to the classes.

Proposed by Mr. Caley, seconded by Mr. Mills, and carried unanimously:—

"That in reference to the question raised by Mr. Kenny in the *Daily News* of August 29th, as to admission of labourers to the Artisans' Institute, this committee are strongly of opinion that while unskilled workmen and the public generally will always be gladly welcomed to the other classes of the Institute, the technical classes are exclusively established for improving and perfecting artisans and apprentices in the technical branches of their various trades, the Institute having been designed for their benefit."

KENSINGTON VESTRY HALL COMPETITION.

GREAT dissatisfaction prevails amongst the competitors. The following note has been addressed to the chairman and members of the Board:—

"VESTRY-HALL COMPETITION.

Gentlemen,—We have read in the professional papers recently published, that *neither* of the four selected or premiated designs for the above can be carried out for the re-pective amounts of tenders submitted therewith. Under these circumstances we beg t submit that the authors of the *remaining designs* recommended for adoption by Mr. Whichcord, should now have the opportunity of sending in detailed estimates, or that there should be a fresh competition among the eight.

THE AUTHORS OF ONE OF THE EIGHT DESIGNS."

COMPETITIONS.

Joint Counties Lunatic Asylums, Carmarthen.—A selected number of architects having been invited to submit plans for the enlargement of the asylum and the erection of a hospital for infectious diseases, those of Messrs. John Giles & Gough have been selected by the Committee of Justices.

Wellingborough Grammar School. — Messrs. Bonner & Mills state that their designs were placed second in the above competition. Mr. Speechly's design not being in the number selected by the Governors as reported in our last.

Fever Hospital, Sheffield.—The following is the result of the competition for the proposed new Fever Hospital at Sheffield, for which twenty designs were sent in:—1st, Mr. Swan, architect, Sheffield; 2nd, Mr. Wm. Hill, Leeds; 3rd, Mr. D. Dodgson, Leeds.

Miscellanea.

The Edinburgh Aquarium.—The Town Council has decided to let a portion of the Vegetable Market for an aquarium; the promoter of that undertaking is Mr. R. M. Brechin. The space to be placed at his disposal, being a portion of the ground-floor at the west end of the market, may be described as a semicircular strip, with a length, following the curve, of about 200 ft., and a width of 17 ft. to 19 ft., together with the triangular space, in the south-west corner of the inclosure, not at present covered by the market roof. At the extreme south end, a tank somewhat larger than the rest, and capable of holding about 11,000 gallons, is intended to be appropriated to the conger-eels. Other six besides this will be set apart for marine creatures, while the remaining four, towards the north, are to be filled with fresh water. At the third tank from the south end, a passage 6 ft. wide will lead from the promenade to the triangular space, now outside the market, but which is to be roofed over, and treated in much the same manner as the promenade itself. Here a central area, 45 ft. long by 22 ft. wide, will be available for walking. Of the three arches under the roadway leading down to the market, two will be converted into ornamental caverns or rockeries, and the third occupied by the hot-air engine which will be required to carry on the work of the aquarium. With the fresh-water tanks there is little difficulty, all that is necessary being to keep up a constant supply from the city mains, which will flow from one tank to another, then by the cascade into the seal pond, to escape finally into the drains. To provide for the marine animals, however, a large reservoir will have to be formed under the floor of the triangular area, and filled in the outset with sea water. By means of a pump this will be sent into the tanks, and on leaving these, after having flowed through the series, it will be returned to the reservoir, to undergo a process of aëration, through which, with very slight addition to the stock, it can, we believe, be made to serve for an indefinite length of time. The work, we understand, is to be commenced at once, according to plans furnished by Mr. T. B. M'Fadzen, architect.

Cremorne Gardens and the Chelsea Embankment.—At the meeting of the Chelsea Vestry on the 17th inst., Mr. Lawrence moved,—

"That, having regard to the great change about to take place at the west end of the parish, by the conversion of Cremorne Gardens and the adjacent property into building land, a committee, to be called the Western Embankment Committee, be appointed, to consider and report as to the advisability of endeavouring to promote the continuation of the Chelsea Embankment from Battersea Bridge to the west end of Cheyne-walk."

The mover said that the Metropolitan Board of Works would have new grounds for considering the scheme, and if the improvement were carried out, they would no doubt have a fine class of property on the Cremorne Estate; and there would be a direct road from the Embankment right up to the western portion of South Kensington. By a diverging road through Cremorne, there would be a through communication into Addison-road, and, in fact, right into the Uxbridge-road. In addition to all these advantages, it would be a great sanitary improvement, for the embankment would do away with a most objectionable mud-bank, which at nearly all states of the tide was exposed, causing a very serious nuisance, especially in hot weather. Dr. Phene seconded the motion, which was carried unanimously, and a committee of thirteen members appointed.

The Adam Black Memorial, Edinburgh. Mr. Hutchison's statue of the late Mr. Adam Black, cast in bronze by Messrs. Cox & Son, Thames Ditton, has been safely delivered at the artist's studio in Edinburgh, and now only awaits the erection of the pedestal to take its place in East Princes-street-gardens. The casting is said to be a successful one, reproducing with fidelity all details of the modelling in head and hands. The design represents Mr. Black in his official robe as Lord Provost of the city. He is in standing posture. The statue stands 12 ft. high. It is intended to occupy a position midway between the Wilson statue and the Scott Monument, and will rest on a pedestal of fine Binnie freestone.

Cleopatra's Needle.—At the time we went to press last week it was feared that the obelisk and the vessel containing it were lost for ever. It appears that a severe gale sprang up on Sunday, the 14th inst., and in consequence the towrope of the *Cleopatra* was cast off at about six p.m. A heavy sea overwhelmed the *Cleopatra*, leaving her with a strong list to starboard, and breaking the rail ballast adrift. Fearing another such sea might capsize her, Captain Carter signalled for assistance. A boat, with six men, was sent from the *Olga*, and caught a rope thrown from the *Cleopatra*, but drifted away, being unable to hold on. The gale continuing, a successful attempt was made to get the *Cleopatra's* crew on board the *Olga*, and a search was made for the missing boat, but without avail. The *Olga* then tried to again find the *Cleopatra*, but could not sight her, and made sail for Falmouth. We are glad to state that the steamer *Fitzmaurice*, from Middlesbrough for Valencia, subsequently fell in with and recovered the abandoned treasure, about ninety miles north of Ferrol, though we regret that nothing has yet been heard of the missing boat and its occupants.

Memorial to the late Mr. John Kane.—After Mr. John Kane's death, many gentlemen in the iron trade, and others of his personal friends, desired to show their appreciation of his character by initiating a subscription on behalf of his widow, but as the North of England Arbitration Board and the ironworkers of the kingdom took the matter in charge, there was no opening for an expression of esteem towards the late ironworkers' secretary left except to raise some monument to his memory. This has been done in the Darlington West Cemetery, where his remains were interred. An obelisk of red granite, resting upon a base of grey granite, and about 10 ft. high, has been raised over the grave, with an inscription signifying that it is done in respectful remembrance of Mr. Kane, who, as the secretary of the National Ironworkers' Association, the Iron Trade Arbitration Board, and the Darlington School Board, in those and other capacities possessed the confidence and friendship not only of the industrial class to whose interest he was devoted, but of all sections of the community.

The Church of All Hallows the Great and Less, in Upper Thames-street, has been re-opened. The tower and vestibule on the north side of the church, which projected into the roadway, have been removed, and the site on which they stood has been thrown into the street. A new vestry, a tower for the bells, and the necessary offices, have been erected on the south side of the church. The cost of the alterations, with the necessary fittings for the interior, has been nearly 4,250*l.* The church is famous for its carved oak screen, supported on spiral columns, which, with the pulpit and reading-desk, was presented shortly after the Fire of London by the merchants of the Steelyard, which was in the parish of All Hallows the Great.

A Brighton Improvement.—On Saturday last the Lord Mayor of London visited Brighton and opened to the public the new roadway leading to the Railway Station. The new roadway has been formed by the widening of the upper part of Queen's-road from 40 ft. to 60 ft. To carry out this improvement the whole of the houses on one side of the street had to be demolished, and will be replaced by modern business premises. The change, which will not only remove an eyesore, but give most important facilities for traffic, is virtually the work of the railway company, as, although the Corporation paid by agreement 1,000*l.* towards it, that sum was only a small proportion of the cost.

The Canal Boats Act.—"A Watchman" writes with reference to "rumours that this Act of last session is likely to be inoperative, because no steps are being taken to carry out its provisions." He says, "This Act comes into operation next January, and it is quite time notices were given, and the Act and other information required were procurable at the principal places along the canals. So far from this being the case, nothing of the kind has been heard of. It would seem that the Act, Mr. George Smith's (of Coalville) work, and the erection of schools for the canal children, are, like the Bishop of Lichfield's boat, 'on the stocks.'"

Warrington.—Mr. R. Vawser has resigned his appointment as borough engineer in Warrington, which he has held for the last ten years, and intends to practise on his own account.

The Library of the Royal Institute of British Architects: New Regulations.—Forms of admission for those who are not members of the Institute, to read in the library, can now be obtained from the librarian; the Council having approved of the admission of the following gentlemen, viz., members of the Architectural Association, students of the Architectural Classes of the Royal Academy, King's College, and University College. The annual fee for such admission is 5s., and the library is open from ten a.m. to nine p.m. daily, and on Saturdays from ten till two.

Warehousemen and Clerks' Schools, Caterham.—On Saturday last the foundation-stone of a new wing of the Warehousemen and Clerks' Schools at Russell Hill, Caterham Junction, was laid by Mrs. Charles J. Leaf. The new wing is intended as a memorial of the late Mr. William Leaf, the first treasurer of the schools, and of his sons, Messrs. W. L. Leaf and F. H. Leaf. The new wing, the completion of which will enable the management to receive 100 additional children (making a total number in the schools 250), will be about 8,000*l.*

Destruction of the Colonsay Monument. The monument which was erected in 1876 to the late Lord Colonsay, in the island of Colonsay, on the west coast of Scotland, has been destroyed by lightning. The accident occurred on the same night that Inverary Castle was on fire. The monument, which is of red Mull granite, was built in the form of an obelisk, and stood 30 ft. high. It was built on the face of a projecting headland which was an outlook station in olden times, and was thus visible far and near.

Electric Light.—We have received a copy of the reports made to the Trinity House by Professor Tyndall and Mr. James N. Douglass, chief engineer of the Trinity House, after a series of comparative trials carried out for the purpose of ascertaining the relative merits of different constructions of electric light machines. According to the reports these trials established the value of electric light.

New Docks at Neath Abbey.—On Thursday, the 25th inst., Lady Dynevor cut the first sod of the new docks at Neath Abbey, which will be constructed to facilitate the shipping of steam coal for Aberdare and Merthyr, and thus save six miles of railway tonnage. The works are to be carried out by Messrs. Vignoles & Greenbank. The cost is put at 165,000*l.*

"Howard Medal."—The following is the title of the essay to which the medal will be awarded in November, 1878:—"The Effects of Health and Disease on Military and Naval Operations." Moreover, the Council of the Statistical Society have decided to grant the sum of 20*l.* to the writer who may gain the "Howard Medal" in November, 1878.

Liverpool Water Supply.—The Liverpool Town Council have matured a scheme for the supply of water to the town sufficient to provide for all requirements for many years to come. The supply is to be got from North Wales, at a cost of 1,250,000*l.* It is estimated that the saving of waste water in the borough will amount to 50,000*l.* per annum.

The Photographic Society.—The Society's Exhibition now open in the Gallery of the Water Colour Society, Pall-mall, will be found very interesting and agreeable. It includes 541 frames, besides 100 photographs taken during the late Arctic Expedition.

Another Exhibition for South Africa.—Upon the recommendation of a Select Committee of the Legislative Assembly, it has been decided to hold a second International Exhibition at Capetown, to be opened in April next.

Fall of a Viaduct.—The Brussels journals state that the viaduct now being constructed for the Dison to Hervé Railway, near Verviers, has fallen in. Two workmen were killed and seven injured.

A Good Example.—We observe that the workmen in the employ of Messrs. Colls & Sons, builders, Camberwell, have collected the sum of 13*l.* 6s. 4d. for the Indian Famine Relief Fund.

Bristol Cathedral.—The new nave, erected from the designs of Mr. Street, was inaugurated on Tuesday last. We shall illustrate it before long.

TENDERS.

For auxiliary buildings (for 432 patients), and two entrance-gates and lodges for same, at the Sedgfield Asylum, county of Durham. Mr. William Crozier, architect. Quantities supplied:—

	Main Buildings.	Entrance Lodges and Gates.
Inglis	£34,208 19 0	£1,130 10 0
Robinson	33,677 18 8	1,198 3 3
Ratter	33,674 13 0	1,230 10 0
Wilkinson & Pounder	32,440 0 0	1,196 0 0
Suggitt & Son	31,947 0 0	1,203 0 0
Elliott	31,8 6 0 0	1,230 0 0
Forster	31,415 7 2	1,230 6 1
Kyle	31,379 10 7	1,183 14 9
Crosby	31,245 0 0	1,259 0 0
Hutchinson & Bainbridge	30,934 17 3	1,178 10 4
Tomlinson & Son	30,598 0 0	1,196 0 0
Craggs & Benson	30,498 0 0	1,165 0 0
Gradon & Son	30,467 13 6	1,088 7 6
Hobson & Son	30,194 0 0	1,179 0 0
Bailey	29,643 9 6	1,072 17 9
Marshall	28,779 0 0	1,217 13 0
Hodgson	28,435 0 0	1,055 0 0
Johnson (Middlesbro')	28,375 0 0	1,193 0 0
Johnson (W. Hartlepool)	27,650 0 0	1,185 0 0
Pearson Bros.	27,1 4 6 4	1,090 10 9
Stephenson	26,855 8 6	1,187 11 5½
Atkinson (accepted)	26,050 10 8	1,049 17 10
Fawell		1,044 4 0

[130 tenders were received in all, containing 411 distinct offers,—45 sole tenders, and 85 for different trades or sections. To the above amounts, of accepted tenders, may be added about 7,500*l.* for foundations and drains, already executed; irrigation, cooking, heating, and ventilating apparatus, and gas and water mains, &c., say under 34,600*l.* for buildings complete in every respect.]

For cast and wrought iron tanks, of a total capacity of about 40,000 gallons, for the School for Imbecile Children, Darenth, Kent, for the Metropolitan Asylum Board. Messrs. A. & C. Harston, architects:—

Beck & Co.	£1,550 0 0
J. & E. Hall	1,269 0 0
Powis & Co.	1,264 0 0
The Horsley Co. (Limited)	1,075 0 0
Spencer & Gillett	1,055 0 0
Fraser Bros.	1,029 0 0
Morewood & Co.	1,025 0 0
Wright & Co.	1,018 13 0
Macefield	1,000 0 0
Le Fevre & Co.	999 0 0
J. & F. May	995 0 0
Spendlagh & Co.	984 0 0
Cochrane & Co.	964 0 0
Batheroe & Co.	959 0 0
Abell	955 0 0
Newton, Chambers, & Co.	951 0 0
Hill & Smith	940 0 0
J. O. & O. E. Brettell	938 0 0
Chandler & Sons	899 0 0
Jukes, Couzens, & Co.	809 0 0
Ashmore & White	793 0 0
Pontifex & Wood (accepted)	698 0 0

For the erection of twelve houses and a shop, Leyton-road, Stratford, for Mr. J. Dowsett. Mr. J. W. Brookes, architect:—

Cullum	£3,675 0 0
Sheffield & Prebble	3,483 0 0
Cardoza	3,404 0 0
Reed	3,325 0 0
Charlton & Mansell	3,180 0 0
Smith (accepted)	2,860 0 0

For re-building the Yorkshire Grey Tavern and Restaurant, Gray's-inn-road, for Messrs. Legge & Chapman. Messrs. J. W. Brooker, and Isaacs & Florence, architects:—

Lawrance	£5,650 0 0
W. & F. Croaker	5,390 0 0
Wagner	5,183 0 0
Downs	5,045 0 0
Tink	4,993 0 0
Morter	4,878 0 0
Axford (accepted)	4,795 0 0

For the erection of school in rear of Baptist Chapel at Tunbridge Wells. Mr. J. W. Brooker, architect:—

Austin	£556 10 0
Eason	557 0 0
Battley	548 0 0
Wickham	435 0 0

For the erection of shop premises in High-street, Shoreditch, at the corner of Great Eastern-street, for Mr. A. Ewin. Mr. J. W. Brooker, architect:—

	Sub-structure.	Super-structure.
Crabb	£420	£1,985
Morter	375	1,670
Oliver	366	1,669
Lawrance	360	1,640
Axford	318	1,625
Downs	333	1,636
Cullum	273	1,625
Wagner	295	1,465

For the finishings to twelve houses (in carcass) in Brailsford and Arlingford roads, Brixton, for Mr. E. G. Chapman. Mr. J. W. Brooker, architect:—

W. & F. Croaker	£2,575 0 0
Battley	2,487 0 0
Cullum	2,395 0 0

For building new Auxiliary County Lunatic Asylum, at Thorpe, near Norwich. Mr. R. M. Phipson, architect. Quantities by Messrs. Whitmore & Kennard:—

Martin, Wells, & Co.	£15,450 0 0
Lacy	37,989 0 0
Youngs	37,9 0 0 0 0
Downing	37,686 0 0
Hawes	37,409 0 0
J. W. Martin	35,897 0 0
Everett & Son	35,750 0 0
Cornish & Gaymer (accepted)	33,920 0 0

For new factory in the Euston-road, for Messrs. F. Braby & Co. Mr. E. L. Tarbuck, architect:—

Manley & Rogers	£2,177 0 0
Longmire & Burge (accepted)	2,070 0 0

For erecting twelve warehouses, Farringdon-road. Mr. E. N. Clifton, architect. Quantities by Messrs. Williams & Griffen:—

Webster	£76,711 0 0
Holland	68,840 0 0
Ashby & Horner	67,100 0 0
Conder	66,494 0 0
Lawrence	64,829 0 0
Brass	61,183 0 0
Ashby Bros.	60,250 0 0
Peto Bros.	58,773 0 0

For works at Hackney, for Mr. S. Betts. Mr. Chas. R. Peters, architect:—

Bartrum	£810 0 0
Stamp & Bowtle	803 0 0
Banner	787 0 0
Judd & Hawkings	785 0 0
Weston	720 0 0
Thomersen	696 0 0
Beale	679 0 0
Palmer	600 0 0
Walker	578 16 0

For warehouse and premises, No. 43, Basinghall-street. Mr. H. H. Collins, architect. Quantities prepared by Messrs. Batstone Bros.:—

Brass	£5,427 0 0
Ashby & Horner	5,417 0 0
Newman & Mann	5,417 0 0
Ashby Bros.	5,348 0 0
Browne & Robinson	5,320 0 0
Waldram & Co.	5,310 0 0
Scrivener & White	5,293 0 0
Merritt & Ashby	5,240 0 0
Mark	4,975 0 0
Abraham	4,796 0 0
Nightingale	4,713 0 0
Kirk & Randall	4,658 0 0

For a parish-room, in the churchyard of St. Michael Queenhithe, City of London. Messrs. Mathews, architects:—

Brass	£1,097 0 0
Newman & Mann	1,025 0 0
Conder	950 0 0
Dove	925 0 0
Ramsey	914 0 0
Browne & Robinson	827 0 0

For grand stands and offices at Kempton Park, near Sunbury, Middlesex, for the Kempton Park Race-course Company. Messrs. Clark & Holland, architects. Mr. S. J. Thacker, surveyor:—

Holland & Hannen	£19,297 0 0
Higgs & Hill	18,500 0 0
Cubitt & Co.	18,225 0 0
Shaw	17,898 0 0
Dove Bros.	17,755 0 0
Braid & Co.	16,977 0 0

For erecting a building and offices on the site of the old Princes' Stand, Epsom Downs, Surrey, for Lieut. C. W. Strange. Mr. J. R. Harding, architect. Quantities by Mr. T. Nixon:—

Goddard & Son	£2,187 0 0
Taylor	2,100 0 0
Hooker	2,078 0 0
Colls & Son	1,975 0 0
Shearburn	1,920 0 0

For two gas-holders, for the Tunbridge Wells Gas Co, each 112 ft. diameter, by 30 ft. 6 in. deep, single lift, with wrought-iron guide framing, cast-iron dry wells, inlet and outlet pipes, with bye-passes between each pair of pipes. Mr. R. F. Spice, architect:—

Horsley Iron Company	£11,640 0 0
Cockey & Son	10,320 0 0
Cutler & Sons (accepted)	10,190 0 0

For planting grounds of school, at Banstead, Surrey, for Kensington and Chelsea School District. Messrs. A. & C. Harston, architects:—

Veitch & Son (accepted)	£412 13 0

For shops and offices, Nos. 115, 116, and 117, Newgate-street. Messrs. Ford & Hesketh, architects:—

Morter	£6,890 0 0
Perry & Co.	6,884 0 0
Brass	6,820 0 0
Kirk & Randall	6,703 0 0
Browne & Robinson	6,618 0 0
McLachlan & Sons	6,590 0 0
Ashby Bros.	6,561 0 0
Crabb	6,446 0 0
Scrivener & White	6,421 0 0
Lawrance	6,367 0 0
Nightingale	6,200 0 0
Newman & Mann (accepted)	6,167 0 0

For new schools at Chepstow, for School Board. Mr. W. Evill, architect:—

Linton	£2,000 0 0
Jones Bros.	1,650 0 0
King	1,479 0 0
Whalley & Pearse (accepted)	1,399 0 0
Thorn	1,287 18 0

For building one pair of villa residences, for Mr. W. Savage, at Woodford. Mr. Chas. Bell, architect:—

Nightingale	£1,393 0 0
Farrant	1,357 0 0
Gregar (accepted for three pairs)	1,305 0 0
Hoskings (error)	1,070 0 0

For building new furnace-room for Messrs. Scott & Co., Stratford:—

Gregar (accepted)	£379 0 0

For thirteen mansions, Chiton-gardens, Folkestone. Mr. J. Gardner, architect:—

Oxley	£55,600 0 0
Knight	49,996 0 0
Brooks	44,000 0 0
Slade	43,100 0 0
Webster	41,227 0 0
Butler	40,065 0 0
Adcock	40,000 0 0
Clemmans	39,997 0 0
Saunders (accepted)	35,000 0 0
Prebble (withdrawn)	33,991 0 0

For Buntingford Grammar School. Messrs. J. Giles & Gough, architects:—

Gibbins (accepted)	£3,372 0 0

For the erection of the Black Boy Hotel and Spirit Vaults, stabling and offices, at Worcester. Messrs Dickie & Coombe, architects. Quantities supplied:—

	House.	Offices.
Inwood	£1,219 0 0	£7 0 0
Simmonds	1,096 0 0	63 5 0
H. & T. Dixon	1,093 5 0	61 4 0
Compton	858 10 0	96 0 0

For the erection of Turkish Baths at Camden-town Mr. H. H. Bridgman, architect. Quantities supplied by Mr. F. Thomson:—

Carcass and Part of Fittings.

Hunt (accepted) £4,000 0 0

Wall Decorations.

Athenian Marble Co. (accepted)... £325 0 0

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The Architecture of Lighthouses.

LIGHTHOUSE architecture has very generally been entrusted of late to the engineer rather than to the architect. No doubt, however, can be thrown upon the statement that the problem to be solved is for the most part purely architectural. The first question raised is necessarily that of site. The reasons for erecting a lighthouse in any particular spot are indicated by Nature herself. A shore-light may have two distinct meanings. It may be a beacon, to warn from danger, or a sign of invitation to enter a place of safety. Lighthouses of the first order, however, are rather to be regarded as topographical land-marks. They are usually placed on capes or headlands, and indicate, for a distance of from ten to thirty marine leagues, the general outline and configuration of a coast. From this first order of distinct lights the importance of the signals in question descends to that of lights of the second, third, fourth, and fifth orders,—the last being signals placed on shoals or sand-banks, or on piers at the entrance of a port for the guidance of mariners at the very moment of coming into harbour.

The selection of site is always the first care of the architect. In regarding the site of a lighthouse his skill must be aided by the experience of the sailor and of the marine surveyor. Attention must next be turned to that of the preparation of the foundation. For distant lights this is usually a simple matter. In some cases, on the contrary, the utmost skill of both the architect and the engineer is taxed in order to provide an unassailable security for the base of a tower. This is especially the case when the light is intended to serve for a beacon or warning to ships near at hand, as well as to form a distinct light to indicate the bearing of a coast. Such was the case with that dangerous rocky shoal which lies in the chops of the Channel, about fourteen miles to the south-west of Plymouth Roads. A small point of rock alone appeared above the water; the rest of the shoal, stretching some 300 yards from north to south, is always covered by the sea. This rock is the first obstacle encountered by the heavy rolling waves of the Atlantic, and lies in the most direct course for an inward bound vessel. From this visible point, fretted by the waves, the rock descends almost perpendicularly to a depth of from 30 to 65 fathoms. The result of this opposition of a vertical submarine wall is to throw the incoming waves, when urged by any considerable wind, with a prodigious leap into the air. A height of from 150 ft. to 200 ft. is said to be at times attained. It was the construction on this unusually dangerous and exposed situation of the famous Eddystone Lighthouse, by Smeaton, the engineer, which seems to have secured to his profession, thus far, something of a monopoly of the construction of lighthouses.

In old times, however, the *Phari*, or light-towers, were among the most famous of the works of the architect. The name of Apollodorus, the famous architect of the Emperor Trajan, is yet associated with the port, breakwater, and Pharos of Civita Vecchia. The word *Pharos*, by which name so many lighthouses are now called, especially by the French, is of Egyptian origin. It was derived from the Island of Pharos, on which the famous light-tower of Alexandria was built. First given to the tower in question, it was thence imposed on similar structures. Such, at least, is held to be the force of the line of Statius,—

"Lumina nocturnæ tollit Pharus æmula lunæ."

The classical scholar will observe that the quantity of the word *Pharos*, as determined by this line, disposes of the derivation which has been sometime proposed from the Greek verb, meaning to shine.

This famous tower was of a quadrangular form. It rose in the midst of an *enceinte* of 220 yards on each side, containing accommodation for a garrison. It was situated at the eastern angle of the new port of Alexandria, in a line with the point called Pharaglione. It was commenced under the reign of Ptolemy Soter (B.C. 324 to 285), and completed under his successor, Ptolemy Philadelphus B.C. 285 to 247). Its architect was Sostratus of Cnidus; and it bore an inscription dedicatory to the gods protectors of mariners. The legend is to the effect that the name of Ptolemy alone appeared over the gate of the tower when first completed. This commemoration, however, was made in plaster; on the subsequent decay of which the name of Sostratus appeared, graven in marble. The height of the tower is stated at a little more than 150 ft. The structure has been represented as a Doric base, with columns and pilasters, surmounted by seven blocks of masonry, decreasing in size, each finished with a projecting cornice. On the top of the whole an immense fire was kept burning by night, which was visible at sea twenty marine leagues off. The interior was chambered, and the position of the staircase was indicated by that of the windows. The Arab writer, Abulfeda, speaks of this Pharos as existing in his time, the thirteenth century. It has been described also by Edrisi, who lived at the commencement of the twelfth century. It ranked among the seven wonders of the world. Few vestiges can now be traced of this famous building. The modern Pharos of Alexandria is a new tower erected at another point.

While the Pharos of Alexandria is the most famous lighthouse of antiquity, it is not the most ancient. On the promontory of Sigæum, in the Troad, a lighthouse is said to have existed 650 years B.C., which served as a landmark by day, as well as for a beacon at night. And three centuries or more earlier than this, the vessels of the Greeks, returning from the siege of Troy, are said to have been lured on to shoals near the island of Negropont by fires lighted by the King of Eubœa with that design.

Another of the famous seven wonders of the world was the Pharos of Rhodes. This was a bronze statue, of upwards of 100 ft. in height, according to Pliny, dedicated to Apollo. It stood astride on two blocks of masonry, which formed the entrance to the port of Rhodes; and held aloft a sort of censer, in its right hand, in which a beacon fire was kept alight by night. This colossus was erected by the citizens of Rhodes, in memory of the siege sustained against Demetrius, king of Macedon. It is said to have been actually constructed of masonry, covered with metal plates. It was overthrown by a violent earthquake in the year 224 A.D.

A lofty and very ancient tower looks down upon the Atlantic Ocean from the entrance of the port of Corunna, in Spain. It is called the Pillar of Hercules; and it is thought that the name Corunna is a corruption of the word "columna." By some writers the origin of this tower is attributed to the Carthaginians; by others to Caius Servius Lupus, who dedicated it to Mars. It was restored by Julius Cæsar; and again restored by Trajan. Its architectural form betrays an origin of a very remote date. There is a tradition that it was erected by an early king of Spain, in heroic times.

At Ravenna a large square tower which stands out from the side walls of the Church of Santa Maria in Porta Fuori is now used as a campanile or bell-tower. It is said to have formerly been the Pharos of the port which Augustus constructed at this point. In the fifth century the silting up of the Adriatic littoral (which is now threatening the destruction of the lagoon of Chioggia) had so obliterated the port of Augustus that its site was converted into gardens.

The Pharos of Boulogne is one of the most ancient in France. It was erected by Caligula (A.D. 38-41), on his expedition into Gaul, according to Suetonius. For many ages this tower was known by the name of the *Turris ardens*. Its base was octagonal, each side measuring eight mètres, according to the design given by Montfaucon. It consisted of twelve stories, each smaller than the one below it, and each surmounted with a cornice. In the year 807, Charlemagne ascended this tower in order to review his army, and ordered that the long-extinguished beacon should be re-kindled. Various coloured stones, brown, red, and yellow, were employed in constructing the different parts of this Pharos, with the aim of rendering it a more strikingly visible object. In 1545 the English made use of the tower as a fortress. Their works seem to have interfered with the solidity of the foundations, for in 1644 the tower fell.

Under Claudius, whose tenure of empire lasted from A.D. 41 to A.D. 54, a tower was erected, according to Suetonius and Dion Cassius, at Ostia, in imitation of the Pharos of Alexandria.

In the fifteenth century it was visited and described by Piccolomini, who was afterwards Pope, under the name of Pius II., from 1458 to 1464. From a bas-relief in the possession of Prince Torlonia, it is deduced that this tower was built, as that at Boulogne was previously described to have been, in successively diminishing planes or stories, with a fire kindled on the top. The elevation, however, which is produced by Signor Cialdi, in his learned memoir on lighthouses, from which very much of our information is derived, is that of three towers, of diminishing sizes, standing one on another, with a thick short column on the top supporting the beacon or bonfire. The deposits brought down by the Tiber have long filled up the Claudian port of Ostia; and the careful measurements which have been made by the Italian engineers of the position of the shore line at successive historic epochs, indicate that a geological undulation, similar to that witnessed by the famous temple of Serapis, at Pozzuoli, on the Bay of Naples, has occurred at the mouth of the Tiber.

The restoration of the lighthouse built by the Emperor Trajan at Civita Vecchia has been effected by the present Pope, Pius IX. The architect, Apollodorus, by Trajan's command, designed and carried out a commodious port at Civita Vecchia. A breakwater, or island, was placed before the entrance of the harbour, to protect it from the waves. Two towers were erected on this work, one of which sustained a beacon. In the Itinerarium, a journey through Etruria, of Numazianus, who lived in the fourth and fifth centuries of our era, the double towers and double entrance of the port are commemorated in hexameter verse. Neglect, and the action of the sea, gradually filled the port; and in the popedom of Gregory IV. (A.D. 828–844) it is spoken of as having been intentionally ruined, for fear of being seized by the Saracens, and used by them as a naval centre. Under Urban VIII. it was repaired and re-opened. In 1616, Paul V., among other improvements, rebuilt the existing eastward tower. The westward towers were still in ruins at the commencement of the present century. It was commonly called Il Marzocco. Pope Gregory XVI. reared a small fort on its ruins, but no better signal was offered to navigators than a light hoisted on a mast. In 1860 Pius IX. consulted the illustrious astronomer Padre A. Secchi as to the lighthouse, and the present tower was built, and furnished with a Fresnel illuminating apparatus of the second order. The tower is of stone, cylindrical in form, and carries a lantern 110 ft. above the level of the sea. The works were executed by the engineer Chevalier Giovanni Minti.

The Cordovan Pharos is a tower of admirable construction, reared on a rock at the mouth of the Gironde. The name is taken from that of an architect, who, about A.D. 830, built a tower in the island of Andros. Both town and island were engulphed by the sea in the earthquake of 1427. The present town stands on a shoal, seaward of the former Pharos, which is covered with three mètres of water at high tides. It was commenced in 1515 by the Parisian architect, Louis de Foix, by command of King Henry II. It was continued by Henry IV. in 1601, and finished under Louis XIV. in 1665. In 1778 the upper part of the tower was removed, and replaced by a frustrum of a cone, rising to 78 mètres from the foundations, by the architect Theulere. The tower is composed of a series of galleries rising one above another, ornamented with pilasters and friezes, and gradually diminishing in dimension. From the second story a fine staircase conducts to the top of the cone. The latter is divided into four stages, on the last of which the lanthorn is placed. A wall surrounds the base, the diameter on the plan being 43 mètres. Within this are situated the rooms of the guardians, almost in the form of casemates. It is claimed for this Pharos that it is the finest edifice of the kind in the world. In 1790 a reverberating light was placed on this tower. In 1854 a dioptric Fresnel apparatus was substituted, with a light of the first order, eclipsing from minute to minute.

The beautiful Torre del Capo at Genoa is well known to all familiar with that picturesque Italian port. Originally built on the promontory of San Berrique in 1139; it was first illuminated in 1326. It was removed in 1512, and rebuilt by the Republic, in 1643. It is a square tower, in two stories, with battlemented terraces, the lower portion nine mètres square, the upper seven. Rising from a rock 42½ mètres above the sea, it carries its light at the height of 118·5 mètres above the water. In 1841 it was fitted with a Fresnel lenticular apparatus of the first order. For beauty and elegance of structure, this historic Pharos is one of the first in existence.

The Pharos of Meloria was built by the Pisans in 1154. It indicated the direction to be taken by ships making for Portopisano, and gave warning of a dangerous sand-bank. This tower was destroyed by Charles of Anjou in 1267, by the Genoese in 1287, and by the Guelfs in 1290. Having determined to abandon Meloria, the Pisans erected, in 1304, the lighthouse which still exists near Leghorn. It is celebrated by Petrarch. It stands near the entrance of the harbour, to the south of the new curvilinear mole; and rises 47 mètres above the level of the sea. It is built of stone, in the form of two battlemented cylinders, surrounded at the base by a polygonal inclosure of thirteen sides.

On the shore extending from the extreme promontory of Istria as far as Chioggia, no lighthouse was in existence in 1818. In that year the flame was kindled on the Pharos of Salvore, which was built by the architect Nobili, on the Punta delle Mosche, twenty Italian miles from Trieste, and five from Pisano. Here occurred the first instance of the use of gas for lighthouse purposes. The tower is cylindrical, of wrought stone work, with a cornice above, and a quadrangular base. Its diameter is 5 mètres, and the diameter of the cornice is 6·3 mètres. An internal staircase leads up to the octagonal lantern, 4·4 mètres high, and 3·8 mètres in diameter, at the height of 35·5 mètres above the level of the sea. The apartments for the attendants are in the square base of the tower.

The example followed more or less directly by the architect Nobili, as well as by George Stephenson in his plans for the Bell Rock Lighthouse, built by him in 1808, at Inchcape, near Arbroath, was no doubt the great work of Smeaton before referred to, the Eddystone Lighthouse. The wonderful triumph attained at this most difficult and dangerous spot was without precedent among any of those ancient and famous Phari to which we have referred. The first attempt to raise a light-house to give warning of this destructive shoal was made by Winstanley in 1696. A base of stone, 15 ft. in diameter, and 12 ft. high, was built on the rock and fastened to it with iron cramps. On that was built the tower, 70 ft. high to the vane. On the night of the 14th November, 1698, the light was first kindled. As the waves broke over the lantern at this height, an addition of 20 ft. of masonry, and of 40 ft. of metal work, was subsequently made, the wall of the tower being made a yard thicker at the same time. In November, 1703, it became evident that repair was necessary. Winstanley betook himself to the tower, expressing his confidence in its ability to withstand the utmost fury of the elements. On the night of the 26th of that month a fearful storm occurred, and the lighthouse had entirely disappeared by the morning. It is said that on the same night the model of the tower, which the builder had kept in his house in Littlebury, in Essex, fell down and broke into fragments.

In consideration of the great importance of the case to navigation, Parliament, in 1706, authorised the imposition of a light due on the vessels frequenting this part of the Channel, and a contract for a new lighthouse was made. A silk merchant, of the name of Rudyerd, undertook the erection. His plan was that of a plain wooden cone, lined with masonry, the idea being at the same time to provide weight for stability, and to oppose a smooth surface to the impinging waves. This tower was 20 ft. in diameter at the base, 14 ft. at the top, and 62 ft. high. The lantern was octagonal, 10 ft. in external diameter, and 9 ft. high. A globe of 32 in. diameter stood on the top of the lantern, at the height of about 90 ft. above the level of the sea. After long and costly work this tower was completed in 1709. On the 2nd of December, 1755, it disappeared in a few hours in a terrible conflagration, the origin of which is unknown. This unexpected destruction, owing to the fury of that element against which the builder had taken no thought to provide, furnishes a most instructive lesson as to the material necessary to employ for similar structures.

In 1756 Smeaton for the first time visited the Eddystone rock. The idea of the form to be given to the building he took from the trunk of an oak, as that provision which Nature herself had made for the most successful resistance to the play of the wind. A model made on this idea was approved by the Trinity House and by the Government, and Smeaton commenced the work in the August of 1757. The stone which he selected was the granite of Hingstone Downs, fifteen miles from Plymouth, for the exterior, Portland stone for the interior, and a mixture of Aberthaw lime and Roman pozzolana for cement. The stones at the base of the tower were bird's-mouthed and dove-tailed into each other and into the rock, so as to form an absolutely homogeneous structure. From August 27th to September 14th, 167 hours were employed in filling in the foundations. The utmost care was taken in the fitting and bonding of the stone, each stone being exactly worked, and fitted to those by which it was to be set, on shore, before sending to the tower. By August 8th, 1758, the work had been raised to the height of 32 ft., and the first store-room contrived in the tower was complete. On March 21st, 1759, Smeaton visited the spot, and found everything perfectly uninjured. From July 5th to August 7th, in that year, another 34 ft. had been added to the height. The metal-work of the lantern had been prepared under Smeaton's inspection in London, and the ball which formed the summit of the structure was fixed by his own hands at 92 ft. above the level of the sea. The solid base rose for 16 ft., at which height a door gave access to the internal spiral staircase.

On the night of the 16th of October, three years, ten months, and sixteen days after the conflagration of the work of Rudyerd, the light was kindled in the lantern of Smeaton's Eddystone lighthouse. It has ever since given uninterrupted warning of the dangerous vicinity. Many violent storms have burst over it, especially that of January, 1762; but it has remained uninjured, although a distinct oscillation is felt in the lantern in violent winds. The calculation of the height of the waves that dash over this noble work makes them rise to the height of 162 ft. above the level of the sea, giving a column of water containing from two thousand to three thousand metric tons. The necessity for the utmost exactitude in the joints of the masonry is thus apparent. When water exerts a battering force of this nature, its effect, if it gets under or within a building, is irresistible, while it breaks into foam against a smooth and curved surface.

On the 24th October, Sir William Thomson professor of natural history in the University of Glasgow, gave a lecture before the Shipmasters' Society on the subject of lighthouses, the point to which he chiefly directed attention however, being not their architectural structure but the character of their illumination. Ninety per cent. of our local lights are fixed; and the danger that they may be mistaken is said by the lecturer to be far greater than in the case of revolving or eclipsing lights. An eclipse, however, of from 50 to 60 seconds is far too long in dirty weather, and the eye may readily lose the point of light before its bearing has been correctly taken. The Craigmoor light, in the Firth of Clyde, has been fitted with a light of Sir William Thomson's own arrangement,—a long and a short eclipse alternate hours, and there is thus a short pause, giving sixteen seconds of unbroken light. This combination of flashes is made to signify the letter C, according to the Morse alphabet, a very beautiful application of one of the latest improvements in telegraphy.

OVER-DECORATION.

It has been often suggested in our columns that the external decoration of buildings has been overdone since the Gothic revival; that a much carved foliage, for instance, is found on a modern hotel as would have sufficed for half a dozen Mediæval cathedrals. It is the natural tendency of revivals to go to excess in the use of things good in themselves, and this kind of excess in decoration, which in external architecture people are beginning to recognise as a mistake, and as involving a certain degree of bad taste, seems to be now extending itself to interior decoration.

We do not so much refer now to the decoration of churches; the question of colour in modern churches, and in relation to Mediæval architecture, has been pretty fully discussed, and it seems likely that the taste which would make a church interior one blaze of strong colouring on mouldings and surfaces alike, will be moderated in future buildings of this kind. The most recent movement in architectural revival has had more direct reference to domestic architecture, and has perhaps affected the public taste in regard to interiors even more than exterior

d the excess which is characteristic of revival
ems to be displayed again in the new style of
corating the interiors of private dwellings.
om being content either with very little
coration, or with decoration left entirely
the conventional tastes of paperhangers
d carpet manufacturers, we have now arrived
the point where the house-decorator
kes rank as an artist: from a period (not
ry long since) when people were content with
ite ceilings, a skirting-board, and a Turkey
:pet, to produce a good effect, we have come
ely, almost at one bound, to a condition of
blic taste which renders it almost imperative
at every wall and every ceiling in a house
uld have its own decoration, if the owners are
pass for persons of taste and perception in
se matters.

It is very gratifying to see so much more
ention given to making dwellings rich and
:monious in internal effect: we have little
sitation in preferring even the extreme of
coration to the extreme of bareness, and none
our readers would expect otherwise from us.
t we think a word of caution is required as
the over-use of decoration, which tends some-
es to defeat its own end.

t is not sufficiently borne in mind that one of
great sources of decorative effect is contrast;
only contrast of colour, but contrast between
in surfaces and decorated surfaces. At present
re seems to be too great a tendency to make
ry available surface throughout a house an
asion for decoration of a more or less elabo-
e description: to let nothing alone. There is
ense of a profusion about a house thus treated
ich is rich in effect, no doubt, but which also
omes a little cloying to the eye and the mind.
find in a dwelling thus treated designs on the
idow-glass, and over all the walls and ceilings
very room; the doors have conventional vege-
ion in bright colours over-running the panels;
orative carpets are on the floors, of many hues;
orative china is placed in every available
ce; and each piece of furniture constitutes a
arate study in decoration. The only bare
ce to be seen is probably the strip of dark-
nished floor which the present fashion de-
nds around the margin of the rooms. It is
lly, perhaps, fitting that the floor on which we
d should be the plain part of the room, where
s shown; but it is rather curious to notice
r colour seems to have flown from the floor
the ceiling. Formerly it was *de rigueur* to
e the whole of the flooring-boards with a fine
pet; and then the ceiling was left white.
w you may show a good deal of plain black or
k surface on the floor, if you like, but you
st on no account leave any other part without
ament.

The result is not unfrequently to produce a
tty effect and a want of repose which is at
iance with the best taste in decoration. It is
sible to carry out this kind of universal
oration to a good and fine result when there
sufficient funds and sufficient time at
posal to allow of that amount of thought being
en to the work which would render every part
t a separate study. But it is rarely that this
be the case. And when it is not so, how-
r praiseworthy may be the execution and the
eral taste displayed in the decorations, it is
dly possible to avoid a certain impression of
chanical repetition, or at least of merely
ering spaces with ornament because they are
re and afford room for ornament. We see a
tain style of decorative diaper on the staircase
l, and we find something of the same kind
r the ceiling of the bed-room, and so on
erever the eye is turned; and in such a case
ornament must necessarily be of a kind
ich has little real meaning or fresh inven-
n in it; it must be something which can
eadily executed over a large expanse of wall
ceiling, or it would become extravagant in
ard to cost and time.

What we wish to suggest is that a better effect
regard to artistic treatment and to general
d taste, would probably be obtained by
tricting the ornamental treatment of a house,
l of its separate rooms, to certain salient
tions, and bestowing on these so much thought
would give a distinct meaning and interest to
ornament employed. The mere diversifica-
n of surfaces by diaper of various kinds,
ery good means of producing rich effect in
tain parts, becomes wearisome to the eye
en continually repeated. Unless a room is to
decorated on an unusually rich scheme, and
ardless of cost, it would generally be best to
ve the surbase or dado plain, or with the very simplest ornament, so as to give the greater effect to the ornamented surface over it. There is even much to be said in favour of flat tints over a considerable portion of a wall, especially where pictures are to be hung; always supposing that the tint is one agreeable to the eye in itself; and such a scheme gives the more effect to the pictures and to anything like an ornamental frieze that may be introduced as a crowning decoration. There is something to be said also in the way of a check upon the elaboration to which ceiling decoration has arrived, which is sometimes found to be practically injurious to the lighting of a room. The whitened ceiling which was formerly the regular finish of a room was a very bald contrast to the Turkey carpet below, certainly, but it had the effect of improving the lighting of a room by its reflecting power. We have experienced in rooms where the ceiling was covered with a design in dark tints a most decided deficiency in this respect, which is not made any the better when the windows are partially or wholly occupied by stained glass. An elaborate ceiling in a large public room, where some part of it can always be seen at a convenient angle, is another thing; but in a private room of ordinary size people are seldom occupied in looking at the ceiling, and the darkening of the room by an elaborate design in heavy colours is an unpractical employment of decoration, and does not help the general effect of the room. An expanse of light tint, with a decorative border, seems more in keeping; and there is a good deal to be said for white plaster when used in combination with wood framing, to give a constructive expression to it and break up the surface. It should sometimes be remembered, too, that windows, after all, are really meant to look through; except in cases when, in a street house in town, the look-out is so uninteresting that an ornamental coloured design on the window is manifestly preferable to anything that could be seen through it. The upper portion of a window, above the eye, may very well be made the subject of decorative treatment, and may thus serve to give a tempered light to the upper portion of the room; but in regard to the main portion of a window its primary object is to let in light and to give an outlook on the prospect: and too much of tracery-bar work and coloured design interposed gives an artificial and confined feeling to a dwelling. The overcrowding of a room with curiosities and knick-knacks is a point to which attention has been recently called in a paper printed in this journal: in this, as in other sources of decorative effect, a special interest and artistic value in each special object, rather than a mere effect of profusion, should be aimed at.

Two words in regard to what may be called the artistic *morale* of the subject. The fashion of over-decoration is somewhat characteristically reflected in our theatres. In the mounting of Lord Lytton's posthumous play, "The House of Darnley," for instance, at present playing at the Court Theatre, the decoration of the various interiors in which the action goes on is carried to a degree of elaboration and realism which certainly strikes the audience, and produces a round of applause each time the curtain rises on a new scene; and the applause in a sense is quite deserved, for the effects of the scenes are very rich and artistic. But all this seems quite out of proportion to the requirements of the occasion, and to the quality of some at least of the acting; and we cannot help remembering, too, that this elaboration of scenic effect could only be made to pay on the "long-run" system, the system which is vitiating both the art of acting and the public taste for it, reducing it to the level of a mechanical kind of lesson wearily gone through after the life and spirit of the acting has been deadened by endless repetitions.

The other reflection one cannot help making is, that there is a degree of bad taste involved in this very attempt at exhibiting decoration in every possible corner of a house: a fact which almost serves to set some really refined people, who have a righteous horror of show and pretence, against the very idea of artistic furniture, as a kind of mark of the *parvenu*. A clever contemporary lady novelist,* in sketching the character and habits of a family of old English gentlepeople, in contrast with those of the newcomers in their neighbourhood, actually mentions, as a characteristic of the former, their indifference to the decorative tastes of their neighbours of the manufacturing aristocracy. Lady —— (we forget at the moment the name of the character in the story) took a sort of pride in being content with her rather small, unpretending house, her carpets and furniture a little worn, and in no particular style, and in letting her visitors feel that she at least was not dependent on furniture and china of the newest taste to uphold her gentility. And this is a true expression of the feeling of some English ladies in real life,—a feeling which it is worth while to take into account. It is so very easy to be vulgar when you carry anything to excess, even if it be in the direction of "taste."

ART AND ARCHITECTURE IN THE PAST AND THE PRESENT.

CAUSES OF DIFFERENCE.

We have without doubt, says an acute critic in the leading journal, assured to ourselves in this country "life and the means of living," but "have we paid the same attention to the ends which make life desirable?" We spend truly without stint on our public services, army and navy,—can we say the same of our galleries and museums? If we compare Manchester and Birmingham, Liverpool and Glasgow, with Florence and Dresden, Nuremberg and Venice, we cannot but feel sadly that the art of acquiring wealth is not the same as the art of spending it. Well, indeed, may we ask these questions, for how is it that such a city as Manchester, or such a city as Liverpool, with their multitude of trades and manufactures, and commerce with the whole earth (for where is there on the whole globe a spot on which Manchester goods are not to be found?) do not more than rival the famous trades-city of Venice? Venice, at its very best, was but a small place as compared with Liverpool, and its wealth could have been but a fraction of that of either of the towns named; yet who would or could dream of comparing the art results of the older cities with the modern ones? No man can do this, even for a moment; instinctive feeling compels him to forbear doing so,—yet why should he not? The wealth of old Venice could have been as nothing as compared with that of new Manchester or Birmingham, and art must needs be bought.

The writer goes on to try to solve this knotty problem, and to account for the but too obvious difference between the art and architecture, as seen in old Venice, and in modern Liverpool and Manchester. To praise past times and depreciate our own is an easy task, but the work of real criticism is a matter of no small difficulty. Nothing is to be taken for granted and then built upon as on a secure foundation. The climax of art-action in past days, in this country, was reached without doubt in our great cathedrals; and that we do not build cathedrals, or even chapels, nowadays, as Englishmen once did, there can be no doubt. We do not even attempt it. That the churches and chapels, says the same writer, which the last half-century has produced so rapidly, repeat in wearisome iteration models devised by a cunning which has perished, no one can deny, and no one wishes to be told. But we do care to have a reason for it. What is the reason? Is "commerce" itself, or the commercial spirit now so active all about us, fatal to art-action? This can hardly be, for were not Venice and Genoa, and many other famous towns and cities, fully as "commercial," so far as their size permitted, as either Liverpool or Manchester now are? Is it a shortcoming in religious aspirations, and inspirations, and feelings? All buildings are not devoted to religious purposes, it may be answered, and the old Heathen temples and the great Christian cathedrals may well be compared architecturally and artistically one with the other. The sculptured work on the Parthenon itself, looking at dates and "surroundings," and the circumstances of the several times, may be compared with the sculptures to be found on the walls and towers of the Gothic minsters. The handwriting on the stones of the one is as emphatic as the handwriting on the marble of the other. Religion was certainly never fatal to art; and even when it entirely ignored it, as in the Mosque architecture, there it is. The whole course of the world's architecture shows this beyond doubt. Much might here be said, and, may be, a mystery or two, here and there, solved, or at least made a little less mysterious; but we would content ourselves with remarking simply, that in the

* Mrs. Edwards, in "Archie Lovell."

older architectures, and in the purely Gothic ages, religious aspirations embodied themselves in realistic forms, and what the sculptor of the pictured panel sought to do was to show to others what he himself saw so clearly and without doubt; and what, indeed, to a great extent was to be seen all round and about him. This may seem a little strange to some, but it is wonderful, and certainly useful, to note how the forms, costumes, and surroundings of a scene illustrating even a Scripture story vary with the age in which the work was executed, and how it all takes you into that time, and puts before the eye, not the story or the legend only, but the very circumstances, and architectural surroundings and costume, and even portraiture, of the men and women of the time and day in which it was executed.

Very many other questions we might here ask and propound for solution, but there is certainly one which would seem at first sight at least to answer the question, and to solve the problem. It is the fact of the mechanical turn and very genius of the present age,—at least, here and amidst English-speaking communities. All is mechanism about us, and effort is made in every possible direction to do by and through a machine what the old world were content to do, and did do, by hand, action, and energy. It is wonderful, indeed, to note what is done nowadays by machinery: nought required but to look on; but, perhaps, not so wonderful after all as the work which was accomplished by those who in past days did without it. Note, for examp'e, the very best of masonry,—the lifting and putting together of masses of stone in the construction of a wall, whether "ornamented" or not,—to say nothing of the size of the masses of stone, and the difficulty of lifting and moving such masses in the antique times as compared with the present: we need but to examine, as may be done even in museums, the stone-cutting of the angles and joints, and the fitting together of them. If the sculpture of the Parthenon is a marvel of artistic skill, so most surely is the mere masonry of it, and the putting together and setting out of its constructional walling and cornices and supporting columns. To our minds, this is all but as wonderful as the sculptures themselves and the handwork of Phidias, and is worthy to hold it.

Again, and we would more especially note it, what wonderful things were done by the antique "potters." Here, as in stone and marble work, no great strength was required, and it can hardly be supposed that the hands of the antique worker in clay differed much from those of our own workmen, or that their physical powers varied much from ours. Yet what have they not accomplished! Compare the workmen as we may yet see them through their work, and as that may be done in the British Museum, with that of those who do the work as it is seen in our china and crockery displays of the most costly to the cheapest wares. No one will contend that our wares are stinted for want of appliances, or that anything is needed which money can purchase to facilitate production, or even that effort is lacking for the education of those who actually do the work. It might a little surprise our great firms in this line of work to see the old Etruscan at his simple wheel, and with his rough apparatus; and, may be, they might be as surprised at the "personality" of the man himself, and still more so at the "way" of his work, and may be, more than all, at the fact of his having, so to phrase it, nothing to go by. No better or more instructive lesson is to be learnt by our art-workmen than is to be got by a visit to the Etruscan room of the British Museum; form, outline, colour, drawing, and individuality of inventive skill, are here to be seen; and, though so much of it looks the same, each vase and detail in it is individualised and separate from the rest.

We are sometimes told that to praise past times and depreciate our own age is an easy task, but indiscriminate censure is not criticism. This is without doubt quite true, and to be kept carefully in mind, for when we see how much and how well those who have gone before us did their work in this world, leaving so much to prove their capacity, we are always tempted to attribute it to some actual superiority in the men themselves, and to leave out of the account methods of work and surrounding circumstances and influences. If, says the writer whom we have already quoted from the leading journal, we try to trace the causes which have given great works of art to other ages, and denied them to us, we are lost in a maze of conjecture. But it is consoling to see signs that the fact is only a temporary phenomenon: still, this hope does not solve the problem, nor does it suggest causes of difference between the artistic action and results of the Past and the Present. But that there must have been, as there must still be, causes for such differences, and that such causes, could we but come at them, must need have been, and must still be, all potent, is certain. We will here but venture to name two.

In the first place, we must bear in mind, or rather call as vividly to mind as may be the fact that in past days, no matter where, whether in old Etruria, or refined Athens, or Middle age England, or Germany, or elsewhere, taking any date or generation to make special note of, there was nought in each such locality but the style of art and architecture then and there prevailing. All thought in and spoke one art-language. At Athens it was Greek,—the Greek, say, of the Parthenon; and to work at all as an artist or a workman—and the words were synonymous,—it was a necessity to work in this Greek, and to think in this Greek. A state of things all but impossible to realise to ourselves, or even to imagine, nowadays, when we are surrounded by a very Babel of art tongues. It was the same in Gothic days: the Early English Gothic artist, or workman, had really nothing all round and about him but the Gothic he and others were working at, and in, as an art and architectural language. The Norman, which preceded it, no man dreamed of copying or looking at, but as at an antique, any more than we now think of speaking or writing like Chaucer. It is, indeed, wonderful to note the profound indifference with which the art workmen of one century seem to have regarded the work of those who immediately preceded them. It is a subject in art yet to be thought out.

We make note here of but one other cause of the distinctive difference between the old art and of that of to-day. It is an important one, and has yet to be mastered: it is difficult to find a term for it sufficiently explanatory. We might term it—the personality, both mentally as well as manually, of the actual workman. In our modern work, as all know, the workman follows the mental lead of another. In the antique work, as in that of Egypt, he must have followed his own. No workman could have cut the animal forms on the black obelisks in the Museum from a drawing.

SUNDERLAND AND ITS TRADE.

When Bunyan's pilgrims were "got out of the wilderness," and saw a town before them, it was like those in our days, for "one commodity is the chief of all" now as then; but in the present age, in the North-country, the resemblance ceases, for all "that is there is sold, or that cometh thither" is heavier than vanity, to the extent that iron ores or their products outweigh it. On Teeside the commodity is iron; on the Wear coal predominates; and on the Tyne there is an amalgam of iron, coal, and chemicals. But rising from the trades so dependent, on the banks of these rivers there has been witnessed a growth of towns without parallel, and the uprisal of industries extensive and varied. Not only is there a revival of life and an extension of old towns, but the bays on the coast have had new ports planted, and at favouring spots new commercial centres have arisen, whilst the bulk of the interior of the country has been dotted with villages. There have been differing ratios in this outgrowth, but possibly the most striking examples of this are found at the seaside, and in some degree one of the most notable of the seaports is the town of Sunderland. It has not had the rapidity of growth of Middlesbrough or West Hartlepool, but the growth has been continued for years in a steadily-progressive manner, and this in spite of the fact that some of the older industries of Sunderland have almost died out, and that its situation has not enabled it to adapt itself to newer industries so completely or so rapidly as some of its neighbours. Still its extensive and varying trades are secure, and the town dependent upon them has continued to increase. It has no early history of note separate from Bishop Wearmouth; so little, indeed, was it noted that in Speed's curious itinerary of the Bishopric of Durham, of about 250 years ago, the name of Sunderland figures on the map, but otherwise it is not deemed worthy of mention. In the twelfth century it figures under the name of South Wearmouth, and it is in much more recent days that it rises into importance as a commercial town under its present name. B springing from the working and shipping of co the building of vessels, and the manufacture glass and of iron, the town has advanced in th century in a ratio very great, as may be gather from the fact that in 1821 the population Sunderland and Wearmouth was 31,891; that 1831 it had grown to 40,735; and that its grow in later decades has been to 53,335 in 1841, 64,673 in 1851, to 81,534 in 1861, and to 98,2 at the time of the last census. At the last da 1871, it contained 12,761 houses, and its mu cipal borough extended over 3,306 acres.

Coal-shipment is unquestionably the first its trades, and it may indicate the growth that trade if it be stated that during a co siderable portion of last century the coal shi ments at the port did not much exceed on t average 65,000 chaldrons yearly; that early th century that amount had risen to nearly t times the quantity; and that at the prese time the shipments of coal and coke are abo a million tons and a half yearly to foreign por and a similar amount to other British ports, that over three millions of tons of coals a shipped from the mouth of the Wear year Ship-building ranks next in importance and fame; for though in this industry the We occupies a lower place than the Tyne, yet it w long famous for its clipper ships, and though t days of the wooden walls of old England ha passed away, Sunderland contributes largely the number of the iron merchant fleet. T branch of the trade of the Wear has increas in a most satisfactory manner, as may be judg from the fact that in 1862 the tonnage built w little more than 15,000 tons, and that for so years past the vessels built have averaged fr 60,000 to 70,000 tons. This pre-supposes c siderable work for marine engineering and ot allied industries. The glass works of Sund land may be next noticed as not only large extent and in producing capacity, but also famc for the introduction thereat of the rolled pla glass; whilst manufactures of kindred goods earthen and other ware,—are to be found on subsidiary scale. The export trades have bec as may be judged, tolerably well developed Sunderland; but, up to a recent period, th was comparatively little attention given to import trades: now, however, this is be remedied, and new industries are being plan and extended on the sides of the Wear. Th has been a careful attention to the needs of port, the provision of increased accommodati and the improvement and extension of the natu advantages of the river, and the result is s in increasing commerce, and increasing to prosperity.

The indications of that increase are great a varied; the population of the town, as we h seen, has steadily progressed, and its prese rate seems enlarged over those of form decades, whilst that increase is reflected some things which are perhaps inevitable, certainly uncreditable. Within less than twe years the criminality of the town has doubled, the number of persons proceeded against havi risen from 2,807 yearly to between five a six thousand, but the increase is not the greate in the more serious class of crimes,—drunke ness and common assaults furnishing the gre bulk of the cases. How far that crime is or not contributed to by the 260 public-houses a the 265 beerhouses it is not now needful inquire; nor need the connexion be attempt to be traced between the numbers and the bu of the pauperism in the union, of which t town is the chief part,—pauperism, which h very much fluctuated of late, and now includ for that union about 570 indoor and 1,740 o door paupers; or, in other words, one person about 49 or 50 is a pauper! Other and le equivocal facts are found in the growth of t rateable value of the borough, until it is n close upon 320,000l.; its building societies a perhaps more numerous than in any other to of similar size, and some of them have prince incomes; and for some years, owing to the carr ing out of a town improvement scheme, the has been a gratifying decrease in the death-ra At the present time that death-rate is very litt more than 20; the number of deaths bei 2,262 yearly, the births numbering 4,409. free library has not yet become so popular as ought to be, but this is because its hom ing the past has not been befitting, and when in t future this condition is improved, it is probab that both free library and museum will bett serve their purpose. Its police force is co posed of 121 officers. On the rolls of its el

mentary schools are the names of 12,926 children, 3,289 being on those of Board schools, but the limited accommodation at the latter is being largely added to. Its infirmary accommodates in a year 1,597 indoor patients, and those treated at their own homes, or prescribed for in the dispensary, make the total 4,572. Finally, it may be said that there is a mass of religious, philanthropic, and social associations, and commercial undertakings, at work in the Wearside town, which in effort, extent, operation, and result may fairly be said to be in every way creditable to the character and enterprise of the people of Sunderland.

This is the present state of the coal-shipping port of North Durham; and from the state of the present the prospects of the future may be taken as brilliant. There is now extension in the town as well as its trade, and the builders find yearly fresh fields and pastures new to cover with streets. The railway communication has for some time been tolerably good, but it has been to some extent marred by the want of a central station, and the consequent distribution of traffic from three small stations dispersed at distances from each other at three points of a triangle. The railway company which serves the whole of the north-east coast, with the exception of one small seaport, is now supplying the deficiency,—a station which shall join the several routes into and from the town. Already, on this junction, there has been spent the sum of 361,778*l.*, and as it is estimated that the further sum of 146,934*l.* will be needed to complete the work, it may be gathered from this that the design is one on no mean scale. It involves the crossing of the Wear with a high-level bridge, the tunnelling under a considerable part of the town and one of the magnificent public parks, the removal of no inconsiderable amount of property, and the construction of a station creditable to the town and to the railway company, and with all these parts of the work considerable progress has been made. On part of the Extension Park it is intended to erect a museum and library also, better befitting the town; there is projected a town-hall, and other buildings of a public nature are in contemplation, and the sects are busy; so that in the constructive trades briskness seems certain in Sunderland. And although the vaster branches of its commerce will feel the ebb and flow of the general trade of the country, there is little fear for its immediate future. It has behind it the vast coal resources of North Durham; its port facilities have not yet reached their maximum; nor have some of its more recent trades attained their full growth. As these grow they develop other fields of industry, and every little rill adds to the force and volume of the general stream. Its position as one of the first of the north-eastern ports, and its prominence in the North in shipbuilding, give assurance also of its future, which is further vouched for by the competent business men and the skilled scientific marine constructors who have in no small degree made the port what it is. Building on the two great northern supports of coal and iron, and adding to these the lighter but still appreciable sources of strength derived from other trades, the industrial future of Sunderland should be marked by the same progression which it has so long known. And as it has learned the lesson taught in plague-stricken times, that more of the care and attention of the rulers of a town should be given to the supervision of a town than had been devoted to Sunderland prior to the cholera outbreak, it is now reaping the fruits of its applied wisdom in the carrying out of the removal of some of the worst of its dwellings,—reaping fruits in the shape of decreased death-rate, improved general health, repute, and appearance. There is yet something to be done in this respect, and there is much to be done before the mass of misery—often drink-engendered—is removed; but the sanitary progress of Sunderland, and its beautification and adornment by the addition of noble parks and stately buildings, have been in recent years more satisfactory than in some other similar towns.

Ventilation of Railway Carriages.—An apparatus, invented by Mr. Birkett, architect, Carlisle, for ventilating railway carriages and travelling post-offices, was on the 25th ult. tested between Carlisle and Lancaster, in the presence of the Mayor of Carlisle, Dr. Barnes, Mr. Williams, engineer of the carriage department of the London and North-Western Railway Company, and Mr. Westmorland, of Liverpool. The experiment was, it is stated, highly successful.

BERLIN AND ITS BUILDINGS.*

THE progress made in the construction of public buildings has, if less rapid, certainly been more satisfactory than that of private architecture. Amongst the many public buildings projected, commenced, or completed, may be mentioned the Houses of Parliament of the German Empire, an illustration of which appeared in the *Builder*, the taking in hand of which building has hitherto, unfortunately, been retarded by the delicate question of finding the most suitable site for it. It forms another Law Courts question, of London notoriety. Much remains to be done, for though Berlin is the fourth largest capital of Europe, it is far from taking that rank from a sanitary or architectural point of view which it as such ought to occupy. But this much deserves to be stated, in justice to the spirit prevailing in the German capital, that Berlin is on the brink of great activity being displayed also in that direction.

It is of the greatest importance for the future of Berlin that steps are already being taken for a thorough reform of its obsolete organisation, with a view of sweeping away its many and opposing elements of fiscal and municipal administrations, basing its new institutions upon the principle of self-administration and decentralisation.

(II.) The buildings of Berlin, being the subject proper of the work before us,† necessarily occupy the greater part of the book. The importance of Berlin in the history of modern architecture is not based either upon the number or the splendour and magnitude of its monumental buildings. The architectural development of the city has up to the present time been retarded very much by an insufficiency of means, which, in a naturally poor country which had to work its way up by its own exertions, were still more limited by the parsimoniousness of its administration. The great public buildings of Berlin have been erected one after another, within the last two centuries, with a steadiness and perseverance without their equal in Germany. Although building at no time has been completely suspended, it has never been more active at any particular period, so that the buildings of one epoch should predominate over those of any other. Each section of the history of the city is represented by buildings bearing its characteristic stamp. It would be wrong to fix upon the time of the architect Schinkel as the starting-point of a particular school, that which affected Hellenic forms. On the contrary, it may justly be stated that there is a sober sameness pervading the whole of the architecture of Berlin, having its origin, probably, in the whole history of Berlin, if not in the traditions of the Prussian state. This is especially noticeable in the architecture of Berlin dating from the Middle Ages. Several churches and chapels dating from the beginning of the fourteenth century are still extant,—simple Gothic erections in brick. Of the architects who created them, the name of only one is known, that of Master Bernhard, who in 1471–74 erected the chapter-house of the Graue Kloster.

With the Reformation, and until the Thirty Years' War, Renaissance forms came in vogue but its creations were few, and fewer still are preserved. Kaspar Theiss is named as the architect of the Elector Joachim II. (1535–1571), and he, in conjunction with the sculptor Hans Scheutzlich, transformed the old Burg into a castle of the style of his times, the later German Renaissance with a trace of Gothic traditions. Several Italian architects followed him, one of whom, the celebrated military engineer Rochus Guerini, Count of Lynar, built in 1590 the still existing cross wing of the Castle. The part of the Castle called the "House of the Duchess" was probably built by the architect Hans Räspell. The Italians Elias de Galli and Giovanni Baptista de Sala, as well as the two brothers Peter and Martin Kummer, both Saxons, continued the building operations of the Castle under the Elector Joachim Friedrich. Of the private buildings of that time, only one is still in existence, the house erected for a Herr von Ribbeck, in the Breitestrasse, in 1624, in the later German Renaissance style, with four gables,—at present forming part of the royal stables. It is ascribed to the Dresden architect Balthasar Benzelt.

After the devastations of the Thirty Years' War, it was especially the Great Elector who did much for Berlin architecturally. He employed principally Dutch architects, the first of whom was Johann Gregor Memhard (about 1645). He is the creator of Unter den Linden, the Dorotheenstadt, and the Friedrichs-Werder, but he is principally known, though ungratefully very little remembered, as the constructor of the first fortifications of Berlin, being a military engineer and architect. He also added to the Castle, this handiwork of successive generations of architects. Beyond these, little is left of his work. The architect Smids followed him; he was principally a hydraulic engineer, the Friedrich-Wilhelm-Canal and other minor constructions being his work. But the most eminent of Berlin's architects of the seventeenth century—at any rate, the first artist—was Johann Arnold Nehring. When Memhard died, he continued the building of the Castle. His works are very numerous; many have been demolished, others are awaiting the fate which the modern requirements of Berlin demand, but his principal ones are still preserved. He is looked upon as the founder of the Berlin style of architecture. Among his successors, the eminent architect Schlüter is one of the best; and he continued in the favour of his employer, the splendour-loving King Friedrich I., until the threatening falling-in of the Münzthurm in 1706 led to his dismissal. He then went to Russia, following the call of Peter the Great, but died in 1713, without having achieved anything worthy of his former fame. The memory of Andreas Schlüter, notwithstanding his faults, the principal one among which being his utter disregard or ignorance of technical requirements, will long be preserved by his works, which are, and are likely to remain for a long time, still undisturbed. His rival, Johann Friedrich von Eosander, *alias* Göthe, by many considered the cause of his fall, and Jean de Bodt, his successor, shared Schlüter's fate in being dismissed from government employ at the accession of Friedrich Wilhelm I., whose reign is almost a blank of architectural creations of a public nature, compensated for in some respects, however, by the erection of numerous private buildings.

With Frederick the Great a new era of architecture seemed to be dawning upon Berlin, especially as the most eminent architect of that reign, Georg von Knobelsdorff, was one of the more intimate circle of the art- and science-loving monarch. Unfortunately, Knobelsdorff was too independent for subordinating his art to the personal inclinations of the King, and his ability found but partial employment under him. He was the creator successively of the castle of Rheinsberg, the new wings of the castles of Charlottenburg and Monbijou, the theatre in the Castle at Berlin, the Opera, as well as the artistic re-arrangement of the Thiergarten. The construction of the castle of Sanssouci led to the permanent estrangement between the King and his architect. Another eminent architect of Frederick the Great's reign was Karl von Gontard. He had a hand in the construction of the Neue Palais, at Potsdam. In Berlin he built the colonnades of the Spittelbrücke, the Königbrücke, the two towers on the Gensdarmenmarkt, and numerous private buildings. In Potsdam he also erected the Marmorpalais. Of still greater importance were the works of Georg Christian Unger, which include the Bibliothek, the Kadettenhaus, the colonnades of the Jägerbrücke, and the Spandau Bridge.

Passing the reign of Friedrich Wilhelm II., which, with the exception of Carl Gotthard Langhaus, produced no architect of eminence, we come, in the reign of his successor, upon Karl Friedrich Schinkel, whose works are too numerous too mention now, and who may be said to have been without an equal. Since the death of Schinkel, in 1841, more than a generation has elapsed, and during that time an artistic development of no mean merit has taken place in Berlin. The authors wisely abstain from a detailed criticism of men still living, some still in the prime of their creative career. Speaking generally, it may be said that the successors of Schinkel have striven hard to imitate their great master, their works bearing more or less the stamp of the Hellenic Renaissance. Their activity has displayed itself at present chiefly in private architecture, which presents their best creations, but there are signs that the great public works, the erection of which is in immediate prospect, will open up to the architects of Berlin a wholesome competition.

Having said this much of the men who have

* See p. 1070, *ante*.

† Berlin und seine Bauten. Herausgegeben vom Architecten-Verein zu Berlin. Mit 609 Holzschnitten nebst 8 Kupfer- und Karten-Beilagen. Zwei Theile. Berlin, 1877. Eigenthum des Vereins. London: Williams & Norgate.

directed the architectural development of Berlin for the last two centuries, with the space at our disposal we shall not be able to enter into details respecting them, but only to draw attention to some of their principal works. Among the erections most characteristic of Berlin may be numbered the colonnades forming a sort of open hall to the bridges, the best of them being the colonnade of the Königbrücke, erected after the designs of the architect C. von Gontard. The Brandenburger Thor, by C. G. Langhans, surmounted by a Victoria standing in a *quadriga*, justifies the world-wide fame which it enjoys. The monument of Victory (*Siegesdenkmal*), on the Königplatz, designed by Strack, and inaugurated in 1873, the foundation-stone being laid in 1865, is to keep alive the memory of the eventful years 1864, 1866, and 1870–71; its cost was 1,800,000 marks (90,000*l*.). The equestrian statue of the Great Elector, on the Lange Brücke, or Kurfürstenbrücke, is the oldest of the many ornaments of Berlin; by many critics it is considered still the best. Next in rank is the monument in honour of Frederick the Great, by Rauch, at the beginning of Unter den Linden. Its erection has occupied the attention of the artists of two generations; design after design was submitted and rejected, until, in 1840, Rauch's model was accepted, the statue being unveiled in 1851. Amongst public monuments erected to private men is the statue of the architect Schinkel, by Drake, in the vestibule of the Old Museum.

Of ecclesiastical buildings, the church of St. Nikolaus is the most ancient, its oldest portions dating from the year 1223. Next to it in age is the Klosterkirche (1272–1300). It was last restored in 1840. Among the churches of the seventeenth and eighteenth centuries may be mentioned the Dorotheenkirche (1678–87, restored in 1860–62); the Französische Kirche, the Neue Kirche, &c.; but the principal one among them is the new Cathedral, erected under Frederick the Great, by Boumann the elder (1747-50); restored by Schinkel in 1816–17. A remarkable building is the St. Hedwig Church, a circular temple. Of the ecclesiastical buildings of the nineteenth century, we mention the St. Markuskirche, the Church of St. Michael (both by Soller), the Church of St. Peter, the Church of St. Thomas, the Zionkirche, and the new Synagogue (by Knoblauch).

Among buildings for public collections, the Royal Library, on the Opernplatz, and the University Library, may be referred to; but the grandest conceptions are undoubtedly the old Museum (Schinkel) and the New Museum (Stüler, Strack), as well as the National Gallery, not quite completed (see *Builder*, May 27 and June 17, 1876). Other prominent public buildings are—for the culture of science and art, the Academy, the University Buildings, the Bauakademie; for public instruction, the König-Wilhelm-Gymnasium, Französisches Gymnasium, the Realschule of the Dorotheenstadt, the Central-Turnhalle, and numerous other establishments; for the care of the sick and infirm, the St. Gertraud-Stiftung, the Charité, the New Hospitals, Allgemeines Krankenhaus. Among houses of correction, prisons, &c., we mention the great Penitentiary at the Plötzensee, near Berlin (see *Builder*, January 20, 1876). We may further mention, among various other public buildings, the new Guard-house and the Armoury, the numerous barracks (not a few of them with some claim to merit in architecture), the Imperial Chancellery, the Ministry of the Interior, the building of the General Staff, the General Post Office, the handsome Town-hall, the Exchange, Imperial Bank (see *Builder*, June 23, 1877), &c. Of course, it is impossible to take cognisance in a notice of this kind of all the thousand and one striking public and private buildings of Berlin, nor enter into a description of the royal castles at Berlin and Charlottenburg, nor the handsome residences of members of the royal family; we must refer the reader to the work itself. Suffice it to say that he will find there, be he architect, engineer, artist, antiquary, or historian, an abundance of material such as is not very often offered to him.

ENGINEERING WORKS.

The second part of the book, though the smallest, is by far the most interesting for the architect, the engineer, and the working builder, just as the first offers the greatest attraction to the statistician and geographer, the historian and economist, as well as the artist and the student of architecture.

(III.) The former history of Berlin offers but few instances of works which we moderns term "engineering works." Considering the situation of the city on the river Spree, hydraulic works became early necessary, but the wharfs and bridges, the mill-dams, weirs, and sluices, constructed during the first centuries after the foundation of Berlin, can only have been erections in wood of the most primitive description. In the same manner, very little was probably done for the requirements of the street traffic; the low-lying roads were gradually raised, but pavement was unknown before the end of the sixteenth century.

Engineering works proper were not known until a girdle of fortifications was drawn round the city towards the end of the seventeenth century, to be taken down again, however, after they had been standing hardly eighty years. Other works, originated by the last Elector of Brandenburg, such as the Lange Brücke, the embankment along the Burgstrasse, exist at the present day, witnesses to the monumental grandeur to which that time was able occasionally to rise when difficult problems had to be solved. With the quick development of the city, the planning and laying out of new quarters had repeatedly to be designed and marked out. The engineers employed were mostly Dutch, later also natives and other foreigners—Memhard, MM. Smids (the constructor of the Friedrich-Wilhelm-Canal), Nehring, Blesendorf, &c.; partly the same men who at the same time created the handsome edifices of the capital.

The eighteenth and the first third of the nineteenth century are devoid of works requiring remarkable engineering skill. The network of streets was gradually pushed farther out, the level of the roadway being repeatedly raised; by the side of the older restored and improved bridges, a not inconsiderable number of new ones (among them in 1796 the first iron bridge) were constructed after, by the removal of the fortifications, the inner city had been more closely united with the suburbs. Since the close of the eighteenth century, the high-roads leading out of Berlin were gradually converted into *chaussées* or macadamised roads.

It was only by the rapid growth of the city in the age of railways (the first of which it received in 1839), the rise of Berlin to a centre of trade and manufacture, that problems arose in ever greater numbers, and of ever greater importance, which it required the engineer to solve. In the first place, provision had to be made for the continually increasing traffic. Seven lines of railways converging in Berlin, with a circular railway, twenty-eight miles long, seventeen *chaussées*, the river Spree with three canals, five tramway lines, twenty-six lines of omnibuses with 145 vehicles, two lines of steamers with fourteen boats, 417 first-class and 3,490 second-class cabs, and 282 carriages called Thorwagen, with together over 20,000 horses, provide for the daily traffic, about 30,000 strangers arriving in or departing from the city. In 1872, the different omnibus lines carried 12,654,105 passengers; the number of persons arriving by rail being 3,512,408, those departing 3,570,462. The railways brought into Berlin 48,774,599 cwt. of goods, carrying away but 14,631,879 cwt.; 34,908 vessels of all descriptions entered Berlin, 33,902 left it, while 6,314 vessels passed the Spree through Berlin.

Such a traffic requires both safe and ample regulation, and the spreading conviction of the correctness of the English saying, that "Time is money," compels the people of Berlin to look carefully after their means of communication, and to have them made as perfect as possible. It is said that both the government and the municipality are doing their duty in this respect; but the local conditions, the narrowness of many streets, the want of suitable building material on the spot, the defective soil, the slight elevation of the whole city above the level of the river, cause difficulties to the engineer such as can only be appreciated by the engineer.

The road engineer finds a collection of the most incongruous attempts at road-making, from the simplest pavement of round rubble stones set in ballast, hardly to be called sand, to the most perfect and expensive execution in carefully-hewn square stones, with concrete foundation and asphalte filling, with foot pavements in granite kerbs, slabs, mosaic tiles, asphalte and cement covering.

Fresh demands are being made every day on the hydraulic architect. Along the Spree new riverine roads are to be made; along the canals the slopes of their banks are to be partly transformed into solid embankments, quays are to be formed; the availableness of the waterways is to be increased, the sluices are to be enlarged, and the tideway is to be improved. Besides all this, the increased traffic necessitates the widening and reconstruction of existing and the construction of new bridges. The present bridges offer a rich collection of specimens, from the simplest wooden pile-pier bridge, with or without flap for passing ships, up to the arched and handsomely decorated bridge of iron or stone. The introduction of railways has led to the construction of roadways over and under the lines in busy localities; the execution of a proposed railway right through Berlin promises shortly to give ample employment to the engineer, as will also the great buildings necessary for enlarging existing termini or erecting additional ones.

The requirements made on the great city from a sanitary point of view are of a somewhat different nature. To its shame, sanitary measures have been too long neglected, and great exertions will have to be made to retrieve what has been lost. The execution of great drainage works has at last been resolved upon, and already been begun. At the same time, the municipality has acquired the waterworks, intending also shortly to enlarge them, to ensure a better supply. A large field has thus been opened out to the engineer.

The streets and places of Old Berlin are generally narrow, and have been laid down without any plan; they mostly run parallel with the watercourses, or they follow in their direction the old high-roads leading straight to neighbouring villages. Modern Berlin is built on a plan prepared in 1858. Berlin has at present 580 streets, of a length of nearly 190 English miles. Its longest streets are Friedrichstrasse (two miles), Oranienstrasse (two miles); Leipziger Strasse (1·11 mile); well-known Unter den Linden, 159 ft. wide, has a length of only 1,094 yards. Berlin's greatest open space, the Königplatz, has an area of 10,376,430 square feet, or 238 acres. The streets of Berlin are perhaps paved worse than those of any other capital.

There are very few public parks in Berlin, and the extensive forests round it, which in summer are the trysting-places of numerous pic-nic parties, offer equivalents which will be still more appreciated when they are brought nearer to Berlin by railway communication, &c.

Tramways were introduced in Berlin as early as 1865, and there is now a complete network of these useful public conveniences all over the capital; the total length of tramways open, or shortly to be opened, being 57 miles.

The water communication of Berlin is excellent, and this, as has already been pointed out, contributes not a little to the commercial importance of Berlin. The Spree itself, which takes its rise in the hills of Prussian Lusatia, does not play the principal part in its intercourse with the surrounding districts. This is performed by the system of canals already mentioned, which connect Berlin with the Oder and Elbe. Besides those already existing, there are several others projected, which will still further facilitate the intercourse of Berlin with the east, west, and north of Germany.

Compared with other European capitals,—London, Paris, St. Petersburg, and Vienna,—Berlin is far behind in respect of the grandeur of its bridges. Though its bridges are very numerous, they are mostly insignificant. The fact is, there is no room for display in a river of such limited width; the low banks of which, besides, leave little room for an application of striking architectural features. Perhaps the most handsome structures among them are the Schillingbrücke, the Lange or Kurfürsten-Brücke, the Alsenbrücke, and the handsome bridge of one arch in the Hitzigstrasse. The most important railway bridges are that of the Berlin-Görlitz Railway, that of the Berlin-Potsdam Railway, the bridge over the Berlin-Spandau Canal of the Berlin Circular Railway, and the bridge over the Spree of the same line.

As regards the railways converging upon Berlin, there are at present seven of them, while three more are constructing. They are: on the south-east,—the Berlin-Görlitz, Königl. Niederschlesisch-Märkisch, and the Königl. Ost railways; north,—the Nordbahn (Berlin-Stralsund; building); north-west,—the Berlin-Stettin, the Berlin-Hamburg, and the Berlin-Lehrte railways; west,—the Berlin-Wetzlar (building; government) railway; south-west,—the Berlin-Potsdam, Berlin-Dresden, and Berlin-Anhalt railways. Besides these, there runs at some

nce round Berlin the Königl. Berliner Ver-
ungebahn. Plans are also being prepared for
Berlin Railway, which, crossing Berlin in an
st straight line from east to west, is to
e as a junction railway for the state rail-
leading east and west, and also for local
c. This latter line will supply, what has
long wanted, a central terminus. Among the
r stations, may be mentioned those of the
n-Potsdam-Magdeburg, Niederschlesisch-
isch, Ost, Berlin-Lehrte lines, &c.

e Berlin Waterworks were opened in the
g of 1856, by an English company, which
ined the royal concession for its undertaking
352, but which did not commence its works
854. The buildings are situate close to the
lau Gate, separated from the river Spree
by the road leading to Stralau, and extends
r as the Niederschlesisch-Märkisch Railway.
y are erected in yellow brickwork, and in
le English Gothic. The water supplied to
in is taken from the Spree, raised on to
-basins, filtered, and driven by steam-
r through the whole city. The supply
nding entirely upon the power of the
aulic engines, and high-level reservoirs
g absent on account of the low level of the
it is necessary that the filters and the
hinery should be able to satisfy the hourly
imum want of the city. The original filter
proving insufficient, two new open filter-beds
opened in 1866, and at the same time it
found that the machinery also was unable
pply the want, which led to additional inde-
ent new pumping machinery being erected
68. Three more filter-beds have also been
opened. The water-works were purchased
e municipality of Berlin in 1874.

on after, it was found that, notwithstanding
hese additions, the supply of water was
ing daily more insufficient for the rapidly
easing population of Berlin, and the munici-
y at once acted upon the report which it
ordered to be prepared. In order to accele-
at least the partial completion of the new
rworks, which are situate upon the Tegel
, seven miles from Berlin, it was resolved to
ruct two works instead of one. Operations
carried on so rapidly that already at the
of last year one of the works was opened,
ding several high-level reservoirs. The
r half, it is expected, will be completed in
een seven and eight years. The cost of the
e is estimated, when completed, at 12,605,200
s (630,260*l.*).

most difficult and complicated subject for
engineer is the draining of Berlin. The
h capital of Europe, to its shame it must be
it has not yet a properly-regulated system of
s and sewers, although its level situation,
ense population, its extent, and the water
ly introduced in 1856, make such a work
ssary. The evils arising from this want
been felt for years, and have led to a
ber of schemes being proposed, the earliest
hich dates from 1816. But it must be borne
ind that the draining of Berlin meets with
ulties such as are not often encountered in
r large cities. In the first place, the multi-
y of interests sure to be affected has to be
iliated. Then there is the further difficulty
e ground-water; Berlin lying so low, and
excessively light sand which forms the
est part of the soil on which Berlin is
permits water to percolate in large quan-
, increasing the difficulty of construction,
necessitating enormous outlay for concrete
dations. Strange to say, the project has
looked upon with most unfavourable eyes,
nly by the poorer classes, but by the rich as

But it found a ready ally in the sanitary
ority of Berlin; the farming interest, however,
cially in consequence of the strange part
Liebig took in the matter, strongly opposed
scheme in favour of a so-called removal
m. Meeting with little patronage on the
of the Government, the question of the
ning of towns, and of Berlin especially, was
entirely to the discussion of the public press
societies. Only in 1869 the subject was
brought before the public by a series of
riments being ordered by the municipality
rlin. The result was, that the necessity for
eral drainage of Berlin was recognised, and
in 1873 the corporation resolved to take
nd at once in the first place the south-
ern part of Berlin the work of canalisation,
the plans of Baurath Hobrecht. Rejecting
rmer proposal, partly based on Bazalgette's
em of draining London, Hobrecht's scheme
ased on the principle of dividing Berlin into twelve districts, and to drain each district inde-
pendently of the others; to construct at suitable spots intermediate pumping-stations for raising the sewage from one level to another, in order to ensure the required fall, this, on account of the low level of Berlin, forming one of the principal difficulties; and to conduct the sewage to a central pumping-station, and raise it there for purposes of irrigation, instead of letting it run into the river Spree below Berlin. The works of canalisation and the construction of the pumping-station are in full progress.

(IV.) The subject of the industry and commerce of Berlin, as well as its industrial buildings, is treated in a separate section. Having formerly been the centre of intercourse between Germans and Slavs, the importance of Berlin as a trading town was early established. Berlin continued to prosper until the Thirty Years' War, when, like all large towns of Germany, it suffered heavily. The Great Elector did much for the trade of Berlin by his canal works; its industry received a mighty impulse by the wise policy of the Hohenzollern of giving a hospitable welcome and every encouragement to the expelled French Protestants, who began to settle in Berlin in 1685, and later to the Bohemian colonists.

Since the time of Frederick the Great, the manufacture of porcelain has been one of the most prosperous branches of industry. England takes now a large share of the goods made there. The weaving of woollens is another very profitable branch of employment. It was first introduced at the beginning of the eighteenth century, by Friedrich Wilhelm I. A favourable sign of the extensive trade of Berlin is the flourishing state of the forwarding business. The principal branches of commerce are now the corn, wool, and cattle trades. There are large distilleries and breweries. But by far the most important branch of industry is the manufacture of machinery and iron goods generally, which has received a still greater impulse by the railways. Moabit is the great seat of the iron industry, and there again the well-known iron and locomotive works of Borsig are the principal ones. Art industry also occupies a high place, and the manufacture of telegraphic apparatus has long ago given Berlin a name. For details respecting the large number of industrial establishments, we must refer the reader to the work itself. Though, properly, the great cannon foundry and artillery workshops of Spandau are rather extraneous matter while speaking of Berlin, yet they find a descriptive place in the book. The great cattle-market and slaughter-houses are models worth studying.

(V.) Highly interesting for builders is the section treating of the building materials used in Berlin, and the description of the principal modes of construction. The principal and only place of supply of limestone for Berlin is the ridge of limestone hills near Rüdersdorf, sixteen miles east of the city, where pits were first driven in the fifteenth century, and have been worked ever since. The works now belong to the State, and in 1875 yielded a net profit of 55,230*l.*, of which one-sixth was paid over to the city of Berlin for its proprietary rights in the pits. This will give an idea of their yield, the pits being, however, only worked according to the demand for the stone, the receipts thus forming an accurate index to the building activity of Berlin. The best descriptions of limestone fetch 1*l.* 1s. to 1*l.* 4s. per cubic mètre (35½ cubic feet). Granite has to be brought some distance from Berlin, from Silesia and Saxony, but also from the Fichtelgebirge. The price for unworked granite at Berlin is now 12*l.* 10s. to 17*l.* 10s. per cubic mètre, while polished descriptions fetch as much as 75*l.* to 100*l.* Sandstone is imported from Saxony, Thuringia, Silesia, and Hanover, prices ranging from 3*l.* to 7*l.* 10s. per cubic mètre. The use of French limestone has come into vogue during the last few years, in consequence of the moderate charge for carriage, and its price delivered at Berlin is now from 4*l.* 10s. to 6*l.* per cubic mètre. Marble is brought from all parts of Europe, but the descriptions principally used are Silesian and Carrara marble, as well as Belgian marble. A great deal of slate is imported from England. The scarcity of other building materials early led to the employment of bricks, and the easy water communication helped much to increase its use, comparatively little brick-earth, however, being found near Berlin. In 1873, from April 1st to December 31st, 22,628,558 cwt. of bricks, tiles, and drain-pipes were imported by water alone; the prices during that period, which was the most active the Berlin building trade has yet known, ranging from 3*l.* to 5*l.* 10s. per thousand, according to quality. In 1875 prices had sunk down again to a normal level, 1*l.* 14s. to 3*l.* 17s. being paid per thousand. The manufacture o terra-cottas has lately risen to a high degree of excellence, the best descriptions being undoubtedly supplied by March, of Charlottenburg As regards timber, Berlin is most favourably situated, deriving nearly all of it from the pine forests of the Mark Brandenburg and the neighbouring provinces. Prices range now from 2*l.* 10s. to 5*l.* per cubic mètre. Oak-wood now fetches from 7*l.* to 7*l.* 10s. per cubic mètre. Berlin being so favourably situated with regard to the principal iron-producing countries, England and Belgium, which compete with Westphalia and Silesia, the prices of iron in Berlin keep at a moderate level. They move for pig-iron between 7s. to 19s. per cwt.; 24s. to 36s. for cast-iron; and 22s. to 40s. for rolled iron (girders, rails, &c.). For the different modes of construction pursued, we must refer the reader to the work itself.

We may remark, in conclusion, that, in treating so fully the subject of the book, only justice has been done to a valuable work. The careful arrangement of the matter under five distinct heads, which division is still further carried through to the smallest details, make the volume the best book of reference obtainable. The work is profusely illustrated, great care being bestowed on the illustrations. There are, besides eight large plans, of which the largest is a very good map of Berlin and its neighbourhood, the latter, as well as the letterpress of the book and the paper on which it is printed, being excellent

LEEDS CASTLE, MAIDSTONE.

Accepting the hospitable invitation of Mr. C. Wykeham Martin, M.P., the Council of the British Archæological Association and some of their friends, a numerous party, visited Leeds Castle on Tuesday, the 23rd ult., and, in spite of very bad weather, found much pleasure and profit in the visit. After courteously receiving his guests in the hall of the castle,

Mr. Wykeham Martin said,—First let me offer you, on behalf of myself and my wife, a hearty welcome to Leeds Castle. I have long wished that I might have the honour of this visit, and can only express my regret that you should have selected the first wet day we have had for six weeks. Let us hope the weather may improve. I will, without longer preface, proceed to give you a sketch of the history and points of interest in this building:—Leeds Castle is remarkable from three points of view. 1st. Because it was the jointure-house of every queen of England in succession from Edward I. to Edward VI. 2nd. Because a very great portion of it is in good repair, and exactly in the position in which Edward I. and Henry VIII., the two great founders of most of it, left it. 3rd. Because it was, at the time it was erected, a fortress of the first-class, according to the weapons and mannes of carrying on warfare in those times. It wa planned by engineers of no mean skill, and they secured what is thought of so much importance now, a flank as well as a direct fire, both of small arms and the artillery of that day, upon every line by which an enemy could approach. It was situated on three islands; it still is upon two, surrounded by three lakes, of which only the smallest, of sixteen acres, remains; but the largest could be, and has been, filled in a few hours. There was, in each direction, a long, narrow causeway between two deep lakes, the enemy being exposed to point-blank flank fire for some distance. The place consisted of five fortresses, the outer barbican, then a large loopholed barrack, with no external windows, capable of holding at least 200 men, with cellarage for provisions, &c. I have myself seated 177 people in one room at a concert with a stage holding forty people. Beyond this was, till 1821, a loop-holed crenellated wall, within which there were five two-storied towers, where the bastions now are. Fourthly, there was the building in which we now are, beyond which was the citadel or old castle built on solid rock, the walls going down into the moat, the depth of which was 20 ft., the space from the water to the windows being 18 ft. You may wish to know the date of the oldest part of the buildings which now exist. Now, as the exact date is in dispute, I will not claim a greater age than 1265, at which date much of it was certainly standing; but I hope to convince you some of it is much older. There is a board in Leeds Church which is copied from one that used to

hang in Leeds Abbey, and which is confirmed from other sources, stating that Robert de Crevecœur placed four cannons in Leeds Castle, in the north-west corner. Now my late lamented father seems to have overlooked the fact, which he mentions in his work on the subject, that two chapels existed in the castle as late as Henry IV. Archbishop Arundel states that he tried Lord Cobham for heresy in the "larger chapel." If the other chapel, as has been conjectured, was out by the barracks, and a ruin in Edward II.'s time, it would have hardly been mentioned. But in the north-west corner of the castle there is a small room with a window of a very ecclesiastical appearance, which even those antiquaries who decline to fix an older date than 1265 admit, seems to be of the time of King Stephen. I hope to prove the same point by circumstantial evidence; but be this as it may, whether the building is over 600 or over 700 years old is of small importance. I mentioned that the castle was the jointure-house of every queen in succession from Edward I. For a few years in Edward II.'s reign it (though the jointure-house of Isabella, called the she-wolf of France) passed into the hands of Lord Badlesmere, one of the king's favourites. During his absence, Isabella, under pretence of a pilgrimage to Canterbury, asked for a night's lodging with a very large retinue. Lady Badlesmere refused to admit any one in her husband's absence. Isabella attempted to storm the place, but was defeated with great loss,—to this day we dig up the skeletons of those who were slain. She implored her husband to avenge the insult, and he called out the *posse comitatus* of the neighbouring counties as far as Hampshire. Unluckily for the garrison he commenced the siege on St. Luke's day, the 18th of October, just before the Martinmas stock of provisions was laid in for the winter, and the king reduced the place by famine. Froissart mentions it "as a very fair palace." To Henry IV. and the trial of Lord Cobham I have alluded. Henry V. coveted it for his own wife, but his father had left a young widow, Joan, who had a fair prospect of outliving, and, indeed, actually did outlive, her stepson. He charged her with heresy, and placed her in confinement during his reign,—how justly may be guessed from a paper which I hold in my hand, being a message sent to Parliament saying that "he was advised no longer to have it on his conscience," and imploring them in the name of God to restore her property to her. His repentance was tardy, as the message was sent in July and he died in August. Henry VIII. was, next to Edward I., the great builder here. He fitted up the old castle for Catherine of Arragon. Anne Boleyn was also here, and we have some relics of her. Edward VI. sold it to Sir Warham St. Leger. He was ruined by the Irish wars in Queen Elizabeth's reign, and by having the Earl of Desmond and his family, fourteen in number, committed to his care. He complains bitterly that he had received no money from the Queen for "their diets," and naïvely adds,—"They have no money of their own, saving your honour, Lord Burleigh; no not to purchase themselves 'a pair of shoces' [*sic*], and *stand in despair of* having any from their own country." He sold it to a family named Smith, and they, after receiving one part, sold it to Lord Colepepper, who assisted Henrietta Maria to escape from Portsmouth. He left an only daughter, who married the fifth Lord Fairfax. His sons died *s. p.*, and his daughter married the Rev. D. Martin, from whom it ultimately passed to my grandfather. To give one touch of romance, for the sake of the ladies, to so long and I fear so dry a speech, I may say that in 1272 William de Leyburn surrendered the castle (I am not clear whether voluntarily or under pressure) to Edward I. He left a daughter, Idonea, who married Geoffrey, Lord Say, of whom I am the direct descendant, though not of the elder branch. We have here some curious manuscripts. One, an autograph letter from Henrietta Maria to Lord Colepepper, in which (as it is very long I will not detain you by reading the whole) the burden of the letter is "that the estrangement from my son, the king, is in nowise my fault." Another is very curious. Some of us are old enough to have had to learn by heart Pope's lines as a school exercise; many of us have seen paintings about the death of Buckingham. The lines commence (line 299 Essay iii., "Moral Essays") with the words,—

"In the worst inn's worst room,"

and terminate with,—

"There, victor of his health, of fortune, friends,
And fame, this lord of useless thousands ends."

These words were published in 1736, but in February, 1706, a rumour was abroad that they had been written. The duke's widow interfered, and they were never published till after her death; but I read a copy of an original letter which I possess, which is published in the report of the Historical Manuscripts Commission, which proves that the duke died in his own house, the best in the village of Kirby Moorside, *which is not, and never was, an alehouse*, with his steward and two peers of the realm with him. He was not ruined in fortune, and it is said "He was always pleased to express a love for good men and good things, how little able soever he was to live up to what he knew." I have detained you too long, but the Scotch have a great repugnance to written sermons, and experience has trught me that an audience in England equally dislikes a written lecture. I have endeavoured to give you this description without notes, and if I have failed, make this allowance for me,—"*Magnis tamen excedit ausis.*"

A perambulation then took place, and the various salient features of the building were pointed out and commented on. Afterwards Mr. Wykeham Martin entertained his guests at luncheon, Mr. Godwin, as a vice-president of the Association, proposed the health of their host, to which Mr. Martin genially responded, and other addresses were made by Mr. Morgan, F.S.A., the Rev. Canon Scott Robertson, and others.

A portion of the party proceeded to Leeds Church, where they were met by Mr. Gordon M. Hills, under whose direction it is about to be restored. An interesting account of this structure, by Mr. Hills, we give as a separate article.

LEEDS PRIORY.

It had been intended to visit the site of Leeds Priory, to investigate the foundations of the church which several years ago were partially excavated by the late Mr. C. Wykeham Martin, but time prevented. The church is described by more than one old writer as having been of great extent, equalling in size some of the cathedrals; but although large portions of the priory buildings remained until the end of the last century, it had been recorded that the church was demolished at the dissolution.

Mr. Loftus Brock, F.S.A., who was ready to guide the party, writes to us thus on the subject:—

The excavations revealed a portion of the apse of the church and of a crypt beneath, with several foundation-walls of late Norman date. Some of the faced work was of neatly-wrought Caen stone, with several interesting masons' marks, while portions of a pavement of small square and diamond-shaped glazed tiles were also met with. Elsewhere, some moulded bases of Early English clustered columns of Bethersden marble were found in the position where the nave and aisles of the church would have extended to, and thus afford evidence, by the difference of the style, that the nave was of later date than the presbytery. It is to be regretted that the excavations were not extended further, and it is to be hoped they may be resumed, when it is probable that more interesting results will be obtained. The priory (it is sometimes erroneously called an abbey) was for Augustine canons, and was founded A.D. 1119, soon after the introduction of the order into England, by Robert de Crevecœur, Lord of Leeds Castle, as is attested by the date in the Rochester Chronicle. Dugdale sets forth many documents of interest, and among these the Charter of Inspeximus, 41 Edward III., which records many gifts bestowed by other members of the Crevecœur family. The priory, like many other similar establishments in the period preceding the Reformation, was deeply in debt, but was rescued from such an unpleasant position by the timely help of Goldwell, Bishop of Norwich, who, having lent a large sum to the prior and brethren, founded a chantry here, instead of requiring the return of the debt. At the surrender, 31st Henry VIII., the value was 362*l.* 7*s.* per annum, and the prior retired with a pension of 80*l.* per annum. The records relating to the structure of the church are very meagre, but we learn that it was dedicated to the Blessed Virgin and St. Nicholas (the adjacent parish church is also dedicated to St. Nicholas). There was an altar of the Virgin Mary in the south aisle of the church, and she had a celebrated statue in the building. Leland records the interment of several notable persons within the church, and especially several of the lords of Leeds Castle.

No remains exist of the mansion-house of th Meredith family, which was built among th ruins of the priory after the dissolution, an which in its turn was demolished at the close the last century.

Maidstone had put in a claim to entertain th Association, but the day was already spent, ar the party made for London without furth stay.

LEEDS CHURCH, KENT.

On approaching the church from the west, th low, very broad, and massive tower standing its west end so hides the church that one surprised, after entering by the west door, find the really important church to which t tower opens. The external view of the chur conveys at once the idea that the tower is Norman date. It has the low, square, pyramic roof proper to that period, although the roof really modern, and upon it some rustic archite has most clumsily set an octagonal shingled spi of stunted proportions, painted white. T parapet of the tower has lost all traces of Norm architecture, having, no doubt, been rebu when the roof was renewed, which the da upon the bells, and the indications of the be frames and timber-work, show to have be about 1730. The buttresses to the easte angles of the tower have but little projectio and are plainly Norman, running up to t parapet without a break; those to the weste angles are larger and lower, diminishing by t tablings, and finishing at little more than h the height of the tower; they have an aspe of a rather later era, whilst the west d is distinctly of the Early English peri The rustic architect who has distinguish himself by his spire appears also to ha operated on the tower windows; two of th are in the west front, considerably raised fr the ground, but lighting the bottom stage; tops of these are somewhat concealed inside a modern floor, but on that side, as far as can seen, they are Norman, whilst on the outsi by a mischievous but ingenious method of dra ing lines in the masonry, in imitation of mort joints, as if for voussoirs of lancet-shaped hea and by trimming the opening into that sha they are made to look something like Es English windows. The next stage of the to has a window north and south, the same disgu has been attempted with them, but being m larger the failure is much more conspicuous; outer order of the masonry retains its Norm shape in perfection, the inner order only been mutilated into a lancet-shape, which bungling hand of the rustic architect comple by adding lancet-shaped wooden frames ins the stonework. The belfry stage of the to has no ancient windows, but there have been t modern ones made to it on the east side open on each side, a little lower down than the ri of the nave roof, their age easily distinguis by their modern brick dressings. All the dre ings to the buttresses and Norman windows of tufa, a stone widely used in Kent and Sus in the Norman and pre-Norman works, repeated investigations have never enab me to say whence this stone was procur The Early English door has the abaci of capitals and springings of the arch-mould Caen stone, whilst the capitals and the a itself are of the grey chalk formation, like so-called "fire-stone" of Reigate and "church" of Cambridge. The absence of ancient windows in the belfry stage, and of marks of Norman architecture at the top, poi to the conclusion that at some time, perh when the present peal of bells was arrang about 140 years ago, the tower was somew reduced in height.

The western side of the tower opens to interior of the church, with an arch measu 10 ft. 6 in. in the clear width, and 19 ft. 6 from the present pavement to the soffit at crown. The mason-work of the arch is wh concealed by thick coats of modern plas where it is not wholly incased by the lath-a plaster partitioning and painted deal panel of a gallery adorned with a Palladian colonn of wooden columns. A breach or two whi have made in these modern disfigurements sh that the arch is of Early Norman form detail, constructed chiefly of tufa masonry, with massive abaci of hard dark-brown i stone, with ponderous cushion capitals, sadly mutilated, of Caen or similar stone, much ruined and disfigured columns of same stone. Mr. Rickman, some fifty y

ro, says of this arch, it "has on the western de very much the appearance of the Anglo-axon character, the work being rude, and uare blocks of stone used in the place of pitals; but on comparing this with the eastern de of the same arch, it is evident that the ork has only been left rough and unfinished. obably because it was not intended to be en; the eastern side is in the usual Norman yle of the time of Henry I., and the Augustinian iory to which it belonged was not founded til 1119." Mr. Rickman examined this arch, obably in the same state of concealment in hich I first saw it, and without the oppor-nity of breaking through its now condemned shroudings which I have had. The rudeness which he spoke is due to mutilation more an to design; some parts of the western side n now be seen retaining in perfection their ne form and character. Still it is not impos-le that, when fully exposed, the arch may be und to have a character of the age of Edward e Confessor. The walls of the tower are not ss than 6 ft. 9 in. thick, and the area within e tower walls is 24 ft. by 22 ft.

The nave is lofty, and of three bays in length. e arcades have slender octagon shafts, with ll-moulded caps and bases, and deeply cut ouldings to the arches, which are high and inted; the whole constructed in "rag" stone. wadays, masons flinch from working this hard ne for such purposes; but in Mediæval times hardness was no discouragement; nay, it to ne extent tempted elaboration of design, being sceptible of receiving exceedingly sharp and e edges, so that in this and other instances in district not only are the mouldings elaborate, the faces of the octagon shafts, which in ter districts would be left flat, are here hol-wed in plan. This work is wholly of Per-ndicular date. The nave roof is high-pitched, d of oak, and of the same date as the arcades. had originally a simple wagon-head form ide, with tie-beams having moulded supports der their ends extending down the walls on to bels, and timber arched framings between se supports all along the walls. In the course ime, as the old tie-beams decayed, three of m have been strapped and strengthened with n, and two more beams added to contribute strength which had departed from the old. e whole roof is now cased with plaster and itewash, and the whole of the timbers in the ts near to the walls having so decayed as to d support, the walls have been raised in an kward fashion, building in 4 ft. or 5 ft. of the er ends of all the rafters.

The mention of side arcades to the nave will ve indicated the fact that an aisle exists on h side. These aisles are of good width. e western part of the north aisle is of great iquity where, to a height of 8 ft. or 9 ft. in side wall and in the west wall following the m of a lean-to roof springing from that height, rubble masonry is of a rude description, ther agreeing with the early rubble-work of e tower nor the later rubble-work of other ts of the church. This ancient aisle-wall tains a narrow west window and three side ndows, all now walled up, and all more or less figured, so concealed that it is hard to assign date to them until the inside plaster shall ve been removed, for the inside is now wholly ncealed. At present they may be assigned to ne time between A.D. 1,000 and A.D. 1,200. e south aisle has a west window of Perpen-ular date, but with the exception of this and the earlier parts in the north aisle, both les are of the Decorated period. In this era north aisle was raised upon and the south le rebuilt. We may very well imagine that, the time of this work, some ancient Norman ades still remained, which were superseded l later by the Perpendicular arcades already scribed.

The nave and aisles open eastward by pointed hes of the same date as the nave arcades to chancel and to a north and south chantry. mediately in front of these eastern arches a oak screen extends quite across the church an unbroken series of eleven arches. The ole of the oak tracery of these arches is per-t, and the blank panels of the lower part of screen are all perfect; the screen doors to north chantry, filling one of the screen hes, remain; but the corresponding doors to chancel and south chantry are lost. So far, remains of the screen, though disfigured by ts of white paint, are very sound and strong, l but little mutilated; but it has lost the ole of the fan tracery, in its upper part, which formed the coving for the floor of the rood-loft, and with this all cornicing and brattishing has disappeared. The absence of these parts leaves exposed to view the rude top beam and open unwrought spandrel frames above the screen arches, which gives to an otherwise excellent work some appearance of rudeness, in exposing work intended to be put out of sight.

The western part of the south wall of the south chantry is of the same kind of rubble-work as the most ancient part of the north aisle of the nave, and no doubt of the same date. This fragment in the chantry is in almost ruinous condition. It adjoins to a later turret, which gave access to the south end of the rood-loft. There is some indication that the east window of this chantry, now blocked up, and occupied on the inside with sepulchral monuments of the eighteenth century, may prove to be of Decorated date. Otherwise the eastern portions of the church are of Perpendicular date, or rather of two Perpendicular dates. The chancel is lofty, and has an arch on each side opening to the chantry, the south arch, perhaps, a little the earlier, whilst the north arch is a little the handsomer. Just eastward of the north arch a very late opening of three four-centred lights without cusps forms a hagioscope, giving a view of the high altar from the north chantry; and similarly on the south side, where there is a handsome sedilia in the chancel, the back of the sedilia is perforated in two lights, to form a hagioscope from the south chantry. The chancel roof is without tie-beams, and is in arched form throughout, with oak panels (originally, now deal) between the arched ribs under each rafter. All the timber is now whitewashed over, as well as the deal panels. The east window is of three lights, large, and of a good form, but filled with uncusped tracery and all the tracery-work of the four-centred type, giving the window a very uninteresting appearance, not according with the otherwise dignified proportions and appearance of the chancel. I incline to think that the extreme east wall of the chancel, with a small portion at the sides, has been rebuilt soon after the Reformation. At the sides, close to the east end, there are two single-light windows, now blanked up, but which are of the same character as the east window.

The north chantry is wholly of the Perpendicular date, and in the condition of its roof and walls is the most dilapidated part of the building. It is lighted by a three-light north window, of good design, and it had an exactly similar window in the east end, now completely blocked up by a monument. It had originally a nearly flat leaded roof, but this, with its timber, having fallen to decay, a high-pitched tiled roof was added over the ancient timbers; this high-pitched roof is itself now in great dilapidation.

So much for history written in stone and wood. I may add to it briefly what connects itself to this history from other sources. In the reign of King Ethelbert, which began in 978, a Saxon Thane built a castle at Leeds, and we cannot doubt that he built, if he did not find here, a church suited to the requirements of the tenants and dependents of his estate. Although the mansion of the nobleman was ere long wasted, a church continued, for when, after William the Conqueror had granted the estates of the Saxon nobleman Lewin to his half-brother, Odo, Bishop of Bayeux, the Domesday survey was made in 1080, a church was found at Leeds. The indications of the now-existing building make it possible to believe that in the tower and north aisle may still remain some fragments of this church of the Domesday book. Four years after the Domesday survey, Bishop Odo was deprived of his estates by the Conqueror, shortly after which the barony in which the Leeds estate was comprised was granted to Robert de Crevequer. He at first fixed his castle at Chatham, but afterwards began to build a castle at Leeds. His grandson, Robert, completed Leeds Castle, which thenceforward became the head of the barony. He founded in 1119–20 a priory of Austin Canons at Leeds, a short distance from the parish church, and, including this parish church, he gave to the priory of Leeds the advowsons of all his churches, so Leeds Church became of the patronage of the priory. It is most likely that Leeds church was enhanced in its architecture by the barons who built the castle and founded the priory, and perhaps most likely that the tower itself belongs nearly to the time of the beginning of the priory. In the deed of confirmation to the priory of the gifts of Robert de Crevequer, by his son Daniel de Crevequer, he designates Leeds Church as the Church of St. Nicholas, which is its present dedication. Of subsequent work to the church whilst this family remained founders and patrons of the priory, the only remaining trace is the west door, with its holy-water stoup, belonging, as its Early English architecture bespeaks, to about the year 1240. In 1268-9, Robert de Crevequer exchanged his manor of Leeds for other possessions. Roger de Leybourne for only two years, and then William de Leybourne till 1274, held the Leeds estate. The last named then surrendered it to King Edward I. Thenceforward until the Reformation the sovereigns of England held the position of founders of the priory, which thus lost the fostering care of a powerful resident family. The castle and lands were immediately given as part of the dowery of Edward's queen Margaret, who appointed Lord Badlesmere castellan. Upon that Queen's death he obtained in 1307 the same office direct from Edward II., but having joined the Earl of Lancaster in rebellion, and being taken prisoner with that prince at the battle of Boroughbridge, in 1322, Lord Badlesmere was tried with others, and finally suffered death as a traitor at Blean, near Canterbury. Lord Badlesmere was possessed of great wealth and power, and the party to which he had attached himself affected a great interest in regard to the monks, so that we cannot doubt Leeds Priory and its subordinate Leeds Church to have benefited by his liberality. To the period of his second possession of Leeds Castle, 1307 to 1322, may with much probability be attributed the "Decorated" work, that is, the raising of the aisle walls, and the dignifying of those parts with two-light traceried windows, three of which still exist, though in a state of great decay, the shelly marble and Clunch stone used in them having yielded grievously to the weather. Of the country gentlemen who succeeded at different times as custodians of the castle we have nothing to say. Richard II., however, made the castle his residence on several occasions after it had been beautified and extended under the wardenship of the celebrated William of Wykeham, who had been nominated to the wardenship, with others, in 1359. It is not unlikely that the earlier Perpendicular works are attributable to benefactions from Richard II., who died in 1399; that is to say, the arcades of the nave, and the older parts of the chancel. Henry IV. held the castle for a short time, and then granted it to Archbishop Arundel, who held it till his death in 1413. If not to Richard II., at any rate to this prelate, these works, including the fine oak screen, must, I think, be attributed. Leeds Priory was dissolved in 1534. In 1560 Queen Elizabeth granted to the Archbishops of Canterbury the rights of the advowson in the parish church, with whom it has since remained. Although in 1551 the fee simple of Leeds Castle was again for the first time since 1274 granted to a private owner, the Reformation and suppression of the priory had separated the church from the castle estate. The two chantries had belonged to the priory, and passed to the grantees of the priory lands, who out of the ruins of the priory built a residence long known as Leeds Abbey. The monuments in the chantries commemorate members of the family of Meredith, settled at the abbey. By another change of fortune, this family having gone to decay, their mansion is pulled down, and the ownership of the chantries has become annexed to the castle again, thus renewing again a part of the dependency of the ancient priory.

GORDON M. HILLS.

THE FRENCH GALLERY, PALL MALL.

THE Winter Exhibition in Mr. Wallis's Gallery, which opened this week, is chiefly notable for the presence of Wilkie's picture of the Chelsea Pensioners reading the *Gazette* announcing the news of the Battle of Waterloo,—a picture which is said to have created, on its first exhibition, almost as much excitement as the despatch itself, the arrival of which it celebrates. A special barrier had to be placed before the picture in the Academy Exhibition to protect it from the crowd which pressed round it. This excitement was probably more patriotic than artistic. The work, though practically new to many, will require no barrier now to protect it. Yet it is a work of great interest and spirit, one of the very best which Wilkie produced after he had quitted the walk in art in which his natural genius lay. Every figure in the centre group is a separate study; each contributes in his own manner to the general interest centered on the

reader of the news,—the mounted soldier, the hungry guest who pauses with his fork in his hand to listen for the end of the sentence, the youth who shouts the news into the ear of the deaf old pensioner beside him. Perhaps the best and most characteristic figure is that of the soldier who leans out of a window on the right, screwing up his features in his effort to hear what is read. The figures of some of the military heroes are rather conventional and long-legged; but in the main there is a great earnestness of intention in the whole.

We cannot say there is much interest in the exhibition generally. The two large works by Max are sensational, and destitute of real feeling; that by Maignau, of the deposition of Boniface VIII., contains fine and vigorous drawing, but in general conception hardly rises above the book-illustration style. The best things are among the small works: the three little military scenes by Medard are full of nature and spirit; some small landscapes by Windmaier and others are very beautiful as far as they go, and Lanckow's "Evening after Rain," and "A lovely Spot," by Heffner, deserve notice. Mdme. Bisschop's "Time flies" is a group of figures conceived and painted in a very broad, powerful style. There are, of course, other things that are worth attention, but, as a whole, the exhibition is very deficient in works of a high class of interest.

THE OPENING CONVERSAZIONE OF THE ARCHITECTURAL ASSOCIATION.

The opening *conversazione* of this Association for Session 1877–78, was held on Friday, the 26th inst., at 9, Conduit-street, the company being received by the President, Mr. Bowes A. Paice, and the hon. secretaries, Messrs. E. G. Hayes and R. C. Page. The walls of the two galleries on the ground floor were hung with a number of water-colour drawings, amongst which we noticed Weston Hall, Staffordshire (exterior and interior), by Mr. Aston Webb; an old house at Rye, by Mr. R. Phené Spiers; and, by the same gentleman, views of Wells Cathedral, Tintern Abbey, Bishop's Palace, Wells, Chepstow Castle, and Winchelsea Church Porch. Mr. W. Hilton Nash exhibited an interesting water-colour drawing of the courtyard of the Oxford Arms Inn, Warwick-lane, and Mr. R. S. Cox some sketches of Brazilian scenery, by Frank E. Cox. "Queen Anne" was represented by drawings of a terrace of houses erected at South Kensington, Mr. T. W. Cutler, architect; of Clifford-chambers, New Bond-street (T. H. Watson & F. H. Collins, architects); and of some other buildings. Mr. James Horsburgh lent an interesting series of photographs of Portugese buildings; Mr. H. Walter Lonsdale some designs for stained glass; and the Ladies' Needlework Society (of which H.R.H. the Princess Louise is president) some specimens of decorative needlework. A series of water-colour drawings by Mr. Philip J. Marvin, Travelling Student of the Royal Academy, 1875, exhibited a very interesting collection of Italian campaniles. Some vigorous pen-and-ink drawings, by the late F. C. Deshon, were also shown. The interest taken in Egyptian obelisks at the present time was reflected in some of the exhibits, notably in a *facsimile* model of Cleopatra's Needle, one twenty-fourth full-size, lent by Mr. Waynman Dixon. An original drawing in colour by the late Owen Jones was hung on the walls. It bore the following explanatory inscription:—"Obelisk vulgarly called 'Cleopatra's Needle,' originally erected by the King Mœris before the Temple of the Sun at Heliopolis, and proposed to be erected as a trophy of the Egyptian victories of the immortal Nelson." The drawing showed a number of sphinxes at the base of the obelisk, disposed in a somewhat different manner to that in which the lions are arranged in the existing Nelson monument. This drawing formed one of an interesting series which have been presented to the Association by Miss Catherine Jones, sister of Mr. Owen Jones. The smaller gallery was principally devoted to what may be called "trade exhibits." Messrs. Trollope & Son lent some Justiniani ware, a vase in Mexican onyx, paperhangings, wall tapestry, and some Italian and other tilework. Messrs. Jeffrey & Co. exhibited some paperhangings, Messrs. Gillow & Co. some cabinets; while Messrs. M. J. C. Buckley & Co., of Bruges, sent some specimens of woven stuffs and art needlework "for church and house." By the courtesy of the Council of the Royal Institute of British Architects, the meeting-room and library of the Institute were placed at the disposal of the Association for the evening. The Institute meeting-room was principally devoted to the exhibition of the designs submitted by the members in competition for the various prizes offered by or through the Association Refreshments were served, or rather scrambled for, in the Museum of Building Appliances, kindly lent for the occasion by Mr. Boyd.

The president (Mr. Paice) took the chair soon after nine o'clock, and proceeded to distribute the prizes, which, in accordance with the judges' reports, were awarded as follows,—books on architecture, decorative, or constructive, being given to the value of the sums named:—

First Prize (5*l.*) offered by the Architectural Union Company for the best series of measured drawings of existing buildings in England, or of portions of buildings, erected previously to the eighteenth century, awarded to Mr. J. Edgar Hatch, author of drawings bearing the motto:—"'Tis better to have tried and lost, than never to have tried at all." Second Prize (2*l.* 10*s.*) given by the Association for the second best series, awarded to Mr. M. J. Lansdell, motto "Excelsior."

First Prize (5*l.* 5*s.*) offered from the Prize Fund of the Association for the best design for a county court, suitable to a provincial town: awarded to Mr. G. A. Waters (motto, "Haste"); Mr. H. W. Barrow's design (motto, "Justice") accorded "Honourable Mention."

Class of Design: prize of 3*l.* 3*s.* for the best series of sketches contributed in the class during the past session: awarded to Mr. H. M. Robinson. Second prize of 2*l.* 2*s.* for the second best series: awarded to Mr. A. W. Hennings. "Honourable mention" accorded to Mr. J. W. Fisher.

Elementary Class of Design: prize of 2*l.* 2*s.* for the best series of studies submitted during the session: awarded to Mr. F. R. Farrow. Second prize, 1*l.* 1*s.*, awarded to Mr. A. Causton. "Honourable mention" made of Mr. Eden Smith, of Birmingham.

Colour Decoration Class: prize of 3*l.* 3*s.* for the best series of sketches submitted during the session: awarded to Mr. E. E. Deane.

Class of Construction and Practice: prize of 2*l.* 12*s.* 6*d.* for the best series of papers submitted at the meetings of the class, and second prize of 1*l.* 11*s.* 6*d.*: equally divided amongst Messrs. H. H. McConnell, of Walsall, R. Henry, and F. C. Hughes, of Birmingham (considered by the judges to be equal in merit). "Honourable mention" made of the papers of Messrs. H. Griffin and A. S. Gover.

Mr. H. H. Stannus next, at the request of the president, asked the Association to accept, at the hands of Miss Catherine Jones, the small collection of drawings (already referred to) of the late Owen Jones. Miss Jones wished it to be understood that the drawings in question were not to be regarded as specimens of the best of her brother's productions, but rather in the light of suggestions for consideration and study. Mr. Stannus remarked that Mr. Owen Jones was a student throughout the whole of his career, and commended his example to the attention of the members of the Association. In conclusion, he observed that the Association was indebted to Mr. Bonomi, of Sir John Soane's Museum, for having suggested to Miss Jones that a small selection of her brother's drawings would find a useful place in one of the portfolios of the Association.

The President then proceeded to deliver a short address, in which, after welcoming the company and recapitulating in detail the work of the Association for the past session, he said:—I have ventured to bring before those whom I have the honour of addressing some of the obvious advantages that this society offers to students for obtaining wider experience than can be possibly acquired in any single office; and the good which must eventually arise from habits of friendly intercourse and honourable rivalry with those who are here joined together for a common purpose. And now that the qualifications for an architect are becoming more generally known and recognised, I doubt not but that nondescripts of every sort, without possessing a single necessary requirement, will be unable to impose themselves as architects upon their opulent but misinformed employers; men who combine other means of livelihood to those which are generally assumed to be included in a general practice. Let me not be misunderstood: I am simply referring to those who have had neither an ordinary education nor studied the elementary principles of the art which they have the audacity to profess to follow. The past session has been, I am pleased to tell you, a most successful one; and I am sure that my brother members of this large society, numbering as it does some 700 members, will agree with me in saying that the success was very greatly due to the manner in which the president, Mr. H. C. Boyes, presided over the meetings, and also to the exertions of our honorary secretaries, Mr. Hayes and Mr. Aston Webb. It is not within my province this evening to dwell upon the numerous questions at present occupying the minds of the profession; but perhaps it may be allowed me to say just a word on the subject of restoration, one of ve great interest to all, and which is now receivi a great deal of attention, and without enteri into the merits and demerits of restoration venture to think that the recent attacks sho have been made, not on duly-qualified architec but on those who undertake such work with any previous knowledge of the subject. I not for one moment doubt but that there is a single architect in this room to-night would dare destroy a page in the history of country's art by the destruction or defacem of any portion, not only of *ancient* work, also work of whatever style or period it mi happen to be, provided it were good; such a of Vandalism are not done by those who earnest in their labours, and if there be work to be undertaken by careful and lov hands, surely it is the restoration, preservat or renovation, where absolutely necessary, our cathedrals and our churches, whose hallo walls have been handed down to us from gen tion to generation, as they were left by pi founders of old, every stone demanding respect and veneration. Time will not per me to speak of various other branches of much as I should like to do so, as there many subjects deserving of a few remarks, for instance, glasswork, art pottery, tile-pa ing, art furniture, &c.; but I hope I may allowed just to mention more in particula subject of peculiar interest to the la and one which is receiving considerable att tion both from architects and painters,—I all to the revival of decorative needlework secular purposes. No doubt a great imp has been given to this branch of art in co quence of the royal family taking such active part in furthering its advancem H.R.H. the Princess Christian being presi of the Royal School of Art Needlework, H.R.H. the Princess Louise, president of Ladies' Needlework Society, in Sloane-street, I believe that H.R.H. the Princess Beatrice is taking an active part in the revival of a sc for tapestry at Windsor. If any of my lady hea have not already paid a visit to the school at S Kensington, or to the unpretending estab ment in Sloane-street, I would venture to rec mend them to do so at once, as they deserving the support of all those interest the advancement of the art, an advancem which will be considerably increased, not by the classes now being organised at the R School for the instruction of ladies in every of stitch in crewel, silk, and gold, but also lectures that are to be delivered on composition, and colour. But whilst mentio these establishments instituted for the pose of re-introducing art-needlework domestic purposes, I should, indeed, be with ing honour where honour is due were I also to mention two other establishm also presided over by ladies, which done and are doing, in a simple, unostentat manner, a similar work for the advancemen the same branch of art, but for ecclesiast purposes. I allude to the Sisterhoods of Mary's, Wantage, and St. Margaret's, East G stead. The business of a *conversazione* is and the making and renewing of friendsh One word, therefore, and I have done. Wh noble profession is that of architecture! have the privilege of following in the foots of those who have left us the glorious cathed of Durham and Lincoln, of Canterbury, of S bury, Winchester, and Wells; the Abbey Westminster and the monastic ruins of Y shire; our noble parish churches throughout length and breadth of the land; the castle Carnarvon, Conway, Warwick, and others numerous to mention; the colleges of Ox and Cambridge, and the stately homes mansions; it is, indeed, I say, an honour t following in the steps where the designer these have trod. Nor are we at a loss to fin recent times men, also, who command our miration and respect. Have we not had Charles Barry and Professor Cockerell, who no more, but will for ever be remembered as of the brightest ornaments of the age, in profession which we are about to follow? taste bids me stop here; but I doubt not when the history of our art during the n teenth century comes to be written, many honoured name will be handed down to poste "Design with beauty, build in truth." is our motto, and, to quote the words of the Mr. Elmes, "may these peaceful laurels, enchanting, fragrant, and ever-blooming flo

of painting, of sculpture, and of architecture, of music, of literature, and of poetry, entwine around our country's brows, and make our times the golden age of England."

Professor Kerr, responding to the invitation of the chairman, said: It is now no less than thirty years that I have been attending the meetings of this society from time to time. I have seen a good many presidents in the chair, inaugurating a good many sessions. I have had occasion, frequently, to congratulate the society upon the choice of its president, and to express my confidence in his guidance of the business of the year, and I am sure I may on this occasion congratulate the Association upon the choice they have made of Mr. Paice as their president, and express my conviction that he will do as his predecessors have done, namely, leave the Association a little better than he found it. There is one characteristic about this society which, to a man getting into years, is very charming, and that is that the Architectural Association is always young,—it never grows old,—never grows any older. Every year there is an accession of fresh young faces and fresh young hearts coming forward in the pursuit of the business of their lives; and if I add that these faces, being the faces of young men, bring with them a corresponding number of fresh young faces of young ladies, it will be admitted that a meeting of this kind is extremely refreshing. I think there is no prettier sight than to see a fair young woman, of perhaps sixteen years of age, opening her eyes very wide indeed in contemplation of some of these drawings, and wondering whatever it can all mean,—a very significant illustration, by the way, of public opinion generally with regard to matters architectural. You have given us, sir, in a very few words, and very expressively, your view of the basis upon which this Association was originally founded. You have said truly that it was established for educational purposes, — for purposes of study, at all events, — but you might have expressed yourself a little more strongly, for the reason of the foundation of this society was really this: that the young men of the profession found that they had provided for them by their seniors and by the authorities of the profession absolutely no means of education whatever. Now there are in Europe at the present day three systems of architectural education, the French, the German, and the English. The French is chiefly characterised as being that system under which a young man is most carefully and liberally taught a particular style of draughtsmanship, followed by and being part and parcel of a particular style of design. By means of this training the student is enabled at the close of his studentship to enter life a thorough designer in a certain class of design; but it is said, and said with some truth,—no doubt with considerable truth,—that this particular system of education fails in respect of certain other considerations than mere artistic design, which it is a pity that any system of education should fail to secure. The Germans, on the other hand, educate their young architects as they educate all their young men, upon a highly-elaborated scientific system, a system not necessarily a system of science, but a systematic "drilling in" of the subject to be taught. The Germans drill everybody as they drill their soldiers, very liberally indeed, and they produce in every other department the same perfection of mechanical execution which they exhibit in that particular department to which I happen accidentally to have alluded. The German system of architectural education, then, consists in a thorough scheme of lectures, lessons, and exercises, whereby in the end the young student has acquired all the knowledge that they can cram into his head. The defect of the German system is that it fails to exhibit that imagination which, to the Frenchman, is knowledge. And now I come to the English system, which is entirely different from the other two. If a man wishes to make his son a carpenter, he sends him into a carpenter's workshop, where he spends so many years in acquiring, from the seniors of his trade, the mode of performing the operations of that trade. Now, in the same way, if a man desires to make his son an architect, he sends him into an architect's "shop," where all he can expect is to acquire the mode of conducting the architectural "trade." That is a vulgar way of putting it, but it is plain language. Suppose we suggest the possibility of fusing these systems? Education is very much talked of now-a-days, and, be sure of this,—that before long it will be discovered that the professions of England are *under*-educated, and there will be a cry for superior education in other professions as well as our own. Now, the three European systems I have mentioned are all carried out in London, in different degrees. My friend Mr. Phené Spiers, the architectural master at the Royal Academy, has under him a class of students who are taught after the French mode. I do not say necessarily taught the French style of design,—that may or may not be,—but taught in the French manner, something after the *atelier* system. Mr. Spiers is thus enabled to turn out students thoroughly well grounded in that draughtsmanship and that design which is part and parcel of draughtsmanship, which students find so valuable for the practice of their art. Now, with regard to the German system, of education, it is this Association which, in its humble and energetic way, attempts to do what the Germans do. It has its classes, and in these classes the senior members are constituted the professors and the junior members are the pupils. I have no doubt whatever that, as far as it is possible to go, these classes are very successful, and do very good work; and that any young man who devotes his spare time to this Association will find at the close of his career in it that he has been to a very great extent educated for his profession by it. Now the English system of education is that which is patronised by the Royal Institute of British Architects. The Institute is not an educational institution; it is an association or club—a trade union, the *Times* calls it, founded for the purpose of enabling architects to back each other up, by fair means or foul, against the public. That may or may not be the way to put it, but we prefer to put it thus: The Royal Institute of British Architects has never fairly tackled the subject of architectural education. But next year there is to be a change. Those who intend to become Associates of the Institute, and who are conscious of not being worthy of it, had better apply at once; for in the course of a year or so they will not be able to join the Institute without going through the shocking ordeal of an examination. On the other hand, those who are desirous of doing credit to themselves, to this Association, and to the Institute, had better wait a little, and then enter the portals of the Institute as no one has ever entered them before,—with flying colours, claiming admission as a right. I have never sympathised with the cry that the Institute is not an educational body, and I am perfectly satisfied in my own mind that before long it must become an educational body, because, unless it takes up the question of education, it will presently be left without any question to take up at all. A great deal has been said about combining this Association with the Institute, but it has been discovered on both sides that a union of the nature suggested is absolutely impossible, and would be highly injudicious. I think the time will come when this Association and the Institute will be so far united as to co-operate in carrying out a system of professional education in a thoroughly academical manner, and I hope to see the day when the Institute, instead of disclaiming its educational responsibilities, shall have its lecturers, if not its professors, for whom this Association shall furnish classes of students, so that the new system, under which Associates are to be examined before admission, may be creditably carried on. In conclusion, the Professor expressed the hope that the coming year would be a year of increased prosperity and usefulness for the Association.

Mr. William White, F.S.A., said the only remarks that suggested themselves to him were on the subject of restoration, and these he should withhold, as he had arranged to read a paper before the Association on the subject during the session.

Mr. T. Roger Smith remarked upon the arrangements for conducting the various classes of the Association, and said that the large number of gentlemen engaged in that work could not fail to acquire beneficial business training in the course of performing their honorary duties.

Mr. E. C. Robins having made a few remarks, the formal part of the business of the evening was brought to a close.

Water Supply for Evesham.—The Town Council of Evesham have at length decided to adopt Messrs. Gotto & Beesley's scheme of water supply. The cost will be about 8,000*l.*, and the water will be brought from Broadway by gravitation.

ARCHAIC GREEK ART.

Mr. C. T. Newton, C.B., delivered the second and concluding lecture on "Archaic Greek Art," last Saturday evening, the 27th ult., at the College for Men and Women, Queen's-square, Bloomsbury, when there was a large attendance. A report of the first lecture has already appeared in the *Builder*.

Mr. Newton said he would now trace the art upwards from the period he brought it down to on the last occasion. If they could conceive of Greek art as a stream flowing onwards, deepening and widening as the several tribes and races united themselves with the main stream, then they must conceive that upward course which he was about to follow that night as something very different from the lower, as different as the Nile above the cataracts, passing from civilisation to barbarism, losing the well-known landmarks. In his last lecture he dealt with the various instruments of evidence valuable to the historian in regard to Greek art, and how it was developed, but as one travelled the downward course there was nothing to help the seeker, not even coins; and after they got beyond the Olympiads then began that weary journey which he could only compare to the wanderings of Livingstone or to quicksands of an uncertain chronology. Upon turning to Homer he (Mr. Newton) asked what he knew of the art of his time, and beyond all question a great deal of most curious information, read by their present archæological knowledge, was to be found in the poems of Homer relating to the art of his period. He described not only the work of foreign artificers from Tyre and Sidon, but something beyond the ordinary experience of mankind,—the wonderful working of that shield of Achilles, beaten out in metal. He also described other works in gold, the workers of which required a good deal of skill in the manufacture, but these matters were not so fully dwelt upon as the shield of Achilles, a subject which was quite sufficient for a lecture in itself. The main idea of the subject seemed to be a sort of microcosm, a picture of nature arranged in concentric circles. Outside of all was the great ocean flowing round the earth, the boundary of all things, which was the idea of the Greeks then of geography. The concentric circles represented the ordinary instances of human life—battles, pastoral scenes, peace and war, and incidents within cities. This work was beaten out, similar to what the French called *repoussé* work, of several metals, which were doubtless nailed on to the shield itself. In the "Odyssey," too, he described necklaces, earrings, and all manner of personal ornaments of women. The persons who made these things were almost always foreign artificers of the Semitic race,—men from Tyre and Sidon and from Cyprus, and though it was true that Greek artificers working in gold were mentioned, the impression that the poet conveyed was that they were inferior as craftsmen to others. The next question that presented itself, was, were there any extant works of art which they could refer to as of the same class as Homer, with a poet's licence, described regarding this shield of Achilles. He (Mr. Newton) said there were. In the first place, this concentric arrangement of circles, with the ocean round the various subjects within it, was, as it were, a period in certain bronze shields, which had been found in some tombs at Etruria, the final boundary being round as the circle of a wave pattern, which meant the ocean. They were not, however, so elaborate as the description given by Homer. The original of the specimen before them was in the Vatican, and was found in Etruria; it was a plate, silver gilt, and all round it were rows of subjects—there was a row of winged monsters, and in the middle was the representation of a lion devouring a bull and a vulture hovering over them. One of these plates was found at Rhodes; it was not Grecian, and the strong presumption was that it was the work of the Semitic race, and came from Tyre or Sidon, and might be the work of the very artists whom Solomon employed, for they were the greatest artificers of the time. His (the lecturer's) notion was that the source Homer got his Achilles' shield from was the treasury-houses of the kings in his time where he frequented. About this period everything in metal was hammered together with studs, and that was one of the characteristics of Greek art, and Homer referred to this constantly. He had before him a representation of one of the great lion weights, and upon it there was a Semitic

inscription. It was quite certain the Greeks had nothing to do with it, and that it was probably the work of a Phœnician artist. There was one great object which in a remarkable manner connected Greece and Italy with Phœnicia, and that was the representation of the shell before them. This shell was found at Etruria, while a similar one was found at Bethlehem, and fragments of similar shells were discovered at Nimroud and Camirus. Naturalists, however, told them that this kind of shell was only found in the Red Sea, or in the Mediterranean Ocean. This shell was covered with the pattern found upon it, and the people who brought it to Western Italy or Greece must have been the Phœnicians. Some people had observed that Homer never spoke of statues, images, or the gods at all, but referred to what they would rather call an idol than a statue,—the representation of a god or goddess worshipped as sacred, and placed either in the temple or within some sacred inclosure. Homer was silent as to the form of these early idols, but the Greeks told them that these were like pillars, with a head and two arms, the feet being close together. The body was not modelled at all, and there was no distinction between it and the lower limbs. Beyond that period these idols get ruder in construction. Many of these Dr. Schliemann found at Mycenæ, and he was pleased to designate them "ox-headed Juno," but he (Mr. Newton) did not agree with him, and maintained that they were rude symbols of the uplifted arms of these idols. Of course they were hungering and thirsting after dates, but he confessed he could not supply them. With regard to the bowls found at Nimroud, they might belong to about the year 606 B.C.; but Sir Henry Rawlinson and Dr. Birch were inclined to put them earlier. The earrings and the plates from Italy and Cyprus might possibly range from 600 to 650 B.C. The next question that presented itself was as to the date of Homer. Mr. Gladstone was of the opinion that he flourished about three generations after the Trojan war, but these quicksands of chronology were very uncertain. Herodotus thought Homer lived about 400 years after his time, and that would bring them to about 850 B.C. If that was the case they must suppose that his active imagination anticipated the onward progress of art, and described things far in advance of the art of his time.

Of course it was not unnatural that he (the lecturer) should say something of what he might venture to call the greatest discovery of their time—these antiquities at Mycenæ,—but there was a difficulty in the way. No person had been allowed to exhibit any drawings or photographs of the Mycenæ antiquities since Dr. Schliemann was in this country. His book would be published very shortly, and it had been thought desirable that his discoveries should not be anticipated in an accidental way by partial exhibitions; therefore, he (Mr. Newton), was not in a position to show them any of the antiquities that night, but he could point out certain things which would have a bearing on many facts on record. They were well aware that Mycenæ was the seat of a succession of semi-mythical dynasties. Unlike other Greek legends, the story of the house of Atreus was to them of peculiar and passing interest, not only because it was ennobled in song by the immortal tragedians, and was a favourite theme in Greek art, but because there still existed in Mycenæ remains which no person acquainted with Greek history could behold without being tempted to say that they were the remains of an heroic age. They consisted of a great gateway entering into the town, surmounted by two lions, with a column between them, a representation of which was now before them. In the sloping below the citadel were the sepulchral treasures and other scattered remains which were found there. They had been enabled to give a complete restoration of the ornaments of the entrance of the great treasury of Atreus, which had been restored by Mr. Donaldson. These lions did not remind them of anything in Greek art, but stood alone as monuments of an heroic age; therefore, ever since scholars visited Mycenæ, it had been assumed generally that these were the actual remains of the gigantic works built by the earlier kings of Mycenæ, and that the walls of the citadel were the very Cyclopean walls which the tragedians, writing in the time of Pericles, spoke of as being old in their time, Pindar mentioning them as being of "remote antiquity." Considering the magnitude of the work, the enormous size of the stone, and the extent of the fortifications, the presumption was that it could only have been executed in a period when there was a powerful monarch probably employing a good deal of slave labour. There always was a presumption that Mycenæ contained other remains of an heroic age, which Dr. Schliemann, who had wonderful tact in discovering treasures, had proved by finding out the five tombs filled with gold, worth about 4,000*l*. The strangeness of the art of the things which he found staggered archæologists, and there had not been wanting men who had stated that Dr. Schliemann had fabricated the tombs; while at Athens some persons stated that, to use an American expression, he had "salted" the tombs, which would be rather an expensive experiment, considering the worth of the gold which was found. All these doubts, however, had happily been entirely dispensed with, the objects discovered being perfectly genuine. At first he (Mr. Newton) was struck by the exceeding strangeness of the art, but the links of archæology had fitted in with great success. Pottery was one of the most valuable guides in tracing the history of art, and the pottery of Mycenæ was in this instance particularly useful. At Mycenæ there were two kinds of pottery found, one of which he would call the geometrical pattern, which they were familiar with elsewhere, and there was the floral pottery. The site of Mycenæ was covered with both sorts of pottery. In the specimens before them they had the Greek artists trying to reproduce on clay what they saw in nature, the fragments of the pottery being found in the earth immediately about the tombs. The cuttle-fish constantly recurred in the ornaments in gold found at Mycenæ, and it constantly recurred in vessels from Rhodes. In the British Museum there were a number of vases exhibited which were brought from Rhodes by Mr. Ruskin, and they all had a tendency to flowing lines. With respect to the date of these, it was not known. Dr. Schliemann's theory of the discoveries had an important bearing on this Greek art. He supposed that he had found the actual tombs of Agamemnon, Cassandra, and all the persons murdered with him and buried in the tombs, which was a startling proposition.

The publication of Dr. Schliemann's book would bring before them a number of new and suggestive facts. At the period of the death of Agamemnon, Egypt and Assyria were great and thoroughly matured empires, and perfectly civilised, with an art with fine characteristics and perfectly developed, already showing signs of decay, as well as were the two great empires of Egypt and Assyria. The phenomenon that it presented was that as soon as Greek civilisation began to rise, the stars in this ancient civilisation faded slowly in the sky, giving place to this new, strong, and vigorous luminary, destined in future time so entirely to eclipse them, that men had a difficulty in realising the length of time these great empires lasted and the wonderful civilisation to which they attained before Greek civilisation had begun. In conclusion Mr. Newton said, that at some future time he would lecture on Archaic Greek art of a later transition.

MONUMENT OF BISHOP SCHERENBERG AT WURZBURG.

In our account of this monument last week we omitted to mention one rather remarkable circumstance connected with it; it is that the inscription is in Roman lettering, and not in "black letter." This is the earliest example we have noticed of an inscription on a German monument in Roman characters. It runs as follows:—

HIC : IN : SPE : BEATI : RESVRECTIONIS
REQVIESCIT : QVOD : MORTALIS : EST
RODOLPHI : VON : SCHERENBERG
HERBIPOLIENSIS : EPISCOPI : D : D
VIXIT : PER : ANNOS : LXXXVII
OBIIT : MCCCCLXXXXV : K : I : P.

There are two other small inscriptions, but these are both in German black-letter characters.

Wellingborough Grammar School Competition.—Messrs. Bonner & Mills wrote last week to say our statement that Mr. Speechly's design was one of the three selected by the governors was erroneous. Mr. Speechly now sends us evidence that our first statement was correct. Messrs. Bonner & Mills should be more careful.

THE NEW VIENNA EXCHANGE.

For the last quarter of a century the Vienna Exchange has been on the move, in fact has, up to the present time, been living in apartments having had to be satisfied with such scanty accommodation, at exorbitant rents, as is generally the lot of lodgers to receive as an equivalent for their money. Now, at last, after its period of hardships, it has a roof which it may call its own. It has, however, something more than a roof; for the great building, the subject of our illustration, situate in the Schottenring of Vienna, is a structure which attracts the eye from afar. The new Exchange, erected after the designs of the architect, Th. Ritter von Hansen, forms a completely isolated square 298 ft. 6 in. long and 325 ft. deep. Its area, consequently, is about 97,000 square feet, and nearly as large as that of the Imperial Opera-house (about 120,000 square feet). The cost of the latter amounted to six million florins (600,000*l*.); that of the new Exchange is about five millions (500,000*l*.), which amount was raised on preference stock in Vienna financial circles. Building operations were commenced in 1869, the work occupying six years and a half.

In the ground-plan the great Exchange room occupies nearly the principal space, with porches and vestibules in the fronts, flanked by two wings, each of which is joined to the great room. The projecting portal of five arcades with flyer-stairs, fronting the Ringstrasse, which rises in two stories of columns, and is surmounted by friezes adorned with bas-reliefs and attic balustrade, contains an open loggia on the first floor, and forms the principal entrance, pointing out the site of the great room and its two side aisles. The connecting wings on the right and left, somewhat retreating and kept lower, intimate the presence of four small courts (two on each side), as well as the connecting wing between the great hall and the side wings. The façades of the principal front and at the back exhibit the same architectural features, but the latter is without the decoration of the columns and the open loggia. Both portals are executed in greyish white Karst marble. The free-standing columns of the façade and those of the porch and the vestibule are of reddish white Trent marble, the borders, mouldings, and balustrades of the doors and windows of greyish-white limestone. The panellings of the outer walls are lined with red terra-cotta friezes, which impart to the building a glowing and warm tone. The attics of the façades are to be adorned with two similar colossal groups,—Neptune, with trident, in a *quadriga* drawn by sea-horses,—after the models of the sculptor Pilz, and with statues on the pedestals of the flyers.

On ascending the latter, and crossing the porch and the imposing vestibule, the great hall is immediately reached, round which are grouped in the side wings the numerous offices of the Exchange committee, the local and State telegraph, the brokers' room, the offices of the imperial exchange commissary, the police, the messengers' rooms, dressing-rooms, closets, &c. The *entresol* and the first-floor contain the offices of the bankers. In the first story, nearest the portal, are several large rooms, of which the one next to the loggia serves as the casino of the Exchange. In the lower story, besides numerous depôts, the warming and ventilating channels, &c., are located, to the right the restaurant, and to the left the corn and flour exchange.

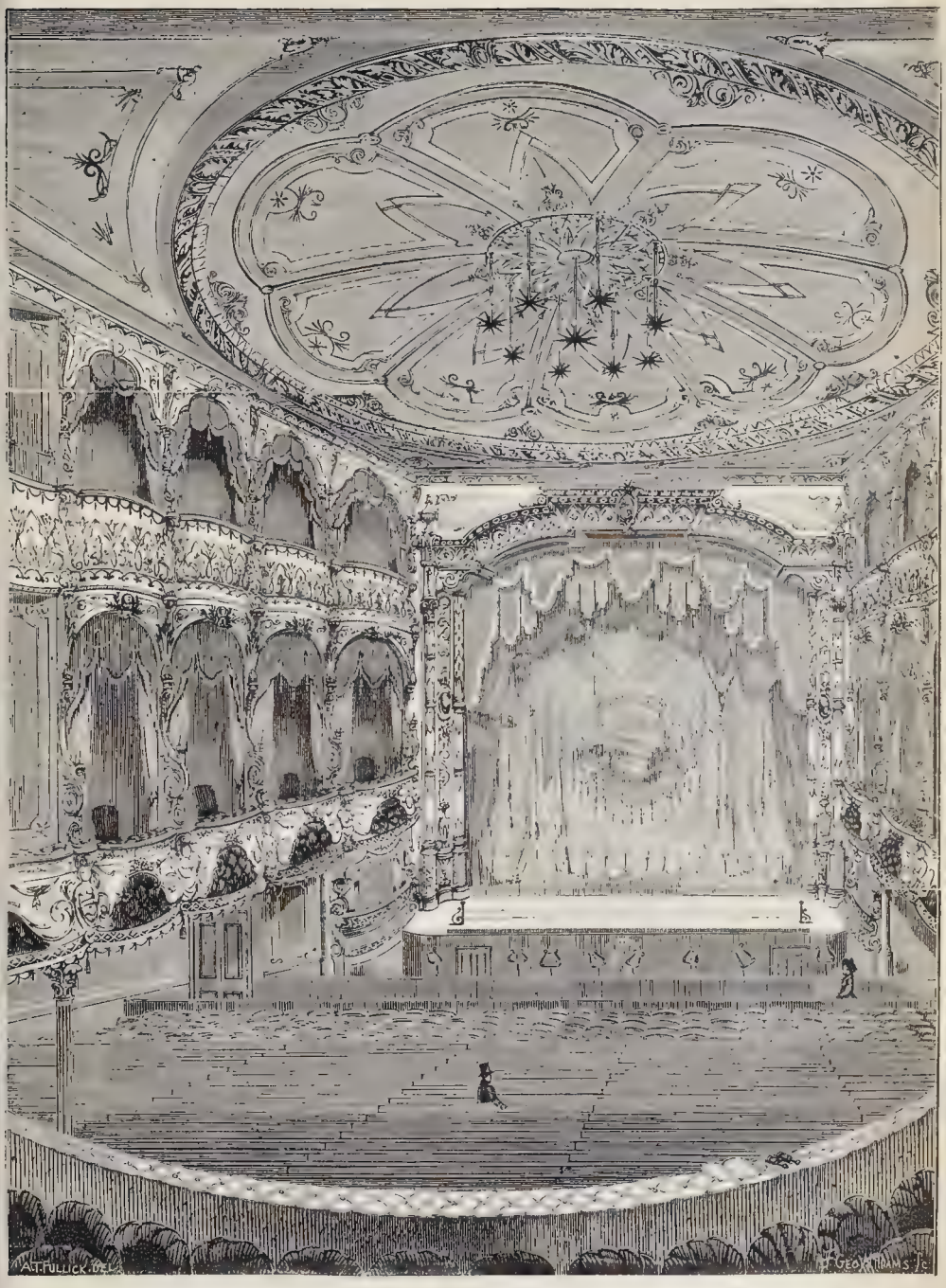
The rooms of the lower story receive their light partly from the courts, partly through windows in the side façades, below the windows of the ground floor. The warming is effected by steam, hot air, and *calorifères*. The ventilation has been designed by Professor Dr. Böhm, whose system has already been successfully adopted in the Imperial Opera-house. The ventilators for supplying fresh air and expelling the vitiated air are worked by a steam-engine of 16-horse power. Two staircases, in front of which are covered approaches, lead to the first story; that towards the Ringstrasse offers in its purely classic forms an especially handsome perspective, and presents interesting solutions of constructive difficulties.

LIAS LIME: PAINT.

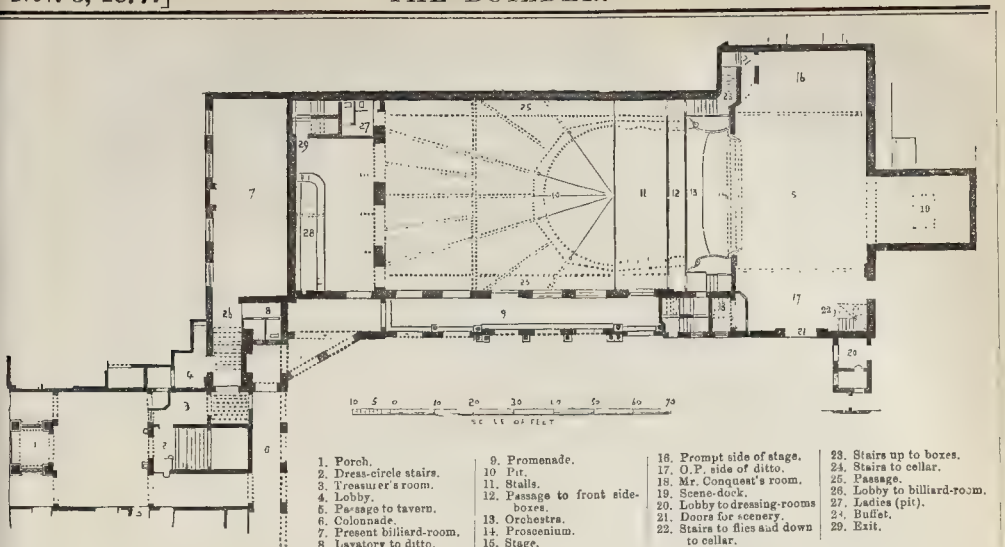
Sir,—Can any of your readers explain how to prevent walls stuccoed with lias lime being discoloured by vegetation, and also why after having been painted with four coats of best lead and oil paint the walls again become discoloured? Also, how to prevent paint from blistering on woodwork by exposure to the sun? BUILDER.



THE NEW EXCHANGE, VIENNA.—Herr Th Ritter von Hansen, Architect.



THE NEW GRECIAN THEATRE CITY-ROAD.—MR. ROBINSON, ARCHITECT.



1. Porch.
2. Dress-circle stairs.
3. Treasurer's room.
4. Lobby.
5. Passage to tavern.
6. Colonnade.
7. Present billiard-room.
8. Lavatory to ditto.
9. Promenade.
10. Pit.
11. Stalls.
12. Passage to front side-boxes.
13. Orchestra.
14. Proscenium.
15. Stage.
16. Prompt side of stage.
17. O.P. side of ditto.
18. Mr. Conquest's room.
19. Scene-dock.
20. Lobby to dressing-rooms
21. Doors for scenery.
22. Stairs to flies and down to cellar.
23. Stairs up to boxes.
24. Stairs to cellar.
25. Passage.
26. Lobby to billiard-room.
27. Ladies (pit).
28. Buffet.
29. Exit.

THE NEW GRECIAN THEATRE, CITY-ROAD.—*Plan.*

THE NEW GRECIAN THEATRE, CITY-ROAD.

To the Eagle Tavern, with its music and dancing, and "Bravo, Rous!" was attached in 1841 a capacious theatre, with all accessories necessary for performances, and we can remember seeing in it the great tragi-comic actor Robson, and hearing a strange story of his parentage. Afterwards came in the late Mr. Benjamin Conquest, who enlarged and improved the theatre, and then again re-constructed and enlarged it. This was in 1858. Here his son, Mr. George Conquest, who succeeded him, has drawn large crowds,—too large, indeed, at Christmas time to be accommodated within the old walls. So now a new theatre has been built to hold, when closely packed, over 4,000 persons, and of this we give a view, looking towards the stage, and a plan. Our view, we are bound to say, does not convey an idea of the extent of the structure; it shows what may be called the dress-part of the house, leaving out of sight the deep dress-circle and huge gallery, which extend far away to the back. The site chosen was the spacious dancing-hall. This building stands at right angles with the old theatre. Entrances to the pit, boxes, stalls, and dress-circle are given from Shepherdess-walk, and visitors will be able to reach the various parts of the theatre without crossing the grounds, as was the case in visiting the old house.

To obtain headway for the raking gallery, four of the principals have had to be greatly raised; the last one about 20 ft. It is claimed, and we believe with truth, that from every seat in this gallery a good view of the stage is obtained; and an idea of its magnitude may be formed when it is stated that it will hold 1,600 persons. The ceiling, sides, and back are match-boarded, stained, and varnished. This gallery is approached by a stone staircase, 8 ft. wide. There are three exits independently of this, all constructed of fire-resisting material. On this level are four private boxes at each side.

The dress-circle is approached by a flight of stone steps, 10 ft. wide. Besides this, there are three extra exits, which can be used in case of need. At the back of this dress-circle is the saloon. The ceilings and walls on this level also are match-boarded, stained, and varnished. This match-boarding, indeed, is used all over the building where it can be substituted for plastering. This part of the house will accommodate about 800 persons. The pit will hold 1,700 persons, and the stalls, in addition, will accommodate 200.

The decoration to the fronts of the boxes is in raised carton-pierre, painted white and gold, picked out in pink and blue. Blue satin is introduced into the dress-circle front, and, like the proscenium, is in a style which will doubtless be deemed handsome by the ordinary frequenters of the house. A depth, including the scene dock, of over 60 ft., is available on the stage for spectacular displays.

Mr. J. T. Robinson, of Bloomsbury-square, is the architect. The work has been executed by Mr. John Garrud, of Spitalfields; the decorations were carried out by Messrs. Pashley, Newton, & Young, of Red Lion-square; and Mr. J. H. Watson was clerk of the works.

The New Grecian was opened to the public on Monday night last, October 29th, with a new drama, called "Bound to Succeed." For the sake of the enterprising, and, in his way, very clever proprietor, we trust this may prove prophetic.

"ROBIN HOOD."

On the 19th ultimo Mr. J. R. Planché, Somerset Herald, delivered a lecture entitled "A Ramble with Robin Hood," at the Vestry Hall, King's-road, in connexion with the Chelsea Literary and Scientific Institution.

Mr. Planché, in introducing his subject, said that at the risk of being unamusing, he intended to adhere to facts as far as they could be obtained, and to eschew fiction. He proposed to ramble through the fields of phantasy, in the hope of eliciting the information that there is a substratum of truth in the popular tales regarding Robin Hood. Bishop Percy had expressed his doubts whether Robin Hood ever was Earl of Huntingdon, and Mr. Thomas Wright, an antiquary of no mean repute, had gone so far as to thoroughly repudiate the existence of Robin Hood. Nothing is definitely known of the exact period in which he lived; the earliest of the dates assigned as the year of his birth is 1160, at Nottesley or Locksley, in Yorkshire (the existence of such a place had, however, been denied by some critics), in the Soane Collection. Other authorities make it as late as the time of Henry VII. or Henry VIII. The conjectures respecting the place of his birth were also as various, for the counties of Yorkshire, Staffordshire, and Warwickshire had each been cited as his native county. Much discussion had arisen regarding the question whether Robin Hood was descended from noble parents. Mr. Planché inclined to the belief that the outlaw was really an Earl of Huntingdon, his true name being Fitz-odo or Fitz-ooth, and that he was descended from a Norman family who came to England at the Conquest. The lecturer considered this theory was supported by references to the Harleian Collection, Leland, Stukeley, and Gale. Historic tradition represents him as having lived in the thirteenth century, we hear of popular rhymes about him in the fourteenth, and we have endless ballads and legends of him in the fifteenth. Proceeding to state the few facts tending to support his view that Robin Hood really had an existence, and that he was Fitz-odo or Fitz-ooth, Earl of Huntingdon, according to current tradition, Mr. Planché mentioned that undoubted proof has been obtained that a family holding the Earldom of Huntingdon existed in the twelfth and thirteenth centuries; also from a grant to the Abbots of Kenilworth, it is proved that a Robert Fitz-odo or Fitz-ooth was connected with Locksley in 1152 or 1153; and, moreover, that there was such a place as Locksley or Nottesley in Yorkshire, thus establishing a striking connexion with the oldest and most probable of the traditions relating to Robin Hood. The balance of tradition, therefore, supported by the authorities of the Harleian and Soane MSS., Sir Edward Cope, Fuller, &c., is in favour of the birth of Robin Hood having taken place in 1160; that he lived through the reigns of Henry II., Richard I., John, into that of Henry III., and that he died about the age of eighty-five years. Mr. Planché held that if the proof of these facts is spurious, he could only say it had been concocted with more care than such things generally were.

Dr. Phené, the chairman, in moving that the thanks of the meeting be presented to Mr. Planché for his deeply-interesting paper, said that he agreed with almost all the arguments used by the lecturer. He believed that we were very prone to ignore everything that we could not demonstrate, and very much disposed to ignore argument which ignores demonstration. He believed that there had been a veritable Robin Hood as well as a veritable King Arthur, who, if not living at the periods assigned to them, had nevertheless existed later, and that various people had at various times personified and lived the lives of the characters represented in the ballads and legends.

Mr. Bernal seconded the proposition, which was carried by acclamation.

The Crummock Water Scheme.—At a meeting, on the 23rd ult., of a joint committee, consisting of representatives of the Cockermouth and Workington Urban Sanitary Authorities and the Cockermouth Rural Sanitary Authority, it was decided that Messrs. Pickering & Crompton, of Whitehaven, should be appointed the engineers to carry out this scheme of water supply.

WHITEHALL GARDENS.

WHERE SHALL THE OBELISK BE PLACED?

At the period spoken of, in "The Story of the Government Offices,"* as so memorable and eventful for architectural competitions, I gave much time, attention, and money to the study of leading lines of thoroughfare and fixed points of view, which would naturally influence the selection of sites for future public buildings to be erected within the space limited by Charing-cross, the Houses of Parliament, the Park, and the River. Certain private and business matters intervened, and the result was not submitted in competition, though a scheme was worked out thoughtfully.

The question,—Where shall the obelisk be placed?—has brought the old plan before my mind's eye, and I find that the new Embankment, Northumberland-avenue, and Home and Colonial Offices only intensify, in my opinion, the correctness of former ideas as to the remarkable appropriateness of the ground now occupied by Whitehall Yard and Gardens for the erection of the new War Office, Admiralty, and other Government buildings, if laid out as is hereafter described. I think no one will dispute that the best site for the obelisk is difficult to decide upon, that many persons doubt the desirability of the position occupied by the full-size model, and that we cannot afford to erect this monolith twice. There occurs to my thought one most striking spot where the obelisk would look well at the present time, and could be easily worked into any scheme for future improvements. To find this spot it will only be necessary to set out a line from the centre of the Horse Guards, squared with the frontage line of Whitehall Chapel, and to measure thereon a distance of 650 ft., which will mark a place somewhere near the old river frontage at the top of the ancient Whitehall stairs. Just within this point it is proposed to construct, in dark-coloured granite, a solid platform 30 ft. square and 7 ft. high, with a blocking or parapet, 2 ft. wide and high on all sides, only leaving two openings, not more than 4 ft. each, with steps for access and closer inspection. Then in the centre of this to set a granite cube of 10 ft. (squared to the setting-out line) as a base on which to erect the monolith. It is presumed that by adopting this site engineering necessities would be reduced to a minimum, as by mooring the *Cleopatra* on this centre line; and, removing the Needle, base end foremost, with the help of inclined planes over the roadway and gardens, one operation would be sufficient to bring it to its permanent position. When erected here it would be visible above the railway on coming past the Savoy from the City, and in full view from any point between the Floating Baths and Westminster Bridge. This may at once be proved by observing an old elm tree now standing somewhat within the proposed spot, and not so high as the obelisk will stand when erected on its platform.

The War-Office and Admiralty.

I have made a plan shewing more fully the suggestion for disposition of future blocks of buildings to be erected on either side of the centre line before mentioned for use as Government offices. The Army and Navy would probably be located, according to the space required, to the right and left from Whitehall, opposite each other. The Chapel Royal might with advantage be rebuilt on a site near Montague House, with college attached, and the Banqueting-room be restored to its original purpose, with a large official residence in connexion facing Westminster. The details of the external architecture and internal plan have not been in any way considered beyond the supposition that the work of Inigo Jones would naturally give the key-note for the Whitehall frontage, the Royal gateway, and the two quadrangles right and left; buildings beyond and fronting the river being of some bold uniform design, hereafter to be decided upon. The houses in Whitehall-place could at any time (either one side or both) be rebuilt or remodelled as part of the same scheme. The buildings at the railway end ought in any case to agree with those to be erected at the opposite corner by the Metropolitan Board of Works.

This arrangement, to the great relief of the Strand and other overcrowded streets, would provide a grand entrance to the Parks direct from the Embankment and Whitehall-stairs, and the whole could still be known as Whitehall place and gardens.

The public recreation-ground would probably be somewhat encroached upon by the new roadway, and for this loss an additional plot might eventually be given up. L. × S.

* See the *Builder*, p. 874, *ante*.

THE STEAM ROLLER ACCIDENT IN CHELSEA.

On Wednesday afternoon, October 24th, at the Westminster Police-court, before Mr. D'Eyncourt, Miss Marion Stewart Clarke and Miss Alice Clementina Clarke, owners of the house known as Waldegrave House, Smith-street, Chelsea, were summoned by the Vestry of Chelsea to show cause why they should not be called upon to pay the sum of 13*l.* 17*s.* 10*d.* incurred by repairing the cellar of the house, under the 102nd Section of the Metropolis Local Management Act, such cellar being in a defective state. Mr. Charles Aldridge, owner of the adjoining premises, No. 25, Smith-street, was likewise summoned for 13*l.* 17*s.* 10*d.* under similar circumstances.

Mr. Pemberton (Messrs. Lee & Pemberton) represented the Vestry of Chelsea, and Mr. Shaw, barrister, appeared for the Misses Clarke.

The case against the lady defendants was first taken, but Mr. Aldridge watched the proceedings throughout as affecting his interest, and several times made observations on the evidence.

Mr. Pemberton, in opening the case, said the section under which the Vestry proceeded enacted that "All vaults, arches, and cellars made, either before or after the commencement of this Act, under any street in any parish or district mentioned in either of the schedules to this Act, and all openings into the same in any street, shall be repaired and kept in proper order by the owners or occupiers of the houses or buildings to which the same respectively belong; and in case any such vault, arch, or cellar be at any time out of repair, it shall be lawful for the vestry or district board of such parish or district to cause the same to be repaired and put into good order, and to recover the expenses thereof from such owner in the manner hereinafter provided."

After some discussion, Mr. Shaw said there was no question about the ownership or the cost of the works.

Mr. Pemberton said the same question would arise in both cases. The facts were, that on the 25th of June last the steam-roller had been employed on the road in Smith-street, but at midday it ceased work on the portion in front of Waldegrave House. In the evening, however, the machine was being driven home at a rate of one mile an hour when the hind wheel of the roller next the channel went into a hole occasioned by the breaking of the coal-vault arch.

After a discussion as to the mode of proceeding before the magistrate,

Mr. Pemberton resumed opening the case, stating that it was the near hind wheel of the roller that disappeared through the vaults, and fortunately it was held by the body of the engine and the tender, so that it did not go right down. Had it done so, the consequences might have been very serious, for there was a heavy pressure of steam on at the time and there might have been an explosion. The driver of the engine went to see Miss Clarke directly after the accident, and she asked if there was any danger. He assured her that there was not, and then she said she had a brother, a civil engineer, who had warned her on the previous day that these vaults were not safe, and some accident would very likely occur.

Mr. D'Eyncourt asked whether the vaults were under the crown of the road or the footway.

Mr. Pemberton said they were under both.

Mr. D'Eyncourt wanted also to be informed which was the older, the vaults or the road.

Mr. Pemberton was unable to give this information, but thought they had both been made a long time, and were probably contemporaneous.

It was admitted that the age of the house was about fifty years.

The evidence called on the part of the Vestry was that of Piper, the driver of the engine, proving the accident, and showing that one of the defendants had a few minutes afterwards expressed a belief that the cellars would have fallen in; of Mr. Collard, the foreman of the roads, as to the mode of repairing the roadway; and that of Mr. Stayton, the surveyor to the Vestry, who stated that the roadway was repaired with fresh broken granite, having first been "picked up" in the usual way, and was consolidated by the steam roller, weighing 15 tons. The rolling was completed, and as the roller was being driven away, at the rate of one mile an hour, the near hind wheel suddenly disappeared down the cellar of Waldegrave House. The driver at once put out the fire, and prevented all danger, by turning off the steam. The roller was extricated and removed, and on examining the vault the next day, he found that it extended 6 ft. under the roadway. He minutely examined the four vaults in front of the two houses, and found the two outside ones perfectly sound, but the two middle ones, which were partially destroyed, were very defective; the mortar had gradually become perished from age and the percolation of water, and they were, in fact, unfit to bear the continuous weight of ordinary very heavy traffic. With regard to the steam roller, although its weight was 15 tons, the weight was so distributed that it would not affect the road any more than very heavy traffic, like a timber-wagon, a dray, trucks loaded with stone, girders, iron castings, or heavy machinery, and he explained that the front wheels were 24 in., and the hind 20 in. wide, giving a total width of 88 in., and an average pressure of 3½ cwt. per inch. With regard to the wheel that went through the vault, in consequence of the roller being tilted towards the footway, he estimated that the total weight thereon was between 5 and 6 tons, or 5½ cwt. per inch at the outside. It was no uncommon thing for loads of block stone or marble, machinery, boilers, girders, or castings, weighing from 6 to 20 tons, to be taken along streets on conveyances having 6 in. or 8 in. wheels, and, taking a load of 8 tons only on four 6-in. wheels, the pressures exerted would be not less than 7 cwt. per inch. He previously had no idea that the vaults extended under the roadway. He proved the cost of repairing the vaults, and stated that the headwalls were now constructed under the kerb by order of the Vestry, the part under the roadway having been filled up.

For the defence, Mr. Shaw, in a long and exhaustive argument, put the matter in several ways, but substantially on one basis, viz., that the extraordinary weight of the steam roller had caused the accident to the vaults, which were perfectly secure for any other traffic, and stated that the cellar was in a proper state of repair, and had been built for about fifty years. It had all that time stood the weight of the heavy traffic. Coal-wagons, heavily laden, had discharged their freight into the cellar, and it was monstrous to suppose that a great steam-roller of fifteen tons should only be of the same weight. The fact was that the roller, being of extraordinary strength and weight, had gradually crushed in the vault; added to which, the water used in the amalgamation of the materials employed, had percolated and made the mortar rotten. *It was a singular fact that the next cellar was sound, and had been unpaired.* Beyond this, the Vestry had, in the rebuilding of the cellar, taken away about half the original space, and when an action was commenced against them in a superior court, not only for the damage done by the roller, but for trespass, &c., they came to the police-court, and by this proceeding endeavoured to prejudice the as yet untried action.

Mr. Pemberton, interposing, said the Vestry must admit that they had done wrong in lessening the vaults, and they were prepared to make some compensation.

Mr. Shaw went on to say that it was idle to suppose that a great steam-roller of this description was ordinary traffic, and he cited several cases lately decided with respect to the liabilities of vestries with regard to the maintenance of roads and footways, and beyond that, argued that there was an Act of Parliament which regulated the passage of steam-engines over roads, and those regulations had not been observed in this instance.

Mr. Pemberton, however, showed that steam-rollers were specially exempted in the metropolis, under the Metropolitan Board's bye-laws.

For the defence, Mr. Rawlinson Parkinson, one of the four district surveyors of the city of London, was called to prove that the vault was a good one, but he proved that it might have been so fifty years ago; mortar was used instead of cement, as now used,—the latter being impervious to wet.

In cross-examination, he admitted that his examination of the vault was made some days afterwards, and was not particularly minute. He was not prepared to give any opinion as to the relative weights of steam-rollers and other heavy vehicles that had been mentioned.

The Court having sat an hour beyond its usual time, Mr. D'Eyncourt adjourned the case till November 1st, and said the question, to his mind, narrowed itself to the weight of the roller and its distribution, and he should like to have some independent evidence on that point; not that he doubted the evidence of Mr. Stayton, but it would be better to have another opinion.

SEMICIRCULAR CEILINGS FOR MUSIC-ROOMS.

Sir,—Your correspondent "T. R. S." (behind which initials it is not difficult to recognise one who has a special right to speak on the subject) is I think correct in saying that St. James's Hall does not in fact return any disturbing echo. In making the observation referred to I rather took the opportunity of drawing attention to the fact that in general a ceiling of this shape was not a good one for music, than asserted that it had an ill effect in this case. I know one or two instances where it has a most detrimental effect, and the fact that it accidentally is not so in St. James's Hall would, of course, be no argument for repeating the same construction.

It occurs to me that one reason for the echo which one would naturally expect from a ceiling of the shape of that in St. James's Hall not being heard, at all events to any annoying extent, may be that it is broken up and destroyed by the numerous perpendicular stalks by which the gas-lights are suspended from the ceiling. Supposing that this is the case, it would be interesting to know if the distinguished designer of the room adopted this arrangement in part for any such practical reason, or merely for the sake of the pretty effect which the hanging lights undoubtedly have. H. H. Statham.

*** Owen Jones introduced the small hanging lights as the outcome of his conviction that light in such a room should be widely distributed, not centralised, and without any reference to acoustical effect.—Ed.

PRESERVATION OF WOOD

Sir,—What is the best way to preserve a wooden tank from decay, when it is placed over a well containing liquor from larch bark? H.

BRICKS FROM SLAG.

In a paper on the "Progress of the Slag Industries during the last Four Years,"* Mr. Charles Wood (Tees Iron Works, Middlesbrough), says:—At the Tees Iron Works there are three slag-sand machines and two slag-shingle machines working, and these machines have produced not far short of 100,000 tons, all of which has been utilised in a profitable manner.

In order thoroughly to test the value of slag made by my two machines for the various purposes just mentioned, it was thought advisable to form a company that should take up the manufacture as a specialty, and who could devote the time and attention so necessary to a young and untried industry. This company has now been in operation about two years and a half, and, like most new concerns when attempting the manufacture of a fresh material, it has had to pass through a severe ordeal. The difficulties met with have been numerous. The failure of one machine after another, the loss of time, patience, and money, would have ruined many private individuals, but thanks to Messrs. Gilkes, Wilson, Pease, & Co., and to a few friends in the Slag Company, I have been enabled to pass through the ordeal, and I am thankful to say that neither their confidence, money, nor time is likely to be lost; but that there is every probability that, with a larger output and a revival of trade, their capital will receive a fair dividend.

The Cleveland Slag Company's works are situated near the docks at Middlesbrough, and are now paying between 60*l.* and 70*l.* per week in wages. The most important part of their manufacture is slag bricks for building purposes, made from the slag sand, produced by the slag-sand machines at the blast furnaces. This sand is mixed with selenitic lime (General Scott's patent), with an addition of iron oxide, and is pressed in a machine hereafter described.

The next article of importance manufactured at these works is a kind of hydraulic cement, make from the slag sand, common lime, and iron oxides. Compared with Portland cement for hydraulic work or concrete, this is the most valuable product introduced for many years, whilst its price is not one-fourth, and the strength little inferior.

Concrete made from this cement, mixed with the shingle produced from the rotary table, is an excellent conglomerate for use in monolithic structures. With this material I have executed some very heavy blast-engine foundations,—in one case where brickwork set in cement had previously failed. The concrete is now standing in the most perfect manner. The cost of the concrete is only about one-fourth that of the brickwork, and experience has shown that it goes on hardening for months. The building of the Slag Company's works is executed entirely in this material,—the walls being nearly 80 ft. high,—they were built entirely by labourers, without a single bricklayer, and the cost of the work when finished, including superintendence, did not exceed 6*s.* per cubic yard. To give an idea of the strength of the walls, I may mention that on one or two occasions we have had to cut doorways through them, and it has taken two good men with steel bars and sledge hammers as much as four days to cut through a thickness of about 26 in.

Mortar is also made and sold in large quantities from a mixture of slag sand, and about 10 per cent. of common slaked lime, and it can be sold at the cheap rate of about 4*s.* per ton.

The introduction of these various products from slag at first met with a good deal of opposition and prejudice from architects and builders, but the remarkable strength and cheapness of the material soon compelled these gentlemen to admit their error, and I am happy to say that our demand in some instances is now more than the production. As before stated, the most important branch of the business carried on by the Cleveland Slag Company is the manufacture of building bricks, and, although the process is now very simple, it has been here that the greatest difficulties have occurred. There was no machine made in England that could work the material in the state in which it is produced at the furnaces, without previous preparation; and to prepare the material to suit the brick press meant that the cost of the bricks became so high as to exclude them from the market. A press had, therefore, to be designed that would work the slag sand just as it comes from the slag-sand machines directly into bricks, and this being accomplished, success was assured.

The bricks, when taken from the brick-press, are placed upon spring barrows, holding fifty each. They are then taken and stacked in sheds, where they are allowed to remain about five or six days, after which they are simply stacked outside in the weather to harden. The percentage of loss is very little, not amounting to two or three per cent. In fact, when once the bricks are upon the barrows, there is little or no waste. Each machine is capable of turning out about 10,000 bricks per day, and, since starting, we have sold about 4,000,000. Large quantities are shipped to London at a cost of 17*s.* to 18*s.* per 1,000 for freight; in other words, about 10,000 tons of slag sand have been consumed for this purpose alone. The following are a few of the advantages of these concrete slag-sand bricks, viz.:—Being pressed, they are perfectly uniform in size and thickness; they are much cheaper than ordinary red bricks, compared in weight with which they will weigh one ton per thousand less; then there is this further advantage, that there are no wasters or halves. For inside work there is a great saving both in bricklaying and mortar, especially when plastering, the walls being of a uniform thickness, and the bricklayers like them, because they can do more work with less labour, the bricklayer's labourer finding he has a ton per thousand less to carry, as well as considerably less mortar. Another remarkable property of the slag bricks is, that the joiners can drive nails directly into them without splitting, and thus, for skirting and doorwork, they are saved much trouble in plugging the walls; and, finally, the longer the bricks are kept the harder they get. . . . .

In addition to the works and progress made by myself at the Tees Ironworks and the Cleveland Slag-working Company's Works, I must not forget the labour and success obtained by my friend Mr. Henry Hobson, engineer at the Moss Bay Ironworks, Cumberland. Mr. Hobson has taken a path different, as far as I know, to any of his predecessors, inasmuch as in making bricks he first of all pulverises the solid slag, and uses no lime whatever. By this system the slag is taken from the solid slag balls, made from hematite Bessemer iron, and broken into pieces sufficiently small to pass under very massive edge-runners, where it is ground or crushed by the sheer weight of the runners into small dusty shingle. It is then passed by elevators into French burr mill-stones, and ground into powder.

* Read before the Iron and Steel Institute at Newcastle.

CHURCH OF NEW CLEE, GRIMSBY.

The church, the foundation-stone of which was laid on October 25th, by Mr. Grant-Thorold, is dedicated in honour of St. John, Apostle and Evangelist, and is designed with a nave, north and south aisles, a chancel with organ-chamber and vestry on the north side, and a western porch or narthex. The chief frontages are to the east and north, the former facing Rutland-street, and the latter the Cleethorpes-road. The chancel gable forms the most prominent architectural feature at the east end, and is filled with five large lancet windows, flanked at the sides by massive buttresses, and on the north side the high-pitched roof, which covers the nave and chancel, without any break in its length, the bell gablet at the west end, and the lofty clearstory with its range of lancet windows, give a height and dignity to the elevation. The vestry and organ-chamber form a continuation of the aisle, the monotony which might otherwise have resulted from this treatment, being boldly relieved by the gable of the organ-chamber, which breaks the long length and at the same time forms an effective feature in the design. In the aisle the lancet windows are divided by slightly projecting buttresses. At the east end is a doorway with moulded arch, and at the west end is the main entrance, a large pedimented archway finished with a cross. A smaller doorway forms the outer entrance to the vestry. The style adopted is Early English. All the doorways and windows of the church will be of Ancaster stone, and the exterior face of the walling is intended to be of brick, relieved by stone string-courses and ornamental brickwork. The porch or narthex at the west end of the nave is approached through the open archway which adjoins the street, and is entered by a large doorway, moulded, having columns with moulded caps, and is lighted by a triplet window at the south end. Opening into the nave from the narthex are two doorways, which form the main entrances to the church; these are square-headed, the tympanum of the arch in each being filled with ornamental brickwork. The church will be lighted from the clearstory on the north and south aisles, by the aisle windows, a lofty triple lancet window at the west end of the nave, and by the five lancets in the east wall of the chancel before mentioned. In designing the church, the requirements of public worship have been considered, and with this end in view the nave and the chancel, which forms a continuation of it, are kept of unusual width, and will be covered by an open-timbered roof 30 ft. in span, the aisles being somewhat narrow. The nave arcades, which are to be of stone throughout, are of two chamfered orders, with hood-moulds, &c., of wide span, and are supported on octagonal pillars, with moulded caps and bases. The nave and chancel are divided by a low septum-wall, and the floor of the latter is raised well above the ordinary level of the church so as to add a more imposing effect to the interior. The organ-chamber has a lofty arch next the chancel and another opening into the north aisle, and is so arranged that the organ may be projected into the chancel, and thus allow the sound to travel more freely through the church. The vestry adjoins it, and is entered from the chancel by a moulded doorway with cusping worked round the arch. In the sanctuary on the south side is the sedilia, with a richly-moulded arch worked on to projecting corbels, and surmounted by a canopy containing a cusped panel, and finished with a hood-mould crocketed and carved. The credence on the north side is of similar design, but without a canopy. An arcade of three arches, elaborately moulded, will form the chief feature of the sanctuary under the east window; the central arch contains the reredos, which is divided into three compartments, each being filled with a quatrefoil panel, and is surmounted by a deeply moulded and carved cornice; a retable shelf rests on carved corbels above the altar. The lofty walls of the chancel will be relieved by arcading, which is carried round on the north and south sides below the clearstory, and is supported on columns with moulded caps and bases. The church will give accommodation for 600 sittings. The seating throughout will be of stained deal, and the floors of the passages are to be laid with tiles. The pulpit and lectern will form effective features in the bay wall of the chancel, and the font is to be placed at the west end between the entrance doorways. The works are being carried out by Mr. J. M. Thompson, builder, of Louth, from the designs and under the superintendence of Mr. James Fowler, of the same town.

SUSSEX ARCHÆOLOGICAL SOCIETY.

The autumn meeting of this Society was devoted to a visit to Forest-row, for the purpose of inspecting and hearing some account of an ancient stone cist which had been found by Mr. Martin, embedded in the bank of a stream which runs through his meadow near the village, and also for the purpose of paying a visit to the ruined mansion at Brambletye, and the site of the still more ancient manor-house. Mr. Furse said the cist appeared to have been embedded in charcoal, and contained some bones, most of which crumbled to dust on being exposed. The bones were mixed with lime. It is about 4 ft. 6 in. long, and 3 ft. 6 in. in width, and rather more than 1 ft. deep internally. It is like a large house-sink, and opinions differ as to whether it was made of burnt clay or stone. Since it had been dragged out of the stream it has fallen asunder, but the broken parts fail to show an ordinary observer whether it is composed of clay or stone. Mr. Slack, in response to a call to give a statement concerning the article in question, said he was afraid the little he had to say about it would be rather disappointing, especially to the ladies and those who, on the strength of its being a memento of some British or Roman hero, were prepared to regard it with romantic interest. He found some carbonate of lime partially crystallised, so as to form granules, and after a search two or three fragments of bone were discovered. As to the lime, if the cist had been used for an interment, it might have been filled with quicklime, which was applied by the Romans and Roman-Britons, in order to more quickly decompose the body, and the quicklime might, in the course of time, have become converted into carbonate of lime,

partially crystallised. Then, with regard to the cist itself, parts of it being soft when found, some were inclined to think it was not stone, but, having examined it carefully, he believed it was a piece of sandstone which had become, so to speak, rotten from being exposed to the action of running water and air. No ornaments or fragments thereof were found, and as to the pieces of bone he had examined, the first was a small piece of marrow bone of mammalian, but he could not go further, except that he did not believe it was a human bone. A friend learned in comparative anatomy was also unable to state what it was. The other piece of bone found among the carbonate of lime had also been carefully examined, and had been ascertained by Mr. Stuart to be part of a sheep's "trotter." Of course it did not follow because human remains were not found that the cist was not used for the purpose of interment.

Mr. Roach Smith, to whom drawings and a description of the cist had been sent, said that cists of the Roman-British period were by no means uncommon, and this appeared to be one.

Captain Noble said it had occurred to him,—looking at the cist as it lay there, and considering the position in which it was found on the bank of a stream,—whether it had not been used to hold water rather than to inter anybody at all.

The visitors then walked over to Brambletye, and the Rev. Wm. Powell referred to the papers on Brambletye which have already been published in the collections of the society, and showed how little is known about the mansion beyond this, that the initials H.M.C. and the date 1631, on a lozenge over the entrance to the hall, are supposed to refer to Henry Compton, a ranger of Ashdown Forest, and his wife Mary, for whom the house was built in 1631. Having traced the ownership of Brambletye through the Keynes, St. Clares, Lewkners, to the Comptons, the rev. gentleman said the history of the place from 1631 was a blank, and it was impossible to conjecture how it became dismantled; but some thought it might have been struck by lightning, which had a peculiar affinity for that valley.

Mr. Somers Clarke gave some account of the architectural features of the ruins of the house, which appeared to have a similar character to that in ruins at Slaugham. Most of the workmanship was very good.

As the company issued from the ruins, a lady of the neighbourhood pointed out some masons' marks on the entrance. The builder's "square" and the "hour-glass" form are there to be seen. These marks are particularly interesting as occurring on a building of so recent date as Brambletye; they were seldom used after the beginning of the seventeenth century on the *face*. It was mentioned that copies of marks from Lingfield, East Grinstead, Balcombe, Steyning, Arundel, and numerous other churches, will be found in a paper printed in the *Builder*, under date March 27th, 1869.

THE LATE MR. JOSEPH DURHAM, A.R.A.

The lamented death of Mr. Durham, which took place on Saturday last at his residence, 21, Devonshire-street, Portland-place, will surprise his friends less than it will grieve them. He had been ill off and on for a long time past, and a recent sea voyage, taken under advice, only served to delay for a time the fatal termination. He was born in 1822, and was apprenticed to the sculptor, Mr. John Francis. Afterwards he worked for some time with Mr. E. H. Baily, R.A. ("Eve" Baily), for whom he always cherished an affectionate remembrance. A bust of Jenny Lind, exhibited at the Royal Academy in 1848, and afterwards reproduced, in miniature, in parian, first brought him into notice. In after years, when, having done something better, he was still spoken of as the sculptor of Jenny Lind's bust, it seemed an annoyance to him. A bust of the Queen for Sir Francis G. Moon, for presentation to the Corporation, followed, and a commission to execute a statue for the Egyptian Hall in the Mansion House—"Hermione." He afterwards produced "Alaster" for the same apartment. His design for a memorial of Mr. Frank Crossley, of Halifax, was selected in competition, and the completed statue, a fine work, was set up in 1860. About the same period occurred that which was the culminating point in his career, his success in the international competition for the memorial of the Great Exhibition of 1851. The design was afterwards elaborated under the eye of H.R.H. the late Prince Consort, and the committee of the fund subscribed for the purpose, and the completed memorial as now standing in the Horticultural Gardens at South Kensington may be pointed to as the best work of its class in London. We can only briefly mention some of his other works:—"Paul & Virginia," "The Fate of Genius," "Chastity" (a statuette), "Go to Sleep" (circulated as a statuette by the Art-Union of London, and very popular), a series of charming statuettes showing the youthful form as displayed in boating, cricket, and so forth, a classical group; "Hero over the Body of Leander," several drinking-fountains, tombs, and a large number of portrait busts; the last of these, still unfinished, in marble, is a bust of Mr. Waterlow.

Mr. Durham was of a genial and kindly disposition, and very popular with a large circle of friends in the earlier part of his career. He was elected an Associate of the Royal Academy in 1866, and appeared to be in the full tide of success. Reverse, however, came; and for some time before his death he had to grieve over the absence of commissions. It might not be valueless to inquire into the causes of his failure to realise all that had been expected of him, but we must leave this to other hands. Probably with a little more power of self-restraint he might have attained a higher position on the ladder of fame.

THE LOUGH MODELS.

The interesting ceremony of formally receiving from Mrs. Lough the valuable art-treasure bequeathed to Newcastle by her husband, Mr. J. G. Lough, the eminent sculptor, took place on the 24th ult., in Elswick Hall, where the numerous beautiful models have been arranged.

The collection includes models of nearly all the principal works wrought during a long, busy, and distinguished career by one who by a perseverance and self-denial, which amounted almost to heroism, obtained for his genius early recognition. One of the most conspicuous of the models, and one to which people will readily give attention,—because it is the model of the statue that first proved Lough to be a highly endowed artist,—is that of Milo. Another colossal figure which will attract special observation is "Samson." This work was executed as a companion to "Milo," and was the first production of the artist after he had become known. Both were wrought in marble for the late Duke of Wellington. A powerful piece of sculpture is also "Duncan's Mad Horses," produced in 1832. It is unquestionably one of the finest works, and with it the sculptor's name is in the minds of many most securely identified. Amongst the larger works is one which was exhibited at Westminster Hall in 1844,—"The Mourners,"—representing a knight slain in battle, his horse standing over him, and a female kneeling by his side. Amongst the most noticeable of the colossal statues are "Michael" (after he has subdued Satan), Milton's "Satan" and "Comus." There are also statues of Prince Albert, executed for Lloyd's; of the Queen, placed in the Royal Exchange in 1845; of the Marquis of Hastings, erected over his grave at Malta; of Dr. Broughton, late Bishop of Sydney, in Canterbury Cathedral; of George Stephenson, in Newcastle; of Lord Collingwood, at Tynemouth; of Southey, in Keswick Church; of Dr. Gilly, at Durham, &c. One of the most beautiful of the works is "The Expulsion," representing Adam and Eve leaving the place of their former happiness:—

> "The world was all before them, where to choose
> Their place of rest, and Providence their guide.
> They, hand in hand, with wand'ring steps and slow,
> Through Eden took their solitary way."

The strength of Lough's powers was shown (says the *Newcastle Courant*) in the numerous colossal works which he wrought; their sweetness is evidenced in the smaller and more refined imaginative creations. Lough was richly gifted with poetic feeling, which is specially manifest in not a few original fancies which he embodied in stone. He illustrated successfully many of the characters belonging to ancient and modern poets, and the fabled gods and goddesses were also often the subject of his chisel; but he was equally fortunate in original efforts, such as "The Lost Pleiad," a charming work of which there is a model in the collection now in Elswick Hall. It is intended to symbolise the fall from her high position in the constellation of modern poets of that bright particular star once known to the literary world as L. E. L.—Letitia Elizabeth Landon. The idea was a happy one, and artistically carried out. A female figure rests upon a sphere encircled by the Hours; in her hand she lightly holds, as if it were to be instantly cast away, a starry crown newly taken from the brow; and the whole attitude is expressive of sorrow. This beautiful statue was executed in marble, and has never been publicly exhibited. A most interesting portion of the collection are the models of the series of Shakspearian characters executed full length in marble for the late Sir Matthew White Ridley, who was one of the sculptor's warmest friends and most generous patrons. The series includes "Hamlet," "Ophelia," "Macbeth," "Lady Macbeth, "Iago," "Edgar" (Mad Tom), "Ariel." Besides the marble statues, the models of some of which are in the collection, Lough, it may be mentioned, also executed for the late Sir Matthew White Ridley a series of elaborate *bassi-relievi* in marble, from "Macbeth" and "The Tempest," and several groups in bronze also from Shakspeare. In addition to those we have named there are numerous specimens of Lough's beautiful studies in lyric sculpture. There is also a large collection of monumental sculpture and busts.

DINNER TO THE WORKMEN AT EXETER CATHEDRAL.

On the 27th ult. the workmen who have been engaged in the restoration of the cathedral were entertained at dinner by the Dean and Chapter at the Globe Hotel. The Very Rev. the Dean presided, and over 100 sat down. Mr. Luscombe, the contractor, occupied the vice-chair.

At the end of the repast the Dean addressed those present, observing that he did so as all there had been engaged more or less assiduously in bringing to a conclusion the great work of restoring the cathedral. Therefore, with one will and one heart, they had been engaged together in a work of which they had reason to be proud and grateful. He thought thanks were due to almost every person engaged upon the work, and of course special thanks were due to those who had been specially engaged on it. These were those who had superintended the work, at the head of whom he placed his esteemed friend, Mr. Luscombe, whose assiduity, carefulness, and thoughtfulness, during the whole progress of the works, had excited the admiration, and he might say the gratitude, of the Chapter. He ought to place in conjunction with him his son, Mr. Edward Luscombe. He would not say all he thought respecting Mr. Edward Luscombe's ability, carefulness, and ingenuity; but would merely observe that, at every step of the work, he had been astonished, surprised, and delighted, at the amount of ingenuity and ability displayed by him on the many subjects entrusted to his care. When he recollected that, seven years ago, Edward Luscombe was little better than a boy, he must say that he had matured to a most wonderful degree, and that he had learnt his business so well that they might look upon him as an accomplished architect, and they might certainly look upon him as a most accomplished supervisor of works. Their thanks were also due to Mr. Drake, for the part he had taken in restoring the windows had excited universal admiration and approbation. Some excellent judges had been lately looking at the windows, and had said that the manner in which some of them had been restored showed great ingenuity and talent. The same might be said with regard to the windows which came from Messrs. Clayton & Bell. Day by day they found their cathedral becoming more and more attractive by reason of the beautiful works of art they had in their painted windows. Thanks were also due to the superintendent of the works, Mr. Widgery, for no matter how carefully things might be planned, they could not be carried out successfully unless there were a practical person to superintend them. When it was recollected to what peril those who had been engaged in the works had been exposed, poised as they were so many feet above the ground on lofty scaffolding, it was a marvel that there had not been more accidents to record. The fact that there had not, only showed the carefulness with which the work had been presided over, and the obedience to orders with which the men had carried it forward.

The Ven. Archdeacon Woollcombe, after alluding to the energy displayed by the workmen, said he wished to say a few words about the cathedral itself, and particularly with respect to the nave. Now the wash had been taken

away, and all the deformities removed, those who entered the nave saw it as it was 500 years ago. The great builder of this cathedral was Bishop Grandisson. He it was who transformed the old shorter nave into the nave of its present dimensions. With the exceptions of the fittings of the nave, and the beautiful glass with which the old windows were filled, they now looked upon it,—pillars, arches, roofs, ribs, and all its material parts,—as Bishop Grandisson did 500 years ago. That was a long time to look back, but they must remember that a portion of the cathedral was older than that. The towers were supposed to have been built in the thirteenth century. What a terrible affair it would be for the city of Exeter if the cathedral were converted into a great museum. What a terrible calamity it would be for Exeter if the churches,—between twenty and thirty,—were turned into smaller museums. They knew that there was a spirit afloat in this country which would desire to sweep away all these things, but he hoped he was right in saying that there was not one individual in the room who would say "Ay" to the designs of such men, and who would not join in the endeavour to hand down to posterity those ancient glorious edifices for God's worship which they had inherited from their ancestors. With regard to the windows, they had had several put in before the date of the restoration of the building, and that very day they had had put before them the design of another window. He was glad to see that the design carried on the idea which had long been entertained of restoring the windows according to a universal design, which in all its material parts was in accordance with the design of the old cathedral windows. There was an old box found somewhere in the upper part of the cathedral when the restoration began, which was full of glass, and Mr. Drake discovered that it was a portion of the ancient glass that decorated the windows in the fourteenth century. Archdeacon Freeman at the same time deciphered the fabric rolls of the cathedral, which were a long list of payments for work done, and he found that the windows of the fourteenth-century work were mainly made by workmen from Rouen. The fabric-rolls showed that year after year money was paid to the people of Rouen, but in the course of time English workmen, it was found, became the recipients of the wages for this work. With that power of acquiring knowledge which English workmen of the present day also possess, he supposed they learnt the art of window-making from the workmen of Rouen, and the later windows, if he was not mistaken, were executed by English workmen. Mr. Drake went over to Rouen to see if it was true that the windows in Rouen Cathedral were similar, as it was said they were, to those in Exeter Cathedral, and he believed he found that they were very much in accord. He would tell them how Exeter came in contact with Rouen. When William the Conqueror parcelled out the land he conquered, he gave the Manor of Ottery to the church at Rouen, and the dean and chapter of that cathedral enjoyed the manor at the time of Bishop Grandisson. The latter, however, thought it a great pity that the people in France should enjoy the proceeds of a manor in England, and he approached the dean and chapter of Rouen for the purpose of purchasing this manor. The ancient story was that he had to drive a hard bargain, but he at last succeeded, and then built Ottery Church, on the model of his own Church of St. Peter, and endowed it. But when Henry VIII. came, he took away the manor and left Ottery with only about 100*l.* a year, and the people and church of Ottery had suffered from that time.

THE ROUS MEMORIAL.

The Committee of the Rous Memorial have entrusted the execution of a bust of the late Admiral to Mr. M. M. Raggi, of Devonshire-street, Portland-place. Mr. Raggi was called upon to take a cast after death of the late Admiral, and the model was submitted to the Jockey Club at Newmarket. He will execute the same in marble; and when the work is completed it will be placed in the Club-room at Newmarket.

Pumps.—Messrs. Gwynne & Co. have now in their factory a pair of very large pumping-engines, each capable of pumping 100 tons of water per minute 17 ft. high.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The first ordinary meeting of the new session will be held on Monday evening, the 5th of November, when the president, Mr. Charles Barry, F.S.A., will deliver his opening address for the session.

The committee appointed to procure papers for reading at ordinary general meetings, announce that the following papers have been promised, and will be read, as under, during the present session:—

Nov. 19.—"On Middle Class Houses in London and Paris." By Mr. William H White, Fellow.
Dec. 3.—"Architectural Notes on St. Alban's Abbey." By Mr. James Neale, F.S.A., Associate.
Dec. 17.—"On the Law of Easements." By Mr. Locock Webb, Q.C.
Jan. 7, 1878.—"On the New Metropolitan Markets." By Mr. Horace Jones, Fellow.
Jan. 21.—"On the Architecture of Norway." By Mr. E. T. Anson, F.G.S., Fellow.
Feb. 4.—"On the Rise and Fall of Wages in the Building Trade." By Mr. Thomas Brassey, M.P.
Feb. 18.—"On the Prevention of Corrosion in Iron." By Professor Barff.
March 18.—"On some Ancient Examples of Japanese Architecture." By Mr. Josiah Conder.
April 1.—"On the Ecclesiastical Architecture of Scotland. By Mr. R. Anderson, Fellow.
April 15.—"The Chemical Disadvantage of Sulphur Joints in Masonry." By Dr. Alder Wright.—"The vexed Question of Oak or Chestnut in Old Roofs." By Mr. Thos. Blashill, Associate.
May 20.—"Syria, the Cradle of Gothic Architecture." By Mr. John Whichcord, F.S.A., vice-president.
June 3.—"Popular Criticism as applied to the Architectural Profession." By Mr. T. Chatfeild Clarke, Fellow.

PAPERS PROMISED AT THE ARCHITECTURAL ASSOCIATION.

The following is the published list:—

Nov. 9.—Address from the President (Mr. Bowes A. Paice) and reports from the various classes, &c.
Nov. 23.—"Notes upon Cornish Churches." Mr. J. P. St. Aubyn.
Dec. 7.—"Gothic Architecture." Mr. J. J. Stevenson.
Dec. 21.—"On the Revival of the Later Styles of English Gothic." Mr. J. D. Sedding.
Jan. 11, 1878.—"On Ornament." Mr. Lewis F. Day.
Jan. 25.—"Restoration *v.* Conservation." Mr. William White, F.S.A., and Mr. R. E. Pownall.
Feb. 8.—Discussion upon the last paper, in which Messrs G. H. Birch, L. W. Ridge, and others are expected to take part.
Feb. 22.—Architectural Heraldry." Mr. F. H. Hummel, M.A.
March 8.—"The Decorative Treatment of Modern Subjects for the Decoration of Modern Buildings." Mr. E. Buckman.
March 22.—"The New Model Bye-laws in relation to Public Safety, Health, and Comfort." Mr. J. Douglass Mathews; "The Paris Building Laws." Mr. W. H. White.
April 5.—Discussion upon the papers of March 22, in which Messrs. Blashill, Plumbe, and Robins are expected to take part.
April 26.—Members' *Soirée*.
May 10.—"On Architectural Ornamentation." Mr. Hugh Stannus.
May 24.—"To Burgos and Back." Mr. A. Payne.
June 7.—"Prehistoric Art and rude Stone Monuments." Mr. T. Roger Smith.

THE FEMALE SCHOOL OF ART.

On Friday and Saturday last week the students' drawings to which prizes have been awarded were exhibited at the School, 43, Queen-square. Two national silver medals, five bronze medals, six Queen's prizes of books, and fifteen third-grade prizes, were obtained by the pupils at the last South Kensington competition, and the works which gained these distinctions were exhibited. Some valuable prizes were given by Mr. S. A. Hart, R.A., Mr. Woolner, R.A., and other artists. The Queen's Scholarship, value 50*l.*, was awarded to Rhoda Carleton Holmes, for drawings in water-colour of an Egyptian girl, and other sketches, and we cannot avoid expressing a little surprise that this lady's works obtained no recognition at South Kensington. The National Gilchrist Scholarships were adjudged to Miss Barnay and Miss Newton. Both these ladies exhibit studies of flowers, well executed. The Subscribers' Scholarships, value 20*l.*, have been awarded to Elizabeth Lovell for crayon heads, to Florence Reason and Catherine M. Wood for fruit, flowers, and birds. Angela Mary Marshall obtained the Queen's Gold Medal for a bust from life of a negro, and she also exhibits a statuette of a fisherwoman, which gained a bronze medal at South Kensington. The silver medals at South Kensington were gained by Alice Hanslip and Anne E. Hopkinson. Miss Gann, with six of the students, paid a visit to Rome not very long ago, and a number of the sketches made formed part of the exhibition of which we are speaking. As a whole, these could scarcely be called up to the mark. Three of the best pupils have been received as students at the Royal Academy,—Miss Alice Hanslip, Miss Ida Lovering, and Miss Catherine Benson; they will be missed in Queen-square.

THE PRESTON NEW RAILWAY STATION.

In a short time Preston will be able to boast of possessing one of the largest and most magnificent railway-stations in England, instead of the inadequate and inconvenient station which for several years past has had to serve for the enormous traffic, on the one hand, passing through the town between south and north, and on the other hand, between the densely-populated districts of Yorkshire on the east and Lancashire on the west. It is estimated that no fewer than 600 passenger-trains per day arrive at and depart from the Preston station, on their way to north, south, east, and west respectively, and Preston being almost precisely midway between London and Edinburgh and Glasgow, it has now come to be regarded as the most important through station on the London and North-Western system, Rugby, Crewe, and other well-known stations not excepted. For this immense traffic the London and North-Western and the Lancashire and Yorkshire Companies, who are the joint owners of the station, have at length been compelled to provide increased accommodation on a gigantic scale, the large works in connexion with which are now proceeding. It may be stated that the railway, on its course northwards, passes under Fishergate, the principal thoroughfare in the town, which is carried across the line by a lofty bridge, erected recently in place of a former dark tunnel, and the site of the station works now in progress extends to both the south and the north sides of this bridge. The station buildings consist of several distinct blocks, one of these containing, on the ground floor, the booking-offices and parcel-delivery offices, situated on each side of a large central hall. The upper floors of this block contain the offices of the managers, and others of the principal servants of the companies, together with subordinate clerks' offices. The street elevation of this block facing Fishergate, is in the Italian style of architecture, the lower portion being in Longridge stone, from the celebrated quarries near Preston, the upper stories being in buff bricks, with Longridge stone dressings. Another block, 163 ft. in length, and 35 ft. in width, contains waiting-rooms, together with station-master's and inspectors' offices, lavatories, &c. This block is in immediate contiguity to the platforms. A third block, 200 ft. long, and 35 ft. wide, contains large dining and refreshment rooms, the dining-room being 64 ft. long and 32 ft. wide, and very lofty, its height from floor to ceiling being 25 ft. The mural and other decorations of this apartment are intended to be very artistic. The two refreshment-rooms in this block are also very spacious, the first-class room being 52 ft. long and 32 ft. wide, and the second-class 30 ft. square. The kitchens and general culinary department in connexion with the apartments in this block will be in the basement. In a continuation line with the several buildings already named, a fourth block, 125 ft. long, and 35 ft. wide, will contain extra booking-offices, waiting-rooms, and telegraphic-offices. The roof of the station will be one of its principal features, being of exceptionally large dimensions, covering nearly the whole of the platforms and buildings, which occupy a ground area of more than five acres in extent. The roof will be in four spans, and in its broadest part will be 200 ft. in width, with a length of 1,000 ft. It will be constructed chiefly of ornamental wrought iron, supported on several ranges of cast-iron columns.

The dimensions and general arrangement of the several platforms will form one of the most striking features in this immense structure. These will consist of a main central platform, no less than 1,260 ft., or nearly a quarter of a mile in length, and 122 ft. broad at its widest part, decreasing gradually to a width of 48 ft. at each end. Immediately attached to this platform will be the booking-offices, dining and refreshment rooms, and lavatories; and in front of these buildings will be another platform, running parallel with the main platform; and between these again an intermediate platform, specially for the traffic of the East Lancashire section of the Lancashire and Yorkshire Company. The two last-named platforms will be 620 ft. in length, the intermediate platform being 28 ft. in width, and the other 17 ft. wide, the three several platforms covering an area of

126,000 superficial feet. The main approach to the station is carried on an incline, on brick piers and arches, and at the lower end of the approach there will be a covered cab-stand, where passengers will alight in front of the booking-offices. Underground passages, lined with glazed bricks, lead from one platform to another.

The contractors for the buildings and works are Messrs. Talles, of Preston, and the estimated cost is nearly a quarter of a million sterling.

WARWICK WATER SUPPLY.

The long pending dispute between the Town Council of Warwick and Mr. Charles Hart, the contractor for the first part of the works in connexion with the new water supply for Warwick, has at length been arranged.

An action brought by the contractor for the recovery of damages for breach of contract, was at the last moment withdrawn by mutual consent, and an arrangement made for leaving the whole of the matters in dispute to arbitration. The contractor's claim amounted to 1,421*l.* 7s. 9½d., and a counter claim was made by the Council of 4,009*l.* 0s. 5½d.

In August of this year Mr. G. Berkeley, C.E., the arbitrator appointed by the President of the Institution of Civil Engineers, held an inquiry at Warwick, lasting five days, the legal points of the case being subsequently argued before him in London.

The arbitrator's award directs that the Town Council shall pay to the contractor 560*l.* 10s., and that there are no grounds for any counter claim. The legal expenses, and those of the arbitration, fall on the Town Council.

PEERAGE PROPERTY.

Sir,—Our reply sent on the 18th ultimo, canvassing nearly every one of Mr. Mitchell's statements (possibly at too great length), not having been inserted, you will perhaps allow us, on the principle of fair play, to forward a much shorter answer, lest it might be supposed we were confuted by his letter.

Firstly, let us say, then, that we find in the "Summary of Domesday Book" that there are more than *two hundred and sixty thousand* owners in England and Wales, irrespective of Scotland and Ireland, and of London, holding each one acre of land and upwards. Now, this is a small limit, but it shuts out all cemetery plots, all building society plots, all town and moor suburban plots.

Secondly. It is really ludicrous to suggest every farm labourer having four acres of land attached to his cottage. And what time would he have to work on a farm if he had four acres of his own to cultivate? An attempt by Fergus O'Connor years ago to establish a number of miniature farms with a few acres and cottage to each, proved a complete failure. As to "retiring" on four acres, that is again ludicrous.

Thirdly. The area of Woburn Park is under 2,000 acres, though it may be twelve or fourteen miles in circumference owing to irregular form.

Fourthly, to quote random newspaper paragraphs as serious evidence, because he has not seen them contradicted, is but poor political capital for Mr. Mitchell. Living within two miles of most of the Duke of Westminster's London estate, we can positively affirm it has not even nearly quadrupled in value in twenty-five years.

Fifthly. In France the subdivision of landed property has been long in force, and it results in this, that the land in France does not produce nearly so much per acre under democratic small holdings as in England under large aristocratic estates. Further, that the small freeholders in France are in practice encumbered with debt, and are obliged to half-starve themselves to pay their way. Such is the difference between theory and reality!

Sixthly. There is immense recklessness of statement in Mr. Mitchell's account of the taxation of "noble and squirearchical houses" in the country. He boldly affirms that where such owners are dominant in the parish there is not an instance of the houses being rated at more than a *tenth* or a *twentieth* of their actual value. That is inexcusable!

The principle of rating for the poor is not in proportion, truly, to what a house may have cost, or in proportion to its size; but according to what it is actually worth to let. Many a great house in the country, if offered to be let, would command but little rent, owing to the expense of keeping up, and the owners are in fairness rated at what their places are worth, not at what they have cost. Such is the law of the land, not the will of the peers. Curiously enough, we find in one of our private note-books on property the following memorandum, namely, that in 1874 the assessment to house-duty was for

Woburn Abbey on		£700	a year value.
Eaton Hall	,,	800	,,
Stowe	,,	700	,,
Chatsworth	,,	1,500	,,
Blenheim	,,	450	,,

At the moment we cannot name on what authority these figures were given, but they were, doubtless, at least as reliable as Mr. Mitchell's, and furnish a singular commentary on his "facts."

We have seen something of the farming classes of this country, and heartily wish them well, but when "One from the Plough" comes forward with such extraordinary assertions these agriculturists may well exclaim in surprise, "Save us from our friends!"

Mr. Grimes's letter is more cautious and temperate, but when he speaks of Scotland being "depopulated," how does he account for the number of inhabitants steadily increasing all through the century, according to the Census?

H. & R. Powell.

*** With this the correspondence must end.

LEAD *versus* IRON PIPES.

Sir,—An article in the *Builder* on the subject of water-supply pipes, signed "H. U. McKie," made me think as to whether, during a past thirty years' experience among water services of all kinds, I had been deceiving myself, or had not some one been deceiving Mr. McKie; for I really had come to a conclusion that no material was so well adapted for the distribution of water throughout our best dwelling-houses as lead pipes, knowing that they do not corrode to any appreciable extent from any ordinary water passing through them. I am ready to admit that new pipes are subject to the immediate chemical action of water, and to pure water, as rain-water, more quickly than any other; but very rapidly an insoluble salt is formed on the inside of the pipe, sometimes in a few hours, and after such formation the water passes through the pipes from entrance to exit perfectly innoxious. So far as regards the lead; and any person taking the trouble to examine the thin interior crust formed on the pipe will find it hard enough to turn the edge of his penknife on attempting to scrape it off, which is not easily done, and the water takes less effect upon such crust than it would upon glass, and when once formed no further action appears to take place. As to the lead pipes corroding up, I have seen lead pipes, after having been used for a century and a half, that were no more corroded than those having been in use for six months, yet still possessing the thin indestructible coating, so far as water is concerned. Raising the question of a substitute for the imaginary poisonous lead pipe, what is offered to us? First, a tin lining to lead. I have had some experience in that, and find it inferior to lead alone, and I do not imagine the salts of tin to be much more healthy than the salts of lead; however, the case is worse even than that, for upon an examination of the tin coating of lead pipes after a brief use, and especially so where subject to changes of temperature, we shall find the inside full of reticulation, exhibiting the fact that the expansion of the two metals is unequal: consequently exposing fresh surfaces of both metals to the free action of the water, and that continuously with every change of temperature. Another experience was in connexion with galvanised iron pipes for street services, and a composition pipe for internal services, such composition being formed in a great proportion of zinc. Such pipes were used over a large district in one of the largest towns in the United States. Sickness prevailed in that district, and upon analysis metal or zinc poison was discovered to be the cause. The pipes were all exchanged and generally replaced by lead, when the sickness disappeared, and my experience teaches me that galvanised iron or zinc in any shape is dangerous when used as pipes, cisterns, or other receptacle of water to be used for domestic purposes, and many times have I traced the slight acid flavour of drinking-water to zinc receptacles of same; and I think their rapid corrosion is sufficient proof of their dangerous properties, so that however cheap the first cost, such pipes may ultimately prove very dear in cases of sickness and death caused thereby. In some towns of America galvanised iron pipes are forbidden to be used from sanitary considerations, and in the principal towns of America no iron house-services are allowed to be used, in consequence of their perishable qualities. Plain iron pipes, so far as health is concerned, are unobjectionable as to their poisonous qualities, but their durability is short, and they are very much more subject to leakage than properly fitted lead pipes, and cause much more trouble to repair, as one moment's thought will exhibit to a practical man. A burst in a lead-pipe makes a very small opening in the pipe, and requires but very little cutting away of casing or floors to make a joint round the same, although it takes a mechanic to do it properly; whereas when an iron pipe bursts it generally extends a considerable distance, sometimes to the whole length of the seam, and even if it extends only 3 in., you have to take out the whole length, which may be a long one, and often gives considerable trouble in cutting it out with a hammer and cold chisel, jarring things in general: so I claim for lead in case of repair all the advantage it deserves, if a tinker be not employed thereon, as is too often the case with lead, and very generally with iron pipe repairs. Iron pipes possess another disadvantage for private dwellings, which is the noise and clatter made throughout the house when any of the cocks are shut off suddenly. The time may come when, with a proper coating, iron pipes may be more advantageously used than at present, but such coating must possess an affinity for the iron itself, and not be subject to fracture from rigidity.

As to the use of cast-iron for soil-pipes in private houses and elsewhere, I only wonder that a general typhoid fever does not pervade the town throughout from causes which could easily be explained, but having extended my paper considerably, I will reserve the soil-pipe question to another time.

A. S. Chappell.

GRANITE IN THE WORKSHOP.

Sir,—Your interesting description of granite working in Aberdeen compels me to think that the good people of that city are a little behind the age. We do not read of the use of any of those machines that have been invented during recent years for cutting and polishing granite with extraordinary rapidity, many of which were exhibited at Philadelphia during the Centennial Exhibition.

The writer of your article speaks of a block of granite 5 ft. thick requiring twelve months to saw it into slabs. At Philadelphia one inventor used chilled iron, finely divided, instead of sand, under a saw of soft iron. By this device, granite was sawn at the rate of 3 in. or 4 in. per hour, and at small expense, the waste of iron being only about 3 lb. for every 2 square feet of sawing.

With this machine, therefore, the block of granite at Aberdeen, 5 ft. thick, and said to require twelve months to cut into slabs, would be severed in a week.

But the chief feature of almost all the machines was the use of the Brazilian diamond as the cutting agent, which is used for the teeth of saws and drills. There were machines for vertical sawing with frame and for circular sawing, the latter predominating. Most varied were the mechanical arrangements, but in three main points all united. Every saw-tooth was topped with a diamond; an enormous concentration of power and velocity was employed; and, lastly, a deluge of water ran upon the point of action to keep down the temperature and to subdue the sparks. Much refined ingenuity was displayed in some of the methods devised for setting the diamonds, so as to secure them in such a thin body as the saw, and, at the same time, to give them a good rear support quite out of the cutting surface of the top. The saws were about 6 ft. in diameter.

A great impression was made by the steady-going way in which the machinery sliced great masses of granite and stone into slabs of any thickness in an hour or two.*

I observe that the steam sand-blast is not approved of in the Aberdeen shops. As your informant remarked "that almost as much trouble was expended in dressing up the work and levelling the cutting afterwards as would have sufficed to cut the work by hand from the beginning," I can only conclude that he has only seen the process tried in a rough way, and that he will probably change his opinion if he reads your report (February 20, 1875) of Mr. Newton's lecture at the Society of Arts.

H. T.

Street Improvements in Liverpool.—At a special meeting of the Liverpool Town Council, there was a long debate on the subject of the proposed street improvements. The net cost of these improvements, after deducting upwards of 300,000*l.* (the value of surplus land), is estimated at 1,086,045*l.* A report submitted by the town clerk dealt with the question as to whether the necessary powers should be obtained by Act of Parliament or a provisional order. Alderman Samuelson moved the adjournment of the debate on the ground that the present time was inexpedient for disposing of a matter involving so heavy an expenditure. The motion was negatived by forty-two to five votes. The next subject was the town clerk's report, which, after discussion, was adopted by thirty-three to fourteen. The council afterwards proceeded to consider the several improvements. The recommendation relating to the high-level bridge in William Brown-street, the estimated cost of which is 227,786*l.*, was referred back. Proposals for widening Roe-street (32,934*l.*), Byrom-street (79,625*l.*), and Dale-street and Whitechapel (41,180*l.*) were agreed to.

* The first cost of one of these machines would soon be returned at Aberdeen in the saving of time and labour at present incurred.

THE NATIONAL GALLERY AND HE BRITISH MUSEUM AS ART-TRAINING SCHOOLS.

Sir,—Knowing the exaggerated value which is ɔt upon the possession of a National Gallery and f a Museum of Antiquities by the British public, ne would expect to find those institutions re-arded as the chief art-training schools of the ietropolis, and as such having professors at-ached to them to direct the students' studies. ut one is astonished to find that in those two hief depositories of ancient art the art-student as, from their very first establishment, been ntirely left to his own devices. This appears ɔ me to be a most wonderful piece of incon-istency. Not that I by any means attach the ame importance to such collections of works of rt as *dilettanti*, who believe them to be abso-ıtely necessary to the development of an nglish school of painting and sculpture. Such nstitutions are doubtless delightful resorts for he cultured, splendid repertories for the copyist, nd excellent foundations for art-training schools. ut to thoroughly utilise them for the latter pur-ose there should be masters of painting and culpture appointed to watch the progress of the rt-students who frequent them. We have, at n enormous expense, brought Greece and Italy o our very doors only to neglect the true hus-andry of such possessions, and to complain of a canty harvest. W. C. T.

HENNING'S CASTS OF THE ELGIN MARBLES.

Sir,—I have read the letters in the *Builder* with some interest, as I have often spoken of Henning, and have had the pleasure of examining ll the dies, not only of the Elgin Marbles, ut also of Raffaelle's cartoons. The Transfigu-ation, &c., at the house of my friend, Dr. McOscar, who was most intimately connected with the deceased artist, and who was in con-equence fortunately enabled at his death to ave the dies from being scattered, and probably destroyed. The whole set now in his possession re most exquisitely engraved on fine slate slabs, s mentioned by your last correspondent, and epresent the patient labour of many years.

They are all rendered with truth and vigour, s well as with perfect finish, and form a valuable xposition of what should be considered a ational work. I only remember seeing one or wo sets at our schools of art, none of which hould rightly be without a set, though these ould be now difficult to procure, as they were ublished so many years ago.

R. Stark Wilkinson.

LIFTS IN LAMBETH INFIRMARY.

The lifts in this building were made and fixed by Messrs. Waygood & Co. Three are to take up the patients in their beds, an attend-ant going with them, and these are also used occasionally to take up a number of dinners; but there is another lift in connexion with the dining-room that is specially intended for bring-ing up the food from the kitchen. The three bed-lifts are fixed in the well-hole of the stair-case; they are made very strong but light, in order not to obstruct more light than possible. The cages are 7 ft. by 3 ft. 6 in. in the clear. By the old method, a patient being brought to the infirmary or hospital must be carried up flights of stairs at considerable pain and often injury, whereas in this case, the patient in his bed is placed in the cage, and the attendant who goes in with him, by pulling the hauling rope, is able to raise them both to the required landing, and by a break-rope keep the cage at a standstill till the patient is removed. These lifts have a patent safety apparatus, of good construction.

The food-lift is double, so that as one box is up being emptied, the one below is being filled, and being capacious, strong, and well fitted, will answer well the purpose for which it is intended.

FLATS.

Sir,—We constantly hear that when there is a real demand for any article of manufacture the supply soon meets it. But in the case of flats this rule has not held good. For the past five or six years I, and many persons of my acquaintance, have sought in vain for apart-ments built on this system, not in the morasses of Westminster and Pimlico, but on the healthy hills of Bayswater. Will no enterprising reader of the *Builder* take up the question? I shall be happy to send him the names of my friends who want flats, and I think common sense will assure him of a good return for his outlay. Mr. Daw, though his flats are in a stable lane, has never, I believe, had any difficulty in finding respectable tenants. Let me suggest such sites as may be found at the corner of Exhibition-road, in Seymour-place or Nutford-place, Edgware-road, or in the neighbourhood of Connaught-square. Paterfamilias.

THE MASONS' STRIKE.

Sir,—The letter of "C. B., One of the Deputation of Masons," requires some reply, which, by your leave, I will make as short as possible. "C. B." says that there can be no difficulty in the masons working different hours from bricklayers and others, because plumbers have always worked different hours. I think any person of common sense will at once see there is nothing in such an argument. Plumbers have no work in connexion with masons, and the well-known reason of plumbers being allowed shorter hours is the unhealthiness of their employment, they being always constrained to work in a stooping cramped position, and liable to inhale the fumes of molten metal.

The next fallacy of "C. B." arises from his mixing up the trades of carpenters and joiners. Carpenters at work in open buildings must of necessity work the same hours as bricklayers, plasterers, &c. The joiner has, as "C. B." states, a nice warm shop to work in, and so is unaffected by weather or darkness.

"C. B." denies the assertion that a skilful mason is made to eke out his time so as not to surpass the idle and unskilful, and asks, can a Master Builder point out any rule in our book to that effect? In reply, I say that the book in question is not available for the masters to see; and if it were, the chances are that no such rule would be found. But the practice is as I have stated, and many instances can be given of the masons striking because the master wished to test the amount of a man's work by measuring it.

The last matter referred to is the dissatisfaction of the Masons' Union at the course the master builders have adopted in seeking men from abroad, being unable to get them at home; and to this I reply that the masters had no other reasonable course open to them.

"C. B." also deplores the fact of many hundreds of men being compelled to subsist on the strike pay of 18s. per week. In this I heartily agree with him. I know a man with nine children who is starving on that allowance (his large family having made it impossible to save much), and yet that man might be earning his 10½d. per hour as fixer if the Union would allow him to work for his old employers.

A Master Builder.

TREATMENT OF BUILDERS.

Sir,—I read in the *Builder* "Justitia's" remarks on the treatment of builders, and hope the powerful aid of your columns will for ever stop such occurrences. I assure you some architects have much to answer for hereafter. My husband completely lost his health under similar treatment. The terrible suspense and anxiety was too much for him, and eventually, to save us from ruin, he was compelled to part with property at a sacrifice to meet his payments. It was truly distressing, meanwhile, to see his health gradually sinking. Justice overtook the Stauntons, but it appears to me that architects may thus kill builders by mental torture with impunity.

M. D.

FIREPROOF WOOD.

Sir,—In your issue of October 20th allusion is made to the fire at Inverary Castle, damage estimated at 15,000*l.* or 20,000*l.*

Do you know any contractors who make timber fireproof? I see in the "Year-Book of Facts" for 1877, page 181, wood can be made both fireproof and damp-proof. If the process be not too expensive it is very desirable it should come into general use; in fact, we should be inclined to try it in some building operations we intend to commence shortly. F. Widdows.

A Park for Lancaster.—Mr. Alderman Williamson, of Lancaster, has offered to buy forty acres of land on Lancaster Moor, and to give 10,000*l.* to convert the space into a public park. The Town Council accepted the offer. Mr. Williamson is stated to have served his apprenticeship as a house-painter.

MANCHESTER CORPORATION GASWORKS.

On the 10th ult. the corner stone of the new gasworks which the Manchester City Council about eighteen months ago resolved to erect near Philips Park, was laid with some ceremony. Some idea of the magnitude of this undertaking may be formed when we state that the site embraces an area of thirty-nine acres, as compared with eight acres occupied by the Gaythorn station, and about nine by that at Rochdale-road; and that the total cost of the works, including land, is estimated at nearly 800,000*l.*, whilst the value of the land, buildings, and apparatus at Gaythorn is put down at 164,713*l.*, that of Rochdale-road station at 225,451*l.* The new works, when complete, are expected to produce 20,000,000 cubic feet of gas in twenty-four hours against 6,000,000 at Rochdale-road station, and 4,760,000 at Gaythorn. There will be four gasholders at Bradford-road, capable of containing altogether 7,000,000 cubic feet of gas, against 4,547,000 stored in five holders at Rochdale-road, and 3,093,130 in the six at Gaythorn. The works are being built in four sections, each of which is to be complete in itself and capable of producing 5,000,000 cubic feet of gas per day. The first of these sections is now in hand.

When the entire works are complete the corporation will be able to manufacture upwards of 30,000,000 cubic feet of gas per day. About 350 men are at present at work, and the operations are being pushed forward as rapidly as possible. The river wall, which is intended to protect the works from any possible damage by an overflow of the Medlock, is nearly completed, and has cost upwards of 20,000*l.*

The whole of the works are from designs by Messrs. Mangnall & Littlewoods, of Manchester, and will be carried out by the executors of the late Edward Johnson, to whom the contract was let.

GRAVING DOCK.

On Wednesday, 17th ult., the centre stone of the invert for the new graving-dock now in course of construction for Messrs. R. & H. Green, of Blackwall, was laid with the usual ceremony. Messrs. Baker & Son are the contractors for these works, and Mr. H. B. Chapman engineer for the contractors.

The dock is 410 ft. long, and 64 ft. wide at the entrance; the depth at centre is 29 ft. 6 in. below the coping, and 24 ft. below high water. The side walls are of concrete faced with ordinary granite pitching. There is a depth of 14 ft. of lias concrete under the walls and bottom of the dock, founded on the blue clay.

THE LONDON BUILDING TRADES.

The Masons.—On the 25th ult. the operative masons on strike held a meeting for the purpose of considering the present position of the dispute. Mr. Broadhurst, the chairman, said large importations of foreign workmen had recently been made. These men had been engaged on the Law Courts alone. The strike committee were a week or two ago informed that a large number of American masons were coming over to oppose them. This would have been a serious blow, but it appeared that the agent who engaged the Americans said that there had been a strike, but it was now over. However, the men found out on the voyage the true state of affairs, appointed a committee, and now fifty-two out of the fifty-eight Americans had voluntarily signed the strike-roll, and were going to take the part of the operative masons in dispute.

Sixty masons have arrived from America per steamer *Elysia*, and on landing at Gravesend they were met by a deputation from the Master Builders' Association, and conveyed by special steamer to the Temple Pier, immediately opposite the Temple Buildings, where some of them have since been employed by Mr. G. W. Booth, the contractor. When the works stopped in July last, eighty masons turned out, the job being about half-finished.

After the newly-arrived Americans had partaken of dinner a meeting took place at the Sussex Hotel, which was addressed by several of the masters and men. Mr. Booth informed the men that there was plenty of work for them to do, and they could work either nine, ten, or even twelve hours per day if they chose. They could work as long as they liked. With respect to the works in progress in this country, there were many which would take three or four

years to finish, and any one of those present could earn 100*l.* a year for that period.

It is stated that in America several hundreds of masons are engaged, and will shortly arrive to fill up the large works in this country.

At the New Law Courts matters remain as they were. The whole of the sixty foreigners take their meals inside the premises, and the Germans only leave at night. A huge canteen has been set up in the basement of these large buildings, and Messrs. Ross, of Netley, have been engaged to supply the men with their meals.

Forty-three German masons arrived at Victoria Station on Tuesday, and were conveyed direct to the works of the New Law Courts, upon which they were engaged on Wednesday.

On Saturday evening a crowded meeting of the masons of London, unionists and non-unionists, was held at Cambridge Hall, Newman-street, Oxford-street. Mr. Broadhurst, who was elected chairman, commenced by asking his brother masons to be more than usually careful in observing order, and, referring to the alleged outrage upon the foreign workmen in the streets of London, he, on behalf of the committee, declared that no one connected with the strike had committed the outrage. In the course of a long speech he congratulated the men on strike, amid loud cheers, that fifty-two out of the fifty-eight Americans who had arrived the previous day had joined the Union. Mr. Nisbet read a proposed memorial to the Home Secretary with respect to the adverse action of the police towards the masons. The memorial prayed the Home Secretary to cause an inquiry to be made, as at present the protection of the police, which should be given to all alike, was being used in a manner to provoke a breach of the peace. The memorial was unanimously adopted.

At Bow-street Police-court on Saturday, Mr. Besley, barrister, applied to Mr. Flowers for a summons against Mr. G. W. Booth, of 24, Bedford-street, Covent-garden, under the following circumstances:—He said that his application arose out of the masons' strike, and that he applied on behalf of four masons, citizens of the United States, who had been induced to come to this country, for a summons against Mr. Booth for unlawful detention. The complainants were engaged at New York by Mr. Stanley G. Bird, a London builder, and secretary of the Master Builders' Association, to work in London for him for six months, under a printed contract, whereby they were to receive 9d. per hour. The men had also signed a supplemental agreement, which he had not seen, but according to which he believed the men agreed to pay back their passage-money by instalments, and allowed Mr. Bird to retain their tools for six months. Mr. Besley then stated that on arriving at Gravesend the men were met by Mr. Booth, who brought them to London. They asked him if he were Mr. Bird, and he said "No," and added that Mr. Bird had not got any work for them, and that they were to work for him. After two days' rest they went on Friday morning to some work being carried out by Mr. Booth, on the Thames Embankment. They asked if it were Mr. Bird's job, and on being answered in the negative, demanded their tools, which Mr. Booth's foreman, Mr. Besley alleged, refused to give up. Having read the printed agreement made by the men with Mr. Bird, and read the section under which the summons was applied for, Mr. Besley asked that a summons might be issued for unlawful detention. Mr. Flowers granted the application.

The Strike Committee agents were busily engaged on the 30th ult. as it became known that a number of workmen from Canada were on the way to London. A "look-out" for them was accordingly arranged among the pickets. The men were engaged by the agent acting for Mr. S. G. Bird, of the Masters' Association, at Montreal, and left Quebec on the 20th ult. in the Moravian steamer, of the Allan line. The party numbered thirty-eight. When they signed the contract as masons and stone-cutters, to serve in this country for at least six months, they were informed that a dispute existed in the building trade, but it is said that no mention was made of a strike, and the men readily consented to the proposed terms. On reaching Londonderry, however, a pilot came alongside the *Moravian*, and shouted "A strike in London!" This was the first intimation they had of what was going on, but after some warm discussion they agreed almost to a man to go to work. They were landed at Liverpool on Monday night, and left by the 10·40 p.m. train, viâ the Midland line, alighting at Kentish-town on Tuesday morning. Omnibuses were there in waiting for them, and they were taken to Fetter-lane, Fleet-street, where breakfast and dinner were provided for them. The men were to have transferred their services to Messrs. Dove Brothers, of Islington, who have several new churches in course of construction, and with the proposals made by that firm the Canadian masons expressed themselves perfectly satisfied. As the day advanced the men with their tools disappeared gradually, until on Tuesday evening, according to the *Daily News*, there was only one man remaining at the White Horse out of the thirty-eight fresh arrivals. Where the remainder had gone could not be ascertained. Messrs. Dove Brothers are said to have paid the passage money in each case. There are, it is understood, large numbers of unemployed masons in Canada, and another contingent of them is expected to arrive soon.

Several of the German masons engaged at the Law Courts were not forthcoming again on Tuesday. On Tuesday morning some members of the Masons' Strike Committee went down to the Docks, and saw off eleven German masons who had been working at the New Law Courts, and who were returning to their own country through the assistance afforded them by a German Society in London, and aided to some extent by the Strike Committee. Seven Italians engaged upon the New Law Courts works waited, on Tuesday morning, on the Strike Committee, and asked their aid to return to their own land. They represented to the committee that they were dissatisfied with their treatment, and desired to return to Italy, but were unable to do so through want of money. The committee did not consider the applicants to be qualified masons, therefore were unable to make any grant towards helping them homewards.

"A. H." writes to say that, owing to the present strike, the whole of the stonework intended to be put into the Government Post-office Savings Bank, Queen Victoria-street, has been cancelled, and cement dressings are to be used instead. Thus the working of a 15,000*l.* job is lost to the masons. What if this system should be adopted everywhere?

The Joiners.—An adjourned general delegate meeting of the London carpenters and joiners was held on the 26th ult. at the Spread Eagle Tavern, Tottenham-court-road. Mr. C. Burton, presided. The object of the meeting was to consider what action should be taken in reference to the resolution passed at the last meeting, asking the employers for an increase of 1d. per hour, and a reduction of working-hours.

Mr. Foster moved the following resolution:—"That we solicit our employers for an advance of 1d. per hour on our present rate of wages—viz., from 9d. to 10d., and a reduction of working-hours from fifty-two hours and a half to fifty hours per week; and that an effort be now made to settle the question by conference, in accordance with the resolution carried at the settlement of our movement in 1872."

Mr. Gowland moved, as an amendment, "That, in the opinion of this meeting, the present is not a fit time to ask for an advance of wages or a reduction of working-hours." After considerable discussion, the amendment was put, and received ten votes. The resolution was then put, fifty-four hands being raised in its favour. The chairman declared the resolution carried.

Mr. Nightingale proposed, and Mr. Try seconded the next resolution:—"That we, the delegates present, record our confidence in the United Trade Committee, and hereby empower them to carry out the foregoing resolution on our behalf." The resolution was ultimately carried.

VARIORUM.

"MIRTH" is the title of a new humorous sixpenny monthly just now commenced by Messrs. Tinsley. It is edited by Mr. H. J. Byron, and the first number contains contributions from Mr. J. R. Planché (Introductory Ode), Mr. J. Albery, Mr. E. L. Blanchard, Mr. G. A. Sala, Mr. R. Reece, Mr. H. S. Leigh, Mr. W. S. Gilbert, Mr. J. Hollingshead, Mr. G. Turner, and the Editor. If this can be kept up, success is assured, though we are bound to say some of the present contributions are feeble enough. The introductory ode, however, is itself worth all the money, and when the author invokes Thomas Hood as,—

> "Best humorist! Beneath thy wildest fun
> The kindliest current flows of human feeling,
> While splitting sides with some outrageous pun,
> Into our hearts insidiously stealing
> By tropes which seem intended but to tickle us,
> Extracting the sublime from the ridiculous,"—

he strikes the key-note which should regulate the productions of the rest of the composers.——As to the increase of the value of land in rural districts of England, the *Leisure Hour* gives the following note:—"In the churchyard of Claverdon, a village in Warwickshire, is a monument to one John Matthews, who died in the reign of Henry VIII., leaving land in the parish in trust to defray the cost of necessary repairs or enlargement of Claverdon Church. From time to time the rental of the estate has been inscribed on one side of the monument. It is a pity that there are such long gaps in the record, but, imperfect as it is, this table is of great interest as showing the rise that has taken place in the value of land in the last two centuries and a half. It must be remembered that a noble is one-third of a pound sterling. The table is as follows:—

1617	12 nobles.
1707	£12
1825	£78
1868	£130."

——*The Garden* continues its issue of coloured illustrations of flowers, and well maintains its character in other respects.——Cassell's *National Portrait Gallery* condenses what ought not to be forgotten as to the Whitworth Scholarships:—"Mr. Whitworth was created a baronet in October, 1869, and in the same year founded the Whitworth Scholarships, for the assistance and encouragement of young students of mechanical and engineering science. In the previous year—March 18th, 1868,—Mr. Whitworth wrote to Mr. Disraeli, stating that it was his desire to promote the engineering and mechanical industry of this country by founding thirty scholarships, of the annual value of 100*l.* each, to be applied for the further instruction of young men, natives of the United Kingdom, selected by open competition for their intelligence and proficiency in the theory and practice of mechanics and its cognate sciences. He proposed that these scholarships should be tenable, on conditions to be defined by a deed of trust regulating the administration of the endowment fund, during his life, and that thereafter the management of that fund, subject to the conditions specified therein, should vest in the Lord President of the Council, or other minister of public instruction for the time being. Mr. Whitworth's munificent proposal was considered by the Lords of the Committee of her Majesty's Most Honourable Privy Council on Education, and he received a letter from their lordships, in which they accepted his generous offer. . . . The princely nature of Mr. Whitworth's gift will be at once apparent when it is borne in mind that a sum amounting to nearly 100,000*l.* must be invested in order to produce the funds necessary for maintaining the scholarships of 3,000*l.* per annum; whilst the benefit thus conferred on the cause of mechanical science is simply incalculable. Not only for a generation, but for ever, are these scholarships intended to exist; and the name of Sir Joseph Whitworth will be held in veneration by grateful students long after the memory of many other equally eminent contemporaries has died away."——The Christmas Annual of *Once a Week* will be from the pen of G. Manville Fenn, author of "Ship, Ahoy!" &c., and, under the title of "Hush-a-bye, Baby," will deal with the "little strangers," welcomed and unwelcomed, in our midst.

STAINED GLASS.

Stanton-on-Peak (*Derbyshire*).—At Stanton-on-Peak Church a new east window has been erected by Messrs. Camm, Brothers, of Smethwick and Birmingham, the gift of Mrs. Thornhill Gill, and which was unveiled on the 28th ult. It contains the subject of the Lord's Supper in a canopied base running through the four lights, and above a large subject of our Lord's Baptism, surmounted by a canopy. In the tracery are emblems of the Lamb, the Dove, and the Holy Trinity. The donor has also presented communion-rails and gates of brass.

Yardley.—In the parish church of Yardley, Warwickshire, Messrs. Camm, Brothers, have recently erected a memorial window to the late Mrs. Simcox, of Hall-green, representing Christiana entering the valley and river of Death.

Percy Main.—A stained-glass window has just been placed in St. John's Church, Percy Main, by the vicar and his sisters, in memory of their parents. The window is Early English in character, and the subject is "Christ bearing his Cross on his Way to Calvary." The vicar has

also contributed four small windows in the west end of the church. The whole of the work was designed and carried out by Mr. Baguley Newcastle.

Chester-le-Street.—The old parish church of Chester-le-Street has just received a new painted window, the gift of Colonel Johnson. In 1850, the parish raised subscriptions for the purpose of filling the east window with stained glass, and the work was entrusted to Mr. Wailes. The advancement in the art of painting on glass since that time, coupled with the fact that several very fine painted windows have lately been inserted, made it desirable (says the *Newcastle Courant*) to have a new east window. Col. Johnson at once offered to defray the cost, and the work was entrusted to Messrs. Clayton & Bell, of London. The window consists of four main lights, surmounted with tracery; the apex consists of a double trefoil light. This contains the figure of the Saviour, surmounted by tracery. Each of the four lights is divided into an upper and lower. The north light contains the Annunciation, or the angel appearing to the Virgin. The next light contains the Nativity. The third light depicts the visit of the wise men. The fourth light contains the "Presentation in the Temple." The four lower lights illustrate incidents in the history of St. Cuthbert, one of the patron saints of the church.

Chagford.—A stained-glass window has just been erected in the south aisle of the parish church, to the memory of the late John and Susanna Berry, by their daughters, Elizabeth L. Cox and Susan Bovey. The subject is "Christ blessing little Children." The artist is Mr. W. H. O'Connor.

Bath Abbey.—A new stained-glass window has been placed in the Abbey Church, Bath, by Mr. Brooke, of Hampstead-heath, in memory of his parents. The new window is on the east side of the south transept, and is by Messrs. Ward & Hughes, of London, who have supplied one or two others to this church. The tracery contains representations of the Good Samaritan, the centre light showing our Lord blessing little children, and the other four lights various acts of mercy. In each of the four lights there are two subjects.

COMPETITIONS.

Stafford Market.—There were thirteen sets of plans sent in, out of which two were selected by the Markets Committee to bring before the Council for deciding as to the award of premiums—first, 75*l.*; second, 25*l.*, as per advertisement. The two plans selected by the committee, after many hours' examination, as being the two best, and of almost equal merit, were "A. B. C." (Messrs. Beaumont & Bare, Corporation-street, Manchester), and "Staffordshire Knot" (Mr. N. Joyce, Stafford). These were placed before the whole Council to decide as to first and second; but, strange to say, the Council took their own course, and "Mark Well," with a device (Mr. T. Chalmers, Stafford), was ultimately decided upon as being entitled to the second premium, "Staffordshire Knot" being placed first.

Southport Covered Markets.—The Markets Committee have recommended to the Council that in their opinion the design bearing motto "Regardez-moi" is entitled to the premium of 100*l.*; "Sanitas" to the second, or 50*l.*; and "Experientia Docet" the third, or 25*l.* The sealed envelopes containing the authors' names will not be opened until after the next meeting of the Council. Much dissatisfaction is expressed at the way in which this competition has been conducted. Two of the competitors,—"One of the Selected," and "Honesty the Best Policy,"—write to the *Southport Daily News* describing the competition as "a complete farce," and allege that the secrecy supposed to insure fair play has been abused by some of the competitors who had "friends at court" letting their intended mottoes be known beforehand.

Tottington (near Bury) Church.—The committee for the erection of the proposed new Church of St. Mary, Hawkshaw, have accepted the designs submitted in limited competition by Messrs. Maxwell & Tuke, of Bury. The estimated cost of the building is a little over 3,000*l.*

Engineer to the Corporation of Salford.—At a meeting of the Town Council, held on the 31st ultimo, it was resolved to appoint Mr. Arthur Jacob, of Barrow-in-Furness, to the office of Borough Engineer. There were 68 applicants.

ABSENCE OF HOARDINGS.

BOWDEN *v.* SERFF AND ROWLAND.

This case came on for hearing in the Brompton County Court the other day, before Mr. Serjeant Wheeler. The action was brought by Mr. Henry Bowden, described as a "monumental plasterer," residing in Rawlings-street, Chelsea, to recover damages, which he assessed at 50*l.*, from the defendants, who are builders, of Sloane-street, Chelsea.

Mr. W. Doveton Smyth appeared for the plaintiff, and Mr. Vallancy Lewis for the defendants.

The plaintiff's case was that at half-past twelve on the morning of the 30th of March last he was returning home, and when at the corner of Pavilion road and Sloane-square he trod on a stone outside some buildings which the defendants were erecting. This gave way under him, and he fell into an area into a quantity of filth, spoiling his clothes, and sustaining severe injuries. In consequence of these injuries he was under medical care for some weeks, and was prevented from attending to his business. For the pain and suffering he claimed 25*l.*, and the remainder of the claim was made up for medical expenses, loss of business, necessary cab hire, and new clothes. The case was before the Court on a former occasion, and Mr. Glyn, barrister, for the defendants, then contended that the place was a public thoroughfare, and that the parochial authorities, if any one, were liable.

The judge decided to view the *locus in quo*, and afterwards expressed his opinion that the defendants were liable, and it was only a question of damages.

Mr. Smyth said the defendants were, in fact, on the horns of a dilemma, for even assuming, for the sake of their argument, that the place was a public one, then they had not complied with the terms of the Metropolis Local Management Act by erecting a hoarding which would protect foot-passengers. By the 121st section of that Act they were under a heavy penalty for this neglect.

Mr. Lewis cross-examined the plaintiff, chiefly with a view of mitigating the damages, and the judge, at the conclusion of the case, said he should give the plaintiff a verdict for 35*l.* and full costs.

LIGHT AND AIR CASE.

SPOTTISWOODE *v.* GODBOLD.

In the Chancery Division of the High Court of Justice, before Mr. Justice Fry, Mr. Willis Bund, on behalf of the plaintiffs, moved *ex parte* for an interim injunction to restrain the defendant from carrying up some new buildings so as to obstruct the light and air enjoyed by the plaintiffs. Plaintiffs are the Queen's printers, who have a branch office on the west side of Chancery-lane. On the eastern side are being erected some extensive buildings, in place of some small houses and shops, which some years ago were pulled down. These old buildings, it was said, were 43 ft. high, and the plaintiff had discovered that the new buildings were to be of the height of 63 ft. The additional height, they alleged, would interfere with their light and air, especially on the first floor, which was used by *employés* engaged in drawing plans for lithography. The width of the lane at the point in dispute was, from house to house, 37 *ft.*

On the plaintiffs giving the usual undertaking as to damages, his lordship granted an interim injunction restraining the defendant from erecting his buildings so as materially to interfere with the plaintiffs' light and air.

PRESERVING FENCE-POSTS.

On this subject the *Journal of Forestry* has the following:—The proper seasoning of timber before being used in any structure is far more important than the season of the year it is felled in, kind of timber used, or preventives employed. There are paints, washes, and heterogeneous steeps recommended for preserving posts, but each are comparatively costly, and only partially successful. One great objection to the application of solutions externally rests on the fact that the sap being confined accelerates decomposition in the interior. Most foresters must have observed this. What I would recommend with fencing-posts is, the materials, when felled, to be directly sawn into posts and stored under sheds thoroughly ventilated, where they will remain at least a year exposed to "sun and wind." The neck or part between wind and water of each post should be slowly charred over a strong fire,—slowly, because our principle means heating the timber thoroughly to the heart, so as to extract any moisture which may be still lodged at the centre, and hardening a crust on the surface of the posts. Afterwards, to prevent the posts absorbing water, they should be well coated with coal tar, having its acid destroyed with fresh quicklime. The tar should be thoroughly boiled to evaporate all watery matter, and applied boiling hot. A large tank, holding the posts set on end, and filled with the scalding tar from a boiler, answers the purpose very well. Of course, the upper half of the posts can be painted when placed *in situ*. I am fully convinced coal tar, properly applied to thoroughly seasoned timber, is far more effectual in preserving posts than creosoting poisoning, kyanising, or all the paraphernalia of iron prongs, sheet-iron wrappers (an American invention), &c. One great recommendation in favour of the above process is that it requires no skilled labour, and the cost is a mere trifle.

DENHAM, NEAR UXBRIDGE.

New schools have just been completed upon a site of half an acre in Cheapside, Denham. They consist of separate school and class-rooms for boys and girls, and infants' school, with master's residence and offices, and will accommodate 240 children. The materials used are stock brick, with dressings of red brick and Box-ground stone; the roofs are tiled. There is a bell turret over the lobby of girls' schools. Internally the woodwork is stained and varnished, and the walls are painted up to the level of window-sills. The school and class rooms are heated by the "Manchester school grate," and care has been taken to provide for proper ventilation. In the infants' school are two galleries of unequal size, and a group of desks for the older infants. The boys' and girls' schools are fitted with "Sidebotham's patent reversible desks and benches," and the class-rooms have proper galleries. There are separate playgrounds, with boundary-walls and iron gates. The contract was taken by Mr. F. Taylor, of Uxbridge, for 2,340*l.*, and there have been no extras. The architect is Mr. R. Groom, of London.

CHURCH-BUILDING NEWS.

Lodge.—The *Oswestry Advertiser* reports the proceedings in connexion with the laying of the foundation-stone of the new church of St. John, Lodge. The site of the church is at the corner of what is known as the old road to Gobowen. The ground set apart is an acre in extent, rather more than half of which will be formed into a burial-ground, whilst the church and vicarage will occupy the remainder. According to the plans of the architect, Mr. H. Kennedy, of Bangor, the church will be built in the Early Decorated style, and will consist of a nave, chancel, north porch, and robing-room, and at the west end the building will be surmounted by a bell-turret with space for two bells. The internal fittings will be of pitch-pine, varnished, and the roof of stained pitch pine, and covered with slates. The church will be built of stone, with dressings from the Gardden Lodge Quarry. When completed it will afford accommodation for upwards of 250 persons. The total cost will be 2,100*l.*, and the work is contracted for by Mr. T. J. Humphries, builder, Bangor.

Claverdon.—The Bishop of Worcester has re-opened the church of Claverdon, near Stratford-on-Avon, which, with the exception of the tower, has been entirely rebuilt, the old one being described in his lordship's speech at the luncheon as being "as bad a church as there could be." The offertory was about 80*l.* The architect was Mr. Christian.

Bagendon.—The small parish church of Bagendon was reopened on Sept. 30th, after having been provided with new roofs for nave and aisle. Internally the nave has three semicircular arches of Norman work dating from about A.D. 1150, while externally it bears the appearance of the Perpendicular architecture of the time of Edward IV. In the middle of the fifteenth century, when this church belonged to the chantry of the Holy Trinity in the parish church of Cirencester, the same persons seem to have been benefactors of both; for on the brass of William Prelatte, which lies in the chapel of the Holy Trinity, he is described as a most special benefactor of it; he is represented between his two wives, of whom the second was Johana, relict of John Twynyho, of Cayford. Some years ago the timbers of the nave-roof had been shortened and the pitch consequently lowered. Latterly there had been unmistakable proofs that a new roof was necessary; and the nave and aisle have been covered with the best pitch pine, after the model of the old roofs. The work has been done by Mr. W. H. Wood, of Cirencester. A local paper says it was found necessary to rebuild the north wall of the aisle; but there is much to be done before the church can be said to be restored. One peculiarity still remains: the church is built in

the very lowest part of the valley, below the level of the brook, and is subject, consequently, to flood and damp. To remedy this, about fifty years ago, the floor was raised some 20 in., to the shortening of the Norman piers and injury of the general effect of the interior. It remains to be seen if a drain cannot be carried down the valley, so as to admit of lowering the floor to the old level.

Foord.—On the 3rd ult. Dr. Parry, Bishop-Suffragan of Dover, laid the foundation-stone of a new church at Foord, near Folkestone. The building is being erected under the auspices of the vicar of Christchurch, the Rev. Claude Bosanquet, and is to cost, when ultimately completed, between 7,000*l.* and 8,000*l.* At present, however, it is intended to confine operations to the erection of the nave and one aisle, leaving the transept, vestry, tower, and chancel until a future period. The style is the Early English, and the architect is Mr. Rowland Harcourt. Messrs. R. & D. Baker, of Folkestone, are the builders. The church will be finished in about twelve months.

Dalton.—On the 29th Sept. the new church of St. Michael and All Angels, at Dalton, near Wigan, was consecrated by the Bishop of Chester. The church has been built at the sole expense of Lord Skelmersdale, at a cost of between 5,500*l.* and 6,000*l.* The land for the site and churchyard has been given by Lord Skelmersdale and Mr. J. Prescott, of Dalton Grange. The church, a substantial building, has been erected by Mr. Winward, builder, of Wigan, from the designs of the architect, Mr. Wyatt, of London.

Stonehaven.—The new Episcopal church that has been erected at the west end of Arbuthnott-street, Stonehaven, was opened on the 1st ult. The building has been erected at a cost of over 3,000*l.* The church stands in an east and west direction, parallel with Arbuthnott-street. It is a large building, built of purplish-grey freestone got from the Bervie quarries, some ten miles distant. The style of architecture is Norman, passing into Early English. When fully completed the building will consist of a nave, two aisles, a chancel, tower, and spire. As it stands, the nave and aisles form the building, the chancel, tower, and spire being intended to be built at a future period, when an additional sum shall have been raised to cover the necessary outlay. The length of the nave of the chapel is about 73 ft., and the breadth from side to side of the aisles about 48 ft., while the height from the ground to the apex of the roof is about 40 ft. The spire, which, as designed, will rise to a height of 85 ft., is intended to be built at the north-west corner, next to Arbuthnott-street. At the west end of the church a stained-glass memorial window has been put in by Mrs. Officer, in memory of her son, Alexander Murray Officer, M.D. The window has been designed by the architect of the church, Mr. R. Anderson, Edinburgh.

Sutton Bonnington (*Nottinghamshire*).—The chancel of St. Anne's Church, having been restored, has recently been re-opened by the Bishop of Nottingham. The church is of a simple, interesting character, erected during the Decorated period upon a site about a mile from its present position, and appears to have been rebuilt upon its present site during the Tudor period. The chancel, having recently given way in some pieces, it was decided to repair, and at the same time to make it more in harmony with the older part of the work. An inspection was made by the architect some months ago, and he found it necessary to erect a new roof and new buttresses to prevent the further spreading of the walls at the top, and to entirely reconstruct the lower part of the walls to the height of about 4 ft. above the floor line. This has been done, together with other works, including floor of encaustic tiles, new oak chancel, stalls, and altar-table, a stone and alabaster screen, and a reredos of white statuary marble and alabaster by Earp. The windows have, for the most part, been fitted with stained glass by Mr. A. L. Moore. The work has been carried out by Mr. H. F. Allen, of Leicester, the architect being Mr. Edwin Dolby, of London.

Dunnington.—Dunnington Church, near York, was re-opened on the 16th ult., after restoration, under the direction of Mr. C. H. Fowler, at a cost of between 1,300*l.* and 1,400*l.* The church is dedicated to St. Nicholas, and previous to its restoration and re-arrangement accommodated about 300 worshippers, but now it can seat a greater number. Mr. John Brown, Lord Mayor's-walk, York, was selected as the sole contractor for the works, and on commencing operations the internal fittings of the church were removed, and the old flooring taken up, and a new one laid down in cement. The chancel floor is paved with encaustic tiles by Mr. Huggins, of York. The chancel roof has been repaired in several places which had gone to decay, and covered in with Staffordshire tiles. The flat ceilings of the aisles have been removed, and the principals and timbers of the roofs exposed to view. The sittings in the nave are open and of pitch pine, and the flooring is composed of wooden blocks laid down in zig-zag pattern. The organ-chamber is occupied by the old instrument, enlarged by Messrs. Walker & Co.

Miscellanea.

Marlborough House.—Recent events have given too much reason to fear that the sanitary condition of Marlborough House was very unsatisfactory. We are glad to learn from the *British Medical Journal* that the drainage has been recently so thoroughly overhauled that all anxiety on the score of bad drainage may now be dismissed. The whole of the basement has been examined, with the result of finding a most discreditable condition of affairs. Old drains and cesspools were found, the existence of which was not even suspected by any person in authority. No one knew what they had been made for, and they had formerly been cut off and were found to be filled with decomposing filth and swarming with rats. Of course they have all been removed, and the ground they occupied has been filled in with concrete. New drains have been put down. All these works have been done by the Board of Works under Mr. Taylor, the chief engineer inspector of the Board. At Sandringham, since the illness of his Royal Highness the Prince of Wales, a special supply of pure water is furnished to the Royal table from two springs on the estate, which, though small, produce very pure water. The house has also been thoroughly ventilated. The drains were examined by Mr. Rawlinson, who removed all the cesspools. The sewage is now to be carried by drains a mile from the house into the park.

An Obelisk for America.—The *New York World* of October 7th, commenting on the departure of Cleopatra's Needle from Alexandria says:—"We are authorised to state that his Highness the Khedive of Egypt has signified his willingness to present to the city of New York, upon a proper application being made to him, the noble obelisk, 70 ft. in height, which now stands 'solitary and alone' near the railway station at Ramlet, at Alexandria, its companion having been accepted by England, and provision made for its transportation thither by a public-spirited Scottish gentleman. And we are further able to say that the enterprising contractors who are now conveying the English obelisk to its destination are prepared to agree to bring the companion monolith from Egypt to America, and to erect it on any site which may be selected for it, at a price not exceeding $100,000, the whole risk of the enterprise being taken by them against a deposit of the sum agreed upon in the hands of some leading American banker."

Dilatoriness of Local Authorities.—Says the *Newcastle Courant*,—"Our local builders are sometimes put out by Town Council regulations, but they are not alone in their distress. The manufacturers Schonfeld, of Herford, have inserted a tablet over the gateway of their new factory, on which is sculptured a highly suggestive inscription. It runs—

'In Memoriam æternam.
Videant Consules ne quid detrimenti capiat Respublica.'

Burned down, March 5, 1876. Permission to build up the factory again requested from the local authorities, June 19, 1876. Permission accorded, November 17, 1876, after a loss of five months. *Suum cuique.*"

Bournemouth Drainage Works.—At a meeting of the Bournemouth Improvement Commissioners, on the 23rd ult., it was decided to have two outfalls for the sewage, each of the outfall pipes to be carried 1,370 ft. into the sea. The tender of Messrs. Lefevre, of London, for 1,370 ft. of 2 ft. 6 in. pipes at 3,447*l.* was accepted. Some apprehension was felt that the sewage would wash back to the shore and prove detrimental to the public health, but the engineer, Sir Joseph Bazalgette, having expressed an opinion that if the sewage was carried 1,200 ft. out to sea there would be no danger of its washing on shore, this scheme was adopted.

Bursting of Water Mains.—Last week the water-main in Buckingham Palace-road, at the head of Brewer-street, burst and caused considerable damage to property in its immediate vicinity. The water was projected to a height of 60 ft., and on falling flooded the basements and shops to a great depth. All traffic was stopped. The accident was reported to the Chelsea Water Supply Company, who are proprietors of the mains in the vicinity, and at once officials were despatched to turn off the supply at Eaton-square and two other stations. A large steam-roller, which is said to weigh 16 tons, had been working during the day within a few yards of the place where the main gave way; and it is stated that new 16-in. pipes were laid by the Chelsea Company at this part of the road six weeks ago. It is not known, however, whether it was the new piping or some other that burst.

Lincoln Archæologists at St. Alban's.—The precentor of Lincoln Cathedral (the Rev. Canon Venables), Sir Gilbert Scott, and other gentlemen have paid a visit to St. Alban's to inspect the recently-discovered remains of the reredos of the walls and abbey chapter-house, which was built by Robert de Gorham, who ruled the monastery from 1151 to 1166. The excavations have resulted in the finding of the whole of the north-west corner of the chapter-house, with its Norman reredos, sedilia, and exquisite pavement. Notes were taken by Canon Venables of the discoveries, and casts of the mouldings and carvings are to be made before the ground is made good.

Explosions in Mines.—Mr. James Bruce, late 33rd Regiment, writes advising the use of lime water in troughs in all mines, as that has the property of absorbing carbonic acid from all gaseous bodies, and liberating their oxygen. When there is a thick sediment, or precipitate, the lime water must be renewed. Mr. Bruce mentions a contrivance of his own for detecting the presence and height of the "choke-damp," which consists in placing a solution of salt of tartar in tall glass tubes, these tubes being covered with "crystals," as high as the vapour reaches. The tubes must be "open" at the top, and the larger the circumference the better.

Village Water Supply in Derbyshire.—At the last meeting of the Chesterfield Rural Sanitary Authority, the engineer presented a report of a scheme for a new water supply for about twenty villages in East Derbyshire. It is proposed to gather the water from the Moorlands, near Baslow, eight miles from Chesterfield, on the estate of the Duke of Rutland, and to construct a reservoir capable of holding 15,000,000 gallons of water, at a place known as Fox-lane. The estimated cost is 20,000*l.* The clerk was instructed to communicate with the Eckington Waterworks Company with a view to ascertain if they will sell their works, which it is thought desirable should be embodied in the scheme.

The Index Society.—It has been determined to form an Index Society, with the immediate object of compiling subject indexes and indexes of standard books of facts, to be printed and circulated among the members; and with the ultimate object of building up a general index of universal literature, which can be referred to at the office of the society during compilation. It is intended to make the basis broad, so as to include science, art, and literature. Mr. Henry B. Wheatley, 5, Minford-gardens, West Kensington, who acts as hon. sec., will receive names.

Cambridge Surveyorship.—Mr. William John Bowyer, A.R.I.B.A., has been appointed town surveyor of Cambridge, at the invitation of the Urban Sanitary Authority. For fifteen years he assisted Mr. R. Reynolds Rowe, who held the office for nineteen years, and resigned from ill-health in 1869. Mr. Bowyer has since that period often acted as honorary deputy surveyor; it is, therefore, but reasonable to conclude that his local knowledge, and long experience as a subaltern, well qualify him for the post of principal.

The Frauds on the Artisans' Dwellings Company.—The trial of Dr. Baxter Langley, Wm. Swindlehurst, and Edward Saffery, took place last week at the Central Criminal Court, before Mr. Commissioner Kerr. The jury found all the prisoners guilty, but strongly recommended Saffery to mercy. Langley and Swindlehurst were each sentenced to eighteen months' hard labour, and Saffery to twelve months'.

The Builder.

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Spring Gardens.

THE history of London is written in its names, and in these names alone survives the remembrance of the rural spots that have been destroyed to make room for houses. There is nothing now at Spring-gardens to remind us of the pleasure-grounds that once occupied the place where birds warbled among the thickets. The origin of the name is to be found in the spring of water described by the German traveller Hentzner, who visited England in Elizabeth's reign. "In a garden joining to this palace [Whitehall] there is a *jet d'eau*, with a sun-dial, at which, while strangers are looking, a quantity of water forced by a wheel, which the gardener turns at a distance through a number of little pipes, plentifully sprinkles those that are standing round." These water-springs were common in Queen Elizabeth's time, and the above description is the first notice we have of this place, which was an enclosure taken out of St. James's Park, and attached to the palace at Whitehall. From a document dated November 29th, 1601, which records a payment made for a scaffolding erected in the Tilt-yard close by, it appears that one George Johnson was then the keeper of the gardens, an office held in 1630, by Simon Osbaldeston. In James I.'s reign a butt for archery practice was formed of eighteen loads of turf cut in Tothill-fields, and a bowling-green was also planned. The gardens, with their fountains and ponds, and gravel walks, and fruit-trees planted *en espalier* along the walls, then formed an attractive resort. There is a small historical incident connected with the bowling-green in Charles I.'s reign. On the 13th of June, 1628, the day that Dr. Lambe was torn to pieces by the mob on account of his malpractices, the King and the Duke of Buckingham were looking on at the players, when a Scotchman, named Wilson, seeing that the favourite alone remained covered, snatched off his hat, saying, "Off with your hat before the king." Buckingham kicked the man; but Charles, interfering, said, "Let him alone, George, he is either mad or a fool." "No, sir," replied the Scotchman, "I am a sober man, and if your majesty would give me leave I will tell you that of this man which many know and none dare speak." A few years after this the king was so disgusted by the constant quarrels that were occurring among the wild young men who frequented the gardens that he ordered them to be closed. We obtain this information from Garrard's gossiping letters to Lord Strafford,—"The Bowling-green in Spring-gardens was put down one day by the king's command, but by the intercession of the queen it was reprieved for the year (1634); but hereafter it shall be no common bowling-place. There was kept in it an ordinary of 6s. a meal (when the king's proclamation allows but two elsewhere), continual bibbing and drinking wine all day under the trees; two or three quarrels every week. It was grown scandalous and insufferable; besides, my Lord Digby being reprehended for striking in the king's garden, he said he took it for a common bowling-place, where all paid money for their coming in." When the Spring-gardens were closed bowling-greens were opened in the country road called Piccadilly, near the north end of the Haymarket, and the house to which they were attached obtained the nickname of Shavers' Hall, partly because the place was opened by the Lord Chamberlain's barber, and partly because the frequenters lost large sums of money, and were said to be "shaved." Spring-gardens were again opened, and were much frequented during the Commonwealth, but in 1647 it was ordered that the keeper should admit no person "on the Lord's day or any of the public fast days." In 1654 the place was entirely closed, and the gay world had to content itself with the Mulberry-garden at the other end of St. James's Park. It was not, however, long shut up, for we learn from Evelyn's Diary that he visited it on the 20th of May, 1658, before going to Hyde Park to see a coach-race. After the Restoration the history of Spring-gardens is a short one. In August, 1662, a quarrel occurred here between Captain Thomas Howard and Henry Jermyn, the cause being the infamous Countess of Shrewsbury. The consequence was a severely-fought duel in St. James's-square. The gardens were described with some minuteness by a French traveller who visited them in 1663, but soon afterwards they were closed, and the visitors removed themselves to the new Spring-garden at Fox Hall, afterwards called Vauxhall.

The Restoration gave a great impetus to house-building, and soon houses began to appear in the immediate neighbourhood of the gardens. As early as 1661 the inhabitants of Charing-cross, who enjoyed a fine view of the trees in the park, petitioned the king that no further houses might be erected there, but no attention was paid to their request. The ground built upon was called "Inner Spring-gardens" and "Outer Spring-gardens," and many illustrious persons came to live in the new quarter. One of the earliest of these inhabitants was Sir Philip Warwick, the royalist author of the "Memoirs of the Reign of Charles I.," after whom Warwick-street, Cockspur-street, was named. The "mad" Lord Crofts was living in 1677 "in the place commonly called the Old Spring-garden," and Prince Rupert died on the 29th of November, 1682, at his house here, in which he had lived for eight years. Sir Edward Hungerford, who was created a Knight of the Bath at the coronation of Charles II., removed to Spring-gardens in 1681, when he left the house at Charing-cross, upon the site of which Hungerford-market was built. Locket's famous ordinary in Spring-gardens stood on the site of Drummond's banking-house at Charing-cross, and Dr. King writes in his "Art of Cookery":—

"For Locket's stands where gardens once did spring."

Adam Locket was the keeper of it in 1674, and Mr. Peter Cunningham mentions a royal sign-manual warrant of James II.'s "for paying the sum of 36*l.* to Adam Lockett for providing diet for the officers of the Horse Guards that are in waiting." The next proprietor was Edward Locket, who kept the house until 1702, and shortly after his death the reputation of the ordinary faded away. Up to this time it was one of the most fashionable resorts in London, and Lord Foppington, in Vanbrugh's "Relapse," informs the audience that at Locket's "You are so nicely and delicately served that they shall compose you a dish no bigger than a saucer shall come to fifty shillings." Close by Locket's was Buckingham-court, in which place was a coffee-house of one Bromefield, a resort of Roman Catholics and persons disaffected to the government of William III. In 1689 a warrant was sent to Sir Christopher Wren, as surveyor of their majesties' works, directing him to brick or close up a door which had been opened out of the court "into the lower part of the Spring-garden that leads into St. James's Park," and this was to be done as he should judge most fit "for the security of their Majesties' Palace of Whitehall, and the said Park and the avenues of the same." Mrs. Centlivre, the play-writer, died at her husband's house in this court in 1723. Pope called her "the cook's wife," Centlivre being "yeoman of the mouth" to George I.

The Bull Head Tavern, Charing-cross, at the entrance to Spring-gardens, was a well-known place in its day, and next door to it lived for a time John Milton, while he was writing and publishing his "Defensio" during the Commonwealth. A very different man, Colley Cibber, also lived near this tavern from 1703 to 1714, and the following advertisement appeared in *The Daily Courant* for January 20th of the former year. "In or near the old play-house in Drury-lane, on Monday last, the 19th of January, a watch was dropped, having a tortoise-shell case inlaid with silver, a silver chain, and a gold seal ring, the arms a cross, wavy and chequer. Whoever brings it to Mr. Cibber, at his house, near the Bull Head Tavern, in old Spring-gardens at Charing-cross, shall have three guineas reward." The last bit of the old garden remained until 1772, when the Earl of Berkeley obtained leave to build messauges and gardens in a place called "The Wilderness," on the north-west side of the passage from Spring-gardens to St. James's Park." Berkeley House was for many years the town mansion of the Earls of Berkeley, and the Hon. Grantley Berkeley has taken note of some historical associations of the house in his "Life and Recollections." It was pulled down in 1862 to make room for the chief office of the Metropolitan Board of Works.

When Thomson the poet came first to London

he occupied a room over the shop of the bookseller Egerton in Spring-gardens, from which he emerged in search of a patron for his "Winter." Canning lived at No. 13, at the corner of Cockspur-street, and at the opposite corner was formerly Farrance's famous confectionery-shop, where the best of ices and other sweets were served by young ladies dressed alike, and with little caps on their heads. Theodore Hook referred to them in his "Sayings and Doings," when he wrote "Bond-street lounges and loungers became a bore to him; he sickened at the notion of a jollification under the piazza, and even the charms of the pretty pastrycooks at Spring-gardens had lost their piquancy." About ten years ago this old-established house was pulled down, and a building for the Charing-cross branch of the Union Bank was erected in its place. Spring-gardens was long one of the chief places in which sights of all kinds were to be seen. The first exhibition of the Society of Artists of Great Britain was held here in 1760, or nine years before the Royal Academy was opened.

In old times crossing-sweepers who had saved large sums of money were not of unusual occurrence. One died worth 500*l.*, another 1,000*l.*, and another 4,000*l.* The crossing-sweeper at Bridge-street, Blackfriars, bequeathed a large sum to the daughter of Alderman Waithman, and one at Hyde Park left 1,000*l.* to a gentleman who had been in the constant habit of giving him 6*d.* But none was more noted than the crossing-sweeper at Spring-gardens, who made a practice of receiving only ½*d.* If at any time 6*d.* was given to him he always returned 5½*d.* Mr. George Simcox, a brass founder, of Harborne, near Birmingham, related that one day he was called into a handsome house by a footman, and the master told him that he had made his fortune as the sweeper of the crossing at Spring-gardens. This story, which appears to be authentic, has been the parent of a large amount of fiction, and Thackeray used it in his "Yellowplush Papers."

New-street has had several distinguished inhabitants. Sir Astley Cooper, the great surgeon, lived for many years at No. 2, Sir James Scarlett (afterwards Lord Abinger) was at No. 4, and his son-in-law, John Campbell (afterwards Lord Campbell), lived close by. Joseph Jekyll, the witty Master in Chancery, who obtained his place through the pertinacious application of the Prince Regent to Lord Eldon, was at No. 22; but one of the most eccentric inhabitants was John Penn (grandson and representative of the celebrated William Penn), who lived at No. 10, and called his house "The Portico." In 1815, a poem, entitled "Marriage," was published, which attracted some attention, and in 1818 it bore fruit in the Matrimonial Society, which was founded by Mr. Penn with the object of encouraging marriage by the bringing together of the two sexes. In the election of members it was proposed to blackball two classes, viz.,—1, the female busybody; and 2, the sneering buck who derides the marriage state. The name of the society was soon changed to the Outinian Society, a reference being made to Ulysses, who deceived Polyphemus as Outis or nobody, and on the reverse of the medal struck on the occasion there is a representation of the blinded Polyphemus throwing a rock at Ulysses. The object of the society hinted at by the name, was to remedy those evils which prompt the remark that the business of everybody is that of *nobody*.

"The boon I claim
And plead my title—Noman is my name."

A resolution was passed to publish two works, to be called manuals, with the information most needful for marrying persons of the two sexes, and nearly two hundred lectures were delivered in various parts of the country up to the year 1825. The encouragement of matrimony was the chief but not the only object of the society. The founder proposed a Court of Honour, which should sit as a perpetual committee to smooth over really serious and dangerous disagreements; but the scheme was not found practicable, and the Marquis of Huntly, who was asked to become the chairman, refused to give his support to it. A record of the society's origin and proceedings was privately printed, and it contains a number of curious proposals. There are notices of the Outinian umbrella and parasol, which had an ivory ball in place of the pointed end, and the Outinian lamp-labels. This last is an invention which has been revived within the last few years. In 1824 the way to Almack's, through the adjoining streets, was indicated by labels on the lamps, but some of them were taken down by the parish officers, in accordance with an Act of Parliament made for another purpose. The labels in Duke, York, King, and Charles streets, and Pall-mall East, remained for a time. The foundation of this society was not Penn's first eccentricity, for a caricature by Gillray, published as early as August, 1799, is entitled "Pen-etration." This plate shows a foolish-looking man, and contains several jokes upon the word *pen*. In 1810 the Duke and Duchess of Brunswick, parents of the Princess of Wales, lodged in New-street. At the corner of this street is the district church or chapel of St. Matthew, which was built by an ancestor of Lord Clifford, and was a bone of contention in respect to the right of presentation between the family of the founder and the vicar of St. Martin's-in-the-Fields. Sir Robert Peel was a constant attendant at this church, and the family pew of his son (the present baronet) is still there. New-street is now chiefly occupied by the offices of the Civil Department of the Admiralty. In 1726 there was a fire in Spring-gardens, which attracted the attention of the Prince of Wales (afterwards George III.), who was regent during his father's visit to Hanover. Nicholas Rowe wrote an epigram on the occasion:—

"Thy guardian, blest Britannia, scorns to sleep
When the sad subjects of his father weep,
Weak princes by their fears increase distress,
He faces danger, and so makes it less.
Tyrants on blazing towns may smile with joy;
He knows to save is greater than destroy."

Spring-gardens, from its vicinity to the Court at Whitehall, was formerly allowed as a sanctuary for debtors who wished to escape from their creditors.

The east end of St. James's Park, as well as the little colony of houses outside the park, goes by the name of Spring-gardens, and the pastoral character of this place, with its cows and milkwomen, noticed by Bishop Warburton, still continues and forms its most special feature. In Tom Brown's day (the beginning of the eighteenth century) the cries were, "A can of milk, ladies!"—"A can of red cow's milk, sir!" Still, in the summer months, nursery-maids take their young charges to drink new milk from the London cow. Gay, in his "Trivia," draws a distinction between the sallow milkmaid of the city and the rosy one of the plains, and the poor cows that are milked every few minutes will not bear comparison with the carefully-tended cattle of the country, but still these old park-stalls give a certain character to the place, and remind us of its past glories when beaux and belles crowded round the cows.

BY-LAWS.

A GREAT deal of the work done in the world, especially that done under the authority or superintendence of corporate societies, is carried on under the restrictions and regulations of "By-laws." But what, properly speaking, are by-laws? In a general way every one knows well enough that they are sets of regulations which are of partial and local operation, and not ostensibly a part of the law of the land. But what is the precise definition of a by-law, its necessary qualification, and its relation to the laws of the realm, many who habitually obey or break such "laws" could not perhaps define very clearly. To give full and clear information on the subject is Mr. Lumley's object in the book published under the above title,* which has not only a general but in some degree a special interest for us, from the fact that so many of the operations controlled by "by-laws" relate to subjects more or less directly connected with building operations and questions of public health.

The literal and original meaning of the term is one on which a word of information is certainly not superfluous. We take it that a large proportion of persons not specialists in legal study would have no doubt that the qualifying prefix "by"† (or "bye," as it is more often written) indicates a subordinate law, just as "by-path" indicates a side-path out of the principal road. But the philology of the word is much more ancient and respectable than this would imply. The following is the definition which the author quotes from an old law book, "Les Termes de la Ley":—

"By-laws, in Latin *Billagenes*, so called by the Goths, the Swedes, the Danes, and the Saxons, from *By*, which in all those languages signifies a *Town*, and from *Lagh* or *Laghen*, which signifies *Laws*. That is to say, laws made *Obiter*, or by the By; such as are made by a common consent in Courts Leet or Courts Baron for the particular good of those that make them, further than the Common or Statute Law doth bind.

The like are generally allowed by letters patent of incorporation to any guild or fraternity for the better regulation of trade among themselves or with others."

And this old definition Mr. Lumley further defines and modernises thus:—"A by-law is a law made with due legal obligation, by some authority less than the sovereign and Parliament, in respect of a matter specially or impliedly referred to that authority, and not provided for by the general law of the land." And the main object of such laws is to enable local communities or organised societies to apply legal regulations to details of a special or local character, such as the more general scope of statute law cannot adequately take cognisance of. And we may add, on our own account, that by-laws may, as it appears to us, be broadly divided into two kinds, those which, though they may be recognised by Government, are made in the first instance merely by a special society in order to control the acts of its own members, and those which are made to facilitate the application in detail of some general statute in regard to which they are framed. Club rules are an illustration of the first-mentioned type of by-law; a club is usually formed quite independently of Government, and is a private association, but its rules are recognised by courts of law as binding on its members. The by-laws of the Institute of Architects are an example of the second case, where the society is created under the operation of a special Act of Parliament, and its by-laws are in reality the machinery for applying in detail the general principles laid down for its action in the charter: and so with by-laws relating to the operation of Building Acts in special localities, to the working of railways, &c.; all which are really the machinery for carrying out the object specially contemplated by the general or initial law. There is, indeed, almost invariably a clause added, in any Act empowering the making of by-laws, to the effect that none of them shall enforce or direct anything contrary to the law of the land; a provision which Mr. Lumley seems to regard as in fact superfluous, or at all events insisted upon with very unnecessary particularity, considering that it is necessarily presupposed in the very existence of the statute law. It is worth notice, however, that a by-law which, in a negative sense, forbids that which without such prohibition would be legal, is no infringement of statute law; the infringement would only take place if the by-law positively directed the doing of an act which was illegal according to statute law. The by-law must, in fact, provide something additional to the statute law, and not merely re-enact it.*

Among the other necessary conditions of a by-law which the author formulates are one or two which may be noticed here. A law of this kind must be *certain* in its enactment—that is, free from any ambiguity; must be *general* in its application, and must be *reasonable* in its requirements; this last being a very important point, failure in regard to which has been not infrequent. One or two of the examples given will illustrate this, and they are examples having special bearing on building and sanitary enactments. For instance:—

"A Local Board made a by-law prescribing a certain thickness for the walls of new buildings under a penalty. They further enacted that in case any offence under the by-law should continue, the offender should be liable to a further penalty of a sum not exceeding 40*s.* for every day during which such offence should continue. The Court of Common Pleas held that if this latter by-law extended to the case of a wall built under the first by-law, it was invalid, as being *unreasonable*, seeing that it would render the builder liable to a series of penalties during the whole of his life, whereas the statute 21 and 22 Vict., cap. 98, sec. 34, enabled the Local Board to remove the wall themselves."

Here is another case: the same statute just referred to in the above quotation enabled a Local Board to make by-laws with respect to the drainage of buildings, to water-closets, privies, ashpits, and cesspools in connexion with buildings:—

"A by-law was made by such a Board that 'no dwelling-house shall be erected without having at the rear or side thereof a good and sufficient back street or roadway, at least 12 ft. wide, communicating with some

* An Essay on By-laws: with an Appendix containing Model By-Laws issued by the Board of Trade, the Education Department, and the Local Government Board. By W. G. Lumley, esq., LL.M., Q.C., Counsel to the Local Government Board and the Education Department. London: Knight & Co., and Maxwell & Son. 1877.

† Mr. Lumley, in his preface, observes that the spelling he adopts, "By," is supported by the etymology of the term, and the usage of the principal legal authorities.

* A by-law, for instance, proposing a penalty for assault, would not stand, because this is already dealt with by statute law.

oining public street or highway, for the purpose of rding access to the privy or ashpit of that house.' he Court of Queen's Bench held that this by-law was lid as being *unreasonable*. They said that it might in e cases altogether prevent a person from building his land, because no house could be built unless a back- et were provided, although it might be intended to e a water-closet for the house."

other case is cited in which there was a ference of opinion among the administrators justice; in the case of "Tong-street Local ard *v.* Seid," where the defendant was sum- oned for not having complied with a by-law ich enacted that all occupiers of yards where rses were kept should provide upon such emises, to the satisfaction of the Local Board their authorised officer, a covered receptacle dung, &c., and a trapped drain for carrying all urine, &c., from such premises. The tices refused to convict, because it was not oved that the manure and refuse were kept on the premises in such a way *as to be urious to health*, and considered that unless s was required to be proved the by-law was *reasonable*. This piece of justices' justice s, however, most righteously overruled by e Court of Queen's Bench, who held that no ch proof was necessary, and that the de- ndant ought to have been convicted. There uld be a fine door open for unsanitary abuses injury to health were required to be defi- ely proved in every such case.

While on the subject of unreasonableness, we y cite one instance which comes not quite hnically under that head, but which is an tance of a by-law offering ostensibly a certain ivilege under conditions which it is impossible observe. No one will be surprised to hear at this is a railway by-law, one which we had e pleasure of studying one day on the premises the Metropolitan Railway, and which we find ms part of the Model Railway by-laws issued the Board of Trade, and added, with other nilar documents, as an appendix to Mr. Lum- 's book. This law provides that if there is t room in a train for all those to whom tickets ve been issued at any station, the fare shall immediately returned, on application, to any ssenger for whom there is not room as afore- d, "if the application be made *before the parture of the train*." Those who are familiar th the arrangements and working of the etropolitan Railway will be best able, perhaps, appreciate the joke; but in any case it is rfectly ludicrous that such a regulation should seriously put forth by the Board of Trade, hen every one knows that, at any roadside ation, the fact of there not being room enough uld never be really ascertained till the train as just moving off. One would suppose the amers of this "model" by-law had never tra- lled by rail.

In reference to the principle that a by-law ould be certain and positive in its wording, the thor cites, as an instance of deficiency in this spect, the not infrequent manner of wording a -law in regard to building regulations, whereby e builder, instead of being informed how he is erect his buildings, or what materials he is to e, according to precise or definite rules, is re- uired to do everything "according to the direc- on and to the satisfaction of the authority or eir surveyor." Without adverting to other jections to such a form of by-law, Mr. Lumley nsiders it defective as being uncertain. There re several cases cited of other forms of uncer- inty of wording in connexion with building gulations, which are worth attention; one we ay quote, that of a local Board, which made a -law requiring a fortnight's notice of the in- ntion to erect a new building. "The occupier f a house within their district caused a small uilding which had been erected against the wall f a yard belonging to his house to be removed o another side of the yard, using in its recon- truction other parts of the wall for two sides of , but substantially the same materials with hich it had been originally constructed. He ave no notice of his intention, and the Court of ommon Pleas held that this was a *new building* ithin the meaning of the By-Law, and that here had been a breach of it." There can be o doubt that the Court was morally in the right, ut the matter would have been clearer if the -law had said "to rebuild" as well as to erect new building. There is a continually recurring mbiguity which we may here notice in certain ailway by-laws, and which is also found in the oard of Trade's Model By-Laws, viz.: that in hich the available use of a return-ticket is tated to be only "to travel therewith to and rom the stations marked thereon," and on the tickets of one well-known company, at least, there is a long legend printed on the back threatening the holder with penalties, or the charge of the whole fare, if he uses the ticket "for any other station than the one named on it." This *literally* would mean, of course, that if he paid for a journey from A to C, he has no right to travel half the journey, and give up his ticket at an intermediate station, B. Surely such a provision would never be supported by law, but there are plenty of railway officials stupid enough to fancy they could act upon it, and the wording of such a by-law ought to be revised.

The Appendix to Mr. Lumley's book contains, printed in a convenient and compact form, various schedules of "Model By-laws," which, as our readers already know, have been recently issued by the Board of Trade, the Education Department, and the Local Government Board. Those of the first-mentioned body are the Railway By-laws already referred to, and a similar schedule for Tramways. To some defects in the Railway Laws we have drawn attention. There is a certain satisfaction in *reading* the very stringent prohibition against smoking in any of the company's premises or in any compartment of any carriage not set apart for that purpose, and the direction (in emphatic italics) that any person so offending "is liable to be summarily removed at the first opportunity from the carriage or from the company's premises;" it would be still more satisfactory to see it acted upon: but, as a general rule, the indifference of "the company's servants" in this matter is as remarkable as the selfishness and discourtesy of those who insist on exposing their fellow-passengers to a nuisance because it pleases themselves.* On the Metropolitan Railway, where, on account of its peculiar conditions, this rule ought to be stringently observed, it is habitually ignored. It is rather difficult to understand why a special law is made against "playing or performing on any musical instrument" in tramway cars, while no mention of this is made in the Railway By-laws. The by-law in the Tramway scheme, that every passenger "shall pay to the conductor, *upon demand*," the fare legally chargeable for the journey, has been made the subject of an action against a passenger who refused to pay the fare until he had reached the end of the journey. He lost his case, and was adjudged to have broken the by-law; but we confess that this hardly seems consistent with strict equity, unless there were also a by-law compelling the company, in case of any accident which hindered the journey, to return the fares on the spot.

The Model By-laws of the Education Board we may pass over, but those promulgated by the Local Government Board are numerous and important. They deal with the following subjects:—

1. Public Baths.
2. Public Wash-houses.
3. Public Bathing.
4. Open Bathing-places.
5. Hackney Carriages.
6. Markets.
7. Hop-picking.
8. Cleansing of Footways and Privies.
9. Removal of Refuse Nuisances.
10. New Streets and Buildings.
11. Common Lodging-houses.
12. Slaughter-houses.

Of these, the schedule No. 10 is by far the most lengthy and elaborate, and the one which most directly interests us; it has already received some comment in our columns,† and may be taken, no doubt, as some indication of the direction in which changes may be expected to be made whenever the possible or probable New Metropolitan Building Act, often talked of, may come into shape. The object of the Model By-laws on this subject, however, is not merely to suggest improved regulations for London, but to furnish a suggestive basis for framing building regulations for towns generally, and securing more uniformity in such matters. There will, no doubt, always be local conditions which a Building Act for any special town will have to take into account, but a great many of the questions involved in the management of town structures, such as those relating to drainage, to proportion of unbuilt areas to the buildings, to fireproof materials, to principles of construction, and many others, must be essentially the same wherever the object is to secure the greatest amount of accommodation on a given space with the best architectural and sanitary conditions. A considerable proportion of the provisions here called by-laws are in the existing Building Act, incorporated as part of the Act. In comparing the definitions of the Model By-laws with those in the Building Act, we notice several points of difference in regard to terms and their interpretations. "Party-wall" is much more distinctly defined than at present; in fact, the Building Act (as we have before pointed out) does not define it at all, merely describing it, for the purposes of the Act, as a wall which separates two buildings occupied by different owners, — a definition which would be quite consistent with the fact of the wall belonging to and standing entirely on the land of one of the owners, whereas the essential definition of a party-wall is, or should be, that it is a wall belonging to both the owners on either side of it. The Model By-laws have a first clause (a), defining it as "a wall used or constructed to be used in any part of the height or length of such wall for separation of adjoining building belonging to different owners," and such a clause is necessary to enable the authority to deal with some cases, especially in old buildings which have been put together by the dispensation of Providence, as one may say, and before Building Acts were dreamed of; but the real and proper definition of a party-wall ought to be one which is on the ground of two owners, because that is the fact which really differentiates it from an external wall. "Cross wall," we observe, disappears from the definition of terms, but it does not disappear from the document, as it is used in section 18, and has there a special definition to itself, which might have been (more systematically) placed with the other definitions, as also the statement that walls shall be considered as divided into distinct lengths by return walls. The form in which this class of regulations is given in the Building Act, in an appended schedule arranged in a tabular form and preceded by the necessary definitions, is much more convenient for reference than the manner in which, in the "Model" By-laws, it is printed in a series of paragraphs with all the measurements given in words instead of the much shorter and more readily comprehended numerals. The alterations in the new scheme, from the provisions of the Building Act, are slight in regard to this table of wall dimensions, but so far as they go they are in the direction of greater solidity; for instance, a wall up to 50 ft. in height and 30 ft. in length should have, according to the Building Act, a brick-and-a-half wall up to the commencement of the topmost story; and if over 30 ft. in length it shall have one story of two bricks thick; but the Model By-laws provide that such a wall shall have the lowest story of two bricks thickness, when under 30 ft. in length, and two bricks and a half when over that length; and other changes in the same spirit are made, and are entirely to be approved. The existing schedule leaves the extremest limit of tenuity that ought to be allowed. We purposely gave the definition in the terms "brick and a half," &c., above, before drawing attention to the confusion existing as to the expression of thicknesses of brickwork, the Building Act speaking of walls of 8½ in., 13 in., and 17½ in., while the Model By-laws speak of 9 in., 13½ in., and 18 in., but again seem to change their principle and say "22 in." and "26 in.," which, of course, according to the same system, based on 4½ in. for the thickness of a brick, ought to be "22½ in." and "27 in." respectively. There should really be some uniformity of expression in regard to this point.

A tendency to amplify existing provisions is evident also in the model code regulations for the area to be preserved adjacent to new buildings. At present this is required to be 20 ft. in width in front; that is to say, that under certain conditions houses may face each other with only 20 ft. between them; but 24 ft. is the least allowed by the new model code; and a house is required to have in the rear "an open space exclusively belonging thereto of at least 150 square feet," while the existing Act is content with 100 square feet, and that only conditionally, "unless all the rooms can be lighted from a street or alley adjoining." This latter alteration is no doubt commendable if it can be carried out without limiting too much the space to be occupied by buildings in populous districts; but the first part of the provision, as to the 24 ft. in front, would be the better for some modifying

* It is noticeable that such offenders, although they are not only acting uncourteously, but actually breaking the law, invariably, if remonstrated with, assume the air of injured persons: this is, no doubt, partly to be attributed to the laxity of the company in enforcing observation of their own regulations.

† Under the head of "Current Conversation," p. 970, *ante*.

clause, as in the form in which it is put forth it would necessitate, for instance, building mews with a 24 ft. passage between the buildings, whereas 20 ft. is now admissible, and is sufficient. There is some ambiguity in the last paragraph but one of this (No. 54) clause of the model by-laws, which provides that no person making any alteration or addition to such building "shall diminish the aggregate extent of open space provided in pursuance of this by-law in connexion with such building, or *in any other respect* fail to comply with any provision of this by-law." The meaning of that is obvious enough as far as increasing the area of the building laterally is concerned: this cannot be done unless there is spare land to use, over and above the 150 square feet above mentioned; but the clauses immediately preceding regulate the arrangement of the open area in proportion also to the *height* of the building; so that, in reality, an owner cannot add to the height of the building either, without breaking the provisions of the by-law. This is, perhaps, what is intended, but it is not very clearly expressed, and it is well that any by-law dealing with a question of this kind, with the effect of subsequent alterations of a building, should be as explicit as possible, as misunderstandings have already arisen on points of this nature: witness the curious and rather puzzling case of the additions to an hotel, cited by Mr. Lumley, p. 264.

Some other points we noted as matter for question or comment in the Model Code. We should have observed, in speaking of the definitions of terms, that "party-structure," as well as "cross-wall," has disappeared from these definitions in the new code. Now "party-structure," in the existing Act, includes any structure separating "buildings, *stories*, or rooms belonging to different owners," so that it provides for vertical as well as horizontal divisions of property; and it is scarcely the time to expunge this definition just when the notion of horizontality of arrangement in houses is getting so much more talked of, and may possibly be put into practice more or less extensively. Clause 13 provides that no one shall construct any part of a wall "not being a projection intended solely for architectural decoration," so as to overhang any part beneath it. Now, will the promoters of the code be so good as to define what precisely is "a projection solely for the purpose of architectural decoration"? They will find it difficult. The fact is, that Building Acts in general deal most illogically with points of this kind. The provision of the existing Metropolitan Act in regard to this matter of projections simply offers a premium on shop-front decorations, which seem to be regarded with special affection. Is a bay window, corbelled out, an "architectural decoration" or not? Presumably not; yet it might surely be as well allowed as a cornice projecting over the line of front, and sending a drip of water down on the foot-passengers in rainy weather, in defiance of the special provision (see Building Act, sec. xxvi., clause 4) which, in regard to this particular kind of projection, seems to be ignored with impunity. We may note that the use of wood in projections is not implicitly forbidden, as in the provision of the existing Act, which has driven architects who wished for a little picturesque woodwork to the expedient of setting back their wall from the main line in order to have room to indulge their taste, as in the case of a well-known building in Leadenhall-street. And there is a special provision that every building shall have a damp-proof course, the omission of which is one of the most extraordinary deficiencies of the existing Act.

The word "fireproof," under the pressure of new investigations and experience as to the behaviour of various materials under fire, seems to have disappeared from the Model Building Laws, to be replaced by "incombustible." Captain Shaw, we believe, would prefer "fire-resisting" as the epithet best defining what can really be obtained from any building materials,—the power of holding out until the fire can be got under. In the effort to realise this incombustible condition, the order "to stop the spaces between joists and in partitions with brickwork, concrete, pugging, or other incombustible material, at every floor and ceiling," has found place in these laws. The action of pugging, by holding moisture and at the same time stopping ventilation, is apt to be most injurious to timber, and has not infrequently been a direct cause of dry-rot. Clause 44, directing that any arch upon which any flue may be carried, "shall be effectually supported by means of a bar or bars of wrought iron of adequate strength," is a remnant of an old building heresy which should be allowed to die out. Anything that can rightly be called an arch should be independent of this kind of necessarily perishable support. It is satisfactory to find in clauses 55 and 57 evidence of an intention to do something towards insuring sufficient window space, opening on to the outer air, for every living-room. In the drainage section the provision (clause 62) that every drain passing beneath a "building shall be completely bedded in solid concrete," seems open to question. Nothing could be better so long as the drain passage is all in good order; but what if there should be a stoppage from any unforeseen cause?

The legal directions as to the duties of persons intending to build, in the matter of giving notice and depositing plans, &c., are remarkably full and precise; nor do they contain any such anomalies of expression as are found in the brief By-laws of the Metropolitan Board of Works, in reference to the formation of streets. It is there stated that "applicants for the approval of the width of streets are required to furnish *two* copies of the application and plans *in duplicate*." What the Board want, we presume, is *two* sets of plans and papers; they do not seem to be aware that in the above sentence they are asking for *four*. On the whole, the Model By-laws are very free from laxities of expression of this kind, so frequently found in such documents. Looking at them as an indication of the future course of building legislation, we should say that they err a little on the side of being too minute, unless frequent new editions are to be contemplated. Sanitary matters are so much in course of progressive development at present that a certain elasticity and capability of expansion seems desirable in all documents dealing with them. But we must quit the subject for the present.

CERTIFICATED SURVEYORS.

An over-clever and what is vulgarly called "cheeky" correspondent, "wants to know, you know," why we are so behind-hand as compared with other papers in giving the list of gentlemen to whom the "Sanitary Institute of Great Britain" granted Certificates of Competence on the 29th ult., and adds, with a sort of chuckle, "I know the list was sent to you in time." No doubt it was, like many other things, with which, nevertheless, we do not think it necessary to trouble or mislead the public. It occurs to us that it is desirable to know, before publishing the list, by what right this new society grants certificates of competence, who are the examiners, and what is the value of the certificate. When we are properly informed on these heads we will give the matter consideration.

The Public Health Act.—Mr. Charles Kellerd, builder, of 40, Shirland-road, Paddington, appeared before Mr. Cooke (Marylebone), to answer two summonses taken out by order of the Willesden Local Board, the first, for that he began to build and continued to build several houses in Cambridge-road, Kilburn, without first submitting proper plans and sections of the same to the Board, as required by secs. 40 and 42 of their bye-laws, and sec. 154 of the Public Health Act, 1875. The second was for causing and permitting a certain quantity of clay, mixed with other material, to be in a state of combustion, the same being a nuisance and injurious to health. Mr. Tilling, solicitor to the Board, appeared in support of the summonses, and Mr. C. E. Berkeley defended. In the first summons the defendant pleaded guilty, and it was stated by Mr. Berkeley that plans similar to those received by other parishes were sent to the Board, but they were not in compliance with the requirements of the bye-laws. Proper plans had since been supplied to the surveyor. Mr. Tilling said the defendant had been cautioned several times, but he had set the Board at defiance. In the second case it was proved that the defendant is erecting houses at the back of Atkinson-terrace, Kilburn, and for the last three weeks he had been burning clay and refuse within thirty yards of the back of the houses, causing such a nuisance, through the stench and the smoke, that the windows at the backs of the houses could not be opened. Mr. Cooke made an order on the defendant to abate the nuisance and for discontinuance of it, and pay 5*l.* 5*s.* costs. In the first case he would have to pay a fine of 40*s.* and costs.

TIBET AND ITS ARCHITECTURE.

In these days of free trade and railways, and all but universal inter-communication, it would seem to be a somewhat strange thing that there should be any inhabited spot on the surface of the earth which should shut itself off from the rest of it, and keep itself to itself. The Chinese Empire did this at one time, as all know; and Japan, with its mysterious system of government, did so too, till within but yesterday,—and even till now it would seem the Government of Tibet, in some way or other, have done, and do so to the present hour! But this seclusion is about to cease, and we are to find out for the first time what sort of place the capital city of Tibet, Llassa, is, and what kind of architecture and fine art is there to be found: what the streets of this hitherto-hidden-away city look like, and what its public buildings are specially used for, what the architecture of its temples, what its strange religion and customs, and the ways of life of its so-far-distant people. It will be a great and wonderful opportunity for "research," that is certain, on all but totally new ground, and will be almost like going into a new world, or rather perhaps the going back into the world as it was in times past. It seems not a little strange, we say, that any such place exists.

We have said that somewhat is already known about Tibet. The traveller who first made us at all acquainted with Tibet, and whose enthusiasm took him to so distant a place, and one so strange, was Captain Samuel Turner, and though he did but comparatively little, still from him and one or two others we may get a hint as to the character of its buildings and its peculiar art, and may see how different it all is from what we have about us. We are not going to open up a new trade, for which, indeed, there would seem to be little prospect, but to see the place, and to know something about it, and to add to our book knowledge. We may note,—for there is a little of the artistic about it,—a singular usage all over Tibet and Bootan, somewhat surprising to a new comer. Captain Turner was met on his entrance into Tibet by a "messenger" from the authorities, with messages of compliments and congratulations, and together with them with the gift of a white silk scarf, and it was expected that he would in return present a similar scarf to them. He tells us, as does Huc, that this is a universal custom. This scarf is always transmitted under cover, even with letters, to the most distant places, whether such letters relate to mere business or are merely complimentary. These scarfs constantly form an essential part of all ceremonial salutation, and between people of every rank and station in life!

But though so little has been hitherto seen of this strange and unknown country and its capital city, still a little is known, and there have been men, enthusiastic searchers after anything that is new, who have made their way into it. We need not here specify them, but one or two facts may be noted as helping to throw light on a strange place and people, so far from European, and even English, influences,—for where is there a place wherein the British man is not to be found, or has not at some time or other made his way? Warren Hastings was, it would seem, the first Englishman of influence who looked at distant Tibet with interest, and his motive was to simply open up a trade with it, and to buy and to sell. But this in passing, though it indicates much worth comment. This, however, is not the object of the proposed official journeyings into distant Tibet, which may, indeed, be looked upon as a new thing altogether. We want to know what that so distant country is,—not to conquer it, but simply for increase of knowledge. We can but think a word or two suggestive of further artistic knowledge,—of architecture and fine art,—may, perhaps, be useful to those who are to undertake this distant voyaging and not a little perilous travelling. Photography will, and must, as a matter of course, be largely employed, but, at least as far as architecture and building are concerned, actual measurement and plan plotting are not a little needful. It is very difficult indeed to give any idea of the special architecture of a new country and nationality without drawings, and unfortunately but very few materials for such drawings as it is exist or are available. But a mere glimpse can be got of the town and street architecture of Tibet, though it may be said generally that these are like to most other Eastern cities and Eastern house-building. Not a few mistakes are here

made as to the look of an Oriental city. It is totally unlike all about us, except, indeed, in what are in neglected spots and in neighbourhoods where the houses are low in height and quite plain and irregular in build. Truth to tell, it is the air and sunlight that give much of the charm to these places, and, what is perhaps more,—though, by the way, travellers do not note it,—the constant occurrence of hand-work, and signs of the individuality of the workmen who put the houses together. It is strange to us that this fact, for fact it is, has not been further noted by those, at least, who have travelled for the purpose of finding details of house-building and street-architecture and art in common things. Much is got, there can be no doubt, by the use of all-powerful and potent machinery, able to do without human hand-help, but there is in it an infinite loss at the same time with the gain,—the expression and feeling which are to be got only by direct human and personal work.

It is impossible at present to get a "plan" of a Tibet temple, for no such travellers as those who have visited Egypt and Assyria have as yet seen one in detail, and still less had opportunity of measuring and putting it correctly on paper. The courtyards, or "inclosures," as with all Eastern nations everywhere, seem to be favourite features in temple arrangements. Three of the sides of a courtyard specially noted by Captain Turner were found surrounded by a colonnade for the occasional accommodation of pilgrims. Upon its walls, rudely painted, are figures of huge size, and emblematical of their system of mythology. The columns of this colonnade are painted vermilion, a favourite colour, and profusely ornamented with gilding, which, by the way, Orientals seem to know how to use so well, and without vulgarism of any kind. The gilding all about us here always, somehow or other, seems out of place, and looks as if put on last of all, and when nothing else was to be or could be done. Llassa may read us a useful lesson here, distant as it is! The temple portico is here, and the entrance into the temple through vermilion-painted doors. The building has a Chinese look, with a Chinese roof, but it is, after all, but the case or outer walls of the real temple itself,—a "beautiful pyramid" placed within it. It is the Lama's Sepulchre, and holds all that is left of him after his so strange life in this lower world.

There is so much to be found out in so distant a country, so new to us, and so little known, that it is difficult to see what is most to the purpose in the finding out of the secrets of its ways of work. We might, perhaps, begin by looking with no small wonder at the country itself, and at the nature round about us when there. In this country of Tibet are to be seen the most colossal mountain forms in the world, the tops of which have never been trodden by mortal foot. They are snow-covered, of course, and the very passes round and about them appal the traveller, though used, and well used, to mountain work. The vastness and obscurity, says one, of the barrier before us, remote and indistinct as it was, simply affrighted us, and we looked with mingled awe and admiration at it. A notable country, truly, and surely such a one should affect its architecture; and its inhabitants should, one would think, strive to adapt their buildings to such surroundings, and to make their architecture,—whatever the special style of it,—somewhat worthy of its place. All this has to be found out, so that it is not merely the dry details of building and the mere prose of plan-drawing that are to be done, but a something more, and a something to put to the test the eye and appreciative powers of the highest faculties. A Humboldt is here needed.

And where there are mountains, such as here, there are, of course, waterfalls and rivers in proportion, and mountain torrents and snow and ice in abundance, all on the like colossal scale. Sometimes not a little skilful engineering is needed in the way of bridge building. And primitive bridge-building there is; and the native engineers, from the little we can see, are not a little ingenious in the construction of rope and chain suspension-bridges. And in one item of this they certainly go beyond us here, in spite of all our mechanical and engineering skill and command of materials, *i.e.*, they do not destroy the picturesqueness of the place wherein the bridge is built, nor the majesty of the fall near which it is. Nay, we had all but said, that the might of the mountain view and the fierce flowing of the torrent are made additionally attractive by the very presence of such signs of human skill and activity. A great problem is surely here, to a certain extent, solved, or in part solved; for any structure, whether a hut, or a temple, or a bridge, should be in some sort of harmony with its surroundings, and form an additional detail of the whole. When this is done, and no incongruity is felt to exist, then it is that the *picturesque* is defined, and Nature herself gains, as does the work itself by all that is round and about it.

To the architect and artist it is certainly very provoking to find so little that can help them to get clear idea of so far-off and little-known a place, for the travellers and explorers do not pause to tell us of "common things," of houses, and living-rooms, and the furniture in them, still less of the "details" of such. We have with some care gone through all we can get at, or that can be got at,—and little enough it is, looking at the matter artistically. There is not a hint as to the ways of the workmen, or artists, who build and decorate the houses and temples. Is the style of art "progressing," or at a standstill, or dying out,—and what influence will "Western thought" and wages have on it? Not, surely, it is to be hoped, to crush it all out, and to substitute for it corrugated iron architecture, and all that is usually to be found in connexion with it. We can but hope for the best, and can but long to see, and to know, more of a country about which so very little is known all ways. It is a great and unique opportunity, and needs only those who will look on it as such. Of Llassa, the capital city, we really know nothing, and it must be more than commonly attractive to look at for the first time, a place in its *native* and primitive state and condition. It will be, as we say, a going back into the dim past.

THE TWO ARCHITECTURAL PROGRAMMES.

We printed in our last (p. 1,111, *ante*) the bills of fare which the two architectural restaurants, the Institute and the Association, set before their customers for the coming season. The former is not, indeed, quite complete, some centre-pieces or *entrées* have yet to be supplied. This is one point of difference between the proceedings in the upper and in the lower room in Conduit-street. The Association have made it a point to fix a programme and adhere to it, printing the work for all the ordinary meetings in advance; and the programme is seldom deviated from. This is no doubt by far the most business-like way of doing it, and one which the Institute seems in fact to be emulating, for its programmes are published in advance to a much greater extent than they used to be, though never fully; but it must be remembered that the majority of the papers are contributed by men with many more engagements, and much more uncertain as to their time, than are those who for the most part furnish the papers to the younger society.

The papers of the Institute include six of what may be called illustrative papers, three scientific papers, one political economy paper, one legal, one literary, and one only which can be called simply a paper on practical architecture. This last-named is the first in order of reading,—the one promised by Mr. W. H. White, on "Middle-class Houses in London and Paris." This is the only paper of the session (so far) which deals with the practical application of architecture to the wants of the present day, and the proportion seems rather under the mark, at least as regards the relation of the Institute to the outside world. Of course, it may reasonably be a question whether the recognition of the Institute by the said outside world, and a public interest in its proceedings, are any object with the management; or whether it is to be regarded merely as the machinery for enabling professional men to meet each other and exchange ideas. But if public interest is regarded as an object, a larger dedication of time and thought to problems directly calling for practical solution would not be undesirable. The style of paper we have called "illustrative" (perhaps "descriptive" would be a better appellation), generally furnishes the most interesting evening, but it does not lead to much practical result, except in cases where an architect who has been entrusted with an important work gives a description of the method in which he has carried it out, and got over his difficulties. This we have always considered a most useful style of paper, and one which ought to be more indulged in than it is: for some reason, architects, as a rule, seem backward to do this, or to bring forward their own experience and their own drawings. There is one paper of this class among those which may be called descriptive, that by Mr. Horace Jones, "On the Metropolitan Markets." "The Architecture of Norway," on which Mr. I'Anson will contribute an essay, is not without a certain practical interest in regard to some faint demonstrations in favour of timber building which have now and again been heard of late; and Mr. Neale's "Architectural Notes on St. Alban's Abbey," have also a special interest, coming just at a time when the great old building, and the efforts to preserve it and reinstate it in a safe condition, are attracting so much attention and interest.

The promised paper by Professor Barff, "On the Prevention of Corrosion in Iron," ought to be a really important paper, though the substance of it has already been published; for the question how far we can regard iron as a perishable or a non-perishable material is one of the very turning-points of modern architecture. The paper by Mr Locock Webb, Q.C., "On the Law of Easements," will have its own value to those who build in crowded neighbourhoods, where one erection is always threatening to interfere with the rightful demands of another, and a whole class of intricate questions arises out of the mere effort to adjust all these conflicting rights in an equitable manner. But the central paper of the session, we should be disposed to say, is that which Mr. Brassey will read on the "Rise and Fall of Wages in the Building Trade." If the reader of this paper can bring any contribution, from his large practical experience, towards really solving the problem as to what system will put an end to the ruinous conflicts in which these questions are involving us at present, he will deserve the best thanks of all who are directly or indirectly connected with building. The subject even touches in its effects on strictly architectural ground. We recorded only last week a case in which the present dispute had led to the substitution of cement for stone in a large building in progress; and if men and masters prove obstinate, and works must go on, such a system of retaliation may be carried out with results hardly foreseen at present. What we have called the literary paper of the session deals with "popular criticism as applied to the architectural profession," a subject which, in the hands of Mr. Chatfeild Clarke, is pretty sure to be entertaining and pointed.

The programme of the Association is even less practical than that of the Institute, including in its sixteen evenings no fewer than ten papers which are theoretical rather than practical, four of these coming under the head of descriptive papers, and six belonging to a class which we call critical essays,—a class of contribution not represented at all in the Institute papers for the session. This difference is only what should be. When an able Fellow of the Institute one evening was criticised, after reading a paper there, in that he had not devoted any of his paper to the *principles* of his subject, he replied that he had gone into the principles when lecturing to the younger society, and confined himself to facts when lecturing to his elder brethren, who were presumably able to consider the principles for themselves. Papers on "Ornament," on "Gothic Architecture," &c., which necessarily imply a discussion of the theory of the subjects handled, are most suitable for meetings composed of those who are young in the profession and are interested in getting clear and certain ideas (or, at least, as certain as possible) in regard to the principles by which their course is to be guided. The paper which is to be read on Gothic architecture by Mr. J. J. Stevenson, is, we can hardly doubt, intended to give the death-blow to that style, though it is followed, oddly enough, by a paper from Mr. Sedding, a gentleman who is enthusiastic upon *Late* Gothic, on the revival of the later styles, which have recently fallen into such disfavour with modern Mediæval architects. "Thus the whirligig of Time brings in his revenges"; but let us hope, for the sake of the Association, that the apostle of Late Gothic will not allow his enthusiasm to carry him to such a length as when, on a former occasion, he carried on the subject at the Institute far into the night, to a gradually dwindling and exhausted audience,—"a word to the wise" on this head. Neither let the contributor who is to read upon "Architectural Heraldry," nor his auditors, be carried away by the study of an interesting branch of archæology into the conviction that true architecture can never be attained without

a revival of heraldry, which is the conviction in which we have observed that lectures on this subject generally end. Other papers in the programme will take care of themselves; most of those who attend the meetings will look with some interest on the papers and discussions relative to the "restoration *v.* conservation" question, and to the "Model Bye-laws"; but we would draw attention to one paper the importance and interest of which may not be so obvious to every one, that by Mr. Buckman, on "The Decorative Treatment of Modern Subjects for the Decoration of Modern Buildings." That is a most interesting subject to take up, and we felicitate the Association on having given it a place in their programme: it touches on one of the most difficult points in regard to modern pictorial and sculptural decoration, the question whether there should be representations of ideal personages in ideal or what we sometimes called "classic" costumes, or whether purely modern subjects from modern life can really be made suitable for architectural decoration; and a further advantage is that the subject will be treated by an artist who has himself designed and exhibited very clever efforts in this style of artistic treatment, and who is no mere theorist. We shall look with interest to what Mr. Buckman has to say on the subject.

In commenting upon the theoretic character of the Association programme, it ought to be remembered that the practical side of the study of architecture is amply provided for in the classes which are formed for the special study of design and of practical science.

LIVERPOOL: ITS BODY AND MIND.*

WHAT expresses perfection in a human being is also expressive of all that can be desired in a town, viz., a cultivated mind in a healthful and beautiful body; by which I mean, dropping metaphor, a salubrious atmosphere, fine architecture, and good moral and intellectual institutions. The first of these requisites Liverpool does not possess to the extent we might expect, considering how large a portion of it is occupied by places of business, and that it is exempt by its comparative newness from the rottenness and corruption of old cities, the air of which is necessarily deteriorated by the crowding remains of mortality beneath them; advantages which, taken along with that of enjoying a tolerably equable climate, and of being situated on the sloping banks of a tidal river, protected by surrounding hills from the north and east winds, ought to have rendered it one of the healthiest towns in the kingdom. But its fine situation has not been taken advantage of; nay, an inspection of its plan would lead to the supposition that it had been built with a view to unhealthiness! for the west wind from the river is shut out by dock walls running longitudinally, and, lest any strayed zephyr should make its escape over these, it is further intercepted by a wall of still loftier warehouses, while the narrowest streets are those running up from the river. The docks, instead of being placed at right angles to the latter, so as to admit of most openings between them in a given length, have been placed parallel to it; and the Pool, the mouth of which was for some time preserved in the Old Dock, has been, by the filling up of that dock, entirely done away with, instead of being preserved as a canal. All the world admires Venice for its beauty, and yet the opportunity of assimilating our towns situated on the banks of great rivers by sea-canals to the "Bride of the Adriatic," imitated in Leyden, Milan, Paris, Berlin, Vienna, and other Continental cities, is never taken by English people. Liverpool people erred in not making Liverpool to a greater extent than she is the Bride of the Mersey, by having more of the sea-water and sea-water baths everywhere distributed through it, instead of polluting the sea-water by refuse matter, and the fair bosom of the earth also, which nature generally fills with something for our use or pleasure—in some regions with veins of gold and silver and precious stones. In the provision of baths, strange to say, we are infinitely behind the ancients, though we have greater means of creating them than they had. Most of the Roman institutions, thank Heaven, are effete, more especially the amphitheatre, with its blood-stained arena echoing the groans of expiring gladiators; but the utility of the bath remains to the present day. It has in Liverpool too much of a humble back-street character.

Believing exercise to be as necessary to health as cleanliness, I think means of taking it would be a wise provision of the authorities by promenades along the river side and stages on the river, and raised walks wherever they could be obtained (in connexion with overhead railways perhaps). The walls of Vienna, York, Chester, which command each extensive prospects, are as useful now for recreation as they were once for defence, and should never be destroyed.

But if none of the mistakes I have noticed had been made in Liverpool, yet so large a town could never be healthy so densely built on,—in which the sky is so shut out in some parts as to induce the wish to see a greater arc of it by any chance, however otherwise disastrous for a time, even by a hurricane to blow a square mile or so of courts and alleys into the sea, or by a rise of the waves to wash them into it,—and purify the polluted atmosphere. The Great Fire in London of 1666, though a calamity to that generation, was probably a mercy to posterity; and a similar fire in Liverpool is a casualty that patriotism and philanthropy themselves might pray for could it occur without causing loss of life or suffering, which of course it could not. As unfortunately streets of the Sawney Pope-street character never take fire, and as Corporation improvements are directed to the relief of traffic rather than the promotion of health, these streets are left to grow old in filth and disease, unchanged except in the breaking out of gin palaces at each of their corners, enjoying a sort of unenvied immortality.

The above was written before reading the resolution of the council to widen Chisenhale-street, &c., which is a movement in the right direction, as it must have a more or less purifying effect upon the poisoned neighbourhood. But I fancy the breaking of such streets one into another, by the removal of entire blocks of houses, which of course is out of the question, would alone adequately grapple with the evil. This, and the ploughing up of sewers throughout the town, and cleansing of the Augean stable and pesthouse below, had we a Hercules to do it, would probably make Liverpool something like what it ought to be in a sanitary point of view. The evil, of course, is increased by overcrowding in each house, which, with all due deference to a recent resolution of the Toxteth guardians, I conceive to be a cause rather than an effect of drunkenness. The best remedy I believe for it would be the erection all round the outskirts of the town of an abundance of comfortable cottages of all sizes and very low rents, some with two rooms for a shilling a week. I would build these of substantial brickwork, closely pointed inside as well as outside, so as to dispense with plastering, and be less liable to get out of repair, or become harbour for vermin.

But open spaces and wide avenues from surrounding belts of verdure are the great desiderata of every part of Liverpool, as it is of all our large towns, which have all gone astray, and are none of them what they ought to be. It would be idle to lament it but for the sake of the new ones springing up, both at home and in the new worlds of Australia and America, which have in the old mother-cities lessons of warning so striking, that there would be nothing unreasonable in expecting them (the young ones) to spring up paragons of perfection, like the goddess of wisdom from the head of Jove. If inanimate objects could confabulate, "Beware, in receiving man's work, of excluding God's work, who made the country," would be the cry of many an ancient town to the new ones. "As you grow up let there be no such thing within you as half a mile square of unmitigated brick and mortar and stone pavement; but let nature's green carpet be regularly interwoven into your texture, keeping you at once healthful and beautiful. Let not those beautiful children of the earth,—trees, and shrubs, and flowers,—that make gay the wilderness and solitary place where no human eye sees them, be, as in mine, absent from your populous places, where they would yield delight to thousands."

The radiating and concentric principle of arrangement of Wren's plan for London is probably favourable to salubrity; on which principle a town would grow from a centre. Another good mode of development would be, instead of growing out from a centre, to move each way, after becoming half a mile wide, into the shape of a ring, including a circle of country, say half a mile in diameter; then, after leaving a belt of a quarter of a mile, like the Paris Boulevards, or the glacis round the city of Vienna (if it remain), begin with a larger ring.

Liverpool's grown-up daughter, Birkenhead, it is evident, *has* taken warning from the early errors of her parent town, as she is in many important respects an improvement upon her. More recently-erected towns may profit still more, — Llandudno, for instance, the embryo metropolis, perhaps, of Wales,—and show still wiser developments.

These speculations bring us to the quality beauty, as essential to perfection in a town; a quality which, I think, was interfered with in Liverpool by the destruction of its ancient Castle, built by King John, the originating germ and nucleus of the town,—its architectural father, so to speak,—and of the Tower of Sir John Stanley; features whose coevals elsewhere have generally remained to beautify the earth as partial ruins and storied spots of interest to everybody. These buildings, with some of the gabled and mullioned manor-houses and old halls, reminiscent of the Middle Ages, described in Mr. Picton's "Memorials," to link them to the present architecture, would have rendered the place more intensely Liverpool, which, dating as it does from the Conquest, should, in the interest of truth and consistency, bear better architectural record and evidence of its age and progress, giving it more of a touching dignity and interest, such as arise from the contrast of patriarchial age and infancy in a family group. Did it do so, and exhibit more of the mists and shadows of half-forgotten time, which, gilded by the light of imagination, become a halo of glory around old cities, there would be more of that attachment to the place among its natives that Londoners proverbially feel for their city, and which is itself a source of virtue and happiness. But, besides this, Liverpool has degenerated within the memory of man, and the most striking thing to me about it is, that it is not so beautiful a place as it was once. . . . .

Liverpool's residential districts have gone out of town. Everton long ago removed to Aigburth, and the rest must be looked for at Garston, in the Prince's and Sefton Parks, &c., and now "nobody" lives in Liverpool proper, which is only redeemed in the districts in question by the numerous churches and chapels, and other public buildings, the earliest of which were designed by John Foster and Thomas Rickman. This no doubt was inevitable, as the town had deteriorated in salubrity, though it was not inevitable that the cause of the insalubrity should have been generated. Be this as it may, it is Liverpool's architectural development in the service of commerce that has given to it the architectectural status it has now attained, and retrieved its general character. The feature that goes farthest to repair all losses is St. George's-place, a locality that has wonderfully improved by the substitution of a series of palaces for ordinary shops and branch streets, which were a disgrace to the town. The greatest farther improvement that could be made in this place, in which Liverpool may be said to rise more than anywhere else towards grandeur, would be the banishment from the precincts of St. George's Hall of judges and juries, and trials for murder, which could easily be provided for elsewhere, say behind the Public Offices in Victoria-street. There is no harmony between the death sentence and quadrilles or polkas. Whatever philosophy may be, this *is* "harsh and crabbed," not "musical as is Apollo's lute." The remainder of the building would be fitly occupied, I think, by the learned societies of the town, for which the Royal Institution is not sufficiently central. It is to be hoped that this fine area, which has become quite classic ground, sacred to Minerva, Apollo, and the Nine, it being already devoted to music, the musical drama, literature, natural history, painting, &c., will be made all it is capable of being made by the graces of architecture and sculpture; which latter, as I have often before pointed out, St. George's Hall still lacks. Nothing gives finishing touches to architecture like sculpture judiciously applied; while as illustrations of biography, I mean in the form of memorial statues, it could not fail to have a refining and elevating influence upon the people. We catch from the petrified spirt of the hero the contagion of virtue, and are ennobled by its noble mien and the historic associations that cling to it. So adorned, St. George's-place would be the Acropolis of Liverpool, by elevation of art-appliances, if not by literal height above the town. The removal of St. John's Church, and adornment of the churchyard, would be an extension of the great area, and bring it nearer to

* By Mr. Samuel Huggins. Read at the Liverpool Architectural Society, October 31.

ie municipal centre, the Town-hall. The hurchyard is due to St. George's Hall, the ack of which is the most Anglican, and there- re the most harmonious with its surroundings. might have a broad avenue through it, lined ith trees, not a street, from the north-east rner to Victoria-street, for the relief of traffic. rees and flower-beds have a doubly charming ffect amid a wilderness of brick and stone, as itness that of the small grass-plots in the court f Somerset House.

The old scheme, now some thirty years of age, I remember rightly, of uniting William Brown- reet and Dale-street by a high-level bridge over he Old Haymarket, is laid to sleep. I think it ill be the sleep of death, and hope it may—for ith all due deference to its projectors and sup- orters, I never felt quite sure that a bridge ould be any ornament to the neighbourhood; hat it would not, on the contrary, bear a patchy, xorescent appearance. And now I feel sure hat neither its beauty nor its utility will be fficient to justify the outlay of a quarter of a illion sterling, more especially as its execution ould involve the desolation of a quarter of a ile square of the very heart of the town for alf an average lifetime. Such a sacrifice of oney, convenience, and comfort of the present eneration could only be justified by the most rgent necessity and evident utility; the cer- ainty, in fact, of conferring an enormous boon pon posterity. Feeling quite sure of this, I lso feel it my bounden duty to say so. As the alley is a natural feature of the town, and un- ulations of ground are generally found to be a ource of beauty in street architecture, as much s a flexuous line in regard to its horizontal ourse, I think it would be best to let it alone. o doubt some inconvenience to cart and carriage affic is experienced from it; but there is not fficient of a valley to call for or suggest such bridge to span it. As regards appearance, I ee nothing the matter with the neighbourhood xcept that many of the houses are unworthy of heir situation, and require renewal, which, with broad flight of steps from the platform of the ibrary, it is to be hoped will soon be executed. ome light cast-iron bridges for foot-passengers, hrown over the dangerous crossings, such as hat at the junction of North John-street and Dale-street, would be a greater utility, if room or the steps to ascend to them could be found. ome half-dozen sets of these would not cost a ithe of the sum that would be spent on the ridge in question. That sum would build two r three thousand workmen's dwellings that would reduce the death-rate of the town, or, ould it be conscientiously devoted to embellish- ents, it would produce ten times the amount f beauty, architectural or sculptural, that could e hoped for in connexion with the great bridge. t is to be hoped that Victoria-street will be endered worthy of the name it bears—and that here and everywhere the chief defects of exist- ng architecture be eschewed. I have long had n impression that in our climate shops and ffices should have more protection from the lements than they have hitherto received. I elieve the Chester-row principle applicable in ome modified form to all times, and I cannot elp thinking that some great trading streets in he centre of the town need covering as much s markets; indeed, they *are* markets. The Burlington and Lowther Arcades encourage me n this suggestion. For the sake of a varied ky-line I do not see why in trading streets, as ell as in private streets, gable ends could not e oftener turned to the front; in saying which would not be understood to have any leaning owards Gothic shops, which have a very dis- ordant effect, where, as in Liverpool, the key- ote has been given by the Classic or Italian. n trading streets there should be more rounding ff of corners, which not only increases the open paces at inter-sections, but gives opportunity or architectural display.

I have only to add on this head that the grandest avenue of Liverpool being the river, very means should be employed of making its argin as ornamental as possible; and that I deem the high-level passenger railway along the docks, proposed by Mr. Alfred Holt, highly desirable, as it will conduce both to convenience and safety.

I must reserve the second head of my paper, viz. "Liverpool's Mind," that is its Moral and Intellectual Institutions, for another occasion.

St. Alban's.—A Roman tomb has been found near the eastern wall of the ancient city.

DISCOVERY OF THE REMAINS OF CHRISTOPHER COLUMBUS.

It is reported from San Domingo that the coffin containing the mortal remains of Christopher Columbus has been found in the cathedral (which has been recently undergoing repairs) of that city. It has hitherto been supposed that the remains of Columbus were taken from San Domingo to Cuba, and deposited in the Cathedral of Havannah. During the recent works of rebuilding the high altar of the cathedral of the former city, the old, half-forgotten tradition, according to which not only an immense treasure of coin, gold, and jewels, but also the bones of the great navigator, are still in the Cathedral of San Domingo, was again revived. The great interest evinced in wider circles by these rumours at last caused the authorities to order a search to be made. On the 5th of July of this year, the bones of the third Admiral and grandson of the great discoverer, Don Luis Columbus, contained in a small half-demolished leaden box, were brought to light. The excavations being continued, on the 10th of September, at ten in the morning, the workmen came upon a vault, about the size of a cubic mètre, exactly underneath the archiepiscopal seat, on the right side of the high altar, containing an almost perfectly preserved leaden box, resembling that containing the remains of Don Luis Columbus, although more massive. This box, by its inscription, was at once recognised by the priest present, the Italian Consul, and several other well-known persons, as one that might contain the ashes of the great discoverer. The Government, when informed of this, to prevent possible abuse of the discovery, had the cathedral cleared, and all entrances occupied. The news spread like wildfire through the capital, and at half-past four in the afternoon, in the presence of the clergy, all the secretaries of state, the whole consular body, the magistracy, and a countless multitude, the raising of the box was proceeded with. Bishop Dr. Roque Coechia, apostolic delegate of the diocese, had it placed upon a pedestal, and read aloud, visibly moved, the inscriptions. They are exactly as follow: — On the outside of the lid: D de la A Pr A te (Descubridor de la America, Primer Almirante). On the side to the left of the reader, a C resting on its side, thus, ☪ (Cristobel). On the front facing the reader, an upright Ć (Colon). On the side to the right of the reader, an A resting on its side, ⊳ (Almarante). The back, as well as the bottom, bear no inscriptions. The measurements are as follow:—Length, 16¼ in.; breadth, 8 in.; depth, 8¼ in. The box was not locked, and the inside bears, in Gothic letters, the following words:—(Illustre y Esclarecido Varon Don Christobal Colon). Whoever had still had any doubts found them disappear when the inside inscription was read out; and one loud shout of the great multitude assembled, and the thunder of cannon, saluted the mortal remains of the great admiral. The minute drawn up immediately afterwards in the sacristy, and signed by all the authorities and consuls present, contains a complete inventory of the little still preserved of the most celebrated of all discoverers. It consists of a few bones of the arms and legs, some fragments of the jawbone and the skull, a layer of dust at the bottom of the box, and, strangely enough, a bullet weighing about three-quarters of an ounce Spanish,—all together taking up less than a fifth part of the contents of the box.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The opening meeting of this Institute for Session 1877-78 was held on Monday evening last, when there was a very large attendance of members. Mr. Charles Barry, the president, occupied the chair. Mr. Isaac Holden, of Manchester, was introduced to the President as attending for the first time since his election as a Fellow.

The President formally announced the decease of four members of the Institute during the recess, viz., Mr. Raphael Brandon, Mr. Gilbert R. Blount, Mr. R. L. Roumieu, and Mr. Carl Ferdinand Busse. A few particulars of the life and works of these gentlemen were included in the opening address.

Mr. F. P. Cockerell, hon. sec. for Foreign Correspondence, said that the announcement made during last session that M. Henry Revoil, of Nismes (one of the Honorary and Corresponding Members of the Institute), was dead, was a mistake. He was glad to say that M. Revoil was alive and well, and had forwarded a donation to the Library.

The President read the following preliminary list of names (forty-one in number) of noblemen and gentlemen who had already applied to be admitted as Honorary Associates of the Institute,—the new class of members instituted as part of the scheme for the re-organisation of the Institute adopted last session. He thought the list was a very satisfactory one to begin with, and the high character and attainments of the gentlemen whose names were inscribed therein augured well for the success of the experiment. The names were as follow:—

The Right Hon. Lord John Manners, M.P.; the Right Hon. Lord Houghton, F.R.S.; the Earl of Dartmouth, the Right Hon. Lord Crewe, F.S.A.; Sir James M'Garel-Hogg, bart.; Sir Walter Farquhar, bart.; Mr. Frederick Leighton, R.A.; Mr. E. W. Cooke, R.A.; Mr. George Richmond, R.A.; Mr. G. F. Watts, R.A.; Mr. T. Woolner, R.A.; Mr. R. Armitage, R.A.; Mr. L. Alma-Tadema, R.A.; Sir John Hawkshaw, C.E.; Mr. J. F. Bateman, C.E.; Mr. Thomas Hawksley, C.E.; Mr. J. Wolfe Barry, C.E.; Mr. John Fowler, C.E.; Mr. Edward Woods, C.E.; Mr. James Abernethy, C.E.; Mr. E. Harry Woods, C.E.; Captain Douglas Galton, C.B.; Mr. A. B. Mitford, Mr. Justice Hannen, Mr. Lascock Webb, Q.C.; Mr. Frederick A. Philbrick, Q.C.; Mr. W. G. Harrison, Q.C.; Professor Erasmus Wilson, F.R.S.; Mr. G. A. Spottiswoode, M.A.; Mr. W. Spottiswoode, LL.D., F.R.S.; the Rev. J. Robins, D.D.; Mr. J. Evelyn Liardet, Mr. Frederick Reade, Mr. C. F. de Kierzkowski, Mr. George Grove, Mr. Herbert C. Saunders, Mr. E. Oldfield, Mr. H. P. Jones, Mr. R. H. C. Nevile, Mr. Osgood Field, and Mr. Alfred White, F.S.A.

The President announced that he had received a numerously-signed requisition, asking the Institute to elect Mr. Frederick Ouvry, an Honorary Fellow, as some slight mark of appreciation of the services he had rendered for many years past as the honorary solicitor to the Institute. The election would take place at a future meeting, and could not fail to be unanimous.

The following gentlemen were balloted for and duly elected, viz., Mr. Thomas Lainson, of Brighton, and Messrs. R. Phené Spiers and T. H. Watson, of London, as Fellows; and Mr. B. E. Entwistle, of Liverpool, and Messrs. Ernest W. Farebrother and Henry Hayman, of Louth, as Associates.

The following gentlemen were elected by acclamation as Honorary and Corresponding Members, viz., Professor G. Von Neureuther, of the Royal Academy of Arts, Munich; and Professor Scholander, of the Royal Academy of Fine Arts, Stockholm.

A large number of donations to the library having been announced by Messrs. Eastlake and Cockerell,

The President said it devolved upon him to discharge the duty of formally presenting to the Institute the very admirable portrait painted by Mr. George Richmond, R.A., and which, he thought, most members of the Institute would recognise as a very striking likeness of their past-president, Sir Gilbert Scott. The portrait had been subscribed for amongst the members of the Institute, and although the sum available was not so large as, under ordinary circumstances, a portrait-painter of Mr. Richmond's eminence could be expected to accept, that gentleman had met the committee in a very considerate manner, saying that he felt it to be a great honour, as an artist, to be asked by artists to perpetuate an artist. The result showed that Mr. Richmond had entered into the work with all his soul. It was a great satisfaction to the Institute to be able to hand down the lineaments of its distinguished past-president to future generations of members. It was to be hoped, however, that the original of the portrait would long remain with them. A melancholy interest attached to the other portrait [that of the late Sir Digby Wyatt] to be presented to the Institute that evening. Mr. Thomas H. Wyatt would say to whose generosity the Institute was indebted for that valued gift.

Mr. T. H. Wyatt said that, on behalf of Mr. C. C. Nelson, he begged to present the portrait of Sir Digby Wyatt for the acceptance of the Institute. He regretted exceedingly that the active career of the generous donor of the picture had been interfered with by a very sad and long illness. This circumstance made the duty he (Mr. Wyatt) had to fulfil still more melancholy than it would otherwise have been. The subject of the portrait he had to present was no longer amongst them; on the other hand, the Institute had just received the portrait of one who was, happily, still spared to them, and whose name was very much honoured. Long might he live to merit the high position he had attained in his profession! The presentation of his (Mr.

Wyatt's) brother's portrait by Mr. Nelson was a very interesting and not an unnatural event. Sir Digby Wyatt and Mr. Nelson were for many years fast friends, and both of them had laboured for the advancement of the Institute. Mr. Nelson was very anxious that the portrait should be painted by Mr. Richmond, but that distinguished artist was not very well at the time, and being pressed with work,—and, moreover, dreading to undertake a posthumous portrait,—(there were only a few photographs for the guidance of the painter) recommended that an Italian artist, Signor Ossiani, should be entrusted with the work. The recommendation was adopted, and he (Mr. Wyatt) thought it would be agreed that Signor Ossiani had succeeded in producing a very interesting and striking work.

On the motion of the President, a vote of thanks was accorded by acclamation to the donor.

The President next presented the Ashpitel Book Prizes, awarded to candidates who distinguished themselves most highly in the Architectural Examination of 1877. The recipients were Messrs. J. J. Lough, F. Baggallay, and John Pilson.

The President then proceeded to deliver his opening address, part of which we have printed below.

Sir Gilbert Scott begged to propose a hearty vote of thanks to the President for his able and comprehensive address, which was remarkable for the large number of important subjects with which it dealt. During the past year the Institute had undergone re-organisation and change in many respects. That re-organisation was not carried so far as was at one time expected, but still the change had been very great. He thought it was matter for rejoicing that the alterations were not so extensive as they had been intended to be. The President had ably laid before the meeting the principal points involved in the changes, besides referring to numerous outside matters. In fact, the one thing that had astonished him (Sir Gilbert) in the President's address, in addition to the industry necessary for its compilation, was the power of condensation it exhibited, enabling reference to be made to almost an infinity of subjects in a short space of time. Without attempting to traverse all that had been said in the address, he (Sir Gilbert) felt bound to follow up what had been said by the President in congratulating the Institute on the result of some of the changes which had taken place in the inner life of the Institute. As far as he knew and heard, they had organised a most admirable Council, who had worked together very satisfactorily. As to the new class of members, "Honorary Associates," the candidates for membership under that title whose names had been read were men of the highest position and attainments, and they could not fail to be a great acquisition to the Institute. On important and special occasions, when subjects of peculiar interest were under discussion, some of the gentlemen whose names had been read had contributed materially to the information elicited. The President had rightly said that the new class of Honorary Associates might learn much from the architects, but, on the other hand, the architects would learn a great deal from the new class of members. It was gratifying to find that the re-organised Council had re-elected the President, whose nomination reflected infinite credit on the former Council. As to the sad list of lost members, the President had said, and said well, what the general body of members would say of the grievous losses they had undergone. As to his (Sir Gilbert's) dear friends, Sir Digby Wyatt and Mr. Edmund Sharpe, he had said a few words during the past session. As to poor dear Talbot Bury, the President had omitted to say one thing about him, viz., that he was a pupil of the elder Pugin. The tragical end of poor Raphael Brandon he could not help thinking of; a more good-hearted man never existed; but his sad career and end were not what might have been hoped for from a man of his talents and ability. He (Sir Gilbert) would only, in conclusion, express the great pleasure he felt in knowing that their old friend, Mr. Ouvry, had consented to accept the only honour which the Institute had it in its power to confer upon him for his invaluable services in the past. The honour was deserved a thousand times over. He would not attempt to say one word on the subject of "restoration." He could quite follow the President on that subject, and he was quite sure about poor Queen Anne; but "*de mortuis nil nisi bonum.*"

Mr. T. H. Wyatt, in seconding the motion, expressed his regret that Professor Donaldson was unable to be present to fulfil that pleasing duty. He could only express his very great admiration of the energy and labour which the president must have bestowed upon his address, which showed the great personal interest which he had taken in the welfare of the Institute. He (Mr. Wyatt) highly appreciated the way in which the Council had managed what he might term the "outer affairs" of the Institute, one result of their management being that the Institute now held a much better position in the estimation of public bodies and Government Departments than it had hitherto enjoyed.

Mr. Whichcord, in supporting the motion, said that Sir Gilbert Scott and Mr. Wyatt had borne testimony, as they were very well capable of doing from the address just read, to the untiring industry and diligence of the president in looking after the affairs of the Institute. But those gentlemen could scarcely have had the same opportunities of appreciating the labours of their president as those who had had the pleasure of serving on the Council with him. Not only were the weightier matters connected with the administration of the affairs of the Institute, and its relations with Government and public bodies, most carefully considered by him, but he gave thoughtful attention to all the minutiæ connected with the working of the Institute. He thought the meeting would agree that what was at one time regarded by many members as a doubtful experiment, viz., the creation of the new class of "Honorary Associates," was likely to be a brilliant success. The high character and attainments of the pioneer Honorary Associates, whose names had been read, were such as to make architects proud of being associated with them. It was due to the president to say that a very large proportion of the names included in the list had been obtained chiefly through his personal exertions and interest.

Sir Gilbert Scott put the motion to the meeting, and it was of course carried unanimously.

The President briefly acknowledged the compliment, and the meeting was brought to a close with the announcement that the next meeting will be held on Monday, the 19th inst., when Mr. W. H. White will read a paper "On Middle-class Houses in London and Paris."

THE PRESIDENT'S ADDRESS,

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the opening meeting of the Session, elsewhere referred to, Mr. Charles Barry, president, in the chair, delivered the following address:—

The season of year has again come round when, according to our usual custom, it is my duty and pleasure to offer you a few remarks relating to the past year, as it has affected us. It is a duty which, while I could wish it were in hands more able than mine to do it justice, is one from which I would not wish to shrink, as it necessarily connected with the honourable office in which you have thought fit to place me, and because I know I may count on your indulgence as to any short-comings of my own in its discharge.

In the outset, I think I may congratulate you that during the year now past we have gained some internal strength in our organisation, and also that the Institute, and with it the profession it so worthily represents, has been more appreciated and better regarded by public bodies, and therefore, I would fain hope, by the public, than has been the case for many years. The association of the Institute with the Paris Exhibition, by the direct action of Royalty,—with the Government and the Houses of Parliament by the request of the former to be advised as to a National Code of Building Regulations, and by the latter to be advised of the views of architects as to the law of copyright in original designs,—with the Metropolitan Board of Works, in the friendly conferences that have taken place under the Act of Parliament for the formation of Northumberland-avenue,—are all illustrative of my meaning, and with regard to each subject I shall have a few words to say presently.

It may be convenient if I divide my observations broadly into those connected—

1st. *With the Inner Life of the Institute*, i.e., its relation to its members,—the progress and opportunities for mutual advancement and good fellowship.

2nd. *With its Outer Life*, comprising its relations, past and present, with the Government and those public bodies with which it may be naturally more or less associated, and with the public generally.

[As the addresses of previous presidents are to be found by the outside public *only* in the *Builder*, published there in many cases at the earnest desire of the writers, we should, according to custom, and at some inconvenience, have printed the whole of the present address. We have, however, received intimation from the Institute that the address is *not* to be given *in extenso!* We confine ourselves, therefore, to the second part of it, as having the more general interest.]

Passing to the second head of my subject viz., *The Outer Life of the Institute during the Past Year*, I naturally allude in the first place to the graceful recognition of the Institute by our Royal Patron the Prince of Wales. Having undertaken the post of President of the British Section of the Paris Exhibition, and having thrown himself into the work and duties of that position with a zeal and an amount of ability for which all who (like myself) have had opportunity to observe and admire feel most grateful to him, the Prince felt that, connected as he personally is with their Institute, he need only call on its members to aid him, so far as architecture was concerned, to the best of their power, to ensure their doing so. The compliment intended by his Royal Highness to be paid to the whole body, by its President being placed on the Royal Commission, has, I know, been warmly appreciated by every member. It remains now, therefore, for us to show, by the character, originality, and excellence of the works to be sent to the architectural portion of the British Fine Arts Exhibition, that the confidence placed in us by our Royal Patron has been justified. You are aware that a special committee of our members has been formed to carry out the necessary arrangements. A circular letter has been addressed to those who have been contributors to former exhibitions, and advertisements have been inserted in the public journals, inviting those who may not have been thus specially addressed to forward drawings of some of their best works executed by them during the last ten years. At the last Paris Exhibition, in 1867, there were, I find, forty-one architect exhibitors, whose drawings covered a wall-space of about 1,000 ft. At the Exhibitions at Vienna in 1873, and Philadelphia in 1876, the number of English architects exhibiting was very small, probably arising from the distance from England, but now that a larger, grander, and more imposing structure than any preceding it is being raised close to us, to contain examples of all that is useful, interesting, instructive, and enjoyable by the mind of man, I trust that English art—including, of course, English architecture—will be worthily represented, and that the exhibitors will be more numerous and more talented than before, and that the wall-space appropriated to us will be more ample and more worthily covered than even in 1867.

I may allude next to the application of the Local Government Board to this Institute to aid them with advice and suggestions on the New Code of Building Regulations, which has for some time been in course of preparation by the Board, with the hope and intent of introducing throughout the kingdom some general rules to be observed uniformly and to take the place of the confused and conflicting codes of regulation now in force, consequent on the absence of intercommunication of the numerous Local Boards by whom these regulations have been issued. It will hardly be believed, but it is a fact, that within a radius of twenty miles around the centre of Liverpool no less than thirty-four Local Boards, each with a set of rules more or less different from the rest, are in force. The same confusion exists very generally, to the distraction of architects, who, in all good faith and innocence, find themselves often transgressing some of these local rules. There is good reason, therefore, for the proposed action of the Local Government Board, who deserve any assistance that can be rendered to them in their by no means easy task. The council of the Institute at once, therefore, met the request of the Board in the same cordial spirit in which I am glad to say it was made. An influential and hard-working committee was appointed, and when I mention that Mr. Whichcord was appointed its chairman, you will, I know, be sure that the committee did hard and useful work, and that their report of advice on the Draft Bye-laws prepared by the Board, and submitted for the considera-

ion of our committee, was eminently practical, ndeavouring to give the public all needful pro- ection in the due construction of buildings, ublic and private, without vexatiously hamper- ng the action of professional men. That Report as been most gratefully and gracefully acknow- edged by the Local Government Board, and many of the emendations recommended by the committee on the original draft, and many of their own suggestions, have been adopted in the entative "Draft Code of Bye-laws for regulating Buildings," which the Board have lately issued. Probably before it receives its final shape, more f not all of the suggestions made by your com- mittee will find place in it.*

Again, the advice of the council of this Insti- ute has been sought by the committee of the House of Commons, still sitting on the question of "Copyright in Design of Works of Art." The necessity of some kind of recognised law on this subject has long been felt by architects, for the custody of, and property in, their original de- igns, as embodied in their drawings, have, as you all know, been the subject of frequent painful disputes, which, if contested in the Courts of Law, would entail on the professional man (who s rarely wealthy) much mental vexation and considerable cost, whether he were or were not successful. The consequence is a thorough con- usion of practice exists. No actual issue has ever been tried out in one of the superior courts, where all arguments on either side would of course be exhaustively considered. I am glad to say the "Copyright Commission" fully realised how unsatisfactory this is, and admitted that architects had a case for protection. How that was to be afforded, and to what extent limited, was felt by them, and indeed is a very difficult subject to settle; but it will at any rate be gra- tifying to the Institute to know that there is very disposition to treat the subject in a manner satisfactory to architects if the members of that Commission can possibly see their way to do so. The proceedings of the Commission are not yet complete, but it is hoped they will present their report this year. The Commission was presided over by the Right Hon. Lord John Manners, whose abilities and courtesy are well known, as well as his interest in architecture and archi- tects, as is evidenced by his now enrolling himself as one of our new Class of Honorary Associates.

I must lastly advert to a matter which, while the Council felt it was one on which it was only right that (as decreed by Parliament) the Insti- tute should be consulted, was a most difficult matter to deal with in such a way as to justify the appeal to them on the question of taste and architectural fitness, without undue or arbitrary interference with the practical necessities in- volved. I allude, of course, to the submission by the Metropolitan Board of Works, under the Act authorising the formation of Northumber- land-avenue, of certain designs for intended buildings to form its frontages. These designs had been prepared by the intending lessees, and sent to the Metropolitan Board for their sanction, previously to giving which the Board asked in each case the advice or suggestion of the Council. A long and careful correspondence (which has been preserved for future information) ensued— some of the fragments of which were separately commented on in the public papers, sometimes from one view, and sometimes from another— but looking all through it as a connected whole, I think the series will not be discreditable either to the Institute or the Metropolitan Board of Works. It will show the high sense entertained by your Council of the importance and the difficulty of the work imposed on them by the Legislature. It will also show the strong cor- diality of the Metropolitan Board of Works, and their desire to meet the æsthetical views of architects, subject only to their great duty towards the ratepayers not to lessen the rent to be paid by lessees by reason of imposing too onerous conditions in the building agreements; indeed, this was their only difficulty in the matter. It was urged by the Council that con- siderations of the permanent appearance—satis- factory or the reverse—of large blocks of build- ings in our finely-laid-out new streets should be allowed to have no small weight, even if some pecuniary sacrifice should be made (a result they believed would at least be doubtful), and that the Metropolitan Board should remember the impossibility of correcting an error once made in such materials as stone and marble, however much it might be desired on all hands to do so when too late.

In the issue the Metropolitan Board required the lessees of the most important block in the whole avenue to modify their design to meet the views expressed by the Council. In this the valuable aid of the superintending architect of the Board was readily given, both to the Board and to the Council, with impartiality and with the best effect. Finally, although the Council could not give an unqualified approval even of the modified design, they felt that the Board at their instance had gone as far as they could be expected to do in requiring alterations which might seriously affect the expenditure by the man who was to pay an enormous ground-rent, and expend a very large sum of money on the buildings, and they, therefore, passed the modi- fied design, receiving an assurance from the Metropolitan Board that they would require that the treatment of the buildings on the adjacent ground not yet let should be consistent with such design. I have the authority of the superintend- ing architect to say that since that time the lessee has frankly recognised the value of the suggestions made to him, and has agreed to some further modifications, likely to be improve- ments on the design so passed. I hope, therefore, I may congratulate the Institute that while it was but too probable that the relations of the Institute to the Metropolitan Board under the above-named Act of Parliament might have led to very unpleasant conflicts between them, the reverse is the case; and I am induced to think that the aid and help of this Institute will in the future be rather sought than avoided by that important metropolitan body, who have itso much in their power to make or mar the appearance of the London in the future.

I fear I may have wearied you by too long allusions to the above matters, but I think you will own that the facts to which I have alluded justify me in the observation I made at the out- set of this address, that this year of 1877 has been remarkable for the greater recognition of the Institute by Government and other public departments.

You will not forget that in the course of last year an animated correspondence took place in the public papers on the subject of "illicit com- missions," as they were called, being commonly paid (as was alleged) to professional men by others than their clients, and without their cognisance or consent. The charge was made indiscriminately against men of various pro- fessions, and among them architects. I felt it a duty to combat the truth of this charge against us, and especially as regarded the members of the Institute, the primary object of which, as we all know, is to preserve and continue "purity of professional action" by every means in its power. The general body fully endorsed, more than once, all that I had written publicly in their behalf, and I cannot doubt it will be their desire to show their earnestness in any way that may at any time seem feasible. With this view some communications have taken place between your Council and Sir Edmund Beckett, who has pro- posed a Bill to the House of Commons which shall inflict a sensible penalty as well as affix a stigma of dishonour on all who might be proven guilty of such practices. That Bill was intro- duced too late to become law last session, but is to be pushed forward this year. Sir Edmund has informed me that it has the full sanction of the law officers of the Crown to whom it had been referred by the Home Secretary, and the meeting will be glad to hear that so far from making the charge so general as he and others certainly did in their correspondence in the public papers, he desires it to be understood that so far as he is concerned he does not wish to say or imply that it is *common* with architects, though he is aware of some instances of those who called themselves by that name having adopted this dishonest practice. This being so, it is evident that, the objects of Sir Edmund and the Institute being identical, they can work cordially together, and your Council will, I am sure, have your full assent in considering any well-devised scheme whereby the honest men shall be relieved from calumny, and the dishonest men be exposed as they deserve.

Many subjects of great practical interest to architects will, no doubt, engage the attention of most of us during the coming year, among which I may specially mention the "Metropolitan Streets Bill" of the Metropolitan Board of Works, and the project for the better supply of drinking-water to this huge and still increasing city.

The question of the extension and concentration of our public Government offices is likely again to become prominent this year, and a report on the subject by a committee of the House of Commons has been published, which I would commend to the attention of our members, and especially as regards the evidence of the witnesses called before the committee, which deals in several places with the question of so much interest to us, viz., whether in the interest of the public architects of acknowledged experience, and with full public responsibility for their works, should not be employed on our public works, rather than they should be entrusted to the unknown talent, without any personal responsibility, of some salaried officer of a "department," who, as one witness very pertinently told the committee, would, on discovering his own talent to be of a superior order, soon give up his salaried official position for an independent one, with all its risks, but also with the incentive to exertion and aid to talent that all feel when a creditable result is publicly acknowledged and identified with *the man* who has achieved it. It is to be regretted that the committee had only one representative of our profession before it, Sir G. Gilbert Scott, in addition to the surveyors to the Crown of the Office of Woods and of the Office of Works. The committee do not recommend any specific action in detail, contenting themselves with pressing on Parliament very strongly the abso- lute necessity of something being done at once to remedy the serious inconvenience and risk arising from the present system of housing our public officers in separate private houses, often small, unhealthy, and divided from each other. Let us hope that should a public competition take place once more (as is not improbable) the subject of which shall be to deal with the question as a whole, the miscarriage and in- justice of action which followed a similar com- petition in 1857, and which I have such good personal reasons for remembering, may be avoided.

We may lastly turn our attention for a few moments to the further progress of work in classic lands, to which I made allusion in my address last year. I need not further allude to the extraordinary and most interesting dis- coveries of Dr. Schliemann at Mycenæ and Troy, for you have heard them described in this room by the enthusiastic discoverer himself. After having carefully prepared for publication a full record, duly illustrated, of his discoveries, the Doctor has returned to the scenes of his labour, and is still sanguine of finding more and more proof in support of the theory to which he has committed himself as to the age and desti- nation of the remains unearthed by him and Mrs. Schliemann. As he has now become one of our honorary and corresponding members, he will, I am sure, feel it a pleasure to recognise the claim the members of the Institute thus have to be taken into his confidence from time to time should new wonders be laid open to the day.

Other researches in Greece have been pro- ceeding, as for instance at Olympia, and though the past year has not revealed anything very new there, all that has been found has tended to confirm the knowledge previously gained. At "Spata," in Attica, a tomb has been discovered, containing many gold ornaments, which are sup- posed by some to be of the same epoch as those found by Dr. Schliemann at Mycenæ. At "Dodona," a number of inscriptions have been discovered, though no works of art of importance. We may see, therefore, that the spirit of research for all and everything that may throw light on the history or legends of that land, at once the birthplace and centre of all early refined art, is actuating many a zealous explorer, and year by year we may confidently hope to add some little to our stores of knowledge on this most enticing subject of inquiry.

I may not pass on without allusion to another work of exploration of the greatest interest, and which has been pursued and persevered with under much difficulty and disappointment. I allude to the "Palestine Explorations." It was early felt that, before exploring particular spots in detail, it was almost essential to have a far more correct map than existed of the whole of the country both east and west of the river Jordan. The east side was undertaken by an American committee, who have not, however, made much progress. The west side was under- taken by our own countrymen, and an excellent map has now been nearly completed, after a persistent labour of some years. A tract of country of 7,340 square miles has been accurately surveyed,—the hills shaded on the spot,—on a

* The draft copy of the proposed bye-laws, with the an- notations of the committee, is in the Institute library, and can there be referred to by members.

scale of one inch to the mile; and the map, as accurate as ordnance maps are, is the gratifying result. The sites of about eight times as many places have been identified and marked on it as are shown on the most correct maps previously existing; while, in addition to the land survey thus made, careful measurements have been taken and drawings made of a large number of architectural ruins of all ages, the greater part of which have now been seen and measured for the first time.

As the American society has made little or no progress, I am informed that, should their funds enable them, our own "Palestine Exploration Committee" will now commence a similar map and record of the country on the east side of Jordan. The extremely interesting excavations by Lieutenant Warren, undertaken also at the instance of the Palestine Committee, have been obliged to be suspended for the present. They were, however, so very promising, and they had already afforded so much curious information, that it is to be hoped they may be resumed. With regard, therefore, to all those labouring in distant lands in matters of such great interest to us here as architects or archæologists, and remembering how earnestly Dr. Schliemann assured us that one of the greatest incentives an explorer can have is to feel that he is not alone, but has the interest, regard, and good wishes of sympathizers all over the world, I may, I am sure, as last year, on behalf of this Institute, wish "God speed" to all who thus are labouring abroad.

And now, gentlemen, before closing what I fear has been too long an address, there is but one more word I wish to say, and it is that it will be well for us in the papers to be read in this room very often to choose subjects of a thoroughly practical character. A charge is frequently reiterated (though as often contradicted) against architects that they think too exclusively of the artistic effect and external beauty of their buildings, and disregard partly or altogether the important questions relating to the health, comfort, and convenience of those who are to live therein. I recently heard a noble lord, in a public address made by him, roundly assert that architects were "ignorant" of all these matters, alluding to questions of ventilation, warming, and drainage. You will know how unfounded this really is. Again, the City Librarian said the other day that the banes of libraries were architects and gas. It was, indeed, well said in reply to him, by a kindly non-professional defender of the architect, that if those who were about to build libraries or other buildings really knew their own wants, and could intelligibly explain them, there would fewer of such complaints. This is perfectly true. The undeserved blame for all the mistakes of clients,—their imperfect perceptions,—their non-power of realisation of their requests (which nevertheless the architect is bound to attempt to comply with),—are heaped on the devoted head of the unfortunate architect. We cannot, I know, expect this state of things suddenly to alter in our favour, but we may learn from our detractors a lesson of Christian submission to unmerited blame, and also learn how needful it is, in these days of extensively diffused scientific knowledge and scientific inquiry, to pursue exhaustively our inquiries into these scientific and practically important subjects, and to do our best to put ourselves in a position to challenge our accusers to the proof of their assertions from any buildings erected under the care of architects of experience, when they have been treated with due confidence by their clients. Let us welcome, then, the discussion of these matters, and it may be that we shall do more thereby to add to the power of the architects of the next generation to carry out large works, beautiful works, and works distinguished by their sanitary excellence, than we ever can by the more exciting discussions whether architecture attained its maximum excellence in the thirteenth century or in the days of Queen Anne.

I have now only to thank you for the great patience with which you have listened to me, and to promise you once more that anything I can do for the well-being of the Institute shall cheerfully and zealously be done by your President.

Institution of Surveyors.—The first ordinary general meeting of the session will be held on Monday, November 12, when the president, Mr. Edmund James Smith, will open the session with an address.

PROPOSED TESTIMONIAL TO MR. JAMES ALLPORT.

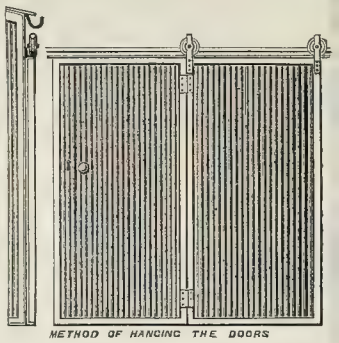
SIR,—The *Builder* for June 16th, on page 617, published a suggestion for the above purpose. Since that time copies of the letter, and various paragraphs relating to it, have gone the round of the London and provincial press, and you will be pleased to think what you kindly fostered has at last found the right man in the right place to carry out the proposition, in his Worship the Mayor of Derby, who has written a letter to the papers, and is taking steps to raise a subscription. GRATITUDE.

COSTERMONGERS' STABLES AND STALLS, COLUMBIA MARKET.

WITHIN the long time during which we sought to awaken public attention to the evil conditions under which dwelt and dwell vast numbers of our fellow-creatures, it often occurred to us to have to point out the difficulties under which the costermongers of London,—a large body of hard-working men,—obtained any place of residence, requiring, as they do, accommodation at night for their friend and helpmate, the donkey, and also a proper store for their unsold wares. It was curious to note the thousand and one shifts adopted for this purpose. Frequently, in the neighbourhoods inhabited by this class of persons may be seen the coster "putting up" for the night, by taking the wheels from his barrow, in order that the same may pass through into the small yard at back, where the donkey has previously been stowed away in a covered corner; the unsold wares being frequently stored in the small apartment occupied by the man and his family, a proceeding the more objectionable when the variety of goods sold by the London coster,—such as fish, vegetables, and other perishable articles of daily consumption, is remembered. We could tell some strange and sad stories of the results of this sort of "pigging," but it is unnecessary just now. The coster who can boast of possessing fair and adequate accommodation for his donkey and wares may be considered a prosperous and lucky man of his class. In some neighbourhoods, the difficulty in obtaining such accommodation is almost insuperable.

Seeing this necessity, Baroness Burdett Coutts,—who so often does the right thing in the right place,—has erected, adjoining her costly gift, the Columbia Market, Bethnal-green, a series of stalls and stables for the accommodation of a number of donkeys, ponies, barrows, and carts, thus enabling the coster who gets a standing here to obtain a dwelling-place irrespective of his stabling. It was a good thought, and our illustrations show how it has been carried out.

The site selected is specially adapted to such a purpose, being situated immediately opposite the Columbia Market. The ground averages a length of 150 ft. by 51½ ft. in width; on the east side, and at each end, are corrugated iron buildings, divided with partitions of wood. The centre building averages a length of 98 ft. by 18 ft. wide, with a ridge-roof. This building is divided with wooden partitions, making in all twenty-four stables on one side and twenty-five barrow-stalls on the other, each stall and stable being 9 ft. long by 4 ft. wide, and averaging 9 ft. high. On the east side are seventeen pairs of barrow-sheds and donkey stables, intended to accommodate a donkey and barrow; each of these seventeen double stalls is 10 ft. long and 8 ft. wide, being divided in the centre with a dwarf division. Over that portion set apart for the barrows is a hay-loft; at each end are three pairs of pony stables and barrow-sheds, similar to the construction on the east side, except that they are somewhat larger in the stables, namely, 10 ft. long by 4 ft. 6 in. wide, with barrow-sheds each 10 ft. by 4 ft. On the west side is an open shed for the accommodation of carts and hand-trucks. Each stable is provided with manger, hay-rack, harness-hooks, &c. The doors to the whole of the stables and boxes are of angle-iron frames, filled in with corrugated iron, and cross-braced with light ⌊ iron, and having ample ventilation between the head of the door and eaves of the roof. In the case of double stalls, and for the purpose of economising the room, an ingenious contrivance has been adopted by a combination of sliding and hanging doors; by this means the hanging door opens on the sliding door, which in its turn slides over the space occupied by each proprietor, and enables him to have his doors open without inconvenience to his neighbour, or blocking any part of the passages.



METHOD OF HANGING THE DOORS

The whole of the buildings throughout are framed in light T and L iron, the roofs being supported by T-iron standards, which also serve as door-posts. The roof is laid on light T-iron rafters and purlins, the divisions of stalls being fixed to the underside of the rafters, all this being of the simplest construction possible, and the covering being of galvanised and corrugated iron. A manure-pit is provided at each end. A copper for boiling water, shell-fish, &c., drinking-taps, and vegetable-washing troughs, and other conveniences, are also provided.

It will be seen from the description and plan that the accommodation provided (which is very much appreciated, the bulk of the stalls being already let), consists of twenty-five lock-up barrow-stalls, twenty-four single donkey stables, seventeen pairs of donkey stables and barrow-stalls combined, six pairs of pony stables, and an open shed, 150 ft. long, for barrows. Each tenant has a "Hobbs's" lock on his door, the keys being numbered and each made to differ,—gas, light, and water being liberally provided. There are two attendants for the place, taking alternate night and day duty, so that the coster may comfortably house his friend and secure the safety of his goods at a moderate weekly rental (1s. 6d. a week the barrow-boxes, and 2s. 6d., we believe, for a stable), subject to certain rules intended for the good government of the place, and which are posted in a prominent position in each stall and stable.

Adjoining the stables is a large coal-yard, as shown on the plan and in the view, connected with the market, and which also supplies coal to a co-operative store now in course of formation, the Baroness Burdett Coutts having generously given a portion of the market for a term to enable the poorer classes at the East-end to participate in those benefits which hitherto have been almost monopolised by their wealthier brethren at the West-end. The costers of Bethnal-green and its neighbourhood have good reason to thank the Baroness.

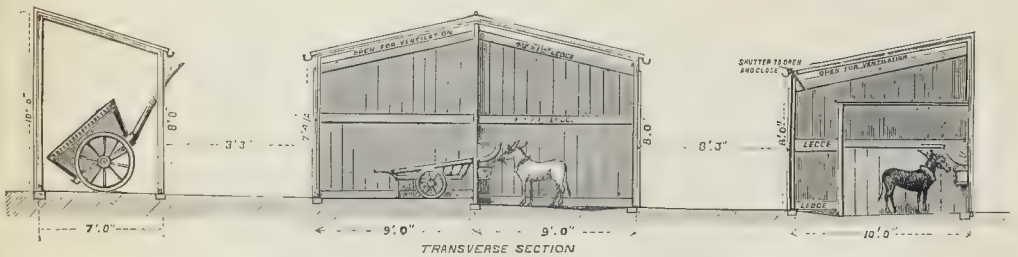
The plans of the building were made by the Baroness's manager at the market, Mr. Lewis Harrison, who also takes the management and working arrangements of the stables and coal-yard. The work has been carried out under the superintendence of Mr. A. B. Hutchings, architect, the contractors being Messrs. Wm. Whitford & Co., Royal Ironworks, Limehouse, who have erected the buildings at what seems a moderate cost, considering the extent of the accommodation provided.

In Columbia Market,

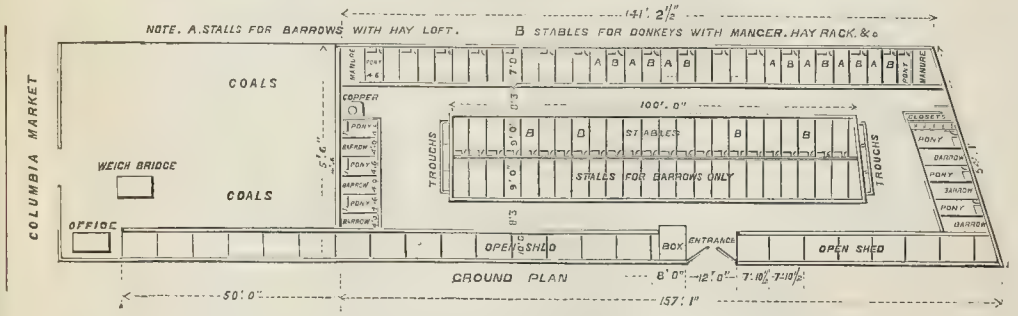
An interesting and important experiment is being tried. A portion of the open area has been occupied for some time past by the American Meat Company, who sell good meat at prices ranging from 3d. to 8d. per lb., according to the joint. Their operations, however, have been cramped by the want of proper places for storing the unsold goods. To supply this want the whole of the vaulted cellars which occupy the site of the open area are transformed into a huge cooling-room, by the action of a refrigerator formed at the end nearest the high-road. By means of a fan and a small steam-engine, 6-horse power, air is pumped in through a series of pipes which are kept embedded in ice. Should this experiment prove as successful as it promises to be, a very considerable extension of the American Meat Market may be expected.



BIRDS EYE VIEW



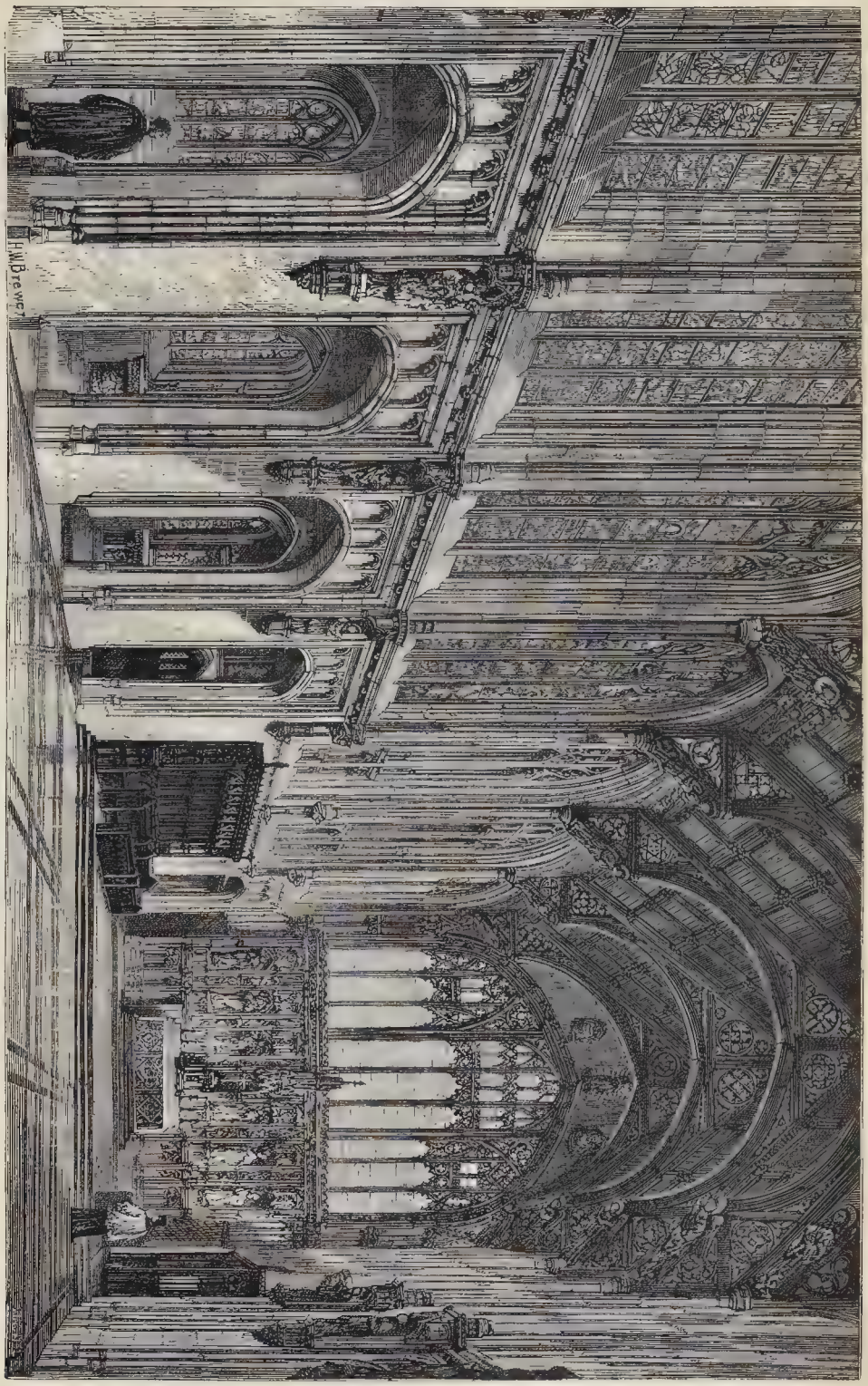
TRANSVERSE SECTION



GROUND PLAN

STABLES AND STORES FOR COSTERMONGERS; NEAR COLUMBIA MARKET, HACKNEY ROAD.

ERECTED FOR THE BARONESS BURDETT-COUTTS.



KENSINGTON ROMAN CATHOLIC PUBLIC SCHOOL CHAPEL.—Mr. Goldie, Architect.

ENSINGTON ROMAN CATHOLIC PUBLIC SCHOOL CHAPEL.

Our engraving is an interior view of this portant structure, which is to form a portion an extensive educational establishment, nded by and under the direction of the Right v. Monsignor Capel, and now in progress, on arge site in South Kensington, close to the w Earl's-court Railway Station on the under-ound line.

The plan is that of the Collegiate Chapels of ford and Cambridge, an ante-chapel, 29 ft. long 61 ft. 3 in. wide, and a choir or chapel proper, ft. long by 31 ft. 6 in. wide. Two quasi-aisles ach 13 ft. 6 in wide), or rather series of chapels, at King's College, Cambridge, flank the choir, d are terminated by the sacristies and the gan-chamber.

As the leading idea of the foundation is to ke up the thread of Roman Catholic teaching ere it was interrupted in the sixteenth century, d unite it with the advanced learning of our n day, so the architecture is of the former riod, adapted to modern requirement.

It is intended, in the first instance, to carry t the purely constructive work, but all in the ost substantial manner, and with the best aterials, and by degrees to add the ornamental atures and the fittings, such as sculpture, tars, stalls, stained glass, &c.

The external walls will be built in fine red ick, with stone dressings. The internal walls ill be in ashlar, and the open roof in oak. A enefactor has already given a large sum for the ilding, and another has engaged to erect the gh altar.

The designs are by Mr. Goldie, architect. The ork will be carried out under the direction of at gentleman, and his partner, Mr. Child, of ensington-square.

The excavations for a portion of the school e progressing, and it is expected that the ildings will be actively commenced and pushed forthwith.

AN EDUCATIONAL POSSESSION.

THE MAYER COLLECTION.

This was the subject of a paper read before e members of the Liverpool Art Club, ovember the 5th, by Mr. Charles T. Gatty, sistant curator of the Mayer collection. It is e first time that any comprehensive notice of it as appeared, and it excited much interest. It is w just sixty years, said Mr. Gatty, since a man, oughing in a field near the village of Little adeley, in Staffordshire, turned up from the il an earthenware urn, and brought to the ght of day a quantity of long-hidden Roman ins. A party of rabbit-shooters in the adjoin-g field were attracted by the discovery; and ne of them, a boy of twelve years, astonished so novel a sight, gathered up a few scattered ins and potsherds. "You shall have a crown," id his grandfather, "if you can read what is ritten on them in a month's time." He got e crown, and another possession as well whose alue he did not then realise,—an impetus to the ind and imagination never to be relinquished. fter all, of what value was rabbit-shooting? did not give one much to think about; whereas is little coin, with the image and superscrip-on of Cæsar himself, what might it not teach?

It is said that, could we get far enough back owards the source of any river, we should come a point where a few blades of grass deter-ine the course, at any rate, of the original pring; and so it is with our minds, and the irections which they unconsciously take in early fe. Here was a chance incident, an old pot of ins turned up by a ploughman, an imaginative, quisitive, active-minded boy in the adjoining eld, but in it you have the source of what was become a perfect Mississippi in its way. hat boy was one of five brothers, each with a pirit and hobby of his own. Shooting, fishing, nd various out-door exercises, rolled the days long with most of them; but our little friend ith the coins had his designs also, not so obvious, t ultimately more important. Commencing a usiness life at the age of twenty, he left the uiet and leisure necessary for study; but he oon started an accumulation of antiquities, a fine brary, and continued a steady course of adher-nce to the furthering of archæological studies.

In the year 1867, the coins and the potsherds, ith thousands of other treasures accumulated y his industry, became the possession of the own of Liverpool. The coins are lodged in the layer Collection, in a little wooden box, inside which is recorded the history of their discovery, signed by Mr. Mayer himself, who is the hero of my story. On the lid is the motto, "Antiqua monete." Such was the source of Mr. Mayer's archæological interest. The ideal ambition of the boy became the practical delight of the man, as year by year he added piece to piece, and collection to collection. Let me draw your attention somewhat in detail to the treasures which he accumulated.

Take first the series of Egyptian antiquities, which may be grouped roughly into Religious, Sepulchral, and Civil Sections.

In the Religious Section are figures of deities, sacred animals and emblems, representing pretty completely the principal forms in that strange Pantheon. But these grotesque figures and mythological mixing of the divine, the human, and the animal, are worthy of attentive study. Idols they were, no doubt, but ideals too, and, in a sense, witnesses to truth. A living writer has said that the Almighty casts His shadow even upon the unseemly legends of a popular mythology; that His writing is upon the wall, whether of the Indian fane or of the porticoes of Greece, and that he is dimly discerned in the ode or the epic as in troubled water or in fantastic dreams. Certainly, in the Egyptian mythology, though the divine ideal is dragged into unreasonable and ludicrous dogmas, and subjected to human caprice and the accidents of time and place, there are occasional flashes of light which illuminate the weird doctrines upon which they are cast. . . . .

The Mayer Collection contains spoils from the Egyptian tombs of the Pharaohs themselves, and of the priests and priestesses, door-keepers and singing-women of the temples, chiefs and nobles, superintendents of palaces, governors, viceroys, councillors, chamberlains, captains of ships, commanders of troops, judges, magistrates, treasurers, scribes, and of numbers of less important personages. A few weeks ago, when in London, I identified, with the help of my kind friend, Dr. Birch, the history of the owner of a granite sarcophagus in the Mayer Museum. This sarcophagus came from Lord Valentia's collection, and bears on it the name of Bakenkhonsu, a priest of Thebes. Now, there is in the collection of the King of Bavaria, at Munich, a statue of this man, on which is a record of his life. He lived at Thebes between 1200 and 1300 B.C., during the 19th dynasty, and, it is said, reached the ripe age of 110 years. The various stages of his career are accurately noted; how he commenced low down in the priesthood, and, during the reigns of two kings, rose by merit to be finally chief prophet of Arnen, and royal architect; and how, in the latter capacity, he built the king's palace, ornamented the Temple of Arnen, and raised granite obelisks, whose tops are poetically described as penetrating the vault of heaven. Champollion found his tomb near Thebes, and says it is decorated with six colossal statues.

Dr. Birch, Keeper of Oriental Antiquities in the British Museum, examined the collection in March this year, and translated all the hieroglyphic inscriptions. A few remarks from his report will give weight to my words. He says,—"This collection comprises an extensive and valuable series of Egyptian objects of all branches, and contains several specimens of unique character and rare interest. Amongst these he would direct particular attention to the valuable alabaster vase, incised with the standard name of Cheops, the builders of the Great Pyramid; the numerous sepulchral tablets, many of which are of great interest, some for their excellent execution and remote antiquity, amongst which the most remarkable is one in bas-relief, of a person named Tetaakh, of an age at least as old as the pyramids of Gizeh." Later on he calls attention to the torso of a statue, either of Alexander the Great, or of his son, Alexander Aegus; to a woven belt, bearing the name of Rameses III., and a variety of other interesting pieces; and, in conclusion, congratulates the Corporation of Liverpool upon the possession of "this valuable collection, which will always be of great interest to Egyptian students."

The British Department forms one of the strongest points in the Mayer Collection; it is strong alike in quantity and quality, and the writer entered into details, both as to its history and its principal features.

The early Briton, the Roman, the Saxon, the Dane, and the Norman, all have their share in the honour of our present position. And as men love the heirlooms which record, in pious foundation, or coat of mail, or learned treatise, the devotion, bravery, or talent of their ancestry, so do we, or rather so should we, treasure the memorials of those who won so great a hold in our country, whose blood flows in our veins, the subjects of Boadicea, Agricola, Alfred, and Harold. Those iron swords and spears from Saxon graves once defended the cliffs of Kent, and guarded the British interests, with as great bravery as do our modern English soldiers now quartered at Dover.

And if those Saxon chieftains could arise from their graves and look over the grass and fallow lands of Kent, after all there is not much to surprise him. I visited, two years ago, the site of some of the Faussett and Rolfs digging grounds, and brought a few Saxon spears from the sandpit at Gilton; but the scenery is, as Mr. Planché says, "peaceful and pastoral. On the one hand, marsh and meadow, dotted with sheep; on the other, a smiling valley, bounded by a range of low wood-crowned hills,—here and there a distant spire, a cluster of farm-buildings, a mill, or an oast-house. Yet those meadows have swarmed with Cæsarean soldiery; over what is now a marsh, have sailed the Roman galleys and the Saxon keels. Those hills have witnessed the worship of Woden; amongst the trees of one of them nestles a village still bearing his name,—that mill marks the site of a vast cemetery; those farms are the remains of manor-houses, whose knightly owners lent lustre to the rôle of English chivalry. The sculptured effigies of some yet moulder on their monuments in the chancel beneath. Puffs of white smoke point out the progress of the up-train from Sandwich, rattling over a railway which sweeps by the Amphitheatre, and round the Castrum of Rutupis; an omnibus is rolling along the road by which Richard Cœur-de-Lion passed on foot to Canterbury, and Edward the Black Prince conducted a captive king of France to London."*

We are apt to forget these things, and to lose, in close attention to the present, the dignity which comes to us from reflection upon the past. I do not mean to imply that there was greater dignity in the past than there is in the present; but I mean to say that, in these days, we can reflect upon the dignity of those ancient times, free from the superficial deceptions which confuse our judgment respecting the worth of what is about us. Concerning the past, time has tried all; the accidents disappear, and the substance only is recorded for those that have come after. I can bear witness to the fact that, while we forget these things, others are alive to their interest. The treasures of the Mayer Collection I have found minutely recorded in the pages of foreign writers, and other total strangers to Liverpool, and I believe that no compliments have been more gratifying to Mr. Mayer than those paid him by the foreign Governments who made overtures to him to try and induce him to part with his Saxon collections, and wished to make his "Saxon Vocabularies" a text-book in Continental schools. The American travellers to this country could probably tell us more about the Roman cities of Deva (Chester), Uriconium (Wroxeter), Alauna (Lancaster), or Mancunium (Manchester), than we know ourselves, and which we have probably never seen. . . . .

I shall now leave the British antiquities, and give you some idea of the specimens of pottery and porcelain which are in the Mayer Collection.

The series commences with English Mediæval and later rough brown earthenwares and stonewares. From these we pass to the English faïence or Delft wares, and then to the earlier Staffordshire wares. Amongst this latter class must be specially noticed the very important collection of Wedgwood ware. Mr. Mayer has lately communicated to me some interesting facts respecting this branch of his collection. He says, "In the year 1845, being in London, I went to take tea with Mr. Chambers, the old friend of Stothard, the artist, and was introduced by Mr. Chambers to a Mr. and Mrs. Wedderburne. Having previously heard that Mr. Wedderburne had been traveller in the service of the Wedgwoods, both in this country and on the Continent, for more than forty years, I entered into conversation with him at tea, and he told me many anecdotes relating to the art of pottery. Amongst other things he said that after the death of Josiah Wedgwood, in 1795, partly owing to the falling off of orders from the Continent, in consequence of the unsettled state of France, there was little done at Etruria in the finest class of works of art, such as cameos,

* *Vide* preface to "A Corner of Kent," by J. R. Planché.

vases, &c., the sale for them not being very encouraging. On the promulgation of the Decrees of Milan, in 1806, when Bonaparte confiscated all goods made in England, and burned them in the Piazzo du Duomo at Milan, and other places, the Wedgwood ware was condemned and destroyed. This circumstance put a stop to further supplies being sent to France and the Continent, and the manufacture was carried on chiefly to furnish the Indian and Russian markets. A few years afterwards the finer part of the manufacture was discontinued, and many of the men having died who had helped to mix the ingredients of the body, the secret died with them, and another body was gradually introduced suitable to the demands of the times. This body was coarser, more easily manipulated, and less costly than the previous one. It would not give to the moulded pieces the fine marvellous sharpness of the original jasper body. It was more like what is termed a stone ware. During a few more years the London warehouse was carried on, and Mr. Wedderburne was chief clerk and adviser; but soon after the whole of the goods were sold by auction, and the establishment broken up. It was at this time that Mr. Wedderburne purchased a vast quantity of the oldest and best specimens of artistic work, and nearly ruined himself in the transaction. The garrets of his house, he confided to me, were full of them, and he would be happy, indeed, if he could dispose of them at half the price they had cost him. At my request he showed me a few of his specimens, and when I saw them my heart beat as I asked him if he had any more, and how much he would want for them. He suggested that I should visit him next day, and see the remainder, which I did, and purchased all he had. This gave such an important appearance to my collection, that I lent some of my best specimens to an exhibition at the Pottery Mechanics' Institute at Hanley, and wrote a small pamphlet describing their excellence, the first work launched, I believe, upon this now fashionable subject."

After describing minutely the ivories and other parts of the collection, Mr. Gatty proceeded,—

I fail to see why a great city like this should not have a place amongst other European towns in assisting forward such researches and discoveries as these. Certainly research is not what is called a popular science. It deals with matters which require a special gift, and generally especial training, but it is the fountain-head of history. And if any one should doubt the capabilities of the Mayer Collection to assist forward such a work, it may fairly be stated, in reply, that whenever it has had the chance to display itself, it has developed a surprising fertility and resource. Consider what service it has done to the archæological and art literature of the last fifty years. Before Mr. Mayer possessed them, Mr. Sams had published his best Egyptian antiquities in a folio work, now out of print, of which we do not possess a copy. Under the direction of Dr. Burgset, Mr. Stobart's finest pieces were illustrated and brought out in Berlin, in 1855. This book is also scarce, and I have been fortunate enough to meet with a copy. And since they came into Mr. Mayer's hands, I fancy that he also contemplated publishing an illustrated work on his Egyptian antiquities, as he had very many of his pieces cut on wood, which same blocks I am using in my forthcoming catalogue. The Faussett Collection was no sooner acquired by him than he issued the *Inventorium Sepulchrale*, a most valuable and beautifully illustrated work, edited by Mr. Roach Smith, giving the diary kept by Bryan Faussett, a record of his excavations amongst the Saxon graves of Kent. I have brought with me the original six manuscript volumes of Mr. Faussett's diary, which are very interesting, and probably have never been seen or examined in any public assembly before.

The antiquities collected by Mr. Rolfe, at Richborough and Ozenzell, were published in Mr. Roach Smith's "Antiquities of Richborough," and "Collectanea Antiqua." The specimens of Liverpool pottery in the Mayer Collection led to the publication of Mr. Mayer's pamphlet on that subject; and again and again in the works and papers of Kemble, Way, Evans, Oldfield, Maskell, Birch, Hübner, Lieblein, Goodwin, Akerman, Roach Smith, Wright, Hume, Chaffers, Westwood, Meteyard, and many more learned antiquaries, the contents of the Mayer Collection have repeatedly done duty. Here is one of the educational uses of the Mayer Collection; it has assisted modern research, and taken an honourable place in the art and archæological literature of this century. Let me now attempt to show you how useful it might be to education, from an art point of view. And I should wish to remind you that here, again, I speak, not from any pretension to superior knowledge, but from the genuine feeling within me of a want which I share with others who live to learn. As far, then, as I understand the question, there is a thing called the tradition of art. It is a long story, but the upshot of it is that, in the works of real art of any period or kind, from the carvings on the mammoth tusks down to the scholar-like productions of some of our living artists, there is a life and a power perceptible in, though in no way dependent on, the peculiar forms and fashions with which the accidents of human life surround art productions. Directly the art student perceives this power, if he be born with the seed of beauty in his soul, nothing will satisfy but that he shall likewise develop, bring out, and cultivate the genius within him. And since a man left to himself, without guide or mark, will have no knowledge whence he should set out, or whither he should go, even though he feel eager for the unknown but glorious career, then he looks towards the past, rich in all wisdom and experience, that he may plant his uncertain feet in the footsteps of those who have gone before. And if art be a "habit of making, joined with true reason," then the perceptions must be trained by habits which have stood the test of ages, and guided by a reason which can discriminate the cause of truth. Now, a collection of works of art, such as the Mayer Collection, supplies the art student with much that is most useful. Of course, it was selected in a great measure for archæological ends, but it contains many representative pieces of the great schools of art, and though some are apparently small and insignificant, yet they are generically related to larger works elsewhere. These are the books of the art student; and in that simple contact between the art student and the object lies hidden a great principle.

SOME FAMOUS TREES IN HERTS.*

I SHALL, for the purpose of narrowing the subject, look for famous trees among oaks, elms, beeches, limes, chestnuts, and ashes. Cedars, sycamores, birches, maples, and others are left out by such an arrangement. It has been said that the oak has more claim to be a truly English tree than most. A token of this may be seen in the readiness with which it seeds among us and grows from seed. Many will tell you that the oak grows best naturally from its oak-corn or acorn. The elm does not ripen, nor, I believe, often form a seed in this country. It certainly is propagated most commonly by slips. Of course the cedar is not indigenous. The first cedars planted in this country may be identified, at least, by tradition. The lime also is not indigenous. The beech is expressly said by Cæsar not to have been found in Britain, and its Welsh name "Fawydd" is taken to be an adaptation of the Latin *Fagus*.

Oak.—Our old Roman masters are thought to have naturalised here the chestnut, lime, sycamore, and box, but they do not claim to have introduced the oak. . . . . No one can doubt that it thrives well with us and takes a giant's grip of our soil. It is said that Americans, accustomed to the giant trees of their forests, find an unmatched stateliness and grace in English oaks. So very long has the oak been among us that we are scarcely aware that he seems to have had an elder half-brother. Much of the oldest oak timber in this country is not of the same kind as that now in use. What we call oak timber now is the wood of the *Quercus pedunculata*. This has its fruit stalked and its leaves sessile. The other oak, the *Quercus sessiliflora*, has its fruit sessile and its leaves stalked. This latter is the oak which furnishes timber to some of our oldest buildings,—to St. Alban's Abbey and to Westminster Hall. The old wood is so unlike our modern oak timber in the absence or indistinctiveness of the silver grain, that it was long considered to be chestnut. . . . . At the Hospital of St. Cross, near Winchester, is some oak of a very singular dark grain,—commonly attributed to the way in which the wood was cut. The extreme length of each plank was only 5 ft., and it might all have been cut crossways. . . . . An old oak is like an old horse with the teeth-marks "gone out of his mouth." I cannot tell upon what grounds the Saloy Forest Oak in Northumberlandshire is so confidently pronounced to be 1,500 years old. I conclude that the only possible method of investigation would be to notice carefully the growth of an oak still growing, and to calculate in what time, proportionally, an old oak would have attained its girth, and then to allow a proportionate time for decay. Of course, this growth would vary much from relation to soil and aspect; still something may be done in this way. Lord Verulam has given me his experience with regard to trees at Gorhambury. He summarises his conclusions as being that an oak increases in girth ½ in., and a cedar, 2 in., per annum. I do not know what experience the poet Dryden had of trees. He most likely gives us the general opinion of his own day:—

> "Three centuries he grows, and three he stays,
> Supreme in state, and in three more, decays."

Elm.—I have spoken of elms as foreigners, but I admit they were naturalised in the times of the Heptarchy. They have given Saxon names to many English villages, as Elmham, Elmwood, Elmsthorpe, Elmstone, Elmstead, and Elmsley. The elm's failing is to become hollow at eighty years of age, and at that time its arms and roots both become brittle. It has a special beetle to itself, called the elm beetle (*Scolytus destructor*). Its great value is for pumps, troughs, conduits, water-wheels, and water-gates,—for places where it is alternately wet and dry. If the elm was at first an immigrant, it has since become an emigrant also. Perhaps it was from his own personal connexion with this country that Philip II. of Spain planted the avenues of Madrid with English elms.

Beech.—The beech-tree peculiarly claims the neighbouring county of Bucks as its own. It gives its name to the county. In Herts it has more variety in its way of growth than any other tree which I have observed. The beech close to the Langleybury Parsonage, which seemingly has always stood out by itself, is a model of a fully-developed tree. It scarcely seems to have lost a twig from the first. The hardest thing you can say of it is, that it is too perfect to be picturesque. At Ashridge you may see elegance in a beech,—crowded in its nursery, and "etiolated" by too close proximity of its neighbours. Then it will run up straight and upright. The King and Queen beeches at Ashridge, girthing only 11 ft. or 11 ft. 6 in.,—the lady is the stouter,—run up, I am assured, 85 ft. before throwing a branch. If you journey thither, mind that you go straight to the trunk, and stand close up to the very stem. Then look at all the glory of the olive-grey, smooth, clean shaft.

Lime.—Limes are known by their employment by all carvers, and notably by that prince of carvers, Grinling Gibbons. The wood is not only smooth-grained and beautiful in the enduring colour of pale yellow or almost straw or creamy white, but that it is also insect-proof. A lime blown or cut down should not be sold cheap. It is worth at least 2s. a foot as it lies, to be employed in sounding-boards and linings of pianos, for which its little tendency to warp makes it valuable.

Ash.—Gilpin, having pronounced the oak to be the Hercules of woods, calls the ash the Venus. I myself always reserve the title of Lady of the Woods for birch. Gardeners in some places time the planting out of their bedding stuff by the appearance of the ash-leaf, and remove any tender material when the leaves fall. It is peculiarly tough wood. The stoutest oar, tool-shaft, or lance-handle, is always made of ash. But it is considered a dull tree, coming out late and going off soon, and without any bright colour on its rather thin foliage.

Chestnut.—Chestnut should always be spelt with a "t" in the middle, in honour of its derivation from Chataigne and Castanea,—both from the city of Castanea, in Pontus, whence chestnuts first came into Europe; as cherries came from a neighbouring town, Cerasus, now Keresoun. I particularly admire in large Spanish chestnut-trees the twist, as of a rifle barrel, which the bark takes, giving the effect of a spiral column, and making the tree look larger than it really is. I was surprised to find such a tree only 14 ft. in circumference. There is at Abbot's Langley a singular instance of the horse chestnut taking root with its branches, and springing out again. The road was raised under the large chestnut on the lawn of Langley House. Where the earth has been lifted up

* Extracts from a paper read before the Watford Natural History Society by the Rev. Canon Gee.

until the branches touched the soil, they have taken root, and sprung up in renewed vigour.

Girth.—There are trees famous for their girth, this girth implying age and generally involving decay. Some of the most venerable are mere shells. There are others which stand erect in stalwart strength, and are solid and massive trees. Justice should be done to the really vigorous, more natural trees; for the greater girth will always be found in those which have been polled or pollarded. . . . . Still we want to get the greatest girth that can fairly be measured, after clearing the root knobs or earth knots. This, for comparison, should be taken at about the same height in all trees. I approve of Lord Verulam's rule of thumb. He always measures a tree at the height of his own waistcoat pocket, standing on the best side of the tree for a ground level. Do what you will, trees will not oblige you by coming into a competition upon terms of exact equality. I distrust some of the extreme measurements that are given. I have sceptical doubts as to that tree in Hatfield Park, which, according to the *Quarterly Review*, measures 48 ft. in circumference. If it be the oak called the Lion Oak, that tree has been measured for me and its measurement reported as 32 ft. I myself have never been able to measure more than one tree more than 30 ft. in circumference. That tree was the yew in Crowhurst Churchyard, in Sussex. It has a door in the side, and eight persons have gone in, and, squeezing tight, declared that they were able to sit round it inside. I would suggest 20 ft. circumference as a starting-point. If you make it your business to be on bowing terms with all trees in West Herts of that girth, you need not be afraid of an inconveniently large acquaintance. The largest tree that I know of, and seemingly the oldest in Herts, is the Spanish chestnut at Little Wymondley, near Baldock. It is now the wreck of a wreck. There is not half of its circumference now standing. A print of the year 1790 shows the tree as then perfect. An original girth of 42 ft. is claimed for this chestnut, and possibly may have been attained. It is still a grand old tree, and one may believe that it was standing at the time of the Conquest. There is no mention of it, however, in the Doomsday Book of the parish; indeed, I find no notice anywhere in Doomsday of particular trees. . . . . Trees seem singularly ignored in all county histories. Looking through the Indices of Clutterbuck and of Chauncy I have found but one solitary tree specified in each. . . . . Next to the old chestnut at Wymondley, the largest girth that I know of is that of a pollard oak in Moor Park, that measures 25 ft., and another near it measures 23 ft. In the avenue or row skirting the park, is a lime in full vigour,—girth 23 ft. This is a beautiful tree. There are two beech trees in Cassiobury Park, going to the Swiss Cottage, both of which reached my standard of fame. Lord Verulam says that the Kennel Oak, at Gorhambury, measures 23 ft. The Queen Oak measures 20 ft., and he has a lime which measures 22 ft. He gives also as just below my standard (being 19 ft. 10½ in.) the Kess Oak, the origin of which title, he thinks, is that the oak was cased or fenced. By the-bye, do you care to know that the many Gospel Oaks in the country had their names from the fact that, in perambulating the parishes, the Gospel for Rogation Day was read when the beaters of the bounds reached those particular oaks?

Height.—I can give two rules of thumb which will assist calculation of heights. Set by the side of a tree a stick of ascertained height, say of 6 ft. Watch the length of the shadows cast by the 6 ft. rod and by the tree. Then calculate in proportion the height of the shadow-casters, *e.g.*, if the tree's shadow be twelve times the length of that of the rod the tree's height is 72 ft.. Or, take three laths, join two of equal length at a right angle, then unite the equal sides with a third, subtending the angle. Walk away, holding one of the equal sides level, until your eye looks up the third and long side to the summit of the tree. You may now consider yourself to be standing at the apex of an enlarged triangle, of which the ground-line is one side and the erect tree another. In measuring the ground-line you measure the height of the tree. This method, I am told, is used by sappers and others in military engineering. Such a triangle tried upon the tallest tree that I know about here—on the spruce in the Cassiobury Woodwalks,—gave the height as some 135 ft. Timber trees are not very high, if Brown, in *The Forester*, be correct in giving the following as the mean average heights:—Oak, 45 ft.; ash, 38 ft.; beech, 45 ft.; birch, 47 ft.; elm, 44 ft.; lime, 44 ft.; poplar, 48 ft.; fir, 57 ft.; chestnut, 44 ft.; sycamore, 37 ft.; yew, 16 ft. There is a notable oak which I wish to commend to you,—the Grimston Oak at Oxhey. This tree, insufficiently known, stands a few yards from Oxhey Chapel. It is 17 ft. in circumference, and a very well-grown tree, very dear to the Gorhambury family. It was planted by James, second Viscount Grimston, who died in 1773, and who had married the heiress of Oxhey. The tradition of the family is that the present Lord Verulam's great-grandfather planted this tree with his own hands. Supposing him to have planted the tree some twenty years before his death, you get a fair idea what a well-grown oak becomes in 120 years time.

Historical Trees.—I will now mention a few trees which, without reference to height or girth, are famous from historical associations. Foremost among these is Queen Elizabeth's oak at Hatfield, standing halfway down the avenue leading from the house towards Hertford, surrounded by a fence, not now in vigorous health, nor of a very remarkable bulk. On the morning or afternoon of November 17th, 1558, for poor Mary died between four and five a.m., Elizabeth was sitting under this tree when a deputation arrived from the Council to apprise her of her sister's demise and to offer her their homage. She fell on her knees and exclaimed in Latin, "*Domino factum est illud, et est mirabile in oculis nostris!*" "It is the Lord's doing, and it is marvellous in our eyes" (Ps. cxviii. 23). And this motto she took as the stamp upon all her gold plate. It must not be supposed, however, that this formal intimation was a surprise to Elizabeth. Miss Strickland says that Queen Mary had already sent her the crown jewels and her dying request in behalf of her servants, and that Throckmorton, her confidential agent, had prematurely informed her of her sister's decease even before the event took place. Elizabeth, fearing some snare, had answered his news with a requirement that, if true, the black enamelled ring should be sent her which Mary was known to wear night and day. Afterwards,—forty-four years later,—when pressed to name her successor, she declared she would not send him such visitors as came to see her at Hatfield, numbers having for some days been passing and re-passing on the "Great Northern road." Most likely the burst of pious thankfulness was genuine, and was the expression of relief at the termination of a season of suspense, the tension of which had been unbearable. . . . . I have not quite done with Queen Elizabeth and her connexion with Herts trees. There is another domain in Herts or its borders, only less closely connected with this royal lady than Hatfield. I have heard that the house at Ashridge stands partly in one county and partly in another. The parish church, Little Gaddesden, where the Bridgwater family lie buried, is in Herts. Of the ash-trees which gave the name to that ridge only one remains, as far as I could observe on my visit the other day. Under this tree, or one of its fellows, we may think the Princess Elizabeth also sat, and so very likely used to sit the *bons hommes* of Ashridge,—the hermit priests who formerly owned that beautiful spot, and who lie in the church which the house itself includes. It will be in chronological order to notice next the Oak Wood in Gorhambury. This is a wood at the back of the house, specially so called. When Lord Chancellor Bacon was in financial difficulties, it was suggested to him that he should cut down this particular wood. "What! man," said he, "would you have me pluck out my own feathers?" And so the trees escaped, and some, I believe, are now standing. The circumstance is told in most Lives of Lord Bacon as if it applied to oaks generally, and they are spelt with a little "o." Lord Verulam informs me that the tale hangs round the particular Oak Wood, as distinct from another, Brook Wood, &c. I come to Moor Park to notice two traditions with regard to trees there. Moor Park was owned once by Cardinal Wolsey, perhaps in virtue of his connexion with St. Alban's, as Abbot *in commendam*. There is a tree which, Lord Ebury tells me, goes still by the name of the Cardinal's Oak. He thinks that it had its name rather from the fact of the Cardinal's having sat under it than having planted it. The other Moor Park tradition is as to the beheading of certain trees there. The estate undoubtedly belonged to the Duchess of Buccleugh, who is introduced into Scott's "Lay of the Last Minstrel." This was Anne, Duchess of Buccleugh, and Monmouth, representative of the ancient Lords of Buccleugh, and widow of James, Duke of Monmouth, who was beheaded in 1685. Of her Sir Walter says:—

> "She had known adversity,
> Though born in such a high degree;
> In pride of power, in beauty's bloom,
> Had wept o'er Monmouth's bloody tomb."
> *Lay*, canto 1, Introduction.

And, says the tradition, on her husband's execution, she beheaded sundry of the forest oaks in the park. This may have been done from morbid sentimentality; or from a wish to save them from confiscation; or perhaps from a somewhat spiteful wish to prevent their ever being used as timber in that navy of which her husband's cruel uncle, James II., was so proud. Mr. Froude, the historian, encouraged Lord Ebury to believe that wherever tradition is clear and strongly-rooted, and consistent with common sense, there is truth in the main fact asserted. I think, therefore, we may continue to believe that these Moor Park pollards had the historical origin attributed to them.

CONCRETE BUILDING AT THE ANTIPODES.

At a recent meeting of the Adelaide (South Australia) Philosophical Society, Mr. B. Herschel Babbage read a paper in which he described at considerable length the experiments he had made in the past and was now making in the construction of buildings composed of a concrete formed of sand, gravel, common earth, and lime. In 1860 he began by building a cellar 21 ft. long by 8 ft. 9 in. wide, which was roofed with a Gothic arch 5 ft. 6 in. high at the crown. The wall on one side was 18 in. thick, and on the other was a 15-in. cob wall, against which was put a lining of 12 in. of concrete, thus giving a wall 2 ft. 3 in. wide. The outer wall afterwards fell down, and the arch was supported for a long time on the 12-in. concrete wall. The walls were built of Coignet's economic concrete,—seven parts sand and gravel, three of common earth, and one of lime. This concrete requires to be rammed, but by making it of seven parts sand and gravel to one of lime it sets without ramming. The arch was built of the latter concrete, which, being found more economic from its requiring less labour, was afterwards generally adopted. The wooden centres under the arch were not removed for three weeks, which time in ordinary weather Mr. Babbage considers would have been sufficient time to permit arches of under 12 ft. span to set. The foundation of this cellar being only 18 in. deep it cracked somewhat, but was secured by putting in two tie-rods, but one was not used till ten years after the place had been built. In 1862 Mr. Babbage began another concrete building—a fermenting cellar, 9 ft. wide and 15 ft. long, with a flat segmented arch having a rise of 1 ft. 8 in., or rather less than one-fifth of the span. This building was intended for the basement of a tower, and the walls were made 6 ft. thick and an invert thrown across the bottom. In the thick side walls wine-vats, holding from 800 to 1,000 gallons, were constructed. The amount of lime in the concrete was reduced to one-tenth of the composition for the walls and one-eighth for the arch. The foundations being 6 ft. below the surface, and the abutments sufficiently thick, no settlement took place, and a tower three stories in height is now being raised on top of this cellar. Another and very slight building was erected in 1863, which is used for a still-house; it is 11 ft. 4 in. long, by 9 ft. wide. The arch only rises 12 in., or one-ninth of the span. One side of this building is supported by the cellar first mentioned, the other by a wall 15 in. thick; one-third of the arch is cut away at one end, and a dome of about 8 ft. 6 in. external diameter is built partially on the old and partially on the new structure. Though the weight of this dome is about six tons, only one very slight crack has been noticed in the whole structure. Besides buildings, Mr. Babbage has constructed several smaller works, such as cattle-troughs and bridges, all of which answer the purpose for which they were designed.

Mr. Babbage has constructed an entire house of concrete,—walls, roof, staircases, all being formed of the same material. Mr. Babbage says:—

"I have never seen a house of this kind, and I have looked through every page of the volumes of the *Builder* for twenty years back to see if there is any record of such a building having been made, but can find none. I am justified, therefore, in calling it an experiment, and I believe that I may add a successful one. By using Portland cement concrete,—that is, con-

crete in which the lime is replaced by Portland cement,—you would undoubtedly have a material which would set much sooner than lime concrete, but whether it would at the end of a thousand years be like lime concrete has been found to be at that age,—as hard as or harder than rock, remains yet to be proved, our experience of Portland cement extending over only fifty or sixty years. The great objection, however, to using Portland cement in any quantity in this country is its high price as compared with lime. Even in England, where the price is, I believe, less than one-third of its price here, they economise by making the walls very thin, a proceeding which does not suit this climate if a cool dwelling is wished for. On commencing my new house I determined to make an experiment that should be adapted to ordinary use by its cheapness. I therefore took no pains to wash the gravel, using it as it came from the creeks in my neighbourhood. Undoubtedly, by washing the gravel carefully you can make a better concrete; but where manual labour is so expensive as it is here the extra time employed in the washing would be a consideration. A good deal of the gravel I used was obtained from a gravel-pit in the neighbourhood, and verged upon being too dirty to be used. If I have succeeded with such gravel as this, clean gravel cannot fail to be a success. The style which I have adopted is Venetian Gothic, as one which, while sufficiently ornamental, consorts well with flat roofs, and admits of such irregularities as the necessities of my case required. In the first instance I had to adapt the additions I proposed making to my old house so as to work the fermenting-cellar previously built into my plan, and by the time I had built most of the lower story of the proposed additions my old house was almost entirely burned down, and I had to start anew to make the foundations of the old house as far as possible available for the alteration I wished to make in the rebuilding; hence, from both causes, a considerable amount of irregularity in plan was occasioned, which, however, although destroying the symmetry of the building, has, perhaps, introduced a compensating amount of picturesqueness of outline. The part to the right of the entrance-porch is built upon the site and partly upon the foundations of the old house. It is two stories in height, each story being arched over, the top of the arches of the ground-floor forming the floor of the rooms above; and, again, the arches of the upper floor form a flat-terraced housetop, such as we read of in the Bible and in accounts of Eastern buildings. Above the top floor is to be an arched corridor, opening into the tower at one end, and facing the terrace roof at the side, so that it will form a pleasant retreat for people to sit in to work or read whilst enjoying the view and the fresh air, thus utilising in an agreeable manner a part of the house which is entirely unavailable in houses of the ordinary construction. A few iron rings built into the tops of the buttresses will enable an awning to be spread on part of the terrace as a shade when the sun is too hot. The arch of the dining-room is 15 ft. in width, with a rise of 2 ft. 10½ in., the rise being nearly one-fifth of the span. The side walls were 1 ft. 6 in. inside the house, and 1 ft. 10 in. outside, with buttresses at the outer angles. The lime concrete at the crown of the arch is 10 in. thick, and at the springing 3 ft. 8½ in. After the centres were removed, and the concrete was thoroughly set, a layer of 2½ in. of Portland cement concrete,—one of Portland cement to seven of fine gravel sand,—was spread over it; and finally this was covered with a layer of one cement to one of sand, ¼ in. to ¾ in. thick, which was trowelled to a smooth face to form the floor of the room above. Thus, the finished arch was about 1 ft. 1 in. thick at the crown, and nearly 4 ft. at the haunches. The weight of this arch is about 32½ tons now that it is thoroughly dry, reckoning 1·4 of a ton to the cubic yard. This is about the weight given in architectural text-books, and corresponds with the result of an experiment which I made myself. The weight of the arch of the morning-room is about 23½ tons. The floor of the dining-room is made of 5 in. of lime concrete, with cement concrete, and facing above it of the same thickness as those upon the arch. The floor rests upon 18 in. of made earth, it being raised above the natural surface of the ground, and the consequence is that some slight cracks have taken place in the floor owing to its settlement. No cracks are to be seen either in the floor of the room above or on the arch forming the roof of the top room. The weight of the arch of the bedroom above the dining-room is twenty-seven tons, the bow window being confined to the lower story. The wooden centres, upon which the lower arch was built, were left for eleven weeks before being removed, as it is a large arch, and I did not like to risk a settlement; but I am convinced they might have been removed sooner if it had been wanted. The arch above was not commenced until six months afterwards. As the ribs of the centres are formed with 1¼-in. flooring boards, cut to the sweep of the arch, roughly nailed together with ties and struts, 1½ in. thick, the chief dependence for supporting the arches during the building is placed upon a considerable number of uprights and raking struts resting upon the arch of the floor below. Thus the whole weight of the upper arch when the concrete was wet (which must have been upwards of thirty-five tons) was borne by struts resting entirely upon the lower arch; so that the new arch (nine months old) had to undergo a test very much greater than any weight that could ever be put upon it in its use as a habitation. All the arches of the ground floor had to undergo a similar ordeal during the construction of the arches above. In two cases I have had a slight settlement take place whilst the concrete of the arch was quite soft owing to imperfect strutting; and in a third case I was taking down the centres during very wet weather,—three weeks after the arch had been built,—when we discovered a settlement of the arch beginning to take place from the concrete not being sufficiently set, and we had to put the centres up again. The result was that, after leaving the centres up about two weeks longer, when we took them down we discovered a flaw in the crown of the arch. It was the arch over the morning room, of 11 ft. 9 in. span. As the simplest way of remedying this I cut a hole right through the arch where it was defective—being about a square yard—and left the edges of the hole sloping like a keystone; then put up the centres again, and filled in the hole with fresh concrete. All these arches in due time had their cement covering put upon them, which would at once have shown by its cracking if any fresh settlement whatever had taken place. I have now built in this house upwards of sixteen arches of varying size, from 6 ft. square to 21 ft. by 16 ft. 6 in.; and in no one case has any settlement whatsoever shown itself since they had their cement covering put upon them. The only failures,—if they can be called so,—that I have met with were, on one occasion, the giving way of a barrel-arch 4 ft. span, forming a flight of steps, owing to one of the principal props breaking in half and causing the fall of the centring, and the wet concrete put upon it; and upon another occasion to a horse mistaking the house-door for a stable-door, and coming in upon a new arch, the concrete of which was yet green, when one of its hind legs broke the crown of the arch and went down through it. This damage was, of course, easily repaired by cutting the breakage out as described in the account of the preceding arch, and putting in a new wedge-shaped mass of concrete. There is a small inner hall, showing a gallery round it, level with the floor of the bedrooms to give access to them. This gallery is arched over at top. The arches I have described above are barrel-arches extending the length of the rooms, and having a flat Gothic arch. The ground and upper floors of this inner hall are built differently, as the arched ceilings rise from all four sides, so that the arches intersect each other in the angles, forming groins, and would meet in a point at the centre if carried out entirely; but an octagonal aperture is cut in the top, thus forming the gallery before mentioned. The upper part of the hall above this gallery is also arched over in a similar manner, but an octagon is cut out of it, upon the margin of which is built a dome, 6 ft. 6 in. in diameter inside, 9 ft. outside, which, including the drum, is 8 ft. high inside. The whole weight of this drum and dome, amounting to 21 tons, rests upon the edge of the octagonal opening. In the drum of this dome are four small windows, glazed with blue glass inside, and rough plate glass outside, leaving an interval of about 4 in. between them. The object of having the double glass is to keep out heat, and the rough plate glass was selected for the outside as a protection against hailstones. This combination has produced a very curious and beautiful effect of light which I did not contemplate. During daylight a diffused glow of a mauve-coloured light fills the whole dome, and the sun, instead of casting the shadow of the margin of the window through which it may be shining upon the walls of the gallery below, as it would do in ordinary cases, sends down a beautiful glow of mauve light, covering about 8 ft. to 10 ft. of the wall below, which glow of light gradually shades off at the edges. The cause of this unusual effect of light is, I believe, that the slight ribs which are upon the outside of the plate glass disperse the sun's rays and spread them out. Why the blue glass combined with the greenish hue of the rough plate should produce a mauve colour I do not exactly know. The first flight of stairs in my new building consists of a flying arch, the bottom resting upon the top of the arched landing over the stairs below, and the upper end abutting nearly at right angles against the wall of the staircase. Upon the upper surface of this flying arch the steps are cut out, or rather moulded, when the arch is made. In building this arch channels or holes were cut in the face of the side wall against which it rests, so that the concrete of the arch might unite with that of the side wall. Whenever, from any cause during the building, it became necessary to put new concrete against the face of the old work, channels were cut here and there in the old face, to form a better junction between them. After the concrete steps were well set they were covered with a layer of two inches of fine cement concrete, and finished over with half an inch of fine cement, consisting of one of cement to one of sand; like the floor, the nosing of the steps was formed in the cement concrete by the help of wooden moulds. The surface of concrete walls is well adapted for receiving plaster, as it offers a good natural key for it, and the plaster incorporates itself with the concrete, forming a solid body. For plastering my house both externally and internally I use a mortar to which a small quantity of sugar has been added. The mixture I adopt consists of fourteen bushels of sand, four bushels of unslaked lime, and 12 lb. of the coarsest and cheapest sugar I can get. I generally mix these quantities at one time in a 'bay.' The sand is put round in a ring, the lime, slaked and riddled, is put inside in the usual manner, and the 12 lb. of sugar dissolved in a small quantity of hot water poured over it, and the whole well mixed together. The original recipe was obtained from Algiers by Colonel Robe, a former governor of this colony, but there was some mistake in the proportions given in it. Those I have given above are the result of a number of experiments that I have made myself. This mortar sets quicker than common mortar, has more adhesive power, and is very much harder; it has, besides, the additional recommendation of being partially waterproof. I have used for lining baths, small tanks, &c., a mortar mixed in the proportion of 1½ sand to 1 of lime, with ¼ lb. sugar added to each gallon of the mixture, and found it quite waterproof. The theory of it I take to be that the sugar combines with the lime and forms a saccharide of lime, which is only sparingly soluble in water. The string-course, cornice, and mouldings over the windows are made in concrete by applying wooden moulds of the requisite forms to the place where these ornaments are to be put, and filling these moulds with concrete. I find that by lining the moulds with damped paper I obtain a better surface, and that it is easier to detach the moulds. For the outer surface of the mouldings I use 'sugar-cement concrete' made of 4 bushels of fine gravel, 1 bushel of lime, and 6 lb. of sugar. The moulds are lined with this fine concrete and then backed up with the ordinary concrete, so that the mouldings form a solid projection of the substance of the wall itself."

Mr. Babbage's paper was illustrated by a number of diagrams.

In answer to questions, Mr. Babbage said that he considered the cost of concrete under ordinary circumstances would be 25 per cent. less than stone or brickwork, and even with that decrease in cost much thicker walls might be constructed, which was a great consideration in the climate of Australia. His house was cooler in summer and warmer in winter than most houses.

"PEERAGE PROPERTY."

SIR,—I think it only due to myself to state that my facts were taken from actual rate-books and Government returns, in Blue Books, &c., and I challenge Messrs. H. & R. Powell to meet them at any time and give them black and white, upon any platform in England.

G. MITCHELL.

BUILDINGS IN FLATS FOR THE MIDDLE CLASSES IN CAMBERWELL.

A LARGE pile of buildings in flats intended generally for the middle and higher artisan classes is now in course of erection in Albany-road, Camberwell, immediately adjacent to the main Camberwell-road. The owners and builders are Messrs. Sutton & Dudley, who have already erected several extensive similar blocks in New Kent-road, known as the "Palatinate," and which have already been noticed in the *Builder*. The site upon which the buildings are being erected is called the Carey Estate, upon which, until recently, stood a number of residences with large gardens attached. The site covers an area of between two and three acres in extent, the buildings having a main frontage to Albany-road of 420 ft. in length, and extending in depth northwards 224 ft. to Boundary-lane, which divides the parishes of Camberwell and Newington. In laying out the land for buildings three streets have been formed, running north and south from Albany-road to Boundary-lane. These thoroughfares, which have been named respectively Maydwell-street, Millais-street, and Holmby-street, have each a carriage-way of 40 ft. in width, with footpaths on either side 5 ft. wide, the entire width of the several streets being 50 ft. When the buildings are completed there will be eighteen blocks, consisting of 324 tenements, some of which will contain three rooms, whilst others will have five and some six rooms, each averaging about 12 ft. square. The several blocks will be 60 ft. in height, surmounted above the cornice by an iron railing. The Albany-road frontages, and the elevations on each side of the three new streets, will be uniform in architectural design and appearance. They will be six stories high, the ground and first and second floors having ranges of bay windows, whilst the windows of the three upper floors will be what are called Venetian. The ground-floor of the several elevations will be in Portland cement, rusticated, and the upper portions in stock brick, with Portland cement window dressings, heads, and sills. Each block will have a flat roof, extending the entire depth from Albany-road to the rear of the premises in Boundary-lane, and which will serve as a recreation space as well as for drying clothes. At the rear of the buildings in each street there is a spacious area 24 ft. in width and 160 ft. in length, intended as a playground, and for recreation purposes, in addition to the ample space at the top of the buildings formed by the flat roof.

Internally, the buildings are constructed with a view to being fireproof, the spaces between floors and ceilings being filled with concrete. The staircases and corridor floors throughout the buildings are of stone. For lighting and ventilating purposes, there is an open area or well carried up from the ground-floor to the roof, in the several blocks, inclosed at the roof by iron railings. The sinks have no connexion whatever with the water-closets, the water from the sinks being carried direct into the main sewer. There are separate water-closets to every tenement, as well as dust-bins in connexion with shoots from the upper stories to the ground. The whole of the windows are fitted with Venetian blinds.

The rents will range from 7s. 6d. to 12s. 6d. per week for each tenement, free of all taxes. About one half of the buildings have already been erected, and will be ready for occupation early in the ensuing year. The buildings are being erected under the superintendence of Mr. Edward Wills as clerk of the works.

THE KING'S SCHOOL, SHERBORNE.

EXPENSIVE works are in progress at this school in consequence of the rapid increase in the number of its scholars, which has made the ancient buildings inadequate in size. The school was originally founded by Edward VI., after the dissolution of the abbey, and located in some small buildings on the site of the abbey lady-chapel. These have been gradually added to, and in 1851 the ancient Abbot's Hall, Guesten Hall, Abbot's lodgings, &c., were converted into school-buildings by the late Mr. R. C. Carpenter, and soon after a new head-master's house and large dormitories were built under the late Mr. Slater. Still these were insufficient, and in 1872 the governors considered a general scheme and plan for further extensive works, which are now being gradually carried out under Messrs. Carpenter & Ingelow. A large quadrangle is being formed, with a great schoolroom, and class-rooms of separate blocks of two stories each, joined together by vaulted cloisters. The chapel, formerly the Abbot's Hall, has a very fine ancient roof; it is, however, of no great width, and, to carry out the plan of a larger and wider chapel, it will be necessary to lengthen the timbers of this roof, so as to preserve it. The new north side of the chapel has been built with buttresses sufficiently massive for the reconstructed roof; but at present the extension forms an aisle, the old roof remaining as it is, and carried by an arcade. Under the extension is a vaulted cloister with traceried windows, joining the new cloisters of the school to the ancient Norman crypt under the Abbot's Hall (now the chapel). The style adopted is that of the fifteenth century, following the beautiful work of that date of the ancient abbey buildings, and of the great abbey church itself, which forms the south side of the inner and more ancient quadrangle.

Adjoining the new quadrangle are other buildings, some new, and others converted old ones, consisting of laboratories, lecture-rooms for scientific and other purposes, music-rooms, workshops, ball-courts, &c., and a large swimming-bath, to supply which the ancient stream of the abbey fish-ponds has been utilised.

RESTORATION OF ELSDON CHURCH, NORTHUMBERLAND.

ELSDON CHURCH stands in the heart of the old moss-trooping country, in Northumberland, amidst some seventy or eighty thousands of acres of moor and moss. The parish, indeed, consists of a tract of hills still covered with heather and gorse, and great grey stones, about eight or nine miles wide and twenty-four miles long, with only a few farm-houses and cottages upon it, giving residence to 1,500 persons. The village green lies in a hollow where four roads across this bleak track converge. On three sides of it are the old low stone houses constituting the village, while on the fourth, and north side of it, set back in a large church-yard, is the ancient church; and beyond it, still on the north side, the grand pele tower, now used as the vicarage. Several of the low stone houses have initials and dates cut on the lintels of the doorways, attesting their erection, however, as recently as the seventeenth and eighteenth centuries; one, with two stories, has "John Gallon, 1727," out on it; others, and these are of one story only, are more ancient, though without any picturesque architectural features. The pele tower, or castle, as it is called by the villagers, is a remarkably fine specimen of Edwardian border architecture, three stages in height, with a coat of arms and the letters Robrte sculptured upon a large tablet upon the south-west front of it, and with an embrasured projection thrown out on corbels on the upper story, from which those within could defend themselves if besieged. The letters are supposed to refer to *Robertus de Umfraville dominus de Rede*, or Redesdale, as the district is called from the river Reed, which winds through the adjacent country. The church contains several ancient sculptured tomb-slabs, which are probably memorials of the Umfravilles and their successors, though it is possible they may have marked the last resting-places of some of the more important warriors who fell in the numerous engagements with the Scots in old times. When these slabs and the old stone paving generally were removed for the restoration just completed, about a thousand skulls, and innumerable bones, were found close below the surface, the result, we must conclude, of some of the battles in question. These, we should state, have all been carefully reburied on the north side of the church-yard. The field of the battle of Otterbourne is about seven miles distant; and as this was, at the time it took place, the nearest sacred edifice, it is possible the dead may have been conveyed to it. Wrote Gray, in 1647,—"The noblemen and gentry of the north have been always employed in their native country, in the warres of the kings of England against the Scots. . . . . Not a gentleman among them that hath not his castle or tower"; and an old piece of minstrelsy relating to one of these "warres," and the fall of a certain Sir Bertram, thus mentions Elsdon:—

> "Thei schot hym downe on ye Elsdon-rigg,
> Wher stands ye headless crosse;
> Thei left hym swomen in hys bloude
> In ye cold moor and mosse."

Elsdon Church is a venerable edifice, in most harmonious keeping with its surroundings and historical associations; cruciform in plan, with several richly and delicately traceried windows and north and south arcades of light and graceful pointed arches to the nave, springing from responds of a still greater antiquity. The great east window is especially reverential and beautiful. In the course of time, after the Mediæval builders had replaced twelfth-century work with thirteenth and fourteenth century work, as occasion required, the fabric had become very much out of repair, very cold, and very damp; and various alterations had been made to it, at successive periods nearer to our own time, which had not been well considered. The old timber roof, for instance, had been removed, and a low flat ceiling substituted for it; and the north wall of the nave, and west wall of the north transept, had been rebuilt with a length of plain walling, without the break of a single feature in either of them. The old stone pavement was in a very bad state, and the internal surfaces of the walls were quite green with the prevailing dampness. In the work of restoration just completed, these blemishes have received proper attention. A new open-timber roof, with semicircular tie-beams, has been substituted for the flat ceiling, the flooring has been renewed, the walls scraped, and stalls, new sittings, and a pulpit, have been furnished. The open-timber roof was carefully put on without touching the slating, which was sufficiently good to remain. To remedy the cold, two underground stoves have been provided. Two stone crosses have been placed on the apices of the roads, one a St. Cuthbert cross, and the other of similar design to one on a tomb-slab supposed to pertain to Umfraville. The church is dedicated to St. Cuthbert.

In breaking out a recess for an organ, two small stone coffin-lids were found, one of which 2 ft. 8 in. long, was in very good condition. These have been built in on the internal surface of the east wall of the south transept. An ancient piscina was uncovered in the last-mentioned wall. A small window, very low down, was also discovered on the north side of the chancel, the object of which is difficult to surmise, but of which there are examples in other churches in the archdeaconry,—viz., Bothel, Mitford, Holy Island, Norham, Hartburn, Morpeth, and Warkworth, only on the south side instead of the north.

The re-opening of the church by the Lord Bishop of Durham took place on Wednesday, the 7th inst.

The architect to whom the Rev. T. G. Baillie has intrusted the restoration is Mr. F. R. Wilson, of Alnwick, the Diocesan Surveyor for the Archdeaconry of Lindisfarne, to which Elsdon belongs. The masonry has been executed by Mr. Henry Story, of Elsdon; the joinery, by Mr. J. Stafford, of Morpeth; the plumbing by Mr. R. T. Terry, of Rothbury; the glazing by Messrs. Wilkin & Dickman, of Alnwick; the staining by Mr. Roper, of Rothbury; and the underground stoves by Mr. Porritt, of Bolton.

THE NORTHERN BARRIER.

SIR,—I cannot refrain from writing to thank you for your most interesting sketch of the "Northern Barrier," which I have just had pointed out to me in the *Builder* of October 13. During last summer (in July) I traversed the whole of the Southern Barrier, and then conceived a desire at once to see what there might be of "Antoninus." I was as ignorant on the subject as most people, but felt a curiosity to see what there was, if only faint traces. I looked at General Roy's book, and at Stuart's "Caledonia Romana," but did not form any idea from them. Dr. Bruce kindly got Dr. Buchanan, of Glasgow, to write to me about it, but the tone in which he wrote was most discouraging. Still I resolved to go, and started from W. Kilpatrick on July 17th, and reached Carriden on the evening of the 20th, having scarcely missed any part, and that not of the best. If only I had provided myself with the Ordnance Map beforehand, as I have since, I could have seen all, and saved several hours of time and labour, lost through missing the track. I shall never forget my feelings when first I found a really fine piece in a wood (with *vallum* as well as ditch) east of Castle Cary. This plantation is marked in the Ordnance Map south-west of the village of Bonnybridge, and south of Seamores, between the canal and the railway. Then Rough Castle, and the vallum and fosse in woods on either side of it. Indeed, eastward of it I could hardly divest myself of the notion that it was an old disused canal, with its cut-thrown bank. I found

the country people more intelligent and helpful than I expected, notably an old man named Jemmy Robertson, who lived in Grahame's Dyke, St. Lawrieston.

I fully intended to go over the whole line again early in October, in order to write a carefully detailed account of the whole, and I still hope to do this some time when weather permits, and the crops are off. When I was there, the standing corn and meadow were a good deal in the way.

J. T. FOWLER,
A Local Secretary of Society of Antiquaries for Durham.

THE DOVER SCHOOL OF ART.

ON Saturday last, Lord Granville opened the new premises of the School of Art at Dover, and also distributed the prizes to the successful pupils of that institution. The school was established in 1870, and languished for some time; but it has since taken a stride forward, and now requires increased accommodation. A new home for it has accordingly been found in a building hitherto used as a raquet-court, the upper part of which has now been adapted for the purposes of art instruction, being roomy, cheerful, and well lighted,—points as to which the old premises were very deficient. Lord Granville said he believed the work done by that and by so many other institutions of the same character now existing in the United Kingdom was most useful, and was especially important at a time when foreign nations were making such strenuous efforts in the same direction. Mr. Sparkes, head-master of the school at South Kensington, had lately written an admirable report on the Belgian schools of art, in which he described the general principles upon which, with considerable elasticity, those schools were conducted. He also indicated very impartially those points on which he thought the Belgian schools had a decided superiority over our own. The first point was the ample and well-lighted buildings they possessed, which enabled every cast to be seen to advantage, and to be copied with comfort by the students. Well, he flattered himself that the room in which they were now assembled, and the way in which it was lighted, would not leave the Dover pupils at any disadvantage even in comparison with the best foreign schools. The second point, he believed, was the limited time allowed for work, whether in practice or in competition, the teaching of all the pupils in imitating the copies set before them, proceeding on the assumption that they were all to become painters. The third was the union of theoretical and practical instruction carried on simultaneously by lectures and by practice in the schools, subject to very severe examinations in both. There was, however, one regulation with regard to those Belgian schools of art which surprised him,—only men were admitted to them. It had sometimes been asked what was the use of a School of Art in such a place as Dover, which was not the centre of any manufacturing interest. Well, in thinking over the matter that morning, he had asked himself—to take only one example—whether there were not many working men in that town who had remained journeymen all their lives simply because when young they had not had the opportunity of acquiring a knowledge and experience of architectural and mechanical drawing, with the power of laying down plans, or that of understanding plans when laid down by others. Of that he had received a singular illustration in a letter which Major Scott had shown him from a man who at the age of 21 was a journeyman workman, but who was now a man of considerable means and position, and he said that he owed it entirely to the education he had obtained on those points, adding the expression of his belief that many of the working men now in Dover might by the education afforded in that school not only raise their wages 10s. or 20s. a week as foremen, but ultimately become partners in large firms, to the great benefit of themselves, and to the encouragement of others by their good example. Now he was bound to say that he thought the support given to the School of Art by the people of Dover was very creditable, especially considering that they had not among them, as was the case with some of the great towns in the North, very rich men residing all the year round in the place. He ventured next to tender, on behalf of the meeting, their warm congratulations to those students who had carried off prizes that day, expressing also the wish that those who had not been so successful would let the disappointment they had sustained prove a stimulus and not a discouragement to their exertions in future. Major Scott had handed to him the offer—from a workman who had himself profited by the education he had received—of a prize of 3*l.* 3*s.* for the best architectural design by a workman.

OUR SCHOOLS OF ART.

SIR,—The unfavourable notice of the pupils' work at the Brighton School of Art, published in the *Builder* on October 13th, suggests that there is something wrong in the educational system at South Kensington. It we examine the twenty-third report, and the last "Art Directory" of the Department, we find about 328 persons have taken the first master's art-certificate only; its elementary character is described in the "Directory," with farther descriptions of the other masters' art-certificates. The same "Directory" also states that 114 persons have taken the second master's art-certificate, and that twenty-two persons have taken the highest painting certificate, called the third master's art-certificate. The latter number is most insignificant considering the Department Training System has been in vogue nearly a quarter of a century. Had the master of the Brighton School of Art held the highest painting certificate he would not have brought upon his school the strong remarks that have been made.

It would be interesting to know how many of the twenty-two persons have had other art instruction before going to South Kensington, say in the Antique, Painting, and Life Schools of the Royal Academy. Many young men study at the Department of Science and Art to prepare themselves for the Art Schools in Piccadilly. The Registrar of the Department informs us in the report quoted that "eighteen students have been recommended for admission to the Royal Academy, twelve of whom were admitted." May we not consider this recommendation from a National Institution supported at great cost, a proof that an artistic education cannot be obtained at South Kensington? We have always understood that all the branches of fine and ornamental art were taught in a first-class manner at the Department of Science and Art. Probably they are, as far as the present masters have ability to teach them practically. We have never heard that the masters are designers or painters, nor have we seen any clever work by their own hands. Again, let us examine the "Directory." We find the head-master holds the first and second certificates; he also holds two others, but they do not apply to art education, nor does he teach the subjects they are for.

The head-master receives 600*l.* per annum, and only for a portion of his time. He is also head-master of the Lambeth School of Art, and we believe that he still retains his post at Dulwich College. The second master is not a certificated master. The third master holds all the art-certificates except one, the fifth, for modelling the figure. The fourth master is not certificated. Here we have the artistic teaching staff, with the exception of Mr. E. J. Poynter, R.A., who has other duties to perform.

In former times, when masters were trained at Somerset House, the staff under Mr. Dyce were men of well-known reputation, but in spite of their talent an energetic talker and pen-man ousted them, and became all-powerful, and established the certificate system, and an extensive system for the teaching of elementary drawing to the poor. No doubt many workmen under the system are now better able to aid the designer and manufacturer, but this is only part of the work to be done; we want our schools of art in our manufacturing towns to be directed by accomplished masters, to teach young men the profession of a designer, and, if need be, an artist. Schools of design were established for that purpose and no other.

The committees in the country are partly to blame for the inferior position that a great many of their schools hold, and we need not wonder when so many schools are taught by masters who hold the lowest certificate, or with an additional mechanical certificate. It may be asked, how can committees ensure more experienced masters? The answer is, the committees should insist upon seeing every branch of fine-art work executed by a master, before he is engaged; by this means the standard of work in the schools would be raised.

The selection of masters on the strength of certificates and recommendations only has been tried long enough, and the time has come for the Department of Science and Art to cease sending out any more persons to increase the large total of 393 individuals without a certificate for painting or designing. The following towns, according to the same report, have schools of art directed by masters who have only one certificate:—Derby, Sheffield, Cheltenham, Croydon, Huddersfield, Salisbury, Preston, Reading, Stafford, Stirling, and Bradford; the last-named town has three places of art education, and each master holds the first elementary certificate only. In many other towns the masters teach without having taken a painting certificate, and yet they have escaped criticism. Information on the subject of art instruction in our various towns would not be unacceptable to the public.

A. B. & C.

SKETCHING CLUB COMPETITION.

ON Wednesday, 31st October, the fourth annual competition between the sketching clubs of the schools of art in the metropolis took place at the Dudley Gallery, Piccadilly, which was kindly lent by the committee for the purposes of the competition.

Five sketching clubs engaged this year in the competition, viz.:—The South Kensington (Male and Female); Lambeth; West London; and the "Gilbert" (St. Martin's); and a total of 202 sketches in oil, water-colour, chalk, clay, and plaster, were contributed.

The gentlemen who very kindly and considerately undertook the office of adjudicating upon the works this year were:—Sir John Gilbert, R.A.; Mr. W. F. Woodington, A.R.A.; and Mr. A. Legros; who spent some considerable time in examining the sketches, and finally made the following awards:—

Award of honour to that club which produced the best aggregate of work, to the Lambeth Club.

The prizes of 3*l.* each (the money for which is provided by the different clubs), were awarded as follows, for the best sketch in each of the subjects named:—

For Figure.—"A Critical Moment," Mr. H. G. Glindoni, Gilbert Club.

For Landscape.—"A Grey Day," Mr. J. W. Wilson, Gilbert Club.

For Sculpture.—"A Critical Moment," Miss H. Montalba, South Kensington Club.

For Animals.—"On the Look-out," Mr. Montefiore, South Kensington Club.

For Design.—"A Decorative Panel," three prizes of 1*l.* each to Mr. C. Reich, Mr. W. Swaine, West London Club; Mr. Pearce, Lambeth Club.

A COSTLY NEW ROMAN CATHOLIC MONASTERY.

AT Cowfield, near Horsham, the Roman Catholics are said to be building a large new monastery, at an expense of 160,000*l.*, upon a site which, with the land in connexion, occupies 400 acres. It is stated that the church attached to the convent will be 140 ft. long and 50 ft. wide, with a tower and spire carried to a height of 160 ft. The new building appears to be identified with interesting historical associations. It is said to be the eleventh monastery of the Carthusian order erected in England. The tenth, and last, was founded by Henry IV., in the year 1414, and was situated at Richmond. The building is stated to have followed the common fate of such structures at the hands of Henry VIII.

RAILWAY WORKS IN PROGRESS IN WEST LONDON.

SEVERAL railway works of a varied character are at present going forward in different parts of West London. Amongst them may be noticed the enlargement of Earl's-court Station. The works are fast approaching completion, and when finished this station will be one of the largest connected with the Metropolitan and Metropolitan District lines. The Midland Company's loop-line at Gunnersbury is being made ready for running their trains on to the North London line, direct both from the country and the City. The Midland are also making rapid progress with their large coal and goods depôt at West Kensington, adjoining the Kensington Station of the Metropolitan Company. It may be remembered that during the late Parliamentary session the Metropolitan District Company obtained powers to construct a new line from Turnham-green to South Acton and Ealing,

which will connect their main system with the Great Western and the Midland Companies' lines. The District Company have just commenced the works for carrying out the extension, which it is stated, will be completed within twelve months. The new line is about three miles in length. The recently-opened extension of the District Company's line westward from Hammersmith to Richmond, has already greatly accelerated building operations in the district, and the further extension of the line to Acton and Ealing is expected to lead to the erection of suburban residences in that locality. It is stated that a new branch line is contemplated from a point on the District Company's line near Hammersmith to Putney.

THE MASONS' STRIKE IN LONDON.

The struggle has now entered upon its fifteenth week. The aspect of affairs is much the same as it was last week, although fifteen of the men who were at the Law Courts last week had not put in an appearance up to Tuesday last. Although it is said that 120 masters have yielded, and paid the rate of wages demanded by the men, these employers do not represent the general body to any great extent. The large contractors still hold out as strongly as ever. Most of the contracts held by these firms have strike clauses, which will enable them to hold off for some time to come. It is stated that the amount disbursed last week in strike pay was about 600*l*. In addition to this there were payments of arrears and travelling expenses, bringing the total expenditure up to about 800*l*. The receipts for the week exceeded 1100*l*. The masons of London in the society number 2,500, of whom only 1,700 are out on strike. Of these 800 are known to have left London, 700 are employed in the metropolis, and the remaining 600 are supposed to be in receipt of strike pay, and are unemployed. This does not, however, represent all the men whom the strike committee has now to provide for. Two parties of men from America have arrived, numbering in all 95 men. Of these 14 only have gone to work, leaving 81 men on the hands of the strike committee. Some of these have already found work; others have gone away; but still each of the 81 men has entailed a heavy expense upon the strike committee, as well as upon the masters' association. Besides the Americans, there have been about twenty-four Germans, Italians, and Dutchmen sent home by the strike committee, or kept in London on strike pay, while special delegates and interpreters have been sent to different parts of the Continent to try to stop the importation of foreign labour. Although it may have cost the masters a good round sum to bring these men over to England, it has also cost the strike committee a large sum to keep the imported men, or send them back. Up to the present time the masters have imported 239 men, of whom (according to the *Standard*) eighty-seven only are at work in this country, and the remainder have been dealt with by the strike committee.

Mr. John Wallace writes from 81, Gracechurch-street:—"Among the mass of correspondence and the many suggestions which have appeared in your paper upon this vexed and vexing subject, I have not observed any illusion to what seems a very obvious help to builders in making up for the present admitted scarcity of stone-workers, viz., the greatly-extended use of machinery for that purpose. Machinery is still comparatively little known or used in stone-working by London builders, although a great portion of what is at present slowly and laboriously accomplished by hand-labour can be equally well done by self-acting machinery, aided by unskilled labourers, and at a tenth part of the cost, such as making steps, running mouldings, &c. In Glasgow some of the large carriers do a great business in working the stones and supplying them to the builders already hewn and dressed by machinery, and there are some London firms, notably Messrs. Hill, of the Law Courts, whose machinery for sawing, hewing, moulding, and polishing is excellent of its kind; but their case is quite exceptional, and a much more extensive use of mechanical appliances is necessary by the builders if the work of London is not to come to a standstill entirely. The constant increase of work and decrease in the number of workmen, as well as of working-hours, can only be reconciled by that means; and it is satisfactory to know that this strike will not be an unmixed evil if it causes builders, for the future, to have the great bulk of their stonework done otherwise than by manual labour. I think this auxiliary machinery would be more satisfactory and lasting, as well as more consistent, with our national feelings, than the importation of foreign labour, and I hope to hear more of it."

THE STEAM-ROLLER ACCIDENT IN CHELSEA.

On Thursday afternoon, Nov. 1st, at the Westminster police-court, Miss Marion Clarke and Miss Alice Clementina Clarke, Waldegrave House, Smith-street, appeared to an adjourned summons, preferred by the Vestry of Chelsea, to recover the sum of 13*l*. 17*s*. 10*d*. for rebuilding a vault which they alleged was out of repair at the time when it was crushed in by a steam-roller. Mr. Charles Aldridge, 25, Smith-street, was also summoned for a similar amount.

Mr. Pemberton appeared for the Vestry, and Mr. Shaw, barrister, for the defendants.

On the last occasion (see p. 1108, *ante*), the magistrate expressed an opinion that the Vestry should produce independent evidence as to ordinary heavy traffic on roads.

Mr. Pemberton now stated that he had some valuable evidence on this point, but he would first recall the driver of the roller.

John Piper, recalled, deposed that he examined the machine when it was first worked, and the thickness of metal on the hind wheels was then 4¼ in., and on the front wheels 4 in. About four days before the accident he noticed the wheels were very much worn, and out of curiosity he measured them. The near hind wheel was then only 3 in. thick, and the off one about 3¼ in.

Cross-examined.—It was not unusual for him to have the "curiosity" to measure the wheels. He did not take any note of his measurement. He had never made any calculation as to the weight of iron that had worn off.

Mr. Thomas Wright, manager to Messrs. Aveling & Porter, of Rochester, manufacturers of steam rollers, produced a plan of the different parts of a 15-ton roller. They had made at the works at Rochester one 30-ton roller, a few 25-ton rollers, a great many of 20 tons weight, but principally 15-ton rollers. The 15-ton rollers were all made in the same way. As a matter of fact this class of roller did not weigh quite 15 tons; it was certainly never more. The weight on the wheels would be 6 tons in front and 9 tons behind. The width of the hind wheels was 20 in., and the thickness of metal 4½ in. He had heard the evidence of Piper, and if one was only 3 in. and the other 3¼ in. thick, roughly speaking, there would be one-third or rather more of the thickness gone. Taking it at a third, the loss of weight would be 25 cwt. That was the allowance for the two back wheels. The front wheels would wear rather less, and for their loss of weight he was within the mark at estimating it at 15 cwt. This would reduce the roller at the time of the accident to 13 tons weight. Understanding that there was only a bushel of coke in the engine at the time, the weight was reduced to 12¾ tons. Taking this as the figure, there was only 7½ tons weight on the back wheels. He had made a calculation of the fall of the road, and he considered the additional weight thrown on either side of the engine would not exceed a quarter of a ton. The width of the engine from wheel to wheel was 86 in. or 89 in. Even assuming a tilt of from 3 in. to 5 in., that would not have the effect of throwing the off hind wheel off the ground. The total weight on the wheel that caused the accident was about 4 tons.

Cross-examined.—If the roller were passing over large lumps of stone, it would be quite possible that momentarily the weight would be unevenly distributed.

Mr. Josiah Metcalf, superintendent of the London Goods Station, Great Northern Railway, stated that weights of from 10 tons to 35 tons, plus the weight of the trolly, were often conveyed along the streets. The trollies weighed from 4 tons to 8 tons. He had known a total weight of 40 tons to be conveyed. Such weights rested on four wheels. Forty tons was rather exceptional, but with tolerable frequency they conveyed 15 tons and 12 tons. The width of the trolly-wheels was about 9 in., and a ton per inch would be nothing excessive. They took no precautions to satisfy themselves that the roads were in good order, except to see that no repairs were being made, and there were no steep gradients. As long as the roads were open, they asked no questions, always assuming that they were made for public use, and able to bear the strain of public traffic.

Mr. D'Eyncourt.—In reference to under the road, gas-pipes, sewers, cellars, and so on. Do you consider that?

Witness.—No, sir.

Further examined by Mr. Pemberton, the witness stated that at the Exhibition of 1862, as a matter of fact, they conveyed many 30-ton boilers along in addition to the trolly. Probably for a thing like this, they would have two additional wheels.

Cross-examined.—If they knew there were cellars under the roads, they would not go that way with heavy weights. It would probably, though, depend on the strength of the cellars; they would go and look at them.

By Mr. D'Eyncourt.—He did not remember any action which the Great Northern Railway had had brought against them for damage by weight. There was one slight case.

Mr. Shaw.—And I suppose you had to pay?

Witness.—There's where you're wrong. The only question was whether we should make some one else pay. For a 30-ton load it took fourteen horses. The accident referred to was that of an engine that sank a few inches into the roadway. The damage was scarcely to be mentioned.

Mr. John Stokes Darby, manager to Messrs. Freeman, stone and granite merchants, of Millbank-street, Westminster, proved that they were in the habit of conveying large blocks of stone, up to 24 tons, along the streets. The width of the wheels was about 9 in. They took no special precautions as to roads, merely avoiding those that had been recently repaired or the macadam not consolidated.

Mr. D'Eyncourt.—Would you go over Hammersmith Bridge?

Witness.—Yes, I should; or over Lambeth Bridge or Vauxhall. If the bridge were to break down I should claim damages for the loss of the horses.

Mr. Shaw.—Just like the Vestry.

Witness went on to say that he should certainly use the small back streets for the conveyance of heavy weights if the road were perfectly consolidated. They would not think of asking whether there were any vaults in the centre of the roadway.

Mr. Pemberton said he had a great deal of evidence of this sort.

Mr. D'Eyncourt remarked that it was good evidence of the kind, and they could not have better. He did not require further evidence.

In reply to some questions as to the sort of street Smith-street was, Mr. Stayton, the surveyor, informed his Worship that, although it was not a main thoroughfare, like the Brompton-road, it was a good street.

Miss Clarke was then called, and she stated that her sister was the defendant. She (witness) was residing at the house at the time of the accident, and had lived there eleven years. The house was repaired in 1871, and an architect named Evans was employed. That gentleman went all over the house, and everything he suggested was done. Up till the time of the accident she was unaware of any defect in the cellar or crown of the arch. There were actually three cellars in front of the house, but only one was broken through. She saw the steam-roller at work on the Saturday afternoon. On the Sunday her sister had a conversation with her brother. After the accident, when Piper called, she waited for him to speak, and after he had said there was no danger she stated that her brother, on the previous day, said that some accident would very likely happen, as the roller was much too heavy, and that he had a good mind to go to the Vestry and say so.

Mr. Pemberton, in a protracted cross-examination, attempted to shake the witness as to the time and the actual circumstances of the accident, but she adhered to the fact that she saw it crushing in the first place against the kerb, that it was rolling at a quarter-past five, and that she saw it falling in in the manner described.

Mr. Aldridge said he was the freeholder of several houses in the street, and in his case the same question was at issue. He had a witness who would most distinctly prove the crushing against the kerb.

Mr. Pemberton said he objected to confirmatory evidence of this description.

Mr. Francis Wentworth Shiels, a member of the Institution of Civil Engineers, and resident engineer at the Crystal Palace, author of a work on "Strains," deposed that he had visited the spot where the accident occurred. The cellars adjoining the one where the accident occurred were in good order, although the brickwork was apparently of old construction. In one of the adjacent vaults there was a crack which appeared to be quite recently done, the surface being quite clean. From the nature and position of the crack he should say it had been produced by pressure from above. The mortar was in a proper state; it was a 9-in. arch, and well calculated to bear ordinary traffic.

Mr. D'Eyncourt.—What do you mean by ordinary traffic?

Mr. Shiels explained that he meant the traffic of heavy loads, like well-loaded coal-waggons; did not mean heavy boilers and things of that sort. The witness went on to describe at great length what strains brickwork could safely bear, and what would be unsafe, and he maintained that ordinary vaults like this would not bear a 15-ton roller. He also proved that the roller was constantly being tilted by passing over large stones, and that at the moment of tilting the weight was shifted on one side or another, and produced a much greater pressure than the nominal distributed weight of the roller.

Mr. Pemberton cross-examined at great length, but the witness maintained his first statements, and produced large stones which he had that day picked off the road. Such would, in his opinion, cause the weight of the roller to be thrown for a short time on a single point or part.

Mr. D'Eyncourt said, to save the parties further expense, as he felt little doubt about it, he would give judgment that night. When the road was dedicated to the public it must be taken to be accepted with the inconveniences and risks attending it at that time. It appeared that the cellar in question had borne all the ordinary traffic for fifty years or more, and if the weight of the steam roller had only been ordinary traffic possibly the owner would have had to make good the repairs. It appeared to him, however, that the cellars had given way under an extraordinary weight,—a degree of pressure not contemplated fifty years ago. If the mortar was soft, it was caused by the default of the Vestry, for it had been proved that at one time there were only 4 in. of material over the roads, and this would allow water to percolate. He dismissed the summons.

Mr. Pemberton asked for a case, which was granted after some discussion.

Mr. Shaw pressed for the costs, and the Magistrate allowed twenty guineas costs against the Vestry.

The proceedings lasted nearly four hours.

*** We understand that the Vestry will appeal against the decision, on the ground that the Act says nothing about "ordinary traffic," and that the public have a right to the free use of the "public highway" for any purpose. It may be desirable to settle the question definitely, but we are very much disposed to think that the parish are not likely to obtain a reversal of Mr. D'Eyncourt's decision.

The Oxford Water Supply.—The new reservoir at the top of Headington-hill, to supply Oxford with water, was opened on the 26th ult. by the chairman of the Waterworks Committee. The reservoir has been built from the plans of Messrs. L. & C. Hawksley by Mr. Dickinson, and will contain a million gallons and a half of water, which will be supplied from the lake at Oxford. The pressure from the new service will be so great that in case of fire a copious supply of water can be produced to reach the highest tower in Oxford.

STRIKES IN THE BUILDING TRADE.

SIR,—I wish to say a few words from a master's point of view in reference to strikes. Are the British workmen aware of the irretrievable injury to themselves and builders they are causing by their inconsistent demands for higher wages?

During the late carpenters' strike at Wolverhampton, the dispute was referred to arbitration; the men would not abide by the award. Their secretary said, at a meeting of the association, that although the men had agreed to arbitrate, yet that unless the award was in their favour they did not think they should be bound by it.

At a meeting of the Carpenters' Society in London, on October 30th, the chairman said that the working classes had no objection to free labour, but to go to the Continent for labour did not redound to the credit of employers, and that their association would try every means to prevent the introduction of foreign labour into this country.

It appears to me that arbitration is useless. As to the introduction of foreign workmen, why should not masters employ any labour they choose?

A great number of men in the building trade,—carpenters, bricklayers, and masons,—are only partly competent workmen, who are idle, dissipated, and will not work when the work is before them; in the streets of Birmingham are continually to be seen bricklayers in cabs smoking cigars; the liquor-shop is their favourite resort on Mondays. Whether they have work to do or not, they are to be met with here drinking brandies and whiskies, *not ale* (that is out of fashion); working men can now afford to drink spirits. I for one hope that the London builders may succeed in their spirited endeavours to introduce foreign labour, as I think we may rely on foreign workmen being more steady and persevering than some of the English; the principal object of builders' men nowadays seems to be to secure the ruin of their masters by doing as little work as possible in a given time, and continually striking for higher wages. If it were not for the law which withholds the men, they would intimidate all the men who have arrived in London to perform the work they themselves are too idle to do. Their notion would be this, if they had their way,—

> "Let's kill all the lawyers;
> Now show yourselves men, 'tis for liberty:
> We will not leave one lord or gentleman."
>
> *2 Henry VI.*

The London carpenters boast that the strike of twenty-six weeks has cost the men 30,000*l.*, and the masters above 300,000*l.*, and they ought to be ashamed of it. If this is true, the men seem entirely to forget that, without masters and capitalists there would be no employment for them.

A PROVINCIAL BUILDER.

IMPEACHED ARCHITECTS.

IN the course of a letter to the *Times*, headed "Fiduciary Agents," Mr. John S. Storr says,—

"Architects are very generally honourable men, content with their defined professional charges; but cases arise not infrequently, as all large builders will admit, where the architect will insist on the contractor giving him 5 per cent. on each certificate, besides the 5 per cent. paid by the client."

We have before now had occasion to protest against indefinite charges of this kind against the profession, and we repeat that protest. Let Mr. Storr, or any of the "large builders" of whom he speaks, give us a specific case, and be prepared to substantiate it. We undertake to say that the Council of the Royal Institute of British Architects would make very short work in dealing with any member of their body against whom such a charge was proved.

IMPROVEMENTS IN OMNIBUSES.

SIR,—I was glad to see the *Builder*, of the 27th ult., contain an article touching upon the many defects of the present system of omnibus traffic.

The public has indeed much inconvenience to put up with that might be considerably diminished by a little energetic outlay, and it occurs to me that the Omnibus Company has also a vexed question to deal with, which might be remedied simultaneously with the complaints of the passengers. I refer to the registration of fares. If, as you suggest, omnibus stations were established at reasonable distances, fares could be, to an extent, equalised, and a method of checking introduced similar to that in Continental cities. Under the present system the thing is totally impracticable.

The offer made by the Company, a short time since, of 1,000*l.* for an "effectual means of checking passengers' fares," shows the importance of this matter to them; and the fact of no attempt being made to secure the prize, shows, I think, the impossibility of any such invention.

Passing from this I would mention another difficulty with which the Company has to contend,—the supply of horses for their omnibuses. Every one must recognise the distress which their day's work entails, and the introduction of foreign horses for the purpose seems to have been abandoned as useless, probably owing to their slow pace.

It would seem that there is a very good field for profitable and serviceable invention, in attempting to overcome these difficulties. Steam power is becoming daily more valuable, and its use is rapidly growing wider in extent. Mr. Hancock, of Stratford, applied it to street locomotion nearly half a century since, and constructed several steam carriages which, it is to be regretted, never found the favour they deserved. Surely another attempt to produce a steam omnibus, so needed at the present time, would meet at any rate with careful consideration at the hands of those interested in public convenience and commercial economy.

Objections would doubtless be raised on the ground of public safety, but it is an extremely rare occurrence to hear of an accident resulting from the present use of steam in metropolitan thoroughfares. Cumbersome steam-rollers work daily in busy streets without any appreciable danger of frightening horses, and snorting fire-engines are dashed along without being the cause of accidents. The pace of a steam omnibus need not exceed that of our present omnibuses, and their stoppage would be a matter of ease, the steam being shut off upon the break.

J. GEO. B. MAYTHORN.

"FLATS."

SIR,—Replying to the letter in your last number, allow me to inform "Paterfamilias" and his many acquaintances that their desire for good "flats" can be satisfied at once, not in the "morasses of Westminster or Pimlico," which they are anxious to avoid, but in one of the eminently healthy localities he names as most eligible, namely, a few minutes' walk from the Exhibition-road and South Kensington Station.

The need for superior "flats" in this fashionable locality is fully understood, and is about to be efficiently dealt with on a large scale in a building arranged on a superior plan, lighted, heated, and ventilated in the most perfect manner, and fitted with the best sanitary and other appliances. The "flats" now ready for occupation, when fitted and decorated, consist of suites of four, six, and eight rooms of varying size, and include bath-rooms, &c., and kitchen also, although the provision of a double lift (with accompanying electric bells and speaking-tubes) on each flat, connecting it with a large additional basement kitchen, in charge of a competent "chef," for the entire building, facilitates the dispensing with cook and scullery-maid when wished, and relegates to the lower regions all or most of the culinary arrangements, with the coals and refuse, fumes and clatter, inseparable from cooking and cleanliness,—leaving the "flat" unencumbered with all that is objectionable when in close proximity to living and sleeping rooms, as in a "flat" must be, and enabling the resident to dispense with any other than personal and waiting attendants.

As a constant subscriber to the *Builder*, allow me to subscribe myself, in the words of "Paterfamilias," also an

ENTERPRISING READER.

Redcliffe-gardens.

SIR,—In answer to "Paterfamilias's" letter on this subject in your last week's issue, perhaps you will kindly permit me to inform him that there is now being erected in the Fulham-road, and close to the Chelsea Railway Station, by a well-known West-end building firm, a block of buildings on the "flat" system, which has been specially designed to meet the requirements of small middle-class families, with moderate incomes, who may be desirous of securing a separate town residence for themselves, instead of being obliged, as at present, to share part of a house with a stranger, or go some rail-distance away from town. Each residence will contain two or more bedrooms, one sitting-room, kitchen, scullery, water-closet, &c., and, being all on one floor and very compact, one servant will be more than sufficient.

To any one really taking an interest in this kind of experimental building, I shall be happy to show my drawings, or give further information.

FREDK. NESBITT KEMP.

Tunbridge Wells.—The Marquis of Abergavenny has laid the foundation of a pump-room for Tunbridge Wells. The building, which is to be of Domestic Gothic (Old English), has for its site a piece of ground at the upper end of the Parade, facing the Bridge-road, and when completed will contain, in addition to the pump-room, a Masonic Hall, with ante-rooms, billiard-rooms, &c.

PRESERVATION OF WOOD.

SIR,—In reply to your correspondent, "Builder," I fear the *lead* paint has much to do with the result complained of. "Builder" and your correspondent "H." should try silica paint of the Silicate Paint Co., Liverpool, or alumina paint of the Alumina Paint Co., Buckley. The latter would certainly preserve the tank referred to by "H." The blistering is caused by the wood being painted when damp, or the paint put on too thick, and during a strong sun heat. Both above correspondents should read the discussion on Professor Barff's paper, Society of Arts, on the 14th of February, 1877, published in the *Builder*.

CORCYRA.

SELECTED PLUMBERS.

SIR,—Allow me to draw the attention of the trade to the following fact. The water-supply of the parish of St. Leonard, Shoreditch, is about being changed from the intermittent to the constant supply, and notices have been left at the houses in the district, specifying the additions and alterations to be made to fittings. Having received several of these notices, I was surprised to find enclosed in each a list of plumbers (one of which I enclose for your perusal) named for the work. Considering this unfair to others in the trade, I trust you will find room for this note in your paper, so that they may know the influence working against them.

ONE WHO BELIEVES IN A FAIR FIELD AND NO FAVOUR.

FUNGUS.

SIR,—Can any of your readers tell me how to get rid of an orange-coloured fungus that grows on wood, and speedily rots it? I am about to floor a house of mine for the third time in eighteen months, through the mischief wrought by this fungus, which seems to be slowly but surely spreading, now attacking the passage flooring. Cupboard-doors and skirtings are rotten with it. I have taken out two loads of earth from under the flooring, put a quantity of lime there, and seen to the ventilation by air-bricks; but it is all unavailing.

Z. PICKARD.

CHURCH-BUILDING NEWS.

Topsham.—The rebuilt church of St. Margaret, Topsham, was consecrated on the 27th ult. The new edifice is not a restoration of what the original church is supposed to have been, but consists of a nave, with aisles, chancel, and transepts, on a larger scale. The old tower has been retained. The dimensions are—nave, 83 ft. 3 in. by 24 ft.; the entire width of nave and aisles, 58 ft. 8 in.; transepts, in length, 91 ft. 9 in. by 22 ft.; chancel, to which there are aisles and vestry, 34 ft. 6 in. by 19 ft. The style is Early Decorated. The walls are of Torbay limestone, the windows and dressings of Bath stone. There is accommodation for 848 persons, 449 seats being free. The roofs of red deal are ceiled between the rafters, that of the chancel being boarded in a polygonal form, and overspread with tracery, ribs, and bosses. The wood-carving is by Mr. Sendell. The sanctuary is enclosed with a brass rail and standards, the work of Mr. Rowe, Exeter. The reredos, an enlargement of a former altar-piece, has five crocketed canopies, the panels illuminated by Mr. Drake. The carving is by Mr. H. Hems, who has also done the corbels, heads, &c., in other parts of the building. The chancel is paved with Minton tiles. The organ has been reconstructed and improved by Messrs. Dicker, and is placed in the north chancel aisle. The works have been carried out by Messrs. Stephens & Son, Exeter, from plans by Mr. Ashworth, architect. Mr. Bradford has been clerk of works. The outlay has been upwards of 5,500*l.*

Rodmersham.—Rodmersham parish church, Kent, has been re-opened, after restoration under the direction of Messrs. Morris & Stallwood, architects, Reading. The church is one of the most interesting in the county. The preservation of the old screens was placed in the experienced hands of Mr. Harry Hems, of Exeter, and under his immediate supervision they have been tenderly treated and made good. The contractor is Mr. Louis Shrubsole, builder, of Faversham.

Halifax School Board.—This Board is about to erect a Board School at Haughshaw for 800 children. Ten sets of drawings have been submitted in competition for the best design for the school. Mr. Adams, the architect to the Leeds School Board, to whom the decision was referred, has decided that those submitted by Messrs. Leeming & Leeming, architects, Northgate-chambers, Halifax, are entitled to the first place. The Board meeting in committee last week confirmed the award.

ESSENTING CHURCH BUILDING NEWS.

Boston Spa. — Boston Spa Congregational urch was opened on the 24th ult. The church situated in Tadcaster-road, the main street of e village, and consists of a nave with small nsepts, with porch, lobbies, and tower. There e school-room, class-room, and vestry behind. s total length is 53 ft. by 34 ft. across nave, d 43 ft. across transept; the whole roofed in e span with open timbers, and affording accomodation for about 260 worshippers. The tower, nich stands at the south-east corner of the ilding, and has a slated spire, is about 90 ft. gh to the top of the finial. The buildings were signed and carried out under the superintendce of Mr. F. Bartram Payton, of Bradford, chitect. Mr. Brelsford, of East Keswick, did e masons' work; and Mr. Bake, of Wetherby, e joiners' work. The total cost is about 300*l.*

Darlaston.—During the past twelve months, e Wesleyan chapel in Pinfold-street has undergone extensive alterations, the whole of the terior fixtures having been removed, and new d more modern ones erected. The ceiling as been neatly panelled. The exterior of the ilding has been repaired, whilst the front has so been ornamented. Mr. John Loxton, of Wednesbury, was the architect, and the builder as Mr. Trow, also of Wednesbury. The exenses incurred amount to 2,500*l.* On the 23rd t. the chapel was re-opened.

Richmond (*Yorkshire*).—The Primitive Methoists of Middleton Tyas have just opened a new apel. It has cost 500*l.*, and is built of stone, ith a brick frontage. Mr. W. Ranger was the chitect, and the work was carried out by essrs. E. Joy & R. Atkinson, the contractors.

STAINED GLASS.

Bradford (*Alresford, Hants*).—A stained-glass indow, representing "Christ walking on the ea," has just been erected in Bradford Church, memory of the late Mr. H. F. Plow, who was st in the *Liberia* in 1874. It has been executed Messrs. Mayer & Co.

Bulwick (*Northampton*).—The large five-light ast window of Bulwick Church is now filled ith stained glass. The subjects represented e the "Last Supper" and the "Crucifixion," e outer lights being filled with adoring angels. he window is in memory of Anne, eldest aughter of Sir John Trollope, sixth baronet, ster of the Right Hon. John, first Baron esteven of Casewick, and wife of Mr. Thomas ryon, who died Feb. 11, 1877. Messrs. Heaton, utler, & Bayne were the artists.

Lightcliffe.—The members of the family of he late Sir Titus Salt, bart., have put up large stained-glass window to his memory the west end of Lightcliffe church. Figures Noah, Abraham, Moses, Samuel, and Daniel re introduced, and under each figure is represented an incident taken from the life of the erson represented above it. The work is upon silvery-white ground. The inscription reads, In memory of Titus Salt, first Baronet. Born eptember 20th, 1803; died at Crow Nest, ightcliffe, December 29th, 1876. This window erected by his children." Messrs. Heaton, utler, & Bayne were the artists.

Guildford.—A memorial window, representing he "Ascension," has been placed in West landon Church, near Guildford, by Lady Mary ugusta Onslow, of West Clandon Park, in emory of her parents, Arthur George, third arl, and Mary Fane, Countess of Onslow. The indow is by Hardman & Co.

The New Yorkshire College for Technical Education.—On the 23rd ult. the foundation-stone of the new Yorkshire College, tended to be erected on the Beech Grove Hall state, Leeds, was laid by the Archbishop of ork. The site of the proposed new college was urchased by the Board of Governors several onths ago, for the sum of 13,000*l.*; and Mr. Waterhouse, architect, was instructed to prepare ans for the new building. These have not en definitely fixed upon, nor can even an pproximate estimate be given of the cost, but ccording to the present arrangements the arious departments of the college will be upon he ground floor. The extent of Beech Grove all Estate is 3½ acres. It is only proposed at resent to proceed with the erection of that portion of the college which will be devoted to the equirements of the textile department.

Books Received.

Inductive Metrology; or, the Recovery of Ancient Measures from the Monuments. By W. M. Flinders Petrie. Hargrove Saunders, Tichborne-street, Regent-quadrant. 1876.

Mr. Petrie says this essay has resulted from an attempt to determine the ancient standards of measure from the monuments: at first supposing that such a course would merely supply details; but afterwards finding that all, or nearly all, the recognised data of metrology could be thus independently ascertained, besides recovering a large amount of additional information. Allusion is made only to linear quantities, as they alone are shown by the architectural remains. It is a very interesting and pregnant book, the result of much reading and patient research.

Designs for the Construction of Markets, Warehouses, and Sheds. By Alexander Friedmann. Translated, with an Introduction, by E. H. d'Avigdor, B.A., C.E. 1877. London: E. & F. N. Spon.

Although this is a large book, or rather portfolio, containing a number of large plates, the gist of it lies in a small compass, namely, the proposal to substitute for cast-iron columns, the objections to which are well known, simple wrought-iron columns, consisting of four vertical angle irons, and four connecting lattice webs, which do nothing else but keep the angle irons at the required distance from the centre of gravity, or central axis of the horizontal section. In this manner the required strength and resistance of an isolated column is obtained with the least possible waste of material, "for the resistance of the column depends of course on the moment of inertia of its section, and this moment of inertia is the larger the further its mass is removed from the central axis,—that is, from the centre of gravity of its section." A large number of designs showing the application of the principle are given. Mr. E. H. d'Avigdor has done his part of the business very well, and the book deserves the careful study of all who are concerned in the design or construction of the class of buildings referred to.

Miscellanea.

"Australian Art."—Under this heading the *Australian Sketcher* says, — "Our well-conducted English contemporary, the *Builder*, lately had a kindly-written article on "Art at the Antipodes," in which the rudimentary efforts made in some of the Australian colonies to encourage art met with liberal appreciation. The establishment in Sydney and Melbourne of academies of fine arts and national galleries is alluded to as showing that the colonists, while compelled by their position and the work before them to give foremost attention to the practical, are by no means neglectful of the ornamental. In Victoria, the Legislature, which has done so much for the intellectual education of the people, has also been careful to make provision for their æsthetic culture. We have a well-lodged and copious gallery of pictures, which, if it does not include, as it was prevented by the circumstances of the case from including, any specimens of the works of the great old masters, at any rate has many valuable pictures by English painters of the present day. The first elements of art education are, by means of our various schools of design, brought within the reach of all. And if, in addition to these opportunities of sculpture and study, there be, as many have thought, something specially favourable to the evolution of the artistic faculty in a bright sunny sky and an exhilarating atmosphere, why, in these respects also, we are most advantageously situated. We live under a sky as fair as that of Greece, and possess a climate as luxurious as, and more stimulating than, that of Italy. Who shall say that in time to come, as practical invention and industrial ingenuity represent the mental bent of the American offshoot of the English race, that rooted in Australia may not be distinguished by especial aptitude for the fine arts?"

Cleopatra's Needle.—It is understood that the obelisk-ship *Cleopatra* will remain in Ferrol over the winter whilst the question of salvage is determined in the Admiralty Court, the owners of the *Fitzmaurice* (the steamer which picked up the abandoned obelisk) having refused Mr. Dixon's offers.

The Romans in Rotherham.—Some discoveries have been made in connexion with excavations which are being conducted under the auspices of the archæologists of Sheffield and Rotherham in a corn-field which now occupies the site of an old Roman camp, about a mile from the latter town. It is situated between the road to Sheffield and the south bank of the river Don. The place has been known certainly since the middle of the sixteenth century as Templeborough. The spade and the pickaxe are being used with vigour. A road 21 ft. wide, and running due north and south through the camp, has been uncovered. On the west of this the foundations of a square building measuring 73 ft. each way have been laid bare. These foundation walls are 3 ft. thick, and are found standing to the height of from 1 ft. to 3 ft. 6 in. Numerous short buttresses occur at intervals along the sides, and the bases of six columns of an eastern portico have also been found. The buildings have evidently served as a quarry for the neighbourhood in the Middle Ages. At the north-west corner of the building there have been disinterred the remains of a hypocaust, and at the south-east angle of the camp a well, surrounded by the foundations of a circular tower with walls 8 ft. thick, has been found. After being cleared to the depth of 12 ft., water became so abundant that operations were for the time suspended. Of the pottery that has been found during the excavations, the articles of most interest consist of several inscribed tiles bearing the stamp C: IIII.; G (Cohors quartus Gallorum); a *mortaria*, or bowl of light brown earthenware, with potters' marks on the rim, and a lip or spout. This is 13½ in. in diameter, and 3½ in. deep. A similar vessel is figured in Mr. Roach Smith's work on "Roman London." There have also been discovered in unglazed black ware a vase and a curiously-grooved saucer-shaped article, 7 in. in diameter, the outer hollow being pierced with holes.

Carbon Gas.—On Saturday last a demonstration was made at the Collinge Engineering Works, Westminster Bridge-road, of Symes's process of manufacturing gas, a process adopted by the Pure Carbon Gas Company. The advantages claimed for this process are,—that the gas is more economically produced than by any other; that the illuminating power is vastly superior; that the product is free from sulphuretted hydrogen or ammonia; that the manufacture is entirely free from smell, and can be carried on by unskilled labour; and that the system may be cheaply adopted for villages, ships, and isolated buildings, which at present cannot have the advantages of gas-light. The retort and furnace occupied a space usually taken up by a domestic copper, and the purifiers did not take up more than a few feet of space. This small apparatus, it was stated, was sufficient for fifty lights. The principal point in the process is that it utilises nearly all the tar in the coal, for, instead of the tar being carried off as a product, it is regenerated by being carried back into the retort; and by this means 13,000 cubic feet of gas is made, it is asserted, out of one ton of coals, in place of 10,000, the ordinary quantity manufactured from the ton of coal. As the gas is passed from the retort it is carried through water by an ingenious method, so as to purify it from ammonia. The gas then passes through another purifying machine, and lime, it is understood, is the material used by which to extract the sulphur.

A New Gymnasium for Birmingham.—A large new building, called the "Oxford Gymnasium," has just been erected in the Aston-road, Birmingham. It is said to be the first building erected in the town for this specific purpose. Fifteen years ago Messrs. Smith & Mason established a working-men's gymnasium in Heneage-street, and afterwards they had a room at the back of the Spread Eagle, in the Bull Ring. Then they removed to Woodcock-street, where for four or five years they had a large number of pupils. The new hall which they have just erected is fitted up with appliances for the most daring performances. It is close upon 100 ft. long, by 30 ft. high and 30 ft. wide; on one side are flying trapezes, 20 ft. high, under which is a strong double net, 70 ft. long. The floor is covered with cocoa-nut matting, and cocoa-nut beds are placed for the pupils to drop on. Among the other appliances are parallel and horizontal bars, boxing-gloves, fencing foils and masks, dumb bells, ropes for climbing, ladders, poles, &c. The cost of the building has been upwards of 1,000*l.*

The Water Supply of Stourport.—At a meeting of the Stourport Local Board, on the 17th ult., it was reported that the whole of the six samples of water sent for analysis to Dr. Swete, the county analyst, were condemned as impure. Three were said to be "highly prejudicial to health," and the others "probably prejudicial." Under these circumstances the Board discussed the best means for providing an adequate supply of pure water for the town. The Kidderminster Corporation had offered to let them have water by meter from their wells at 6d. per thousand gallons. Mr. Harrison thought the price was much too dear, as, with the cost of laying mains, service-pipes, and other expenses, it would probably cause the price of the water at Stourport to be prohibitive. He thought they should let them have water at 4d. per thousand gallons. Mr. Baker, architect, laid before the meeting an alternative scheme, by which means water would be obtained from Gledderbrook, a stream which runs between Arley Wood and Stagbury Hill. The cost of making a reservoir, filter-bed, &c., according to this, would amount to 2,397*l.*, against 2,214*l.* for bringing the water from the Kidderminster Waterworks. In the latter instance, however, they would have to pay for the water, whereas in the former such would not be the case. A committee was appointed to confer with the Kidderminster Waterworks Committee as to a reduction in the price asked.

The Antiquities of Lochleven.—The long-projected exploration of the picturesque ruins on St. Serf's Island, on Lochleven, was made a few days ago. The party comprised Mr. David Laing, LL.D., of the Signet Library, one of Sir Walter Scott's surviving friends; Mr. Kerr, late of her Majesty's Board of Works; the Rev. Dr. Campbell, author of "Balmerino and its Abbey"; Mr. Alexander Laing, F.S.A., Newburgh, author of "Lindores and its Abbey"; and Mr. Hodgson, Cupar. The time of arrival was unfortunate, for there was a whole gale on, with sleet, and the boatmen would not venture out. After lunch the weather grew better, and, so says the *Glasgow News*, over a rough water the party took their way in two boats towards the bleak expanse of 90 acres which comprise St. Serf's Island, the property of Sir Graham Montgomery, M.P. The Kinross contingent had weeks ago laid bare with spade and mattock the foundations of the old and grass-covered ecclesiastical pile, and thus there was comparatively little to do but to examine the "finds." These mainly were the remains of two bodies which had been found inside the standing ruin, and believed to be the bones of St. Ronan and the first Bishop (Graham) of St. Andrews. Immediately on these relics being laid bare Mr. Burns Begg read a paper about them, which will be read before the Society of Antiquaries in Edinburgh, after further explorations have been made of the plan of the ecclesiastical foundations of St. Serf's.

The Laird Statue, Birkenhead. — The bronze statue of the late Mr. John Laird, M.P., erected in Hamilton-square, Birkenhead, arrived at its destination on the 25th ult., from the foundry of Messrs. Masefield, Chelsea. The site is on the south side of Hamilton-square, and right in front of the centre of the area proposed to be occupied by the town-hall of the new borough. The statue is of colossal dimensions, standing about 10 ft. high, and weighs about 50 cwt. When mounted on the pedestal its full height will be 42 ft. from the ground. The sculptor is Mr. Bruce Joy. The unveiling of the statue by Lord Tollemache took place on Wednesday last.

Fulwood.—Amongst the improvements in Preston and district, we may mention the new Local Board Offices at Fulwood. They comprise a board-room, with entrance-hall, which admits to the board-room on the right, and to an office or weighing machine-room on the left. Both these rooms are isolated from the domestic portion of the buildings occupied by the keeper, which consists of a large kitchen, pantry, wash-house, and W.C. on the ground-floor, the latter being so arranged as to be accessible from the board-room and keeper's rooms. The style adopted by the architect is modern. The buildings have cost under 1,000*l.* Mr. T. Harrison Myers was the architect.

Macclesfield.—The foundation-stone of a new School of Art and Design, at Macclesfield, has been laid by the Mayor. The building, exclusive of internal fittings, will cost 3,500*l.*

Brickmaking.—The brickmaking season is now finished. On the whole it has been (according to the *Daily Chronicle*) a very favourable one both for masters and men. Owing to the number of new schools being erected in all parts of the kingdom, the result of recent legislation, and other causes, the demand has been unprecedentedly great, the natural sequence being that bricks have fetched a capital price. Then, the weather has been exceptionally fine; the brick moulders and their gangs have thus had but very little lost time, which of course made a considerable difference in their earnings. Brick moulders, setters, and temperers have earned on an average from 50*s.* to 60*s.* per week each, and in some cases even more. In the large brick-making districts, of which Sittingbourne and Faversham are the centres, over two hundred millions of bricks have been turned out this season. Of these, no less than sixty millions were made by Messrs. Smeed, Dean, & Co., of Murston, near Sittingbourne, who are the largest individual manufacturers in the kingdom. It is remarkable what a number of bricks one man can mould in a season; to make a million is regarded as being excellent work, but there are several instances in the district referred to in which 1,200,000 or 1,300,000 were made at one "stool."

Distress in America.—A letter from New York says, "Trade is in a shocking state in this country. A great many families have been out of work for more than twelve months, and others have had very little work for the past three years. All through the summer a vast army of the unemployed has been tramping through the States in search of work or plunder, and this army will soon be fearfully augmented. In this, the Empire State, the wealthiest in the Union, there are, out of a population of 4,000,000, at least 500,000 persons following out-door employment whose means of subsistence are entirely taken away. They live through the summer—that is, those of them who are fortunate enough to get work at all—on wages barely sufficient to support them, and then they are thrown upon the community to endure the rigours of an almost Arctic winter as best they may, homeless and penniless. The fact is, the supply of labour in this country is greatly in excess of the demand. Every emigrant vessel that comes into port only adds to this army of surplus labour."

Safeguards for Theatres.—At a meeting of Middlesex magistrates on the 25th ult. a letter received from the Marquis of Hertford, Lord Chamberlain, was laid before the Court, accompanied by some important conditions and regulations. It is required that all doors and barriers shall open outwards while the public are within the theatre; all gangways, passages, and staircases to be kept entirely free from chairs and other obstructions. Each part of the auditorium to have at least two means of exit in case of alarm. All doors not ordinarily used for exit, but available as additional means of escape in case of alarm, to be indicated by printed placards. All footlights to be protected by a wire guard. Wet blankets or rugs, with filled buckets or water-pots, to be always kept in the wings. Hatchets or hooks, for cutting down scenery in case of fire, to be always in readiness. No structural alteration to be made in the theatre without the sanction of the Lord Chamberlain. The communication was referred to a committee.

The Joiners' Strike. — The Manchester Builders' Committee held a meeting on the 31st ult., at which it was reported that a number of the old hands who struck work on the 1st of May last had resumed work, and that more were expected to follow. It was stated that applications had been received from several of the union men as to whether their shops were open to them if they came to work on the employers' terms, and that the number of non-union joiners now at work for the associated employers is nearly 3,000.

Workmen's Dwellings in Exeter.—The Exeter Town Council on the 6th inst. took their first action under the Artisans' Dwellings Act by determining on the removal of a number of houses in the lower part of their city, which now afford accommodation to about 300 persons. The cost of the purchase will be 8,000*l.* The Council will themselves become the purchasers and the buildings will be erected by an artisans dwellings company, who will undertake the work in consideration of the ground being leased to them in perpetuity at a nominal rent.

Tube Wells.—At a meeting of the Society of Engineers on the 5th of November, Mr. Thomas Cargill, C.E., president, in the chair, a paper was read by Mr. Alfred Le Grand, on "Tube Wells," commonly known as "Abyssinian," which were introduced about ten years ago by Mr. J. L. Norton. The author described the system as a modified form of pile-driving, employed to drive tubes into the earth, principally in search of water-bearing strata, thus obviating the necessity of well-digging. A tube, furnished with a steel point, and perforated near the end is driven by a hollow weight, which is guided by the tube, and which falls upon a clamp bolted to the tube. Tubes are added by screwing them on like gas-pipes. When water is reached, the fine particles of the soil are pumped out, until a clear natural filter remains around the perforations. In favourable soils, the tubes can be driven to considerable depths; and if the water, when tapped, does not rise within lifting reach of the suction-pump, a long-barrelled pump, formed of the tube, can be driven, and the rod carrying the pump-bucket works inside the tube by means of a lever fixed above the surface. The author described a new method of driving tubes, which has recently been introduced by Messrs. Le Grand & Sutcliff, and which consists in driving them by means of an elongated weight, which passes down the inside of the tube, striking its blow immediately above the point.

Wire Rolling in Warrington.—The Pearson & Knowles Coal and Iron Company have of late turned attention to the rolling of exceptionally long lengths of wire rods for fencing and other purposes, and with this object have adopted Mr. J. J. Bleckly's patent four-high wire-mill; the results obtained from which, both in length of rods and amount of work turned out, are, we believe, quite without precedent. Last week, according to the *Warrington Guardian*, in two shifts, of ten hours each, the extraordinary quantity of 40 tons 9 cwt. 2 qrs. of No. 4 finished puddled wire rods were rolled in this mill, the individual rods ranging in weight from 45 lb. to 70 lb. each; and the average production of the mill during the whole week was 18 tons 2 cwt. 2 qrs. of No. 4 iron per shift of ten hours. One distinguishing advantage obtained in this mill is that in consequence of the arrangement of the rolls, only one-half of the number of men usually employed in a wire-mill are required.

Drawings from the Board Schools.—During the last few days the hall of the School Board House, on the Embankment, has been hung with drawings, good, bad, and indifferent, sent from the various schools governed by the Board. Knowing the age of such scholars generally it was a little puzzling to find by the ticket attached to such specimens as we singled out that they had been executed by persons seventeen, eighteen, and nineteen years of age. The very civil janitor, however, soon explained this by the intimation that these were the work of pupil-teachers. Considering the short time during which the system has been in operation we ought not, perhaps, to have expected more than we found. Lambeth comes to the fore amongst the Board Schools as it has done in other fields.

The Bolt Trade.—Mr. Chamberlain, M.P., who accepted the office of arbitrator in the wages dispute between the workpeople and their employers in the nut and bolt trade, which recently led to a strike of sixteen weeks' duration, has given his award, which deals in detail with all the matters in dispute. The general effect of the award is to reduce prices from 5 to 15 per cent., while slightly increasing the allowances for bedscrews and kindred description of articles. The rules and conditions of work have also been revised. Some 500 workpeople are immediately affected by this award, which takes effect from the commencement of last month. Great dissatisfaction is expressed.

Reading-room, Great Corby. — A new reading-room at Corby, Cumberland, has been opened by Mr. P. H. Howard, of Corby Castle. The structure (which is a single-story room 35 ft. by 21 ft., and capable of seating about 250 persons), situated at the high end of the village, is built of red sandstone from a quarry in the neighbourhood. The cost has been 212*l.*, exclusive of the site, the timber used, and the services of a joiner, as these were presented by Mr. Howard. Mr. Stewart, of Carlisle, was the architect; and Mr. Ormston, of Wetheral Plain, the contractor.

The Builder.

VOL. XXXV. No. 1815 SATURDAY, NOVEMBER 17, 1877.

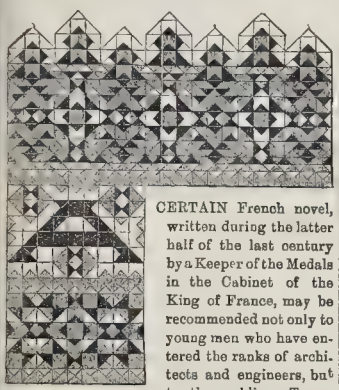
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Paris: after Ten Years.



A CERTAIN French novel, written during the latter half of the last century by a Keeper of the Medals in the Cabinet of the King of France, may be recommended not only to young men who have entered the ranks of architects and engineers, but to the public. Translated into elegant English, it had much to do with the enthusiasm felt in this country for Grecian art after the long war with Napoleon. The "Travels of Anacharsis the Younger in Greece" are, we make no doubt, unread if not unknown among the art-students of to-day. Yet passages penned a hundred years ago by the Abbé Barthélemi read almost as if they had been written by one whose mind, superior to the shock of recent events, acknowledged the useful lesson they offer. The book to which we refer was begun in 1757 and given to the world in 1788. At the close of the historical introduction Barthélemi says:—"Greece, after enjoying for some time a prosperity that increased her power, fell into a state of dissension which gave a surprising degree of activity to every mind. She beheld wars and victories, riches and luxury, artists and monuments multiply at once within her bosom; the festivals became more splendid, public spectacles more common; the temples were covered with paintings and the environs of Delphi and Olympia with statues. On the smallest success, piety, or rather national vanity, paid a tribute to industry, excited likewise by an institution which turned to the advantage of the arts. Was a public square or a public edifice to be decorated: several artists treated the same subject; they exhibited their performances or their plans, and the preference was given to him who united the greatest number of public suffrages. The Grecian cities assumed a new appearance, after the example of Athens, which surpassed them all in magnificence. Pericles wishing to give employment to a people formidable to their chiefs in the inactivity of peace, resolved to dedicate to the embellishment of the city a great part of the contributions furnished by the allies to support the Persian war, and which had been hitherto kept in reserve in the citadel. He represented that by throwing this wealth into circulation it would procure to the nation an abundance for the present moment and immortal glory in futurity. The shops of artists and the public places were instantly filled with an infinite number of labourers and mechanics. Works which a great empire would scarcely have ventured to undertake, and which seemed to require a long space of time for their completion, were completed by a little republic in a few years under the administration of a single man, without either suffering in their elegance or their solidity by such astonishing diligence."

Writing, as we propose about the French Capital, we may be excused for making the preceding quotation from a work, fictitious, though founded throughout upon classical authority,—a quotation having reference to Athens and the Athenians, in the fifth century before Christ, but equally applicable to Paris and the Parisians nearly a hundred years after it was written. Indeed, the cant of historians has always had a tendency to qualify the rise or restoration of cities at all times, and in all countries, with the word "magnificence." Bishop Sprat, addressing the Sons of the Clergy on the 7th November, 1678, went even a little further. He described London before the Fire of 1666 as "a great and magnificent city," which in a short time after the fire "not only excelled itself, but any other city in the whole world." Others have told how Rome, built of wood and shingles, and levelled with the dust by the Gauls, rose from its ashes "more magnificent than before." Chicago and Boston have probably had, perhaps with greater justice, equally grand things said of them since the reconstruction of their public and private buildings. But he who described the citadel of Athens rising after the Persian war more magnificent than before, said what we know or feel must be true, for more than one temple had stood where the Parthenon now stands; and a hundred temples, one only a little less perfect than the other, must have been erected before the perfection which the ruin on the Acropolis exhibits, could have been attained. Nor can the most patriotic defender of order and national tradition, the blindest opponent of free land and the repeal of privilege, dare to deny that, during the space of nearly a hundred years, Paris has risen from periodical disaster a healthier and more beautiful city than before.

Ten years ago, while crossing the Champ de Mars, which was then occupied by an industrial temple of iron and glass, two English gentlemen were discussing the wisdom or folly of that great exhibition. "Think," said one, "what this amusement of half a year costs!" Said the other:—"Not so much as even successful war costs in a sixth of the time." Paris, in the highest state of elation, was then nursing recollections of French victory accomplished in Italy, China, Algeria, and Mexico. The Parisians, admiring the audacious presence of Bismarck and the King of Prussia in their Capital, kept both eyes directed towards the Rhine. M. Thiers was making and meditating speeches which had and could have no other end than to popularise a war with Prussia. But that peaceful show, encamped in front of the chief military school of France, overcame every hostile anticipation. Then Paris, the recognised centre of Europe, entertained the sovereigns and princes of the Continent. It was so far the crowning triumph of the Empire, and the triumph was one of peace,—a novelty to France; a still greater jubilee would therefore follow, so it was thought, in a path with which the nation was familiar and sure of the goal to which it led. War came; revolution followed. The Parisians, shut up for months, never redeemed the character they displayed at the first—not blush,—but rage of defeat. They sought to efface within themselves the memory of rulers they contemptuously discarded, rather than show, to the world without, their power to rule themselves. For a second time this century Paris was dishonoured by the tread of a foreign army. In the bitterness of defeat, in the confusion of untrained political party, in the general despair, murder and robbery were perpetrated under the sanction of so-called authority. The Capital expiated in flames the follies of which it had too often boasted. Public buildings, linked with the historical triumphs of centuries and the names of great Frenchmen, were saturated and fired; for a time streets of private houses, systematically heaped with fodder for ignition, contributed to the bonfire made by a foolish minority. A painter who, the author of trashy canvases, had known how to paint a few excellent pictures, assisted in the destruction of the Vendôme Column. Without the smallest attempt at exaggeration, it is certain that the horror felt during those few days made some men mad, and sent others to a premature grave. More than six years have elapsed, and in spite of much that would willingly be believed to the contrary, the Parisian of even the lowest class is a calmer and more reflecting member of the community. "You in England must laugh at us," said a French gentleman to his English guest just before the recent elections; "we are always doing things in politics which must appear ridiculous to so well-governed a people as yourselves." But, the Englishman replied, "Then you shall laugh at us when I tell you that, in spite of order and prosperity, and apparent general harmony; in spite of a Parliament said to represent the nation, and of a system of municipal government said to be the very foundation of representative institutions; in spite of the whole four estates of the realm urging, and even attempting, practical amelioration and reform, we can no more improve London as you have improved Paris; make Manchester, with all its wealth, assimilate to Lyons; Liverpool, with all its commerce, to Bordeaux; or Southampton, with all its ships, to Marseilles, than we could desert,—you must forgive the harsh insinuation,—our sovereign in the moment of supreme national disaster. We are simply astounded, not so much with what has been done, as with what is actually doing; with the private houses in course of erection; with the streets of new buildings that you have in hand. Our own wealth, enormous as it is, seems to diminish before the evidence of individual success among

all classes of Parisians now in Paris, and which a visit to your city discloses."

Yet the traces of the last civil war have not entirely disappeared. The centre block of the Tuileries, facing the gardens, still remains in ruins; it partly lines the new street which runs across what was the private garden of the Emperor,—a street which connects the Rue de Rivoli and the new Avenue de l'Opéra with the bridge over the Seine, leading to the Rue du Bac. Those ruins would have been pulled down had it been possible to decide whether any kind of palace should occupy the site. The evident intention seems to be to open the Place du Carrousel to the gardens and the Place de la Concorde, and thus the great irregular square, formed by the newer parts of the Louvre and the lateral pavilions of the Tuileries, will have one of its sides entirely free and exposed; an iron railing will probably enclose the old Place, which was named after the Carrousel of Louis XIV. in the year 1662; the triumphal arch now in the middle of it will be visible from that on the hill of the Champs Elysées; and the only obstacle in the long vista between them will be the obelisk of Luxor in the Place de la Concorde.

From the last-named, near the river-side, the scaffolding on the Trocadéro stands out in relief against the horizon. This, however, is not, as many English people have imagined, the Great Exhibition Building. The rising ground, leading up from the Seine,—at the close of the Empire symmetrically arranged with streets on either side and a wide, stepped ascent in the middle,—which exactly faces the Champ de Mars, has been devoted by the Republic to a purpose of which the Empire probably dreamed, but had not the temerity to attempt. The Palace of the Trocadéro is to be a Temple of the Arts, a permanent building, which will be to the Parisians very much like what the Crystal Palace used to be to the Londoners, with this exception, that the Trocadéro is within an easy cab-fare of the Boulevard. The view published in the *Builder** necessarily gave but a faint idea of the work; its size, circular form, and extended façade cannot be shown in a half geometrical sketch such as was then to be thankfully obtained from the architects' designs. These gentlemen, MM. Davioud and Bourdais, are attempting to reconcile Paris to a departure from the severity of Classical traditions. Coloured materials, which jarred a little at the time of their introduction in the exterior of the Opera-house, are not only lavishly used at the Trocadéro; they are used in the Oriental fashion. The alternate lines of red and yellow which, in Cairo, in too many cases, are only paint, M. Davioud and his colleague have obtained with small square stones (*moëllons piqués*) and a hard red stone, called marble, which is brought from the Jura. A great deal of "*échaillon*," one of the most expensive stones brought to Paris, is also used. The stone-work of the cascades and basins in front of the Rotunda or theatre forming the centre is of the most massive construction. This Rotunda will probably be the "Albert Hall" of the French metropolis.

A week or so ago the minarets shown in our view made no great sign of exceeding in height the circular wall between them. The sculptors were then at work on the capitals of the square neo-Greek piers supporting long galleries, which, in the form of a quarter of a circle, bind the two end pavilions with the main building. A great deal of framed iron is used in the roofs, and the rolled-iron joists, instead of being filled up with *plâtras*, are consolidated with hollow bricks. Similar bricks are used in the vaults and arches, and rolled joists are laid at intervals in the vaults. In parts of the external façades the Jura marble is used simply as decoration; the arches, built solidly of stone, have been cut into, and the red Jura marble inserted. This is a practice not much more excusable than building a house of solid stone, and letting in bits of bricks to give it the appearance of a brick and stone building. In the Palace of the Trocadéro little attempt has been made to economise materials: it bids fair to astonish as much by its size and by the novelty of its arrangement as by the extreme refinement, in parts, of its details. All the work is being proceeded with at once: rockeries at one side, plantations at another; fountains here, roads there, are all going on at the same time with the stone and ironwork of the building itself. The glazing of one circular gallery was barely finished when the Italians had begun the mosaic pavement,—of a kind introduced some twelve or fourteen years ago, and which has recently found its way, like many other similar novelties, to this metropolis. We confess to have watched the progress of the new palace during two or three visits with some interest and astonishment. The energy, the activity of the workmen, and the evident indisposition of the foremen to be beguiled into conversation with strangers, formed a new phase of Parisian existence. When talking, though, of the Trocadéro, one or two architects and equally thoughtful observers shake their heads and doubt, English-like, whether it can possibly "pay." Its rise, its progress, is, after all, national vanity—or piety, as Barthélemi called it—and the Palace of the Trocadéro, unlike Versailles or St. Cloud, of bitter memories, unlike the many castles of Royal France, is essentially the Palace of the People.

Its immense extent is seen to advantage from the centre of the Great Exhibition Building on the opposite side of the river. The many rings of iron, the many radiating passages, which formed the Exhibition of 1867 are nowhere to be seen in the skeleton of that for 1878. Nor is the skeleton all put together; externally the building has not yet assumed its proposed shape, and the activity on the opposite side of the river contrasts with the apparent tranquillity of the huge cover to the great military parade-ground of Paris. Facing the Seine a large inclosure seemed comparatively finished; matched-boarding very much like the familar deal of insular commerce; something of a "boiler" type of iron architecture; yes, a notice in true, official characters was there. It was part of the British section; it suggested to us that of the many ways in which this country can show its neighbourly appreciation of Paris, London can hardly do better than go in a mass once more to the banks of the Seine. All those who retain pleasant remembrances of '67,—and in England their name is surely legion,—may next year possibly renew them. Painters, sculptors, and members of our own profession will thus acknowledge in some measure the obligation due from every artist to the Capital of the arts.

The two great works of one year,—this current year,—comprise the construction of the Avenue de l'Opéra and the completion of the Boulevard St. Germain. The one runs from the New Opera House through what was once the most crowded part of Paris; the other joins the Palais Bourbon,—that is, the building used by the Corps Législatif before the fall of the Empire and facing, from the opposite bank of the river, the Place de la Concorde,—to the Place de la Bastille.

As we explained in an article in October of last year,* the purchasers of land on the new Avenue were bound to complete their houses by April, 1878. The City of Paris was only authorised to issue the necessary loan for the making of the Avenue de l'Opéra on the 27th of June of last year. The street is not only made, the stone line of frontage is even built. Most of the houses are already roofed, and in some, sculptors are already chiselling the heads of windows and the foliage of scrolls. Carriages, heavy wagons, cabs, and foot-passengers, jostle the workmen through the whole day. Few Englishmen who will perhaps pass along this newest Avenue next summer will know how much life it has given to the heart of Paris. Cut deliberately through the lower portions of the original Butte des Moulins,—the dust and refuse heap of, we think, the Mediæval city,—some of the houses in and around the Avenue have been built within the earth, as it were; they have risen even before the level of some old roadways was disturbed. As we passed, one side of the Church of St. Roch stood on a cliff; not far off, the Italian Opera-house stared grimly from its still more uninviting square. "The New Street of the Little Fields," where Thackeray drank his Bouillabaisse,—and of which he afterwards told in a pretty little ballad, concealing just a glimpse of his early domesticity,—is traversed at its narrowest part; and any one who may have lost himself a few years ago in some of the narrow alleys, with a sole gutter running down the middle, now disappeared, may well marvel at the true magnificence to which they have succumbed. In one ordinary building, fronting the Avenue, partly in the Rue St. Roch and the Rue d'Argenteuil, the sum of 80,000*l.* is said to have been expended in less than six months. The proprietors of the "Gagne Petit" are building an enormous store or general shop, which is approached through a broad archway from the new Avenue. They expect very feasibly to recoup themselves for extravagent façades by the numerous sets of *appartements*, or superposed houses, which are to cover their enormous shop. M. Tronquois is their architect, an architect whose admitted talent in planning houses of this description is equalled by the skill with which he has varied façades of almost similarly arranged openings; for, much as it may be doubted by superficial observers, hardly one new house in Paris is the copy of another. In almost every new balcony the consoles supporting it, and the mouldings round it, have been specially designed. We failed to remark even two out of a score of carriage-entrances (*porte-cochères*) exactly similar.

Further westward, in some of the new houses near the Boulevards Haussmann and Malesherbes, the comfort and luxury introduced into the *appartements* are of a marked character. In one new house just commenced, and the plans of which were offered for our inspection, every possible innovation is contemplated. The site, of course, is freehold; its proprietor,—of both house and land,—proposes to occupy the Entresol, which is to be 3 m. 80 c. high, that is, about 12 ft. 6 in. English. An annual revenue of 800*l.* is anticipated from the first-floor house. There is, of course, a hydraulic "*ascenseur*" and a service-lift besides. There are no shops, and the whole building would in this country be deemed a foolish speculation. Hard by, other houses are rising, or are just finished. In one the rents, exclusive of taxes, are:—

First-floor house	400*l.*	per ann.
Second-floor ditto	360*l.*	"
Third-floor ditto	320*l.*	"

The principal staircase is not large; its polished treads are carpeted, and the effect of luxury is maintained from top to bottom with scrupulous care. The proprietor undertakes to keep an apparatus specially to warm the staircase, as well as the hall and serving-room of each house on each floor. His house has cost him about 40*l.* the square mètre, and his revenue from it is about 5 per cent. per annum. Yet the gentleman has been a Contractor of Public Works!

In another block now in course of completion, we saw the horizontal system of house accommodation carried to the extreme limits of prudence, and we think also beyond the bounds of wise economy, both as regards plan and expenditure. Stables are there arranged on the cellar floor below the level of the street and courtyard. An inclined plane leads to them; it must, however, be owned that the horses are provided with quite as much ventilation as is often obtained in a London mews, for besides large window openings there is a shaft from each stable leading to above the roof. Each tenant of each floor has a stable, a coach-house, a saddle-room, and a corn-bin allotted to him. The dung is raised to the street level by a lift, and in the same shaft the forage is lowered. The service of each superposed house is contained in one kitchen, one serving-room, a few closets, and one servant's bedroom. Rooms in the roof afford sleeping accommodation to the rest of the servants. This block of houses possesses three *fosses* or cesspools; and we had the honour of entering one while operations for which a *fosse* is specially intended were proceeding. First an ordinary wooden door was opened; we found ourselves in a narrow lobby, and it should be understood that this *fosse* was on the same level with the stables and the cellars. Then an iron door was opened, and some pains had evidently been taken to render the door air-tight. There was no offensive odour; instead of a pool of liquid soil we stepped upon a clean cement surface. A large opening near the top of the vault faced us; it was the ventilator. Next to it there was a large pipe descending into an iron cylinder of portable dimensions, raised a few feet from the floor. From the cylinder another pipe descended into the earth, and it was connected with the cylinder by a gutta-percha tube. This machine, of a frightfully primitive nature, acts in the following manner: solid matter, descending by the common pipe which receives the discharge of each floor, remains in the cylinder, at the bottom of which is a narrow, well-protected grating; through that all the liquid oozes, by means of the gutta-percha tube, into the drains, whereby it is conveyed by the street sewers to the Seine at a distance from Paris. Every two days this chamber is visited by the servants of the company,—undertakers

* See the *Builder*, vol. xxxiv., p. 1097.

* See the *Builder*, vol. xxxiv., p. 989.

or rather contractors for this system of drainage. The cylinder, disconnected from the pipe descending from above and the gutta-percha tube before mentioned, is carried off on the shoulders of two men; another empty cylinder is put in its place. Such a *fosse* is simply a clean empty cellar, containing in one corner the rough machine which we have described. The different houses above, by no means large or extravagantly decorated, are likely to let, the first floor at 700*l.* a year; the second, perhaps, at 500*l.* a year. Houses of such a rent include, of course, all cellars, servants' rooms in the roof, stables and coach-houses, as well as much furniture, which is regarded in the light of fixtures. Nevertheless, few Londoners appreciate the advantages of living in the heart of a great and an agreeable capital sufficiently to pay an equal sum for the mere horizontal slice of a large and an elegantly-finished block of houses.

We will not weary our readers with further description of buildings in course of erection: some of them are let before they are completed, and the new houses in the renovated neighbourhoods are eagerly sought. Yet only a few architects in Paris are busy. M. Duc, whom we saw engrossed with his drawings, and alone in his private office above the Cour de Cassation, contents himself with the completion of one building, the labour of many years, and a master-piece. The portico of the Palais de Justice, the really beautiful portion of the exterior, is now finished. Its broad flight of steps complete one side of an open space only lately cleared, and soon to extend to the Pont Neuf,—the bridge connecting the island upon which the Palais stands with the banks of the Seine on either side. The works executed since the war, both at the Palais and the Cour de Cassation, forming as they do one building, are varied and important. The portions burnt during the Commune have been restored or rebuilt. These burnt portions were the Grand Salle des Pas Perdus, fronting the Boulevard St. Michel, and constructed originally by Jacques de Brosse; the two Salles d'Assises, erected during the latter years of the Empire, by M. Duc himself; nearly the whole interior of the main building facing the Boulevard St. Michel, and extending almost to the Sainte Chapelle; and a part of the Chambre de Police Correctionnelle. Since the fire the Galerie de St. Louis, the Galerie des Avocats, the two towers and the roof facing the quay have been rebuilt. A statue of St. Louis, the work of M. Guillaume, Director of the École des Beaux Arts, and a member of the Institute of France, is in course of completion within the walls. Every, even the meanest, object within and without this building has been designed expressly for the position in which it is placed. A certain sum of money is annually devoted to the purpose; a special staff directs the works. The technical Offices, both of the State and of the City, are concerned therein. The Cour de Cassation belongs to the State, and M. Duc is the sole architect; the Palais de Justice belongs to the City, and M. Duc and M. Daumet are the joint architects. In Paris at the present moment the Ministry of Public Works is occupied principally with engineers' specialities, such as roads and bridges; the Ministry of the Fine Arts has been abolished, and its business confided to the Director of Civil Buildings.

Across the river the Hôtel de Ville shows hardly anything except a huge scaffolding of timber such as is rarely seen out of France. Along the quays fewer people crowd and idle than were often seen ten years ago. Tramways traverse streets and boulevards heretofore free of such so-called encumbrances. The itinerant vendor of dangerous acquisitions, like opera-glasses and real English cutlery, has gone with many better men. There are doubtless a host of poor, overworked, people in Paris, many who often want bread, or wine, or clothing; but no one begs! Search the town through, and you shall find no pauperism so despicably mean and low as that which hourly shocks the sight of even old Londoners. Yet in the course of nearly a hundred years this ungovernable nation has endured disasters than which those of no other European people can be compared. Prosperity, however, is conspicuous in the Capital, independence is obtrusive in the provinces. So rich are the French individually, that France will offer a huge present to the sister and elder Republic of the West. A more than colossal statue of "Liberty," to be executed in copper, is even now commenced, and it is to be conveyed to New York. We saw the model of an arm in course of preparation beneath a lofty roof in the workshops of the well-known plumbers by whom most of the beaten lead and copper work of the Opera-house and other new buildings has been executed. Whence comes this prosperity? France torn by recent civil commotion, with the Capital only six years ago enveloped in flames of petroleum, with the interest of a heavy war indemnity to pay, with no settled mode of Government,—France bereft alike of a landed aristocracy, and an organised system of poor relief,—without peers and without paupers,—France looks on calmly and approvingly, while Paris continues to rebuild itself. In the meantime a great part of Northumberland-avenue is still in the market; not a house-front there is yet above the level of the soil; and the new streets of which so much has been lately said and which are to form the long-talked-of communications between Charing-cross and Oxford-street, between the Strand and Regent-circus, have emerged from the scuffle of Parliamentary committees a mere shadow of the improvement they might have been,—thanks to the blind and ill-considered demands of the War Office on one side and of the Marquis of Salisbury on the other.

MARLBOROUGH HOUSE, AND THE SAFETY OF THE DISTRICT IN WHICH IT STANDS.

Prediction, by way of preternatural indication of coming events, is a subject unfit for discussion in our columns. But there is a kind of prediction which comes within the range of science. The utterance of such prediction is a part of the duty of scientific men. With regard to the former class of prophecy, the same venerable authority which anticipated the occurrence of messages sanctioned by the seal of prediction, also intimated that the authenticity of that seal was, in such cases, to be tested by the event of fulfilment. For the accomplishment of prophecies of a preternatural order, therefore, patient expectation may be the course of wisdom. It is otherwise with regard to the prophecies of science. These are of two kinds. They are either definite and absolute,—which is the case when they refer to something entirely beyond the reach of human control or influence, as in the case of an eclipse,—or conditional, when they refer to the possible occurrence of events which may be affected by human effort. Our almanacks, published before the beginning of the present year, predicted the occurrence of a total eclipse of the moon on August 23, which was to begin at 9h. 14m. p.m. So safe and precise was the prediction, that no one has cared to call public attention to the fact of its exact fulfilment. But when the *Builder* asks (as it did on the 18th of August last, to say nothing of countless times before),—"How many of our palaces, mansions, public offices, are still maintained as the seed-beds of preventible disease?" and when it adds, "We very much fear that we shall have more and more royal, noble, and even medical victims to typhoid infection, unless the profession somewhat change their hand in this matter," we have a good case of the second order of prediction. We have anticipations of what was likely to be discovered, founded, as is now apparent, on sure data; and we have anticipations of what was likely to occur, unless prevented by certain measures, which we also indicated, which have also been verified, in the case of Miss Knollys, and in the more fatal attacks on other members of the royal household.

No language can be much stronger than that in which the *Lancet* describes the result of such an investigation of the basement and subsoil of Marlborough House as was advised in our columns, as plainly as could well be done. The sanitary conditions under which the Prince of Wales and his family have been living "would be imperfectly paralleled had Marlborough House been built over a Northern midden-stead." Very imperfectly, in truth, as appears from the sequence of the article. "The condition of the basement of Marlborough House is the condition, probably," adds our contemporary, "of most ancient mansions in London." The evil in this case is said to be traceable back to the condition of the ancient Friary, which occupied the site of Marlborough House when it was granted by Queen Anne to the Duke of Marlborough in 1709. But let no one take comfort from the reflection that no monks were their own predecessors. Hostile as the monastic orders usually are to the application of water in any abundance, their abodes were by no means more neglected than those of the nobility, gentry, and commonalty of their day. All along that part of London which fringes St. James's Park, and which runs from the Thames, by the site of the Abbey, past Buckingham Palace, and on through much of the costly area of Belgravia, the natural level of the ground is so little above that of the high tide, that difficulties as to draining are as old as any idea of artificial draining itself can be. We can speak from personal knowledge of the intolerable state of the vicinity, for example, of Duke-street, years ago. How far the works of the metropolitan drainage have improved this state of affairs, is a question which each owner or resident is called upon, under the most serious risk, to ascertain for himself. What is certain is that the greater part of this district is composed of the alluvial deposits brought down in the course of time by the river. These deposits have not been raised, by the natural process of formation, above the range of high-water, or, at all events, of flood, level. They are for the most part more or less permeable. Where they consist of sand and gravel they are usually thoroughly permeable. They are thus likely to be saturated with the remains of the sewage of centuries. With the erection of houses and the excavation of foundations, usually coincides the rising of streets,—that is to say, of the apparent, not of the actual, level of the district. The rise thus occasioned may be taken, from measurements made in London, as well as in many ancient cities, at something like 1 ft. per century. The effect of this rise, in the case to which we are referring, is to disguise the actual level of the ground on which houses stand. We have to deal with an ancient area of made and pervious soil, in which, from the time when building first commenced upon it, cesspools were formed and covered in, drains were made, neglected, half or altogether closed, cut off, and dealt with in every way that ignorance, caprice, or penuriousness could suggest. If such a blessing in disguise as the Great Fire of 1666 had swept over this courtly district, there might have been some general order taken for the drainage of the subsoil. As it is, there is but too much reason to fear the condition is generally bad. The main fact of the level on which the houses were built has complicated the difficulty. The recent report only confirms suspicions, and more than suspicions, that we have been led to entertain, as to more than one locality within the area in question. In one instance, where an offensive smell was perceived in a house belonging to a man high in official life, representation was made to the Metropolitan Board of Works. They made some examination of *their own drains* in the vicinity, and replied that they were in perfect order. It is matter for very serious inquiry how far the actual system of metropolitan drainage is calculated to supply the public necessities of the important part of London which lies under the conditions we have described.

The inquiry, in fact, is twofold. It must be made within as well as without. No public body can undertake the first duty,—at least, none as at present constituted. In the case of Marlborough House, we are told of many "ingenious devices and rectifications of obvious evils," which appear not to have gone to the root of the matter. That the War Office is in a like plight we suppose there can be no question. It is evident that the same kind of thorough investigation which is now in course at Marlborough House must be extended to the district, if it is to be converted from a seed-bed of danger. Each owner or resident has a part of this onus thrown on himself. A proper investigation, by a competent person, should be a matter of conscience in each case. It is in defiance of warning, of risk of life, and of common sense, that such an investigation will be omitted by any householders to whom these warnings apply.

As to the public part of the matter, moreover, we shall be glad to have some re-assurance. The basement of Marlborough House stands at a level, the *Lancet* says, "which makes its outlet into the existing system of metropolitan sewers a work of considerable difficulty." We should like to have this sentence put into plain English. We should like to know the level of the sewers in Pall-mall, Spring-gardens, Duke-street, and similarly-situated parts of the West End, as referred to Trinity high-water mark, as well as their depth below the level of the streets. For it must be remembered that it is perfectly possible that the works on which the residents, in these expensive localities, have been taught to rely as their sanitary safeguard, may have been so constructed as to accommodate the modern closet drainage fairly, and yet to leave untouched the ancient sewage percolation and neglected

drainage of preceding generations. We by no means state that such is the case. But it very much looks as if it were. The public have a right to the fullest assurance on the subject. We trust that such assurance will be forthcoming from the officials of the Board of Works. What the public have a right to know is, not a general assurance that all is right, and that everything has been properly attended to, but such detailed information as may allow every householder, or at least the professional man whom he consults, to know distinctly and definitely how far the area on which his house stands is, or is not, efficiently drained by the existing system of works. For this end it is necessary that a full and minute plan, showing accurate levels, should be readily and gratuitously accessible to each householder. The plans that some foreign authorities,—as, for example, the Italian Government,—are now taking in order to furnish individual proprietors with hypsometrical data, might be very well imitated in this country. We have urged, and we do urge, every man who is not fully advised as to the salubrity of his house, to take the proper steps without delay. But it is obvious that the full and ready concurrence of the drainage authorities is necessary to that end. The owner, or his surveyor, may ascertain the facts as to his own area of land. He may, if he is in doubt, even sink a trial boring, or take any proper measures to ascertain what is really under his feet. But this is useless unless he is at the same time put in possession of the further information which we point out as necessary. Suppose, for example, it were ascertained in any house that at 2 ft., 3 ft., or 4 ft. below the floor of the kitchen the soil was saturated with damp. Suppose there were 8 ft. or 9 ft. of wet, semi-pervious soil, and then blue clay. The question would arise how to deal with this state of things. A permanent premium, if not to typhoid fever, certainly to phthisis, and those disorders of the respiratory system which are so generally aggravated by residence in London, especially in autumn and spring, is offered by leaving matters alone. But the question both of efficiency and of cost will be insoluble without the exact knowledge of the relation between the spot in question and the system of urban drainage. Nor is it a question of one or two levels alone. The actual level of the main sewer in the street by such a house as we have intimated may be given. But the question of communication with that sewer is another matter. As a rule, a main sewer should not be looked to as affording a local drainage of subsoil to its own level. If house-drains and percolation from the soil are allowed ready entrance into a main sewer, sewage poison can make its way back into the soil and house. If there is no such ready communication, it is obvious that the mere knowledge of the level at which the sewer runs will not be sufficient for the guidance of the private owner. He must know distinctly what are the most available means for the drainage of the area covered by his own house,—say at a depth of 3 ft. below the footings of his walls, or the floor of his basement. If he does not know this, he is at sea.

It must not be forgotten that a possibility exists that the main drainage works of this part of London are not so constructed as to act as subsoil drains as well as carriers of house drainage. We do not say that it is so,—in fact, it looks very much, from the report we have cited, as if no one was at the moment in a position to reply to the question. But it may turn out that subsidiary works are required for the thorough sanitation of this low-lying and important district. This much, however, is indisputable. It concerns us all very deeply that the truth of the matter should be publicly known. We cannot believe that the Board of Works will hesitate to place full details of the levels at which they receive either sewage or soil-drainage at any portion of their system. If it proves that something has yet to be added to the existing method of discharge, it is not by keeping that fact in the dark that any credit or advantage will be gained. It is possible that the information which we point out as necessary to be at the disposal of each separate proprietor may be easily forthcoming. It is possible that some study and investigation may be necessary in order to draw up the requisite plan. At all events the public must have the facts before them. Without these facts proprietors may be put to great expense, and yet secure no satisfactory results. When the *Lancet* speaks of the great difficulty of now draining Marlborough House, it seems to intimate something like the block which we suggest.

Our readers may remember that some time ago we referred to the drainage of a town in which the phthisis rate fell to almost *nil* while the sewerage works were in progress, and rose again nearly to its normal rate of intensity when these works were completed. The causes were clear—phthisis depends on wet subsoil. Drain the subsoil and phthisis disappears. In the case in question the excavation for the main sewers effectually bled and drained the subsoil. The town grew healthy—as to this source of disease. When the main culverts were finished, and the excavation filled up, the bleeding of the subsoil ceased. The water rose with rain till it reached its former natural height. The death-rate rose with the water.

We do not very well see how to avoid the conclusion that a somewhat similar state of affairs must exist in the part of London to which we call attention. In fact, where the soil is permeable, or semi-permeable, elements of mischief must exist unless there be a distinct provision for subsoil drainage, independent of the main run of the sewers, and falling into the sewerage system at proper points. And we confess to considerable doubt whether this necessary drainage can be thoroughly effected in this case without special pumping. We desire to make the matter perfectly clear. We do not offer evidence on the subject, but we say that there is ample evidence,—Marlborough House, to wit, —to justify us in putting to the Metropolitan Board of Works the question, What is the provision made for any old sewage or subsoil drainage in Westminster? No one can rejoice more than we shall do if the reply is in all respects satisfactory. No one, that is to say, unless it be the architect or engineer in charge of the sanitation of Marlborough House, when he is assured that the difficulties as to drainage anticipated there are imaginary.

But in the absence of any such assurance the question will become a very serious one for all locally interested. Nor for them alone. It is not the relatives of the public officers,—generally picked men,—the very men whose services are of the most value to the country,—alone, who are concerned with the sanitation of the War Office. It is not even the highest family in the country that is alone concerned in the sanitation of Marlborough House. The nation has a deep interest in the matter, and will have a voice, and a loud one too, in its settlement. The subject is now fairly brought before the public. From knowledge of the great danger up to the present time incurred by residence in Marlborough House, the *Lancet* speaks of the serious difficulties of effectually draining the area on which the palace of the heir to the throne stands. We give professional reasons for fearing that a similar difficulty may spread over an important area of the capital, and we call on the authorities who have been so liberally provided with public funds for the purpose of draining this, as well as other parts of London, to set the public mind at rest on this subject. If the drainage is properly planned, the fear as to difficulties should be shown to be vain. If this essential part of the matter has not yet been fully looked at in the face, no time should be lost in doing so. It is not a matter of blame or recrimination,—it is a matter of life or death, or at least it is a matter of giving accessible and ample information to those on whose exertions the health or sickness of the inhabitants of all that part of London which presents such conditions as those now known to apply to the site of Marlborough House, must in great measure depend for their efficiency.

Bromley Art and Science Classes.—The annual meeting of these classes was held at the Town Hall, Bromley, on the 15th ult., when prizes to the students, who had attended last year's classes, and had successfully passed the examination, were distributed by Miss Norman. Mr. Charles L. Norman presided, being supported on the platform by Dr. Farr, Rev. A. G. Hellicar, Mr. J. Scrutton, Mr. T. Davis, and other gentlemen interested in the movement. The chairman having addressed the meeting, Dr. Farr moved the adoption of the report. Mr. J. B. Brown having seconded the motion, it was put and unanimously carried. Miss Norman then presented the prizes and certificates to those students who had successfully passed the examinations, and whose names were published in the *Bromley Record*, on September 1st. Mr. Davis having announced the arrangements for the ensuing session, Mr. W. P. Griffith followed with a speech on the benefits conferred by mental culture.

THE VALUE OF WORKS OF ART IN MEDIÆVAL ITALY.

The difficulty which many persons feel when reading history of bringing clearly and vividly before their mind the actual political life and reality of the past is equally strong when the portion of history under study relates to art. Of the hundreds who annually visit our National Gallery, the Louvre, or any of the other great galleries of Europe, but few picture to themselves the place which those works upon which they gaze held in the estimation of their ancestors. We understand in this age of riches the sort of desire which exists in rich patrons of art to be the possessor of some masterpiece of Turner or Correggio, but we can scarcely imagine the same strong wish among the half-civilised soldiers of the Middle Ages. Again, the painters of the past are too much regarded as men who worked actuated by religious zeal or for the sake of their art alone, and we forget—even if we ever took the trouble to ascertain—the motives which caused so many fine collections of works of art to be gathered together by those who were neither the heads of religious houses nor, broadly speaking, highly-civilised men. Of course, the larger part of Mediæval art may possibly be considered as either devotional or historical, especially, so to speak, personally historical; but there was still a large amount of work done for persons who desired to have beautiful pictures as such, and to possess lifelike portraits, it is true, but at the same time fine specimens of the painter's art. But this was far more the case in Italy than in any other country of Europe.

Unless, however, we can to some extent realise the high value thus set upon art in Mediæval Italy, not only in a pecuniary sense, but for its own sake, we certainly fail to grasp one of the most interesting facts in the history of art and of Italy. The life of Titian especially affords many examples of this value, and any one who follows the career of the great Venetian painter with any care, will find in it striking instances of this characteristic of Mediæval Italy. From the subject of the Magdalen alone Titian boasted that he had in the course of his life made upwards of 2,000 scudi. In 1531 Federico Gonzaga, Marquess of Mantua, wrote to Titian, requesting him to paint him a Magdalen, "as beautiful but as tearful as possible," which was intended as a present to Davalos del Vasto, who was in high favour at that time with the Emperor Charles V. The actual price paid for this picture is not known, but is cited here as a striking instance of the manner in which good works of art were sought after in those days. For this was not a picture to be placed over some high altar in some great church, but was a work of art to be presented to the favourite of a great monarch and a great soldier, simply and solely for the sake of its intrinsic merits, and of the artistic value which would be set upon it by its possessor, and we cannot doubt that its giver hoped for some substantial political favour in return. Nor is this the only instance of the somewhat base uses to which high art was put in those days, when Italy presented so singular a picture of love of art, combined with nearly all the moral qualities to which true art is antagonistic. Thus Benvenuto Cellini, in his egotistical and amusing autobiography, yet most life-like picture of an artist's life in the Middle Ages, tells us with complacent self-satisfaction how, when one Federigo Ginori died, for whom he had modelled a medallion of Atalanta, this same work came into the possession of a certain Luigi Alamanni, who shortly after presented it to Francis I., king of France (Vita di Benvenuto Cellini, libro i., xliv.). The sovereign was so pleased with it that he desired to become acquainted with the artist himself. And this is a striking illustration of the value of works of art in that period of European history. For Francis I. was not by any means a lover of art for art's sake. He was a vain-glorious young man, who desired to do everything in what in these days would be termed "the best style": yet, not only was a medallion modelled from an antique subject considered a gift worthy of a proud and powerful king, but that monarch (allowing for Cellini's ideas of his own self-importance) was clearly pleased with the Italian present. The influence undoubtedly came from Italy, and this may be considered rather as an instance of the value of works of art in Italy than in France, for Italy, so to speak, set the fashion.

To take another example: in 1532, Charles V. again entered Italy, accompanied among others

by his favourite secretary Covos, commander of Castile, to whom the management of Italian affairs was intrusted. This person had a taste for art, and consequently, through art it was found easiest to reach his ear and obtain his influence. Farrante Gonzaga, brother of the Duke of Milan, endeavoured to ingratiate himself with this powerful official by the promise of a picture by Sebastian del Piombo. On the other hand, Alfonso of Ferrara set Titian to work to produce a picture which should at once win Covos over to his side. In this way Titian and the great masters of the Italian schools created works which have charmed posterity, but which were produced at the order of some luxurious Italian prince, who, unable often to obtain his ends by open measures of diplomacy, would seek to make his object attainable by nothing more or less than artistic bribery. It is a singular instance of the rottenness of social life when those arts, which should be employed for the noblest ends, become the instruments of illicit political negotiation.

When Maximilian Stampa, the agent of Sforza, Duke of Milan, distributed his most substantial favours to Aretino, the friend of Titian, and a notable intriguer and literary man, he received a gem cut by Luigi Anichini and a "Boy Baptist," by Titian. To such base uses may the noblest works be put. But we may refer again to the actual pecuniary value set upon pictures in those days, though their social value is possibly the best test of their actual worth in Mediæval Italy. When Ercole II. succeeded his father as Duke of Ferrara, in 1535, he at once sent Titian fifty ducats* as an earnest that he desired him to continue a certain portrait of his father, Alfonso, whilst for the actual picture itself when completed the painter received 200 scudi. The value set on art is further exemplified by the way in which what was known as a broker's patent in the Fondaco de' Tedeschi was granted to one or more great painters in Venice. It was a valuable right, producing some hundred ducats a year, as well as exempting the holder from certain taxes, but requiring in return a portrait at rare intervals of some great Venetian citizen.

But the importance of all these facts in regard to the point upon which these remarks are made is that they show that the Government of Venice had in fact a State painter, thus clearly pointing to the importance which was attached to the art of painting, and consequently to its results. Not indeed that this general retaining fee was the only way in which Venice showed her opinion of the work of art, for the Government was continually giving commissions to Titian and those who preceded and succeeded him, for various paintings for the Hall of Great Council and the public buildings of the Queen of the Adriatic.

Again, the estimation in which a painter's services are held, which serves as a sign of the value attached to his productions, is further exemplified by the desire shown in 1547 by those two heads of the ecclesiastical and the civil world, Pope Paul III. and the Emperor of Germany, to obtain the services of Titian. The former promised Titian the seal of the Papal Bulls, lately held by Sebastian Luciani, who is generally known from his office as Del Piombo, a post which gave its holder an official position at Rome. In addition he was promised a lucrative benefice. On the other hand, the Kaiser sent the painter large sums of gold, a rich outfit, and a promise that he would defray his expenses to the German Court in the ancient city of Augsburg. The general reputation and the riches to be gained from being attached to the German Court proved the most attractive to the renowned painter, and the Emperor proved more persuasive than the Pope. But the moral, so to speak, of all this curious rivalry for the services of a great painter, as keen in its way as that for territory or power, is certainly to show plainly the high estimation in which the productions of the painter whose services were desired by the chief personages of the day were held.

But what we chiefly wish to make clear to our readers by these examples is the actual sterling value of a fine work of art in Mediæval Italy. So far from the present being the only time when a picture has a high general value, those very masterpieces of great painters, some of which still exist, whilst others are now destroyed by time or war, far from having recently become, so to speak, marketable, did, in their first days, possess not only a worth which would obtain for their possessor large sums of money, but had actually a value which they now lack. They were things so precious that they could change a statesman from a foe to a friend, and obtain from the monarch or the minister substantial political favours.

* The gold ducat of Venice was worth in modern times from 5s. to 6s., but it was, of course, far more valuable in the Middle Ages.

ARCHITECTURAL MODELLING IN ITS RELATION TO THE ARCHITECT, HIS CLIENT, AND THE PUBLIC.

While England may vie with Continental countries in the beauty, grace, and majesty of design of the edifices which adorn her land, she possesses no gallery of Architectural Models in which may be collected the gems of British architecture, affording an interesting study to the student, general public, and foreign visitor.

When it is fully considered that there is as much real hard thought expended in the conception of a design, as there is in the composition of a picture, or piece of music, or in the lines and construction of a ship, and that the artist, the musician, and the naval architect have each afforded them, by the State, galleries in which they may exhibit their talents, it must be considered unfair that the British architect is left out of the field of exhibition. It is true that he may exhibit his skill at the various art exhibitions which occur from time to time throughout the country, but still the fact remains, the architect possesses no permanent place in which his designs may always be before the public.

In order that the public may better understand drawings, they should be accompanied by a well-executed model placed in front of them, that the spectator may carry his eye from the drawings to the models, and thus realise a far better impression of them.

However artistically plans, elevations, sections, and perspective drawings may be made, these, even at the best, give but an incomplete idea of what a building would be like upon erection. You can walk round a model, examine the contour, the details, the relative proportion that the various parts of a building bear to each other and the whole, the projections and recesses, the system of ventilation, method of carrying off the rain water, roof-plan, &c., which you cannot do with a drawing.

Further, when it is considered that there is no profession which is so crippled by time, space, money, fluctuations in the price of labour and material as that of the architect, and that the architect has often to contend in his design with the crude and indifferent taste of his client, and so conceive it that he will not interfere with surrounding buildings and neighbouring interests, one would naturally think that the State would, in recognition of these difficulties, and in compliment to the versatile ability and genius of the profession, afford it a place in which, under proper auspices, might be collected carefully-executed models illustrative of everything that is interesting in the study of architecture. Such an exhibition would, apart from its use as a study, be of incalculable benefit to the nation, allowing the architect's client an abundance of examples from which to choose illustrative of the style in which he would like a building erected.

Three reasons may be assigned why architectural modelling is not brought into greater requisition.

First, models are so often so indifferently constructed that they become more like caricatures of an architectural design than any faithful embodiment of it.

Secondly, those who have given to it a lifelong study have been so inadequately rewarded that they have thrown it up in disgust.

Thirdly, the art of photography, by which any number of perspectives can be obtained, has done much to do away with modelling; but even this art fails to give to an observer that readiness and fulness with which he can grasp the design of a building in all its parts when shown by a model.

There is no reason why architectural modelling should not assume its place among the art-industries of the country. Few pursuits afford a finer scope for the exercise of the inventive faculties, or where delicacy, and mathematical and geometrical accuracy of works, are required. One may fairly attribute a great deal of the beauty of Sir Christopher Wren's designs to his being assisted by models of his own construction.

A model can not be made too faithful an embodiment of an architectural design; the more it is so, the more it becomes a work of art, and thus an object of national interest, and when it becomes so it advances the interest of the architect and the value of the building of which the model is the representative. A model should be constructed not like a mere toy to be cast on one side, but as a work of art worth preserving in the future.

Apart from any artistic value architectural modelling is of the greatest practical value to the architect, his client, and the public. It is to the architect what the clay model is to the sculptor. It not only assists him in the conception, but also in the correction of his design, it is also a test of the accuracy of his draughtsman, and is of material assistance to the builder. To the client it is of essential value. Few clients can understand plans and sections, and perspective drawings are often made so deceptive as to mislead the client so that the client becomes dissatisfied. When the building is erected, he is under the painful necessity of making extensive alterations, involving an amount of expense and vexation which a carefully executed model would have avoided. You can pull down a model much cheaper than you can pull down a building, and a well-executed model instead of being an additional cost, proves in the end a considerable saving. To the public, architectural modelling would be of special interest. A gallery of carefully constructed models would enable persons to compare the relative merits of various designs, would create a national taste for architecture, promote the interest of the profession and those trades with which it is brought into immediate connexion. Persons, corporations, public companies, founders of charitable institutions, &c., desirous of having edifices erected would get a more tangible idea of the design they would like to adopt by an inspection of an architectural model gallery than by any series of drawings however elaborately and carefully executed.

There is hardly a Continental country which does not possess a national gallery of architectural models. That England should form an exception does not reflect to her credit in her encouragement of the architectural profession.

The additional cost of a building by having a model previously constructed is trifling, and that in ninety-nine cases out of a hundred it proves a gain in the end, cannot but form a sufficient inducement to have one made.

Having pointed out the value of architectural modelling to the architect, his client, and the public, it would be well to compare the relative merits of the various methods pursued in their construction, and see which is best calculated to be the most faithful representation in miniature of any architectural structure.

Models may be divided according to the material of which they are constructed into block, sketch, cork, plaster, cardboard, and a new kind lately invented whereby the materials of which a building is composed are illustrated by the inlaying of woods of appropriate colours,—that is, adapting the colour of the wood to the various colours of the materials of which the building is constructed, and inlaying one within another. These models may well be called "inlaid."

Block Models are blocks of wood with elevation marked on paper and placed on the wood. They are used for roughly representing various buildings which will be interfered with in carrying out any city improvements.

Sketch Models are constructed on an exceedingly small scale. The details are drawn and not shown in relief upon the various elevations. These models are used when an extensive range of buildings is to be erected, as for the new Government Offices.

Cork Models, from the porous nature of the material and its easiness of compression, are unsuitable for accurately representing detail, but exceedingly useful in representing old and rustic buildings.

Plaster Models are very beautiful in appearance, and admit of much fineness of detail, but the plaster being pure white does not faithfully represent a building which is constructed of materials of various colours. Plaster models are admirably adapted for representing temples, monuments, coliseums, tombs, &c. The great objection to them is their monotony of colour, their liability to chip or break, and the necessity, usually, of having moulds previously made.

Cardboard Models are superior to those already described, inasmuch as they can by colouring be made to imitate the different materials employed in the building, much fineness of detail can be obtained, and an excellent result secured. The

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cardboard models of Dighton and of Salter were marvels of geometrical accuracy and beauty. It was they who first brought cardboard modelling to very high perfection; even in their models a resort to moulds, and having some parts cut in wood, was absolutely necessary.

In approaching the last system of architectural modelling, viz., *Inlaid*, by which the principal materials of which a building is composed are illustrated by the inlaying of woods of appropriate colours, several distinctive features and advantages will become apparent. Any one unacquainted with woods would be surprised at the infinite beauty of grain and variety of colour which they possess. Wood being a material easily bent, carved, or moulded, you are enabled in modelling to dispense with moulds; the variety of colour of the woods used relieves you of the necessity of all artificial colouring; and the inlaying of the woods one within another gives to the model a more realistic appearance than can be effected by the use of cork, cardboard, or plaster, thereby avoiding the roughness of the first, the toyishness of effect so common to the second, and the monotony of colour so characteristic of the third. The inlaid models can be easily cleaned with ink-eraser, scraped or finely sandpapered; they are less liable to warp, chip, or break, and they have the advantage of being easily added to or altered. The model of Preston Hall, Aylesford, the seat of Mr. H. A. Brassey, M.P., is carried out on this principle. The model is now placed in the Architectural Department of the South Kensington Museum. It is constructed principally of two kinds of wood, one representing the Kentish rag, the other the Caen stone. The ornamental slates, ironwork, sashes, doors, &c., have their due representation in appropriate coloured woods.

The statues and statuary groups are carved in ivory, a material far better adapted than wood for very fine carving. In this model the fountain, lawn, terraces, walks, shrubberies, and flower-beds, are all artistically represented.

Inlaid models can also be more quickly executed, as there is no occasion for artificial colouring, making moulds, or castings, and you are in a position to model as fast as the architect can prepare his drawings.

In advocating the establishment by the State of an architectural model gallery, it is with the sincere conviction that architecture would be benefited, the interests of the architect would be advanced,—also those trades with which his profession is brought into connexion,—a taste for architecture would spring up among the people, an encouragement would be given to one of the art-industries of the land, and the Government would, by so doing, be paying a graceful tribute to the architectural profession, which, in its pursuit, stands second to none in the amount of study, skill, and energy required.

ON THE ANTIQUITIES OF KILLARNEY.

Within an easy drive of Killarney are found antiquities of every age and class,—judicial, sepulchral, ecclesiastical, military, and domestic; a circle of stones, an ancient burying-place, churches and abbeys, castles of various ages, and a great variety of raths, are there. Even specimens of early habitations are not wanting, nor of early writing in the Ogham character.

First, and most deserving of notice, is the very remarkable group at Aghadoe, comprising a church, a cloictech or round tower, and a military tower or castle. This group, two miles and a quarter from Killarney, stands upon a rocky ridge, whence, from a height of 400 ft., is a view of the whole expanse of Lough Lean, including Ross, Inisfallen, Mahony's Point, and the woods of Dunloe Castle, while in the background, the frame of this lovely picture is formed by the mountains of Stoompa, Mangerton, Looscaunagh, and the Reeks, ranging from 1,200 ft. to 3,000 ft. These lie to the south. To the north is a view not less Irish, but of a very different character. A bleak, barren, and dreary tract, poor land and poorly cultivated, and in every way a contrast to the natural paradise which includes the Lakes of Killarney.

Aghadoe, "the field of the two yews," was the seat of a bishoprick, afterwards combined with Ardfert, and of which its small and ruined church represents the cathedral, and is so designated in ancient histories. The church is a reputed foundation of St. Finian Lobhar, or the Leper, about A.D. 675, founder also of the adjacent Abbey of Inisfallen, and the patron saint of South Kerry, as St. Brendan is of the North. At Aghadoe, in 1009–10, died Maelsuthain, one of the chief authors of the "Annals of Inisfallen," and in 1027 Maenarch of Mucorumra, and it was from the stone church of "Achuddeo" that, in 1033, O'Cathel, the heir of the kingdom of Lough Lean, was taken and slain. In 1158, it is recorded, the great church of Achadeo was completed by Aulliffe Mor, son of Aongus O'Donoghue, and dedicated to the Holy Trinity, and here he was buried with much state. Here also, in 1231, Aodh, his son, king of Lough Lean, was also buried, in his own tomb.

The dimensions and appearance of the church are scarcely consistent with its historical illustrations. It is in plan rectangular, 81 ft. long by 24 ft. broad, internal dimensions, and the walls are 3 ft. thick, and at the sides were 10 ft. high. It stands east and west, or nearly so. It is composed of two churches—an eastern and a western, divided by a cross wall.

The eastern portion measures 24 ft. by 45 ft. It appears to have had a south door near its west end, and in its east wall are two sister lancet windows of 6 in. opening and 9 ft. high, each within a splayed recess, low-pointed, and with a plain chamfered arch rib, and connected with the springing of the ribs is a sort of quatrefoil ornament, and near it a human head carved. The roof was of timber. The north wall is standing, the south wall much broken down.

The western portion is 33 ft. by 24 ft. In the cross wall which divides it from the eastern portion, and forms its east end, is a loop, and near it a small doorway. The loop has a round head, cut in a single stone. It is splayed inwards. It is placed rather to the south of the centre, and the doorway rather to the north. The doorway was small and low, and is now blocked up and half-buried; but its arch is visible; rude, and low-pointed. In the north and south walls, near the east end, are small loops, also splayed inwards, and with round heads formed of two stones. The sides are said to be inclined, but this is now concealed by the ivy. These loops are of sandstone.

The west door is the gem of the building. The entrance doorway has plain flat jambs, about 6 ft. high, and inclined, the bottom being 2 ft. 9 in. broad, and the top at the springing level, 2 ft. 7 in. It has a round head. The doorway has a plain broad border, succeeded by a very peculiar crenellated moulding, each stone forming a perfect member of the pattern in itself. Beyond this is a nook, occupied by a shaft, one quarter engaged. These shafts have a sort of lotus-flower capital, and are carved in a peculiar variety of the chevron pattern. The bases are buried. Above is a plain abacus table, the under edge of which is a hollow chamfer, with a bead. The head is excessively rich, and though restored by some one whose intentions were beyond his knowledge, its original design is perfectly clear. There are four members. The innermost is a bold chevron moulding; the next a band of balls and pellets; the third a broad and much enriched variety of the chevron moulding; and the outermost, or drip, a bold projection studded with balls. Where the members have bold projections, the soffit of the arch is carved. This doorway is in sandstone.

It is difficult to form an exact opinion as to the date or dates of this church. The western seems the older part of the two; but had it been an original church, why should the eastern window have been placed out of the centre? And it would have been equally unusual to place a wall across a single church, dividing the nave from the chancel. The loops may, of course, be of any date; the door in the cross-wall is probably of the date of the east window. Part of the north wall, especially of the north-west corner, looks very old, older than the west door, which is probably the work of Aulliffe, about 1158. The eastern church may be the work of Hugh O'Donoghue, who died 1231. The west doorway may be taken as a very good example of Irish work, showing a strong Norman influence, but retaining a large measure of its own peculiarities.

Within the church, laid against the west wall, is a small monumental stone, one of the angles of which bears an Ogham inscription. It appears to have been set upright. It is now broken, but the fracture is tolerably clean, and but one small fragment is missing, which may be concealed by the stone. This stone should be lifted, cemented together, and lodged in some secure place. As usual in ruined Irish churches, the sanctity attributed to the spot has more than filled the area, which is crowded with graves and gravestones with little regard to decency. In the churchyard is a half-buried fragment of stone bearing a very rude and early representation of the Crucifixion.

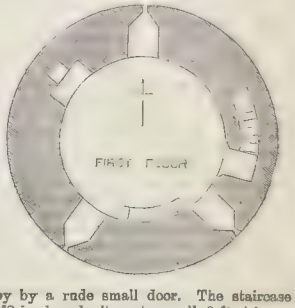
The *Cloictech*, or Round Tower, stands about 20 yards north-west of the church, upon the northern border of the churchyard, and is a little encroached upon by the modern wall of the highway, which is built against the core of the tower, from which the facing stones have, on that side, been removed. The tower is, and for at least a century has been, a mere stump, on one side 9 ft., and on the other 15 ft., high. At the base its full diameter is 16 ft. The cill of the door is, or was, 10 ft. from the ground, but is now either gone or concealed by the ivy. The wall at about that level is 4 ft. 6 in. thick, and the interior diameter 7 ft. The lower part is filled up, either with fallen rubbish or intentionally solid. The outline has a slight taper. The tower is cased inside and out with squared stones of different sizes, and here and there coursed, but more generally uncoursed, though well fitted together with moderately close joints. The stones are cut to the curve of the wall, both inside and out. The interior or core of the wall is composed of boulder stones, with a free use of mortar. This is probably one of the latest of the Irish towers, and is so classed by Miss Stokes with Timahoe, Annadown, Temple-Finnan, Keils, Ardmore, and Disert O'Dea. There seems no reason why it should not be of the same date with the west door of the church, or the middle of the twelfth century.

The Military Tower, or *Castle*. This rather remarkable tower, or what remains of it, stands on the slope of a hill, a few feet below, and about 150 yards south-south-east of the church. It is called by the people the Bishop's Pulpit; but the lessons inculcated from it were scarcely those of the gospel of peace. The tower is circular in



plan, and 36 ft. in diameter, with walls 7 ft. thick; and the chamber, therefore, 22 ft. across. Its present height is about 24 ft., and if it tapers or batters, it does so very slightly. It is at present composed of a basement and upper chamber, and there are traces of a second floor.

The doorway, now a mere breach, is at the ground level in the north-north-east side, or that nearest to the church. It opens by a passage 3 ft. 9 in. broad, with a flat roof, direct into the basement, but on the left hand, in the substance of the wall, is a small rude door, from which a staircase, winding with the wall, ascends to the first floor, into which it opens from a sort of



lobby by a rude small door. The staircase is 2 ft. 8 in. broad; its outer wall, 2 ft. 4 in., and its inner wall, 2 ft. thick. It is lighted by a small square-headed loop in the outer wall, about 8 ft. from the ground. The basement had a loop towards the south, in a splayed recess beneath a

low-pointed arch. The whole is much broken, and the loop converted into a gap. This chamber was 10 ft. to 12 ft. high, and the floor of the upper room covering it was of timber.

The first floor, also 22 ft. across, was entered from the staircase. It was lighted by three windows, or rather loops, to the south-east, south-west, and north. These, also, are broken away, but were probably square-headed, 6 in. wide and 2 ft. high. They were placed in splayed, low-pointed recesses, 4 ft. 6 in. broad at the inner end. Towards the north-west is a large fireplace of 6 ft. opening, and 3 ft. deep, with a vertical tunnel in the wall. Two large holes show that the hood was of timber. The floor was about 15 ft. high. Opposite the fireplace, between two of the window-recesses, is a steep narrow staircase, solid, and built against the wall. It led to the upper floor, of which the joist-holes of the floor and the cills of one or two windows remain.

This tower is constructed of boulder-stones, untouched by the mason's tool, very roughly coursed, with abundance of mortar, and every now and then parts of the work are brought up to the level by a course of tile stones. Spawls and fragments of stone are packed into the joints. The masonry is of the roughest, and the tower was evidently built in haste, with such stones as were at hand, and lay, as they still do, scattered over the surface. About the date of this tower there can be no doubt. It belongs to the same class with Tretower, Dolbadarn, and Brunllais, and some others in Wales, though the two latter have the entrance on the first floor. It is of the Early English period, and probably late in the twelfth century. Pembroke belongs to this type, as do Launceston and Conings-borough, though more ornate. It is said that there are towers similar to this at Waterford and Wexford.

There are no traces of any outbuildings, and probably the base-court was defended by a bank, and palisaded. The court-yard or bawn in which the tower now stands is much later. It is a square of about 37 yards in the side, defended by a bank of earth 5 ft. or 6 ft. high inside, and double that outside, where it slopes into a ditch. The tower is placed about 12 yards from the northern bank, and the southern portion is crossed by a second bank, inside the first. The outer bank is further strengthened by two round bastions of earth, 4 yards diameter, which project, the one from the north-east angle, and the other from the south-west, each thus raking two faces of the ditch. Each, if stockaded, would hold three or four musketeers. These bastions fix the date of the work. They are omitted, strangely enough, in the 6-inch Ordnance map. It is curious that with a cloictech close at hand to remind them, the Norman builders should have placed their entrance at the ground level, unless, indeed, they stabled their horses in the basement, which is possible. Also, it might have been expected that the builders would have used the material of the cloictech for their work. May it be supposed that they respected its connexion with the church?

It appears from the Irish annals that after the rising of MacCarthy, and the forfeiture of his territory, Cogan and Fitz-Stephen had a grant of it from Henry II., and after the capture of Cork, in 1177, went to Aghadoe to inspect their grant, and stayed there two days. It is said their visit was a pilgrimage, so that probably they went with some show of peaceful intentions. It is not improbable that the castle tower was the result of their visit. The base-court and earthwork may not improbably have been formed in 1584, when it appears from the Four Masters that Desmond was here encamped, and was attacked by a party of English cavalry, under Captain Sinitsee [Zouch], who stormed the camp by a sudden attack made on a Sunday morning, and slew many of the garrison. Either party holding the tower would be likely to strengthen it by such an outwork. Miss Stokes gives an admirable photograph, by Lord Dunraven, of the church, cloictech, and castle.

Aghadoe is the only military building in the district attributable to the times of Strongbow. The other castles, such as Castle-Lough, Ross Castle, Pallis, Dunloe, and Killaha, are much later. Castle Lough stood on a point in Lough-Lean, and what remains of it, a mere mound, is in the grounds of the Lake View Hotel. Pallis Castle, a mile north of Beaufort Bridge, is also a mere small square mound, with fragments of foundations. Both were no doubt square towers of the sixteenth century.

Ross Castle, upon the neck of the peninsula of that name, is celebrated for its brief siege by Lord Broghill, Sir Hardress Waller, and the Parliamentary forces, in 1641. It was held by Lord Muskerry for his ward, Valentine Browne, ancestor of its present owner. It is composed of a large and lofty square keep, with a doorway at the ground-level, or nearly so, whence a well-stair ascends to the summit. Appended to the opposite face of the keep is a large rectangular building. Unfortunately this and most of the keep are walled up, so as to be quite inaccessible. The keep does not look Norman, but rather of the fifteenth century. In front of the keep, on the edge of the lake, is a sort of low outwork, composed of a short curtain between two bastion towers, commanding a central water-gate, and a part of a curtain, with round bastions, enclosed within which the tower stood. This looks earlier than the tower, but the whole needs a close examination.

There are two other castles, both late, which well deserve a visit, though more from the peculiarity of their positions than from their architectural merit. These are Dunloe and Killaha. Dunloe Castle stands upon the end of a rocky ridge, which rises between the confluence of the Loe with the Laune, the outlet of the Killarney lakes, and about a mile north of the celebrated ravine known as the Gap of Dunloe. The woods about the castle are fine, and the scenery very remarkable. The castle is a mere tower, square, or nearly so, and very lofty, with high gables set, like those of a Scottish peel, behind the rampart walk. It is inhabited. In the grounds is the celebrated Dunloe Cave, with Ogham inscriptions, discovered in 1838, and a killeen, one of those curious circular embanked burial-places said to be occupied by Chrisoms, or unbaptised infants, and those who died under the ban of the priest.

Killaha, called also O'Donoghue's Castle, is quite in another direction, about six miles east of Killarney, and a mile south of the railway. Its appearance from the Killarney road, crowning a rocky promontory, but rising out of woods, is very fine indeed. It is a small rectangular tower, about 50 ft. by 30 ft., divided within into two parts, of which one contains the small barred door of entrance, a vaulted porter's lodge, and part of a well stair. The basement of the other and rather larger part was the kitchen, lighted by small loops, and having a large fireplace.* The first floor has also a fireplace, and is looped. The second was the main floor. It has a large and handsome Palladian chimney-piece of marble, and the windows are tolerably large. At one angle is a small balcony. The third floor, also with a handsome chimney-piece, was the best bedroom; and the fourth floor is a sort of garret, in the gables, which are high-pitched and set back behind the rampart walk. The whole is of Tudor date, and does not appear to have had any outworks. Killaha and Dunloe are typical examples of a very common Irish castle of the sixteenth century, mostly built by English settlers, but sometimes by the native chiefs. The view from the castle to the south and east is wild beyond description. It looks down upon two small valleys, occupied by the Flesk and its tributary the Owneykeagh, beyond which rise a group of mountains from 1,500 ft. to 2,000 ft. high. The slopes and floor of the valleys are formed of beds of very rough gravel, and strewed thick with masses of granite, of all sizes and shapes, more or less water rolled, and evidently a part of a great ice drift. It scarcely requires a geologist to see that the agency of ice must have been in operation here for ages, detaching huge masses from the parent rock, and grinding crushing and depositing them over its track.

Besides Aghadoe, Inisfallen Chapel, and the abbey churches of that island and of Muckross, are several ancient and now ruined churches, though not of very high antiquity. These are Killalee, Killaha, and Muckross.

Killalee is on the road to Beaufort Bridge, four miles from Killarney, a ruin in a potato-field, draped with most luxuriant ivy. It is rectangular, about 30 ft. by 20 ft., with the side walls about 12 ft. high. The gables are standing, and the roof was of wood. It stands east and west, but has no west door. The entrance is in the south wall, towards its west end. It is now a mere breach, but the depressed pointed arch which covered it may still be seen. The east window was a long splayed loop. In the south wall is a square-headed loop, and near the east end a small piscina with a trefoiled ogee head, and a foliated basin. There is no opening in the north wall. The walls are built of large boulders, rudely coursed and laid in thick beds of mortar, the joints packed with spawls and fragments. The masonry looks old, but is only rude, for the pointed arches and ogee piscina show that the building is not older than the Early English period. Indeed, it looks of the Decorated.

The church at *Killaha* is also roofless and ivy-covered. It is rectangular, 60 ft. by 30 ft., and stands east and west. The doorway, now a breach, was in the south wall. There is a round-headed south loop, and east of it a plain cupboard. The east window is of two lights, long and narrow, with ogee heads, the only piece of ashlar in the building. In the north wall are two plain cupboards, one at each end. No windows. In the west wall no door, but a small loop high up. The roof was of timber, and is gone; the walls and gables are perfect. The exterior quoins are formed of large stones, apparently naturally squared. The whole structure seems of Late Decorated date.

The ruined church of *Muckross* stands in the cemetery, on the hill above the modern Protestant Church. It is rectangular, stands east and west, and measures 20 ft. by 11 ft. inside. Its roof is a rather acutely-pointed geometrical barrel vault. Its entrance is in the north wall, and the recess in which it stands is four-centred. The doorway is segmental. The east window is a loop of 9 in. opening, with a round head cut in a single stone. There are rude cupboards in the north and south walls, and at the east end a stone altar. Over the western end is a bell-gable, pierced by round-headed arches at right angles. Notwithstanding its small size, stone roof, and rude construction, it is difficult to regard this chapel as older than the Tudor period, though such may be the case with its walls.

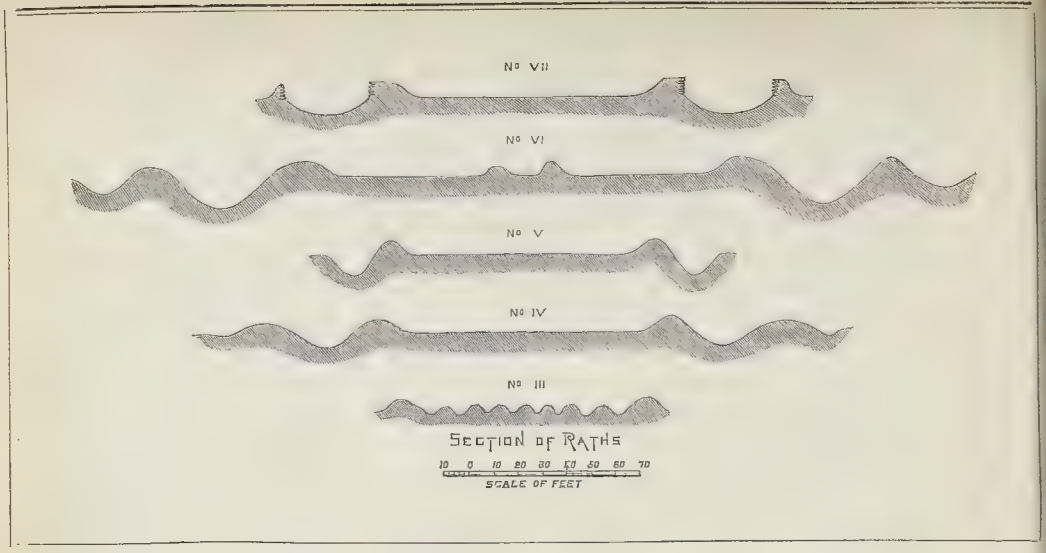
About two miles east of Killarney, near Woodford Bridge, is a small and curious *stone circle*.

Seven boulder stones are set in a circle about 15 ft. in diameter, and stand about 4 ft. high out of the ground. The circle is placed in the centre of a larger area, 60 ft. in diameter, contained within a bank of earth about 5 ft. high, and 9 ft. broad at the base. On the south-east side is a gap, and in advance of this entrance, 40 ft., are two upright stones, set 8 ft. apart, one 9 ft. and the other 6 ft. high, forming propylæa before the entrance. The ground is level, and there is no ditch or tumulus or anything indicating a burial. If it was merely a moot, or place of assembly, or in which courts were held, the inner circle seems superfluous; or it may have been a Pagan temple. The stones do not appear to be marked by the tool, or to bear any inscriptions or ancient marks of man. The structure of one of the large stones is brought out in ribbings by the weather, and these at first look artificial. There are some modern initials. Probably those who are conversant with Irish antiquities, and have examined other similar circles, may be able to throw some light on their use and date.

The most numerous, and not the least interesting of the antiquities around Killarney are the *Raths*, of which the Inch Ordnance shows twenty-eight within a radius of five miles, and there are a few others not there set down. The use of these works is clear enough, and their construction by the native Irish is now generally admitted, but their date is still a subject of controversy among Irish archæologists, though they certainly were in use at a very remote period. The word "Rath" is Irish, and is held to mean "security," and in a secondary sense a "village," an "artificial mound or barrow," and Lhwyd instances "Rioghrath,' a "prince's seat." The name and the thing are common all over Ireland, and occur in at least seventeen places in West Pembrokeshire. Earthworks very similar are found in other parts of the Principality and occasionally of England, but they are usually on very high ground, and not, like the Irish rath, readily accessible.

A rath is a mixed domestic and military structure, constructed for habitation and defence. Varieties of it are termed Raheen, Lios or Lisheen, Dun, Doon or Dooneen, Cathair, Cahir, or Caher. A rath is a circular earthwork, from 50 ft. to 150 ft. diameter, though occasionally much less and much more. The area is usually a little raised about the surrounding land, partly by original intention, partly by long continued

* There is a curious aperture from the porter's lodge, opening just outside the door, as though to enable the porter to observe, and, if need were, to shoot the visitor. There is also a loop in the form of a cross potent, opening from the kitchen, and looking upon the entrance-passage.



residence. The inclosure is a bank of earth, in its present condition from 4 ft. to 6 ft. or 8 ft. high and sometimes more, and outside the bank is usually, but not always a ditch, and in a few rare instances there is a ditch, but no bank. The ditch, however, is so general that in the Book of Armagh, rath is rendered by "fossa." Where there is no ditch it is probable that there was a natural knoll which needed only to be scarped, and, in part, levelled. A double bank and ditch are not uncommon, and there are examples of a third. Sometimes the inner face or scarp of the ditch is revetted with dry walling, which seems to be original. In the overwhelming number of cases the work is circular, but there are several examples of square raths, so marked on the Ordnance sheets, and a plan of one is given in the Transactions of the Kilkenny Society for 1867. There is some doubt as to whether these are real raths, or forts of the sixteenth and seventeenth centuries. Where the circle is inclosed by a regular wall of dry masonry, it is called a dun, and such are usually older than the ordinary rath, the defence of which is of earth. Many, perhaps most, of the raths contain subterranean chambers, called "natha" or "caves." These are often extensive and connected by galleries, called "creeps," but almost always very narrow, low, and inconvenient, often only 4 ft. 6 in. high, and 4 ft. to 5 ft. wide, so that they have been regarded rather as storehouses for grain and valuables than for residence, though probably they were intended for both. These caves have almost always upright sides, supported by dry walling, and usually flat roofs from 4 ft. to 8 ft. below the surface, and formed of long stones, laid across. It is very common to find Ogham writing upon these stones, so placed as to show that they were not originally intended for such a purpose, and such, when read, are found usually to be monumental, and to have been originally set upright. Where this occurs it seems reasonable to infer a considerable period between the age of the Oghams and that of the cave, for had the original use of the stones been known, or the inscriptions understood, the natives would scarcely have so employed them. At Scart is a cavern within a circular rath, 6 ft. high, and covered in by overlapping stones. At Dunballogue, near Cork, a church has been built within a rath, and the chambers have been discovered beneath it. These caves, though commonly within a rath, are not always so; that of Dunloe, discovered in 1838, so famous for its oghams, opens in a field, on the edge of a steep bank. Sometimes foundations of rude stone huts or cloghanns are observed in a rath, and under the turf, black earth, bones of animals, querns, pots for cooking, personal ornaments, and weapons of all ages from flint and bone, bronze and iron, down to leaden bullets, the latter probably showing that the earthworks were employed as convenient parapets for musketeers. To whatever use the caverns were put, it is very certain that they could accommodate but a few of the ordinary inhabitants of a rath, and it is not clear in what sort of structures the people generally lived,—no doubt very often in stone huts, but as traces of such remains are by no means general, it seems likely that wigwams of wattle and skins were also in use.

It has been remarked that the banks of the raths are very often surmounted by a hawthorn hedge, the trees being of a great age. The hawthorn is a sacred tree with the Irish peasant, as the abode of the "good people," and this feeling has saved many a rath from conversion into top-dressing. It is possible that the original fence of a rath, superadded to its bank, was a "haia," or quickhedge, by no means a weak defence, and that these stocks are the originals, or represent them. Where regular cemented masonry is found, either in the containing wall of a rath or within its area, it seems to be an addition. It is said that such masonry is common in the square raths.

Dr. Graves, the learned Bishop of Limerick, has advanced an opinion that raths occur in threes, and he has thence supposed those mysterious concentric circles found occasionally upon rocks to be plans of raths. These works are certainly very often placed in clusters, and almost always within hail or sight of one another, and usually upon moderately high and dry ground, neither in a bog nor upon a mountain. The writers of the last century attributed them to the Danes, but their immense number shows them to be the work of the people of the country, besides which, though oghams form an original part of many of them, Runic inscriptions do not; add to which, they are intimately incorporated into the Celtic topographical nomenclature of the country; so that, though not, it is true, forming a part of the names of mountains or rivers, they enter into those of all classes of divisions, legal, social, and ecclesiastical. The general opinion now seems to be that they were thrown up in times when every man's hand was against his neighbour, and were intended for the winter residence of the people, and the safety of their cattle, when they were taken up from their summer pastures, and that many of them continued to be inhabited long within the historic period. They are also frequently mentioned by the annalists and native historians as native residences, and the larger ones,—as Tara, Rathcroghan, the Navan, and Bruree,—as royal seats. The circular form is everywhere that first employed, being easiest to construct. In Ireland, the rectangular plan was introduced by the Christian missionaries, both for huts and for churches.

Of the raths near Killarney, the following may be noticed:—

I. A mile or more east of Aghadoe Church, north of the road, is a rath. It is circular, about 60 yards diameter within the earth bank, which is from 6 ft. to 8 ft. high, and is surrounded by a ditch, about 85 yards broad and 6 ft. or 8 ft. deep. Outside the ditch is a second and lower bank.

II. Half a mile east of Beaufort Bridge, south of the road, is a similar rath, circular, but 50 yards across, with banks 6 ft. high, and outside descending 12 ft. There does not seem to have been any ditch, and certainly no second bank.

III. North-east of Killarney, along the road that skirts the valley of the Deenagh, are several raths. That near Mount Pleasant House is 30 yards diameter within its bank, which is 3 yards broad and 4 ft. high inside, and 6 ft. outside. Whether it ever had an exterior ditch is doubtful. Its peculiarity is that the area is occupied by four or perhaps five concentric ditches, about 2 ft. to 3 ft. deep, and increasing in width towards the circumference. In the centre is a sort of mamelon, 6 ft. across, then a ditch 3 ft., then a bank 4 ft., then a second ditch 5 ft., then a second bank 5 ft., then a third ditch 6 ft., then a third bank 6 ft., a fourth ditch 6 ft., a fourth bank 7 ft. It is not probable than any one would have planted potatoes in such a fashion, and the trenches look old, but probably are not so. They could not have been part of a palisade defence, for the central space left is too small. Sections of this and the following raths are subjoined.

IV. The next rath is near the Hermitage, and on the rather steep slope of a small valley, occupied by the Deenagh. It is about 35 yards diameter, and has a bank 6 yards broad at its base, 6 ft. high inside, and 12 ft. outside, where it slopes towards a ditch, about 15 ft. broad. Beyond this is a second bank, about 15 ft. broad, surrounded by a second ditch, which, on one side, descends nearly to the river or rivulet. In this lower side is the mouth of a small cave, roofed with a stone lintel, not unlike the entrance to Dunloe, but choked up. Near it is a settlement as though a part of the roof had given way.

V. Farther on, near the national schools, is another rath, 30 yards diameter, with a bank 5 yards broad and 6 ft. high, and an exterior ditch 20 ft. broad.

VI. North-east of the last, on the top of some high ground, is a very large rath, 50 yards across. In its centre is a flat circular area 5 yards across, contained within a bank about 3 yards broad and 3 ft. high, where probably stood the hut of the chieftain. The circumscribing bank is 6 ft. high and 10 yards broad, and beyond it is a ditch 13 yards broad and 14 ft. deep. Then a second bank 5 yards broad and a second ditch 8 yards, so that the whole area covered is about 122 yards across. This rath is not only larger and stronger than those near it, but it overlooks a large turbary about the heads of the Deenagh, in which are the three small pools of Kilbream, Lockagh, and Doolig. Probably the head of the sept occupied this rath.

VII. Lissyviggeen. This rath lies three miles east of Killarney, between the road and the railway, very close to both. It is circular, 30 yards across, and surrounded by a bank



THE IMPERIAL GALLERY, BERLIN.—Messrs. Kyllman & Heyden, Architects.



LONDON BUSINESS PREMISES: ALDERSGATE STREET.—Messrs. Lander & Bedells, Architects.

ft. thick and 6 ft. high, outside which is a ch 12 yards broad and 12 ft. deep, and ond that a bank. The peculiarity of this h is that both banks towards the ditch are ed or revetted with dry stone walling, neatly d, and now nearly concealed under moss and eds. The substance of the banks is earth. thin the interior are traces of two huts with ne foundations, one 20 ft. long by 12 ft. wide, th a round end, and the other a sort of circle ft. across; both abut upon the bank. The ace of the door of the larger hut is seen.

Annexed to this paper is a table of the raths down in the Inch Ordnance Map, whence it pears that while there are scarcely any in the unties of Dublin, Armagh, Tyrone, and Fermagh, there are some hundreds in Kerry, Galway, aterford, and Tipperary; but as the counties ry much in area, another table is added in which e percentage of raths to acreage is calculated, d the counties are set down in that order, hence it will appear that these works are scanty the northern province, that of Ulster, and most equent in Leinster and Munster. They are ost rare in Tyrone, Cavan, Wicklow, Antrim, d Armagh; and most frequent in Carlow, ilkenny, Longford, Westmeath, and Waterford. mething is, no doubt, due to the superior rogress of agriculture in the north, and the roteastant disregard of the superstitions connected with them, but they must always have een comparatively rare in the North.

RATHS.

	No.	Acres.	Per centage per 100 acres.	Counties in order of frequency.*
Dublin	7	248,000	·0028	Tyrone U.
Armagh	9	328,000	·0027	Cavan U.
Tyrone	11	754,000	·0014	Wicklow L.
Fermanagh ...	13	471,000	·0027	Antrim U.
Antrim	19	758,000	·0025	Armagh U.
Londonderry ...	20	518,000	·0038	Fermanagh U.
Sligo	30	434,000	·0·63	Dublin L.
Down	32	611,000	·0052	Donegal U.
Louth	35	206,000	·0270	Londonderry U.
Leitrim	37	420,000	·0088	Down U.
Donegal	43	1,165,000	·0036	Sligo C.
King's County..	58	528,000	0109	Mayo C.
Meath	71	567,000	·0125	Leitrim C.
Cavan	74	473,000	·0015	King's Co. L.
Kildare	86	392,000	·0216	Meath L.
Monaghan	90	327,0 0	·0275	Cork M.
Wicklow	100	4,340,000	·0026	Clare M.
Carlow	101	219,000	0460	Kildare L.
Queen's County	102	398,000	·0250	Galway C.
Mayo	105	1,355,000	·0070	Q. County L.
Roscommon ..	123	609,000	·0250	Roscommon C.
Longford	164	263,000	·0620	Louth L.
Clare	178	802,000	·0210	Monaghan U.
Wexford	182	564,000	·0320	Kerry M.
Cork	189	1,730,000	·0160	Wexford L.
Kilkenny	241	513,000	·0470	Limerick M.
Westmeath ...	250	386,000	·0650	Tipperary M.
Limerick	251	674,000	·0360	Carlow L.
Kerry	319	1,148,000	·0270	Kilkenny L.
Galway	338	1,510,000	·0220	Longford L.
Waterford	339	471,000	·0720	Westmeath L.
Tipperary	406	1,013,000	·0400	Waterford M.
	4,030			

G. T. C.

THE KAISERGALLERIE IN BERLIN.

The Kaisergallerie, or Imperial Gallery, in Berlin, at the corner of the Behrenstrasse and Friedrichstrasse, is not what popular language would designate by that name: it is neither more nor less than a passage of the nature of Burlington Arcade, only on a far grander scale, and with the addition of a large restaurant, and immense cellarage underneath. Such as it is, however, it rises, in one of the most busy neighbourhoods of Berlin, a handsome building in rich Renaissance style, adorned with turrets and gables. Its front towards the Behrenstrasse has a length of 300 ft., its principal entrance at its corner leading to one of the most elegant passages of shops. This arcade forms a space 26 ft. wide, 42 ft. high, covered with glass, with first-rate shops on both sides. About halfway through this passage widens out into an octagon 50 ft. in diameter, from which another passage leads to the entrance in Unter den Linden.

It has been stated that the execution of the plan had become a necessity. The narrow footpath of the Friedrichstrasse no longer sufficed for the great stream of life continually flowing from the south to Unter den Linden and the Brandenburg Gate. The establishment of the new communication has diverted the stream, and at the same time offered an excellent opportunity to many business people to display their goods.

The wall surfaces of the passage are divided into ornamented smaller arcades, which, to the extent of 1,200 ft., offer ample space for numerous shops. A wrought-iron railing, gilded, runs along the shop windows; the floor has been covered throughout with ribbed yellow paving-tiles. Terra-cotta has generally been employed in the interior architecture, Herren E. March Söhne having executed the ornamental and figure work after the designs of the sculptors Afinger, Enke, Wittich, and Calandrelli. The whole has an airy as well as suitable effect. The ventilation of the passage is especially praised; it is effected without mechanical contrivances through the glass roof. The fact of the floor rising gradually from the Behrenstrasse towards Unter den Linden, and the axis running in a direction from north to south, is said to contribute materially in this respect, an equilibrium of temperature from the southern portal exposed to the sun to the northern one lying in the shade being thereby effected.

A good idea of the purposes of the large building is best obtained by an inspection of the vast cellarage. The floor of the latter is formed of inverted arches, filled up to a uniform level with concrete, the latter being covered by several layers of flat roofing tiles set in cement. Underground water, which should, notwithstanding, find its way in, may be removed at once by a steam-pump erected for the purpose. The whole *souterrain* is crossed by several sets of rails, connected by turntables, by which goods and stores may be removed to the different vaults. Each business, consequently, established in the Gallery may possess besides a perfectly dry and closed warehouse. The extensive system of water-pipes also extends throughout the entire basement, which contains besides the apparatus for warming with hot air and hot water; a steam-engine for the ventilation of the upper rooms, and spacious kitchens with large cooking stoves for the restaurant. Lifts are constructed for raising the food sent from the kitchen to the second and third stories. In the cellars are also the winding-machines for raising the heavy iron doors for closing the two portals. They are not hung, but are let down in the morning, and forced up in the evening.

Stairs lead from the cellar to the large restaurant, with which are connected a confectioner's and a Vienna *café*, and which extends round the passage in a series of large and small rooms, handsomely decorated. They may all be used at the same time by different parties, as they can all be shut off one from another, it being possible to accommodate as many as twenty parties with a total number of 3,000 persons. The balcony on the first floor belongs to the great hall of the restaurant, adjoining which are a number of comfortable rooms and cabinets for small and smallest parties. In the same story is the dining-hall, which accommodates several hundred persons. Every nation may dine here after its own fashion, for there are French, English, Italian, Spanish, Vienna, Hamburg, and Berlin cooks, and wines from all countries, from the dearest and finest down to the ordinary and cheap, are offered. One story higher, there is the same accommodation, with this difference, however, that the space occupied by the great dining-hall below is taken up by rooms containing together twenty-five billiard-tables. Over the restaurant are vast stores, and yet one story higher is a photographic establishment receiving its light first hand. The Vienna *café* mentioned above is in the ground story. From it a staircase leads to the smoking and reading room, as well as to a gallery whence a view may be obtained of the principal room. Behind the façade towards the Unter den Linden, where an alternation of sandstone and brick produces a pleasing effect, is the great ball and concert room, with ample space for 1,000 persons. Its walls and ceiling are adorned with frescoes by Begas, Hildebrand, and Ewald, and its windows by coloured glass, executed by Swertskoff, of München. The lighting is of a brilliant description. There is also a post and telegraph office in the building.

The architects are Herren Kyllmann and Heyden. The arcade and concert-room were opened by the Emperor in person followed by a numerous suite. Hence its name, "Kaisergallerie." After the concert the company invited proceeded to the dining-hall, where a sumptuous banquet, and afterwards a ball, attended by the Emperor, in the great ball-room, concluded the proceedings.

LONDON STREET ARCHITECTURE: ALDERSGATE STREET.

The buildings illustrated afford another example of the rapid transformation which London is daily undergoing, and which is such a marked sign of progress and wealth. Everywhere do we see old and inconvenient dwellings replaced by large and convenient business premises. The demand for warehouse room must be met, though often at the expense of the homes of the labouring population; but their removal again creates a new demand, which must in its turn be supplied by improved dwellings: so that in the end it is to be hoped all classes will be benefited by the general "move on."

The site on which these houses stand was but lately occupied by small shops, with miserably low ceilings, and dirty, ill-ventilated back buildings, and in the rear by stables, immediately over which there dwelt in small and crowded rooms a large number of the labouring poor.

The formation of new streets makes it at all times a somewhat difficult matter for ejected tenants to find convenient sites for their business or manufacturing purposes, and involves the necessity of converting dwellings into trade premises to meet this want, and often at highly increased rents.

The absolute demand made by the manufacturer for space and light, oftentimes with an utter disregard to the appearance of the premises from an architectural point of view, renders it difficult for the architect to satisfy both the wishes of his client and the claims of art. Still the problem must continually be attacked, though the result may meet with varying criticism.

In the present structures, the largest possible amount of light has been obtained for ground, first, and second floors, while sufficient brickwork is left at the sides to satisfy the demand for stability and fitness to carry the upper floors.

The decision not entirely to remove the public-house at the corner, but merely to improve the front, and the introduction of the new street, have considerably broken up the line of frontage; sufficient, however, has been secured in one block to produce a complete façade. The centre is being erected for Mr. F. H. Ayres, cabinet-maker, and the remainder is let to various tenants.

The architects who have had the management of the estate under the sanction of the Court of Chancery, and who have by the alterations, as we hear, greatly increased the income of their clients, are Messrs. Lander & Bedells; and the builders for the different portions have been Mr. E. King, Messrs. Williams & Son, and Mr. R. Rose.

THE ARCHITECTURAL ASSOCIATION.

The first ordinary general meeting of this Association for Session 1877-78 was held on Friday, the 9th inst., at Conduit-street, Mr. Bowes A. Paice, president, in the chair.

The following new members (twenty-eight in all) were duly elected, viz.: Messrs. T. H. Eagles, M.A.; Cecil H. Scott, Alfred H. Gausden, A. R. Scott, H. G. Nixon, F. H. Gaudin, E. C. Pinks, W. E. Clifton, J. S. Trott, A. T. Ellison, P. Childs, jun., C. A. Ewing, J. C. Woods, A. B. Plummer, R. B. Whitaker, W. H. Duffield, E. H. Lloyd, T. G. Loxton, R. J. Beale, J. L. Houston, T. C. Cunnington, E. D. Hoyland, R. A. Briggs, P. E. Ridge, S. Bury, C. T. Coggin, A. H. Molesworth, and R. H. Kerr. Thirty other gentlemen were proposed for membership.*

Mr. R. C. Page, one of the hon. secretaries, read a letter from the Royal Institute of British Architects, calling attention to the facilities now offered to members of the Association for studying in the library of the Institute.

The President hoped the members would take advantage of the very important and valuable concession on the part of the Institute. He moved a cordial vote of thanks to the council for having made the concession, which, although extended to one or two smaller bodies of students, was primarily made in the interest of the members of the Association. Mr. J. Douglass Mathews seconded the motion, which was heartily agreed to.

Mr. Hayes proposed votes of thanks to the

* The letters U. L. M. C. indicate the provinces.

* This will bring the total number of members up to more than 800, seeing that at the commencement of the session the Association had, according to the "Brown Book," a total of 753 members, of whom 621 are resident in London. At this rate of increase the Association bids fair to have a roll of 1,000 members next year or the year after.

Council of the Institute for their kindness in giving their meeting-room and library for the use of the Association at the recent *conversazione*; to the various friends who lent drawings and other objects on the same occasion; and to the Entertainments Sub-Committee (especially to the secretary, Mr. H. H. Stannus) for their labours in connexion with the same gathering. These were, of course, agreed to, as was a special vote of thanks to Miss Catherine Jones (sister of the late Mr. Owen Jones) for a valuable presentation by her to the Association of some of her brother's drawings, referred to more particularly in our report of the *conversazione* a fortnight ago. It was incidentally mentioned that these drawings had been obtained for the Association by the instrumentality of Mr. Joseph Bonomi (of Sir John Soane's Museum) and Mr. Stannus.

Various donations to the Library were announced, and thanks accorded to the donors.

The *Annual Report* for the past session was taken as read, and unanimously adopted. In it the committee express continued satisfaction at the steady increase in the number of members and at the great amount of interest taken in the proceedings of the Association both by the members and the profession at large. The following are extracts from the report:—

> The cordial relations maintained between the Association and the Royal Institute of British Architects are especially matter of congratulation. An opportunity of affording the support due from the junior to the senior professional society occurred during the past session, when a sub-committee was appointed to co-operate with the council of the Institute in its action in the matter of "Illicit Commissions." On the question of competitions also your sub-committee received courteous attention from the Institute, whilst in abolishing its class of students, and opening its library to our members, and in affording facilities for election as associates, the Institute has still more strongly marked its appreciation of the educational work which the Association is carrying on. The committee feel assured that the Association will do its best to continue to deserve the encouraging confidence thus shown, and the interest taken in its progress and welfare by the leading professional society.
>
> The new rules, after much discussion and consideration, have been adopted.
>
> The classes have, on the whole, been well attended, but it is the wish of the committee that members should avail themselves of the advantages offered to a larger extent than they do, and it is desirable that members of the classes should interest themselves as much as possible in their management, as individual effort is required to carry on the work satisfactorily.
>
> The sub-committee appointed to consider what measures, if any, should be taken by the Association in the matter of competitions, has collected the opinions of members on the subject, with the result that the Institute has been asked to take the lead in further steps which it is hoped will be of advantage to the profession, and has issued a circular upon the subject to its members.
>
> The Saturday afternoon visits (always popular with the members) have been well attended, and much interest was shown in the practical questions brought under notice by those in charge of the works visited. It is hoped that next session the visits to ancient buildings will be resumed.
>
> The Birmingham Branch is making satisfactory progress, and its members have availed themselves to a large extent of the use of the library. They have also joined in the work of the classes, fairly holding their own against the London students.
>
> Reference to the balance-sheet shows that the financial position is satisfactory.

The report concludes with a few well-timed words on behalf of that most deserving institution, the Architects' Benevolent Society.

The balance-sheet showed the total receipts for the past session to have been 529*l.* 17s. 1d., as against a total expenditure of 440*l.* 17s. 9d., leaving a cash balance amounting to 88*l.* 18s. 4d. in the hands of the treasurer, Mr. J. Douglass Mathews, who, in moving the adoption of the balance-sheet, animadverted upon the satisfactory position of the Association financially, and said that the Association had nothing in the shape of a fund, having always gone upon the principle of spending its full income in the general work of the Association for the benefit of the members; but he thought that as the balance in hand was much larger than it had ever been before, it would be desirable to invest 50*l.* as the nucleus of a fund which could be made available at any time if required for the purposes of the Association. Mr. Riddett seconded the adoption of the balance-sheet, and said he thought the suggestion made by the treasurer a very good one, and the fund invested might come in useful in fitting-up more suitable premises should they ever be obtained. By mutual consent the suggestion was referred to the committee for consideration, and a vote of thanks was given to the auditors, Messrs. Alexander Payne and R. L. Cox.

The Library.—Mr. R. E. Pownall, the librarian, brought forward the report of the Library Sub-Committee, which expressed satisfaction at the use which had been made of the library; 1,239 works had been taken out on the thirty-three evenings the library had been opened, exclusive of those sent to Birmingham for the use of the Birmingham branch of the Association. A new and complete catalogue had been issued. During the session the committee of the Association had made a grant of 40*l.* to the library for the purchase of books, &c. The total receipts were 54*l.* 15s. 8d., 27*l.* 15s. 9d. had been spent in the purchase of new works. The balance in hand amounted to 14*l.* 4s. 6d. The report was, on the motion of Mr. Pownall, seconded by Mr. H. H. Statham, unanimously adopted.

Class of Design.—Mr. Page presented the report of the Class of Design, which said that the work of the past session was not so satisfactory as that of the previous session, there being only twenty-five members as against thirty-four. Fourteen meetings were held, at which 107 members contributed 110 designs. Mr. Page, in moving the adoption of the report, said he was afraid that the class would have fared very badly had it not been for the sketches submitted by the Birmingham members. Mr. Stannus seconded the adoption of the report, which was agreed to.

Elementary Class of Design.—The report of this class, which was agreed to, showed that the number of members last session was twenty-four as against forty-three in the previous session. The number of sketches submitted was thirty as against twenty-seven in the previous session.

Class for the Study of Colour Decoration.—The report of this class, the adoption of which was agreed to on the motion of Mr. H. W. Pratt, stated that the number of members was the same as in the two previous sessions. Ten meetings were held during the session, the total number of attendances being eighty-two; number of sketches submitted, 36, showing a slight increase on previous sessions. Six papers on subjects relating to decoration were prepared and read by members in the class.

The Architectural Science Class report stated that the number of members for the past session was twenty, the number of papers submitted being nine. The report was agreed to.

Class of Construction and Practice.—The report of this class showed that the past session was the most successful which it had had since its commencement. Although there was a slight falling off in the number of members, the average attendance and the number of papers sent in show a considerable increase, as will be seen by the following:—

	Session 1874-75.	Session 1875-76.	Session 1876-77.
Number of members.....	62	63	60
Members at each meeting	22	22	27
Papers	114	111	133

Three members of the Birmingham branch joined the class, and two of these contributed papers to all the meetings, thereby setting an example of industry which it would be well for some of the London members to follow. The papers were quite up to the standard of former years. The increased success of the Class was largely to be attributed to the labours of the "Visitors," who had done their utmost to make the Class useful and instructive. The report was adopted, a suggestion being made by Mr. Maylard that this Class, and the Architectural Science Class, might increase the value of their work if a sort of sketch-book of construction were established, members contributing sketches of constructive details, traced from drawings in progress in the offices in which they were engaged, to which, he imagined, no objection would be made by employers.

The Surveying Class was held as usual, under the direction of Mr. E. Bennett. Twelve meetings were held, six outdoors and six indoors.

The Birmingham Branch.—The report of the Birmingham Branch congratulates the members on the progress which has been made, not only with the increased interest manifested by the members, and in the enlarged attendances at the meetings, but also in having acquired rooms for its own exclusive use in Queen's College, Paradise-street. The only prize competed for during the preceding session was that for Time Sketching, which was awarded to Mr. J. W. Fisher. The classes have been fairly successful, the average attendance being very good. The library has been very well patronised by the majority of the members. The Saturday afternoon visits to buildings in course of erection were generally well attended. At the commencement of the session it was decided that a sketch-book should be published by the Association, and a "Sketch-book Committee" was appointed. The first three quarterly parts of vol. i. have already been published. The report was adopted, on the motion of Mr. Hayes.

The Sketch-book.—Mr. Maylard made a statement in reference to the progress of the Architectural Association Sketch-book.

Annual Excursion.—Mr. Pink read the report of the eighth annual excursion, which took place a few months ago, when Warwick, Coventry, Kenilworth, and the neighbourhood were visited. Special mention was made in the report of the services rendered by Mr. Fowler, of Louth, and Mr. J. Tom Burgess, of Leamington. The report was unanimously adopted.

The President, Mr. Bowes A. Paice, then read his opening address, the greater part of which we publish in another part of our paper.

Mr. J. Douglass Mathews, in moving a vote of thanks to the President for his address, congratulated him in having attained that position after years of hard work in connexion with the Association. He (Mr. Mathews) earnestly hoped that the members at large would take to heart the words of the President when he counselled them to join the classes of the Association, for the classes were, after all, the secret of the success of the Association. If ever there were dearth of members willing to join the classes, and assist in their management, the Association would decline in usefulness. It was gratifying to know of the cordial relations subsisting between the Institute and the Association, for each body had its own work to do. The Institute had recognised the claims of the Association as an educating body by abolishing the class of Students, which was a good thing for the Association, and also for the Institute, for the former was strengthened, and the latter had got rid of a dead branch. As to the system of "articling," at the present time the whole system of apprenticeship and articleship seemed to be falling into disuse. In former times it was necessary that a man should be bound to a trade before he could follow it, but unfortunately, as the architects of the present day knew too well, men were allowed to work at trades without having received any proper training. This was a great evil, and a source of endless trouble to architects and master builders. He did not quite follow the President's idea as to the probationary system of articleship. He did not think many architects would care about having a youth in his office for the first twelve months of his pupilage with the certainty that he would go away at the end of the year. If it were necessary to have a term of probation at all, it would be desirable that the probationary period should be served in the office where the pupil was to be articled. Later on in his career of pupilage he might, perhaps, advantageously transfer his services to some other office, subject to arrangement. He agreed with the President's suggestion that instead of young architects trying to make a name by competition they would do far better to work for their former employers for three days a week,—a desirable arrangement not only for the young men themselves, but for their employers. It was desirable to encourage the association of the younger architects with their seniors, and one way of doing this would be by dispensing with the ordinary "clerks of works," and appointing young architects as "resident architects" who should be responsible for the due carrying out of the designs of the chief or designing architect. As to the suggested Architectural Association magazine, the subject had been before the committee several times during the past few years, but they did not see their way clear to carry it out. It would, no doubt, be a desirable thing if their Transactions could be published in a regular form, but at the same time he should be sorry to see the reports suppressed in the professional papers.

Mr. H. H. Statham seconded the vote of thanks, and observed that the very general tone of melancholy and dissatisfaction about the reports of the classes was in itself a healthy sign as an indication of the vitality of the Association. When people were not easily satisfied with their exertions, they sought to make greater efforts.

Mr. Clarkson, in supporting the motion, said with reference to the proposed magazine, that he had a sort of general idea that they were rather overburdened with "Transactions" already, and that if in some way they could endeavour to compress the amount of architectural pabulum in the world it would be better for everybody. As to the question of pupilage, he thought that the scheme put forward by the President was quite practicable if the parents would take the trouble to interest themselves in the matter. As a rule, parents were anxious to get their

ons actively employed. They had a sort of eneral idea that if their sons were possessed of air talents they would master their profession omehow. There was a good deal of truth in his, no doubt; it was the necessity of having o make exertions that brought out the talents f people in the majority of cases. Any special arefulness in the beginning might defeat itself y not making the pupil self-reliant. The paricular thing that seemed to be wanting was ome text-book which should give intending upils and their parents some idea of the work f the profession before making up their minds n the subject. Unfortunately, large sections f the public had not the slightest idea of an rchitect's work.

The motion having been carried, the meeting erminated. The next meeting will be held n the 23rd inst., when a paper will be read by Ir. J. P. St. Aubyn, entitled, "Notes upon Cornish Churches."

"ARTICLED PUPILS."—COMPETITIONS.

THE PRESIDENT'S ADDRESS, ARCHITECTURAL ASSOCIATION.

At the first ordinary meeting of the Architectural Association for the present session, elsewhere referred to, the President, Mr. Bowes A. Paice, delivered an opening address. He said: By a somewhat curious coincidence both the senior and junior societies have been placing their houses in order at the same time. The Royal Institute of British Architects has been revising its bye-laws, and as some of these affect the members of the Architectural Association, I hope I may be permitted to make a brief allusion to them. The alterations of the bye-laws were suggested by the reports made by certain sub-committees appointed by the council to take into consideration various matters relating to the improvement of the Institute. The points raised of special interest to us are,—(1) the relation of the Institute to kindred societies; (2) facilities for study; and (3) conditions of membership. In regard to the relations of the Institute to kindred societies, the Architectural Association came in for its full share of consideration. Both societies were agreed that amalgamation was either practicable nor desirable, and that each society had and should keep to its own special sphere of usefulness in which to work. That the Association has a special sphere in which to work is fully recognised in the report of the committee for the improvement of the Institute, adopted at a special general meeting in March last. It is there stated, "They [the committee] recommend that all possible encouragement should be given to the Association in its educational work, and that the Institute, which has never charged itself with similar functions, should no longer contain the class of Students which for many years past has been a merely nominal one, and the existence of which conveys a wrong impression." It will thus be seen that the Institute abandons any attempt at being an educating body, but is willing to co-operate with and give every encouragement to the Association in carrying on the work of education. This leads me to the second point, viz., facilities for study. Here, again, the Institute has come to our assistance, by allowing our members the privilege of access to one of the finest art libraries in the kingdom, the regulations for admission being the official recommendation of your president, the payment of a small annual fee, and subject to approval of the council; and in order to give every opportunity to students to avail themselves of this privilege, the council has made arrangements to keep the library open from ten in the morning to nine at night every week-day except Saturday, when it will be closed at two. It is hoped that our members will appreciate this concession by making frequent use of it, and I am quite sure that the courteous librarian, Mr. Kershaw, will be delighted to have a room full of readers. And now one word in regard to the conditions of membership. It having been represented to the council that our senior members, when desirous of becoming Associates, frequently find it somewhat difficult to obtain the signatures of three Fellows from "*personal* knowledge," it has been made a bye-law that in the case of members of the London Architectural Association desirous of being admitted as Associates the nomination form may be signed by one Fellow of the Institute and by the President, and at least three members of the Committee of the Architectural Association It will thus be seen that membership of the Association is now recognised in the bye-laws of the Institute as a stepping-stone to the membership of the senior society; and, in the words of our annual report, "The Institute has still more strongly marked its appreciation of the educational work which the Association is carrying out. The Committee feel assured that the Association will do its best to continue to deserve the encouraging confidence thus shown and the interest taken in its progress and welfare by the leading professional society." So much for the relationships between the two London societies.

In respect to the various classes, our annual report tells us that last session they were, on the whole, well attended, but that there was a tendency on the part of the members to neglect to interest themselves in their management. Now I consider this much to be regretted, for I believe that the success which has hitherto attended the classes has been greatly due, not only to the officers, but also to the individual efforts of the members in assisting them to conduct the classes. And here I would urge upon all my younger brethren, more especially those who are joining our ranks to-night, the advantage of at once entering one or more of our classes, and of taking an active interest in their working. Do not delay. It will, no doubt, be hard work for you at first, but you will be amply repaid for it. The valuable information you will gain will cause you to take a much greater interest in your office work, and will be of inestimable value to you later on in life. Another benefit to you will be the making of friendships, which is so much easier to do in the class-room than at our ordinary meetings. And who, I would ask, would for one moment deny but that such making of friendships is indeed a benefit? Does it not cheer one on to come here, Friday after Friday, to meet again the familiar faces, to grasp each other by the hand, and to assist each other in any problem we may have to solve? Can you delay joining the classes? The longer you put it off the more difficult will it become, and the opportunity lost cannot be regained. As you grow older you will have other claims upon your time, and you will always regret the day that you declined to join the classes. While speaking on this subject of work that has to be done outside the office, I would strongly urge the desirability of attending a course of lectures on the anatomy of the human figure. To have only a slight knowledge of the skeleton in general and its component parts, the contours of the external surface of the body, the muscles, and the forms produced by the movement of the head, neck, and limbs, and, above all, proportion, is a wonderful assistance to the architect, more especially in the preparation of drawings where figure subjects have to be introduced. A most valuable course of lectures is given at South Kensington by Dr. Bellamy every Thursday evening during the winter months, commencing on the 15th inst., at which students can attend on payment of a merely nominal fee. Before leaving the subject of classes and the means afforded to students for the purpose of study, whereby the hand as well as the eye can be trained to appreciate the beautiful in art, it would indeed be an omission were I not to mention the Architectural Museum at Westminster. "Here," as Sir Gilbert Scott remarks, "it is true the student will find within the structure no architectural beauty, but a stark and unambitious interior of naked brick and timber; but he will be startled at finding himself surrounded by innumerable models of an architectural art workmanship culled from the most famous buildings of our own and other countries, and forming a complete illustration of the carving and other arts of the Middle Ages and (though in a less degree) of those of classic antiquity. The more he examines the contents of this simple building, the more will he appreciate and the more surprise will he find at their number, their variety, and their beauty." It would be difficult to over-estimate the very great benefit to the student arising from the systematic study of architectural details arranged in a chronological order; and it is with the view of increasing the interest of students in the valuable and extensive collection of casts and examples that a sketching-club has been formed in connexion with the museum. A prize of five guineas is offered by the council for the best series of sketches exhibited at the annual exhibition. They are to be made from objects in the museum, executed in pen and ink, so that if successful the young student may have the additional pleasure of seeing his sketches reproduced by photolithography.

The opening address of a president of this Association must necessarily be somewhat of a gossipy character, and I cannot but expect that the few remarks I am about to make will not be received with unanimous approval. I could hardly wish it otherwise, for were we all agreed, discussion would cease, and we might be hastening on reforms which eventually might prove to have been a mistake. Borrowing terms from the President of the Institute, I will, with your permission, say a few words on the outer life of the profession rather than on the inner life of the Association, and I hope that you will at least give me credit for speaking my own thoughts in a humble but honest and straightforward manner.

First, in respect to "articles" and premiums, I cannot help thinking that the present system of binding a young man for four or five years, and paying a large premium at the outset, is the bane of the architectural profession. It is entered upon by many with too much of the commercial spirit. It is regarded as a sort of "paying concern," whereas the majority of those who have been in the profession for some time know full well that it requires years of unceasing but loving toil in order to become the fortunate possessor of even a moderate income. No; there must be no hurry for worldly gain; the work must be undertaken purely and simply for the love of the art, and by those, and those only, who can appreciate its beauties, who will study its various phases, and who intend to labour with a lifelong patience. Let it be conceded that this is the spirit in which to enter the profession, I will ask the question,—Should there not be some means whereby a young man's capabilities and his fitness for the calling could be tested previously, not only to his being bound for a series of years, but also to the payment of a large premium? But here let me interpolate the remark that I know there have been instances of eminent architects waiving the recognised system of premiums when they could perceive elements of latent talent, and when they have found that the means of the would-be pupil were not only limited but narrow,—and all honour to them for doing so! To proceed, however, is it not frequently found to be the case that many, after having been articled, find that they have no real love for their work,—that they take no interest in it whatever? They soon begin to realise that they have mistaken their calling, and would gladly turn their steps to try their fortune in some other walk of life; but they are bound for four or five years, the premium has been paid, and they must endure their weary existence as best they can. I believe that a boy could be made to learn carpentry without either feeling or devotion; but I very much doubt whether any one could be so successful as to make a boy or young man without such qualities learn the practice and study of architecture. Now let us inquire by what means this state of things can be remedied. I have mentioned on a previous occasion * how necessary it is that an architect should have a sound education, and without entering upon the merits or demerits of the system of architectural education adopted by the French and German schools, I will content myself with a few and I hope suggestive remarks not unworthy of quiet thought for the improvement of our own system in England. Granted that a young man is desirous of entering the architectural profession, and, as a preliminary to such a step, has had an ordinary education, is thoroughly acquainted with those books of Euclid which are usually read, has attended a course of lectures on natural philosophy, has an acquaintance with the modern languages, and some knowledge of the dead languages, and, above all, has a taste for drawing, and a knowledge of the use of mathematical drawing instruments; with these elementary qualifications I imagine it would be better for such a one were he to enter the office of an architect as a probationer for one year, rather than at once being bound for a much longer period. During his term of probationship he would have an opportunity of seeing the ordinary routine of the business of an architect's office. He could attend the lectures on architecture and construction at University College or King's College; he could attend our own Elementary Class of Design, and take advantage of the other opportunities offered by the Association, in order to gain an insight into what

* *Builder*, p. 1100, *ante*.

really are the requirements of the profession; and then if, at the close of the year the student were really satisfied that he could follow the profession with an earnestness of heart which had already shown itself by his zeal, then, I say, and not till then, should he be articled. In fact, I would make entering the profession as an articled pupil conditional on passing a preliminary examination at the Institute. Then, I venture to think, we should have real students,—young men who have made up their minds to follow the profession, and who intend to make the best use of their time, not wasting it in frivolous amusements, but rather, by improving their minds, not only by close study, but also by surrounding themselves with the beautiful in art so far as their limited means will admit, even if their rooms be on an attic floor in a back street of one of our London squares. Let me, however, qualify the words I have just used,—"frivolous amusements." By saying that, I would not for one moment be thought or be guilty of casting any insinuations upon those whom I have the honour now of addressing, nor upon architectural students in general, for I believe that they are more earnest in their work, more active in their labours, and more anxious for opportunities of study in this year of grace 1877 than they have been at any previous time; but it is to improving their condition, firstly, in their relations to the senior members of the profession, and eventually in the eyes of the public, that my remarks are now directed. Gentlemen, it suffices me just to have touched upon the subject of articles and premiums, and where it appears to me some reform is necessary. How to carry out that reform must be left to more mature consideration, but I am inclined to think that the premium should be paid annually, as a college fee, rather than in a lump sum; and I would also suggest that the student should not be articled to the architect with whom he has served his probationship, as by a change he would have an opportunity of seeing another class of work, which would assist his education, and tend to guard against the loss of individuality.

And now let me turn your thoughts to another matter, also of great interest to the younger members of the profession, viz., the subject of competitions. It has been said that this is a subject for the Institute to take up, and that it is not within the province of this Association. Perhaps not, as a society, but although the Association is an educating body, yet a very large proportion of its members are either acting as assistants, or are commencing practice for themselves, and it is from the young men just starting in life that the ranks of the great army of competitors are being largely recruited, for by this means, it is said, they hope to get a connexion. With the senior members it is different, for they have already established practices, sufficiently large in most instances to fully occupy their time without embarking on the sea of an open competition. You are aware that a sub-committee was recently appointed to take into its consideration the subject of competitions, and to ascertain whether or not it was thought desirable that the Association as a body shou'd take any action in the matter. Mr. Pownall, the energetic secretary of that sub-committee, will bring forward the report at some future time, and it is not my intention to-night to argue the point as to whether the Association as a body should or should not take action in the matter, but I hope you will allow me to express my own view *en passant*, which is, that it should not, for it seems to me to be a matter that should be left in the hands of individual members to uphold the honour and dignity of their profession. I purpose, therefore, confining my few remarks to the broad question of the competition system. Gentlemen, I am afraid you will give me the credit of being a radical, whereas I am a conservative of the darkest blue. I have already said that our present system of making or trying to make an architect of a young man by binding him for a number of years before his capabilities have been tested is the bane of the architectural profession; and now, again, I am bold to assert that the system of open competitions, as managed (or rather I would say, *mis*managed) at the present day is also a bane, not only to the profession, but also to the art of architecture. Let us for a few moments turn our attention to the arguments generally used in favour of the system. It is said by some to be a means whereby a talented young man may attain a position which want of influential friends would otherwise prevent his reaching. This sounds all right, but is such practically the case? Are not the promoters of these open competitions in the majority of cases unable to grasp the advantages of a well-considered plan over the disadvantages of another which a professional eye would at once detect? Then, again, with regard to the architectural design of the building: is it not the experience of most of us that vulgarity rather than refinement wins the day? Do not the glaringly-coloured perspectives, with a crowd of pedestrians and equestrians in coats and trousers of many colours hurrying to and fro, but, of course, shown in the act of admiring the building,—which at present exists only on paper,—do not these, I repeat, win the day, and not those of our talented young men, who finish their perspective drawings, it may be, in pen-and-ink, it may be in light Indian ink or sepia, or it may be in a refined and delicate use of water-colours? The best designs are not, as a rule, selected, and the talented young man is doomed to disappointment. And so disappointment succeeds disappointment, which must have a bad effect upon the mind of the young architect. Let him have patience, and he will be sought after without having to go through the throes of a competition. Let him be thoroughly in earnest in his work; let him make the most of his time during his term of pupilage; let him act for a few years as an assistant, and then let him take an engagement for three days a week, which will admit of his making and keeping appointments, and I believe that work will come sooner or later, and that he will be able to attain a position without joining in competitions, and he will feel a pride in his having attained to that position not through influential friends, although they are most valuable, but simply through his own earnestness, his patience, and his loving devotion to his art. Another argument in favour of the competition system is that for public works it is calculated to ensure an erection more perfect for its purpose than the ordinary course would be likely to do. I for one am not at all prepared to accept this argument, for I believe that an architect would take a much greater interest in his work if he felt that he was entrusted with a public building without competition, not only in consequence of the confidence which is placed in him, but also because he would remember that his reputation and future success were at stake, and I am convinced he would do his best to merit his country's approval. Let his plans be submitted to a consulting architect, or to the Council of the Institute if thought necessary by the Government or other public body which employs him, and I doubt not but that the architect would gladly make such modifications in his design, based upon the suggestions of the referees, as would thoroughly satisfy his clients before the works were commenced. Again, I believe it is far better to work out a scheme calmly and quietly, and without hurry, rather than under the high-pressure system and bustle of a competition. So much for the arguments in favour of the system. And now let us glance at the arguments against the system of open competitions. The competitor embarks in ignorance, not knowing fully the requirements of the promoter, his preference (if any) for style, or the building materials of the neighbourhood at his disposal, and their prices. The competitor may spend many long and tedious hours over the conception of some wonderful dream of the Queen Anne period, and when the designs are submitted, he learns that this is the only style which is distasteful to the promoter. Again, it is said by others that the system itself, unless based upon a somewhat Utopian ideal, necessitates a vast expenditure of time and trouble, not to say skill, by a number of persons, all of whom cannot possibly receive any adequate return. In support of this argument, let us take a by no means exaggerated example of the ordinary competition advertisements of the present day. "To Architects and Others." Designs are invited for such and such a building in such and such a town, and these are the conditions: the site being at the corner of a street, two elevations are required, plans of five floors, two sections, block plan of site showing drainage, &c., and a perspective view,—which, if the competitor chooses, he may take an extra day or two over by finishing it in pen and ink instead of colour. Premiums of 30*l.*, 20*l.*, and 10*l.* respectively will be given for the three selected designs, which will become the property of the promoters, who do not bind themselves to employ the architect whose design may be considered best, but, in the event of their doing so, the premium will merge in the commission! Let us analyse what this bait of premiums really means. It means that at least thirty competitors would be beguiled, and that therefore twenty-seven of them would receive no remuneration whatever, the other three competitors receiving 60*l.*, or an average of 20*l.* each. We may assume that each set of drawings, including working out the preliminary sketches, would take one man at least thirty days: consequently his remuneration would be 13s. 4d. per day. This, I think, clearly shows that even the successful competitors would be out of pocket. And yet this is by no means an uncommon example of the indignity so frequently offered to architects. Let us look at the same example in another light. We saw that eleven drawings were required, and that there were thirty competitors: consequently there were 330 drawings submitted. We will assume that these 330 drawings would take one man at least two years to complete. What would be his remuneration? Thirty pounds a year, without board and lodging! Now really, gentlemen, are you going to be so dishonest to yourselves as to assist in supporting such a system? Are you going on wasting your time, your talent, and your energies on drawings, however well thought out, however artistic they may be, which will eventually be consigned to the lumber-room? Are you going to cast your pearls before those who cannot appreciate them? No; I am sure all who hear me to-night will not put forth a hand to advance such a scandal to the profession, but will rather do all in their power to check it. It has been remarked that the fact that such a system is not a good one is recognised by its not being adopted or even suggested in any other profession. It has been tried and failed notably in those most allied to architecture, viz., sculpture and painting, and this notwithstanding the fact that the sketches or models of the painter or sculptor have an intrinsic value of their own, whereas those of the architect have practically none. I have endeavoured to prove to you, in commonplace and feeble language, but which I hope will be not the less convincing, that the present system of open competitions is bad for art, bad for the public, and bad for the architect. If, however, it is found in some cases that competition must be resorted to, it should be on the principle of submitting preliminary pencil sketches, and a selection of competitors made on the merits of such sketches to prepare a second set, to be finished drawings, each of whom should receive an honorarium towards defraying his expenses. It is simply preposterous to expect a man to work for nothing, and is should be considered below professional dignity to enter upon a competition without such recognition of services rendered; and no competition whatever should be entered upon except under proper precautions and a guarantee for a fair adjudication.

ENGINEERING IN SCOTLAND.

At the meeting of the Institution of Engineers and Shipbuilders in Scotland, on the 30th ult., an introductory address was read by Mr. R. Bruce Bell, president. At the commencement of it Mr. Bell said,—

This Institution, being composed of all classes of engineers and shipbuilders, holds an exceptional position, and has in its grasp a much greater range of objects to deal with than most other similar societies, and owing to the great advancement which has been made since 1857 in the industries connected with all the different professions into which the Institution is divided, a thorough review of these subjects would be a more tedious matter than I am prepared to inflict upon you, and I shall therefore deal very shortly with them, taking a brief notice of the progress of these various branches, and then considering to what extent we, as a society, have been maintaining our ground with the progress of the age.

In civil engineering, many great works have been carried out; railways have stretched their lines over the world; docks and harbours have been multiplied, constructed of much greater depth and area than those of former years; extensive operations have been carried out in sewage and water works; telegraphs have been carried through the air and under the ocean round the whole earth, and although we can hardly say that an entirely new branch has been added to what existed formerly, yet some considerable changes have been made in the modes

of construction of these various works. In the construction of bridges, malleable iron has been been made use of to a much greater extent and in a much more economical manner than formerly. We have also in the foundations of bridges in bad ground, and in the soft beds of rivers, superseded much of the old system of cofferdamming and piling, in some cases by sinking hollow cylinders either of iron, brick, or concrete, and filling them with concrete or other material; but in this process we have only copied what has been practised by the natives of India for many hundred years. The English engineers who carried out the railway system in India adopted this plan in cases where the soft deposits of the great rivers of the country were found to be of interminable depths, and afterwards introduced it into this country, where it has been very extensively used. Three instances of its adoption on the Clyde on a large scale, with cylinders sunk from 70 ft. to 90 ft. into the ground, are in the foundation of the Union Railway Bridge, commenced in 1865; the Albert Bridge, commenced in 1870; and the Caledonian Railway Bridge, at present in progress. These are all built with iron cylinders filled up with concrete.

The application of this system to the construction of the foundations of quays and wharfs was suggested in the year 1869, in a paper read by Mr. Imrie Bell upon the Jumna Bridge, describing the continuous cylinder foundation used in the abutments, and it has since been designed and carried into actual practice by Mr. Milroy, in the construction of river quays on the Thames, with iron cylinders, and on the Clyde with brick cylinders, and on a very large scale is now being applied in concrete to interior dock walls in the Queen's Basin at Stobcross, on the Clyde. I am very much inclined to think, however, that in this latter case, or in any similar application of the system when the work is actually within dry land, where the ground could be dug out and a solid wall built in the open air, it is altogether a misapplication of the system, costing much more money and sacrificing time, strength, and solidity without any tangible object.

The success in sinking these cylinders on the Clyde to such great depths is mainly due to the digger, the ingenious invention of Mr. Milroy, which has been used in all these works. Various other plans have been tried—continuous bucket dredgers, sand syphons, &c., none of which have as yet turned out so successful as the digger.

Another system which has been used in many large bridge foundations, the latest example of which is Mr. Bouch's gigantic work, the Tay Bridge, is that of the compressed-air chamber, by which an air-tight chamber, covering the entire pier, is sunk down to the required depth, and the pier built within it. In the great swing bridge over the Tyne at Newcastle, built by Mr. John F. Ure, this system was applied to the cylinders themselves, which, after being sunk, were built in with masonry.

Concrete has of late years come much more extensively into use in engineering works, especially in the construction of sea-walls and breakwaters, where artificial blocks of stone up to 300 and 400 tons weight have been lifted and set in place by powerful barges and machinery.

In respect to the working appliances used in engineering construction, machinery now plays an important part, and much has been effected in the improvement of pumps, cranes, and portable engines and dredging machines; and the rock drill and the steam navvy are now effecting the speedier completion of rock and earth excavation.

Two of the most remarkable works of dredging have been executed during our existence as a society. The one is the Suez Canal, and the other the removal of the bar and deepening of the river Tyne, from the sea to a distance of several miles above Newcastle, either of which works, in point of magnitude of the quantity of material removed, exceeds what has been done even upon our own river.

In mining engineering there has been little change except the introduction of machinery in "getting" coal. Mechanical ventilation has in some cases superseded the old methods of ventilation by furnace; this, however, as far as Scotland is concerned, has not been carried out very extensively.

As regards mechanical engineering we have no doubt arrived at greater precision of workmanship in the manufacture of locomotives and land engines, but have not made any great change in the character of the machines themselves. But in marine engineering, the compound engine has completely altered the position of matters afloat, as regards consumption of coal; and great improvements have been made in the forms and construction of the engines and boilers. But in all these branches a great change has been gradually working its way in the system of the workmanship itself, as almost every portion of the preparatory stages is now effected by machinery in place of by manipulation with hand tools.

Before the year 1850, with the exception of the self-acting lathe, the horizontal planing-machine, the common vertical boring-machine, and the simple slotting-machine, there were hardly any machines in the engineer's shop,—the work was nearly all done by hand labour, with the chisel and file; and in the smiths' shop the heavy heats were still managed by swarms of forehammer men clanking round the anvil.

The great stimulus which was given to all manufactures by the Great Exhibition of 1851, which effected so many rapid changes in our social arrangements, helping forward a change also in the workshop, which has year by year progressed until now almost everything is done by the machine; and the erection of a large marine engine may be compared to the building of Solomon's temple, there being neither sound of hammer nor file, and the workshop seems almost a gigantic watch-maker's establishment, where the fitters have only to take up the various pieces as they come from the machine and put them together; and to pursue this farther back, the very machines which do this work are themselves made by other machines, and so on backwards, until we appear to lose ourselves in the attempt to reach back to the first hand-made machine. In the place of the dingy, smoky blacksmith's shop, we have now the tidy forge without coal, smoke, or ashes, with clean floors and brilliant furnaces, coal and manual labour being replaced by gas and steam hammers, cresses, and dies.

In shipbuilding we have during the same period made a great revolution; timber as a material in shipbuilding, both for the navy and the mercantile marine being now almost a thing of the past. We have not yet, however, progressed far in the direction of supplanting manual workmanship in the construction of the hulls of vessels, as the noisy clink of rivet-hammers still reverberates through the yards and maintains its ceaseless din. But even this stronghold of manual labour is at last threatened, and Mr. M'Millan has now a machine at work at Dumbarton riveting upon the ship's side.

In war-ships during that period great changes have been made, and the duel between the gun and the armour, whatever may be the final result, has no doubt been the means of advancing the art of metal-working in an immense degree, and increasing the power and precision of artillery to an extent which, a few years since, would have almost been thought fabulous. Who could have imagined thirty years ago that guns of 100 tons, throwing shot of a ton weight, would be carried on board ship, or that ships would be made strong enough by armour-plates to receive and resist missiles of this weight, discharged with such enormous force from these massive engines of war? But the curious question now comes to be, after all this expenditure of money and brains in producing such gigantic floating monsters, provided with these enormous engines of destruction, *cui bono?* For after all this immense expenditure of money upon systems of offence and defence, we find that notwithstanding such costly precautions, the ships, like Achilles, are still vulnerable in the heel, and that a midge of a boat with half a dozen men on board and a few tons of explosives, can, in the course of a few minutes, send ship, armour, and ordnance to the bottom; and it is curious to note that after having done all we can to bring to perfection the invincibility of the ships to shot and shell above water, our whole energies are now concentrated upon making machines to destroy them from below, and to render useless all that has been done for the last twenty years at such vast expense.

Monumental.—A memorial has lately been erected by the Right Hon. Hugh C. E. Childers, M.P., at Norton, near Worcester, in memory of the late Mrs. Childers. It consists mainly of a colossal Latin cross, raised upon a suitable base. The work has been designed and executed by Mr. E. J. Physick, sculptor.

BUILDERS' BENEVOLENT INSTITUTION.

ANNIVERSARY DINNER.

The thirtieth anniversary festival in connexion with the Builders' Benevolent Institution was held on the 8th inst. at Willis's Rooms, St. James's, the President, Mr. William Higgs, in the chair, supported by upwards of three hundred subscribers and friends of the Institution,—a larger number than on previous occasions.

The Chairman, in proposing the toast of the evening, "Prosperity to the Builders' Benevolent Institution," said he must congratulate all concerned on the continued progress of the Institution, which had now been in existence thirty years. During that time they had spent upwards of 20,000*l.* in payment of annuities to pensioners, and the funded capital of the charity had now reached the like noble sum of 20,000*l.* Now that this point had been attained, many important alterations had been made in the rules of the Institution during the past year. It had been decided to spend all future donations, as well as subscriptions, in furtherence of the objects of the Institution, instead of funding them as heretofore. Legacies would continue to be funded, as hitherto, and perhaps some of those present might remember the Institution when making their wills, but he should recommend them to aid the Institution while alive to see the good that could be done by their help. It had been agreed to increase the amount of the pensions to 30*l.* instead of 24*l.* for the men, and to 24*l.* instead of 20*l.* for the women. It had also been decided that on the death of a male pensioner, his widow should have a man's pension. Under the former arrangement, it must have been a very great hardship for the widow of a pensioner to find herself not only bereft of her husband, but penniless in the world. This was a change, then, that would commend itself to the approval of the supporters of the Institution. A pleasing incident in the report was that one who was until recently a pensioner on the funds of the Institution had been able, through altered circumstances, to withdraw from receiving her pension, and to present the Institution with a donation of five guineas as a token of gratitude. During the time the Institution had been in existence great good had been done to members of the trade who, in the decline of life were unable to help themselves owing to misfortune. One hundred and two pensioners had received the charity of the Institution to the amount already named, and had died at a good old age, averaging about 77 years. Three candidates were proposed for the next ensuing election, one man and two women, of whom the committee had at first only proposed to elect one man and one woman. But which of the two females to reject it was difficult to choose. Both were widows of gentlemen at one time in good circumstances, and subscribers to the Institution. One was the widow of an old friend of his, Mr. Ebbs, of Aberdeen-place, Maida-hill, who was a subscriber to the Institution from its commencement, and continued to be a subscriber for something like twenty-four years. He (the chairman) had persuaded the committee to elect all three candidates, and they had consented, provided the donations and subscriptions obtained that evening amounted to 500*l.* He would, therefore, strongly urge all present to do their utmost, so that the two widows should not be placed in competition, and one of them rejected. He was willing to do his part in the matter, and in commending the toast to their notice he would only say, that "there is that scattereth and yet increaseth, and there is that withholdeth more than is meet, but it tendeth to poverty." The toast was drunk with all the honours.

A little later on in the evening the lists of subscriptions and donations were read by the secretary, Major Brutton. The total amount obtained was rather more than 600*l.* The president's list amounted to 290*l.* 17*s.*, including his own handsome donation of 105*l.*

Mr. Robinson, in proposing the health of the chairman, said he was sure that the toast would be enthusiastically received. The very great success which had been announced was due not only to the exertions made by the president, but to his high personal character. Mr. Higgs had for many years occupied a proud position in the building world, and not in the building world alone. Wherever anything was to be done for promoting goodwill among mankind, or for the advancement of any good institution, he was always to be found taking a prominent part. He had in years gone past done much to benefit the Builders' Benevolent Institution, and now he had come forward to give it the advantage of his

superintendence as president, with what success had already been seen. After a long and honourable career, Mr. Higgs was about to retire from active participation in business, and he (Mr. Robinson) was quite sure all would join him in saying that Mr. Higgs would carry into the retirement of private life the satisfaction of a well-spent life. He would take with him the recollection of having done much to further the welfare of the building trade and of the Builders' Benevolent Institution.

The toast was enthusiastically received, and

The Chairman, in reply, said he could assure his friends that it was always his pleasure to do what he could to assist others, and he was glad that he was able and willing to do it.

Mr. James Doulton, in proposing "The Vice-Presidents and Trustees," congratulated the company on the way in which they had responded to the chairman's appeal. The vice-presidents had rendered great services to the Institution, and the trustees were responsible for the due care and administration of its funds. Their duties had always been efficiently and satisfactorily performed, and therefore he had great pleasure in proposing the toast, coupled with the name of Mr. James Freeman.

Mr. Freeman briefly responded.

Mr. James Stiff proposed the health of the treasurer, Mr. George Plucknett, who fulfilled very important duties in connexion with the society. That those duties were efficiently discharged proof was afforded in the fact that the treasurer had been unanimously re-elected year after year for many years past. The office was not a paid one; the work was performed voluntarily, although it required a great deal of time and attention, and they were paying the treasurer no idle compliment in saying that they thanked him sincerely for his labours in connexion with the Institution.

Mr. Plucknett, in responding, expressed his warmest thanks to the President for his able advocacy of the claims of the Institution, and for his munificent donation. The list of contributions announced would enable the Institution to fulfil all its obligations for the next year, and to elect the whole of the candidates who would present themselves at the next election. The president, and others whose subscriptions had been announced, had relieved the committee of the very disagreeable duty of having to exclude one of the poor widows referred to at the next election,—a duty which would nevertheless have had to be undertaken if the funds had not allowed of her election. The friends and supporters of the Institution were to be congratulated on the fact that it had never, until the coming election, been in so good a position as to be able to elect all the candidates who presented themselves. But notwithstanding present success, the friends of the Institution must not relax their efforts in the least if the Institution was to maintain its present position. There would certainly be no falling off in the number of candidates, and already there were four or five candidates for election in May next. However, it was satisfactory to know that all three candidates who would present themselves for election at the end of this month would be elected. It might be stated that a very pleasing letter had been received from the pensioners, expressing their hearty thanks for the increased amount of their annuities. While it was obviously the duty of every prosperous member of the building trade to do something for his less fortunate brethren, it was not to be expected that those outside the trade, though necessarily more or less identified with it, should as a mere matter of course help the Institution; but nevertheless, he was glad to say that some of the warmest supporters of the charity were the merchants and manufacturers of materials and appliances used in building,—such gentlemen as Messrs. Doulton, Stiff, and Jennings. To those and other friends of the Institution he expressed his warmest thanks for and appreciation of their valuable assistance.

Mr. George Jennings proposed "The Architects and Surveyors," with whom he thought ought to have been included the civil engineers, for to the gentlemen of all three professions the building trade was indebted. With the toast he coupled the names of Messrs. Sandell and Franklin.

Mr. Sandell, in responding, was almost inaudible, but he was understood to refer to the altered conditions of the building trade now as compared with those existing fifty years ago, when architects and clerks of works were few and far between, and when each department of work was intrusted to the care of a master workman.

Mr. Franklin urged the members of the building trade to protect their own interests by invoking the assistance of competent and respectable surveyors more generally than was the case at present.

Mr. Burt proposed the "Directors and Stewards," coupled with the name of Mr. Simpson, who briefly responded, and the proceedings terminated.

AMERICAN INSTITUTE OF ARCHITECTS.

The convention of the American Institute of Architects, which was held at the end of last month, was neither very largely attended nor exciting; but it was not wanting in animation and interest. According to the *American Architect*, which publishes the address of the president, Mr. Walter, it had the advantage of an unusually symmetrical programme, in which the discussions were well balanced between practical and artistic questions, and divided the time with executive business and sight-seeing. A resolution was passed appealing to the Government to undertake tests of materials and methods of construction which claimed to be fireproof. A valuable suggestion, which was appropriately referred, was made by the Rhode Island Chapter, that a report be prepared on the various building materials supplied by the country.

Mr. Walter, in his address, spoke thus as to competitions:—

"Competition of any kind is no more necessary in architecture than it is in other learned professions; but public opinion being in its favour, it remains for architects to seek to remove, as far as may be, the evils attending it. The only just and equitable method that appears to be practicable to obtain competitive designs for a public work is for the authorities entrusted with its management to select a given number of architects, and to extend to each a special invitation to furnish designs in competition, under a schedule of graded premiums, corresponding in number with the competing architects, care being taken that the lowest premium is sufficient to cover the expense of producing the design, so that no competitor could be an actual loser by the operation. In all such competitions the drawings should be made to a similar scale, and finished without colouring. After their reception by the building committee or commission, they should be submitted to a board of experts, consisting of at least three non-competing architects of acknowledged proficiency in the science of architecture, selected from the Fellows of the American Institute of Architects, and two civil engineers of undoubted skill in their profession. The board of experts thus constituted should examine the several designs; and whatever decision they arrive at, as to their relative merits, should be considered as final; and the competitor receiving the highest premium should be appointed architect of the building at the usual rate of compensation for his services. By thus limiting competitions to a given number of selected architects; by referring the designs they submit to a board of experts of acknowledged skill; by awarding graded premiums, according to merit; and by appointing the competitor who receives the highest premium the architect of the proposed work, the evils of competition may, in a great measure, be avoided."

THE TELEPHONE.

According to the *Deutsche Verkehrs-Zeitung*, experiments have recently been carried on at Berlin with the telephone of Professor A. Graham Bell, of Boston, the trials having been attended by "surprisingly favourable success." The experiments for verbal intercourse by means of the telephone were made between the Berlin General Post-office and the Central Telegraph Station, and they are said to have been of an exceedingly interesting nature. They took place, at first, in the Berlin Central Telegraph Office, in the Französische Strasse. The connecting wire was laid for a distance of about a hundred yards through several rooms, and the experiments begun with closed doors, so as to prevent even the possibility of a transmission of waves of sound from one end of the conduit to the other without the aid of the telephone. It soon appeared that not only single words, but protracted sentences, were perfectly and easily understood by both sides when the telephone was applied. Indeed, even modulations of the voice were distinctly perceptible, the peculiarities of voice of each individual person speaking being also clearly recognised. The first trial having thus proved so eminently successful, it was resolved to at once increase the distance, and to carry on a conversation by the aid of the two telephones through the underground cable connecting the Central Telegraph Station and the General Post-office, a distance of about one mile and a quarter English. The latter experiments were also successful. The words spoken were easily understood, the rising and sinking of the voice, as well as the peculiarities of individual persons, were plainly discernible. Musical notes were also distinctly heard. Of the songs tried, tune as well as words were audible to every ear. Even the *piano* of a violin was perceived.

Experiments were made a few days later on a more extended sphere of operations. Although the apparatus used had been designed only for limited distances, it was found that its effectiveness had been greatly underrated. Speaking experiments were first carried on through the underground cable connecting the General Post-office in Berlin with Schöneberg, next Potsdam, and, finally, Brandenburg, a distance of thirty-eight English miles. The success was here also complete. Words spoken in an undertone at one end did not only arrive at the other with perfect clearness, but the person speaking was at once recognised by the sound and peculiarity of his voice. It remains to be seen whether such a result can be obtained also when the overground telegraph is used. At any rate, the apparatus which was placed at the disposal of the Berlin postal authorities by the delegate of the English General Post Office staying in the German capital has satisfied the experts of Berlin.

As was to be expected, the German authorities have not been long in making practical use of the valuable invention. Since the 5th November the first telephone has been in operation between the room of the German Postmaster-General in the Leipziger Strasse and that of the Director of the Berlin General Telegraph Office in the Französische Strasse. The verbal intercourse thus established between the two offices is both satisfactory and constant. The Postmaster-General talks into the instrument on his table, gives verbal orders and asks questions, and receives verbal reports and answers from the Director of Telegraphs, on whose table the other telephone is placed. The conversation is carried on without a hitch, as if the two gentlemen were sitting side by side. It may be left to the official mind to imagine what valuable saving of time and stationery is thereby effected.

THE FUTURE POST-OFFICE AND THE EMBANKMENT.

With respect to the statement so authoritatively made by some of our contemporaries that the site of the new Post-office was settled to be on the Embankment,—by one with such circumstantiality that the very style of the building that should be erected was freely discussed,—we can but say that any such step must have been built on but little, or, rather, no foundation. It is true the site mentioned has been acquired by the City authorities, but only quite lately; and we do not think we are betraying confidence when we say the price paid for the eight acres of land was 300,000*l.*, but no preliminary *pour parlers* even as to its reconveyance have yet been suggested by those who are, or would be, interested in either its sale or its purchase.

THE ARTISTS' RIFLE VOLUNTEER CORPS.

On Tuesday, the 6th inst., the members of the C company of the Artists' Rifle Volunteer Corps celebrated the tenth anniversary of its formation from among the members of the Architectural Association by a dinner at the Holborn Restaurant. The chair was occupied by Captain Ridge.

Colonel Leighton, R.A.; Major Edis, F.S.A.; Captain Paice (the president of the Association) and other representatives of the battalion, were the guests of the officers and men of the C company on the occasion. Captain Florence, of the 40th Middlesex, and many others who had formerly served in the ranks of the C company were also present.

Colonel Leighton was called on to return

ks for the toast of the "Army, Navy, and iliary Forces," and in doing so he gradually up to the announcement that he had been ested by the noncommissioned officers and of the company to present an elegantly-rned sword to Captain Ridge, in acknow-ment of the zeal shown by him in connexion the company since its formation. The rman, who was altogether unprepared for episode in the entertainment, in a few rty words, returned his thanks for the honour owed on him.

ajor Edis, the orgical promoter of the itectural companies, proposed "Success to ompany of the Artists," and while he likened miserable weather of that evening to that of corresponding evening ten years ago, when first members of the company were enrolled, contrasted the then existing state of the ists' Corps with its present largely increased abers and efficiency. The C company has, he result of the work of its tenth year, an ctive roll of exactly 100 men, of whom no a percentage than ninety-eight are efficient. imultaneously with the success of the C com-y, Captain Paice's Architectural Company very largely increased during the past volun-year.

SOCIETY OF ARTS.

HE following arrangements for the Wednes-evening meetings previously to Christmas e already been made:—

ov. 21.—Address by Deputy-Chairman of the Council, W. Hawes, F.G.S.
ov. 28.—"The Telephone," by Professor Graham Bell.
ec. 5.—"The Weak Points of the Elementary Educa-Code, with Suggestions for its Revision," by the E. F. M. MacCarthy. Sir Charles Reed, chairman e London School Board, will preside.
ec. 12.—"Freedom in the Growth and Sale of the os of the Farm, considered in its Bearings upon the rest of Landowners and Tenant Farmers," by Mr. Lawes, F.R.S.
ec. 19.—"State Aid to Musical Education, at Home Abroad," by Mr. Alan S. Cole.

he Cantor Lectures,—Monday evenings:—

rst course, on "The Manufacture of Paper." Six res by Mr. William Arnot, F.C.S.
econd course, on "The Application of Photography he Production of Printing Surfaces and Pictures in nent," by Mr. Thomas Bolas, F.C.S; and
ird course, on "Some Researches on Putrefactive nges, and their Results in relation to the Preservation nimal Substances," by Dr. B. W. Richardson, F.R.S.

course of three lectures on "Explosions in l Mines," will be delivered by Mr. T. Wills, .S., in January and February.

OPOSED NATIONAL TESTIMONIAL TO MR. ALLPORT.

POLICY OF THE MIDLAND RAILWAY COMPANY.

R,—The renewal in your columns of the advocacy of blic testimonial to the manager of the Midland Rail-, Mr. Allport, raises a very important question. The *der* will do no small service to the commercial and ustrial world if it throws such light on this question as l lead to its satisfactory solution.
must be admitted that there is a considerable differ-e between a public testimonial, to which the public are ed to subscribe, and one of those private felicitations h come within the limits of personal friendship. As he latter, the public writer has nothing to say, unless ay be to express congratulation at any instance of ate worth being brought to light, or at feelings of good wship gracefully made tangible.
s to the former, the case is altogether different. A ic testimonial, from the days when Demosthenes ve for the crown down to our own, means much more a general tribute to private worth. It partakes of nature of what our foreign neighbours have taught us all a demonstration. It must be founded on public ice. If the nature of that public service be question-, the onus lies on the proposers of the testimonial to y that the question has been decided in favour of the e.
e had an example, which ought to be an instructive of the neglect of this wise distinction in the testi-ial presented to Mr. Hudson. At the time when that leman held a position almost without precedent ess it was in the yet more famous case of Law, and the tement of the South Sea Bubble), it was proposed to w him public honour for having done so well for him-and for his friends. Some of us can remember the of arguments which was urged in order to procure scriptions. Nor was the motive, in that case, far to . Whether the eager desire to appear on the list of scribers so long as Mr. Hudson was believed to have power to turn all that he touched to gold, or the savage tion, when that power had vanished, by which the ner flatterers took vengeance on the object of their ice, was most disgraceful to the country, may be bted. At all events, the lesson remains a very striking It should be maturely pondered by all those who note public testimonials, at all events, by all those se motive in so doing is more public-spirited than a e desire to secure a "commission" on the subscriptions ined.
the present case, I have not a word to say either nst the virtues which may adorn the private life of the leman to whom it is proposed to do honour, or in reciation of the vigour and energy which he has bted, for so many years, to the service of the Midland way. And if the shareholders of that railway, unsolicited, are disposed to show their appreciation of these qualities, the fact will be one calculated to encourage many a hard-worked, thoughtful, and deserving man.

But it is another thing if, as your correspondent states, copies of a letter from an anonymous individual being sent round to the London and provincial press, and paragraphs having been duly distributed, a local mayor is induced to propose a national testimonial and address. In order, in any way, to justify an appeal of this nature, it is necessary to show that the policy inaugurated by the Midland Railway, under the influence of Mr. Allport, is sound and wise. Nor is that a trifling question. If the policy be the true one, and as such affords a just claim for a national testimonial towards its author, it ought to become general. In fact, if the Midland theory be true, that of other lines, the directors of which decline to follow this policy, must be false. The presentation of such a testimonial, then, is an expression of opinion on the part of the subscribers that the main outlines of the Midland policy ought to be adopted by other companies. I am not either asserting or denying that such may be the case, but I must urge that it is essential for the promoters of the testimonial to prove that it is actually the case.

The Midland Railway is a truly colossal undertaking. Its paid-up stock and share capital, at the end of 1876, was 45,723,351*l.*; its loan and debenture capital was 13,683*l.*; and it had subscribed 4,679,812*l.* to other companies. Its revenue for that year reached the large figure of 6,245,218*l.*, or 10¼ per cent. on its capital. But we must regard, if we wish not to be dazzled, not so much the actual condition, as the progress and movement of the line, if we wish to form an impartial estimate of the policy which has piled up such a vast capital. The length of the Midland lines, which at the end of 1871 was 989 miles, was increased, by the end of 1875, to 1,139 miles. But the cost per mile, which was 42,161*l.* on the smaller distance, had risen to 47,834*l.* on the larger. The gross receipts at the same time had risen from 4,580*l.* to 5,211*l.* per mile per annum. Viewed in this light it may be said that the great increase of capital had produced a more than equivalent increase of business. So, in a sense, it has. But if we look to the net income per mile, which is the test to prove the wisdom of the policy adopted, we find that so far from having been increased by this great increase of capital, business, and consequent cost and danger, it has actually diminished. In 1871 it was 2,491*l.* per mile, in 1875 it had fallen to 2,416*l.* per mile. In consequence, the proportion of net receipts to capital, which in 1871 was 5·908 per cent., had fallen, in 1875, to 5·119 per cent. So that, in point of fact, the depreciation in the value of the Midland stock, during the four years in question, has been 15 per cent. The gross capital of the line has been raised from 41,698,999*l.* in 1871 to 54,449,218*l.* in 1875. That is to say, the shareholders have put their hands in their pockets for 12,752,219*l.* But the depreciation of earning from 5·908 to 5·16 per cent. is equivalent to a loss of more than eight millions sterling, so that the net movement of the four years has resulted in a subscription of thirteen millions and a loss of eight. If we take the figures up to the end of 1876, they will be still more instructive; but I confine myself to published authorities to prevent any risk of error.

Now, sir, no one can be more convinced than I am, that cheap fares are desirable for all parties. They increase the business of the railways, and they facilitate the general business of the country. But in order to do this permanently and efficiently they must not diminish the profits of the companies. If they do this it shows that there is some error,—some screw loose. The English companies have not yet made any approach towards the low fares of the Indian lines. The tariff for the third-class passengers is pretty much the same throughout the kingdom. As to giving facilities for the third-class traffic, it is now everywhere the rule, instead of being, as formerly, the exception. What the proprietors of railways, therefore, have to look forward to is the increase of their net profit by such an increase of traffic as pays. It is positive loss to induce gross traffic, unless there be a corresponding increase of net traffic. On the Midland this positive loss has occurred. Capital per mile has been increased 13·5 per cent., gross traffic has increased in a somewhat larger proportion. Net traffic has declined. This does not come before the world as a satisfactory result of a model policy.

Your correspondent, "Gratitude," may perhaps be able, in some way which I cannot anticipate, to show that a policy which has reduced a net earning of over six per cent. to one of under five per cent. in five years is a good policy. If he can do so, he has a good basis for claiming a national testimonial for the author of the policy. And, at the same time, such a testimonial will be a significant hint to the directors of other lines to change their hands.

But if the proposers of a national testimonial cannot do this,—not as matter of vague sentiment, but as matter of practical businesslike common sense, they are bound, and all who stir in the matter are bound, to confine their claims to those of mere personal good feeling. For a national testimonial to be given in honour of a policy which has reduced the net earnings of a line from six to five per cent. is, as it appears at present, something like a contradiction in terms.

R. M. R.

UNSANITARY "MODEL" BUILDINGS AT PECKHAM.

THE Camberwell Vestry have induced the Metropolitan Board of Works to take action in respect of certain new model lodging-houses which are now in course of erection by Mr. W. Nunn, a builder, in Choumert-road, Peckham. At the meeting of the Metropolitan Board last week, a letter was read from the Vestry of Camberwell, drawing the attention of the Board to these houses, which it was stated were defective in construction, especially as to their want of sanitary appliances, and requesting that an officer of the Board might be instructed to examine the buildings and report thereon, the Vestry being of opinion that it was not desirable that the buildings should be allowed to proceed towards completion if any steps could be taken to stop their further progress. Mr. Dresser Rogers, in supporting the request contained in the Vestry's letter, said that this was a most important question, affecting the metropolis at large. At the present time the Board were taking steps, at considerable expense and trouble, under the orders of the Artisans' Building Acts, to pull down old buildings in the metropolis, and replace them with others of improved construction. The Vestry of Camberwell, being aware of that fact, spoke very strongly on this matter, because they felt strongly upon it. It would be found that whilst many houses were being pulled down, they were being replaced by houses of a far worse description than those originally existing. In the present instance the sanitary arrangements of the houses erected in Peckham were exceedingly defective. Unless the Board stepped in to put a stop to this style of building they would find that all over London the rookeries which had been condemned would again arise, to the great detriment of public health. He moved that the matter should be referred to the solicitor. Mr. Selway, in seconding the motion, suggested that the district surveyor, who appeared to be implicated in the matter, should be requested to attend before the Works Committee to explain the matter. The proposal was adopted, and the alleged defective character of these buildings will now be fully inquired into.

CERTIFICATES.

SIR,—I am much pleased with your answer to an over-clever correspondent. It is quite time that a little more practical common sense was introduced into sanitary matters, and less theoretical (so-called) nonsense published. What a strange thing it is that we have not a reliable society within reach of the practical mechanic, where the architect, doctor, plumber, and all interested in sanitary matters could meet and hold discussions, and where certificates of competence could be given. When you see the great variety of fever-traps, called water-closets, and the absurdities of the new water-companies' regulations, &c., it should be a matter of surprise that there is not more sickness. You little know, sir, the great boon you would confer on society at large if you could, by the aid of your paper, promote a society of this description, in whose certificates the public would have confidence.

C. W. T.

MANCHESTER BATHS COMPETITION.

MR. J. G. LYNDE, the Manchester city surveyor, is good enough to inform us that the following is the result of the competition designs for baths and washhouses for this city. Thirty-one sets of plans were sent in, out of which three bearing the following mottoes have been selected for premiums by the committee, and approved this day by the council. For the first premium of 200*l.*, the design bearing the motto "Economy well considered," by Mr. J. Johnson, of Queen Victoria-street, London; for the second premium of 100*l.*, the design bearing the motto "Experience," by Messrs. Mangnall & Littlewood, of Brown-street, Manchester; for the third premium, of 50*l.*, the design bearing the motto "Concilio et Labore," by Mr. J. Lowe, of Mansfield-chambers, St. Ann's-square, Manchester.

The designs have been open for exhibition to the public at the Town-hall during the whole of the week.

THE MASONS' STRIKE IN LONDON.

THE masons' strike still continues. On Saturday last the Masons' Strike Committee had a busy day, as the strike pay of 18*s.* per man had to be paid to about 700 men who were on the strike roll, and although a large number of these receive their pay at their own lodges, a very considerable number, including such foreigners as now remain on the roll, receive their money at the committee-rooms. The amount paid in this way to the men on strike was about 630*l.* The expense of sending away the Canadians, Italians, and Germans in the earlier part of the week, brought the week's disbursements up to about 900*l.* On the other hand, the receipts from the country have been about 100*l.*, and this, with the regular levies, swelled the total income of the week to about 1,000*l.*, so that the balance in hand considerably exceeded that at the end of the previous week, being over 400*l.* The masters have issued the following notice:—

"The Central Association of Master Builders of London, No. 3, Westminster-chambers, Victoria-street, S.W., to the American and Canadian masons and stonecutters lately arrived.—Notice is hereby given to any of the above who have not commenced work under their contracts that

unless the Americans present themselves at Mr. Booth's works at the Temple, and the Canadians at Messrs. Dove Brother's works, Studd-street, Islington, on or before Wednesday morning next, the 14th inst., they will be considered to have broken their contracts, and will render themselves liable to legal proceedings.—Stanley G. Bird, hon. sec.; Chas. Goolden, secretary."

The Strike Committee have commenced an action for the damages occasioned by the detention of tools.

On Tuesday afternoon a large meeting of master builders was held at the Westminster Palace Hotel, Mr. G. F. Trollope in the chair. The secretary reported that they had offers on hand from the Continent of no less than 1,000 good and efficient masons ready to come over and commence as soon as arrangements could be made.

A motion was passed expressing approval of the action taken by the committee since last general meeting, and stating that the meeting saw no reason for any alteration in its present course. The following resolutions were also passed:—

"That the committee be empowered to continue to bring over foreign workmen, beyond those now engaged abroad and on their way to this country."

"The Central Association of Master Builders of London tender their best thanks to those provincial associations who have expressed their sympathy and offered their assistance during the strike, and hereby authorise the committee to accept such assistance, more especially with a view of bringing to London such masons as are out of employment in the provinces."

A letter from the masons requesting a conference was left to be answered by the committee, after a unanimous expression of opinion that no such conference should be agreed to.

FLITCROFT'S MONUMENT.

SIR,—It is nineteen years, four months, and five days since Peter Cunningham asked me to accompany him to Teddington, to see the monument of Flitcroft, the architect. Passing the other day, I found the church had been renovated, and that Flitcroft's Monument had been much detrimented. A portion of the Wedgwood-like vase of the period is gone, and no one would read the inscription if he had not had his attention drawn to it. I have heard that architects are, as a rule, penurious, and that they have little sympathy one with another. I knew Sir John Soane, and agreed well with him. Tite gave the Cocked-Hat Club once a dozen of champagne,—but that might have been for the *éclat* of the thing. Talbot Bury always gave me a good cigar, and Ashpitel gave a glass of good wine. But your knowledge of them is greater, and therefore you will know if it is likely you could get a few shillings together for the proper restoration and protection of this monument. There is a man near me who would be glad to do it, and I think it is just in his way. He was the right hand of poor Durham. AN OLD BOY.

*** We will take our part in the work with pleasure if anything can be usefully done.

ARCHITECTS' ACTIONS.

PUGIN AND THE EASTERN COUNTIES AQUARIUM COMPANY.

A CLAIM was made in the winding up of this company, in the High Court of Justice, Chancery Division, by Mrs. Pugin, the widow of the late Mr. Edward W. Pugin, architect, and Mr. Calder, formerly his assistant, for a sum of 625*l.*, alleged to be due to Mr. Pugin and Mr. Calder, in respect of plans and drawings prepared by them for the erection of an aquarium at Yarmouth. The company was originally projected and promoted by a Mr. Leather and other parties in the year 1872, when Mr. Pugin was employed to prepare the plans for the building.

The company was registered in February, 1873, and the articles were signed by seven persons, who took eighty shares between them. A pro-pectus was issued containing the names of seven gentlemen as directors,—namely, Lord Claud Hamilton, Mr. R. Baxton, Mr. J. Goodson, Sir Edward Lacon, the Hon. Ashby Ponsonby, the Hon. Frederick Walpole, and Mr. Wolverton; and at the first meeting of the directors the plans prepared by Mr. Pugin, which were of an elaborate description, were approved of, and he was requested to make further plans for carrying out the buildings in sections. This was effected; but the company were unable to obtain sufficient money to carry out the undertaking, and the project failed, and the money already subscribed was repaid to the shareholders. The directors had taken an indemity from Mr. Jackson, the contractor, and several of the persons to be employed in carrying out the buildings, that, in case the capital could not be collected, there should be no liability to the company in respect of the contracts entered into with them; but, in the case of Mr. Pugin, no such indemnity was required. The defence to the claim was, that Mr. Pugin was employed by the promoters of the company before any company was actually framed or directors appointed, and was himself one of the promoters; and that these plans and drawings were only prepared provisionally, and in case it should turn out that sufficient capital could be procured; and further that no formal steps were ever taken by the directors to sanction the employment of Mr. Pugin to carry out the plans.

The Vice Chancellor (Malins), without calling upon counsel for the defence, said he regretted being compelled to decide against this claim; but it was clear, in his opinion, from the evidence, that the work carried out by Mr. Pugin, as well as by the contractor, was done upon the understanding that if sufficient capital could not be obtained to start the company, there would be no liability incurred by the directors. The money was not obtained, and what had been subscribed was returned to the shareholders. Under these circumstances his Lordship was of opinion that the claim by Mr. Pugin and Mr. Calder would not be supported as against the company, whatever they might be against the persons by whom Mr. Pugin had been employed, and the summons must, therefore, be dismissed, with costs as regarded the adjournment into Court, and without costs as regarded what had been done in Chambers.

Some letters on this subject have reached us, too late for consideration till next week.

THE DESIGN IN CLEOPATRA'S NEEDLE.

SIR,—In your issue of the 27th of October last you record a fact which has not, I believe, hitherto been made known, viz., that the base of the obelisk is not square on plan, but an oblong, measuring 7 ft. 5 in. on two of its sides, and 7 ft. 10½ in. on the other two. This inequality of width in the base of an obelisk which was placed in a city probably at that time the centre of art and literature, could scarcely have been the result of an accident, and it has occurred to me that on æsthetic grounds there may have been some special reason for it. It is well known that a column or obelisk, when seen in an open space against the sky, loses somewhat of its apparent diameter; in other words, the bright light behind encroaches upon it. Now, these obelisks were placed in front of the great pylons or gates to the temples, in some cases lofty masses of masonry 300 ft. long, and when viewed in front, with the pylons behind, the diameter of the obelisk would retain the apparent value of its real width; but when seen from the side, with the clear sky behind, the real width would be diminished in appearance. If there is any truth in this theory, the narrower sides of this obelisk must have been placed parallel with the walls of the pylon, and the greater width of 7 ft. 10½ in. would, with the sky behind it, have had an apparent width of 7 ft. 5 in.; or, in other words, the obelisk would seem to have a square base. This important fact ought to be taken into account in deciding upon the site on which the obelisk should be erected.

R. PHENÉ SPIERS.

THE ARCHITECTURE OF LIGHTHOUSES.

SIR,—I have read your excellent article under the above heading with especial interest; for it chanced to be perused amidst the one hundred and forty isles which, some distance out in the Atlantic, help to form the group of Scilly,—a spot, of all places in the world, where light should be appreciated.

Pray permit me to remind you, as a sort of supplement to your interesting account of the Eddystone, that this well-known lighthouse is doomed, and will, no doubt, at an early date, be taken down. It is not its masonry, nor anything connected with the general construction, that is at fault; the weak point lies in the foundations. The rock upon which the structure stands is, if I may use the expression, literally rotting away. Whether the Eddystone will be rebuilt upon a surer basis, or whether the whole pile of rocks upon which it stands will be blown up—as those which obstructed New York harbour so recently were—remains, I believe, for the present, an unsettled question. HARRY HEMS.

St. Mary's, Scilly Isles.

Victor Emanuel Gallery, Milan.—The architect of this gallery, Signor Mengini, directed that a part of the interior walls should be treated with the petrifying liquid of the Silicate Paint Company, Liverpool and Cannon-street, in order to observe the effect of the material. It was watched for the term of two years, and the result was so satisfactory to the architect that the municipality were recommended to apply the liquid throughout the structure. A special scientific investigation was, however, directed to be undertaken by the official assessor. The material having undergone this ordeal, a contract for a supply has been entered into with the company.

DISPUTE AS TO WATER-SUPPLY.

OLDHAM *v.* THE CORPORATION OF LEAMINGTON.

IN the Warwick County-court, on the 6th in an action was brought by Mr. John Oldha contractor for supplying water to Leaming to recover 49*l.* from the Corporation of that to for water supplied to that town over and abo the quantity which he was required to supp Mr. Young (instructed by Mr. Sanderson) for the plaintiff; and Mr. Buszard, Q.C. (structed by Mr. Passman, Town Clerk), was the defendants.

The plaintiff's contention was that accordi to the terms of his contract, after giving notice to the Corporation, he was entitled charge 7*d.* per 1,000 gallons, instead of 1½*d.* any quantity supplied over 500,000 gallons diem. After hearing Mr. Buszard and Alderm S. T. Wackrill (the chairman of the Waterwor Committee), the judge held that the plaintif case had been completely rebutted, and that was not entitled to the extra charge. The contr must be read in its entirety, and the mere f of the plaintiff giving the Corporation the not which he had done did not constitute a barga to pay the additional amount, unless the Corp ration assented to the new contract. He the fore gave judgment for the defendants, w costs.

Re GRAVING DOCK, BLACKWALL.

SIR,—Allow me to add to the account of the abo graving dock now being constructed for Messrs. R. & Green, which appeared in your issue dated the 3rd in the following names in connexion with the works, via Messrs. Kinipple & Morris, consulting engineers, their resident representative, Mr. A. Nelson Barnes; W. R. Mace, agent for the contractors (Messrs. G. Be & Son), from whom Mr. H. B. Chapman receives his structions in the capacity of engineer. W.

Miscellanea.

The President's Address, Institute Architects.—We stated in our last (p. 112 that we had received an intimation from th Institute that the President's address was n to be given *in extenso*. The intimation came us through our reporter, who seems to have mi understood what was said. We are glad to fi this to be the case.

The Water Supply of London.—A speci meeting of the Metropolitan Board of Work was held on Wednesday last to receive a repo from the Works and General Purposes Com mittee on the question of the Board taking und their control the water supply of the metropoli purchasing the interest of the existing com panies, and extending the works. The com mittee considered it indispensable that th Board should submit a perfect scheme to Parli ment so as to include the purchase of the wat companies and the providing of a pure supply water for drinking purposes. They advised th separate Bills should be prepared for those pu poses, and had given instructions to the Parli mentary draughtsman to that effect. regarded the new works, the committee dre attention to the fact, as furnished by the est mates of the engineers (Messrs. Bramwell Easton and Sir J. W. Bazalgette), that by th execution of these operations, instead of th enlargement of the existing undertakings, whic would otherwise become necessary, an annu saving of 112,250*l.* would be effected. Th report was adopted by a considerable majorit We stated a month ago (p. 1036, *ante*) that th Committee had agreed to recommend the ado tion of the scheme.

The New School of Art at Macclesfield.— The foundation-stone of the new building for th Macclesfield School of Art was laid on the 6t inst. The building will have a frontage about 73 ft. to Old Park-lane, and will be erecte close up to the librarian's house, adjoining th Free Library, so that there will be an unbroke line of building from the Free Library corne The building will occupy the whole plot to th extent of Paradise-passage, to which it will ha a frontage, the dimensions from back to fro being at the widest part about 50 ft. A goo portion of the ground-floor space is devoted pri cipally to science. There will be a room 28 f by 17 ft. for science only, and in convenient co iguity, a laboratory and appliances for the pra ical study of chemistry. A large lecture-roo 45 ft. by 28 ft., on the ground-floor, will be eature of the arrangements.

Brief," a weekly epitome of current news, ght, and criticism, is the newest venture in nalism. It promises, for one penny per k, to be "at once a short record of note- thy events, a compendium of the manifold and wisdom of the entire Press, and a useful, ly repertory of facts, dates, and opinions, for re reference,—concentrated essence of Press, act." If the programme which the projectors e set themselves is well carried out,—no very thing to do,—the new paper will find hosts readers amongst those who have not time to e through the daily papers.

merican Edge-tools in Sheffield.—The York correspondent of the *Sheffield Inde- dent* writes, under date of October 26th, as ows:—The bulletin of the American Iron Steel Association says:—

We are reliably informed that a prominent cast steel ufacturing firm of Sheffield have been purchasing for time American edge-tools and implements, made of rican iron and steel, through their agency in Phila- hia, which they distribute among their English, South rican, and Colonial trade. A recent order from them xes was placed with Wm. Mann & Co., whose works t Lewistown, Pennsylvania. We are informed that , Brother, & Co., of Pittsburgh, chiefly supply these s with steel. Steel spring and edge-tools are con- ly being forwarded to this English house; in one week dozen steel hay-forks were sent, made of American by Sheble & Fisher and Myers & Ervien, of Phila- hia."

his true? That American pattern edge- s and hay-forks are very popular there is not slightest doubt, but can it be possible that erican steel is also becoming more popular n that produced in Sheffield?

he Tyne Shipbuilding Trade.—Local ers show that the Tyne trade is now greater n that of all Scotland put together; but while is the case, the shipowners do not limit their rations to their own port, but Newcastle s and skippers trade to and from every port he United Kingdom to every quarter of the ld. While this is the case here, the reports come from the Continent about the ship- ding there are most gloomy. In Germany, mark, and Sweden, the larger proportion of limited companies are winding up, and most he shipyards there have taken the form of ted companies,—one large establishment, h cut out in price some of our Tyne ship- ders, and built steamers which now trade to river, winding up after four years' work with ss, it is stated, of not less than 60,000*l.*! r or five years ago, one hundred sailing-vessels e building on the Italian coast of the Riviera, ween San Remo and La Spezzia; now there less than half a dozen. Compared, there- , with foreign nations, our condition is not ad; but it must not be forgotten that, after our shipyards are a long way off full work. he very least their machinery could turn out ple the present rate of production; and ker, Hebburn, Wallsend, and Jarrow present elancholy array of empty houses.

Veston Park Museum, Sheffield. — A e collection of archæological objects and s of art has recently been contributed to Weston Park Museum, Sheffield, by the Rev. ville J. Chester, M.A. Among them are some statuettes and groups in ivory, of Portu- e work, numbering about forty specimens. se are all religious in character, and many of n excellent in workmanship. They consist gures of saints in various attitudes of devo- representations of the Madonna and Child, of the Crucifix, with various other subjects, uding a wooden figure of St. Joseph, with y head, and a similar representation of ntony, of Padua. There is also a group in y, of Spanish work, representing a Pietà, the sed Virgin seated and holding the dead body r Lord upon her lap. Upon the walls of picture-gallery are several oil-paintings lent Mr. Chester, who has also lent a large number ncient Etruscan, Greek, and Roman bronzes, numerous pieces of English and Continental ery.

he Edinburgh and Leith Masons.—The ter builders of Edinburgh and Leith have n notice of a reduction to 9d. per hour, being rate agreed upon by the operatives and em- ers as the standard wage for the year. ng to the busy season which has now closed, neral advance was made to 9½d. per hour, higher rates of 9¾d. and 10d. being paid in outlying suburbs. The finishing of most of work in hand and the influx of masons from try jobs is considered by the masters to vant the reduction now proposed, which mences from and after this date.

Ramsgate Improvements.—A meeting has been held in the Town-hall to discuss the advisability of taking steps with a view to obtaining an Act of Parliament for the improvement of the town. The meeting was quite unanimous as to the desirability of something being done, but there was a slight difference of opinion as to whether action should not be deferred for another year. The majority, however, were of opinion that now was the proper time to go on with it, and to test the feeling of the ratepayers upon the question. After about an hour and a half's discussion a resolution was carried almost unanimously to the effect that the matter should be brought before the Local Board, with a view to taking the necessary steps for obtaining a severance from the town of Sandwich, and obtaining a charter of incorporation.

Tramways Vetoed at Brighton.—Application has been made to the local authorities at Brighton for their consent to the construction of a tramway within the boundaries of that borough. The applicants proposed to lay down lines from Preston,—the northern suburb of the town,—to the Pavilion, in the centre of the town, and also to have a spur running as far as the Lewes-road Cavalry Barracks, also at the northern quarter of the borough. The committee who received the application recommended the town council not to entertain it, and the council have unanimously approved the committee's recommendation.

The Horsham Monastery. — A correspondent says,—You mention the Horsham Monastery. Some months ago I paid a visit to it. The architects, M. Normand and his son, do not speak English. It is an enormous building, and planned after the fashion of the Charterhouse, the description of which is given in M. Viollet-le-Duc's Dictionary. The monastery is called "Parkminster," and is more than ten miles from Horsham. The works are not being done by contract, but on the French system. M. Normand has built other houses of the same kind abroad. The money comes from France. —H.

An interesting Investigation is being made of the several localities in the course pursued by Cæsar and his forces, in the *Liger* (*La Loire*) and round the coast, to the *Mare Conclusum* (bay of Quiberon), where the great naval fight took place between Cæsar's triremes and the fleet of the Veneti, the ships of which were furnished with leather sails. Dr. Phené, who is making the investigation, is also taking drawings and making casts of the principal engraved stones in those localities.

A Grammar School for Oxford. — At a special meeting of the Oxford Town Council, held on the 6th inst., it was resolved to establish a first-class grammar school, the corporation granting a site in the centre of the city of nearly an acre, and 4,000*l.* towards the building, as well as 100*l.* per annum towards its maintenance. There are to be fifty free scholarships tenable for three years, thirty of which are to be filled up from the public elementary schools.

The Harrow-road Improvement. — On Saturday last, what is known as the Harrow-road improvement, was opened to the public by Sir James M'Garel Hogg, the chairman of the Metropolitan Board of Works. The improvement consists in the widening of Harrow-road, and has cost about 195,000*l.* The road has been made 60 ft. wide throughout, the narrow portion forming the entrance having been formerly only 35 ft. wide in parts.

The King's School, Bruton, Somerset.—Extensive works are just commenced at the ancient King's School of Bruton, by the sanction of the Charity Commissioners, and include an extension of the dining-hall, new dormitories, offices, sick-rooms, &c. Messrs. Carpenter & Ingelow are the architects, and Messrs. Clarke & Son the builders.

The Institution of Civil Engineers.—At the first ordinary meeting of the session, held on the 13th inst., Mr. George Robert Stephenson, president, in the chair, the paper read was a "Review of the Progress of Steam Shipping during the last Quarter of Century," by Mr. Alfred Holt, C.E., of Liverpool.

Our Obelisk.—At the opening meeting of the British Archæological Association (32, Sackville-street), to be held on Wednesday evening next, the 21st, Dr. Birch will read a paper on "The Obelisk known as Cleopatra's Needle."

Compensation Case.—A claim for compensation made against the South-Western Railway Company with reference to land at Frimley, Surrey, has been settled. About two years since Mr. Kelsey, the freeholder and occupier of some hundred acres of meadow-land, was served with a notice to treat for seven acres of the land in question, and as the company made no offer the case went to a jury. Mr. Cole, Q.C., and Mr. Eyre Lloyd were counsel for the claimant; and Mr. Marriott, Q.C., and Mr. Percy Gye for the company. Mr. Geo. Fuller (land agent, surveyor, and valuer, of the firm of Fuller & Fuller) had the conduct of the case on behalf of the claimant, and his valuation before the Under-Sheriff, Mr. Abbott, and a special jury, amounted to 1,998*l.* 10*s.*, and these figures were supported by Mr. Saunders, Mr. Withall, and Mr. Eggar. The company called Mr. Christopher Oakley (of the firm of Danl. Smith, Son, & Oakley), whose figures amounted to 882*l.*, and the same view was taken by Mr. Pink, of Winchester, Mr. Buckland, of Cannon-street, and Mr. Ryde, the company's surveyor. The jury returned as follows:—For the seven acres of land taken, 700*l.*; general severance, 475*l*; special severance, 508*l.*; for the tenant's interest in other small holdings, 115*l.*—total, 1,798*l.*

Sanitary Works for Great Malvern.—On the 7th inst. Mr. Arnold Taylor, Inspector from the Local Government Board Office, held an inquiry relative to an application made by the Local Board of Malvern for powers to borrow, on security of the General District rates, the sum of 14,000*l.* for works of sewerage, and 3,500*l* for works of water supply.

TENDERS.

For mission-hall, St. Silas's, Toxteth Park, Liverpool. Messrs. T. D. Barry & Son, architects.

	Quantities supplied		
Appleton	£1,499	0	0
Woolfall & Williams	1,451	0	0
Roberts	1,419	0	0
Pears & Gill	1,386	0	0
Titterington	1,376	0	0
Yates	1,375	0	0
Jones	1,373	0	0
Smith	1,267	0	0
Mather	1,259	0	0
Tyson	1,209	0	0
Brown & Backhouse	1,208	0	0
Black & Toul	1,200	0	0
Thornton & Son	1,200	0	0
Nicholson & Ayre (accepted)	1,147	0	0

For the erection of the David Thomas Memorial Church and Schools, at Bishopston, Bristol. Mr. Stuart Colman, architect. Quantities by Mr. Deane:—

Veals	£7,861	0	0
Eastabrook & Sons	7,594	0	0
Baker & Sons	7,332	0	0
Hill & Prior	7,281	6	7
Davis	6,990	0	0
Wilkins & Hill	6,726	0	0
Banner	6,678	0	0
Stephens & Bastow	6,676	0	0
Lewis & Edbrook	6,611	10	0
Hatherley	6,283	0	0
Cowlin & Son	6,237	8	0
Howell (accepted)	5,868	0	0

For the erection of Board schools for the Clee-with-Weelsby School Board. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Darby	£4,189	0	0
Fidler	4,052	0	0
Fetcher & Thompson	4,035	0	0
Thompson	3,999	0	0
Brown	3,727	0	0
Haywood	3,698	0	0
Hobson	3,659	0	0
Hensman	3,583	0	0
Snowden	3,579	0	0
Hutchiffe	3,515	0	0
Farrow	3,486	0	0
Smith	3,3 5	0	0
Ruggall	3,236	0	0
Topham	3,2 0	0	0

For the erection of new offices, Black Horse-yard, Weststreet, Bristol, and heating same, for Mr. Joseph Hennessey. Mr. W. Cloutman, architect.

	Quantities supplied		
Wilkins & Son	£410	16	0
Cunningham	393	0	0
Lewis & Edbrooke	359	0	0
Hill	333	0	0
Wilkins & Hill	329	5	0
James	315	0	0
Hatherley	3 8	0	0
Eastabrooke & Son	3 7	0	0
Davis	289	0	0
Phillips (accepted)	286	10	0
Calder (without heating)	3 8	3	4
Banner do.	280	0	0
Hayes do.	253	0	0

For alterations, new offices, &c., to premises, Plymouth, for Messrs. Newbery & Hallett, tea merchants. Mr. H. Elliott, architect:—

Bishop & Son	£250	0	0
Foot	249	0	0
Tremain & Son	237	0	0
Treleaven (accepted)	216	0	0

For the fifth contract of the Cadogan and Hans Place Estate Co. Mr. John Ashdown, architect. Quantities by Mr. W. C. Poole:—

Pearson	£2,726 0 0
Mowlem & Co.	2,670 0 0
Nowell & Robson	2,580 0 0

For the erection of a block of industrial dwellings, Church-street, Chelsea, for Miss C. E. Stephen. Mr. Elijah Hoole, architect:—

	Cement flat roof.	Slate roof.	Extra for iron joists to flat roof.
Haydon	£6,950 0	£7,000 0	£150 0
Warne & Co.	6,830 0	6,940 0	92 0
Carter	6,568 0	6,768 0	85 0
Prout	5,793 0	5,943 0	100 0
Nightingale	5,623 0	5,698 0	50 0
Julian & Co.	5,036 0	5,036 0	*nil.*
Beale	4,990 0	4,825 0	21 0

Accepted for the enlargement of the North-Eastern Hotel, Goole. Mr. William Watson, architect:—

Fawcett (brick and stonework)	£1,000 0
Stewart (slating)	116 0
Walsh & Son (plastering)	230 0
Gibson (carpenter and joiner's work)	860 0
Backhouse (plumbing, glazing, and ironwork)	240 0
Butler (painting)	41 10

Accepted for restaurant, shops, and offices, for the Borough Market Co., Wakefield. Mr. Wm. Watson, architects:—

Bagnall, Bros.	£1,154 16 0

Accepted for altering the old slaughter-houses, Wakefield, for the Borough Market Co., Wakefield. Mr. Wm. Watson, architect:—

Bagnall, Bros. (all except iron)	£890 0 0
Shilitto & Harrison (ironwork)	353 0 0

Accepted for enlarging Bellevue Chapel, Wakefield. Mr. Wm. Watson, architect;—

Langton & Others	£404 10 0

Accepted for enlarging the Westgate Board schools, Wakefield. Mr. Wm. Watson, architect:—

Fawcett and Others	£325 15 10

Accepted for a warehouse, Westgate Common, Wakefield. Mr. Wm. Watson, architect:—

Dunn and Others	£360 15 6

For stabling at Pentonville, for Messrs. Brewis, Bros. Mr. Banister Fletcher, architect:—

Champion	£1,844 10 0
Terry	1,634 10 0
McCowan	1,525 0 0
Shapley	1,450 0 6
Bayes, Bros., & Allen (accepted)	1,398 0 0

For workshops at Radnor-street, for Messrs. Smith & Gale. Mr. Banister Fletcher, architect:—

Trill	£841 0 0
Angood	757 0 0
Hobern (accepted)	750 0 0

For sheds for Patent Straw Co., Paddington. Mr. E. H. d'Avigdor, engineer:—

Design No. 1.

Whiteley	£1,723 0 0
Young & Co. (corrugated iron)	1,652 0 0
do. (zinc)	1,627 0 0
Tildesley	1,320 0 0
Handyside & Co.	1,264 13 5
Cochrane & Son	1,241 0 0
J. O. & C. E. Brettell	1,219 19 6
Dixon & Co.	1,198 0 0
Head, Wrightson, & Co. (iron-work only)	690 0 0

Design No. 2.

Elford	817 0 0
Whiteley (accepted)	800 0 0

For Maidstone drainage. Mr. Lewis Angell, engineer. Quantities by Mr. D. W. Young:—

Contract No. 2.—Concrete Sewage Tanks.

Botterill	£3,663 0 0
Lewis & Co.	4,900 0 0
Nowell & Robson	4,800 0 0
Downs & Co.	4,790 0 0
Neave & Sons (accepted)	4,119 0 0

Contract No. 3.—Main and Branch Sewers.

Botterill	£48,570 0 0
Downs & Co.	29,450 0 0
Nowell & Robson	27,500 0 0
Fordham & Co.	26,000 0 0
Neave & Sons (accepted)	21,450 0 0

For converting No. 53, Highgate-road, Kentish Town into a shop, building coachhouse and stable, &c., for Mr. Wm. Jones. Mr. J. B. Furniss, architect. Quantities supplied:—

Scrivener & White	£1,183 0 0
Wall, Bros.	1,090 0 0
Manley & Rogers	1,065 0 0
Row	990 0 0
Gould & Brand	977 0 0
Durnford, Bros.	937 0 0
Taylor & Son (accepted)	918 0 0

For the erection of two shops, Nos. 3 and 4, Donegal-place, High-road, Clapton, for Messrs. A. Webb & P. Dashwood. Mr. Robert Blackmore, architect:—

Niblett (accepted)	£1,235 11 0

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Grover	2,984 0 0
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Vol. XXXV. No. 1816. Saturday, November 24, 1877.

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The London Water Supply Question.

THE Metropolitan Board of Works have lost no time in giving a distinct answer to the question which the *Builder* put to that worshipful body, on the appearance of the report of Sir J. W. Bazalgette, Mr. Bramwell, and Mr. Easton, in August last. "In fact," we wrote,* "it comes to this: are we to put the cart or the horse first? Are we first to ascertain what it will cost to give a central body—the Metropolitan Board or any other—the full control of the water supply, and then to see how this may be partially or wholly improved? or are we first to attempt partial improvement; and then to find that, at additional cost, owing to our want of foresight, we have to acquire the general control?"

To this practical question a definite reply was given, on the 14th inst., by the report of the Works and General Purposes Committee on the reference of the Board, of the 23rd of February, 1877, and also on the resolution of the Board of the 23rd of March last instructing the engineer to report jointly with Mr. Bramwell and Mr. Easton. The committee have come to the conclusion that it is indispensable to present to Parliament a perfect scheme. They have, therefore, drawn up a Bill which is to carry both the horse and cart. They ask for power to make the compulsory purchase of the existing water companies, and at the same time to carry out the plan of the engineers consulted for a supplementary supply. As to the serious character of the undertaking thus sketched out we have the assurance of Mr. Roche, who moved the adoption of the report, that the Board "were not afraid of the magnitude of the work before them, nor were they afraid of the expense." It has yet to be seen whether the ratepayers are equally courageous.

It must be observed that the mode in which this gigantic scheme has now been brought before the public touches the question of expense to the metropolitan residents with gentle hand. "They considered that the supply of water could be obtained from the proposed new works, and effect a saving of about 70,000*l.* per annum." We quote from the *Times* account of the special meeting held to receive the report. That, so far as the notice given by the Works and General Purpose Committee goes, is the cheerful prospect which is now offered to the ratepayer,—a saving of 70,000*l.* per annum. But a saving to be effected on what? On actual present cost, of course, thinks the unprejudiced reader. Alas! this simple grammatical sense vanishes as the scheme is more carefully investigated.

It is remarkable that in an account occupying a column of the *Times*, and presumably giving a fair view of the essential parts of the report, as well as of the speech of its mover, not a single word is said as to what, after all, is the first question raised. What is the purchase of the existing works to cost? Of course, if 70,000*l.* per annum are to be saved to the ratepayer, that same cost matters little to him. It is only our uncomfortable suspicion as to the reality of the saving in question that leads us to put any further questions. As far as these questions can be answered from official documents, the reply is not reassuring. The cost of purchase, as to which the Board of Works are discreetly silent, has, however, been estimated by the gentlemen called on by the Board to report. The only inconvenience is, that their report was drawn up from a different point of view from that now adopted by the Board. That point of view seemed to us to be that it was desirable to get in the small end of the wedge. Therefore, it was pointed out how small that edge was. But unfortunately its narrowness was illustrated by a reference to the great width of the broad end. And now that the entire wedge is brought out before the world, this former admission as to its magnitude is memorable, and may prove inconvenient. "If the governing body of the metropolis were," said the reporters of August last, "at a cost of from 20 to 25 millions of money, to acquire the existing water companies, it would find that this expenditure was merely a first step in the outlay, and thus the 25,000,000*l.* would have to be supplemented by a further, and perhaps an almost equal, outlay." The first instalment, then, for which the ratepayer is to provide, is from 20 to 25 millions of money, and the larger sum is assumed as probable by Sir J. Bazalgette, Mr. Bramwell, and Mr. Easton. Concurrently with this the 5½ millions required for the scheme of these gentlemen are to be found. Thus the scheme starts with a cost of thirty millions sterling, with more than a hint that, under certain contingencies, it may cost fifty millions sterling. The Board and their spokesmen have the inconvenient adroitness of justifying their own plans at the moment by showing how much more plans of some other kind would cost. "Lay out five millions and a half," say the reporters, "at once, for fear you should be asked for thirty millions, or even for fifty millions, by and by." "Pass our Bill now," says Mr. Roche, four months later, "because you must remember that if the water companies were compelled to put on a constant supply, the ratepayers, in a few years, would be called on for about three millions of money." Three millions of money,—that is to say, per annum.

Now, is it not well to ask ourselves whether this is altogether a reassuring mode of attacking a question of such signal importance? If we dismiss, as we hope we may do with propriety, any idea of want of candour, or of an attempt to steal a march, or to get in, as before said, the small end of the wedge, can we allow that the matter has been treated with the forethought, gravity, and statesman-like ability which it so imperatively demands? Are these sums of five and a half, thirty, fifty,—up to eighty or a hundred millions,—which are thrown like shadows on the screen of the future, matters to be so lightly dealt with? We cannot admit such to be the case. The Board of Works may, it is true, be in possession of a carefully digested project, of which all the inconveniences have been foreseen, all the difficulties provided for, and the ultimate cost duly counted. If so, they have done themselves great injustice by not taking into their confidence the ratepayers, with whose money they propose so freely to deal. If otherwise, they have been guilty of the greater injustice towards these same ratepayers.

Let us look for a moment at what we may call the minimum sum of thirty millions sterling as required for the first setting up of the new water supply authority. We think we are right in saying that the loans hitherto raised by the Metropolitan Board of Works, taking into account both rate of interest and rate of issue, bear something like an interest of 3¾ per cent. on the actual amount of money raised. Of course, if these loans had to be paid off, there would be a further loss, but we are regarding them as permanent. The actual income of all the existing water companies is a little under 1,200,000*l.* per annum. The incidence of rate, which provides this income, is 6s. 6d. per head per annum; the total incidence of the metropolitan rates being 50s. per head per annum, out of which one-eighth thus goes to pay for water. The actual cost of distribution of the present supply is a little over 460,000*l.* per annum. Messrs. Bazalgette, Bramwell, and Easton allowed in their estimate 32,500*l.* for cost of distribution. As this scheme proposed to serve as many houses as are now supplied, besides providing an instantaneous supply at 75,000 separate hydrants, the contrast between the actual and the proposed expenditure partakes of the nature of the ludicrous. Even with that drawback, we still find a sum of 490,000*l.* per annum at least will have to provided for working costs. Eight hundred thousand, perhaps, would be nearer the mark, but let us take the smaller figure. Here is an additional 2s. 9½d. at one blow added to the existing rate of 6s. 6d. per head. And if we look forward to the highest charges intimated as possible by the Board of Works we shall find that the ratepayers will have occasion to congratulate themselves if their actual water-rates are not doubled in the future.

If this were all, serious as it would be, the change might even be worth this enormous cost. Supposing any authority in the professional and financial competence of which implicit confidence could be placed, were to come forward

* *Builder*, p. 847, *ante*.

and say, "The evils of the actual water supply of the metropolis are known and admitted. We are able to show how they may be remedied. We will provide every house with a sufficient supply of pure drinking-water, namely, two gallons per head per diem. We will also supply twenty-eight gallons of rain or other water per head per day for purposes of cleansing, sewage, street watering, manufacturers, and the like. We will so arrange that it will not be easily in the power of an idle servant or a careless occupier to take the common water for drinking purposes instead of the pure water. And we will keep a minimum head of 100 ft. of water on each of 75,000 hydrants distributed over London; the pipes being large enough to deliver a jet of 2,000 gallons of water per minute from each hydrant. The cost of this will be, say, 14s. per head of population per annum." Suppose this offer to be made, and to be made with material guarantee for the fulfilment of their part of the contract by the proposing purveyors of water, the ratepayers would, in our opinion, do well to think twice before rejecting it. High as would be the price, far be it from us to say that it would be too high. If the two great requisites of immunity from any possible source of disease arising from water, or want of water, and of comparative safety from fire, in consequence of the presence of an ever-available and ample supply of water, were secured, it is very possible that three millions sterling a year would not be a ruinous price to pay for such immense benefits.

What we do object to, however, is that the certitude, at present, is altogether on one side. That extra cost to the ratepayer will be increased by the compulsory purchase of existing waterworks is shown as clearly as possible,—though it is not directly stated,—by the report of Messrs. Bazalgette, Bramwell, and Easton. That any advantage, in any way, will accrue to the ratepayers by such a transfer, is a point left entirely in the dark. No evidence, no argument, is offered in order to show that such will be the case; in fact, the Bill as now proposed to be sent before Parliament may be taken as evidence to the contrary. The main advantage of a concentrated administration, in a financial point of view, has always been represented as lying in the disuse of duplicate works. But the introduction of a complete set of duplicate works is to accompany the transfer. Any idea, then, of utilising and improving the existing apparatus of supply by combining the different apparatus is abandoned. "Put all in our hands," say the Metropolitan Board, "it will only cost you ten or twelve millions of money." "What shall we gain by doing so?" asks the ratepayer. "Oh! you will have unity of action; and concentration of power to deal with the matter; and so forth," is all the reply. "Shall I have a single drop of water more, or a grain less of impurity in the gallon?" asks the ratepayer. "As to that, we have other things to propose. You shall have more and better water. For that, however, you will have to pay separately, of course." That is how the matter stands at present.

That the Bills of the Metropolitan Board of Works will become law in the ensuing session of Parliament we suppose no one seriously imagines. No persons, we should conceive, would be more disgusted at such a result than the legal gentlemen whose medium of life is in the stormy skies of Parliamentary Westminster. For the matter to receive a preliminary threshing is, no doubt, all that can be expected in 1878. But even as to this, the ratepayers should not be too secure It would be quite consistent with that magnanimous fearlessness of expense of which Mr. Roche boasts, for the Board to make direct and private offers to the several companies such as the directors of the latter would not feel justified in refusing. Indeed, if it be decided that, *coute qui coute*, the expropriation is to take place, it is probable that a little timely extravagance in this way would be an ultimate saving. The value of the Water Company stock is calculable by any accountant. The percentage due to any one for forcible expropriation is also capable of valuation. If it comes to serious negotiation, there would not be room for very material difference between the sellers and the purchasers in the case. The former, Parliament in view, could not stand out for a fancy price. The latter, under the same control, could not offer anything under the amount of a professional valuation. The difference in such a case could hardly amount to the certain cost of a long Parliamentary conflict. Therefore, if the Board were wise, and also resolute, and if the companies, whether resolute or not, were wise too, all parties might shake hands before the Bill came into committee.

But, in that case, who would represent the people of London? Have they given to the Metropolitan Board, who are, or ought to be, not their masters, but their servants, *carte blanche* on this subject? Have they given them authority to pledge the rateable property of the metropolis for 1,200,000*l.* per year, or for any sum between that and 3,000,000*l.*, in order to get the control of the water supply? Surely, not yet. There must be clearer statements and more precise figures first.

JOTTINGS AT WIMBORNE AND CHRISTCHURCH.

Wimborne is a small town, with little to interest the architectural visitor save and except its minster, which, on the other hand, is a small building, with very much of interest, quite disproportionate indeed to its limited extent, and the slight notice or illustration it has received. Externally, the striking feature of the building is the Late Norman or Transitional centre tower, the only important portion of the original Norman church which is visible externally. The east and west walls of the Norman transepts remain, but the transepts have been lengthened to about double their original extent at a late Gothic period (they were very shallow originally), and the former pitch of the roof lowered, so that from the exterior, at all events, there is practically little of them left. Adjoining the north transept, however, on the west wall, the extent of the original work is marked by the greater portion of the angle stair-turret, which has peculiarities that have led to a supposition of the Saxon origin of this portion of the building. The turret differs from the most common Norman plan in that it projects out from the external wall, instead of projecting internally into the floor area of the building; and it is square in plan at the lower portion only, breaking into a circular form above, and, as it now stands, rising a little above the present roof level, and finished with a bit of low-pitched conical roofing, it looks unusual enough. There are points about the architecture of the crossing internally which give a very primitive character to it, and rather bear out the idea that this portion of the church might have been pre-Norman, if we accept the idea that any of the simpler developments of what is generally called Norman architecture were really anterior to the Conquest. If it ever be possible to settle this vexed question, it can only be by a systematic and exhaustive critical examination and comparison of all the earliest Norman buildings in regard to which documentary evidence of date is attainable; and it may be doubted whether this kind of evidence exists in sufficient quantity or reliability to afford any means of settling the question at all positively after all.* The notion that this part of the structure was Saxon probably was suggested by the circular plan of the stair-turret, the circular tower being a recognised "peculiar" feature in some acknowledged Saxon remains; but there is not apparent in any of the masonry or details connected with this part of the building anything similar in character to that unquestionable Saxon architecture which we know at Barnack and elsewhere. All that can be said, in the present state of our knowledge, is that the lower portion of the crossing, up to the springing of the roof, is appreciably older in style than the tower and the nave arcade, the former especially, which could not have been built till some time after the arches on which it stands were constructed. Formerly there was an opinion among Dorsetshire archæologists that tower and all were the work of the untutored Saxon mind; an opinion which will be found recorded in Hutchins's History of Dorset, compiled about the end of the last century, but which a glance at the tower shows to be absurd, on any tenable theory of Saxon advancement in the art of architecture. At that period of time, however, it was the custom to call every building that had semicircular arches Saxon.

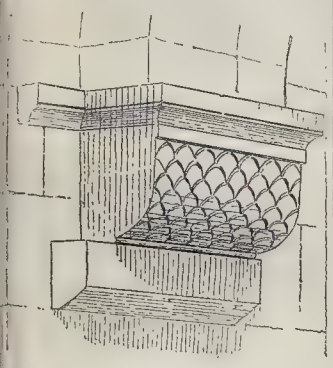
The centre tower is, in fact, a specimen, and a very fine and well-preserved one, of the type of work in which a distinctly Gothic feeling first appeared superinduced on, or blossoming out of, the characteristic Norman style. There could hardly be a specimen of architecture more markedly *transitional* in character; so much so that one seems to see the style growing, step by step, with each stage of the work. The architectural *ordonnance* of the bell-stage, for instance, consists of two semicircular-headed windows, with a pointed wall-arch between them, the pointed form being introduced simply to make the centre arch, over a narrower space, range with the others. In the stage over this, the decorative treatment consists of semicircular arches interlaced in the manner which used to be so often quoted as having given the suggestion of the pointed arch; and in this case there are actually pointed sub-arches, with a separate order of archivolt moulding, under the pointed spaces formed by the intersections of the semicircular archivolts. If this stage of decoration had occurred by itself it might really have been taken as a very strong indication of this origin of the pointed arch from interlacing circles; its design almost seems to emphasise this idea; yet it is found above a story in which the pointed arch has already been introduced from a totally different and in some degree practical motive. Another curious point for comparison is this: in the interior of the tower there is an open triforium arcade, consisting of narrow round-arched openings in groups of four, each group included under a very slightly pointed wall-arch (so that here is really the first appearance of the pointed arch in the upward progress of the tower); the shafts carrying these arcades are surmounted by a most interesting collection of transitional capitals, every one of which is a separate experiment in design, and all of which retain that semi-Classic or Romanesque type which was prevalent at a certain period of Transitional-Gothic architecture. But if we look from these to the caps of the exterior shafts in the next stage higher of the tower, we find already that in the process of raising the tower that stage the treatment of the capital has developed, that it approaches much more nearly in its outline and treatment to that character now called Early English. It is not often that one can see the style actually *growing* in one feature of an edifice so distinctly as in this tower.

Wimborne had, it is on record, a spire, which fell about the year 1510, shortly after which probably were built the ugly square oversailing pinnacles which now terminate its angles. The masonry of the Norman part of the tower is in very fine preservation, and the work of the most admirable character in regard to the depth and effectiveness of the mouldings and the general solidity of character of the whole. There is not, beyond the central tower, much of special interest in the exterior, some of which is restored, and where not so, it is mostly later Gothic of a not very forcible type; and the western tower is a commonplace specimen of Perpendicular work. The variegated treatment of the masonry is worth notice, consisting of courses of a light-coloured limestone intermixed with a reddish brown sandstone, not symmetrically, but with a kind of intentional irregularity, apparently.

Internally the most interesting point, at first glance, is the crossing. As the church at present stands, this is the oldest portion, from which the more recent additions radiate. The style here is of nearly the simplest and plainest phase of Norman, with half-cylindrical wall-shafts and cushion capitals: the curious point is that the provision for buttressing the thrust of the tower eastward and westward is here made not, as at Tewkesbury and other great Norman buildings, by extending solid piers eastward and westward of the crossing, but by advancing the jambs inward so as to make the north and south arches considerably narrower than the east and west ones. As the north and south arches are built nearly true semicircles, the consequence is that the east and west ones are flattened to a great, one would say a dangerous, extent, considering the superincumbent weight of the tower. It seems strange that constructors who were so careful about providing abutment against longitudinal thrust should have been so indifferent in regard to vertical thrust as to build a heavy tower on an arch practically flat at the crown; at the same time it must be admitted that the result seems to justify their confidence in the capability of their segmental arches, which do not appear to have succumbed in the least. There is something, however, in the whole arrangement of this part, and its rather clumsy and primitive method, as contrasted with the design of the greatest

* In regard to this most interesting question to the historical student of architecture, the description in Mr. Freeman's history, of England in the generation immediately preceding the Conquest, deserves special attention. He finds evidence that at that period England was, in many respects, half-Normanised already, chiefly through the influence of the appointment of Norman bishops, who of course might be expected specially to influence the style of the ecclesiastical buildings.

Norman buildings, which gives some colour to the theory that this was the ruder effort of a less instructed race of builders prior to the entire possession of England by Norman rulers and Norman artists. Eastward of the crossing one bay extends of the same date, beyond which the thirteenth-century work supersedes the original. But westward of the crossing there is nothing which is not appreciably later; so that there can be no doubt that in this, as in so many other cases, the crossing and the choir only had first been built: then the later builders took it in hand and added the nave first, and then proceeded to build the tower; by which time, as we have observed, they had got into the full swing of the transition towards the Pointed style. We find one curious little bit of evidence that the originally contemplated nave never was carried out, and that the existing one is on a larger scale than was intended by the builders who commenced the work. The accompanying sketch shows the impost corbel from which



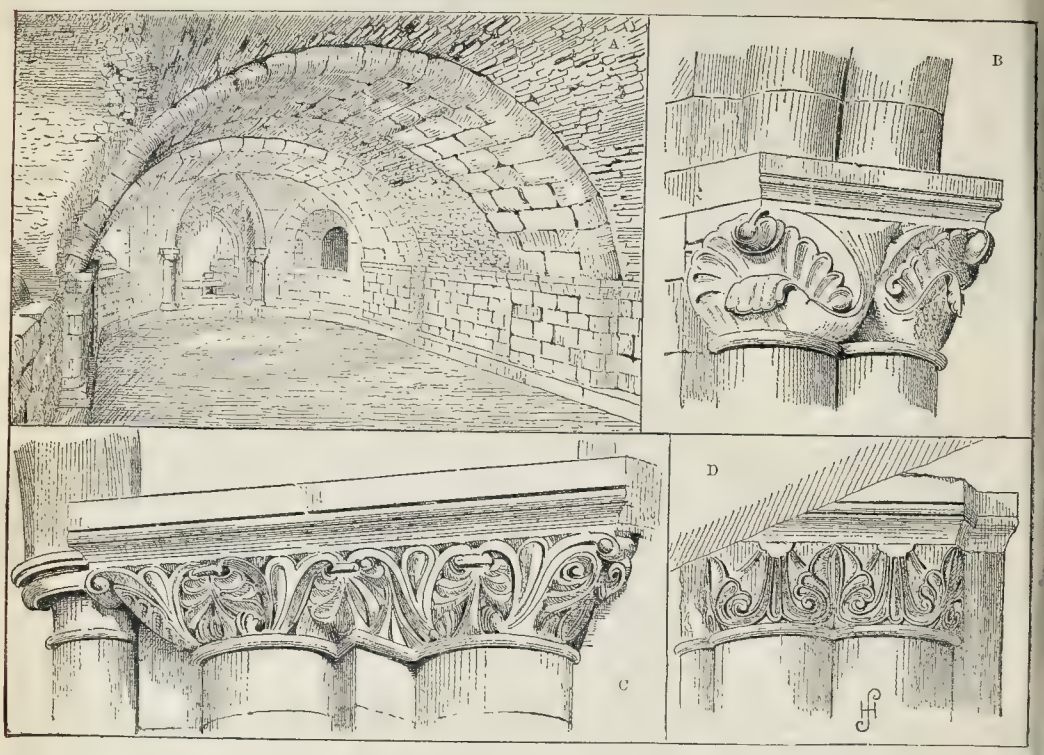
springs the first arch of the nave west of the crossing. The corbel with the scale ornament upon it ranges with and belongs to the period of the existing nave arcade; but just below it is seen a projection not central with this corbel, and having no relation to it, which is obviously the upper member of the impost originally built in for the springing of the first nave arch, before the new set of builders took it in hand. The nave which they built extends four bays to the westward, three of which consist of round arches of bold design, decorated with two separate orders of zigzag enrichment, the outer one zigzagging horizontally, and the inner or soffit one vertically; this being carried out on either face makes four large zigzags to each arch, which, on the small scale of the arches, confuses the lines very much, and looks rather barbaric. Westward of this part two more bays have been added in very Late Decorated work; and subsequently to these the western tower; the thickening of the piers inward to carry it cuts off part of the western arch of the nave. But the oddest and most puzzling feature in the nave is the first arch immediately west of the crossing. This is a narrower arch than the rest, as at Romsey, though the disproportion is much greater in this case; but this arch, springing from the corbel sketched above, is pointed. It seems impossible to suppose that it is not original, from its relation to the adjoining portions of the structure; but if so, it is certainly a singular instance of the appearance of the pointed arch, as one may say, before its time.

The nave at Wimborne has a modern hammer-beam roof, put up when the repairs and partial restoration were carried out a good many years since. The transepts still retain their plastered ceilings and mean-looking galleries. In the end of the north transept is a somewhat singular and apparently original geometrical window with uncusped tracery, in two very wide lights with a circle in the head between them; these have been propped in modern times by an extra mullion inserted in the centre of each light supporting the apex of the arch; the whole making a very odd combination. It is in the chancel that there has been most of restoration. It is noticeable that the Norman work, as is often the case, has lasted much better than the later additions: it seems to have called for little renovation, while of the thirteenth-century arch which adjoins the Norman work eastward scarcely a bit of the original seems to be left. The restored portions, we must notice with regret, have been made with little feeling for or knowledge of the details of the style: some of the sections of mouldings which are seen are wonderful. As our readers will probably remember, one remarkable point about Wimborne is the elevation of the choir above the rest of the church; first by more steps than usual at the crossing, then by a further elevation of seven steps further eastward, leading to what is now the altar-rail and the chancel. But this latter elevation is much later than the main part of the choir, and the manner in which it has been done, and the effect of the whole, is very curious. The main part of the choir is thirteenth-century work of the finest type, at the point when Early English was just developing into Decorative architecture: the east window consisting of what is really a set of lancet windows with a remarkable arrangement of cusping on a large scale on the internal mouldings, which above the cusp sweep round in a circle filled up by a quatrefoil light above the point of each lancet light, in a manner very unusual. The centre of the choir is connected with its aisles by arches of a very fine and rich type of Early English work, with many shafts set on the chamfer plane; but the jambs of the eastward arch are cut into by the raised floor of the chancel, which has been made quite independently of them. When this floor was raised there was formed under it what has been called incorrectly a crypt; this, is in fact, a chamber half above and half under the main floor level, with a vaulted roof supported on slight piers and carrying the raised floor above. This looks as if it dated from late in the fourteenth century, but the details of the vault and its piers have been extensively restored and renewed, and the details as existing now are mostly so unlike anything really Gothic that it is difficult to say what they were meant to reproduce. The choir, in fact, seems to have been greatly *over*-restored, while the transepts have been left in a somewhat forlorn state of dilapidation.

To snatch a glance at Christchurch while in the way of it, one has to go round the angle at which the two railways meet at Ringwood, after skirting the brown moors which form a kind of neutral ground between the Dorsetshire and Hampshire country. At Ringwood every one has to wait for everything (it is amazing how leisurely the railways are in these south-western counties), and there is time to notice that there is nothing of architectural interest in the town, unless we except a rather bald-looking modern Gothic church of some size, and that the flat meadow country in its outskirts, with the river bridges rising above it, reminds one of a Dutch picture. As to Christchurch, many of our readers must be familiar with it: still it is impossible to mention the place without a fresh word of admiration for its grand and picturesque and in some ways almost unique exterior as seen across the open ground from the north; more especially noting, in detail, the beautiful and well-preserved Early English work of the north aisle, and the fine and unusual design of the Norman transept, which has been very carefully and judiciously repaired rather than restored, and still retains much of its ancient work quite untouched and in remarkable preservation. Indeed, in general this church shows externally less of restoration, and less pretext for it, more fine work in fine preservation, than one often has the good fortune to encounter. The stone which has stood so well on the north side is believed to be from the Isle of Wight; it has a rich grey tone, and lichened surface now; but the mullions, &c., seem almost as sharp in section as when they were cut; the capitals in the Norman portion are more gone. We come upon the Saxon *versus* Norman question again in reference to portions of Christchurch, certain corners and remnants of which have been claimed as Saxon in the most decisive manner by the late Mr. Garbett, whose very interesting dissertations on the subject are appended to Mr. Ferrey's valuable book on the history and architectural character of the church. From his way of speaking of them, this writer seems to have included in the Saxon portions the interior wall-arcade under the windows of the south aisle of the nave, which he says presents in the capitals "a rude imitation of the Corinthian order." Our impression would be that they were just specimens of what we have often called the experimental character of transitional capitals; there is this to be said, however, in favour of the notion of their early origin, that they seem to be much more dilapidated than other capitals in the church which are of unquestionable Norman and Transitional date. We judge of this by the few that are left intact; but the fact is these capitals in the aisle-walls have for the most part been so much restored that, though the restorations have all the appearance of being correct and of being carried out under a true comprehension of the character of the work which they have supplanted, it seemed difficult to find any complete specimens sufficiently untouched to be reliable, otherwise we would have given some sketches of this series of caps. We do give a drawing of another portion of the building claimed by the same writer (who, we believe, is not alone in his opinion), as being of Saxon origin; the small crypt, namely, under part of the north transept (see illustration A, p. 1166), which is at least very unusual in its method of covering; the barrel-vault being strengthened at intervals, as shown, by a broad arch of squared stone springing from a projecting pier, and looking like a kind of first type of the vaulting groin. These piers are respectively 4 ft. and 6 ft. in width, with about 8 ft. between them; the corner stones both of the piers and the groins rounded; the arch springing from a kind of surbase-moulding about 5 ft. from the floor, resembling the usual upper member of the abacus of an Early Norman capital. The remainder of the vault is in very irregular work, mostly long, narrow stones running in the direction of the length of the vault, with very thick mortar joints, and looking rather as if this portion must originally have been plastered. The coursed masonry seems to have been repaired in some parts of the walls, but is mostly original, and in very good condition. The theory of Mr. Garbett is that when the Norman bishop, Flambard, commenced rebuilding the church in the reign of William Rufus, he removed the Saxon church, but left these crypts; adding to them, however, the semi-circular eastern termination which formed the base of the apse in the eastern wall of each transept. This theory at least accounts for the distinction between the construction of the oblong part of the crypt and the apse at the end, as the roof of the latter portion has regular vaulting groins springing from the two shafts flanking the doorway. These two shafts, however, seem earlier Norman work than the end of the reign of Rufus, to which Garbett's theory would bring them. Of course, the Pointed doorway behind is much later. The broken stairs seen through this door are unused now; the present entrance is on the left, by a narrow stair from the transept floor. There is a precisely similar vault under the north transept, which has been restored; the one shown in our sketch is left in a rough state, the window-openings half encumbered with *débris*.

The process of reparation, or restoration, or what the reader will, seems to have been carried on rather capriciously, or perhaps was untimely cut short for want of funds. A single one, for instance, of the original Norman apsidal chapels against the east transept walls remains (in the south transept), and has been restored in a very complete manner,—that is to say, there is hardly an old detail left. If this shocks the minds of virtuous anti-restorers, they will, on the other hand, doubtless be pleased by the state in which the shrines and sedilia in the presbytery are to be seen; battered and cracked, defaced in some parts with green mould, while one monumental recess seemed to be used as the receptacle for the sexton's poker and shovel, for the heating furnace and coke-cellar. This, of course, by new lights, is (barring the poker) all decorous and proper, and as it should be. There is a remarkably interesting chapel adjoining the south aisle of the choir, containing a beautiful Early English work with Purbeck shafts. This is in a state of lumber. The floor is half-covered with old tiling, which seems in process of getting gradually defaced. The transepts are disfigured with galleries extending over their whole superficies, put up about fifty years ago, of the worst Batty Langley type, the ceiling of one of which cuts across the curious and interesting capital shown in illustration D. Something less unsightly, more in keeping with the grand style of the building, might at least be substituted for these galleries. The capitals, of which we give illustrations, are among the best specimens serving to exemplify the interesting and peculiar semi-Classic or semi-Byzantine character of much of the ornamental work; that marked B is from the western respond of the south arcade of the nave; C is the impost at the north-east angle of the north

SKETCHES AT CHRISTCHURCH.



aisle, from which springs the arch over the east end of this aisle; adjoining it is the cap of the shaft from which springs the first groin of the thirteenth-century aisle-vault; the one marked D, cut across, as aforesaid, by the gallery ceiling, is against the west wall of the north transept. These capitals have been, the two latter especially, very carefully and symmetrically worked, and are in very good preservation. The seating under the galleries blocks out some interesting Norman arcade work. It is worth notice that the crossing at Christchurch presents the same peculiarity as at Wimbourne, of a flat segmental arch east and west, but not to nearly so great an extent.

Averse as we are to any unnecessary restoration, and thinking that restoration in regard to some details at least has been carried rather far at Christchurch, we cannot but say, on the other hand, that the state in which this grand interior is at present left is by no means creditable, or what it ought to be. The east portions should not be left so battered and disfigured; the transepts should receive new roofs or ceilings; and at a fitting opportunity the galleries, if practically necessary for accommodation, should be rebuilt in a less paltry and commonplace style.

Those who find themselves in Hampshire will do well, especially if it be in the autumn, to supplement their architectural ramble in the county with a little *détour* through some of the best wooded parts of the forest, the beauties of which seem to be curiously little known among many who cannot be said to be out of easy reach of them. If we land at Brockenhurst Station, on our way back, for instance, a drive in almost any direction will take one through woods glorious when in their autumn foliage: "tints" is far too quiet an expression; in many parts it is almost a blaze of gold and purple and rich browns, brought out all the more glowingly from the contrast of the vivid green of some evergreen which stands out in front of the decaying foliage. In this respect, Hampshire in October is well worth a visit, whether to those who journey with or those without a sketch-book.

Liverpool Master Builders' Association. The annual dinner of this Association was held on the 15th inst., Mr. W. Tomkinson in the chair.

MIDDLE-CLASS HOUSES IN PARIS AND CENTRAL LONDON.

That a writer or a speaker who presumed to address his colleagues, or even the public, should have some personal as well as studious acquaintance with the subject of which he treated, used to be more than an axiom,—it was a self-evident proposition. But the great perfection to which the art of public writing has attained, and the means now at every one's disposal to diffuse information—not to mention the exigencies of rapid journalism—permit men to describe, often with accuracy, things that they have not seen; and to discuss, sometimes with advantage, subjects which they have not had occasion to appreciate. I prefer the earlier custom; and I would not venture to call the attention of the leading architectural society to the matter of house accommodation in Paris, were it not a subject which, I humbly think, no other English member of our Institute has had an equal opportunity to study. During a residence of ten consecutive years in middle-class Paris houses, I have seen many hundred similar buildings rise from the vaulted cellars on which they rest to the mansarde which crowns them. I would, therefore, invite an examination of the method employed in Paris to house groups of people of different denominations upon one and the same restricted area of ground; to combine, in a single block, shops complete in themselves and distinct houses each complete in itself.

The title of this paper may shadow forth a treatise in several volumes; for the middle classes, both in Paris and London, are as ubiquitous as the houses in which they dwell are varied and dispersed. But the classes of a town population to which I would chiefly refer, consist of people who, in every phase of general society, live, like the ideal hero of the Latin poet, between the little and the great,—all those who, amid the organised clamour of working men and the optimism of dull prosperity, can neither gain the sympathy nor excite the cupidity of reform.

That the Paris house,—that is, the *maison-à-loyer*,—is entirely different in methodical arrangement from any in Central London I need hardly insist. Its principle of plan is based upon the Roman custom in vogue even during the time of Cicero, and brought, in the second and third centuries to systematic elaboration,—elaboration, though, which could not have reached a character other than comparatively primitive. But that two classes of domestic buildings were recognised in Rome as early as the close of the first century, is known, I think, beyond a doubt. There was the *domus*, intended for the accommodation of a single family; there was also the *insula*, or island of clustered shops and supposed dwellings. Incidents connected with the Roman mode of habitation are recorded at intervals up to the time of Palladio, when even noblemen, who resided in the heart of an Italian city, sometimes devoted the ground story of their palaces to shops and shopkeepers' dwellings; whereby they obtained a by-no-means despicable revenue. In parts of France, even before Palladio's time,—obviously in the great cities,—private houses were sometimes approached through a broad passage, bounded on either side by shops, let to different tenants, who had no connexion with the superstructure of which their shops formed simply the ground story. Scotland, whose relations with France, in the sixteenth and seventeenth centuries, were intimate and practical, adopted some of the customs of, at that time, a superior form of civilisation. In Edinburgh, in the year 1598, both gentry and tradesmen resided in "one broad and very fair street," but not, as in English towns, beside each other; the houses of the gentry were behind and above those of the shopkeepers, whose business compelled a monopoly of the street frontage at the ground level. A distinguished architect, the late Mr. David Bryce, assured me that in the Old Town there were immense blocks, of the end of the sixteenth century, thirteen stories high, and that each story was a large house. Nevertheless, they cannot be regarded as superior, except in size, to the Roman *insulæ*; the house was simply composed of rooms leading one into another. The same must be said of similar buildings in Paris about the beginning of the seventeenth century; and, indeed, until far into the reign of Louis XIV.

How in the course of two hundred years the Paris house has grown, may be seen by a comparison of the illustrated books published during that period. A series of model plans and elevations, given to the world by Pierre le Muet in

1663, contains designs for every variety of frontage and depth;* but they are for houses to accommodate a single family. In one, however, arranged to cover a plot of ground about 40 ft. wide by 100 ft. deep, it will readily be seen with what facility the different stories could be divided into distinct sets. Only, comparatively speaking, a small hôtel,—that is to say, a private mansion,—it is built with party-walls on either side, and with the front brought forward to the street alignment. The depth of 100 ft. is divided into four parts: two of construction and two of open space. First there is a block with windows front and back; then a courtyard; then another block with windows on either side; and then a garden. The two blocks are connected by a narrow building which contains the staircase; and thus the courtyard is surrounded on three sides only. The frontage of 40 ft. is in three divisions: a passage in the centre, to the left of which is a stable; to the right, a kitchen. The entrance-door to the house is in a corner at the end of the courtyard. On opening this door, the staircase is immediately in front; and to the left is a lobby leading to two sitting-rooms. To bring the dinner and supper into one of these rooms from the kitchen it is necessary to cross the open courtyard, and the only communication between the latter and the garden is through the sitting-rooms. On the first floor each block contains a set of rooms; the door of each room opens into a lobby or hall, which is approached through a single door communicating with the central staircase. In the block facing the street, the set of rooms consists of a small study, a bed-chamber, and a dressing-room; in the block between the courtyard and the garden the set consists simply of a bed-chamber and a dressing-room, called the *garde-robe*, the invariable appanage of a bed-chamber in the time of Louis XIV. It was used not only for the wardrobe, but often for an attendant's bed; it contained not only the small bason and jug for which a complete washing apparatus has lately been substituted, but also that *chaise-percée* which spared to the Great Age any complication of pipe or drain. Such a distribution of plan, repeated on the second and third stories, enabled an almost patriarchal system of habitation to be pursued. One set of rooms was occupied by the chief of the family; his married daughter, say, occupied, with her husband, another set; the eldest son another; the younger children another, and so on. When, after fifty, or a hundred, years, this house was relinquished by the family of its original owners, and probably builders; when, perhaps, it fell into the hands of a speculator, nothing was easier than to apportion the different stories in either block to different tenants. The staircase, common to the various groups of one great family, was no less suitable for groups of several less distinguished families; the outer door of the lobby belonging to each set of rooms became the entrance to a small house. The kitchen and stable were converted into shops, the small larder, between the stairs and the kitchen, became a porter's lodge. By a further subdivision of the different sets of apartments, it was easy to add a small kitchen to each. No radical improvement upon the kind of house I have attempted to describe was made until after the Revolution. A great deal of progress then took place, to which, I think, the architect Patte must have largely contributed, from the many practical suggestions he published. That progress has continued in Paris up to the present hour; it is possible to trace through the reigns of Napoleon, Louis Philippe, and the late Emperor, the ameliorations introduced into the house of the middle-classes. From the staircase specially devoted to the service,—an innovation of this century only, and now the adjunct of even ordinary domestic buildings,—to the hydraulic elevator, which is an innovation of barely ten years ago, the gradations of development are distinctly marked.

Upon the wall are plans of a block of shops and houses built in the newer quarters of Paris some forty years ago; it may be considered typical of the houses which rose during the reign of Louis Philippe, and its development from Pierre le Muet's model is not difficult to perceive. There are also plans of a corner block situated on the Boulevard Malesherbes, and certainly not older than fifteen years. I need merely describe one of many ordinary blocks as I remember them during the last ten years of the Second Empire. Take, say, one near the middle of the Champs Élysées, in a by-street, and with a shop at the street-level. The shopkeeper, perhaps, simply uses his portion of the building as a place of business; he inhabits, with his family, elsewhere. The houses are built round three sides of a courtyard, the fourth side being open to the courtyard of the adjoining block, a division wall existing only to the height of the ground story. In the courtyard are stables and coach-houses, used by the tenants of the principal floors. The approach to the courtyard is under an archway, through a passage about 10 ft. or 11 ft. wide, and the entrance to the principal stairs is in that passage. Thus carriages deposit their occupants under cover at the foot of the stairs. Commanding these stairs, as well as the courtyard and the carriage-entrance, is the porter's lodge, consisting of two small rooms. At the further end of the courtyard is the entrance to a small staircase, used exclusively by the servants and the tradespeople. Each story, above the ground floor, forms one house, the private entrance to which is on the staircase landing of each floor, and the distribution of rooms in each house is the same. It consists, say of eight rooms exclusive of dressing-rooms, a kitchen, and a square hall, or, as it is termed, an ante-chamber. Into this hall open the doors of the dining-room and the drawing-room; also a door leading to a passage communicating with a morning-room and with two bedrooms; on the other side of the hall is a door leading to the servants' corridor, between which and the hall are the doors of two more bedrooms. One room with a cupboard, and perhaps a small larder or pantry, are all that is devoted to the kitchen. Thence a door leads directly to the back stairs, which form the only communication from the very top to the very bottom of the house,—from the cellars in the basement to the servants' bedrooms in the roof; for to each house are allotted two vaults below and two rooms above. If, therefore, five different families occupy the five floors of the building, most of their servants, male and female, sleep on the sixth floor, under the second slope of the mansarde, and the depôts of wine, wood, or coal, are together in the cellars beneath the ground story, below which there are no living-rooms.

In this country, where the system of habitation is completely different, the plan of such a building will not be properly understood, even by yourselves, without previous knowledge of Parisian habits and the routine of Parisian life. Permit me, therefore, to describe an imaginary household occupying the first or the second floor. It is composed, say, of a gentleman and his wife, a daughter just in her teens, a couple of children, a nurse or a lady's maid, a female cook, and a butler or footman. Perhaps there is also a son who is at school or college; and, let me add, with all deference to English conviction, there are not only homes in Paris, but many resound with the cry of more than two children. Husband and wife occupy the two bedrooms in the main building; their dressing-rooms, and often a water-closet, adjoin; and sometimes the gentleman's bedroom is provided with book-cases and a writing-table. The young lady has one of the two bedrooms behind, the two children the other; the nurse or lady's-maid sleeps in a room, perhaps, on the opposite side of the kitchen. The two rooms in the roof are occupied respectively by the cook and the butler. A second water-closet is at the back of each residence; for the servants generally, one is usually found in the basement, and another in the roof. Now for the routine of life. Paris is wide awake, even in the fashionable quarters, at six in the morning; and that through the greater part of the year. Before seven o'clock the porter has opened the great doors of the carriage-entrance, and admitted fresh air into the courtyard, which, I confess, often requires a change of atmosphere. There, a groom is rubbing down a horse, a coachman cleaning a carriage. In the different kitchens, coffee or tea is being prepared, and it will be served before eight o'clock in the various bedrooms. Meanwhile, the dust swept from the sitting-rooms, the hall, the kitchen, and passages, is collected, carried down the servants' stairs, and deposited in the roadway. For this deposit the Municipality returns interest; in fine weather or foul, in summer or winter, the streets of the Capital have been swept, and the dust-carts have disappeared before a few minutes after nine, every (even Sunday) morning. To provide the two daily meals, the mistress, attended by the cook, or the cook alone, goes to market; hardly more than just sufficient for the day is brought home, and usually the purchase is a ready-money one. Part of the secret of French thrift is concealed in that practice, and in the small space given to the kitchen, repulsive as the latter must be to an English housewife whose own beef and mutton emerge from a complete set of apartments presided over by a complete set of domestics. Breakfast is taken between half-past eleven and half-past twelve, dinner about half-past six, in the dining-room. Nor is that room ever used by true Parisians for any other purpose than eating and drinking. It is never occupied as a family living-room. Sometimes, when the housework is done, a maid-servant sews in it, or her mistress may receive a tradesman in it, but that is all. Visits, except of a familiar character, are not paid until after midday; as with us visitors are received in the drawing-room. After dinner, all that household matter which is called dirt is deposited in the roadway, as before,—except that, in the evening, the legal hour for making such deposits is after eight o'clock.

Thus, I hope to make it clear that, though a great deal of traffic takes place upon the servants' stairs, very little time is spent by the members of the different families upon the principal stairs. Intimacy between superposed neighbours not only does not ripen, it does not grow; for though on meeting it used to be the custom to bow, they rarely meet. Any communication between them is made through the porter who is the necessary and, if properly treated, the useful caretaker of such houses. His salary is paid by the owner, that is, the freeholder, of the property, including both houses and land. All letters are delivered to the porter, who distributes them; of him the visitor inquires before making perhaps an unnecessary climb. It is he who sweeps the courtyard, the carriage entrance, the staircases; who cleans the staircase windows and lights the lamps; who, at night, opens the great doors to carriages and the small door to pedestrians. He is the janitor, who, night and day, morally chained to the door-step, is responsible for the security of the whole building; and in whose charge a tenant leaves his house during a family migration to the sea-side or a country seat.

The many improvements of the last few years have tended to increase the comfort rather than the elegance of a Parisian home. In the new houses, water is laid on even to the topmost house; a heating apparatus, provided and maintained by the landlord, is lighted during winter in the basement. Warm air, introduced through flues in the walls, is thus carried into the hall of every house. This apparatus, the chief use of which is to warm the principal staircase, also communicates with a hot-closet, arranged in the serving-room attached to each dining-room. Housemaids' closets have also been introduced, though I should add that the work of cleaning floors, steps, and passages, done in this country by housemaids, is intrusted in France to men. Lifts for carrying coals, wood, and wine are here and there visible; the means for facilitating service here and there conspicuous. Hydraulic elevators are to be seen next the staircases of many new blocks of building.* But, even as late as last month, I could not find any intention or desire to increase the proportion of space allotted to kitchen accommodation. Though I saw every kind of improvement introduced into the cooking-range, though there were large cupboards, though there was abundant space for preparing meats and dishes of every kind,—plenty of water and plenty of light,—yet one room sufficed to contain what in London is divided into kitchen, scullery, servants' hall, housekeeper's room, and butler's pantry! I left that room, though, with a regretful conviction that the soups and stews which may be concocted therein will be infinitely more palateable than any that usually issue from the wilderness

* I am sorry to say that Pierre le Muet's book is *not* in the Institute library.

* It may, perhaps, interest the Institute to know that the elevator, or *ascenseur*, now common in Paris, is partly due to a paper read in this room in January, 1854, and I have authority for the statement. Towards the autumn of 1866 the manufacturer of these French elevators happened to be in my office on business; he mentioned his desire to introduce passenger-lifts into the ordinary buildings, and the conversation fell upon those already working in London. To save time, I lent him a copy of the Institute Transactions which contained a drawing, by Mr. Whichcord, of the English hydraulic lift, and an explanation of it by Mr. Easton. Some six months after, two elevators were at work in the Paris Exhibition of 1867; and since then they have been freely used in different parts of the town. In palliation of my own share in the piracy, I beg leave to say that when, at the close of 1868, I placed a hydraulic elevator in a château not far from Paris, it was Mr. Easton who made and fixed it, not his imitator.

under or above the ordinary clubs, taverns, and houses of London.

But the English metropolis has an advantage which neither friend nor enemy fails to envy or remark. The capital of a country guarded by the sea, no fortifications have impeded its spread. In its very centre, railways connect street with street; they bind compact suburbs to the heart of town. Within a radius of Bow steeple, but far beyond the sound of Bow bells, the number of residents has not only decreased, the few who have lately resided there become year by year distinctly fewer. There, the demand for office-room extends to the uppermost stories of new and old buildings. Away through the Strand, Holborn, Regent-street, Piccadilly, and Pall-mall—over all the nondescript mass of Central London,—the traveller reaches great residential squares, long lines of residential streets, in which an army of serried houses shelter innumerable families of rank, wealth, and position. Past the parks, along the northern and western roads, across the bridges into Surrey and Kent, back through the City into Essex, new towns have swallowed up villages and hamlets; have met at their confines; and running over four counties, interminable lines of thoroughfare are bordered with equally interminable lines of houses. The majority of these houses are each inhabited by one and the same family. To reflect seriously over the space they cover, and the income that each house represents, is to invoke a reality of individual ease and collective wealth surpassing, in a better fashion, the magnificence of Ancient Rome, and even the wildest flight of archæological surmise. A system which gives to each family not only the superficial area of a plot of land, but also the whole cube space above it, reaching, were it possible, to the nearest heaven, must be a right system. Any one of either country conversant with habitual phases of life in Paris and London will freely admit the advantages of a system that grants to the head of a household the partly poetical licence of breathing his native air on his own ground.

My faint description, however, includes only the city of London, the suburbs of London, and residential London. I passed over the heart of London, which is neither purely commercial nor purely official, neither entirely residential nor specially monopolised by trade or manufactures. To describe the houses there, I shall have to repeat much that I have said in other places, and much that has been said about them by other people. First let me call attention to the map hanging on the wall.* An attempt is made to distinguish by two opposing tints the isolated parts which are purely residential, and the great mass of houses the occupation of which is nondescript. The greater portion of the grey surfaces are lodging-houses, or, more correctly, shops and houses tenanted by more than one family or group of individuals. Within a certain radius of Temple Bar, even within a certain radius of Regent-circus, the great mass of the residents are lodgers; they occupy a story or two stories, a set of rooms, or even a single room. It was not always so. Of the causes which lead to the disintegration of a residential neighbourhood, of shops and houses in the centre of London, two are paramount; one the desire to escape, before and after business hours, from the surroundings of business; the other, the fact that the rent of floors and single rooms let separately will often return to the owner enough annually to pay for a shop or an office in the centre, and a private house or a villa at the circumference of town. The consequence is inevitable; in the old houses the private house-door becomes a public entrance, and the staircase, originally private, becomes common to the different groups who use or inhabit the different stories above the shop, which alone remains in the undivided possession of the householder. When it is a question of rebuilding, observe what happens in scores of cases. The slice of land, out ninety-nine years ago,—and just the kind of slice fitted for a shop or dwelling-house occupied by one and the same family,—possesses a frontage to the street, say, of 18 ft. That width cannot be extended because neighbours on either side,—leaseholders, doubtless, of similar slices,—have their own leasehold obligations to sustain. The unfortunate tradesman, ordered by his ground-landlord to rebuild, devotes the two lowest stories of the new building to business purposes; he lives in the country, and the superstructure, raised over his shop, is of no use to him; yet this superstructure often contains as much cubical space and material as are to be found in a suburban villa or a small private house. Its three or four stories consist of two rooms over two rooms, reached by a narrow and steep stair. The horizontal and hollow divisions between the stories are of deal and mortar; 1 in. of wood and 1 in. of plaster form the only solid barrier between one story and another. This same superstructure is offered indiscriminately to professional men as offices, to bachelors, and even married people, as residences; the different floors of which it is composed return perhaps three per cent. interest per annum for the outlay involved in their erection and maintenance. To rebuild under such circumstances is hopelessly unprofitable. Business men will not climb above a second-floor, nor will even a confirmed club-man accept a "home" in which neither a chop can be cooked nor a servant lodged; in which the storage of a ton of coal is an impossibility,—where, by night, the staircase is pitch-dark, and by day the house-door is totally unguarded.

A short time ago, when the London estate of the Duke of Bedford was left without a steward, it occurred to me that the moment was favourable for making an appeal to the Duke himself on behalf of some of his Grace's tenants, who, though forced to rebuild on the old system, did not occupy the upper portions of their houses; and who vainly attempted to let these upper portions, either as offices, chambers, or residences. After having mentioned cases which had come under my notice, I said:—

"Take an instance in which the leaseholder, one of your Grace's tenants, proposes to build over his shop three or four superposed residences, each planned as a distinct home. He borrows two pieces of land in order to obtain a frontage of, say, 50 ft., and your Grace's agent says to the tenant:—'You may have, if you want them, twenty pieces of the Duke's land, but it is on condition that you rebuild on the very spot where a party-wall has stood for ninety-nine years, another similar wall, which shall stand for another seventy or eighty years!' That is to say, he may build, if he likes, upon the two pieces, one house, but he must plant in the very centre of it a thick wall."

The Duke of Bedford was good enough to send me his "sincere thanks" for my communication; but in so doing he said that the views of his agents had been misrepresented in the paragraph I have just quoted; or rather that he was bound to hold that opinion until he was better informed of the accuracy of my statement. Now, such a restriction as that to which I alluded, and which used to exist on the Bedford estate, is just one of those impediments to reform in shop and house accommodation about which an architect may appropriately confer with his colleagues; and such a course was pursued this very day last year in this room. In a paper, treating of house building and the business requirements connected with it, an Associate of our body described a house he had erected in King-street, Covent-garden. Mr. Knight told us how,—"With an extraordinary view of the possibilities of future London, the agents of the noble Duke required that the building with a frontage of 36 ft. only, should be so planned as to admit of ready conversion into two dwellings." The agent's idea of a dwelling for Central London was,—I say was, because another and a better steward now rules the estate,—a house about 60 ft. high, supported on a shop-front 18 ft. wide. Any one who will look carefully at some of the houses erected at the Strand extremity of the Bedford estate, since 1870, will perceive here and there two occupied by one and the same tenant. In Bedford-street, 22 and 23, as well as 29 and 30, have been planned as two old-fashioned houses, though in each case the leaseholder has obviously desired to build one house, for he has made holes in his superfluous party-wall wherever he has found it necessary to get from one side of his own building to the other.

In the Appeal I ventured to make to the Duke, the necessity of a modified width of frontage was urged on the plea that much of the cubical space now absolutely wasted over the shops upon his Grace's estate could be utilised for residential purposes, and to the undoubted profit of the owners. Instead of building upon two slices of land, each, say, 25 ft. in width, two houses—each composed of a shop and nine or ten rooms over it, with two dark kitchens, two servants' attics, and two water-closets,—would it not be better to build upon the two slices, containing together a frontage of 50 ft. or 52 ft. to the street, one block of buildings? Such a block is shown in the drawing, in which the plans of certain houses as they are, on the Bedford Estate, are contrasted with the plans of houses as they might be. The suggested block contains two shops, extending over the whole surface of the site, except those portions occupied by a small internal area, by the staircase and the two entrances to the upper part of the building. Under each shop, and communicating with each, there may be easily arranged a set of rooms, a lavatory and a water-closet, stores, and cellars for the exclusive use of the shopkeeper. The story immediately over the shops is reached through a special entrance from the street by a special stair; and it contains eight business offices. Above, on the first floor, on the second floor, and on the third floor, there are six distinct town residences, each complete in itself, and closed by a private door opening to the staircase landing, just as an ordinary house-door opens to the street. Each residence consists of an entrance-hall, a sitting-room (17 ft. by 13 ft.), two bedrooms and two closets; a lady's pantry, a kitchen and a scullery; a larder, a coal-store, and a water-closet; and a servant's bedroom. A goods-lift from bottom to top of the staircase communicates with the landing of each story; and coals can be shot into each coal-store from the landing itself. The central staircase can be crowned, not only with a skylight, but also a lantern having upright openings, arranged both for light and ventilation; a plate of glass over the entire width of each private door on each landing, provides a sure cross light (as will be seen on the plan) on every story. In fine, the whole block of shops, offices, and residences may be easily contained in a height of 56 ft. from the street pavement to the ceiling of the topmost house.

The revenue from the two houses as they are, each with its two rooms over two rooms, the shop, workrooms at the back, and the central superfluous party-wall, may be safely calculated in the following manner:—

Shop No. 1, with basement story of both houses and the buildings at the back...	£350	0	0
Shop No. 2.—Ground-level only.....	150	0	0
First-floor of the two houses	190	0	0
Second-floor ,, ,, ...	140	0	0
Third-floor ,, ,, ...	100	0	0
Fourth-floor (for two housekeepers)	0	0	0
Total annual revenue.....	£920	0	0

The probable revenue from the block of shops offices, and houses, as it might be, or as I suggest it, is 1,420*l.*, thus:—

Two shops, ground-floor and basement...	£700	0	0
Eight offices, mezzanine	360	0	0
Two residences, first-floor	140	0	0
Two ditto, second floor	120	0	0
Two ditto, third-floor	100	0	0
Total annual revenue.....	£1,420	0	0

Calculating the cost of the block as it might be, at 2,000*l.* more than that of the two houses as they are, and allowing 10 per cent. interest per annum on that sum (all other expenses being equal) the balance of profit in favour of the block, as it might be, is 300*l.* a year. When, moreover, it is remembered that the upper portions of the houses as they are remain vacant often for a quarter and even a year; that entire houses in the neighbourhood of Covent-garden have remained unlet for years,—I think it will be difficult for any one, aware of the actual demand for small houses arranged on the horizontal system, to shut his eyes to the more-than-probable advantages I have attempted to point out, especially when his ground-landlord compels him to rebuild.

Take another example: I have chosen an actual island of shops and houses in the very midst of fashionable trade. Bounded on the principal side by Regent-street, it has Warwick-street on the east, Beak-street on the north, and Regent-place on the south. The larger portion of the island is the property of the Crown; and from the circumstances of its transfer at the beginning of every reign, it may be called national property. Originally there were twenty-eight shops and houses upon it; there are now only twenty. The two houses, in the centre fronting Regent-street, have been amalgamated; in course of time these two houses have absorbed another house at the back of them, and possessing a frontage in Warwick-street; then two more houses, south of the latter, in the same street, have also been absorbed. Thus five houses have become one house. At the corner of Beak-street and Regent-street, three houses have become one. Again, No. 138, Regent-street has run through to No. 32, Warwick-street, and the two houses are now one. In Regent-place, two houses, forming together about 30 ft. frontage, have become one house. Yet the character of the construction has not changed. The main divisions between the twenty-eight houses still exist; only holes, large and small, have been made in the party-

* A Map of the Heart of London, published in the *Builder*, vol. xxxiv., p. 305.

walls. This desire, or rather necessity, for lateral extension,—that is to say, for space at the same level,—is experienced all over Central London; and the process of filling up the internal breathing area of one island very much resembles that of another. In this instance, twenty-eight houses were built close together, so that the principal front of each formed the continuous elevation of four streets; though it was only possible for draughts of fresh air to enter the internal area at intervals, still, after a fashion, it was breathing-space. Bit by bit, this breathing-space has been filled up, more particularly on the portion belonging to the Crown, or rather the nation; half a dozen well-holes remain to convey light and air to the lower stories. I have tried to show how this island, unhealthy and uncomfortable, might, under the Parisian system of plan, be healthy and comfortable; and in order that my motives may not be misunderstood, let me say that, as the Crown portion of the island is above the law, so, for more years than I can live, must it remain beyond possibility or hope of improvement in the direction to which the makeshift alterations of the different tenants unmistakeably point.

I have divided the island into four blocks, separated by two party walls. Take the two southern blocks, partly in Regent-place: they hold six shops, as I have chosen to partition them; they can with equal facility hold only two shops without destroying the points of support sustaining the superstructure. The same remark applies throughout. Now take the frontage, towards Regent-street, of the houses as they are: there are twelve houses and, say, ten have private entrances to the upper floors. By allowing 3 ft. to each private entrance, 30 ft. of frontage are used; I propose, instead of ten narrow passages of 3 ft. each, to give three carriage-entrances of 10 ft. each. Take the frontage to Warwick-street: the London system divides it into eleven parts or houses, and if each is to have a private as well as a shop entrance, nine at least of those houses must have doors in Warwick-street; the nine doors therefore engross 27 ft. of frontage. I propose, instead, to give two carriage-entrances open to the sky, of together about 30 ft. By the present system, 15 ft. of the frontage towards Beak-street must be given up to provide doors; and 12 ft. of that towards Regent-place must be sacrified to the same purpose. By the Parisian system, the whole frontage of both Beak-street and Regent-place can be devoted to shop-windows and shop-doors. Hence by the Parisian system, the total economy of shop-frontage round the entire island is 24 ft. Consequently, though about 30 ft. run of frontage is lost by setting back the line of suggested buildings in each of the surrounding streets, the run of frontage for my shops is only 6 ft. less than before the widening of the four streets.

I provide twenty-one ordinary shops; without the removal of even one support, they can be turned into five extraordinary shops, or, by the addition of a few brick partitions removable at will, they can be converted into thirty shops. Of the suggested twenty-one shops, seventeen possess three stories; and, collectively, the mezzanines of these seventeen shops contain thirty-three rooms, some of them 22 ft. by 17 ft. in size.

In the island as it is, the exact number of rooms above the actual shops is unknown to me; but I will admit that, above the two lower stories, the superstructure holds 182 rooms,—an estimate that gives fourteen more than the ordinary two rooms to each story of each house; and some of these are mere "attics." The largest of them are of the kind usual to houses of 18 ft. frontage and 36 ft. depth. Nor are the rooms in sets; out of the 182, at least 150 are mere single rooms, forming no sort of habitation other than it is usual to extemporise in the heart of the metropolis. I offer instead:—

Three complete and distinct houses of 14 rooms each, in all	42 rooms.
Three ditto of 10 rooms each, in all	30 ,,
Three ditto of 9 rooms each, in all	27 ,,
Ten ditto of 5 rooms each, in all	50 ,,
Total: 19 houses, containing together	149 rooms.

Thus, though it is a matter of secondary importance, I obtain 149 + 33 rooms over my suggested shops to exactly counterbalance the estimated 182 rooms over the shops as they are. There is no time now to describe the plans; they must speak for themselves. There are features, however, in the suggested island as it might be which are strange to England; but some of those features may be traced to houses in London before the Fire. The courtyard *was* a thoroughly English institution; it was Dutch influence that caused it to go out of fashion. To the courtyard a carriage-entrance was necessary; it is this broad, lofty archway that would obviate the discomfort peculiar to Central London of living over a shop. The continual modification of the vehicle in which ladies and gentlemen are carried through the streets, seems to point to the admitted necessity, during the course of centuries, for covered entrances to houses. Look back to the time when most people rode a-horseback, and the horses entered, with their burdens, the Mediæval hall. Coaches were not common until many years after the death of Elizabeth. Before her reign a litter was the vehicle of ceremony, and there are records of great ladies being carried into Westminster Hall. Some two hundred years after, the covered chair was used, and in it a lady was deposited, not only on the step, but in the very entrance-passage of her house. Fielding described a certain Lady Bellaston who "was set down in a street not far from Hanover-square, where, the door being opened, she was carried in," that is, in the Bath chair she had hired. But at the present moment, in our ordinary houses, no lady attired for a ball or a dinner can enter a carriage without exposure to the elements. True, each of the best houses possesses a portico; but its shape counteracts the purpose of its erection, for it does not cover the street pavement, and in summer it exoludes the sun, in winter it invites the rain. The continued use of the courtyard by the Parisians has left the street-pavements of the French capital unpierced by those pitfalls to be seen in front of every tavern and many shops of our own metropolis; neither trap-doors nor coal-shoots render the boulevards inconvenient to pedestrians. A courtyard is the proper place for the delivery of coals and wood, of beer and wine barrels, for thereby the obstruction of ordinary traffic is avoided. But I do not advocate building round a closed courtyard; my plans show an attempt to keep the inner parts of the island free and airy.

I have something to say about the doors and windows of the suggested houses. Of course, after a certain hour of the evening, the great doors of the carriage-entrances, the great gates at the other end of the courtyard, would be closed. When the bell rang it would be necessary for the porter to open them, but he ought not to leave his post in order to open doors or gates; from his box he should pull a *cordon* as it is everywhere the custom in Paris. Such little things have more to do with the proper organisation of superposed houses than is probably believed.

The kind of window has also a great deal to do with the aspect both of the exterior and the interior of a town house. The look of dull care which the streets of London habitually wear is enhanced by the absence of two things always seen in Paris: a large casement and a white embroidered curtain covering the whole window. A window that descends to the floor and ascends to the ceiling, that can be so opened as to permit a volume of fresh air to enter, is the logical window of our time. I know that the sash is said in England to be the only frame that will keep out climatic discomforts,—that the rain always penetrates an English "French" casement,—and that the balcony which such a window often necessitates is unfitted for fog and rain. But the truth is, that though English joinery is often more carefully made than that of Paris, the ordinary Englishman does not know how to make a real French casement, the wood of which must be of small dimensions, and either oak, teak, or mahogany; while the ordinary English smith, whose locks and keys surpass all others in the world, has not yet contrived any sort of fastening comparable to the *espagnolette* and the *crémone* of French manufacture.

It is also maintained that because the climate of this country is bad, Englishmen do not desire to get out of, or even look out of, window. Balconies are, therefore, useless excrescences. Surely a balcony has a purpose entirely distinct from mere pleasure or taste; it enables the ordinary servant to clean the exterior of the windows, to brush down the outside of the house, and in summer it helps to give freshness to a room. To my mind, our London summers, were they but courted, might be made as agreeable as those of the French capital. We begin, though, by believing that both the English climate and the English metropolis are incurable plagues sent us for our mortification; and every appliance which, in the course of years, has served to make the climate of Paris delightful, is rejected in London as impracticable or superfluous. If, in India, Englishmen used the same arguments as they use here to maintain the heart of London in its present condition of discomfort, half our countrymen in the Empire would die of heat, dust, and mosquitoes before they had time to contract any serious disease.

My paper, of which this is only an abridgement,* contains one or two points of importance relating to the construction and organisation of houses-in-flats; it also embodies a description of the method of building such houses in Paris. I would particularly direct your attention to the manner in which the Parisians make the horizontal party divisions between the houses: also to the lintels of rolled iron and plaster-concrete they use for covering wide openings, both within and without the shops. For I take it to be a paramount obligation on the part of those who pretend to build houses-in-flats that the horizontal divisions between each be fire-resisting; and it should be remembered that neither wrought nor rolled iron in a naked state resists fire, that oak will burn, and that deal or pine is simply inflammable. There are systems of floor construction used in England, by which the rolled iron joists are almost entirely enveloped in concrete; and if that concrete be composed of materials that have already passed through fire, such floors may be considered fire-resisting. I would not, however, introduce much iron into the floors. It will be seen on reference to the plan of houses, as they might be on the Bedford Estate, that each house is entirely surrounded with a brick-wall, and that in the middle there is a vertical support which runs from bottom to top of the whole building. This support may be an iron column enveloped in fire-clay, or, I would prefer a pier of blue bricks built in cement. With this support ten comparatively small rolled joists will suffice for the framework of each floor; the dotted lines on the etched half of the block indicate where those joists should be placed. I would couple them on the French system, and thus make solid lintels protected top and bottom with real plaster of Paris. The horizontal space between these lintels and the walls should be filled with fire-resisting concrete. Then having roughly plastered the walls and ceilings; having finished the staircase to both the offices and the residences; having closed the building throughout with shop-shutters and house-windows; having established the position of the water-closets; having put the lift in its place; having fixed the private entrance-doors to each residence from the staircase; and having duly installed a caretaker in a box on the ground story,—I would leave the whole building to dry while possible tenants paid probable visits, or offered their own ideas as to the manner in which they would arrange the shops and their basements, the partitions of the mezzanine, and the distribution of rooms in the different residences. That is the method which has been found successful, as regards shops, in Paris; and it is a method lately adopted in the City of London. But I have not yet seen chambers or houses-in-flats offered to the public in the manner I have described,—where the whole superficial area of the residence is left free,—the entrance, the fireplaces, the windows, and the water-closet being the only fixed points therein.

A systematic organisation of the whole block is of the utmost importance. At the present moment it is usual for the landlord of a house to make a bargain with an entire family of a class below that of ordinary domestic servants. This family lives either in the basement or the roof. In one case, the foul air generated below rises up the staircase and distributes itself in the different apartments; in the other case, the foul air of the apartments cannot escape through the staircase, because of the heaviness of the atmosphere above,—a heaviness to which the lower classes accustom themselves in their homes. There is no necessity to house an entire family for the sake of lighting and guarding the staircase. One of the useful body of commissionnaires is just the man to take care of such a block; and he should be made responsible for the guarding, cleaning, lighting, and general superintendence of the public parts of the building. His own home might, perhaps, be in the neighbourhood; but, while on duty, he would be entirely

* The original paper, which covers more than thirty-two pages of the Institute Transactions, contains four illustrations by the author.

removed from any connexion with his own domestic difficulties or delights. A cellar for coals under the staircase would suffice for the four sets of offices on the mezzanine, and a supply sufficient for the day could be stored in each. The shopkeepers must have, as they now have their own staff of cleaners. The individual completeness of the six residences leaves to the holder of each the duties and responsibilities of housekeeping. Without going into details, I think an examination of the suggested distribution of one of the six residences,—a distribution which can be made with wood and plaster partitions,—will explain many things that perhaps an imperfect description has left obscure.

Reflections obviously force themselves upon people who have inhabited, for a consecutive period, the thoroughfares of both Paris and London, which do not so readily occur to those who, familiar with one capital, know the other only by periodical visits. If it ever be deemed desirable to erect, in the centre of our metropolis, houses planned like those I venture to submit to your criticism, the details and results of the Parisian system cannot be too minutely examined. Thus, the general aspect of a city has an effect for good or evil upon the population it contains. Why, with the majority of travellers, does Paris inspire liveliness and a desire to remain in town? London, sadness and a desire to quit it? Some say it is the climate; and certainly the sky of Paris is brighter during the greater part of the year than the sky of London even in summer. But the atmosphere of Calcutta is much clearer and brighter seven months in twelve than that of Paris in June; yet the sun, far from concealing the filth that encumbers the native town of Calcutta,—far from brightening the dead walls, the closed shutters, and vacant verandahs of the English quarter,—only heightens the dreariness and even disgust which the Palaces of Chowringhee arouse in a breast possessing artistic appreciation. The most consummate architecture is incomplete without the constant presence of its maker; only a ruin assimilates with solitude. Buildings, even the most beautiful, must be inhabited before they can present a cheerful countenance. Above the business-level of Central London there must be houses in which families who desire to live in the heart of town can reside with comfort and decency. There must be windows that will open; balconies upon which to stand; horizontal divisions that will not burn; staircases lighted, guarded, and cleaned. Did any architect ever place the elevation of a typical London house side by side with that of a typical Paris house? The parlour-window that commands a dust-bin in the area; the sheet of stone, supported upon cast-iron brackets, and called a balcony; the "French" casement that the inmates dare not open; the muslin rag protecting the two lowest panes of the second-floor window, and called a bedroom curtain; the unfinished female head and shoulders caught in the guillotine of a top window,—they are things of beauty compared with that other front, frowning upon a back garden in which the dying lilac-bush, that never dies, shelters a plantation of mustard and cress. But to partly understand the effect produced on a traveller by the aspect of Central London, the Londoner should visit it on that day when every place of intellectual recreation is closed; while a score of church-bells are tolling a hundred housekeepers to prayer; while creatures who, under equal laws and just taxation, might have been decent men and women, crouch in filthy passages and courts —affording a spectacle such as cannot be seen in any, even the meanest, part of Paris. Yet it was not always so. Little more than a hundred years ago, Paris was celebrated for the black and pestilential mud that covered it. The houses in the narrow streets were black and dilapidated; the social condition of the poorer inhabitants was not much better than that of the people whom Juvenal handed down to perpetual execration. The improvement of the Capital, as it is now, commenced only when the last vestiges of feudality succumbed to the national decree, when the traditional privileges of a minority ceased. Even well-to-do families had hitherto been forced to extemporise homes in worn-out and discarded houses, until an age of great benefactors, whose splendour only a few enjoyed, gave place to one of benefits in which all could fairly participate.

I have sought to show that, in spite of much that is said to the contrary, architects cannot alone make architecture; our profession is virtually powerless to render the centre of London habitable as Paris is inhabited. Even if the Legislature compelled leaseholders to build substantially for the benefit of their ground-landlords, all reform in the heart of London must be abortive which presupposes every new house to be the residence of a single family. There is only one method of planning houses for the occupation of two different classes of holders; and the restrictions often imposed by powerful landowners or their agents, the varying and conflicting lengths of leasehold tenure, the rooted prejudice even of classes likely to gain by reform,—and, worse, the circumlocution of English law,—oppose a formidable barrier to the introduction of that method. For my part, I sincerely believe that the Roman custom, improved by Palladio, and developed by generations of Frenchmen, is a system by which buildings can be made to hold under a scientific distribution of plan—healthily and comfortably,—twice as many people as now inhabit the irregularly crowded houses of our bye-streets and slums. I venture to think that by the utilisation of actual slums, with careful financial management and legislative aid, houses such as I have described could be advantageously built, not alone for the middle-classes, but for the working-classes; and that they would return eight if not ten per cent. per annum on the outlay for cost of land, construction, and maintenance. They would possess the additional advantage which all Englishmen appreciate, of being, not barracks, taverns, or co-operative hotels, but,—purely and simply,—homes. A word in conclusion. I have said nothing that has not been urged now for many years.* The applicability of the Continental system to Central London was a favourite subject of discussion among earlier members of our body. One name, which will recal to a few seniors agreeable memories of the past, is linked with former attempts to gain the public ear. The arguments, used twenty-two years ago, by the late Mr. Arthur Ashpitel, are still unanswered. The few crude attempts that have been made since his time,—the domestic residences which have been offered to London under the name of "flats,"—are, with singular exceptions, as unlike the Parisian model as an English mansarde differs from its original prototype. Happily we possess among us Mr. Ashpitel's partner and junior; our chief vice-president, from his vast experience in London building, is able to point out the difficulties which environ and impede at every step the introduction of buildings to Central London fitted for the present character of its occupation. The time for action is ripe; and if at this moment, while thousands of pounds are being lost to the metropolitan ratepayers on the vacant borders of our new streets; while thousands of mean houses, already condemned, await the order for demolishment and reconstruction,—the British architects will discuss the best means of combining business premises and domestic residences compatibly with modern requirements and *a fair remuneration*, those who, like myself, hear the private comments of travelled and sympathetic Frenchmen about the state of Central London, may yet be spared, often a blush, and many an impotent regret.

WILLIAM H. WHITE.†

* An allusion to the services of the professional press in this particular question is in the following words:—"There is hardly an argument employed or a description given in my paper that may not be found somewhere in the architectural journals; and perhaps I may be permitted to record my indebtedness to the earlier volumes of the *Builder*."

† Read at the Royal Institute of British Architects, as elsewhere mentioned.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting of this Institute, held on Monday evening last in Conduit-street, Mr. Charles Barry, president, in the chair, the following gentlemen were introduced to the President on their first attendance since their election as Fellows, viz.: Mr. R. Phené Spiers, Mr. T. H. Watson, and Mr. G. T. Hine.

The following gentlemen were nominated as Honorary Associates, viz.: Mr. P. H. Calderon, R.A.; Mr. Charles Manby, F.R.S.; Mr. W. H. Barry; Mr. Charles Neate, C.E.; Mr. J. Gascoigne Lynde, C.E.; and Mr. Alfred Morrison.

The donations to the library included the presentation, by Mr. Arthur Cates, of a few copies of a pamphlet on "Illicit Commissions," being a reprint of an article which lately appeared in the *Westminster Review*. It may be mentioned that a special committee of the Institute has this subject under consideration.

The thanks of the Institute were tendered to the several donors.

Mr. Eastlake announced that an interesting series of sketches had been received from Mr. Josiah Conder, a recent Soane medallist of the Institute, and now professor of architecture at the Japanese College at Tokao.

Mr. H. H. Collins, of Old Broad-street, was balloted for and duly elected a Fellow.

Mr. W. H. White then read a paper "On Middle-class Houses in Paris and Central London," the substance of which we have given on previous page.

The President said that, under the new rule as to the conduct of the ordinary general meetings of the Institute, the discussion on the paper would not take place until the next meeting. Nothing could better demonstrate the wisdom of that rule than this the first paper coming under its operation, opening up as it did so many matters for consideration,—points which could not be usefully disposed of in discussion until opportunity had been afforded for reading and studying the paper. He was sure that the members would be glad of the fortnight they would have to consider some of the somewhat novel suggestions which Mr. White had brought forward. Of course, it would be very desirable for London architects, in considering the subject, to bear in mind the trammels under which they laboured, in the shape of the Building Act, for instance, and which stood in the way of the attainment of some of the delights, real or fancied, of Parisian houses. The way in which such changes as were proposed by Mr. White would affect, for good or evil, national family life, as we knew it and valued it in England, was one of the very large number of important questions which the paper opened up. It was to be hoped that the paper would be discussed in such a way as to fully reward its author for bringing the subject forward.

The thanks of the meeting having been accorded to the author by acclamation, it was announced that the next meeting would be held on Monday, December 3, when, after the discussion on Mr. White's paper, Mr. James Neale, F.S.A., Associate, will read a paper entitled "Architectural Notes on St. Alban's Abbey."

THE SOCIETY OF BRITISH ARTISTS.

THE winter exhibition of the Society, just opened, is the last they will hold in their present rooms in Suffolk-street, as they announce their intention of re-opening next spring in the galleries at No. 9, Conduit-street. The closing exhibition in the old rooms seems a good augury for the future, for the average merit of the collection certainly goes on improving, and we may hope that the Society of British Artists has got on an ascending path, and will continue to advance. The best items in the exhibition are among the landscapes; but there are figure-subjects very well worth attention. Only it occurs to us that while the style of the figure-subjects has emerged from that of commonplace, which certainly used to predominate almost exclusively, there is need of a caution against drifting into an opposite defect of sensationalism. The works of Mr. Caffieri, for example, "Croquet Party" (86), and "A Juggler in the time of Queen Elizabeth" (229), unquestionably clever as they are, display that sort of cleverness which the French would call "*chic*"; the qualities which characterise them are, indeed, suggested by some of the less admirable productions of contemporary French art. The personages in the "Croquet Party" are essentially vulgar, and are painted in a vulgar way; and though this is not the case with the other painting named, which contains some interesting and expressive figures, the style of execution is that which aims at success rather by dash and effectiveness of touch than by study and finish. Mr. Ashton's "Summer Holiday" (155), a bright and original thing, is open to the same objection of seeking effect by splashes of light laid on with a careless extravagance, as on the back of the girl stooping in the foreground, which has its effect, no doubt; but it is an effect not difficult to repeat when the trick of it is once caught. Then there is a very clever work, in many respects, "Her Royal Highness's Birthday" (179), by Miss B. Meyer, representing "Farmer George" and his Queen, and the little Royal Highness whose birthday it is walking through a throng of loyal subjects of the upper class. There is a great deal of clever

nd painfully real character in this, but it is ainted in an unnecessarily repelling style, otally devoid of shadow or softness, and is a isagreeable work to look at; whereas it might ave retained all its real merit in conjunction rith a more agreeable and artist-like style and andling.

Among other figure-pictures is a fine head by Ir. A. B. Donaldson, called "St. Barbara," a icture very rich in sentiment and colour; there s a landscape background with an evening sky, nd the saint holds a peacock's feather, which ells powerfully in the colour-harmony of the whole. Mr. Peele's portrait of a lady (126) has haracter and power, and a fine broad style. Ir. Gadsby's "Girl in a Mob Cap" (122), is lever and striking, though again a little splashy n style; Mr. Gordon's figure of a girl in an range-silk dress, "Writing" (50), has feeling nd refinement, and Mr. Morgan's "Yes!" (79) s a pretty and finished little study of figures in andscape. Among other things in which figures orm the main interest, Mr. Logsdale's "A Welsh Chimney Corner" (123) is a powerful nd effective study, in which the apparent oughness of execution is not thoughtlessness; nd "Mixing the Salad" (148), a scene in a rench wine-shop, by Mr. G. Sainsbury, has umour and good colour. Mr. T. F. Goodall's Spring-time" (304), where some children are laying in a garden amid the spotty foliage of pring, is a good study both of figures and landcape, or "gardenscape." "My Model's Opinion," y Miss Conolly, we may probably take to be a ortrait of the artist and her model, an old oman who comes forward to examine her ortrait on the canvas; the face of the painter s nearly turned from us, but the head is interesting in pose and treatment. Mr. E. C. hampion's "Study" (222), is a good piece of ntique still-life, an Assyrian bas-relief forming he background to an assemblage of odds-andnds, an antique jar, and flowers, &c. "The tudent," by Mrs. F. Martin (320), a girl in nourning-dress, reading, is a pleasing work in entiment and execution.

Among landscapes, those of Mr. Wyllie are, as sual, among the best; the scene on the beach t "Whitstable, Kent" (27), and "The Mouth f a River" (288), are both very good speciens of his style and feeling; and perhaps etter than either is a delicate little sketch alled "Moonrise" (112), where some figures ome over the shoulder of a slope covered with ong grass, and the moon is just faintly visible n a light that has hardly faded into twilight. Mr. Aumonier sends an interesting little "Study rom Nature" (63). Among larger efforts may e mentioned Mr. F. W. Meyer's "Beddgelert" 127), a work which will bear looking into; the erspective of the hills is very fine, both in egard to drawing and aërial effect, and the olour shows originality of perception in this espect. Mr. T. F. Goodall's "Forest Pathway ear Lyndhurst" (26), and Mr. A. B. Collier's 'Trebarwith, North Cornwall" (36), are good nd careful studies of local scenery, the latter oteworthy for the fine treatment of the cliffs, hough the sea looks a little metallic. Mr. Wainewright's "Showery Weather" (119), hough rather commonplace and mannered in he foreground, shows a very fine sky and disance. Mr. Donaldson's "Albanian Coast from Corfu" (137) will hardly do; the clouds are eally too much like a built-up solid mass. Mr. A. F. Grace is weak and wanting in local colour n his large "Sussex Pastoral" (142), his maller work, "A Sussex Pasture" (386), is much more successful, and, indeed, quite beyond he larger one in style and feeling. Of Mr. J. W. B. Knight's landscapes it is difficult to speak; hey are remarkably clever and full of feeling; both coast scenes, and apparently from the ame locality; in "Runswick Bay" (162) the landscape is remarkably fine and free in treatment, but the sea is peculiar, and becomes mannered in the very attempt to escape from mannerism; and in the "Cliff-top in the flying Shower" (371), though this again is a very original thing, the sea becomes positively unlike sea at all; it would be difficult to say what it was meant for. Such painting is the result of carrying to an extreme a principle of handling good in itself, where the effect is got by broad sweeps of the brush avoiding detail; but this cannot be carried too far without resulting in mere smearing. The "Fern Harvest" of Mr. Crafton (392), and Mr. H. Sampson's "No Man's Land" (418), are good landscapes, the former a little hard and metallic, but forcible in effect.

Mr. Wyke Bayliss exhibits a carefully-painted "Interior of the Church of Notre Dame, Chalons" (6), and an excellent water-colour drawing of the "Interior of Strasburg Cathedral" (706).

Among the large number of water-colours in the north and north-west rooms are many good things; we may particularise "Companions" (499), by Miss J. Moore, a drawing of a solitary enthusiast playing a violin; various drawings of Mr. Clint's, all in a broad poetic style; and Mr. Donaldson's "Bridge-street-row, Chester." The centre pedestals in these rooms are occupied by some clever sculptural sketches by Mr. Mullins, among which a little group in terra-cotta called "Sympathy" is very pretty.

A HOME FOR REFORMATION.

It is not often that the English people are left behind in an attempt to remedy what is universally felt to be a crying evil, but, strange to say, with regard to habitual drunkards no attempt has hitherto been made in this country to reclaim and cure them, although in America the properly-managed institutions for this purpose have met with considerable success. The vice of drunkenness is so widely spread, unhappily, in this country that it seems hardly necessary to give details. The statements made by every gaol chaplain, and by every police magistrate, are appalling. It is commonly said that 80 per cent. of persons committed to prison are committed directly or indirectly through drunkenness, and the Ordinary of Newgate, at a meeting at the Mansion House on the 29th of October last, stated that from his experience he should consider 90 per cent. to be nearer the mark; and the attention of the public is especially directed to the fearful increase of intemperance amongst women, of whom, during the year ending Michaelmas, 1876, 5,588 were committed for drunkenness to Westminster prison alone, being an increase of 708 in the year, and an increase of 3,074 in the last six years. They were of all ages, ranging from sixteen and upwards; many had been previously committed,—some forty, fifty, and even one hundred times, for short sentences of three to fourteen days or one month. These short sentences and punishment appear utterly to fail in effecting any reformation whatever, and show the great need for a sanatorium or reformatory especially adapted for this class, one which has hitherto been most difficult to deal with, as no existing institution can give such cases the special treatment and length of time absolutely necessary to effect any permanent cure. Many of these women have entreated to be placed in some asylum where they might be guarded from themselves, feeling hopeless of the future without some kindly help; and there were cases which required to be treated to a certain extent as insane or suffering from disease. It is hardly possible to estimate the evil being done to society at large, or the misery caused to the families of these unfortunate beings by their returning to their homes. Women who drink lose the power to control and cure themselves far more than men, and greatly need external aid to reform; but, as things now exist, hundreds who might with care and restraint become all that is good are simply drifting away, falling lower and lower, because for them there is no effectual help, and England has hitherto not cared to make one single effort to provide any sound means to reclaim this most miserable of all classes. The British Medical Association have lately declared, with the authority justly attending such a body, that habitual drunkenness is, in many cases, a disease which can be cured, but only by a forced abstention from intoxicating liquors.

Well, growing out of these facts, a committee has been formed for the purpose of establishing an Industrial Home on the principle that sufficient time should be given to enable the nerves to recover a healthy tone, as there would then be every hope, with the aid of religious and moral influence and constant medical treatment, that many of these unhappy beings, whose lives are now a misery to themselves and others, would be restored to a higher state of existence and become useful members of society. It is intended to make the institution self-supporting, and, besides laundry-work, to introduce every variety of lucrative and interesting employment, and to classify the inmates as far as possible according to their capabilities and talents, as the great aim will be to develop and cultivate to the utmost the capacities and latent good which may be found even in the weakest and lowest. Length of stay will be regulated by medical advice; and it is the general opinion of the eminent doctors who have been consulted on this most important point, that the term of residence should be as protracted as possible, and it has been suggested as an inducement for their remaining for a lengthened period in the absence of compulsory legislation, that the inmates should receive a certain amount of wages, after a stay of stated duration, and that such wages be accumulated for them and given on their discharge as the committee should direct, but forfeited by those leaving before the time agreed upon, or without the sanction of the authorities. The committee appeal to the public for funds to commence this work, from which good results are believed to be obtainable; it is found after careful investigation that 4,000*l.* would start the work efficiently, of which 600*l.* have already been subscribed. Messrs. Ransom & Co., and the London Joint-Stock Bank will receive subscriptions; and Mr. Edmund E. Antrobus, treasurer, 14, Kensington Palace Gardens, would give any further particulars desired. We wish the effort success.

ANCIENT GREEK ART.

Mr. C. T. Newton, C.B., on Saturday evening last, at the College for Men and Women, Queen's-square, Bloomsbury, delivered his third lecture on "Greek Art." The two previous lectures have already been reported in the *Builder*.

Mr. Newton said that that evening they were not going to take an upward course, but pursue the stream of Hellenic civilisation downwards, tracing it step by step all the way, watching it widen and deepen as they advanced in their history of Greek art, and tracing it finally till it lost itself in that great gulf,—the Roman Empire. The period he had now to deal with was just about a century, between the years 540 and 460 B.C., or, if they took it in the language of ancient chronology, between the sixtieth and the eightieth Olympiad. In that period in their downward course, at every turn they would come upon most valuable landmarks with which they had long been familiar. He meant to say that the evidence on which Greek archæology was based improved and amplified itself as they went downwards in the history, and with every succeeding half-century they got better and surer evidence. For instance, in his last lecture he was obliged to exclude absolutely all evidence to be derived from Greek writing, coins, or indeed sculpture in the highest sense of the term, being obliged to content himself with pottery, gold ornaments, or descriptions of works of art referred to by Homer, for dates. But in the period between 540 and 460 B.C., they had a long sequence of coins with which they could fix the dates. They certainly had knowledge of the changes that Greek writing underwent in that century, for they had works of art inscribed with Greek characters which were of inestimable advantage, and they could approximately fix the exact age of these works of art. Instead of having only one literary authority, viz., that mysterious chronologer of old times, Homer, of whom no living man could say, with anything like certainty, when he lived, where he was born, or who he was, they had both poetry and prose literature to refer to. The century he (Mr. Newton) was dealing with was that within which Herodotus wrote his history, in which Simonides composed his work relating to those who fell at Thermopylæ, in which Pindar celebrated those glorious victories in song, in which Phrynichus told the sad tale of the taking of Miletus to an Athenian audience, and in which Æschylus still further redeemed the Greek tragedy.

Art represented the religious feelings of the Greek, and to know it they must study not only the art of the period, but also the literature. If they wanted to be cognisant of the religious faith of the people with which he was dealing they must refer to the pages of Herodotus and to the odes of Pindar, where they would find the very best commentary on the art of the period, and if they would pursue the comedy of the Attic tragedians it would take them to the art of the next period,—the age of Phidias. It was well that they should bear in mind the very stirring events this century contained, viz., the fall of the Persian Empire, the Ionian revolt, the defeat at Marathon, and of the invasion by Xerxes. These were great and stirring events, and so far as they could venture to interpret art they found that in that century great and stirring political events took place which were calculated to excite the passions of mankind towards noble objects. As Syracuse developed, the wealth of

the people increased; they built great temples, and votive offerings were frequently made, consequently art flourished by true encouragement for religious purposes. Then, again, there was the great institution which gathered together into one common focus this Hellenism, which was not limited to any particular district, and greatly intensified by victories. This Pan-Hellenic sentiment, the name by which it was known, found its only utterance at Olympia, which was the great gathering every four years, at which all of noble Hellenic blood met. Pausanias told them that the statues, which were dedicated to Olympia, were made of a very precious material, in bronze, which was made hollow in casting. By this important casting in bronze the great mechanical difficulty of the earlier artists was overcome as regarded the legs and feet of the statues. Then they came to a common influence generated in Greek art out of the religious sentiment and the institutions of the people themselves, an influence which led them to study what might be called the dramatic part of art,—a story with a violent action told by a group of figures, and this new influence was, to a certain extent, running counter to the old sacred idea of representing gods in human form as idols. There was no doubt that the first Greek idols must have been very barbarous in representation. When men had learned to put figures in violent action in bronze, they began to consider whether it was not possible to do something in marble, and by dint of trying they succeeded in finding out certain postures in which legs in marble carried the superincumbent weight of the marble trunk. There were two main sculptural decorations of a Doric temple,—sculpture in the pediments and in metopes above the capital. They were not what was called sculpture in the round, but in relief. In an Ionic temple, instead of the metopes there was the frieze, and it was in the period with which he was now dealing that these pedimental sculptures, metopes, and friezes were developed to the point in which Phidias found them. In two of the specimens before them, they noticed that they had arrived at the perception of movement. From the temple of Salamis, in Sicily, there were represented before them two metopes, one of which was very rude and clumsy, and depicted Hercules having in custody two robbers, and the other subject was Jupiter and Juno, the flowing lines of the drapery being well represented. With regard to the Harpy Tomb from Xanthos, which was in the British Museum, it was so placed there that no person could properly see its four sides for any practical purpose, because of the smallness of the room in which it was situated. When it was brought to this country, a line-of-battle ship was sent to fetch it, and all Europe felt an interest in it. At length the authorities of the Museum had succeeded in getting a new room for it, and when placed there he (Mr. Newton) hoped to be able to show it in a proper manner. One side represented two goddesses seated, but he was afraid the subject was not known, though no doubt it was funereal. The point he wanted to draw their attention to, however, was the character of the art, and he hoped in the course of next year to show them the difference of sculpture in these seated figures and in those figures brought from Branchidæ, when they would be able to recognise the advance in art. One of the problems of ancient Greek artists was to put a battle scene in a triangular space, the exact forms and limits being prescribed for him after the architect had done his work, the sculptor having to accommodate his conception of a battle to the particular space. This working out according to restrictions, was one of the most valuable things an artist could have to guide him, and it was the absence of that law that had destroyed modern sculpture. The centre figure of the Harpy Tomb was the Deity, who was supposed inevitable in a battle to help one army or the other. On both sides were represented two sets of warriors, and the whole was a great development of sculpture in the period with which they were dealing. As regarded the decoration of temples, he was sorry that the excavations at Olympia had not produced one single votive offering as yet, but it was quite possible that one would be found. With reference to the coins of Syracuse, chariot groups were represented commemorative of Olympian victories. He could not leave this period without saying that they had the names of artists who unquestionably flourished, and who were mentioned by contemporary authors, their names being inscribed on their works. One of those represented was the warrior of Marathon, the artist being Aristion, who, they were told, flourished at that time. Another artist, Kanachos, was said to have made the statue of Apollo, which was dedicated to the Temple at Branchidæ, being carried off thence and subsequently taken back by the Macedonians. Kalanis was said to have made for the city of Tanagra the statue of Mercury, and he was associated with the third artist, Kallon, by two great Roman writers, as exhibiting certain transitions of archaic style. Onatas was one of the persons who made the votive works in bronze at Olympia, and was also called upon to reproduce a very curious type of a goddess. In conclusion, Mr. Newton said that he had endeavoured in his illustrations, as far as possible, to cite examples in the British Museum in order that the students might study them. He wished he could refer them to some place where they could see casts of those that were not to be found there. In Paris, Berlin, Vienna, Munich, or even Bonn, they could at once turn from the lecture-room to a collection of casts, to which every archæologist and professor was in the habit of referring his audience. In all these cities, great and small, there was a collection of casts from the antique such as would enable a person who professed to teach to point out samples instead of having copies made, they being provided for him by the public. For the last thirty years France and Germany had thought that museums of casts were worthy objects of national expenditure, and accordingly they had provided these museums; and universities, with very small endowments, which could only be compared to Oxford and Cambridge as a mile to an inch, had provided, and continued to provide, these museums of casts. The only wonder was that the British nation had not a museum of this kind for educational purposes, and if they wished to profit by the British Museum they must insist upon it.

THE GLOUCESTER CO-OPERATIVE AND INDUSTRIAL SOCIETY'S NEW STORES.

THESE new stores, in Barton-street, Gloucester, the second built by the society, comprise, on the ground-floor, three shops No. 1 (facing Clarence-street), for hardware; No. 2 (facing Clarence-street), for boots and shoes; and No. 3 (facing Barton-street and Brunswick-road), for drapery, hosiery, &c.: hall and staircase at the back of the shop No. 2, with door to each shop therefrom, and back-yard, accessible from Brunswick-road by a covered passage, 6 ft. wide. At the east end of the passage there will be a trap, with pulley over, for the delivery of goods to the cellars, which extend under the whole of the building.

The first-floor provides a show-room for drapery goods (over shop No. 3), with office attached thereto; show-room for hardware (over shops Nos. 1 and 2), with assistants' room and staircase at the back. Provision is made for hoisting goods to this floor.

The second, or top, floor forms one large room, 62 ft. by 30 ft., by 21 ft. high, available for meetings of the society, lectures, reading-room, &c. It is lighted by five large three-light Gothic windows, will be warmed by two open fireplaces, lighted at night by gas-brackets and star-light pendants, and ventilated by Hill & Hey's patent syphon ventilators.

The building is Gothic in style. The Barton-street elevation consists of three bays, divided by buttresses, and finished with gables, the whole divided horizontally by double moulded strings, with inlaid geometric ornament of grey Pennant stone. The angle between Barton-street and Brunswick-road has at its base the entrance to the drapery department, consisting of mahogany double doors, the upper panels glazed with plate glass, flanked by grey Pennant columns, and surmounted by a richly-moulded arch, with tympanum carved with devices suggestive of the principles of the society. Over the doorway, on the first-floor, is a window. Above this (on the second-floor level) is a panel, having on it the name of the society, in large letters, and above this, forming a conspicuous object, visible from Clarence-street, Eastgate-street, and Westgate-street, as far down as the County Bank, is a high-pitched gable, having in the centre of it an illuminated clock, with dial 6 ft. diameter. The shields at the base of the gable are carved with devices emblematical of the different trades engaged in by the society. The Brunswick-road elevation is similar in treatment to the Barton-street elevation, with the exception that in this front there is only one bay.

The building is constructed of Painswick stone, with Box stone dressings, and Hampton-common plinths, copings, &c., and roofed with red Broseley tiles. The shop-windows have mahogany frames, glazed with British plate glass.

The building has been erected by Mr. Albert Estcourt, of Gloucester, from the designs of Messrs. Medland & Son, architects, of Gloucester.

At the opening, which took place recently, a history of the Gloucester Co-operative Society was read by Mr. G. Sargent. We learn from this that the most important year in the history of the society was 1875. The rules were revised this year, and into the amended rules many benefical improvements were introduced. The new rules give the committee power to deal in land, and subject to the conditions prescribed in the rules of the building department, to erect houses for the members when the necessity for employing surplus capital shall again arise. This year the sales were 50,923*l.*; profits, 4,462*l.*; the number of members, 1,886; and the average dividend, 1s. 10½d. In 1876 some most important steps were taken in furthering the society's progress. The Corse Society was transferred to the Gloucester Society; another branch store was opened at Sudbrook, which has proved a great success; and the plans for the erection of the new stores were approved, and tenders advertised for. At the close of this year we find the receipts to have reached 51,991*l.* The profits were 4,114*l.*, giving an average dividend of 1s. 7d. in the pound. Of the year 1877 a portion has elapsed, and nothing of importance has taken place to call forth any special remark, with the exception of the completion of the "Co-operative Palace," as one of the papers of a neighbouring town chose to style it. The cash receipts from the end of the year 1876 to June 25th, 1877, were 26,798*l.*,—an increase of 798*l.* over the same proportion of time the previous year; members' share capital now stands in the society's ledger at 18,854*l.* The profits realised are 1,934*l.*, which give an average dividend of 1s. 7d. in the pound. The number of members stands at 2,019. The total cash taken during the society's existence has been 441,624*l.*, and the profits made in the same time 32,129*l.* The whole of the buildings are depreciated at the rate of 2 per cent. per annum, and the fixed and working stock at the rate of 10 per cent. per annum. There is a reserve fund of 1,037*l.*, and the whole of the buildings and stock are covered by insurance in various offices to the amount of 11,100*l.*

ELSDON CHURCH RESTORATION, NORTHUMBERLAND.

SIR,—As an old resident in the parish of Elsdon, I read with much pleasure your interesting sketch of the venerable old church. You will, therefore, excuse me, if I point out what seem to me one or two slight errors into which your otherwise accurate correspondent has fallen.

Your description of the parish as "a tract of hills still covered with heather and gorse" is altogether too sweeping. The village of Otterburn (not Otterbourne) is situated in the centre of the parish, and is a perfect picture of rural beauty; as says the old ballad,—

> "Otterburn's a bonny burn,
> 'Tis pleasant there to be,"

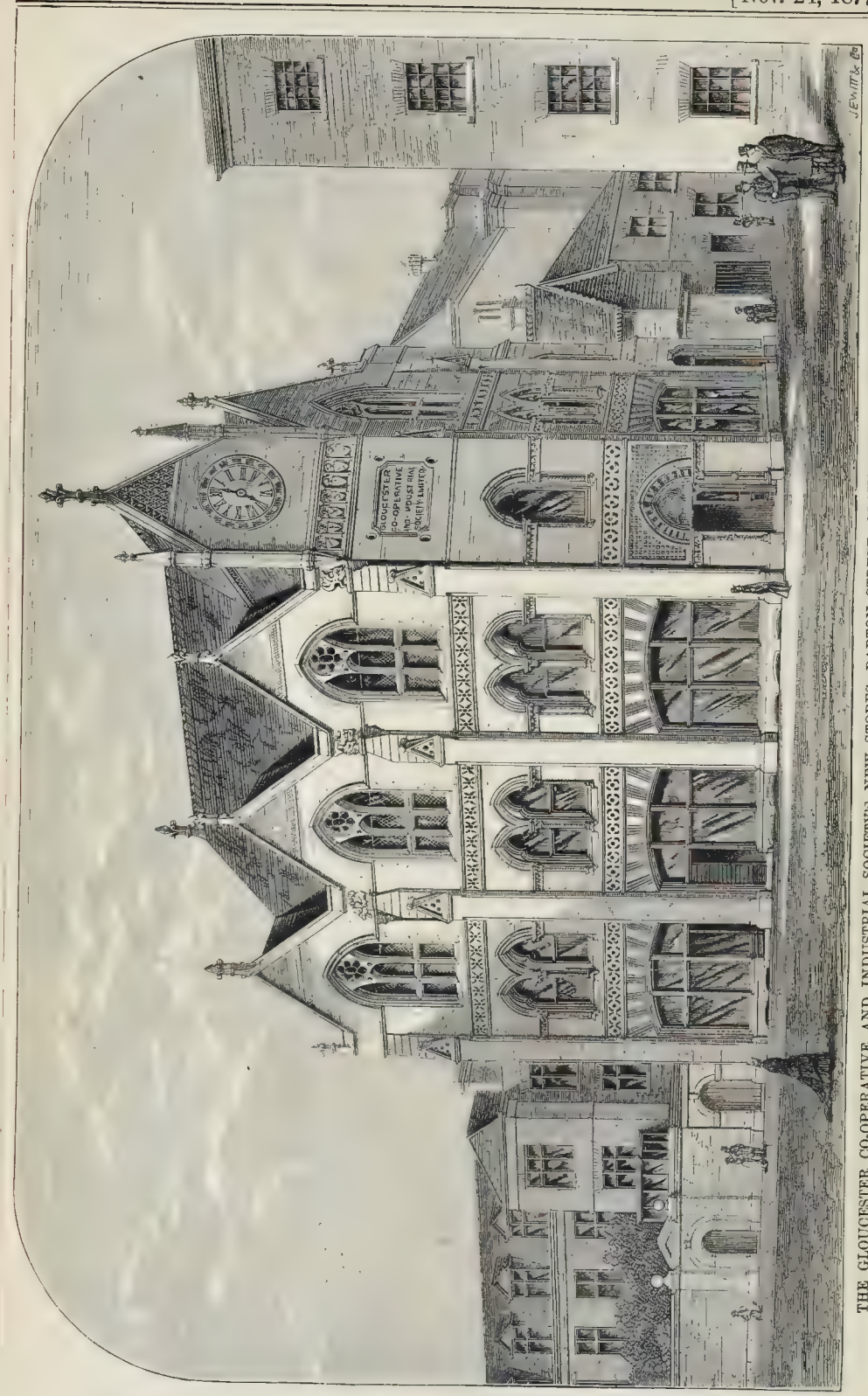
and the valley of Redesdale is rich with fertile pastures and good trout streams.

Again, the battle-field of Otterburn is only about five miles distant from the parish church, and the skeletons just exhumed, all of which were of a very large size, are almost certain to be those of the brave clansmen who fell in that sanguinary struggle.

It is to be hoped that the work of restoring the ancient fabric, so successfully begun, will be carried forward with the same energy, nor should the hand of the restorer be stayed until all the abominable modern rubbish, on the exterior of the building, be removed and replaced by work more in accordance with the original beauty of the church. JOHN S. BRODIE.

MASTERS' LIABILITY.

A SHORT time ago our carman was shifting some goods from a warehouse, and accidentally came in contact with a passer-by, pushing what he carried through a pane of glass. Are we responsible for the full value of the glass?
S. W. F.



THE GLOUCESTER CO-OPERATIVE AND INDUSTRIAL SOCIETY'S NEW STORES, BARTON STREET, GLOUCESTER.—MESSRS. MEDLAND & SON, ARCHITECTS.



CHURCH (R. C.) OF ST. ALOYSIUS, OXFORD.—Messrs. Joseph A. Hansom & Son, Architects.

CHURCH OF ST. ALOYSIUS, OXFORD.

Of this church, built for the Jesuit Fathers from the designs of Messrs. Joseph A. Hansom & Son, we give an interior view in our present number. The exterior we published some time ago.* It is still, in a measure, not complete, and awaits the addition of side chapels and the like to render it so; but such additions will not affect the correctness of the view now given. One part only of importance may be said to do so, and this cannot be embodied in the present drawing, and that is, the permanent altar, tabernacle, and reredos,—the complement, so to speak, of the sanctuary,—which, though already in course of execution by Messrs. Farmer & Brindley and Messrs. Hardman, will not be completed for several weeks, and will be an elaborate and costly work. However, to describe the interior of the edifice as we see it is to say that its chief characteristic is, as it were, a simple nave, of somewhat bold proportions, 120 ft. long, 30 ft. wide, and 55 ft. high to apex of the ceiling; the sanctuary end is semicircular.

Although there are no aisles, as popularly understood, something of the same effect is gained by the disposition of piers and arches on each side, the piers being based on a square of 3 ft., broken above the pedestal into nook and shafts as in transition examples of Norman to Early English, and a face-shaft running up to the springing of the roof; the piers are 10 ft. high, and the arches springing from them rise to the height of 17 ft. 6 in. from the floor, in a broad flat soffit of 2 ft. 6 in., and archivolts on the face 1 ft. 3 in. wide.

The fenestration is simple, two lights over each archway of trefoil-headed lancets 15 ft. long and 2 ft. 6 in. wide, in all seventeen bays on the sides and circular ends; the chief window, at the entrance end (a rose-window), came into the exterior view.

The ceiling is formed of the roof framing, that is of circular main ribs moulded and shown one over each pier springing from the before-named face-shaft, with intermediate smaller ribs following the same curve transversely, and longitudinal ones dividing each bay into sixteen panels, and forming what is known as the pointed wagon-headed roof. It may be observed that already there are two chapels built, one on each side of the sanctuary, and capacious sacristies, and two side-chapels abutting on and opening into the nave on the right-hand side in our view, but they do not come into prominence, as a small alley running behind the pillars separates them from the nave. There is an organ-gallery at the entrance end of the church. Sitting accommodation in the nave may be for about 400 persons, but there is ample space to contain more than double the number in the alleys, arms of the cross, gallery, side chapels, &c. The contractor was Mr. Charles Claridge, of Banbury; the clerk of works, Mr. James Firth. The gas standards and branches were from Messrs. Hardman & Co.; the warming apparatus by Messrs. Haden & Son. The total outlay on the building as above has been over 10,000*l.* We will give plan on another occasion.

* See vol. xxxiv., p. 881.

LIVERPOOL: ITS BODY AND MIND.†

I COME now to Liverpool's intellectual and moral institutions, in which she is not very ill-furnished or glaringly deficient.

She has colleges and schools and learned societies, natural history museums and archæological museums, and music halls, as well as that remarkable invention of the nineteenth century the free library, the characteristic advantage of which is that it multiplies in a geometrical ratio the result of the invention of printing, by bringing as many readers to each copy of a work as the said invention could produce copies of it; an institution which, when as in the Liverpool one, it is not merely a working-men's library, but provides the highest order of works, must, by increasing the facilities of private study, raise the standard of education among the classes which are unable to obtain the advantages of a university. Liverpool is also well supplied with moral and religious institutions. Its churches are numerous, while her charitable institutions are sufficiently so to show that there is some solidity in her religion. But it is equally true that till this present year the two chief arts of form,—the divine sisters Painting and Sculpture,—had no abiding home provided for them in this wealthy community. During the last few years they have been only temporary lodgers, though under the patronage of the corporation, at the Free Public Library, in rooms that could be ill spared for their accommodation. The late movement, therefore, creative of an art gallery, which no doubt has a filial relation to the act which has embalmed the name of William Brown,—in other words, is an offspring of his bright example,—has not rendered Liverpool conspicuous among the cities of the empire for the extent of her fine-art endowments, nor crowned her with an unusual ornament; but has rescued her from an anomalous position. It has restored a balance to her intellectual and educational development, which was in an eccentric and unsymmetrical condition. It has caused the wonder for ever to cease of all reflecting men, that England's commercial metropolis should be behind all other places of its size and importance in the civilised world in provision for that which is essential to the equilibrium of the mind and perfection of the human character. This art is, more especially among town-imprisoned men, from whom God's daughter, Nature, as Young calls her, her prototype, is shut out. The appetite for beauty is a natural and healthy one, and the germ of it lies in the lowest of our race. Beauty is a higher necessity of humanity, but it is as real a necessity as that of bread, by which man does not live alone. Take off his shoulders the weight of material necessity,—that of providing himself with meat and drink, clothing and shelter,—and his higher bent, his tendency to ascend, resumes its sway. His natural taste, hitherto dormant, asserts its legitimate rights, and he immediately seeks food for his mind and affections,—the ambrosia that does not perish with the perishable body,—and wraps himself in the golden visions of poetry and painting, sculpture and music, and enshrines himself and them in the splendours of architecture. The mind of man is two-fold, comprising intellect and emotion, and it is his nature to go up with respect to both, and not only elevate and ennoble the intellect, but purify the affections and passions. And high as man has already ascended in Greece and Italy, it may be doubted if he has yet reached his highest possible point of culture and sublimity. We know not if all his sympathies have been called forth, or whether there be not passions in the soul that have remained dormant for want of the corresponding objects to excite them.

The establishment of the Walker Art Gallery and an annual exhibition is a great point gained, and Liverpool's cerebral development is now very different to what it was seven years ago. But it is by no means yet in the condition it ought to be in for so large and important a place, which if we include Birkenhead with its appendages, which is to Liverpool what Southwark is to London, is one of the largest communities in the world. We have as yet but an annual exhibition; which is by no means sufficient for the art-culture of the people. Nothing but a permanent exhibition of pictures, including the highest class of works, will bring up the public taste to a proper standard from its present low condition. We have now in the permanent gallery building, it should be remembered, the shell only of such an institution, without the kernel; we have the casket, but not the jewels, which are for the most part yet to be obtained, and should be very speedily obtained, and which will require for their purchase not thirty or forty thousand pounds merely, but some hundreds of thousands. And when this is achieved it will be found that something else is wanting to our keeping pace with the general march of the world around us. Nay, we want many things at present: we want a museum of geology; we want a zoological garden, for the furnishing of which Liverpool's commercial relations with foreign countries offer the greatest facilities, and which is just as needful as a botanic garden; stuffed animals being insufficient for the naturalist, who wants living animals as well as living plants. We want, I doubt not, a score of instructing or refining institutions that I am unable to name. Liverpool is aspiring to be a bishopric; I do not see why it should not aspire also to such scholastic functions as to be independent of London, Manchester, or any other place in the matter of education. I do not see why Liverpool should not contain within itself the means of a complete education, and the most enlarged mental cultivation, including extended and systematic courses of instruction for professional pursuits, and become an educational centre for the North and West of England. It is no credit to Liverpool that it is without classes for the higher scientific teaching, such as to qualify students for the degrees in science of the London University, which cannot at present be obtained, though it is a want that has been long felt. Let me suggest for Liverpool, in addition to these, a college of moral and metaphysical science, to establish the just foundation of morality on conscience and the soul; or to show its scientific bearing. Liverpool should, I think, also include a mathematical college, and a college of civil and naval architecture and engineering, as well as a college for the study of geology. For these, and for book-publishing, its remarkable centrality of situation in the United Kingdom, as well as equi-distance between the three capitals, London, Edinburgh, and Dublin, mark it out. This is the more to be desired, for the probable beneficial influence its intellectual elevation would have upon numerous towns around it, among which Liverpool is as a city set upon a hill, whose light cannot be hid, and, as I feel certain, upon all North Wales, which depends a good deal upon Liverpool for its mental culture. Though not in North Wales, Liverpool is virtually its metropolis, and so called, though I am sorry to add, with the adjective "drunken" sometimes prefixed. The Welsh are a devout people, well provided with places of worship, and with Sunday schools for the religious training of the young; but in secular education they are less advanced than English, Scotch, or Irish, a fact that might form a profitable theme for the Social Science Association, and by no means a trite one; for while works on topography, history, and antiquities of Wales are plentiful, those inquiring into the condition of education are scarce.

How unawakened their sympathies for art may be judged by their treatment of the recent Wrexham Exhibition, which, though it consisted of pictures of the first class of unquestioned merit, and from the finest collections in England, ancient and modern, nobody went to see. Sufficient cause for this, I think, cannot be found in the geographical situation of Wales, and there can be no barrier to knowledge in the mountains, nor in the Celtic intellect. It must be sought alone in the maintenance of the Welsh language, which it is to be wished will soon sleep with its Greek and Latin fathers or mothers. The mental condition of Wales, however, only concerns Liverpool so far as it supplies a motive for trimming her intellectual lamp. In aiding her in doing so, and supplying the various wants I have referred to, to say nothing of the improving of the sanitary condition of the town, and as far as possible wiping off the foul stain of being among the unhealthiest towns in the kingdom, which does not come under this branch of my paper, what capital chances there are for our millionaires to cover themselves with glory, and procure passports to immortality of praise! As I remarked at the time of Sir William Brown's gift to the town, when, by the way, I mentioned the want of a Permanent Gallery of Art, there is still room for heroes of this class. We have within or around St. George's Hall, which it seems is to be our future Westminster Abbey, an abundance of niches and pedestals for statues, which need not be all rated alike, but might be put up at different prices, say from ten to a hundred thousand pounds, according to their position. I made these remarks, concluding with an invitation to gentlemen to "step in" to this ideal auction, some nineteen years ago,* with a view of, in some humble degree, accelerating the good movement, and I repeat them now with the same view, though with a profound sentiment of wonder that it should be necessary to do so, and that the vast number of Liverpool men, to whom the gift of fifty or sixty thousand pounds would involve no sacrifice of enjoyment, would not make haste to aid the work; and that for the high honour of supplying a known public want, as well as the blessedness, which attaches more to giving than receiving, there is not a fierce competition. I feel as much pleasure as most people at such presents being made to the town as the Walker Art Gallery, which, as the act is contagious, benefits not our town merely but the whole country and the world; but I consider the highest praise that can be justly bestowed on the donor is that he has made a proper use of his money; that he is making his riches, what Solomon says riches are to the wise, a crown of glory, and is drawing the highest pleasure and profit from them that they are capable of yielding to their possessor, who otherwise can receive

† By Mr. Samuel Huggins.—Read at Liverpool Architectural Society, November 14th. See p. 1,122, *ante*.

* See *Builder*, vol. xv., pp. 301-302.

no pleasure from them at all, except the anticipation of dying rich,—

"Guilt's blunder and the loudest laugh of hell."

He who hoards superfluous wealth denies himself the luxury and blessedness of doing good. He is like the man in the "Pilgrim's Progress," with a dust-rake in his hand, who will look no way but downwards, though there stands one over his head proffering him a celestial crown for his rake. He buries in the earth the talent—the wand of power — the talisman, of the magic potency of which, to slay the monsters poverty and disease, ignorance and vice, fraud, tyranny, &c., that prowl about the earth and prey upon our happiness and peace, the Club of Hercules, the caduceus of Mercury, the sword of Perseus, are but faint types and shadows. He foregoes the honour of connecting his name for all time with some knowledge-spreading, happiness disseminating institution, which is an honour to the human race, and enshrined perchance in an edifice which is an ornament or acquisition to the earth. I can conceive no act of self-denial much greater than this. Those deeds recorded of Zeno, Epictetus, Cato, Marcus Aurelius, and others of the Greek and Roman stoics, must pale before it. Most men, it is thought, are ambitious; but I think we have strong proof that the rich man, as a rule, has no ambition, or that avarice eats it up. While hoarding his money he is, as the case may be, a wealthy merchant, a rich banker, a large manufacturer; but let him apply his wealth after the manner suggested, and he becomes a world-renowned founder of some moral or intellectual institution, and a public benefactor of his species; besides having the satisfaction of knowing that so much of his money is for ever secured—that he has so much treasure laid up in heaven, where neither moth nor rust can corrupt, nor thieves break through and steal. Men who have so connected their names with some great institution need not seek knighthood or elevation to the peerage. They have decorated and ennobled themselves, more effectually than royal favour or patent could have done it for them; a fact the nobility by royal patent seems to be growing conscious of, for many of them are coming out and making themselves useful as writers and lecturers, and we hear now sometimes of noble preachers of the gospel. It is high time for rich men and all men to feel that neither wealth nor rank is any distinction in itself. The man of true taste, who felt as he ought to feel, as humanity properly disciplined is capable of feeling, would rather have his name connected with some religious or philanthropic enterprise, or with some institution whose object was the enlarging the boundaries of knowledge, fanning the flame of love and charity, or raising the standard of virtue among mankind, than being Emperor of Germany or Russia. Which reminds me how much more than kings or queens, even kings and queens might render themselves, and shine as bright peculiar stars among the sovereigns of the earth, by getting upon this course to fame—how a monarch, even in these republican times, might, by a philanthropic career, disarm all opposition of faction to his authority. "This," as Lord Byron says, in reference to a certain benevolent act of George IV.,—

> "This is to be a king, this is to raise
> Envy into unutterable praise,
> And by the heart, not hands, enslaving us."

This is a digression, however, too long a one for the unity of this paper; and its subject—patronage—I have, perhaps, laid too much stress upon, at least as far as art is concerned, which, requiring rarer faculties for its successful prosecution, must be less indebted than science to wealth and extraneous aid; and, while exhorting the professional men at least of this town duly to avail themselves of the privileges offered them in the new Art Gallery, which they ought to feel an interest in kindred to that felt by the painter and sculptor, let me warn them against trusting in patronage, however princely, for the success of art. It was only one of the minor causes from which the seemingly miraculous success of Greek art sprang, and which, had it stood alone, would have been powerless, though exercised by a Pericles. Art will not come, says Emerson, at the call of a legislature, nor repeat in England her history in Greece. She must spring up between the feet of earnest men, who love her and follow her for her own sake, and to whom she is, like virtue, her own reward,—a passage which suggests the chief cause of her success in Greece, the native country of the Muses and the Graces; where, from an arbitrary hieroglyphic, from a tool of despotism, or a ponderous monument of eternal sleep on the banks of the Nile and Ganges, art emerged into life, motion, and liberty—I mean enthusiasm, which is the very soul of poetry, the Coryphæ of the Fine Arts, there being such an indissoluble union subsisting between them, that the same word—*vates*—in the learned languages was indifferently applied to a poet or a prophet. This was the chief cause of the success of the Greek school. It is one that, of course, need not be wanting in ours; and a careful study of the history of Greece will, I think, show us that some of the chief of the other causes which conspired along with it to elevate Greek art, we also possess.

A prominent source of excellence in Greece was the sedulous cultivation of grace and elegance of person, which is the image and reflection of grandeur and beauty of the soul, among the people, for the benefit of art, which fully availed itself of the bright boon. The most celebrated beauties were the models of the artists, and were immortalised by them on canvas and in marble. Thais, the mistress of Alexander the Great, and afterwards queen of the first Ptolemy of Egypt, and whose charms were celebrated by Menander the poet, served this purpose. Of the celebrated Phryne, a statue was carved by Praxiteles, for the Temple of Apollo, at Delphi; and the same beautiful model is said to have been the original of the Venus Anadyomene of Apelles. Another cause of success in Greek art was political liberty, a blessing which bestows on man elevation and dignity of soul, and an enthusiasm which enkindles the imagination; which must be favourable to a soul-born art, and must be wanting in the willing subjects of unlimited monarchies or despotisms. Without liberty, I believe, art could nowhere flourish. We shall never hear, for instance, of a Muscovite Flaxman or Reynolds, till many years after we have heard of a Russian "Magna Charta," "Bill of Rights," &c. The situation of their country on the shores of the Mediterranean, with its proximity to the East, and its fine climate—their national character and manners—the nature of their religion, and ideas of the Deity, which with the belief in their own divine origin, led them to realise the conceptions of ideal beauty which the poets had attributed to the divinities, were also so many advantageous circumstances in favour of the Greeks with respect to the arts in question.

Now, in the first of these secondary causes of Greek excellence, beauty of person, though behind the Greeks, we are not remarkably deficient as a nation or group of nations; and the second, political freedom, we possess in as great a degree, or greater, than they did. As to the mental quality of the Greek race, which was a mixture of the Pelasgi with the Hellene, or Dorians, to which is sometimes attributed all that is great in the art and literature of Greece, it is probably not so much superior to our own as is usually supposed. I certainly do not agree with Mr. Fergusson, who is ever lamenting some artistic inaptitude for art inherent, as he supposes, in the Teutonic race. At least I conceive the countrymen of Shakspeare and Spencer, of Milton, the architect of Pandemonium; of Shelley, of Wordsworth, of Sir Walter Scott, need not despair of success in art on ethnological grounds.

But whatever circumstances favourable to art may be operating for us, let us not forget the main one, the spiritual one, which, in the absence of a Muse of painting, sculpture, and architecture from the Greek mythology, we might invoke as a substitute, viz., enthusiasm or love, which is as essential in art as the theological virtue so-called, or charity is in religion. Even the Greeks would have failed without it. Their art fell not from heaven; it was born and had its infancy on earth; but, as Fuseli observes, the Graces rocked the cradle, and Love taught her to speak.

With painting and sculpture architects are more deeply concerned than architects generally suppose, and should be better acquainted than at present, as a body, they are; and nothing would go further towards the redemption of architecture than increased study of the sister arts by her professional votaries. Study and practice of these arts by the architects of Italy was a cause of their eminent success in architecture, and many an Italian design, such as the Doge's Palace at Venice, for example, could not have been produced by a mere architect. The same may be said of the Saracenic architects in Spain, Egypt, and India. They were more than architects, in the common acceptation of the term, though they did not, and dare not, carve the human or animal form. The sculptor's art was devoted to death by the Moslem creed; but it was rescued by Moslem genius, and appeared in their arabesques as a mural decoration of surpassing beauty. The architects of the ancient Egyptian temples were also more than architects in our sense of the word; so were the ancient Hindoo architects, as shown in the celebrated cave temples of Ellora, which are decked with a redundance of sculptural ornament, including representations of men and animals, gods and goddesses of the Hindoo Pantheon, in such perfect unison with columns and entablatures that sculpture and architecture seem one undivided art, as if their practitioners never dreamt of them as separate arts, and as if Nature herself had joined them.

These observations remind me of a remarkable difference to which attention has of late been directed, between work of the present day and that of the Mediævalists and some ancients, in respect of the part played therein by the actual workman. No doubt the general impression is in favour of the old manner,—that the workman should have a mental as well as a manual part in architecture,—that *his* mind should beam from it as well as the architect's—a very good idea in itself, and very suggestive. It appears to me, nevertheless, that it is essential to a work of art that the whole conception, design, and composition, including the subjects and treatment of sculptural decoration, should be the work of one mind—that of the architect, who should have sufficient knowledge of sculpture to direct its execution. This need not, however, prevent the pouring out of the mind and heart of any workman who may have mind and heart to pour out. These, which should not be suppressed in the workman, are essential to the architect. *With* them there will be no limits to the success of a Liverpool School of Painting and Sculpture, with which should be closely connected a Liverpool School of Architecture.

In conclusion, I may be excused for betraying even special interest in the success of the School of Painting and Sculpture, when I inform you that I was thrown by circumstances, very early in life, into connexion with the scene of its birth, or at least infancy. I refer to the neighbourhood of the bottom of Brownlow-hill and Mount Pleasant, where, in a well-known establishment at this time, I was first made aware, by a work of Peter Nicholson's, of there being "five orders of columns in architecture," and commenced my study of them. At a sculptor's place, a few doors above this, that of Samuel and Thomas Francevs, John Gibson, R.A., the sculptor, was a pupil, placed there, if my information be correct, by Roscoe, the historian of the Medici; and from it came afterwards Edwin Lyon and William Spence, two of the first members of the Liverpool Academy, and the son of the latter, B. E. Spence, J. A. P. Macbride, and one or two other sculptors of promise who died young. Close by this, in Benson-street, lived Alexander Mosses, a talented portrait painter, another academician, of whom W. Daniels, I believe, a master in chiaroscuro, was pupil; and not far from it Samuel Williamson, the landscape painter; while within a stone's-throw, in Mount Pleasant, was the studio of John Foster, who, though architect, was president of the Academy, and who travelled with Mr. Cockerell, and was concerned with him in the introduction of Greek architecture into England. These, with W. G. Herdman, W. J. Bishop, R. Ansdell, R.A., and one or two others, may be considered the precursors of painting and sculpture in Liverpool.

ART AND ARCHITECTURE IN THE PAST AND PRESENT.

SIR,—With your permission, I should like to make a few remarks on the article with the above title lately published in the *Builder*.

After asserting that, as a nation, we spend money without stint on the army and navy, the writer asks if we can say the same of our galleries and museums?

Perhaps I shall surprise the majority of your readers if I say that I think it would be rather an advantage than otherwise if it were necessary to answer the question in the negative. There are some persons—and I agree with them—who think it is time that we asked ourselves whether the young people who are intended to become artists will ever possess any power of originality so long as the present vicious system of copying

ncient examples is continued; whether we hall ever establish — what ought to be the bject of all national art-teaching—a real living rt, ever progressing and improving, so long as we onstantly and systematically look back at what as been done before, and flatter ourselves that e have achieved something meritorious if we can nly say that our picture is a tolerably exact eproduction of what Titian, or Leonardo, or affaelle would have done in their days; or our atest church just what would have been built the thirteenth or other past century.

Certain it is that the great masters depended lmost entirely upon themselves, on the cultiva- ion of their innate powers, for the simple reason hat they had no museums or galleries to go to; nd it is more than probable that, if they had ossessed them, *we* should have had no *chefs- œuvre* to admire. They looked to themselves nd nature only; or if they did look at what ad been done before, it was only to be careful ot to fall behind it in merit, but to keep up the eneral advance towards perfection. In ancient rchitecture there is ample proof even that there as not the slightest hesitation at destroying der work to make room for new and,—as it as considered, and generally was,—improved ork. In pulling down a Mediæval church, the eautiful details of an earlier building are often ound used as mere walling material, which had vidently been thrown aside, almost with con- empt, as unworthy of the existing state of igorous architectural progress.

The most elaborate work was sacrificed some- mes to keep up the vital spirit in design.

How different it is in these days! Our young rtists are educated to look upon the glorious orks of ancient art in our galleries and useums as so many *ultima thules*, as goals at hich all further energy and progress may ease, and thus they grow up in a state of avish servitude to the past; so, also, is it with ur young architects. It is all copy,—copy. I ink I may fairly claim to be second to none in eneration of the many glorious works of ancient rt that have happily been preserved to our mes, but, at the same time, I consider that here is a very apparent evil in the uncontrolled tudy of it to the exclusion of the practice of riginal design.

I fear I may have stated my views on the bject very imperfectly, but if there be any rath in them, the remedy would probably be ound in a modification of the system of art- raining at the Academy, at South Kensington, nd in our architect's offices. Roughly stated, he time of students in art should be divided nto three parts:—1, learning to draw; 2, copy- ng from the best examples, and attending ectures; and, 3, original designing; and the hole organisation should be so arranged that he first lead up systematically to the last, and he highest (or perhaps the only) prizes should be eserved for the successful student in this last eriod. Some such course as this would, I think, nsure originality, progress, and, in the end, a ational school of art, producing vital historical ork, for which our national history would rnish glorious and inexhaustible events.

In comparing such towns as Manchester and irmingham with ancient Florence and Venice, he writer of the article is scarcely just, I think. he merchant princes,—as they are sometimes alled,—are certainly most liberal patrons of art, nd in the neighbourhood of Manchester are me of the finest collections of modern works, pon the acquisition of which handsome fortunes ave been expended. The world is occasionally stonished at these, when circumstances compel eir dispersion, and, to my certain knowledge, ey are not in the main collected with a view profit, but from a real love of art.

In conclusion, the writer alludes, rather regret- lly, I think, to mechanism as the genius of our e. But need we regret this? A glance the works of Viollet-le-Duc shows that the tists of the Middle Ages were first-rate echanics, and we may therefore conclude that ey would certainly if now living have availed emselves of our modern inventions. We have erely carried to perfection what they began, d I think it is a fact that mechanical appliances ed not, of necessity, clash with architecture as fine art.

H. T.

RE MESSRS. GREEN'S DOCK, BLACKWALL.

IR,—In reference to your description of this unique ck, permit me to add that the whole of the granite used its construction is from the Kemnay Quarries, Aber- en.

ALEX. NICHOLSON.

JOHN HENNING, SCULPTOR.

THE public works of this artist were the frieze of the gateway leading to Hyde Park, and the front of the Athenæum Club House; and besides the models of the Elgin marbles from the Parthenon, he restored the exquisite Greek compositions of the Phigalian marbles, taken from the frieze of Apollo Epicurus, illustrating the combats of "Greeks and Amazons," "Centaurs and Lapithæ."

It appears from his evidence before the Parliamentary committee upon arts and manufactures in 1835, that the course he adopted was to make careful drawings of the mutilated marbles, and then after filling up the deficient or defective portions, to model them, and when satisfied of their effect, they were transferred to a slate slab in the opposite direction (intaglios), so that the slate became the matrix mould with great certainty and precision; it was, in fact, "die-sinking" by the artist's own hand. The series of the Elgin sculptures were begun in 1816 and finished in 1822.

With reference to the robbery to which all sculptors and artists are exposed, he states that "when the casts are issued any one who lays his hand on them may with little trouble take moulds in sulphur, wax, or plaster, and multiply them in any number." Now this is so obvious that any one possessing a collection of these "gems of art," has great need to be careful to keep them in his own hands even during the operation of properly framing them; hitherto they seem to have escaped the plagiary of plaster figure-makers; and therefore are confined to comparatively few hands.

Then upon the preservation of marble sculpture from decay. When exposed to atmospheric changes, he advises that they should be coated with a wax, and describes an experiment he made with a piece of polished marble, upon which he made "a stripe of wax with hair pencil, then heated the marble until it had absorbed the wax. This he exposed on the top of his house for a whole winter, and in the spring the polish of the marble had all gone, except where the wax had been laid." He considers it should be allowed to penetrate to $\frac{1}{16}$ of an inch; and the effect, so far from being in any way objectionable, appeared only as being of the finest material.

Henning, like most men of talent, did not claim to be the inventor of the process, which, he said, might have been used by others before, but that it was unknown to himself.

JAS. THOMSON.

STRUCTURAL IMPROVEMENTS AT KEW GARDENS.

SOME improvements of an important character have just been completed at Kew Gardens, one of which is the re-arrangement of the heating department of the great Palm-house, which had for some time past been in a very unsatisfactory condition. It appears that the low level of the ground on which the building stands is almost flush with the bed of the river, and that during floods the heating boilers are frequently extinguished, and pumps have to be used. These defects have been accompanied by a difficulty in regulating the temperature, the consequence being that the plants have for some time past suffered. This has led to the First Commissioner directing that the machinery connected with the heating apparatus should be entirely reconstructed, which has just been carried out. Works have been effected which will prevent the water from having access to the stoke-holes. The boiler-rooms have likewise been remodelled, and the boilers renewed, together with the introduction of a new apparatus, whilst the mile and a half of water-pipes connected with the building have been re-arranged. The chief feature of the alterations are the new tubular boilers, which are the invention of Mr. C. Rivers, C.E., one of the Government surveyors, who, along with Messrs. Simpson & Co., have executed the works. Mr. Rivers has obtained a patent for his invention, which it is stated involves an entirely new and novel principle in boiler construction. It is stated that the new boilers act well, and Mr. Smith, the curator, is reported to have remarked that he shall be able to get as much work out of the four new boilers as he formerly got from the eleven old ones, in addition to which he will be enabled more equably to control the heat in every part of the building. A new herbarium has also been erected at the back of the house formerly occupied by the late King of Hanover. This building is intended to be devoted entirely to the storing of dried plants. It is several stories in height, with flying galleries round the walls.

LOCAL GOVERNMENT BOARD INQUIRIES.

Horsham.—Application having been made by the Horsham Local Board for sanction to borrow 12,000*l.* for the purchase and extension of the Horsham Waterworks, Major Tulloch, R.E., has held an inquiry on the subject at the Town-hall. Major Tulloch said he had received the detailed report on the scheme from Messrs. Gotto & Beesley, and he invited comments thereon. Mr. Hurst said that both the Local Board and the Waterworks Company were very anxious to bring this matter to a close, simply because the Board were anxious to extend the works, and lay down the mains in a certain part of the district where there was at present no water-supply except from common wells, in many of which the water was found to be very impure. The Waterworks Company did not feel inclined (and in fact had no means at their command), whilst matters were so uncertain, to extend the works and the mains. The purchase-money which the Board had agreed to give for the waterworks was about 7,360*l.* The present reservoir at the works held about 114,000 gallons, and the new one which was intended to be built would hold about 80,000 gallons.

Dorchester.—On the 13th inst., Lieut.-Col. Ponsonby Cox, R.E., held a public inquiry at the Town-hall, Dorchester, in reference to an application by the Town Council for permission to borrow 8,000*l.* for sewerage and water-supply,—3,850*l.* being the estimated cost of the proposed sewerage works, and 3,100*l.* that of an increased water-supply, including 1,350*l.* for an elevated reservoir, 350*l.* for an engine, and 318*l.* for buildings. The Borough Surveyor (Mr. Norman) explained that it was contemplated to provide drainage and water for the whole of the new district, which comprised the new barracks now in course of construction. It was intended to commence the drainage in the upper part of the borough,—from Bridport-road, and thence proceeding by way of Cornwall-terrace, Great Western-terrace, Weymouth-road, and as far as the parish boundary,—Maumbury Rings; also through Maumbury-road, South Walk-road, and the villa sites road, including Topp's Bridge-road, also Icen-way. In answer to questions by the Inspector, the Surveyor said he did not, according to the present scheme, propose to do anything with the sewage before it was sent into the Frome, which was proposed to be done where the present sewer emptied itself. The Inspector pointed out that this was contrary to law.

Ipswich.—The Corporation of Ipswich, as the Urban Sanitary Authority of the borough, having applied to the Local Government Board for their sanction to a loan from the Public Works Loan Commissioners of 44,500*l.* for the carrying out of the plans for the proposed intercepting sewer, with outfall into the Orwell at Pilots' Hard, an inquiry has been held before Mr. Robert Morgan, C.E. The estimate of the engineer (Mr. Bruff) for the work is 41,000*l.*, to which have to be added 3,500*l.* for compensations and contingent engineering and legal expenses. It is proposed to discharge the sewage soon after high water, so that the whole of it may go clear away before low water. The sewage of the town is 800,000 gallons per day.

NEW BRIDGES.

York.—At a special meeting of the York City Council it has been determined to construct a new bridge over the river Ouse, at a cost 38,363*l.* The site of the bridge will be from what is known as Skeldergate Ferry to St. George's Field, and will involve the clearing away of a large amount of property for approaches and in street improvements. The bridge will be so constructed as to open for the passage of vessels. Mr. Page, of London, is the engineer; and the work is to be executed under the superintendence of Mr. Styan, the city surveyor of York.

Widcombe.—Steps are being taken to erect a wooden bridge, at Widcombe, Bath, on the site of that which fell in June last. The proposed structure will, it is said, only be of a temporary character, and in course of time will give place to a substantial iron bridge capable of carrying carriage as well as foot traffic.

CLEOPATRA'S NEEDLE.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE opening meeting of the session in connexion with the British Archæological Association was held at its rooms, 32, Sackville-street, Piccadilly, on Wednesday, the 21st inst., when Dr. S. Birch, Keeper of the Egyptian and Oriental Antiquities, delivered a lecture on "The Obelisk known as Cleopatra's Needle." The chair was taken by Mr. Godwin, F.R.S., vice-president, and there was a large attendance.

After the formal business,

The Rev. Mr. Mayhew called attention to some glass vessels found near Troy, which he exhibited, stating that they were Moorish in shape, and believed to be of very great antiquity.

Mr. Godwin said that Mr. Morgan exhibited some drawings, including one showing the obelisk preparatory to being launched; Mr. W. Dixon showed a model of the obelisk; and Mr. Reddie some ancient casts illustrative of the obelisk. It was now his (the chairman's) privilege of requesting Dr. Birch to favour them with his observations upon the obelisk. The lecturer, as they all knew, had gained for himself a European reputation, and what they heard from him they knew to come from the best authority.

Dr. Birch, who was warmly received, said that it was with much pleasure he obeyed the summons, and trusted that as regarded the obelisk, it would soon be brought to this country. Before going into details of the obelisk from Alexandria, he thought it was desirable to give them some account of what obelisks were. To their eyes they appeared to be square columns, broader at the base than at the top. After all, an obelisk was only a repetition of the pyramid in another form, truncated at its top, at which was placed another pyramid of different proportions. Unfortunately, at the present moment, they were unable to decide from Egyptian monuments what was the symbolical notion of an obelisk. It was "texen," from the Egyptian verb "to hide" or "to conceal"; it also bore the word "Men," or "Amen," which was another appellation; but they were unable to connect the obelisk with the god "Amen," though it was used as a symbol of that god. At a later period, at the tomb of Memphis, obelisks were found before the doors of sepulchres, and this mode of using them for sepulchral purposes was continued from the time of Ptolemy. Another remarkable use of obelisks at this period was the placing them on the top of truncated pyramids, while other examples had been found to have globes at the top. In the 11th Dynasty obelisks were placed before the temples of the kings at El Assasif. The first obelisk of the old Empire which remained as attached to the temple, as distinguished from those employed for sepulchral purposes, was the obelisk at Heliopolis (of the 12th Dynasty), to whose tutelar deity it was dedicated. Heliopolis was a great city of obelisks, and it was thence the obelisk known as "Cleopatra's Needle" originally came, the place being called *Ben-ben-ka*. Probably the obelisk was of a sepulchral origin, and represented some primitive form handed down to remote times. In the 12th Dynasty they were placed before the doors, but were no longer sepulchral, being rather of a triumphal character, set up by the great kings of the 18th and 19th Dynasties. They might be compared to the triumphal columns of the Romans, because they were only allowed under certain circumstances, and then by permission of the priests. He considered the obelisk to be a kind of primitive stone flag, on which were inscribed the names, titles, and honours of kings. As to the caps, they were probably placed on the top, but did not extend very far down. That there were caps would appear from the numerous inscriptions which were on the obelisks at Alexandria, which were stated to be capped with gold, while one that was in the British Museum was said to be capped with some black metal,—probably iron. The oldest obelisk had only a single line of hieroglyphics down the centre of the shaft's side, lines being added by different monarchs, not on all of them, but on a few. The inscription on the side of the obelisk—that was to say, the central line—contained the honorific titles of the kings. Every Egyptian king had five titles. The Horus, or Harmachis, title was designated by a hawk, which they saw on the top of the obelisk, having beneath a square compartment called a banner. Obelisk inscriptions were merely honorary; but they generally contained information, incidental, as it were, in mentioning the titles and honours of kings. The secondary inscriptions were added by monarchs who were successors of the kings who set up an original monument. How they were added he (Dr. Birch) was not prepared to say, and whether they were lowered or a scaffolding made they had no means of judging. They only knew that certain monarchs, particularly Rameses II., added two lateral lines to the centre monument, one object being to make it symmetrical. These secondary inscriptions appeared on many of the great obelisks, which took a great deal of time to construct. There was one at Rome which was stated to have been thirty years in the hands of the workmen before it was set up, and two reigns passed by before it was placed in its intended position. The obelisks at Alexandria were two, and were removed there from Heliopolis, according to the inscription. The standing obelisk, which had not been removed, represented the youth of Rameses II.; therefore the secondary lines were added in his youthful years in the nineteenth dynasty. The erection of the obelisk of Alexandria itself at that place was no older than the age of Cleopatra. Mr. Dixon was the discoverer of the crabs on it, and it was found that the standing obelisk, when set up, had been supported at the four corners by bronze crabs. On one of the claws he found the name of the Roman architect Pontius, and the following,—"B.C. 23, set up by Augustus." These obelisks were probably removed by Cleopatra, and tradition assigned them to that queen,—there being every reason to believe that tradition was correct, one author quoting some ancient authority to that effect, saying that they were placed in the Cæsareum in honour of Julius Cæsar. They were found close to the shore. With regard to the standing obelisk, two sides of it had been found to be seriously injured by the effects of sea, wind, and the atmosphere. It was said to be purchased by the Americans with the object of having it conveyed to New York, and it was to be hoped that her sister would be safely brought to this country and placed at Westminster or wherever the site might be. Since the time of Niebuhr the obelisk had twice been turned over. It formerly no doubt stood close to the side of the fallen one at the time of Niebuhr, and there was every reason to believe that it was turned over by the French and subsequently by the British in 1801, when it was attempted to remove it by the army and navy as a monument of British valour. It, however, lay embedded in the sands of Alexandria for several years, and although Joseph Hume, the economist, brought forward a motion in Parliament to have it removed, the expense was estimated at 10,000*l.*, and the Government declined to take the vote of the transport to England. Such was its fate till 1867, when it was again offered to the British Government because the Khedive had let the land, and it was found to be a tenant that did not pay rent, and therefore the landlord wished to get rid of it; but the Government again refused it. They all knew, however, that, owing to the liberality of Professor Erasmus Wilson in directing the removal of the obelisk to this country, he had made a most magnificent donation to his fellow citizens in his desire to enrich the metropolis with one, at least, of these obelisks. With regard to the mode in which obelisks were anciently removed, there was one which was really represented as coming out of a cylinder, but he would rather think that the ancients removed them in galleys, and did not adopt the ingenious construction of Mr. Dixon, and attempt to tow them across the Mediterranean. The Romans removed them for the sake of placing them in the Spinæ Hippodrome and the Circus Maximus, the obelisks being placed in the centre of the Spinæ. By the kindness of Mr. Dixon, they had before them an excellent model of Cleopatra's Needle, and he had had the opportunity of examining the four sides of the original. As it stood, the obelisk had three lines on each side, making in all twelve lines. The central line was placed by Thothmes III., and stated that the Horus, Lord of the Upper and Lower Country (Egypt), the powerful bull crowned in Western Thebes, King of the North and South, "made his monument to his father, and had set up to him two great obelisks, capped in gold, at the first time of the festival of thirty years. According to his wish he did it. The son of the son Thothmes, type of types, did it." The question of the festival of thirty years, Dr. Birch continued, was a very important one, and was mentioned in the Rosetta Stone, but it appeared from an examination of different obelisks,—and here he was indebted to his friend Mr. Basil Cooper for the information,—that the festival of thirty years was a kind of lunar year, which fell from time to time and was seized upon as a kind of jubilee in order to erect these monuments. The most important of them was set up for the first time, in celebration of the thirty years' festival. On the centre side of the obelisk it stated that "the Lord of the Gods has multiplied to him festivals on the great Persea tree in the midst of the place of the Phœnix. He is recognised as his son; he is a divine person; his limbs emanate everywhere." On the fourth side mention was made of "the making offerings to their majesties at the two periods of the year that he might repose by means of them with a sound life hundreds of thousands of festivals of thirty years, and very many other festivals." In his (the lecturer's) opinion, Rameses II. placed his name on the obelisks, and erected them during his youth. On the standing obelisk at Alexandria it stated that Rameses was a young man, which would not be inscribed unless he had been in his youth. In conclusion, Dr. Birch said that very soon he hoped they would have the pleasure of seeing the obelisk in London. With regard to the details of the size, Mr. Dixon would be able to explain all particulars. There was one point he should like to call their attention to. They had all heard of the Great Pyramid, and of it being a wonderful work, of beautiful design, with proper proportions, and so forth, but unfortunately they never came across any Egyptian monument which was perfectly square. This obelisk was 7 ft. 5 in. wide at one side of the base, and 7 ft. 10½ in. at the opposite side. He did not know whether any one present had ever taken the trouble to measure the four sides of the Pyramid, but no doubt it was not symmetrically constructed, the proportions probably varying within certain limits. He had never seen an Egyptian courtyard perfectly accurate in all respects. He could only express a hope as regarded the obelisk that very soon they would have the opportunity of looking at it themselves in order to resolve their doubts upon certain parts of the inscriptions, and to see what effect a colossal monument of this kind, taken from the site of an ancient civilised nation and placed in the capital of the civilised world, would have.

Mr. W. Dixon, C.E., then exhibited a capitally executed model of the obelisk, and said that with regard to the engineering details, they were very recently described by his brother at the meeting of the Royal United Service Institution. He thought it was Herodotus who first described the way in which obelisks were brought down from Assouan. As to their erection, they had no precise knowledge of the means used. He judged it was by some simple means, or else a record of it would have been left. As to the removal of the obelisks, the ancient Romans had not to navigate the terrible Bay of Biscay, which had been so disastrous to their enterprise, but the circumstances showed that by modern means of transport an obelisk could stand the danger of being cast adrift in a storm, and if it had not been found off Spain, it must still have been safely floating about. He then proceeded to refer to the means of shipment, which has already been made public. With respect to the bronze crabs found beneath the standing obelisk, he had made a drawing of them. He also found on one of the claws the traces of an inscription, which stated that the name of the architect who had set it up was Pontius.

Dr. Birch asked if Mr. Dixon could give them any information as to the use of the obelisk as a sun-dial.

Mr. Dixon replied that formerly obelisks in Egypt and Rome were used as sun-dials.

The Chairman said that, with regard to what had been stated respecting the two sides of the obelisk not being precisely the same in dimensions, it was quite possible that it might be the result of carelessnes, or the desire to make use of the whole of the stone available; but it had been suggested that there was a much more subtle reason prompting the Egyptians in this matter. They knew very well that an upright monument of that sort seen against the sky looked much thinner than against a dark background. The obelisk being for the most part against the gateway, the narrow side being parallel with the building, it was seen at the side against the light, and did not appear any

ning different from ordinary stonework. It was ue to the Egyptians that they should have the redit of this ingenious suggestion. The diffi- alty of getting these obelisks was something normous, and they had practical proof of hat not long ago. The committee originally ppointed to raise the Prince Consort Memorial or London considered the advisability of letting take the shape of a granite obelisk, but they ound the difficulty insurmountable, for there ere no quarrymen in England who would ndertake to supply such an obelisk as was pro- osed. As to the origin of obelisks, it seemed to im that Dr. Birch hardly went far enough back; or a simple stone raised on end as a memorial, nd to which there were numerous references in he Bible, might be regarded as the origin of he obelisk, while a piled-up heap of stones ight be the origin of the pyramid. With respect o the term "Cleopatra's Needle," he had eard people sneer at the title as a vulgarism: t seemed to him that it was the best that could e given, for the equivalent of *obeliscus* was eedle, and although Cleopatra was dead before was raised at Alexandria, yet it was under- tood that it was removed there at her sugges- ion. There was one point he wished particularly o call their attention to, and that was in regard o the question of site, which was a very im- ortant matter. They were all, he believed, eeply interested in that obelisk, a memorial which Joseph and Moses had gazed upon, and which had been erected before Greece and Rome ad risen. He had found himself, after anxious consideration, quite unable to agree with the pinion expressed as to the advisability of placing it in Parliament-square. It seemed to im to be utterly a bad site, and he was sure hat they would thoroughly regret it being placed there. He was aware that Professor rasmus Wilson and Mr. Dixon had given a preference for that site, but it should be con- idered that if it was there erected it would be placed amongst lofty towers and spires; it would be degraded itself, and would degrade all he statues around it. He was quite satisfied that the Thames Embankment offered a satis- factory site. To put a monument over a con- tantly vibrating tunnel would be a "tempting f Providence." He was very much afraid that unless there was a strong expression of feeling gainst it, Parliament-square would ultimately e fixed upon as the site.

Mr. Charles Barry said that with respect to he question of the site he had ventured to ex- ress a strong opinion in the same direction as he chairman. He was sure that Professor rasmus Wilson and Mr. Dixon would be the st to deprecate an expression of feeling on a atter of such great interest to them, and that ey would, therefore, receive any suggestion hat came from critics in a spirit in which it was ndered, knowing at the same time that the bour, expense, and ingenuity which were in- olved in bringing this monument to this country ould meet with its due reward, not only from he present generation, but in generations to ome. In letters to the *Times* he had suggested site which he knew was attended with some difficulty, but it seemed to him to fulfil the re- uirements better than any in London. Other ositions, however, might be found equally good nd even better, but he joined heartily with the hairman in expressing a fervent hope that it ould not be put in Parliament-square. A onument such as this was to be looked upon as n antiquarian relic and to adorn the city. If ney considered it from an antiquarian point of iew it should have gone to the British Museum, ut he entirely sympathised with those who ought it had some higher value in the yes of those Londoners who were anxious to ave it as a monument. He had endeavoured o become converted to the Parliament-square te, but in vain, and the more he looked at it rom different points of view the more it would ot contrast. Its own simplicity of outline eemed to rob other buildings of their proper cale, which could not be desired by those who dmired them; they seemed to detract from that implicity and contemplative feeling with which pure, simple monument like this ought to be egarded. The objection on the ground of its nstable position was a serious one, if there was o other. Another difficulty was that, having only ne obelisk, they had to consider it a central bject wherever it might be placed. If there were wo, they could be properly placed on either side f the porch of some building, as in ancient times. t Parliament-square it seemed to be out of cale with everything around it, except in one position, and that was coming up from Palace-yard towards Great George-street, where it was seen against the sky; but in the metropolitan changes in view no one could say that the buildings in Great George-street would not sooner or later be of totally a different character, when the last refuge of admiration would then disappear.

Mr. Dixon, at the request of Mr. Grover, explained that the obelisk was 68 ft. 6 in. high from the base to the apex, and that it weighed 186 tons.

Mr. Grover urged that a monument of this description should be placed in a conspicuous position, and this would not be the case, he thought, if it were placed on the Thames Embankment. With respect to the beautiful statue of Cœur de Lion, he maintained that it ought to be put in a more prominent position.

Major Joseph urged that an obelisk should be placed in such a position where people were likely to see it.

Dr. Birch said it had been thought desirable to place it in the court-yard of the British Museum, but he fancied the centre of Regent's Park, where it would have a fine sky-line, surrounded with trees, and be accessible. Under any circumstances, he trusted that due precautions would be taken to secure it from the injuries of a British winter. Even in Rome obelisks had the appearance of being washed by rain, and the hieroglyphics disappeared unless care was taken. He trusted that the best authorities would be consulted with a view that the obelisk should be protected against the English winter.

The Rev. Mr. Mayhew proposed the courtyard of St. Paul's Cathedral as a suitable place for the obelisk.

Mr. Morgan then proposed a vote of thanks to Dr. Birch and Mr. Dixon.

Mr. E. P. Loftus Brock, in seconding the motion, said that he had received a communication from Lord Houghton, who expressed a strong desire that the obelisk should be placed in the court-yard of the British Museum, which position he (the speaker) considered to be one of the worst.

Mr. Godwin said that before putting the vote he would say that it would be a lamentable thing if this great memorial should be treated as a mere curiosity, and taken to the British Museum. As regarded St. Paul's Cathedral, the fact of the distance, if nothing else, was to be considered: to be traversed by this great mass of 186 tons, and also up a hill, would be a task almost insurmountable. With regard to Mr. Grover's suggestion, as to the placing of the statue of Cœur de Lion more prominently, he (Mr. Godwin) concurred in that view, and suggested that it should be placed in Parliament-square, where it would contrast most beautifully with the surrounding buildings.

The vote was then put, and carried with acclamation.

"THE DESIGN IN THE OBELISK."

SIR,—Because Egypt was the centre of civilisation and knowledge in the era in which Cleopatra's Needle was quarried and was set up, it is concluded that the Egyptians must have had a reason for all that they did. No doubt they had, but, like other peoples far more civilised and possessing much greater knowledge, not always a sufficient and a right reason. We should not forget that the obelisk and the pylon were coeval with the mummification of cows, cats, and birds, and with the puerile mural decorations of the temples. For these performances the Egyptians doubtless also had *their* reasons, but reasons which we feel quite sure would not justify us in following their example. We must, nevertheless, thank Mr. Phené Spiers for endeavouring to account for the inequalities in the measurements of the facets of Cleopatra's Needle. If his ingenious hypothesis were correct, all obelisks should exhibit the same peculiarity, and a proportionate adjustment of the correction. I have not the data which would enable me to affirm whether they do or do not, but Mr. Spiers will probably be able to inform us upon this point.

The interesting paper on obelisks in the *Builder* of October 27th does not give us the particular dimensions of all, but it does record two cases of inequality in the dimensions of the sides of obelisks, viz., in those of our own, and those of the Lateran monolith. How do these measurements tally with Mr. Spiers's hypothesis? The variation in the lesser obelisk is as 89 in. : 94½ in.; in the greater, 116½ in. : 108 in.,—that is to say, in the one case the narrower sides are about 1-17th less in width than the wider, and in the other about 1-14th. The greater obelisk has, therefore, the greater allowance made to counteract the phenomenon which Mr. Spiers calls to his aid. Should this be so, according to the hypothesis? I think not. For if we could imagine a series of obelisks gradually increasing in their relative dimensions, the deterioration of width by the phenomenon he supposes would be less and less in proportion as the width of the facets increased. In short, the phenomenon would be a constant quantity, whereas the dimensions of the facets would increase. But in the examples quoted the Egyptians have made the difference between the width of the sides greater in proportion in the greater obelisk than in the less, which should not be the case if they had been conformed according to Mr. Spiers's hypothesis.

May not these differences in the width of the sides be due either to the effacement of pre-existing records, to their use as gnomons, or to the accidental inequalities of quarrying? At all events, the measurements of the species obelisk might help us to a decision.

W. CAVE THOMAS.

METROPOLITAN IMPROVEMENTS AND ARTISANS' DWELLINGS.

The New Street from Charing-cross to Oxford-street.—At the meeting of the Strand District Board of Works on the 14th inst., Mr. Pratt asked if the Board's representative at the Metropolitan Board of Works could give any information as to when the new street from Tottenham-court-road to Charing-cross would be commenced.—Mr. Bonsor understood that they were waiting in consequence of not being able to comply with the clause inserted for the purpose of providing for the people of the poorer classes whom they would be compelled to dispossess.—Mr. Phillips said that was not the fact. The truth was simply that the Act gave the power to construct some other streets besides the one mentioned, and the Metropolitan Board, finding in some that they were not in any way affected by the Artisans' and Labourers' Dwellings Improvement Act, resolved to take them first. Several representations had been made to the Metropolitan Board upon the subject from different quarters,—notably, a memorial from the Vestry of St. James, asking them to push on the work, to which a reply had been made that no unnecessary delay would take place, and that was the only answer it was in his power to make to the Board.—The clerk was instructed to write to the Metropolitan Board of Works, informing them that in the opinion of the Strand District Board it was expedient that the work of making the new street should be proceeded with without delay.

Royal Mint-street.—At the last meeting of the Whitechapel District Board of Works, a committee presented a report containing a proposal that it be a recommendation to the Metropolitan Board of Works that the works under the Artisans' Dwellings Act in Royal Mint-street be commenced from the eastward, and that, if considered necessary by the Board, the Home Secretary be memorialised upon the subject, to urge that, for sanitary reasons, the operations be commenced forthwith. In connexion with this matter, the committee further intimated that they were informed by the medical officer of health that the condition of several parts of the area to be dealt with was now much worse than before the official representations which had led to its being brought under the operation of the law, and consequently great danger to the public health to be incurred, and rendering it of the highest importance that something should be done without delay to remedy the evil. He had already caused some of the houses to be closed, and should consider it his duty to adopt the same course in regard to others.——Mr. D. Munro, representative at the Metropolitan Board, said that one of the difficulties which confronted the Board in dealing with schemes of this nature was how to comply with the requirements of the Act of Parliament in providing homes for the people who were dislodged in effecting the improvement of areas of this description. Those who wanted to acquire the land as a site for model dwellings would not give more than one-third of its improved value, and the Board was naturally averse to enriching public companies at the expense of the ratepayers.—After a protracted debate, it was eventually resolved that a recommendation of the nature proposed by the committee be forwarded to the Metropolitan Board.

MANCHESTER BATHS AND WASHHOUSES COMPETITION.

THE site of the proposed new buildings will be 230 ft. by 86 ft. As we have already said, Mr. John Johnson, of No. 9, Queen Victoria-street, London, has gained the first premium of 200*l.* by drawings distinguished by the motto, "Economy well considered." The estimate for the entire building is given as 15,300*l.*, and of the engineering and fitting work as 4,300*l.*, making a total of 19,600*l.* The following are some of the particulars of this design:—Situated at the corner of the plot formed by New Islington and Baker-street, is the public hall of two stories, each room being 72 ft. by 36 ft., the upper floor being supported by wrought-iron beams. The approaches are by means of stone stairs and ample passages, and the requisite rooms and conveniences, with a gallery at one end and the two sides, are shown upon the plans. The two large swimming-baths are approached by means of a double entrance-hall in Baker-street, the first-class bath being 80 ft. by 25 ft., provided with sixty dressing compartments; and the second-class bath being 100 ft. in length and 29 ft. wide, with sixty-eight dressing compartments. Thirty-two first-class private baths are arranged in galleries extending above the swimming-bath, and these are reached by means of stairs from the entrance-hall. Eighteen ladies' private baths are arranged on the second-floor, above the laundries. The swimming-baths are placed longitudinally parallel with what we may call the back wall, the washhouses and laundries are at the corner of Baker-street and Horne-street, and the two-storied public-hall is at the corner of New Islington and Baker-street. The general design of the exterior and interior is in a plain simple Italian style, with little in the way of ornament.

The Bath Committee of the Corporation called in the aid of Mr. Thomas Worthington, architect, to report and advise upon the designs, and assist in the adjudication of the premiums.

DISPUTE AS TO RIGHT OF LIGHT.

BIRKETT *v.* HUGHES.

IN this case, heard before the Hastings Borough Bench on the 8th inst., Mr. Henry Hughes, a builder, and a member of the town council, was summoned for wilfully knocking down a hoarding or wooden screen, and doing damage to the amount of 4*l.* 18*s.* 4*d.*

Mr. F. J. Mann said, the complainant, Mr. James Birkett, was the freehold owner and occupier of 12, Maze-hill, St. Leonards, and his garden was overlooked by a window in the house, No. 1, Maze-hill-terrace. In order to secure the privacy of his garden, Mr. Birkett had erected a substantial hoarding, the posts supporting which had been sawn through at the direction of Mr. Hughes.

Mr. Birkett said the hoarding was up for a week. It was inside his garden. In cross-examination the complainant said there were windows overlooking the garden, and this had been the case as long as he had lived there. The hoarding was put up for the purpose of defending his property. He had put the hoarding up to prevent an easement, and to assert his right to do so. He had previously been lessee of the property, of which he became the freeholder in June last. The hoarding, which was within 3 ft. of the windows, was intended to block out the light and to assert his right.

Mr. Lamb, for the defendant, raised the question of jurisdiction of the Court, and maintained that it was a case for the county court.

After some further discussion, the magistrates retired, and on their return into court the mayor said the magistrates had jurisdiction in the case.

Formal evidence was then tendered to prove the commission of the damage, and Mr. A. Smith, architect, who had superintended the erection of the screen, spoke of the cost of erection. The terrace was not erected in 1860.

The Mayor said the Bench had decided to convict. Mr. Hughes would be fined 1*l.*, and 2*l.* 4*s.* damages, and costs.

Mr. Lamb applied for a case for a superior court, which was granted.

CABMEN'S SHELTERS.

Leeds.—The following is the section in the Leeds Improvement Act, 1877, in reference to Cabmen's Shelters:—

Section 105.—"The Corporation, as Surveyors of Highways, may authorise and permit such suitable erections as they may approve of to be placed in such of the streets of the borough as they may think fit, for the use, convenience, and shelter of drivers of hackney carriages plying for hire, and may make bye-laws for the management and use of such places, and the conduct of the persons resorting thereto."

At present there are in Leeds three cabmen's shelters not in the highways. There will now be no legal obstruction to the extension of the movement to the streets if thought desirable by the promoters and Corporation.

Liverpool.—The Corporation of Liverpool are erecting a cabmen's shelter at the cost of 188*l.* but it is in substitution of one erected some years ago by public subscription. The new structure is a moveable one, seven yards by three yards inside, and its height is 8 ft. at the sides and 12 ft. in the centre.

Wakefield.—The cabmen's shelter for the drivers of Wakefield, presented by Mr. William Hartley Lee, J.P., in memory of his late wife, has been formally opened for use. It is a substantial erection, and has been placed at the top of Westgate, in front of the Corn Exchange. Mr. F. Simpson is the architect, and Mr. Squires is the builder. The shelter has been handed over by Mr. Lee to the Wakefield Tradesmen's Association, which will undertake the control thereof.

MONUMENTAL.

Bath.—It is stated that the monument to Bishop Montague, which stands in the nave of Bath Abbey, is to be redecorated at the expense of the Town Clerk, Mr. John Stone, who has instructed the city architect (Mr. C. E. Davis) to superintend the work. It is considered probable that the monument will be removed from its present position, and placed in the chancel, near Prior Birde's chapel.

Dorchester.—An interesting letter, signed "F.S.A.," on the monuments in St. Peter's Church, Dorchester, appeared in the *Dorset County Chronicle* for Nov. 15.

EMBOSSED FLOCK PAPERS.

MESSRS. W. WOOLLAMS & Co. have sent us some specimens of their new improved embossed flocks, for which they have just completed patents.

The patterns in flock papers are, as a rule, in very low relief, or, if raised, as they sometimes are for painting, present but one plane to the eye. In these now made by the patent process, the design is raised much higher above the level of the surrounding ground, and is afterwards embossed or modelled by pressure so perfectly that any effects a skilful artist can create by modelling, chasing, or carving in bas-relief can be readily produced, with so great a truthfulness of expression that the artistic excellence of the work cannot fail to commend itself. These papers, which afford a material for the enrichment of surfaces with tasteful ornament in actual relief, casting its own shadows in the right direction from every light, and easy of application, will be welcomed by many.

They are made in coloured flock, with or without gold, ready for use in every variety of tint; and also in white or undyed flock, for painting over if required.

We are bound to admit we are no great admirers personally of flock papers pure and simple: they collect the dust; we prefer to have them painted. The patterns of the new papers we have seen are excellent.

FUNGUS.

SIR,—That which your correspondent complains of is the result of damp, against which such ventilation as he describes is only a partial remedy. Let him make the soil as dry as possible by putting drains outside, and, if needful, inside also; then cover the ground under the floors with some dry hard rubbish, faced with 4 in. to 6 in. of Portland cement concrete. If the timber used is treated according to the process of Sir William Burnett & Co. (90, Cannon-street, E.C.), it will resist fungus and the other effects of damp in such a situation.

THOS. BLASHILL.

SIR,—In answer to Mr. Pickard's letter in your paper of November 10th, I would advise him to put a layer of asphalte on the ground before he lays a new floor. This will remedy the evil he complains of. Having had twenty-six years' experience in the asphalte trade, I have had many places of the kind to contend with. This plan was adopted and used by me at the British and Foreign Bible Society's premises in Victoria-street.

T. FALDO.

DRYING ROOM.

WILL some one experienced in such matters kindly say what sort of room or building is required for smoke-drying bacon on a small scale, and the mode of operation?

T. C.

GAUGES OF ROOFING ZINC.

SIR,—Can you obtain for us the reasons for changes in gauges of roofing zinc?

Zinc, 24 oz. to the foot superficial, proper for flats, used to be stamped No. 15; and 26 oz., for gutters, No. 16. For some time past, however, No. 15 has been stamped on 21¾ oz., and No. 16 on 24½ oz., by manufacturers, to whose stamps I had been accustomed to look for convenient checking of work as laid. Of course, when the change was noted, I determined to drop all mention of gauges in specifications, and to describe only the weight per foot. But these somewhat eccentric weights per foot are not universal. Laxton's Price-book for 1877, for instance (p. 270) gives the following list quite in the old way:—

Gauge	13	...	14	...	15	...	16
Weight per foot sup.	20oz.	...	22oz.	...	24oz.	...	26o

No doubt this must apply in numerous cases; and other variations occur besides. There is one finds, a disposition on the part of builders to order from their dealers the weight nearest to that described,—that happens to be lower, not higher. Of course, no one can accept the stamps as evidence now without question. The edges of sheets are frequently so uneven in thickness, that the only way to apply a fair test is to weigh a whole sheet. Cannot some custom be steadily adhered to pretty generally? For instance, might not zinc for roofing purposes be made to the same gauges by all the trade, and stamped accordingly? Unexplained changes in the direction of thinness give a sort of sensation of being left in the lurch by former loyal allies in overcoming the old bad habit of using thin zinc, and palming off wrong gauges, who volunteered assistance to architects in getting justice done to their employers. But perhaps manufacturers have some easy explanation which will satisfy.

AN ARCHITECT.

"SILICATE COTTON."

SLAG wool, or silicate cotton, is used as a non-conductor, and acts as an efficient and powerful isolator of both heat and cold without deteriorating or being affected by either. It can, at the same time, be applied easily, and in such a manner as to adhere to the surfaces to be covered, and to remain efficacious under all conditions of temperature, weather, damp or wet from the outside.

The process of manufacture is extremely simple. A jet of steam is made to strike upon the stream of molten slag as it falls from the usual runner into the slag-bogies or wagons. This jet scatters the molten slag into shot, and as each shot leaves the stream it carries a fine thread or tail with it; the shot, being heavy, drops into the ground, whilst the fine woolly fibre is sucked into a large tube and discharged into a chamber. This chamber is very large, and is covered with fine wire-netting or sieve-wire. The steam and air carry the woolly particles all over the chamber—the finest into recesses formed for the purpose, the heavier into the body of the chamber. After each blowing it is selected and taken up with forks and put into large casks or bags for shipment or otherwise. The inside of the chamber represents a remarkable spectacle after each blowing. The wool is of a snowy-white appearance. Slag wool, or silicate cotton, is chiefly employed to cover steam-boilers, pipes, &c. Messrs. Jones, Dade, & Co., of London, are the sole agents for its sale, and they have taken out one or two patents for its application. The most noteworthy of these is for what they term mattresses. These are about 2 ft. to 3 ft. long, and 1 ft. wide, by 2½ in. thick. The mattresses are laid upon the boiler or pipes to be covered, and are secured in the usual way. Its perfect incombustibility, combined with its non-conducting and indestructible properties, give this material many advantages over any other for this class of work. It may be used to deaden sound.

School Board Architects, Bradford.—At a meeting of the Bradford School Board on the 14th inst., the following resolution was agreed to:—

"That Messrs. Hargreaves & Bailey be appointed additional architects to the Board, their remuneration for preparing all necessary plans and doing all other architect's work, including supplying contractors with quantities, to be 5*l.* per cent. commission on the cost of the buildings for which they are employed; and that Mr. E. P. Peterson, who was appointed architect to the Board on the 29th of November, 1876, be in future paid on the said terms."

THE ARCHITECTURAL MUSEUM.

By an advertisement which will be found on nother page of the *Builder* it will be seen that a itting opportunity is afforded the rising school f architects, more particularly the followers of Queen Anne," by which their zeal may be ested as well as their faith in the quintessence f the revival. We refer to the offer which the ouncil of the Royal Architectural Museum have ut forth to members of the profession, with a iew of making the Museum more comprehensive, o receive with thanks any gifts or loans of casts r examples of the later styles of English archi- ecture, more especially the ornamentation o Free Classic," as it is called, or "Queen nne." Whatever opinion we may ourselves ntertain for the style, there can be no doubt ut that the Museum should contain examples of his and other kinds.

AQUARIUM AND ASSEMBLY-ROOMS, BIRMINGHAM.

The proprietor of the Aston Lower Grounds, irmingham, has determined to erect an quarium and a large assembly-room, with lant and fern house. The aquarium is to be a uilding 312 ft. in length. There will be nine- een show-tanks, each containing about 1,300 allons of water. Opposite the show-tanks, and djoining the aquarium promenade, will be a uilding, over 300 ft. in length, devoted to the rowing of ferns and choice plants. The assembly- oom will be 220 ft. in length, 90 ft. in width, nd 50 ft. in height, with galleries at each side nd at one end. A raised platform is shown at ne other end, for musical or other performances. he whole is in the style called Victorian Gothic. he buildings are to be of brick with stone ressings. The buildings have been designed y Mr. Naden, architect, of Birmingham.

The *Birmingham Gazette* says that in addi- on to improving the appearance of Broad- reet, by the erection of a row of shops on the ot of land that fronted the Prince of Wales's heatre, Mr. J. Jacobs has added to the accom- odation for public gatherings and public amuse- ents which the town already possesses a new ssembly-room. It is situated at the top story the building which forms the frontage to the rince of Wales's Theatre, and it is approached y a wide staircase. On either side of the trance to the room are retiring-rooms, neatly ted up. The room measures 65 ft. in length d 25 ft. in width. It has a coved roof, with oulded and figured frieze, representing Art in its ramifications, and is lighted in the centre three large chandeliers from the workshop of essrs. Best & Lloyd, the firm to whom was trusted the lighting of the Birmingham Arcade. he decorations are by Messrs. Lees, of Ann- reet. The upper end of the room is to be ted up with a small stage, with proscenium, otlights, and appliances for working scenery.

CTORIA EMBANKMENT APPROACHES.

THE QUEEN *v.* METROPOLITAN BOARD OF WORKS.

In this case a rule was granted some time ice by the Queen's Bench Division, calling on the defendants to show cause why a man- mus should not issue commanding them to ry out a certain work in pursuance of an reement entered into between them and the arquis of Salisbury.

Ir. Biron last week appeared to show cause on behalf he defendants. The rule was supported by Mr. A. L. ith. The agreement in question had reference to the struction of a roadway 25 ft. wide through the Marquis Salisbury's property from the Strand, opposite Exeter ll, to the Thames Embankment, within fifteen months, was entered into in consideration of the abandonment Chancery suit, and the withdrawal by the Marquis of osition to a Bill promoted by the Metropolitan Board Works.

he contention of the defendants was that they were at rty to make the roadway 15 ft. wide, and two footpaths ft. width each. On the other hand it was contended t under the terms of the agreement the roadway should 5 ft. wide.

t the close of the arguments, which were of a technical racter, the Court made the rule for the mandamus olute.

METROPOLIS BUILDING ACT AMEND- MENT BILL.

IR,—It is understood that another Bill is to introduced, proposing to govern building sters by "*Bye-Laws*." As this is, in that par- lar, a reproduction of the one rejected on very ground, one may ask, *cui bono?*

We are again asked to substitute "uncer- ty" for "certainty." AN ARCHITECT.

HINTS TO SPECULATIVE ARCHITECTS.

YARMOUTH AQUARIUM COMPANY.

SIR,—You have published the decision of Vice-Chancellor Malins in the above matter (as against poor Pugin's widow), and if you can give architects, when about to prepare designs for public companies, a few hints it would prove of value to the uninitiated. As I can speak from a very sad experience, in loss of health, vigour, and a good sum of capital, perhaps the following notes may serve the purpose.

A young architect is always willing and anxious to secure work, especially a large or public building, as generally proposed by companies. He hears that such is to be carried out, or pretended to be so, by a body of gentlemen who intend to form a company under the guidance of a Promoter, often a pauper, but who dresses well, is considered a good fellow in the City, invites you to some hotel to dinner, and of course there is the inevitable solicitor, a highly respectable man or firm. The architect is beguiled into preparing sketches, and perhaps to take some shares,—merely for form's sake,—nothing to pay upon them,—just to show the other intending shareholders that the architect has confidence in the matter,—and any payments for shares can be deducted from his professional charges, &c. The architect is, perhaps, led to sign the Articles of Association; thereby (poor fellow) becoming a contributor, or really a promoter (as the Vice-Chancellor puts it) without the least idea what he is doing. Further, he is assured of the genuiness of the matter by a splendid prospectus, to which his name is to be added as architect, at which, perhaps, he is very pleased (at least, I know I was fool enough to be so some years since). Everything looks and goes well; he attends directors' meetings, takes instructions and so forth from them, and thinks he is working for them, but does not think or know that it is necessary to have himself proposed and appointed by the directors as architect to the company, and so entered on the minute-book. Time rolls on; at the end of one, two, or, at most, three years, things do not go on so smoothly, shareholders are dissatisfied, creditors are clamorous, when a big general meeting is held, formerly at the late London Tavern, and now at Cannon-street Hotel. Where is the promoter, or the highly respectable solicitor? The directors behave, as a body, so as they dare not do in their individual capacity. Then comes the liquidation. How few when they take shares think of its consequences? The architect makes out his account, and sends it to the Court or private liquidator, disappointed and disheartened. A few months elapse, a call is made: the architect, to his astonishment, receives—"Notice, you are requested, &c., to pay 2*l.* 10*s.*," on, perhaps, 50 or 100 shares. You protest against payment, you never did pay anything, and it was not intended you should pay for any shares. You are informed the deposit on your shares was paid, and the allotment letter was sent you, and your name is on the list of subscribers. "You must pay, and perhaps you will let me have the amount at the earliest convenience, &c." Here begin the trouble and confusion. Perhaps you have forgotten about the allotment note; however, after a search you find it, and try to find the said promoter,—but where? You go to your solicitor. Here begins another "act": (set scene) bill of costs in the distance,—worry and anxiety in the foreground,—and be thankful if this is the only company you are acting for. You now begin to learn the law: you are told and advised that you must pay the calls. "Yes! but here is my claim against the company, cannot I prove this in liquidation and deduct these calls from it?" Very natural,—but, alas! not legal. Mr. Court-de-Chancery says "You must pay your calls due before you can prove for your account, and be placed on the list of creditors." Well, you feel disgusted, get a handy "Book on Companies" (Effingham Wilson's to wit), consult with some private friend or chum; perhaps he helps you. Thinking it is all right you pay the money (calls), and expect in time to be paid your account, or a dividend upon it, and rest a little easy in your mind. After a time you call upon the liquidator, asking when you may expect a dividend? He is very civil, &c., but politely tells you you have no claim against the company; you were not appointed architect by the directors, there is no minute in the book to that effect: what work you did must have been for the "promoter" (Pugin case), who was paid certain fees for *formation money*, including designs, plans, &c. And you must look to him for payment. You, of course, protest, consult with your solicitor again, and you are very fortunate if, by dint of the strength of right, you can get a small allowance, which generally does not amount to the calls paid, or the "costs" to come; or perhaps you take it into court, like Mrs. Pugin, and you learn the result, as Crabbe has it:—

> "Hard is his fate who builds his peace of mind
> On the precarious mercy of mankind."

I have thus written my knowledge of company-making, of which I have had a fearful experience, being drawn into them by pretended friends, who, of course, received their commission on my shares. These few words may be of great service to future intending architects to companies, and perhaps save them from disappointment, and, it may be, financial ruin.

A VICTIM.

OUR SCHOOLS OF ART.

SIR,—Your correspondents, "A. B. & C.," writing in the *Builder* for Nov. 10, under the above heading, exhibit a misapprehension of the subject, despite their study of "Blue Book" and "Directory." They say the one purpose for which these schools were established was "to teach young men the profession of a designer, or, if need be, an artist." This statement shows ignorance of the history of the Department of Science and Art. The teaching of design no doubt forms a part of the curriculum of such schools as are situated in centres where such study bears upon the practical business of life, and in those centres the masters are thoroughly acquainted with the subject. Whether it be possible or desirable to teach young men to be artists is questionable.

With respect to the possession of certificates by the masters, it is within the personal knowledge of the present writer that the masters of three of the schools "A. B. & C." name, who have only the first certificate, are professional artists who only took the certificate in order to put themselves in connexion with the Science and Art Department. The possession of more certificates would be of no value to them; so that the number of certificates is no criterion as to the capabilities of a master. There are not wanting cases where a school under the direction of a many-certificated master did not show to great advantage, but flourished and did good work under one of "A. B. & C.'s" despised two-certificate men.

The proposition that "committees should insist upon seeing every branch of fine-art work executed by a master before he is engaged" is highly comic. One can imagine the scene; and, after all, they might select a master entirely devoid of teaching faculty. No, "A. B. & C.", that method of choosing a teacher will not do.

There are, no doubt, many flaws in our system of National Art Education, and it would be well were the eccentricities of the administration of the Central Department brought to light; the plurality of livings of the head master noticed by your correspondents is one worthy of note; but little good will be done by writers with imperfect knowledge of the origin, progress, and present position of the Department of Science and Art.

ANDROS.

RAILWAY ITEMS.

St. David's.—A Cardiff paper says that the promoters of the St. David's Railway have determined to run a branch line from Haverfordwest to a junction proposed to be made at Treffgarne Rocks. Originally it was the intention of the promoters simply to effect a junction with the Great Western Railway at Clarbeston-road, but by the altered arrangement a direct line of communication between St. David's and the southern part of Pembrokeshire will be given.

South-Eastern and London, Chatham, and Dover.—Notice is given of the intention of these companies to apply to Parliament in the ensuing session for leave to bring in a Bill to make provision for the joint working and maintenance of these lines, with a view to ultimate amalgamation.

Proposed New Line between Farringdon-street and Regent-circus.—Application is to be made to Parliament next session for an Act authorising the formation of a new railway between Regent-circus and the Metropolitan Railway at Farringdon-street. It is proposed that the line shall be

made beneath the new streets now in hand or about to be commenced by the Metropolitan Board of Works.

London and North-Western.—A special general meeting of the proprietors of the London and North-Western Railway was held on the 13th inst., for the purpose of creating and issuing new capital, authorised under "The London and North-Western Railway (Bletchley, Northampton, and Rugby) Act, 1875," to an amount not exceeding 900,000*l.* to defray the cost of widening the line. A large portion of the land for the purpose has been bought, and the works are going on rapidly.

Swindon and Andover.—Efforts are now being made with a view to get the support necessary for the construction of the Swindon and Andover Railway, the Act for which was obtained two or three years ago. The companies directly interested in the line are the Great Western and the London and North-Western, the line connecting the two systems by stations at Swindon and Andover. The line would give direct communication between the South of England and the Forest of Dean and South Wales coalfields, and when the Severn Bridge Railway is completed the distances between those districts would be still further diminished.

Bath and Cirencester.—It is stated that a scheme is in contemplation to promote a railway between Bath and Cirencester, to commence by a junction with the Great Western Railway at Bathampton, and pass through Batheaston, Marshfield, West Kington, Netherton, Acton Turville, Luckington, Great Sherston, Weston Birt, Tetbury, Long Newnton, Crudwell, and terminate by a junction with the Great Western Railway at the Swindon end of the tunnel, near the Kemble Junction, with running powers into Cirencester.

VARIORUM.

Under the title "The Main Drainage of Oxford," Messrs. Jas. Parker & Co. have published a paper on the subject by the engineer (Mr. W. H. White, C.E.), read before the Ashmolean Society. As the illustrations include details of the various works it will be found useful by those who are engaged in drainage matters. We will take an opportunity to mention what has been done in this direction in Oxford.——The "Gentleman's Annual" for Christmas, 1877 (in connexion with the *Gentleman's Magazine*: Chatto & Windus), consists of three stories, by R. E. Francillon, F. W. Robinson, and Julian Hawthorne, respectively, much above the average of similar productions.——The Christmas number of *Tinsley's Magazine* is a story by Mr. Farjeon called "Solomon Isaacs." The heroine is a Jewess, and the story lies wholly among her people. The illustrations are somewhat coarse.——"The Gossips' Bowl" is the title of the Christmas number of the *Illustrated Sporting and Dramatic News*. Miss Braddon writes the leading story, entitled "Thou Art the Man." The illustrations are numerous.——The *Sunday Review*, a monthly magazine, ably advocates the object of the Sunday Society. A Plea for a Philosophical Language in the current number deserves earnest consideration.

Miscellanea.

Truro Cathedral.—The following suggestion is thrown out by the Bishop of Truro in a recent address to the cathedral body:—"The prebendal stalls in the old cathedrals are even to this day inscribed with the local names of the estates and churches with which they were until lately endowed. We have no such names to give to ours. But, in a country like this, where the names of places are so lastingly identified with the history of its Christianity through the names of the great missionaries who brought us to Christ, you would deem it inexcusable if I tamely entitled the stalls number one, two, three, up to twenty-four. I propose, therefore, to appropriate to them such local names as shall not only sound true Cornish, but also, by the help of your own distinguished antiquary and student, Mr. Boase, to place them chronologically."

The New Military Brigade Depots at Caterham and Reading have just been completed for the War Department, the former by Messrs. Higgs & Hill, and the latter by Messrs. Cooke & Green. Mr. James Hill supplied about 300 locks for Caterham Depôt with keys differing throughout, and a similar number for Reading.

Temple Bar.—At a meeting of the Court of Common Council on the 15th inst., the City Lands Committee presented a report recommending that Temple Bar be demolished forthwith, excepting the south pier, which would be left standing pending the rebuilding of Messrs. Child's premises, and the north pier, or a portion thereof, which will be left standing pending negotiations with the Government. Mr. Rudkin, in moving the adoption of the report, said that with regard to the south side of the Bar, the Committee had so successfully negotiated with Messrs. Child & Co. as to induce them to throw into the public way land 4 ft. 6 in. wide, extending the whole length of their frontage, and this east and west of Temple Bar would lead to an immense improvement upon that side of the road. This particular foot-pavement was already 10 ft. wide, both in Fleet-street and the Strand; and as it was thought desirable that this should not be lessened, the Committee proposed that they still continue it the same width. A column or obelisk, they suggested, should mark the site of the present structure, the "rest" being 5 ft. wide. Thus they should be enabled to have a 17-ft. carriage-way—sufficient space for two carriages,—on the one side of the "rest," and a similar space on the other. This would leave 12 ft. for the footway on the north side of the Bar. The Government had been applied to upon this subject, and they had referred the Committee to the architect of the new Law Courts, Mr. Street, who, however, refused to concede a single inch. The Committee thought that, in carrying out a great improvement of this character, they had a right to expect something from the Government, and it was suggested that the latter might give them 2 ft. The report was adopted.

Proposed New Building Act.—The Metropolitan Board of Works has given notice of its intention to apply for leave to bring in a Bill in the next session of Parliament to amend and enlarge some of the powers and provisions of the Metropolis Management Acts and of the Metropolitan Building Act, so as to enable the Board to make further regulations, and to impose new restrictions with respect to the erection or alteration of houses and buildings, and particularly with respect to the distances at which such structures and the premises connected therewith shall be from the centre of any carriage or footway upon or near to which such properties shall, for the time being, be situated; to prevent the use for carriage traffic of roads of less width than 40 ft. where there are houses on each side of the road, or of less width than 20 ft. where there are only houses on one side; to authorise the Board to make and enforce bye-laws,— (1) as to the foundations and sites of houses and buildings, and the mode in and the materials with which such foundation shall be made, and the sites be prepared and completed; (2) as to the description and quality of the substances of which the walls shall be made; (3) the powers and duties of and fees payable to district surveyors; to enlarge the powers of the Board as to the removal of dangerous structures, and to provide for the recovery of the expenses incurred by them in respect thereof; to authorise the district surveyors to enter upon and to inspect houses, buildings, and works in course of construction; to confer upon the Board powers over and with respect to theatres, music-halls, and other like places of entertainment, and to enable the Board from time to time to make and enforce all such rules, regulations, orders, alterations, and restrictions as they may deem necessary or expedient in relation to such buildings for securing the public safety and convenience.

Bow Church.—The dragon vane on the spire of the church of St. Mary-le-Bow, in Cheapside, having been much damaged by the late gales, Messrs. Proctor & Co., engineers, of Turnagain-lane, City, proceeded to remove it. The height of the spire is 220 ft., and the length of the vane to be removed 8 ft. 6 in. Ladders are placed close against the building, and secured by a spike at the top; a second ladder is then hoisted from the first with a block and rope, the foot being well secured to the top of the other, and the second made fast as before, and so on until reaching the top.

Bricklayers' Technical Classes.—The first annual report, just now published (Office, 5, Great Queen-street West, S.W.), shows that the committee are satisfied with the result so far. The small funds subscribed appear to have been carefully expended.

Compensation Cases and the Metropolitan Board of Works.—At a recent meeting of the Board, Mr. Rooke said, "The Committee wished it to be known that there was no necessity for employing agents, and that any person who had reason to claim compensation could come personally to the Board, where he was quite as likely to receive fair and liberal compensation as if represented by agents. If any agents had stated that they had greater facilities for approaching the Board, those representations were without foundation." A correspondent writes,—"After an experience of thirty years as valuer, I have found the old proverb stands true, that 'He who advocates his own cause has a fool for his client.' It rarely happens that a shrewd man of business, whose premises are required for public improvements, railway extensions, or what not, fails to know among his friends a competent and trustworthy surveyor, architect, auctioneer, and valuer, to whom he states his case, and with whom he arranges the preparation and settlement of his claim. This last act, the settlement, always involves much serious negotiation, tact, and good judgment. Sometimes it is advisable not to accept 'the final offer,' the *ultimatum* of the Board, and then the claimant has to choose between a jury, a special jury, and arbitration. The guidance of a gentleman trained in and accustomed to such matters is expedient (though there may be 'no necessity' for it) in each stage of these proceedings, especially as the Board, through its valuer, often makes more than one bid before it comes to the final offer; indeed, the practice of the Board is not such as to lead to the supposition that if claimants 'approached the Board' humbly and in person, they would always receive that 'fair and liberal compensation' to which Mr. Rooke so fondly alludes."

The Parkes Museum of Hygiene.—This museum, which is in course of formation at the University College, Gower-street, is in a fair way towards completion, and will soon be available for the purpose of diffusing a practical knowledge of many branches of sanitary science. The museum is divided into a library and eight classes. The library will be devoted entirely to works on hygiene, reports, pamphlets, &c. Class 1 is devoted to local hygiene and sanitary engineering, and will consist mainly of plans, views, drawings, &c., illustrative of drainage, sewerage, water supply, burial, and the hygiene of crowded districts. Class 2 deals with hygienic architecture, and will be illustrated by plans and drawings properly classified and packed in portfolios for easy reference. Class 3 illustrates the important subjects of lighting and warming; Class 4, clothing; and Class 5, food. Class 6 deals with personal *régime* and comfort for invalids, including the transport and care of sick and wounded in battle; Class 7, with safety and rescue; and Class 8 with the hygiene of the professional and industrial classes.

"Jerry" Building.—"I am told on creditable authority [says the correspondent of the Birmingham *Daily Mail*] of a remarkably neat manœuvre executed by a 'jerry' builder of the most artful type. His suburban houses were duly inspected by the local officer when in course of erection. The regulation 9-in. walls were apparent everywhere, and even the out-houses and other walls showed the required thickness of brick. The official duly passed the work; but hardly had he turned his back when, hey! presto! down was pulled a big portion of the out-house walls, so that the old unsafe "single brick" alone remained. The extra layer had merely been built up temporarily to satisfy the authorities. I am told this is a favourite device with the gentlemen of the 'jerry' persuasion. If so, a second visit of inspection when the building is complete may be rendered necessary."

Working Lads' Institutes.—The first annual meeting in connexion with the Working Lads' Institutes, the first of which was established in Mount-place, Whitechapel, last year with the view of providing to working lads, after their day's work is over, the comforts of a home, innocent recreation, good and useful reading, and the means of educational improvement, has been held at Stationers' Hall. The report showed the success of the movement during the year, and several of the speakers, among whom were Mr. W. Rivington, Sir E. Carden, and the Rev. Mr. Jones, bore testimony to the good effect which had been produced by the establishment of the institute in Whitechapel, and resolutions were carried pledging the meeting to do their best to support and extend the movement.

The Wrexham Exhibition of Art Treasures.—The committee of this exhibition, held 1876, have issued a circular, in which they y that the exhibition, having failed to attract fficient popular support in a year of unampled depression in trade, ended, as is now nerally known, in a deficit of 4,300*l.* Notthstanding the exertions of those connected th its management to make it financially sucssful, they failed; and they now appeal to all vers of art, as well as to those who wish to evate and improve the taste of the people, for lp in the liquidation of the amount still owing, nich, after deducting the large sums promised the Duke of Westminster (2,000*l.*), and by Mr. . Cornwallis West (500*l.*), is in round numbers, 800*l.* Over 550*l.* of this has, however, been omised.

Westgate-on-Sea.—We are glad to note the auguration of a Working Men's Club in this ising watering-place. The promoters were rtunate in obtaining the valuable assistance of r. Thomas Hughes and Professor Erasmus ilson in starting the undertaking. We believe e promotion of the scheme is due to Mr. and dy Rose Weigall, and their efforts appear to ve been cordially seconded by other well-own residents and visitors. Mr. Corbett has nerously given a piece of land on which to ect a building for the club. Subscriptions are omised towards the building itself, and there every prospect of the undertaking being sucsfully accomplished. Mr. Hughes made a very eresting and useful address.

Leinster Lawn, Dublin.—The Dublin Corration have passed a resolution condemning e intention of the Government to build the oposed Museum of Science and Art on inster Lawn, and have appointed a deputation wait on the Chief Secretary on the subject. e resolution declared that, inasmuch as oes for public recreation in Dublin are very y in number, it would be most undesirable build on Leinster Lawn, which is not only great ornament to the city, but a means of rding enjoyment to the people, and of tivating the public taste. We recently pubed a letter protesting against the proposed oliation of the place.

"Cleopatra's Needle."—A special meeting the members of the Royal United Service titution was held on the 16th inst., to hear a per by Mr. J. Dixon, C.E., giving an account of steps taken to remove the obelisk from Egypt England. He referred to the history of the nument, and to its being composed of granite m a ridge some 700 miles up the Nile. He mired the ingenuity of the ancients, who could up and pull down such immense blocks, and had often thought that such an example of engineering skill of the people of some 00 years ago should be for more reasons than transferred to the centre of the engineering ld of the present day. He expressed his ief that the obelisk would before long reach gland.

Selborne Church.—The parish church of borne, the little village in Hampshire made nous by the Rev. Gilbert White, the naturalist, l fallen into a state of very serious decay. has now undergone partial restoration. It s opened last week. The north transept has n almost entirely rebuilt, the roof of the e renewed, and the whole of the high-backed s replaced with open benches on new floors. ne old coffin-lids and many interesting tiles e been found and placed on a raised foote at the east end of the south aisle. The hitect is Mr. William White, F.S.A., grandhew of the famous naturalist.

The Royal Dramatic College.—At a eting of the governors of the Royal Dramatic ege, held in London, on the 12th inst., the owing resolution was unanimously adopted:—

That as it is impossible to keep up the Royal Dramatic ege and provide for its inmates, through want of cient support, there being at this moment no funds for urrent expenses except by selling out the remaining of 1,000*l.* in the New Three per Cents., the council do with take such steps as the Charity Commissioners advise to dispose of the property and to provide for mates."

Destruction of a Church by Fire.—The old church of Lamerton, situated about e miles from Tavistock, was on Monday ing totally destroyed by fire. It was only teen months ago that the edifice was restored, cost of about 1,100*l.*, and at the same time a organ was erected at an expense of about more.

Moving Buildings.—For some time past the public have complained of the inconvenience occasioned at Chepstow station by the level being considerably lower than the floor of the carriages. Last week the novel proceeding of bodily raising the structure was completed in the presence of various scientific men. The station is supposed to be about 140 tons in weight. It consists of two stone buildings on either side of the line. Each of these is 56 ft. by 18 ft. 6 in. wide, and 12 ft. 6 in. high. A number of jacks were simultaneously put in use, and the station was successfully raised the required height of 22 in. No injury whatever was done to the building. The project was first suggested by the engineer of the Great Western line, Mr. L. Owen.

The Frauds on the Midland Railway Company.—At the Manchester Assizes last week, George Mason Tickle, brick manufacturer; Edwin Westerman, superintendent of permanent-way, and Thomas Herrick, inspector of permanent-way, were indicted for conspiring together to defraud the Midland Railway Company of divers large sums of money, and large quantities of bricks and other materials. The prisoners were found guilty, Herrick being recommended to mercy. Westerman was sentenced to eleven months, Tickle to twelve, and Herrick to six months' imprisonment with hard labour.

The Dome of St. Peter's at Rome is reported to be again giving considerable anxiety for its security. It is stated that the fissures and cracks in the upper part of the dome and its supports have much increased of late. A commission from the Russian Academy of Fine Arts has recently examined the dome, and it was found that almost every part of the structure was more or less cracked or dislocated. Bands of iron have been placed round the dome in previous years and marble tablets dove-tailed into the crack, but numbers of the latter have been broken or torn by the widening of the fissures.

Sculpture for the London Guildhall.—At the meeting of the Court of Common Council on the 15th inst., the general purposes committee, reporting on a reference of the 22nd March last, on the letter of Mr. J. Bell, sculptor of the Wellington monument in the Guildhall, offering for sale to the corporation a marble relievo of "Peace and the Soldier's Return," recommended that the same be purchased at a sum of 300 guineas. The motion was agreed to, and it was referred to the City Lands Committee to select a suitable site for the work.

Destruction of an Historic Building by Fire.—On the night of the 14th inst. a fire broke out at the offices and hall of the Scottish Corporation, at the top of Crane-court, Fleet-street, which resulted in the entire destruction of the building, which was the first meeting-place of the Royal Society, for whom it was built by Sir Christopher Wren in 1710. A view of the house, together with some account of its history and associations, appeared in the *Builder* for January 8th, 1876 (vol. xxxiv., pp. 32—34).

The Widening of London Bridge.—The Corporation of London have given notice that in the next session of Parliament they intend to apply for leave to bring in a Bill to enable them to widen London Bridge and to construct the necessary works in connexion therewith, and for such purposes to borrow money on the credit of the Bridge House estates. The widening of the bridge will be to the extent of 11 ft. on each side. They will also ask to amend any Acts relating to the bridge, and for other powers.

The Slate Trade of North Wales.—The *Mining Journal* says that notwithstanding the general depression in trade at home, and the closing of the Baltic ports for the winter, the slate trade of North Wales keeps uncommonly good, and there is a movement among quarry-owners for another advance in price. The advances made during the last ten years reach a total of thirty per cent. on the current prices of 1867.

Papers for the Institution of Civil Engineers.—The Council of the Institution of Civil Engineers invite communications, of a complete and comprehensive character, on certain subjects, as well as on other analogous questions. For approved original communications, the council will be prepared to award premiums, arising out of special funds bequeathed for the purpose. A list of subjects has been published, which can be obtained at the Institution.

Gunpowder in Coalmines Superseded.—Some experiments have just been made at Wigan with the view of ascertaining if coal cannot be got without the use of gunpowder. Mr. I. Knowles, of the Pearson and Knowles Coal and Iron Company, has invented a hydraulic ram to be applied to wedges, and it was with these that the experiments were made. The first trial, on a very hard seam, where the coal had been bored, cut, and drilled as if for powder, brought down three or four tons in seventeen minutes, the second dislodged nearly eight tons in seven and a half minutes, and the third wedge which was driven into the face of the coal loosened it so as to render its being easily got by hand.

Baths and Wash-houses for Southampton.—It is proposed to establish in the poorer districts of Southampton public baths and wash-houses on somewhat the same principle as has already been adopted in the metropolis and other places, and it is believed that a great want will be supplied in this manner, as in Southampton no such establishment exists. It seems that a large and appropriate building is available in a thickly-populated district of the town, and a meeting for the purpose of discussing the matter has been held at the Deanery.

The Sea at Eastbourne.—The ratepayers of Eastbourne are agitating with a view to some prompt action being taken in the matter of the Foreshore at the east end of the town. During the hurricane on the 11th inst. a fissure was made in the embankment, and two faggot groynes were destroyed. It is feared that unless some immediate steps are taken, the wall at that part will be swept away in another gale with high tide.

Knightsbridge "Flats."—A dozen of the houses in Albert-terrace, Knightsbridge, ranging from the Co-operative Stores to the "Fox and Bull," near Albert-gate, are in course of removal, and on the site a large pile of buildings, to provide dwellings in flats for about 200 families, is to be erected. A new entrance to the park, in connexion with this alteration, is talked of.

Rental of Edinburgh.—From a statement just issued it appears that the rental of the burgh of Edinburgh has increased from 761,863*l.* 9*s.* 1*d.* in 1855-56 to 1,538,738*l.* 3*s.* 8*d.* in 1877-78. There has been an increase of 69,797*l.* 4*s.* 4*d.* during last year. The population of the burgh in 1855 was about 160,000, and in 1877 about 200,000.

Mechanics' Institute, Jarrow.—Mr. C. M. Palmer, M.P., lately laid the foundation-stone of a new wing to be added to the Mechanics' Institute at Jarrow. The plans have been prepared by the committee's architect, Mr. Edward Shewbrooks, of Newcastle, and the contract has been let to Mr. John Smith, of Jarrow.

Reading.—The Foresters of Reading have decided to erect a hall for their meetings, &c., in West-street. The frontage is to be occupied by shops on each side of the entrance to the hall. Messrs. Brown & Albury are the architects engaged. The cost will be about 4,000*l.*

TENDERS.

For the Level proposed water supply, Brighton:—

Jones & Co.	£397 10 0
Green & Son	253 10 0
Anscombe	246 0 0
Laidlaw & Son	245 15 0
Reed & Co.	235 0 0
J. & F. May	210 0 0
Suffield & Co. (accepted)	197 3 4
Chandler & Sons (too late)	189 0 0

For rebuilding No. 54, Gracechurch-street, City, for Sir William Mitchell. Mr. Legg, architect:—

Coleman	£5,359 0 0
Little	5,257 0 0
Boyce	5,220 0 0
Conder	4,962 0 0
Lathey Bros.	4,812 0 0
Shurmur (accepted)	4,383 0 0

For manufacturing premises, Chapel-street, City, Messrs. Ford & Hesketh, architects:—

Nightingale	£8,046 0 0
Scrivener & White	8,015 0 0
Newman & Mann	7,885 0 0
Browne & Robinson	7,870 0 0
Ashby Bros.	7,845 0 0
McLachlan & Sons	7,704 0 0
Kirk & Randall	7,652 0 0
Brass	7,449 0 0
Morter	7,333 0 0
Perry & Co.	7,328 0 0
Conder	7,198 0 0
Mark	7,000 0 0
Merritt & Ashby	6,887 0 0
Crabb (accepted)	6,823 0 0

For shop front and fittings to No. 2, Donegal-place, High-road, Clapton, for Messrs. A. Webb & P. Dashwood. Mr. Robert Blackmore, architect:—

Niblett (accepted)	£97 10 0

For alterations and additions to the Stafford Hotel, Westbourne-villas, Harrow-road, for Mr. F. Smith. Messrs. Bird & Walters, architects. Quantities supplied:—

Newman & Mann	£3,220 0 0
Temple & Foster	3,185 0 0
Brass	3,149 0 0
Lawrence	3,105 0 0
Williams & Sons	3,078 0 0
Mark	2,980 0 0
McLachlan & Sons	2,869 0 0
Hockly	2,830 0 0
Marr	2,816 0 0
Nightingale	2,744 0 0
Langridge & Sons	2,694 0 0
Anley (accepted)	2,670 0 0

For additional works to premises for Messrs. Jones Bros., Holloway-road:—

Anley (accepted)	£1,194 0 0

For rebuilding Nos. 15, 16, 17, Camomile-street, City, for Mr. Frederick Jones. Quantities supplied by Mr. R. W. Griffiths. Mr. Wm. C. Banks, architect:—

	Net.	Allowed for Old Materials.
Shurmur	£6,435	£225
Oliver	6,410	150
Browne & Robinson	6,302	95
Marriage	6,140	260
Sheffield & Prebble	5,944	139
Sharman	5,920	200
Downs & Co.	5,910	150
Carter	5,751	170
Hart	5,610	170
Nightingale	5,571	200
Cross	5,439	200
W. & F. Croaker	5,344	210

Accepted for new Board schools, Staithes, Yorkshire, to accommodate 333 children, master's house, outbuildings, boundary-walls, &c. Mr. Alfred J. Martin, architect:—

Gladstone (excavator, bricklayer, &c.)	£1,329 12 2
Tyerman Brothers (slater)	220 0 0
Burton Brothers (carpenter and joiner)	522 15 0
Boddy (plumber, painter, &c.)	192 13 6

For alterations and additions to Napleton House, Kempsey, Worcester, for Mr. F. S. Williams. Messrs. Yeates & Jones, architects. Quantities supplied:—

Wood & Sons	£1,455 0 0
Beard	1,400 0 0
Bourne	1,377 10 0
Dixon	1,315 0 0
Kendrick (accepted)	1,250 17 0

For alterations to Dorset-cottage, Fulham, for Mr. D. Macfarlaine. Mr. C. G. Wray, architect:—

Anley (accepted)	£530 0 0

For repairs and alterations at Hill-house, Hornsey, for Mr. J. W. Bird. Mr. J. E. Saunders, architect:—

Harper, jun.	£1,035 0 0 !
Searle	835 0 0
Perkins	830 10 0
Bolding	793 0 0
Malley (accepted)	681 0 0 !

For the erection of an engineer's residence, at Canningtown, for the West Ham Local Board. Mr. Lewis Angell, architect. Quantities by Messrs. R. L. Curtis & Sons:—

Maddison	£1,270 0 0
Reed	1,180 0 0
Rivett	1,150 0 0
North Bros.	985 10 0
Wood	983 0 0
Hart	960 0 0
Sheffield & Prebble	947 0 0
Judd & Hawkings	945 0 0
Boyd	888 0 0
Horlock (accepted)	875 0 0

For pair of cottages, Emmer-green, near Reading, for Mr. Winslet. Mr. John J. Smith, architect:—

Patience & White (accepted)	£270 0 0

For a pair of cottages, Rodbourne, Wilts, for Mr. Woolford. Mr. John J. Smith, architect:—

Joyce (accepted)	£293 0 0

For shop, New Swindon, for Messrs. Falconer Brothers. Mr. John J. Smith, architect:—

Wiltshire (accepted)	£251 0 0

For dwelling-house, Longcott, Berks, for Mr. William Hickman. Mr. John J. Smith, architect:—

Wiltshire (accepted)	£730 0 0

For two dwelling-houses in Brown-street, Salisbury, for Mr. William Hicks. Mr. Fred. Bath, architect. Quantities supplied:—

Adey	£1,287 0 0
Plowman	1,215 15 3
Sawkins	1,211 14 0
Harris	1,110 0 0
Cooper	1,057 0 0
Young & Sons (accepted)	1,031 10 0

For the erection of three houses at Brockley. Mr. Robert Blackmore, architect. Quantities by Messrs. Whitmore & Kennard:—

Stamp & Bowtle	£2,289 0 0
Niblett	2,080 0 0
Wood	2,043 0 0
Linfield	1,961 0 0

For roads and drainage, South Grove-road, East-street and West-street, Walthamstow. Mr. J. H. Swan, surveyor. Quantities by Mr. T. M. Deacon:—

Pound	£1,108 7 0
Pizzey	1,033 0 0
Calver	1,020 0 0
Bloomfield (accepted)	1,002 0 0
Wilson	975 0 0

For the erection of a house on Bush-hill Park Estate, Enfield, for Mr. J. S. Harris. Mr. T. Tayler Smith, architect:—

Heath	£1,670 0 0
Patman	1,628 0 0
Hampton	1,470 0 0
Fairhead	1,398 15 0
Bentley (accepted)	1,377 0 0

For the erection of a house and stables, on Bush-hill Park Estate, Enfield, for Dr. Mugliston. Mr. T. Tayler Smith, architect:—

	House.	Stables.
Patman	£1,381 0 0	£279 0 0
Heath	1,310 0 0	253 0 0
Hampton, jun.	1,693 15 0	245 0 0
Fairhead	1,612 0 0	236 0 0
Bentley (accepted)	1,589 0 0	225 0 0

For the erection of St. Mary's Church, Kippington, Sevenoaks. Mr John M. Hooker, architect. Quantities by Mr. Thos. Ladds:—

	Oak Seats.	Deal Seats.
Shaw	£10,027 0 0	£9,334 0 0
Brass	9,537 0 0	8,863 0 0
Constable	9,916 0 0	8,476 0 0
Cowland Bros.	8,894 0 0	8,556 0 0
Adcock	8,514 10 7	7,849 10 7
Wallis & Clements	8,011 0 0	7,503 0 0
Wilson	7,661 0 0	7,308 0 0

For temporary shops, &c., in Watney-street, St. George-in-the-East, for Mr. M. Drummond. Mr. W. Bisiker, architect:—

Roberts	£630 0 0
Moyle & Son	620 0 0
Palmer*	534 0 0
Jackson & Todd (withdrawn)	499 0 0
Roper (withdrawn)	375 0 0

* Accepted subject to a slight alteration.

For the erection of a pair of semi-detached villas, at Woodford, for Mr. James Bourke. Mr. Robert Blackmore, architect. Mr. P. Dashwood, surveyor:—

Bullen*	£960 0 0

* Accepted subject to alterations.

Villa Residence at Highgate.—In list of tenders for the above, the lowest tender, 2,670*l.*, was from W. Larter & Son, not Larken & Son, as printed. The tender was accepted.

TO CORRESPONDENTS.

H. St. J.—R. L. S.—W. J. H.—M.—S. W. H.—E. W. C.—E. W. B.—E. A.—E. T. S.—E. S. R.—E. P.—M.—J. F.—H. G. L.—One from the Bench.—A. J. M.—W. W.—Quondam.—T. O.—F. R. W.—W. J.—W. C. B.—S. H.—L. & Son.—J. B. & Son.—J. W. S.—J. de P.—G. H.—J. M. H.—J. M. S.—J. J. S.—W. B.—I'A. A. & Co.—F. B.—H. H.—W. S.—G. T. G.—G. McD.—P.—An Old Member (next week) —T. G. (next week).—Flitcroft's Monument (next week).—P. W. (next week).—H. G. L. (next week).—Camberwell Workhouse Competition (next week).—G. M. (we should try the Silicate paint).—H. P. (was not bound as an architect to do the work he describes).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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water, W. [ADVT

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WILLIAM J. VIAN, Secretar

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Income for the past year 489,5
Amount paid on Death to December last 11,148,3
Aggregate Reversionary Bonuses hitherto allotted ... 5,523,1
The expenses of management (including commission) are a
4½ per cent. on the annual income.
ATTENTION is especially called to the NEW RATES of PREMI
recently adopted by the Office.
The RATES for YOUNG LIVES will be found MATERIAL
LOWER than heretofore.
Policies effected this year (1877) will
entitled to share in the Profits at
next Division, in December, 1879.
Forms of Proposal, &c. will be sent on application to the Office.

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The Builder.

VOL. XXXV. No. 1817. SATURDAY, DECEMBER 1, 1877.

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On the Safety of Foundations.



SAFE foundation is the first object of the care of the experienced architect. So universally is this felt to be the case that the statement of the fact may be called a truism. It is, perhaps, open to that objection. But it is at the same time something more. It is, at all events, a very suggestive truism. The terms of the architect, as to this elementary necessity, have passed into the language of art, of science, of politics, of religion, and of philosophy. We constantly meet with reference to the fundamental principles of art and of science, to the bases of political or religious opinion, to the firm ground on which the edifice of philosophy is erected. When we seek to express something certain, fixed, indubitable, we speak of its sure foundation. It may not be amiss to look a little at the practical import of a word that plays so great a part in our ordinary language.

The importance to the architect of a thorough scientific acquaintance with the principles which should regulate the foundations of his buildings, and with the practical details which affect the application of his materials, becomes more apparent the more we advance in civilisation; that is to say, the more rapid is the increase of population, and the more densely is it agglomerated round its chief centres. The Arab drives his tent-pegs into the sand of the desert or into the sward on which he pastures his half-wild flocks or herds. The hunter, the fisher, the agriculturist, finds a dry and sheltered spot, on which to erect his hut, shanty, or shed, with little or no disturbance of the soil. But as huts collect into hamlets, as tracks become beaten into roads, as men collect into communities, more care and forethought become necessary in the foundation of their abodes. Drainage becomes needful. Year by year the provision for this element of health and comfort demands more care and art. An open ditch is found to be a nuisance. Culverts or covered drains are introduced. With this change from the original automatic action of rainfall and evaporation, a more elaborate foundation is required for the house. Security has to be looked into, so has health. Cellars are placed below the dwelling-rooms, both for economy of space, and for the sake of dry floors. Beneath these cellars the footings of the walls have to be carried, and the character of the soil on which they are laid demands careful investigation.

Again, as buildings increase in size, in weight, and in importance, the security of their foundations demands increasing care. Space fails; land becomes of more value. The side of a navigable river gradually assumes a commercial importance. Where a boat might formerly lie in the mud, a quay wall is now required. As commerce throngs the quay, the requirements of the shipper demand the aid of a crane. From a small jib worked by hand, or by a simple crab, the crane grows into a steam-driven, or an hydraulic, machine, capable of raising many tons at a time. Here, again, absolute security of foundation is required, and required often where the natural level of the spot is formed of ooze, wet sand, or half-dried mud. Nor is the growth of marine and riverside architecture confined to the shore. Piers jut out into the sea or river. Great bridges are required to maintain an unbroken communication over a stream or tideway. Lighthouses, pier-heads, or forts are demanded for the protection of the growing harbour, and the architect may be called on to base structures of the highest importance on sites where a foundation can only be obtained by extraordinary labour, directed by practised skill.

M. Gaudard, a professor at the Academy of Lausanne, has given a series of lectures or papers on Foundations, a translation of which, by Mr. L. F. Vernon Harcourt, has lately been printed among the selected papers of the Institution of Civil Engineers. It will be of interest to look at some of the facts brought together by the Lausanne professor.

M. Gaudard classes foundations under two heads:—(1.) Ordinary foundations, on land, or protected from any considerable rush of water; (2.) Hydraulic foundations, in rivers, or the sea. Simple as this division may seem, it cannot be taken as exhaustive. Our own experience has furnished cases of difficulty and importance that will come under neither head. What would M. Gaudard say, for example, to a peat bog? What to a broad valley, covered with good turf, and offering firm support for any moderate weight, but covering a treacherous gulf of semi-fluid mud, which will rise in waves at the side, and allow of profound subsidence, if any heavy structure be raised on the deceptive soil? What would he say to sinking 4 ft. or 5 ft. below a dry marly soil, and finding a running sand, full of water, below? These are instances that occur in the practice of the English architect or engineer. They form a very difficult study. In fact, so far from a simple division of foundations into ordinary and hydraulic being adequate, a long series of cases may be suggested, each of which demands special treatment, and offers special difficulties. The presence of water is the chief, but by no means the only, cause of difficulty.

The limiting expression for the resistance of a foundation must be within the crushing strength of the material of which it is composed. As to this we have much experimental information, although not so much as might be desirable to attain. It would be of great service to the architect to have an exhaustive monograph written on the subject. The elastic strength of materials (cast iron excepted) is, in general terms, half of its ultimate or breaking strength. The elastic limit of cast iron is not yet clearly determined but the same proportion is usually allowed. The mean comparative strength of cast iron, obtained from a number of experiments by Mr. Hodgkinson, was 38·525 tons per square inch. This, of course, is something immensely beyond the demand that the architect can in any case have to make on the resistance of any material. We mention it only as an outside figure. Coming to the materials ordinarily to be met with in a natural condition, the highest resistance yet tabulated is that of the quartz rock of Holyhead, across its plane of lamination, which is given by Mr. Mallet at 11·4 tons per square inch. If the weight be applied parallel to the lamination, this stone will crush with 6·25 tons per square inch. This is a very great strength. Irish greenstone has a resistance to crushing weight of 9·30 tons per square inch, according to Wilkinson; Irish slates, resistances of 10·60 tons on beds, and 6·23 tons on edge, according to the same experiments; Irish marble, of 9·0 and 6·75 tons per square inch. Aberdeen granite has a resistance of 4·87 tons, according to Rennie; Peterhead, of 3·70 tons; Cornish, of 2·83 tons. Sandstones range from 3·52 tons per square inch for Arbroath pavement, to ·97 for Runcorn red sandstone. Marble is quoted as 4·32 tons for the ordinary white-veined, and 1·44 for statuary marble. Irish limestones, which are akin to marbles, rise to a strength of from 7·56 to 5·06. Purbeck stone has a crushing weight of 4·09. That of chalk is as low as ·224. This is inferior to the strength of bricks, which vary from ·358 for red bricks to 3·275 for rough Staffordshire blue. Stourbridge fire-clay has a resistance of ·766. We caution the reader, however, that the resistance of ·358 for ordinary red brick, which was obtained by Rennie, is not now to be taken for granted. As bricks are at present made, they require experiment. Mr. E. Clark gives a resisting power for brickwork in cement of only ·232 tons per square inch,—hardly more than that of chalk. The strength of Portland cement depends on its age, and on the quantity of sand mixed with it; varying from 2·67 tons when neat, and 2·04 tons when mixed in the proportion of one to one sand, when nine months old, to 0·43 when in the proportion of five sand to one cement, and only three months old. Blocks of concrete made with Portland cement, being 12 in. cubes compressed, twelve months old, have given a resistance of 170·5 tons per block, or 1·18 per square inch, if one to one; and 91·0 tons per block, or ·62 tons per square inch, of six sand to one cement, when six months old. Mortar varies from ·194 to ·357 tons per inch, according to qualities of lime and sand. It will result from the above that half the lowest resistance shown, or, say, 1 cwt. per square inch, being about eight times the atmospheric pressure, is the utmost weight to which a careful architect will subject the area of ordinary foundations. And in allowing a weight of this magnitude to come on the ground, care has to be taken to ascertain the geological nature, and actual condition, of the site.

M. Gaudard gives from 55 to 110 cwt. per square foot as a safe load on stiff clay, marl,

sand, or gravel. From 165 to 183 cwt., or about 25 per cent. more than we have ourselves above indicated, have been put on close sand in the foundations of the Gorai Bridge, and on gravel at the Loch Ken Viaduct at Bordeaux. Some settlement has taken place with a load of 152 cwt. per square foot on a bridge at Nantes. Under the cylindrical piers of the Szegedin Bridge in Hungary, the soil, consisting of clay intermixed with fine sand, bears a load of 133 cwt. per square foot; but it was deemed expedient to increase its supporting power by driving piles in the interior of the cylinders, and also to protect the latter by meeting outside. The pressure on the bottom of the cylinders for the Cannon-street Bridge is stated at 117 cwt. per foot super., and for the Charing-cross Bridge at 159 cwt. The pressure on the rocky foundation of the Roque-Favour aqueduct is 267 cwt. per square foot. The ordinary pressure of the atmosphere, which may be taken to denote the minimum resisting power of the most unstable foundation, is about 19 cwt. per square foot. The weight which the human body brings to bear on the small area on which the pressure of a well-formed foot (without a shoe) normally comes, is about two-thirds of the pressure of the atmosphere, for a man 5 ft. 6¾ in. high. Thus the surface of an Irish bog, of a Scotch moss, of a Welsh marsh, or of a Lincolnshire fen, over which a man can just step without displacing the tufts of reedy grass on which he puts his foot, has a resisting tenacity of about 12 cwt. per square foot. The weight of a house 30 ft. by 15 ft., and 25 ft. high, with walls 18 in. thick (taking roof and floors to weigh as much per square as a single wall), only comes to about 8·5 cwt. per foot of area; so that if the weight of the walls were thrown on a platform and distributed over all the area covered, the house would be quite stable on the bog. But as the weight actually is distributed by means of footings, the usual pressure on the base of the walls will be about double that which would result from the distribution of the pressure over the whole area covered by the roof. The weight of a granite obelisk 72 ft. high on its own base, is about 6 tons per square foot. We have seen that the lowest resisting power attributed to granite is 2 83 tons per square inch. Assuming, therefore, half the crushing resistance as the limit of safety, a granite column might be raised to the height of more than 2,000 ft. before the lower stones were in any danger of crushing.

These data lead to the remark, which may not be in the first instance obvious, that the Pyramid is anything but a truly architectural form of structure. The admirable materials at the command of the ancient Egyptians allowed them to adopt any form of edifice which the fancy of the architect might suggest. They were not bound and tied to that grace which springs from a scientific use of but slightly resisting material. In fact, no simple form of structure can be worse adapted for stability, as far as the question of foundations is concerned, than the Pyramid. The great Pyramid had a height of 485 ft., with a base 764 ft. square. But the weight of this prodigious mass of 3,500,000 cubic yards of masonry is about as ill distributed over the area of the base as it is possible to contrive. At the outer edges the pressure commences at nothing; while in the centre, if the mass were solid, it would be as much as 40 tons per square foot. This does not, as we have seen, indeed, approach the crushing strength of granite, or of the harder stones. But if we make the proper correction for the weights and resistances, we see that a brick pyramid of such dimensions would far too narrowly approach the limits of resistance for the lower courses in the middle of the structure, even for burnt bricks. And with regard to almost any foundation except the live rock, the imposition of so ill-distributed a weight would be extremely likely to cause displacement. Thus viewed as a matter of foundation, a pyramid is anything but a symbol of architectural permanence and stability; although, as a mere form of resistance to atmospheric and meteoric action, it may to some extent be regarded in that light.

Returning to the recommendations of the Lausanne professor, we find the statement that "when the ground consists of rock, hard marl, stiff clay, or fine sand, the foundations can be laid at once on the natural surface, or with slight excavation, and with horizontal steps where the ground slopes." We should be extremely sorry to follow this advice for the erection of any building of great magnitude. Under no circumstances should the foundations of a tower, fort, palace, cathedral, or large bridge be laid on the natural surface. Even in the case of solid rock a certain portion should be removed, in order to give a proper bed for the lower courses of the building. The plan of stepping up the foundations is one that should be regarded with considerable jealousy. Independently of any questions that may arise as to displacement of the ground under the steps, the mere fact of basing a heavy wall on portions of masonry or concrete of different thicknesses is objectionable. The subsidence in the case of brickwork, or the swelling which sometimes takes place in the solidification of concrete, gives a total movement of the plane at the upper surface of the work proportionate to the thickness of the work itself below. This will be quite enough, in case where the slope is abrupt, to interfere with the regularity of the courses of the work above. Our recommendation would be to the very contrary of M. Gaudard's suggestion, that in any cases where, for the sake of economy, the foundations of a great building are stepped, sufficient time must be allowed for the subsidence, consolidation, and drying of the foundation work before any attempt should be made to carry on the superstructure. We have recently seen how careful Smeaton was not to raise his famous tower with too much haste. The same criticism applies to the recommendation to spread a layer of concrete over an uneven surface of rock, in order to afford a level foundation. If there be one foundation more inappropriate than another to be overspread with concrete we should say it was live rock. "Sometimes," M. Gaudard says, "large buildings have been securely built on quicksands, of too great thickness to be excavated, by the aid of excellent hydraulic mortar, and by excavating separately the bed of each bottom stone." It is difficult to understand the meaning of this sentence, which continues,—"Such a building will be stable if its pressure on the foundations is uniform throughout, and if it is placed sufficiently deep to counterbalance the tendency of the sand to flow back into the foundations." It is hardly possible that the translator can here have done justice to the professor. The sentence, as it stands, absolutely fails to convey any meaning to the mind. This is the more to be regretted, because the case referred to is one of the most difficult that is met with in the practice of the architect or of the engineer. We can recall two instances that came under the personal knowledge of the writer, of building on running sand. One was in the case of the foundations of a bridge in wet sand, which ran, when excavated, together with the water. But the sand itself was sharp. It was not a mere silt or mud. As the water was drained from it, it solidified; or rather remained perfectly solid. In that case the plan adopted was to lower the whole surface of the water in the hill containing the stratum by several feet, an operation which was effected by tapping it by lateral drains. This took some months to carry out, and was attended by an unlooked-for expense. All the inhabitants of the adjoining hamlet made complaints as to the drying up of their wells; and it became necessary to lower every well in the place, or otherwise to compensate the owners or occupiers. When the water was thus lowered as far as practicable, large rough stones were made to find their own bed on the wet sand below them, and the masonry was carried upon these stones in the usual way. Of course the use of good hydraulic mortar in such a case is indispensable. The work stood perfectly.

The only case which we can cite as in any way explanatory of the experience above quoted, as to excavating separately the bed of every bottom stone, is that of the Thames Tunnel. During a portion of this work headway had to be made through a muddy silt, which offered no support for the brickwork. The plan there adopted was to use an iron frame or shield, made in compartments, so that a small portion could be pushed forward at a time. Bricks were thrust in by the workmen on the removal of each shovelful of silt; and immediately set in cement. Thus a solid wall was gradually protruded, as if it grew, through the water; and the cross arches were subsequently cut by hammer and cold chisel out of this solid mass. This was a work of peculiar delicacy, difficulty, and danger. It was not the foundation alone that required this unusual care. The whole work was, so to speak, foundation. It was the protrusion of a pair of brickwork pipes through strata of treacherous character, under the bed of a navigable river,—in fact, through the mud-ground formed in the course of ages, by the deposits of that river, and the silting up of its bed. As a case of dealing with running wet material it is without any good parallel in our public works, unless the Kilsby Tunnel, which very nearly arrested the progress of the London and Birmingham Railway, be taken as a companion triumph.

M. Gaudard cites, as instances of this kind of difficulty in the laying of foundations, the works of the Metropolitan Railway and Metropolitan Board of Works; those of the Paris sewers, and the excavation for a sewer at Grenoble. In the former case the danger to which the noble façade of Somerset House was exposed was pointed out in the columns of the *Builder*, as well as the various expedients proposed or adopted in order to prevent the abstraction of the layer of sand on which a portion of the metropolis stands, by tapping the water of which it was then full. In the Paris sewers, the upper part of the culvert was built first. "A little trench was then dug out at the bottom, each side being supported by interlined boards, and this trench was then pumped dry in lengths of about 110 yards at a time. When one length was dry, a second row of boards was beaten down on the top of the first row, and at last it was possible to excavate the soil in lengths of 13 ft., carefully shored up, in which the lower portion and the invert could be constructed, completing the section of the culvert." The description is not a model of clearness, but it is, perhaps, possible to pick out what it means. The culvert in question was 9 ft. 10 in. wide and 12 ft. 6 in. high. The underworking of this arch strikes us as an extremely dangerous and difficult mode of accomplishing the task. 2,950 feet in length are said to have been thus constructed in eighty-five days. The work at Grenoble was carried on in a more normal manner, the sides being built as the excavation proceeded, and the floor of the culvert being laid in quick-setting concrete. The above instances have been taken from that portion of the paper which speaks of ordinary foundations, and fully justify our remarks as to the arbitrary and unsatisfactory nature of the division adopted. The subject is one of great professional interest, and it will be proper to return to it. We have made use of the selected paper, rather as a text than as affording a true basis for the instruction of the student. It is not our wish to go out of our way in order to attack a foreign lecturer, especially when his work comes before us in the unsatisfactory shape of a translation. But the attention of many students must have been recently directed to this A B C of the work of the architect. The wide field over which the examples taken by M. Gaudard extend is such as to give some assurance of a practical illustration of the subject. It is, therefore, the more necessary to allow no case of haste, of misstatement, or of misapprehension, to remain without challenge. It is as essential to have a clear scientific knowledge of the requisites of a safe foundation, as it is to have a practical experience of the difficulties met, and of the expedients successfully adopted to obviate them. The student should never forget the difficulties which Sir Christopher Wren encountered in laying the foundations of St. Paul's, nor the patient and unflinching manner in which that great architect laid, on that awkward basis, the solid structure of his most famous monument.

A WORD ON THE THIRLMERE SCHEME.

WATER FOR MANCHESTER.

We have refrained from taking any part or pronouncing any decided opinion in regard to the proposed acquisition of Thirlmere by the Manchester Corporation, as the question of the moral and scientific righteousness of the proceeding must be eventually determined by considerations based upon detailed information as to the real wants of Manchester and the real intentions of the Corporation, which is not publicly accessible at present, but which will doubtless be elicited when the scheme comes before Parliament. The publication of a second pamphlet of protest by the "Thirlmere Defence Association" suggests, however, a remark or two which may contribute to narrow the grounds of the contest.

The Association, which includes some very good names, desires to arouse public feeling on the subject, regarding the beauty of the Lake district as a national possession, not to be lightly trifled with; a principle in which, on general grounds, we of course entirely concur, as well as

many others who are not taking part in the agitation. The protesting party wish to get up a petition with numerous signatures, as a first step towards an organised opposition to the scheme, should it really come before Parliament. A good many of our readers, no doubt, have been or will be asked to join in the opposition, and while thinking it premature to express a decisive opinion on this particular scheme, we may call their attention to the real point at issue, which is, unintentionally perhaps, evaded in the exhortations of the Defence Association. We spoke just now of the scientific and the moral rectitude of the scheme, but these two elements in the question cannot really be separated. Pure water in large quantities is a necessary of healthy life in large towns, and it is also necessary that it should be got in the best and most economical manner, and from the source which is least likely to fail or be exhausted. If this cannot be efficiently obtained without spoiling a landscape, it is a great pity, but we should opine that no sane person can be in doubt that in such a case the landscape must give way. Health is the first consideration. We may enjoy health without scenery; it is notorious that many thousands of people do: we cannot enjoy scenery without health. And when it comes to the question of a very large town demanding fresh water,—a necessary of life, as against the regrets, natural and reasonable in themselves, of a comparatively small number of persons who cannot bear to see their neighbourhood or their holiday-ground, and its associations, interfered with, the "greatest happiness of the greatest number" forms an obvious factor in the problem. Assuming for the moment that the wants of Manchester and its immediate neighbourhood cannot be adequately supplied in any other manner, without extravagant expense, their demand for water would amount almost to a moral right, on behalf of the poorer classes especially, whose life in large towns it is so difficult to make healthful with all the aids we can give. They might say, in effect, to the dwellers in the Lake district,—"The circumstances of our life compel us to crowd together in a town; we have not the good fortune to live, as you do, in beautiful scenery, and by lakes of pure water; very few of us can even go to look at your beautiful neighbourhood; give us, at least, a little of the pure water you have stored up there; it may spoil your prospect, but it will be a matter of health and refreshment to us." Is such a demand so unreasonable? And if it be said that the Lake district is a national possession, a place of refreshment to the eye and mind of those who are wearied with business, we repeat that it is the minority only who can avail themselves of it in this way; while, on the other hand, the health of a great town is a matter which affects more than its own inhabitants,—which affects, as every physician knows, the spread of disease generally, and also in other ways is bound up with the general welfare of the community, whose interest is that of all its working members.

Still assuming (only for the sake of argument) that adequate water supply for Manchester cannot be found nearer its own neighbourhood, we may notice one special grievance which the opposers of the scheme emphasise particularly; namely, that Manchester wants to get more water than is really necessary for its own purposes, and to become purveyor of fresh water for that district of England: with the additional grievance that Manchester in that case will make money out of it. This is very bad, truly; but we fear it is what is generally done in this degenerate stage of existence. If water is wanted for that part of England adjacent to Manchester (and we must assume that those who wish to become suppliers of it see reason to expect a demand), it will be an act of usefulness to procure it; and we presume it is not to be seriously contended that there is anything wrong in getting back part of their expenditure by the supply of an article because it is a necessary of life. At that rate, we might blame the bakers for expecting a profit on their bread.

So far we have been simply putting the case on the supposition that an adequate supply of water cannot be found nearer to Manchester, and in a manner less objectionable on the score of disfigurement of a landscape and annoyance to sentiment and association; drawbacks which we believe we should be naturally disposed to overrate rather than underrate. We merely point out to what ground it is that the question must ultimately be narrowed. The problem of providing pure water for large towns is becoming of increasing difficulty as these towns, under the centralising motives of modern life, become continually larger, and, therefore, more complicated in their arrangements and requirements; and if we cannot get it without drinking up some of our lakes, we must drink them up, and there is an end. On the other hand, let it be understood that we are by no means suggesting for a moment that the Manchester Corporation should be allowed to take Thirlmere merely because that scheme pleases them best, or suits their pocket best. On the contrary, we hold that every practical step should be tried rather than spoil a beautiful spot; and that if the demand can be supplied adequately from any nearer source, adequately for the future as well as the present, the Thirlmere scheme ought to be quashed: and it is well that there should be a strong opposition, in order that the truth of the case should be thoroughly elicited. But the question must be put on its proper footing. It is of no use for the Thirlmere Defence Association to oppose the matter from the point of view of sentiment merely, which is what their pamphlet in reality amounts to: because a question of health must carry the day against sentiment. They would have made their case, as here presented, a great deal stronger, and indeed have put it on quite a different footing, if, instead of saying in general terms that Manchester and the neighbourhood could get water in sufficient quantities from other sources nearer, they had stated what they considered those sources to be, and what is known of their supplying power. This they do not; and their case, in fact, really amounts to saying, "Get water where you can, but you shall not have it from us."

A word as to the real probabilities of the effect upon Thirlmere and the Lake district. It is to be regretted that the promoters of the scheme have volunteered to say that what they mean to do will not spoil the district or the appearance of the lake. That is rubbish. Of course, it will damage it; and for its promoters to say otherwise proves that they are either very deficient in perception of what makes the sentiment of landscape, or that they are somewhat disingenuous. The remarkable proposition, which we believe was seriously put forward, that the proposed embankment across the head of the lake should be artificially made to look natural and picturesque by the addition of "rocks," seems to argue the former deficiency rather than the latter. The Manchester engineers had better quit that ground; their scheme will not "hold water" in that way, at all events. They had better say, frankly, "We are sorry to spoil a pretty landscape, but we want a good supply of water." Then the question will be argued on its real merits. If it should be carried out, we hope that there will be no attempt at any landscape-gardening. That defeats its own end in such a case. Engineering works of this kind are for the most part least offensive to the eye (and in some cases have been quite the reverse) when done in the simplest and most unostentatious manner; the arrangement of materials, so as to combine economy with strength, often leads to a result more in harmony with nature (because designed in direct relation to natural forces) than any attempt at what may be called ornamental treatment, whether in the landscape-gardening or the architectural direction. We can hardly conceive that the mere embankment across the outlet of the lake would be so serious an eyesore in the landscape as some people seem to fear. The really serious point in regard to disfigurement seems to us to be that which the Defence Association have brought out rather pointedly in the map appended to their pamphlet; the laying bare of the area to a great extent when the water is drawn off in a dry season. They admit, however, that since their map was drawn the promoters of the scheme have partly met this objection by a proposal to raise the level of the water by 5 ft. more than was at first intended, it being supposed that with this additional large bulk of water any necessity for materially reducing its level would hardly be likely to arise, except under very exceptional circumstances. This may be so; but we quite feel that, in regard to this, the dwellers in the neighbourhood of the lake would have a real and tangible grievance; and their prediction that of course the owners of the water would make the utmost use they could of it, is one that cannot be passed over. This might be met to some extent by a provision that the water was not to be drawn off below a certain level. There are two other objections which have less weight. The opponents make a great outcry about the aqueduct, which will have to be built, and which, they say, will not only deform the landscape, but will suspend a great volume of water at a dangerous elevation. As to this, the stream requisite to keep up the daily supply talked of would hardly amount to what can be called "a great volume of water," regarded from an engineering point of view. The writers are probably hardly aware how small a pipe, comparatively speaking, will carry a very large supply of water, if the flow is continuous. And as to the appearance of the aqueduct, all building and engineering operations disfigure the site on which they are carried on, *while in progress*, no doubt; but when fairly completed, and the rawness of new work worn off, we are much mistaken if it might not prove rather an addition to the picturesque elements of the scene than otherwise. Many large existing aqueducts admittedly are so; the great works of this kind which have been carried out by the French Bureau des Travaux Publics are among the things that the nation may be proud of; and at the worst we may just call the attention of the objectors to the fact, that there is not a single line of railway going through any pretty district of England against which the same cry was not raised at the outset; yet we find hundreds of thousands of people annually finding holiday enjoyment in scenes which it was said were to be irretrievably ruined, and which most of them would never have been able to visit or to see at all but for the very railway which was supposed to work the ruin. The case we are speaking of is not in this sense quite parallel to that of a railway, certainly; but then an aqueduct is a much less objectionable thing than a railway embankment; it almost carries the necessity of a certain picturesqueness inseparable from its construction. The other fear expressed by the opponents, which we think fallacious, is that this will be the signal for every other municipality to want a lake drained for itself. That would be a rather serious demand; but we do not see where the towns are that are to make it. It is only very large, crowded, and wealthy manufacturing towns that can either want or pay for such accommodation on so large a scale; probably we may say that the only two provincial towns at all analogous to Manchester in this respect are Birmingham and Liverpool. The former is too far south to meddle with the Lake district; Liverpool, we believe, is rather short in its supplies, and has mooted a lake scheme more than once; but these are the only two that could want such a mode of supply, for a long time to come at least. Large towns do not at present tend to multiply: it is only that the existing chief centres tend to increase sometimes to very unwieldy proportions. What London may have to do we will not just now discuss.

For ourselves, we should view the proposed scheme as a necessity much to be regretted, and to be avoided if possible, and those who oppose it will do a good work if they will compel its promoters to take every step in the first instance to find a satisfactory source of water supply which will not involve the serious annoyance to many people which this unquestionably will cause. Only let them put their opposition on a consistent and logical footing; and if it appear that nowhere can the Manchester district be so well supplied with wholesome water as from Thirlmere, do not let them grudge to persons less fortunately situated than themselves the boon of "a cup of cold water."

Dilapidated Tenements in Bermondsey. At a meeting of the parochial body known as the "Bermondsey Governors and Directors," on the 15th ult., the report of Mr. George Elkington (surveyor), with respect to the repairs required at No. 127, Bermondsey-street (Kendall's gift), stated that the tenement was in so dilapidated a condition that it was totally unfit for human habitation, and recommended the Board to give the usual three months' notice for repairs; and that on the expiration of such notice, if the necessary repairs were not made, legal steps should be taken. Mr. Shepherd wished to know what was the usual practice with reference to the charity estates. Had there been no periodical visitation? The clerk said, not in his time. Mr. Shepherd said he thought it was a very great scandal that the Board, being trustees of property and money left by their predecessors, should take so little interest in their trust, and moved that the surveyor be deputed to report on the whole property under their trust. The resolution was agreed to.

MUST AN ARTIST BE ONLY AN ARTIST?

PROFESSIONALISM.

To what extent do the requirements of a liberal education in the fullest sense hamper and disable the demands of the most efficient professional education? On the other hand, is it possible for professional accomplishments to attain their highest perfection apart from participation in Liberal education, even to some very considerable extent?

How far is professional success, and how far professional efficiency, jeopardised by predilection for original inquiry,—by enthusiastic devotion to extending knowledge over undiscovered regions,—to finding out the yet unknown, instead of restricting one's self to simply making the best use of what has already been discovered?—by an ardour to originate new precedents, and not merely to gain a mastery over the old? Even in the case of allowed devotion to historical or theoretic investigation, how far is such pursuit promoted or impeded by including a very large and very varied field of nature, as well as art, within the scope of research?

These, and such as these, are questions which come up in the mind as we glance over the speeches of ministers and ex-ministers of education, in this extra-Parliamentary season,—over opening lectures of medical schools, and schemes of reformed academies and universities, and the leading articles and multifarious correspondence that they call forth in such earnestness and such abundance.

Two universities of North Britain have recently been in correspondence, not to say controversy, as to the terms on which the degree of Medical Doctorate shall be granted, and open up a subject that has bearings beyond the walls of the medical schools: shall the coveted "letters," M.D., be granted on proof alone of complete medical acquirements, or shall a condition be annexed of a certain, and perhaps a considerable, knowledge of Greek? The divergence between Edinburgh and Aberdeen, at this crisis of medical certification, is manifestly about a principle which may have its application at any time to any other profession,—to the official promotion of students in any art and at any stage of general education. It is conceded, of course, that not in medicine alone, but in any branch of study,—in architecture not the least,—the very nomenclature and technology can scarcely be understood satisfactorily without some knowledge of Greek, but what this amounts to is so simply rudimentary that a demand for it can scarcely be taken to affect the main question. This question is not so much or so seriously on what terms a degree shall be conceded, as under what circumstances, if conditions are unreasonable, it may be as unfairly as unhappily withheld. It is very desirable, no doubt, that all students who are admitted to the Life School of the Royal Academy,—to go here for an example,—should, in addition to a certain proficiency in draughtsmanship, have something more than an average of educational advantages; but it is more desirable that no rule must be established that would have involved the certain exclusion of a Turner, to name no others. Unless the French orthography of Napoleon only lost its accuracy in later years, some autograph documents which we have recently seen would assuredly have excluded him from Brienne by the application of rules which have sufficed to exclude heirs of very distinguished naval and military names from the chance of emulating ancestral careers. The scheme of granting to Owens College the right of conferring degrees is opposed with vehemence, on the ground of risk that a less stringent or less comprehensive test will be rewarded there by a title which elsewhere indicates superior general accomplishments, and that so the better merits will lose their due distinction. True it is, as we know, that such things have been,—that foreign universities have made merchandise of degrees; and titles are current, in consequence, that cast a suspicion on the origin and value of others won by more genuine process. The title of "Doctor" has been pirated thus unscrupulously, while "Professor" is apparently the common property of all who profess anything whatever, from science and literature to thaumaturgy and hygeism. Not that the dreaded equivoque is not initiated already, and likely to advance. So far as examination of one or two sets of papers indicate, it appears that matriculation at one university demands acquirements which should be sufficient for a final degree, and at another probably are so. A certain remedy would seem to be, to allow different establishments to give their own degrees but with signs of origin; so that M.D. Cantab. and M.D. Londin., or M.D. Mancun., &c., and M.A. and LL.D., &c., similarly distinguished might carry with them, by general notoriety, a declaration of special standard as to the kind and degree of accomplishments that have in each case been verified.

But be the art in question medicine or architecture, the official sanction for professional competence should be uniform, and by uniform test. These questions have a double aspect, from points of view of the public and of the professional man himself; but difference in point of view does not, as is too frequently assumed, alter the matter-of-fact that is under such double inspection. The public are naturally concerned only to secure the utmost professional efficiency; the individual practitioner is perhaps excusably regarded by them as a cog in a wheel of the great machinery of society, whether in driver-wheel or follower, and so long as the cog is good and sound for its limited and special function, that is all that the indifferent public cares for and requires. And deny we may not, that a high standard of good service and of professional success may constantly be secured by those who consent to accept the conditions of such limitation. Valuable servants of the world have been numbered among these, and well deserving their honours and rewards for services conscientiously rendered. They are not leaders, it may be, in the highest sense, and,—

> "Content as men at arms to cope
> Each with his fronting foe,"

perhaps do not aspire or pretend to be.

They may possibly direct no more and indeed see little more of the causes that sway the alternations of the conflict of tastes and battle of styles, than the bombardier who, enveloped in smoke, sees only the successive flashes of his own gun as he stands to it,—No. 3, but stands to it without flinching however the contest goes, and at least serves his own battery throughout with vigour and alertness, come what may.

But the question for the individual is often only to be decided by reference to his individual tastes, opportunities, purposes; and so far involves a great deal that society without does not always concern itself about, and probably will only do mischief by attempting directly to meddle with.

There are some who can achieve great success, and of no moderate general value, by strict economy of powers which are not very extensive,—even of powers of application which could never stand the strain to which others can subject themselves,—body and mind,—with impunity and effect. In such a case energy is wisely, and may be instinctively husbanded, for a main and clearly seen purpose or branch of study with the most careful frugality. Examinations that must be passed, matriculations, moderations, finals, and the rest of it are passed, but so much in the supposed case the more profitably, because most cheaply, if only barely passed by "scraping through" and collateral studies are pursued no step further than will palpably pay by results in the special direction which is limited by specialised capacity. The result of such a life for the world is often one single great discovery or great achievement that will bear fruit and branch forth under the tending care of successors; and sometimes a series of valuable services that help the world along for the time, and that the world will miss until it lights again upon as devoted a specialist. It is vain and futile to criticise such a career as based upon a mistake,—to criticise it as narrow, restricted,—as going but little way towards vindicating the dignity of science or art in all their grander comprehensiveness. So far as it does go it is good,—and it could not have gone as far as it has, had time been spent on studies preparatory to an enterprise for which capacities, genius, opportunities were unsuited or incompetent. It will indeed be usually found, if we look closely into such a career, that the limitation, decided as it may be, was not quite so absolute as it seemed;—that collateral study and research were not utterly wanting;—great results could scarcely be achieved without them;—but that a certain instinct guided to the directions which led most happily to what illustration of the special purpose was required, and as infallibly marked the point beyond which for such purposes it was unnecessary to pursue them,—if only because beyond this point the capacity to pursue them must fail.

When we light upon an example of a truly narrow mind working within a strictly narrow range, it will naturally prove that the life-result is not of true importance or important in any sense. But otherwise limitation may in truth be the condition of concentration,—the corrective of a tendency to flitter away time, and to substitute dissipation of energy for well controlled exertion.

Dissipation of energy is subject to rebuke in two forms,—as even intra-professional as well as extra-professional. The genius who could run through "all chords of the lyre, and be master of all," is doubtless more rare than the "Jack of all trades, who is master of none." It may be reasonably doubted whether the artist who can with equal ease and readiness throw off a design in any style of architecture whatever, and in each with equal observance of character and accuracy of detail and ornament, will prove at last to have executed even one which in its proper style stands unrivalled or even very highly distinguished. Here, again, we deal with a matter of degree; the exclusive familiarity and idolatry of a single style will as certainly cramp invention and limit ideas; we know nothing thoroughly in its best state of which we are not aware of the flaws and liability to failing,—and can scarcely appreciate specific beauty unless we know somewhat of other forms that are its contrasts and indeed its foils. Everything depends upon due subordination. In the study of composition, as in composition itself, unity, force, effect, depend upon the predominance of a central interest. When this predominance can be secured, there is scarcely a limit that need be set or can justly be set to the excursiveness of study. Sooner or later, the most seemingly erratic course may prove to be only erratic in the sense of planetary, as ever controlled by a central attraction. The apparently wildest digressions are found to have been made to end at last under the strictest conditions of regulated curvature, and, moreover, have reward by a home-bringing of associations, suggestions, discoveries, which give a richness to the elaboration of the single interest; the interest which, however out of sight for the time in seeming remoteness, was governing the orbit of the student all the time.

The same remarks apply in a general way to extra-professional studies,—studies which are not absolutely required either for professional distinction or professional success, that do not affect or influence proficiency in the art, and are as little the indispensable conditions and adjuncts of those so-called arts of life which very importantly promote the chances and the opportunities of the best employment of the best endowments.

But simple professional success is not all that a professional man may justly or worthily make the object of his life. His duty to himself, to his family—if he is so fortunate as to have one,—to his country also, be it added, do not demand, and,—if he excludes exaggerated estimates and protects his mind from the extravagance of passion,—do not involve, the utter sacrifice of all that enhances the dignity and the happiness of the very highest professional success and so much that goes far to compensate,—that may even more than compensate,—for voluntarily foregoing more than a certain proportion of such success.

> "It was not meant
> By Him that on the back the burden bound,
> That cares—though public, critical, and grave—
> Should so encase us, and encrust, as shuts
> The gate on all most beautiful below;—
> This was not meant, and him will not befall,"

who, straining his energies for the attainment of a high standard of professional accomplishment, finds those energies reinforced by liberal excursions even beyond the several arts which the lofty point of view provided by his own art brings within his ken, over literature covering the history of his own art, to the literature that collaterally illustrates that history in *belles lettres*, the history of manners, the expression of character in poetry.

We have not to lay down laws for supreme and exceptional genius,—who is entitled to do so? This will, as it must, take its own way, and be as universal in its devotion to the arts as Michel-angelo,—to the arts, both fine and useful, and even simply curious, as Leonardo,—or be as limited as men at the opposite extreme, who still have executed works which give them places among the world's chief benefactors. But even as between these two classes there is no doubt towards which side our sympathies incline,—nay, as to which class even by the standard of the value

of their best works, we owe the largest debt of gratitude.

The dignity of an art is enhanced immeasurably by the elevation of the general standard of taste, and general acquirements and accomplishments of its professors; and the whole body of professionals is under obligations accordingly to those among them who are ambitious to superadd to professional distinctions,—it may be, though not of necessity, at some professional sacrifice,—distinctions which would be honourable if standing alone, to all who advance without definite effort as naturally as unaffectedly into the front rank of refined and intellectual society. Assuredly those who become distinguished in virtue of such collateral development, and confer honour on their colleagues by reflected distinction, are not without their own reward. This is a reward which ever accompanies the highest culture of our natural endowments, especially when under the impulse and the government of a noble ambition at once, and a manly self-control, the reward which is even most valuable of all for the days when the immediate excitement of professional successes and disappointments is matter of the past.

So it is, then, that we might fairly demur to the degree which entitles to practise one art being denied to special aptitude and knowledge, on the score of inaptitude and ignorance in respect of literature and arts that are essentially connected with it; we may justly think it hard and wrong to be debarred or deterred from the services of the best skill, whether we have a limb to be removed, a disorder to be identified, or a house or a public building to be planned or reformed, because the best skill in these respects has failed upon a time in Greek construing or composition, misdated Edwards and Henrys, or was vague on the nomenclature of orchids or the differential calculus; but taking the position of the artist himself, assuredly he is to be congratulated, and the profession is to be congratulated on his account, who successfully asserts the compatibility of professional studies, professional practice, with sympathy for other arts besides his own, and the same interest in literature of whatever era, that is the proper heritage of cultured society at its best.

THE BOARD OF WORKS IN RETREAT.

THE scheme of the double water-supply for London, on the unsatisfactory nature of which we commented on the first promulgation of the scheme,* and again last week, received on the very day of the publication of our observations its first check, for such the result of the division on the subject at the Board of Works meeting unquestionably was. The resolution to bring in a Bill for carrying out the scheme was only passed before by a majority of seventeen against thirteen; and when Mr. Fowler, at the meeting on the 23rd, proposed a resolution that the former proceedings in regard to this point should be rescinded, the result was that in spite of the obvious and natural feeling on the part of a good many members against taking a step in retrogression, or, as it was said, stultifying the Board, the new motion was thrown aside by a majority of only three in a much fuller house, the numbers being in this case twenty-three to twenty. This may be called a victory by the supporters of the measure, but it is a victory very like a defeat. With such strong evidence of doubt and uncertainty in the opinion of the Board of Works themselves in regard to the project, it is not likely that those outside its circle who already strongly object to the scheme will be at all reassured by such a result; and we may say that in the face of this expression of vacillation the chance of such a Bill being carried is almost *nil*. One member who observed that the Board had gone to Parliament with many Bills before, and had failed, and that they would fail in that, is likely to prove a true prophet.

The resolution moved by Mr. Fowler, though formally stated in general terms, referred, as he himself observed, to the scheme of a double supply in particular; and there is no doubt that "there's the rub." London is becoming a vast and complicated an institution that, for efficiency, we must in all things aim at simplicity in the mechanism of its working. The proposed scheme does half the work only by providing pure water for Londoners, and does this by doubling the mechanism of supply. And when the public begin to realise what such a plan actually means, they will be opposed to the scheme by a much more decisive majority; and the Board, in their own interests, would have done wisely to listen to the member (Mr. Cuffiin) who counselled them not to go to Parliament with the Bill when they were so equally divided on the subject. The probability is, that in that case "the House" will be very unequally divided, with a large majority on the side of "the Noes." The scheme is one so peculiar and so partial in its character that no government would be very likely to assent to it unless it were demanded, as the best thing that could be got, by unmistakeable public opinion: and this is most unlikely to be the case. The expense of the scheme is great, and not as yet sufficiently estimated; the unsatisfactory nature of the result is patent to every one. It will not be nearly so much a question of cost and of increased rating as of what we shall get for this. It would be worth while to pay a great deal more, even, to get a complete and copious supply of good water; it is not worth while to pay a lesser but still enormous sum for a scheme which will only half meet that want, and will inflict a most costly and cumbersome system of supply upon us.

* See p. 847, *ante*.

THE DUDLEY GALLERY.

IT would be difficult to point out any remarkable work, or, in fact, any one that could be called the leading work, in the eleventh Winter Exhibition of Cabinet Pictures in Oil, which has opened this week at the Dudley Gallery. This absence of a central point of interest generally tells against an exhibition, giving an impression of mediocrity; but there is a good deal to interest in the collection. It appears to us that, in comparison with some years, there is less in this exhibition of the distinctly "cabinet-picture" element which it professes to represent, and by which we understand pictures on a small scale, but highly finished. On some former occasions there were some remarkably typical pictures of this class; in the present exhibition there are a good many which may rather be termed sketches and studies than cabinet pictures. So long as they are good of their kind, there is nothing in a name, except that the contents of the exhibition do not quite tally with the title on the catalogue.

Not being able, as we said, to begin at any palpably important work, we will just notice some of the most interesting items in the order of numbering; taking figure-subjects first. Among these, Miss E. Pickering's "Cadmus and Harmonia" (20) claims mention as the only complete and elaborate study of the figure, and as a work aiming at ideal poetic expression. It is from Ovid's Metamorphoses, and represents Cadmus in the form of a snake climbing round and nestling against the nymph who had been his beloved when he was yet in human form, and who has not yet undergone the transformation. Whether these wild fables do so well for painting is perhaps a question. There is something disagreeable and "uncanny" in the actual appearance of an elaborately-painted snake twining about a woman's naked body, and we are apt to be more struck by the disagreeable fact than by the poetic meaning. Otherwise, it is a very beautifully-painted figure, showing much refinement of feeling. It is rather effectively balanced by one placed (with obvious intention of contrast) at the other end of the same wall, Miss Hooper's painting of "The Sleep of Brynhilde" (138), the lady now so well known in London society through Wagner's treatment of her story. Not that this, though a good solid painting of a figure in antique armour, can rank with the first-named work; but it is interesting thus to contrast the heroines of Greek and of Gothic mythology in painting. Going back to our first position, we note, in progress along the wall, Mr. Stock's "Watercress Girl" (31), Mr. Farquharson's "Ready for a Ride" (44), a characteristic half-length portrait of a young girl with her "habit" gathered close about her with very natural action; and we are brought up before Mr. Frank Holl's "Hush!" (68), to consider whether this is real or affected sentiment. There is a companion work, "Hushed" (100), and they represent two episodes in getting baby to sleep, in a cottage interior; the groups in both cases, as well as in a third rather similar work by the same hand, being lighted in a mysterious manner so as to show only the salient angles of figures and furniture brought out by the light; the rest in gloom. And we decide that it is not real, and is an attempt to give an effective appearance to what is really common-place work. We would rather have "A Leisure Hour" (112), by Mr. Hugh Carter, which touches the same class of subject in "the light of common day," and with a simple fidelity, though the painting is rather pleasing than powerful. Two single figures in this neighbourhood give us pause by their individuality of treatment and colouring, and their strong contrast; "Marianina" (94), by Mr. Fildes, and "Reflections" (76), by Mr. O. Scholderer. The former is a sketchy work, very thinly painted, and yet treated with so much power of tone and modelling as to have quite a finished and complete effect. It represents a very buxom, ruddy young Spanish (?) girl of the lower order, with coal-black short hair, standing in an easy attitude with her arms crossed; the tones of her dress are most happy as a combination of tertiaries. Mr. Scholderer's girl is a young lady, seated on a bench, and gazing absently before her, neglecting the book on her knee. In this case, also, a great deal of the interest of the picture lies in the combination of low tones of colour in a very delicate harmony; indeed, this is its chief value, for the young lady herself is not interesting. There is something puzzling about the foreshortening of the left fore-arm, which seems to disappear behind the book in a rather doubtful manner. We may count among figure subjects Mr. Marks's capital picture of three cranes, called a "decorative panel" (80), but which seems to us too much of a picture in the usual sense to be so entitled. Mr. Yeames has a good subject in the old interior where a party are looking at "The Priest's Hiding-place" (125). The two paintings at the top of the room, Mr. Pettie's "Disbanded" (168), a Highland soldier tramping up a snow-covered mountain with a bundle of "loot" on his back, and Mr. Calthrop's "Appeal" (169) are hardly satisfactory; the former is indeed decidedly a sketch, and not a cabinet picture, but has force and character: Mr. Calthrop's is a finished work which means very well; a man earnestly appealing to another who sits at the opposite side of a table and seems unconvinced; it comes near being a very interesting work, but seems just to miss it. The right leg of the listening figure is surely very long. Mr. Rivière's "Poachers" (160) is very successful; the look of intelligence and even cunning in the wretched dog is capital. Mr. Eyre Crowe's young lady cutting "Initials" (208) on a tree is a wishy-washy young person; we would not have cared for her to cut our initials; and M. Lhermitte's "Butter Market at Landerneau" (230) is not up to his mark, though one may conclude so without thinking slightly of it. Nor would we ever have guessed the name of G. F. Watts as that of the painter of "Bessie" (264). The presence of such a work looks as if eminent painters regarded this exhibition as a place to send their stray experiments to: that, again, is quite in controversion of the title of the exhibition. Things which really do come under the definition of cabinet pictures, are Mr. Heywood Hardy's two exceedingly clever little works, "I'm going a Milking, Sir, she said" (235), and "Here we go round the Mulberry-bush" (428); the latter represents three girls dancing round and trying to get their dogs to join them. In the former the historical milkmaid is questioned by a blue-coated man on horseback, whom we have seen before; man and woman, hare and dogs, are all admirable in drawing and character. Then we come to Mr. Napier Hemy's comparatively large work, "Corpus Christi" (292), which is exceedingly interesting, as showing us a very able artist in a class of subject we have not hitherto had from him. The scene is the street of a Mediæval town in early morning, in which groups of figures are scattering flowers and kneeling in devotion; the central figure being that of a high-born lady, who is giving her homage to the festival by scattering flowers over the street. The picture impresses one at first as somewhat unreal and visionary in character; but this impression rather wears off on further study, and the painting vindicates itself as an earnest and thoughtful work, showing a good deal of imaginative power as well as fine colour. Mr. T. Graham has a very clever study intended to represent "Audrey" (323); the figure has a little too much of grace, and a certain rustic coquetry, to suit the idea of the Audrey who was told to "bear her body more seeming"; but there is something naive and original in it. Another study of a single figure, "The Amateur" (338), by Mrs. Seymour Lucas, a rough-looking rather fantastically dressed man, playing a flute with an intense earnestness of application, is a

good specimen of true forcible realisation of his subject which marks the works of this artist, who is taking a firm position as an able and original painter. "A Doubtful Bargain" (293), by Mr. Walter S. Stacey, and "Les Bons Amis" (332), by Mr. Hennessey, are two clever little pictures; and in the middle of the screen, among several very good things, we find a small work by Mr. Tadema, "A Kitchen Garden" (435), Roman, of course, with two draped figures holding a consultation in regard to the vegetables for some dinner eaten 1,800 years ago. This is in the true sense a cabinet picture, and one of the best things in the room, though but a slight work for this artist, whose name is a more certain guarantee of fine work than perhaps any other at present before us. Two or three of the best works in the room are among those of which one can hardly say whether the landscape or the figures form the predominating interest; Mr. Boughton's "October" (273), in which certainly the principal point is the expressive figure of the son of the soil with the pitchfork in his hand; "The Foundation Stone" (258) by Mr. P. R. Morris, and (still better), by the same hand "A Forest Dell" (83), a small dark evening landscape, where two girls are clambering up a bank in the foreground: we hope this is only a study for a larger picture; "The Farm Road" and the "Shepherd's Wife" (30, 174), by Mr. Mark Fisher; "Water Lilies" (81) by Mr. G. D. Leslie, where the said lilies are gathered by three girls reclining in a punt, "themselves the fairer flowers"; and Mr. Hamilton Macallum's "Caught by the Tide" (31), a very clever, bright, sunny picture, deriving its title from the figure of the bare-legged woman who wades through the water, endeavouring to keep her skirts out of it without infringing too much on the proprieties. The picture reminds us of a wicked anecdote in Thackeray's "Reminiscences of a Tour in Ireland," of a certain place where there were two villages on opposite sides of a river, where the women in wading across the water to see each other had to hold up their habiliments even higher, it is inferred, than the woman in Mr. Macallum's picture, whence the place came to be called "Prospect Ford."

Among landscapes there are a good many nice bits. Mr. Waterlow's "August Moon" (42) has real light in that luminary, besides other merits; his view of a cornfield showing "a rich crop" (274) of poppies is very interesting and forcible. Mr. Macartney's "Lustleigh Cleeve, Devon" (167), is a fine landscape, giving the bare gloomy aspect of the country under certain conditions of weather very finely. In Miss Montalba's "Grey Day, Venice" (207), a little bit of real originality catches the eye; and equally so in Mr. H. Moore's "North Sea" (238); though in each case we seem to find the painter working with a special and perhaps too narrow aim. Mr. Walter Field's "From my Study Window" (236), and Mr. Hennessey's "Old Church at Bonerville" (252) are original little landscapes; Mr. MacWhirter's "Golden Gate" (310), the entrance to San Francisco Bay in a glowing sunset, is a good attempt at a Turneresque effect; and Mr. Aumonier's "River Blythe, Suffolk" (331), has some of the finest qualities of landscape, and a good deal of grandeur of effect, in spite of its comparatively small scale and the simplicity of the materials from which it is composed.

Sculpture, usually represented in these exhibitions by a single figure, is in more force this year, and includes one masterly terra-cotta, of a lady reading, by Dalou; the costume is that of every day, but the dress, falling in broad sweeping folds from the left knee, is treated in the finest and most sculpturesque manner. The marble statue, by Mr. Lawes, "Hesitation," is that well-worn motive with modern sculptors,—a nude figure of a girl afraid to plunge into the water; it deserves attention for its careful modelling, and a certain individuality of character in the contours, but the face is affected, and the attitude of the feet too nearly repeats that of a well-known work. Mr. Mullins's small terra-cotta figures of "Painting" and "Sculpture" show real grace and fancy, and his little sketch portrait in clay of a girl seated is very pleasing. Miss Alice Chaplin has some clever little models of cats (No. 463 in particular), and Mrs. Fennessy makes a bold effort to realise in bronze the figure of Polyphemus hurling the rock, in which the head is treated with considerable power; the legs, however, seem too short for the head and trunk of the figure.

NOTES ON CORNISH CHURCHES.

ARCHITECTURAL ASSOCIATION.

At the ordinary general meeting of the Architectural Association on Friday, the 23rd ult., Mr. Bowes A. Paice, president, in the chair, the following gentlemen were elected members, viz., Messrs. W. G. Penty, M. B. Teulon, W. F. Grieves, A. F. Wills, J. H. Currey, A. S. Haynes, J. H. Wilson, E. J. Milner Allen, H. Dobie, J. Adkins, W. M. Hodges, C. Tait, F. T. H. Chambers, H. W. Twyman, R. Néjedly, jun., E. Mills, C. M. Burgoyne, T. C. Dalziel, F. W. Kite, J. Brown, A. W. Johnston, H. B. Flood, H. Worthington, A. L. Lovegrove, C. W. Goodchap, T. B. Whinney, F. Stocker, C. A. Poland, and E. W. Charlton.

Fifteen gentlemen were proposed for election at the next meeting.

A letter was read from the honorary secretary of the Architectural Museum, asking the members of the Association to contribute casts of details of "Queen Anne" and other late styles of architecture, so as to add to the completeness of the Museum.

Mr. J. P. St. Aubyn then read the following "Notes on Cornish Churches": — The few remarks I have to submit to you on Cornish churches I propose confining to the examples which have come under my notice in the ordinary course of my professional dealings with them, rather than attempt a description of every church in the county,—a task I do not feel competent to undertake, as there are many I have not had the advantage of visiting, and therefore cannot undertake to describe.

The examples I have met with range from the Norman period (as in the Church of St. Germans) to a date reaching down to A.D. 1664 in the later works (as in the Church at Morwenstow).

The Norman works in Cornwall are not numerous, though there are some fine examples, the most notable being the west front and a small portion of the interior of the Church of St. Germans, a scale drawing of which, and photographs, I show. The other examples with which I am acquainted are the south doors of Kilkhampton and Morwenstow, both fine examples and in the same remote part of the county. At Tintagel there are considerable remains of Norman work.

There are also examples of Norman doors at Cary and Myloe, both small, and situated at the other extremity of the county. At St. Germans, North Petherwin, and St. Breward, portions of Norman arcades remain, massive in proportion, but built of small stones; and here I would remark that, as far as I am aware, granite, although a very abundant material, and at hand, was not used in church building till the sixteenth century, the probable reason of this being the difficulty of working so hard a stone with the tools and mechanical appliances then available.

The building-stones mostly used for this Norman and all the periods so late as the Second Pointed or Decorated, were the slate stones and elvans, both very good workable and useful building-stones, and abundant throughout the county. The elvans vary in every degree of texture and colour, from almost black to a light grey. Caen stone, and Bere stone from Devonshire, were also frequently used for windows and other ornamental details. Serpentine rock has been largely used in the Lizard district.

Early English or First Pointed work is certainly very rare in Cornwall. I know of only a few examples, one being the fragments of a double lancet window in what is now the breakfast room at St. Michael's Mount, and which was brought to light a few years since; and a few single-light lancets are occasionally met with, scattered about the county.

The transepts of the churches which still, either in part or wholly, retain their original cross-shape, appear to have arches of this date; they are very simple and rude, being nothing more than depressed lancets with slightly-chamfered voussoirs and jambs, with a rude impost-moulding, as may be seen at St. Minver. The north arcade of St. Minver, and the arches of the chancel aisles of St. Austell, are possibly of this date. The piers and arches of St. Minver are built of very small stones. The former are octagonal on plan, and the arches of two orders are square, with slightly-chamfered angles.

The Decorated or Middle-Pointed work is more abundant than that of either of the two preceding periods, and is of great interest. Windows, doors, arcades, and minor features are numerous and well defined. The windows have a character of their own, and a mode of treatment not met with in other districts. Examples of this are to be seen at St. Germans and St. Columb Major. The arcades vary in treatment from the early and simple example at Fowey, to the more elaborate specimens at St. Enodock and St. Columb Major.

The only example of a Decorated tower that has come under my notice is that of St. Neot. It has massive buttresses, and windows of simple tracery, and either had, or was intended to have, a spire, the springing of which is very apparent.

The church of Lostwithiel is a notable example of an open spire of this date, but I have not had an opportunity of examining it. The steeple of St. Hilary is a plain example of this period.

An excellent article by Mr. Street, on the Middle Pointed work of Cornwall, with numerous illustrations, will be found in vol. iv. of the "Transactions" of the Exeter Diocesan Architectural Society, to which I beg to refer you.

Having called your attention to these early styles, I now come to the Perpendicular, or Third Pointed period, reaching down to 1664, as at Morwenstow, which has this date on one of the pier caps of the south arcade. To this period the greater number of the Cornish churches belong, though mostly grafted on buildings of much earlier date, and of cross form; and so similar are they in plan, elevation, and detail, that this may be fairly said to be the typical Cornish church, the characteristics of which consist in the nearly equal length, height, and width of the nave and chancel, with their aisles; in the almost universal absence of a chancel-arch; in the long, slender, and monolithic pier-shafts, sometimes merely octagonal, but mostly moulded; in the depressed arches of four centres, and moulded, of small span; in the low pitch of the roofs (seldom exceeding 45 deg., often less); in the cradle or wagon shape of the roofs internally; and in the depressed window arches and usually plain tracery of three lights, often without cusping.

In this period granite is largely employed, either native, or imported from Lundy Island. Clear-stories are very unusual, but they occur at Fowey, Lostwithiel, and North Petherwin. The chancel, as I have before mentioned, was seldom separated by an arch. The nave and aisles were parted from the eastern part of the church by handsome and elaborately-carved oak screens, few of which remain, but the stumps which have been spared indicate their position, and give an idea of the beauty of the destroyed superstructure so ruthlessly removed. Remains of colour and painting are to be found on these screens, which supported rood-lofts, the stone stairs to which in most cases are remaining. The chancel fittings have in almost all cases disappeared. In the Collegiate Church of St. Burian only have I seen a few fragments of the stalls and miserere. But the church benching has fared better. Much of this work remains, and in some cases in good condition; but in a large proportion of churches it has been ruthlessly destroyed and replaced by the meanest description of deal framing in the shape of "square" high pews.

The roofs, screens, and benches appear to be of the end of the sixteenth or early in the seventeenth century. The benches are elaborately carved, generally with a running border of fern-leaf and foliage, and, when not panelled, the centre of the bench-end is covered with emblems, arms, crests, initial letters, and monograms. The benching at Morwenstow is dated 1595.

The roofs of these Late Perpendicular churches are of "square" 45-degree pitch, and constructed in the cradle or wagon form, divided into panels by moulded ribs and side-pieces or purlins. The intersections of these ribs and purlins are covered by large carved bosses of foliage. The wall-plates, ribs, and purlins are very frequently enriched by a running pattern of fern-leaves, but ordinarily they are merely moulded. They were never ceiled with plaster, but, in some instances, over the altars were underboarded and illuminated with gold and colour. These roofs, although containing a large quantity of timber, and possessing much beauty, are not particularly strong in construction. The component parts are numerous and small. They are without longitudinal ties, and depend for their stability on the soundness of the tenons and mortises. If from any cause these failed, the construction soon fell into ruin, as has been the case in too many instances. The slate-laths are nailed immediately on the backs of the rafters. On these laths hang the small slates locally called "scantles." They are bedded in mortar, and unless the timbers are underboarded, the slating was

exposed to view from the inside. The plastered ceilings taking the curve of the ribs, now so common, are quite modern additions, and intended to exclude draughts, which followed on the dilapidation of the construction of the roofs and gutter-leads. It is plain to see, also, that as soon as the failure or decay of the mortises and tenons, and the oak pins which secured them, commenced, the timbers subsided and had a tendency to thrust the wall-plates outwards, and to drag the slender arcading with them. To this cause the leaning position of so many of the arcades may be traced. I need hardly add that all the roof-timbers are of oak, the curved branches of the tree being brought into use in forming the under-ribs of the framing.

I have before alluded to the original cross-shape of nearly all the Cornish churches; some still remain so, notably the interesting church of Tintagel, a Late Perpendicular tower being the only addition to the original planning. Most of them appear to have been subsequently altered from their original form to that of aisled churches, thus: the limbs of the cross have been removed, generally both, sometimes only one; and then, usually on the south side, an arcade took the place of the old side walls, new side walls being built further out, and extending the whole length of the church.

The Church (now the Cathedral) of St. Mary at Truro, and St. Mary's, Launceston, deserve particular attention from their unusual richness of detail; that of the latter is cut in granite, and very perfect; that of the former in Pentnan stone, and much decayed.

The towers of the Cornish churches, particularly the late ones, are characteristic. They are mostly of granite, excepting where this material is very distant. Massive in design and construction, when buttressed the buttresses are slender, and obviously not intended for support; but more frequently there are no buttresses. Sometimes the pinnacles are square, but often octangular, rising considerably above the battlements.

The tower of Fowey Church is a fine example, 100 ft. high from the ground level to the top of the battlements. It is highly embellished with well-cut ornaments of Pentnan stone. Probus, said to be the most lofty tower in the county, is of fine proportions, but I believe not higher than Fowey. The tower of St. Austell is also a fine and elaborate specimen. There are likewise many fine towers in the north-east of the county. The tower of Maker is fine, and the walls are of the extreme thickness of 5 ft. 6 in., built of granite.

The spires are not numerous or striking, and do not number twenty. Lostwithiel, however, deserves attention from its peculiarity of design and construction.

The fonts, some of which belong to the Norman period, are of very great antiquity and interest. They are of almost every variety of shape and description of stone. Granite is not a common material in use for fonts, and mostly they are of earlier date than the Third Pointed period.

Pulpits of early date are uncommon. A stone one occurs at Egloshayle, which I believe to be the only example in the county. I know of no wooden ones worthy of notice.

A few fragments of wall painting of interest have occasionally been found, under successive coats of whitewash. I have met with no specimens of encaustic tiles.

Of metal-work, a few good examples of monumental brasses remain, the most notable being at St. Columb Major and at Stratton. The damp climate, added to neglect, has left very few examples of ironwork.

Painted glass, owing to the neglect of the Cornish churches in former times, is not common; but a notable example remains at St. Neot; and there is a good window at St. Teath, nearly complete. A few fragments are to be found dotted about the county.

I have now put before you, imperfectly, I fear, the facts that have presented themselves to my notice in my dealings with these Cornish churches, and in which, naturally, I take a great interest. I hope I need hardly add it has been my aim to preserve their ancient features, and to be as conservative as the exigencies of the several cases admitted of. I regret I have never been able to replace one of the oak cradle roofs when its state has made it necessary to substitute new, by reason of their great expense, and the extreme difficulty of finding oak for the purpose within a limited time; and workmen in sufficient number and skill would not be forthcoming to carry the work into execution without importing them from a distance at a cost which cannot be met by the funds usually raised for the repairs of a Cornish church.

From what has been stated, you will see the close resemblance one church has to another, and how this family resemblance extended not only over the whole of Cornwall, but far east into the adjoining county. It would seem as if one design (if I may so speak) was used throughout the district, giving the modern architect a lesson, I venture to think, to be not too anxious to build his fame on the variety of his designs, but rather to follow the example of the men who built these Cornish churches.

Having concluded the reading of his paper, Mr. St. Aubyn devoted some time to *viva voce* explanation of the large number of illustrations on the wall, many of them being his own working drawings and sketches made prior to and during the restoration of some of the churches named under his direction.

The President (Mr. Paice), Mr. W. F. Potter, Mr. H. W. Pratt, and another member, having made a few remarks, Mr. St. Aubyn answered a number of questions asked by the speakers, and the meeting terminated after passing a vote of thanks to Mr. St. Aubyn for his interesting paper and its accompanying illustrations.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

ARCHITECTURAL COMPOSITION, WITH SPECIAL REFERENCE TO GENERAL OUTLINE.

COMPOSITION should be arranged with an eye to broad and powerful chiaroscuro, which is part of composition and dependent on it; and to produce an outline more or less pleasing with due respect to the proper character of the subject.

The expression of the latter being the primary object and generating cause of composition, the mind as well as the eye has to do with the appreciation of every architectural group, and will be gratified in the degree in which it is satisfied of its fitness for its practical purposes, including the more immediate and structural ones of throwing off water, resistance to and the affording shelter from the elements, the primary idea of all architectural forms, and the fulfilment of the divine laws of health.

It should be unnecessary to say that architectural compositions must differ according to their rank and proper character and destination. Municipal buildings, for instance, from palatial, political from collegiate, and so on; as in sculpture, the beauty of the Apollo is one kind, that of the Hercules another; while the Venus differs from the Diana, and the Minerva from both. And we give these various distinctions of character by the same means as Nature does, by different qualities of form, which must, independently of education or association of ideas, have a connexion with corresponding emotions of the mind.

A good bounding line is said to be a leading exigency of sculpture "in the round." I believe it is equally important in architecture. But that this may be obtained consistently with truth or fitness of character we may be assured if we consider how vast and varied are the forms and proportions of Nature's chief structures, man and the lower animals, within the sphere of the beautiful. How different, for instance, the proportions of head to body, in different creatures! The lion owes his grandeur mainly to the enormous preponderance of the head and limbs over the small body, as some birds their grace and elegance to length of legs and neck. There is scarcely a plan or arrangement, horizontal or vertical, dictated by practical utility, but what may be wrought up into fine and characteristic forms. Infinite are the solid shapes in which composition may present its subject to the eye. Ask not, says Fuseli, what is the shape of composition, meaning that it cannot be defined and must not be restricted to any particular character of form. It is not confined to the spire-crowned mass nor to the dome-crowned mass, to the group of three spires, as in some approved Gothic piles, nor to those of three or five domes, as instanced by some very picturesque Classic and Byzantine compositions. Composition is the shape of every beautiful thing that waves in the summer breeze or gleams in the eye of day: trees,—the oak, the chestnut, the larch, the poplar,—flowers, crystals, birds, beasts, mountains. It is the shape of flame, of rocks, of the vault of heaven, of the human head, all of which objects architecture may emulate, as she may take hints even from purely moral and intellectual conceptions; building materials, statical and dynamical science, laws of the resolution and resistance of forces, are all sources of suggestions, analogies, and principles of forms, proportions, or arrangements in architectural composition. Composition may be as simple as a Greek temple, or it may resemble a forest or mountain-chain in complexity, and yet be pleasing and satisfactory. The latter seems to have been the feeling of the Romanesque architects of Germany, whose numerous groups of spires are among the most picturesque objects to be found anywhere.

Every building should, however, in its general ideal outline be more or less suggestive of the pyramid. No building should be an absolutely square or parallelopiped block, or without some general diminution upwards, or rise in the centre, which latter provision against weather renders needful in northern latitudes. I say this advisedly, though aware it is condemnatory of many fine and otherwise meritorious structures.

As of all forms that of the pyramid is most fitted to resist the force of gravitation, these requirements are paramount to the laws of decorative style. Some styles are more aspiring than others, and will take a pyramidal form more readily and naturally than others. But buildings of all kinds are under obligation to assume a general pyramidal outline, though it may be of lower proportions; and in cases where an upright wall is desirable for its greater impressiveness, or otherwise necessary, yet the spirit and principle of the pyramid should be kept in view, and the mass rendered really lighter upwards by the increase of openings and multiplicity of parts of each story to the top, which was a beautiful characteristic of many Mediæval buildings.

Some approved compositions are a group of various pyramids rather than one, under one general pyramidal outline, an excellent example of which is the group of towers of Laon Cathedral, in France, a second is the Church of the Apostles at Cologne. Such complex compositions belong to the Romanesque period of Germany; the productions of the Pointed style there and elsewhere being nearer the single pyramid in general outline. They would have been nearer to it had they been finished, which many Gothic buildings are not, but imperfect from lacking the spires or lanterns of the great central mass,—a fact that has not been borne in mind; for they have in this state been imitated as models of composition, while the few finished compositions we have have been unheeded.

The highest feature of a composition should be, as in these, the one nearest its centre, which in the cathedrals is the tower marking the intersection of nave and transepts. This prevents distracting equality: round the centre spire the other portions of the building circle in subordination, producing a general composition which satisfies both eye and mind. This is by no means the case when two west towers, or any other two equal masses are the principal features of the composition; and there is no commanding third one to render them secondary. The Church of St. Sulpice at Paris, Greenwich Hospital, and Westminster Abbey are examples of this; and, if I remember rightly, some of the published designs for the new Edinburgh Cathedral.

Of the terminal or crowning features of a composition, the most beautiful are the curved or dome class, and the lantern species, or those wherein tower and spire are blended. But the spire alone piercing the blue deep, well united to a broad tower properly subordinated to it as its base or pedestal, gives great spirit and animation to a building, far more than the finest tower, which latter may in some measure be redeemed by the going up of an angle turret, or by a visible, high-pitched roof,—a feature too seldom seen. The combined tower, lantern, and spire may be carried to the utmost limits of architectural elegance, and show an exquisite grace and delicacy of outline. It belongs to the very nature of such objects designed to please the eye only, and unrestricted by considerations of utility, to admit of a beauty almost dreamlike, and in some instances display forms which, for fairy-like delicacy and grace of outline, the spectator would expect to see vanish from his sight. It belongs also to the nature of such objects to exhibit as a class an almost infinite variety of design: spires should differ in a town in aspect and character as much as trees in the country.

But might we not see in steeples a greater variety of position with respect to the body of the church? Might not the towers of city churches be placed more frequently behind,

nearer to the chancel end, so as to leave the front in each case symmetrical or uniform, over which a tall spire has a more poetic effect than immediately abutting on the street? A variation of the kind as it would affect the general arrangement might lead to some fresh and equally pleasing and convenient forms; and it must lead architects to the discovery that there is more scope for varying on foregone types than they are allowing themselves, and to an occasional departure from the clearstory and side-aisle section, which every true and enlightened friend of Gothic architecture would be delighted to see. It might lead sometimes to designs exhibiting a noble elevation of wall and a series of lofty windows enclosing a simple undivided interior, an arrangement to which the Gothic style would as readily bend as to the clearstory.

It seems to be taken for granted that ecclesiastical edifices should be invariably spired or domed, while all other buildings may either be so or not. But it appears to me that every great or public building, of whatever class, is under equal obligation to rear a crest of some kind above the crowd of houses, for which the architect may find ample occasion or pretext even in provision of a useful feature, or to increase the height and dignity of a centre hall, or give height to it clearstory-wise.

If I am right in this, many otherwise great buildings are imperfect compositions; behind, strange to say, in this important particular, the works of semi-barbarous nations, reared while architecture as a fine art was yet in embryo.

The great united palace of the Louvre and Tuileries, even though it properly makes the roofs an important feature, and sets a good example with reference to chimneys, which are as necessary to the expression of a royal palace as to a cottage, yet wants a loftier central mass. It has one block that goes higher than all the rest, but not high and commanding enough to give unity to so vast a building horizontally. The Palace of the Vatican would have been in a worse plight but that it appears as a vast wing of the church, the dome of which unites all. Our National Gallery and Somerset House are redeemed by their domed towers, though mean objects in themselves, from this flatness. That all such buildings, consisting of several masses, should have at least one of them forming a larger body in the centre surmounted with a tower is suggested by the analogy of animal forms, more especially those of birds, consisting of body, head, and wings; and the value of such an elevated feature breaking the sky-line may be judged by the spirit and unity which a very slight spire often gives to a great pile; witness the effect of the wooden spirelet over the huge body of the French Cathedral of Amiens, which brings, as it were, its numerous aspiring features to a focus above. Nay, a flag, or even flag-staff, on the top of a square building or tower, not only gives life and spirit sometimes, but dignity. And what, on the other hand, would give a more crestfallen, mournful aspect to a city than beating down its domes and spires and reducing it to a level sky-line?

Some secular buildings of course have higher demands in this respect than others. Palaces, Government offices, museums, art-galleries, public libraries, and what may be termed the homes and shrines of moral and intellectual institutions have more claim, or should have crownings of higher character than workhouses, infirmaries, and lunatic asylums,—a principle that has not been acted upon, for we often find buildings of the latter class which ought generally to wear a lowly air, and which a quiet, humble mien would best befit, show a prouder bearing and more aspiring character than edifices of the very highest destination.

Connected with this subject is the lesson taught us by the discovered upward convergence of the axes of the columns of the Parthenon, a practice which is not only necessary to correct any appearance of overhanging, but to give a little of the look of pyramidising. Set-offs, too, are also an important means of effect in composition. Nor are they less necessary in Classic than in Gothic architecture. They give life and grace to all classes of erections, from the cottage to the cathedral. Pyramidising more or less is essential to unity with the ground. It gives a building the appearance of growing out of the ground; and the mention of this unity reminds me that in all buildings, more especially large ones, it is necessary that one horizontal cornice, entablature, or string-course, at least, should unite all the different masses in its embrace. This is a very important principle: a composition may consist of a number of rich and beautiful parts, and yet be very poor in design and effect unless properly bound together. The London University building, in which the centre or head seems an insertion between two disevered parts of the body, is a case in point. The National Gallery, Edinburgh, is another. I may be told of the Erechtheium at Athens,—a building that has been praised for the discontinuance of its entablature. I believe that no praise is due to it for this, which is probably the result of accident, or some special cause,—not design. But however it be, as Allison, in his "Essay on Taste," says,—"In all the fine arts, *that* composition is most excellent in which the different parts most fully unite in the production of one unmingled emotion; and *that* taste the most perfect where the perception of this relation of objects, in point of expression, is most delicate and precise." The whole composition should fill the eye at once; but there may be receding and partially concealed parts or recesses, where the imagination may revel, and enhance the general effect to the mind by ideal and unseen beauty. A similar effect is produced by the intricacy of the forest of buttresses and flying buttresses in the great Gothic cathedrals, which, though sometimes inveighed against, I believe to be a beauty in that style of architecture.

In this general effect of a composition, an eminent part will be played by its accessories, the design of which is an important matter, as the effect of a building may not only be greatly enhanced, but greatly reduced and injured by its adjuncts and outworks,—like a master ruined by the misconduct of his servants.

A composition must be influenced by its situation, to the avoidance of hopeless rivalry with nature. Spired and domed compositions, for instance, are only suited to a champaign country, where there are no corresponding forms in the shape of mountains or peaks within sight to dwarf them. Domes of 50 ft. or 100 ft. diameter can have no power to charm or awe among those of 2,000 ft. And it would be well to emulate the Mediæval architects in the marvellous ingenuity with which they adapted each edifice to its particular locality,—river-side, hill-slope, or wooded dell, and with which they adorned it with those poetic and touching objects which Nature so lavishly contributes to such scenes; which suggests that public buildings in cities should be adapted also to the general character of the architectural scene they are introduced to, and not allowed to look so lonely and anomalous as they often do for want of kindred buildings to unite them to the ordinary architecture; as if they had strayed from their proper place. Nor should there be the irreverent crowding of private and ordinary buildings on public and important ones which we sometimes see, especially on places of worship, which ought to stand detached from every other building.

In composition, more than in any other part of architectural design may be exercised the inventive faculties of the architect to the production of new forms and lines based on nature and the intellect; and these faculties may be variously stimulated,—by peculiarities of site, or new building material, for example, or some singularity of requirement or condition, as a religious prohibition,—a circumstance which led to great originality in the Saracenic architecture. Leonardo da Vinci avowed that even from the stains wrought by time on old walls he obtained many excellent hints.

But I believe architectural composition may be most advanced by the study of really great buildings, however imperfect or mutilated they may be by time; that is, by the action of the creative power of the imagination upon them, idealising them, supplying their deficiences, repairing their defects; inspired by the natural love of, and desire for, the perfect; glimpses of which we catch from a contemplation of what in itself may be imperfect.

Literal imitation is the bane of art, and produces, not merely stagnation, but retrogression; but what I here suggest is an intellectual imitation, imitation of the principle on which the beauty or grandeur of a work has been achieved,—emulation of its spirit and fire, by one who is conscious of power to avoid being seduced into error as to what are beauties, by the authority of antiquity or the brilliancy of a great name. The loveliest Madonnas of Raffaelle and Guido Rheni were drawn from the divine forms of the antique animated with the glorious flesh-tints, blue melting eyes, and flaxen hair of the Italian women of their day; or, in other words, from the best living models they could obtain, corrected by the Greek ideal,—and so probably the highest conceptions in architecture might be reached from extant productions of the art,—idealised or perfected by the restorative and inventive powers of the imagination.

The most costly element of architectural perfection is the sculptural embellishment. A beautiful building, embodying rich subtleties of thought, and full of life and expression, can be produced without it. But the highest class of architecture must be indebted to the highest class of sculpture, which, as the superior and more phonetic art, cannot fail greatly to elevate the other. The importance of sculpture to architecture has been by one writer, I think, overstated. But in England, by English architects, it has practically been as much underrated. Placed in juxtaposition with some Italian buildings profusely pinnacled and adorned with statues, some of our finest architectural compositions would have a poverty-stricken, starved appearance, and excite regret that architecture should so lack its natural aliment. Duly adorned with statues of an imaginative and creative character, how much more harmonious would many of our finest Anglo-Classic façades become with every object of nature that can be seen in connexion with them? How much more harmonious, even if nothing but the sky, with its fleecy clouds, were visible along with them? Architecture properly attuned to and duly supplemented with high-class sculpture is like poetry set to music. So combined, the two become more emotional, more powerful, and eloquent.

Samuel Huggins.

GATESHEAD-ON-TYNE.

Gateshead has shared the fate of many a place the importance of which, dwarfed by a larger neighbourhood, is overlooked. Separated only by the river Tyne from the larger and older borough of Newcastle, it has received less than the attention demanded by its own importance, the extent of its trade, or the variety of the industries which are centred in it. Its growth in the present century has been rapid, and not only has it advanced in population, but also in the extent to which it has influenced the district and contributed to the development of the industries located on the southern bank of the Tyne. Down to comparatively recent days it was composed chiefly of three streets,—one, the High-street, "formed by a number of houses clustered on both sides of the road leading to Newcastle," and the others running parallel with the river and joining the main street at the southern end of the bridge. Thus situated and dwarfed, as noticed, by the overshadowing presence of the great Tyne-side town, Gateshead was little named or taken note of, and one of the references to it in contempt dubbed it a "dirty lane leading to Newcastle,"—a sentence which, without the uncomplimentary adjective, expressed tolerably generally the opinion formed of it. There are references to it occasionally, but usually, prior to the time of its acquiring direct Parliamentary representation; the notices of it are to the effect that its government was vested in a bailiff under the Bishop of Durham; that since 1695, stewards elected by the borough holders and freemen had governed it; that petty sessions were held; and that its church was "an ancient edifice, the living being in the gift of the Bishop of Durham." The benevolent institutions would be named, the shoe-fair glanced at, and the whole dismissed with the statement that in 1821 the population of the parish was over 11,000. Those who would describe Gateshead now find greater facts to chronicle.

Its population has bounded forward from 11,000 to 15,177 in the first decade after the time named; and thence, by successive steps, until, in three decades, the last number was doubled; and at the last census, its population was over 48,000. Nor was this all, for it had largely contributed to the growth of the population of the neighbouring villages; and in the union of which it forms the chief part, the population was raised from 59,409 in 1861 to 80,235 in 1871. As one result of this accompaniment of increased population, an increase of pauperism is known, and Gateshead has now in the bounds of its union 330 indoor and 1,944 outdoor paupers; but as its pauperism is to its population at the rate of 1 to 35, it is,—although worse than the average of the whole of the north-eastern district,—by no means the worst of surrounding unions. Turning to its own more proper

limits, it may be said that its borough includes 3,243 acres, which held at the last census 6,386 houses. Another accompaniment of a large population is criminality, and in a year about 3,000 persons are proceeded against—a usual proportion giving over two-thirds to the male and one-third barely to the female sex. A third of the crime is furnished by drunkenness; and crime of not the most heinous nature takes up the chief of the rest, the serious offences being comparatively few. The large population in the wider bounds of the Union furnishes nearly 4,000 births and 2,600 deaths yearly. It also furnishes about 180 insane people, tolerably evenly divided between the sexes. And in the lesser limits of the borough it has raised the roll of the burgesses to about 12,000.

Gateshead as an industrial centre occupies no mean position. It had established, about a hundred and thirty years ago, its chief iron-works; and as the years have passed they have grown; and they now include rolling-mills, engine-works, chain and anchor foundries, and other allied industries of great extent. Authentic figures a few years ago stated the number of workmen employed at over 1,500, credited them with the manufacture of 150 marine and land engines, and estimated the value of the work then turned out at 225,000*l.* yearly. Next, the vast works of the North-Eastern Railway may be named, in which some 2,000 workmen are employed; and in which the building and repair of a large part of the engines at work on that immense system of railway is accomplished. The works of Messrs. Abbott & Company are also large, hydraulic machinery, anchors, pipes, &c., being amongst the special manufactures of the firm. There are large chemical manufactories centred at Gateshead, and the subsidiary but very important industries include glassworks, shipping, &c., whilst the adjacent and early noted collieries and the shipbuilding-yards contribute materially to the prosperity of the borough. In some of these later trades it is impossible to define exactly the extent of the trade of the town, for the figures which would have told it are hidden in the total of the associated towns of Newcastle and Gateshead, or in the vaster total even representing the trade of the many places which contributed to the greatness of the Tyne. In many modes the boroughs are united, and in many official documents Tyne trade is given as a whole, so that the proportions of each contributor are not always ascertainable. But that of Gateshead, it may be said, is great and growing, as well as in some respects of early date. The Tyne has long been the home of the northern chemical trade; its course for long distances is through the heart of the richest and best esteemed part of the northern coalfield; and alike on both banks its contributions to the output of northern metallurgy have been great and varied. Glass, earthenware, and paper are amongst the manufactures for which it is noted; the tanning trade has been long established; and engineering and other trades found an early home on the banks of the Tyne. To these and others Gateshead has contributed. Sailing down the river we may notice traces or indications of the presence not only of the parent coal and iron trades, but also firebrick and colour-works, glass-works, paper-mills, timber-yards, soap, cement, and chemical works, whilst coal staiths, foundries, engine-works, and shipbuilding-yards are so near as to form practically a part of the great whole, which extends its boundaries yearly.

The trade of the Tyne has suffered in one or two respects of late, and there may be marked on both sides in the voyage from Shields to Newcastle silent furnaces and works, whilst the collieries near, as is well known, have felt in some degree the force of the great general as well as local depression in the coal trade. It is by no means a certainty that the iron trade on the Tyne will know the prosperity again that it once knew; for its blast furnaces are not of the newest or most productive type, nor are they most centrally situated, so far as the supply of ironstone in large quantities is concerned. The local coal trade knows also the result of the increased competition between the various coal-producing districts of the kingdom, and knows also that some of its early-famed seams are worked under conditions more unfavourable than was once the case. But there are now being applied, if not remedies, at least palliatives of the evils engendered by the latter state of affairs, and there are attempts to work the coal-seams in more economical modes in the future than in the past. For the future of the coal trade there is confidence, due alike to that fact and to the repute of its product. On that trade is built up the exports of the Tyne largely, but her imports are giving to her a vast and extending trade in other directions; and guided by the capable men who have long controlled the destinies of the river, there has been increased use made and advantage taken of the great natural endowments she is possessed of, and the vast stores of treasure-trove in the shape of minerals that are laid up in the bowels of the earth,—stores of power representing the accumulated solar energy of ages. To the development of the export and import trade of the Tyne, Gateshead has contributed a full quota; and she has,—in increased wealth, in increased trade, and enlarged extent,—fully reaped a corresponding benefit. Founding her trade on the great staple of the district, and adding thereto others which, from position or abundance and cheapness of material, she can favourably add, there should be for the second town on the Tyne a future relatively as great as that for the older sister. It is evident that her facilities are not yet fully developed, and it is also evident that she has in some respects been in the shade which the greatness of Newcastle has made; but using aright the advantages of her position, and the fuller facilities of trade which are being given to her river, there should be an advance yet before Gateshead as great as that which has been known in the later years that have passed of this century.

THE BUILDING INDUSTRY OF PARIS.

For several years the French Chambers of Commerce have collected and published a series of valuable reports upon the industries of Paris, and the latest is not the least interesting. It applies to all branches of work; but it is possible to take a special view of each, so accurate and distinct is the arrangement. There are, indeed, ten groups distinguished, among which one,—that of building,—occupies a prominent place. If we rank these ten industries according to the amounts of money expended upon them, we find it fourth in degree, food, clothing, and miscellanies for which Paris is celebrated beyond all cities in the world, taking precedence. It would stand far higher on the list were it not, in fact, for the immense architectural extensions and enterprises undertaken and completed by the Empire, when the quarries in the neighbourhood of the capital almost failed to supply materials for the stonemason. Still, in point of individual earnings, the building operatives keep the lead, and are likely to keep it indefinitely. Only a short time ago, we are told, such a revival took place in the trade that 30,000 extra workmen had to be sent for from the provinces, gigantic structures rising everywhere to employ them, and that was long after the exuberant period of Imperial magnificence. The circumstances under which these men labour, however, are not of the best, though their wages, judged by the Parisian standard, may be liberal enough. Where their task lies, there, of course, or near it, their dwellings must be, and they who construct houses are themselves often almost houseless, unless they can afford to pay rents such as sadly detract from their other means of living, and this is more especially true in the palatial quarters, where, frequently, not a nook remains,—not a cellar, not a garret, for the artificer of any class, within reasonable distance of his employment. It is not so, however, with other trades. The cabinetmaker has his traditional home in the Faubourg St. Antoine, and the bronzer and goldworker in the Quartier du Temple, just as metropolitan watchmaking used to have its centre at Clerkenwell, and silk-weaving at Spitalfields; but the builder must be by turns everywhere between the Arch of the Star and the Mount of Martyrs. To make it worse, we must bear in mind that Frenchmen, as a rule, detest walking, and no great accommodation is afforded by the few lines of local railway, which are generally, moreover, devoted to excursionists and pleasure-seekers, rather than to the industrial classes. Again, the experiment of the "Masons' villages," tried a few years ago at Marly, was anything but a success. There was too much of patronage and too much of restriction about it; and Paris, in one respect, has recently begun to imitate London by dividing itself into exclusive sections. Formerly,—and that not long since,—the Parisian workman of any grade, might be seen emerging, with his basket of tools, from imposing edifices on the boulevards, where a nobleman or wealthy merchant occupied the lower floors, while an artisan ensconced himself in the attic. Gradually, however, the two banks of the Seine have been taken possession of by an entirely different description of people. It is true that, in the vicinity of the great market-places, a considerable proportion of mechanics is lodged to this day; but even these are giving way before the march of new streets and the multiplication of showy warehouses. The habit of constructing enormous central edifices for purposes of trade, has grown into a passion in the French metropolis, and before long there will be very few small shops or tenements of any kind left in the city whose sky-line continues rising year after year. At one time these changes would have been nearly impossible. The masons, stone-cutters, plasterers, and "mortarers" of Paris constituted a powerful and favoured fraternity, whose interests were particularly consulted by the municipal authorities. From them, however, the living generation has inherited some institutions of signal value,—a special school among them for the instruction of young stone-cutters in those arts of design appertaining to the trade, and whose results are seen in the innumerable façades and arcaded roofs which so sumptuously adorn the city;—for, like the Florentine, the Parisian architect not seldom invites the Parisian workman to his councils. The marble-workers possess another similar establishment, chiefly supported by the municipality, and upon the pediment of its temple is inscribed the legend: "True Work is True Art."

A suggestion, however, is made in the memorial, with reference to the stonemasons, that it would conduce far more to the convenience, and even safety, of the Parisian thoroughfares were all this kind of preliminary industry in connexion with the building trade carried on, not merely beyond the old circle of the barriers, but outside the great masses of the population altogether. This, we are reminded, would get rid of a vast amount of dust, din, obstruction, and danger, and the remark is applied, also, to the elaboration of marble, alabaster, and serpentine,—processes belonging properly to the workshop. No doubt it is undesirable to have so much work done as is done in Paris on the very pavement itself, incumbering it with masses, rough from the quarries, so gigantic that they might have contributed to the external facings of a pyramid, not to speak of the eternal ring of hammer and chisel, and hissing of saws, in new and improving neighbourhoods; but the point is of no great importance, far less so than that a popular industry should feel at home in the city which feeds it. The report cites, upon this subject, the example of the carpenters, whose principal *ateliers* are in the suburbs, and who bring the results of their industry ready to be put in frame upon the spot,—an observation not to be universally applied. The varieties of fact, indeed, connected with this topic, may be inferred from one of a most typical character, which is that the wages of the class under notice range, like those of the Parisian cabinetmakers, from 5d. to 15s. a day, though both of these extremes are rare,—the former more so than the latter. The memorial to the minister then goes on to discuss the question of improved abodes for this order of artificers, dealing with the difficulty of so placing the workman that his work shall be moderately near to his hand. It dismisses at once all the schemes of model cottages—if such a word as "cottage" has ever been really naturalised in the French language,—and applies itself to such "floors," containing kitchens, bedrooms, and sitting-rooms, within the guardianship of a single door, with invitations for special plans to be judged of at the Great Exhibition of next year. There is no possibility, under the circumstances, they admit, of persuading builders or speculators to abandon the old system of "many-storied barracks," or, as Dr. Veron styled them, "perpendicular streets" with "thoroughfare staircases," a habit ingrained in the Parisian nature, leading to economy in ground-rent, it is argued, and cheapness of construction at the same time, though the consequent heaping up of population must conduce to bad conditions of life. But the available space is small; land is excessively dear; rents are equivalently high; and a miracle might as well be expected as any approach to adopting the Chinese one-floor or the Dutch four-room system. The solitary hope expressed is, that in the typical eight-floor Parisian house, often inhabited by ten or twelve families, the rooms dwindling as the ascent grows higher, until, at the summit, sitting-room, kitchen, and bedroom, with coal-hole and cupboard, cellar and potato-store, are contained within four narrow

walls, some improvements may be made in the future such as are manifestly necessary now. If, say the writers, "the architecture of Paris is a valuable school in itself, there is a great deal to be learned in it yet, and the workers upon it have also themselves in a considerable degree to teach. The one necessity cannot be dissociated from the other; the building is a reflex of the builders,—from the architect to the humblest mason." The memoir is interesting from many points of view, but especially in so far as it represents a great industry of Paris perennially developing itself, since in that city, as in London, a vast amount of reconstruction is incessantly going forward. "The builder," says M. Jonveaux, "signifies Paris progressing." A little truth may here be lost for the sake of epigram; but the truth is not entirely absent, nevertheless.

NOTES FROM MANCHESTER.

The Central Free Library.—The work necessary to be done in order to adapt that portion of the old Town-hall, King-street, which has been placed at the disposal of the libraries committee for the purpose of a central free library, is being pushed forward. The apartments of which the libraries committee have taken possession are the large hall, the room which was used as the council chamber, the mayor's parlour, a smaller room which was used by the mayor as a private parlour, and the hallkeeper's room. These, with the addition of other space which has been secured by blocking up the corridor leading from the head of the main staircase to the mayor's parlour, form the space at the disposal of the librarian. According to the *Manchester Courier*, the alterations which have been carried out are principally in the large hall and the council chamber. In the former the dome has been opened out and glass inserted, and it is by this dome alone that the main room is lighted during the day. All the windows and all the doorways, with one exception, have been closed up, by which means a large additional shelving space has been secured. In the council chamber, a false ceiling, which had been erected to improve the acoustics of the room, has been removed, and the dome opened out and glazed as in the central building; the dome over the mayor's parlour has been similarly treated. The two partitions which divided these three apartments have been removed, so that the large hall, the council chamber, and the mayor's parlour, now form, as they did in the original building,—one hall of large proportions, which will form one of the finest free library buildings in the kingdom. The shelving, which is now nearly completed, measures about a mile and a half. The alterations have been carried out by Messrs. Neill & Sons, under the superintendence of Messrs. Barker & Ellis, architects.

The Thirlmere Water Scheme.—In connexion with the proposal to supply water from Thirlmere, it may be mentioned that the projectors of the scheme assert that the Manchester Corporation are going for their water where there is an abundant supply, where there is scarcely any population, for there are only about 200 people in the watershed, where the land is mountainous and perfectly watertight, and where, except in the valleys, there is very little vegetation. The following are some of the particulars on which they rely:—Thirlmere is situated close to the district of Borrowdale, where there is the heaviest rainfall in England, and clouds from every direction except the south-east can pass through open valleys or gorges to the mountains which form its gathering-ground. For several years past the rainfall at Wythburn and Helvellyn (Birkside), both within the Thirlmere gathering-ground, has been registered, and the average is found to be about 104 in. Compared with the rainfall at Longdendale, that at Thirlmere is almost double, the average of the gauge at the former place from 1855 to 1876 being 49·77 in. The present drainage-ground of Thirlmere is 7,400 acres in extent, but this will be increased to nearly 11,000 by the impounding of the drainage-ground of St. John's Beck and Shoulthwaite. At present the area of the lake is 315 acres, but when raised 50 ft., as is contemplated, the top water area will be increased to nearly 800 acres. The height above the sea level will then be 583 ft. The sheet of water will thus be considerably more than doubled. The raising of the lake will be effected by blocking up the present outlet at the northern end, whence the water flows through St. John's Valley. This outlet is 24 ft. wide, and the embankment which will be necessary will be carried from the Great How to the bump of rock which stands in the centre of the northern end of the lake. Beyond this bump of rock the land forms a sufficient embankment for the present lake. It is, in fact, 12 ft. or 13 ft. above the level of the water, but when this is raised the depressed ridge beyond the bump of rock will have to be raised also, the rock dividing the two works. The top level of the outlet,—part of the embankment,—will be 116 yards in length. The other part will be 178 yards long, and over the top a road will give access to the western shore. In height the embankment will vary from 47 ft. to 61 ft. The corporation intend, in the first instance, to arrange for 10,000,000 gallons of water per day, syphon pipes, where necessary, being laid of that capacity. Where tunnelling has to be done, or aqueducts laid, the work will be done in such a manner that 50,000,000 gallons of water can eventually be passed through them per day. There will be no filtering of the water, which has been certified by several eminent analysts as equal, if not superior, to that of Loch Katrine, whence water is supplied to Glasgow. As to variation of the lake level, it will, it is said, be no greater than it is now,—namely, from 5 ft. to 6 ft. The longest drought in the lake district of which there is any record lasted about eighty days, and during such a drought the drawing off of 10,000,000 gallons per day, and paying compensation water, would only reduce the level of the lake 6 ft. in vertical depth. When 50,000,000 gallons per day are withdrawn the lake at the end of a drought of eighty days,—a very rare occurrence,—would be drawn down 25 ft. The cost of the first instalment of 10,000,000 gallons is estimated at 1,700,000*l.* It is estimated that every further 10,000,000 gallons will cost 400,000*l.* in laying down additional syphons. The Manchester Corporation have already made considerable purchases in the neighbourhood. The completion of the works, including the obtaining of the Act of Parliament, is estimated to occupy ten years.

PICTURES AT THE UNIVERSITY OF GLASGOW.

When recently in Scotland, after the Aberdeen Congress of the Social Science Association, Mr. E. M. Ward, R.A., unearthed a number of pictures at the University of Glasgow, to which they were bequeathed by Dr. Henderson, a very good scientific writer and connoisseur of art.

Here is a list of the principal works:—

1. Raffaelle's Madonna della Sedula (same size as original, and evidently either touched upon by Raffaelle or executed in his school,—very fine).
2. Oil miniature of Galileo (Florentine work, and evidently from nature).
3. Stothard, R.A. (allegorical group in his best style).
4. La Belle Ferronnière (good copy from original by L. da Vinci, in the Louvre).
5. Two views in Venice, by Guardi (in his best style).
6. Two views by Canaletti.
7. Albano (group of dancing boys,—very good).
8. Moonlight, by Vandernesi (very fine, but much damaged).
9. Both (fine landscape).
10. Annibal Caracci (head, life-size).
11. Metzu (good, but much damaged).
12. Mais (very fine).
13. Sir Charles Eastlake (view in Athens).
14. Carl du Jardin (landscape).
15. Barghem (ditto).

There are, in addition to these, some very creditable works, which need not be mentioned; and altogether the works form a collection which, should the University think fit to place it better, and with better light than it now enjoys, we feel sure will form the nucleus for an important gallery of pictures, to which there is little doubt the neighbouring gentry may be induced to contribute.

When first seen, they were in a filthy state and miserably placed; but Mr. Ward had them all down; washed them himself with soap and water, and obtained a promise from the principal, Dr. Milligan, that they should by no means be touched by any local "restorer."

They are, on the whole, in very fine condition considering the treatment and neglect they have hitherto undergone.

GLASGOW PUBLIC HALLS.

A description of the new Public Halls in Granville-street, Glasgow, appeared in these columns some time since; but in view of the fact that the building was inaugurated by a performance of the "Messiah" on the evening of the 13th ult., at which the Princess Louise and the Marquis of Lorne were present, it may not be out of place to revert to a few of its more leading features. The idea of erecting the new halls partly originated from the inconvenient position of the City Hall in Candleriggs, and the inadequate accommodation it afforded on the occasion of large gatherings. So far back as 1871 an influential company was formed, with the object of acquiring a large area of ground in the west end of the city, bounded by North-street, Kent-road, Granville-street, and Berkeley-street, and building thereon a commodious hall after the style of the Philharmonic Hall, Liverpool. The original sketch-design for the proposed building was prepared by the late Mr. John Cunningham, architect of the Liverpool Hall, Mr. Campbell Douglas, of Glasgow, being associated with him in the work. As the entire undertaking proposed was one of considerable magnitude, in 1872 it was decided to proceed with the erection of the western portion of the edifice alone, and the result is the hall just inaugurated, which is described as one of the most commodious in the kingdom. The length is 185 ft., the width 75 ft., and the height 58 ft., while, under ordinary circumstances, the hall will accommodate 4,000 persons. Even on the occasion of a concert, when the seats are necessarily placed more widely apart, and when space has to be reserved for the chorus and orchestra, no fewer than 2,300 persons can be comfortably seated, allowing room for 450 members of the chorus, and from seventy to eighty persons in the orchestra. As a reason for providing so much space for the performers, it should be explained that a frequent use to which the new hall will be applied will be for the holding of the Grand Orchestral Concerts which have now become an important institution in this city and neighbourhood. Although an ungracious task to refer to such a matter in connexion with an undertaking otherwise so successful, it must be stated that the unusual shape in which the orchestra is constructed is considered a defect in the arrangements, the large organ having been brought so prominently forward as to divide the orchestral space, and separate the members of the chorus. Some little alteration, however, in the front of the orchestra and adjacent balconies has been suggested, and it is possible that this may be carried out, and so far remedy the defect complained of. The organ itself, which is a magnificent instrument, of ornamental appearance, has been built by Messrs. T. C. Lewis & Co., of London, from the specification of Messrs. H. Smart and W. T. Best, and has sixty-four sounding stops and fourteen couplers. Messrs. Campbell Douglas & Sellars are architects of the new Hall. The following are the principal contractors:—Mr. James Watson, mason; Mr. George Gilroy, joiner; Mr. James Steel, plasterer; Messrs. Wallace & Connal, plumbers; Messrs. A. & D. Mackay, slaters; Messrs. Alexander & Howell and Messrs. M'Kenzie & Co., upholsterers; Messrs. Rait & Lindsay, engineers; Messrs. Combe & Son, heating engineers; and Mr. Andrew Wells, painter.

NEW CIRCUS FOR GLASGOW.

A commodious new building, intended for a circus, was inaugurated by Mr. James Newsome on the 12th ult., this being the second establishment of the kind in the city of Glasgow. The new erection, which is of brick, occupies a site in East Ingram-street, and its dimensions are 120 ft. in length, 110 ft. wide, and 57 ft. in height, accommodation being provided for 3,000 spectators. The various parts of the house are reached by separate entrances. The arrangements and decorations of the interior are of a tasteful description. The roof is supported by twelve main pillars, with an equal number of subsidiary ones in the rear. Each pillar is surmounted by a display of shields and flags, which has a very pretty effect. The chairs in the stalls on the west side of the house are of ebonised wood covered with crimson velvet, the boxes in the rear being hung with lace curtains, and embellished with mirrors. The second seats are on the side of the stalls, and these are covered with crimson cloth. On the east side of the ring are

the "pit" seats, while the gallery runs all round the house. The "ring" is 42 ft. in diameter, each of the two communicating doors being surmounted by a neat crimson canopy ornamented with a gilt horse. Light is supplied by a double row of jets extending the whole length of the building, and from a pendent crystal gaselier weighing half a ton, and having 210 lights arranged in six tiers. Dressing-room accommodation for the artistes has been provided on the north side of the building, while on the south side there is stabling for sixty horses; and with a view to provide good ventilation, while avoiding draughts, a line of ventilators has been placed along the roof for the egress of the heated air. Mr. McAndlis is the architect of the new building, Mr. Ponton the builder, and Messrs. Chas. Jenner & Co., of Edinburgh, are the upholsterers and decorators.

MESSRS. COCKERELL'S NEW BUILDINGS AT PURFLEET WHARF, BLACKFRIARS.

A PROMINENT block of new buildings is now in course of erection at Purfleet Wharf, near Blackfriars, for Messrs. Cockerell, coal merchants, a portion of which is intended as a coal depôt, and will contain extensive offices and a large range of stabling. The buildings and depôt will cover an area of about an acre in extent, having a frontage to Earl-street, near Thames-street, of 80 ft. in length, and extending to the north bank of the river, about 300 ft. in depth. The principal elevation of the building is nearly opposite the new premises of the *Times'* offices. In excavating for the foundations a depth of 25 ft. below the pavement line was reached. The footings of the foundation-walls are 6 ft. in thickness, and the lower portions of the walls themselves are 2 ft. thick. The elevation to Earl-street is 54 ft. in height, and is surmounted by three gables. The building contains three lofty stories above the ground-floor, which is carried up with grey granite piers, and a portion of this part of the structure will consist of shops. The three stories above the ground-floor are faced with red bricks, with Portland stone dressings and strings, the arched window-heads and reveals being in red moulded brick, and the sills in Portland piers. All the windows have iron sashes, all the upper floors being intended for warehouse purposes. At the east end of the elevation, there is a gateway 10 ft. in width, having an arched head in Portland stone, supported on Portland stone. A line of tramway will be laid along this passage, and will be carried the entire depth of the depôt to the margin of the river. Strong iron columns, resting on massive bases in concrete, are carried up from the basement to the top of the building, supporting the several floors. The whole of the east side of the ground-floor of the building, together with the basement, will be appropriated as offices for Messrs. Cockerell's business purposes, the floors of this part of the structure consisting of iron girders and concrete arches. On a spacious area of ground at the west side of the rear of the building, a separate block, containing the stables, will be erected.

The architect is Mr. Alfred Bovill, and the contractors are Messrs. Peto Brothers, Mr. Meade being foreman of the works.

NEW BUILDINGS IN FLEET-STREET.

AT the corner of Fleet-street and Salisbury-court a large block of old buildings standing on land belonging to the Vintners' Company has just been cleared away, and on the site a range of new buildings is in course of erection which, when completed, will form one of the most prominent features in Fleet-street. In designing the new structure the Queen Anne style of architecture, refined, has, to a considerable extent, been adopted as regards those portions of the Fleet-street and Salisbury-court elevations above the ground-floor. The Fleet-street frontage is 52 ft. in length, and the extreme height, to the apex of a central gable, 64 ft. The lower portion of the elevation, to a height of 26 ft., is carried up with polished Aberdeen granite piers, with capitals and lintels of the same material, the former being richly carved and ornamented, and surmounted by figure-heads in Dumfries stone. Immediately above is a cornice, also in Dumfries stone, projecting 14 in. beyond the main face of the elevation. This is again surmounted by a low ornamental iron balcony. This part of the structure will consist of the ground and mezzanine floor above, the former being 14 ft., and the latter 11 ft. in height, and is intended for spacious shops and show-rooms. The windows of the ground-floor, and the lower portion of the mezzanine floor above, will be of plate glass, whilst the glazing of the upper portion of the last-named floor will be in the small squares of glass of the Queen Anne period. The rest of the elevation is in red brick, with Dumfries stone windows and dressings. The floor above the mezzanine contains a range of five windows, including a prominent bay window in three divisions, in the centre. All the windows have pediment heads, sills, and reveals, in Dumfries stone, the glazing of the several windows being uniform with those of the mezzanine floor below,—the lower part of plate glass, and the upper part of the Queen Anne type. The third floor windows are square-headed, and all in red brick, the glazing of the whole being in small squares of glass. A frieze under the main cornice is carved with wreaths of flowers, fruit, and corn. In the centre of the main cornice, immediately above, is an arched pediment enclosing the arms of the Vintners' Company, and above the cornice is a balustrade in terra cotta, the whole being surmounted by a coping and central gable in Dumfries stone, with a curved roof containing circular dormers on each side of the central gable. At the angle of Fleet-street and Salisbury-court there is a similar elevation about 6 ft. in length, with a return uniform frontage along the west side of Salisbury-court, extending to a depth of 62 ft. southwards in the direction of Dorset-square. At the extreme end of the Salisbury-court frontage, there is a separate entrance to the upper portions of the premises. In addition to this block other buildings of similar design are about to be commenced, which will have a frontage to Salisbury-court, in continuation southwards, of 65 ft. in length, the entire Salisbury-court frontage of the two blocks being upwards of 130 ft. in length, and occupying almost the whole of the west side of that thoroughfare as far as Dorset-square.

Mr. A. Peebles, of Cannon-street, is the architect for the whole of the buildings, and the contractors are Messrs. Langmead & Way. Mr. J. H. Grant is clerk of the works. The cost of the buildings now in progress will be between 14,000*l.* and 15,000*l.*, and the estimated outlay for the whole when completed is upwards of 30,000*l.*

NEW PUBLIC OFFICES AND FREE LIBRARY AT HANDSWORTH.

AT Handsworth, in Staffordshire, new public offices are about to be erected in connexion with a free library, and the memorial stone of the buildings has been laid by the chairman of the Local Board. The style of architecture adopted is Gothic, of the Tudor type. The buildings will contain a board-room and offices for conducting the business of the local board, and will also include an engine-house and stables for the fire-brigade staff, together with cart and implement sheds. The offices and the apartment for the free library will be in the front part of the building, which will be surmounted by a lofty tower, under which will be the main entrance to the offices. A stone staircase immediately facing the entrance will lead to the first floor, which will contain the board-room, a large apartment 40 ft. by 24 ft. On the same floor there will likewise be several committee-rooms, together with the clerks' and the sub-clerks' offices, waiting-rooms, and other conveniences. A floor above will contain the keepers' apartments. The entrance to the free library portion of the building will be altogether distinct and separate from that leading to the offices, and on the ground-floor will be a lending library and a reference library, whilst above there will be a reading-room, 44 ft. by 36 ft., having an open timber ceiling. The materials of the structure will be red pressed brick, with Hollington stone dressings, the building being covered in with Staffordshire tiles of an improved make. In the tower provision will be made for an illuminated clock. The cost of the building will be 12,000*l.*

The Worcester Theatre Burnt Down.—The Theatre Royal, Worcester, was burnt down on the morning of the 24th ult. It was rebuilt in 1874, under the direction of Mr. C. J. Phipps, F.S.A., on the model of the Gaiety Theatre.

DOINGS AT SHEFFIELD.

Street Improvements.—On the 19th ult. the Corporation of Sheffield decided upon an extensive scheme of street improvement. They are promoting eight schemes, in addition to thirteen for which power has already been obtained. The schemes will involve the outlay of an immense sum of money, and in the case of one of them a loss of nearly 100,000*l.* This one scheme has been rendered necessary by the running of tram-cars in narrow and crowded streets.

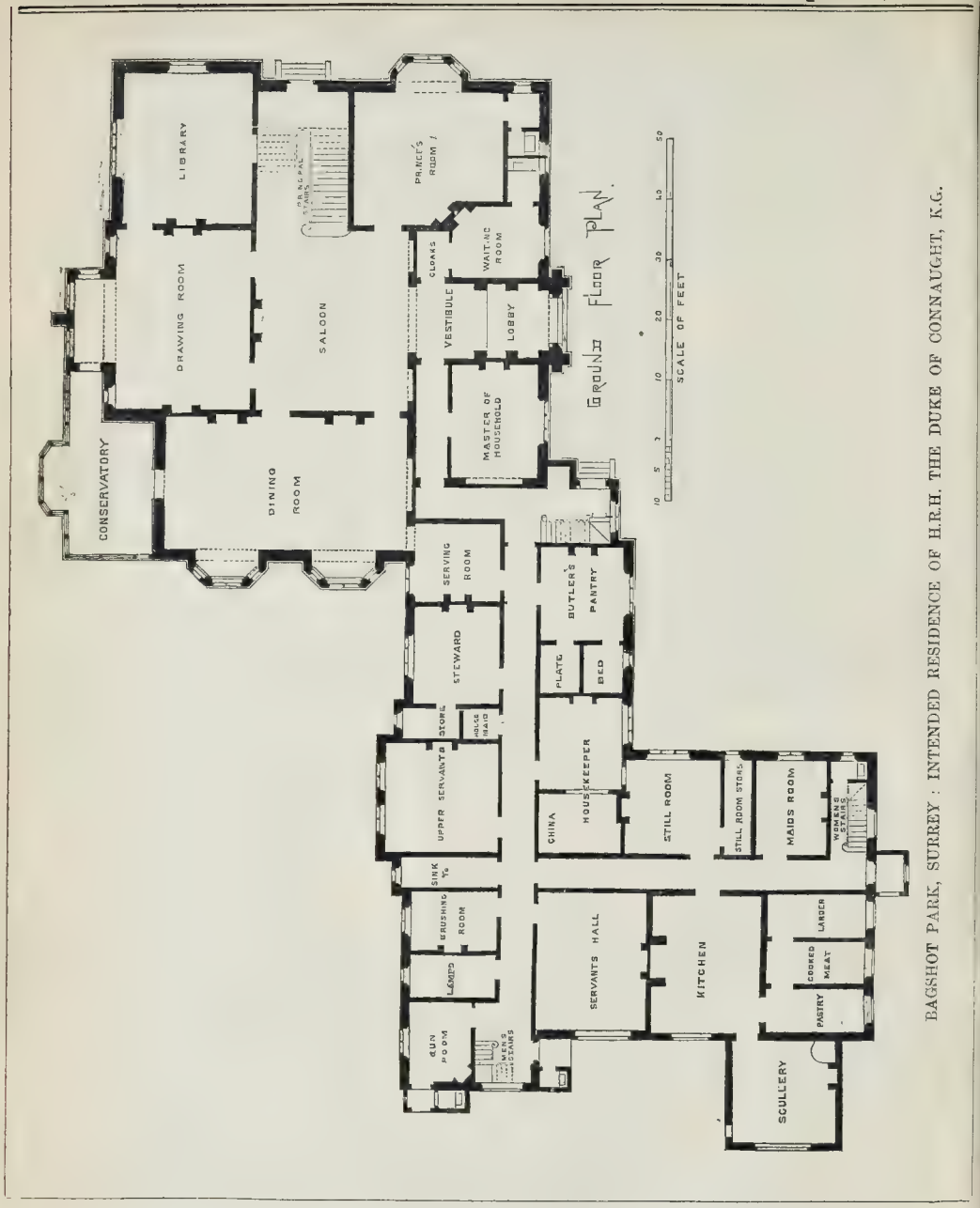
New Workhouse at Pitsmoor.—An adjourned meeting of the Sheffield Board of Guardians was held on the 15th ult., for the purpose of opening the tenders for the erection of the new workhouse at Pitsmoor. Tenders were received a few weeks ago, and that of Messrs. J. Tomlinson & Son, of Leeds, for the whole of the work, was accepted. This tender amounted to 124,136*l.* Subsequently a letter was received from Mr. Tomlinson intimating that a mistake had been made in making up his tender, and asking that it might be amended by adding about 10,000*l.* to the amount given above. This the guardians declined to do, and decided upon advertising for new tenders. The lowest of the second list of tenders for the whole of the work was that of Mr. J. Garlick, Birmingham, which amounted to 134,800*l.* The amended tender of Messrs. Tomlinson & Son was just 100*l.* more, being 134,900*l.* The total of the lowest contracts for the various kinds of works necessary in the erection of the building was 134,187*l.*, about 600*l.* less than the tender for the whole of the work sent in by Mr. Garlick. Under these circumstance it was resolved that Mr. Garlick's tender be accepted. Mr. Hall is the architect.

New Baths.—New Turkish and swimming baths on an extensive scale have just been erected by a local limited liability company, who some time since purchased the old swimming-baths and saloon in Victoria-street, and the triangular piece of ground at the back. The bath and saloon remain, very much improved though (according to the *Sheffield Independent*); whilst on the vacant ground and on the site of the volunteer depôt, the company have erected new Turkish baths, and are now making a large swimming-bath. The Turkish baths are now finished. The new buildings extend the whole length of Convent-walk, the Turkish baths being at the Victoria-street end, whilst the swimming-bath is at that nearest Cavendish-street. The exterior has no special architectural features. It is believed that the total cost, including the land and the old building, will be about 20,000*l.* The architect for the whole of the alterations and the new buildings is Mr. E. M. Gibbs. Those by whom the work has been done are:—Mr. B. Powell, mason; Mr. Sharp, joiner; Mr. Bissett, plumber; Mr. Hadfield, marble mason; Messrs. Davy Brothers (Limited) were the makers of the boilers; the upholstering has been done by Messrs. Jones & Sons; the chairs and tables by Messrs. Johnson & Sons, Fargate; and Messrs. Hydes & Wigfull (Limited) are the makers of the washing apparatus.

LIVERPOOL AND ITS WATER SUPPLY.

THE NEW SCHEME.

THE chairman of the water committee of the Liverpool Corporation has just made an interesting statement respecting the water-supply to that town, and the new project now under consideration for obtaining a further supply from Wales. Adverting to the income derived by the Corporation for the supply of water to the town, he made the remarkable statement that they were delivering at the present moment one-tenth less water, notwithstanding the increase of the population, than they were in 1871, and yet that their income was 30,000*l.* more than it was in 1871. This was owing to water which was previously wasted, but now saved, and the tenth of water now saved was adequate to the increasing demands of Liverpool for four years longer, which would bring in a further income of 20,000*l.* a year; in other words, the water previously wasted produced a saving in the revenue of 50,000*l.* a year. He next stated that in 1881 the calculation was that a further supply from new sources would be absolutely required, and whether the fresh supply was obtained from local or other sources, it was a matter of urgent necessity that they should look forward to a supply adequate to the future wants of the town. Referring to the new scheme for obtaining a supply from Wales, he said that the cost in



BAGSHOT PARK, SURREY: INTENDED RESIDENCE OF H.R.H. THE DUKE OF CONNAUGHT, K.G.

round numbers would be about a million, or a million and a quarter, and that the 50,000*l.* a year saved to the revenue by what was previously wasted would pay interest on the new scheme, and they should not ask the ratepayers for one farthing, as the water wasted and now saved was sufficient to pay the interest from the day the works were commenced, and virtually the effect of their operations would be that Liverpool would be presented with a scheme costing a million free of all charges.

Irish Ecclesiastical Monuments.—A notification has been issued by the Irish Church Commissioners, stating that arrangements are about to be made to protect and preserve ancient ecclesiastical monuments and relics in Ireland.

BAGSHOT PARK, SURREY.

A new mansion is in course of erection here for H.R.H. the Duke of Connaught, K.G.

The old house, once the residence of the Duke of Gloucester, stood in a low situation, and having become much dilapidated, has recently been pulled down.

The site selected for the new structure, of which we give a view and plan, is considerably more elevated, and commands an extensive and beautiful view. The house now building is in the Tudor style, which has been preferred to Lombardo-Gothic; the materials are red brick and Portland stone. The plan is formed so as to admit of future additions when required.

Mr. Ferrey, F.S.A., is the architect, and the contractor is Mr. Thomas Boyce, of Eagle Works, London.

ROYAL ALBERT HALL.

The Royal Albert Hall Choral Society commenced their seventh season on Thursday evening, November 22nd, with a performance of Verdi's "Requiem." It was a happy thought of the directors of these concerts to place this *quasi* novelty first on the list, not only because the "Requiem" was first heard in this country at the Royal Albert Hall, under the auspices of the Royal Albert Hall Choral Society, but also, and chiefly, because it requires for its adequate interpretation unusual qualifications on the part of soloists, orchestra, and chorus. As giving a taste, therefore, of the quality of this society, the selection of Verdi's "Requiem" as the opening work of the present season was, we repeat, a happy thought.

If, on the present occasion, the inspiring



BAGSHOT PARK, SURREY: INTENDED RESIDENCE OF H.R.H. THE DUKE OF CONNAUGHT, K.G.—Mr. Benjamin Ferrey, F.S.A., Architect.

resence of the composer of the work, and the henomenal perfection of the original solo uartette were wanting, they were to a great xtent atoned for by the improved *ensemble* of he orchestra and chorus. To compare Mdme. emmens-Sherrington, Mdlle. Redeker, Mr. Lloyd, nd Mr. Thurley Beale with the quartette brought ver by Signor Verdi would be manifestly unfair, ere it even in good taste. These, with the xception of Mdlle. Redeker, are all native rtistes; the others were the pick of all Europe. n justice, however, to the efforts of our English ingers, it is hardly right to qualify the praise hich is justly their due. Of Mdme. Lemmens-herrington and Mr. Lloyd it may fairly be said hat their high reputation cannot fail to be enanced by their excellent singing in this arduous ork, nor must we omit a word of commendaation to Mdlle. Redeker and Mr. Thurley eale; but the palm of excellence must be warded to the admirable singing of the chorus. rom the lowest whisper to the most supreme ffort of force, every gradation of tone was xhibited in perfect proportion, nor were there anting indications of those higher intellectual ualities which, however common in, in a greater r less degree, individual singers, are rarely ound in large choirs.

To the orchestra likewise great praise is due or the musician-like style in which, under the fficient leadership of Mr. Pollitzer, it overcame he difficulties which characterise the accomaniments to this work.

The organ, in the experienced hands of Dr. tainer, contributed its full share to the general uccess. Mr. Barnby conducted with his usual are and intelligence, and more than his usual eal.

The Society announce the performance of rofessor Macfarren's new oratorio, "Joseph," or the first time in London, on Tuesday evening, ecember 11th.

THE CAMBERWELL WORKHOUSE COMPETITION.

Sir,—We are all of us proud of our glorious nstitutions; but it is difficult to believe that mongst these can be included the Camberwell oard of Guardians. I write *apropos* of the ist of tenders for the above which appeared ecently in your pages.

On a former occasion you were good enough o insert a letter from me on this subject (see *Builder*, March 3rd); and, as I am more than ustified by the result, I venture again, in the nterest of the profession at large, and of all oncerned, to draw your attention to this, one of he most flagrant instances of injustice in competitions that I have ever met with, in the hope hat your powerful aid may be enlisted in the natter. I may premise that I am only a looker-n.

In the autumn of last year the Board instituted a limited competition for the proposed uilding. The terms laid down as to the extent nd character of the accommodation to be proided were very clear; and the estimate was to include all necessary fittings, &c.; everything, n fact, required. Two premiums were offered, ne of 50*l.*, the other of 25*l.*; both sets of rawings to become the property of the Board. As appeared from the *South London Observer* of anuary 20th, 1877, and from other local sources f information, two of the designs were premiated; one of which, by Mr. R. P. Whellock, eems to have been generally considered very nuch the better of the two; but the other, bearng the plausible motto "Veritas," though abounding, as was pointed out by members of he Board, in all sorts of defects, and not, it would seem, coming up to the standard of the Local Government Board, or even to the instructions issued to the competitors, was ultimately hosen, on the ground of economy, the estimated ost of it being only 26,000*l.*, as compared with 49,000*l.* for the other design.

I consider that the Board were without excuse n making the selection before attempting to test he accuracy of the figures, however roughly. f the amazing difference did not challenge some light examination, and if there were no other eason for hesitation, my letter, above referred o, which, from a professional point of view, oundly asserted the impossibility of executing he work for less than double the sum quoted, hould alone have been sufficient to make them ause.

What is the result? The list of tenders which ou have just published, shows that the mean between the highest and the accepted one is 56,787*l.*! and that the accepted one itself is 53,674*l.*! or more than double the misleading estimate of "Veritas."

Now, sir, considering the point on which the award was made, I do think it will be really too monstrous if the Board still adhere to the course they appear to have chosen. It will be shameful and un-English on their part; and not very nice on the part of "Veritas," who, one would think, if he had a delicate sense of honour, would feel he must retire or be guilty of something very much like robbing another. I would ask the individual members of the Board what they would think of such treatment applied to themselves.

To many a man a few such blows as the loss of so important a work, fairly earned, to which so much time, thought, and expense had been devoted, and for which the 25*l.* premium is no recompense (especially as it involves the loss of the drawings), would be altogether crushing.

Should the Board not endeavour to retrieve their character, it is to be hoped that the ratepayers will make their voice heard on the subject.

SURVEYOR.

Sir,—As a competitor for the above, I deem it my duty at this juncture to recapitulate certain facts in connexion with this competition which I consider should be more generally known, more especially as I feel myself to have suffered a grave injustice in the matter.

It will be remembered that there were several,—that is to say, six,—architects who competed, including myself, and that the awards were made in January last, the first premium being given to the authors of "Veritas," Messrs. W. Berriman & Son, who estimated the work at 26,000*l.*, and the second premium to myself, the author of "The Poor you have always with you," my estimate being for 49,000*l.*

On hearing of the great discrepancy in the estimates, I memorialised the Board of Guardians and in respectful terms urged that it was impossible to carry out their requirements for the amount stated by "Veritas," and suggested, as a fair test, that the two designs should be submitted to the oversight of a respectable and disinterested surveyor, when it would be seen at once whose was the reliable sum. My memorial was unavailing, my opponent's low estimate of 26,000*l.* was approved, and it obtained the first place.

These facts were made public at the time in all the local and professional papers, in all which, more or less, the discussions of the Board were given *in extenso*, and which any one may peruse for himself; and I think that but few minds, uninfluenced by prejudice or caprice, would come to but one conclusion as to whose was the best and most suitable design.

Now, sir, what is the sequel? The design of my opponent, "Veritas," has been subjected to the crucial test of *quantities*. Nineteen respectable contractors have tendered for the work upon the basis of these quantities, and the result is made known to the public in your paper as follows, viz., the highest tender being 59,900*l.*, the lowest, 53,000*l.* Now how do these figures compare with the approximate estimates of the authors of the two premiated designs? Thus mine: 49,000*l.*, or well within 10 per cent. of the accepted tender, and "Veritas," 26,000*l.*, or less than one-half of the lowest tender. In the face of these facts I ask whether or not I have what Englishmen love, or used to love, "fair play"? It is manifest that mine is a very near approximation to the actual tenders, and was based, as I can readily show, upon sound principles and precedents, and yet I have had to give place to an opponent whose estimate, as borne out by facts, proves to be illusory.

Up to this time I have refrained from making my case public; but when I know, as I do, that the designs of my colleagues and self were never publicly exhibited, as is usual in such cases, and when the "Veritas" design is selected in the face of discrepancies which, at that time, in the interests of justice, demanded inquiry and test; moreover, when I observe that a tender for 53,674*l.* has actually been accepted and the work likely to go on, I consider it is right that these facts should appear for the benefit of all concerned.

It is simply ruinous to any architect to compete in such contests. His efforts or skill (in this instance a labour of many weeks) are abortive; he cannot win,—and, without hope of redress, he must retire with the mournful satisfaction that he has contended lawfully, and lost the race for speaking "the truth."

I maintain, therefore, that under the circumstances I have won this competition.

I must not close this letter without a word of discrimination, viz., in offering to some of the gentlemen who compose the Board expressions of my gratitude for the support they gave me,—a person previously unknown to them,—and in which course they consistently continued to the end, supporting their convictions under much opposition. I take it that such conduct proves them worthy of the important posts they fill and of the confidence of their constituents, of whom I am one of ten years' standing.

ROBT. P. WHELLOCK,
Associate of the Institute of Architects.

Sir,—My reason for writing to you on the subject of the recent competition for a new workhouse in Camberwell is, on the one hand, that justice in architectural competitions is a matter which so vitally interests our profession at large that the circumstances connected with this particular competition ought to be generally known; and on the other, that unless there be some explanation which it is impossible to derive from anything at present accessible to the public, simple justice to a very meritorious competitor demands that the decision of the Board of Guardians, who adjudicated on the designs, should be reversed in favour of that to which they assigned the second place.

The discussions in the Board were published at some length in the *South London Observer* and other local papers in January, 1877, and it appeared that finally the selection lay between two designs, namely, that which was accepted and that of Mr. R. P. Whellock, to which a premium was adjudged as second.

With scarcely a dissentient voice, however, it was admitted that Mr. Whellock's design was best, both in appearance and in the excellence and fulness of the arrangements, but the estimate—carefully and conscientiously prepared—of 49,000*l.* stood in its way, and his opponent's, which was offered with an estimate of 26,000*l.*, was, after a very sharp contest, preferred on that score, as was argued, and on that score only. The tenders for this design have just been published, the lowest being 53,000*l.*, the accepted tender, 53,674*l.*!

Either, therefore, the estimate submitted in the competition was not half what it ought to have been, thereby violating the conditions requiring it to be *approximate*, or else the design itself was so imperfect that works valuing 100 per cent. of what was at first proposed had to be interpolated before it could meet the requirements of the Central Board.

In either of these cases,—whilst I may ask in passing how such an irregular and uneconomic procedure may strike the Camberwell ratepayers,—I think your readers will agree that justice to the profession demands that the design which fairly won the competition should be recognised as such, and adopted.

F. C. PENROSE.

THE NEW RÉGIME AT THE INSTITUTE.

Sir,—I went to Conduit-street last week to hear what Mr. White had to say about flats. He gave us a very good paper, but we were not allowed to discuss it for a fortnight. By that time those who are interested in the subject will probably have ceased to care about it, so that those who are not will be allowed to force on the next business, which is the reading of another paper to be discussed at another interval of a fortnight. This will, no doubt, facilitate tranquility; but there is something else I have to mention, with your leave.

The two front rows of seats are appropriated as reserved seats for the council. Now, as the benches in question provide accommodation for about forty persons, while the probable attendance of members of the council cannot very well be put at more than five or six, the consequence is that a sort of vacancy becomes a little too apparent. I for one have no objection to see the members of the council made as conspicuous as they please; and, indeed, if it is intended that they should occasionally recline at full length upon the front benches, I am prepared to console myself with the reflection that they are entitled to both honour and ease. But there are disadvantages in the arrangement nevertheless. Sir Gilbert Scott and Mr. Wyatt, I observe, have to take obscure places amongst the crowd in the rear, whilst Mr. —— sits sublime in the centre of a space of 10 ft. square. The lecturer of the

evening, with a particular friend or two, used to form a little cluster near the desk; now they must go where they can. Mr. Beresford Hope—forbid it, Heaven!—will have to take a back seat, possibly beside Dr. Schliemann or Mr. Gladstone, because sauce for one must be sauce for another, or there is an end of all discipline. Moreover, there are certain men whom long usage has habituated to a seat on one of the forbidden benches, and a sense of custom may make the change go hard with them. Another thing is, that the awkwardness of the situation seems to be felt by the members of council themselves; for the best of them seem to huddle away at one corner, as much out of sight as possible. Then I saw that two or three people, who ought to have known better, had disregarded the placards of reservation,—an offence against one's instinct of propriety which provokes the inquiry who those people are, and why they are not taken by the ear by the proper officer, and conducted to the back of the room.

To cut the matter short, is it not the custom amongst Englishmen to meet together as peers? Might it not be left to the good taste of a scientific society so to place themselves in their meeting-room as to give honour where honour is due without placards of reservation for front benches? One word more. Have we not got on very well for forty years without such invidious distinctions? AN OLD MEMBER.

SEWERAGE WORKS.

West Kent.—The West Kent Main Drainage works, which comprise a line of sewers extending from the parish of Beckenham to the river Thames at Long Reach, near Dartford, and embracing the parishes comprised in the Bromley Union, as well as a portion of the district of Lewisham, are progressing very favourably. It is also contemplated (says the *South-Eastern Gazette*) to carry the sewage from the district of Croydon, and a scheme is now under the consideration of the Local Government Board for forming a combined sewerage district by the Sevenoaks Rural and Urban Sanitary Authorities, the sewer to be commenced at Westerham, and carried through the Valley of the Darenth into the West Kent sewer at Dartford, and it is expected that both the Dartford Rural and Urban Sanitary Authorities will ultimately avail themselves of the sewers laid down through their respective districts, although for the present they take no active part in the works commenced and proposed. The works have lately been visited by representatives of the constituent authorities, accompanied by the engineers, Sir Joseph Bazalgette and Mr. A. Williams, and by Messrs. Neave & Sons, the contractors. In addition to the principal sewer from Beckenham, there is a branch sewer, which commences at Orpington, in the Cray Valley, and passes through St. Mary Cray, St. Paul's Cray, Foot's Cray, and North Cray, forming a junction with the main sewer at Bexley. The works were practically commenced about nine months since. The sewer already executed in tunnel is about 5,600 ft. in length, while about 10,000 ft. have been constructed in open cutting, all in the upper portion of the scheme. The Cray Valley branch has also been commenced, and a length of about 1,800 ft. has been constructed between Bourne Bridge and Bexley. The outfall works consist of an open reservoir 500 ft. long and 129 ft. wide, and 10 ft. deep, with discharge pipes into the river. The reservoir will be divided into three compartments longitudinally by means of two walls, while transversely it will be divided by three sets of screens for straining the sewage, and otherwise treating it before its discharge into the river. The bottom of this reservoir is being made of lias lime concrete 3 ft. thick, of which material the inner dividing walls will also be built up. The outside walls will be of Portland cement concrete, with puddle on the outside. All the walls will be 10 ft. 6 in. high above the floor of the reservoir. There will be three openings from the main sewer into the reservoir,—one for each compartment, and either or all of them may be used as may be necessary. The sewage, after treatment, will pass from the reservoir through a double line of pipes about 400 ft. long, 4 ft. in diameter, and extending 250 ft. into the river. Each of the three compartments of the reservoir will have an outlet pipe opening into the main line of discharging pipes; each outlet, as also each inlet, will have its own penstock for regulating the admission and outflow of the sewage. At the outlet works a length of about 2,500 ft. of sewer has been constructed. The works will, it is expected, be completed in about two years from the present time.

Droitwich.—The Droitwich Rural Sanitary Authority has adopted the plans prepared by Mr. Edward Pritchard, C.E., for the drainage of a portion of the parish of Claines, more particularly Barbourne and Rainbow Hill, and has sent them to the Local Government Board for approval. Mr. Pritchard proposes, in laying out his system of sewers, to adopt the principle laid down for the guidance of local authorities by the Local Government Board, in the suggestions made by Mr. Robert Rawlinson, C.B., viz., the right or straight line system, with manholes and ventilating shafts at each and every change of gradient or lateral deviation. He proposes to dispose of the sewage by irrigation and downward intermittent filtration, the estimated cost (exclusive of purchase of twelve acres of land) being 10,500*l.*

Walsall.—On the 14th ult., the Walsall Town Council met to consider (1) the best means of disposing of the sewage of the borough, (2) the Rivers Prevention Pollution Act, 1876, and the various clauses thereof applicable to the borough, and also the propriety of authorising the acquisition of land, and any other measures necessary for the disposal, purification, and utilisation of the sewage of the borough. Reports were presented by Mr. Lewis Angell and Mr. T. Hawksley. The report of the first-named gentleman advised the general adoption of the water-closet system, and stated that no town could expect a positive profit from sewage farming, but must regard the question from the sanitary point of view,—viz., the most economical purification of the sewage, and advocated the application of the sewage of the town to land. His estimate for works at Crankhall Farm, in the event of that site being chosen, was 12,800*l.*, exclusive of land and laying out same; and for pumping, including repairs, about 1,400*l.* annually. His estimate of cost of works at Barr Beacon (exclusive of cost of land, or laying out same, or compensation) was 25,000*l.*; and of pumping and repairs, 1,920*l.* annually. Mr. Hawksley, in his report, discusses first the feasibility of the projects for utilising the sewage on an irrigation farm; and, second, the feasibility of establishing a precipitating work. Under all the circumstances, but principally because of the non-adaptability of the soil for the required purpose, he felt compelled to recommend the Council to discard the idea of establishing a sewage farm in the Tame Valley. An area of 600 acres would be required, involving, with the cost of altering and improving the channel of the river, an outlay of 250,000*l.* The total expense or No. 2, or Crankhall Farm scheme, would not be less than 170,000*l.*, if the Corporation could secure the whole farm, which, in the face of the opposition by the West Bromwich authorities, was not likely. The soil of Barr Beacon, or No. 3 site, was the best for the facile purification of sewage he had ever met with, and 250 acres would be sufficient for the purpose, but the great cost (viz., 200,000*l.*) of this otherwise inviting project almost necessarily precluded its adoption. With respect to the second branch of the subject,—the feasibility of establishing precipitating works,—he stated that the question presented but the one difficulty, which was not insuperable, of utilising or otherwise getting rid of the deposited matter, which, notwithstanding some ignorant assertions to the contrary, did possess a real and available manurial value. For the treatment of the sewage by the precipitating process,—which he claimed to be simple, effectual, and economical,—he recommended the purchase of from twenty to thirty acres of land in the Tame Valley, near to the remotest extremity of the Walsall district, and he estimated the cost at 40,000*l.* for works and land, and the working expenses at 1,500*l.* per annum, which amount, capitalised at twenty-five years' purchase, would represent a comparative outlay of 37,500*l.* Hence the total cost might be taken to be 77,500*l.*, or about 3,000*l.* per annum, or 1*s.* per head of the population. The Sewage Committee presented a report recommending the Council to accept and act upon Mr. Hawksley's view, and it was resolved to authorise the acquisition of forty-seven acres of land at Bescot.

Weymouth.—Mr. Hawksley has reported to the Weymouth Town Council as to the Park Drainage. He recommends deep subsoil draining, pumping by two eight or ten-horse power engines, and the construction of an underground tank to hold 20,000 cubic feet of water. The engines, Mr. Hawksley states, would be dis... proportionately heavy, but nothing less would be effectual. The report was referred to a com... mittee.

FLITCROFT'S MONUMENT.

SIR,—My attention having been directed to the paragraph in your paper relating to the co... dition of the above in Teddington Churchyard, I have now made an inspection of it, and find there is a "Ledger" stone in good condition, and in a safe corner on the north side of the West Tower, out of the way of all traffic and wear, and the inscription on which is perfectly clear, and which I have copied for the information of those of your readers who may be ignorant as to the qualifications and position of the deceased.

On the west wall of the church, over this, is a white marble tablet some 2 ft. 6 in. square, superposed by the semblance of an urn, also in white marble, the section of which is the half of a very flat ellipse. It is about 1 ft. high, with a projection of 1½ in.; this has been made in four or five pieces, each one dowelled into the backing of black or grey marble. The wet has loosened the urn, and the neck (a piece of marble some 1½ in. square) has gone.

There is an inscription in Latin on the tablet partially illegible from weather-stains only. A few shillings would "restore" this.

Shall be glad, of course to assist "Old Boy."

THE ARCHITECT TO THE RENOVATION.

COPY OF INSCRIPTION.

"Here lieth the Body of Henry Flitcroft, of Whitehall in the County of Middlesex, Esqre., who had the honour of having ye three first Princes of the House of Brunswick with him in the Board of Works, of which he was successively appointed Clerk, Master-mason, and Controller, the last of which offices he continued till his death, which happened on 23 Feby., 1769.

Also the remains of Henry Flitcroft, the only child of the above-named Henry Flitcroft, late of Richmond, Esqre., who died without issue April 3rd, 1826, in the 84th year of his age; and of Jane, his wife, who died May 12th, 1779, aged 25 years."

"DESIGN IN THE OBELISK?"

SIR,—Since the question respecting the purpose of the inequality in the measurements of the sides of the obelisk has been opened, I have experimented with four-sided truncated shafts, bringing these against dark buildings below, and against the bright sky above, without discovering any distortion in their outlines which would need correction, much less such an amount of correction as that of 8 in. in the Lateran and of 5½ in. the Cleopatra obelisk. In fact, the magnitude of the difference is to my mind conclusive evidence against the diffraction hypothesis.

Again, if the inequality in the widths of the facets were intended to counteract the effect of diffraction, the inequality should be greater at the upper part of the obelisk, where it would be in extreme contrast with the sky, than in the lower. The minimum correction would, therefore, be required at the base; whereas, by the favour of Mr. Erasmus Wilson, I am enabled to show that the minimum difference is at the apex, not only absolutely, but proportionally. The measurements of the sides, at the truncation, are respectively 4 ft. 10 in. and 5 ft. 1 in. The total absolute difference, of the inequality of the sides at the base, as compared with that at the truncation, is, therefore, as 5½ in. : 3 in., and the proportional difference is roughly as $\frac{1}{17} : \frac{1}{20}$. This is also, I think, conclusive against the diffraction hypothesis.

Of course, I am fully aware that the lines of an obelisk standing between the observer and a brilliant point of light would be distorted by diffraction, and that an obelisk might appear to be severed into two parts if that brilliant source of light were the sun. But that is a phenomenon which no change of dimensions would avert. This concentration of the luminous source is necessary to produce any marked effect by diffraction; for when luminous surfaces illumine objects, the waves issuing from different points, either of clouds or of the empyrean, obscure and neutralise each other. But, admitting for a moment the diffraction hypothesis, I utterly fail to perceive how the appearance of squareness in the obelisk could be preserved by an increased breadth being given to the sides in immediate contrast with the light; for, in viewing the obelisk so contrasted, the other two sides would not be in view, and in an angular perspective view, the eye has little power of correctly estimating the absolute dimensions of foreshortened surfaces.

Dr. Birch notices a persistent irregularity

measurements of Egyptian structures. Did Egyptians adopt this irregularity on prin-le? The following facts indicate a very im-fect knowledge both of art and of science, tend to shake our faith in there being any tle reason for the inequality which is the ject of discussion. There is a winged genius considerable size depicted on the interior sur-e of the sarcophagus of the father of the raohs, which has been endowed by the ptian artist with either two right or two left s, instead of a right and a left foot. The artist y possibly have had some subtle reason for so lowing this figure, but we will not stop to over it. I fancy, too, that I have seen yptian diagrams—I will not call them paint-s,—in which the life-guards of Thebes are resented with both their legs on the same e of their war-horses. Did the Egyptian art tics insist that nothing should be left to the agination? And we may form some idea of obviousness of the Egyptians to the science perspective from the fact that a front view the eye is constantly present in profile views the face.

With respect to the effacement of prior records a possible explanation of inequality in the es of obelisks, a correspondent of the *Times* tes that Pharaoh Thothmes III. was infamed his endeavours to erase, wherever he could, name of his distinguished sister, Queen tasen or Hataseps, who so long ruled Egypt Queen Regnant in her own right, and whose utiful obelisk, which still stands amid the ns of Thebes, bears the significant and sug-tive title of "Pharaoh's Daughter." But I d that Mr. Erasmus Wilson leans to the nion that the inequality of the sides is due to e necessities of quarrying or of cleavage.

W. C. T.

As to the idea of Mr. Phené Spiers that the belisk is thicker one way than another because e way it is against the sky and the other seen ainst a building, I should be glad to know what kind of sight it was so arranged,—for long-sighted man or for one like myself short-hted? I often, in looking at a very slender ire, see the finial or cross at top and then no onework at all for a little distance, and I can hoy that if the stonework below the necking d been made thicker to suit me, it would have peared clumsy to the eye of the architect who signed it. I always like to indulge in a stumpy ire; probably it is my sight which makes me efer it, and this, perhaps, leads to another uestion. Are all architects who design stumpy ires short-sighted, and those who put up nder ones long-sighted? I am afraid Mr. hené Spiers's idea, although clever, will not be lieved in by many. I prefer Mr. Cave Thomas's otion that the obelisk is greater one way than e other owing to the accidental inequalities of arrying. G. T.

Bloomsbury.

BANE AND ANTIDOTE.

MR. ARTHUR ANGELL, the Hampshire county halyst, recently read a paper at the Hartley stitution, Southampton, before the members the local Literary and Philosophical Society, a certain brown colouration, which, if not eculiar to Southampton Water and the rivers owing into it, is still rare. He said that this ear the peculiar colour, sometimes resembling uddy coffee, and at others something between ust and red iron rust, appeared in the early part the month of June and continued until late in ctober, when the nights became frosty. This rownness colours the whole of the water down Netley Hospital, its effects being more marked some places than at others, it being found at igh water most concentrated at or near the nores, the deep water being comparatively free, nt sometimes hanging about in clouds at parti-ular spots, between which comparatively clear ater may be seen. At dead low water a bottle-al may be taken out clear and bright, arising om the freshets on the surface, whilst every roke of the oar will bring up in eddies clouds f brown colour. At the verge of the green ocean ater, this colour is mapped out with a striking harpness. It never appears to reach Calshot, before the ebb tide reaches the Spit it is opped by the flood tide, which appears to carry back to Hythe or thereabouts. A sample of he coloured water being dipped and held to the ght appears of a pale reddish-brown tint, which he naked eye will show is due to the presence f countless myriads of fine brown points, as if some minutely divided brown dust or iron rust was suspended in the fluid. The whole of this colour, on the bottle being allowed to stand, will fall to the bottom, leaving the upper stratum of water quite clear, but if the bottle be turned bottom uppermost the stuff will fall in a flocculent mass, and is not again evenly distributed unless briskly shaken; whilst if a small quantity of the subsided matter be taken up in a dipping tube, it will be found difficult to let a part flow from the tube without letting the whole out together: this is because these little brown things surround themselves with a gelatinous medium. Exposed in a glass of sea water to the direct rays of the sun they show symptoms of increased vivacity with a bold eager front towards the light, and bubbles of gas are evolved which are believed to be none other than oxygen. A drop of this water shown under a 1-in. objective contains hundreds of specimens of semi-transparent brown-coloured bodies, filled apparently with highly refractive granular matter, these creatures being of a peculiar shape and very active in their movements, each furnished with a belt of cilia round its waist, and a long, transparent and exceedingly flexible tail. After death they give off an odour similar to that of seaweed, and change their colour to green,—thought to be indicative of the presence of chlorophyl. All these facts led Mr. Angell to the conclusion that these creatures are of vegetable origin, and in his further investigations,—which he described,—he found they figured in the Microscopical Dictionary as one of a species of *Peridinium fuscum*—an animal organism; but taking his own observations, apart from anything gained from books upon the subject, he was strongly of opinion that they were microscopic plants, performing the functions of living vegetables existing upon the products of the decomposition of dead organic matter and hastening its perfect oxidisation and final destruction. Man vitiates the river by pouring into it filth enough to render the water, especially in hot weather, a stinking abomination, but Nature sends this vast army to fight the enemy, and the water is kept sweet. When sewage no longer flows into the river the *Peridinium fuscum*, no longer needed, will speedily disappear, leaving the water a pure and translucent green.

ARCHÆOLOGICAL SOCIETIES.

Chester.—At the inaugural meeting for the winter session of the Chester Archæological Society, Mr. Worsley, F.S.A., of Winwick, read an interesting paper on "The Monumental Brasses of Lancashire and Cheshire."

Cambridge.—At a meeting of the Cambridge Antiquarian Society on the 12th ult., Professor C. C. Babington, president, in the chair, a paper by Mr. Jukes-Browne, F.G.S., was read, in which he gave a detailed account of "Flint Implements found at Helwan, near Cairo," and described geologically the nature of the site in which they were found. Mr. Naylor gave an account of some interesting frescoes which have been recently discovered during the restoration of Chesterton Church. Mr. Spencer G. Perceval, M.A., presented a black Romano-British vase (6½ in. high by 1 ft. 10 in. in circumference), which had been found by coprolite-diggers on Coldham-common, about 1860.

THE CROWN FLOOR-CRAMP.

UNDER this title Messrs. F. W. Reynolds & Co., of Southwark-street, have brought out a new flooring-cramp, which is worthy of notice. The driving-handle of this is mounted over the top of the cramp, and in a vertical position, so that it is always free to be worked by the workman, instead of being placed in a horizontal position at the side of the cramp, as in the ordinary way, which often necessitates the digging of a hole before the man can turn the driving-handle when laying down a ground-floor. The improved position of the handle enables the cramp to be worked with more ease and effect, the grip being greater. The screw works under a covered way, which protects it from clogging by dust, lime, &c.; but the most important feature in the new cramp is the mode of fastening it to the joist previous to its employment for closing up the boards. In the ordinary way, when being adjusted in the slot of side bracket to suit the various thicknesses of joists, the security of the position of the stud in the slot depends upon the tightness of the nut, which frequently slips out of position, and necessitates a blow with the hammer to secure the necessary tightness. Messrs. Reynolds employ a fixed rack, into which corresponding teeth on the washer under the ordinary stud belonging to the lever can pass. Upon this toothed washer being worked into the fixed rack no slipping can take place, and the wing nut only requires to be slightly tightened by the fingers.

ROAD MAKING.

LIVERPOOL ENGINEERING SOCIETY.

ON the 7th ult. a paper was read by Mr. John Brodie, entitled "The Application of Blast-Furnace Slag to the Purpose of Road-making." He first pointed out that soft stone does not form a good foundation for metalling, as it works through and comes to the top, and quoted from the Parliamentary evidence of Macadam in support of his views. After saying that a road-surface should be elliptical in form, having a rise of 6 in. for a width of 20 ft. between curbs, he described the method of making slag-roads somewhat as follows:—On the earthwork surface the slag is laid, after being carefully selected and prepared, in blocks not less than 7 in. deep and 4 in. wide; these are well keyed together by means of small pieces of slag being driven between them, and the whole is covered over with broken slag and coke-ashes to the depth of about 4 in. The slag obtained from smelting the well-known Cleveland ore into "grey" or "foundry iron" he thought about the best for road-making, and the longer the slag is exposed to the atmosphere before being employed for this purpose the better, as it is rendered less brittle by this treatment.

SIR PAUL PINDAR'S HOUSE, BISHOPSGATE.

HOWE *v.* CROXTON AND OTHERS.

THIS was an action brought in the Chancery Division of the High Court of Justice by the owner of the Sir Paul Pindar Tavern, 169, Bishopsgate-street, to restrain the Metropolitan Free Hospital and their contractors from pulling down the adjacent house in such a way as to damage or endanger the stability of No. 169.

The two houses were stated to be to some extent framed together, so that parts of the rooms of one would be immediately above or beneath rooms of the other, the two having probably formed originally one house. The buildings are old and interesting, and the plaintiff deposed that he attributed much of the value of the goodwill of his business to the "antique and quaint appearance" of his house, which had been the mansion of Sir Paul Pindar, who lived in the reign of James I. It appeared that No. 169 was only separated from No. 170 by a timber-framed partition resting upon a beam, and that in the course of the dismantling and demolition of the adjoining houses, which had already commenced, a portion of the timbers supporting that partition had been removed to enable the authorities of the South Kensington Museum to get some large and handsome ceilings. Under these circumstances, the plaintiff showed that the pulling down of No. 170, even with every precaution, would endanger his house, and might lead to a settling down of its foundations, and on the 2nd inst. he obtained an *ex parte* injunction.

Mr. W. Pearson now moved for an injunction upon notice, on the ground that the plaintiff had a right or easement of support from the defendants' premises.

Mr. Cracknell, for the defendants, merely asked that the order should be without prejudice to any proceedings by them under the Metropolitan Buildings Act, and with special liberty to apply.

The order was taken in that form, and the motion being by consent treated as motion for judgment, to be subsequently set down *pro formâ*, the order was directed to be post-dated and entered as judgment for the plaintiff for a perpetual injunction accordingly, with costs.

LOCAL GOVERNMENT BOARD INQUIRIES.

Southampton.—On the 16th ult. Mr. Robert Morgan, one of the Local Government Board Inspectors, held an official inquiry at the Town-hall, Southampton, into the subject matter of an application made by the Town Council to the Board for sanction to borrow 87,000*l.* for paving, sewering, lighting, and otherwise improving certain streets, for works of water supply, for providing baths, slaughter-houses, fire-escape stations, and a hospital, and for re-paying certain moneys borrowed on security of old Water Works and Improvement Commissioners' Bonds.

Mountsorrel.—On the 14th ult. Mr. J. Thornhill Harrison, C.E., one of the inspectors of the Local Government Board, held an inquiry at Mountsorrel, Leicestershire, relative to an application made by the Barrow-on-Soar Rural Sanitary Authority for sanction to borrow 2,000*l.* for works of drainage, according to plans prepared by Mr. Hodson, C.E., of Loughborough. The sewage is to be disposed of by means of irrigation.

THE TROJAN TREASURES.

Dr. Henry Schliemann, some little time ago, promised his London friends that they should see at any rate a selection of the remarkable relics which he had unearthed at Hissarlik, and he has kept his word. He has brought to England, with cost and labour, more than 4,000 objects, and is now busily engaged in arranging them in the South Court at the South Kensington Museum, where, in the course of a few weeks, they will be publicly exhibited. The bulk of the collection is of terra-cotta, with numerous varieties of the owl-faced tutelary goddess of Ilium, but it also includes much of the Treasure of the supposed King Priam, of the mythical heroic age, and the brilliant sculptured block of triglyphs, with Phœbus Apollo and the four horses of the sun in the metope. London will owe thanks to Dr. Schliemann.

THE REBUILDING OF DRUMMOND'S BANK, AND THE GOVERNMENT.

It is now nearly twelve months since the substantial scaffolding and hoarding was erected in front of Messrs. Drummond's bank, Charing-cross, for the purpose of taking down the old building, and erecting a new structure upon the site, and yet up to the present moment not a step has been taken towards the demolition of the building and the erection of the new premises, although it is generally understood that designs for a new and handsome architectural structure have for some time past been prepared by Messrs. Waller, of Lisle-place, which those gentlemen are prepared at once to carry out. It is stated that the cause of the delay is owing to a difficulty in an arrangement being entered into with the Government for the purchase of the site for public buildings, which it is understood the Admiralty are desirous of erecting upon it. The site has been occupied as Messrs. Drummond's banking-house for more than two hundred years, and apart from its intrinsic worth, Messrs. Drummonds are understood to have placed an enormous value upon it for the purposes of their business. As the Parliamentary notice which has just been issued by the Office of Works, with reference to new public buildings in the neighbourhood does not include this particular property, it would appear that the Government have no intention of acquiring it by compulsory purchase. Meanwhile, the residents in the immediate locality are beginning to complain of the inconvenience caused to pedestrian traffic by the footpath having been so long absorbed without the erection of the new banking premises being proceeded with, and it is stated that a representation will shortly be made to the authorities on the subject. Within the last few days 2 ft. have been taken from the carriage road, in order to widen the temporary footpath in front of the hoarding.

THE LEICESTERSHIRE CLUB-HOUSE, LEICESTER.

This building was opened on the 14th ult. It faces Welford-place and Pocklington's-walk, having a frontage to the former of 62 ft., and the latter of 30 ft. The style of architecture is Flemish, and the height of the building to the ridge is 58 ft., to the parapet 46 ft. The edifice is built of red brick, with Ancaster stone dressings. On the basement are ten rooms, including the kitchen, which is 27 ft. by 20 ft., and the cooking-apparatus has been supplied by Messrs. March & Pattison, St. Peter's Foundry, Leicester. The arrangements for heating the premises were undertaken by Mr. Constantine, of Manchester. There is a cool cellar for the storage of beer, and a very convenient one for wines. A steward's room, which faces the latter, is nearly 15 ft. by 15 ft., and the servery on the same floor is 16 ft. by 14 ft. The front entrance is approached from Welford-place, and, after ascending eight stone steps, the entrance-hall is gained, the openings being through oak folding-doors, in the panels of which are stained-glass windows by Mr. Swain Bourne, of Birmingham, who has also provided the rest of the stained glass. The hall is paved with black and white tiles, the design being after the Roman style. It is the first time that these tiles have been laid in Leicester. The same floorings have been laid in other portions of the building. They have been supplied by Mr. Eratt, of Coalville. The hall is 26 ft. by 20 ft.; the conversation-room, 16 ft. by 14 ft.; the reading-room, 46 ft. by 25 ft., and its height 15 ft.; the dining-room is 40 ft. by 25 ft.

The communication to the various parts of the building is by means of electric bells, by Mr. Webb, of High-street, Leicester. The ventilation is on Tobin's principle. The furniture has been supplied by Messrs. Spencer & Sons, of Leicester. There is a sprinkling of carving over the building, by Mr. Harry Hems, of Exeter.

The architects are Messrs. Goddard & Paget, of Leicester; the clerk of the works is Mr. W. Clifton; whilst the builder is Mr. T. H. Herbert, of Leicester, whose contract was for 8,400*l.*, but the probable cost of the club altogether, inclusive of its fittings, will amount to nearly 12,000*l.*

The building was commenced on the 1st of October last year, and has taken little over twelve months to erect.

A NEW VESTRY HALL FOR HOLBORN.

The Holborn Vestry have decided upon the erection of a new vestry-hall, taking advantage of the ground which has been cleared in the neighbourhood of Gray's Inn-road for the new street eastward from Oxford-street. At the meeting of the Vestry last week the Works Committee recommended that the site at the corner of Gray's Inn-road and Liquorpond-street, immediately adjoining the point where the new street will intersect Gray's Inn-road, should be purchased for erecting the proposed building thereon. Mr. Hunt, in moving that the recommendation be adopted, observed that it was high time such a district possessed a vestry-hall worthy of the locality. A building of the kind was much wanted in the parish, and in addition to its usefulness for public business it might be made a source of profit, as he had no doubt it would be readily taken for meetings, lectures, and other entertainments. In proof of this he instanced the Shoreditch and other vestry-halls, which were very remunerative in this respect. He suggested the erection of a spacious and handsome building, and remarked that if they went to an expense of 25,000*l.* it would be well laid out, and produce a good return. The chairman, in supporting the recommendation, said there was not a parish or district in the metropolis of any importance that had not a hall suitable to the wants of the locality, and Holborn lost prestige by not having one. He would undertake to say that the Metropolitan Board would gladly advance the sum required for the erection of the building. The recommendation was unanimously adopted.

SCHOOLS OF ART.

Winchester.—The annual distribution of prizes to the students of this school was held a few days since, the mayor (Mr. T. Stopher) presiding. The report showed the school to have 118 students, and went on to say that,—

"Owing to various causes,—in part, perhaps, to delay and loss of time in arranging and preparing the new room,—there has been some falling off in the general prosperity of the school. At the same time there is every reason to hope that, with the encouragement given to the work in the mass, the greater freedom allowed to the special taste and capability of individual students by the present director of the Art Division at South Kensington, E. J. Poynter, R.A., and the impulse given to public education in elementary schools, the advantages offered by the School of Art will attract an increasing number of students of various classes and ages."

The financial position of the schools is satisfactory.

Reading.—At the distribution of prizes to the Reading School of Science and Art students, on the 13th ult., Mr. Walter, M.P., said the object of the Department of Science and Art in establishing such schools was to train up the rising generation to take commanding positions in their various trades, and to infuse an artistic spirit into the mechanical classes. The decline of art was due to the invention of machinery. In the best days of art in Germany and Italy, the artist was a mechanic, and executed his own designs. Nowadays, no doubt owing to the introduction of machinery, the artistic idea seemed to have been lost sight of, and the mere mechanical idea survived. It was probably necessary to the mass of mankind to have things cheap, and they did not care to pay a high price for the good article; but if they wanted better things they must raise the character of work in manufactories. He did not see how that was to be done except by cultivating better taste among mechanics. He cited, in illustration of his remarks, the case of chairs and spoons, in the production of which the present generation was greatly excelled by the workman of a hundred years ago. A pure taste was a thing of almost national importance because the character of a nation depended in a certain measure upon the way in which the taste of its people was cultivated. It was quite a mistake to suppose that the taste was merely an arbitrary or capricious thing. There was such a thing as a pure taste and a vicious taste in illustration of which he referred to the new opera-house in Paris, which he saw the other day. It was one of the most costly and lavish buildings in the world; but he never saw a building in his life the interior of which struck him as more vicious and meretricious in ornament and more extravagant in grandeur. That was the opinon of most cultivated Frenchmen. Within 200 yards or 300 yards of that monument of bad taste was one of the most beautiful buildings in the world, the Italian Opera. The only explanation that could be given of that fact was that there had been a falling away in the national taste. Coming nearer home, they could not look round on the architecture of the present day, either in domestic, ecclesiastical, or public buildings, without seeing a great deal to disapprove of, for a great amount of exaggeration prevailed in decoration. The new National Gallery and Keble College, Oxford, were illustrations of his remarks. People seemed to think they could not lay on colour enough, nor cover the space allotted to them too completely with designs, ornaments, and patterns of every kind so that there was no rest for the eye. Believing that that was wrong, he looked to schools of science and art to be the means of producing more refined and cultivated taste in those important matters.

Kidderminster.—It is proposed to erect a new building for the Kidderminster School of Art from plans prepared by Mr. T. M. Gething, architect. Dr. D. W. Goodwin, the late mayor, has given the site.

Gosport.—The Right Hon. Sclater-Booth, on the 19th ult., presented the prizes gained by the Gosport branch of the Portsmouth, Isle of Wight and Gosport School of Science and Art. The right hon. gentleman spoke at some length on the importance of extending the knowledge of art, and traced its recent history and development in this country. The importance of it was fully recognised by the late Prince Consort, who was the mainspring of the Exhibition which took place in London in 1851, and the results throughout the country had been satisfactory, and justified the policy which had been pursued by the Government in reference to the schools of art. In 1876 the amount of money paid for results was about a quarter of a million.

WATER SUPPLY.

Wigan.—The Wigan Town Council have requested the Mayor, Chairman of Water Committee, and Town Clerk to see the Town Clerk of Manchester with a view to the acquiring by the Manchester Corporation of powers whereby the town of Wigan could be supplied with water by the scheme which proposes to make use of Thirlmere for water supply for Manchester and district. The storing capacity at Wigan waterworks has been found not to be sufficiently large for the supply of the town, in consequence of the great increase in the number of houses in the borough, and a larger supply will have to be provided during the next few years.

Oldham.—The proposal made by the Manchester Corporation to acquire Thirlmere as a source of water supply has attracted attention in Oldham, and some correspondence has passed between the town clerk (Mr. H. Booth) and Mr. Bateman, engineer. In a letter from the town clerk to Mr. Bateman, Mr. Booth said he was directed to ask if he thought there would be any chance of the Oldham Corporation obtaining any direct or indirect benefit from the proposed scheme, in case they were willing to assist the Manchester Corporation to get their Bill through Parliament. The Oldham Corporation Waterworks Committee would respectfully give expression to their opinion that it might be to the interest and advantage of the city of Manchester and of the whole of the towns and places of which that city was the centre, if they were to combine in some form or other, so far as regarded their water supply. The committee thought that, if possible, one grand comprehensive scheme, or rather series of schemes, should be developed for the whole of the Manchester di-

, at the joint expense of the several places rested. The committee suggested that it ld be worth the while of the Manchester erworks Committee to have a conference on subject with the waterworks committees of various towns forming the Manchester rict. If there could be a combined action on part of the district, or of a considerable ion of it, the efforts of the opponents of the rimere scheme would have very little chance ed of success. In his reply to Mr. Booth, Bateman said he believed it was not the in- tion of the Manchester Corporation to apply an extension of their limits of supply the next session of Parliament, but if they ined their Act they would certainly be in a tion to help their neighbours. He thought Booth's arguments used in favour of partici- ion were strong.

outh London.—Notice is given of the inten- to promote a Bill in the next session of liament for the incorporation of a company ing for its object the supplying of water, n springs at Tooting, to Wimbledon, Merton, hmond, Streatham, Tooting or Tooting veney, Upper Tooting otherwise Tooting k, Wandsworth, Mitcham, Beddington, Wal- ton, Lambeth, Croydon, St. Giles Camber- l, Battersea, Norwood, Anerley, Sydenham, est Hill, Dulwich, Penge, Stockwell, Peck- n, Clapham, Brixton, Balham, Putney, Roe- npton, Kingston-on-Thames, Thames Ditton, ner, Long Ditton, Malden, and Morden, in the nty of Surrey; and St. Nicholas and St. l, Deptford; Lewisham, Beckenham, Anerley, lenham, Forest Hill, and Penge, in the county Kent. Power is reserved for the sale or se of the undertaking to, or its amalgamation h, existing companies supplying the district.

SANITARY MATTERS.

Twyford.—Dr. Gordon Stables, R.N., writes to *Reading Mercury* as follows:—

I believe it is a good thing for us here in Twyford that balmy breath of the Berkshire woods circulates so ly around us, or no doubt typhoid would soon find out and decimate us. The cesspools are in a fearful dition, and badly looked after. Clear moonlight nts, with no wind, are chosen on which to empty them. se nights are nights of terror to many inhabitants, and diting is the general thing. In summer the air is ded by the pestilential odours from the butchers' k premises; by night in winter people can hardly stop room for any time for the bad odour of the gas. en I took the house in which I live I was assured the water was very good. That water poisoned my ole family—including the dogs. It is closely sur- nded by three or four fearful cesspools, that had not n cleaned out for years, and the house being vacant some time, the well had had the benefit of the leakage. e of these cesspools has now found its way into a ghbour's cellar, and is creating a very great nuisance sed."

Dunstable.—The Town Council have prepared ns for disposing of the town sewage on an igation farm, the cost of which is estimated be 5,000*l.* The opponents of the scheme say will cost 10,000*l.*, and advocate the ash-closet stem, which, they urge, will only cost about per house.

RAILWAY ITEMS.

Fulham and Walham Green.—Application is be made to Parliament next session for the porporation of a company authorised to con- ruct railways from Hammersmith to Walham reen, Fulham, and West Brompton. Railway o. 1 is intended to commence in the parish of . Peter and St. Paul, Hammersmith, by a nction with the Hammersmith and City Rail- ay, at a point 75 yards, or thereabouts, south the signal-box of the Grove Junction on that ilway, and near to Hammersmith Station on at railway, and to terminate at Walham Green, the parish of Fulham, at the point in Bishop's- ne where that lane intersects Goater's-alley id Wheatsheaf-alley. Railway No. 2 is to mmence at the point of termination of Rail- ay No. 1, and to terminate in the parish of ulham at a point on the northern boundary of e back road 71 yards, or thereabouts, from the rth-east corner of the lodge facing the back ad at the entrance to the grounds of Ranelagh ouse. Railway No. 3 is to commence at the oint of termination of Railway No. 1, and to rminate in the parish of St. Mary Abbotts, ensington, by a junction with the Metropolitan istrict Railway at and between the southern tremity of the platforms of the West Brompton ation of that railway.

Devonshire.—The Teign Valley Railway Com- any, who are authorised to construct a railway from Crediton to the Moretonhampstead Railway, near Newton Abbot, having now nearly completed their railway to within a distance of seven or eight miles of Exeter, intend to apply in the next session for powers to extend their line to connect with the railways in that city, and also to form a branch to Chagford. This extension to Exeter will establish an inland route from that city to Newton Abbot, and avoid the interruptions that so frequently occur on the coast line between those points. Another project is on foot for the formation of a new and independent railway from Exeter to Chagford.

Dover and Deal.—The scheme for the construction of a railway between Dover and Deal will very shortly be carried out, and the connecting link in the coast line, advocated as well by travellers as by military strategists, will be furnished. The joint committee of the London, Chatham, and Dover and the South-Eastern Railway Companies have had considerable difficulty in negotiating with the landowners, and have now decided to serve those who have not come to terms with notices. After this the line will be begun as soon as possible.

Manchester, Sheffield, and Lincolnshire.—The negotiations for the joint acquisition of this line by the Great Northern and Midland companies have failed. The differences which led to this result were, it is stated on behalf of the latter two companies (1), as to the amount of rent; (2) as to the sums which the Sheffield directors claimed to retain for distribution among their proprietors. As to the rent,—the terms offered by the two companies involved the purchase of the Sheffield undertaking on the basis of a rent-charge yielding a fixed ultimate dividend at the rate of 4 per cent. per annum on the ordinary stock of the Sheffield Company, and this arrangement was to be effected in such manner as to give that company the best possible security. The proposal thus made was approved in principle by the Sheffield Board of directors. The two companies afterwards slightly modified their offer in order to meet the views of the Sheffield directors, but after the Sheffield Board meeting, on the 26th of October, it appeared that the aspect of the negotiation was changed. Instead of a rent-charge secured in the best manner consistent with Parliamentary usage, the Sheffield directors asked for a security which should take priority over even the debenture stocks of the two companies, a condition inconsistent with Parliamentary practice. As to the sums which the Sheffield directors claimed to retain for distribution among their proprietors, under the proposal of the two companies the Sheffield line was to be transferred to them as from the 1st of July, 1878, up to which date the Sheffield company would receive and pay all debts on revenue account. It was, in the first instance, claimed that any reserves accumulated on revenue account fairly belonged to the Sheffield proprietors. Taking the most favourable view, these revenue reserves, according to the two companies, could not exceed 75,000*l.*, but the Sheffield directors claimed 200,000*l.*, the difference consisting of premiums received on the issue of stocks and shares.

NEW STATUES.

Dr. Graves.—A full-sized marble statue of the late Dr. Robert James Graves, a distinguished Irish physician, has arrived at the College of Physicians, Kildare-street, in one of the principal halls in which it is intended to be placed. The statue in question is by Mr. Albert Bruce Joy, and is stated to be successful as a work of art. It represents Dr. Graves in the act of commencing to lecture, and attired in an academical robe.

Mr. John Laird.—The statue erected to the memory of the late Mr. John Laird, M.P., in Hamilton-square, Birkenhead, has been publicly unveiled by Lord Tollemache. The statue was modelled by Mr. Albert Bruce Joy, and was cast in bronze by Messrs. Masefield & Co., of Chelsea. The statue, including a thin metal base, measures in height 10 ft. 5 in., while the pedestal stands 13 ft. high, making the total elevation of the whole nearly 24 ft. Mr. Laird is represented standing with his left hand in the upper part of the breast of his buttoned coat. The right hand rests on a pedestal, whereon are drawings, the top sheet of which is an outline representation of the Birkenhead docks. The body looks to the right, and the face bends slightly downwards so as to prevent the foreshortening which would otherwise take place during a view from below. The pedestal is formed of blocks of chiselled Cornish granite, from the quarries of Messrs. Freeman & Sons, of Penryn. The base or foot of the pedestal, which rests upon a foundation of brick and cement, consists of two steps, the lowermost of which is 9 ft. square. Upon the steps is a die, which tapers upwards, and is surmounted by a moulded cap, 5 ft. 9 in. square, upon which the figure rests. The die-face of the pedestal fronting Hamilton-street has been polished, and bears the inscription, in gilt letters,—"John Laird: born June 14, 1805; died October 29, 1874."

Lord Canning.—The statue of Lord Canning is now completed, and about to be sent to India, to be placed close to Lord Hardinge's. The bronze figure of the Governor-General, bare-headed, on horseback, has been cast by Messrs. Masefield, at their works in Manor-street, King's-road, Chelsea. There are two names inscribed on the base, that of Foley, and that of Mr. Thomas Brock. To Mr. Brock the task of completing the work was intrusted when the early death of Mr. Foley removed the artist who was responsible for the original design. The whole statue is 15 ft. high, or about half as large again as the natural size. The casting has been successfully accomplished after about two years' labour in preparing the moulds, welding together the six pieces in which the figures were made, and chasing by workmen to prepare for the last touches of the sculptor.

Captain Cook.—The Legislature of New South Wales has decreed the erection of a national monument to Captain Cook, the great navigator. The monument is to take the form of a gigantic bronze statue, and has been entrusted for execution to the hands of Mr. Woolner. The work has already advanced to the stage of the clay model, which is now completed. The design represents the great sailor in the costume worn by naval men in the early years of George III. It is to be placed on a pedestal 22 ft. high, on a site overlooking the whole of the beautiful bay of Sydney, and visible over the whole extent of it, even to Port Jackson Heads.

King Robert the Bruce.—A monument to King Robert the Bruce was unveiled at Stirling on the 24th ult. The statue was formally uncovered by Lady Alexander. The monument occupies a commanding position in front of Stirling Castle, 140 ft. east of the counterscarp, and 10 ft. from the north wall of the esplanade, being placed on a spot whence may be seen a portion of the battlefields of Stirling Bridge and Bannockburn.

PROPOSED NEW BRIDGES.

The Thames.—Application is to be made to Parliament next session for a Bill authorising the incorporation of a company having for its object the construction of a bridge over the Thames, at a point between the Tower of London and the St. Katherine Docks, the bridge starting from the Surrey side at the point of intersection of Cross-street and Freeschool-street, Horselydown. It is proposed to levy tolls, notwithstanding the Act passed last session for the abolition of tolls on all Metropolitan bridges.

The Severn.—Notice has been given of an intended application to Parliament for authority to construct a bridge over the Severn, from Arlingham to Newnham, "for the passage of vehicles, foot-passengers, and animals," with necessary swing-bridges, draw-bridges, lift-bridges, or other mechanical appliances for admitting the passage of ships and vessels.

HOW CAN A RAILWAY ARCH BE MADE DRY?

A NEIGHBOUR of mine uses a railway arch for a grocery store, but it is very damp. He has had the floor concreted, but the upright brickwork looks very wet; he has tried a gas stove with atmospheric burner, which has been very costly to burn and of little use for drying; he then purposed trying an American parlour-stove, with doors to the fire, and usable either open or shut, with an iron pipe flue, but an M.D. in passing recommended a Dr. Arnott stove as the better of the two. My idea is that an open fire will suck in the damp air on the same line as radiation, and pass it off with the combustion outside the building, while the Arnott will, by the heat, raise it as steam to the crown of the arch, where it will condense and again pass down walls. I presume that each stove being a pipe stove gives the same amount of heat per pound of coke used by either. I would say that both ends are ventilated by two iron gratings, 18 in. by 12 in., fixed near the springing of the arch, and in addition four air-bricks, about 2 ft. from the ground at one end. There may be some of your subscribers who are similarly situated, while others may have mastered the difficulty. I hope that it will be for the general benefit to have it discussed. M. TOSSELL.

A MEMORIAL.

The chancel of St. Margaret's Church, Tyler's-green, Bucks, has lately undergone considerable alterations and received some additions, the roof having been lined with pitch-pine boarding, fixed and panelled with moulded ribs and gilt paterae. A reredos has also been erected of Caen stone, with carved caps and columns of Mexican onyx and other rich material, and alabaster panels, the central panels over the communion-table being in gold and coloured mosaic, by Messrs. Salviati. A new ciborium on north side, and double sedilia on south side of chancel, have also been added. The floor is laid with Messrs. Maw & Co.'s encaustic tiles, and the new altar-rail is of wrought brass, and, with the corona, was supplied by Messrs. Hardman. The whole of the interior of the church is about to undergo a thorough colour decoration in stencil patterns. A brass plate, fixed at the back of the ciborium, bears the following inscription :—

"In honour of Almighty God, and as a tribute of loving affection to his beloved wife, Dame Margaretta Rose, this reredos was erected, and the chancel of this church was enriched and beautified on the anniversary of her birth, September 16th, 1877, by Sir Philip Rose, bart., of Rayners."

Mr. H. G. Liley, of Bradmore Park, Hammersmith, was the architect.

UNDER METROPOLIS LOCAL MANAGEMENT ACT.

Messrs. Cubitt & Co., the eminent builders, carrying on business in the Gray's-inn-road, appeared before Mr. Slade, at Greenwich, in answer to two summonses, taken out at the instance of the Vestry of Rotherhithe, charging them with infringements of the Metropolis Local Management Act, in failing to give notice of the rebuilding of two houses in Rotherhithe-street, in that parish.

Mr. Stokes attended in support of the summonses, and Mr. H. D. Greene, barrister, for the defendants.

The case occupied some time in hearing, but the facts may be briefly stated. On Sunday morning, June 24th last, between four and five o'clock, a fire broke out at granaries in Rotherhithe-street, and the flames spread, setting fire to two houses, situated north and south, and numbered respectively 357 and 35. The former was occupied by Mr. Carpenter, a pawnbroker, and the windows were broken by the heat of the flames, which entered the building, and caused great damage, the whole of the original walls standing, except a wall at the back of the premises, where there were 5 ft. of the old wall left; and of the premises No. 35, the old walls stood at the height of 15 ft.

Mr. Greene contended that there had been no rebuilding, only repairing, of the premises, and that, under the 75th and 76th sections of the Act the penalty imposed was only applicable where notices were not given of the digging of foundations for new buildings. The premises in question had received extensive repairs, with the assent of the Phœnix and the Guardian Insurance Companies, by the defendants, who had for years carried out works damaged by fire, and had never given such notice.

Mr. Slade said, from the evidence before him, he did not consider that any offence had been committed, and both summonses would be dismissed.

ECCLESIASTICAL ODDITIES, ANCIENT AND MODERN.

In connexion with the restoration of Eladon Church, an excellent account of which appeared recently in your columns, there has been discovered a series of striated long incisions on a pillar of the church close to the entrance-door, in a vertical slanting direction within arm's reach. These are supposed to be done by archers, who after attending mass previously to a battle, would, for luck, give, in this manner, a final sharpen of their arrows or other weapons before quitting the sacred edifice. In accord with the discovery of 1,000 skulls and corresponding bones found under the floor of the church, supposed to be the remains of the slain in the battle of Otterburn (Chevy Chase), close by, and the innumerable Border wars, raids, and forays, that took place in the wild locality in which Elsdon is situated, the oddity, above mentioned,—a rare one, I conclude,—is worthy of mention.

In Embleton Church, in the same county, Northumberland, there has been recently placed an odd memorial of a deceased lady. On the east wall of the south aisle, there is placed on a stone bracket a handsome majolica bowl, about 1 ft. 3 in. in diameter and 1 ft. high. This curious object is so placed by the relatives because the deceased lady highly prized it when in life, and they thought this was the best form of memorial that they could erect for her. Should this queer example be followed, would not the interiors of our churches become curiosity-shops, or exhibitions of, say, old clothes, art, or *virtu?*

Archæologia.

ZINC GAUGES.

Sir,—Referring to a letter in last week's *Builder*, signed "Architect," on zinc gauges, "The Vieille Montagne Zinc Mining Company" in 1875 did away with the Belgian gauge which has hitherto been adopted for Belgium and England, and introduced the French gauge everywhere, which is about one gauge lighter than the Belgian.

I am not aware that other manufacturers adopt a different gauge, but, no doubt, "Architect's" safe plan is always to specify the weight per foot. But if where he used to specify No. 15 gauge, he now requires No. 16, and so on, always one gauge higher than the old, he will get what he has been accustomed to and approves.

"The Vieille Montagne Company" still employ a staff of architects in London and several chief towns in the provinces, whose duty it is to render all assistance and information to those who desire it, without charge. I inclose printed list of gauges and weights.

James Edmeston,
Architect to the V. M. Company.

A PIECE OF NEWS AS TO THE STRIKE.

Sir,—At a late meeting of the Pontack Lodge of the stonemasons at Liverpool, it was considered "that the introduction of foreign labour must now and for ever be crushed;" and it is anticipated at the next meeting of the Central Stonemasons' Committee at Cardiff a proposal will be made to the members throughout the kingdom that steps be immediately taken to withdraw custom from all bakers who cannot produce a sworn certificate from the Lord Mayor of London that they use no foreign flour whatever, and employ no foreign men in making bread; and further, that every exertion be made now and for ever to stamp out the use of tea and sugar and all foreign articles. This latter resolution will, it is understood, have the effect of keeping Cleopatra's Needle out of England, as it comes under the category of foreign stonework.

Tradesmen in any way offering foreign goods for sale are invited to close their shops, *now and for ever*, or be in peril of a universal crushing (ramming, if preferred) by stonemasons.

English stonemasons working abroad must consider this a notice to return home forthwith, every man to his own parish.

Bob.

AN EXPRESSION OF THANKS.

Sir,—As a reader for several years of the *Builder*, I cannot refrain from thanking not only yourself for inserting, but the able and well-meaning writer of "Liverpool, its Body and Mind," which I find in your valuable paper of November 24th, and I can say from experience that this kind of writing tends to improve the minds of all. There is so much of the competition and ambition for wealth constantly pressing upon the minds of business men, especially the young, also the love for the gay and fashionable, that the desire to improve the moral tone of the lives and actions of themselves and those around is entirely lost sight of, and you will agree with me that there are plenty of men to be found in the building trade who will declare that as to a contractor and builder being a reading, thoughtful, improving, and strictly moral man, it is impossible. And so it is if the mind is constantly to be bent upon the everyday affairs and anxieties of business life; but I do not see why, if such wholesome food for the mind is regularly taken as we have in the article to which I refer, and others in the *Builder*, readers, though they are in daily contact with the roughest portion of our fellow men, should not become good and able men for society, a credit to themselves, their craft, and their country. If you will kindly insert these few remarks, I will endeavour to practise what I preach.

J. P. W.

SEA SALT.

Sir,—I have recently built a house, mainly of brick made in a yard about four miles from the sea. The bricks are to some extent impregnated with salt, and when the damp weather comes on, or there is a change in the weather from dry to damp, wherever there is a salty brick, there a damp place shows, and I am afraid that no paper will long remain on the walls. After a time, too, a frosty appearance shows on the walls where the damp places have shown. I have had some of the walls plastered with Parian cement, and painted over it; but the damp places have come through the paint, and the same frosted appearance after a time.

Can any of your readers inform me what I can place over the wall so as to prevent the dampness and frostiness above referred to from showing?

I have been recommended to use shellac dissolved in spirits and applied with a brush, also silicate; but, on the other hand, I hear that neither will answer the required end.

Porter Wilson.

BUILDINGS, FINSBURY PAVEMENT.

Sir,—A week or two ago you gave an elaborate description of the buildings recently erected by Mr. Cave Finsbury Pavement, Moorgate-street, in which most the parties concerned were duly recognised, but in wh our names as contractors for the ironwork (of which supplied a large quantity) were omitted. If you will gi a line or two to rectify this omission you will much ob

R. H. & J. Pearson

DISPUTE AS TO WAGES.

Olorenshaw and Hitchin v. Horseley.

At the Birmingham Public Office, on 21st ult., Thomas Olorenshaw and Char Hitchin, members of the Amalgamated Soci of Carpenters and Joiners, and in the empl ment of Messrs. Horseley Brothers, builders & contractors, summoned their employers for 9s. and 10s. 4d., arrears of wages alleged to be d to them in respect of carpenters' work done, the rate of 8½d. per hour.

It appeared that the men worked up to the 16th having been paid all arrears on the previous Satur The foreman gave them notice to leave on the ground they had been too long over their work, and tendered th 7s. 8d. each in payment of Saturday, Monday, and Tu day's work, instead of the amount claimed. The poin the case was whether the men ought to be paid by wa tion of the work done or by the hour.

Mr. Maher, for the complainants, stated that his cli had been in the employment of the defendants for upwa of nine months; that they had been paid a rate of wa customary in the trade,—viz., 8½d. per hour; that no c plaint had been made as to the manner in which they done their work, and that they were consequently enti to 8½d. per hour up to the time of their notice.

Mr. Ansell, for the defence, said the two men delayed too long over the work entrusted to them, result being a loss to their employers, and a justificat of the amount tendered. He also submitted that the co plainants were bound by the printed rules of the society one of which referred disputes to arbitration.

Mr. Kynnersley, the magistrate, said such rules did do away with the jurisdiction of that Court. He thou the men were entitled to the amount claimed, and gave decision accordingly.

HOSPITALS.

West London.—The corner-stone of the w wing and out-patients' department of the W London Hospital, Hammersmith, was laid on 19th ult. The out-patient department will co sist of six consulting-rooms and a sorting-ro for the house surgeons, and a large waiti room for male and female patients. The fro part will contain three wards,—a woma accident ward, a man's accident ward, and children's ward, with twenty beds. A lift w also be erected, capable of taking a patie either on a stretcher or bedstead, to the upp wards, and will also communicate with t operating theatre. The sum of 11,000*l.* required to complete these additions.

Hemel Hempstead.—On the 17th ult. H.R. the Princess Mary Adelaide opened the n West Herts Infirmary at Hemel Hempstead, which Messrs. Coe & Robinson, of London, s the architects. The old infirmary was found in 1826 by Sir John Sebright, who munificent expended 13,000*l.* on its building and endo ment. The new building was commenced t years ago. The sum of 8,018*l.* has been actua received on account of the building fund. T whole cost when completed will considerab exceed 13,000*l.* The new building will ho fifty patients.

London.—The rebuilding of a portion St. Bartholomew's Hospital, with a vi (amongst other things) to the better accommod tion of the medical school, is now in progre This important scheme, like so many other wor of public utility, is due to the energy of Ald man Sir Sydney H. Waterlow. Mr. Edwa l'Anson is the architect.

SCHOOL BOARD SCHOOLS.

Pocklington.—New Board School and master house are now being erected at Melbourne, ne Pocklington, from designs by and under t superintendence of Mr. W. G. Penty, architec of York, at a cost of 1,027*l.* including bounda walls, out-offices, and school fittings, the wor being carried out by Messrs. P. J. & W. Harris contractors, York. The schools are to accom modate 110 scholars, and will be heated wi Shillito & Shorland's Patent Manchester Scho grates.

London.—Sir Charles Reed has formal opened a new Board School situated in "L street, Queen's Park Estate, Harrow-road. T school, which is built in the Queen Anne style capable of seating 279 boys, 271 girls, and 3 infants. Mr. E. R. Robson was the archite

SCHOOL BUILDING NEWS.

cliffe.—New National schools have been eted and opened at Radcliffe. The archi- were Messrs. Maxwell & Tuke, of Bury. chools are planned in the form of the T, the top portion being the girls' school, by 30 ft., and the stem the boys', 50 ft. ft. The division between the two schools ed partly with folding doors and partly revolving wooden shutters, so arranged that event of a meeting the whole can be n into one. The platform is placed at p of the T opposite to the stem. There wo entrances, one for girls and one for with a class-room by each entrance, to- r with lavatories and cloak-rooms. The ing is of brickwork, with stone dressings. woodwork inside is pitch-pine, varnished. style is Gothic. The contracts have been ited by separate tradesmen: the stone- by Messrs. Openshaw & Buckley; brick- , Messrs. Stevenson & Holt; woodwork, John Allen; slating, Mr. John Smith; bing, Mr. Wm. Brierley; plastering and ting, Mr. Joseph Brooks, all of Radcliffe; ing apparatus, Mr. Joseph Downham, of . The total cost will be about 2,400*l.*

nbridge.—The foundation-stone of a new tist Sunday School and Lecture-room at bridge was laid on the 6th ult. The room o be built by Mr. T. Wickham, of Tonbridge, n designs by Mr. W. J. Brooker. The cost timated at about 715*l.*

CHURCH-BUILDING NEWS.

lewbury.—The chancel of Blewbury parish rch has been re-opened for service, after re- ration. The building is one of the most eresting in the county of Berkshire. Some tions of it are thought to be of Saxon gin. About two years and a half ago the toration of the nave was commenced. The f was renewed in solid oak, in exact accord- se with the old one. The floor was lowered the ancient level, showing the bases of the lars. The pews and galleries were removed, d the floor paved with encaustic tiles, the rtion under the seats being covered with nite's patent wood-block paving. This por- n of the church was opened for Divine rvice in the spring of last year. The resto- tion of the chancel was commenced in March t, the funds being provided by the parishioners, led by a grant from the Ecclesiastical Commis- oners. The contract was taken by Mr. Martin, of ereford. The work has been carried out under e direction of Mr. Dolby, architect, Abingdon. he original floor-lines have been regained, and e arches and stone-groined roofs are exhibited their fair proportions. The north and south isles remain in a very dilapidated condition for want of funds. The sum already spent is about 500*l.* An equal amount is needed for the ompletion of the work.

Thorpe Malsor.—On the 6th ult. the parish urch of Thorpe Malsor, Northamptonshire, was e-opened, after being closed a year for purposes restoration. The church is in style a mixture Early English and Tudor architecture. Most the work of the nave and chancel is entirely ew, and the architect for the restoration, Mr. lapton Rolfe, of Reading, has worked on the nes of the old work. The body of the church mainly built of sandstone. The chancel has een entirely rebuilt, and many of the old fea- ures re-introduced. The roof is groined very laborately with oak, the beams springing from orbels representing winged angels, carved in tone. Three sedilia have been set into the outh wall of the sanctuary. The chancel is ivided from the sanctuary by a brass railing, upplied by Mr. Hardman. The floor is laid with ncaustic tiles, supplied by Mr. Godwin, of Hereford. The reredos is of carved oak, gilt, aving in the centre panel a representation of the *Agnus Dei*, in *basso relievo*, surrounded with mystic symbolisms. The panel flanking this on he right contains a group of saints and virgins n adoration, the principal figures being St. Mary Magdalene, St. Ethelreda, and St. Catherine. The panel on the left contains the representations of St. Thomas of Canterbury, St. Benedict, and St. Edmund. The re-table is of alabaster, and on each side is an alabaster pillar, which it is intended to cap with the heads of cherubim. The choir-stalls are of oak, and the ends of the benches are carved. The subjects are in *basso relievo*,—the "Virgin and Child," "St. George and the Dragon," "St. Leonard," and that mystic bird the "Pelican." This work is by Mr. Hems, of Exeter. On the north side of the building a small private chapel has been formed out of the Maunsell vault, and an Early English arch, which was closed, has been opened on the west. The pulpit is formed of Caen stone, resting upon a pedestal of Ketton stone. A new porch has been constructed on the south side of the nave. The restoration has been carried out, at a cost of 5,000*l.*, by Mr. John Gee, of Daventry.

Burwell.—The restoration of Burwell Church has been advanced a stage towards completion by the dedication of a new reredos, a restored screen, and a new organ. The nave of the church was restored fourteen years ago at a cost of 2,000*l.*,—the chancel nine years ago by the University at a cost of 1,200*l.* The reredos of carved clunch from the quarries in the parish, executed by Messrs. Rattee & Kett, carvers, Cambridge, from the designs of Mr. A. W. Blomfield, was erected through the liberality of the University of Cambridge, the patrons of the living. The new organ, with other works in the chancel, have been carried out by the joint contributions of several members of the University, landed proprietors, and a few parishioners. The organ is by Messrs. Bevington, of London.

Tolleshunt Knights.—The nave of the parish church of Tolleshunt Knights, Essex, was re-opened on the 1st ult. The nave has been fitted with open benches, the chancel with suitable choir-stalls, the old ceiling taken down, and the fine oak rafters brought to sight, the ceiling extended by pulling down the old belfry. The exterior has also been improved by the erection of a red brick bell-tower. A heating apparatus has also been fitted. The architect is Mr. R. Armstrong, and the builder Mr. R. Bartram, Aylsham, Norfolk. The parish is extensive, and is on the line of the ancient Roman way from Maldon to Colchester, as near Barnwalden Roman pavements have been dug up. In the chancel of the old church is an effigy of a Knight Templar and some defaced monuments of the Poteshall family. It is the mother church of the Tolleshunts.

Bruton.—Bruton Church, Somersetshire, has been re-opened on the completion of the restoration of its nave and aisles. The works have extended over seven years, and the reconstruction of the chancel has yet to be undertaken. The church is wholly of fifteenth-century date, having been rebuilt in the time of Henry VII., a short time after its beautiful western tower had been rebuilt. In many respects the church is of the same character as St. Mary Magdalene, Taunton, but its roofs are finer, and are, indeed, almost unrivalled in the district for their beauty and elaborate workmanship. Unfortunately the gutters had been allowed to get into a bad state, and it became necessary to take the roofs down bay by bay, and splice new ends on to the beams and other defective timbers, also to rebuild the north arcade and clearstory. Much of the carving, and many of the carved angels in the cornice and under the beams had disappeared; these have been replaced by new. The north porch is continued up as a tower, three stages in height. Under the chancel and a portion of the nave, is a crypt of earlier date than the church, vaulted in six bays; this, after being used as an ossuary, was made a vault by the Berkeley family, to whose ancestor, Sir Maurice Berkeley, was given the property of Bruton Abbey (an Augustine friars' foundation), and also the manor of Bruton. The abbey church has utterly disappeared, and but few remains of the buildings are to be found beyond the prior's house, and a great buttressed wall, probably that of the refectory. The church has been entirely re-seated, working in some fine old seventeenth-century bench ends, and a richly-carved screen, bearing date 1620. The niches between the clearstory windows have been filled with figures of the Apostles, by Mr. Owen Thomas, of London; and the great west window has been filled with stained glass by Messrs. Clayton & Bell, and others are to follow. The chancel, an erection of the eighteenth century in the Grecian style, is to be reconstructed to harmonise with the nave. The works were commenced under the late Mr. Slater and Mr. R. H. Carpenter, and have been continued under him and his partner, Mr. B. Ingelow, Messrs. Clarke & Son, of Bruton, being the builders.

Langham.—The little church at Langham, which has been entirely rebuilt, with the exception of the chancel, has been re-opened by the Bishop of Ely. The work of renovation has been carried out by Mr. Alfred Andrews, builder, of Bury St. Edmund's, who has, under the supervision of the architect, Mr. J. H. Hakewill, utilised as much as possible the old materials, and, in one instance, has replaced a window in precisely the same position it originally occupied; whilst the character of the Early English architecture of the church has been preserved. The exterior has been improved by the addition of a bell-turret at the west end; the roof is also ornamented by terminal crosses. A wooden tower formerly occupied the place of the bell-turret. The roof of the nave is covered with blue Staffordshire tiles. The whole of the roofs, together with benches, pulpit, reading-desks, &c., are of English oak. On the south side of the church an open porch of English oak has been constructed as the principal entrance. The church is warmed by an underground heating apparatus, supplied by Mr. Porritt, of Bolton. The entire work of rebuilding the nave has been undertaken by Mrs. F. Maitland Wilson, as a tribute to the memory of her husband, Colonel Fuller Maitland Wilson, M.P. for West Suffolk. The undertaking has cost about 2,000*l.*

Peak Forest.—A few days since the Bishop of Lichfield consecrated a new church at Peak Forest, the gift of the Duke of Devonshire. The new building is intended to replace the old church, which was built about the middle of the seventeenth century, and was dedicated to "St. Charles the Martyr." The building adjoins the old church, and is designed in the Perpendicular style. The main entrance is by a porch formed by the tower, which is square, and affords room below for a ringer, and above for a bell-chamber. Two stained windows have been placed in the church, one by Mr. Samuel Needham, of Rushup, and the other by Mr. William Claye and his sisters, as a memorial to their mother. The chapel and reredos are also the gift of Mr. S. Needham. The plans of the building have been prepared and the work carried on under the direction of Mr. Henry Cockbain, of Middleton, near Manchester. It was originally the intention of the duke to restore the old church, but on examination it was found that the material had been so damaged by fire some years ago as to necessitate the building of a new one. There are many peculiar features connected with the old church, amongst which is the fact that it was at one time an English Gretna Green, where, it is said, any one at any time could be married without previous notice.

Aldsworth.—The chancel of the parish church, Aldsworth, has been re-opened, after undergoing restoration. The restoration has included a new chancel-roof and arch, organ-chamber, and vestry, flooring of encaustic tiles, choir-seats, oak reredos, &c. The plans were prepared by Mr. G. R. Clarke, and the work has been carried out by Mr. J. Field, of Aldsworth, and Mr. W. Mills, of Foss Bridge.

Ordsall.—Ordsall parish church has been re-opened by the Bishop of Lincoln, after restoration and enlargement. The work was greatly needed, for the old building was rapidly hastening to decay. The nave, aisles, and chancel are completely new. A new organ has been supplied by Messrs. Brindley & Foster, of Sheffield, at a cost of something like 500*l.* Mr. Hind, of Nottingham, was the architect, and Mr. John Wilson, of West Retford, the builder.

Weaverham.—The parish church of Weaverham, Cheshire, has just been re-opened, after restoration. The old pews have been all cleared away, and open benches of oak substituted for them. The fabric was originally much disfigured by the gallery which stood at the west end, completely filling up the tower-arch and hiding from view the west window in the tower. The gallery has been completely removed, the tower-arch thrown open, and the window filled with stained glass. The windows of the church have had new stone mullions inserted, and the stonework generally has been repaired and made good. The new font, presented by Mr. R. Heath, of Hefferstone Grange, is of white marble, with an oak cover. The marble work of the font was supplied and worked from the architect's designs, by Mr. John Cassiday, of Liverpool. The church will be warmed by means of hot-water pipes, this part of the work being undertaken by Mr. Seward, of Preston. The lamps and pendants have been supplied by Messrs. Hart, Son, Pearl, & Co. The general contractor for the works has been Mr. Robert Fairhurst, of Whiteley, and the plans for the work (except that in the chancel, which was done under the direction of the Ecclesiastical Commissioners) were prepared by Mr. Douglas, architect Chester.

BUILDERS' BENEVOLENT INSTITUTION.

The forty-eighth election of pensioners on the funds of this institution was held on Thursday at Willis's Rooms, St. James's, the president, Mr. William Higgs, in the chair. There were three candidates, all of whom were elected,—an event without precedent in the history of the Institution, which has now been established thirty years. Including the three pensioners just elected, there are now forty-six recipients of the funds of the charity, twenty-three men and twenty-three women, the men receiving 30*l.* per annum and the women 24*l.* The names of the new pensioners are John Morris (who was a member of the committee of the Institution twelve years, and also a subscriber), Mrs. Rebecca Brown (widow of Mr. John Thomas Brown, a subscriber to the Institution), and Mrs. Mary Ann Ebbs (widow of Mr. John Ebbs, a subscriber to the Institution from its foundation for twenty-four years).

The President remarked that the committee were able in this instance to elect all the candidates who presented themselves, owing to the satisfactory state of the finances of the Institution, to maintain which, however, it would require continued watchfulness on the part of its friends. The sum required to pay the pensions and to meet the necessary working expenses was about 1,700*l.* a year, which, after deducting the 600*l.* a year coming in from the 20,000*l.* invested in the Public Funds, left a sum of 1,100*l.* to be got together every year by subscriptions and donations. He thought the Institution might fairly hope to obtain this sum annually. A vote of thanks to the President terminated the proceedings.

THE MASONS' STRIKE.

The Strike Committee of the Masons' Union have this week issued what they are pleased to call a "manifesto," which has been published in all the newspapers, and which concludes as follows:—

"We in all confidence appeal to you to assist us in fighting this battle, which is not a battle of the Masons' Society against the master builders of London, but against an organisation that has for its especial object the extermination of all trade organisation, and reducing the English workman to the contemptible position of a slave."

The London Master Builders beg to be held excused from any such motives. They do not wish to be concerned with or interfere with the rules and practices of any trade organisations whatever, so long as these rules and practices are consistent with common sense and honesty. They object to the trade unions restricting men's labour so that the best men should be made to pretend to work instead of working, and so not to out-do the slow and incompetent man. They object to rules which prevent the best men from rising in their position and earning more money, and the constant interference exercised by the Masons' Union through the agency of shop stewards, whose chief business seems to be to put all hindrances possible in the way of the industrious artisan and contractors, of whom I am

One.

Books Received.

Notices of the Historic Persons buried in the Chapel of St. Peter-ad-Vincula, in the Tower of London. By Doyne C. Bell, F.S.A. London: John Murray.

As the title shows, this volume deals especially with the eminent persons who from time to time have been buried in and about the Chapel of St. Peter-ad-Vincula; but it also includes a carefully-written history of the chapel itself,—which has undergone several modifications during these later days,—and is illustrated with a number of good engravings, which include representations of other parts of the Tower. "In truth," as Macaulay says, "there is no sadder spot on earth than this little cemetery. Death is there associated, not as in Westminster Abbey and St. Paul's, with genius and virtue, with public veneration and with imperishable renown; not, as in our own humblest churches and churchyards, with everything that is most endearing in social and domestic charities, but with whatever is darkest in human nature and human dishonesty; with the savage triumph of implacable enemies, with the inconstancy, ingratitude, and cowardice of friends, with all the miseries of fallen greatness and of blighted fame." The notices of the persons buried here have been very carefully compiled, and the volume makes very pleasant reading. It is appropriately dedicated to her Majesty the Queen.

VARIORUM.

"Round about London," by a Fellow of the Society of Antiquaries (Stanford), is a little book which is not intended to compete with the two very interesting volumes on the same topic recently published by Mr. Murray; it nevertheless contains sufficiently-long notices of places within a circle of twelve miles round the metropolis to make it very valuable to those who contemplate short walking excursions. Hatfield, Uxbridge, St. Alban's, and other well-known spots, are all fairly treated in this little work, which has what Murray's book at present has not, viz., a map of the environs of London, greatly enhancing its usefulness to those who may be seeking from time to time for places to visit.——The *Church Builder* (Rivingtons) for 1877 makes a pretty little volume. This work has been enlarged, and the price increased, and now it includes more information than was previously the case, together with a number of very good illustrations.——Persons with the humblest means seeking to obtain some knowledge of science can have no difficulty at this time in finding works of small cost affording them what they desire. We have on our table at this moment a dozen books of the kind; as, for example, "The Elements of Machine Design," by W. Cawthorne Unwin (Longmans); "Practical Treatise on Mill-Gearing," by Thomas Box (Spon); two volumes of Lardner's "Handbook of Natural Philosophy," enlarged by Benjamin Lowey (Crosby Lockwood & Co.) (one treating of "Mechanics," the other of "Heat"); not to mention a number of others, all of them being thoroughly reliable works, and published at low prices.——"The Amateur Mechanic's Practical Handbook," by Arthur H. G. Hobson (Longmans), describes chiefly the different tools required in the workshop, the uses of them, and *how* to use them. This is not the only book of its kind recently published, but it is in a more condensed form than some others, and will be found very useful, at any rate in the colonies.——"Locomotive Engine-Driving," by Michael Reynolds (Crosby Lockwood & Co.), is a practical manual for engineers in charge of locomotive engines. It is evidently the work of one well acquainted with the subject, and if the drivers and firemen of locomotive engines throughout the kingdom could be brought to read it, they, as well as the public, would be advantaged.——"The Compendium of Architectural Sheet-Metal Work," edited by A. O. Kittredge (Sampson Low & Co.), is an American work,—a "trade book" rather than otherwise; but it contains such a very large amount of information on the subject of which it treats,—giving rules and directions for estimates, tables of roofing, of brackets, modillions, friezes, designs and prices of architectural ornaments, and drawings of cornices, window-caps, and so forth,—that we may safely recommend it for reference on this side of the Atlantic.——"The Geological Survey of Indiana," made during the year 1875, by E. T. Cox, State Geologist (published by the Centennial Company, Indianapolis), includes not merely accounts of the geology of the various parts of the State, but records the existence of all antiquities met with in the course of the survey. In Vanderburg county, the earthworks appear to have particular interest, and are described at some length. The United States Government deserve great praise for devoting money to these surveys, and Mr. E. T. Cox appears to have proved conclusively that he was the right man to be employed to carry out their views in the present case.——It is to be hoped that the attention of the Local Government Board authorities will be increasingly directed to the separation of pauper children and invalids from adult paupers and from unsuitable nurses, in consequence of what has recently occurred in a workhouse, near Birmingham, where an attendant has been sentenced to two months' imprisonment for cruelly beating, with a leather strap, a miserable pauper, seventy-five years of age, blind, dumb, paralysed, and bedridden. In connexion with this case, the appearance, in the *Contemporary Review* (December, 1877), of a very valuable paper on "Pauper Children," by Mr. Francis Peek, is very timely. He advocates the enactment of a measure to prohibit the training of children in the same buildings with adult paupers, and to provide for their being brought up exclusively in District Schools, or grouped Village Homes, on the Mettray plan, or by the Boarding-out system, individually under regular supervision. He shows that the latter system is universally adopted in Scotland, where it works admirably in its moral, sanitary and economical results.

Miscellanea.

The "Adelphi" and the Brothers Adam.—In an interesting lecture delivered the other day at the hall of the Society of Arts (in connexion with the Working Men's Club and Institute Union), Dean Stanley observed that as they went through London or elsewhere it was very instructive to ask always what was the meaning of the name of the place where they happened to be; he always did. To take the place where they were at that moment,—John-street, Adelphi, Strand. What did that mean? Some of them, of course, knew. Any one knowing Greek knew that Adelphi meant brothers; but why was it called "brothers"? It was because there were four brothers named Adam, who came from Kirkcaldy. These brothers were great architects, and they determined to rescue that part of London where they were at that moment from the mud of the Thames; they were, in fact, the founders of the Embankment. They were named Robert, William, James, and John, and those streets were called after them, and would continue a memorial of their energy and how they kept together by their strong brotherly affection.

Royal Scottish Academy.—The annual meeting of the Royal Scottish Academy was held on the 14th ult., Sir Daniel Macnee, president, in the chair. The principal business before the meeting was the election of three Associates in room of Messrs. George Reid, J. B. Macdonald, and John Smart, who were appointed Academicians in February. The *Scotsman* understands that the following gentlemen were elected to the vacancies in the order named:—Messrs. W. D. Mackay and D. W. Stevenson, Edinburgh; and J. Docharty, Glasgow. A fourth Associateship remains to be filled up; and there will be another vacancy created in February by the promotion of an Associate to the rank of Academician, in room of the late Mr. James Drummond.

The Royal Windsor Tapestry Works.—The success which has attended the tapestry works at Old Windsor has necessitated their removal to Manor Lodge till a larger factory is erected for the accommodation of additional workmen. The tapestries which will be shown at the Paris Exhibition next year are nearly finished. A cartoon, representing a stag-hunt in the reign of Henry VII., and one of several intended as designs for tapestry ordered by Mr. Christopher Sykes, M.P., has just been completed by Mr. E. M. Ward, R.A. The old tapestry damaged by the recent fire at Inverary Castle is in course of restoration at the works.

St. Paul's Churchyard.—The *City Press* hears that the efforts which have been made to secure to the people of London the ground round St. Paul's Cathedral have been successful, and that an agreement will shortly be entered into between the Dean and Chapter and the Corporation for this purpose. The contemplated improvements include lowering the palings, remodelling the ground, planting trees, and making the necessary pathways. We have long urged that the railings here should be re-arranged.

Paris Exhibition, 1878.—There will be an International Show of Breeding Stock in conjunction with the Universal Exhibition, and very handsome prizes will be given. Programmes and "Entry Forms" can be obtained on application at Canada Buildings, King-street, Westminster, S.W. Intending exhibitors should make their entries by December 20th. The general superintendence of the Agricultural Department has been entrusted to Mr. Brandreth Gibbs.

A Park from the Queen.—At a special meeting of the Heywood Local Board it was announced that the Queen had presented to the town twenty acres of land for the purposes of a public park. The money has been set apart by the Queen out of a sum exceeding 10,000*l.* which fell to her as Duchess of Lancaster through the death, without heirs, of Mr. C. M. Newhouse, of Heywood.

Ventilation, Wolverhampton Town-hall. G. Eastlake Thoms, borough engineer and veyor, Wolverhampton, has presented a report the public works committee as to the ventila- n of the committee-rooms of the Town-hall. says that, having carefully investigated the tems now in use, he has come to the conclu- n that the system adopted by the Sanitary gineering and Ventilation Company, London, on the whole, that which he has most con- ence in recommending. By this system the mission of the air is accomplished by making opening in the outer wall, generally at the or-level, through which the air flows into the m by means of a vertical tube or pipe (about t. high for ordinary apartments). In passing rough this tube the air attains a velocity ich carries it towards the top of the room, adually spreading out as a spray, thereby xing with the warmer air of the room, and en descending gradually. By this arrangement, e air at the top of a room is as fresh as that at e lower part, by reason of its being continually anged, and the temperature is also uniform roughout. Provision is made for intercepting st, "blacks," and other dirty particles. Directly air is admitted through the perforated ating on the outside of the opening, it is flected or thrown down on to a body of water, hich at once arrests the floating particles with- t interfering with the inflow of the air. This ater can be renewed, and the water-tray with accumulation of dirt flushed out by occasion- y pouring water down the tube.

The Patent Laws.—In his address at the ening meeting of the Society of Arts on the st ult., Mr. William Hawes dealt with a large mber of interesting topics coming within the pe of the Society's operations in the pro- otion of arts, manufactures, and commerce. mong the subjects dealt with was patent-law form, Mr. Hawes remarking that "one of the eatest difficulties in connexion with the patent- w is the determination of what is a new inven- n. It can hardly be maintained that a modi- ation or improvement in the arrangement of rts of a new machine can entitle the improver a monopoly of the same duration as that given the original inventor. An original inventor, discoverer of a new process beneficial to the untry at large, deserves reward. But, except very exceptional cases, does the patent-law ure to him this reward? It would be better t a reward, however large, should be given the State, when the novelty and public utility an invention had been proved, than that housands of useless patents should be granted, which progress in invention is retarded, and ficulties and impediments placed in the way a real genius, who, after years of labour, per- ts that which he has long striven for, and then ds that he cannot proceed without first meet- g demands made upon him for claims for rights ained under scheming and useless patents, ten out mainly for speculative purposes."

The Thames Steam Ferry, recently opened traffic, is situated almost immediately over Thames Tunnel. The works were commenced October, 1875, when the first pile of the wharf the Wapping side of the river was screwed the then Lord Mayor, Alderman Stone. The ading-stages on each side are raised and vered to suit the state of the tide by hydraulic chinery invented by Mr. F. E. Duckham (the gineer from whose plans the whole of the rk has been carried out), and the means of mmunication are two ferry-boats, the *Pearl* d the *Jessie May*, each of which is 82 ft. in gth by 42 ft. in breadth, with a carrying pacity of fifty tons, accommodation being rded for twelve two-horse vans, besides foot- ssengers. The tariff is 1d. for a pedestrian; tle, 6d. per head; cab, with fare, 8d., returning pty, free; and other vehicles from 8d. to 2s. 6d., cording to the number of horses by which y are drawn, and whether empty or laden.

St. Luke's Church, Old-street. — This urch has been re-opened. It has been sed for some months, in consequence of tain dilapidations. The woodwork of the ts had decayed, coffins had to be removed, d there was the want of general repair. e Ironmongers' Company have helped the rk of restoration, Mr. Warren De la Rue subscribed 250*l.*, and with the aid of the shioners, the funds for the renovation have n approached in amount. The walls have n underpinned, and the interior of the fabric tored. Mr. Blomfield was the architect.

Cocoa House, Chester.—On the 17th ult., the "Little Nag's Head Cocoa House," Chester, was opened by the Duke of Westminster, the owner. Formerly a public-house, the building has been altered to suit its new purpose. The ground-floor contains a restaurant, with smoking-room, kitchen, &c., in connexion therewith, and two staircases to the first-floor. On this floor there is a large club or refreshment room, extending the whole width of the front, and a separate room for women in the rear, with convenient offices. The attic floor is occupied by a club-room overlooking the street, a manager's room, and bedrooms at the back. The frontage of the old building was in a line with the adjoining houses; but the new front has been set back on the ground story to allow greater width of pavement, the upper stories being projected to increase the area of the rooms and protect the bay windows. The timber framing of the front is executed in English oak, filled in with thin bricks on the first floor, and sgraffito work above, the latter being carried out by Messrs. Trollope & Sons. Messrs. F. T. Farrimond & Co., of Chester, were the general contractors. The carving of the tracery on the beams, &c., has been executed by Mr. Brown, the brick-work by Mr. Parrot, the plumbing by Mr. Isaac Williams, and the painting by Mr. Ellis, all of Chester; the whole from the designs of Mr. John Douglas, architect.

The Rivers Pollution Act.—The third inquiry under the twelfth section of the Rivers Pollution Act was opened on the 23rd ult., at the town-hall, Barnet, by Mr. R. Rawlinson, C.B., C.E., the inspector appointed for the purposes of the above Act by the Local Government Board. The Local Board of Barnet, for some time past, have been put to great expense and inconvenience through legal proceedings which have been brought against them in consequence of the pollution of Dollis-brook by the sewage from their sewage works. Both in the Chancery Division of the High Court of Judicature and at the Hereford Assizes in March last, proceedings had been instituted against them, and in both cases they were mulcted in costs. They now applied to the Local Government Board for a certificate under the 12th section of the Rivers Pollution Act, 1876, to the effect that the means used by them for rendering harmless the sewage matter flowing or carried into Dollis-brook (the cause of the litigation) from their sewage outfall works, are the best or only practicable and available means, and the inquiry was opened by Mr. Rawlinson for hearing the circumstances of the case, and of deciding as to the granting of such certificate. The inquiry was adjourned.

Blasting by Means of Dynamite.—Some interesting experiments to show the capabilities of dynamite as an explosive for blasting purposes, fired either by electricity or by fuse, have just taken place at the Forcett Limestone Quarries, near Darlington. The experiments, which were conducted by Mr. John Harris, for Nobel's Explosives Company, are asserted to have demonstrated the superiority of dynamite over gunpowder and other explosives as to safety, economy, and strength by the immense displacement and breaking up of the stone. It is also stated to have been proved that dynamite requires a strong percussion-cap to explode it, and that when set fire to in any other manner it merely burns harmlessly away.

Liverpool Operative Plumbers' Association.—On the 19th ult., the eleventh annual tea-party and ball in aid of the Widows' and Orphans' Benevolent Fund of the Liverpool Operative Plumbers' Association, took place at St. George's Hall. Upwards of 800 persons sat down to tea. After tea the chair was taken by Mr. Edward Whitley, Mr. David Bage, secretary of the ball committee, read the annual report, which showed that the amount realised by last year's ball was 126*l.* 19*s.* 2*d.* Of this sum there had been paid to widows and orphans 58*l.* 15*s.*; to afflicted members, 49*l.* 19*s.*; and after paying some expenses there remained a balance of 14*l.* 19*s.* 4*d.*

Bow-street Police-court. — Application is intended to be made to Parliament in the ensuing session, on behalf of the Commissioners of her Majesty's Works and Public Buildings, for an Act to empower the Commissioners to acquire and take, by compulsion or agreement, certain lands, houses, &c., for the purpose of erecting buildings and conveniences in connexion with the authorised new police-court, in lieu of the existing Bow-street Court.

Stow-on-the-Wold.—The foundation-stone of a new town-hall for Stow-on-the-Wold has been laid. The building, which will occupy a conspicuous position in the Market-square, will consist, on the ground-floor, of library, 26 ft. by 18 ft., and reading-room, 31 ft. by 17 ft.; gentlemen's cloak-room, porch, hall, staircase, and custodian's apartments; and on the first floor will be the assembly-room, 50 ft. by 24 ft., with committee and ante-rooms, and ladies' cloak-room. The building will be Gothic in style. It will be built of Farmington stone, and roofed with Kinton Hill stone tiles. Mr. Medland is the architect, and Mr. Estcourt the builder, Mr. Saunders acting as foreman of works. The cost will be over 4,000*l.*

The Darien Canal Scheme.—A note was read at the last meeting of the Academy of Science, Paris, from M. de Lesseps, who at the last Geographical Congress was appointed President of a Commission to consider the best means of accomplishing international communication across Central America. The Commission, he stated, were in favour of the project of a canal, 44½ miles in length, that would traverse the Darien isthmus from the river Tuyoa to the Atlantic, and would have the immense advantage of not requiring any locks. A tunnel, however, 8¾ miles long, will have to be constructed, and to provide a passage for the largest vessels it will have to be 118 ft. high. The cost of the tunnel and other works is estimated at twenty-five millions sterling.

Experiments with Hydrants.—The gas and water committee of the corporation of London have lately carried out a series of experiments in connexion with the hydrants which have been laid down in several parts of the City for immediate use in case of any outbreak of fire. No fewer than 100 of these hydrants have been completed and are ready for use, and about 150 more will soon be ready. It is proposed that there shall be 1,000 of them in the City alone for fire-extinguishing purposes. At the experiments referred to the hydrants were in turn practically tested at the Royal Exchange, Dowgate-hill, the Cannon-street Station of the South-Eastern Railway, and several other places.

Improvement of Dwelling Houses.—On the 17th ult. the fourth of a course of sanitary lectures at the Gloucester School of Science was delivered by Mr. F. W. Waller, on "Comfort and Health in existing Homes." The lecturer referred to the necessity for greater legislative powers being passed to prevent overcrowding, to abate nuisances, and to compel builders to adopt proper sanitary precautions. Town houses might be periodically inspected, and the landlord granted a certificate of healthiness where it ought to be given, and no houses let without a proper certificate. Though this would cost money, a vast amount would be saved in preventible illness.

A Railway King.—Asa Foster, who died at Montreal on November 1, is stated to have been one of the most enterprising men in the Dominion. He was contractor for part of the Grand Trunk Railway and for various other railways in Canada. On the accomplishment of the confederation he was appointed to the Senate of the Dominion, but retired from it two years ago on receiving a contract for the construction of the Georgian Bay Branch of the Pacific Railway. At the time of his death he was actively engaged in making arrangements to complete this contract.

Depression of Trade in South Wales.—The *Times* cites, as a proof the depressed state of the coal and iron trade in South Wales, the fact that there now stand in the parish of Merthyr alone the extraordinary number of 1,000 houses unoccupied and untenanted. An extensive exodus of the working class has been going on for some time, and colliers who have for years lived in the district have now left it for the county of Monmouth, or the more flourishing fields of the Rhondda Valley.

The Middle Level Outfall Sluice.—The new sluice at the Middle Level Works, near Lynn, has been opened. The engineer is Sir John Hawkshaw, and the contractor Mr. Webster. The cost is between 40,000*l.* and 50,000*l.*, and by it 200,000 acres are to be drained, and rivers to the extent of 200 miles. The sluice is in substitution of syphons, which will now be discontinued. It is said that the fen country of the Isle of Ely will now be safe from inundation.

The Masons' Strike.—Mr. Ball, the contractor for the New Law Courts, having been in Germany some time for the purpose of selecting for himself men capable of work, and willing to come to this country to serve him, has been so far successful that he returned to the works on Wednesday morning with 129 German masons. In each instance the men have signed a contract for twelve months, their pay averaging from 7d. to 9d. the hour. Fifteen German masons, who came to this country of their own accord,—paying their own passage,—commenced work on Tuesday at the Law Courts, and they report that fifteen others will shortly follow their example. It is said that the American masons are so satisfied with their position that the wives and families of several of them are now on their way to England to join them.

The "Premium" Door and Gate Spring. At first sight the position of the spring (which is shown by an illustration in our advertising columns) would seem to render it liable to bulging, but experience of it contradicts this impression. It is one of the simplest and cheapest of springs that we know of for the intended purpose, and if it be found to endure (as we have little doubt will be the case) it can scarcely fail to come into use.

Site for Cleopatra's Needle.—We are glad to hear that Mr. John Dixon has sought and obtained permission to erect another dummy obelisk (in addition to that placed in Parliament-square) on the Victoria Embankment, either at the foot of Northumberland-avenue or inside the railings of the gardens opposite the York Steps, about midway between Waterloo and Charing-cross Bridges, as he may deem best.

The Model Bye-Laws.—The report on the "Model Bye-laws" by the Council of the Liverpool Architectural Society is worth the attention of those who are investigating their worth or otherwise. The reporters consider the proposed laws on the whole "grievous and oppressive." The report is printed by J. A. D. Watts & Co., Liverpool.

Serious Fire at a Builder's.—On Monday morning, between nine and ten, a fire of a very extensive character happened in the larger pile of buildings belonging to Messrs. F. J. Terry & Co., builders, &c., of Effra-parade, High-road, Bromley, Kent. It is understood that Messrs. Terry's business will not in any way be delayed through the fire.

Glasgow University.—The Marquis of Bute has offered to build, at his own expense, and to present to the University of Glasgow, the grand hall of the new buildings, according to designs proposed by Sir Gilbert Scott, R.A. It is estimated that the building will cost from 70,000*l.* to 80,000*l.*

Competition Plans for Hospital for Infectious Diseases.—The Maidenhead Town Council have awarded the first premium to the author of the plans under the motto "Ad Rem," and the second premium to the author of the plans under the motto "Serio."

Northfleet Brick Company.—Some of our readers may be interested in knowing of the formation of a company under this title for the purpose of acquiring and working a leasehold property at Northfleet, Kent, for the manufacture of bricks.

Sinking of the Roadway, Shoe-lane.—On Monday morning some alarm was occasioned in Shoe-lane by reason of the sinking of a portion of the roadway and footways at the northern end of the thoroughfare lying between the bridge close to Dr. Parker's chapel and Charterhouse-street. This subsidence appears to have been caused by excavations in the vacant land on both sides of the street, carried on at a great depth below the foundation of the buildings which had previously stood there.

Dray's Patent Concealed Urinal.—This heading itself explains the merit claimed for Dray's arrangement. It is a great improvement upon the intrusive affair often seen, and in a case under our own eye has acted for some time perfectly well.

TENDERS.

For proposed alterations at the Prince of Wales Tavern, 119, Hampstead-road, for Mr. G. K. Turnham. Mr. J. R. Furniss, architect:—

Batchelder	£753 0 0
Sommerville & Smith	700 0 0
Evers	695 0 0
Schlater	659 0 0
Gould & Brand	629 0 0
Ashby & Nicholls	620 0 0

For alterations and additions to the Stafford Hotel, Paddington. Messrs. Bird & Walters, architects. Quantities supplied:—

Newman & Mann	£3,220 0 0
Temple & Foster	3,185 0 0
Lawrance	3,150 0 0
Brass	3,149 0 0
Williams & Son	3,078 0 0
Mark	2,980 0 0
M'Lachlan & Sons	2,869 0 0
Hockly	2,830 0 0
Marr	2,816 0 0
Nightingale	2,744 0 0
Langridge & Sons	2,694 0 0
Anley (accepted)	2,670 0 0

For Llanbister schools. Messrs. Haddon Brothers, architects. Quantities supplied:—
Speake (accepted).

For rebuilding Black Lion public house, Whitefriars. for Mr. Causton. Messrs. Groome & Dixon, architects, Mr. C. Kirkly, surveyor:—

Stamp & Bowtle	£2,445 0 0
Steel Bros.	2,410 0 0
Lawrence	2,403 0 0
Langmead & Way	2,390 0 0
Andrews	2,340 0 0
Patman & Fotheringham	2,295 0 0

For Chiswick main drainage. Contract No. 2. Engines, pumps, and machinery. Mr. H. O. Smith, engineer:—

Thwaites & Carbutt	£3,775 0 0
Jackson	3,378 0 0
Amos & Smith	3,370 0 0
Dale	3,032 18 0
Hayward, Tyler, & Co.	2,996 14 6
Young & Co.	2,950 0 0
Vulcan Foundry Company	2,749 17 0
Moreland & Son	2,672 0 0
Holroyd, Horsford, & Wilson	2,642 15 0
I'Anson & Co.	2,633 0 0
Oliver & Co.	2,553 8 0
Mason & Co.	2,545 14 0
Stott & Co.	2,400 0 0
Gwynne	2,384 16 0
Simpson & Co.	2,349 10 8
Hett	2,345 0 0
Pontifex & Wood	2,224 14 8
Swift & Dod	2,148 5 0
North Moor Company	2,105 0 0
Hathorn, Davis, Campbell, & Co.	1,990 0 0

For converting and finishing two carcasses into showrooms and warehouses, at Folkestone, for Mr. John Banks. Mr. Burgess J. Reeve, architect:—

Payne	£1,180 0 0
Prebble	1,149 0 0
Brooks	1,098 0 0
Slade	1,050 0 0
Butler	989 0 0
Holdom (accepted)	980 10 0

For pulling down and erecting a new front to the Victoria Inn, Folkestone, for Messrs. A. Langton & Co. Burgess J. Reeve, architect:—
Petts (accepted).

For Hereford Middle-class College. Quantities supplied. Mr. F. R. Kempson, architect:—

Baker & Sons	£16,800 0 0
Wood & Sons	15,855 0 0
Yates	15,597 0 0
Wingate & Son	14,970 0 0
Colman Brothers	14,846 0 0
Welsh	14,300 0 0
Stephens & Bastow	14,299 0 0
Bowers	13,479 0 0

For warehouse at Sharpness. Quantities supplied

Chubb	£3,801 0 0
Thompson & Roberts	3,630 0 0
Church	3,211 0 0
Stephens & Bastow	3,208 0 0
Brock & Bruce	3,150 0 0
King	3,068 0 0
Jones & Co.	3,061 0 0
Robertson	2,993 15 0

For staircases in Hopton Wood and Parkspring to shops in Moorgate-street, for Mr. Cave. Mr. Pea architect:—

Beevers	£1,295 0 0
Tilney & Co.	1,000 0 0
Maslin Bros.	764 15 0

For erecting three premises, Salisbury-court, F street. Mr. A. Peebles, architect:—
Langmead & Way (accepted).

For block of four cottages, Maidenhead, for Mr. Britton. Mr. E. J. Shrewsbury, architect:—
Woodbridge (accepted) £735 0 0

For granaries, &c., for Messrs. Gibson & Co. Mr. Shrewsbury, architect:—
Woodbridge (accepted) £400 0 0

For proposed house and stables, at Crouch-end, fo H. Ryder. Mr. W. Treheame, architect. Mr. Wardle, surveyor:—

Patman & Fotheringham	£1,875 0 0
Anley	1,880 0 0
Faulkner	1,835 0 0
Nightingale	1,816 0 0
Langmead & Way	1,745 0 0

For the erection of a detached house in Holly Par Mr. J. Wilson. Messrs. W. Waymouth & Son, tects:—

Sheffield & Prebble	£810 0 0
Smith & Co.	804 0 0

For detached house at Mount-pleasant. Messrs Waymouth & Son, architects:—
Smith & Co. £815 0 0

For joinery for Mr. W. Perry. Mr. J. Ashby, tect:—

Torode	£520 17 6
French	238 8 0
Lascelles	220 0 0
Rees & Son	200 0 0
Godbolt	196 3 0
Sawbridge	195 13 4
White	170 0 0
Row	170 0 0
Webber	170 0 0
Brock & Bruce	165 0 0
Dowland	150 11 6
Bowers	150 0 0
Longman	148 11 8
Smitheman	147 0 0
Fowler	137 0 0
Thomas (accepted)	110 11 10

[How is this to be explained?—Ed.]

TO CORRESPONDENTS.

F. C. O.—M. L. G.—S.—B. P.—S. H. B.—J. & Son.—J. F. & S W. H.—M. & Co.—F. C. P.—H. W.—Victoria.—J. B.—L. A T. D. B.—G. R.—J. B. R.—J. L.—H. C.—J. A.—L. & W.—J. H. O. S.—M. (no).—F. T. (next week).

We are compelled to decline pointing out books and addresses.

All statements of facts, lists of tenders, &c. must be accom by the name and address of the sender, not necessari publication.

Note.—The responsibility of signed articles, and papers r public meetings, rests, of course, with the authors.

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.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

VOL. XXXV. No. 1818. SATURDAY, DECEMBER 8, 1877.

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How the Bye-Laws Worked at the Institute.

A WORD on one or two points in regard to the last meeting of the Institute, the proceedings at which are reported elsewhere in our columns. The election of a long list of Honorary Associates, nearly all bearing names well known and honoured for their ability and distinction in various departments of the work of the world, caused a delay a little tedious at the time, but must be a subject for congratulation to those who wish well to the representative body of British architects.

In the discussion which took place on Mr. White's paper, read at the previous meeting and reported at considerable length in our columns, one or two points of practical importance were started in opposition to the views propounded in that paper. Mr. Cates, referring to what had been said, by implication at least, in the paper under discussion, in regard to the influence of the Crown agents, as holders of property, in opposition to improvement, called attention to what had really been done by the Crown, for two or three generations past, in effecting important improvements in the centre of London, and insisted that both the Crown and the typical "noble" landowners referred to by Mr. White were really rather sinned against than sinning,—were tied and bound by the chain of prior settlements which the law had sanctioned, and which were in reality absolute impediments to any improvement in the principle and practice of dealing with house property and building-land in a great portion of London. "Marriage settlements" had been the bane of much property that might be twice as valuable in every sense if not burdened with the antiquated conditions thus imposed. Mr. Hansard drew attention to the actual expenditure which would be entailed in acquiring and rebuilding an "island" of property contiguous to Regent-street, such as that described in the paper; but he was practically answered by Mr. Foster Hayward, who pointed out that Mr. White had not professed to go into that question—had merely given an example of how such a block of building might have been arranged *ab initio*. The President summed up in favour of English social habits and institutions, as at variance with the method of arranging houses proposed by Mr. White. It is only due to the latter gentleman to say that he replied to the attacks directed against his scheme with a degree of humour, point, and vivacity which might have made its mark in any assembly, and which was fully recognised by the meeting, and procured him repeated rounds of applause. Two objections, however, we think, hardly received an answer; one was a small but exceedingly practical objection, that of the repeated cutting up of the foot-path which would ensue if Regent-street, for example, were lined with a number of blocks of houses, each with its carriage-entrance giving access to the central courtyard; and this, in addition to the already numerous cross streets each of which obliges the foot-passenger to keep a good look out against the danger of being *écrasé*. The question of economy, *so far*, is also in an unsettled condition. In spite of all we believe as to the advantage, in an economical point of view, of the "flat" system, the fact remains, that rooms in some existing "flat" buildings cost more, in rent, than better rooms in ordinary "chambers." They are sometimes in a better building, it is true; but not always. And many will agree with the president of the Institute in thinking that English domestics will require some generations of training before they will be content to have their apartments and "offices" shrivelled to the dimensions which are considered ample in *la maison à loyer*, on the French principle. At the same time we hold that English servants, as at present constituted, are an exacting and self-indulgent race,—in the upper classes of them especially; and it was amusing to note that the remark, that to accept these newly-planned habitations we must all be content with French cooks, was received with a buzz of applause, as it well might be!

Spite of all objections to the flat system, real and imaginary, we are satisfied that it may be introduced in many parts of London with much advantage under good management, and we expect to find that this will be done.

But now we come to the point of doubtfulness in regard to the meeting, the first under the new rule, which adjourns the discussion till the evening following that on which the paper is read. We printed last week a letter from "An Old Member," finding fault with the new regulations generally, though we did not wholly agree with it. In regard to the setting apart of special seats for the Council, for instance, we see no objection whatever to this, in moderation; it is an arrangement tending to increase the dignity and formality of the meetings, and formalities of this sort are not to be despised, and it is due to members of the Council who may be engaged on the business of the Institute in an inner room, that seats should be reserved for them. Moreover, we can testify that on this occasion at least the Council benches were well filled, and there was none of that huddling together of sparse numbers described so pathetically by our correspondent. But we must say that the result of the new arrangement was in one sense most unsatisfactory, though precisely what we expected. We did not detect anything in the discussion which could be directly traced to the influence of the special and exhaustive thought supposed to be bestowed upon the paper during the intervening fortnight,—anything, in short, which might not as well have been said immediately after the reading of the paper. But we did find exactly the result that we expected,—that it was impossible for the President to confine the discussion within the limits necessary to give fair hearing to the paper for the evening. It must be admitted that the proceedings were driven later than they ordinarily would be owing to the time occupied in balloting for the great number of Honorary Associates; and no time was unnecessarily lost in this operation, which was managed in the most business-like manner. But in spite of all this, we have the fact that the discussion was intended to be closed, according to the new rule, by half-past nine, and that it was not in fact closed till five minutes to ten. Under these circumstances Mr. Neale, whose fine illustrations of St. Alban's Abbey covered the walls, and who was prepared, we believe, with a full and elaborate paper on that grand building, desired to adjourn, rightly feeling that neither was he in a state to read nor were his audience in a state to listen to such a paper after a long debate on another subject. In this he was warmly supported by Mr. Street (who did not scruple to say that the rule placing the discussion on the previous paper before the paper of the evening must be rescinded), and by the unanimous feeling of the meeting, who thought it unfair to a young writer of a paper to which he had given much trouble and thought that he should be forced to read it under such circumstances. So Mr. Neale's paper stands adjourned; the space to be found for it as the Council may determine; and, if we understand rightly, it will be read *first* on the 17th inst., and the meeting will commence at half-past seven instead of eight. The discussion will immediately follow the paper. This is the kind of difficulty which will constantly recur. It is impossible under these circumstances to keep a discussion within limits, when a meeting is interested in it, without an exercise of sheer despotism on the part of the chairman; and, at the best, who would care to read a paper he had given his best mind to, towards the close of an evening, and to an audience tired and sated with discussion? The paper of the evening must be the leading matter for the meeting; it is inverting the natural order of things to put a long discussion on another subject before it; and the matter will hardly be mended by adopting the suggestion we heard made, of reading the paper of the evening first, and then going to the discussion of that of the last evening,—"moving the previous question," as one may say. The bye-law on this point will have to be rescinded, or there will be endless dissatisfaction and confusion,—that is just the truth of it; and we are in a position to assure the governing body that this was the general feeling of the non-official majority last Monday evening.

Before quitting the subject of the meeting, we refer with pleasure to the exhibition of sundry sketches illustrative of Japanese architecture and design, by Mr. Conder, who has recently been summoned to teach architecture to "the

spirits in prison" in Japan. The appointment of a young English architect as a professor of architecture in a Japanese college is an interesting event, and suggests the question,—what architecture will he endeavour to engraft on the Japanese? There is a great opportunity, surely, for the evolution of "a new style."

THE GROSVENOR GALLERY IN WINTER

If there were some doubt whether the new gallery in Bond-street quite fulfilled its mission in the opening exhibition held there in May there can be no such doubt in regard to that which opened to the public on Monday last. If the Grosvenor Gallery is to become, as we hoped and by implication promised, a centre for exhibitions above the run of everyday taste, and appealing to the cultivated minority, a better step towards this end could hardly have been made than by combining in one set of rooms a large and almost representative exhibition of old English water-colours, and a still more numerous collection of original sketches and studies by great artists of the class now generally defined as "old masters." This latter part of the exhibition, though occupying less of the wall space, is in reality the most interesting and valuable portion. It cannot be called "representative," only because the productions of this class fortunately exist in too great numbers and in too many localities to be fairly represented in any single exhibition of moderate extent; what is to be seen here is but a gleaning. Such as it is, however, it is of such interest and variety that we rather prefer to defer detailed notice of this part of the exhibition till after a more leisurely survey, and will here confine ourselves to some remarks on the water-colours.

These are arranged in the large West Room of the Gallery, and are as far as possible grouped according to authorship; drawings by Turner and David Cox, the two greatest of English water-colourists (if we may for a moment speak of Turner in this light only), occupying respectively the greater part of the two end walls, and Girtin having a compartment to himself on the east side of the room. The arrangement of the exhibition and of the catalogue is due, we understand to Mr. Comyns Carr, under whose editorship also a larger edition of the catalogue, accompanied by facsimile reproductions of some of the old masters' drawings, is promised to those who are willing to subscribe thereto. The date of birth and death of each artist is inserted, for the most part, under the first appearance of his name in the catalogue; a useful memorandum for immediate reference.* The list commences, after a single specimen by Gastineau, with some dozen or so of Constables, of which there are three little drawings (10, 11, 12), exhibiting some of his finest qualities, and one rather larger, of "Old Sarum" (9), to which special attention should be given, for it is one of the most remarkable specimens that could be seen of the attainment of real grandeur of effect and sentiment in landscape, on a small scale. The drawing represents the historic mound at Sarum which marks the site of some monument of ancient barbaric greatness: the modelling of the sweeps and folds of the ground in the middle distance, apparently by single washes of the brush, the extent of distance to which the eye is carried, the grand effect of the sky, produce a result which is astonishing on a piece of paper a foot square. A great many of the lights are taken out apparently with the point of the knife, not a very usual method with Constable, but producing its intended effect without hardness or glitter. We pass to a group of names less familiar now; Wheatley, for instance, whose peasants are like "good-book" people, got up to look amiable and pretty, and to convince us of the superiority of peasant life to every other, but like no real people We have got nearer reality than that, at all events in more modern representations of the characteristic features of humble life. John Glover whose finished and placidly harmonious drawings meet us at various turns in the room, is best represented by his large "Danstanborough" (16), with its grand rock standing up in a warm glow of light in the background, and the "drawing master" trees in the foreground, trees being apparently the last thing in nature to receive individuality of characterisation by English artists. Even Gainsborough is a great sinner in this way, as may be seen from a few small sketches of his in another part of the room, where the trees are indicated in a most routine manner; not Nature's trees, but Gainsborough's Francia's "Stranded Vessel" (18) is a fine specimen of the school of water-colour in which all things were varieties of brown, except a fisherman's red jacket or two; and Cozens's drawings represent a type in which all things are varieties of grey. This colourless view of Nature, and the gradual steps by which colour is superinduced upon it, no doubt represent to a considerable degree not merely progress in taste, but progress in the development of the water-colourist's palette, which was so restricted in the earlier period as to confine the artist practically to something very like monochrome painting. Poor Cozens, who lived a quarter of a century before Francia, had not even Francia's browns; what he did with his greys is remarkable enough, considering his limitations. His "View of St. Peter's at Rome" (40) has a little more variety of tone,—"colour" one cannot say, and is notable as being an exceedingly clear and hard rendering of distant buildings without losing atmosphere. Among the drawings in this part of the room the views of "Ely" and "Durham," by George Fennell Robson (14 and 31), later in date, have peculiar excellence as combining finish and a great degree of realistic effect with a fine feeling for the picturesque; the small view of Durham has very unusual excellence in this respect. We next come to a group of Cattermoles. Here we are in the midst of colour, very fine and very rich colour; but the drawings of this admirably-gifted artist do not in one sense gain by juxtaposition: they show, indeed, how uniformly excellent was his work in its own way, but they also show emphatically how very limited were his motives in subject and composition. There is, however, one very bold and powerful sketch of the "Falls of the Clyde" (47), which rather takes one by surprise, and in general feeling might not inaptly be compared with David Cox. With regard to the works of this latter great water-colour artist, nearly fifty of which find place on the south wall of the room, there is hardly occasion to say anything further here; hardly room to say anything new. The principal drawings among those exhibited are well known; and the greatness of Cox's style, as an exponent of the highest and most powerful capabilities of pure water-colour, is recognised and done justice to universally now. This can hardly be said to be the case with the works of the painter who comes next on the walls, John Sell Cotman; nor, we must add, is that gifted and unfortunate genius, who was compelled to waste the best part of his life in the drudgery of school teaching, at all adequately represented here. Some of the drawings exhibited, such as that called "A Bridge" (101), show something of his peculiar power as a colourist, but his finest productions are not here. A curious contrast between real and false genius, however, is suggested on comparing even such works of Cotman's as are collected here with those next adjoining them by Barrett. It is difficult to understand on what principle this concocter of artificial classical landscapes finds a place in such company. There is a certain capability of doing what he meant to do, certainly; but, then, it never was for one moment worth doing. Nor does Copley Fielding's delicate and weak manner tell very fortunately amidst much work of a far higher and more powerful class; it must be said, however, that his qualities, never the highest, but still with an excellence of their own, are not adequately represented. Of far higher interest are the drawings of an artist much less popularly talked of, who, to distinguish him from the greater man of the same name, is described in the catalogue as "Turner, W. (of Oxford)." "Lowering Weather" (124) a large highly-finished drawing, has very fine qualities; we have seen and admired it before, but are surprised to find how it holds its place in such a collection as the present. Another smaller drawing by the same hand, "Stonehenge" (156), which is new to us, is a truly remarkable work; it represents almost the first complete view of "the stones" on the road from Amesbury, and is as minutely correct in regard to the whole scene as if topographical realism had been a main object, and at the same time is a drawing full of fine and poetic feeling. This remarkable little work is the property of the Duke of Devonshire. One is obliged to confess that John Varley, much as we owe to him as one of the founders of the English water-colour school, does not look remarkable in this collection. He, it is true, is not very largely represented; but what strikes one in comparing his works with those of some other good names, old and new, is that he was not so certain as to his scale of colour and his mode of treating nature as were some of the earlier and later men. He has not the completely balanced though low-toned harmony of Girtin; he introduces strong and decided colour, but seems unable to combine it with his whole scheme of landscape; it is colour introduced partially, and as if experimentally. And in regard to composition and general impression, the landscape of Cornelius Varley, "Farm Buildings" (135), is superior to anything by the other of the name who is represented. This is not, as its name might imply, a picture of buildings; these merely stand out as a central object in the middle distance. Then we come on a collection of De Wints, amongst which a large landscape by Callcott seems to find a very natural position, for its feeling and handling show an affinity with De Wint, only with poorer tones; it is what may be called a very finely-modelled landscape, almost entirely deficient in local colour. This latter deficiency may in a sense be said to exist in De Wint; but then his tones, though when considered absolutely they are unlike nature, are so true relatively, and so rich and harmonious for the most part in themselves, that the result is quite satisfying to the eye and mind. We say for the most part, for there are works of his here which are not up to his best standard (indeed, none of his really finest productions are exhibited), and in which the colour is of a doubtful and nondescript kind. It is possible, however, that the background against which the drawings are hung has something to do with this. Even when oil paintings were exhibited at the Grosvenor Gallery the hangings were found fault with as injurious to the pictures; and, when we come to water colours, it is difficult to imagine anything less calculated to set them off than a background of strong crimson. In "The Hayfield" (179) the haystacks look almost green, and we attribute it to the preponderance of crimson in the room. Such delicate tones as De Wint's demand very tender treatment in regard to their surroundings.

We may pass over with a word of recognition the familar work of William Hunt, just observing how completely such sound conscientious art as this, though limited in its range, keeps its place,—how thoroughly "safe" it is. We fear it is impossible to say the same of another set of works bearing a well-known name, which hang near. With all the picturesque effect and remarkable facility in his own line which is shown in the numerous drawings of Prout, the juxtaposition of a considerable number of them only confirms the idea which has been current for some time among thoughtful critics, that his success was due to something very like a trick in picture-making, rather than real artistic insight. Singularly enough, our eye was caught by a work belonging to the same class as Prout's, and hung with his drawings, a view of the house of Rienzi at Rome, and our reflection was that after all Prout could be more forcible and masculine in style than we had supposed. But the pleasing deception was momentary; the drawing was by Cromeck. Any one who would compare it with the drawing by the more popular artist immediately over it, must see how mannered and conventional is his treatment of masonry in comparison, although there is always that sort of effectiveness which catches the eye of the majority of spectators. Poor Fred Walker is represented by two or three small works, not among his best in feeling, but having very fine qualities; and we may note as an architectural and topographical curiosity, John Varley's little drawing (275) of "Bow Church, now destroyed," while Bow was still a country village, with a large white horse out out in wood, standing out in the air as a signboard. We are in the region of the Turners now, but cannot attempt special comment upon Turner here, of course. We may just notice one small drawing, "A Rocky Fastness" (251), as a remarkable instance of the same quality we noticed in a drawing of Constable's, the effect of grandeur on a small scale. There are several interesting things in this part of the room also as interesting as curiosities, or as the work of out-of-the-way names. Coming round to the Girtins we find the artist very well represented by about twenty drawings, including some of his finest works. We analysed Girtin and his place in the art pretty fully on the occasion of the fine exhibition of his works at the Burlington Club,* where

* See *Builder* for June 5, 1875.

* We are glad to observe that the inconvenient method of commencing the numbering afresh in each room, on which we commented on the occasion of the first exhibition, has been abandoned.

we remember rightly, most of the drawings ung here were to be seen. Our former opinion in no way modified by this fresh examination f a number of them; but the effect of some of hem is manifestly different in their present osition; drawings which might have seemed ally powerful, and even rich, in tone, when pposed only to others by the same hand, seem uch weaker here; an effect which would aturally result from their being seen in oppoition to some more modern works in a higher ale of colour, but which, in this case also, we e disposed to attribute still more to the crimon hangings. It is really surprising how diffeent the grand view of "Durham" (300) ppears from what it looked like at the Burlingon; and we cannot but think these drawings iffer from the prevailing colour of the room. On pale green-tinted wall they would be quite ifferent things.

The screens in the middle room contain several pecialities worth looking at. There are some ortrait studies, sketches on a small scale by eynolds, Romney, Lawrence, and others; some Blake's drawings, which seem out of place mong their surroundings, and had better have een omitted; Blake was fully illustrated at the urlington Club last year. There is a remarkbly interesting and able life-study by Wilkie 369), signed and dated, from a subject set by mself at the Royal Academy. There are some ery good cart-horse drawings by Micholowski 404, 407, 409, 418), and a large drawing by illet, "The Tramp," which is full of pathos nd intensity of feeling. Maclise's highly chaoteristic portrait of Turner (513), a half-ngth sketch, is a thing to be noted. The name Decamps appears in connexion with one nall drawing. It is out of place here, of ourse, as this is professedly an exhibition of water-colour drawings by deceased artists of he British school," and in any case it is almost oard to hang one small sketch by such a great rtist in what is meant as a representative exibition. But how we should like to see a cootion of the works and studies of Decamps in he Grosvenor Gallery on some future occasion. We commend the idea to Sir Coutts Lindsay and hose whom it concerns, thanking them for what ey have already given us, especially the Old asters' drawings, to which we shall return.

THE ECCLESIASTICAL ARCHITECTURE OF RUSSIA IN THREE ERAS.

I. Byzantine Influence. 989–1475 A.D.

The introduction of Christianity into Russia as nearly contemporaneous with the rise of hat monarchy in the middle of the ninth century, ut it was not till the reign of Vladimir the reat, more than a century afterwards, that the hristian faith was definitely adopted. The istorian tells us that that prince, after the erits of Judaism, Roman Catholicism, Mahommedanism, and Greek Christianity, had been uccessively canvassed, sent deputies to the ountries where these religions were professed, o report upon their claims to his attention. It ould appear that the imposing ceremonies of he Greek Church, as witnessed by the deputies n the magnificent St. Sophia at Constantinople, ade a most powerful impression on Vladimir, ho thus resolved to enter the communion of he Oriental Church, and compelled his people o follow his example. It is from this period hat dates the history of Russian ecclesiastical rchitecture, borrowed from the Byzantine, and hich had developed itself in such splendour in he creation of Arthemeus of Tralles,—the Constantinople Basilica of Santa Sophia. In the ourse of time the grand princes of Russia, of he tenth and eleventh centuries, were in constant intercourse with the Greek emperors, with hom they maintained friendly relations for a ong period. All this had, no doubt, great nfluence on the propagation of Byzantine rt in Russia, for we find that the capital, Kief, as described by Ditmar, bishop of Merseburg, a contemporary of Vladimir the Great, wing to its numerous inhabitants and prosperous state, possessed hundreds of churches, nd we have the testimony of Adam, one of he canons of the Bremen Cathedral, who called Kief (1072) a second Constantinople. Only he Tartar invasion (1240) put a stop to the ourishing of the Byzantine adoptions, and fter a long period of stagnation in the national evelopment indirectly contributed to centralization, and by the same evoking during the eriod of the first Russian Czars the development of the national art. But before entering into a description of the buildings, it will be necessary to notice the transition from a Byzantine basilica to an orthodox church. We have only to recollect how and from what the basilica was formed. A long building, with a rounded end on one side, with a portico on the front façade and a transept covered with a dome, it was created out of the Roman courts of justice and assemblies, and in the form in which it appears in the Cathedral of Justinian was almost ready for an othodox Greek church.

But in the Latin basilica the transversal nave is relatively a little longer (in the form of a Latin cross), and was thus adopted as the ground plan of the Gothic churches of Europe. In Russia another form was adopted, that of a Greek cross with equal sides, in which the transversal nave is nearly of the same length as the great nave. Another distinguishing feature of the orthodox ecclesiastical architecture is the ikonostas, or continuous screen separating the altar from the part of the church destined for the congregation; then the kliros, or choir for the singers, which was formerly placed on both sides of the great nave, and subsequently removed nearer to the ikonostas; and, lastly, the gallery running along the walls: these are the chief peculiarities of a Russian church. The domes have not only been retained but have been increased in number, and have assumed quite an original form of their own. Frescoes, gilded walls, mosaics, thick square pillars, narrow windows, and the mystic twilight of the Greek basilica, have not only passed over to Russia, but have become the necessary conditions of the national art of the most recent date. The most ancient basilica in Russia in the Byzantine style is, so far as we can tell, the Dessiatinny Church at Kief,—the magnificent temple dedicated to the Virgin Mary. This church was constructed and embellished by Greek artisans and artists invited by Vladimir the Great from Tsargrad (Constantinople). The site chosen was the spot sanctified by the first Christian martyrs in Russia (the Varague-Christians, Theodor and John). The Dessiatinny Church was begun in the year 989, and took seven years to build and decorate. In 996 it was consecrated, and continued to exist for 244 years; Batui, the Tartar invader, destroyed it in 1240, and the ruins, consisting of heaps of bricks and stones, were carried away by the inhabitants up to the year 1635, in which year the metropolitan of Kief, Peter Mogila, partially restored it. Two hundred years later, in 1820, Captain Annenkoff, of the Russian army, undertook on his own private means the reconstruction of the Dessiatinny Church. In the process of digging the old foundation was disclosed, which presented the form of a wide quadrangle with three apses on the eastern side, the middle one being the largest, and destined for the archbishop's stall. The length of the whole building along the straight walls was 140 ft.; from the arc of the central apse to the western doorway, 168 ft.; and the width 112 ft. The height is unknown, but judging from structures somewhat similar to the Dessiatinny Church, it may be estimated at 84 ft. without the domes. The depth of the basement exceeded 4 ft. The plan presented six longitudinal and five transversal walls; four longitudinal and five transversal interior walls under the flooring of the church served as the foundation on which rested the pillars, the partition walls which supported the arches, vaults, and the gallery. Outside the building there were buttresses. The thickness of the clear walls was 2 ft. 8 in. The rubble underneath the walls consisted of large granite stones, and in some places of limestone and bricks; and at the commencement of the walls were found three kinds of bricks; some larger than the present 10½ in. bricks, others again of a wide square shape 12 in. each way, and ¼ in. thick, like tiles. This kind of masonry with the Greeks was called *Izodom*,—of equal layers; bricks of a similar kind are to be found in the walls of the Colosseum in Rome. The cement is composed of a mixture of lime with finely pounded and sifted brick; and the layers of it were thicker than the thin bricks, and it was used also for cementing the marble linings to the walls. The pavement of the church was composed of dark red granite, with a chequered design of large octagons, with squares in them. Inside the altar space the place for the high altar was paved with dark-coloured slabs, and around it with mosaic squares of marble and jasper in various colours. The church had marble pillars inside, which is proved by the fragments which were found of bases and capitals in the Byzantine style. The walls of the altar space were decorated with mosaics, and the other walls of the church painted in fresco. On the western side the gallery formed the second story of the edifice. In 1828 the foundation was laid of the new church, which was consecrated in 1842. The chief altar is dedicated to "the nativity of the holy mother of God," and the two altars on each side are in the name of the Grand Prince Vladimir and St. Nicolas. The plan of the new Dessiatinny Church is a square, each side of which measures 93 ft. The façades are the same on every side. The eastern side is plain, and the other sides have decorated entrances with archivolts, architectural arches or semicircles, and have open steps. The chief entrance consists of an arch deeply recessed and ornamented with small columns, which project one before another, as in the ancient church doorways. The main body of the edifice is of two stories. The height to the roof is 70 ft. Above the roof rise five domes supported on drums, the middle drum being 42 ft. in diameter and 37 ft. 4 in. in height. The extreme height of the whole structure, including the cross, is 147 ft. In laying bare the foundation of the old church, bells were found, which probably hung in a separate belfry-tower. In the beginning of the eleventh century (1017) the foundation-stone was laid of the Church of St. Sophia, the most celebrated and magnificent structure of that time. It was raised as a memorial to the faith, and as a thanksgiving to the Giver of all Good for the victory gained by the Grand Prince Yaroslaf over the Petchenegues. The plan of the Kief Cathedral of St. Sophia is in the proportion of one to four to the Church of St. Sophia at Constantinople, upon the design of which it is supposed to be founded. The foundation of the Kief Cathedral is from 6 ft. to 9 ft. deep, and the materials used were the same description as those laid down for the foundation of the Dessiatinny Church. The basement contains the crypt, in which were buried the ancient Grand Princes of Russia, and in subsequent ages the Kief metropolitans. The floor of the church is of dark crimson granite. The interior, with the exception of the transept, is formed of arches about 9 ft. in span. These arches rest upon twelve cruciform pillars, which also support the gallery. The interior of the church is in the shape of a Greek cross, in width about 26 ft., the longitudinal and transversal measurement of the cross, 96 ft., including the altar, but without the space for the bishops' stall, which presents an extended semicircle, and the south and north sides of the cross are the lateral porticos. Between the second row of pillars there are two octagon-shaped pillars, 3 ft. 6 in. in diameter, and about six diameters in height. These pillars are without bases, with plain capitals in the Ionic style, and are faced with marble. At the angles of the quadrangle of the transept are erected four piers, which support the arches carrying the drum of the dome, which is about 23 ft. in diameter. The golden ground surrounding all the mosaic pictures occupies the greater portion of the surface of the walls and arches. The mosaics have been preserved principally on the altar walls, and in places on the wall supports and the arches. In the main altar-space above the bishop's stall there are two tiers of mosaic figures; in the lower one are represented the Byzantine prelates of the third and fourth centuries, and in the second the Lord's Supper. These tiers are divided by wide bands of ornamentations in mosaic. Above the second tier, just over the middle of the archbishop's stall on the convex surface of the hemispherical vaulting, there is a very remarkable colossal figure in mosaic, representing the Virgin Mary, called "The Imperishable Wall." The Kief Cathedral of St. Sophia, besides mosaics, contains also Greek frescoes, which were discovered in 1843, by the Academician Solntseff; they were found on the wall supports, and partly in the galleries, where ages ago chapels had been erected. The large arches under the middle drum are decorated with paintings of the four Evangelists. The general plan of the church is a quadrangle, as nearly as possible square, for the ancient structure of the walls has been preserved only in the middle of the existing mass. The length of the cathedral from east to west is little over 119 ft.; and from north to south 161 ft. With the additions which were subsequently made it is larger. The height to the roof, together with the cornice which runs alongside it, is 73 ft. 6 in., and the height of the

entire structure, from the surface of the ground, is 154 ft. There was besides a covered wooden gallery round the outside of the building. These galleries were in ancient times destined for penitents who were excluded from the church proper. The number of domes of the St. Sophia of Kief erected by Yaroslaf is not known, but from the time of the Metropolitan Peter Mogila in the seventeenth century, up to the year 1803, there were eleven large and four small ones. In 1850, when the church was being restored, seven gilt crosses were added to the domes. Inside the cathedral, the gallery is supported by semicircular vaulting, and has, instead of a balustrade, a barrier composed of slabs of dark crimson granite placed on edge, which is decorated with carved sculptures, in relief, of foliage, &c., and pretty interwoven ornamentations in the Greek style. In the walls of the church were found iron fastenings, and in the vaulting hollow burnt clay vessels, used for strength and lightness.

In 1240 the Tartar invader Batui, above mentioned, destroyed the cathedral of St. Sophia, but in 1385–90 it was again restored by the Metropolitan Cyprian. In the sixteenth century the Uniates (Greek Catholics) continued the devastation of the Tartars. The cathedral was again repaired by Peter Mogila, who also made a few alterations inside. The walls also were strengthened by buttresses, and the windows were made wider. In the eighteenth century the domes were covered with tin plates, and gilded, and in the present century repairs have been made inside, and the outside has also been decorated. During the lifetime of Vladimir the Great, by the order of that monarch the Bishop Joachim was sent to Novgorod, for the purpose of converting the inhabitants, who were at that time Pagans, to the Christian faith. This bishop built at Novgorod, in the year 922, a small wooden church, dedicated to St. Joachim and St. Anne. Subsequently the same archbishop commanded to be built of oak the church of St. Sophia, in the Torgovistohe, in Bishop's-street, on the banks of the river Volkhof, in the words of the chroniclers, "with thirteen domes, cunningly and fairly built and decorated." Upon this church being destroyed by fire, the Prince of Novgorod, Vladimir Yaroslavich, in imitation of the Church of St. Sophia at Constantinople, and according to the model of the existing Kief Cathedral of Sophia, erected a stone church named after the latter, on the left bank of the Volkhof, which was completed in seven years, and consecrated in 1052. The measurement of this church, together with the later additions at the sides, is,—length, 105 ft.; width, 119 ft.; height, with domes, 161 ft. The interior plan contains ten square pillar supports ranged in the middle of the church in the form of a Greek cross. Above, on the three sides are the galleries, which contain the sacristy and library. The ancient walls, which are very thick, are constructed on the same principle as those of the Kief Cathedral, with thick layers of mortar. In ancient times, the western and two other sides of the exterior were surrounded by a covered gallery. Both the construction and decoration of the Novgorod Cathedral were at the very beginning conducted by Greek artisans and artists. The interior surface was painted *al fresco*, of which there are still seen traces in the altar-space under the paintings on the wall above the archbishop's stall. The chief altar is separated from the church by a partition-wall, to which the ikonostas is joined. The windows were narrow, and pierced at wide intervals. Eventually some of them were made larger. Opposite the ikonostas, on the eastern side of the two front pillars, two stalls are erected, one for the Czar, the other for the bishop. Both are ornamented with rich carving, with crosses in fret-work at the top, and crescent-shaped figures below. On the north-eastern side of the gallery there are frescoes representing the Prince Vladimir, the founder of the church, and his father Yaroslaf, his brother, and other relations. The domes of the cathedral of St. Sophia have been frequently altered, of which there are at present five, and one above the sacristy. The roof, with its figured cornice, is a remnant of the work of the seventeenth century. A belfry-tower was added to, or rather erected by, the side of the church in 1439. After its first completion, this church, up to the fifteenth century, was frequently damaged by fire, and suffered from the devastating enemy. At Tchernigof, in the first half of the sixteenth century, was erected a stone cathedral, dedicated to the Transfiguration. The exact year of its foundation is not determined, but it is known that the foundation-stone was laid by Mstislaf the Brave, son of Vladimir the Great, who ruled over Tchernigof from 1024 to 1036. The site chosen by the prince for this church was on an eminence in a fortress where, in very ancient times, there existed a pagan temple. The church was completed in the reign of Sviatoslaf Yaroslavich, Prince of Tchernigof, about the year 1004, and consecrated in 1076. Sviatoslaf was buried there. The plan of the church is nearly a square, length 105 ft., width 112 ft. The construction, decorations, &c., are of Greek execution. The original façade has disappeared, but the antiquities are retained in the disposition of the walls, in the remaining lower portions of the pillars and the rubble basement containing a crypt. Inside the church extended two rows of columns from east to west; they supported the gallery. According to tradition, the lower pillars were encrusted with marble of a reddish colour, with plain bases in the shape of slabs, with iron capitals; the front pillars, or those nearest to the ikonostas, were of an octagon shape. The gallery extended respectively from the east and west sides to half the length of the church, and joined over the western entrance of the church; the gallery had square pillars, also faced with marble. They supported the arches of the church and the middle dome. Between these was a barrier of marble slabs. Of the three altar apses the middle one projects more than the others. From the year 1240 up to the reign of Alexay Mikhailovich, for a period of more than 400 years, this church stood in ruins. It was finally restored by command of Catherine II. in 1780. The galleries on the southern and eastern sides were removed, and were retained only on the western wall above the entrance to the church; the cracks in the walls were filled up, and the parts which had suffered from fire were repaired. Behind the left kliros, close to a pillar, a pulpit is put up, with a baldachino over it; the floor is made of cast-iron plates. The facades of the two towers which stand on both sides of the western portion of the building are of modern architecture; the left one is called the Terema; the lower, the right one, the belfry. The second stories of the towers are round, and have each eight wide arches; above these three small recesses, above which is an attic in the shape of a wide girdle; above this again rise Gothic dêches, on the apexes of which are spherical heads, with crosses. At present the cathedral has five domes, of which the middle one is 105 ft. high from the floor of the church. The northern and outward doors of the church have new porticos over them, copied from the new portico of the northern entrance to the cathedral of the Archangel at Moscow.

THE WORKS AT MARLBOROUGH HOUSE.

Readers are aware that considerable works are being executed in Marlborough House, with a view to remedy its evil sanitary condition. The drains were found to be of ordinary brick construction, full of soil, the stench from which was horrible. New pipe-drains are being laid, but we are informed that the soil from the old drains is actually being *dug into the ground and left there*, to save the expense of cartage! But for the source from which the information reaches us we should refuse to believe that so indiscreet an act, to use too mild a term, had been perpetrated. We have most serious doubts as to the wisdom of the mode proposed for ventilating the drains, but are unwilling to condemn on insufficient information. Who is responsible for the works?

Loans to Municipal Art Galleries.—A deputation, appointed by a conference of municipal corporations held at Westminster Palace Hotel in July last for the purpose of obtaining grants of loans to municipal galleries and museums, has waited upon the Trustees of the National Gallery to ask for loans of pictures and drawings from the National Gallery, and generally to have the benefit of their co-operation. The Trustees present were Mr. Russell (chairman), Lord Hardinge, Sir Walter James, Mr. Warner, and Mr. Burton. The deputation consisted of the Mayors of Birmingham, Leicester, and Wolverhampton, Alderman Collings (Birmingham), and the ex-Mayors of Wolverhampton and Ipswich. The Trustees promised to give their answer in writing.

BARROW-IN-FURNESS.

Vulcan, in Homer's days, was pictured as destroyer, but in our days "*Vignipotent*" is creator of towns. Alike on the east coast and the west, there are built up on the foundation of the iron trade, more especially of recent years, vast towns and districts. Middlesbrough owes its importance to that great industry, Stockton and the two Hartlepools have been benefited thereby, and most of the towns on the north-east coast have been benefited by the iron manufacture, whilst the whole of Cleveland has felt the impetus of the iron-mining development. On the west there has been an equal growth, and though it is shown in the districts of Furness generally in the creation of new centres of population, and the extension of old hamlets and villages, yet perhaps the fullest proof is to be found in the growth of Barrow-in-Furness, the Middlesbrough of the west coast. The rapidity of its rise, the extent of its growth, and the apparent soundness of its trades more than rival indeed those of the Teesside towns whose praises Mr. Gladstone sang as "the youngest born of Britain's greatness." Barrow dates its practical commencement later than does Middlesbrough, but in many respects there is a similarity between the two towns in other than the fact that in both the iron manufacture is the chief and the controlling industry. Both have added allied trades to that of iron, both are ship-builders, and shipping ports; both depend upon the regions round about for their mineral treasures; both are public-spirited, enterprising, and pushing; and both have thrown into the shade older towns near which might have seized the advantages the newer towns have known. Middlesbrough, however, has not advanced beyond its compeers to the extent that Barrow has for the iron manufacture is diffused along the banks of the Tees; coal exportation is in the hands of the Hartlepools chiefly; and the steel manufacture is taking root outside the bounds of the ironmaking town. But though at Barrow the hematite iron industry is diffused, yet that town is its centre, to which all the mining villages and towns that have sprung up are subsidiary. Places like Ulverstone are distanced in the race; and the smaller towns and villages where the mining or iron industry is located are only so many stars that derive their light from the great solar centre of the Furness, which seems to have sprung into being, fully equipped as the goddess of old sprang from the brain of Jove.

Barrow-in-Furness dates back barely thirty years. One of the best of our Gazetteers, published a few years before, could find nothing to mention of the place of the future town, even by name, its nearest reference thereto being the magnificent ruins of Furness Abbey. The whole district at that date was in the state of embryo. Dalton was a pleasant little place of some 760 inhabitants; the iron trade was scantily carried on in it, so far as mining was concerned; and similarly at Ulverstone, the extensive parish of which contained about 7,000 people; whilst the whole of the district was in the condition which Cark and Cartmel are now in,—quiet places, where commerce remained stationary, and cattle-fairs and hirings formed the chief exhibitions of busy life to disturb the monotony of a still district. As to the place where Barrow now stands there are, however, historical associations, although the name of the town has provoked many an etymological dispute. On the sandy shore of the arm of the sea which separates Walney Island from Furness, there had been for long a community deriving its subsistence in large part from the rich and pure iron ore it gathered and shipped. But the limited nature of this trade may be learned from the fact that though the "Peru of Furness" has had its treasures extracted in small degree for hundreds of years, yet a writer describes that extent as such within remembrance as to afford employment for half a dozen old men "in scratching up a little of the best of it; leaving it for the present and future generations to raise millions of tons." Prior to this, the purity and richness of the ores induced inquiry for them, and the charcoal furnaces send supplies to some extent from Furness; but down to the beginning of the present century the quantity exported is stated not to have exceeded 3,000 tons yearly, derived exclusively from the mines at Lindal and Whitriggs. Slowly and steadily the trade in iron ore increased, but the quantity locally smelted was small; Mushet's "Papers on Iron and Steel," giving the total quantity of iron made in the old

charcoal furnaces of Lancashire in 1839 as only 800 tons. It was a little more than thirty years ago that the need of railway communication between the mines and the port of shipment impressed itself upon the district, and in 1845 Parliamentary powers were obtained for a line of railway which was subsequently extended north and south. These lines, when formed, gave an impetus to the iron trade, first swelling the export of ore, and then causing the commencement of the vast smelting works on which the foundations of the town were built up. As a result of that increased use and sale the produce of the mines of the Furness district has very largely increased, and now at least four of its mines have an output of over 100,000 tons each,—one of the four coming up close to a yearly output of a quarter of a million tons; and the twenty-four mines now at work in the Furness district have, in the total, an annual production of over 984,460 tons of ironstone; whilst the thirty furnaces in blast out of the forty-seven erected, yearly make over half a million tons of pig iron.

Other trades have been developed. The Bessemer steel works are large,—the number and capacity of the converters being stated in the latest official statistics as 18 of 6 tons capacity each; the shipbuilding works are of considerable extent; the flax and jute works are extensive alike in the area covered and in the work executed, whilst the buildings themselves are in a style which makes them an ornament in great contrast to buildings in older towns where the unmitigated ugliness is compensated only by the usefulness. Wire, engineering, brick and tile, rolling-stock works, foundries, sawmills, and rope works, with other important if subsidiary trades, have a place in the ranks of industry in Barrow. Its fleets of merchant shipping are large: the lists of one owning firm include the names of about a score of vessels, and those of three others the names of from eight to twelve ships or steamers. The subsidiary industries, the shipping trades, the vast manufactories and works have built up a commerce on which a vast population depends. The growth of that population has been rapid: in 1847 it was stated to be only 235; in 1861 it was 3,000; in 1864 it had grown to 10,068; and its present number has been variously estimated at from 34,000 to 40,000. When the charter of incorporation for the borough was applied for, in 1866, it was stated that there were 8,000 ratepayers in the town; its area, prior to the recent addition, was close upon 8,000 acres; and even after a period of severe depression the additions to the rateable value in the year just concluded amounted to over 1,000*l.* The births monthly were, according to the last report, 160, and in a similar period the deaths, at a low death-rate, were 47. On the registers of the large and costly Board schools are the names of over 3,000 children, on those of the denominational schools over 2,000 names. To supply the thirst of the people, there are 89 public-houses and beer-houses, with 45 additional beer-houses having licences for the sale for consumption off the premises, and 11 grocers' licences. And, as a consequence, or an accompaniment, there were 351 persons proceeded against for being drunk and disorderly last year,—about a tenth part being women. The police force numbers 41 men and officers; the "tramps" passing through Barrow are many in number,—in one year 4 000 being "relieved." The School of Art Classes receive 100*l.* yearly from fees; and a permanent home for these is projected at a cost of 4,000*l.* New workhouse buildings are contemplated,—the number of paupers in the present one being about 53. Friendly societies have taken kindly root in Barrow; temperance has its local habitation as well as name, and in addition to parent societies, good Templars, and some of the benefit orders of teetotalism, are represented; whilst co-operation has flourished, and sent forth branches into the neighbouring mining villages. Episcopacy and Dissent, in most of its phases, are well represented, and the various institutions of towns, for bodily and intellectual recreation, as well as for other allied purposes, have been early planted.

The prospects of Barrow,—emerging, as it now seems to be, from the cloud which it, in common with all other iron-producing districts has known,—are bright. It has been recently shown that its chief company,—the Hematite Steel Company,—has for eleven years "earned and distributed amongst its shareholders an average return of fully 20 per cent. per annum." In some degree this is typical of the state of trade, for whilst in the east the rolling-mills are idle, in the north-west briskness characterises them, for the growing preference for steel rails gives to the hematite districts a great advantage. In the large stores of iron that lie behind it Barrow has the foundation of future growth, for these stores are not only vast, but they consist of rich and pure iron ores, adapted for use to meet the growing demands for the "metal of the future." Increasingly, the demand is now for steel for railway formation purposes, and there cannot be a doubt that the same metal will to a large extent supersede iron for other uses. As the depository of the largest stores of red hematite iron in Britain, Barrow may well look forward with confidence to the increase of steel requirements, for it points to an increased demand for her pig-iron, and increased work for her enlarging steel-mills. She has able men at her helm, their monetary resources are vast, and their confidence in the future of their town is undoubted, whilst times of depression in one of the chief industries only seem to increase their exertions to develop other trades on which that great town may in part depend. But although Barrow seems in its infancy to have had careful training, and perhaps at one period its growth was a little forced, yet it is now able in great degree to throw away the bladders that in times past helped to sustain it. In taking this course, its leaders are building up a protection against the periods of depression which are so common in many of our great industries, and still more against those possibilities of change which are so great in the iron trade. As, however, the demand for the ores of Furness increase, whether for home manufacture or export raw, the development of Barrow must progress with it, for it is the trading centre of the Furness mining district, and to it all that benefits that wider district tends. Its circle is widening, its commerce, by sea and land, draws contributions from an extended and extending area; it is overcoming the effects of too-rapid growth, and its trades, after a check, are again beginning to show signs of returning prosperity. With these local inspiriting symptoms, the future of Barrow-in-Furness must advance, though the period of the commencement of its next forward march may in appearance be deferred until there shall be a fresh wave of trade prosperity generally known in the kingdom, the impetus of which will show the local advances that may be registered.

GEORGE SEMPLE, ARCHITECT.

A NEGLECTED ARCHITECTURAL BIOGRAPHY.

With Notes on a rare Edition of his "Building in Water."

GEORGE SEMPLE, a Dublin architect, towards the close of his professional life, in 1776, published a now scarce work, entitled "A Treatise on Building in Water," in two parts. The first part particularly relates to the repair and rebuilding of Essex Bridge, Dublin, and bridge-building in general, with plans properly suited to the re-building of Ormond Bridge, in the same city. The second part deals with original quick and cheap methods for erecting substantial stone buildings and other works in fresh and salt water, quaking bogs or morasses, for various purposes, "fully laid down and clearly demonstrated by 'Twelve Practical Propositions,' but not in any case exceeding ten fathoms deep: together with a Plan for a spacious and commodious Harbour for the Downs, in England, projecting to 20 ft. at deep low water."

Semple's work is illustrated with sixty-three copper-plates, and is dedicated "to the King" (George III.). A word about the dedication, as it has some bearing upon particulars which we shall furnish further on. The architect says, in his dedication,—"To whom, then, can I, with such propriety, inscribe these sheets as to a monarch who is peculiarly interested in the subject of the most important part of them, that of a 'Plan for a commodious Harbour in the Downs.' I lay them with the utmost deference and humility at your Majesty's feet. They are the fruits of a close and unremitted application of twenty-four years," &c. This Dublin edition of 1776 of Semple's work, "printed for the author by J. A. Husband, [28,] Abbey-street," had long been supposed to be the only edition of "Building in Water" extant. A few weeks ago, however, the present writer accidentally picked up on a London street book-stall an enlarged edition of Semple's work, containing a third part—*i.e.*, "Part III."—not to be found in the original edition, or even indicated as forthcoming at a future date. The writer having in his possession for several years a copy of the scarce original edition, has been enabled to compare both volumes, but one little difficulty has presented itself, which weeks of research and correspondence have not enabled him to remove. The enlarged edition of Semple's picked-up, though otherwise clean, and in good condition, is unfortunately minus its title-page and dedication, and another copy of the enlarged edition of "Building in Water" cannot be found, though searches were instituted in the chief public libraries of London and Dublin, and inquiries made among a number of the oldest booksellers. There is not even in the valuable libraries of Trinity College, Dublin, the Royal Irish Academy, or the Royal Dublin Society, one copy of any edition of the work, and the British Museum alone in London has a copy of the original edition with two parts, which came into its possession with the library of George III., to whom "Building in Water" was dedicated, as already mentioned, by the author. In 1776, George Semple when he printed his edition in two parts was residing at 53, Queen-street, Dublin, but his name disappears from Wilson's "Dublin Directory" after the year 1782. Some are of opinion that he left Dublin in that year for London, but we cannot at present produce any sufficient authority for the statement. The type and paper of both editions of the book in our possession are to all appearance the same, and the alterations in the enlarged edition as far as Part I. and Part II. are concerned are confined to the final paragraph, in which some sentences are omitted and others altered and added with a view of preparing the reader for what was to follow in Part III. In this paragraph also numbers are used in referring to the previous plates instead of Roman letters for numerals, as in the preceding part of the book. It is worth while comparing the last sentence of Part II. in the original edition (which part concludes the book) with the final sentence in Part II. of the enlarged edition, which is preparatory to Part III. immediately following. In the first instance, Semple says,—"Thus have I, to the utmost of my capacity, at length gone through the design I proposed, and which I have so much at heart; and if the ends I had in view shall be answered, and these sheets may in any wise conduce to the national welfare and instruction of young students in works of this nature, I shall be so far from regretting the labour I took in composing, and the expense I have been at in publishing them, that I shall sit down with all the self-complacency that arises from a consciousness of meaning well." To the table of contents accompanying the enlarged volume is added a list of the chapters and sections in Part III., and, of course, this is not to be found in the tables of contents of the original volume comprising but two parts, which is another proof that the enlarged edition is a *bonâ fide* one. We will now give a short summary or description of the contents of this rare Part III. Briefly described, it is "a plan for increasing the commercial and landed interests of Ireland; and briefly demonstrating that not only Great Britain but the whole British empire may gain mutual advantages thereby." There are three chapters in this part, and each of the chapters, like the original volume, is divided into a number of sections. Throughout these chapters the question of Free Trade, exports and imports, roads and their construction, the establishment of fairs and markets, the reclamation of land, the duties of surveyors and supervisors of works, and other kindred questions, are discussed. The last section of Part III. deals with the public utility of the plan proposed, demonstrating that not only Great Britain and Ireland, but also the whole British Empire, may gain mutual advantages thereby, illustrated by seven short conclusions drawn from the whole.

It would appear from the practical patriotic spirit manifested by George Semple in Part III., that he was moved to take up his pen again, stirred by events that led to the short-lived National Parliament of Ireland in 1782–1800. The architect and author of "Building in Water" certainly came out in Part III. of his work, both in the character of a public benefactor and social reformer as well as in that of an engineer and architect. He goes in for the construction of a grand road, dividing the country from north to south, from Londonderry to Cork, and another grand road from east to west, or from Dublin to Galway, with other connecting roads, and the establishing of a number of stated fairs or markets thereon, for the opening up of trade

As Semple never anticipated the railway system, he long bethought him of the best way of developing trade and manufacture, and hence his plans for improving the trade and wealth of the country by public works of magnitude, including road-making, drainage, and lifting hundreds of miserable creatures out of the then poor houses and transplanting them to remote parts of the country, where they might be taught some industrial employment, and made the nucleus of a future thriving colony of producers, instead of idlers and eaters of unearned bread.

Having furnished the reader with particulars of the enlarged edition of Semple's "Building in Water" we will proceed to give some account of the architect himself, his professional practice and architectural work. Hitherto, although a century is ending since the architect's death, no one has furnished us with a sketch of his life, and indeed materials for a biography are scant. The evidence to be found in his literary work, and odd waifs and strays to be unearthed in out-of-the-way channels, are the only materials that are accessible as far as our diligent investigations have revealed them. George Semple was born in the early years of the eighteenth century, but in what particular year we have not been yet able to trace. He was self-taught, for the whole of his time at school amounted to "six winter weeks" in his thirteenth year. Writing in 1775–6, when the first edition of his "Building in Water" appeared, he speaks in one of his chapters of his experience extending over a period of sixty years; and he also mentions his father being a building workman as far back as 1676. Semple informs us that from his childhood he had been well acquainted with the nature of lime and sand made into mortar of all sorts; and his opinion of good mortar and its properties is more than once stated in his volume. "Mortar made of pure and well-burned limestone, and properly made up with sharp, clean sand, free from any soft earth, loam, or mud, will, within some considerable time, actually petrify, and, as it were, turn to the consistence of a stone." Commencing life with a practical knowledge of building materials, and with a determination to use the best, he laid the foundation of his subsequent success in practice. Like many architects in the eighteenth century, Semple began life as a builder or contractor; and for the better part of his active life he combined both professions. In the earlier years of his practice, his works were confined to the designing or erection of private dwellings in the city and provinces in the sister kingdom. He appears also to have had some experience in the drainage of bogs in Ireland, which knowledge he afterwards turned to good use in his plans for erecting buildings and other structures in like soft foundations. In August, 1739, Semple set out on a business tour from Dublin, riding all the way, visiting Sir John Bingham's place in Castlebar, County Mayo, his route leading him to Frenchpark, in the County Roscommon, and other places in the Province of Connaught. He has left us a short account of the dreary pictures and dismal scenes of poverty and wretchedness he witnessed among the peasantry at that period. In 1749 Dr. Sterne, Bishop of Clogher, bequeathed 1,000*l.* towards the erection of a spire to St. Patrick's Cathedral, Dublin; and this work, which is built of mountain granite, was executed some time afterwards from the design of Semple. This spire is 103 ft. high raised on the tower, which is 120 ft., making in all from the ground to the ball of the spire 223 ft. This ball was, in after-years, blown down or destroyed by lightning; and, if we remember aright, a ball and cross were set up a few years ago during the work of restoration, carried out by the munificence of the late Sir Benjamin Lee Guinness, bart., M.P. About the year 1751, when Semple was solicited by some public men in Dublin to give his opinion respecting the temporary repair of Essex Bridge, preparatory to its rebuilding, he was engaged by contract in building St. Patrick's Hospital, otherwise known as Swift's Hospital (commenced in 1749 and opened in 1757). He had also in hand two private houses for the Rev. Dr. Leigh, in Capel-street, Dublin, and one for Arthur Newburgh; a new mansion for the Archbishop of Dublin; and another for the noted Colonel Ram, of Ramsfort, Gorey, County Wexford. In the Irish rebellion of 1798 the insurgents destroyed the mansions of Ramsfort and Clonaton, the handsome seats of the Ram family, and other houses. When Semple began the temporary repair of Essex Bridge over the Liffey, there were two or three schemes lying before the Corporation of Dublin, one of which was to repair it with timber in five months for 500*l.*, and another with stone within six months for 800*l.* Semple gave it as his opinion that the temporary repair of the fallen pier or the broken arch could be accomplished with timber, in the space of ten days, at a cost not exceeding 100 guineas. After due examination and preparation, he accomplished the work in an efficient manner in the time he had, in the first instance, unpremeditatedly mentioned. Mr. Prior, a well-known public benefactor and practical patriot of the time, convinced of Semple's abilities, often visited him during the time he was carrying out the work of repair, and he in conjunction with some of the principal aldermen of the city, who were also constant visitors, urged Semple, when he was completing the repairs, to undertake the work of the rebuilding of Essex Bridge. After some slight show of hesitation, on account of his want of sufficient experience of bridge-building, or works constructed in water,—but at heart being really desirous of attempting works of the kind,—the architect consented to undertake the work suggested. He consulted his books, but the works of Alberti, Palladio, Scammozzi, Serlio, and others of the old architectural writers, were deficient in the information for supplying practical plans for laying foundations in deep or rapid rivers, although those authors supplied numerous designs. In the middle of the eighteenth century, modern architectural literature was in its infancy, and as Dublin libraries and booksellers could not furnish any useful book on the coveted subject, Semple settled his domestic affairs, and prepared for a visit to London. In the latter city he thought he was likely to secure books that would be useful to him. Arrived in London, he purchased about 40*l.* worth of books, plans, &c., which he ordered to be sent after him, and returned home himself within fourteen days. The deficiency of the ancient writers on bridge-building and other kindred works amazed Semple, though the perusal of their works afforded some hints which he turned to good account. After taking soundings and borings in several places in the river Liffey, preparing plans and making other preparations for the rebuilding of Essex Bridge *de novo*, seemingly insurmountable difficulties presented themselves to the mind of the architect. The providing or making of an inclosure or coffer-dam was one of the chief obstacles, for Semple had no previous knowledge of those appliances. Old Westminster Bridge, which was completed by Labeleye in 1750, appeared to Semple to be the one that came nearest to his model, and, with the exception of some particulars, he took it as a precedent. In the construction of the latter bridge, however, the Swiss engineer used caissons in laying the foundations. On the 20th of May, 1752, Semple again set off for London under three strong inducements:—(1) to find out the methods which were at that time in agitation for opening the streets in London and Westminster; (2) principally to consult his friends and procure advice for his intended enclosure or coffer-dam; and (3) to procure several appliances which he knew he would want both in his capacity of architect and contractor. In London he was industrious in seeking information anent street improvements, and procured the three Acts of Parliament passed at that period for the purpose. He was not so lucky in his second quest of procuring information concerning his intended inclosure for laying foundations in water. He called on Labeleye, the engineer, and laid his plan, soundings, and borings before him for the new Essex Bridge over the Liffey, but Labeleye freely told him that he did not by any means approve of laying foundations in coffer-dams, assuring the Dublin architect that it would not answer his purpose. At this time the pier and other works were being carried on at Ramsgate under Etridge and Preston, and as these gentlemen were more intimate friends, particularly the former, Semple posted off to Ramsgate to consult them. Etridge some time previously was sent over to Ireland to project a bridge for Coleraine, most likely instructed by the "Irish Society" of London, which still held large estates in that district. Etridge had also been employed by the Corporation of Dublin some time before to view the ruinous bridge and report upon it, which he did. From neither Etridge nor Preston, however, did Semple receive any encouragement for laying foundations in coffer-dams, as neither of those gentlemen had ever seen the method practised. The former concluded his advice by saying, "Take care that you do not find yourself mistaken," and the latter volunteered the friendly caution, "Above all things, take care that you do not spare timber." Before leaving Ramsgate, where he stayed two days, Preston favoured Semple with a rough copy of their plan. The latter afterwards expressed his surprise and wonder at seeing with what dexterity they handled large blocks of Portland stone, and with what ease and deliberation they laid them under the water at Ramsgate. Leaving the latter town, Semple posted away to take a cursory view of the coast as far as Dover. A harbour for the Downs was at the time the subject of some talk, and Semple's visit resulted several years afterwards in a plan for the construction of a harbour there, "projecting to 20 ft. low water, the highest strong tides supposed not to exceed twenty more." The details of Semple's harbour for the Downs are given in Part II. of his "Building in Water." Of course it was a speculative plan, taken from observations, and not based on soundings or borings, which he had no opportunity of carrying out during his flying visit to Ramsgate and Dover. On his return journey, from his second visit to London, Semple purchased several more books with the hope of finding some practical information in them concerning inclosures or coffer-dams. On his way home he also purchased two chain pumps, three double screws, six jacks of different sizes, two dredging-machines, and several sorts of terras, and went, as he tells us himself, "to Leigh, near Warrington, to procure some Leigh lime (which, as I was informed, would set under water as well as terras), picked out a few labourers at Liverpool, and on the 23rd of June returned to Dublin." All the information obtained by Semple as the result of his visit to England was insufficient for his purpose; he was still in doubt about the construction of his favourite inclosure, and not one of the books he possessed afforded an idea of the construction of a coffer-dam. In the midst of his alternative hopes and anxieties he visited the bookshop of an old and wealthy Dublin bookseller, of the name of George Ewing, to look up more books, and accidentally hearing from the bookseller that a son of his was then on his travels, and at that time believed in Paris, Semple earnestly pressed Ewing to write to his son to procure, regardless of expense, all the books, drafts, or plans that could afford him (Semple) any instructions for laying the foundation of a bridge about 25 ft. under high-water in a rapid river, and to forward them to Dublin with all expedition. The bookseller's son fortunately picked up in Paris the very work that suited Semple's needs. Colonel Belidor, the since well-known Bernard Forest Belidor, a Continental engineer of much celebrity in his day, had just published the fourth volume of his "Hydraulic Architecture." This work was forwarded to Semple, and the perspective view it contained of the men at work in a coffer-dam at a bridge then building at Orleans, instantly roused Semple's somewhat drooping spirits. The French language Semple did not understand, nor could easily, at that time, get translated, but in turning over the plates of Belidor's volume, they all appeared plain enough to him. Save what hints he got from Belidor's volumes in the matter of coffer-dams, a method which Semple from the first, under the name of an inclosure, had determined upon, the Dublin architect had to invent and contrive the numerous methods and appliances used in the progress of his work. He has left an interesting account, with details and plans, of the building of Essex Bridge, with a diary of each day's work, and incidents from the taking down of the old bridge on January 19th, 1753, till the completion and opening of the new bridge on the 8th of April, 1755, covering a space of two years and eight days from the time the public were deprived of the use of the former bridge. In building Essex Bridge, Semple kept faith with the public as nearly as possible, and only slightly exceeded his estimate and the time calculated. He promised the overseers, the Lord Justices, the committee of the Irish House of Commons, and the public, that he would build them a bridge that would stand as long as the mountain in the neighbourhood of Dublin, known as the "Sugar-loaf," that the expense should not exceed 20,500*l.*, and that he would also have a road opened for carriages over it within two years from the day of stopping up the old bridge. Considering the great difficulties that beset his path, and which are detailed in his "Diary," his work was signalised by great expedition. The cost amounted to 20,661*l.* odd, and half this cost was expended for works that

are under low water. Between Labeleye's Old Westminster Bridge and Semple's Essex Bridge there was a great analogy observable not only in their design, but in other matters constructional and historical, although the foundations of the former were caisson laid, and the latter cofferdam. From their high-water mark to the lowest bed of their masonry, the mean depth at Westminster Bridge was 23 ft., and at Essex Bridge, 21 ft. 6 in. The stones in Essex bore a proportion to those in Westminster Bridge, the proportion taken from the spans of their middle arches, which were to one another as three to five, their length being as one to four. The breadth of Old Westminster, from the extremities of the parapets, or plinths under the balustrade, was 44 ft., and at Essex Bridge it was 51 ft. Both bridges have given way to modern improvements, after a service of about 120 years. The former was replaced in 1862, and the latter quite recently. Semple's bridge, however, would have lasted hundreds of years longer, but it was too high, and had too bold a sweep for modern passenger and vehicular requirements. Its stable and firm foundations have, however, been utilised by the engineer of the Port and Docks Board of Dublin, in the New Essex, *i.e.*, Grattan Bridge, which has replaced it. Semple's boast, after all, is not unlikely to be realised in part, for the foundations of his bridge may yet last as long as the granite of Sugarloaf Mountain.

Besides the work mentioned already, Semple was also employed by the Corporation of the City about the same period in the examination and repair of old Ormond Bridge over the Liffey. While so engaged he took soundings and borings, and left for his successors a design and plan for its future reconstruction, details of which may be found in Part I. of his Treatise. His anticipation about the future of old Ormond Bridge, owing to its instability, were realised, for that bridge was carried away by a great flood in 1802. The ornamental design of the reconstructed bridge was by a Mr. Savage, an English artist, but the plans, soundings, and borings made many years before by Semple, were utilised. The providing of bridges over the rivers at Londonderry, Waterford, and Wexford, and other places occupied a good deal of Semple's attention from time to time, and he appears to have been consulted by the Corporation of the above cities and towns, for he prepared these plans personally, and prepared plans and reports for timber or composite bridges suitable for these localities, which he recommended to the consideration of the respective corporations. It is somewhat strange that Semple's name does not appear among the list of competing architects, English and Irish, to the number of sixty-one, who sent in designs for the erection of the Royal Exchange of Dublin in 1769. It is still possible, however, that his name may be hidden under one or other of the *noms de plume* that grace that list. The Guild of Merchants on that occasion showed a good example in paying 100*l.* for the best, 50*l.* for the second best, and 40*l.* for the third best design. Three English architects, James Gandon, Thomas Cooley, and Thomas Sandby, carried off the chief premiums, but some of the native architects whose designs were considered good were presented pieces of plate. Cooley, who received the highest premium, carried out that work and other large works in Dublin afterwards; he was succeeded by James Gandon, who, though English born, became *par excellence* the greatest Irish architect of his time. He lived on until 1822, when he was over four-score, having spent more than forty years of that time in Dublin, his predecessor, Cooley, dying in 1784, at the early age of forty-four. Semple commends the examples of the Guild of Merchants and of the Corporation of his day in giving premiums to architects for preparing designs for the Royal Exchange and the Blue Coat Hospital to other public bodies as worthy of imitation. Knowing, as he well did, the trouble and labour it costs architects to prepare designs, &c., which modern committees dishonestly ignore,—that is, they ignore the pains, but they utilise the labour without paying for it. "There is no doubt," writes Semple, in 1776, "but when Ormond Bridge has fallen down but they [the corporation and other bodies alluded to] will continue to exercise the same most useful generosity, and perhaps much enlarge those sums, as the nature of that extraordinary work, and the prescribing proper and effectual methods for laying the foundations require a great deal of labour, and justly merit a very liberal compensation." Semple was promised the Controllership of the works in connexion with canal navigation, projected in Ireland in his time, but by some underhand influence he was circumvented.

We have not much more to add. Although Semple designed and built many private houses and mansions throughout his career, he looked upon Essex Bridge with a pardonable degree of pride, and justly judged it as his most ambitious work, and his contemporaries and successors were of the same opinion. His brother John appears to have been associated with him in his bridge-building and other works, for he mentions his name more than once in connexion. When George Semple published his "Building in Water" in 1776 he had for some years retired from the active duties of his profession, but his mind was active still in devising projects, as may be instanced in Part III. of his work, alluded to in the earlier part of our sketch, and which addition he made to his treatise some years after its first publication. We have not been able to trace the exact date of the architect's death; but as near as we can approximate he died some time early in the last twenty years of the last century at an advanced age. Had the architect lived, and his health permitted him, it was his intention to have added another part on kindred subjects to his "Building in Water." His treatise, as a whole, is both useful and interesting, and contains numerous hints on building matters, materials, and contrivances that can be well utilised by architects, engineers, and building workmen in the present day. From the centring of a small bridge to the construction of a large harbour or lighthouse, in the framing of timbers, the piling for foundations, in masonry and mortar, and in many other operations, there is much information and honest advice for the execution of sound and lasting building work in and out of water.

Since this article was in type, the writer has seen in the library of the Royal Institute of British Architects a copy of the second edition of Semple's book, and a reference thereto has shown the writer that it is a perfect copy, and a London edition. It was "Printed for the author, and sold by T. Longman, No. 39, Paternoster-row; J. Almon, No. 178, Piccadilly; and I. Taylor, opposite Great Turnstile, Holborn. MDCCLXXX." In view of this announcement a slight alteration of the writer's text would appear to be necessary; nevertheless he is inclined to exclaim, *Scripta manet!*—what is written is written,—and let it remain. What has been stated after all only goes to prove the rarity of the second edition of Semple's book, and the difficulty often entailed upon a public writer in hunting up a copy of a work not generally known. Further, it may be stated that an advertisement inserted in the public press, added to other inquiries instituted by the writer, failed to elicit the fact of the existence of a second edition. As a matter of justice, the writer wishes to be allowed to state here that the well-known "Essay on Concrete," written in 1836, for which the medal of the Institute was awarded, points out the fact that Semple was one of the first of modern architects to suggest foundations by concretion.

ARCHITECTS' ASSISTANTS.

SIR,—Will you kindly allow me space in your columns to suggest that it appears to me, and doubtless to many, a remarkable fact that no benevolent society has been formed in connexion with the large class of architectural assistants and draughtsmen?

The builders' foremen and clerks of works, law clerks, artisans of all descriptions, and most professions, have their respective institutions; but, unless I am much mistaken, none exists for the class to which I have referred.

Surely it is time that an institution of the sort were formed, and if you, sir, would add this to the many good causes you have so ably advocated, and other gentlemen of position and influence would give their countenance and assistance to a scheme, no doubt in a short time it might become a *fait accompli*. Within scope of its operations might be included land and quantity surveyors', also civil engineers' assistants.

Professional assistants, as a rule, are not too highly paid, and have little opportunity of providing for a time of adversity. It is not within my purpose to propose any details of a scheme. I will, therefore, trespass no longer on your valuable space, hoping that this letter may not be without its good results. BIENFAISANCE.

MIDDLE-CLASS HOUSES IN CENTRAL LONDON AND PARIS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute, on Monday evening last, Mr. Charles Barry, president, in the chair, thirty-nine noblemen and gentlemen of eminence in art and science were balloted for and duly elected as Honorary Associates. (Their names have already been given by us in recent reports of the Institute's proceedings.) The following were proposed for election as Honorary Associates, viz.,—the Hon. C. Gore, Rev. C. B. Scott, Lieut.-Col. Lennox Prendergast, Sir John Gilbert, R.A., Rear-Admiral Count Gleichen, the Right Hon. W. Cowper-Temple, Mr. Edward G. Webb, C.E., the Very Rev. the Dean of St. Paul's, and Mr. Solomon A. Hart, R.A.

The following gentlemen were balloted for and duly elected as Fellows, viz.,—Messrs. Thomas Blashill, John T. Christopher, Edmund B. Ferrey, Horace Gundry, George Legg, and Alfred Norman. As Associates: Messrs. W. F. Hammond, E. B. J. Knox, A. G. Northover, G. Robson, R. St. A. Roumieu, and W. Scott.

Mr. Frederic Ouvry, F.S.A., was elected by acclamation an Hon. Fellow of the Institute, and, in recognition of his past services as Hon. Solicitor to the Institute, the meeting authorised the suspension of Bye-law 34, in conformity with the wishes of the Council, and in order to remit in this case the payment of the usual contributions. Mr. Ouvry, who was introduced by Mr. Hansard, expressed his appreciation of the honour done him, and said it was far in excess of what he deserved for the slight services which he had been able to render the Institute.

The President called attention to a very beautiful collection of drawings illustrative of Japanese architecture made by Mr. Conder, a recent Soane Medallist of the Institute, and now professor of architecture in Japan.

The discussion on Mr. W. H. White's paper on "Middle Class Houses in Central London and Paris" was then commenced.

Mr. Arthur Cates said Mr. White appeared to have almost exhausted the subject. He had put forward his ideas very clearly and lucidly, and had backed up his theory with very much practical experience,—experience gained not only in this metropolis, but in Paris. It was to be regretted that London, which was the metropolis of a vast empire, should, from what he (Mr. Cates) would venture to call the prejudices and the mistaken ideas of those who should be its inhabitants, have fallen almost into decay at its centre, that its heart should have become cankered, and that it should present to the eye of the stranger a sombre and woe-begone appearance, miserable in the extreme. This arose from the delusion which had become almost a portion of the Londoner's creed,—that health could be secured most certainly by sleeping nightly in what he called the country, in what was, in fact, a small, ill-built, ill-ventilated, and ill-drained box, but which he called his "suburban ville," planted upon ill-drained land, and surrounded by remnants of decaying vegetation. In order to pass to and fro between his suburban villa and business, he underwent the toil and anxiety of rushing to a railway station more or less distant from his house or his office, twice daily, and in the course of transit probably shut himself up in the foul atmosphere of a smoking carriage. This sort of thing was a great delusion, but it had been encouraged by the fact that, from circumstances which it would be difficult indeed to trace, it was impossible for him to find, within a reasonable distance of his employment, any residence which he could fairly inhabit. Mr. White had proposed a plan by means of which a person could have, within easy reach of his place of business, an excellent residence. By the adoption of Mr. White's proposals, the constant stretching-out of the metropolis until it became altogether unwieldy would be checked, and the labour and expense involved in municipal government, formation of roads, drains, sewers, and their maintenance, besides that of water-supply and gas, would be largely saved. Let any one take a map of Paris as it was twenty-two or twenty-three years ago, and compare it with a map of Paris as it is; and having done that let him compare London as it is with what it was at the same distance of time. In the interval, Paris had been almost entirely reconstructed, and had become the most beautiful and wealthy centre in Europe; notwithstanding that it had undergone troubles which

we in London had happily escaped, it was still as fair and as smiling as ever. What had enabled the wise municipality to carry out these vast improvements? Simply because the *maison à loyer* had kept the wealthy population in the centre of the city, and had permitted of reconstruction on an architectural scale. If buildings such as had been described by Mr. White became common in London, they would do much towards extinguishing the pestilential class of speculating builders, who ran up houses which were a disgrace, not only to their builders, but to the state which permitted their erection. Buildings such as had been described by Mr. White must of necessity be substantially erected, and with sounder construction there would grow up an improved taste in the architecture of London residences, as had been the case in commercial buildings. Mr. White, in his description of the "island" or block of houses in Regent-street,—an example which he had selected and dealt with with very great skill,—had attributed all the evils attaching to the conglomeration of houses and premises of which it was made up to the owner of the greater part of the property, viz., the Crown. The other great landlords whose policy in dealing with their property Mr. White had criticised were able to speak for themselves, but the Crown, being an impersonal owner, could not speak for itself, and therefore he (Mr. Cates) would say a word on its behalf. He would ask Mr. White whether he had the slightest idea of what the Crown had done for the improvement of London, and what the West End especially would now be but for the revenues which the Crown had lavished upon public street improvements? Look at Regent-street, which occupied ground formerly covered with a congeries of mean, narrow, and tortuous streets. Pall-mall East, Cockspur-street, King William-street (Strand), and other streets in the neighbourhood, were all formed by the Crown out of its own revenues, and if the people who built the houses which now line those streets had been inspired with one-tenth of the public-spirited liberality with which the Crown was inspired when it made those improvements, Mr. White would not have reason to complain. The enlightened way in which the Crown had set about these improvements was in marked contrast to the parsimonious manner in which they would be proceeded with now by the Metropolitan Board of Works. To make a new street between two given points, the Board would carry it as far as possible along the line of existing streets, no matter how squalid, and would allow one side of such streets to remain standing. This course of procedure prevented the formation of anything like straight or properly laid-out streets, and the squalor and ruin attaching to new thoroughfares so made hung about them for years, and consequently it was difficult to get the unoccupied ground taken for building purposes. Such streets were made without the slightest regard to effect or magnificence, and seemed to be regarded merely as cab-roads which would save a few minutes in getting from one point to another. Such was the method of procedure which the local self-government of the metropolis thought best befitted its dignity when it proposed to open up new lines of thoroughfare. Mr. White must have been misinformed, or rather uninformed, as to the management of Crown property, and his strictures were not merited. The managers of the Crown estates in London had but one anxiety, and that was to promote the well-being of their estates and of the metropolis at large; and as regarded the particular "island" or block in question, if Mr. White had a client who was prepared to say he would arrange for the surrender of all outstanding interests in that or any other Crown property, the Crown would negotiate with him and grant him a lease of the property for the erection of such buildings as he had described. The fact was it was not the Crown nor the wealthy noblemen who owned so great a part of London who stood in the way of such improvements as had been advocated; they were powerless to prevent people dealing with leasehold interests by making marriage settlements and otherwise tying up and entailing their property so as to render it impossible to deal with it. The Crown and the other great landowners regretted this, but they could not help it.

Mr. Whichcord said he believed the subject dealt with in Mr. White's paper was one which was fast coming to the front, and sooner or later architects would be called upon to erect in the central parts of London houses in flats rather than the ordinary self-contained dwelling-houses.

Mr. Hansard thought Mr. White's plans, especially the one for the reconstruction of the island in Regent-street, very misleading. There were nineteen houses in that block, held on leases which had something like forty years to run. To purchase all existing interests, to obtain a renewal of the leases, and to erect a building such as Mr. White had described, would absorb 500,000*l.* at the least.

Mr. Street asked at what price per cubic foot Mr. Hansard calculated the cost of the building?

Mr. Hansard: You may calculate it at any price you like.

Mr. Hebb said that a builder of large experience had told him that such buildings as were proposed by Mr. White could not be built so as to let for less than 30*l.* per room per annum. If that were the case, people of moderate means could never afford to locate themselves in such houses. Much had been said to the detriment of the speculating builder, but he had at any rate taught architects how to build cheaply—("And nastily")—and he defied any architect to build the same kind of houses—("We don't want to")—as were built by speculating builders at anything like the same cost.

Mr. Dawson thought that, admirable as Mr. White's plans were, they adhered too closely to the Parisian model, and therefore they were to a certain extent unsuited to the requirements of English households. The domestic offices were decidedly wanting in completeness, and such scant accommodation as Mr. White had provided would not be tolerated by householders. In his, (Mr. Dawson's) opinion, it would be necessary to devote at least 25 per cent. more space to the area of each dwelling.

Mr. C. F. Hayward pointed out that Mr. Hansard was mistaken in assuming that Mr. White proposed to purchase such costly property as had been mentioned,—to acquire unexpired leases, and to compensate tradesmen for loss of business and removal,—with the view of erecting on its site dwellings in flats such as he had described. Of course it was obvious that such a mode of procedure would never pay. Mr. White had merely instanced a particular "island" or block as an example of what might be gained in residential accommodation, architectural *ensemble*, and money value, by the adoption of his plans on a given site, as compared with what was obtained by the ordinary mode of building shops and houses with narrow frontages and superposed rooms. He thought one objection to the numerous carriage entrances to the courtyards of such houses as had been proposed was that they would very much cut up the pavement, and that they would add to the danger, already sufficiently great, of passengers being run over.

The President, in closing the discussion, said there could be no doubt as to the ability and interest of Mr. White's paper; but he (the President) had come to the conclusion that, although there were in London a large number of bachelors and people with no families, to whom such dwellings as the Parisian houses in flats which had been described would be very acceptable, it would be difficult for the generality of Englishmen to imagine anything more miserable and uncomfortable. He agreed with what had been said by Mr. Dawson as to the inadequacy of the domestic offices. Mr. White not only wanted to revolutionise our houses, but our instincts and habits and modes of life. As far as his (the President's) experience went (he had not had any experience of Paris, it was true), in Turin and Vienna he had found people crying out, "Give us an English house for comfort." Perhaps, after all, the whole of what might be said on the subject could be summed up by saying that people were all more or less discontented with what they had, and were apt to consider that other people's possessions were better than their own.

Mr. White, in replying on the discussion, said he was very much obliged to the members for the vote of thanks they had accorded to him at the last meeting, and for the evident attention they had given to his paper. Some of the objections which had been raised to his proposals had already been answered, and he was particularly indebted to Mr. Hayward for having replied to the remarks made by Mr. Hansard. He (Mr. White) never wished to be understood as bringing forward model plans for houses in "flats"; he simply wished to show that in Central London houses as they might be would be much more remunerative than houses as they were. Nothing helped the cause of reform more than intelligent opposition, but nothing was more dangerous than that opposition which sprang from misconception or perversion,—he would not say wilful perversion,—of a reformer's arguments. Let them imagine a meeting of barristers, with a learned judge in the chair, to consider the amount of crime supposed to be prevalent in a particular locality of Central London. Say that at that meeting one of the barristers rose and made a suggestion which, if carried out, would extirpate from that particular locality murder, robbery, and rape; and suppose that on that suggestion being made, the learned judge interposed with "My learned friend has made a very good suggestion, but one which, if carried out, would seriously affect our national habits," it might be justly implied that our "national habits" partly consisted in murder, robbery, and the "other thing." Yet, when he (Mr. White) pointed out the other night that in certain parts of London there were houses in which whole families and groups of individuals were living in a state of higgledy-piggledy confusion, without any possibility of observing the ordinary privacy of family life, the President said or implied that the family life of this country was menaced by the suggested reform. Was it to be inferred, then, that the typical lodging-house of Central London represented English family life? It had been arrogantly vaunted that an Englishman's house was his castle; so it was in those admirable castles of Grosvenor, Bedford, Russell, and Portman squares, and even in parts of Belgravia. Could, however, the same boast be made by the denizens of the lodging-houses of Central London? But in Paris the boast, if it were made, would be a justifiable one. According to the Parisian plan, people might still live in Central London, each family having its own "castle," with a portcullis on the landing. It had been said that it would be far better to have a house in the suburbs for 50*l.* a year than a "flat" in Covent-garden for 60*l.* or 70*l.* a year, but those who argued in that manner forgot how foolish it would be to plan "flats" in Central London for people who preferred to live in the suburbs. Houses in flats were not intended for people who wished or could afford to have large houses in the suburbs. It astonished him to know that there were families in Paris who were willing to pay 1,000*l.* per annum for a few rooms on a boulevard, when for a tenth part of that sum they could have an entire house and a garden at Courbevoie or Vincennes; when for a twentieth part of that sum they could have perhaps a small château at fifty miles from Paris. But ever since the world had formed itself into communities, the heart of a capital city had been deemed by many men to contain all that made life worth living,—all the wit of one sex and all the beauty of the other. It had been explained to him,—not quite privately, and by no ordinary person, for it was Mr. Hansard,—that an insuperable bar existed to oppose the success of a scientifically-planned lodging-house; that such a bar lay in the vices of middle-aged celibacy and the often erratic domesticity of youth; that in houses such as he (Mr. White) suggested the young couple would be prematurely annoyed by the cries of the unwholesome family that always had measles in June and hooping-cough in November. But in the lodging-houses of Central London the middle-aged "celibat," the erratic youth, the young couple, and the unwholesome family, not only met upon a common stair daily and hourly, but their very rooms were dovetailed into each other. Since his paper had appeared, two well-known architects had told him that the buildings of which he had furnished illustrative plans were not high enough, which was perfectly true, for he had only sought to show that, block for block, the horizontal or "flat" system of planning was capable of utilising a given amount of cubical space far more economically and conveniently than the vertical system. Make the blocks the height of a Paris house, 66 ft. from pavement to cornice, and the result would be, in the case of his Regent-street plans, forty-five shops and houses, instead of the twenty shops and houses that actually existed. It was no sweeping reform that he proposed,—it was simply development. He had been called a revolutionist, and he had heard some one in the background call him a "radical." But to have the reputation of being a radical was to lose in the esteem of all that numerous tribe of dulness which sub-

sisted upon the prejudices of one-half of the community and the abuses of the other. The question, for the moment, was more a political than an artistic one. Once settle the politics of it, and the artistic part would be immediately successful. That the question would be settled was certain,—perhaps within the next fifty years,—but, before it could be settled, it would be necessary to reform the law of leasehold tenure, to cut off the custom of entail, and, as it had already been urged, to make real laws relating to light and air. Although he could hardly go so far as a certain Chief Commissioner of Works, who expressed a desire to

"Let laws and learning, arts and commerce, die,"

he sincerely trusted that Providence would

"Leave us still our old nobility,"

more particularly because he firmly believed that upon some of our "old nobility," and not upon architects and builders alone, depended the improvement of architecture in Central London; upon them, and not upon architects or builders, depended the improvement of many thousands of homes in Central London. But before such reforms could be effected, some amelioration of present evils was possible if the ground landlords of Central London would consent to study their own particular interests, to put money into their own pockets by laying out their land upon a scientific plan. Mr. White concluded by asking permission to add that the ground landlords did not put money in their pockets or study their particular interests when they drove hard bargains, when they extorted short leases, or when, as they sometimes did, they obstructed, at every turn, the march of public improvement.

The discussion on Mr. White's paper not having closed until five minutes to ten, it was decided, after some discussion, to postpone the reading of Mr. Neale's paper on St. Alban's Abbey to some future date, to be fixed by the Council.

SOCIETY OF PAINTERS IN WATER-COLOURS.

THERE is nothing in particular to distinguish the sixteenth winter exhibition of sketches and studies from many of its predecessors. The good things are mostly by the old names, and much in the style we have been accustomed to. Sir John Gilbert has one or two admirable landscape studies, at least studies in which landscape is the predominant interest, and exhibits the small study for his fine, though rather theatrical picture of "Wolsey," which was in the last Academy Exhibition. Mr. Naftel has a remarkably fine little sketch in North Wales (74): the hill which fills up the background shows a notable success in giving size and perspective, making us realise the scale of the landscape; and Mr. A. Goodwin's small drawing called "The Earth taking Refreshment" (119), is a sketch which is very original and intense in its effect; his other drawings seem not equal to what he sometimes contributes. Mr. Boyce is in force with studies of old buildings at Ludlow and elsewhere, as he only can do them; and also contributes an elaborate and fine study of the interior of Edward the Confessor's Chapel at Westminster Abbey (110), on a larger scale than is usual with him. Mr. Walter Duncan, to whom we looked as one who promised something of the poetry of figure-painting,—something more than realism,—seems to be rather keeping his hand in than aiming at anything serious, but his figure of a lady, called "The Sonnet" (71), has much feeling, besides a very delicate harmony of colour, and his two old men who represent "Force and Finesse" (265) are highly characteristic. In a lighter way the capital study of a girl holding a bit of blue china and looking upward, with the title "Where shall it go?" (305), is worth attention. Mr. J. D. Watson sends several very suggestive drawings of landscape with mostly a single figure in each, which he has left without any special title, so that we may make our own story for them: in two of them (133 and 195) there is much beauty of tone and feeling in the landscape; No. 148 is a good study for Don Quixote and Sancho, obviously, though not so named. Animal sketches are rather strong in the exhibition: Mr. F. Taylor's "A Favourite Hunter" (16), and Mr. Brittan Willis's "Sketch of a Short-horn Bull" and "Slight Sketch of a Grey Cart-horse" (222, 235), are very interesting studies of what may be called animal character, the last-named especially; and Mr. Otto Weber's animal pictures are, as usual, excellent, with the added pleasure of good landscape. Among the figures of young women which abound, and which are mostly but commonplace, Mr. Johnson's "Summer" (288), a very fine young woman with light dress and black hair, seated in the shade, has more force and feeling than most of his contributions. The figure called "Caught!" (213) is a puzzle: who or what is "caught" is not very apparent, but the lady has her hand in her hair, and we involuntarily recall a certain poem by Burns.

Mr. Buckman is trying, we fear, to carry "decorative treatment of modern subjects" too far in "A Pastoral" (114); figures and foliage may be treated decoratively, but landscape cannot possibly be subjected to this form of treatment: it is in that case neither one thing nor another. His other study, "In the Country" (314), a young lady, in a *négligé* costume, seen against a background of foliage, is very graceful and very successful. Among the small things on the screens, which are generally among the best in the room, are some beautiful sketches of landscape effects by Mr. F. Powell,—things equally tender and true in feeling; two little drawings by Mrs. Allingham, "At the Sea, Eastbourne" and "On the Shingle, Eastbourne" (369, 406), studies of children, and also of shingle, the beautiful-toned large pebbles being depicted in the latter drawing in a way to make one loved them. Mr. Lamont's study for the "Laird of Cockpen" (444) is clever; so are "On the Turf Moss" (453), by Mr. Clarence Whaite, and "On the Sands at Instow" (458), by Mr. Brittan Willis; and there are three small drawings by Mr. Alfred Hunt, of which "Pont-y-Garth" (443) is perhaps the finest. A single contribution by Mr. Tadema, "Flora" (394), shows a classic maiden stooping to gather flowers, her face nearly hidden, and her head and shoulders foreshortened, in a garden or meadow, with a fountain and statues in the distance.

SUSPENSION OF NOTICE TO REPAIR.

IT is very often much better that those who are not lawyers should not take any heed of the decisions of the courts of law, for the purposes of their own transactions, without first consulting those whose business in life it is to keep themselves abreast of any change in any particular branch of law. For it may be that a decision which is relied on, unless given by a court of very high authority, is in a short time overruled, a fact which may be unknown to the non-legal reader. Or, it may be that without comparing it with other decisions, to explain or curtail it, this decision is not applicable to many cases which at first sight it might seem to affect. But a decision of the House of Lords,—when it is one which interests either the general public or a particular class of persons,—deserves some comment, and should not be lightly passed by. The rule which has been formed by the decision of this high tribunal in the case of Hughes *v.* The Metropolitan Railway Company is thus fairly entitled to consideration, and may be thus laid down. Where there is a covenant to repair upon notice, and the conduct of the persons by whom notice is given is such as to lead the person to whom notice is given honestly to suppose that such notice is temporarily suspended, whereas it is not the intention of the person entitled to give notice so to suspend it; then the latter will not be allowed to take advantage of the penalties in such covenant. We have, it will be observed, confined this definition to the case of a covenant to repair, though the principle of the decision is certainly applicable to other covenants; but it will be safer to confine ourselves to this class of covenants, especially as it is that which is of most importance to the readers of the *Builder*. But we must also point out that the person to whom notice is given must honestly and *bonâ fide* believe in the suspension, for otherwise he will not be relieved from acts caused not by mistake, but by intention. Neither does it make any difference whether the person giving the notice behaved honestly or dishonestly, so long as the person to whom notice is given is by the conduct of the former lulled into a false security, though fraud, it is scarcely necessary to observe, would constitute another ground of action. We will, with these prefatory remarks, take, as an example of this rule, the facts in the case before us, upon which, as we have said, the House of Lords have adjudicated. The plaintiff was the owner of the freehold (we leave out the steps in the transmission of the property), a certain person, whom we will call A. B., is the lessee, and the Metropolitan Railway Company were sub-lessees. The lease, and also the under-lease to the railway company contained a general covenant to repair, and a covenant to repair within six months after notice, and also a proviso for re-entry. On the 22nd of October, 1874, the plaintiff caused a notice to repair to be left with the first lessee, stating that the repairs were to be done within the aged six months. On the 28th of November the solicitors of the Company wrote to the plaintiff, stating that as the Company's interest would shortly expire, the freeholder might be desirous of obtaining possession of that interest at once, and adding, "and so we propose to defer commencing the repairs until we hear from you as to this arrangement." We need not travel over many more facts, for this letter was the commencement of negotiations which continued until the 31st of December, when they came to an end. Consequently, about the middle of the following April the Company set to work at the repairs of the buildings, which were completed about the end of June, that is, more than six months after the notice to repair had been given. Consequently also the plaintiff brought an action for breach of the covenant to repair. The action itself was fought out with the varying fortune which attends so often a struggle in the law courts between two wealthy litigants over an important legal point. But after two adverse decisions in the Courts below the House of Lords decided in favour of the Company, on the ground that during the time when negotiations were in progress the notice to repair was temporarily suspended, so that that period should not be counted against the tenant; consequently the notice actually began to run from the 31st of December. Thus, in point of fact, the repairs were completed within six months after notice had been given. It is obvious, therefore, that a very important principle is thus formulated, the only difficulty in regard to which is its application. Because, it must be remembered, the circumstances must be such as would induce a person reasonably to think that the notice is suspended. If they were such that a man of ordinary prudence would not regard them as temporarily waiving the notice, it is obvious that in such a case a court of law will not relieve a person against the consequences of his own stupidity or carelessness, so that it is necessary that this decision should not be counted on as being capable of altogether universal application. Still, in many ordinary transactions between landlord and tenant it may have important consequences. Thus the tenant, after such a notice as regards painting, for example, might enter into negotiation with the landlord that he should bear part of the expense, and the landlord might for a time entertain the proposal. On the principle enunciated in the case upon which we have based these remarks, such negotiations might reasonably lead to the idea in the mind of the tenant that the notice was during such period suspended, for there would have been the unintentional "misleading," which is the foundation of the reasons for the interference of the Court. It will be observed, that we have used the word "suspension" in place of "waiver," because this latter term points to a total withdrawal of notice, not to a temporary suspension; but these are legal points of too great minuteness to be dwelt on longer. What we have desired to do in these remarks has been to show clearly the principles which for the first time in regard to this subject have been concisely and plainly laid down by the highest Court of Judicature in Great Britain, and which may have important consequences on the ordinary relations of many classes of the community.

Swans on the Thames. — Mr. E. C. Robins, architect, in his report as "swan warden" of the Dyers' Company for the current year, states that an interview was had with the Lord Chamberlain with regard to the objections of some of the residents and anglers on the banks of the Thames that the swans ate fish and spawn, and it was satisfactorily proved by the analysis of Mr. F. Buckland that the outcry was much exaggerated. The birds do not eat the fish or spawn by preference, but only incidentally whilst feeding upon the vegetable matters with which the river abounds. However, the Crown has decided not to increase the number of swans, but to maintain the total of grown birds and cygnets at about 400; those of the Dyers' Company at 65, and the Vintners' at 45, which was the average of the last seven years.

THE HOSPITAL FOR INFECTIOUS DISEASES COMPETITION AT MAIDENHEAD.

As we mentioned in our last, there has been a competition for a new hospital for infectious diseases at Maidenhead, which has resulted in the corporation of that town awarding the first premium of 10*l.* (and therefore presumably the task of carrying out the building) to the author of the design signed "Ad Rem," and a second premium of 5*l.* to that signed "Serio." The drawings were exhibited on Monday last in the Town-hall at Maidenhead.

The affair turns out to be a very small one: a hospital has been required to accommodate eight patients, four male and four female, for which the sum of 800*l.* has been allowed as a limit of cost. This seems too small for securing any really adequate building affording proper accommodation. But granting that the building can be provided in a proper manner for that sum, a glance at the two selected designs shows at once that this is not likely to be the case, so far as the matter has yet gone; and that, meagre as is the sum allowed to provide such a building, the Council have made either an utter blunder or something worse in their selection.

It is not usual for us to go out of our way to notice specially a competition on so small a scale as this; and the general quality of the designs, though they are painfully numerous, considering the premium offered, is not such as to call for any remark, except in regard to the gross ignorance or neglect of the conditions of hospital building which many of them show, in addition to the usual ignoring of the question of cost which generally meets us in a competition. But when we find that the selected design, by, we are informed, a local architect, is one of those which shows this ignorance or thoughtlessness, we decline to consider the matter as a trivial one. Small as is the building to be erected, its right or wrong construction is really and practically a matter of life or death. A style of proceeding which, in the case of a competition for some other classes of building, might be regarded rather as a question of fairness to other competitors than in any more serious light, assumes really a grave moral aspect when it concerns a building intended as a sanatorium, as a means of checking and curing virulent disease.

It is our bounden duty, therefore, to take the initiative, and to point out at once that the design selected by the council of Maidenhead is utterly unfitted for its purpose, and ignores principles which, first urged in this journal, have been long accepted as essential by all who have given their attention to the subject of hospital building. It is essential that the wards in which patients are lodged (in the case of infectious diseases more especially) should be kept as separate as possible from each other and from the main building; should have as much free air space as possible all round, and a thorough cross ventilation; and that all water-closets should be separate also from immediate communication with the main portion of the interior. All these conditions are utterly ignored in the selected design. The plan in any case is that of a man who is no planner; there is no system about it. But its positive defects are more serious. The wards have windows only on one side. The waterclosets open on to an interior passage in the centre of the building, upon which all the other rooms also open (there is a pretence of a vestibule between the actual closet and the passage, but that merely means a little longer space for effluvia to traverse); and they cannot be reached from the wards but by coming out into this passage; and the rooms for stores are close adjoining these closets. There is a "happy family" appearance in the plan, as if the direct object in an hospital were to bring all its inmates and all its departments into as close a union as possible, instead of the contrary. It is extraordinary that a plan should have been sent in so utterly ignoring the true conditions of the problem as this does: we wish we could add that it is extraordinary that this plan should have been selected.

The comparison of this plan with the one to which the second premium has been awarded affords some explanation of the motive with which the first design has been selected, but an explanation which makes matters no better. For the plan marked "Serio" is, as far as we were able to judge in a short inspection, the best that has been sent; at all events, it is without question one of the best, [and, though open to some objections, is obviously the plan of a man who has considered and understands the subject to some extent. The author keeps the two wards as wings separate in great measure from each other and from the central block of offices, with which they are only connected by small rooms for nurses (with an outlook window on the ward in each case); and the water-closets and lavatory are connected with each ward, in such a way as to give privacy, and at the same time provide a stratum of complete cross-ventilation between them and the wards: they are connected with no other part of the building whatever. The author would have done better had he planned his wards so as to have windows *opposite* to each other instead of at cross corners; indeed, we must put it more strongly, and say that opposite windows are an absolute necessity, for where there is only cross corner ventilation the opposite corner is almost certain to become a receptacle for contaminated air which cannot be got rid of. We must say also that there is one point in the "Ad Rem" design which "Serio" has not, and would be the better for, viz., a separate ward for a convalescent patient. But in the main the plan of "Serio" is a good one, and in every respect superior to "Ad Rem" and to most others in the room; and the council appear to know that it is a good one, since they have given it the second premium. They have not, therefore, the shield of ignorance for their action in the matter. Nor can it be a question of cost, since "Ad Rem" in reality goes beyond the stipulated cost in adding a sum for his mortuary, which mortuary is a necessary part of the scheme, and therefore the author is in reality out of court for transgressing the stipulated sum. It is true that the other design *looks* more expensive, partly because it is better drawn. The real test, however, would be whether the author of "Serio" can find a contractor willing to pledge himself to carry out the building for 800*l.*; he professes to be within the amount, while his favoured opponent admittedly exceeds it. The matter cannot, therefore, whatever the Council may pretend, be a question of cost. The architect of the chosen design makes a strange statement in his report; he says the cubic space of air per bed is something over a thousand feet in one room, and a considerably smaller space in the other room, and sums up,—"thus *giving an average* of 945 cubic feet per bed." We suppose that on the same principle, if the man who lived at No. 1 in a street had five meals a day, and the poor fellow in No. 2 had only one, Mr. "Ad Rem" would say there was an average of three meals a day between them, and No. 2 had no right to complain.

The matter is one to which, as we observed, we should hardly have given this space had it been a mere ordinary specimen of unfair treatment of competitors, because, though the unfairness, even in that light, is striking, the interests at stake to the architect are but small. But when the building to be erected is a hospital, which will be useful or pernicious in its effects in proportion as it is rightly or wrongly planned, it is our duty to interfere. We do not care who is employed to erect it, so long as it is properly done. We do not necessarily recommend the plan marked "Serio,"—could not, in fact, do so *sans phrase*, unless some modifications were made in it. But we tell the corporation of Maidenhead that if, in the face of what is now known about the necessary conditions of success in the sanitary operation of hospitals, they erect the building on the plan to which they have chosen to give the premium, they will run a very serious risk.

TOUTING VALUERS.

An eminent solicitor writes:—"Don't you think the system of surveyors touting for compensation cases should be exposed?

I inclose some notices sent to clients of ours, who have property in the new line of street about to be made through Soho. Such notices would not be allowed in our profession. The unwary are soon caught, and go to surveyors and solicitors who are not in their confidence."

We have received a perfect shower of letters inclosing applications made by some four or five valuers mostly unknown in the profession; one of them who uses the same name as an important officer of the Board of Works claims to have "great facilities for ensuring a favourable settlement of such claims." All we can do is to advise claimants to make inquiries before appointing any one to act for them.

NEW BATHS AND WASH-HOUSES FOR ST. PANCRAS: TOTTENHAM COURT-ROAD.

The building was commenced in March, 1877. The foundation-stone was laid on May 8th by Mr. Churchwarden Thornton. The contractors have undertaken to complete the works by the end of the year, and there is no doubt the building will be opened early in the coming season.

The site is the old Fitzroy Market, and is rectangular, being 109 ft. by 105 ft. The building is completely detached. The west front shown in our illustration is in Whitfield-street, and is the most important in some respects. The north, east, and south sides overlook the narrow old Market-street.

The principal entrance for bathers is from Tottenham Court-road, through Fitzroy-court, which is opposite the eastern portico of the baths. The latter consists of a Portland stone colonnade, supporting seven horse-shoe arches and a deep-trussed cornice. The swimming-baths occupy the north and south frontages. The Whitfield-street front contains the residences of the superintendent and engineer, the board-room, the public wash-house, and the ironing-room and the boiler-house.

The material of the facing is red brick. The mullions and tracery of the windows are stone, and the strings and ornaments are in Portland cement. Inland encaustic tiles will be used in the cornice and window labels.

The accommodation provided in the new establishment will be gentlemen's swimming-bath, 90 ft. by 28 ft.; second-class swimming-bath, 55 ft. by 24 ft.; 109 private baths. The public wash-house will contain accommodation for seventy-eight women. The style adopted is Moorish.

The interior of the large swimming-bath will be decorated in the style of the building. One of the principal features is a pendentive dome, which is being executed by Messrs. Dennett, in whose material the whole of the ceilings are also to be constructed.

The Commissioners have accepted contracts to the amount of 25,300*l.* Messrs. Kirk & Randall are the builders; the whole of the engineers' fittings are by Messrs. Fraser Bros.; the porcelain baths and glazed tile work by Mr. J. Finch; and the Portland cement dressings are in the hands of Mr. J. Stride.

Mr. Gundry is the architect, and Mr. G. Garratt clerk of works.

The plan of the building is to a great extent studied from the establishment in King-street. The Commissioners have adopted every suggestion that has been made with a view to economy in the consumption of fuel.

When the first stone was laid, Mr. Thornton, the chairman, gave some statistics as to the baths in King-street. He said he had no doubt that many of them would remember that about eleven years ago the Vestry of St. Pancras agreed to erect baths and washhouses in the parish, and after great anxiety and trouble they purchased freehold land in King-street, and erected an establishment at a cost of 23,000*l.* That establishment was opened in May, 1868, and since that time it had proved a very great success. A few figures would prove interesting. In the year ending March, 1869, the bathers at King-street numbered 145,735, and the washers, 9,425; 1870, bathers, 149,474, washers, 19,620; 1871, bathers, 152,216, washers, 23,485; 1872, bathers, 165,338, washers, 25,796; 1873, bathers, 164,964, washers, 29,730; 1874, bathers, 195,657, washers, 31,456; 1875, bathers, 199,657, washers, 31,456; 1876, bathers, 215,880, washers, 29,878; 1877, bathers, 221,441, washers, 27,694. Thus 1,629,200 bathers and 226,812 washers had used the establishment during those nine years, and they had contributed 29,299*l.* 19*s.* 2*d.* The debt raised by the cost of the erection had been liquidated by about 1,150*l.* a year. 10,625*l.* had been paid off, of which the establishment had contributed 8,490*l.* 14*s.* 10*d.*, and there now remained 10,625*l.* to be paid off the 23,000*l.*,—the cost of the building and site. The Commissioners had also contributed a very large sum for improvements. The site for the building now in course of erection was purchased of the School Board for 5,000*l.*

NEW BUILDINGS, FLEET-STREET.

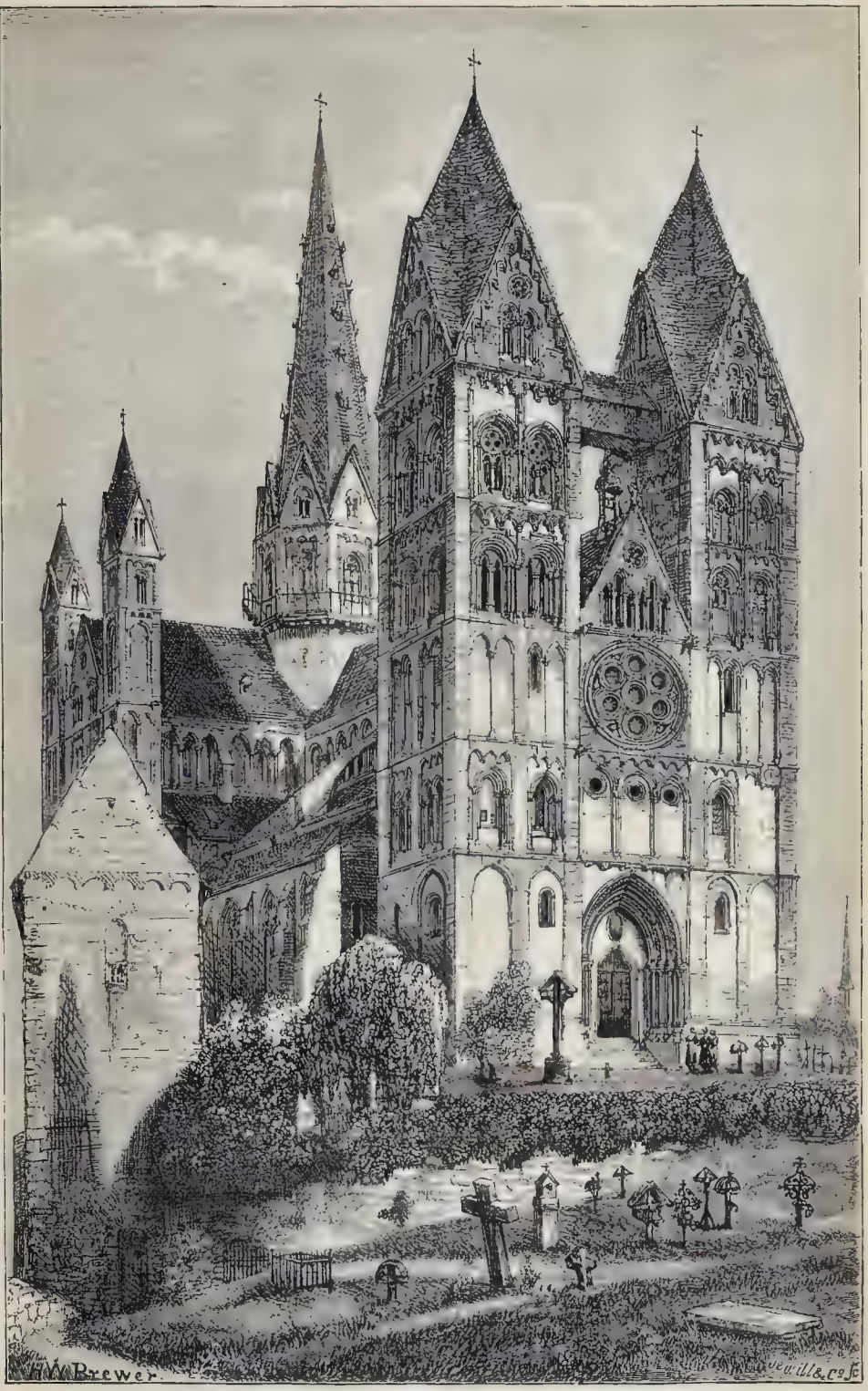
Sir,—In describing the above you state that the figure-heads, cornice, window dressings, pediments, &c., are of Dumries stone.

The whole of the red stone in these buildings is from Messrs. J. & A. Murray's quarries, Corsehill, Annan, N.B.

Samuel Thickett.



NEW BATHS AND WASHHOUSES FOR THE PARISH OF ST. PANCRAS: TOTTENHAM COURT ROAD.—Mr. Horace Gundry, Architect.



THE CATHEDRAL OF LIMBURG-ON-THE-LAHN: WEST FRONT.

THE CATHEDRAL OF LIMBURG ON THE LAHN.

RESTORATIONS ABROAD.

WE have previously described, and have more than once given illustrations of, the interesting Cathedral Church of Limburg-on-the-Lahn; and our chief reason for again reverting to it is the fact that this beautiful building is at present undergoing a restoration, against some portions and particulars of which it is our painful duty to raise an earnest protest, and to expostulate—we fear, alas! with little hope of success—with those who are engaged in a work, some of the details of which, we feel sure, are ill considered, and will cause great regret to the archæologist, and, in fact, to all those who are interested in ancient buildings.

The restoration of such a church as the cathedral of Limburg-on-the-Lahn must, under any circumstances, be an excessively hazardous and dubious undertaking. The building in its present condition looks so exceedingly beautiful, from the exquisite tints which age has given to its surface, and forms such a strikingly picturesque object when seen in combination with the rock upon which it stands, the river which flows past it, and the highly-interesting ancient buildings which surround it on every side, that an architect ought to think long, and ponder well, before he attempted to do anything which might mar or interfere with a scene so charming, and a combination so highly picturesque and interesting.

Now the reports which have reached us from trustworthy sources lead us to suspect very strongly that those engaged in the restoration of this beautiful church have not given sufficient weight to the considerations which we have previously suggested. We are told, for instance, that it is decided that the curious gallery which unites the two western towers shall be removed, if this foolish act of vandalism has not already been perpetrated. These galleries uniting the towers of the German churches are very interesting features, and are, if we mistake not, peculiar to Germany. They are also found almost exclusively in churches of an early date, such, for instance as Limburg Cathedral, the Church of Boppard (where it has been recently destroyed), the church at Dietkirch-on-the-Lahn, St. Dionisius at Eslingen (Mr. Webb, in his "Continental Ecclesiologist," describes the towers of this church as being united by two galleries, one above the other: if this was the case one of these galleries has disappeared), the Cathedral of Aix-la-Chapelle, and many other churches of a Romanesque date. It is true that such galleries are occasionally found in churches of a later date, but rarely. It is probable that the galleries now existing in the churches we have mentioned are not coeval with the towers which they unite, but we have little doubt that they replace others that were, and the fact that these galleries are represented in most ancient views, especially those in the "Nuremberg Chronicle," a work published in the year 1493, proves beyond all question that these galleries were in common use previously to that time. In the work alluded to (the "Nuremberg Chronicle"), there is not a single representation of a church, with Romanesque towers, which is not furnished with one of these singular galleries. One of the uses of this gallery or bridge is obvious enough. It, of course, saved the expense of a staircase in both towers. It also saves the trouble of going down to the ground and mounting another staircase when it is necessary to go from the bell-chamber in one tower to that in the other. We may venture to hazard a third use. There can be no doubt that at all times during the Middle Ages church towers were used in extreme cases as places of defence. They were, in fact, the very last stronghold of the besieged, and church-plate, valuables, manuscripts, &c., would, in case of necessity, be placed in the tower which had no staircase. The wooden bridge or gallery could easily be thrown down, and they would be placed in a position almost inaccessible, for a time at least. With regard to the picturesqueness of this singular feature of ancient German ecclesiastical architecture there cannot be two opinions; and even were it not so, its very singularity ought to plead for its preservation. This being the case, we cannot conceive what can induce the German architects to destroy this feature whenever they can get an opportunity of doing so. We fear this mischievous propensity may be traced to that hard, inartistic spirit of "purism," which renders German restorations and modern German architecture so dry, cold, and thoroughly uninteresting. If a German architect has to restore a Romanesque church he considers it his duty at once to destroy every feature which is not Romanesque. If it is a First Pointed church which he has in hand, everything which is not First Pointed work must go, and of course anything like Renaissance furniture must be swept away as something too abominable to contemplate for a moment; and thus most German churches, when they are restored, are robbed of the whole of their interest, and might just as well be entirely rebuilt from the ground. This is the case with the Abbey Church of Laach, the Church of Sinzig, the Cathedral of Speier, St. Godehard, Hildesheim, and many other churches which we might mention. Now it is just such a fate as this which we dread for the Cathedral of Limburg-on-the-Lahn. It is only just to say that all German architects are not imbued with this mischievous purist spirit; for a more conservative restoration than that of the Cathedral of Paderborn, under Mr. Guldenpfennig, it has rarely been our fortune to see.

Another thing which is being done at Limburg is to be seriously reprehended, and that is the removal of the singular old screens which cut off the transepts from the choir. One of these screens is shown in a view which we published of the interior of the church in a former volume. We understand that these screens are to be re-erected in the arches of the apse; but here they will do exactly what they are not wanted to do, that is, they will block out the view of the aisle which surrounds the apse.

Our view represents the west end of the Cathedral of Limburg before the commencement of the restoration. It is from a drawing made entirely upon the spot, and may thus stand as a witness and a protest against any alterations and modernisations which may be attempted by the present restorers.

THE CLUBS IN AUTUMN.

THE London clubs have just passed through a phase which may not inaptly be termed their moulting season. They obey the general law of animated nature as respects the function of discarding and renewing integumental coverings once a year. This they do in the slack season of autumn, when it is convenient to cast off old garments and put on new. Each and all have been engaged in performing this operation, and they now shine forth fresh and gay in full feather and bright plumage.

The business of renovation carried out in different establishments is more or less extensive, according to the quantity of work to be done, and it is accomplished in two ways. When only a moderate amount of renewal is needed it is the practice to keep the club open and place workmen in first one part and then in another, paying off, so to speak, the debt of dilapidation by instalments. But when a more thorough and complete repair is undertaken, the whole house is at once given up to workmen, and the members are received as guests in some other club, which, in its turn, closes, and the hosts return the visits of their guests. The latter plan is to be preferred; it has many advantages, and, looked at in every point of view, it is the best; for, when the job is done piecemeal, members are mixed up with workmen, and a large amount of discomfort is experienced by the clubite. All is topsy-turvy; both morally and physically the tables are turned. The coffee-room is first taken in hand, all the furniture is ejected, tables are no longer performing duty round the room, they have retired from business, and are frolicking in passages, kicking up their legs wildly into the air, and, close by, the chairs are at high-jinks, playing leap-frog over each other, or sticking on the shoulders of a fat well-stuffed brother. All this is bad enough; but upstairs matters are worse, for, on entering the library, you find that poets, philosophers, and statesmen have descended from their lofty positions, and are lolling disreputably on the floor, cheek by jowl, in a far corner, and you are pained to observe the degradation which has befallen Messrs. Shakspeare, Pope, Milton, & Co.

Besides upsetting the household gods, this invasion and occupation of the premises by an army of artificers is attended by many inconveniences. The dignity of the member is lowered, the house is no longer his own, and he cannot wander where he lists. At the very threshold the porter indicates to him where he may and where he may not go. He no longer orders; but is ordered, and creeps about, stumbling over stray articles, into rooms shorn of their usual air of comfort. The times are changed with a vengeance; our authority is usurped something like that which occurs at home when the man-midwife and monthly-nurse enter into possession. In both cases the lord of the creation is shorn of a large portion of his dignity; he is no longer master of the house, is humbled and degraded, and heartily wishes the days of candle and whitewash over. At these times the service is utterly deranged; the butler, head-waiter, and *chef* are away performing their autumn manœuvres. The club organism may be said to be in a state of semi-vitality or suspended animation, undergoing resuscitation at the hands of members belonging to the profession of painters, plasterers, &c.

When a move is made into another house the clubite enjoys a change of scene somewhat like a trip from home. True, he meets with a few old acquaintances, but all else is new, and everybody he meets in the saloon is busily discussing plans of autumn excursions. London attire is doffed and country donned. Shoddy suits, billycock hats and shooting-jackets are the order of the day, and the foreign Bradshaw is much in request. At dinner he finds a sprinkling of one or two of his own waiters dressed not in their usual butterfly evening garb, but in plain morning attire, and looking ill at ease and by no means at home. Strolling out at night he passes his old club-house, which no longer shines forth with glow-worm light from top to bottom, forming a striking contrast to other abodes. All is dark, dismal, and dreary, as if covered by a gloomy pall. The front door, ordered by printed rule to be kept open seventeen hours out of the twenty-four, is closed, the paint is scraped off, the white blinds and red curtains are gone from the windows, and he turns from his old haunt, fumbles for his latch-key, and prepares for bed.

A STEP IN AN ARCHÆOLOGICAL DISPUTE.

THE Imperial German Consul-General in Syria has taken a step of which the propriety has long been obvious. Informed of the existence of a number of *terra-cotta* objects, which purported to throw a flood of light on archæology, art, epigraphy, sepulchral usages, and thus on the architecture, even of Eastern Syria, the Consul has thought it more consistent with his duty to make investigations *in situ* than to take the less troublesome course of denouncing the whole collection as forged. The Consul, in a letter recently published by a contemporary, refers to several points of a controversy which has attracted more attention in Berlin than in London; and states that Dr. Almkvist, who is Professor of Oriental Languages at the University of Upsala, has furnished a real proof, not only to the impartial, but also to the prejudiced, observer, that pottery wares had been lying for a considerable time on the rocky soil of Moab. Dr. Almkvist himself selected a spot in the rocky wall of a cave, dug into it for 2 ft., and found there a written vase. The Consul uses the expression "stratum of flint," by which he possibly means stalactite. It is, however, very desirable that some practical geologist should give an opinion as to the age of the formations opened out.

After Dr. Almkvist's discovery, the Consul-General, accompanied by Herr Schick, councillor for architecture; Ser Murad, first dragoman to the Imperial consulate; and A. Niepagen, inspector of ruins of the Convent of St. John, visited the caves of Kubeibe, Mack'ad, and Kyriath-Aleyan. The cave which they selected to search was "covered by a kind of fine grey moss [probably lichen is meant], which was distributed over it like mould, having rats worked by the passage of insects, a proof that no human hand had touched it for long periods." The earth thus covered contained fragments of rock, of upwards of a cubic foot contents; and from behind these rocks, the party extracted fragments of clay, bearing inscriptions, a small idol, and some bones. On clearing away this ancient *débris*, a niche was exposed in the side of the cave. In a crack above this niche they found a large idol, in two parts, which bore, like the idols now at Berlin and in Jerusalem, embossed Aramaic letters in front, and indented letters behind.

It is only by the hazardous plan of accusing four respectable German officials of reporting to the Imperial Government a tissue of false-

hoods that any attempt can now be made to support the charge of forgery against the existing collections in block. Of course, the authenticity of an individual object may be matter for distinct inquiry. But that there exist in the soil of Eastern Syria vases and figures of an interest very superior to those recently found at Cyprus, there is now no pretext to deny.

We could have wished that some responsible English traveller, of geological experience, had investigated this subject before. There is, however, no doubt, ample room for further investigation. One of the points on which it is interesting to find light thrown, is that of the practice of cremation by a Semitic people; which, judging from the use of the Aramaic alphabet, these cave worshippers were. Some of the vases in Jerusalem have been translated in this country as bearing mortuary inscriptions. The early mythology of Syria is also illustrated to an extraordinary extent. As to history proper, we are unaware that any records have been found like that of the Diban stone. But after the recent discoveries of the cuneiform records, it is impossible to prescribe a limit to the information which may be found inscribed on the durable material of burnt clay, although buried for thousands of years.

HALIFAX PARISH CHURCH.

It is proposed to restore the parish church of Halifax, under the direction of Sir Gilbert Scott, R.A.

At a meeting held the other day in furtherance of the object, the vicar (the Rev. F. Pigou) said he had made it his business to examine the church a few days previously, and he would vouch for the literal accuracy of what he was about to say. The church was a vast charnel-house. He had gone from pew to pew, and within three or four inches of the floor were human remains. He could show them near the pulpit,—the bishop saw it himself on Sunday,—in one place a human skull, in another pew an arm-bone, in another a rib, in another a shoulder-blade. Look with a light, as the verger bade him do, under the thin partition of the floor of the church, 3 in. from their feet, and they would see wherever the eye rested uncoffined human remains. The pipes from the heating apparatus ran right through these remains, and no wonder, therefore, that they had the faint and sickly smell of corruption which pervaded the church. The uneven state of the pews was owing to the fact that by degrees coffin-lids had given way, and the pews had sunk into the depressions thus caused. It was not proposed to sweep away with wholesale indifference to the past all the valuable work, and what they had been accustomed to care for; it was not proposed to efface a single monument of the true past. In their parish church they had a building second to none in its grandeur of outline, and it ought to be their pride to be able to point to it as indicative of the pious care of this generation. He was encouraged by the promise of subscriptions which had been made; 10 000*l.* was all that was at present sought. Some thirteen persons had already subscribed 5,000*l.*

Sir Gilbert Scott, in giving an account of the suggestions and advice he had given with regard to the church, said he should be glad to get rid of the word "restoration." It had been so misused as to express something very different from what on that occasion was intended. "Reparation" was a better word, but it did not express all. They wished to repair the church, and hand it down in as good a condition as it had been in the past, but that did not imply all. Reparations had been made from time to time, some of which were good, but some wanted improvement; therefore he did not think that reparation would do. Dealing with a church like that, was something like dealing with a grand old institution like the British constitution. Both were venerable institutions, erected in years long gone by, but had undergone changes, some of which had become obsolete, and others had been found injudicious, and in dealing with each one needed an underlying stratum of deep reverence. It was only when the alterations which in the course of time the church had undergone had been proved to be injudicious and militated against the objects of the church, and against its sacred use, that they ought to venture upon obliterating or removing them. Their object ought to be to hand down the church to future generations in as good a state as they had received it, but like the tree having dead branches, they ought to deal with it as a judicious husbandman would deal with the tree — cut off the dead branches and insert better ones. That glorious old church, as they all knew, and as Mr. Fairless Barber, the antiquary, not only of that place, but of Yorkshire, had so admirably laid down in a paper on the subject,* had arrived at its present form through a long series of very interesting changes. It was founded many centuries back. They did not know exactly when, but they knew the existing building went back to Edward I., and they thought the church existed many ages before, and it was their hope that it might exist for as many ages to come. They could still find some work of the time of Edward I. They could trace step by step the changes which had been made in the fifteenth and sixteenth centuries, and about the middle of the sixteenth century they arrived at the form of the building which it still possessed Subsequently to that time its fittings were almost wholly renewed, viz., in the time of James I. and Charles I. The fittings, or the sittings, he ought to say, were of great beauty, and thoroughly in character with the feelings of the period. Nothing could be more beautiful in their way than the fittings in the nave, which were similar to those of St. John the Evangelist, Leeds, founded by Mr. Harrison, about 1621. Not only the fittings, but the galleries and some other things were all of the architecture of the time of Charles I., all of which, if they did not interfere with the use and object of the church, he would preserve. Next, he would point to the additions made in the last century, in the days of Queen Anne. One of these was the great western gallery, which cuts across some distance from the west end, and the other was the screen separating the tower from the rest of the church. This screen he would preserve, as both useful, ornamental, and interesting. He could not speak in the same terms of the gallery. It cut off from the length of the church one-fifth, and he could not, from any associations connected with it, advise that it should be preserved. The church had a vista of ten arches in length, which was reduced by this gallery to eight arches. The gallery also hid the two beautiful arches of the nave to the west of it, and the beautiful arch leading into the tower. The only piece of destruction he would be guilty of would be the removal of that gallery—not for the sake of destroying it, but for the sake of displaying to view those noble parts of the church which it now concealed, and still more for the use in public worship of one-tenth part of the church which they were now prevented from utilising. The old seats he would most carefully preserve, and restore in the sense of putting them into repair, and handing them down undecayed and uninjured. But what was underneath those pews? They must take them up, for just beneath was the floor fearfully decayed in parts, with the boards 1 in. or 1¼ in. apart, and between they might thrust a hand down, and the vicar had already told them what they would find. He had that day seen lots of human bones, and had come away in disgust. Having dwelt on the sanitary aspect of the matter, and shown how impossible it was that the atmosphere of the church could be healthy, Sir Gilbert referred to the condition of the roofs. The nave and chancel roofs were in a fair state of repair, but still required reasonable, though not extensive reparation. The whole of the lower southern roofs were bad, as also the northern roofs, and required very careful and well-considered reparation. The building was not unsafe, but it required careful and loving reparation. From what he had said, they would judge of the general spirit in which he would deal with it. Treat it in a thoroughly conservative manner,—not like an old-fashioned Tory, who believed that "whatever is, is right," nor yet like a new-fashioned destructive, who thought that "whatever is, is wrong." Rather lean to the Tory, believing that everything is right until it is proved to be wrong; and in re-arranging it to do it lovingly, so dealing with the old church that they might hand it down to future generations, not in renewed youth, but in a sturdy and green old age. Whilst he was glad to hear there was so much conservative feeling in Halifax with regard to their parish church, he advised them that in dealing with it they should commit it to the care of such antiquaries as Mr. Barber, and follow very much what he advised.

* The substance of this paper, giving much curious historical information about the church, will be found in last year's volume of the *Builder* (vol. xxxiv., p. 967).

HYDE PARK, KENSINGTON GARDENS, AND THE POWDER MAGAZINE.

Embracing an extent of one mile and three quarters from east to west, and of over half a mile in equable width from north to south, the whole interval being beautifully wooded park, and surrounded by the most fashionable suburbs, no other city possesses within its precincts such a resource, the value whereof is inestimable, as it tends to the recreation and enjoyment of a population of four million souls, pent up within a circle of ten miles in traverse, covered with houses, and which year by year is still expanding.

The borders being beautifully planted and shrubbed, and walks cut in every required direction, both park and gardens have of late years acquired a greater appreciation, which makes every intrusion on the public open space more intolerable to those whose daily walk needs enlargement rather than diminution.

On an eminence commanding a great range of park from Kensington Gardens to Park-lane, and from Bayswater-road to the Serpentine, at a short distance from the ranger's mansion and grounds, a new building of three stories has been just erected and finished in the modern style, covering an area of 45 feet square,—of course, for the occupation of some official. Also a hideous and lofty building with a rounded zinc roof, for the steam roller for the roads; besides that a new Ordnance Office, with additional out-buildings, have been recently added to the Guard Barracks. There is, however, another building, near the Serpentine Bridge, sunk in a hollow, occupying an acre of ground, obstructing the direct line of access from Westbourne-terrace to the Exhibition-road,—the Powder Magazine. Round this the new road winds by a descent of 10 ft., all traffic having again to ascend in the circuit to the road so recently opened to the public; whereas a road cut straight through the Magazine inclosure from the bridge would save not only a deviation of 200 yards, but also the descent and re-ascent of an elevation of 10 ft.

As over 1,000 cabs and even more private carriages use this route every day, surely some more appropriate position could be found for the storage of gunpowder, as well as the allocation of a guard, which has barrack-rooms both there and at the vicinity of the Ranger's Lodge for its protection.

An extensive store of gunpowder, however picturesque, is not an agreeable object within view of ranges of fine houses, such as border the Kensington and Bayswater roads; and surely ample accommodation could be found for the storage of such explosives, say at Wormwood Scrubs, or any other vicinal and less populous suburban quarter.

The site recommended for a royal palace by the writer in the *Builder* of the 7th July last is about 300 to 400 yards distant from the bridge and the magazine. It is on the highest and most open elevation of Kensington Gardens; commanding views of the park to Kensington on the west, Park-lane on the east, Bayswater-road on the north, and Kensington-road on the south, being also open to both ends of the curving Serpentine and its beautiful border walks, interned within a scope of park grounds of nearly 800 acres, with full-grown plantations and shrubbed floral walks. No other city of Europe could offer such a position for a royal palace within its precincts.

The plateau selected for a site is a quadrangular space of about twenty to thirty acres, bounded on three sides by noble foresters, and the frontage to the western glade is at least 100 yards, clear of all "brancage." The palace frontage might advance 40 ft. upon the glade, thus leaving space for two side windows commanding open views to east and west.

There would be ample space for gardens, offices, and adjuncts, and the modern building now used as a powder-magazine would make handsome and commodious stables, with only a little alteration.

Seeing the effete and smouldering condition of the old Palace, it must soon be either demolished or restored at an enormous expense; and as the position on the boundary wall of the extreme end is most inappropriate, the erection of a new and appropriate structure would be of great benefit to the Royal Family.

Until the new palace may be completed, there need be no occasion to interfere with the old building; but then all the adjacent grounds, both within and without the old boundaries,

uild be thrown into park, and fenced in with
railings; and above all, a public roadway
dicated from Kensington (at the Royal gate-
) to Notting-hill. This would greatly extend
blic privileges, and, at the same time, a palace-
thy the British Sovereign might be attained
the right place, which would also be nearer
more agreeably accessible to the nobility
gentry of London. T. H. H.

BIRMINGHAM TO-DAY.

The building trade is in most branches not
rly so busy as it has been for a long time
st, several important works are approaching
mpletion, and no work of any magnitude has
en recently begun. The dome and cupola at
e Municipal Offices are now complete, and the
diments with their statuary nearly so, and
e internal finishings are in progress. The
w building for the Imperial Hotel in Colmore-
w is also nearly complete, and the block in
e same row for the offices of the Midland
nd Corporation and the Birmingham School
ard will be ready for occupation in a few weeks.
The nineteenth Board school has just been
ened, and another will be ready at the begin-
ng of the new year, and the School Board
nounce that they intend building seven more
complete the educational scheme, making
enty-seven schools, to accommodate 25,000
ildren, at 10 ft. super. area per child. The
te is now 7d. in the pound. The school
ildings are perhaps the most picturesque
d ornamental in the neighbourhood. The
nominational schools, not under the control of
e Board, instruct about 24,000 children, so
at nearly all the children in the town of school
ge attend school. It is to be hoped that a
arked effect will be observed in the manners
d habits of the rising generation in conse-
uence of the instruction they receive, for it
nnot be denied that Birmingham enjoys the
nenviable notoriety of harbouring some of the
reatest ruffians and blackguards in the king-
om. The language heard in the streets occa-
ionally from both young and old is enough
o make even an old builder shudder,—"scaffold
rammar" is mere milk and water to it,—and
he robberies from the person with violence
eceived the marked attention of a judge of
ssize recently, when he sentenced several
uffians (of both sexes) to penal servitude, with
fair dose of the lash. It appears to me that
he system of building entries, from the streets,
eading to courts behind, which at night are
ark and dismal, has a good deal to answer for
n that particular. It is desirable especially to
all the attention of the authorities to this
natter. The practice is almost peculiar to the
lace, and it is very conducive to street rob-
eries and immorality.

A subscription has been set on foot, and well
esponded to for the purpose of erecting a
ountain and canopy with a medallion portrait
n honour of Mr. Joseph Chamberlain, M.P.,
hree times Mayor of Birmingham, for his suc-
essful efforts in connexion with the gas and
water works, and the adoption of the Artisans'
Dwellings Act. The design has been pre-
ared by Messrs. Martin & Chamberlain, archi-
ects, and will shortly be carried out, and the
ountain erected in the open space at the back of
he Town-hall. Sir Josiah Mason's College, and
he new Assay Offices in Newhall-street, are
both up to the roof, and the proposed extension
of the free Public Library, which is to cost over
30,000*l.*, is on the point of being let.

The general trade of Birmingham is still very
dull. That it is so is, I think, not altogether
undeserved. The manufacturers of the better
class of goods are much better supplied with
orders than are those of the very common sort,
and this fact seems to indicate that the world in
general is tired of the wretched make-believes
and shams to which it has of late years been
treated. Fancy drawer-locks the wholesale
price of which is 2s. 6d. per dozen! These are
mostly exported to our colonies, and the colonies
refuse to have them any more. So with the
common description of firearms. The makers of
the better sorts are fairly employed, but great
distress exists amongst those who can only make
the common sorts. Even our black friends on
the Gold Coast, Ja Ja and Oko Jumbo, refuse
now to fight without good rifles, and the makers
of the six-and-sixpenny article want orders in
consequence. The makers of edge and other
tools also seem to fail to recognise that style is
as necessary in their branches, as it is in a more
useless and purely ornamental manufacture.
Masons' tools of Birmingham manufacture cannot
be bought here under 9d. per pound, and are
clumsy and ugly, whereas others of Manchester
make, of a decidedly superior quality and style,
are sold with a profit at 7½d. per pound. The
same remarks apply to many joiners' tools.

A friend who travels much amongst coal-
mines says that at the present moment in the
Black country of Staffordshire there are many
thousands of tons of coals stacked at the pits'
mouths awaiting sale, and this condition of
things has existed for some time past. Now,
one of the things not generally known is the
fact that bituminous coal exposed to the open
air and rain soon loses its gases, and in time
becomes little better than so much cinder. The
rain which falls upon it is absorbed into the
coal, and is tenaciously held therein, so that in
purchasing wet coal we buy a quantity of water,
which in the furnace requires a portion of the
remaining coal to drive it off, before the coal
can burn, thus causing a double injury. The
policy of the coal-miners, therefore, in restricting
the output of coal wherever there is an accumu-
lation above ground, is not the unmitigated evil
which some would represent it to be. Still, it
may be asked, why is there an accumulation?

A practice of street-cleansing which has pre-
vailed in Birmingham over thirty years, and
which finds little favour in other towns, is the
use of machine-brooms drawn by horses. Set
at an angle with the street, the broom as it is
drawn along revolves, and sweeps the mud into
the gutter. If the mud thus swept up were in
all cases immediately removed no possible
objection could be raised, but very frequently,
especially on Saturdays, the mud is allowed to
remain in the gutters until Monday, or even
later, forming a continuous trap for the unwary
pedestrian, and many are the curses, loud and
deep, which are vented upon the devoted heads of
the scavenging department in consequence.

A movement is in progress for the establish-
ment of a permanent court-house for the coroner
for Birmingham, similar to that in Manchester
and elsewhere. There can be no doubt that such
a court, if situated in a central position, would
be a great improvement upon the present custom
of sitting in public-houses, and the movement,
therefore, deserves success.

In a late number of the *Builder* are quoted
some remarks by a correspondent of the *Bir-
mingham Daily Mail* upon jerry building here,
and the need of better inspection. Birmingham
is not worse than most other large towns in
respect to this question. Speculating builders
build to sell, not to keep and use, and as long as
a low standard of commercial morality is recog-
nised by the public, we may expect such builders
to take advantage of it if allowed. Notwith-
standing such apparent addition to their profits,
as is complained of in the article quoted, there
has been during the past three months a large
number of failures amongst this class, between
thirty and forty having filed their petitions in
the local court. Jerry building is, therefore, like
all other trashy productions, at a discount just
now. The public is doubtless tired of being
compelled to live in houses of diminutive pro-
portions, with 9-in. outer walls, and 4½-in. party
walls, 7 in. by 2 in. joists, and break-neck stairs,
with locks on the doors so common that the
makers say they cannot afford to stoop to pick
one up, if dropped. A very bad practice exists
amongst all branches of building operatives in
Birmingham, except masons, of working syste-
matic overtime as long as daylight permits. By
the rules no extra pay per hour is payable until
seven o'clock in the evening, with the result that
every one works till seven o'clock as a regular
thing. It is not surprising that the master-
builders have not before this discovered how
much this practice operates against themselves
as well as the men in the long run; because it is
found that when men work overtime regularly
they always lose time in the morning, and lose
the opportunity for recreation and mental culti-
vation which long evenings afford. Another bad
practice is the late breakfast-time. Beginning
work at six o'clock, a man becomes very much
exhausted by half-past eight, and the punishment
is felt by those who have been in the habit of
breakfasting at eight o'clock in other districts,
and who come to work here. E. G.

City Commissioners of Sewers.—At a meeting of the Commissioners of Sewers on Tuesday last, a memorial was presented praying for the widening of Upper Thames-street.

CITY AND SPITALFIELDS SCHOOL OF ART.

The annual distribution of prizes to the students of this school took place in the School Hall, Skinner-street, Bishopsgate, on the 27th ult., the Lord Mayor in the chair. The annual report shows that the school, which was established in 1842, gives instruction to upwards of 200 students, most of them artisans, under the direction of Mr. S. F. Mills, head-master. During the year lectures were delivered on "An Art Student's Prospects," by Mr. N. H. J. Westlake, F.S.A.; on "Florence and Michelangelo," by Mr. T. Chatfeild Clarke, architect; on "Ornament and Colour," by Mr. George Aitchison, B.A., architect; and on "The Present State of Industrial Art," by Mr. C. L. Eastlake, secretary of the Royal Institute of British Architects, and were reported in the *Builder* at the time. The master's report details a large amount of useful work done, and shows that the fees received from students amounted to 181*l.*

Mr. J. C. Horsley, R.A., was present, and after some introductory remarks, said that perhaps he might be considered to have some little claim to speak on the subject of schools of art, seeing that for a very great portion of his life he had been actively connected with them. Thirty years ago and more he was head-master of the figure-class of what was then termed the "Government School of Design" at Somerset House; and since then he had assisted for several years in the adjudication of the works submitted to the South Kensington authorities in competition for the national prizes. Some notes of progress made might be usefully given. In 1847, in addition to the principal Government School of Design already mentioned, there were thirteen branch schools (of which the City and Spitalfields School was one), having a total of 1,734 students on their books. Now, in 1877, there were 141 Schools of Art (besides 883 art classes) affiliated to South Kensington, having in all 59,131 students under instruction. In 1847 the schools were officially under the Board of Trade, and one useful under-secretary managed the whole of the business connected with them. That under-secretary was now known as the Right Hon. Sir Stafford Northcote, Chancellor of the Exchequer. At the present time, the Department of Science and Art, which might be said to be almost a distinct branch of the Government, requiring a very strong official staff, controlled the schools. In 1847 the splendid and unique museum at South Kensington was not even dreamt of, and it was to be hoped that the energy and discrimination of those who might almost be said to have forced successive Governments,—always sluggish, be they Whig or Tory, in fostering art education,—to establish and develope that Museum would never be forgotten. He for one never entered the Museum without feeling grateful to such men as Henry Cole, Richard Redgrave, Captain Fowke, Soden-Smith, and others associated with them. We were rather apt in the present day, in the presence of "new brooms" whose power to "sweep clean" had yet to be proved, to forget those old and tried ones who had been worn down to stumps and handles in the national service. Undoubtedly great progress had been made in the art-education of the country during the past thirty years, and with what was now being done and projected we might look forward with confidence to the work of the future. Having made these general remarks, Mr. Horsley addressed himself to the students, disclaiming any desire to speak to them dogmatically or magisterially. He said he spoke as a student to students, and would remind them that no true artist ever lost his sense of studentship. The idea of excellence which the artist ever had before him was for ever becoming higher, and its attainment more and more hopeless; and were it not for the infinite reward, and for much of what the world called success which was attained in the mere striving after excellence, the artist would almost be inclined to give up his task in despair. Art-students should not forget that the foundation of their success must be laid in perseveringly sticking to and mastering all the tedious, but none the less necessary, elementary studies. There was a striking difference now in the ages of students at the Academy. In his student days they were all mere lads; now they had a much older class of students, and many of them were not only "bearded like a pard," but might be fathers of families, full of anxious cares as to what

Byron called "the inflammation of the weekly bills." He thought that those who entered upon the study of art while young, and before the imagination became active, had the best chance of thoroughly mastering the technical details which were essential to success in art. True it was that Landseer and other great artists ultimately attained an almost fabulous celerity of execution; but that celerity was only attained after long years of patient labour and practice. While, however, the student was to be diligent in mastering, line upon line and precept upon precept, the technical details of his art, he must at the same time be a constant student of nature. The greatest of painters, up to the very end of their time, never deserted the study of nature. Turner himself died in a Chelsea lodging-house, taken by him on purpose that he might study sunsets on the river. Old Stothard used to go about, looking for all the world like a tax-gatherer, with a little ink-bottle tied to his button, and a large red-covered book, with which he used to sit down in hedgerows and odd corners, and sketch from nature. Having reverted to the opportunities which the City companies had for the promotion of mural painting in the decoration of their halls and public buildings, Mr. Horsley concluded his address, which was interspersed with several anecdotes and personal reminiscences, not the least interesting of which was his account of how he, as a boy, won and received the Academy medal, from the hands of Sir Martin Archer Shee, the then president. He explained that at the Royal Academy the students did not know beforehand, nor did even the Academicians themselves know, who would be the recipients of prizes until the names were announced by the President, and he graphically narrated the expectation with which he, encouraged by the generous encomiums of his fellow students, awaited the announcement of the successful medallist, and how, when the announcement had been made, he ran from Somerset House to his home at Kensington, and exultingly exhibited the trophy to his mother, who placed all the resources of the family larder at his disposal in honour of the event. His bill of fare on that occasion began and ended with "damson cheese," and although he had partaken of many more elaborate *menus* since then, he had never sat down to table with greater zest.

SERIOUS CHARGE AGAINST A WATER COMPANY.

A CASE which came before Mr. Partridge, the magistrate at the Southwark Police-court, last week, was illustrative of the danger to health and the sanitary evils which the arbitrary powers possessed by the metropolitan water companies are capable of inflicting. The Southwark and Vauxhall Company were summoned by Charlotte Mary Ann Snook, of Albert Cottage, St. James's-road, Old Kent-road, for refusing to supply her with water after tendering the rates due. The complainant stated that she had been a customer of the company for twenty years, and had been upwards of four years in her present abode. She had unfortunately allowed the water-rate to be in arrears in the sum of 28s., and because she was not able to pay that sum when last demanded the water was cut off. She begged of the collector to call again before doing such a cruel act, but he took no heed of her appeal, and she had since been without water.

In answer to Mr. Partridge, the complainant said she had tendered the amount due, but the company refused to put the water on again unless she paid all expenses for cutting off and replacing the pipe, as well as a quarter in advance. She could not do that, and the consequence was that the drains were stopped, and health was endangered. She further reminded the magistrate that small-pox and fever were on each side of her, and it was necessary that she should have a good supply of water. If the company had waited only two hours before they cut it off she would have been able to pay them.

The magistrate strongly animadverted as to the conduct of the company in cutting off the water, when they had the power to summon her for the arrears. He expressed his regret that the company had their Act of Parliament to support their monopoly, and to act as they had done, but he thought they had been a little too harsh in cutting off the water where small-pox and fever were raging. He added that the company might restore her the supply of water on her payment of the arrears due, and an agent of the company promised to lay the magistrate's recommendation before the directors.

A PECKHAM BUILDER'S CLAIM FOR PLANS.

AT the Lambeth County Court, Mr. W. G. Shapley, a builder, at Peckham, claimed the sum of two guineas from Mr. H. W. Woollard, of Lordship-lane, for preparing certain plans and specifications.

The plaintiff stated that in April last the defendant called upon him at his office, and stated that he had some property in Lordship-lane, which he was desirous of converting into shops, and he asked him (plaintiff) to prepare drawings and specifications for the work, stating, at the same time, that a friend was going to prepare some drawings, but that he should pay the plaintiff for his trouble.

John Stagg, clerk to the plaintiff, said he remembered the defendant calling at the plaintiff's office, and making arrangements with plaintiff for the work.

In answer to the claim, the defendant said that he met the plaintiff at the King's Arms, Peckham-rye, when he told him that he intended to make certain alterations on his property, and had been recommended to Mr. Murphy, a surveyor, to draw up the plans, on which the plaintiff said it was quite an unnecessary expense to go to, and offered to draw up a plan and specification, stating that if he (defendant) found that his estimate was not low enough he need not accept it. Mr. Murphy, on seeing the plaintiff's estimate, said it was preposterously high.

The Judge said he had found it to be the ordinary rule in such cases that unless there was a special bargain the work should not be paid for, and the verdict would therefore be for the defendant, with costs.

A BUILDER FINED FOR OBSTRUCTION.

AT the Wandsworth Police Court, last week, Mr. Henry John Cox, of Marlborough House, Falk-road, Battersea, builder, was summoned by the Wandsworth District Board of Works for depositing building materials on the footpath and roadway of Falk-road. The case against Mr. Cox having been stated by Mr. Corsellis, the clerk to the Board, the defendant in answer said he applied for and paid for a licence to use the footpath during the building of certain houses. He could not produce the licence, as it had been promised to be sent to him by the Board of Works, but it had not arrived. He produced a receipt for the money paid. Mr. John Pilditch, the surveyor to the Board, said a licence had been granted for the defendant to use the footpath, provided he placed a hoarding round it, and constructed a railed gangway for passengers to pass without going into the road. He had not done so, and his building materials were not only on the pavement, but in the road, for which he had no licence. Mr. Paget, the magistrate, fined the defendant 40s. and 2s. costs.

VAGRANCY.

IT has been found that the professional vagrant has a decided preference for those workhouses where provision is made for his accommodation on the old-fashioned plan with associated dormitories and workrooms. Here he can exchange experiences with his brother tramps and give and receive "tips" as to the best "lays," and generally spend his evening in social, albeit somewhat obscene discourse, to the disgust of any respectable poor person who may, by stress of circumstances, be compelled to accept the charity of the ratepayers. The associated vagrant wards are, however, doomed, and new wards on the cellular plan are taking their place. The Guardians of Kensington are about to erect wards for forty males and twenty females, from the plans of Messrs. A. & C. Harston, architects. Here each tramp will, after taking the inevitable bath, be introduced to a separate sleeping-cell, warmed, lighted, and provided with every necessary, but with accommodation for one person only. Adjoining each male's cell is a work-cell, into which he is admitted in the morning, to find a given quantity of granite stones and a hammer for the cracking thereof; should he have occasion to call the attendant he will find in each cell an electric "push," which will cause a gong to sound in the attendant's room. The clothing of the vagrants will be dried and disinfected in a Leoni's gas disinfector in the basement, where will also be found the boilers for heating and for the supply of hot water.

The contract for the whole of the work has been taken by Messrs. Lathey Bros., and it will be carried out under the superintendence of Messrs. A. & C. Harston, architects.

FIBRE.

IN 1870 the Government of India offered a prize of 5,000*l.* to the inventor of the best machine or process for the preparation of the fibre of the *Böhmeria nivea* (popularly known under the names of Rhees, Ramie, and China grass), and the terms on which machines would be admitted to competition were widely notified. Many persons declared their intention to compete, but ultimately only one machine was brought to the place of trial. The machine having been carefully tested at Saháranpur in the autumn of 1872, was found imperfect, and the inventor was adjudged not entitled to the full reward. He was, however, presented with 1,500*l.* in consideration of the partial measure of success he had attained. This machine has not since been adapted by the inventor to practical use, and no improved process of preparing the fibre of the Rhees has been yet discovered by other persons. Meanwhile the demand for Rhees continues, and the conditions which induced the Government of India in 1870 to offer a prize remain substantially unchanged. The President in Council, therefore, considers that it is desirable to renew the offer, and has accordingly notified that a reward of 50,000 rupees will be paid to the inventor of the best machine or process which will separate the bark and fibre from the stem, and the fibre from the bark, of the *Böhmeria nivea;* while a smaller reward, not exceeding 10,000 rupees, will be given to the inventor of the next best machine or process.

THE FORTH AND THE TAY BRIDGES.

SCOTLAND is likely, at no far distant day, to possess two of the most gigantic railway bridges in the world. In the Tay Bridge she has already a structure unequalled of its kind, and active steps are now being taken to secure the construction of the great bridge across the Forth, which has for some time past been contemplated. It is stated that the North-Eastern, the Great Northern, and the Midland Companies in England, along with the North British Company in Scotland, have agreed to contribute a large proportion of the cost of the proposed Forth Bridge, which, it is said, will in some respects be the most stupendous piece of engineering work ever attempted, having the longest spans, at the greatest heights, above the foundations of the central piers.

As regards the Tay Bridge, now almost completed, we learn that 600 tons of ballast per day are now being conveyed to complete the 10,000 tons required to make up the ground for station purposes between the Caledonian Railway and the Esplanade. The work of finishing the bridge is rapidly going forward, and mineral and goods trains are expected to run over the line early in the ensuing month. The directors have wisely determined to test the strength and security of the bridge by passing heavy merchandise traffic over it for some time before its being opened for the conveyance of passengers.

Steam v. Horse-power for Tramways.—The problem as to mechanical traction upon tramways appears, from some tabular returns issued by the Paris Southern Tramways Company, to be settled. This line has two sections, one of which is worked by horses, the other by steam power. During the first six months of the current year each of these two sections earned 62*l.* per diem, but this sum was earned upon the section worked by horses with an average of thirteen cars, while upon the other section there were only ten cars. Taking the expenses to be the same as they were last year, the cost of each car drawn by horses is 2*l.* 2s. 6d. per diem, or 45·50 per cent. of the total earnings, whereas the cost of steam traction is only 1*l.* 12s. 6d. per diem, or 35 per cent. of the total earnings. The difference in favour of steam traction is, therefore, 10s. a day for every car run.

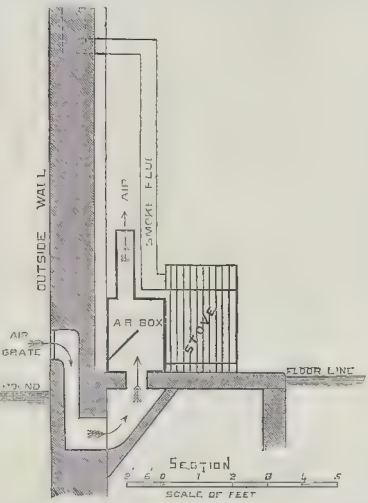
THE PETROLEUM INDUSTRY.

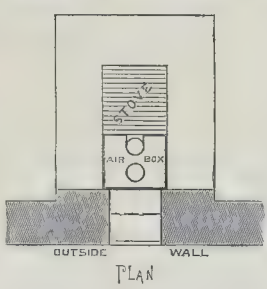
THAT part of the artificial "light of other days,"—or rather nights,—which was represented by the old-fashioned "dip" and "mould" candles has been so largely superseded by gas and petroleum that the present generation fails to estimate to its full extent the improvement which has taken place in domestic lighting during the past forty years, especially in regard to the dwellings of the poor. Gas is not, however, much used,—at any rate, not in London,—amongst the poorer classes, who are, to a large extent, weekly tenants and migratory in their habits. To protect themselves against losses, as the gas companies know so well how to do, conditions which are virtually prohibitory are imposed upon tenants of the poorer class, who would, but for such conditions, gladly burn gas.

Petroleum, now so largely used for lighting purposes, is an American product. Herr Hofer, who was a member of the Austrian Commission at the Philadelphia Exhibition, took the opportunity, while in the United States, to visit the principal petroleum wells, and the result of his observations appears in a pamphlet published at Vienna a few weeks ago. It was in August, 1859, that Colonel Drake discovered near Titusville, in Pennsylvania, a large stream of petroleum at a depth of 70 ft. from the surface; and though this discovery was made only eighteen years ago, it is estimated that the quantity of petroleum obtained in the interval is 2,802,500,000 gallons, of a total value of 46,000,000*l*. It is evident that such results could not have been achieved without the most complete mechanical appliances, and they must be principally attributed to the system of steam boring which has gradually been brought to something near perfection. Thus, at first the wells did not yield more than 180 gallons of oil a day, but the average rapidly increased, and in 1861 a well at Petroleum Centre yielded 11,000 gallons a day. The dimensions of the wells and the yield of oil increased to such an extent that there was quite a fever of speculation; and this fever reached its height upon the discovery, at a place called Tar Farm, of a spring which produced no fewer than 105,000 gallons a day. It is an old story how towns, with numerous hotels, theatres, restaurants, gambling-tables, and so forth, sprang up as if by magic in these districts; and Herr Hofer mentions a place called Triumph-hill, where there are 150 wells within one square mile of ground. The trade increased so rapidly, that before six years after Colonel Drake's initial discovery there were no fewer than 1,000 wells in existence, yielding 120,000,000 gallons a-year; but the progress has been still more rapid within the last nine years. In 1867 the number of wells at work was 1,133, each with an average yield of 103,300 gallons per annum, and in 1875 there were 3,272 wells, each yielding upon the average 94,000 gallons a year. Thus, while the number of wells has increased almost three-fold, the average yield has diminished by more than nine per cent. The price has undergone great fluctuations during the same period; for while the average price per gallon was 1s. 6d. in 1867, it rose to 3s. 2d. in 1869, declined to 2s. 2d. in 1870, and to as low as 9d. in 1874; there was a trifling rise in 1875, and the average for the first six months of 1876 was 1s. 3d. a gallon; but it is not likely that prices will ever be as high as they were in the "fever" years from 1869 to 1872. There are thirty-six Oil Pipe Line Companies, with pipes of a total length of 2,095 miles, which convey the oil from the wells to the railway stations and canals. Every well-owner has a tank, which is filled by his own men, and from the tanks the oil is run into the companies' pumps by means of large pipes. The railway arrangements are not less practical, and it is estimated that there are no fewer than 4,000 tank-cars in the oil districts, constructed much like the water-carts used for watering the streets. There is a petroleum Exchange in nearly every large town in the oil district. Herr Hofer doubts whether petroleum will long continue to be so rich a source of revenue to the United States. He bases his opinion upon the ascertained fact that in Pennsylvania a well, no matter how abundant the flow of oil at first, does not yield for more than three years, and he says that all the northern part of the State was pumped dry in about ten years' time. Many other springs have been discovered in the southern part of the State, but they are gradually being worked out, and the yield of oil in Ohio, Virginia, Kentucky, Tennessee, and Canada is, on account of the high cost of production, comparatively small.

VENTILATION.

SIR,—A simple and effectual method of supplying fresh air without draft to a schoolroom, may perhaps be thought worth notice in the pages of the *Builder*. The details will be seen on reference to the accompanying small plan and section. It may be described as an air-box made of sheet-iron, and placed behind an ordinary Gill stove. The box is connected by an air-shaft with the outside wall, and has an inlet-pipe above, which admits the fresh air into the room. In passing through the "box" the air





becomes slightly warmed in winter, when there is a fire in the stove, and it is a good ventilating shaft in summer. It is most effective when it is most required, *i.e.*, when other openings, doors or windows, are closed. Its advantage over the old plan of a simple opening under the stove, is that there is no danger of dirt or ashes falling into it and filling it up. I may add that I designed it twelve months ago, for a Board School in Leicester, where it has been found to work admirably.

W. JACKSON, Architect.

Tramways in Spain.—It appears that Mr. William Abbott is now in Spain with a view to pushing tramways there. Recently we heard of him at Liverpool, Hull, Belfast, Dublin, Swansea, and other points where economical steam traction on tramways is either being used or contemplated. He is now at Madrid, where, it appears, there are already two or three lines of tramway in operation. Tramways are also working at Barcelona. Spain is thought to present a good field for enterprise of this class, both as regards the establishment of fresh lines, and the introduction of steam on those already existing.

BRITTANY STONE MONUMENTS.

SIR,—About twenty years since my attention was directed to the stone monuments in the vicinity of Auray. I read the description of these relics contained in Higgins's "Celtic Druids," pp. lxxxvi.–lxxxviii. The description is extracted from "Monumens Celtiques" of M. De Cambray, and it includes four illustrations. According to De Cambray "this monument belongs, doubtless, to astronomy: it was a celestial problem, of which it is difficult to give the plan, or perceive all its bearings. Its position is from east to west, placed in eleven straight lines, 30 ft. to 33 ft. distant. The space between the stones in the lines varies from 12 ft. to 15 ft. I have measured the largest stones at Carnac; the most elevated are 21 ft. or 22 ft. above the ground. One of them is 22 ft. high, 12 ft. broad, and 6 ft. thick, exclusive of what is concealed by the sand." Mr. Higgins states that Carnac is a Celtic word, and that the stones referred to the zodiacal signs, as the ancient astronomers admitted eleven zodiacal signs, Libra being a Grecian addition or alteration in lieu of the Claws of Scorpio, which the Greeks transmitted to the Tail; thus making twelve signs.

More recent authors,—Weld, Mrs. Palliser, Lowth, &c.,—have described Carnac and other Brittany stone relics. The Rev. W. C. Lukis has issued (1875) a handbook or guide to the relics near Auray, which is exemplified by two maps or plans,—very useful for antiquaries.

In 1865 I hired a vehicle at Auray, when I visited Carnac, inspecting Mont St. Michel and the Menec lines, eleven in number, 1,125 yards in length. At that time the sepulchral cist, now closed, was shown on Mont St. Michel, and I inspected it. The guide then drove on to Plouharnel, stopping at the dolmen on the right of the road, and proceeding to the two dolmens, Roch Guyon, rather beyond. We returned to Auray, viewing the dolmens described by Mr. Lukis as Runusto, Grottes de Grioneo, and Crucuny. But this is the ordinary guide's trip. In 1872 I remained several days at Carnac, when I saw the objects above mentioned, and also the stone rows at Kermario and Kerlescant, north-east of Mont St. Michel. The former are ten in number, and about 1,330 yards in length; the latter are thirteen in number, and form twelve avenues, "and of no great extent," now reaching about 325 yards in length. A circle, 100 yards in diameter, ended the lines at the west end. On the north side there was a barrow 100 yards long, with a high menhir at the west end. Mr. Lukis refers to another barrow, on the north of these lines, which is described in the Journal of the Brit. Arch. Assoc., vol. xxiv., pp. 40–5, with several engravings. During this visit I saw also St. Barbe Avenues, north-west of Plouharnel, three in number, the longest of which is about 450 yards. The tradition that these lines terminated in an inclosure of stones forming the segment of a circle is confirmed by an extant plan. I saw several dolmens to the east, including the large one at Courconno. Here two covering stones are visible, the largest of which is 22 ft. long. Near it, south-east, are the relics of a square of stones, about 100 ft. in length on each side,—a unique specimen. The dolmens of Mané-er-Groah (Hill of the Fairy) and Mané-Remor, mentioned by Mr. Lukis, are in this vicinity. Further north I inspected the stately avenues of Erdeven, composed of ten lines, extending originally about 2,300 yards. Two dolmens at Mané Bras, and one at Erdeven, north of the rows, are visible, and a menhir to the west. I saw also the two dolmens at St. Antoine, south-west of Courconno, which merit a passing visit, I think.

During my visit to Auray in 1865, I hired a vehicle, and inspected the stone relics at Loc Mariaker, described at length in Murray's "Handbook to Brittany," and also the chamber at Mané-er-H'roek, about half a mile south of Loc Mariaker. It was discovered in 1863,—12 ft. 8 in. by 9 ft. 7 in. in size. A report by M. René Galles, of this relic, &c., has been issued. Roman tiles have been found near here, and it may have been the site of Dariorigum, or of some other Roman settlement. But, upon this second occasion, in 1873, I walked to Loc Mariaker and back, passing and inspecting several cromlechs or dolmens near Porhers, and Kerhan, and at Mein Drein. Upon this occasion I hired a boat, and reached Gavr'Innis

seeing the great cairn, enclosing the chamber and passage, discovered in 1832, with its sculptures. Mr. Lukis states the visitor will be struck with them, and by the three enigmatical circular holes hewn in one of the left-hand supports of the chamber, cupped as if intended to hold a liquid. He refers to stone relics extant on the adjacent isle of El Lanic, and he deems it probable that these isles were part of the main land. Mr. Lukis mentions also a dolmen near Auray, Kerhuen Tangui, in an orchard; its covering-stone is 22 ft. long by 11 ft. wide, with supports of considerable height. It is on the left of the road at Kerhuen Brigite, two miles and a half from Auray. In a tract Mr. Lukis describes the Kerlescant barrow at Carnac, with two engravings, and a sketch of the objects found in it. He has issued another tract, with three plans, descriptive of Brittany relics before mentioned, and including also some other relics which I saw in 1872, viz., a circle, and five lines of stones, at St. Pierre, Quiberon, the former 195 ft. in diameter. The stone relics in Belle Isle have vanished; but I saw there two menhirs. Mr. Lukis in one plan shows the lines at Kerlescant, Kermario, Menec, St. Barbe, Erdeven, and St. Pierre, with its circle, besides twenty-three dolmens, and the square at Erdeven.

The compiler of the "Handbook for France" (Murray) recommends, with reference to Brittany, the perusal of Souvestre's "Les Derniers Bretons," and the "Foyers Bretons," with Freminville's "Finistère and Morbihan." For the churches and Druidic remains, Merimée's "Notes d'un Voyage dans l'Ouest de la France," and Joannes's "Itinéraire de la Brétagne," are mentioned as useful. At Huelgoat I saw a large rocking-stone; and near Pol de Léon, not far from the road to Roscoff, on the left, several large dolmens, described in Weld's "Brittany."

In my notes upon the Roman Wall, p. 564, *ante*, I omitted to notice a stone relic which I saw near Haltwhistle, described in the Ordnance Map as the "Mare and Foal," in a field.

C. C.

ARCHITECTS AND PUBLIC COMPANIES.

Sir,—We have carefully perused the letter in your edition of the 24th ult. from a "Victim," and while sympathising with him in what is no doubt a very hard case, cannot help thinking that had he taken what most ordinary men of business would have considered ordinary precautions, a greater part at any rate of his loss might have been prevented. An architect with any experience of public companies would have seen that his appointment was regularly ratified by the board of direction, and long before the expiration of the two or three years' probable duration of the company referred to by your correspondent, would have had his fees paid, and thereby lessened his loss.

According to your correspondent's own account, he is as much to blame as any one else in allowing his name to be used upon a prospectus as an inducement perhaps for others to invest their money without having thoroughly investigated the matter, and it is this very carelessness which has brought that which should be (and in most cases is) a great public benefit into disrepute. There are, of course, sound and unsound public companies, as well as solvent and insolvent private businesses, and if people would only take the trouble to think, and make a few inquiries before entertaining any investment that is laid before them, half the losses would be avoided.

Manufacturing companies, as a rule, are safe and profitable investments, as in any case they give the investors an opportunity of judging the probable profits to be derived from the business, and common sense would teach us whether there is or is not a demand for the article manufactured. There can be no question that a great deal of money has been lost in public companies, but, on the other hand, vast sums of money have been made, and thousands of incomes augmented through their medium, and the majority of professional men have reason to be thankful for a system which brings so much capital into use which would otherwise remain unprofitable.

Investor.

Art at Manchester.—The Committee of the School of Art in Manchester are to hold next spring an exhibition of pictures, sculpture, and specimens of art workmanship, in aid of the building fund for a new School of Art. A large selection will be contributed from South Kensington, and the committee have already received promises of loans from private collections.

"OUR SCHOOLS OF ART."

Sir,—With your permission we will reply to "Andros." He informs you, sir, that we exhibit a "misapprehension of the subject." If "Andros" will condescend to accept a little information from us, we would advise him to read a few extracts from the addresses published by the Department of Science and Art by H. Cole, C.B., 1852; R. Redgrave, R.A., Superintendent of Art; Mr. Redgrave again, 1853; J. S. Howson, M.A.; Mr. John Ruskin, 1857; Earl Granville, 1857; the Right Hon. W. Cowper, M.P., 1857. In these extracts the noblemen and gentlemen preach art education pure and simple. We hope, for his own sake, "Andros" will not accuse the gentlemen named of a "misapprehension of the subject."

When we spoke of Schools of Art being established for design, and, if need be, for the education of artists, we took it for granted that "Andros" would understand that the same privileges were for the general public. "The teaching of design no doubt forms a part of the curriculum of such schools as are situated in centres where such studies bear upon the practical business of life." We should like to know if *to doubt* means trivial; we should also like to be informed what subjects are taught in Schools of Art not "situated in centres" without a *no doubt*; if design and other branches of art education are not taught in such schools, then building construction and orthographic projection must be, for these latter subjects are part of the stock-in-trade of the Department of Science and Art.

If a student wishes to study art as a profession, "Andros" has a doubt, he says, "whether it is *possible* or *desirable* to teach young men to be artists is *questionable*." To such a profound confusion, in reply, it is not possible for the 393 persons holding the first certificate to teach either design or fine art. We know there are a few exceptions in the total stated who have studied art elsewhere. Perhaps the above conclusion is the reason 393 persons are trained at enormous expense not to teach art in any form, ornamental or otherwise. Well might the *Daily Telegraph* say, a few days ago, in an interesting leading article, "Our own national progress in art education has been so tentative and so shame-faced." We should be glad if the able writer of those words would examine the subject of the art-teaching in this country.

What we desire to go forth is, that the Department system has not done what ought to have been done with the many liberal grants of money entrusted to those who have had the spending of the £. s. d. Our impression is, that every school of art ought to have a master equal to the very few that have taken the highest artistic certificates. Perhaps the air at South Kensington is too frigid for so much fruit to grow, so the small plants are cultivated for the market instead. This may be the right way, and answer very well for the Blue-Book, but we make it a question. At the conclusion of our letter the readers of the *Builder* shall judge for themselves what a severe test the 393 persons had to endure before taking a school of art. The assertion of "Andros" that there have been masters holding many certificates so unfit for their duties that the "despised two-certificate men flourished and did good work" after the former masters had left, is a very serious accusation. From such an inference the Department pay training-masters to study for years without proving the teaching power of such men. Probably the Department can explain that little matter.

We can understand "Andros" to object to the suggestion in our former letter, that committees should see every applicant's work in the fine arts before making an engagement. Is "Andros" afraid with his first and sixth? Courage, "Andros." The "comic scenes" that our friend conjures in his playful imagination would be seldom witnessed among clergymen, medical men, manufacturers, and leading tradesmen: they are keen and shrewd men of business, which, we believe, most masters very soon find out. If there are as "many flaws in our system of national art education" as the observant "Andros" states, why do the masters not come forth and point them out, and not leave the work to be done by those that apparently follow a crafty defunct minister's safe advice? We hope "Andros" will credit us with a little more information in this letter than the jaunty conclusion of his interesting epistle intimates. We know all we require for our purpose, and in conclusion we append the following:—Candidates must be prepared,—(*a*) to instruct a class in the presence of the examiners, in freehand drawing, geometrical drawing, perspective, and model drawing; (*b*) sketch in a given time a group of models; (*c*) solve on paper questions in geometry, perspective, and elementary architecture. In addition, the following works are also required:—Stage 1*a*, a sheet of geometrical problems; stage 1*c*, a sheet of perspective diagrams; stage 1*d*, a sheet of architectural details; stage 2*b*, a sheet of diagrams, showing the application of the principles on which foliated design is constructed; stage 3*b*, an outline of ornament in low relief from the cast; stage 5*a*, a sheet of drawings of models, shaded; stage 5*b*, a sheet of ornament from the cast; stage 6*a* or 8*a*, an outline from the figure, from the flat or *round*; stage 10, a sheet of foliage drawn from Nature; and, finally, a sheet of flowers painted from the flat.

A. B. & C.

New Science and Art School, Newcastle-on-Tyne.—The foundation-stone of the new Science and Art School, Corporation-street, Newcastle, was laid on the 21st ult. by Mr. Cowen, M.P. On the ground-floor the building will contain hat and cloak rooms, lavatories, students' latrines, store-rooms, and other accommodation, with covered playgrounds. Upon the first floor will be the lecture-hall for science subjects, and also several large science class-rooms. On the second floor the rooms are to be devoted to art students, separate apartments being provided for the junior and senior divisions, as well as private rooms for the headmasters, and a place for arranging the philosophical instruments. The chemical and physical laboratories will be placed on the third floor. For the purpose of supervision, glazed partitions are to be largely introduced in the interior, instead of the ordinary division walls. The contract for the whole of the work has been placed in the hands of Mr. H. Atkinson, Blaydon, and Mr. T. Oliver, Newcastle, is architect.

TEMPLE BAR.

Sir,—Allow me to offer you a suggestion in reference to the disposal of the last of our ancient City gates, viz., Temple Bar. I have not seen, in all the correspondence in reference to the future of the above, the idea thrown out that it might be very well utilised as a water-side entrance to the Temple and gardens from the Thames Embankment. If the stonework were carefully taken down and refixed centrally with the gardens, and, of course, in line with the iron palisading, and the respective archways filled in with suitable ornamental iron gates, as entrances for carriages and foot-passengers, it would form a nice feature on the Embankment and still retain its old associations with the Temple. The room over might be used as a shelter for garden and gate keeper.

J. B.

At the meeting of the Court of Common Council, on the 29th ult., Mr. Bedford moved,—

"That it be referred to the City Lands Committee to remove Temple Bar, but that before disposing of the Bar it be an instruction to the committee to consider whether some spot cannot be found, either within the City boundaries, or on some beautiful portion of the land held by the Corporation in trust for the people, on which the time-honoured memorial of the city of London may be preserved for the respect and admiration of future generations."

Mr. Edmeston seconded the motion.

Mr. Alderman Sidney said that by adopting the motion they would cover themselves with ridicule. Were they prepared to spend 20,000*l.* upon so absurd a project, for that was the sum it would cost?

Deputy Fry said some of the difficulties in the way of adopting the motion would be removed if the committee were instructed to proceed with the work forthwith.

Mr. Rudkin thought it would be better to take the Bar at once to Epping Forest.

After observations from Deputy Lowman Taylor, Mr. Coles, Mr. Beck, and other speakers, the resolution, with Deputy Fry's suggestion incorporated, was carried *nem con.*

The City Lands Committee, at a meeting held at Guildhall on Tuesday, gave instructions to the City Architect to forthwith cause Temple Bar to be pulled down, and removed to vacant land in Farringdon-road. The external stones are to be numbered, with a view to the Bar being reconstructed on some site to be decided on by future vote of the Court of Common Council.

STAINED GLASS.

Norwich.—Two stained-glass windows have just been placed in the chancel of Christ Church, Eaton, Norwich, to the memory of the late vicar, the Rev. Frederick Weston. The windows were designed by Mr. Augustus E. Browne, architect, and executed by Messrs. Heaton, Butler, & Bayne.

Northleach.—A stained-glass window has recently been placed in the chancel of Northleach Church, as a memorial to the late Rev. W. Price, who was upwards of fifty years rector of the parish. The designs are in three compartments: the centre one the Crucifixion, the others the Resurrection and Ascension. The four Evangelists are placed above. The window has been executed by Messrs. Jones & Willis.

Edinburgh.—An addition has been made to the decorations of the restored portion of St. Giles's Cathedral, Edinburgh, in the filling with stained glass of the great east window, the gift of Lord Provost Falshaw. This large and important work, just completed by Messrs. Ballantine, was publicly inaugurated on the 3rd ult. The window, 40 ft. in height, is divided into under and upper tiers of five lights each, terminating at the top in flowing tracery. In the lower lights has been placed the "Crucifixion," the subject being carried out in groups of large figures, extending across the whole width of the window. The five upper lights are occupied with the "Ascension." Designed by Messrs. Ballantine, the work has been carried out under the supervision of Mr. R. Herdman, R.S.A.

Tadcaster.—A stained-glass window has just been placed in the north aisle of Tadcaster Church, by Mrs. Bradley, in memory of her late husband. The subject is the three Marys at the Tomb and the Resurrection. The artist is Mr. Constable, of Cambridge.

Stoke-upon-Trent.—Two more Munich windows, consisting of a three-light, representing in the centre the Ascension, with the descent of the Holy Ghost and our Lord walking on the Sea of

Galilee on either side, and a two-light containing the Raising of Lazarus, have just been added to the church. These, as well as all the other windows in the church, have been executed by Messrs. Mayer & Co.

TUBE WELLS.

AT a meeting of the Society of Engineers, held December 3rd, in the Society's hall, Victoria-street, Westminster, Mr. Thomas Cargill, C.E., president, in the chair, a paper was read by Mr. Robert Sutcliff, on "Tube Wells for large supplies and in various Strata." This paper was supplementary to one read at the previous meeting of the Society, on "Tube Wells," by Mr. Le Grand, which dealt with the subject of tube-wells (commonly known as Abyssinian) of small size. Mr. Sutcliff, in his opening remarks, observed that in laying down plant for obtaining large supplies of water, a number of tube-wells were coupled together by horizontal mains, so that one pumping-engine drew from many tubes. In this way, for the last eight or nine years the leading breweries at Burton-on-Trent have obtained the bulk of their water-supplies. Messrs. Allsopp & Sons pump 600,000 gallons daily from thirty 3-in. wells, and Messrs. Bass & Co. 500,000 gallons from twenty-five tubes. Thus in one town two breweries are obtaining sufficient water for a town of 40,000 inhabitants. Although some of these Burton wells are within a stone's throw from the Trent, the quality, level, and temperature of the water differ from those of the river water. The town of Carmarthen, in Wales, is supplied by ten 2-in. tube-wells. In sandy soils strainers or filters are used, which prevent sand coming into the tubes. A tube-well was sunk in a very fine sand at Chislehurst by pumping up six barrow-loads of sand, and replacing it with gravel. One advantage of the gravel filter is its imperishability, and if made sufficiently large the velocity of the water is not sufficient to bring the grains of sand within the area acted upon by the pump. The author observed that in rocks and other hard strata the method of sinking tube-wells was similar to that employed in making artesian borings, but the mode of pumping and development of supply was entirely peculiar to the tube-well system. Bored tube-wells can be made through any stratum and to any depth that an ordinary artesian boring can reach. The Lower Grounds, Birmingham, with their ornamental waters, fountains, and extensive gardens, derive their entire water supply from a single 5-in. well sunk to about 200 ft. deep. By means of this well an annual saving of 300*l.* for water-rate is effected. Two tube-wells at West Thurrock yield a daily supply of 220,000 gallons from the chalk. In conclusion, the author observed that it was said that the first tube-well was a pointed bamboo driven into the earth, and the pump a "nigger," who sucked the water through the pores of the cane. Now, said Mr. Sutcliff, factories, breweries, and towns derive from them enormous supplies, and it is possible that coupled tube-wells in the chalk may solve the problem of providing London with pure water. We should think not.

WAREHOUSES, ALDERSGATE STREET.

SIR,—In the description of the three warehouses in Aldersgate-street, illustrated in your issue of the 17th ult., it is stated that the centre portion of the block was erected for Mr. F. H. Ayres, and the remainder let to various tenants, the builders employed being Mr. E. King, Messrs. Williams & Son, and Mr. Rose.

As this statement is calculated to convey a wrong impression of my position in connexion with the property, will you kindly allow me to say Messrs. Lander & Bedells were employed by me to design the two warehouses on the right and left of centre, and of which two warehouses I am the owner, and by an arrangement the centre building for Mr. Ayres was erected by me at the same time in connection with my own. EDWIN KING.

A Workmen's Hall at Cowfold, Sussex.—Messrs. Longley Brothers, of Henfield, who have kept the store used by the men employed in the erection of the Monastery at Cowfold for the past twelve months, have just had a commodious stone building erected, which they designate a Workmen's Hall, at which refreshments and non-intoxicating drinks will be retailed, while chops and steaks can be had to order. After six p.m. the restaurant is available as a free reading-room, being well warmed and lighted, and supplied with newspapers and periodicals, &c.

GRANITE MONOLITHS.

SOME owners of granite quarries and works are not satisfied to let the statement made by Mr. Godwin, on the occasion of Dr. Birch's lecture, to the effect that the London Committee for erecting a memorial of the late Prince Consort did not find themselves able to recommend the adoption of a granite obelisk, on the ground of uncertainty, pass without comment. Messrs. Freeman & Sons, of the Penryn Granite Works, have sent us copy of their correspondence with the committee, showing that they answered all the questions put to them excepting the question of price. The statement was perfectly correct, and this very omission on the part of Messrs. Freeman serves partly to explain it. Messrs. Freeman add, and we are quite willing to believe them:—

"Since 1832 our quarries have been largely developed; we have more than sixty quarries in this district of fine regular-grained grey granite. Many masses of solid rock have been quarried, having dimensions large enough to make needles from 40 ft. to 85 ft. in length. It is by no means an infrequent occurrence to throw over rocks containing from 800 tons to 1,500 tons. We shall be much obliged if you will give these facts publicity. We are quite ready to join with the rest of the world in admiring the wonderful works of the ancient Egyptians, and do not pretend to vie with them in magnitude, but we think that it is only right that the real capabilities of modern times and English quarries should be known. We have raised and polished columns 30 ft. in length and 21 tons in weight, and pedestal blocks 40 tons in weight, and would not hesitate to undertake works of far greater magnitude, such as the production of a needle from 60 ft. to 80 ft. in length."

THE CAMBERWELL WORKHOUSE COMPETITION.

SIR,—I am very pleased to see that several gentlemen have taken up the cause of the much-injured author of the design marked "The Poor you have always with you."

It appears to me that the Board of Guardians commenced the business in a very improper way, as for a work of such importance the very best talent should have been secured, either by selecting a few experienced architects to compete, or by open invitation through your columns. Instead of this, the whole matter was kept quiet, and two or three local practitioners alone asked to compete. I never, to my knowledge, saw either of the competitors named in your last issue. But, living on the boundary of the parish, I have been enabled to form an opinion from reports in local newspapers and current conversation that the decision was most unfair. FAIR PLAY.

MAIDENHEAD HOSPITAL COMPETITION.

SIR,—About eighty designs were submitted in this competition, and the Town Council appointed five members to form a committee to select five plans for the final decision of the whole body. The design eventually selected was found to be the work of a local architect, and it is a singular fact that three members of the sub-committee are builders, and one of them, the ex-Mayor (Mr. Woodbridge), has at least two jobs in hand for this local architect.

A COMPETITOR.

CHURCH-BUILDING NEWS.

Langport.—All Saints' Church, Langport, Somerset, has been re-opened for use, after restoration under the superintendence of Messrs. Foster & Wood, of Bristol, the builder being Mr. Davis, of Langport. The roof of the nave has been altered to what is thought to have been the original form,—moulded pitch pine ribs having been placed longitudinally and curved ribs the transverse way, to form panels and carved bosses placed at each junction. The north and south aisle roofs have been taken off, and the old lead recast and used again. These roofs are of pitch pine, being formed of massive beams and rafters. The roof of the north chapel has been carefully restored in old oak, to match the old work. Mr. Vincent Stuckey has given a stained window in memory of his mother,—Mrs. John Wood. The stained window which was in the north chapel, in memory of the Mr. Vincent Stuckey who founded Stuckey's Banking Company, has been taken out and placed in the south chapel. The west window of the tower is to be filled with stained glass, in memory of Mr. Walter Bagehot, editor of the *Economist*. The church is heated with hot air, the apparatus for which has been fixed by Messrs. Haden & Sons, of Trowbridge. The organ, which is new, was built by Messrs. Hill & Sons, of London. The total cost has been about 2,250*l.*

Edinburgh.—Trinity College Church, Edinburgh, the erection of which was commenced some six years ago, has been re-opened. The building is seated for 900 persons, and has been erected at a cost of nearly 10,000*l.* As originally framed by Mr. Lessels, the plans embraced in the details features borrowed from the interesting old edifice which the church was designed to replace; but before the work was fairly begun it occurred to some of those charged with the carrying out of the undertaking that a considerable portion of the ancient structure might be actually reproduced in connexion with the new one. Mr. Lessels accordingly modified his plans so as to give effect to this idea, the method adopted being to put down at the back of the new church what may almost be regarded as a distinct building, constructed of the old stones, and preserving some of the finest portions of the original structure. Internally, the two are only separated by a partition, the lower part of which is of wood, and the upper portion of glass; and the annexe, which affords accommodation for 200 or 250 sitters, is to be used for mission, Sabbath school, and other similar meetings. The church proper is an oblong building, with its front and main entrance towards Jeffrey-street, and one side abutting on Chalmers-close.

Langthorne.—A new church for the hamlet of Langthorne has just been consecrated by the Bishop of Ripon. The church was built almost at the sole cost of the Rev. T. Melville Raven, vicar of Crakehall and Langthorne, from designs by Mr. C. Noel Armfield, of the firm of Messrs. Armfield & Bottomley, architects, Whitby. The whole church is decorated with colour, and furnished with embroideries, all from special designs by the architect. The altar frontal is the gift of Mrs. John Raven, widow of the late landscape artist, John Raven (brother of the munificent builder of the church).

Rainford.—The foundation-stone of a new parish church for the village of Rainford, near Liverpool, was laid on the 1st ult. The new edifice, to be called All Saints' Church, is being built in the semi-Gothic style of architecture, its total length being 113 ft. 6 in., by 48 ft. 2 in. wide, and the total height of the nave 46 ft. to the pitch of the roof. The church is divided into nave, chancel, and two aisles, the former of which is 77 ft. long, the chancel being 31 ft. deep by 19 ft. wide. It is being built of Runcorn stone, dressed with local wall stone relieved with red stone bands. At the north-east corner of the building is the tower, which is 18 ft. square at the base, but at present will only be carried to the height of 26 ft. The building will be seated with open benches, seating 550 persons. The architects are Messrs. Aldridge & Deacon, of Liverpool, the clerk of works being Mr. F. Hulme, of Stockport, and the contractor Mr. Hugh Yates, of Liverpool. The estimated cost is 5,449*l.*

Diss.—The restored chancel of Diss Church has been reopened for use, after restoration and decoration from plans by Mr. A. E. Browne, architect.

Shrewsbury.—The opening of the chancel of the new church of All Saints, Castle-fields, Shrewsbury, was opened on the 7th ult., the nave having been opened a year ago. The chancel, which is 40 ft. internally by 25 ft. wide, and about 52 ft. high to the ridge, is raised three steps above the nave, and furnished with oak stalls for a choir of twenty-eight men and twenty boys; there is a gradual ascent of six steps more to the altar. The chancel is paved with Maw & Co.'s encaustic tiles, and is warmed by one of Rimington's underground hot-air stoves. Red-hill stone has been used for the walling, Greenshill and Shelvoke for dressings, and blue Pennant (Bristol) for shafts. The walls are pointed internally, not plastered. The open-timbered roof is of pitch-pine, boarded between rafters, and covered with Mr. J. Parson Smith's patent pressed Ridge-hill tiles. The stone carving was executed by Mr. R. L. Boulton, of Cheltenham. The contractor for the chancel, with north chancel aisle, organ-chamber, and vestry in tower, is Mr. W. Bowdler. The chancel roof and choir stalls were entrusted to his late partner, Mr. H. T. Darlington. Messrs. Alltree & Lea undertook the lighting. The total cost of the chancel, when the contract is completed, will be about 2,400*l.* The architect is Mr. E. Haycock, of Shrewsbury.

Sheffield.—The parish church of Sheffield is about to undergo alteration and enlargement, from the plans of Messrs. Flockton & Abbott, architects. The main features of the alteration are the extension of the nave and aisles westward a distance of 30 ft., adding two bays to the arcades; the addition of a large and lofty south porch, and south and north transepts; the throwing open of the chancel to the church by the removal of the screens now filling two of the arches; the removal of the organ, and of all the galleries. Arrangements will be made for accommodating the choir in the chancel. When the alterations are carried out the building will be, in the interior, 165 ft. long from east to west,

and 98 ft. wide from north to south across the transepts. The four pillars and arches of the tower will be left entirely free, adding much to the imposing appearance of the interior. The space gained by the enlargements and the connexion of the chancel with the church will fully compensate for the loss of the galleries. Externally the old tower and spire will remain untouched, but otherwise the architectural character of the whole of the exterior of the church will be changed, and from being a plain, formal, square building, it will be broken up in a bold and effective manner. The style adopted for the additions is Late Decorated. Towards the cost, Mrs. Thornhill's magnificent gift of 10,000*l.* has been supplemented by an undertaking on the part of Mrs. Sam. Parker to expend 2,500*l.* on the north transept in memory of her late husband, and a promise of 1,000*l.* from Mr. Mark Firth for the cost of the new south porch. A handsome font the gift of the Freemasons, will be placed near the southern entrance.

DISSENTING CHURCH BUILDING NEWS.

Conisborough.—On the 8th ult. a new Wesleyan Chapel at Conisborough was opened for service. The new chapel has been erected from the designs of Messrs. Dixon & Moxon, of Barnsley. Messrs. Downing & Twiby, of Conisborough, did the brick and stone work, and Messrs. J. Appleyard & Son, of Rotherham and Conisborough, the woodwork, plumbing, glazing, gasfitting, &c. The contract with Messrs. Downing & Twiby was for 1,209*l.*, and with Messrs. Appleyard & Son for 1,600*l.* Subsequently the plastering work was given to Mr. Gummer, of Rotherham, and the slating to Mr. Gregory, of Doncaster. The total cost of the building is estimated at nearly 4,000*l.* The chapel provides accommodation for 530 persons. It is described as being in "no particular style."

Leytonstone.—On the 1st ult. the memorial stone of a new Baptist Chapel, at the corner of Fairlop-road, Leytonstone, was laid by the Rev. A. G. Brown. The new chapel is designed to accommodate 400 people, and further accommodation for 300 more can be furnished by the provision of side galleries when needed. The scheme will also include a schoolroom for 120 children, but a space is reserved for larger and detached school and lecture-hall at a future time. The cost of the chapel and temporary schoolroom will be about 3,500*l.* The architect is Mr. James Cubitt.

Grimsby.—The new Baptist chapel in Victoria-street, Grimsby, was opened on the 6th ult. It has been built by Mr. John Brown, of Grimsby, in accordance with the plans prepared by Mr. Glover, architect. The style adopted is Romanesque, and the materials are red brick, relieved with black brick bands, and Bath stone dressings. The principal features of the front are two towers, with steep slated roofs, angle turrets, and pinnacles; these are 73 ft. high from the pavement. Between them is the recessed central gable, with a large traceried rose-window, and below it, projecting nearly to the front of the towers, under a smaller gable, is an open portico with two archways. The chapel will accommodate 1,100 persons, without reckoning seats in the aisles, or standing-room. There are six external doors to the building and four staircases to the galleries.

Guernsey.—The foundation-stone of a new Wesleyan Chapel has been laid at Guernsey. The building, which is to cost 5,000*l.*, is being carried out from the designs and under the superintendence of Messrs. Wilson, Willcox, & Wilson, architects, Bath. Mr. D. C. Jones, of Gloucester, is the builder.

VARIORUM.

In the December number of the *Nineteenth Century*, Mr. Godfrey Turner strikes a good blow, under the heading, "Amusements of the English People," in favour of that movement for obtaining a theatre not wholly governed by the prevailing popular taste, which was initiated some few years ago by Mr. George Godwin, and followed up by Mr. J. R. Planché and Mr. Tom Taylor. Mr. Turner says, after an account of the condition into which the stage has been brought,—"It is my contention, practically weak though it may prove in any possible result, that the remedy for what is mostly wrong about our popular amusements must be between rulers and ruled. A State subvention secures the theatre which enjoys it against departure from a standard and a plan."——The *Belgravia Annual* for 1877 (Chatto & Windus) is a good specimen of its class. The December *Belgravia* ends the year well.——In the new number of the *Gentleman's Magazine* (from the same publishers) Mr. Justin M'Carthy concludes his capital story, "Miss Misanthrope."——The *Victoria Magazine*, conducted by Miss Emily Faithfull, keeps steadily in view its main objects, Woman and Woman's work. The magazine must give more matter, however, if it hope to run against similar periodicals.——The new part of "Picturesque Europe" deals with the Lake Country and South Wales, and has its usual number of excellent engravings. It includes a view of Brantwood, Coniston, the residence of Mr. Ruskin.——We have before us a handsome and charming book, "The Great Painters of Christendom,—from Cimabué to Wilkie," by John Forbes-Robertson, just now published by Cassell & Co. We shall review it before long; but, meantime, mention it for the benefit of such of our readers as are looking for a present-book, which is much more than a mere ornament for the table.

Miscellanea.

A Needed Improvement Deferred.—At the last meeting of the Holborn District Board of Works, Mr. S. W. Hopwood, the clerk, read two letters referring to the proposed new thoroughfare from King's-road, Holborn, to Clerkenwell. One was from the Vestry of Islington, stating that they concurred with the views expressed by the Holborn District Board, that there should be an improved road communication from Gray's-inn-road, at its junction with Liquorpond-street to Clerkenwell and Islington, and that they would co-operate with the other parishes to secure the improvement. The other was from the Metropolitan Board of Works, acknowledging receipt of communication from the District Board asking, under the Metropolitan Streets Improvement Act for the new street above mentioned; also for accommodation for dwellings for the working-classes on the ground already and purposed to be acquired; and stating that that Board had arrived at the conclusion that it is not advisable to take any action upon these subjects during the ensuing session of Parliament. All who have experienced the perils of the present route *viâ* Elm-street, Mount Pleasant, and Coldbath-fields, will be glad to know that the representatives of Islington, Clerkenwell, and the Holborn district are taking steps to urge upon the Metropolitan Board the imperative need of the proposed improvement.

Roman Remains at Chichester.—Sir: Can any of your readers give further information as to a Roman inscription found in 1809, at Chichester, and in which the letters remaining were:—

M
NVSAT
ARIVS
LXXXV

This is evidently the right-hand portion of a Roman tombstone. Dallaway, in his "History of Western Sussex," vol. i., page 5, says:—"At the same time was found a fragment of a miliary column of granite, but too much obliterated to be deciphered." Any information as to the whereabouts of either of these stones, or a copy, as far as the letters are visible, of the inscription upon the miliary, will be gladly accepted, and, in fact, considered as a boon by antiquaries.—W. Thompson Watkin.

Adventures of an Inscription.—There was an old house in Brighton which for many years had a Latin inscription in raised Roman letters, which, in consequence of the action of the weather, underwent a variety of vicissitudes. First, the inscription seems to have been "Excitat acta robur" (Strength awakens action—that is, a consciousness of power rouses men to action). This became changed to "Excitas actis robur" (Thou awakenest strength by deeds). Again, this became changed to "Excitat actis robur" (He rouses to strength by acts). Again came another change, "Excitas acta robur" (Thou wakest, or excitest, to deeds of action, O strength!). But its last appearance defied all efforts at translation,—"Excitus ecta ropat," and as it only excited ridicule, it was entirely obliterated.—*Leisure Hour.*

The Masons' Strike in London.—The masons on strike would appear to be getting the worst of their conflict with the masters. On the 24th ult. the Strike Committee issued an appeal to all the trade unions of the country, asking for support to enable them to defeat what they call the "unpatriotic" conduct of the masters in importing foreign workmen. At a general meeting of the men on strike, on the 29th ult., the following resolution was adopted:—

"That we deem it advisable to rescind the resolution passed in this hall on August 16, in reference to sub-contracting, and that we allow our members to work for sub-contractors finding their own stone, who are paying 10d. per hour, according to our local rules."

The large contingent of German masons, whose arrival we noted last week, is said to be turning out very satisfactory work. Twelve more German masons, paying their own expenses, arrived on Tuesday, and more may be expected, as work is said to be very slack in Germany.

Serious Accident to a Dock Wall.—On the 20th ult. an accident occurred at the new dock works, Bootle, which will cause a large number of men to be thrown out of work, probably for some months. It appears that, during the previous fortnight, the men working under the contract for the excavation of the new dock works have experienced great difficulty, in consequence of large quantities of water oozing through a temporary wall, on the north side of the Canada Half-tide Dock. On the date named the breach in the bottom of the wall became more enlarged, causing large volumes of water to force its way into the new dock works, and cover the whole of the working plant. Large bodies of workmen were at once employed, and were occupied during the night in filling in with ballast the half-tide basin near where it was supposed the opening in the wall had taken place, but their efforts were unavailing, as the new works, covering some acres of land, were completely deluged with water, in some places to the depth of 10 ft. or 12 ft. Shortly after four o'clock on the 25th ult. a quantity of earthwork, over which the tramway was conveying the earth from the works, collapsed, carrying with it the metals and a wagon. With as little delay as possible Mr. Sutcliffe, the engineer's deputy, set to work, and had it filled in with ballast. Mr. G. F. Lyster, engineer to the Dock Board, and his son were upon the spot shortly afterwards; but the water had gained a complete mastery, and there will probably be a breach in the wall which will cost the Dock Board months of labour and thousands of pounds to make good. The primary cause of the accident is supposed to be that the excavations were made too near the temporary wall, for the purpose of putting in the masonry for some gates which were required. This was the only entrance to the docks in course of erection, and the excavations having gone below the old masonry, the water has worked underneath till it has made the breach spoken of. Some 42 acres of excavation have been covered with water, and 1,700 men are thrown out of work.

Extension of Wholesale Fish Market Shudehill, Manchester.—The Markets Committee of the Manchester Corporation invited four Manchester architects in the early part of this year to send in competition drawings under motto, and ultimately selected the designs of Messrs. Mangnall & Littlewoods out of the four for adoption. The plot of land for the site adjoins the present wholesale fish-market, and covers an area of 1,996 square yards. It is bounded by New High-street, Thomas-street, and Little Stable-street. About 500 square yards of the plot are to be utilised for shops and offices, which will front Thomas-street, leaving a net area of 1,500 square yards for the extension of the wholesale fish-market.

Fatal Accident to a Builder.—On the 22nd ult. a fatal accident occurred in High-street, Burton-on-Trent, which resulted in the death of Mr. William Lowe (of the firm of Lowe & Sons, builders), who was a member of the Burton School Board and a Town Commissioner. It appears that at about three o'clock in the afternoon of the day named the deceased was driving from Ashby-road to his business in the town, and, upon turning into High-street, a pair of runaway horses approached him; he drew up on his right side, and the runaways ran into his trap, threw him out, and the fall was such as to so seriously injure his head that he died in about eight hours afterwards. Mr. Lowe was in his fortieth year. His funeral was largely attended.

Cranbrook and Paddock Wood Railway. The agreement providing for the working of the Cranbrook line by the South-Eastern Company, at fifty per cent. of the gross receipts will be immediately taken in hand, and this will render the undertaking a promising one for the shareholders, for whatever may occur, they are certain to receive some dividend, as fifty per cent. of the gross receipts will be available for division among them. Thus, if the gross receipts equal 14*l.* per mile per week, a moderate estimate, the Cranbrook Company's proportion will be over 4,800*l.*, or nearly five per cent. on the whole share capital. A meeting of the directors was held last week, when it was decided that, considering the satisfactory state of the agreements with the South-Eastern Company, and also the forward condition of the land arrangements, the engineers should be instructed to commence the setting out of the line as soon as possible.

Public Loans to Local Authorities.—The Local Government Board has issued a circular drawing the attention of the local sanitary authorities throughout the kingdom to the 13th section of the Public Works Loans Act, 1875 (38 & 39 Vict., cap. 89), which requires that all local authorities intending to borrow from the Public Works Loan Commissioners should send to the Commissioners, on or before the 31st of December next, a statement of the new loans or instalments of loans already granted which the authorities may probably apply to borrow during the ensuing financial year, viz., that commencing on the 1st of April, 1878. Unless this condition be satisfied, the Commissioners are not empowered, except with the permission of the Lords Commissioners of her Majesty's Treasury, to make an advance under the Act.

Silversmith's Work.—The Council of the Society of Arts offer the sum of 100*l.* (p'aced at their disposal by Messrs. Watherston & Son), together with the Society's Medal, for the best Essay on the Art of the Silversmith, past and present, of all nations, with practical suggestions for its future development. We hope some of our readers will go in for it. The essay, it is understood, must be historical as well as practical, and should point out the *chefs d'œuvre* produced in various countries. It is necessary that the obstacles which have tended to retard the progress of the art in England should be set forth with a view to their removal, and that suggestions should be made for improvements in the various branches of the art. The names of the judges are to be published hereafter.

Death of the Borough Engineer, Portsmouth.—The death is announced of Mr. Joseph Edmund Greatorex, the borough engineer of Portsmouth, who had only just returned from a short holiday. He was suffering from a cold, which resulted in congestion of the lungs, to which he succumbed on the 26th ult. The deceased was elected borough engineer in 1866, having for fourteen years previously held a similar appointment at Coventry, during which period the city was drained under his supervision. During Mr. Greatorex's residence at Portsmouth the subsidiary drainage has been carried out, many roads and streets have been put in repair, and other works of importance devised and executed.

A Plantagenet Tomb.—"Langley Regis" writes:—"Allow me to explain that the remains recently discovered in King's Langley Church are believed to be those of Edmund de Langley and not his twin-daughters as stated, but his wife, Isabel of Castile, and their daughter Constance. The subject is undergoing investigation, and much interesting matter in reference to it may be expected to appear before long. The discovery is of a singularly interesting nature, especially when we bear in mind that Edmund de Langley,—the fifth son of Edward III and founder of the House of York, as John of Gaunt, the fourth son, was of the House of Lancaster,—was a direct lineal ancester of her Majesty the Queen."

"Tower Bridge." — Among the Parliamentary plans deposited are two proposals for relieving the traffic north and south of the Thames,—the widening of London Bridge, and the erection of a bridge at the Tower. The former is deposited by the City Architect, and the latter by Messrs. Le Fevre & Co. The bridge at the Tower is to consist of five spans or openings,—one span 200 ft., 30 ft. clear headway; two spans 150 ft., 28 ft. clear headway; two spans 110 ft., and 25 ft. clear headway.

Postal Regulations. — An official letter dated the 31st of October last has been sent from the General Post-office to the Advertisement Manager of the *Times*, by whom it is freely circulated, informing him in reply to his inquiry that "Letters addressed to *Initials or Fictitious Names* are *not* now *taken in* to be called for at any Post-office, but are at once sent to the Returned Letter Office for disposal." Our own Publisher wrote to the Secretary of the Post-office upon the same subject on the 21st of November, and has since been informed, also *officially*, that Letters addressed to Initials or Fictitious names *are* now taken in to be called for at *some* Post-offices. For the convenience of those persons who are obliged to make use of initials for advertising purposes, it would be better either to rescind the regulation altogether, or to carry it out in its integrity, as the public, who have been informed of the *rule*, but not of the *exceptions*, are hardly likely to reply to advertisements so addressed.

Ornamentation of Paris.—The Fine Arts Department in the city of Paris has under consideration (according to *Galignani*) a plan for adorning the promenades and open spaces, down to the smallest squares, in a way similar to what has been done in parts of the Park Monceau. The idea is to place, at certain distances, busts of all the historians who have left studies of the manners and customs of the capital, in the great avenues,—such as the Champs-Elysées, the Avenue du Bois de Boulogne, &c. In the squares will be erected statues of notable personages, provosts of the guilds, judges, soldiers, &c., of all periods who have in any way illustrified Paris. Finally, in the large spaces, such as the Bois de Boulogne, the Buttes-Chaumont, and Montsouris, groups will reproduce historical events which have occurred in the city from the most distant times to our days.

New Harbour for Boulogne.—A commission of eleven has been appointed by the Chamber of Deputies to report on a scheme for the construction at Boulogne of a new harbour, to be accessible to large vessels at all times of the tide. The projected works are estimated to cost 17 millions of francs (680,000*l.*), which are to be advanced to the Government by the Chamber of Commerce at Boulogne, at 4 per cent. interest, repayable by thirty half-yearly drawings. The draught law proposes authorising the Chamber of Commerce to contract a 6 per cent. loan. The difference between 4 per cent. paid by the State and 6 per cent. paid by the Chamber of Commerce will be raised by harbour dues.

New Parsonage-house, Aston Brook.—The founiation-stone of a new parsonage-house at Aston Brook, near Birmingham, was laid on the 27th ult. The site of the building is in Sutton-street, a short distance from the church, and is nearly a quarter of an acre in extent. The house will be Gothic in style, and built of brick, with stone sills and strings. Mr. J. A. Chetwynd is the architect, and Messrs. Baxter, of Sparkhill, the builders.

TENDERS.

For roads and sewers on the Addison Park Estate, for the Midland Land and Investment Corporation, Limited:—

Maxwell	£25,025	9	4
Currall & Lewis	24,279	15	0
Mears	22,831	0	0
Josolyne	22,400	0	0
Nowell & Robson	22,000	0	0
Marshall	22,000	0	0
Young & Co.	21,399	0	0
Williams, Son, & Wallington...	19,900	0	0
Wilson	19,700	0	0
Keeble	19,467	0	0
Quinn & Co.	19,400	0	0

For Stamford Brook roads, for the Metropolitan Board of Works:—

Downs & Co.	£6,360	0	0
Pearson	6,34)	0	0
Young & Co.	5,200	0	0
Williamson & Walington	4,750	0	0
Webster	4,867	0	0
Mowlem & Co.	4,850	0	0
Nowell & Robson	4,685	0	0
Young	4,450	0	0
Batch	4,400	0	0
Dove, Brothers	4,333	13	9
Dunmore (accepted)	3,976	0	0

For making a new approach-road, with timber bridge, &c., to the Convalescent Hospital, at Cheadle. Messrs. J. & P. Higson, engineers:—

Smith	£2,284	4	0 !
W. & J. Worthington	1,168	10	0
Genney & Smith	1,099	0	0
Cordingley & Stopford	1,063	0	0
Haughton	999	0	0
King	920	0	0
Flavin	901	15	7
Burrows	875	8	6
Lowe	766	0	0
Braddock (accepted)	760	2	3 !

For paving, West Ham district. Contract No. 1. Mr Lewis Angell, engineer:—

Booth & Wheeler	£2,235	3	4
Casselton, Brothers	2,152	2	6
Knight	2,108	18	9
Rutty	2,074	0	0
Turner (accepted)	2,055	10	0

For new vagrant wards, on the cellular plan, for the guardians of the poor of St. Mary Abbotts, Kensington. Messrs. A. & C. Harston, architects:—

Holland	£5,571	0	0
Nightingale	5,385	0	0
Newton & Griggs	5,335	0	0
Hunt	5,296	0	0
Downs	5,160	0	0
Cowland, Brothers	5,084	0	0
Tarrant & Sons	4,999	0	0
Palmer	4,899	0	0
Josolyne	4,703	0	0
Nash	4,700	0	0
Lathey, Brothers (accepted)	4,620	0	0

For the erection of an hotel (exclusive of cooking apparatus and hot-water supply), at Great Marlow, Bucks, for Colonel Owen Williams. Mr. W. H. Powell, architect Mr. T. Ladds, surveyor:—

Kempsell	£7,880	0	0
Longley	7,685	0	0
Carter	7,300	0	0
Stevens & Bastow	6,999	0	0
Carter & Son	6,999	0	0
Woodbridge	6,910	0	0
Lovell	6,720	0	0
Kearley	6,540	0	0
Gibson	6,275	0	0
For Pneumatic Bells.			
Homfray & Co.	£131	16	0
Zimdars	110	11	8
Edmundson & Co.	106	10	0

For erecting four warehouses, Charterhouse-street. Mr. R. N. Clifton, architect:—

Ashby, Brothers	£28,373	0	0
Mortar	27,643	0	0
Holland & Hannen	27,181	0	0
Downs	26,925	0	0
Brass	24,390	0	0
Conder	25,895	0	0
Lawrence	25,200	0	0
Peto, Brothers	24,140	0	0

For the erection and completion of Board Schools, with class-rooms and offices, to accommodate 230 children respectively, Perran-ar-Worthal, Cornwall. Mr. Silvanus Trevail, architect:—

Searle	£1,475	0	0
Julian & Sons	1,266	0	0
Mayer	1,206	0	0
Hancock	1,140	0	0
Rickard	1,139	0	0
Broad & Gard	1,095	0	0
Blight (accepted)	985	0	0

For gaspipes and fittings, at the new baths and washhouses, Tottenham court-road, for the Commissioners of St. Pancras. Mr. Gundry, architect:—

Richardson, Ellson, & Co.	£330	0	0
Abercromby	284	0	0
Buckley & Beach	254	0	0
Land & Co.	220	0	0

For fencing land, at Banstead, the site of the proposed Kensington and Chelsea School. Messrs. A. & C. Harston, architects:—

Taylor & Brooker (accepted)	£597	0	0

For erecting four villa residences (exclusive of painting and decorating, mantels, stoves, &c, and plate-glass), on the Priory Estate, Bromley-road, Lewisham, for Messrs. Warren & Froud. Mr. Wm. Theobalds, architect:—

Banks (accepted)	£1,400	0	0

For erecting warehouse and show-room, at St. Mary Cray, Kent, for Mr. Caleb Hosmer. Mr. Wm. Theobalds, architect:—

Wright, accepted.

For Seasalter sea defences, Kent. Mr. Thomas Ashenden, surveyor:—

Garrett	£9,552	0	0
Chamberlain	5,746	0	0
Foad	4,137	0	0
Stoddard	3,321	0	0
Batch (accepted)	2,600	0	0

For the erection of Board Schools, residence, and fences, at Stebbing, near Dunmow, Essex. Mr. H. Lovegrove, architect. Quantities by Mr. A. F. Wrightson:—

Whiffen & Sons	£3,145	0	0
Newman	2,666	18	7
Josolyne	2,549	0	0
Andrews & Son	2,449	0	0
Cock	2,432	0	0
Gardner & Son	2,379	0	0
Corowall	2,319	0	0
Mason & Son	2,277	0	0
Brown	2,130	0	0

For the re-building of premises in Oxford-street, Bethnal-green, for Mr. Pereira:—

Beale	£421	0	0
Emery	4 5	0	0
Thomerson (accepted)	385	0	0

For re-building No. 99, Fore-street, Exeter, for Sir F. Bathurst, bart. Messrs. Tarring and Wilkinson, architects:—

Gillard	£4,469	0	0
Stile & Sons	4,441	0	0
Shadland	4,180	0	0
Spadding	3,829	15	0
Stralford *	3,785	0	0

* Accepted, subject to reduction.

For master's house, at Old Goole, for the Goole School Board. Mr. Wm. Watson, architect:—

Elliott (Excavating, Brick, Stone, &c.)	£312	0	0
Rawlins (Slating)	58	0	0
Tasker (Carpenter and Joiner)	123	0	0
Backhouse (Plumbing, Glazing, & Ironwork)	67	5	0
Shutcliff (Painting)	14	9	0

Accepted for Board Schools, at Lingwell Gate, for the Stanley-cum-Wrenthorpe School Board. Mr. W. Watson, architect:—

Wilson (Excavating, Brick, and Stone)	£419	0	0
Stewart (Slating)	56	0	0
Eastwood (Plastering)	29	10	0
Cheesebrough (Carpenter and Joiner)	142	15	0
Johnson (Plumbing, Glazing, & Ironwork)	75	0	0
Turner (Painting)	12	10	0

For the erection of house and boundary-walls, for Mr. W. Sims, Crouch-hill, near London. Mr. A. J. Rouse, architect:—

	For House.	Garden-walls.
Webbs	£1,813	£149
Whiteley	1,797	83
Knight	1,772	192
Niblett	1,755	159
Steel, Brothers	1,750	169
Webber	1,715	134
Cox	1,705	115
Gibson & Guthrie	1,670	137
Parker & Evans	1,636	129
Matlock, Brothers	1,613	133
Newton & Triggs	1,606	148
Boyd	1,580	135
Clack	1,529	135
Warr	1,397	129

Accepted for new National Provincial Bank of England, at Loftus-in-Cleveland, erecting by the Right Hon. the Earl of Zetland. Mr. A. J. Martin, architect:—

Dickinson (Excavator, Mason, Bricklayer, Plasterer, Slater, Carpenter, and Joiner—all stone supplied free)	£1,420	0	0
Boddy (Plumber)	70	8	6
Webster & Son (Painting, Gasfitting, &c.)	203	0	0
Robinson, Brothers (Ironmongery, &c.)	72	4	11

For new school-house for the district of St. Mary Bolton, West Brompton. Mr. J. Peacock, architect. Quantities by Messrs. Gardiner, Son, & Theobald:—

Stephenson	£2,986	0	0
Hockley	2,884	0	0
Smith	2,750	0	0
Adamson & Son	2,678	0	0
Gregory	2,631	0	0
Lathey, Brothers	2,500	0	0
Nightingale	2,443	0	0

For the erection of corporation stabling, cart-sheds, foreman and housekeeper's houses, &c., at South Shields. Mr. Matthew Hall, borough engineer and surveyor. Quantities by Mr. George Connell:—

Lawson, Brothers, & Lowes	£6,726	0	0 !
Lawson	5,234	10	6
Harwood	4,749	3	2
Leighton	4,707	13	0
A. & P. Marshall	4,514	3	3
Moore	4,415	1	7
Douglass	4,414	3	3
Hutchinson & Sedgwick	4,246	6	6
R. H. & J. Nicholson	4,167	8	7
Alexander	4,138	5	0
Elliott	4,110	0	0
Summerbell & Young	4,040	0	0
Mackey	4,039	9	8
Storrar	3,998	0	0
G. Hillan	3,996	8	0
Suddards	3,976	0	0
Allison	3,920	0	0
Parvis	3,894	10	0
Atkin & Co.	3,577	5	0
Halliday & Christie	3,845	3	8
Kennedy & Co. (accepted)	3,741	10	0
Miller (withdrawn)	3,015	7	5 !

For mansion, at Hampstead, for Mr. E. Long, A.R.A. Mr. Norman Shaw, architect. Messrs. Franklin & Andrews, surveyors:—

Bumford	£7,585	0	0
Conder	6,756	0	0
Simpson & Son	6,689	0	0
Brinstead & Co.	6,534	0	0
Manley & Rogers	6,527	0	0
Lascelles	6,300	0	0
Braid & Co.	6,240	0	0

For making and kerbing roads, laying sewers, &c., on the Millbrook Estate, Edmonton, for Mr. S. Bird. Messrs. Whitmore & Kennard, surveyors. Quantities supplied:—

Killingback	£2,237	0	0 !
Williamson	1,874	0	0
Crockett	1,530	0	0
Bloomfield	1,411	0	0
F. & F. J. Wood	1,382	0	0
Jackson	1,250	0	0
Pound	1,152	0	0
Taylor	1,138	0	0
Rutty	1,130	0	0 !

For new house, Berry Stede Estate, Ascot, near Windsor. Mr. W. J. Hopkins, architect. Mr. Lewis Sheppard, surveyor:—

Warne	£6,140	0	0
Patrick & Son	6,060	0	0
Carter	5,949	0	0
Williams & Son	5,823	0	0
Silver & Son	5,730	0	0
Terry	5,494	0	0
Wood & Son	5,449	0	0
Kimberley	5,225	0	0
Braid & Co.	5,100	0	0
Claridge	5,050	0	0
Shapley & Co.	5,030	0	0
Watson	4,970	0	0
Boyce	4,883	0	0
Harris	4,823	0	0
Norris	4,674	0	0
Inwood	4,555	0	0

TO CORRESPONDENTS.

A. J. R.—S. G.—C. B.—G. L.—H. L.—R. H.—S. T.—C. L.—M. H. J.—H. H.—J. B.—J. N.—T. G.—P., Brothers.—W. H. P.—Messrs. P.—J. W. S.—F. P.—A. & C. H.—G.—W. T.—R. S.—H. G.—T. L.—G. W.—A. G.—F. C.—F. B. P.—R. G. (list and amounts should be sent).—N. C. (thanks for good feeling).—J. B. & B. (on its bed).—Constant Subscriber (we cannot interfere in private disputes).—Manchester Fish Market (not legible).—J. W. (next week)

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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Bath Stone of best quality.
SANDELL, SAUNDERS, & CO. (Limited), Quarrymen and Stone Merchants.
List of Prices at the Quarries and Depôts, also cost of transit to any part of the Kingdom, or application to
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Asphalte.
Seyssel, Patent Metallic Lava and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Advt.]

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J. Sessions & Sons, Docks, Gloucester, Manufacturers of ENAMELLED and PLAIN SLATE CHIMNEY-PIECES, URINALS, & WELSH ROOFING SLATES direct from Quarries, to any station in the Kingdom. Prices and terms on application. [Advt.]

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Patent Ventilator, or Air-Propeller, for the introduction of Cold or Warm air into Dwellings, &c.
The machine may be seen in action at the Show-rooms, 127, Regent-street, London, W.
The apparatus consists of a drum with a double set of fans, which are worked by a fly-wheel placed in the centre, and on the same axle as fans. The motive for this fly-wheel is arrived at by a small jet of water being directed on to it, causing both the wheel and fans to revolve with great velocity; the air passing through the machine at a rate equal to 2,500 feet per minute if desired, according to size of apparatus.
N.B.—The above machine may be used either as an exhauster or injector, as may be preferred, or both objects combined.
Also Patentees of the Fireclay Burners for Gas Fires and Cooking Purposes, and Patentees of the Tubular Gas Boiler for Baths and Conservatories, &c.
Designers and Manufacturers of Lamps and Candelabra.
Office and Works, 155, Queen's-road, Bayswater, W. [Advt.]

MICHELMORE & REAP,
Manufacturers of
CHARLES COLLINGE'S PATENT
COLLINGE'S PATENT HINGES, LEVER, SCREW, & BARREL BOLTS, and IMPROVED GATE FITTINGS of every Description.
36A, BOROUGH ROAD, LONDON, S.E.
Discount to Builders. Illustrated List, two stamps.

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VOL. XXXV. No. 1819. SATURDAY, DECEMBER 15, 1877.

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*Tiryns and Mycenæ.**

THE anxious expectation, on the part of no small portion of the English public, of full details of the startling discoveries made by Dr. Schliemann on the site of the Homeric city of Mycenæ, will be amply gratified by the study of this beautiful book. The announcements which Dr. Schliemann himself has given, from time to time, in the columns of the daily press, have, indeed, prepared that full surprise which would otherwise have been occasioned by the publication of the book itself. But a reality has now been given to conceptions which were at best but shadowy, by the numerous, splendid, and faithful illustrations. These consist of nine maps and plans, seven large plates, and 548 other plates, vignettes, and woodcuts in the page. It is hardly too much to say that the work will hereafter date an era in book illustration, as well as in archæological discovery. Some of the plans, which were drawn by a Greek engineer, would have been, perhaps, more satisfactory if the ground had been contoured, according to our own latest mode; but they give the information required by the reader of the book. The greater number of the illustrations are woodcuts, by Messrs. Thymper and J. D. Cooper, from photographs of the rare objects of ancient art discovered in the researches. These cuts combine the accurate reproduction of the photograph with the permanent reliability of the printed cut. There are also a few coloured prints of terra-cotta vols and other objects of pottery. The large number of the illustrations, their rare beauty and fidelity, and the patient detail with which Dr. Schliemann narrates the course of the labours which have been so splendidly rewarded, will enable those who cannot visit the museum at which these relics are to be displayed at Athens to form a not inadequate idea of what Dr. Schliemann has done for the historian, the archæologist, and the artist.

It is not easy to say in which branch of philological and æsthetic research students will have most light thrown on their labours by the work now before us. To the discoverer himself, the great central idea of recalling from the regions of myth and fable to those of actual history the kings and heroes of the "Iliad," is one of such imaginative grandeur that it leaves him but little room for other, and even more important, reflections. But the distinct branches of cognate studies that are illustrated by the researches are neither few nor unimportant. As to architecture, light is thrown on its most ancient and most mysterious phase. We are presented with a glance at the arms, ornaments, habits, and religious rites of,—if not the builders, yet at all events the inhabitants,—of those megalithic structures which bear the name of the fabled Cyclops. We hope to find space to point out some remarkable facts which may give collateral information as to certain points connected with the megalithic structures of our own island, at Avebury and Stonehenge. Then, again, as to sculpture, as we formerly remarked,* the entire theory of the growth of Grecian art before the time of Phidias is illumined by the discovery of the funereal golden masks figured in this work, to which we may add the bronze idol numbered 212, the golden figure in chapter vii., and the magnificent cow's head of silver, with gilded horns, numbered 327, 328. Not only sculpture, but the art of the goldsmith in general, is now proved to have been practised from an antiquity that is extremely remote, with a skill of no mean order, and with a taste of which the motives have been so far forgotten, in the progress of the craft, that they now come before us with startling novelty. Personal ornament, in diadems, belts, studs, and sceptres, or staves of dignity, as well as in highly ornamented swords, had attained, in the days of these buried heroes, a splendour to be compared with that which prevailed in Europe about the time of our King Edward IV. Gem-cutting, though less advanced than goldsmiths' work, was yet so far practised as to give not only objects of beauty, but illustrations of dress and manners. The moment of ethnological time at which the tombs opened by Dr. Schliemann were closed was one of most interesting transition. For while the entombment, with sixteen or seventeen bodies, of gold to the weight of 5,000 sovereigns, and to a cost, owing to the artistic work, of at least twice the value of the metal, gives an indication that there is something more than mere legend in the traditions of the golden age, we find arrow-heads of obsidian alongside of swords of bronze, and of wall-plates, and domestic utensils of copper. It is already suggested that archæologists will have to intercalate a copper period between the neo-lithic and the bronze ages. Through this long series of pre-historic times, it is now evident, the goldsmith pursued his delicate toil, and it was not until he had attained a rare mastery of his materials, and learned to plate on copper (though not on silver), that the expedient of the potter's wheel was invented. The idols, and many other objects in pottery, are of a rudeness far more archaic than those of the idols lately brought from Moab by German explorers; and the indication of the cow's horns for Here is incomparably more roughly conventional than in the case of Chemosh. We thus see that we have yet very much to learn as to the indications given by different branches of art of ethnological date. Had we nothing but the kredemna, or diadems, by which to fix the date of Mycenæ, we might be led to bring it down to very recent times. Had we only the terra-cotta relics, we might throw back our glances to a date more early than has yet been measured by the progress of human art.

In the south-east corner of the plain of Argos, Dr. Schliemann tells us, on the lowest and flattest of a group of rocky hills which rise like islands out of the marshy lowlands, only eight stadia, or one mile, from the gulf of Argos, was situated the ancient citadel of Tiryns, now called Palæocastron. It was celebrated as the birthplace of Hercules, and was famous for its gigantic Cyclopean walls; of which Pausanias says:—"The circuit wall, which is the only remaining ruin of Tiryns, was built by the Cyclopes." It is composed of unwrought stones, each of which is so large that a team of mules cannot even shake the smallest one. Smaller stones have been interposed in order to consolidate the large blocks. The usual size of the stones is 7 ft. long, and 3 ft. thick, but some were 10 ft. long, and 4 ft. thick. (In the next edition we hope Dr. Schliemann will add that third dimension which is requisite in order to give an exact idea of the size of those noble stones.) He judges, by the *dé ris*, that the walls, when entire, must have been 60 ft. high. The flat rock of Tiryns, which is girt by this wall, is 900 ft. long, and from 200 ft. to 250 ft. broad. The wall was 25 ft. thick, and traversed by interior passages or galleries with ogival vaults, of which four can be easily discerned. One of these galleries, which is 90 ft. long, and 7 ft. 10 in. broad and high, has in the external wall six openings, or loop-holes, which reach to the bottom, and are formed at top by the courses of masonry oversetting one another. Dr. Schliemann thinks that these were loop-holes for archers.

On the eastern side of the citadel is the only gate, which is 15 ft. wide. It is approached by a ramp, 20 ft. wide, supported by a wall of megalithic masonry. The right flank of the gate is defended by a tower 43 ft. high and 33 ft. broad. Theophrastus, according to Pliny, attributes the first building of towers to the Tirynthians, and the epithet "*τειχίοεσσα*," which in the second Iliad Homer applies to Tiryns, is wonderfully apt at the present day.

Dr. Schliemann, to whom (and but little wonder) the language of the earliest Greek writers has all the force of exact chronicle,—objects to the application of the term "Cyclopean" to these walls, on the ground that the Cyclops were "a mythical giant race." Mr. Gladstone suggests the term Poseidonian, which, considering the existence of a citadel of megalithic structure on the very summit of Mount Eubœa (which Dr. Schliemann describes), is singularly unhappy. What, however, is of more importance to the architect of to-day than the adjectives by which these colossal works are described, is the occurrence of the three main types of megalithic masonry,

* Mycenæ: a Narrative of Researches and Discoveries at Mycenæ and Tiryns. By Dr. Henry Schliemann. Preface by the Right Hon. W. E. Gladstone. Maps and illustrations. London: Murray. 1878.

* See p. 145, *ante*.

in which Dr. Schliemann is unwilling to recognise the signs of successive building ages. These are, according to his description and drawings, first, gigantic stones laid on their bed with some regularity as to level, but not coursed, and pieced out with smaller stones. Secondly, some large stones of irregular polygonal forms, dressed on each joint, and closely fitted together. Thirdly, are walls of well-cut quadrangular blocks or slabs, which are closely jointed, without mortar. The Acropolis of Tiryns (plate 1) presents a noble example of the first. The second (figured on p. 30) occurs at Mycenæ. The entrance to the Acropolis of Mycenæ (p. 32) affords a magnificent instance of the third; although some of the quadrangular blocks are dressed with a bevel, in order to allow of the aperture over the lintel of the gate (a feature recalling a remarkable structural expedient in the Great Pyramid) to be filled by the sculptured block representing the two famous lions ramping on either side of a central column. These lions, Dr. Schliemann has convinced himself, originally had heads of bronze. The subterranean treasuries, which form so important a feature of these ruins (and which so closely resemble many tombs and treasuries in Apulia, at Cumæ, and in other parts of Italy), are all built of squared and coursed blocks.

At Tiryns Dr. Schliemann engaged fifty-one workmen, and seems, from the date of this chapter, to have worked for twelve or thirteen days. He dug a long and broad trench in the highest part of the citadel, and sank thirteen shafts 6 ft. in diameter, striking the natural rock at depths of from 3 ft. to 17 ft. He also sank without the fortress. He brought to light Cyclopean house-walls built on the natural rock, and Cyclopean water-conduits of a primitive sort, being composed of unwrought stones laid without any binding material. Here he found rude terra-cotta idols, which he figures, and a small archaic figure in bronze, wearing a Phrygian cap, and with the arm raised as if hurling a lance. Two fine terra-cotta vessels (Nos. 13 and 14), and specimens of greenish and of dark red pottery, very highly polished by hand, must, the discoverer thinks, either have been imported, or manufactured by inhabitants of a later period than the megalithic builders.

It is well to note here that the determination (where possible) of a comparatively late date for any megalithic building, gives no indication of the age of the earliest structures of the same class in the same locality. There is no doubt that Herod the Great raised megalithic structures of great beauty and size not only at Jerusalem, but in several other parts of Palestine. Yet we know enough of the relics of the Holy Land to be aware that this magnificent king only emulated, in this respect, the earlier builders, of whose first date we can form no conception. Inhabiting a site adorned by colossal masonry, no great builder could be content with ordinary work. Thus, if Agamemnon inhabited, or even built, the palace which Dr. Schliemann assigns as his abode at Mycenæ, the fact would tell us nothing as to the anterior date of the walls of that city. Dr. Schliemann estimates the date of the walls of Tiryns at from 1800 B.C. to 1600 B.C, but as to this the data are as yet too few to allow of any confident opinion. Knives of obsidian, but no implement of stone, were found in the prehistoric strata at Tiryns. The skeleton of a man was exumed at the depth of 16 ft. 6 in. We wish the measurements of the bones had been given.

On the 7th of August, 1876, Dr. Schliemann arrived at Mycenæ. In the distance of 50 stadia, or 5·8 English miles, from Argos, the road crosses the ancient Charadros, now called Rema, the Inachus, now the Bonitza, and the Cephisus, to which no modern name is attached. Mycenæ lies in a recess between two majestic peaks of Mount Eubœa, of which the highest was the site of a chapel dedicated to the prophet Elias (which occupies the area of a megalithic temple-fortress, supposed to have been sacred to Helios, the Sun god) rises 2,500 ft. above the sea. The Acropolis occupied a strong rocky height which projects from the foot of the mountain in the form of an irregular triangle, sloping to the west. The cliff overhangs a deep gorge, which protects the whole south flank of the citadel. The water of the copious fountain Perseia escapes through the gorge. On the east and west six natural or artificial terraces ascend to the platform of the citadel, and the lower city stretches between two gorges, running east and west. The Acropolis is surrounded by megalithic walls, chiefly of the first order above mentioned, from 13 ft. to 35 ft. high, and averaging 16 ft. in thickness. They are built of a beautiful hard breccia. A large portion of the western wall is of the dressed polygonal work, and by the great gate occur almost quadrangular blocks arranged in horizontal layers, although the joints are not always vertical. The first western terrace is bordered, on its west side, for a distance of 166 ft. by a megalithic wall 30 feet high, which is crowned by the ruins of a tower, and runs parallel with the great circuit wall. A gallery like that before described at Tiryns is formed in this wall. We must refer to the book itself, and to the excellent plate, for the description of the famous Gate of the Lions, and for the explanation offered of the symbolic bearing, which, at the first glance, might be taken for the work of a Pope of the House of Colonna. The arrangements for protecting the gate and entrance from surprise are almost identical with those still (or very recently) to be found in the western gateway of the lovely little archiepiscopal city of Sorrento, as a portion of the Mediæval system of defence. The lower city covered an area equal to that of the city of London,—a square mile,—and the site is distinctly marked by the remains of numerous megalithic substructures of houses; by a megalithic bridge, by five treasuries, and by the fragments of painted archaic pottery with which the ground is strewn. This site is traversed in its entire length by a ridge, the summit of which has been artificially levelled, so as to give course to the principal street of the city, from the Lions' Gate to the Cyclopean bridge. It is to be regretted that neither from the vignette nor the letterpress can we obtain any hint on the most interesting question of the mode in which this bridge was pierced or provided with arches, or substitutes for arches.

A vast and well-built suburb surrounded the central portion of the Acropolis. One megalithic building, of 93 ft. by 60 ft., may have been a temple. A second large structure of the same kind stood on the crest of a hill S.S.W. of the Acropolis. Dimensions and descriptions of the famous treasuries are given. One of these is attributed, by the traditions of the spot, to Atreus, the father of Agamemnon. Another, close to the Lions' Gate, was entirely underground, and its existence was unknown. There is a fine woodcut of the treasury of Atreus.

We must hasten to the central feature of the discoveries of this wise and enthusiastic explorer. On entering the Acropolis by the Lions' Gate, the visitor reaches a circular area of about 100 ft. in diameter, which, from the stone slabs forming seats around it, and from the testimony of classic literature, there can be no doubt was the Agora of Mycenæ. To this open air municipal council-hall our modern English habits offer us no parallel. But the question may well arise, from the fact that the Agora was the place of sepulture of those personages of extraordinary dignity whom both Dr. Schliemann and Mr. Gladstone believe to have been none other than the "King of Men" of the Iliad and the accompanying members of the expedition, that an unusually sacred character attached to this hypæthral senate-house. Those who are familiar with the wonderful relics of Avebury will see the force of the suggestion that the peculiar character of the vallum of that megalithic centre of ancient worship (which is not a defence, but which commands a view of the inside of the circle, as from the benches of an amphitheatre), may have been designed for reasons corresponding to those which led to the construction of the Agora of Mycenæ.

In this sacred spot, one of the most unmistakable localities in Greece, Dr. Schliemann opened five sepulchres, sunk in the solid rock, containing the remains of sixteen, or probably seventeen, persons, and the most extraordinary treasure of ancient wealth that has ever rewarded the enterprise of any discoverer known to history. The words of Mr. Gladstone may be taken as expressing the mode in which this discovery was, and is now likely to be, regarded by men of sufficient special education to form opinions on the subject worth consideration:—"When the disclosures at Tiryns and Mycenæ were announced in England, my own first impression was that of a strangely bewildered admiration, combined with a preponderance of sceptical, against believing tendencies, in regard to the capital and dominating subject of the tombs in the Agora. Yet the balance, I will not say of evidence, but of rational presumption, seems as though it might ultimately lean towards the belief that this eminent explorer has exposed to the light of day, after 3,000 years, the memorials and remains of Agamemnon and his companions in the return from Troy." The careful citation of authorities by Dr. Schliemann, and the certitude that circumstances of altogether an extraordinary nature must have preceded this pompous burial of so many persons at the same time (as indicated by the partial cremation practised), lead, at all events, to the conclusion that no other explanation has yet been suggested for the phenomenon.

Leaving, however, the identification of the remains aside, with the remark that, as not a single letter has been found on the sculptured tombstones which appear to designate the royal rank of those whose resting-place they were erected to mark, the date of the sepulture must have been antecedent to the committal of the Iliad, or the story of the Iliad, to writing, the indubitable facts discovered are of primary archæological importance. Guided by the indication of the sculptured stelæ, Dr. Schliemann sank in this spot until he found a quadrangular tomb, 21 ft. 5 in. long, and 10 ft. 4 in. broad, cut in the solid rock. Black ashes, bones, buttons covered with gold, curious objects in ivory, and fragments of pottery, occurred during the excavation, which was for a time stopped, at a depth of 10 ft. 6 in., by heavy rain. Dr. Schliemann then sank under a second tombstone. At a depth of 25 ft. below the surface of the Agora, and of 15 ft. below the surface of the rock, in clearing out the made-ground with which this tomb (11 ft. 8 in. by about 20 ft. 6 in. in dimension) was filled, he reached a layer of pebbles. Below this, at distances of 3 ft. apart, he found the remains of three human bodies, with the heads laid eastward. A second layer of pebbles alone separated them from the rock floor of the grave. A mass of ashes was all that remained of the clothes, and of the wood with which they had evidently been buried *in situ*. On each of the three bodies were found five diadems of an oval form, of beautiful *repoussé* work in gold, each 19½ in. long and 4 in. broad in the middle. Fourteen thin golden ornaments of radiating leaves were also found, small cylinders of glass, obsidian knives, the remains of a vase of silver, copper, and gold; a silver cup, perforated necklace beads, a bronze vase-handle, small Here-idols of archaic form in terra-cotta, and fragments of fine wheel-made pottery. The freedom of handling in the ornamentation of a vase represented on page 160, claims attention. In a third tomb were found, under precisely similar conditions, the remains of three women, one of whom was old. No less than 701 ornaments of gold *repoussé* work were found in this tomb; some of the most striking of which are round thick plates of gold 2½ in. diameter, covered with *repoussé* work in varying patterns. The bodies have been laden with jewels, all of which bore marks of the fire and smoke of the funeral pyres. Delicate leaves of gold, of about the same size as the round plates, perforated pieces of gold worn as necklaces, on one of which is wrought an intaglio representing Hercules killing the Nemean lion, ten golden cicadas, suspended by chains (badges of Attic royal blood), three golden griffins, three golden hearts, a golden lion, twelve ornaments each representing two stags leaning against each other (an arrangement which recalls the two lions over the city gate), pin-heads representing four lions' cubs, a woman with a dove on her head,—another with a dove on her head and one on each side (probably of oracular meaning), ornaments in the form of cuttlefish, a flying griffin, a seated female figure, and eight butterflies, all of gold, were among the adornments of these persons. On the head of one corpse were found a splendid crown or tiara of *repoussé* gold, 2 ft. 1 in. long, 1 ft. deep, and profusely covered with ornaments. Thirty-six attached leaves stood up, around the head, forming a coronet of unrivalled richness and beauty. A diadem, only inferior to this in beauty, was on the second figure; and five other diadems accompanied them. Six cruciform ornaments of leaves, a golden brooch, with a woman with extended arms and (Dr. Schliemann says) Greek features in the aperture (on the engraving she looks rather of an Assyrian type); a pendent ornament, like a locket, and rings of spirals of gold wire, ornaments of gold of unknown application, a perforated ball of rock crystal 1½ in. in diameter, and two sceptres of silver, plated with gold, with handles of rock crystal, lentoid gems of sardonyx and amethyst cut in intaglio, six golden wheels, 2½ in. in diameter, a lady's comb of gold, with teeth of bone, twelve tubes of gold, gold and amber

ads, a gold drinking-goblet, with one handle, *repoussé*, a gold toilet-box with a lid, four ier golden vessels, four copper boxes filled th partly charred wood, a hand-made terra-ta vessel, a polished hemisphere of rock stal, and many smaller objects, were found this tomb.

In a fourth adjoining sepulchre, 24 ft. long, ft. 6 in. broad, and 33 ft. below the surface, re five bodies, buried, and partly burnt, like e foregoing. Not only had they also been vered with jewels and precious objects, but by were accompanied by golden masks, which, om their different forms and expressions, ppear to have been intended for portraits. e silver cow's head, with gilded horns, before entioned, was found in this fourth tomb, as ell as a pile of bronze swords and lance-heads, lden ornaments from scabbards, signet rings, th intaglio gems, a massive golden bracelet th a flower, golden breast-plates, and knee-nds, nine goblets and other vessels of gold hich are figured), a silver œnochoe, a gold uilder-belt, a large three-handled alabaster se, and a golden tube in which the interstices a floral pattern were filled with rock crystal, re among the treasures of the fourth tomb.

In the fifth tomb were the remains of a single rson, who had been buried like the others. gold drinking-cup, two small bronze swords, o bronze knives, a lance-head, a vase of green gyptian porcelain, and a golden diadem, accom-nied this interment.

Finally, Dr. Schliemann resumed the excava-n of the first tomb, in which he found the mains of three bodies of large proportions; e head of one of which had been so preserved, der its golden mask, that it almost resembled at of an Egyptian mummy. A massive golden east-plate, a gold sword-belt, goblets, plates, ttons, and other objects of gold, the remains a dagger-handle in sculptured ivory, an abaster goblet, the remains of a large silver n, a wheel-made vase of terra-cotta, and other ects of value, were also found here.

We must now commend the reader to the work elf, which we hope he will read with more, ther than less, interest, after having perused e above sketch of the operations, and their sults. As to the connexion of the Five Tombs th the Royal House of Pelops, and date of the ora, Dr. Schliemann has a right to be heard himself. Analyses of the metals show that e gold was more than 19 carats pure; 18-at is considered very pure, and even 16 is ought good gold to-day. But even of the alloy, e greater part consists of silver. The silver the vases, on the other hand, contains such ces of copper, lead, and iron, that chemical composition has advanced with comparative bidity, and the chloridised dust forms 27 per nt. of the total weight of the vessel analysed. e proportion of this in the bronze varies. In bronze sword the tin was 13·06 per cent.; in a se handle, 10·08 per cent. But the traces of ferent metals in every analysis are observable, d it will be interesting to hear by-and-by at is indicated by these proportions as to the urces from which the metals were derived.

Dr. Schliemann has added to the debt which due to him from the archæological world, by e simplicity, thoroughness, and truthfulness of book. If it be, as would seem to be the case, own composition in the English language, it a remarkable proof of the versatility of his wers. The book must also add to the nourable repute deservedly enjoyed by its blisher. The cost of its production must ve been very large, and we trust it will find e sale it deserves. It is a literary as well as archæological phenomenon.

New Hotel at Strathpeffer.—A new hotel being erected at Strathpeffer, from plans Mr. Joass, architect, Dingwall. The e of the building occupies, over all, an area 156 ft. in length by 120 ft. in breadth. e building will contain eighty-four bed-oms, drawing and coffee rooms, two bil-rd-rooms, seven parlours, servants' apart-nts, and cellars. It will stand three stories gh, and the front walls will be broken up by bles and pediments. The material used for the in body of the work is whinstone, from the ighbourhood, and for the corners Brora white estone. Messrs. H. & A. Ross, the contractors the carpenters' work, have just got on the of the building. The masons' work has been mpleted by Messrs. Harrow & Sinclair. The ilding is to be finished by March next.

OLD MASTERS' DRAWINGS AT THE GROSVENOR GALLERY.

THOUGH the collection of drawings in the east room of the Grosvenor Gallery presents at first sight such an extent and variety of interesting specimens that the visitor seems hardly to know which way to turn, one cannot be long there without finding the attention involuntarily concentred on one portion of the room as of special interest. There can be no question that the Leonardo da Vinci drawings surpass everything else in the rooms in interest, variety, and beauty. There is such a glamour hanging over the name of Da Vinci; his reputation seems (in some lights) so out of proportion to the exceedingly small number of genuine finished pictures by his hand that are known to exist, that he impresses the imagination like a personage of romance. In one sense, this feeling is what leads one to look with such interest at his drawings; in another sense, these productions serve to exhibit to us more clearly the solid basis on which his great fame rests, without entirely dispelling the romance, the idea of something unusual and abnormal, which surrounds his name. There is evidence in the extreme beauty and finish of these drawings, even when they show no more than the study of a piece of drapery, to satisfy us that what we have of Da Vinci's paintings represents but a small part of what he could have accomplished had he been less exacting in his efforts to satisfy his own ideal of complete and perfect work. And on the other hand that element of the *bizarre* in his genius and character, of which we have evidence on record, is illustrated strangely in these drawings. They show the greatest variety in subject and treatment. Here is a feminine head in profile (87), for instance, so delicately touched, so exquisitely lovely and graceful, that we linger before it as if spellbound with its dreamy witchery; and who would think the head next to it (682) was by the same hand?—this half-grotesque profile of a warrior, in which the artist seems to take an almost childish pleasure in the elaboration of the details of a rich and fantastic armour. This same spirit of vagary meets us throughout these drawings. A jocosely grim, lanky head in bistre, said to be a caricature of Dante (whom Leonardo must have had some grudge against, for there are two or three caricatures of him), is flanked by a beautifully-finished study for a head of the Virgin. Then we find a semi-grotesque face on a rather large scale (678), a highly-finished drawing in red chalk of a face with wide compressed mouth and screwed up eyes, and others of the same character in which the odd element still more predominates. There are sheets of powerfully sketched and most extravagant caricatures of the human countenance, contrasted with girls' heads of such simple yet perfect beauty as to give one the impression that the artist could in turns be Michelangelo or Raffaelle at will. Among the most interesting things are the sheets of small studies lent by the Queen; which in particular furnish evidence how careful and exact a student was Leonardo, with all the eccentricity of his genius. His studies for bits of pictures, such as for the different parts and folds of drapery, are executed, not roughly, but with the greatest care and precision of touch. Some of the slightest of the head and figure studies are of most poetic beauty: look for instance at the female head lightly sketched on blue paper in the upper part of No. 701, so instinct with feeling and life; or at the bright little sketch of a girl who stands in the centre compartment of No. 706, her face turned eagerly to the spectator, her hair and dress rippling and blowing about, her hand pointed to something in the distance: a little bit of beautiful ardent life fixed in a few minutes for after generations to admire. And if we turn round to the stand behind us in the centre of the room, we find there studies of fruit and foliage by the same all-powerful hand, as finished and delicate as if the business of his life had been to study and draw such things: and minute little studies of landscape too, in one of which the mechanical side of his genius comes out, and he has given special pains to delineating, on a very small scale, the formation of a ferry barge by the joining of two ordinary small boats side by side. It is in the heads, however, and more especially the female ones, that the greatest beauty of his drawings exhibited here consists. Each one of these, almost, is a little poem in itself, and worth a dozen finished pictures by ordinary hands.

The Michelangelo drawings are, for the most part, rather remarkable for a certain indifference to finish, a sketchiness of execution, as if the artist were content with merely getting his idea evolved, thinking of the end and not of the means. An exception is the ideal female head known as the "Marchesa di Pescara" (664), which is almost as finished as an engraving, and at the same time, it must be admitted, has less of the master's characteristic power than most of the others; it is too smoothed down and placid for Michelangelo. One of the finest is the study of three nude figures (657) for the Last Judgment; the front figure reclining and shading his eyes with his hand, is remarkable not only for its intensity of attitude and expression, but for the wonderfully instinctive power and reality with which the limbs and the whole figure are posed, giving the idea that the representation of the body and its mechanism and statical conditions had become as natural and easy an accomplishment to the artist as the art of writing is to most men. The two studies of "The Virgin and Child" (653) and "Christ Rising from the Sepulchre" (645), are of peculiar interest, as showing a combination of grace and elegance with the artist's characteristic power; in the latter noble sketch, the naked figure is in the act of springing upward, one foot pressed on the ground and giving the upward impulse; there could hardly be a finer example of the expression of exultant power through the medium of the figure than this. As a representation of Christ, it has nothing in common with any of the types which are familiar to us in art. This drawing was obtained, the catalogue tells us, from the descendants of Michelangelo by Wicar; it now belongs to Mr. Malcolm, of Poltalloch, who is a large contributor to the collection. There is an extraordinary study for a battle of giants (646), a pen-and-bistre drawing all legs and arms; and a red chalk study for the celebrated figure of Adam in the Sistine Chapel, but, without the head, only a note in the catalogue telling us that "on the reverse is a man's head of great character." Pity we cannot see both sides of the paper. Other very remarkable studies for the Crucifixion and for groups in the Last Judgment are there, and an exceedingly valuable and interesting diagram, as it may be called, of the proportions of the human figure (668), consisting of a drawing in pen and bistre of the figure in profile, with some measurements appended, and a diagram at the side which it is not very easy to make out the principle of; but it would appear that certain of the proportions are deduced from the lengths of arcs of circles intersecting each other, and struck from certain points having a fixed relation of distance. There is a peculiar interest in thus seeing, alongside of his lifelike figures, the study which is at the basis of them, a bit of the scaffolding with which the art of Buonarotti was built up. Among other curious items in this collection is a sheet containing the apparently incongruous combination of an anatomical study of an arm and fifteen lines of Italian poetry, "notes for a love sonnet in Michelangelo's handwriting." One would like to know the circumstances under which these two things got on the same bit of paper!

The drawings by Raffaelle perhaps come next in interest. They are not of such importance in regard to their illustration of the artist as those by Leonardo and Michelangelo, nor can there be said to be any drawings which are as fine in themselves as the finest by those two men. Among the things most characteristic of the painter are the head in "silver point" (617), said to be Raffaelle's sister, and the half-length portrait in chalk (626), with the same legend attached to it. There is a serene beauty and purity of feeling in these which is typical of the painter's own genius. The head of a young man turned upwards with a rapt expression (639), exhibited as a study for the head of St. James in the Vatican picture of the "Coronation of the Virgin," has the same kind of perfection of form and expression. One or two of the figure studies, in particular the kneeling figure (619), and another of a man with his back to the spectator (both in red chalk), are very fine, though quiet and unostentatious to a degree in style and execution.

Turning to the point where the numbers in the East Room commence, we find as the first object in the list of these drawings Titian's sketch for the lost painting of the battle of Cadore (521), of which so much is said in Crowe and Cavalcaselle's "Life of Titian," and which is lent by Mr. Josiah Gilbert, also so well known in connexion with the study of the great Venetian's life and works. Over this is hung Fontana's

engraving which may be presumed to represent more or less completely the effect of the finished picture. The most remarkable variation between the sketch and the picture is, that in the former the centre is light, in the latter it is dark, and the groups at each side are brought into full light. A larger study of the well-known figure of the falling horseman (522) is curious as showing an entire difference in the treatment and attitude of the horse's head, which is drawn as looking round, backward and upward. The alteration which, from the engraving, was obviously rejected afterwards, is a complete mistake as compared with the general sketch, destroying the headlong appearance of the fall, besides that it is very doubtful whether a horse thrown off his legs and in the act of falling *could* turn round his head thus under the circumstances. In regard to a landscape by Titian, also lent by the author of "Titian's Country," a note in the catalogue calls attention to the exceeding truthfulness with which the dolomite country in the neighbourhood of Cadore is represented: the drawing is with a pen and brown ink, the distance almost entirely in outline. There is a study for the "Peter Martyr" picture (which suggests melancholy and unavailing regrets), a study of a beech tree and a landscape with waterfall (535-6) which, for careful elaboration, might be the work of a professed landscape-painter, and a most interesting and charming pastoral (541) recalling Giorgione in idea, where a half-nude female with her back to the spectator, and with an exquisitely-graceful figure and head, listens to a man playing on a picturesque odd-looking bass-viol: the whole drawn and shaded with the pen.

Of course, however, one gets less of Titian, who depended so much on colour, in mere drawings, than in the case of those with whom form was a more predominant interest. His small drawing of a profile head (569), said to be that of Isabella Sforza, should be noticed, it is so full of the Italian character of the period, in expression and costume. We must pass over without a word numbers of drawings, nearly all of which have their own interest and beauty, to mention only a few which seem specially attractive. Architectural visitors will not omit to notice the drawings for room decoration, by Nanni da Udine, especially the fine and careful pen-drawing which is called in the catalogue "Design for a Ceiling" (573), but which is really a collection of various ornamental details, arranged in a partially symmetrical manner on the paper, but not a "design." The drawings by Correggio in red crayon have all his grace and pure sentiment; those of Perugino, which in regard to expression are somewhat weak, have nevertheless a great interest to the draughtsman in consequence of the way in which they are drawn, being very carefully and completely shaded and modelled by pen lines. In the way of semi-architectural work, a conventional lion, by Giulio Romano, "probably a study for one of the frescoes at Mantua," is a capital specimen of the kind of thing; far better and more original than Giulio's more *au naturel* drawings which are here, and are, with hardly an exception, commonplace and academic in appearance. Passing round among the Raffaelle and Michelangelo groups, already alluded to, we note as a specialty what will interest many, a drawing by Benvenuto Cellini, for one of his silversmith designs, and a beautiful drawing of the kind it is, with all the delicate perspective curves drawn in the most free and flowing manner, and yet hardly a line to be seen in it, as if drawn with the brush in thin washes, so as to have quite a faint and fragile effect. On the desk running beneath the Leonardo drawings, on the east side of the room, are arranged various specimens of German art, some of them by names by no means as familiar as household words, such as Hans Baldung Grün, whose drawing of a lady with an obsequious skeleton carrying her train after her (681) is quite in the Albert Dürer vein; his odd drawings done in white lines on a dark ground are interesting as curiosities. Of Dürer himself there is not very much, but what there is is of interest. His grisly crayon sketch of Death riding on a horse whose bones are nearly coming through his skin, is one of the characteristic Dürer "grotesqueries" which we know so well; but there are other things more out of the beaten track of our acquaintance with him,—a large-sized coloured study of the muzzle of an ox, for instance, and a "Landscape with Mill-wheel in Foreground" (709), which is the oddest of landscapes, where everything is delineated in the minutest manner, but with such an utter absence of air or perspective distance that it is not easy to make out what the whole is meant for. The water-colour sketch of the "Castle and Fortifications of Trent" (713), evidently an unfinished sketch made on the spot, and aiming at topographical accuracy, is an exceedingly interesting record of a bit of old town architecture. His portrait (695) of a gowned figure, seated, is an example of the vagaries in regard to material that are to be found in the collection, this being, like some others, an outline drawing on a green paper of a tone resembling the peculiar rather sickly green called viridian; a more unpleasing ground for the eye could hardly be imagined. Further on, there is a drawing of Judith by Mantegna, one of those designs in the grand sculpturesque Roman style which he made his own, in which the shadows are put in with a strong heated pink, or what may rather be called claret, colour, with an effect that is hideous, although in other respects it is a fine design well worthy of the master. Other drawings by Mantegna are of interest, one especially being a "trophy of arms," drawn very elaborately with the pen, and highly illustrative of the artist's peculiar taste and temperament. Guardi's drawings of architectural scenes may be noticed, but are not remarkable; and the few specimens of Luca Signorelli are disappointing. A curious drawing in every sense is that of Dürer's of the "Angel playing the Guitar" (794), an angel with a wrinkled commonplace human face, as if the artist had sketched some neighbour with a guitar, and then added wings. His profile head of an old man (786) has individual character in every line, slight as it is. Among others at this end of the room which are of particular interest are Pollajuolo's "St. Francis espousing Poverty," the subject treated in a very naïve manner; Filippo Lippi's composition of three figures (782), obviously portraits of some of the brethren of the order of this disorderly ecclesiastic; and Giotto's small figure of St. Katherine (799), noble and beautiful in character, and in the grand fall of the drapery; it is a "silver point" of drawing touched with white, on a very dark blue paper; another vagary in regard to executive means.

The desks in the centre of the room contain a number of very interesting (mostly smaller) things, commencing with Da Vinci's fruit and flower studies, &c., before mentioned; and including other studies of Michelangelo for the Last Judgment, &c., and a very fine pen-drawing by Raffaelle for the fresco at Siena representing the embassy of Piccolomini to Eugenius IV.: the minute and subtle delineation of character in the row of heads on the spectator's right is worth notice: the whole large composition with its architectural back-ground is carefully drawn and shaded with the pen. A small head of an old man, by Lorezo di Credi (812) is remarkable for delicacy of expression obtained with slight means. We come on fresh evidences of Dürer's careful study of animals in the coloured drawing of two squirrels, with the most loving finish not only of the fur of the animals, but of the nuts and broken bits of shells. Giovanni Bellini's "Christ standing on Clouds" (842), and holding a globe, described in the catalogue as "drawn and vigorously shaded with point of the brush in bistre," is interesting both for its powerful effect and its free method of execution: so too is Fra Angelico's "Head" (845) in silver point and white, this time on a warm orange paper. Botticelli's "Allegorical Figure of *Abundance*" (846), "a beautiful young female clad in thin gauzy drapery," shows us the manner in which those curious half-Classic, half-Mediæval figures of his were originated; perhaps the next drawing, an angel, is even more characteristic of his style,—a peculiar flavour of painting that people get to like as they get to like olives, by an education of the taste. Donatello's sketch for the figure of St. George (849) shows that his immortal work did not arrive at its present grandeur of conception *d'un seul jet*; the first sketch is far inferior in pose and effect to the finished work. A drawing of an ideal dragon and a real lizard on the same paper, by Dürer, reminds one oddly of Huxley's comparison between the two ("the dragon was the grander, but the lizard had the advantage of being more real"), and indicates that Dürer, like da Vinci, made a practice of studying grotesque things in nature to assist him in inventing *bizarreries* on canvas.* A considerable number of specimens of Canaletto occupy one part of the desks; a certain proportion of these are half drawn in ink and the effect washed in with a dull Indian-ink looking tint; their general effect is very bald and unpleasing, and they seem to explain to some extent one of Canaletto's defects in his finished paintings, his mechanical treatment of water, which seems to be derived from the first treatment in such studies as these where surface is given to the water by a number of little horizontal pen scratches, producing an effect as weak and un-artist-like as could well be. It is singular that when he abandons his washes, and trusts to the pen-shading entirely for the effect (as in some drawings on the reverse side of the desk from the first-named), he is far superior; one of these, done entirely with a reed pen (896), is very fine. The series in the east room closes with a very beautiful little sepia study by Giorgione, for the "Adoration of the Shepherds," one of the drawings lent by the Queen.

In the vestibule, the most noticeable contributions, for which we are also indebted to her Majesty, are the beautiful coloured studies of portraits by Holbein; studies slight in one sense in execution, yet with a perfectly finished and complete effect, showing how thoroughly from the very beginning Holbein aimed at getting at the reality of his subject. We feel that we have here the real people,—no fancy sketch or painter's translation; and yet how thoroughly artistic in effect they are; a quality partly owing to the picturesque costume, the flat caps especially, which helped the painter so much. Yet the larger portrait of Archbishop Warham, without such aid, is as interesting, from the intensely real and studied character in every wrinkle of the face, which seems an epitome of the Churchmanship of the period. The learning of Holbein's drawing is especially exemplified in such a portrait as the small one of Lady Vaux (944), where every line and curve of the head-gear and the fall of the necklace over the bust is given with such perfect truth of perspective. The rooms called the "Soulpture Gallery" and "Water-colour Room" are occupied with a number of small things, some of which may be called curiosities, but which, nevertheless, are quite an interesting little exhibition in themselves. The sketches of Claude do not come to very much. There is a single study of trees by Constable (1103) which is worth the whole set of the Claude sketches. Divers drawings by Watteau are charming; and it is pleasant to see how well a very old friend,—Greuze,—comes out in his studies, better than in his finished paintings; there is more "go" and less affectation; witness the study of a child's head in red chalk (1001), and the elegant yet expressive figure study for "La Cruche Cassée" (999). Some beautiful drawings of Flaxman, partly of well-known published subjects; studies of hands by Wilkie; portrait studies by Gainsborough, including a woodland scene, in which the figure sketching (himself?) has been cut out of another piece of paper and "inlaid" in the landscape (1095); a drawing of a satyr and faun (1013), with reed pen, by Thorwaldsen; a tiny masterly little Indian ink drawing of animals by Bewick (1006), are among the many interesting items of this corner of the collection.

To have such an exhibition as this open for three months is not only a perfect boon to every one with eyes and knowledge to see and appreciate its contents, but may have no little educational influence on a less informed class of the public, in giving them an idea of what sort of work is at the back, as one may say, of the production of great pictures, and how the conceptions of great artists have first taken form and substance. If the Grosvenor gallery can continue to give us exhibitions of this class, it will be doing a great work and filling a place which no other institution fills in London.

* Every one will remember Vasari's account of Leonardo's studio while he was painting his Medusa picture, when the place was littered with the dead bodies of toads, lizards, and whatever else could assist the artist's wild fancy.

Proceedings under the Rivers Pollution Act.—Proceedings under this Act are now being instituted against the Local Board of Nantwich, Cheshire. This Board has received notice from the adjoining rural sanitary authority to keep the sewage of Nantwich out of the river Weaver, the sewage of that town being at present turned into the stream without any attempt at purification. At their last meeting the Board decided to call in Mr. Baldwin Latham, C.E., to advise them upon an irrigation or filtration scheme. They also decided to give notice for a loan of 10,000*l.* from the Public Works Loan Commissioners to carry out their first year's wo

MR. GALSWORTHY DAVIE'S SKETCHES IN FRANCE.*

We recommend not only students of architecture, but all masters and curators of architectural schools and libraries, to obtain the very excellent collection of working drawings that Mr. Davie has made during the last three or four years; and which Mr. Batsford, the publisher, now offers to the public in a volume well bound and well printed. It is true that these drawings are merely reproductions of building details, some of which have been sketched over and over again by amateurs, by architects, and by students of the arts; but they have an advantage over the majority of works of the same kind, for they are not picturesque sketches, perspective views, fine effects "equal to copper plate;" but architectural drawings, such as those that are turned out at times from the best architects' offices. They are not only fair specimens of the technical knowledge of to-day, but they actually present to the public, details of Mediæval construction,—not, we would add, as the public eye is instructed enough to see them for itself, but as such details appear to the instructed and appreciative eye of the well-informed student. To be more explicit, Mr. Davie's drawings would not please the modern French artist who periodically astonishes his countrymen and ourselves with counterfeit presentments of edifices new and old, drawn with a delicacy and refinement not common to Western Europe, and representing things rather as they ought to be than as they are. Thus, to take three French draughtsmen of our time:—M. Pfnor has given us, in a positive degree, not the Castles of Fontainebleau and Anet; M. Viollet-le-Duc has given us, in a comparative degree, not all the numerous edifices and "bits" that he has sketched; and M. Sauvageot has given us, in a superlative degree, not the palaces, châteaux, and hôtels of the sixteenth and seventeenth centuries,—but each in his own degree has reproduced his subject upon paper in a refined, an improved, and a restored condition. When M. Viollet-le-Duc sketched a town-house at Reims, or a tower at Laon, his pencil, too powerful for mere fact, gave the artworld, only too pleased to receive it, an outline exactly as he saw it, but filled in with details and accessories such as his imagination directed or his wit improved. When M. Sauvageot drew the Château du Pailly it was not the actual ruin, but a brand-new and restored elevation of the different parts he saw before him that he offered to the public. But Mr. Davie has nothing extenuated in his drawings of arches, doors, windows, pinnacles, cornices, and ecclesiastical furniture. If in certain instances the drawing is coarse, so is the original stonework; if a piece of ironwork seems to be rough and uneven, so is the original hinge or bolt whence it is taken. The artist has simply sought to show in line, and often depict in colour, the things that he saw; and, taking the book as a whole, we think that he has succeeded,—has, in fact, given it a scientific value which a mere collection of picturesque sketches and perspective views, however admirable and perfect, can never afford to the architect or his pupils.

It seems more than likely that the Gothic "Revival," pure and simple, will soon be numbered among the things that have been; and we hope that men of all shades of opinion in archæological matters admit the immense accession to general knowledge that the "Revival" has precipitated. But while acquiring this knowledge, the architecture not only of Grecian and Roman buildings, but even of those erected by the elder Mansard, Wren, Hawksmoor, and Gibbs, has been contemptuously shelved. To talk, at the present hour, to men whose career of fifteen or twenty years of professional life has been expended in the study of Mediæval works, about the temples, the houses, the public edifices of antiquity, is to discover absolute ignorance or at best imperfect acquaintance with the classics of our art. It may, therefore, be reasonably feared that when this shortcoming is felt there will be a corresponding reaction. Gothic architecture, regarded as "played out," will be laid on the shelf with the many excellent books that its "Revival" has called forth. Already some inclination of the kind is seen in the bastard aspiration to "revive" what has been termed a British vernacular style; and to secure this it is thought sufficient to copy or adapt the architectural productions common in England, and largely due to intercourse with France and Holland, during the seventeenth century. But however much the practical and practising architect may be assisted by a study of the buildings erected in the days of Elizabeth and James of England, of Henri II. and Louis XIII. of France, the student will gain nothing but chaotic and delusive notions of design from those sources, springing as they did from a little learning and much desire. He must go diligently and modestly to the standard books, both of France and England, upon Ancient Greece and Rome; to the standard books, both French and English, upon Mediæval France and England. He should draw parts of the Parthenon and of the Propylæa of the Acropolis; he should draw a tower of Laon, a porch at Coutances, a spire at Salisbury, a gable at Lincoln. To prepare himself for such a task—a very worthy and ennobling task if conscientiously performed—he must begin by copying, tracing, reading Stuart and Revett's, Cockerell's, Hittorf's, Donaldson's published works upon Grecian architecture, and at the same time he must acquire with equal diligence a knowledge of Mediæval principles of construction, of the motives which inspired the Mediæval decorator and sculptor, by copying, tracing, and reading the best of the many works which, not only within the memory of living men have been published, but which living men have published. As we said before, some of the modern books upon Gothic architecture, both in text and drawing, are more delightful than exact. Only the experience obtained by practice and travel is enabled to discriminate between them. We may, however, say with confidence that Mr. Davie's collection of drawings now offered to the public, though late in the field, are faithful and unpretending geometrical representations, to an English scale, of Mediæval building in France as it was and is.

The book is dedicated to Mr. Butterfield, and contains eighty-nine plates, 20 in. by 14 in. in size, each entirely filled with drawings. Of these, fourteen are coloured, the more notable being representations, real size, of objects in enamel and copper gilt, preserved in Auxerre Cathedral Museum. Bits of stained glass, tapestry, &c., are also given. The plans, elevations, and details of the Chapter-house of St. Georges de Boscherville form a valuable group. A part of the crypt of Bourges Cathedral is worked out upon several sheets with care and minuteness. There are also five working drawings of parts of Cassicourt Church, a well-known building near Mantes, once a fine town, and situated on the road between Paris and the celebrated Château Gaillard. The Mont St. Michel, on the coasts of Normandy and Brittany, is not unworthily represented in these sketches by whole sheets of details, drawn to scale, and with the mouldings sometimes traced at their full size; while the details of iron hinges, &c., from Sens and Angers are quite fit to place in the hands of the smith, were it desired to reproduce them. This mode of sketching,—going to an old building, choosing a door, a window, or an archway, and deliberately transferring its plan, sections, and elevation to paper to a large scale, and its profiles to their real size,—is undoubtedly the proper one; for, if only a sketch be taken, a draughtsman, even the most accomplished, is inevitably beaten by the photographer: whereas the best and most varied series of photographs cannot show the student what a pencil and a foot-rule offer to the practical inquirer.

The ambition to be known as the author of a book is not confined to any particular profession or calling. Apart from an excusable sentiment of vanity, out of which that ambition is often engendered, a good book has been the means of introducing more than one architect, now famous, to his professional brethren and the public. But books, however excellent, upon architecture are rarely remunerative; and though we are only too pleased to be able to encourage students to make collections of original drawings, we would not lead them to expect to make money, or even reputation, by publishing them. In the case of Mr. Davie there is something exceptional; he was known some years ago to be a successful draughtsman. A winner of the Soane Medallion, presented almost every year by the Institute of British Architects, he afterwards in 1871 carried off the Gold Medal for Architecture at the Royal Academy. His prize design, a building to accommodate six learned societies, was publicly exhibited, and both as to plan and elevation justly commended. From subsequent tours in France have resulted the drawings we are now noticing, and in these he was assisted—so he says in his text—by the late Mr. John Capon, a young man who received his elementary education at the Architectural School of the South Kensington Museum, and who for a few years was engaged in an architect's office in Paris. The war of 1870 drove him to London; he returned in 1874, and for several months assisted Mr. Davie in France; he afterwards started for America, where he died. We are glad to have this opportunity of recording the good opinion which we are assured by those who knew Mr. Capon was entertained for him by his employers and friends.

* Architectural Studies in France. By W. Galsworthy Davie, Architect. London: B. T. Batsford.

"THE DRAWING-ROOM."*

ART AT HOME SERIES.

This is a kind of pendant to the book on house decoration which formed an earlier number of the "Art at Home" series, and was mentioned by us at the time. It applies more in detail, to the drawing-room only, the same kind of recommendations which we have read pretty often now, in one form or another.

It is hardly of much use to review seriously a book which, in spite of its comprehensive title, is in reality nothing more than a recommendation of the methods of decoration which happen to be in vogue with a certain class of *dilettanti* just at present, and which is utterly without principle or consistency. Mrs. Orrinsmith professes at the close of her book that her great object has been to foster and suggest originality, while in fact the greater part of the book consists in recommendations to obtain, or to imitate, things belonging to the fashion of another day. We have of course pages of the usual sarcasms upon the ordinary types of everyday furniture, much of which deserves, no doubt, nearly all that can be said against it, but this kind of writing is very easy, and has already been repeated *ad nauseam*. What is so absurd in treatises of this class is the serious and solemn tone in which this or that particular fancy of the day is recommended, as if it were something really affecting the well-being of humanity. There is a fancy now that the best and properest sort of fender is the rather high ornamental brass fender which was in fashion at one time; and we are told that these fenders "must now be sought for seriously," they are every day becoming more rare. We can imagine Mrs. Orrinsmith's readers, duly impressed with her apostolic teaching, going about with sad and serious mien, inquiring where old brass fenders may be found. The particular kind of fender is a pleasing one, and the brass has a warmer and more attractive tone in firelight than the glitter of steel; but it would be more to the purpose to suggest that therefore brass should be used in the manufacture of modern fenders, and to say a word as to the characteristic treatment of the material, instead of sighing over the rapid disappearance of the old ones. There is one point in which an improvement might at once be made upon the old style of brass fender, practically, without in any way impairing its characteristic style. All the old fenders of this kind that we have seen are more or less bent and buckled in the centre through not having stuff enough in them of a proper section to keep them stiff, and to resist the shaking effect resulting from people repeatedly placing a foot on the fender, as almost every one does continually. If they were made with either a stay-piece in the centre or a longitudinal bar of sufficient section to resist lateral bending, they would now look in much better condition than they often do. The fireplace is of course to be subjected to the same antiquarianism as the fender. We are told, with a sigh of regret, that the old grate with a high level and hobs "fell into disuse from a supposed loss of heat and inclination to smoke." There was no supposing in the matter. Every one with a grain of practical knowledge must know very well that they wasted heat; three-fourths of the heat went up the chimney. Against the average trade marble chimney-piece almost anything may be justifiably said, though its iniquities hardly justify any one in making such a drawing of it as that on page 33, with the console drawn as if it were in profile instead of in perspective. One thing, however, we learn from the remarks on fireplaces, namely the value of those small convex mirrors which it has become the fashion to revive; they "gather the whole contents of the room into a handful, perfect and pretty."

* The Drawing-room: its Decoration and Furniture. By Mrs. Orrinsmith. London: Macmillan & Co. 1877.

We should have said that they furnished a "peep-show" for the children; but it seems we are all to be grown-up children now; *ex. gr.*:—

"To an appreciative mind, not spoiled by the luxury of wealth, what keen pleasure there is in the possession of one new treasure: a Persian tile, an Algerian flower-pot, an old Flemish cup, a piece of Nankin blue, an Icelandic spoon, a Japanese cabinet, a Chinese fan; a hundred things might be named, not one being costly, yet each, in its way, beautiful and interesting. Where to place it, for the best, is a fertile topic of conversation (!); then the bracket must be made; the tiny shelf designed. A delight as pure as that of a child with a fresh toy, and superior to that in its lasting power, is open to the aspirant after the beautiful in art."

And we are told that "what shall be added next should be *a constantly recurring thought*." It is needless to add that any such intellectual art as drawing in the true sense receives a side-cut; but instead, young girls are exhorted to put on "pretty blouses" and paint their own furniture.

We by no means say that a good many things suggested are not improvements on what is commonly seen in the furnishing and decoration of rooms; many of the suggestions are not very new, certainly, and it is quite inconsistent for the author in one page to say that no material should imitate what is not, and a few pages further on to recommend the use of ebonised wood, which is simply ordinary wood treated to imitate ebony. But this is just one of the instances of what is obvious throughout the book, that what is recommended is upon no principle, but only because certain persons at present have got into a habit of thinking that good taste depends upon doing this or that. A Japanese effect may be given to a room, we are told, by a certain treatment. No doubt it may; but *why* is an English room to have a Japanese effect? Why are rows of Japanese fans to be put round the wall, or crammed up with "Christmas greenery" over a bachelor's fireplace? Why are we told that "rooms doubtless look better with the ceilings undecorated," without a word of reason, and in the teeth of numberless examples to the contrary? What does Mrs. Orrinsmith mean by saying that "wholesome china" alone is necessary to make a fireplace pleasing? What is "wholesome china"? Why does she devote a couple of pages merely to telling us, in tragic accents, and with such expressions as "woe worth the day!" that gas is not a desirable light for a drawing-room? Why, after lecturing us about the vulgarity of the ordinary taste for curves and wriggles in furniture, does she give, as a specimen of good taste, (page 137) a representation of a cupboard in the very worst *rococo* taste, the top entirely made of curls and twists, which are a bad application, in woodwork, of one of the worst masonic features of a decayed and corrupted style of architecture?* And the answer to all these whys is the same: that the book simply expounds, without reason or principle, a set of fashions accepted by the Sir Vistos of the day, who are not only determined to "have a taste," but to force it, as far as they can, upon every one else, on pain of their condign contempt and displeasure, whatever that may amount to.

Mrs. Orrinsmith complains in one passage in her book that persons who have attained eminence in literature or music should imagine they have, therefore, a right to an opinion on matters of household taste or decoration. Persons who have "attained eminence" in any really intellectual study are likely, we imagine, to look rather contemptuously on the pursuit of shams which is called taste. Really, to see the solemn manner in which such collecting of trifles is paraded and preached about as if it were the serious business of life, is almost enough to disgust one with the very word "Art," in the name of which all this is carried on. If this is what "Art at Home" means, it appears to be merely an amusement for grown-up children, and an occasion for the glorification of that most disagreeable species of humanity, whether in the masculine or feminine variety, the æsthetic prig. And if treatises such as these are really popular and in demand, we can only conclude that the present generation contains a large percentage of exceedingly soft-headed people.

Carlisle.—The strike of Carlisle cabinet-makers, which commenced on the 8th of June, has terminated. The men will receive an advance of ½d. an hour in March.

* On p. 100 the author complains (rightly) of the "pertinacious attachment of modern furniture-makers to curves" as a great hindrance to amendment; on page 137 she gives as an example of good taste a room in which all the furniture is in curves and twists without a straight line anywhere.

THE ALBERT GALLERY, EDINBURGH.

In the spring of this year a new and handsome building was completed in Shandwick-place, at the west end, for a limited liability company. It contains a picture-gallery, which is designated the "Albert Institute of the Fine Arts." This gallery was opened by an exhibition of paintings, rather hurriedly got up, and not remarkable for the excellence of the works shown.

The first winter exhibition at the gallery was opened on the 28th of November, and is a decided improvement upon the former one. The new institution does not pretend to rival the Academy, but to be auxiliary to it. It cannot hold out the same inducements as the chartered body, and can only be useful as a means of exhibiting works which would otherwise not be brought before the public. The exhibition is not, therefore, confined to the works of living artists, but contains some by deceased masters. The Institute also serves as a means whereby those who consider themselves aggrieved by having their works misplaced in, or excluded from, the Academy, may have an opportunity of displaying their talent. Two of the most remarkable pictures in the gallery are the work of the late David Scott. He was one of those men who aimed at a high ideal, but fell short of it. His work is decidedly above mediocrity, but he was apt to go into extremes, and failed in reaching that healthy stage of excellence which is the crucial difficulty of the artist.

The characteristics of the artist are strongly pronounced in both works, "Peter the Hermit Preaching the Crusade," and "The Alchymical Adept lecturing on the Elixir Vitæ." The principal figure in each is cadaverous and grotesque, the drawing is faulty in many respects, and the composition lacks artistic unity and effect. Yet withal there is an intensity and variety of expression, and a high aim, far removed from the vulgar trivialities which are received with greater favour.

The number of portraits exhibited is small; none of them by living artists, and all interesting. The first of these that engages our attention is one attributed to Gainsborough, representing an old gentleman, in a brown coat and white wig, seated, beside whom stands a boy in a blue silk suit. Great as the name of the artist is, the work does not affect us; if it ever possessed that purity of colour which characterises the works of the artist, it has now disappeared, and it does not display much subtlety of expression.

On either side of the Gainsborough hangs a head by Raeburn, both of which are full of force and animation; and there is another by the same artist of Mrs. Campbell, aunt of James Watt, a shrewd genial old lady in a white cap, touched off with great breadth and power.

Another remarkable portrait is that of Miss Linley, afterwards Mrs. Sheridan, by Sir Joshua Reynolds, which, like so many of Sir Joshua's works, has suffered considerably from time; yet enough survives of its original charm to attract us. The young lady is attired in a white lace dress and turban, looped up with pearls, from under which falls a wealth of brown hair, and large brown eyes light up a sweet and winning countenance. Opposite the Gainsborough hangs a work by Michael Wolgemuth, "Christ and Simon bearing the Cross." Wolgemuth was the master of Albert Dürer, and ranks amongst the first painters of the early German school. This work is the companion of the famous picture in the Louvre, representing "Christ brought before Pilate," and, like it, is in the hard but powerful manner which prevailed before the splendid genius of his great pupil,—rejecting the conventionalities of the period,—originated the style which is associated with his name.

"A Roman Balcony" during the Carnival, by Robert Herdman, presents to us a group of ladies, richly attired, enjoying the scene in the Corso. It is a highly-finished work, displaying much brilliancy of colour and skill in the manipulation of the draperies.

The landscapes of Mr. J. C. Wintour are now characterised by slovenliness of execution, vegetation seeming to have undergone a process of boiling before being depicted; but a work of his here exhibited, "A Minnow Stream," shows that such was not always the case. It is as rich in colour as his present work, but is careful in detail without detriment to the general effect, and has some fine passages in the middle distance, which is skilfully graduated beyond. To a "Dutch Lugger making for the Harbour—Storm rising," by J. F. Schatz, the artist has succeeded in imparting the sense of movement, and the colour of sea and sky appears natural and unexaggerated, but in so animated a sea, overspread by a grey sky, it hardly appears to us that the reflection of the colours of the vessel and its sails would be so vivid as here represented; but the aspects of nature are so varied that we feel not at all sure as to this: a momentary gleam of light from a break in the clouds might produce the effect depicted.

"Manhood," with a quotation after Æschylus, and "Youth," with a quotation after Anacreon, are Classical idylls by J. D. Marshall, the work of a man of culture, gracefully treated, and rich in colour. They are more in the nature of decorative panels than easel paintings,—a phase of art not much affected by Scottish painters,—and to which it would be well if some of them directed their attention.

J. W. Bowkett exhibits three figure subjects, "Faust and Marguerite," "Marguerite," and "My Lady the Countess," in each of which the same young lady appears in a lavender silk dress. She is a fair and pretty simpleton, but not the Marguerite of Goethe; and the Faust is that of the opera and not of the poem. The lavender dress, which appears to be a *spécialité* of the artist, is daintily done.

"A Daughter of Eve," by James Archer, represents a girl standing under a tree, with a lapful of apples, one of which has fallen amongst the grass at her feet. From her arch expression she seems to be inviting some swain to her side, whether to partake of the apples or other fruit we know not. The arrangement is simple, graceful, and effective, but the colour is duller than is generally found in the works of this artist.

As a piece of realistic representation we have seldom seen anything more effective than the beech-trees in the "Deserted Avenue," by J. McWhirter. The picture is redeemed from being a mere study by the figure so deftly put in by Orchardson, and the glimpse of city and hills in the distance.

We have heard much of the works of Bridgman, an American artist, and have here a specimen of his work entitled "Souvenir of Italy." It represents a garden-scene, in the right foreground of which is a fountain with colossal bronze figures; in the middle distance is a party of ladies and gentlemen, and beyond, and overtopping a group of trees to the left, are the roofs and campanile of a city. The composition is odd but masterly, the treatment, especially of the bronze figures, is broad and suggestive, and the local colour of the group in the middle distance is put down in a manner seldom attempted.

"Off Shore," by T. Graham, represents a fisher-boy in a boat at sea, apparently all alone and buried in a reverie. The head is rendered in a vigorous manner, and the colour is admirable; the sea, however, appears of too uniform a tint of green, and lacks atmospheric effect; but it is more in accordance with nature than the crude yellow which overspreads the water and sands in the "Coast Scene," by J. Ewebank, which, however, is effective as regards composition.

One compartment of the gallery is devoted to water-colour drawings, amongst which a vignette by Turner claims the pre-eminence. "The Lake of Neme" is a diapason in delicate blue, in which the opaline tints mingle as in mother-of-pearl. There are also good specimens of the handiwork of H. Cameron, J. Heron, W. P. Burton, and others, which our space does not admit of our noticing in detail.

We also observe a few specimens of sculpture, amongst which we note two graceful figures symbolical of "Painting" and "Sculpture," by Mrs. D. O. Hill, and "Esmeralda in Prison," by W. G. Stevenson.

In closing our remarks upon this interesting exhibition, we would pass a word of commendation upon the manner in which the hanging committee have performed their duty. The paintings are admirably arranged, and regard has been had to the merit of the works irrespective of their authorship.

The Middle Level Outfall Sluice.—The new sluice at the Middle Level Works, near Lynn, was opened on the 26th ult. The engineer is Sir John Hawkshaw, and the contractor Mr. Webster. The cost is between 40,000*l.* and 50,000*l.*, and by it 200,000 acres are to be drained, and rivers to the extent of 200 miles. The sluice is in substitution of syphons, which will now be discontinued. It is said that the fen country of the Isle of Ely will now be safe from inundation.

THE HOUSEHOLD AT DIFFERENT ERAS.*

LOUIS QUATORZE. II.

"Our own Religion furnishes us with adequate Ideas of the Blessing as well as Curse which may attend absolute Power. The Pictures of Heaven and Hell will place a very lively image of both before our Eyes: for though the Prince of the latter can have no Power but what he originally derives from the Omnipotent Sovereign in the former; yet it plainly appears from Scripture, that absolute Power in his infernal Dominions is granted to their Diabolical Ruler. This is indeed the only absolute Power which can by Scripture be derived from Heaven. If therefore the several Tyrannies upon Earth can prove any Title to a divine Authority, it must be derived from this original Grant to the Prince of Darkness, and these subordinate Deputations must consequently come immediately from him whose Stamp they so expressly bear."—*Fielding*, 1749.

THOSE who are exercised in their minds concerning the proper way to plan or divide dwelling-houses in the centre of great cities cannot do better than study the phases of development which have succeeded each other in the two capitals of France and England since the beginning of the seventeenth century. For an Englishman, the best prelude to such study is undoubtedly a careful perusal of Macaulay's celebrated chapter on the state of England in 1685. Only the nucleus of London as it is then existed; and a single line of irregular arches overhung by piles of mean and crazy houses, garnished with mouldering human heads, impeded the navigation of the river. Of the metropolis, the City, properly so called, was the most important division. At the time of the Restoration it had been built, for the most part, of wood and plaster; the few bricks that were used were ill-baked; the booths where goods were exposed to sale projected far into the streets, and were overhung by the upper stories. The City was the merchant's residence; the mansions of the great old burghers stood in retired and gloomy courts, accessible only by inconvenient passages; but their dimensions were ample, their staircases not wanting in grandeur, and their rooms stately. Almost all the noble families had long migrated beyond the City bounds. "Shaftesbury and Buckingham, while engaged in bitter and unscrupulous opposition to the Government," said Macaulay, "had thought that they could nowhere carry on their intrigues so conveniently or so securely as under the protection of the City magistrates and the City Militia. Shaftesbury had therefore lived in Aldersgate-street, at a house which may still be easily known by the pilasters and wreaths, the graceful work of Inigo. Buckingham had ordered his mansion near Charing-cross, once the abode of the Archbishops of York, to be pulled down, and while streets and alleys, which are still named after him, were rising on that site, chose to reside in Dowgate." A few great men retained what the historian calls "their hereditary hôtels" in the Strand. In Lincoln's-inn-fields and Covent-garden noble and rich families inhabited stately dwellings. At the same time, in Covent-garden a filthy and noisy market was held close to the dwellings of the great. In the centre of Lincoln's-inn-fields, the rabble congregated to hear mountebanks harangue, to see bears dance, and to set dogs at oxen. In all the open spaces rubbish was shot. St. James's-square was a receptacle for all the offal and cinders, for all the dead cats and dead dogs of Westminster, and a shed for rubbish was built there under the windows of mansions occupied by the first magnates of the realm. In rainy weather the gutters formed torrents; even foreigners who knew Paris cried shame upon the London pavements. Pails were emptied from the windows into the streets, and at night the latter were left in profound darkness. Then the coffee-house was† an important political institution. "Every man of the upper or middle class went daily to his coffee-house, to learn the news and to discuss it." Foreigners remarked that the coffee-house was the Londoner's home,—a thing that especially distinguished London from all other cities. There were coffee-houses in different parts of the town for all ranks and professions. In them public opinion was expressed, altered, or matured; they were to the politicians of the seventeenth century not alone what the clubs are to the present day, but what the newspapers are to actual thinkers and workers. Ordinary people learnt at the coffee-house the latest news from Whitehall, where "half the jobbing and half the flirting of the metropolis went on,"—where "this courtier got a frigate and that a company; a third the pardon of a rich offender; a fourth a lease of the crown land on easy terms." Its master, Charles II., was the grandson of Henri IV.; unable to affect the splendour, he practised the affability, of his patron and kinsman, the French king. France set the fashions, not in dress alone, but in manners. French was the language of fashionable society. For a gentleman "to garnish his conversation with scraps of French was the best proof which he could give of his parts and attainments."* Macaulay maintained that France then had, over the surrounding countries at once the ascendency which Rome had over Greece (that is to say, in a political and practical sense) and the ascendency which Greece had over Rome (that is to say, in a literary and an artistic sense). Now let us turn to the Capital whose social sway our ancestors thus acknowledged about twenty years after the Great Fire.

We have already quoted some of Evelyn's notes upon Paris, made about the year 1649. We have also quoted James Howel, who, in 1657, wrote a book entitled "Londinopolis"; and we have mentioned Dr. Lister, who in 1698 accompanied the English Ambassador to Paris. A description of the entry made by the British Envoy was given in the "Mercure Galant" of March, 1698; it is therein recorded that the immense concourse of people assembled on the line of route from the entrance to the Faubourg St. Antoine to the Rue de Tournon ("près d'une lieue et demie de chemin") caused some of the English to say that there were more people in Paris alone than they had thought to find in all France. Dr. Lister described the houses as either built entirely of stone or coated with plaster. Some built at the beginning of the century (the seventeenth) were of brick and stone, at the Place Royale and the Place Dauphine, for instance; but that style had been given up, and only in a few houses was the plaster covering painted to resemble brickwork. The domestic buildings were everywhere lofty and majestic; and all those belonging to persons of quality had carriage gateways to internal courtyards, in which were to be found coach-houses and stabling. The doctor estimated the number of carriage gateways *(portes-cochères)* at more than 700. The principal mansions had their lowest windows,—those of the ground-floor,—provided with iron grilles, which particularly attracted his attention on account of the great expense that they must have occasioned. The taste for what he called magnificence also astonished him; it was impossible to enter the house of a person of any ease without observing it. The doctor remarked the paving of the streets; they were all laid with cubes of stone of from 8 in. to 10 in., and the gutters were not deep. The streets were narrow, and passers-by were ill-protected from the press and the rapidity of carriages, which were driven at a fast trot between the lofty houses, causing a kind of music hardly likely to please any other ears than those of the Parisians. Most of the houses,—at least of the larger sort,—had been erected during the forty years preceding Dr. Lister's visit; and during the entire century most of the great mansions in Paris had been rebuilt on the old site, or had risen on a new one. The same remark applied to the convents, the bridges, the churches, and the city gates. He visited the "appartement" of M. de Vivier, at the arsenal; it was composed of seven or eight rooms on a ground-floor looking upon the great garden. The "appartement" of M. Le Nôtre,—the controller of the king's gardens,—by the side of the Tuileries, was also worth a visit. M. Le Nôtre was then 89 years of age, and always lively and active. Of all the royal buildings, that of the Luxembourg was the most advanced. Dr. Lister described some of the rooms he entered; amongst others, a few wainscoted with cedar, carved in garlands of flowers,—a fashion then rare at Paris. The floors were in "marquetry," and inlaid with silver. The solidity, the durability, the preservation, of these floors at the end of such a long time excited his admiration, particularly when he remembered that, at home in London, the boards warped and creaked, so that after a few years they became intolerable! Satire upon English progress, that Londoners who know should be saying precisely the same thing after nearly 200 years! At the time of the doctor's visit there were two theatres in the gay capital,—one, the Opera, was in the house of Monsieur, and formed part of the Palais Royal; the other was devoted to dramatic entertainments, though the kind of spectacle that it was possible to produce in 1698 may be faintly imagined when it is remembered that only in 1782 were seats introduced into the ordinary auditorial portions of a theatre, and only in 1784 were the big rushlights displaced for candles and oil-lamps. The streets were lighted at night all the year round. This custom was favourably mentioned by Dr. Lister because of the absurd practice of not lighting the torches in London during the half of every month. In the Paris lanterns there were candles, of four to the pound, that lasted almost until after midnight. About the same time Germain Brice described the city as entirely filled with people,—as one in which there was no corner not inhabited. The number of beggars was so great, and they were so importunate, that, whether on foot or in a carriage, Dr. Lister could hardly proceed without annoyance. He also thought that some attempt should be made to disinfect a town so peopled; but he knew of no machine likely to succeed, except one that swept away the populace at the same time. Every threat, every notice upon the walls, remained without effect. The dust in Paris where the streets were paved was not much less than that of London, where the roads were of sand and pebbles. Boileau alone can explain this: said he, ridiculing the mud of his time,—

> "Elixir d'excréments pourris,
> Maudites crottes de Paris!"*

Yet, strange to say, Evelyn, writing his notes in the French capital on the 15th of February, 1652, says,—"That very seldom has a plague or other epidemical contagion made here (in Paris) that havoc and lamentable devastation which it so frequently doth in our putrified climate and *accidentally suffocated* city, contrary to that vulgar and most false tradition which I find in every man's mouth: that the pestilence is never out of Paris."

Nor should other references made by Evelyn be overlooked by people desirous of learning how the modern forms of houses in both capitals have developed or whence they have sprung. In his celebrated "Parallel," Evelyn wrote,—"Not to be forgotten are the floorings of wood which her Majesty the Queen Mother has first brought into use in England at her palace of Somerset House, the like whereof I directed to be made in a bedchamber at Berkeley House. The French call it *parquetage*." Again,—"This puts me in mind of that most useful appendix (to Palladio), and those other pieces of Le Muet, the French architect, wherein, besides what he has published concerning these kinds of timber floors, &c., you have a most accurate account of timberings, of all sorts of stones, roofings, &c." That was written in 1664; Pierre le Muet published his "Manière de bien Bastir" in 1663; and the Great Fire of London occurred in 1666. Any one who is familiar,—as most Englishmen now are,—with the Domestic architecture of the fifteenth and sixteenth centuries, knows the kind of shop and dwelling-house which existed in London before the Fire: a few still remain plastered and bedaubed in Holborn, Aldersgate-street, the Strand, and other parts just without the circuit of destruction made in 1666. Many, indeed most, of the houses that rose after that period were based upon the French

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* See p. 949, *ante*.

† Before 1667, neither coffee, chocolate, nor tea was to be had in Paris. At the beginning of the reign of Louis XIV., the *grand seigneur* frequented "*ou cabaret*." Macaulay says that the first coffee-house in London was set up in the time of the Commonwealth by a Turkey merchant, who had acquired among the Mahomedens a taste for their favourite beverage. It is said that an Armenian started the first "*café*" in Paris in the year 1672.

* Many of the phrases and expressions which still pass current in England as polite "French," are now half unintelligible in Paris. A legal light in the Channel Islands would have no difficulty in knowing what was meant by a "*femme sole*," and a Parisian antiquary would, after a little study, understand what Englishmen,—statesmen and others,—mean by the word "*leches*." But to ask an ordinary Frenchman what his "*forte*" is, is to unnecessarily perplex him with a term which, nevertheless, came into this country through France. A passage we lately extracted from a published letter of the late Prosper Merrimée, and dated the 1st of September, 1869, has a touch of humour about it which will be appreciated by all Englishmen who are ambitious to be thought good French scholars:—"Si vous n'avez pas 'Evelyn's Diary' dans votre Bibliothèque," wrote Merrimée, "vous avez tort. Il était très amateur d'Art et de ce que les Anglais appellent *vertu*."

* James Howel, in "Londinopolis," says, at p. 391,—"Touching streets, the dirt and crott of Paris may be smelt ten miles off, and leaves such a tenacious oily stain that it is indelible, and can never be washed off." In the days of Howel and Boileau, many of the streets of Paris were not wider than those of Pompeii, but the former had not the advantage of stepping-stones, such as those which may still be seen at the corners of Pompeian thoroughfares. In Paris, fine ladies were assisted across the kennel in the centre of the highway upon the backs of professional carriers, who plied an unlicensed calling, much like the crossing-sweeper of to-day, amid the profitable filth of London.

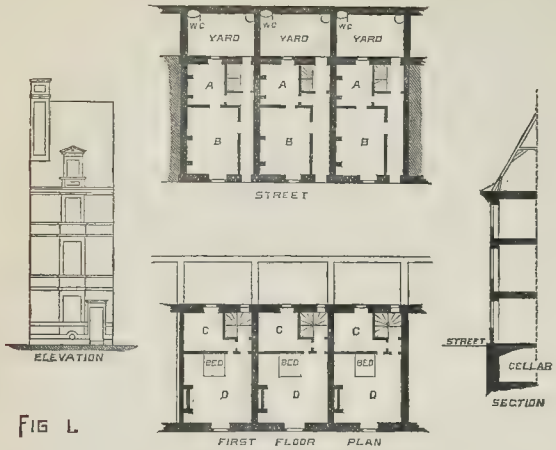


FIG. 1.

Type of Family Residence in Paris, 1663.

model; the houses that were built in London towards the close of the seventeenth century, and during the early years of the eighteenth, resembled the narrow-fronted houses that were common in Paris at that period,—all of which, however, have now disappeared. Pierre le Muet designs for houses comprise plans and elevations for frontages of [illegible]; he has one design for a frontage of 1[illegible] (English), another for a frontage of about 17 ft., others of 40 ft. and so on. Our fig. 1 includes the ground and first floor plans of three houses of about 17 ft. from centre to centre of each party-wall. Such houses lined some of the streets of Paris two hundred years ago; the stories of two rooms over two rooms, the front and back parlours (A and B), the narrow entrance-passage, the back-yard and its privy, are all there exactly like an old house in Soho, or a comparatively new one in the Gray's Inn-road at the present day. The only difference is that the basement-floor was devoted even in those days to cellars and not to kitchens or living-rooms as they were and are in London. It is probable that the majority of such houses were inhabited by one and the same family; it is equally probable that others were occupied in stories by different families. In this latter case we would call the reader's attention to the small square lobby, shown on the first-floor plan, through which the two rooms C and D are approached. One door, between the lobby and the staircase, suffices to confine the whole story and to shut off the rooms of each floor; in the London house the doors of the two rooms open upon the staircase landing. As for the elevation, which is reduced line for line from Le Muet's drawing, it is neither more nor less than the kind of house still to be seen by curious observers in the neighbourhood of Golden-square, and in some of the back-streets further west. The description of the design given by Le Muet shows conclusively that the house is intended for a single family: A is the kitchen, B the *salle* or dining-room; D is a chamber, C a *garde-robe*, or, as it was called in England, a ward-robe.

Another design by the same architect, reduced to the diagram we publish, is shown in fig. 2. Except that the stable forms almost part of the living-house, it is not dissimilar from many domestic residences not only existing, but actually still rising, in English provincial towns. At E is the entrance for man and beast; H is the *salle* or dining-room, K the kitchen, L the larder, and C is a chamber. The *salle* is some 33 ft. by 22 ft. (English), and the kitchen is 27 ft. by 18 ft. 6 in.,—both much larger rooms than are usually found in the best modern ordinary dwellings of Paris. Our space has not permitted a reproduction of the second-floor plan; therein no attempt is made to divide one floor from another or to shut off the different rooms from the stair-landing by means of a lobby. On the contrary, all the rooms open into a square landing in the English fashion. On one side of the staircase are two bed-rooms and a dressing-room opening into one another; on the opposite side a bed-room and a dressing-room opening into each other. Fronting the staircase is a *garde-robe*. The rooms are large, the best bed-room being 27 ft. by 22 ft. We repeat it is the English family dwelling-house of to-day; it was in vogue in the French capital about the period of the Great Fire of London, and perhaps

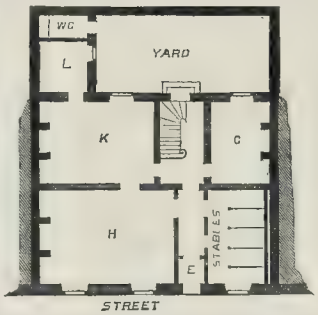


FIG. 2.—*A Gentleman's House in Paris*, 1663.

in isolated instances it was to be seen in Paris as late as the closing quarter of the last century. But not a trace of such a type of residence now exists within a certain extended radius from the Madeleine.

Our figs. 3 and 4 show another type of family dwelling-house common in Paris during the early

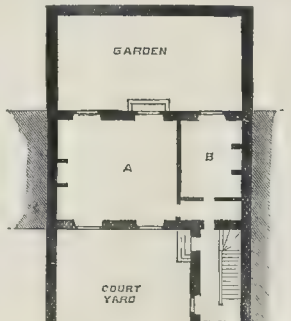


FIG. 3.

years of the reign of Louis Quatorze. They are plans by Pierre le Muet of a gentleman's hôtel suitable for a site bordering the street and containing a frontage of about 40 ft. with a depth of about 100 ft. (French measure). It is to these plans that a recent lecturer at the Institute of British Architects traced the Paris *maison-à-loyer* of this century. Fig. 3 is the ground-floor plan divided in the length of 100 ft. into four parts, two of construction, and two of open space; and the two *corps-de-logis* are connected by a narrow building containing the staircase. At E is the carriage entrance (*porte-cochère*); coaches would be driven into the court-yard, at the further end of which is the house-door.* The kitchen accommodation is at D, consisting of a single room, 20 ft. by 14 ft., and a larder, 9 ft. by 7 ft. At A is the *salle*, at B the *sallette*,—the latter being probably the withdrawing-room among ordinary families of gentle birth two hundred years ago. But, horrible to tell! in the lobby between the staircase and the two rooms, A and B, there is a sort of flue built in the angle of the wall, and it is described by Pierre le Muet himself as a "privy." The smallness of the scale to which all† our plans have been drawn has prevented our adding this hole-in-the-wall to our diagrams, but in the original design it is shown on every floor. The distribution of the upper floors is shown on fig. 4; and there it will be perceived how easy it was when the house was discarded by the original occupiers to convert it into one of several different and distinct dwellings. The sets of apartments are each approached from the central staircase through one door leading to a lobby, into which all the rooms open. Thus in the block between the street and the courtyard there is a distribution of rooms which, at the present day, would be called by Parisians a small "appartement." J is the ante-chamber; it leads into a lobby about four French feet wide, and lighted from the courtyerd. K is a small sitting-room, M a bed-chamber, L a ward-robe

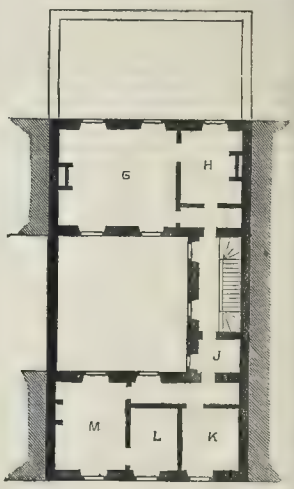


FIG. 4.

used as a dressing-room, and probably by an attendant as a bedroom. The same arrangement occurs in the block between the courtyard and the garden. There is a lobby into which the two rooms G and H open, and this lobby is shut off from the stair-landing by a single door. Yet the whole house was planned for and occupied by a single family, an explanation of which is easy to those who know that, even at the present day, hotels are being built in which a similar system of habitation is pursued, though, of course, on a largely-developed scale. The house was, say, the patriarchal residence of a family chief; in his dining-room all the inhabitants met twice a day, at dinner and supper; in his kitchen everything required by all the inhabitants was cooked; in his stable the horse belonging to each member of the family was stalled. The chiefs say, lived and slept on the first floor in the rooms,

* It should be remembered that there were very few coaches in those days; any vehicle, whether a cart or the hearse-like conveyance then fashionable, would have been left in the courtyard, in the open, and probably uncovered. The cushions and hangings would be stored in the house, as the servants now sometimes do in India. The *chaise-à-porteur*, or Bath-chair, would stand conveniently in a lobby or in the staircase.

† All our illustrations are drawn to the scale of a 32nd part of an inch to the foot.

G and H. His wife, the mistress of the house, occupied the rooms K, L, M, approached through the antechamber J. The various sets of apartments on the upper floors were occupied respectively by the eldest son and perhaps his wife, by the eldest daughter and perhaps her husband, by younger children, or by an unmarried brother or brother-in-law of the head of the house. The elevation of this house, published by Pierre le Muet in 1663, is not dissimilar from buildings known to have existed in the neighbourhood of the Louvre during the very beginning of the Great Reign; and we refer those of our readers who care to know what the fronts of Paris houses resembled in 1662 to Charles Perrault's pictures of the royal fêtes which took place in that year. Therein are to be seen narrow-fronted shops and houses squeezed together on either side of irregular streets, as well as broad-fronted hotels, like the Hôtel Lambert and others still existing in the neighbourhood of Notre Dame. Nor until the seventeenth century do we find even architects discriminating between a house arranged for one family and a house arranged for several families; indeed, the designs extant for such houses are not of earlier date than the beginning of the eighteenth century. It had evidently been the custom in Paris,—and the custom lasted till the very beginning of the eighteenth century,—for families of a lower class of the community to occupy sets of rooms, or whole stories, in houses built originally for the occupation of a single family belonging to the superior classes,—houses, by the bye, not always so easy to divide and subdivide as that of which we have given plans in figs. 3 and 4.

We print in fig. 5 the ground-plan of the Hôtel de Lionne, built from the designs of Le Vaux, architect to the king. It is to be found in the "Grand Marot," and though it is undoubtedly the type of private mansion (seventeenth century) erected during the reign of Louis Quatorze, it is also one of the finest and largest of the kind. M. Viollet-le-Duc, in spite of his prejudices, cannot refrain from praising this hôtel in his chapter on "l'Architecture Privée," which forms the seventeenth of his lectures;* with his usual disregard for fact and exactness he has produced a plan, founded upon that of the Hôtel de Lionne, but containing all the refinement of arrangement—indeed all the comfort,—which did not come into existence until the French architects had studied not alone the actual edifices of Ancient Rome, but also those of Greece. At page 268 of his "Entretiens" is a plan, which might have been made only the other day, of an hôtel that has never existed. M. Viollet-le-Duc calls it the type of Northern-French mansion erected between the end of the fifteenth century and the middle of the eighteenth century. If it be the type of such buildings then the newest and best *maison-à-loyer* of the Boulevard Haussmann is the type of middle-class residence in vogue in Paris during the seventeenth and eighteenth centuries.

We beg leave, therefore, to say that our fig. 5 represents the ground-story of one of the largest hôtels erected in Paris during the latter half of the seventeenth century. The court-yard (*cour d'honneur*) covers about 100 ft. by 75 ft. (French). This court is separated from the street by a wall which rises to the height of the ground-floor. The buildings on either side of the court are lower than the main building, which contains the hall, the reception-rooms, and the principal apartments. The courtyard, therefore, while it protected the family from the street, and from passing noise, was not so inclosed as to impede the passage or circulation of fresh air. The hôtel formed the angle of two streets, and in one was the broad lofty entrance. The family coach was driven through the court-yard up to the steps P, which were covered by a *marquise* or overhanging roof. The chairs were carried, with their burdens, into the hall. A host of domestics of all kinds and grades were stationed at the doors, under the archway leading to the stables, upon the steps. At twelve o'clock, when the dinner was being served in the great *salle* B, servants were running backwards and forwards across the open court from the steps at P to the door at Z. When it rained they passed through the servants' hall at X, thence through Y,—which was a chamber probably for the *maître d'hôtel*,—into the hall. C was a small study, writing, or retiring room. O was the chapel or oratory, approached from the dining-room. The great reception and withdrawing rooms were on the first-floor, and the grand staircase leading to them was approached from the hall. So much of the first-floor was taken up with these rooms that little was left for bed-rooms. A complete set of apartments, probably for the owner and his wife, was arranged on the ground-floor. The bed-room at H was probably that of the lady; the bed was raised upon a daïs; curtains partly divided it from the room, and the alcove in which the bed was placed was about 22 English feet by 13 feet. A private passage led from one bed-room to the other, and the communication with the bath-room L was equally private. At J was a private sitting-room or *cabinet*, at K the wardrobe. M was another wardrobe through which it was necessary to pass to reach a small oratory at O. At Y was another bed-chamber. The two bed-rooms were approached through an ante-chamber at D, and this piece, common to the whole household, to visitors, and sometimes to strangers even, is another link which connects the life-in-common of Mediæval times with the life private and divided of actual manners. To quote Patte, writing in 1773,—"Vitruvius, Palladio, and Scamozzi called all the rooms without distinction a Hall or a Chamber; but the moderns more properly understand by the latter denomination a room intended simply for repose." That was true about the close of the last century, but in the middle of the seventeenth the distinction was neither rigidly maintained nor even understood. In different parts of France some of

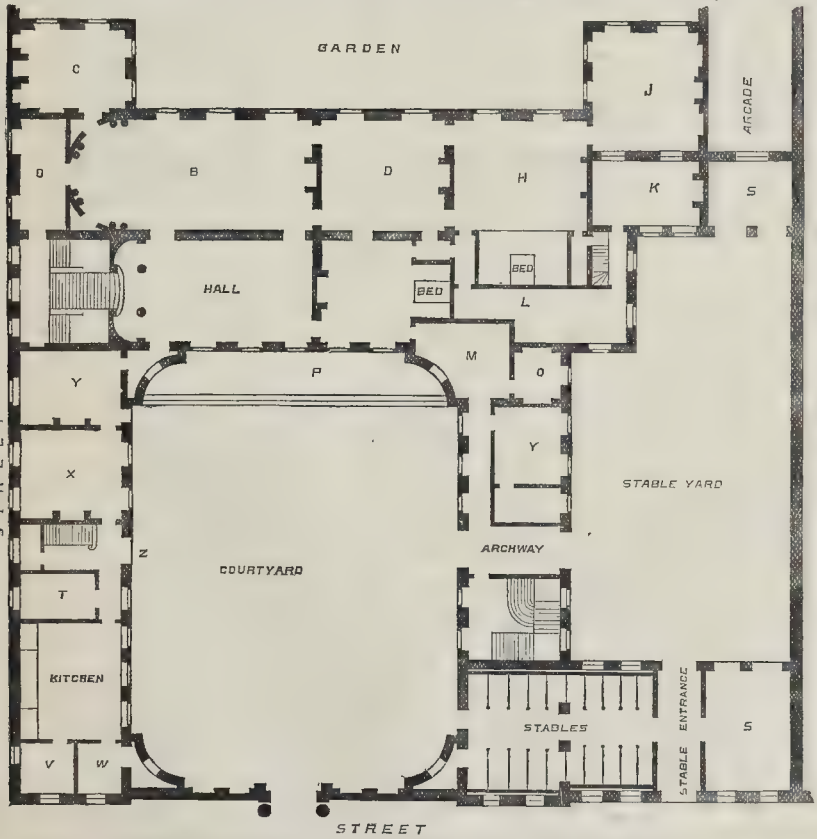


FIG. 5. *A Nobleman's House in the Rue Neuve des Petits Champs: End of Seventeenth Century.*
T, V, and W—Kitchen Offices S—Coach-houses.

* "Entretiens sur l'Architecture," vol. ii., pp. 263-70. M. Viollet-le-Duc, while paying a just compliment to the proportions of the Hôtel de Lionne, describes the book of Pierre le Muet as one of the most interesting works that can be studied; but he cannot admit that the present is comparable to the past—even the past of the seventeenth and eighteenth centuries. Observe the ironical hand of Time in the two following quotations, which we prefer to give unspoilt by translation. Patte, writing in 1777, said:—"On était logé uniquement pour représenter et l'on ignorait l'art de se loger commodement et pour soi. Toutes ces dispositions agréables que l'on admire, aujourd'hui, dans nos hôtels modernes, qui dégagent les appartements avec tant d'art; ces escaliers dérobés; toutes ces commodités recherchées, qui rendent le service des domestiques si aisé, et qui font de nos demeures des séjours délicieux et enchantés, n'ont été inventé que de nos jours: ce fut au Palais de Bourbon en 1722, qu'on en fit le premier essai qui a été imité depuis, en tant de manières." Ninety-five years after, in 1872, that is to say, 150 years after the reform successfully introduced in the Palais de Bourbon, M. Viollet-le-Duc gravely maintained in the second volume of his "Entretiens," p. 267, that "Ces bâtiments simples en épaisseur, qui jusqu'à la fin du XVIIe siècle étaient en usage dans nos hôtels, avaient-ils cet avantage, d'être facilement aérés? Cela présentait des difficultés au point de vue des distributions et services intérieurs, mais il faut reconnaître que dans leurs plans nos anciens architectes s'en tiraient avec adresse et ne perdaient pas les surfaces que nous sommes aujourd'hui contraints d'affecter à des couloirs et des dégagements sombres, insérables et, au total, fort massades." For our own part, we may add that that man cannot be said to know the world, or its history, who does not see how in Western Europe during the last thousand years the product of each century represents progress of some kind—be it in art, science, or political economy, each having to take its turn of development and change.

the châteaux of the time still remain unaltered, or where the large apartments have been subdivided it is easy to distinguish the additions. An enormous antechamber often formed the sole entrance to a set of private apartments; it was a lofty room, with a fireplace and large windows. The door to my lord's rooms was on one side, the door to those of my lady was on another. The bed-rooms were used as living-rooms on ordinary occasions; only on extraordinary occasions were the great reception-rooms and the great dining-room used. In the descriptions extant of Versailles and Whitehall it is the antechamber in which courtiers met, and of which the most frequent mention is made. At that time,* a bed-room, or even a dressing-room, though it had its annexes, such as a small cabinet or study, a room for the wardrobe and often an oratory, was not encumbered with washing or bathing accessories or indeed with many of those things now indispensable to the toilette of even ordinary people. "For a thousand years," has said Dr. Lyon Playfair, with some exaggeration, "there was not a man or woman in Europe that ever took a bath."† Some ladies even in the Great Age took warm baths; the cold bath system actually taken is a habit solely of our own time,—and principally confined to this country. The sanitary condition of the palaces, hôtels, and smaller houses of Western Europe two hundred years ago can neither be imagined nor described at the present day. Courtiers, attendants, domestic servants, parasites high and low, were not provided with separate sleeping accommodation. The huge mansardes in which afterwards so many small rooms were fitted up, were originally mere waste spaces; the cooks and kitchen servants slept over, around, or within their kitchen, just as the grooms slept over, or more often within, their stable. The body-servants found the best lodging they could in the set of apartments devoted to their particular masters and mistresses. In default of any systematic arrangements, even gentlemen were accustomed to "*se mettre à leur aise*"‡ in the wide open corridors of a château or an hôtel. The great Gallery of Versailles is known to have been habitually used in this manner. There were no drains; Patte, a hundred years after, published plans and sections showing how such novelties could be introduced into private residences. The refuse and dirty water oozed away through a "conduite" into a well, built of rough stones without mortar; and filtered through the interstices to earth. Holes in back-yards, in the corners of passages, even in the inner walls of inhabited buildings, communicated with untrapped cesspools in the very basement itself. Such things—remnants and records of the good old time—may still be seen in the castles of royal France, and, unless we are much mistaken, in some of the great and even regal homes of this country.

THE PORTER-CLARK PROCESS FOR PURIFYING AND SOFTENING WATER.

Before proceeding to describe the Porter-Clark process, of the application of which, on a tolerably large scale, we give illustrations, it may be well to describe shortly the not-too-well-known process of Dr. Clark for the purification and softening of water; and the more so that, in the sense in which purification is popularly understood, Dr. Clark's process has been hitherto altogether dormant.

It was so long ago as 1841 that the late Dr. Clark, Professor of Chemistry at the University of Aberdeen, patented the very beautiful and simple process of throwing out lime by means of lime, and which he entitled "A new method of rendering certain Waters [the water of the Thames being among the number] less impure, and less hard, for the supply and use of manufactories, villages, towns, and cities." Certainly, up to the present time the water of the Thames has not been rendered less impure nor less hard by the process of Dr. Clark, and we are not indeed aware of its having been applied anywhere to the treatment of river waters. To the softening of the hard and pure waters of the chalk measures surrounding the London basin it has been applied (as at Canterbury, Caterham, the Government Works on Shooter's-hill, and elsewhere, under Mr. Homersham; and more recently at the Colne Valley Waterworks, under Mr. Bateman) upon a large scale, and with the most satisfactory results.

Dr. Clark's process consists in adding to water containing bi-carbonate of lime a due proportion of lime that has been deprived in the lime-kiln of the carbonic acid that made it chalk. This lime, as recommended by Dr. Clark, and, as used in the cases of its application just referred to, being first slaked in the usual way, is dissolved as far as may be, in what is called the "lime-water tank," and the strong lime-water thus formed is introduced in a perfectly clear state to the water to be softened in proportion (ordinarily eight or ten per cent.) to its strength and the quantity of bi-carbonate in the water to be treated.

The immediate effect of this is, that a proportion of the carbonic acid of the latter flies into combination with the invisible lime of the clear lime-water, and the two become visible in crystals of carbonate of lime or chalk; while the loss of this proportion of carbonic acid reduces the heretofore invisible bi-carbonate also into visible carbonate of lime. Their chemical relations are such that 2 lb. of carbonate of lime or chalk will be formed by 9 oz. of lime introduced by the lime-water. The chalk thus formed is infinitely fine, and many hours are required for its complete precipitation; accordingly, where large quantities of water are required correspondingly large reservoirs are needed, not only for the mixing, but for a supply of cleared water for use while the subsidence of the day's mixing is going on. The removal from time to time of the accumulation of precipitated chalk is attended with some trouble, but it may be utilised by burning for a fresh supply of lime. That this process has not been applied to the treatment of river waters is due chiefly to the very much longer time required, in the presence of vegetable and other organic matter in the water, for the fine crystals of chalk to precipitate thoroughly, if indeed that thoroughness be attainable at all in such waters.

We can well imagine that the filtration of river water under treatment by Clark's process would be attended, practically, with insurmountable difficulty, since the accumulation of the chalk in the filter-beds of a water company would shortly check the filtration; and it does not appear that any other method of filtration has hitherto been able to cope successfully with this difficulty. It has no doubt occurred to many that (the actual softening of the water, the chemical operation, being very rapid) the cost of the works might be reduced, and the process made available even for private houses, could an efficient filtering apparatus be provided so as to admit of a continuous treatment and supply of softened and filtered water. The cost and trouble of ridding the apparatus and its filtering media of the slime of chalk has no doubt been the main cause of our want of a better acquaintance with Dr. Clark's process.

Mr. Porter, however, has, we hope, surmounted this difficulty by adapting a filtering apparatus of a very compact character by means of which he utilises the precipitate of carbonate of lime itself as the sole medium of filtration; and, although in the cases we have illustrated the Porter-Clark process has been applied to economising in the outlay for plant and building in treating the pure hard waters from deep wells, he expects shortly to prove that no more effective or purer medium of filtration could be desired in dealing with the water of rivers.

The three examples we give serve to show the adaptability of the Porter-Clark process to circumstances, and are very suggestive, particularly for industrial purposes, on premises where space could not be afforded for carrying out the process of Dr. Clark in the usual way; at the same time it should be said that, in two of the cases illustrated, space was available, and the process would have been carried out in the ordinary way as at Canterbury and Caterham, but the Porter-Clark process was found to involve much less outlay in plant and building, while it occupied one-fourth of the space. At Banstead Asylum, lately built for the county of Middlesex, the quantity of water thus treated is 60,000 gallons, and at the Kent County Asylum, at Chartham, it is 50,000 gallons daily, at the rate, continuously, of 5,000 gallons per hour in the one case, and 6,000 per hour in the other. For treating 60,000 gallons daily there would have been required at least two reservoirs capable of holding each that quantity, with margin of depth for accumulation of deposit, drawing off, &c., and perhaps a third large service-tank in which to draw off the clear water to be lifted by the pumps to the tower for distribution. These two first are represented under the Porter-Clark process by a tank that holds only 1,300 gallons at its working level, and the third by a tank capable of holding an hour's yield of the softened water running from the filters.

The whole of the plant at Banstead is contained in a house 21 ft. square inside; and that at Chartham in one of 18 ft. square inside. The ground-floor in the latter is the filter-floor, and that above is for the tanks for lime-water and mixing. The lime-water tank mainly determines the size of the building, both at Banstead and Chartham, occupying one side and nearly one third of the upper floor. On the opposite side, but at a lower level, is the mixing-tank over one end of which a pair of small service cisterns respectively receive and discharge in due proportions the water to be softened and the lime-water for softening it. These small cisterns, fitted with floats, maintain a constant and equal head of pressure on their respective discharging valves, and the opening or closing of these valves is controlled beneath the cisterns by an arm actuated by a float in the mixing-tank. The water in the mixing-tank being, by the regularity of the continuous filtration below, kept at a uniform level, or with but slight variation, but little agitation is produced simply by the discharge of the waters into it at a few inches above its surface; therefore, to promote the chemical action, agitation is given by means of air pumped by a small air-pump in the distant engine-room, and led by a gas-pipe into the mixing-tank. This serves also to keep the suspended chalk from settling, and ensures its being carried forward to the filters below. If the engine-room were nearer, another means of agitation could have been adopted, but this is very effective, and in the case of waters having organic matters the air so pumped in would assist the purification by virtue of the oxygen.

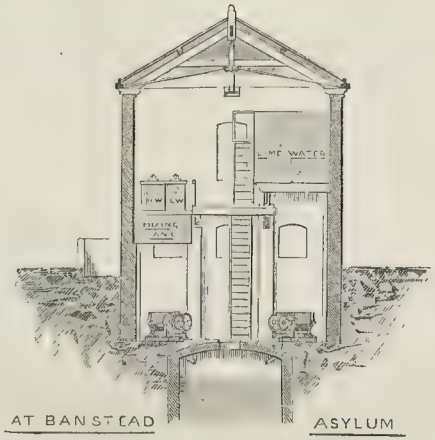
At Banstead Asylum the filter-floor is below the level of the ground, in order to admit of the water to be softened being led to the small service cistern from a low-level supply tank covering the boiler-house. For filtering the 60,000 gallons, four filtering-machines are provided, but three are found sufficient for working at one time. These average 2,000 gallons of water each per hour, and each contains rather less than seventy square feet of filtering surface, presented in six-and-twenty discs of 22 in. in diameter, disposed vertically, and between each pair of which is a water-space of the same diameter, and 1 in. in thickness, containing the chalky water from the mixing-tank above. The water-space is a circular open centre in an upright iron frame, 25 in. in width, and of the same depth; and having in one or both of its upper corners a hole of about 2 in. in diameter, one of these, by means of smaller holes, communicating with the open centre or water-space. The filtering-chamber is of similar form and dimensions to the water-space frame; but where the one has an open, the other has a solid centre. This centre has on both faces narrow concentric grooves ranging from the centre to the limit of 22 in. in diameter noticed above.

Over this filtering-chamber of about 1 in. in thickness is dropped (as a towel placed upon a towel-horse) a cloth of superior quality of cotton twill having worked in it holes to correspond with the 2-in. holes through the upper corners of both water-space frames and filtering-chambers. When these alternate water-spaces and filtering-chambers with cloths are pressed closely and tightly together by a powerful end-screw arrangement, it will be seen that the 2-in. holes become, collectively, 2-in. tubular channels of the length of the "battery," the channel of the one side admitting its chalky water to the circular water-spaces, whence, being inclosed, and under the pressure due to the height of the mixing-tank above it, it can only escape through the adjoining cloths into the concentric and radiating grooves which conduct it by a small outlet to the 2-in. channel on the other side, and so into any convenient receptacle, where, if desired, its flow may be controlled by an ordinary ball-cock. At Banstead and Chartham this second or outlet channel is not provided; the several filtering-chambers discharge the filtered water into a trough common to all, whence it is conducted to the brick tank beneath the floor.

* The state and half-state "lever" of Louis XIV., as well as the "grand" and "petit coucher," were ceremonies practised on a smaller scale by the nobles at their hôtels and country châteaux. The "Levee" of modern times, at least in London, is held in the afternoon. The great "Levee" at Delhi was held by Lord Lytton towards midnight. It ought to have been called a "Couchee."

† See "The Sanctity of Dirt," in the *Contemporary Review*, February, 1876.

‡ See under "Latrines" in the "Dictionnaire de l'Architecture Française." There is a note at the foot of page 163 (vol. vi.), which is not, we are fain to believe, exaggerated.



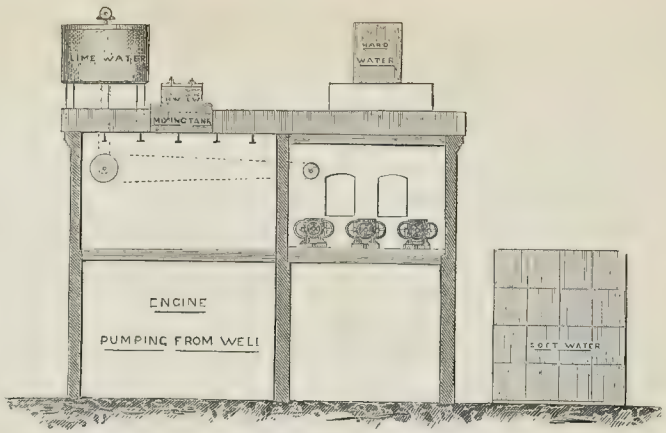
AT BANSTEAD ASYLUM

60,000 GALLONS PER 10 HOURS



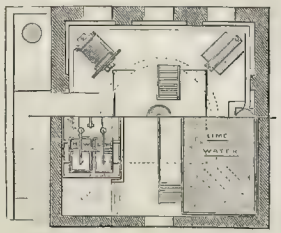
AT CHARTHAM ASYLUM - KENT

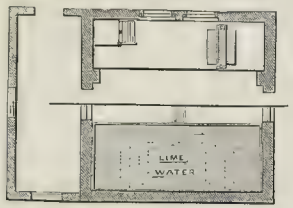
50,000 GALLS PER 10 HOURS

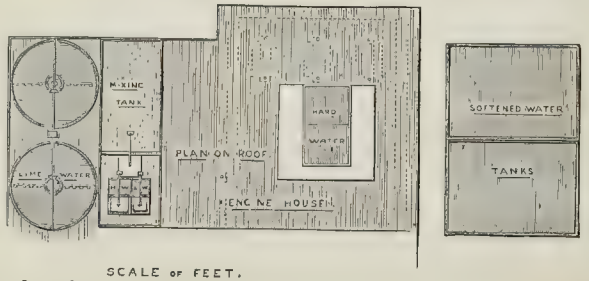


AT Mr DUNCAN'S SUGAR REFINERY - LONDON.

100,000 GALLS PER 24 HOURS.

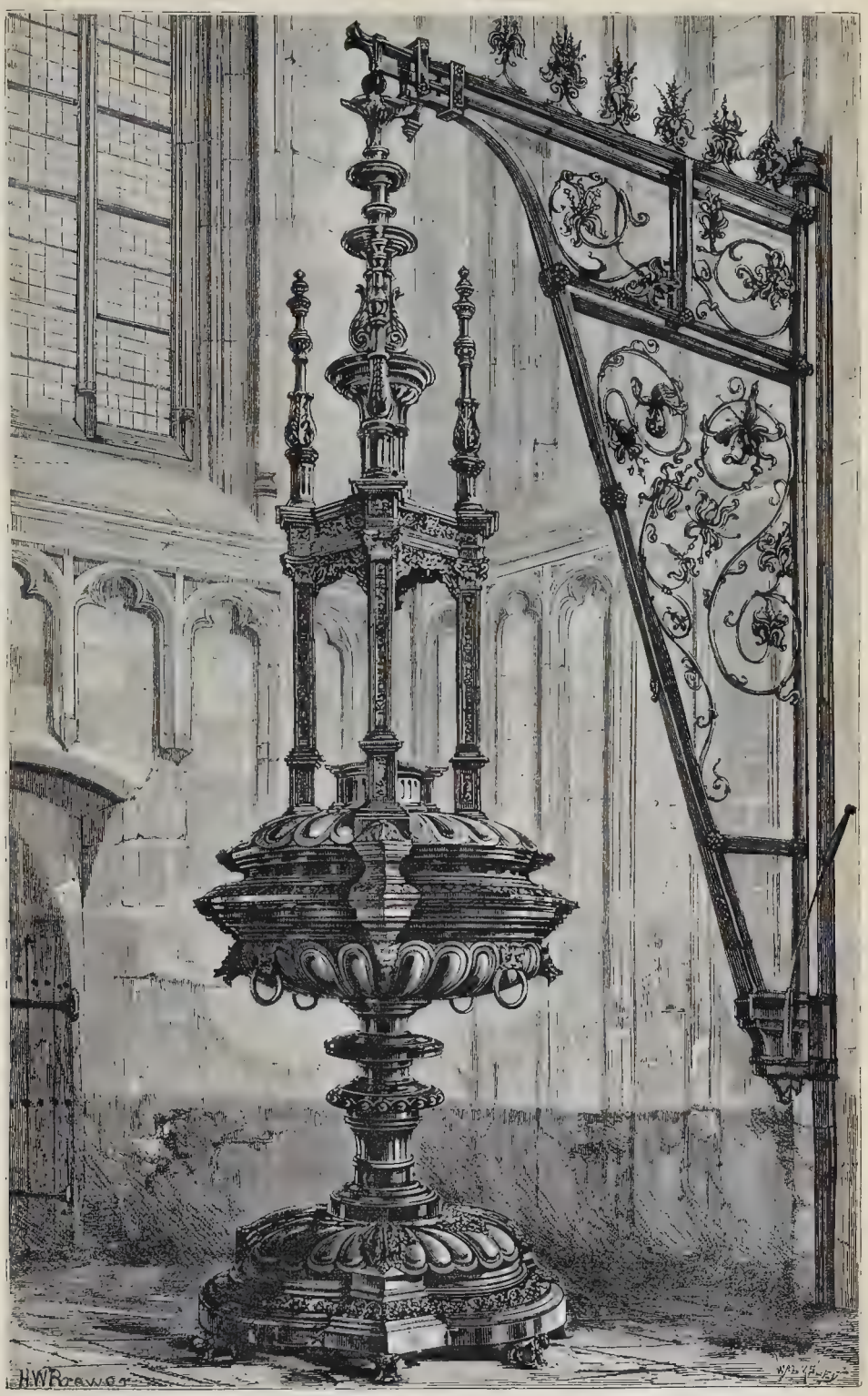






THE PORTER-CLARK PROCESS FOR PURIFYING AND SOFTENING WATER.

W. G. SMITH, Sc.



FONT IN THE PROTESTANT CHURCH, BREDA, HOLLAND. Sixteenth Century.

The chalky water in coming in contact with the freshly-placed cloths is not completely strained from the infinitely fine crystals of carbonate of lime: for two or three minutes a rapidly-decreasing dulness is visible in the water issuing from the filtering-chambers; gradually and rapidly, however, the surface of the cloth becomes covered by an aggregation of crystals, which, ever increasing and compacting, present within the short time named a perfect filtering medium of carbonate of lime, whence passes water of the most exquisite clearness, having when viewed in the depth of the receiving-tank the beautiful azure tint peculiar to water purified by Clark's process. It continues thus to flow on throughout the day, at the end of which time the accumulated deposit does not exceed $\frac{1}{16}$ in., although 20,000 gallons will have passed through the 69 square feet of filtering surface. The bulk of this deposit is easily removed by an ordinary trowel, and in the other modifications of the apparatus given in Mr. Porter's patent the cloths are so attached to the filtering-chambers as to admit of their being thus partially freed from deposit without being disturbed: it is found preferable, however, to free their interstices by rinsing and to begin *de novo*, and the facility with which by the apparatus we have described, the cloths charged with deposit can be lifted off and replaced by others constitutes an essentially important and interesting feature in the process, particularly when viewed in relation to waters containing vegetable or other organic matters; for it is agreeable to know that it is not continuously filtering through the decomposing accumulations of weeks and months, but through a medium of extreme purity constantly renewed.

It was under the advice of Mr. F. J. Bramwell, as consulting engineer to the committee of magistrates, that this process was adopted for the Banstead Asylum: and upon the recommendation of Messrs. Giles & Gough, the architects, it was adopted by the Kent Justices for Chartham. The water at these places is reduced by the Porter Clark process from 16° and 17° of hardness to 3½°: the cause of calcareous incrustation in the steam boilers and the miles of hot-water pipes is thus removed, and a consequent saving of fuel effected, while for laundry and other purposes soft water, free from all impurity, gives cleanliness, comfort, and economy.

The cost of the apparatus or plant of the Porter-Clark process, inclusive of all charge for patent right, has been nearly 800*l.* at Banstead, and somewhat over 700*l.* at Chartham, in both cases exclusive of the cost of the building; and if we may judge from the third example illustrated, it would not appear that a special building of a costly character is at all necessary. It will be seen that at Mr. Duncan's Works the lime-water and mixing-tanks are placed upon the roof of the engine-house, and the chalky water led to the filtering-machines in a room below. In the frost and short days of winter some inconvenience may be expected where the tanks are not under cover, and the ordinary vicissitudes of weather would appear to bespeak a shelter of some kind.

The cost of working the process in the quantities named is said to be less than 1½*d.* per thousand gallons. While thus applied, as in the examples before us, to thousands of gallons per hour, we are glad to learn that Mr. Porter is prepared to adapt his apparatus to the scale of domestic requirements in private establishments.

THE FONT IN THE PROTESTANT CHURCH, BREDA, HOLLAND.

WE have from time to time had occasion to mention the Protestant church, formerly the cathedral, of Breda, in North Brabant. It is not our intention now to give any descriptive account of this edifice, but simply to call the attention of our readers to the remarkable font which forms such a beautiful feature in this very interesting church. This font, as will be seen from our illustration, is a fine example of the Early Renaissance style of the Low Countries. It is entirely composed of brass, and is gilt both over its external surface and in the interior of the bowl. The workmanship is remarkably delicate, and the arabesques of the pilasters are worthy of an Italian. There can, however, be no doubt that it is a work of that splendid school of architects and workmen who produced the stalls at Dortrecht, the side screens at Bois-le-Duc, the high altar at Venloo, and other works of a similar character which are to be found in the neighbourhood. The exact date of this fine piece of church furniture is not precisely known; there can, however, be little doubt that it was executed a very few years previously to the Reformation, which we must remind our readers took place in Holland nearly half a century later than it did in this country; and if we ascribe the date 1565–1570 to this font we shall not be far out of the way. It is much to be regretted that so few examples now remain of this early Renaissance work in either Holland or Belgium; the examples which, however, do exist, are singularly original and beautiful. As a rule, the general outline and composition is thoroughly Gothic, whereas the detail is quite Italian in character. We think there can be little doubt that the general idea of the font at Breda was borrowed from the splendid Gothic example at Bois-le-Duc, of which we have given an illustration in a former volume of this journal, and a careful comparison of the two will serve to show how well a good architect can take a hint from a work in one style and translate it into another. The general appearance of the font at Breda is greatly injured by the destruction of the figure or group of figures which formerly filled the large tabernacle or niche forming its cover. In the font of Bois-le-Duc this space is occupied by a representation of St. John baptising our Lord, and it is highly probable that the same subject was here also represented.

The crane for lifting, or rather sliding, off the cover of the font also exists, and bears a strong resemblance to that at Bois-le-Duc, making allowance for the difference in the dates of the two examples. With this, however, all comparison ends, for the beautiful baptistery screens and other interesting articles of furniture which exist in the latter church have here all been destroyed, and even the font itself is neglected and unused. We do not wish to suggest that any attempt should be made to restore this beautiful example of church furniture, as we feel that this could not be satisfactorily done; but we do plead that it should be carefully preserved, and that the building in which it stands should not be allowed to fall into the state of neglect and decay which is a disgrace to all connected with it. As an example of this, we may mention that owing to years of neglect the beautiful central lantern of this church had to be destroyed. Probably, a few pounds spent every fifty years in mending the lead work would have made it secure for centuries. We are glad to see that the tower, which is the property of the town, has at last been attended to, and the fine monument of William III. of Nassau has been repaired under the direction of the well-known architect, Mr. Cuypers.

In a former number we have given a drawing of this monument.

THE WORKS AT MARLBOROUGH HOUSE.

WE have received the following communication from Mr. Robert Rawlinson, C.B., and gladly give it place, though we are unable to admit the correctness of the first sentence:—

"The paragraph on page 1216 of the *Builder* is in error. All old drains and all tainted subsoil are being removed from the basement of Marlborough House. All drains are also removed and new drains are constructed, externally; all sink-pipes pass into external traps externally ventilated. All timber floors are being taken up, and the ground surface examined, cleansed, and covered by 3 in. of Portland lime concrete. These floors will be free from any refuse underneath, and will be fully ventilated. Where the old drains have been removed new clean gravel is substituted, and the surface then concreted. The entire basement is, in fact, being examined, freed from tainted material, and is also being concreted. The old lead soil-pipes are being removed, and new solid 10 lb. lead pipes substituted; every soil-pipe trap is being ventilated, and the external drains are ventilated at six points, the pipes being carried well above the roof.

Mr. J. Taylor, of the Office of Works, has charge of the works. There are about seventy men, masons, bricklayers, carpenters, plumbers, and labourers, employed, under competent clerks of works,—and foremen never absent.

On behalf of his Royal Highness the Prince of Wales, and with the assent of the Office of Works, I have inspected the plans, and from time to time inspect the works and communicate with Mr. Taylor, as may be necessary. The word 'all' is, I see, repeated many times; but I wish to impress upon you that no pains nor expense are being spared by the Office of Works to free Marlborough House from a suspicion of sewage taint; and when it is again handed over to his Royal Highness, I believe it will be as complete in all sanitary works as such a house can be made."

We are glad to have elicited this statement, which will doubtless be satisfactory to the public. Our informant adheres to his statement. He says,—"When I was at Marlborough House I saw the workmen laying the new drain-pipes in the old brick drains, which still contained the old soil, on which fresh earth was laid, so as to fill up round the new pipe drain." We must suppose that this was a quite exceptional case, and are quite satisfied to leave the matter in the competent hands which, as we now know, have the direction of it.

INSTITUTE OF PAINTERS IN WATER-COLOURS.

THE twelfth winter exhibition of sketches and studies at the gallery of this society is in reality more of a "sketch and study" exhibition than is the case with some other collections now open under a similar title. Unfortunately the number of studies that are of any particular interest is limited; the more so that some of the leading contributors exhibit nothing of importance. Mr. Linton's figure of a rather thick-waisted lady (82), or a lady in a costume which gives her that appearance, is a fine study of colour, no doubt, and has individuality of character, but it certainly does not show the best intellectual qualities of his art, and the title, "Hesitation," is a mere name for the drawing,—there is no indication of its being a special study of the expression of that particular mental state. Mr. Collier is represented by two small sketches, which do not exhibit his usual power. Mr. Hine's four small drawings are also much slighter than he usually sends even to the winter exhibition, but are exceedingly interesting as showing the artist's method of working out in the first instance those beautiful south-country scenes which he treats, in their finished form, with such an unusual combination of realism with delicate aërial effect. As we have before said, we decidedly prefer that exhibitions which profess to consist of sketches should keep to their *rôle*; we do not complain in this exhibition of drawings being rough and unfinished, but of their being also weak and comparatively uninteresting. All the studies by Mr. Hugh Carter are, however, more or less interesting and expressive; the sentiment and treatment of figures of rustic life are obviously in some degree founded upon that of Israels; but though not rising to the height of his model, the artist, on the other hand, has escaped mere plagiarism: he gives his own feeling (a placid and quiet one), and his own method of handling, to the figures who inhabit his cottage interiors. Another very clever figure study is that by Mr. Seymour Lucas, entitled "Not Done Yet" (72), the article to which the words apply being one of those long-tailed coats of coloured cloth in which Mr. Lucas has clad a good many figures of men of the olden time, and which we now see in the state of preparation at the hands of a tailor of the period. Mr. Harry Johnson contributes several interesting broadly-treated drawings described as "from nature," by which we conclude we are to understand that they are executed on the spot. Of these "A Sussex Cottage" (167) is very picturesque. Near this is a single small dark drawing, full of originality of feeling, though very slight in handling, by Israels, and entitled "A Peasant's Home" (168). It is a strange, almost weird, little drawing of a hut under dark trees, and a figure seated by the low door, about the opening of which two white doves are fluttering, making two gleams of light in the dark shadow. Mr. Gregory's "St. George" (256) is a fine and pathetic study of a head life-size, though we can see no reason for its title; and Mrs. E. Murray has two good Eastern figure-sketches, in one of which, "Muly Seedi Ben Ali sitting for his Portrait" (305), there is considerable humour. Mr. Gregory's small sketch of "The Château, Dieppe" (316), is a very good specimen of the sketch proper, and an interesting corner of architecture. An "out-door sketch" by Mr. Beavis, "A Weedy Nook on the Thames" (252), is worth looking at; it is in the main a study of dock-leaves and other wild vegetation. Mr. Towneley Green's little miniature pictures (for such they really are),

"The Drawing-master" and "Under the Yew-tree" (320, 355), are very charming, the former especially. Mr. Aumonier sends a really fine landscape study, "Before the Daylight deepens into Night" (253); there is great solemnity of feeling in this. Mr. Ward's little interior with figures, "The Inn at Dinan" (245); Mr. Edwin Bale's "The Curé," (222); Mr. Wimperis's large and powerful sketch called "Showery Weather" (191); and one or two drawings of Mr. Andrew C. Gow, in particular "The Last of the Old Squires" (238), are among things that catch the attention. The second screen contains a coloured study for an illustration for the Christmas number of the *Graphic*, by Mr. C. Green, "The Children's Fancy Ball" (341),—a procession of children in fanciful costumes, arranged on one plane in a "decorative" manner. This is a pretty joke: under it, on the same screen, are two drawings for another illustrated publication, which are "no joke" at all in any sense, although they are contributions to a, or rather to *the*, comic paper: these are two original drawings by Mr. Tenniel for the cartoons of France standing over the remains of Thiers ("the broken link"), and that more recent one, "Tightening the Grip," which must be fresh in the memory of our readers. We should be disposed to call these the finest works in the room, both in intensity of feeling and power of drawing: in regard to the latter quality, the figure of the struggling Turk is really remarkable, especially when we consider the short time which circumstances allow for the study of such a drawing as this, which has to be almost improvised to meet the interest of the moment.

ROYAL ALBERT HALL.

The Albert Hall was the scene of an interesting musical entertainment on Tuesday evening last, when Mr. G. A. Macfarren's new oratorio, "Joseph," was produced for the first time in London before a very large and attentive audience. The new work was very well, we might say enthusiastically, received, several movements being re-demanded; and the composer, who appeared before the audience at the close of the performance, was received with much applause and cheering. As in other works by the same composer, there is in "Joseph" a great deal of highly-picturesque suggestion of "local colour"; as in the instrumental introduction representing the pastoral life, the quaint music which accompanies the approach of the caravan of Ishmaelites, and (in a similar spirit) that in which the arrival of Jacob and the brethren in the wagons sent by Joseph is indicated, where we hear the tinkling of the wagon-bells as they approach. The effect of these and other effective and piquant bits of orchestral colouring will be imagined by those who know the composer's success in this way in other works; but the oratorio contains matter of higher interest than this, and some of the solos and choruses are marked by great beauty; that which produced most effect on the audience (partly due to the impassioned singing of Mr. Lloyd) was Reuben's air, "Let us not kill him." The whole scene of the transaction with the Ishmaelites is as dramatic in effect as if it were a scene from a "serious opera," and hardly requires the scene-painter's aid for music which is so vivid in its characterisation. The scene (for so it may be termed) in which Pharaoh relates his two dreams, is another passage very effective and descriptive. It is worth notice that the acclamations in praise of the Egyptian deities, in the chorus which opens the second part, are sentences translated from Egyptian monumental inscriptions: a curious revival of the expressions of a worship of such a remote period. The work was very well executed. The principal performers were Mdme. Sherrington, Mrs. Osgood, Mdme. Patey, Mr. Lloyd, Mr. Santley, and Signor Foli. Dr. Stainer was at the organ, and Mr. Barnby conducted.

Association of Municipal and Sanitary Engineers and Surveyors.—A meeting of the members of this Association, under the auspices of the Home and Eastern Counties District Committee, will be held at Dartford, Kent, on this Saturday, the 15th inst., to view the West Kent Main Sewerage Works, by permission of Sir Joseph Bazalgette. The Model Bye-Laws, recently issued by the Local Government Board, will be discussed previously to viewing the works.

THE DEVELOPMENT OF GOTHIC ARCHITECTURE.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association, on the 7th inst., Mr. Bowes A. Paice, president, in the chair, the following gentlemen were elected members,—viz., Messrs. A. Burnell Smith, F. J. J. Whitwell, E. C. Newmarch, E. Marsland, H. W. Booth, E. A. Mason, J. P. Cutts, F. Baldwin, W. F. Keen, E. H. Abbott, H. Rose, H. Ainsworth, C. C. Wilson, F. Burrows, and W. J. Essex. Five nominations for membership were read.

The President said it would be remembered that, at the opening *conversazione* of the Association, a number of drawings by the late Owen Jones, presented by his sister, Miss Catherine Jones, were exhibited. The Association was again indebted to Miss Jones for her kindness in presenting to them a portrait of her brother, for which he (the President) was quite sure that they would award their thanks by acclamation.

Mr. J. J. Stevenson then read a paper, the subject of which had been announced as "Gothic Architecture," prefacing it by saying that part of what he was about to read had already been published in a magazine,* although there was a good deal which he had not published before. The more proper title for the paper would rather have been "The Development of Gothic Architecture." Of course on such a subject, about which people had been talking for the last hundred years, he could not hope to say much within the limits of a paper; all, perhaps, that he could do was to bring the views of others together, and to put them into a shorter space. He had been mainly indebted, as any one who studied the subject must be indebted, to Viollet-le-Duc. Mr. Stevenson went on to remark that although England and France developed each her own forms of Gothic architecture,—similar advances being made independently in both countries about the same time, as is the case at present in astronomy and other sciences,—the style was imported into England already somewhat advanced. Its first appearance was in France, and there, from the more logical character of the people, less tolerent of compromise than we are, its development can best be traced. It sprang from an imitation of the buildings which the Romans during several centuries of occupation, with their faculty of giving their conquered provinces not only their language but their manners, had left everywhere throughout Gaul, in their own round-arched style, palaces, baths, aqueducts, bridges, basilicas, and villas or country houses like villages, consisting of straggling agglomerations of buildings one story high connected by covered colonnades for country residence and the cultivation of the soil. After a century or two of pillaging excursions, the German barbarians settled in the land. About the middle of the sixth century the Franks had occupied the whole country except part of Languedoc held by the Visigoths, the east held by the Burgundians, and Brittany, which was not conquered. When with rising civilisation churches or monasteries and towns began to be built, architecture had to begin at the beginning again. Roman buildings remained everywhere, but no one knew how they had been constructed. These in their new buildings the people copied as well as they could, making up for miserable construction by lining them inside with marble and gaudy painting. When they began to build churches they attempted a reproduction of the old basilicas, or halls for the administration of justice. At first, as they were unable from poverty and want of skill to reproduce the Roman vaulting, the roofs were wooden. But churches in those days, like theatres now, were always being burnt, and attempts were made to make the roofs as well as walls of incombustible material. In the south of France this was attempted,—without the use of wood,—by a plain wagon-vault, as it is called, from being like the cover of a long wagon stretched on half hoops. This vault they covered with solid masonry, in the ordinary form of a roof. But for this a round arch was very unsuitable; a pointed one saved weight on the apex, and had less thrust. And, wherever they got the idea, whether out of their own heads, which is not impossible, or through Venice from the East, where the pointed arch seems to have been used continually since the time of the Pyramids and Nineveh, it was for vaulting almost immediately adopted. But the arches opening between the nave and aisles, and those of the windows, were still round. In another way the pointed arch was found advantageous in construction. Attempts, again from a desire for fireproof construction, were made to build domes. Gothic had once a chance of becoming a domical style of architecture. If a square is supported on four arches, and carries a dome, the bottom of the dome being quite inside the angle pillars, must be supported from them by four spherical triangles, whose points rest each on one of the pillars, and whose bases, turned uppermost, form together the lowest ring of the dome. These triangles resting on their points, their tops a quarter of a circle, their sides each half of one of the supporting arches, are called pendentives, from their hanging as it were in the air. Now if the arches whose curves their sides follow are pointed, the pendentive will be longer than if the arches were round, and, the projection being the same, will not slope so steeply forward; while, if the arches are round, the top part of these pendentives must project actually level, and thin away to nothing. Consequently a dome is more easily placed on pointed arches than on round. Neither of these styles of Gothic was ever developed. In them the windows and openings always remained round. The domical style, with the means at the command of the builders, was suited only for small churches, and could not serve the needs of the great towns of the north. The style with wagon-vaults was suited only for the south, for churches so constructed were difficult to light. To form an abutment for the massive central vault the lower side aisles had to be carried up to its springing, thus abolishing the clearstory and preventing any light getting into the central nave except from the side aisles, leaving the central vaults dark caverns. Then the roofs all stone did not do. Water got through their upper surface, as will happen, and filtered through the solid roof in devious courses. The place where it appeared on the inside was no indication of the position of the leak outside; so that it was found necessary, especially when the vaulting became more intricate in form, to make it merely an inner ceiling, protected outside by a simple wooden-framed roof. Gothic, as we know it, developed in the north of France, in what was called the Royal Domain, comprising Paris, Rheims, Amiens, &c. At first, their churches being large, the builders confined their fireproof constructions to the side-aisles, for they were unable to vault over the wider central portion; nor could they afford to lose the range of windows, or clearstory as it is called, which lighted this central part, by raising the side-aisles so as to make them abutments to a wagon-vault. For this difficulty they found in Roman work a solution which enabled them to vault the central nave and yet preserve the clearstory. By dividing the continuous wagon-vault of the nave into square compartments, and running another vault across each compartment, so that the two vaults intersected, as the Romans had done, they concentrated the thrust on the four angles of the compartment, where it was abutted, at first ineffectually by tall buttresses, but with larger experience completely, being carried down to the ground by half an arch above the aisle-roofs, to which is given the name of flying buttress. At the same time an arched space was left clear in each compartment of the nave above the aisle-roof, in which windows could be opened. This form of vaulting is called groining, in contradistinction to the continuous wagon-vault, as the masses of the vault are divided and joined at a point like the limbs to the trunk in the human groin. This system of vaulting it was easy to apply either to the nave, leaving the aisles with wooden roofs, or to the aisles only with wooden roofed nave; but to vault both at the same time, using only the Roman round arch, was a problem of some difficulty. For, if the width of the nave was taken as the size of the square of vaulting, the vaults of the narrower aisles, springing from the piers of the wider nave, become oblong in plan, the arches across the aisles only half the size of those into the nave, and the vaults rising from these lower arches to the higher ones having an awkward domical appearance. If, again, the aisle vaults, as well as those of the nave, were made square in plan, each square of the nave corresponding with two squares of the aisles on each side, the thrust of the nave vault was brought on every second pier only. Again, if only semicircular arches are used, those across

* Nearly two years ago. In the *Builder* for January 15, 1876 (vol. xxxiv., p. 62), we quoted the latter portion of the paper, under the heading "The Architecture of the Future."

the diagonals of the square of vaulting, being larger and higher than those of the sides of the squares, the windows under these cannot be as high as the centre of the vault. Light is thus lost, and a mass of dead wall is needed over the clearstory windows to form a level bearing for the beams of the roof over the central vault. In other positions, also, the round arch was found awkward. Where the piers are close together, as round the apse of a church, the arches resting on them, in order that their crowns might be on the same line as those of the wider arches down the sides of the church, had to be "stilted," as it is called; that is, perched on the top of straight piers, down which their mouldings were continued to the line of the capitals. By the use of the pointed arch, all those difficulties were got over. By means of it arches of different spans could be made all the same height. By breaking the round arch into two parts, attached by a point at the top, the arch could be widened or narrowed like a pair of compasses, and by adding to the length of the legs in the longer stretches, could be kept the same height as in the narrower stretches. In this way the determination to render churches fireproof by means of vaulting produced the pointed style of architecture which we call Gothic. In consequence of being so constructed, our old cathedrals have been preserved to us. Canterbury and Chartres, in our own time, and Rheims in the sixteenth century, have had their wooden roofs which covered the vaulting destroyed by fire, without injuring the buildings under them. At first the windows were small, leaving large surfaces of wall to be decorated with colour and painting, and the decoration was carried out over the windows also by the use of stained glass. This latter [illegible] introduced, was felt to be so brilliant and charming [illegible] it ruled [illegible] development of the style. The object of every change was to reduce the surface of masonry, and give more space for stained glass. The small windows were put closer together, and the masonry between them reduced to single upright bars of stone, called mullions, narrow on the face, but deep across the plane of the window, so as to give as much opening as possible for the glass, at the same time retaining strength. Openings shaped like flowers of three or four or more leaves, were placed above them; the corners left between were pierced; the stone between these openings was reduced to bars bending round the foliated forms (to which the name of tracery is given); and thus at last one great window was formed, which filled the whole space under the vault. Gothic architecture had a magnificent opportunity of development in the construction of the great cathedrals, which, in France, were all built at the end of the twelfth and beginning of the thirteenth centuries. These were civil as well as ecclesiastical buildings; in fact, the distinction between the two provinces was a thing unknown at the time, and is wholly a modern idea, which we never probably would have had, except for the differences in religious belief which arose among us at the Reformation. The bishops and abbots were feudal barons, with civil jurisdiction; and, on the other hand, all State action had some religious character and sanction. The cathedrals were the great meeting-places of the city, used for secular purposes, such as the administration of justice, and even for histrionic performances (which, again, were religious in character), as well as for mass. They sprang up just after the towns, along with the right to have walls, had attained freedom and privileges; in fact, as monuments of these and as rivals to the great castles of the lay, and the monasteries of the religious, barons. The bishops and secular clergy went heartily with the movement, thereby asserting for themselves the power and importance which had been largely absorbed by the monasteries. All the important towns seemed seized with a mania to rebuild their cathedrals with a magnificence unknown before. Their architects were laymen for the most part, as in several instances we know from their names, and the representations which occur of some in the lay dress. In fact, the regular clergy,—those living under a rule, or monks, who had hitherto been the sole depositaries of art and culture,—disliked the movement; naturally so, for it meant that their use, and consequently their importance, was gone, and they continued to practise still, after pointed architecture was invented, their own old round-arched style. This is the reason why the architecture of the French cathedrals is in almost every instance pointed, while in England it is generally round-arched. In France the cathedrals were rebuilt in the new style; in England, in accordance with our spirit of compromise, our cathedrals were generally monasteries or minsters as well. This cathedral-building mania (which was really analogous to the railway mania of our own day) lasted in France just about eighty years, the cities then ceasing to find that their privileges and the importance of the clergy (even of the secular clergy) were identical. Strifes arose, the clergy forbade the use of the cathedral bells for town meetings; the building impetus stopped before a single cathedral was finished, and though parts have since been built, most of them are unfinished, and not one has been completed according to the original design. The style thus developed was, of course, used for other purposes than churches. Castles and houses were built in Gothic, and the mouldings and minor ornaments were the same as in churches. Pointed windows and tracery, however, from the first it was found necessary to modify; while between vaulted floors, when height was valuable, flat arches, segments of a circle, were adopted. Very few specimens of Gothic houses remain anywhere. During the Middle Ages the style of living was poor and even miserable, as is proved by the general prevalence of leprosy, testified to by the necessity, everywhere felt, of establishing lazar-houses. The houses, except in the rich cities of Italy, were generally poor and small, but many of them were built of wood, and in the course of centuries got out of repair, and almost everywhere the more comfortable style of living in every class which the Revival brought with it caused them to be rebuilt. In Nuremberg, though it possesses two noble Gothic churches, there is scarcely a house older than the [illegible] century. Here and there, in places w[illegible]perity had departed, and the people were too poor to rebuild, Gothic houses still exist. Everywhere in great halls built for civil and domestic purposes, pointed vaults, and consequently pointed arches, were used, although the windows, so far as the portion used for light was concerned, were square-headed. During the highest development of the pointed style, while the pointed arch was used for all the decorative features, it was frankly abandoned in the windows, where the form would have been impracticable. It may be urged against the statement that vaulting is an essential of Gothic architecture, that Gothic churches, as well as domestic buildings, in England especially, frequently had wooden ceilings, not always from economy, but even, as in St. Stephen's Chapel, at Westminster, where the wealth of English art was lavished. This, however, does not disprove the fact that the Pointed style arose from vaulting necessities; and, indeed, to the use of wooden roofs in England may be traced the abandonment of the pointed arch, and the adoption of the flattened perpendicular form, while in France, where the use of the vault was continued, the pointed arch also was retained to the last. Till the end of the thirteenth century, the development of Gothic architecture was similar in France, England, and Germany. There are some slight national differences, but every advance of the art was common to the civilisation of those countries. It was even carried as far as Norway, where the Cathedral of Drontheim, built in the thirteenth century, is in the ordinary style of the period. It is built of stone, not in the national wooden mode of construction, which the Norwegians did not abandon in their other churches. But the style of their carving in wood, which has always been a national art, prosecuted during their six months of continual night in winter, became, and continues still, thirteenth-century Gothic in character. This similarity of style in the different countries of Europe was largely due to the organisation of the great monastic orders, who sent missionaries to found new houses and establish religion and civilisation in outlying districts. The new inventions of architecture were thus carried everywhere, as those of engineering are at the present day. During the fourteenth century, each country where the style was established took it into its own hands, and developed it into a national style of its own. It is absurd to call these later styles degraded, as has been the fashion of late. Each of them, if studied without prejudice, will be seen to have developed characteristic and interesting, and often noble, qualities of architecture. One common quality characterised them as compared with the earlier style,—greater lightness and elegance in construction,—more window in proportion to wall,—giving an effect of space and height and light in the interior which was the glory of Gothic. This was attained by more scientific construction, and greater mechanical skill, which enabled the builders to dispense with the masses of material necessary in the earlier style. It has been the fashion to abuse our English Perpendicular churches, and much beautiful work in the style has in the last few years been destroyed, though it had three centuries of antiquity to boast of, because the clergyman or his architect disliked it, and preferred a modern imitation of an earlier style. The dislike of Perpendicular architecture in which we have all been trained has arisen from our judging it from the modern imitations of the last generation. For a like reason it is possible the earlier styles may find little favour with the coming generation. But one only needs to look at the Perpendicular style in its genuine productions to appreciate its high artistic qualities. By its common sense and severity it saved English architecture from the looseness and degradation into which Gothic architecture fell in other countries. In few styles of architecture has there been a truer sense of proportion, or greater skill in the disposition of the masses, than in Perpendicular. In the grandeur of its towers it is unsurpassed, and the appearance of height in these is increased by the low roofs and the prevalence of the horizontal lines, for which there is the authority of Greek architecture. The lecturer then proceeded to speak of modern Gothic work. He said that, as in all copying, it is the form, and not the spirit of the original, which is apt to be retained. Our architects and builders think they are working in the Gothic style when they stick a pointed arch where it is not wanted, and means nothing—possibly an arch one brick thick on the face of a wall, supported by a wooden lintel inside—while the whole construction and details of the house follow the ordinary Classic traditions. The new Gothic hotel at St. Pancras Station is a splendid example of the revived style, but it cannot be said that the specially Gothic features, such as the pointed windows filled with tracery, are an outcome of any modern hotel requirements. Pointed windows are inconvenient for blinds and curtains, and reduce the light at the top, where it is of most value for lighting the room; the tracery still further obstructs it, and it is scarcely sufficient justification for it that the circles in it are utilised as ventilators. The beauty of the architecture may be sufficient compensation for the inconvenience and expense which the use of the style involves, but when applied to modern domestic use it has not the justification which is claimed for it,—that its features are the outcome of use and convenience. Old Gothic attempted honestly and fearlessly whatever use or necessity dictated. It has always the merit of truthful and apparent construction. But this also to some extent unfits the style for modern use. It involves, unless when money could be lavished in decoration, an appearance of severity which does not accord with our modern feelings, and is least appreciated by the poorer and less educated, in whose houses, did we attempt really to carry out the principles of the style, it would be thoroughly disliked.

A brief discussion ensued, in which Messrs. R. Phené Spiers, H. W. Brewer, M. B. Adams, and H. L. Florence took part. To this we may return.

THE WEST BRIGHTON ESTATE.

THE parish of Hove,—a few years ago an unimportant suburb of Brighton, chiefly noticeable as containing the Sussex County Cricket Ground, which was then close upon the sea-shore,—has now within its confines the nucleus of a great town which bids fair to rival Brighton itself. The extension of buildings westward of Brighton proper within the past five years has been noteworthy.

"Westward the march of empire takes its way,"

stands a chance of fresh verification, and although alarmists predict that the growth of houses has been too rapid, at present no indications of any such calamity are apparent, and the houses are taken as soon as they are ready.

The most important enterprise in Hove has been the building up of the West Brighton Estate, which, in fact, has swallowed up the old County Cricket Ground, compelling its removal further north, on the Stanford Estate, where a large extent of admirably-kept grass is devoted to the use of the several clubs that maintain it.

The West Brighton Estate comprises some forty or fifty acres, and extends for the third of a mile along the sea front. It also has a wide branch running northwards up the middle of the Stanford Estate, which is called the Drive, and consists of an avenue of noble width, on each side of which are gardens and a private road to the houses that are planned to be built.

The great features of this estate are the well-kept lawns that lie between the main road and the sea. These are laid out with terrace walks and level grass plats with evergreen shrubberies and a wealth of floral beauty. The owners of the estate deserve praise for their largeness of views in providing these gardens for the enjoyment of their tenants and the adornment of their land. These lawns, the "Queen's Gardens" as they are called, are kept in order and laid out by Mr. Mills, the gardener to the estate, whose conservatory at the top of the Second Avenue and extensive nurseries near the Cliftonville Station are worth a visit.

The estate is now nearly covered with buildings. At first, two terraces were built by the owner, from the designs of Mr. Knowles. Mr. Wheeler succeeded him as architect, and some parts of the estate were re-arranged. The avenues were then laid out, running north from the sea front to Church-road. The first avenue at the eastern extremity was taken by Mr. J. T. Chappell, of Westminster, the well-known contractor, and Mr. Stenning, and who had already built the front terrace. The first avenue is laid out in terrace houses, alternately in blocks and in groups of three or more. Nearly all of these are completed. The second avenue has been devoted to villa residences, either singly or in pairs or groups, and is filled up. The buildings in this avenue are, with one or two exceptions, from the designs of Mr. Wheeler, who, by the way, seems to have become owner as well as architect. They are all of gault bricks, and are plain, unpretending houses, internally convenient.

In the centre is the Drive, on the corner of which is the large building originally commenced as a residence for Mr. Albert Grant, and now occupied by "Prince's Club." The whole of the east side of this avenue has been taken by Mr. Ockenden, who is rearing a number of mansions, two of which are ready for occupation. The other side of the avenue is taken by Mr. Chappell, who is also the owner of the terraces in course of erection on the frontage as a continuation of the two terraces already referred to. These new terraces are more attractive in external finish as well as on an improved scale of internal accommodation.

Next to the Grand Avenue is the third avenue, which the owners of the estate intend to reserve exclusively for detached residences, three or four of which are already built and occupied.

The next avenue is the fourth, the western boundary of which extends to the rear of the gardens of the houses on the east side of Albany Villas, and is thus the western extremity of the estate. Nearly all the land is taken in this avenue, which thus far shows the erection of semi-detached houses of considerable size. All the houses on this estate are built with white facing bricks, almost exclusively from the Burham Company, or from Messrs. Crampton, at Sevenoaks. So far, the estate having been in the hands of but a few large builders, the general effect has been scrupulously adhered to, and the key-note given by Mr. Knowles's two front terraces has been judiciously retained. The estate is managed by Messrs. Ashurst, Morris, & Co., for the company. It terminates on the south side of Church-road, with the exception of the drive in the centre, which belongs to it, and is intended to cross the railway, and ultimately curve round over the Dyke-road and a corner of the Downs, and so run into the Preston-road. If this is judiciously managed, a grand opportunity may be secured for a public park and for detached villas in grounds of considerable extent. North of the Church-road is the Stanford Estate, from the owners of which the West Brighton Estate was originally purchased. This extends far north and east. The roads run north in continuation of the avenues before alluded to, and are crossed by others running east and west. In these a great mistake has seemingly been made as to the levels, which are so considerably below the Drive, that it is difficult to see how the approach thereto is to be attained. Mr. Willett has taken the whole of the land on each side of the Drive from the north side of Blatchington-road to the new railway bridge, and will have to show all the skill he possesses in getting over this difficulty.

Excepting a cottage, with sharp tile-covered roof and well-grouped gables and chimney-shafts, erected for Sir Alexander Malet, there is as yet nothing attractive in the way of building on the Stanford Estate. Upon the Drive Mr. Nurcombe is erecting a group of houses from Mr. Church's designs, and adjoining these are two large mansions, which Messrs. Spreadborough & Feldwick are building, and which promise to be attractive. Upon the opposite corner Mr. Chappell has just finished three houses in gault bricks with stone dressings.

The cost of land on these estates has necessarily compelled high rents and a large price for purchase of freehold. The detached villas vary from 4,500*l.* to about 7,000*l.*, with the exception of one or two larger residences, for which far higher prices are asked; and the terrace-houses from 3,000*l.* to 7,000*l.* The rents are from 250*l.* to 350*l.* for the moderately-sized houses.

THE ROYAL ACADEMY PRIZES.

The annual distribution of premiums to the students of the Royal Academy took place on the 10th inst., at Burlington House. Sir Francis Grant presided, and distributed the premiums. The young lady competitors were received with especial applause, and the President, in presenting one of the prizes, remarked that it was not improbable that ere long there would be a Ladies' Academy, of which he hoped the Princess Louise might become the president. The following is the list:—

Historical Painting, gold medal, 23*l.* scholarship and books, James Elder Christie; Landscape Painting, gold medal (Turner), Allen C. Sealey; Painting of a Figure from the Life, silver medal, H. H. La Thangue; Painting of a Head from the Life, silver medal, Blanche Macarthur; extra silver medal, Henry Gibbs; Copy of an Oil Painting, silver medal, William Walker; Drawing of a Figure from the Life, 1st, silver medal, not awarded; 2nd, silver medal, Chas. Knighton Warren; Drawing of a Head from the Life, silver medal, Edgar Hanley; extra, silver medal, Lewes Will Jackson; Composition in Sculpture, gold medal, 25*l.* scholarship and books, Thomas Stirling Lee; Design for a Medal, silver medal, not awarded; Model of a Figure from the Life, 1st, silver medal, not awarded; 2nd, silver medal, not awarded; Model of a Statue or Group, 1st, silver medal, Ezmeline Halse; 2nd, silver medal, not awarded; Drawing of a Statue or Group, 1st, silver medal, Bernard Evans Ward; 2nd, silver medal, Arthur William Hayes; Drawing of a Statue or Group, 10*l.* premium, Richard Alfred Williams; Design in Architecture, gold medal, 25*l.* scholarship and books, Edward Clarke; Design in Architecture, travelling studentship, Ely Emlyn White; Architectural Drawing, 1st, silver medal, George H. Rayner; 2nd, silver medal, George E. Langford; Perspective Drawing and Sciography, silver medal, Harriette Edith Grace; Composition and Design of a Figure Picture, 1st, 30*l.*, James Elder Christie; 2nd, 10*l.*, Henry Marriott Paget; proxime accessit, Walter Chas. Horsley.

Sir Francis Grant, in the course of a brief address, said,—It was almost a truism in art that every picture should have a principal light,—one special object of attraction on which the eye of the spectator could mainly dwell. But for relief by smaller and inferior lights the chief light would become a spot in the surrounding gloom. He remembered this first principle of art being illustrated by Lord Eldon, the celebrated judge. Lord Eldon possessed a fine collection of the ancient masters. He was a high authority on all matters of art, and was himself no mean artist. The noble lord was addressing a young artist, to whom he said, in broad Scotch, "Sir, do you know that every picture must have a sun?" And the learned judge paused for a reply. The young student said, "I presume your lordship means the principal light." "Quite right," quoth the judge. "But, sir," he added, "you must also have a moon." The student replied, "I presume your lordship means a secondary light, less important than the first light." "Right again," said the judge; and then, turning his keen grey eye on the student, he said, "It must also have satellites." Now it had always struck him that there could not be a more perfect and simple description of how a picture ought to be composed, the principal light being the sun, the second the light of the moon, and the satellites to enliven the gloom of the picture. A picture might have a good deal of truth, and possibly some taste and refinement, but if it was not carried out on sound principles of art it would fail to be attractive. It would be well, therefore, for art-students to remember the receipt of the celebrated Scotch judge with regard to the sun, moon, and satellites. If he might venture upon one other anecdote, he would say that he believed the reason why Sir Joshua Reynolds was so true to nature was his method of placing his canvas close to the sitter, and retiring to the end of the room and comparing the production with the glass. If a student had to paint the leg of a table, the leg of a table should be before him. He remembered entering the room of Sir William Allan (afterwards president of the Royal Scottish Academy), when the latter said, "Stop; don't move for the world," and he then pointed to the pieces of a broken fiddle. Allan was painting the subject of "The Broken Fiddle," from the incident that some idle boys had tormented a street fiddler, and he, in his indignation, made a rush at them and broke his fiddle over their heads, and the moment seized by the painter was that of the fiddler's despair. He (Sir Francis) found that Sir William Allan had bought a fiddle and broke it over the head of a lay figure in order to obtain truth in the representation.

THE DESTINATION AND PRESERVATION OF THE OBELISK.

Sir,—Allow me to add my earnest protest to your own, and that of others most capable of giving an opinion in the matter,—a matter, let me say, which only architects or artists can properly adjust,—against the erection of the obelisk in Parliament-square, where it will assuredly receive and do all the injury you predict of it. But my reasons for this protest apply equally against its introduction to *any* architectural square, place, or scene whatever, more especially the area before St. Paul's Cathedral, where it would be quite as mischievous as in Parliament-square,—I say, architectural square or scene, for it is out of the question, as it would dishonour the precious antiquity, to put it among mean buildings in a mean neighbourhood. I believe there is no architecture but that of its own country to which it could be fitly introduced; or associated with it, would not present an alien and anomalous appearance,—architecture which, though the parent style of all styles, alike Occidental or Oriental, can never look at home in any other land but like a creation not only of another age but of another world. Such the obelisks look in Rome and Paris, where, doubtless, they have done no good to the architectural scenes they are placed in; to which nothing but their intense historic prestige, overbearing every artistic consideration, could have caused their introduction. They enchant the Piazza San Pietro and other localities of Rome, and the Place de la Concorde at Paris, but it is not with the charms of architecture, but the glory of thirty or forty centuries of history,—the associations of the "Mother of Science," and the cradle-land of the gods.

It should be borne in mind that the object in question is not properly an independent architectural monument; but an accessory of a monument strayed, or taken captive, into a foreign land; and an ancient Egyptian architect, could he visit once more the "glimpses of the moon," would probably smile at our wish to make a monument of it for the adornment of a great city. In Egypt, along with its companion obelisk, it was a graceful accessorial feature, designed visually to intensify by contrast the ponderosity of the vast pylons or temple-gate-towers before which it was placed, which in return increased its apparent gracefulness. In London there is no architecture to which it can render this service,—the service it rendered to the Temple of the Sun at Heliopolis, and latterly, to that of Cæsar at Alexandria,—or from which it can itself derive increase of delicacy. In London the obelisk's occupation is gone.

One, if not more of your correspondents, has suggested one or another of the parks as a proper site. How far the points meant are clear of architectural objects I cannot tell, but to be so placed as to appear to most advantage, and to do no mischief to its surroundings, I am convinced that in one of the parks, or in some Botanic or Zoological Garden, where there might be something of its own country and clime, plant, or animal about it—some other exotic—it should be placed, where it could be viewed from all points against the sky, and where it would bisect or otherwise injure no building by its long severe lines, or receive injury in return, and be surrounded only by beautiful shrubs, not tall trees.

With the desire that has been generally expressed that it should be placed where passing multitudes would daily see it, I do not sympathise, believing that not one in ten of the multitude will look at it after the first satisfying of curiosity; and that those who can duly appreciate it will go any distance to see it, and would prefer having it in a place where it

could be leisurely and quietly contemplated, and dreamt over. In such a place they would be in a fitter mood fully to realise its overpowering associations, as the most potent talisman over the cultivated imagination within the British Isles, not excepting the Assyrian sculptures; for ages before the oldest discovered palace at Nimroud was founded it had witnessed the exodus of the Israelites, and their passage of the Red Sea, and (as we need not limit its sight) watched the Chaldæan priests surveying the heavens from the tower of Belus. It will look down on Westminster Abbey and Stonehenge as things of yesterday. In this situation I would give it as a base nothing but a single cubical block of granite, without cornice or plinth, on three or four steps, as shown in your "Rendezvous of Egyptian Obelisks," Oct. 27, and no metal cap of any kind; by which treatment it would look most Egyptian.

But great fear has been expressed by Dr. Birch of the effect upon it of a northern winter; even that its hieroglyphics may disappear unless care be taken; which is a point that should be seriously investigated. If there is real danger of this, perhaps the obelisk's proper destination is under the glass dome at Sydenham,—which would be a banishment of it that few would agree to. But I must confess that sooner than it should run much risk of losing its surface, in which alone its historic interest inheres, not in its core, I would dispose of it as just suggested; or even turn it on its side in the Crystal Palace, or in some gallery, supported on trestles, of the British Museum,—a position which would, at least, have the advantage of enabling visitors to fully inspect it and become as well acquainted with the top as with the bottom; better acquainted with the former than the great Sesostris himself could have been.

This letter may be too late to influence, if it could, late or early, the decision of the site of the obelisk. But it will not be too late to warn those who have the disposal of it on this most important point, and to suggest that wherever it be placed, it be duly protected by some means from the weather. For the preservation of an antiquity of such surpassing interest, and that has already cost some lives to bring it to our shores, there would be nothing very extravagant in putting it, in a park or garden, under a glass shade, *alias* a crystal tower or pyramid. Let me suggest the latter, say a model, on a scale of 3 in. to the foot, and so 1-64th in bulk, of the Great Pyramid, which would be about 150 ft. square on the base, and the same in height. A glass pyramid would be something "new under the sun," if not, too hot under it,—an objection, however, which applies to all glass structures alike.

While on the subject, a few particulars and observations that occur to me may not be deemed out of place. As regards the variation in dimensions of the two pair of parallel sides of our obelisk, it must arise from accidents of quarrying, for why should its author trouble himself to correct an appearance that could not offend anybody, or unfit it for its purpose? Few Egyptian obelisks, it is said, are perfectly square, and sometimes the face is slightly curved. The obelisk of Axum, in Abyssinia, shown in Salt's work, of a single block of granite, 60 ft. high, is remarkable for one of its sides being recessed in the centre from top to bottom, and for being terminated by a kind of patera, instead of the pyramidion, which has a not unpleasing look. The obelisk of Arles, by the views given of it, seems to taper in a far greater degree than usual. As to dimensions, it appears that much larger obelisks than any we are familiar with are mentioned by ancient writers. Diodorus Siculus mentions two of 120 cubits high; and as he has not exaggerated the size of the Great Pyramid as Herodotus has done, he has some claim to be trusted in such a matter. It is probable that anterior to being placed in front of temples, obelisks were raised to transmit to posterity precepts of philosophy; and that they have been used as sun dials, being entitled by the Egyptian priests "fingers of the sun."

In Elmes's "General and Bibliographical Dictionary of the Fine Arts," a book of much research, is given a list of works on the subject of obelisks, and of books of voyages and travels bearing on the subject, which must be valuable to the inquirer. Whether the author of the article "Obelisk" in the "Architectural Dictionary," has availed himself of it, I know not.

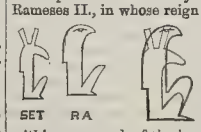
SAMUEL HUGGINS.

P.S.—Let me take the opportunity of saying that I was much gratified by the "Expression of Thanks" of "J. P. W." for my Paper, "Liverpool: its Body and Mind," in the *Builder* of Dec. 1st, and that I shall try to deserve his commendation better than I think I do.

"DESIGN IN THE OBELISK."*

THE difference of widths in the sides of obelisks is due rather to the difficulty of procuring sufficiently wide and long blocks than to design, for even those destined to stand before the same pylon were never precisely alike in either of the dimensions. It has further been remarked that those obelisks which bear three vertical columns of hieroglyphics are considerably more curved on plan than those that have but one column, probably owing to the necessity of preparing the surfaces by rubbing down little irregularities at the angles produced in the quarrying. The obelisks of Luxor are conspicuous in all these defects.

In the obelisk of San Giovanni Laterano the difference in the dimensions of the sides is inconsiderable,—a fraction less than 3 in.; but in that of the Porta del Popolo it is so great as to have obliged the Egyptian artist to represent the divinity on the two narrower sides in a standing position, the space not being large enough for the god to sit down as on the two opposite and wider sides. This obelisk, though only of the preceding reign to those of Luxor, is much less curved on plan, denoting more careful quarrying. It was erected by Oimeneptha I., the Pharaoh of the sarcophagus in the Soane Museum, and there are curious evidences of its having been raised before the completion of the centre line of the present east face by his son and successor Rameses II., in whose reign the god SET became an object of religious hatred, for all the places where his figure occurs in the upper part of the obelisk remain intact, while all those within easy reach of the base have been carefully and skilfully changed into the figure of RA.



The finest obelisks in the world, however, and far superior to those already named in all important particulars, are the two large obelisks still left at Al Karnak. One of them had been thrown down, perhaps, some years before a more complete devastation of that wonderful building took place, for the greatest part of its shaft still lies buried under the colossal roof-stones of the surrounding buildings; and it is from this that Mr. Hay procured a cast of one face of its pyramidion, now placed on the landing of the staircase leading to the upper Egyptian chamber of the British Museum. This pyramidion, which is now adorned with the figures of Ammon Ra and the king whose name is read by Mr. Samuel Sharpe as Thothmes II., had at one time contained different personages which have been entirely effaced, and the effacement is only to be detected by placing what the masons call a straight-edge against the side. The base of the pyramidion measures 9 ft. The length of the shaft of the companion obelisk is estimated at 93 ft. or 95 ft. Besides the cast of the pyramidion there are casts of the crowned hawk, or Horus, who presides over the central column of hieroglyphics, and of several of the figures of the kings and the gods which occupy the margin of all the four sides of the monolith down to about half its surface, and these, it may be seen, have had their inscriptions altered, as well as the sculptures on the pyramidion. At what time these alterations in the inscriptions were made, and whether due to political or religious events, are curious questions for the historian; certain, however, it is they were made while the obelisks were standing, and the perfection with which the alterations have been effected is highly in favour of the Egyptian artists who executed them; they would, indeed, escape notice, as those do on the obelisk of the Lateran, unless the sun shines very obliquely to the surface. Mr. W. R. Cooper, in his "Short History of the Egyptian Obelisks," gives some very interesting remarks on the four inscriptions on the pedestal of the fallen obelisk, which was first seen and published by Mr. James Burton more than fifty years ago, but only recently received its proper interpretation. Both these obelisks are of a lighter red colour than any of those already quoted, whether because taken from a different place in the quarry, or to a greater perfection of the surface of the monument, is doubtful.

JOSEPH BONOMI.

* See pp. 1160, 1181, 1204, *ante*.

ASSISTANT ARCHITECTS' AND DRAUGHTSMEN'S BENEVOLENT SOCIETY.

SIR,—The suggestion of your correspondent, "Bienfaisance," is one which ought to be acted upon without further procrastination. The idea is not a new one, having been at various times resuscitated; and about three years ago I called attention to the desirability of some such organisation in the columns of a contemporary.

This apathy on the part of architects' assistants to make provision for the future and against possible misfortune, arises in a great measure from a too sanguine belief in their ultimate success as architects. All assistants do not become architects, and even if they do they cannot prognosticate truly their own pecuniary success; it therefore behoves them to do their utmost to provide against the evils and miseries arising from those "thousand natural shocks that flesh is heir to."

As stated by your correspondent, nearly all other members of crafts and professions have their respective institutions: this protracted apathetic indifference on the part of draughtsmen and assistants is reprehensible, owing to the short-sighted policy which their conduct evinces.

If one or two members of the profession would undertake the responsible offices in connexion with the institution, in order to inspire confidence, they would thus form the nucleus of what, I feel confident, would ultimately become a successful organisation.

Personally, I shall be glad to give my leisure to further the success of this proposal; and if several gentlemen will form themselves into a committee, I do not think we shall have cause to anticipate failure.

You, sir, I feel confident, from your conduct in past years, will do your utmost to assist the effectuation of the suggestion by giving publicity and encouragement to any efforts that may be made, especially as the objects in view are the alleviation of human miseries, upon a principle that commends itself, owing to the sense of independence which it engenders, whilst at the same time it rids many persons of those morbid fears which are continually harassing them as to the future.

JAMES GEO. BUCKLE.

SIR,—Perhaps your correspondent would like to hear that a similar proposition was made about ten years back, and a paper read on the subject before the "Civil and Mechanical Engineers Society."

The response made to the circular for convening a meeting (one inclosed) was not sufficient to warrant the founding of such a society at that time; but if "Bienfaisance" thinks the new year an opportune one, I would help all I could.

ENGINEER.

THE MASONS' STRIKE.

SIR,—At a meeting in connexion with the above, which is reported in a daily paper of the 30th of November, one of the speakers made the following statement:—"The men do not *object to free trade in labour*."

Now, sir, if it is really true that such is the feeling of the men (and I have no doubt it is true of a very large number of them, although whether it is equally true of those who have been foremost in this strike is open to question), then what on earth is there to quarrel about?

I opine that if free trade in labour means anything, it means that a workman may sell, and an employer may buy, labour on whatever terms may suit the interests and conveniences of both parties, without let or hindrance. I beg, sir, to suggest that herein lies the very pith of the question. From what I know of the matter, which is not a little, I can with some confidence assert that is all the employers require. That point once fairly conceded, and the strike must end forthwith,—a consummation devoutly to be wished for by all those *outside* the *circle* whose especial business seems to be to organise and keep in motion a strike under some pretence or other. It occurs to me that, were this subject of free trade in labour better understood and more thoroughly acted upon, it would be better for all (excepting, of course, those before named); more especially the skilful and industrious workman, who would then be able to get, what he now does not get, "the full market value for his labour, and the liberty to turn his superior qualifications to his own advantage." He would not then, as now, be compelled to go to the labour-market with one hanging to his coat-tails who has perhaps not half his ability nor any of his intelligence, nor any inclination to attain it.

I say, sir, it is a perversion of plain-speaking to call it free trade in labour when all men are levelled to one standard, and compelled to act as such. There would be some show of reason about it, on the part of the men (but what about the employers?), if they were all equal in their social condition or domestic circumstances. Take, say, twenty, or, if you like, a hundred workmen, no matter what trade, and you will find every one of them differently situated. Some may be married, some may be single; some of the former may have large families depending upon them for support; some may have but a small number, others none; some may be robust, others weakly; some may live a long distance from the neighbourhood where employment is to be had, others may be living close to it; some may, from ill-health or from one of the many vicissitudes attending the career of a building artisan in particular, have been but partially employed, and fallen into arrears. Then, I say, it is a mockery of the principles of free trade in labour to place all these upon one level in regard to the bargains they may make in the labour-market as to wages or hours, no matter whatever their skill, their needs, or opportunities. Then, again, in regard to employers,—they, by the same rule, are placed in the same groove, no matter whatever their business requirements.

It will, doubtless, be urged—as it invariably is—in reply to arguments such as those here put forth, that there is no law in the book of rules which affects, one way or another, any workman or employer under any of the circumstances here enumerated, or which places any trammels upon free-trade in labour. But can that be freedom when a tax of 100 per cent. is imposed upon any employer who, from whatever cause, is anxious to employ a man, or number of men, after the stipulated hours, known as overtime, or that he should be called upon to pay 10d. per hour to a man who is either unwilling or unable to earn 7d. or 8d., or even less; or, if he is disposed to encourage and reward a skilful and industrious workman with an advance upon his rate of wages, but is compelled to forbear, because of the fear of an immediate demand by all hands to be paid at the advanced rate, or risk a strike; or to have billeted upon his pay-sheet what is known as a shop delegate, the chief part of whose duty is to see that the rules of the union are strictly carried out, and, in case of any infringement, woe be to the offender, who would as surely be tried and punished as if he had offended the laws of the country?

I say, is it free trade in labour when a man, for the privilege of selling his labour, is called upon to pay a heavy per-centage in the shape of subscriptions to the union? But, it will be said, these subscriptions go to the support of the sick and burial fund, &c. *True*, that is *one* of the objects, which of itself is deserving all due honour; but is it not patent to those who know anything about these matters that the benefit society is but secondary in consideration, the primary object being the maintenance of the strike-fund? Again, is it free trade in labour when a man is compelled to submit to a levy of, say one, two, or three shillings per week from his earnings (in addition to his weekly subscriptions), to help in maintaining a strike, to which he was entirely opposed, but dare not express his convictions; or, may be, a strike in quite a different part of the kingdom to where he is employed, or ever likely to be? Say, for instance, a London workman to be levied for a strike in Manchester, as in the case of the joiners, which strike, or pretence of a strike, has now been going on for several months; and the London Society joiners, during that time, have been taxed at the rate of 25 and some 50 per cent. upon their earnings weekly in support of it. Is that free trade in labour?

It is time, sir, some voice or pen more powerful than mine spoke out plainly upon this subject. I maintain it is a disgrace to the otherwise well-informed British workmen,—the building artisans in particular, that they cannot, or will not, understand it, as affecting their own interests, leaving out the interests of the employers, whose interests, in spite of what is said to the contrary, are identical with their own. I say, where is the boasted independence of these? Where the liberty of the subject, so frequently flaunted in the face of foreigners, when they are told they will be allowed, &c., &c.? (see the wording of the resolution passed at the meeting aforesaid),—as if a man, in a free country like England, is not entitled to do what he likes with his own, so long as he does not infringe upon the rights of his neighbour, or break the law of his country. And is a man's labour not his own? I say it advisedly, and repeat it emphatically, an Englishman's labour is his freehold property, and he has, by the laws of his country, the undoubted right to dispose of it upon any terms that may suit his convenience, and no man, or any number of men, has any right to interfere in any way or dictate the terms. What would a trade-union representative, or one of his constituents, say, if upon entering a shop or market to purchase an article of merchandise a third party stepped in and dictated the terms of the bargain, and claimed a share of the proceeds, or forbade the transaction altogether if not conducted after his fashion?

Again, although I as much as the most infatuated partisan of trade unionism, deprecate the introduction into this country of foreign labour, are the employers to blame? Is the world to stand still because the union think fit (supported by their laws of protection) to raise the price of labour beyond its market value? Let us by all means have, what it is said the men have no objection to our having, free trade in labour, and we need not fear the result of a competition with foreign workmen.

A Building Artisan.

OLD MASTERS IN GLASGOW UNIVERSITY.

Sir,—You have done good service in calling attention to the collection of fine pictures by old masters in Glasgow University, and Mr. Ward deserves praise for proclaiming their value and securing proper care being taken of them in future.

I suspect, however, he is somewhat mistaken in supposing himself to have discovered them. They are, no doubt, part of the famous collection of Dr. Wm. Hunter (not Henderson), the great surgeon and physiologist, bequeathed along with his cabinet of Greek coins to Glasgow College, and formerly exhibited in the old buildings, now a railway station. They were placed in a garret, because room could not be found for them in the unfinished new university, but are mentioned in Murray's Handbook for Scotland, along with pictures by Rubens, Rembrandt, Sir Joshua Reynolds, G. Kneller (portrait of Sir Isaac Newton), Murillo, S. Ross, &c.

Let us hope that the munificent gift by Lord Bute of 60,000*l.*, to build a central hall for the College, will furnish rooms for the proper exhibition of these art treasures. Viator.

THE REPAIRS OF OUR PARISH CHURCHES.

The Rev. F. G. Lee, D.C.L., vicar of All Saints', Lambeth, writes:—

Under the Metropolitan Board of Works Act the repair of our parish churches is now apparently made to rest, not, as heretofore, in the parishioners, but in the vicar or rector for the time being, holding a limited freehold. The point has been tested as regards the parish church of All Saints, Lambeth, and I am called upon, under threat of a warrant of distress, to pay more than 105*l.* and costs spent by the Board in repairing the spire of the church. Thus the abolition of church-rates has apparently saddled the incumbent with a most serious pecuniary burden. It has deprived several clergymen (myself amongst the number) of the aid of churchwardens. For, as some time ago two churchwardens in this parish had to pay nearly 100*l.* deficiency in one year's current church expenses, I have found (and am not astonished at finding) that no one will either come to the Easter vestry meeting or take the office of churchwarden.

When I was appointed to the parish eleven years ago, failing certain promised subscriptions, I spent 800*l.* of my children's money, independently of about 700*l.* collected, upon a thorough repair of the building, thirty years after it was erected. For the last seven years I have been responsible for, and have paid each year, the balance owing on current church expenses. There is no fund for the repair of the church.

I have applied in vain for advice and aid to my ex-diocesan, to the Ecclesiastical Commissioners, and to Queen Anne's Bounty-office. In conclusion, I note that the judges are not called upon to repair the law courts in which they sit, nor the admirals the vessels they guide. It seems very hard, therefore, that the clergy of the metropolis, with incomes (as in my case) little above that of the skilled artisan, should, by the abolition of church-rates, be thus so harshly and unjustly burdened.

Italian International Exhibition, 1879. An International Exhibition, under the patronage of Prince Humbert, and organised by an influential National Committee, is to be held at Milan in 1879. The municipality have granted the use of an eligible site for the building, with ample open-air space for an agricultural department. The *Commissaire Délégué* for the United Kingdom is Mr. E. Johnson, of Castle-street, Holborn

THE LATE MR. SYDNEY SMIRKE, ARCHITECT.

We notice with great personal regret the death of Mr. Sydney Smirke, R.A., which took place at his residence, Tunbridge Wells, on the 8th inst, in the seventy-eighth year of his age. Mr. Smirke had retired for some years from the practice of his profession. His father, well known as an artist, was a Royal Academician; so also was his brother Sir Robert Smirke, the architect of old Covent Garden Theatre, the British Museum, and the Post-office in St. Martin's-le-Grand. Sydney was brought up in the office of his brother, and succeeded him in many of his appointments. In conjunction with his brother, in 1836 he erected the Oxford and Cambridge Club-house in Pall-mall. In 1842 the Temple Church was restored under his direction, and he published an account of the building. A block of buildings in the Temple, prominently seen from the Embankment, having turrets at the angles with low conical roofs, are from his designs; as are the Conservative Club-house, St. James's-street; the Carlton Club-house, Pall-mall, studied from a well-known building by Sansovino; the Circular Reading-room of the British Museum; and a number of private residences, some of which are illustrated in our volumes; where will also be found his lectures delivered as Professor of Architecture at the Royal Academy. For some years, moreover, he was not an unfrequent contributor to our pages. The credit of the Museum Reading-room was given at times to Sir A. Panizzi, the late librarian, by indiscreet friends of that gentleman, to the great annoyance of Mr. Smirke. The original suggestion, however, and something more, belongs, in truth, to the late Professor Hosking, whose design was published. Correspondence on the subject will be found in our pages. Mr. Smirke acted as architect at Woking Cemetery; and amongst his latest and best works must be named the exhibition-rooms of the Royal Academy.

The subject of our notice became a Fellow of the Royal Institute of British Architects in 1844, and received the Royal Gold Medal in 1860. He was a Fellow of the Royal Society and of the Society of Antiquaries (contributing to the *Archæologia*), and one of the Trustees of the Soane Museum. In the establishment of the Architects' Benevolent Society he took considerable part, and remained its president until recently, writing the annual reports and otherwise assisting anxiously to promote the excellent objects of the charity. Mr. Smirke's manner was somewhat cold and reserved, but he was greatly esteemed by those who knew him. He had travelled much and possessed a cultivated mind.

AN AQUARIUM AND BATHS FOR NEW BRIGHTON.

An extensive aquarium and new baths are now in course of erection at New Brighton, in Cheshire, on the opposite bank of the Mersey to Liverpool. An hotel of a high-class character is also included in the buildings, the total cost of which will be upwards of 30,000*l.*, the promoters being the New Brighton Aquarium, Hotel, and Baths Company. It is expected that the hotel portion of the structure, which, when completed, will contain upwards of sixty bedrooms, will be finished and ready for occupation shortly after Christmas, and the baths and aquarium about March next. The site of the buildings is on a lofty eminence, commanding an extensive view of the mouth of the Mersey, and the inland surrounding country.

A BUILDING DESIGN AND CONSTRUCTION INSTITUTE.

Sir,—In your reference to the report of the French Chamber of Commerce on the building industry of Paris, you say that, "like the Florentine, the Parisian architect not seldom invites the Parisian workman to his councils." This suggests to me the desirability of there being a Building Design and Construction Institute, which should consist of properly-qualified members of the profession or trade. Such an institute would, I believe, receive the support of many members of the Royal Institute of Architects, and would naturally attract the thoughtful and inquiring mechanics of the several branches of the building trade, to the obvious advantage of the latter, and therefore of the former, as the

improved artisan would be better able to enter into the spirit of the architect's work, to say nothing of the general advantage that would follow from thus associating the theoretical with the practical. I hope that the readers of the *Builder* will give consideration to this matter.

MARK H. JUDGE, Clerk of Works.

FREE LIBRARIES.

SIR,—At the weekly meeting of the London School Board a subject of very great importance was very wisely brought forward, and if carried out in the same manner as it is in Manchester will prove a very great boon to the working classes of this great metropolis. Free reading-rooms and libraries having lived five years in Manchester, I can bear testimony to the way in which they are patronised and appreciated by the working people of that great industrial city. Mr. Wilks evidently seems to have a very good idea of what free libraries should be. We can certainly boast of one free library in London, and that is situated in Smith-street, Westminster, but that is not so comfortable nor is it up to the standard in any respect of what a free library should be as compared with those in our provincial towns. A very great amount of credit is due to the School Board for pulling the wires on this subject, but I cannot see that the schoolrooms are adapted for this purpose, for the simple reason that they should be open from nine in the morning until nine or ten at night, and should be well supplied with all the London daily and provincial newspapers, a good supply of books, illustrated papers, periodicals, &c., paying particular attention to making the rooms warm and comfortable, and as attractive as possible. G. R.

WORM IN BEECH CARVINGS.

SIR,—Is there any easy effectual method of stopping the action of worms on beech without damage to delicate carving? The difficulty seems to be that the worms are secreted in the thickest portions of the wood, and no mere surface application will destroy them. Creosote, which is recommended, would exclude any work from the inside of a house for many a day. Would injection of linseed oil, through each of the surface holes, be likely to answer? If any reader of the *Builder* has practically succeeded, and will give us the benefit of his experience, I am sure many who regret to see good,—albeit "Pagan" seventeenth century,—work tumbling to pieces would be much obliged to him. S. F. C.

THE THIRLMERE SCHEME.

IN your article of the 1st inst. you put very clearly your views on the position of the Thirlmere question, and there is perhaps little in your statement of the issues involved, as between the opposing parties, with which the "Thirlmere Defence Association" would be disposed to find fault.

Will you allow me, however, to observe that we conceive that it will not do to examine the arguments against the case of the promoters one by one, and finding no one of them of itself sufficient to prove the necessity for its rejection, to pronounce in favour of the project? The objections ought to be considered in their cumulative bearing and force; and one general consideration is most important, viz., that a much stronger case ought to be made out before powers are given to convert one of our English lakes into a reservoir, than would be necessary if the proposition were to occupy some moorland valley, where the pecuniary damage to the owners should be all that required consideration. In short, that the Lake district should be exempt from invasion by distant places, until other available sources of supply not further from home are exhausted.

What promoters in ordinary cases have to show is,—

1st. That an increased supply of water will be beneficial to the neighbourhood to which they propose to convey it.

2nd. That the place whence the supply is to be drawn will furnish the quantity required.

3rd. That any deterioration to the value of property which may ensue can be reasonably compensated by money payments.

The Association are of opinion that, in the present case, beyond all this, it should be shown that the existing needs of water cannot be met, from other sources, without unreasonable cost or inconvenience; and that the burden of proving the contrary of this ought not to be thrown on a limited number of individuals, who, with a very few exceptions, have no interest whatever in the matter except such as is common to all Englishmen who are possessed of a moderate amount of mental culture. Still, they know very well that if the case is to be decided according to routine methods, that this burden will be thrown on them, and they feel confident that nothing but lack of funds can prevent such proof being fully established.

They conceive, however, that it is not incumbent on them to elaborate any perfect scheme in opposition to the one worked out by Mr. Bateman; or even to show that as much water can be had from any one locality or at as cheap a rate, but only that there are various places from which sufficient water can be got at no unreasonable cost compared with the price which other communities have to pay for it. In this connexion we think that one consideration which you are disposed to make light of has great weight; viz., that Manchester acts in this undertaking simply as a water company expecting a profit, and must see her way to a profit, in order to justify her Corporation in speculating with the credit of the ratepayers, for the benefit of other people. If the nation generally are to sacrifice what is a national possession, because water can be obtained from Thirlmere cheaper than elsewhere, the sacrifice will be made simply to increase the revenues of one municipal borough.

A MEMBER OF THE DEFENCE ASSOCIATION.

MAIDENHEAD HOSPITAL COMPETITION.

SIR,—I could not, of course, read your article on the Maidenhead Hospital Competition without feeling that you had devoted considerable attention to the plans, but if you have to allude to the matter again there is one point which I am sure you will take the opportunity of putting right if possible. I have so often insisted on the necessity of having windows *opposite* each other in hospital wards that I feel I should have neglected a most important point had I not made this provision in my plan.

I send you a tracing of the plan of the ward showing two windows in the back wall; the transverse section shows also a third window in the centre (over the roof of the lobby) opening close up to the ceiling. Your not having noticed these windows is the fault of my draughtsman, who, because the sills are somewhat higher, ran the colour (which is particularly strong) through the lines.

ERNEST TURNER ("Serio").

CAMBERWELL WORKHOUSE COMPETITION.

SIR,—Your correspondent "Fair Play," in writing about this matter, says that "two or three local practitioners were alone asked to compete." This is not quite correct, for I neither practise nor reside in the neighbourhood, but, nevertheless, was invited by the Board of Guardians to join in the competition; and my reason for declining to do so should be sufficiently told by the following extract from the "Instructions to Architects":—

"The Guardians will award premiums of 50*l.* and 25*l.* respectively for the best and second designs, which designs are to become the property of the Guardians; and the Guardians reserve to themselves the option of employing or not either of the architects whose plans may be selected. The architect whose design is selected to be carried out by the Guardians will be paid a commission of *two and a half* per cent. on the total cost; such architect to provide all proper plans, specifications, detail drawings, and supervision necessary for the fully and perfectly carrying out and completion of the several works, as well as any modification of the original plans which may be required by the Local Government Board, and attendance on that Board and the Board of Guardians, without any extra charge whatever." H. SAXON SNELL.

SIR,—Will you again kindly allow me space in your valuable journal to express my thanks to "Fair Play" for his letter of sympathy in your last week's impression. At the same time he will, I hope, pardon my saying that he is slightly in error in respect to the competitors being all local practitioners, as to my knowledge two of them at least, if not more, are not so, and are moreover men of good standing in the profession. ROBT. P. WHELLOCK.

We understand that it is more than likely that the Local Government Board will investigate this matter.

COMPETITIONS.

Southport Market.—At a meeting of the Southport Town Council, on Tuesday evening, the markets committee reported that having called in Mr. Waterhouse to adjudicate on the twenty-five sets of plans submitted in competition for the proposed new markets, he had recommended that the premiums be awarded to the authors of the following designs, viz.,—First premium, "Iron"; second, "Southport"; third, "Regardez Moi." The chairman of the committee moved that the recommendations in Mr. Waterhouse's report be adopted, but to this an amendment was moved to the effect that as the instructions as to cost had not been complied with, Mr. Waterhouse's recommendations be not adopted. In support of the amendment it was urged that neither of the competitors had kept within the prescribed limit of cost, but, according to Mr. Waterhouse, this limit was fixed at too low a figure. The recommendation of the committee was adopted by a large majority.

Luton Wesleyan Sunday Schools.—The *Bedfordshire Times* states that in compliance with the request of the trustees, three of the firms of architects who sent in plans at the former competition, on the 3rd inst. submitted amended plans for the consideration of the trustees. After a full comparison of the different sets of drawings the trustees decided to adopt the plans of Mr. J. R. Brown, of Luton. The schools are estimated to cost from 3,000*l.* to 4,000*l.*

ST. GEORGE-IN-THE-EAST WORKHOUSE AND INFIRMARY.

THE Board of Guardians, at their last meeting, determined to erect new board offices and registrar's office upon land opposite the workhouse; and, in view of the rapidly-increasing demand for accommodation at the infirmary, to build residences for the assistant medical officer and the house steward.

Messrs. Wilson, Son, & Aldwinckle were instructed to prepare the plans.

LEYTONSTONE CHAPEL.

SIR,—My name appears in last week's *Builder* as that of the architect of Leytonstone Baptist Chapel. Will you kindly allow me to state that my design is being carried out with deductions at the discretion of the contractor, and that I am not superintending the works, or in any way responsible for them? JAMES CUBITT.

SAVING (?).

SIR,—We in Rotherham have the advantage of a School Board—an economic and self-elected one. They have just accepted tenders for building two new schools of 3,500*l.* and 4,000*l.* respectively, to be erected at opposite sites of the town. Thinking they required a clerk of works, they have agreed to give their already overworked clerk to the Board 1*l.* a week to act as clerk of the works. When is he to do it, seeing his office duties already require an assistant in the shape of his son? Also, is it necessary that a clerk of works should be a judge of material, or manner of work, or be able to measure a plan by scale, or measure up work afterwards? As this already-overwrought public officer has never been connected with the building trade, is it wise economy or justice to ratepayers to appoint an amateur? W. B.

The Employers and Workmen Act.—Difficulties have arisen in enforcing orders for wages made under the Employers' and Workmen Act, in consequence of the alteration in the law. In a case brought before Mr. Bridge, at the Wandsworth Police-court, on the 7th inst., it appeared that a workman was unable to recover his wages, the officers of the court not being able to serve a copy of the order, as the address of the master was not known. Mr. Bridge said workmen clamoured for an alteration in the law, but the new had proved to be more oppressive than the old. He asked the applicant if he could find the employer, to serve a copy of the order upon him. A question arose as to whether the Act allowed the applicant to serve it, but Mr. Bridge, after looking at the rules, thought there was power. The applicant was told to apply to Mr. Paget, who made the order. Mr. Bridge remarked that the Act made it very hard upon workmen, but their only remedy was to agitate for the old law to be restored.

CHURCH-BUILDING NEWS.

Norton Lees (*Derbyshire*).—A new church at this place has just been consecrated. It is in the Early English style, and consists simply of nave and chancel, the latter having a vestry and organ chamber upon its south side. There is a bell turret at the north-west end of the building, and this rising well above the rest of the church gives piquancy to the general grouping. It is octagonal on plan, and above the lancet-light belfry windows the spire springs, at each angle, from gurgoyles. Dunford Bridge stone has been used, and the roofs are steep-pitched and are interspersed with bands of varied colour, the whole surmounted by a red cresting. The apex stones of the gable have richly-foliated crosses. The windows are simple and in accordance with the style, and having their label moulds stopped by carved bosses. The buttresses are strong, and form a good feature. The ground drops somewhat to the eastward, and thus enhances the general good effect. The interior of the church is just over 100 ft. from east to west. The roofs are of considerable altitude, and spring from stone corbels; they are of red deal stained and varnished. The chancel arch is carried by foliated capitals, and there is a carved pulpit and lectern in oak, the other fittings being of pitch-pine. Mr. T. Rodley, of Sheffield, carried out the stone work, and Mr. T. Badger, of the same town, the wood work. The stone carving is by Mr. Harry Hems, of Exeter. The church has been designed and erected under the immediate superintendence of Mr. J. D. Webster, architect, of Sheffield, at a cost of 3,400*l*.

Aintree. — The new Church of St. Peter, Aintree, was consecrated on the 20th ult. by the Bishop of Chester. The site, near the railway station, was given by Lord Sefton, and the building has been erected in accordance with plans prepared by Messrs. Asahel P. Bell & G. F. Roper, the work being entrusted to Mr. E. Hughes, Miller's-bridge, Bootle. The plans provided for nave and north and south aisles, with shallow transepts, choir, and sanctuary, the east end being flanked by vestries and organ-chamber, and a tower,—not yet erected,—at the west end of the south aisle, forming a porch, the principal entrances to the church being through the north and south transepts. The principal dimensions of the building, when completed, will be,—Nave, 96 ft. 6 in. long by 25 ft. 4 in. wide, divided from the north and south aisles, which are 13 ft. 4 in. wide, by an arcade of five arches. The width across the transepts is 70 ft.; the chancel is 18 ft. long by 20 ft. wide, the sacrarium extends eastwards some 13 ft., making the total length of the chancel 31 ft., and that of the church about 133 ft. The tower will be about 175 ft. high, and in the meantime a wooden *flèche*, containing a bell, has been erected at the east end of the nave. The church is built in a simple form of Early Gothic, and, with the exception of the west window and two small wheels in the transept gables, is entirely lighted by lancet-windows, every detail being kept, on account of expense, as simple in character as possible. The exterior of the building is faced with red sandstone, the roofs being covered with red tile, whilst the interior of the roofs of the nave and chancel is boarded. It is proposed hereafter to decorate the whole of the interior. At present there is accommodation provided to seat rather more than 500 persons, but eventually the church will contain about 900 sittings.

Bungay.—St. Mary's Church, Bungay, is to be restored, under the direction of Mr. Phipson, the diocesan architect, who has reported that the tower is unsafe, and that the porches, roof, and windows are in urgent need of repair. This work will cost about 1,000*l*. The renovation of the interior of the church, viz., removing the galleries, rebenching the church, removing the organ to the ground-floor, and making other alterations, will entail a further outlay of something over 1,000*l*. It is also proposed to build a new chancel, should funds be forthcoming for the purpose.

Bonnybridge.—A new church at Bonnybridge, N.B., was opened on the 11th ult. It has been erected from plans by Mr. Watt, architect, Glasgow. The style is Thirteenth-century Gothic. It is built of the finest Thornliedyke stone. The contractors were:—Messrs. Harvey & Dalziel, masons, Denny; William Frew, joiner, Denny; Wallace & Connell, plumbers, Falkirk; J. Harper, slater, Falkirk; J. M'Donald, plasterer, Kilsyth; and W. & J. J. Keir, glaziers, Glasgow.

Books Received.

Theory of Transverse Strains and its Application to the Construction of Buildings. By R. G. Hatfield, Architect. New York: Wiley. London: Trübner & Co.

Mr. R. G. Hatfield is an American architect who has given much attention to the strength of materials and the result of strains, and he has published this book for architects and students of architecture. Some little knowledge of algebra is required to make full use of the book, but a large amount of information is to be obtained from it even by the less prepared. The course adopted by the author has been to present an idea at first in concrete form, and then to lead the mind gradually to the abstract truth or first principles upon which the idea is based.

We give a few paragraphs from his discussion as to the required strength of a floor. Tredgold, in his "Treatise on Carpentry," says that the greatest weight to which a floor can ordinarily be exposed is that to which it is subjected when covered with people. He continues,—"Such a load is about 120 lb. per foot;" and again, at page 283 of his "Treatise on the Strength of Iron," he says:—"The weight of a superficial foot of a floor is about 40 lb. when there is a ceiling, counter-floor, and iron girders. When a floor is covered with people, the load upon a superficial foot may be calculated at 120 lb. Therefore 120 + 40 = 160 lb. on a superficial foot is the least stress that ought to be taken in estimating the strength for the parts of a floor of a room."

Mr. Hatfield, by experiments, arrives at the conclusion that Mr. Tredgold was in error when he fixed upon 120 lb. per foot as the weight of a crowd of people. He says,—"The weight of men, women, and children is 105·5 lb. each, on the average. This may be taken as quite reliable as to the weight of people. Now as to the space occupied by them. It is known among military men that a body of infantry closely packed will occupy, on the average, a space measuring 15 × 20 = 300 square inches each. At this rate forty-eight men would occupy 100 square feet, and if a promiscuous assembly should require the same space each, then there would be a load of 50·64 lb. upon each square foot. In military ranks, however, the men would weigh more. Taking the weight of males from twenty to fifty years, in the above table—this being the probable range of the ages of soldiers—the average is found to be 137·9; a weight of 66 lb. upon each superficial foot of floor; and this weight may be taken as the greatest which can arise from a crowd of people. But this is simply the *weight*, no allowance being made for any increase of strain by reason of the movement of the people upon the floor. We will now consider the increase made in consequence of the agitation of the weight through walking and other movements. In walking, the body rises and falls, producing in its fall a strain additional to that due to its weight when quiet. The moving force of a falling body is known to be equal to the square root of 64½ times the space fallen through in feet, multiplied by the weight of the body in pounds. By this rule, knowing the weight and the height of fall, we may compute the force. The weight in the present case, 66 lb., is known, but the height of fall is to be ascertained. This height is not that of the rise and fall of the *foot*, but of the *body*; the latter being less than the former. The elevation of the body varies considerably in different persons, as may be seen by observing the motions of pedestrians. Some rise and fall as much as half an inch at each step, while others deviate from a right line but slightly. If, in the absence of accurate observation, the rise be assumed at a quarter of a inch, as a fair average, then the moving force of the 66 lb., computed by the above rule, would be 76·4 lb. This would be the *moving force* at the moment of contact, and the *effect* produced would be equal to this, provided that the falling body and the floor were both quite inelastic; but owing to the presence of an elastic substance on the soles of the feet, and at the joints of the limbs, acting as so many cushions, the force of the blow upon the floor is much diminished. The elasticity of the floor also diminishes the effect of the force to a small degree. Hence the increase of over 10 lb., as found above, would be much diminished, probably one half, or, say to 6 lb."

The work includes a number of tables prepared expressly for it.

The Official Handbook for the National Training-School for Cookery. Compiled by E. O. C. London: Chapman & Hall.

This is an 8vo. volume containing 416 pp., printed in large type, and includes lists of utensils required in kitchens, lessons on cleaning, and cookery lessons, with the average cost of all materials. It gives, in fact, the recipes in use since 1875 in the South Kensington School of Cookery; most of them excellent, as all who have tested them or practised at the school know, and some of them not to be equalled, such as the boiled fowl, lobster cutlets, clear soup, and jelly, though we fail to discover the value to be derived from Dr. Kitchener's broth, unless there be thirteen small mouths that must be filled with something, no matter what. The part devoted to sick-room cookery is very valuable. We can scarcely reconcile the heat of the oven given as required for meat pies and tarts at 280° on p. 23, with that given for the same thing in other lessons, notably "Flaky Crust," p. 276, at 240°, which crust, by the way, when made, is not satisfactory; it looks all that can be desired, but eats hard. The lessons appear to have been written to supply words for a demonstrator. Even then, however, there seems some needless repetition of "we put," "we take," "we now add," and so on. In trying to be clear the compiler has become somewhat verbose. We would suggest that, as a handbook it had been more useful if the mode of operation on each several article of food had been first detailed, also the definition of terms used, and then the recipes to follow in few words. The book furnishes a reliable cookery-book for novices in the art, possessing as it does the rare advantage of giving the precise quantities clearly to those who have patience to wade through the unnecessary words. It gives, too, examples of cookery at different degrees of cost, from curried rabbit, for 3s. 8d., to curried tripe for 10½d. We should have been glad if this book had contained some instruction on the chemistry of food, or recommended suitable books on the subject, which would have made it more complete as a handbook. Still, we recommend it.

VARIORUM.

"The *Précis* Book; or, Lessons in Accuracy of Statement and Preciseness of Expression," by W. Cosmo Monkhouse (Lockwood & Co.) will be found useful by others than those seeking to pass an examination for the civil service. Précis writing (abstracting, and cataloguing with brevity a statement) is excellent training. It requires, 1, complete understanding of the matter in hand, and 2, power to express what is understood. Mr. Monkhouse gives a large number of examples. A youth who would work sedulously through this little book would acquire precision of thought and power of condensed expression that would be valuable throughout life.——Messrs. Partridge & Co. send us a number of gaily-covered cheap "good" books which have been running as usual through the year in the shape of periodical sheets, the *British Workman*, first and foremost; the *Friendly Visitor*, the *Infant's Magazine*, the *Band of Hope Review*, the *Family Friend*, and others. The merit of these serials, from an artistic point of view, is that although cheap the illustrations are as good of their kind as can be obtained.——The *Archer* is the title of the Christmas part of the *Quiver*,—and a very pleasant part it is.

Society of Engineers.—At the twenty-third annual general meeting of the Society of Engineers, held on Monday last, the 10th of December, Mr. Thomas Cargill, president, in the chair, the following gentlemen were balloted for, and duly elected as the council and officers of the Society, for the year 1878, viz.:—As president, Mr. R. P. Spice; as vice-presidents, Mr. C. Barnard, Mr. J. Bernays, and Mr. T. Porter; as other members of council, Mr. J. Church, Mr. F. E. Duckham, Mr. F. W. Hartley, Mr. C. Horsley, Mr. A. Rigg, Mr. J. Walker, Mr. S. Cutler, and Mr. L. Perkins; as honorary secretary and treasurer, Mr. Alfred Williams; and as auditor, Mr. W. H. Bennett. It was announced by the President that the following premiums had been awarded by the Council, for papers read during the year, viz.,—to Mr. J. W. Pearse for his paper on "The Mechanical Firing of Steam Boilers"; to Mr. Alfred Le Grand, for his paper on "Tube Wells"; and to Mr. Ralph H. Tweddell, for his paper on "Direct-Acting Hydraulic Machinery."

Miscellanea.

The Models of the late Mr. Noble.—At the monthly meeting of the Newcastle Town Council on the 5th inst., Mr. Stephenson presented a report of the Lough Gift Committee, which stated that the chairman of the committee (Mr. Stephenson) and the Sheriff had proceeded to London and inspected the models of the late Mr. Noble, offered to the Corporation by his widow. These gentlemen state that the collection is of high merit, although not so large as that lately presented by Mrs. Lough. The committee recommended the acceptance of the handsome offer of Mrs. Noble. The upper rooms at Elswick Hall can be made available at a trifling cost for the purpose, and the trustees were willing to grant the further use of the premises without charge. Mr. Stephenson moved that the report be confirmed that day. The motion was carried. It was also agreed that the Town Clerk should write a letter to Mrs. Noble, accepting the gift in the name of the Corporation.

Tottenham Surveyorship. — At the last meeting of the Tottenham Local Board, a report was received from the finance committee, on the application of the surveyor, for an increase of salary, stating that, in order to enable him efficiently to perform the numerous and increasing duties of his office, and to maintain a constant personal supervision over all works in progress, the Board should purchase a horse, trap, and harness for his use, at a cost not exceeding 50*l.*, and keep the same in the stable at the rear of the offices, and that the gatekeeper attend to the same for the present. Mr. Pedley inquired whether, on the appointment of the surveyor, it was not made a condition that he should keep a horse, and for that reason he was given a salary of 400*l.* a year. Mr. Childs said it was quite correct that the arrangement was that the surveyor should keep a horse to enable him to go about the parish, but the surveyor now said there was more work than he supposed. He had been in their employ a year and nine months, and during the last twelve months the plans of 2,000 new houses had been considered by him, besides plans of new roads, and he had to go a distance of at least three miles every day, and during the past year had expended 70*l.* in horse-hire, and he now said he could not afford to do it any longer.

Buried Alive.—An inquest was held at the Raven Inn, Welshpool, Montgomeryshire, upon the bodies of George Williams, aged 13, and John William Evans, 13. An oven had been built at a new bakery, at the back of 45, Mount-street, and a large quantity of soil had been placed in the oven to support the arch while it had undergone the process of "turning." Upon the completion of the arch it was necessary to remove the soil from the inside of the oven. Three boys were engaged to do the work. While they were thus engaged, the entire brickwork gave way, burying them all alive. The first body recovered was that of James Horton, who, after some hours, was restored to consciousness. The bodies of the other two boys, George Williams and John Evans, were afterwards got out of the oven. The jury returned a verdict of "Accidental death," expressing a regret that "an experienced architect had not been engaged to superintend the work."

The Proposed Street from Tottenham-court-road to Charing-cross.—The following resolution has been unanimously passed by the Vestry of the parish of St. Anne, Westminster, on the motion of Dr. Rogers, seconded by Mr. Cooper:—

"That this Vestry has heard with great regret that the Metropolitan Board of Works has postponed the formation of the new street from Charing-cross to Tottenham-court-road; that such postponement of a great metropolitan improvement, which has been admitted to be a necessary improvement for upwards of half a century, is attended with great loss and inconvenience to a large body of respectable ratepayers, who are now uncertain when their houses and businesses will be taken from them, and can therefore make no provision for the future. That this Vestry further regrets that the reason alleged for the delay in making the street is stated to be the difficulty the Board finds in providing sites for buildings for the working classes, a difficulty which could be fairly met by immediately purchasing for the purpose some of the large plots of property comprised within the limits of deviation."

Royal Westminster Aquarium.—To keep faith with the Fellows, an exclusive *soirée* is to be given for them on December 21st. Each Fellow may obtain tickets for a certain number of friends. It will take the shape of a Children's Fancy Calico Ball.

Asphalte Paving.—At the annual general meeting of the shareholders of the Limmer Asphalte Company, held on the 29th ult., the directors reported that the result of the year's work had not been so satisfactory as they would have desired, the cause of which owed itself chiefly to the falling-off of work during the past year, both of street-paving and skating-rinks. Recent experience had shown that mastic asphalte was not so durable as compressed asphalte for thoroughfares of incessant traffic, and in consequence of that the directors had felt it necessary to enter into a contract with the United Limmer Company for the supply of compressed asphalte. The accounts showed a balance of profit for the year of 817*l.*, and the chairman said that had it not been for the enormous expenditure in maintenance of the streets, and the fact that it had been found that their material did not answer the purpose for heavy traffic, the profits would have been much larger.

Right of Way.—At Wallasey, on the Cheshire shore of the Mersey, the Brick and Land Company some time back purchased property including a long strip of land on the river margin. This has been much used by the people of Wallasey and visitors to both Egremont and New Brighton. The company offered to dedicate the land to the district if the Board would make and maintain the road, which the Board refused to do save under conditions which the company would not accept. The company then warned the public by placards that they intended temporarily to close the road, which they barricaded. The result has been a series of outrages very discreditable to both bodies.

A Roof Conservatory in Chicago.—The *Scientific American* says that the plan of turning the tops of houses in cities into gardens has been carried out at the Palmer House in Chicago, and a portion of the roof of that hotel is now covered with a large conservatory. The structure is entirely of glass and iron, and it is built on an extension; its location is such that it opens directly out of the fifth-floor corridor of the main edifice, which rises some two stories above. A fine collection of tropical and rare plants has been provided, and the regular heating apparatus of the house supplies ample warmth. The conservatory is open to guests of the hotel, and furnishes a delightful resort.

Building Accident in the City.—On the 7th inst., Mr. Payne held an inquest at St. Bartholomew's Hospital concerning the death of George Jean, aged 45, of Crescent-place, Hackney-road, who was killed by the falling of a stone. It appears that the deceased was foreman for Messrs. Tildesley, of Paddington, at the erection of some offices opposite the Moorgate-street Railway Station, and on the 5th inst. was superintending the raising of a large piece of stone. When about 30 ft. from the ground the cradle, on which the stone was placed canted, and the stone fell to the ground, and in its descent struck the deceased on the head. He was removed to the hospital in an unconscious state, and died shortly afterwards. Verdict: "Accidental death."

A New Lamp.—A new lamp, called the "Orion," the invention of Mr. Whittle, has just been tried in Newcastle-on-Tyne. It is said to possess several advantages over other lamps for the purposes for which it is more especially adapted, namely, the lighting of streets, workshops, factories, mines, engine-houses, railway stations, docks, and other places requiring large illuminating power. The oil used is obtained from shale; and the quantity of light produced is stated to be twice that obtained from gas, while the cost is proportionally less. The cost of a good light is put at about 12-16th of a farthing per hour. The light is turned on and off precisely as coal gas.

Piddletown.—The *Dorset County Chronicle*, of the 29th ult., contained a long account of the ancient monuments and effigies in Piddletown Church, Dorsetshire, written by a Fellow of the Society of Antiquaries.

The Architectural Union Company.—The ordinary general meeting was held on Wednesday, the 5th of December, and the report showed that the company was prosperous. A dividend of 6½ per cent. was declared.

Farnham, Surrey.—We learn from a report of the last meeting of the Farnham Local Board that the matter of the drainage of the town is under consideration, and that the subject of finding an engineer is now mooted.

Daring Burglary at a Builder's.—The building premises of Messrs. F. J. Robinso & Company, of Rosendale-road, Sutton, were entered by thieves on Monday morning, who succeeded in carrying away from the building a large amount of property. Before leaving the premises the burglars broke into the counting-house, and made a desperate attempt to force open two of Milner's large safes, containing bank notes, bills, and a considerable amount in gold and silver. Failing, however, in this, they made off, leaving behind them several house-breaking tools. The property stolen consisted principally of the whole of the workmen's tools.

The Builders' Ball.—The thirtieth annual ball in aid of the funds of this institution will be held at Willis's Rooms, on Thursday, the 31st January. We hope it may result, as usual, in procuring a handsome sum for the Institution. Mr. F. W. Keeble, the hon. sec., will be glad to hear from anyone willing to aid in the consummation of this hope.

By the will of the late Mr. J. Durham, A.R.A., Mr. Raemaekers, of Pimlico, has been left to complete his unfinished works. Mr. Raemaekers for the last twenty years has been the associate of the late sculptor.

TENDERS.

For pulling down and rebuilding the Apple Tree and Mitre, Chancery-lane, for Messrs. Combe & Co. Mr. Henry Cotton, architect:—

M'Lachlan	£5,490	0	0
Toms	5,257	0	0
Willams & Son	5,175	0	0
Newman & Mann	5,105	0	0
Patrick	4,883	0	0

For bar-fittings at the Apple Tree and Mitre, Chancery-lane, for Mr. Simmonds:—

Patrick	£839	0	0
Williams & Son	785	0	0
M'Lachlan	743	0	0
Newman & Mann	740	0	0
Toms (accepted)	725	0	0

For bar-fittings to the Queen's Head, Theobald's-road, for Mr. Hunt, Messrs. Isaacs & Florence, architects:—

Hill	£504	0	0
Toms (accepted)	498	0	0

For pulling down and rebuilding the Rose and Crown, Little Britain, for Messrs. Combe & Co. Mr. Henry E. Cotton, architect:—

Wheeler	£3,885	0	0
Williams & Son	3,514	0	0
M'Lachlan	3,487	0	0
Patrick	3,447	0	0
Toms	3,323	0	0

For bar-fittings at the Rose and Crown, Little Britain, for Mr. Garbett:—

Newman & Mann	£468	0	0
M'Lachlan	455	0	0
Williams & Son	453	0	0
Patrick	440	0	0
Toms	437	0	0

For rebuilding Nos. 40 and 41, Foster-lane, E.C., and sundry alterations to No. 39, for Messrs. M. & N. Salaman. Mr. B. Tabberer, architect. Messrs. Franklin & Andrews, surveyors:—

Sabey & Son	£5,150	0	0
Merritt & Ashby	5,139	0	0
Downs	4,847	0	0
Mark	4,838	0	0
Newman & Mann	4,818	0	0
Ashby, Brothers	4,594	0	0
Brand & Co.	4,562	0	0
Killby	4,496	0	0
Conder	4,444	0	0
Nightingale	4,383	0	0
Crabb	4,350	0	0
Lawrence	4,050	0	0

For alterations at the Albert Arms, London-road, for Mr. Harry Evans:—

Banbury & Stephens (accepted)	£239	0	0

For continuation of Upland-road into Lordship-lane, on the Dulwich estate, for the British Land Company (Limited):—

Killingback	£1,966	0	0
Pearson	1,877	0	0
Richardson	1,820	0	0
Crockett	1,734	0	0
Pizzey	1,590	10	0
Harris	1,584	0	0
Love (accepted)	1,251	0	0

For alterations, &c., to the St. James's Tavern, Windmill-street, Haymarket, for Mr. Cousins. Mr. J. C. Dear, architect:—

Lathey, Brothers	683	0	0
Lamble	679	0	0
Joubert & Son	607	0	0

For the restoration of the parish church of St. Peter, Stourton, Wilts. Mr. E. S. Harris, architect:—

Gaisford (accepted)	£725	0	0

For the erection of Alberta House, Friern-road, Dulwich (stables not included), for Mr. Henry Lea. Mr. J. Dudley, architect:—

Smith	£1,992	0	0
Colebrooke	1,990	0	0
Watson	1,878	0	0
Watson & Dennett	1,720	0	0
Gillett (accepted)	1,467	10	0

For the restoration and enlargement of St. Bartholomew's, Heigham, Church, Norwich. Mr. R. M. Phipson, architect:—

Newel	£2,921	1	1
Cornish & Gaymer	2,589	3	6
Wilkin	2,519	10	0
Downing	2,516	5	2
Grimwood	2,315	0	0
Rust	2,285	0	0
Hawes (accepted)	2,150	0	0
Curtis	2,158	0	0

For new house for the Sisters of Charity, St. Raphael's, Bristol. Mr. E. H. Edwards, architect. Quantities by Mr. C. Poland:—

Brock & Bruce	£9,342	0	0
Hatherly	8,960	0	0
Veals	8,795	0	0
Eastabrook & Sons	8,770	0	0
Stevens & Gardiner	8,570	0	0
Krauss	8,300	0	0
Lewis & Edbrook	8,170	0	0
Davis	7,845	0	0
Crocker	7,425	0	0
Howell (accepted)	7,380	0	0
Bevan	6,750	0	0

For eight houses at Plumstead, for Mr. Hunter, of 487 and 489, Oxford-street. Mr. Dovey, architect:—

Tongue	£2,586	0	0
Vickery	2,575	0	0
Wagner (accepted)	2,570	0	0
Hall	2,555	0	0

For pulling down and rebuilding Nos. 12, 13, and 14, Grafton-street East, Tottenham-court-road, for Messrs. Maple & Co. Mr. H. Woodzell, architect:—

Pritchard	£4,412	0	0
Newman & Mann	4,390	0	0
Downs	4,260	0	0
Longmire & Burge	4,216	0	0
Manley & Rogers	4,167	0	0
Scrivener & White	4,079	0	0

For construction of roads and sewers at Mansford-street, Bethnal-green, for Mr. J. R. Mills. Messrs. Farebrother, Ellis, Clark, & Co., surveyors:—

Hiscock	£1,890	0	0
Anderson	1,819	15	0
Nowell & Robson	1,652	10	0
Culverhouse	1,599	0	0
Killingback (accepted)	1,500	0	0

For new house, Bury Hall estate, Sunningbill. Mr. N. J. Hopkins, architect. Mr. R. L. Sheppard, surveyor:—

Boyce, accepted.

For "The Chambers," corner of Savoy-street, Strand, for Mr. G. Rees. Messrs. A. & C. Harston, architects:—

Howard & Co.	£12,399	0	0
Bangs & Co.	11,900	0	0
Sheffield & Prebble	11,874	0	0
Kirk & Randall	11,340	0	0
Oliver	11,140	0	0
Nightingale (accepted)	10,980	0	0

For additions to and decorating Dunsandle House, Vanbrugh Park, for Mr. E. G. Ledger:—

Stephens, accepted.

For a new school-building, examination-hall, gymnasium, &c. at the North London Collegiate School for Girls, Camden-town. Mr. E. C. Robins, architect. Quantities supplied by Mr. G. R. Tasker:—

Manley & Rogers	£15,873	0	0
Lascelles	15,150	0	0
Lucas & Sons	14,999	0	0
Lathey, Brothers	14,780	0	0
Brass	14,500	0	0
Scrivener & White	14,475	0	0
Downs	14,276	0	0
Nightingale	14,142	0	0
Newman & Mann	14,120	0	0
Adamson	14,085	0	0

For alterations and additions to the Grove, Stanmore, for Mr. G. Brightwen. Mr. B. Binyon, architect. Quantities by Mr. G. R. Tasker:—

Girling	£2,437	0	0
Lascelles	2,253	0	0
Bayes & Allen	2,134	0	0
Kirby (accepted)	2,052	0	0

For three warehouses, Swan-street, Minories. Mr. R. J. Worley, architect:—

	Excluding Front Wall.	Including Front Wall.
Toms	£6,987	—
Smith	5,637	—
Rudkin (accepted)	—	£6,000

For residence at Chislehurst. Mr. R. J. Worley, architect:—

Toms	£1,416	0	0
Sperring	1,231	0	0
Smith (accepted)	1,049	0	0

For removing old and building new mortuary and lavatory at the St. Olave's workhouse. Messrs. G. Elkington & Son, architects:—

Billers	£192	10	0
Stephens	192	0	0

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The Vital Question as to the Purity of the Thames and the Health of London.

IMPORTANT, and to many persons unexpected, light has been thrown on the interminable question of the disposal of organic refuse by the report which has just been presented to the Conservators of the River Thames by Captain Calver, R.N., F.R.S. It occasionally happens that questions arise of so serious a nature that men instinctively thrust them, as far as possible, aside. They take for granted that the reply will be as they wish, because the contrary answer would involve such trouble, cost, or mischief, that they gladly hold it to be incredible. Such has been the case in the present instance. Voices have been raised, which were entitled to respect from their tone, if not from their number, to ask, "Is it safe to turn the sewage of three millions of people into a tidal river?" Engineers familiar with the Continent have drawn evil auguries from the experience of Havre, of Marseilles, or of Naples. To our own expressions of fear we need not refer. But the notion that more than four millions and a half of money has been expended by the Metropolitan Board in the drainage of London in the absence of a full knowledge of the ultimate results of works which are held to be completed, is one of so ugly a complexion that it is small wonder if all those who rely on the continuance of existing municipal institutions should at once scout it from their thoughts.

Again and again, however, a serious question has been put on the subject. Again and again it has been met by a reply which, however satisfactory it may have proved to the Board, or even to the public, has always appeared to us to leave the last word unsaid. At length the conservators of the Thames have called in counsel from a source entirely independent of any engineering theory or influence. A captain of the Royal Navy, who is also a Fellow of the Royal Society, has examined the physical facts of the case, after the method proper to the hydrographer. And if he has not spoken with the same weight and detail as to the chemical question, it has not been from the fact that that question has yet been satisfactorily disposed of.

Captain Calver has adopted that double method of investigation which alone can be satisfactory in a question of such national importance. He has not contented himself with estimates and with arguments; he has sounded and measured the Thames. He has ascertained where, how, and how fast, the river is losing depth,—is, in fact, being filled up. He has compared the data thus arrived at with the quantities of solid matter which are, undeniably poured into the Thames from the discharge of the main drainage. He has thus arrived at conclusions the truth and value of which it is impossible safely to ignore.

In 1863-4 the main outfalls of the metropolitan drainage system were opened into the Thames. In 1867 a vessel grounded, on passing the mouth of the southern outfall, on a mud deposit, in a spot where 18 ft. or 19 ft. of water had run over a gravelly bottom before the opening of the outfalls. Periodical surveys, ordered by the conservators, have shown that a similar action is not confined to a restricted locality. The diminution of the depth of water is in progress at various points in the river, and occurs even above bridge. The first point, or the physical fact of the encumbrance of the channel of the river, is thus established.

The solid contents of the sewage of three and a half millions of people, apart from any question of salts or other compounds which may be held in chemical solution, and exclusive of soot, grease, road sweepings, and other elements which require daily removal, either above or underground, may be taken at a minimum of 90,000 tons per annum. If we allow extraneous matter to enter into the sewers to only an equal amount, we shall find that materials for a very serious amount of deposit are steadily in progress of contribution. Since the opening of the main drainage works this amount cannot be put at less than two and a half millions of tons of solid matter; and that estimate is probably very far under the mark. It may be replied that it is not a matter of very formidable difficulty to remove 180,000 tons per annum from the Thames by dredging. If twopence per ton be allowed as the cost of so doing, the outlay would not exceed 15,000*l.* per annum. This the Conservators of the Thames, by the force of the Thames Navigation Act of 1870, appear to have the power to call upon the Metropolitan Board to perform. This, then, it may be urged, is the worst of the matter,—look at it how we may.

Then, however, comes in the chemical question. We have spoken of the matter accumulating in the bed of the Thames as if it were harmless silt or mud; something that if we dredge up we can use,—or, at all events, put in some other place without involving any further trouble. But it appears that Dr. Williamson, Professor of Chemistry at University College, London, has tested thirteen samples of this mud taken from the vicinity of the outfall, and three taken from Woolwich Reach, and that these analyses, as well as others made during the present year, show that there is a large amount of sewage contamination in this deposited mud.

It may be remembered that in a discussion of the paper read by Mr. Norman Bazalgette on the sewage question at the Institution of Civil Engineers in the month of February last, the case of the Metropolitan Board was defended by a Queen's Counsel. But the figures then cited by this gentleman, Mr. Littler, Q.C., from the statistics of the Metropolitan Board, had the inconvenience, if they proved anything, of proving too much. "Between 1866," urged the learned Counsel, "when the Metropolitan Board poured the sewage in at Crossness, and 1868, there had been a decrease in the deposit of 480,000 cubic yards. From 1868 to 1869 there appeared to have been an increase of 142,000 cubic yards; from 1869 to 1870 a decrease of 216,000 cubic yards; from 1870 to 1871 an increase of 277,000 cubic yards; and the following year an increase of 279,000 cubic yards. Then, oddly enough, in the next year there was a decrease of 260,000 cubic yards; clearly showing that it was owing to accidental causes, not the constant one, sewage, but other causes." As the balance of these figures gives a decrease of 264,000 cubic yards of deposit, the due inference of the argument would seem to be that the discharge of a large quantity of sewage into the river has the effect of deepening and improving the channel.

The portion of the bed of the river, however, which was referred to in this account is stated at a length of about three-fourths of a mile. What we find, then, if the figures are reliable, to be the fact is, that over this small portion of the Thames an amount of sewage-contaminated mud, which very nearly corresponds with the annual contribution which we before estimated as a minimum, is travelling up and down the river, according to the variations of wind, tides, and currents; at times accumulating in one particular stretch of the river, and at times making its way to foul the stream elsewhere. Mr. Littler added,—"The question whether or not the sewage was filling up the river was one that could only be dealt with by ascertaining, over a long distance of the reach from Crossness downwards, whether there was an increase of silt, and an increase of sewage deposit." Had the learned gentleman said upwards as well as downwards he would have offered a very good introductory preface to the report of Captain Calver.

Another point which has been overlooked by the advocates of the wholesale pollution of rivers is brought out clearly by Captain Calver. A natural river bottom consists, in most cases, of light and inadhesive materials. A certain depth of these materials is in a constant state of motion. It travels now up, now down, the course of the stream, under the influence of tide and current, and according to the force and the direction of the winds, and the impetuosity of the land floods. But the mean general progress is towards the sea. If, however, the bed of the river be composed of an adhesive material, such as sewage mud, the case is diffe ent. Such a material attaches a certain portion of its substance to the channel at each point of its movement. "The matter carried up by the flood falls and sticks sufficiently to render it inde-

pendent of the next recurrence of the downward scour, and it is, by consequence, moved up afterwards along the channel stage by stage." It should have been stated that this movement must rather depend on the maximum scour of the water, whether upward or downward, than on any other cause yet pointed out. We see no reason why the mud that resists the downward scour should yield to an upward tide, unless the tide, for at least a portion of its course, were more impetuous. This, we shall presently show, is stated on very high authority to be the case. There may also be some difference in the specific gravity of the ebbing and flowing water, that coming upwards from the sea being more salt, and thus seeking the bottom of the channel, and in consequence of its greater specific gravity, ploughing up the silt more deeply than the down-running fresh water can do. This, however, we only throw out as a suggestion. The true state of the case can only be definitively settled by the hydrographer and by the chemist after further examination than has yet been made. It is as in possession of the facts hitherto ascertained, both by survey and by analysis, that Capt. Calver tells us that, in point of fact, the sewage mud is creeping up the channel of the Thames, and contaminating the river even above Bridge. "As matters now stand," says the Report, "the metropolitan sewage discharge has reproduced in mid-Thames, in an aggravated form, a nuisance that was felt to be unbearable in the upper portion of the river. Formerly, the sewers of London discharged their contents into the river at low water; and this, Sir Joseph Bazalgette has pointed out, was most injurious, because it was carried by the rising tide up the river, to be brought to London by the following ebb tide; then to mix with each day's past supply, the progress of many days' accumulation towards the sea being almost imperceptible. This exactly describes the existing state of things in mid-Thames; both as respects the accumulation of sewage, its daily oscillation, and its slow progress sea-ward." Taking the estimate of Sir Joseph Bazalgette to the effect that the sewage-matter contained in the Thames moves sea-ward at the rate of five miles in a fortnight, it is evident that the daily contribution of 120 millions of gallons of sewage must be producing a slow daily aggravation of foulness which must ultimately become a source of intolerable danger.

In fact, it is no use to beat about the bush. The question is not one of a few hundred thousand yards of mud more or less, or even of a temporary or strictly local nuisance. It is something much more serious; something with which every sanitary authority will have to reckon. Something which is as hostile to the plans now in course of adoption at the mouth of the Clyde, at Bournemouth, and in other places, as it is at London. It is a fact which is not new, but to which some engineers have persistently shut their eyes. It is a fact which may be long ignored, but which will, if still ignored, one day assert its presence by terrible calamity. It is the simple, certain, awkward fact that if sewage is poured into water, still or running, fresh or salt, the water does not oxidise the sewage, but the sewage poisons the water. This is the primary law of the case: everything else is matter of time and of detail.

From this primary fact we can see no escape whatever by the mere theory of dilution. Our inland rivers would not have become the sources of anxiety which they now so frequently are, if water would have parted with the oxygen, which it holds in so firm an embrace, in order to allow it to combine with extraneous floating matter. It is, as we have often insisted, only from the atmosphere that the oxygen necessary for the purpose can be obtained; unless, indeed, we supply it by some chemical agent, as in the case of Condy's fluid. And that oxygen is to be obtained from the atmosphere only either by spreading out a thin sheet of fluid over an infinite network of points and facets, as in the case of filtration through the earth, especially through a sandy soil; or, when the supply is too concentrated and too abundant thus to be dealt with, by submitting the organic matter to actual combustion, for which process, indeed, it mostly supplies the fuel.

If it be true, as the analysts tell us, as the River Pollution Commissioners tell us, as Capt. Calver tells us, as every one who has impartially studied the subject tells us, that sewage cannot be oxidised by the simple procedure of throwing it into water, it is high time that the fact should be laid down as a primary canon of sanitary work. If there be anything to be urged *per contra*, now is the time for it to be done. If any inventor will discover a cheap, ready, and certain mode of obtaining from water the oxygen which is required to destroy the pestilent poison of sewage, he will be entitled to what honour the nation can do to its benefactor, as well as to the large amount of wealth that will no doubt flow into his pockets. But it is high time that this matter should be once for all understood. On the authority of such a report as that of Capt. Calver, it is now possible to say something which all vested interests would have combined to burke had it been uttered a few months since. But the man who thinks to become rich by shifting his money from one pocket to another, is a sage compared to those who seek to secure the public health by forbidding small contributions of unclean matter to be thrown into our river channels, in order that enormous masses of the same may be poured into them just at that portion of the course which ensures an upward as well as a downward travel.

We said that a high authority was to be cited as to the fact of the travel of this sewage-mud up the channel of the Thames. It is that of no less distinguished a person than the Astronomer Royal. A paper in the "Philosophical Transactions" of 1849, contains the result of a set of observations made by that gentleman of the rise and fall of the tides at Deptford for a month. In the spring half of the tides the average duration of the flow was five tidal hours, and that of the ebb seven hours. Sir George Airey goes on to say that he thought it might be taken for granted that the velocity of the water is nearly proportional, that of the flow being to that of the ebb as seven to five. This would make the transporting power of the former eightfold that of the latter; so that if the ebb-tide was strong enough to move a pebble weighing one ounce, the flowing tide would move a pebble weighing eight ounces.

Without disputing for a moment either the observations, or the mathematics, of the Astronomer Royal, it is clear that they prove too much, unless they are subjected to the control of more practical engineering knowledge. Allowing, as the Astronomer Royal does, that in neap tides the case would be somewhat different, it would yet follow that there would be a steady movement up the channel of the Thames of what is commonly known as the ballast that covers great part of its bottom. No such phenomenon is known to occur. Two elements of importance have been apparently overlooked by Sir G. Airey. One is that of the volume of the river itself, by which quantity the outgoing tide always exceeds the incoming tide in magnitude. The other is the fact, only recently proved by measurements of the great rivers of America, although known to hydrographers from the survey of the Dardanelles and of the Straits of Gibraltar, that the surface of a tide or a current affords no sure indication of the movement of the water below. This can only be ascertained by direct measurement in each case. It is not to be arrived at by formulæ. It is possible that an under-current of water may be running seaward in parts of the Thames at the very moment that the surface of the same part of the stream is flowing up the channel. We do not say that this is the case,—but it is a point yet to be ascertained.

Enough weight, however, is due to the remarks of Sir G. Airey, even under this control, to show that a steady upward travel of sewage-mud from Crossness to above Battersea is not only possible, but probable. Examination of the river-mud, Capt. Calver tells us, shows that it is actually the case. We are thus driven to look at the question of the limits of safety. Is all this theoretically true, but practically unimportant, or is it a vital question?

The sewage pumped into the Thames by the metropolitan drainage works amounts to about 120 millions of gallons per diem. This, according to Mr. Redman's report (Minutes of Proceedings of the Institution of Civil Engineers, March 27, 1877) amounts to one-fourth of the actual outflow of the Thames. Supposing, then, that this quantity of sewage mixed with the down-flowing river, and made its way uninterruptedly to the sea, the Thames below Crossness would be a dilation of sewage consisting of three parts water and one part sewage. It is the estimate of Capt. Calver that 432,412,000 cubic feet, or twenty-two days' discharge, represents an aggregate amount of sewage which is continually oscillating up and down a section of the river of eight miles in length. This is based on a calculation of Sir Joseph Bazalgette and Capt Bazalgette that the sewage matter poured into the Thames moves seaward at the rate of about five miles in a fortnight. We do not quite follow the argument. Capt. Calver takes the sewage at one-fifth of the volume of the river, instead of one-fourth according to Mr. Redman. But if this volume of sewage, or any assignable part of it, occupies twenty-two days in flowing eight miles, there must in that time be twenty-two fifths of the daily volume of the river to be dealt with. The accumulation, in this case, would seem to be in excess. Without, however, going further into these difficult questions of the oscillating section, of the floating of the sewage-matter, and of its gradual increase in foulness it is evident that if we find that the incoming tide sweeps under London Bridge a flood consisting of one-fourth, one-fifth, or even one-tenth of the actual sewage, we are approaching a state of things far more dangerous than was that which drove London to encounter the expense of between four and five millions sterling in order to ameliorate it.

Captain Calver's report allows to the Metropolitan Board a *locus penitentiæ*, of which they will probably endeavour to take advantage although it cannot avail to justify recent proposals for turning the sewage of other places into water,—fresh or salt. Mr. Rawlinson is cited as having expressed the opinion that the Metropolitan Board never contemplated the permanence of the present state of things, and were all along perfectly aware that the sewage must ultimately be kept out of the Thames. This being the case, the remarkable silence of the Board and their advisers has been a great injury, if not to the inhabitants of London, at least to those rural residents who have been taught to look to the Metropolitan Works as an example of sanitary engineering in every respect to be copied. Much of the large sums borrowed by various Urban and Rural Sanitary Authorities throughout the country is, we fear, in course of outlay under this impression.

The general conclusions, and the recommendation of Captain Calver, deal directly with the question on which he was directed to report, namely, the maintenance of the channel of the Thames. To London, as a commercial emporium, that question is one of primary importance. It is one rightly to be taken up by the conservators of the river,—a body of men who, however recent their actual Parliamentary authority represent the ancient watchers over the very commercial existence of the City. But the direct amount of obstruction is, as we hope we have shown, but a very small part of the momentous question now forced into the light of day. A quarter of a million tons of mud, more or less, to be removed from a river-bed in a year, is no a very formidable matter for the mother port of England. A contamination of the Thames at a point six miles below London to the extent of one-fifth part of its volume, a contamination which each successive flood brings more and more undiluted by to London itself, is a matter that concerns, not the wealth only, but the health of the metropolis. It is impossible to blink the subject. It will be dangerous to palter with it. It would be treachery to the cause of the public health to be silent. After long and tedious inquiry, repeated Commissions, repeated debates in Parliament, we have passed a law to prevent the contamination of our rivers, on the ground that it is an invitation to pestilence to continue to convert them into running sewers. And side by side with this legislation we show to the world the spectacle of the largest and most important quasi-municipal body in the kingdom, furnished by Parliament with wide powers, raising an enormous income from taxation, dealing with many millions of public money, and all this with the upshot of pouring into the Thames, some six miles below London, the concentrated sewage of the whole vast population of the metropolis. And it has taken thirteen years to find out the mischief that is being done.

Lambeth Palace Library.—The Ecclesiastical Commissioners have lately provided for the arrangement and repair of a vast number of rare documents relating to the see of Canterbury from the time of Henry III. downwards. They contain much information on the customs of manors and local history. The whole contents of the archiepiscopal library, which is open three days a week, will now be available for reference.

A TREATISE ON PORTLAND CEMENT.

IT is one exemplification of the rapid increase in the use of Portland cement of late years, and the importance that has come to be attached to it as a constructive material, that this, which not so long ago used to be mentioned casually in practical treatises as one among other mortars, should now be thought worth a large volume to itself, in illustration of its history and the methods of compounding and using it.*

"The Eddystone lighthouse," says Mr. Reid, "is the foundation upon which our knowledge of hydraulic mortars has been erected, and is the chief pillar of modern architecture." The latter expression would be more correct if he had said "of modern *building*,"—distinguishing construction from design. But it is no doubt true that Smeaton's unwearied and conscientious experiments in the search after a reliable mortar for his famous structure, first led to anything like a system in regard to the compounding of hydraulic cement,—"lightened up the darkness surrounding the subject of mortars," as the author (who is a little too much given to "talk dictionary") expresses it in his introductory chapter. The book is accordingly dedicated to the memory of Smeaton, whose fine countenance, at once shrewd and benevolent, appears as frontispiece to the introduction. It is somewhat singular that a book, written in connexion with these studies of Smeaton's, should appear just about the same time that we hear of the intended demolition of the structure for which these very experiments were made. There is none the less honour to Smeaton, however, whose lighthouse is to be removed through no defect in his engineering, but through the threatened giving way of its rock foundations, and the necessity for a structure that will accommodate an improved lighting apparatus.

Smeaton discovered, by close attention to the numerous experiments which he carried on with very primitive chemical means, that the limes which were not pure carbonates, but contained an admixture of earthy matter, were those which hardened best, or at all, under water. His test, after experimenting on the indurating qualities of small balls of different limes, kneaded up while soft, and left to harden in water, was, to apply an acid which dissolved the calcareous matter. The specimens made from chalk and Plymouth marble dissolved entirely under this test; that from the Aberthaw limestone, which had behaved best in the way of hardening, left a deposit of earthy matter. It was thus that Smeaton came to the conclusion that these impure limes produced the best results, though it is rather too much to say that he had thus "unlocked the secret of hydraulicity." He had discovered the conditions under which hydraulic qualities, or the power of setting under water, existed; but the "secret of hydraulicity" cannot be said yet to be known; it is still a vexed question of chemical theory. For some time after Smeaton's discovery it was supposed that a ferruginous character in a part of the ingredients was an inseparable, if not the principal condition; he himself seems to have entertained this idea, upon grounds that seem both insufficient and even contradicted by some of his own experiments. It is curious that Smeaton seems to have reached the result which eventually satisfied him through what may be partly called an accident. He had been led to think that he would find *Terra Puzzolana* from Civita Vecchia a better material for mixing with the Aberthaw lime than *tarras*, which he had previously tried; and "fortunately he found at Plymouth a considerable quantity of this material, which a merchant had imported on speculation, expecting to sell it to the contractors of old Westminster Bridge. But neither commissioners, engineers, nor contractors would trouble themselves even to buy it, so the venture turned out a bad one for the importing merchant, but a lucky thing for Smeaton." The test-balls made with this proved so satisfactory in their behaviour that he expressed his conviction that by this means he could make a cement which would equal "the best Portland stone" in solidity and durability; and from his comparison with the stone the new material came to be called "Portland cement"; an accidental name having no connexion with Portland in any way, as has been often supposed. Mr. Reid is, in fact, bent on showing in his book how widespread in regard to locality the materials for making this class of cement really are. As he observes, the fact of its invention and improvement in English hands has led to a general impression of the local nature of the manufacture, and that, in fact, "English Portland cement" is an article of universal currency. "The port of London, attracting the commerce of the world to its docks and river, naturally assisted in the establishment of a belief that Portland cement was indigenous to its neighbourhood, and could only be produced by a combination of the chalks and clays found on the banks and shores of the river Thames and its affluent, the Medway. In France and Germany, however, large works have been for a long time in existence, and it may be said that London, Boulogne, and Stettin, respectively, represent the chief centres of this industry in these three countries." And a long chapter of Mr. Reid's book is devoted to "geological and mineralogical observations" intended to throw light on the position and geological distribution of materials suitable for the manufacture of Portland cement,—a chapter which contains a great deal of very useful and suggestive information, though some portions of it are hardly to the point.

The general progress of experiment since Smeaton's time, however, has really had for its object to do with English materials, that is, with materials found at hand and near to each other, that which Smeaton did with a mixture of English and foreign material, the latter having been fortuitously brought within his reach on moderate terms on that occasion, but not presenting in general the means of economical manufacture. The name of Sir C. Pasley fills the largest place in the list of investigators, and it was he who pitched upon the alluvial clay of the Medway as the best material for the purpose. The degree of heat to which the cement was to be burned in the kiln was, however, a point in regard to which there was long misapprehension, the majority of the experimenters being afraid of the application of heat to the extent which has subsequently been found to be beneficial. Edgar Dobbs, the wording of whose patent (taken out in 1810) shows a very detailed knowledge of the *rationale* of the process to which he was subjecting the materials, nevertheless remarks that the intensity and duration of the burning must be such as "to expel the carbonic acid from the lime without vitrifying any of the substances"; and all experiments up to about 1820 were carried on upon this supposition; "instead of driving the mixture to the point of vitrifaction, all the operations were so conducted as to studiously avoid such a result; and when by accident this occurred, the pieces so hardened were carefully rejected as worthless." Mr. Reid attributes to Aspdin, of Leeds, whose patent was taken in 1824, the discovery of the advantageous effect of a high temperature in the kiln in bringing the ingredients into closer union, producing that high specific weight which is considered by many to be one of the tests of a good Portland cement. Aspdin's own specification for his patent, however, which is quoted *verbatim*, does not include any direct remark as to carrying the heat to the point of vitrifaction.* Indeed, we must say that the whole chapter on the historical development of the cement, though containing a great deal of information, is put together in a very confused and confusing way, no definite chronological order being observed; and in some cases the observations seem quite contradictory, as in a paragraph on page 28, in which reference is first made to the "salient property" of quick-setting in Portland cement, while in the very next sentence "a protracted setting" is given as one of the tests of the best cement. It may be observed, before quitting the historical part of the subject, that in spite of all the attention bestowed upon Portland cement by scientific investigators, and the high estimation in which it is now held, the material was a long while in making its way into favour, and was at one time nearly "extinguished" by Roman cement. The author attributes its final success in the market to the impetus given to its use in connexion with the London drainage works in 1859.

The chapter before mentioned, on the geological and mineralogical aspect of the subject, is perhaps the most useful part of Mr. Reid's book, as it includes a great deal of information in regard to the localities in which materials may be looked for, and a number of detailed chemical analyses of various ingredients that either have been used or might be used in producing a Portland cement; and as the economical employment of materials, in regard to proximity to each other and to the place of manufacture, is one of the most important conditions for manufacturers and the public, the information here formulated deserves the attention of those most directly concerned; whom, however, we must refer to Mr. Reid's pages for the further consideration of the subject, as the chapter is distinctly statistical and nothing more. We may, however, refer to the short chapter following this one, which suggests some *artificial* materials for making Portland cement; a suggestion which is of special importance, as it seems to offer the means of utilising some of the waste products of manufactories, which are now much worse than useless, and are allowed to cumber and disfigure the land in the neighbourhood of the manufactories which produce them. Among the materials the utilisation of which is thus suggested is iron slag, which has long been suffered to disfigure with its dreary-looking heaps whole square miles of country in certain districts. This, however, as the author notices, has already been utilised in some places as railway ballast, instead of being left in useless heaps. From the analysis of some of these slags it would appear, on the face of it at least, that they are peculiarly adapted, in regard to chemical composition, for cement-making, as they contain not only silica and alumina, but also a considerable item towards the amount of lime necessary to combine with the silica in the proper proportion for cement, so that some of the lime also would be furnished by their use, provided (which is the point we should ourselves feel just a question about) they can be successfully combined and amalgamated with the rest of the material necessary. Waste from lime-burning, which is in fact (from the analysis of an average sample) hydrate of lime, with a usually small proportion of sand, silica, and other ingredients, is a material which has been used lately for cement-making, and the author notes that in the Buxton districts waste of this kind exists, ranging in quality from that newly deposited from the kilns in a free or caustic state, to that which is probably a century old, and almost as hard as the stone from which it was originally obtained; and that barn and cottage floors, of a most durable description, are frequently made of this waste. "These waste heaps are commonly in close proximity to the other ingredients, in the form of shales and clays. At present their cost is merely nominal; and even supposing this increase to cease, there is abundance in many districts to supply the cement-maker during this century at least. That good Portland cement is being made from this source establishes its value in that direction; but, like every other supply of the carbonate or hydrate of lime, it must be converted in the locality in which it lies, as no expensive carriage for these materials can be tolerated." Another material which has been thought of in this relation is alkali waste, in regard to which the author remarks that he was consulted some years ago by one of the largest manufacturing firms in the St. Helen's (Lancashire) district in regard to the possibility of turning their waste to account in Portland cement-making; but the large amount of sulphur in it, forming sulphate of lime, prevented its applicability for a hydraulic cement. Mr. Reid adds, however, that since that date a desulphurising process has been employed for the recovery of the sulphur, and that the remaining material, after this process, would have a much better chance of proving a good cement material. Those who know the district referred to would think any process much to be desired which would facilitate the economical

* The Science and Art of the Manufacture of Portland Cement, with Observations on some of its Constructive Applications. By Henry Reid, C.E. London and New York: E. & F. N. Spon. 1877.

* As Mr. Reid attaches great importance to what is called "heavily-burnt" cement, and reiterates his view on this point repeatedly, we may just remind the reader that some eminent practical authorities are not so decisive in regard to the advantage of vitrifaction. Mr. Grant, C.E., in the course of his papers on the "Strength of Cement" (read before the Institution of Civil Engineers) points out that the slow-setting of this heavily-burnt mixture renders it unsuitable for some positions (as in moving water), where a lighter cement would set more quickly. He added that "another inconvenience, to which this heavily-burnt cement exposed the engineer, was the almost certainty that it would not be properly ground. Theoretically the cement should be an impalpable powder, and every grain of sand a matrix round which the cement should form a film or coating; but this could scarcely be the case with a material which it was so difficult to reduce to power, as the heavy cement in question. On the contrary, if carefully scrutinised, by passing it through a sieve or by washing it, a considerable residue of particles resembling sand would be found, comparatively inert in their character, with very feeble setting properties, and of a nature to diminish the amount of real sand which the cement would otherwise carry. He might also add that the coarsest ground cement being found to weigh the heaviest, the exaction of a very heavy specific weight, unaccompanied by any other restriction, offered an inducement to imperfect pulverisation." What does Mr. Reid say to this?

removal of the peculiarly obnoxious form of waste material, emitting fetid odours, which renders the land about these manufactories hideous to more than one sense. We have emphasised a little this chapter on the utilisation of artificial material, considering that any means of turning such manufacturing waste to account, instead of letting it "cumber the ground," is of great importance, and in fact a subject which ought not be let alone until the right use is found for all such "waste," which is only "matter in the wrong place." Nature "wastes" nothing; and it is our business to learn and adopt her grand economical method.

The short chapters on the choice of a site for cement manufacture and on the selection of the raw materials are very practical and to the point; but the latter chapter furnishes an important instance of the author's want of method and the inconsistency of statement in different portions of the book. In the introductory chapter of the work it is remarked in reference to Aspdin's specification (p. 15) that he employed what is now called the "*double-kilned* treatment," but that the process is *now abandoned*, because "*modern machinery effects as perfect a reduction of the hardest materials* as is necessary for their perfect amalgamation with the silica and alumina ingredients." The reader is left to infer from this that the object of this treatment, in which the lime is calcined twice, before mixing as well as after mixing, was to facilitate the union of the various ingredients; but he gets no definite statement as to the philosophy of it till he comes to page 144, when for the first time he gets the reason of the process set out, but in a manner that entirely contradicts what has been said in the last quotation, *e.g.*:—

"In the handling of amorphous materials it is only a question of simple mechanical operation to reduce the varying indurated chalks, clays, and shales, so as to fit them to perform their required task of free and accurate mixture. In dealing with hard crystallised rocks, the task is much more onerous; for, however finely you may reduce the material, you cannot reduce the crystal; no matter how small the atom, it is still a crystal, and *your utmost sources of mechanical reduction fail* to effect its complete extinguishment. The mechanical expense of this operation is therefore considerable, and, however accurately performed, it may never succeed in the realisation of a powder fine enough or sufficiently soft to ensure the perfect chemical combination of the various materials. To accomplish what must be regarded as the most important part of cement-making operations, it is desirable, to ensure the success of this initiatory stage of manufacture, *to first convert the limestone into lime by the ordinary process of burning*. That alternative thoroughly overcomes the objection to the crystalline character of the mechanically reduced stone."

We quote the above passage because it is an interesting and, in itself, perfectly clear statement of one of the mechanical difficulties in the preparation of the material, and of the reasons for the double calcination. But, on the other hand, if we compare the passages which we have printed in italics in this and the previous quotation, it is impossible not to see that the author is absolutely contradicting himself.

In the course of remarks upon the treatment of the materials in manufacture, we find again a strange want of consistency in the author's opinions as expressed in different parts of the book. In the general chapter on "Treatment of the Raw Materials," he sums up the methods under three heads, viz:—"Wet" method, "semi-wet" method, and "dry" method. The object of all the processes is the accurate and complete mixing of the two elements, the lime and the clay or silicate. In the wet method, which was the earliest, and is still, we believe, the most commonly used, the lime and clay are mixed through the agency of a wash-mill, in about four times their own volume of water, placed in a circular vat, and churned, as we may say, by a horizontally-revolving frame, with vertical blades immersed in the water. The semi-wet method was patented by Dupont, and introduced subsequently into England as "Goreham's Patent Process," and consists in passing the "chalk"* and clay through horizontal mills while in a semi-plastic state. The dry method is the reduction and mixing of the materials by grinding machinery while in a dry state. None of them seem to be regarded by Mr. Reid as entirely satisfactory, and it is impossible to find out which he recommends. The (obvious) drawback to the wet method is the difficulty arising from the different specific weight of the two classes of materials, which renders them, even if completely mixed under the action of the continually-revolving blades of the wash-mill, liable to irregular deposition in the troughs or "backs" into which the water is run off for the mixture to settle previously to draining the mixing water away from it. The mechanical or dry method requires considerable care to ensure thorough mixing, though it is obvious that it is free from any such palpable and essential danger as that of the wet method. The intermediate method Mr. Reid seems unable to make up his mind about. He says (p. 159) that "under the best conditions it must fall short, in thorough mixing value, of the wet process." This seems improbable on the face of it: and on turning to page 210 (the chapter on "the wash-mill") we read that the evils inherent in the wash-mill process are "practically unavoidable, and a tendency is now being shown to reduce this wasteful and dangerous process by adopting the Goreham plan of converting the stuff . . . ; and we cannot do better than refer shortly to it"; the latter process being the very one which he had previously described as necessarily inferior to the wash-mill method. After this we can hardly take Mr. Reid as a guide in regard to this part of the subject; all we can really gather from his remarks might be expressed in a Hibernian formula,—"One plan is as bad as another—'faith, and a great deal worse!"

The chapter on mechanical means of crushing or reduction is well illustrated by diagrams of the various machines which are and have been in use, the principal of which are modelled on or are modifications of "Blake's Stone-breaker." In nearly all the principle of application of the crushing force is essentially the same; the crusher is formed by a fixed and a movable jaw placed vertically at an acute angle, so as to leave only a small opening between them at the lower edges; the stones are put in at the top and broken by degrees by a rapid succession of crushes imparted by eccentric movement from a fly-wheel, and descend as they are broken smaller, till they finally fall out through the lower orifice. In a machine which goes through such a continual succession of jarring shocks, simplicity and strength of parts, and the greatest possible distribution of the shock through all the parts, are necessary elements; and the methods by which these ends are attained in some of the machines are very ingenious, but they appear to us almost all to be chargeable with one common defect of principle in the method of attack of the crushing jaw, which works on a centre or hinge at the *upper* angle of the jaw, which consequently is practically fixed, and the greatest movement takes place at the lower edge, just where the stones have got smallest and require the least force to reduce them, and the method of action increases the angle between the two jaws at the moment of the blow, whereas the nearer parallel they are (as in a vice) the more directly would the crushing force be excited. This drawback is remedied in the improved form of "Goodman's crusher," shown in figure 15 (page 204), where the movable jaw works on its lower edge; it seems strange that a matter so obvious should have required so many stages of invention to arrive at it. The most effective action would be that in which the two jaws approached each other with a direct horizontal action, but the economical application of the power in this way might not be so easy. Another form of Goodman's crusher or triturator, shown on p. 199, has a pair of toothed jaws working against each other with a combined clipping and grinding action (the latter obtained by a slight rotatory movement) which is about as precise an imitation as possible of the grinding action of the jaws in living beings. It was first designed for reducing metalliferous quartz rocks with the view of extracting their ores, and is only applicable to the reduction of comparatively small stones, not being fitted for the rough work of the other crushers. These machines are not, as may be supposed, connected solely with cement manufacture; they are largely employed in the preparation of road-metal.

The chapter upon the theory and practice of the construction of kilns is very interesting. The three objects of kiln-burning Mr. Reid defines as, 1st, the expulsion of the water remaining in the material from the mixing process; 2nd, the expulsion of the carbonic acid gas contained in the carbonate of lime proportion of the mixture; 3rd, and (as he says) most important, the combination, by fusing and clinkering, of the lime with the silica; these stages of operation being successive in the order named. In the ordinary dome-kiln the materials are arranged by placing on the bars, when the kiln is cool, a layer of wood for ignition, succeeded by alternate layers of coal or coke and of the materials to be burned. The fire heat, before the coke is fairly ignited, drives off the water; and the second stage is complete when all the carbonic acid is evolved, which requires the temperature of a light red heat. "The quantity of carbonic acid thus requiring expulsion is something enormous, so much so that for every ten tons of Raw Portland cement four tons at least of this acid are set free. So that when you estimate the weight of coke or other fuel, and raw material, put into the dome, or any other kind of kiln, and compare it with the cement produced, you can form a fair idea of the amount of power absorbed in its handling." After the evolution of the gas, the heat rises still higher, and the operation of fusing begins. According to Mr. Reid, the arrangement of the fuel and material so as to equalise the heat over the whole mass, and the determination of the point at which the clinkering heat proceeded far enough, are alike matters for "rule-of-thumb" judgment on the part of the workman, who simply goes by his experience in previous cases. The waste of fuel is very great from the necessity of warming the cold kiln, and from the amount of heat carried away by the carbonic acid; not to speak of the speedy destruction of the kiln through the contraction and expanding of the brickwork during intervals of heat and cold. In contrast with this Hoffmann's "ring kiln," in use in Germany, where the furnaces are arranged in a circle and connected to a central chimney by flues from the bottom of each furnace, so that all the gases before escape have to contribute their full quota of heat to the general result. "Each chamber is so constructed that it can be readily put into communication with the outside air, with the central flue, and with the adjoining chambers: the first, to obtain the necessary air for combustion, the second for the purposes of draught, and the last to receive the waste heat from one chamber, and in due course, and as the combustion proceeds, pass it on to the next. The fuel is introduced at the top." Of the superior science and economy of such a furnace there cannot be a question; but, as Mr. Reid half admits, its manipulation so as to gain all its advantages requires an amount of thought and attention which it would be difficult to get, for some time to come, from English workmen enamoured of their former (want of) method; and part of its superiority, economically, depends upon its constant employment. Each separate furnace has to cool in order that the charge may be drawn as in the ordinary kiln; but in the case of the Hoffmann kiln the greater part of the waste heat goes to the adjoining furnaces which are supposed to be in action, and which also keep the walls partially heated, so as to avoid the extreme effect of contraction while a furnace is not in use.

We have only space here to refer to the lengthened chapter on the important subject of testing-machinery, which also is fully illustrated, and to the descriptive and suggestive chapter on the uses of Portland cement: just observing (as it is connected with a question much agitated just now) that one special suggestion is the use of concrete to form large rain-water reservoirs,—"a series of covered concrete reservoirs communicating with each other by the aid of pipes or tubes of the same material, and judiciously contoured on the catch-water principle, would change the face of this country, besides affording relief to fever-striken homes by a plentiful supply of water in their time of need. That the rainfall is more than ample for all moderate and even extravagant, wants, is beyond doubt, and its perfect utilisation should no longer be delayed." That the idea is well worth carrying out to a certain extent, and that there is an enormous waste of rain-water, there is no doubt; but Mr. Reid seems to forget that it is part of this very water which is drawn up again from the earth eventually by mechanical means and under different chemical conditions. The question would seem to be whether it were truer economy in the widest sense, to construct reservoirs to catch moisture as it falls from the clouds, or machinery to draw it upward out of the earth. The working cost of the former would be less, of course, and no doubt a great deal might be saved which is now lost, and a large margin of storage ensured, by an extended system of rain reservoirs.

The past and future importance of the subject, and the elaborate character of the book, justify our devoting some considerable space to it: at the same time we must say that Mr. Reid's work exhibits in a high degree the defect so common in books of this class in England, of want of

* The author himself uses the word chalk, here and elsewhere, apparently as synonymous with lime or carbonate of lime, though, of course, chalk is in reality only one of the forms in which the lime is found. This carelessness of wording in a scientific treatise is much to be deprecated.

method and arrangement and of a clear literary style. A man who undertakes to write a large practical treatise of this kind should not only have a detailed knowledge of the subject himself, but should know how best to convey his knowledge to others. Any one who compared this book with such a treatise as Coignet on Béton, for instance, would be struck with the difference; in the work of the French engineer everything is as clear, precise, and logical in statement and arrangement as a proposition of Euclid; in that of the English engineer we hardly know where to look for anything; a remark which ought to be at the beginning of a chapter, to explain the drift of what follows, occurs at the end; and so on. If Mr. Reid had been more logical in his arrangement and style, he might have conveyed the same information much more intelligibly in a book of little more than half the size of this, and of course at proportionally less cost. His use of language is often absurd; as when the mention of a proposal to dry lime by pressure prompts the remark that "it is singular how perverse the human mind is, and often revels in retrogressive action" (whatever that process may be); when we read that Mary Anning, the geologist, "is the ichthyosaurus now in the British Museum" (p. 35); not to mention almost numberless slips in grammar and construction. The most curious mistake is that in the last sentence of the preface, where the writer states his conviction that his book will certainly be regarded as perfect, though his obvious and more modest intention was to say the reverse.* We do think that those among us who undertake to communicate practical knowledge to the world should first learn the right use of their medium of communication, the English language. They would save themselves and their readers much trouble in the end.

"EVOLUTION" IN ARCHITECTURE.

THE subject of styles is certainly just now a much vexed question,—a *vexata quæstio* in the usual formula; but as discussions proceed, it is not certain that a "vexing question" may not become the more appropriate phrase. It is not, however, on this account that its consideration either should or can be shirked; in every difficult inquiry we must be prepared for a crisis of wearisomeness, and whether it comes on as a hot fit or a cold, to give way to it is to renounce the fruit, the ripening fruit, of all past labour. All cessation is premature until something like a settlement is attained to, and there comes in sight at least such a modified conclusion as the world in such cases has to be contented with. He must be a sanguine man indeed who can entertain a hope that any controversy whatever will come to an end by absolute conversion of all parties to it to an identical opinion. No such euthanasia is in store for any debate which has once raged with a certain degree of vivacity; a lull sometimes ensues from one or both sides getting tired,—from one or other side finding silence the pleasantest way of dropping some arguments that have become too palpably indefensible; and sometimes both antagonists cease to care about a matter which once set them furiously at odds; though by no means admitting to each other or even to themselves what perhaps they might if candour and a clean breast were in question,—that it had been misapprehended by both, or that both had found out that they had been all along fundamentally of one opinion, and only blundering about words. Perhaps this last unavowed but still effective conclusion is the most frequent, and perhaps it is the happiest of all. Nothing will conduce so favourably to bringing it about as a reduction of the terms that recur most frequently to a precise definition: the attachment to them of limiting explanations, after which even perverse ingenuity may be at a loss to use the same phrase again for different things.

Socrates would have commenced a conversation on our topic by inquiring, What do you mean precisely by a style?—and his respondents would be at least reported to us,—whether the dialogue reached us through Plato or Xenophon, as instancing one style after another,—say the Egyptian, the Doric, the Ionic, and so forth. Then they would be checked by the inexorable interrogator, and ultimately brought to admit that to produce a chair or a table is not to explain what is the meaning of furniture, that armour does not mean a helmet, or clothing a shoe, nor does an example of a style define style in itself,—the idea of style. We may think that the interrogated sometimes do not have fair play in the reported or rather the invented dialogues, and are exhibited as more dull than they were likely to be on a matter so simple. But simple as it seems and obvious to take for granted to begin with, that we know what we are talking about when we begin to talk, in nine cases out of ten where there is disagreement, it proves that a definition is not what we can start with, but what we have to work our way to; it is the satisfactory end, if indeed to an end so satisfactory we can arrive, and not the beginning of our inquiry. Hence if the perplexing old Athenian could re-appear among us and challenge us to state distinctly what we mean by an architectural style, it might be as well to turn the matter over a little before exposing ourselves to his retort.

The chief characteristics of a style, shall we say, are a certain harmonious coherence and final self-contained completeness; we certainly are not disposed to call a mere huddle of clumsiness and inconvenience and disorder in buildings an example containing the marks of a style, however vast or however prevalent may be such an unfortunate attempt at construction. Such may be the way in which a particular tribe may have been content to house itself for centuries, but to what we have beating in our mind more or less distinctly as an idea of style, it assuredly does not answer.

Let us betake ourselves to another Socratic expedient, and try what help we may obtain by an analogy,—the more familiar the better,—his own favourite way of getting philosophy clear out of a mist. We have no difficulty in recognising that Style in art is much the same as Breed in organised nature. We talk, indeed, of the contingencies of style in metaphors borrowed from breed. We have pure and degenerate, spurious and mongrel styles, very much as we talk of our dogs as of pure race, mixed breed, low breed, or mongrel. And there is something more in our resort to these metaphors than a mere random escape from a difficulty of expression. What else is the ultimate characteristic of high breed in an animal or a flower, if not the same as that of a style of architecture? When we speak of either in terms of the highest generality, we apprehend a thoroughly balanced combination of powers and proportions with reference to ends or purposes of a certain grade of complexity, and beauty, and elevation. The thoroughbred horse or greyhound exemplifies the perfection of style in nature, and it is scarcely forced to say that we witness the equivalent of high breed in a Greek temple or a Gothic cathedral. Indeed, the gradual development of a style, its divergences into varieties, advance towards perfection, its degeneracy or decline, or supersession by another,—all these contingencies exhibit it in curiously close relation with the incidents of a breed or a species under the influences of primary growth and casual or methodical culture. Very much, then, of what goes by the name of evolution, has its place in the philosophy of art no less than of nature; and it may be that while some hints may be derived from the theories of the physical evolutionists, the obligation may be more than repaid by a study of the principle from the side of art.

If we were to accept all that is very confidently told us, which fortunately we are not bound to do, we should believe that "all organisms are derived from one or a few originals by process of evolution, and that hence all species are related." But we have only to translate this into our own vernacular of architecture to find that we must demur at once. Styles may be all related, and doubtless are, but that is due to the essential characteristic of all of them having relation to the common necessities and common feelings of man. We are as little bound to one original as to a few; if one style may originate independently, why not another?—and if a few, why not a multitude? In the intellectual as in the material world, we see around us—

> "All nature quick and bursting into life";

the fact of affinity between styles or their mutual interaction and modification very manifestly does not prove a single source and local origin; and as little, if the evolutionists will allow us to say so, does the fertility of unions of varieties imply of necessity a single direct line of descent. Notoriously a dog knows a dog, whatever their exaggerated contrasts; but against those who hold,—and there are such, of not mean reputation,—that Italian greyhounds, bulldogs, and mastiffs, to name no more, had originals as distinct from each other, as the primæval ancestry of eels and hedgehogs, the rigid evolutionist has nothing to reply at last but that for his part he does not think so, and that if we grant all that he chooses to assume there is no necessity that we should think so.

The factors of evolution which the physicists chiefly insist on, are Heredity, which they define as a tendency to the continued transmission of peculiarities; and then adaptability to Environment, involving a tendency to variation under the influence of the total of surrounding physical conditions.

Habit, tradition, imitation, are the forms under which Heredity declares itself in styles of architecture, with consequences familiar enough. One generation builds, on the whole, just as it speaks and dresses, very much as its fathers did; the sequence is continuous. And this is the case with faults which check or reverse the best development, as well as with excellencies; much is reproduced very happily after its reason is lost, but much also of which the reason exists no longer, and much that never had a justifying reason. To the architect it may be often said as truly as to a sufferer by the gout or by a Chancery-suit,—"Woe unto thee that thou art a grandson!" The accidental or the imposed misarrangements of one continue to be repeated by ages that follow, even as a rabbit born with one ear has transmitted the deformity, and mutilated guinea pigs have perpetuated an inheritance of toelessness.

What the philosophers call *atavism* may in strictness be regarded as heredity in its strictest form; it is the liability of a breed or a variety to revert to the original and simpler type; acquired peculiarities occasionally die out, even suddenly, and leave apparent the original features of the unmodified stock; so it is that the gardener sometimes finds heartsease, perfectly wild in both flower and foliage, springing up from the unmixed seeds of the most finely cultivated. Among pigeons this has been found to be the consequence of crossing very strongly-contrasted breeds, and attempts to secure transmission of an excessive variety of characteristics. We have not far to look for a comparison to this in architecture; not the longest architectural life is required to recal more than one reaction to a plainer and ruder style, which has ensued upon temporary or persistent prevalence of a straining after novelty by overcharged elaboration, or upon either desperate or ignorant attempts to blend the repugnant and the incongruous.

The chief influences which are assigned to Environment are usually classed as those which are due to crossing of breeds or varieties, and then to changes in general external conditions, as of climate, food, exercise, or confinement, and so forth.

The response of architectural variations to climatic,—to follow forth the analogy,—scarcely needs specific illustration; it is difference of climate and not of occupant that produces the contrast between an English country-house and an Indian bungalow,—between the flat-roofed Egyptian temple and the pedimented Parthenon; and if nothing pushes on development of an organism like abundant and even excessive food, at the period of growth, it is no less the case that accumulative capital is the great stimulant of building, that the works of the architect must be rooted in supply of resources, even to lavishness, for some of the grandest conditions of effect; while duly-proportioned if scantier means are indispensable for the attainment of an important effect, even in a style of more austerity. Severity itself cannot be characteristically embodied in stone and marble without expenditure that draws deeply on the oil of the lamp of sacrifice. If development may be corrupted when pampered to excess, it perishes outright under the frugal regimen that means starvation.

The most popular expositors of the mysteries of evolution and breeds are sometimes given to allow, at least tacitly, too liberal a scope for the fortuitous on the one hand, and the arbitrary on the other. The determination of a genuinely self-consistent and characteristic type is implicitly conceded to influences merely accidental, or to arrangements of influences that aim at an arbitrary result,—any one out of a number that might be adopted as reasonably. But a noble development depends on the concurrence of special external influences that have a pre-existent sympathy with specific original capa-

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* For Mr. Reid's information, if he strikes out the word "but" in the sentence referred to, it will mean what he intended it to mean.

bilities,—on the rich capacities and tendencies of the primal germ being fostered by those surroundings which alone are suitable to promote its advance to a determinate form and projection for it. Sometimes these conditions may seem to fall together fortuitously; some of the finest French pears, it is said, and one English apple at least, have been come upon in full perfection growing wild; and some buildings, it may be, have been hit upon by uncultured nations and early times, which exhibit types of graceful design and beautiful proportions. But otherwise perfection depends on the original endowment being studiously and advisedly put in the way of those circumstances by the aid of which, indispensably and exclusively, it can truly declare its qualifications and flourish. A certain wild flower has a capacity for one most beautiful development,—a special tendency to realise a particular type, which, if we regarded the flower as conscious, might be called its dominant ideal, the purpose that it ever longs and endeavours to accomplish. But any such tendency is in sympathy with and relative to external circumstances that may seem entirely independent of it,—to *pabulum* and protection, and regulated warmth, that it cannot itself control or go in search for. Nature, however, in one kingdom hearkens to nature in another; the link of relation is as absolute here as between the orchid and the insect, on the agency of which depends its chance of fertilisation. When we contemplate this correlation permeating and harmonising secondary divisions of nature, we cannot but ask ourselves,—where does it stop, and what right have we to assume that stop it does. Is it certain that it was accident and not some deeper cosmical sympathy that settled the Greek race precisely where the Isle of Paros and the Pentelic range were at hand to supply the very material that was needed for development of plastic art by the finest geniuses for sculpture the world has produced?

However this may be, we may rest assured that in every combination that presents the rudiments of a style of art, there is contained the germ of an ideal which it is for trial and for study to attain to as a definite conception, which has to be sought for and found, and recognised at last by a natural harmony,—"Congruein in a full and natural close, like music."

The endless combinations and trials in thought, on paper and even executed, of a thorough student, his comparisons of imagined forms, his repeated testings of compatibles, in working up to such a result, are comparable, without derogation, to the mingled theoretical and practical operations of the man whose object is to perfect a breed of animals, or a fine flower; and, having obtained it, to fix and continue it. Judicious crossing,—sedulous culture,—aims at eliminating wrong conditions, and approximating the desirable; it is a process in which skill does not seek to counterwork nature; but to divine, to interpret, and be a fellow-worker, with capabilities and purposes which, it is an antecedent and just conviction, are certainly there to be divined, and to reward the industry and sagacity of the interpreter. Crossing is the art of methodical combination, and is most successful when the sagacity in discriminating and estimating differences has been cultivated till it seems an instinct. So have been produced those marvellous specimens of high culture and pure breed that attract multitudes to shows and competitions. To this art we owe the English racer, and many another champion, which, while equally a horse, has perfections so distinct and so peculiarly characteristic, as to declare him equally the standard type of a breed.

With such contrasted but equally perfect types it is not below the dignity of the orders of architecture to be compared; but here, in truth, although we generalise orders, it is the fact that every example of each order, when of a fine period, is itself a special type. This has been notorious since the examination of the monuments themselves exposed the mistake of the confidence which was placed too long on the fixed Vitruvian formulas. The finest art is in this respect in complete harmony with these phenomena to which we indulge ourselves in tracing their analogy. Even in the instances of the most established breeds, it is only relatively that they can be said to be fixed. "Nothing is at a like goodness still," says Shakspeare; and in the case of the arts, not only can no style go on persistently through the ages unchanged; but it will change from one master to another, nay, from one example by the same master to another. Fine art ceases to be when it ceases to change. We divide the history of art into periods for convenience; and have our general ascriptions of merit or degeneracy, which make no further distinctions; but when accuracy is in question, we find that every master of the finest time had a style of his own, and a style that even in his own hands was constantly in flux,—that was modified into what connoisseurs refer to as the succession of his "manners."

Some of the most important developments of the arts have ensued upon the confluence of two styles previously considerably remote. We are used to contemplating Gothic architecture as developing from within,—but these secondary developments might fairly be designated *manners*;—if we go back far enough, we find that the style ever took its great starts at periods when the movements of nations brought men acquainted with very contrasted forms. So the works of Dante, Raffaelle, Michelangelo, of Shakspeare and Milton, combine ever the characteristics of two forms of civilisation,—of the revival of learning and of all that went before,—combine them harmoniously, and in virtue of their harmony claim severally the honours of the purest style. The great masters of Italian architecture stand precisely in the same position.

There seems at first sight a contradiction in the production of a homogeneous style by the concurrence of contrasted impulses, and still more in the proposal to obtain a fine breed by assiduous crossing, and then finding that purity of breed, which is its homogeneousness, can only be conserved by avoidance of crossing and by steadily breeding, as it is called, "in and in."

But the contradiction is only apparent. When the advance to a fine type is in progress, every well-designed cross has a special purpose and tendency to strengthen a certain quality and discourage others that are objectionable, and there is a controlling and subordinating power in what has been called the "prepotency" of one stock above the others. In consequence, when a truly fine type has been obtained, it has within itself a natural coherency;—it is the harmonious concentration of qualities that mutually sustain, we had almost said understand, each other, and the object remains no longer to search for improvement or corrections, but to preserve it from debasement by incongruous mixture.

It is the debasement of a fine type by admission of incongruous elements that constitutes the essence of the mongrel, either in nature or art; the title, low as it is, is not conferred, is not thrown away, upon a paltry muddle of insignificance and disability.

But a fine type, however, from the very liability to change that has been specified, is subject to degeneracy; and then it may rest with a "violent cross" to give any chance of a recovery or rescue by a new development through however many changes. The Greek orders had wandered far from purity by the days of Diocletian, and the architecture of Spalatro does not retain an order with enough of purity for the anomalous combination of arch and entablature to call for such a term as mongrel. It marks a reopening of the whole question of style; it is the first "violent cross,"—which long changes through a series of years at last were destined to produce in the happily combined arrangements of Romanesque. The great court of the palace,—one instance, no doubt, out of multitudes,—is a hybrid of the hybrids; but it is a bold break with heredity, with tradition; and by degrees, and in better hands, became divested of all that was characteristic of a crude expedient,—shook off the anomalous and the superfluous, and allowed the emergence of a new pervading principle. A revival that means, and that attempts to be nothing more,—an artificial galvanisation of the naturally defunct,—reproduction pure and simple,—simple as truly as pure,—of parts and details each labelled with authorisation of a precedent, and all put together with no obligation incurred to an organic principle to assure coherence and sympathetic culmination; what is such a manifestation but reversion or atavism in its worst form, and degeneracy combined? If an ancient style is to be laid under contribution for distinctly modern requirements, we have a problem that assuredly need not be insoluble, but that will tax ingenuity, imagination,—nay, daring to the uttermost. The conflict of pointed arch and mullion and tracery with our contemporary sash may possibly be susceptible of happy accommodation; but meanwhile let us not be afflicted by the spectacle of their discord at the height. To assume a character worthily is one thing, and common mimicry is another. If modern architecture masquerades as ancient, let it pass muster better than Falstaff before Sir Hugh Evans,—"I like not when a 'oman has a great peard; I spy a great peard under her muffler"; let it, at least, emulate the fat knight's subsequent "admirable dexterity of wit," when "But that my admirable counterfeiting of an old woman delivered me the knave constable had set me i' the stocks i' the common stocks, for a witch."

Such architecture is not likely to be mistaken for the work of either witch or conjuror; and if such an example is to be found, it may be left to it to set forth better than a column of exposition, with what appropriateness "mongrel" may be applied to a debasement of style as well as to the offspring of a deerhound and a bulldog,—of a Skye terrier and a turnspit.

MR. CROSS ON ART.

It is one of the æsthetic amusements of the day to bring out now and then a gentleman eminent in the political world, set him upon a platform, and get him to talk about art. There seems to be a kind of special interest in seeing how a man will talk on a subject with which he is not supposed to be acquainted; or perhaps the fact is that in this country political eminence is considered the highest kind of eminence, and when a man has attained it there is a desire to hear what he has to say upon any and all subjects, and one of the duties incident to his success is to be ready to speak about anything on any occasion. We do not know whether it ever strikes people that political success can hardly have much to do, necessarily, with a man's power of judging and seeing rightly in regard to the very different class of subjects included under the name of art. We imagine, however, that most persons would think there was something rather odd if the proceeding were reversed, if persons eminent in art were persuaded on to the platform, simply on that account, to talk about politics, and we read in newspaper headings "Mr. Leighton on County Suffrage," or "Mr. Millais on the Game Laws."

As the custom referred to does prevail, however, there is a certain interest in noticing what proceeds from the lips of public men when called upon to speak words about art, and comparing their various views. In some sense these indeed are not "various," for there are certain considerations, on the refining influence of art, &c., which are pretty sure to be forthcoming, and to be expressed in very much the same kind of language, on all such occasions. Apart from this, we find one statesman emphasising the moral influence of art, another confining himself to the narrower subject of art workmanship and household taste. Mr. Cross's remarks at the Cannon-street Hotel last week, when he delivered the prizes to certain metropolitan drawing-classes, conducted by Mr. Busbridge, take their place very well amid addresses of the kind; for the speaker avoided everything that could be called "fine talking" on generalities, and he made one or two special points. One of these was in recognising the influence of bad design not only on those who purchased and preferred it, but on those who had to make it. He saw, he told his audience, in spite of a certain improvement of late years, "very vulgar displays" in many rich people's houses,—things which were costly and magnificent, but which had very little real art feeling, very little of the really beautiful in them. "When he saw these things himself he could not but feel regret, not only for those who reside in those mansions, but for the workmen who prepared the furniture, and whose taste must have been degraded in so doing." There is something really pathetic in this, and no doubt the workman who has to execute a bad design, whether he will or no, is a rightful object of sympathy, if he happen to know better; but we doubt whether in fact those who make tasteless furniture, for example, often feel it in this way. Perhaps their artistic consciences are seared by long familiarity with ugliness and inconsiderate or false design; at all events, we are disposed to think that workmen may be found, and not infrequently, who will put very careful and honest workmanship into a bad design, and pride themselves on their work too, and seem to feel no compunction in being the agents for producing it. Mr. Cross thought if we elevated the taste of the workman we should elevate the taste of his employers; very likely we should if we could do it; but our impression is that a high standard in such matters is more likely to

proceed downwards than upwards in the social scale. As a rule, what a superior workman sees the meaning of is solidity, finish, and honesty of workmanship; he will exhibit a most conscientious endeavour to realise these qualities even while working on something that is really tasteless and unworthy of the trouble he is applying to it. The doctrine is perhaps exemplified in a different grade of workmanship, in the manner in which certain firms, supposed to represent pure taste in decoration, take the artistic consciences of their customers into their own keeping, and will let them have nothing but what the decorator considers to be the right thing. "He must have what is good for him, not what he likes," was the remark of one of these apostles of domestic taste, when directing something quite different from what his "customer" had expressed a wish for. Another point in Mr. Cross's remarks is one seldom brought forward by lay speakers on art, simply because their deficient knowledge or deficient sympathies close their thoughts to it,—namely, the importance of figure study. No one, he observed, could draw the picture of a man or woman worth looking at unless he knew the structure of the human frame; "to draw a mass of cloth or muslin with a face over it was not enough." It is as well that this truism, as it is to many of us, should be repeated till it comes to be a truism to the public generally; how many of them realise precisely what means such study implies may be another question; but it is as well that they should be (if anything) still more clearly told, and made to understand that if they think there are objections, on the score of modern manners and feelings, to the study of the figure from life (and some do think so), it is a question between that, or having no drawing or painting at all worth the name. But our impression is, that people are beginning to understand this better than they once did, and that the time may come when the fact that artists study from the living model will not cause surprise, or be talked of as if it were something necessary, but improper. Mr. Cross's other little "point" was his application of the teaching of truth in art to dress, in regard to which he specially addressed the ladies. "Did he not frequently see, for instance, rows of buttons on boots, which were not placed there for use? Buttons were very good things when wanted, but whether on boots or dresses,—and he had seen rows of them on dresses,—why should they be used, if he might so say, when they were intended to be useless?" The criticism admits of much wider application, nor was it altogether fair to direct it against the ladies in particular. He might have instanced the man's hat which is neither in shape nor in size corresponding with the head that wears it; or, still worse, the scarfs made up in sham knots and bows, and with pins which have nothing really to do with holding them together. Some of these fashions have come to pass in a very natural way, after all; they are "survivals of types"; the row of buttons, when buttons were used, formed a sort of ornament to the boot, and when they came to be disused in some forms of boot, the manufacturer was unwilling to part with the neat row of buttons, or did not know what to substitute. Each such sham incident in dress is a little thing in itself; in some moods one might think it beneath notice; yet it is well that even these little defects and falsities should be avoided: they are trifles separately, but the sum of them goes to make up that habit of life which is indicative of innate "good taste," which we take to mean refinement combined with truthfulness. We may add, however, that the abuse of compo because it is compo, and of graining because it is a representation only, is easy work, but needs qualification, or it must lead the critic to erroneous and injurious sequents.

Hydrants in the City.—The question of obtaining increased means of extinguishing fires led to a discussion in the Court of Common Council on the 13th inst. In moving the adoption of the report of the Gas and Water Committee, Mr. J. L. Shuter quoted statistics as to the cost of placing hydrants in the public streets, 739 of which would cost 22,000*l.*, and adverted to a statement of Captain Shaw that one of the hydrants already erected was equal to an ordinary fire-engine. The amount required to complete the entire system was 10,476*l.*, and it is proposed that a hydrant shall be placed within forty-five yards of every house in the city. The report was adopted.

THE EXCAVATIONS AT OLYMPIA.

EXCAVATIONS at Olympia having been again commenced, for the season, by Dr. Treu, we are enabled to publish a few details respecting his work up to the 15th ult. The more immediate object of this winter's excavations is to complete the entablature groups of the temple of Zeus, and so far the works undertaken have been to the purpose. The group of the western entablature has been already enriched by six finds, valuable, on the one hand, from their extent and preservation, but also of importance because they permit of the statues formerly found being completed in a satisfactory manner. At the east front, the works have not been so successful, the yield consisting merely of small, though numerous, fragments of the entablature groups. Some objects, however, of value have been discovered in that locality. They are three valuable archaic bronzes and three Roman statues, two of them with inscriptions.

The first important find on the west front, made on the 19th October, was the centre part of one of the two colossal groups of Centaurs carrying off women, which stood next to the centre figure. The centre portion now found includes the breast of the Centaur and the third (middle) part of the female trunk, which, added to the parts already discovered, permits of the *motive* of the group, of which only the head of the woman and a few extremities are wanting, being recognised.

Six days later, on the 25th October, the most important discovery was made: the gigantic trunk of the centre and principal figure of the western entablature. The head found last winter fits exactly on the neck of the present figure, and the latter is now complete with the exception of the right arm and lower parts of the legs. It is a colossal youthful figure, naked with the exception of a light chlamys round shoulder and neck. Its movement is moderate.

The third considerable find belonging to the western front is a Centaur's head, found on the 26th October. It completes the second of the large groups of Centaurs standing next to the centre figure of the western entablature, and described generally as the Deidameia.

The other three fragments discovered belonging to the west front are less important. They are a left thigh, a right foot, and a right hand of Lapithes.

Besides these finds, the exploration of the ground in front of the west face of the temple of Zeus has brought to light two of the most important bronzes hitherto found. They are a well-preserved head of bronze and a large bronze tablet of the shape of a trapeze, covered with reliefs in extremely archaic raised work, the style of the figures being that of the oldest so-called Corinthian vases.

The three Roman statues found are all without heads. The two female figures bear the inscriptions of Eros and Aulus Sextos Eraton, both Athenian sculptors, respectively. They are average reproductions of current types from the Athenian studios of the time of the Roman empire.

THE SITE FOR AN OBELISK.

YET another proposal for placing *the* obelisk, and a revived theory, on placing obelisks in general, appears in a letter by Mr. Waynman Dixon, addressed to the *Athenæum* last week, which for one reason in particular we notice. Mr. Dixon applies an old theory as to the setting up of monuments in general to the effectiveness of obelisks, which is that they ought not to be seen from a distance, being under such circumstances insignificant in apparent size; and that placing them in an open space, and in opposition to buildings in horizontal lines, therefore counts for nothing. The way we are to see them is to come suddenly upon them close to the base, and look up, and then we shall be impressed with their height and their size as monoliths, and not otherwise. The effect of foreshortening, the writer does not seem to take into account. On his principle, the site on which the model of the obelisk is now placed is objectionable, because it will be seen too far off along Victoria-street, and also because the railings of the flower-gardens of St. Stephen's-green interfere with the view of the base, and consequently with the effect of height. Therefore he proposes to move it nearer to the line of Great George-street, sacrificing the northernmost of the two greens, and making an open paved space in which the obelisk will stand. We notice Mr. Dixon's remarks for the one fact that the writer sees the absurdity of placing the monument over the railway tunnel. He says, "the very idea of such a monument standing upon the top of an arch is unsatisfactory. The Arabs say an arch never sleeps, or, in other words, is constantly exerting itself to thrust out its abutments, and sooner or later must succeed. Why, then, when we are erecting a monument which we trust will stand not only for hundreds of years, but which may indicate the site of where London once stood, when England shall have been submerged and rise again from the waves,—why place it on any structure which has a shadow of a doubt about it, when hard by we gain the advantages above enumerated, and have in the gravel beds below the surface all that can be desired for an enduring and sure foundation for ages to come?"

We owe some recognition to a writer who sees what a number of persons insist on shutting their eyes to, that there is a want of ordinary common-sense in the very notion of putting up a thing of this kind to stand over a hole in the ground, and on a foundation necessarily more perishable than itself. Accordingly, we thank Mr. Waynman Dixon, whose connexion with the engineer engaged on the work gives additional value to the expression, for this one piece of much-needed common-sense, and reprint his words as a small tittle of evidence to add to our own, previously delivered, on this practical point in regard to the placing of the obelisk.

THE LAW OF EASEMENTS.*

"AN easement," writes the learned author of "Gale on Easements," "may be defined to be a privilege, without profit, which the owner of one neighbouring tenement hath of another, existing in respect of their several tenements, by which the servient owner is obliged *to suffer or not to do* something on his own land for the advantage of the dominant owner." This definition was adopted by the Court of Exchequer in Mounsey *v.* Ismay. The term "servitude" is used to express both the right of the dominant and the obligation of the servient tenement; and the term "easement" generally expresses the right only.

ESSENTIAL QUALITIES AND ACQUISITION OF EASEMENTS.

There must, as an essential quality of an easement, be two distinct tenements, the dominant, to which the right belongs, and the servient, upon which the obligation is imposed. The right conferred by an easement attaches upon the soil of the servient tenement. If any disturbance of an easement has taken place previously to the transfer of the servient heritage, although such tortious act would give a right of action against the former owner, his successor is also liable if he allows it to continue. The servitude, when once acquired, passes with the heritage into the hands of each successive owner. Although the right to an easement is a "privilege without profit," it has been held that an easement is an interest in land for the invasion of which compensation may be claimed under "The Lands Clauses Consolidation Act, 1845," 28 & 29 Vict., c. 18.

Easements are either affirmative or negative. Affirmative easements authorise the commission by one owner of acts which, in their very inception, are positively injurious to another; such, for example, as a right of way over, and a right to discharge water by a spout or projecting eaves upon, another man's land; the right to support from a neighbouring wall; the right to use or to affect water of a natural stream in any manner not justified by natural right. Negative easements are injurious consequentially, only restricting the owner of the soil in the exercise of his natural rights of property, as where he is prevented building on his own land to the obstruction of lights. The right of support of neighbouring soil for land *not encumbered by buildings*, and the right of a riparian owner to the flow of a stream in its natural course, are ordinary incidents of property, and not easements.

The origin of every easement may be referred to an agreement, either express or implied, of an owner of the property to be subjected to it. In case of express agreement, it will be obvious that the precise words of the instrument itself must determine the extent of the right created.

* From a paper read by Mr. Locock Webb, Q.C., before the Royal Institute of British Architects on Monday evening last. A report of the proceedings will follow.

Easements in general bear a strong resemblance to covenants running with the land, both express and implied. Thus, when the dominant tenement itself is conveyed, whether in fee or for any less estate, all rights which the conveying party enjoyed by virtue of and as appendant to his estate as against third parties pass with it.

EASEMENTS BY IMPLIED GRANTS.

The implication of the grant of an easement may arise in two ways,—firstly, upon the severance of a heritage by its owner into two or more parts; and, secondly, by prescription.

Upon the severance of a heritage, a grant will be implied of all those continuous and apparent easements which have been used by the owner, and which are necessary for the use of the tenement conveyed, though they had no legal existence as easements, and of all those easements without which the enjoyment of the severed portions could not be had at all. In the leading case of Palmer *v.* Fletcher, decided in the time of Elizabeth, the rule of law was laid down thus:—If A builds a house on part of his own land, and afterwards sells the house to B, and the land adjoining to C, who obstructs the lights, although the house be a new messuage, yet a person who claims the land by purchase from the builder cannot obstruct the lights any more than the builder himself, who could not derogate from his own grant, for the lights are a necessary and essential part of the house. Lord Chief Justice Tindal, in Swansborough *v.* Coventry, after referring to Palmer *v.* Fletcher, and other authorities, said,—"It is well established by decided cases, that where the same person possesses a house having the actual use and enjoyment of certain lights, and also possesses the adjoining land, and sells the house to another person, although the lights be new, he cannot, nor can any one who claims under him, build upon the adjoining land so as to obstruct or interrupt the enjoyment of those lights"; and in Riviere *v.* Bower, Lord Tenterden held that an action was maintainable against a possessor holding as tenant for the obstruction to a window existing in the landlord's house at the time of the demise, although of recent construction, and that although there was no stipulation at the time of the demise against the obstruction.

Grants will be construed most strongly against the grantor, for "no principle can be more sacred" (as was observed by the Master of the Rolls in Leech *v.* Schweder) "than that a man shall be compelled to perform his contract." And another kindred principle is, that "no man shall derogate from his own grant." Both these principles are well established rules of law.

Upon the severance of an estate, such rights of easements, usually called "*easements of necessity*," will be acquired by implied grant as may be necessary to give effect to the intention of the parties to the severance. For example, if I have a field enclosed by my own land on all sides, and I alien this close to another, he shall have a way to this close over my land as incident to the grant; for, otherwise, he cannot have any benefit by the grant. So also, on the same principle, if a man grants to another the minerals under his lands, the grantee would, as incident to the grant, have the right to execute the necessary works to win the minerals, including the right to fix machinery to drain the mine and raise the minerals. And if a man sells trees in his wood, that implies liberty to take and carry them away. The grant of a thing passes everything included therein, without which the thing granted could not be had.

But a grant arising out of the implication of necessity cannot be carried further than the necessity of the case requires. When, for example, a way is claimed by necessity, there must be a necessity continuing up to the time of the trespass justified under it, and it is a good answer to show that there is another way which the party may use. Again there must be a reasonable user of the easement.

EASEMENTS BY PRESCRIPTION.

Easements are also acquired by *prescription*,—or, in other words, by possession had during the time and in manner fixed by law; for after the lapse of the requisite period, the law adds the right of property to that which before was possessory only. To constitute a legal possession, there must be not only a corporeal detention, or that quasi-detention which, according to the nature of the right, is equivalent to it; but there must also be the intention to act as owner. An enjoyment in order to confer a title must have been uninterrupted, both as to the manner and during the time required by law; but in those easements which require the repeated acts of man for their enjoyment, as rights of way, it would appear to be sufficient if the user is of such a nature, and takes place at such intervals, as to afford an indication to the owner of the servient tenement that a right is claimed against him,—an indication that would not be afforded by a mere accidental or occasional exercise of it.

By the 2 & 3 Wm. IV. c. 71 (1832), commonly known as "The Prescription Act," the title by prescription is governed by statutory provisions, making length of possession prescribed by the statute a bar or title of itself, which was so before only by the intervention of a jury. The Act provides that (§ 1) claims to right of common and other rights with profit shall not be defeated after thirty years' uninterrupted enjoyment, unless held by consent or agreement; (§ 2), claims of rights of way or other easements the prescription should be twenty years; (§ 3), when the access and use of lights to and for any dwelling-house, workshop, or other building, shall have been actually enjoyed therewith for the full period of twenty years without interruption, the right thereto shall be deemed absolute and indefeasible, any local usage or custom to the contrary notwithstanding, unless it shall appear that the same was enjoyed by some consent or agreement, expressly made or given for that purpose by deed or writing"; and (§ 4), each of the before-mentioned periods should be deemed to be those next before some suit or action, wherein a claim to which such periods relate shall be brought into question.

A custom formerly prevailed in the city of London that a man might build to any height on his old foundations, although he obstructed his neighbours' ancient lights; and the like custom also existed, I believe, in the city of York and other places; but in the Salters' Company *v.* Jay, and Truscott *v.* The Merchant Taylors' Company, it was decided that such customs were abolished by the Prescription Act. One object of the Act was to shorten the time by which persons who had the access and use of light could acquire an absolute right to it. The third section does not, it will be observed, say "when the access and use of light shall have been enjoyed as of right," because every person has a right to so much light as can come to his window. The Act brought this to a simple question:—It says that after twenty years' enjoyment without interruption, the right shall be deemed absolute and indefeasible. In order that the enjoyment which, in the quasi-possession of an easement, may confer a right to it by length of time, it must have been open, peaceable, and "as of right."

PARTICULAR EASEMENTS.

Running Water is the subject of easements of several kinds. The right to receive a flow of water in a natural stream and transmit it into its accustomed course is an ordinary right of property,—a natural right. The right to interfere with the accustomed course, either by penning it back upon the land above or transmitting it, altered in quality or quantity to an extent not justified by natural right, is an easement. Without any convention, the occupier of a lower field holds it under servitude of recovering the natural drainage from an adjoining field on a natural level. This servitude is imposed by usage, depending upon natural situation, and extends to usual floods. But, if a storm floods the adjoining lands in an unusual manner, the land-owner may, it seems, fence against it, within the period of prescription. He may raise the banks to keep the stream within its ancient bed, if he can do so without injury to others, and so perhaps if the stream changes its course. "The right to the use of water," said Sir. J. Leach, in Wright *v.* Howard, "rests upon clear and settled principles: *primâ facie* the proprietor of each bank of a stream is the proprietor of half the land covered by the stream, but there is no property in the water. Every proprietor has an equal right to use the water which flows in the stream, and consequently no proprietor can have the right to use the water to the prejudice of any other proprietor." Easements of an affirmative nature, the object of which is to interfere with the natural course of the stream, may be acquired by user over a stream flowing through a man's own land, or through his neighbour's land. With regard to *eaves*, although every one in building is bound to construct his house so as not to overhang his neighbour's property, and to construct his roof in such a manner as not to throw the rain-water upon the neighbouring land, yet it would seem that a man may acquire a right by user to project his wall or eaves over the boundary line of his property, or discharge the rain running from the roof of his house upon the adjoining land.

As to Subterraneous Channels, the rule of law which governs the enjoyment of a stream in its natural course is not applicable to underground springs or subterraneous channels. In Chasemore *v.* Richards, which was decided by the House of Lords, the plaintiff was possessed of an ancient mill, about a mile from Croydon, which for upwards of sixty years had been worked by the flow of the river Wandle. The river was supplied with water produced by the rainfall on a very extensive district, large quantities of which sank into the upper ground to various depths, and then flowed and percolated through the strata towards and to the river. The Local Board, for the purpose of supplying Croydon with water, sank a large well, to a considerable depth, in their own ground, and pumped therefrom between 500,000 and 600,000 gallons of water daily, and by such means the ordinary underground percolation of water was diverted from the river to such an extent that the mill-owner lost the use of the stream, and sustained material damage; but it was held that this gave the mill-owner no right of action against the Board. It would therefore appear that any person may dig wells or cut drains in his own lands with impunity, although he thereby drains his neighbour's land, by interrupting the flow of water percolating through the pores of the soil, and which, but for such cutting or draining, would have reached his neighbour's land, or by causing the water already collected on his neighbour's soil to percolate away from and out of it. But on the other hand, if A makes a grant of land to B without any exception of the rights to the streams of water in the land, neither A nor any one claiming under him could, it is conceived, lawfully do anything which would have the effect of draining the underground water or diverting any stream from the land, for such an act would operate as a derogation from A's grant.

Sewers.—In a certain sense all sewers passing through the lands of private owners are easements; but sewers constructed under legislative authority, or which, although originally private property, have become vested in public bodies, such as the Commissioners of Sewers, are regulated by statutory authority. Commissioners of Sewers were originally established under the provisions of the 23 Hen. VIII., c. 5, commonly called the "Statute of Sewers," which was made perpetual by the 3rd and 4th Edw. VI., c. 8. By the "Land Drainage Act, 1861" (24 and 25 Vict., c. 133), the powers of Commissioners of Sewers extend (1) to cleansing, repairing, or otherwise maintaining in a due state of efficiency, any existing watercourse or outfall of water, or any existing wall or other defence against water, and to such other matters as are mentioned in the 16th section of the Act. By the interpretation clause "watercourse" includes all rivers, streams, drains, sewers, and passages through which water flows; (2) the deepening, widening, straightening, or otherwise. The law relating to *sewerage* is regulated by the Public Health Acts of the 31 and 32 Vict., c. 115 (the Sanitary Act, 1866), and the 38 and 39 Vict., c. 55 (the Public Health Act, 1875), which repealed the 31 and 32 Vict., c. 115, except so far as relates to the metropolis. Under the provisions of those statutes, all existing and future sewers, within the district of the local authority, except sewers made by any person for his own profit, or by any company for the profit of the shareholders, and sewers made and used for the purpose of draining, preserving, or improving land under any local or private Act of Parliament, or for the purpose of irrigating land and sewers under the authority of any Commissioners of Sewers, are vested in and placed under the control of the Local Authority, which is restricted from making or using any sewer, drain, or outfall for the purpose of conveying sewage or filthy water into any natural stream or watercourse, or into any canal, pond, or lake, until such sewage or filthy water is freed from all excrementitious or other foul or noxious matter, such as would affect or deteriorate the purity and quality of the water in such stream or watercourse, or in such pond or lake.

Nuisances.—The term "nuisance" is applied in the law indiscriminately, both to a disturbance of an easement already acquired, and infringements upon the natural rights of property, for which an action can be maintained. Strictly

speaking, however, the term nuisance should be confined to the latter class of injuries only; those acts which though originally tortious as infringing the common law rights of property, may nevertheless, in process of time, confer a prescriptive title by enjoyment. Many acts done upon a man's property which are in their nature injurious to the adjoining lands, and consequently actionable as nuisances, may be legalised by prescription. There can, however, be no prescription to make a common nuisance, which is a prejudice to all people, because it cannot have a lawful beginning by licence or otherwise, being against the common law. But when manufactories may have been borne with in a neighbourhood for many years, it will operate as a consent of the inhabitants to their being carried on, though the law might have considered them as nuisances had they objected to them in time. A manufacturer may consequently acquire a right to pour his polluted water into a stream as against all new-comers, so that those below him, coming after he has acquired the right, may not have the right to complain of what he does to the stream.

As to Light and Air.—The strict right of property entitles the owner to so much light and air only as fall perpendicularly on his land. He may build to the very extremity of his own land and no action can be maintained against him for disturbing his neighbour's privacy by opening windows which overlook the adjoining property, but it is competent for such neighbour to obstruct the windows so opened by building against them on his own land at any time during twenty years after their construction, and thus prevent the acquisition of the easement. The right to the reception of light and air in a lateral direction without obstruction is an easement.

The right to the enjoyment of *air* is generally speaking governed by the same principles as those which regulate the passage of light. The old authorities mention a singular case of an easement of this kind, from which it would appear that where one erected a house so high that the wind was stopped from the windmills in Finsbury Fields, it was adjudged that it should be broken down; but there were probably some special circumstances connected with that case,—the house may have been built contrary to some privilege conferred on the windmill, both the house and the windmill being on the estate of the prebend of Finsbury. Besides, at that time it was the practice of the Crown to prohibit and regulate buildings in the neighbourhood of London by proclamation, and the house may have been built in defiance of the proclamation, and the owner of the windmill may have sued for the injury he sustained by the building, which either was or was supposed to be illegal. There are several other cases in the old law books of complaints arising from injury by stoppage of windmills by buildings, showing that relief was granted on the ground that the buildings were *nuisances*, but all those decisions may probably be explained on some such ground as those relating to the Finsbury windmill.

It is rarely now that a case is established for the interference of the Court upon the ground of stoppage of air irrespective of obstruction to light, but in my own experience such cases have arisen. For example, in Kidd *v.* Wagner, heard before the Master of the Rolls, the complaint was that the defendant proposed to build a new church in Brighton, so close, and of such a height, as to stop the free passage of air to the plaintiff's malthouse, which required a free current of air; and in Dickey *v.* Pfeil, heard in the last vacation, before Mr. Justice Fry, where the complaint was mainly grounded on the stoppage of the free current of air to the plaintiff's houses situated in the crowded neighbourhood of Drury-lane. In both cases *interim* injunctions were granted, but such instances may be considered as exceptional, and in the following observations no distinction is intended to be drawn between the obstruction of light and air, although mention is made to the obstruction of light only.

With regard to the law relating to the obstruction of ancient lights, the old doctrine which was established by Lord Eldon, in what has been termed the parent case of The Attorney General *v.* Nichol, seems in substance never to have been departed from. "There are," said his lordship, "many obvious cases of new buildings darkening those opposite to them, but not in such a degree that an injunction could be maintained, or an action upon the case which however might be maintained in many cases, would not support an injunction." In that case an injunction was dissolved upon an undertaking on the part of the defendant, if the verdict upon the trial promptly had, should be against him, to remove such of the buildings complained of as should be proved in a material and improper degree to affect the plaintiff's ancient lights.

It was held also in the leading case of Back *v.* Stacey, that in order to give a right of action and sustain the issue, there must be a substantial privation of light sufficient to render the occupation of the house uncomfortable, *and* to prevent the plaintiff from carrying on his accustomed business on the premises as he had formerly done. With the single exception of reading *or* for *and*, I apprehend that the above ruling correctly lays down the doctrine in the manner in which it would now be supported in an action in the Supreme Court of Judicature.

Lord Cranworth made some observations in Clark *v.* Clarke, which were originally supposed to imply that there was some difference between the right of a person residing in a town and the right of a person residing in the country to be protected in respect of obstruction of ancient lights. But soon after that case his lordship's own decision in Yates *v.* Jack, dispelled any such idea, and laid down the rule that the owner of ancient lights was entitled, not only to sufficient light for the purpose of his then business, but to all the light which he had enjoyed previously to the interruption sought to be restrained. In Dent *v.* The Auction Mart Company, Lord Hatherley (then Vice-Chancellor) reviewing the state of the law relating to ancient lights, referred with approbation to the parent cases of The Attorney-General *v.* Nichol, Back *v.* Stacey, and Yates *v.* Jack. "The principle," said his lordship,—

"on which the Court interferes in these cases is somewhat analogous, as far as value can be compared with comfort, to the case of specific performance where the Court says it is not enough to pay a man a sum of money, he is entitled to have the specific property which he has acquired and to be relieved against the breach of the contract. In all these cases the questions are, first, whether damages would be recoverable; and secondly, whether the damages, if recovered, would be such as to authorise the Court to interfere."

The easement of the owner of a dominant tenement to have his light and air unobstructed by newly-erected buildings is not lost or diminished by the circumstance that, by means of clearances effected in the neighbourhood by other parties shortly before the alterations, he acquired more lights than the buildings could obstruct.

The Prescription Act has not altered the law as to the nature and extent of light to which the owner of an ancient light is entitled. "The nature and extent of the right before that statute" (citing from the judgment of the Lord Justice James, in Kelk *v.* Pearson),—

"was to have that amount of light through the windows of a house which was sufficient, according to the ordinary notions of mankind, for the comfortable use and enjoyment of that house as a dwelling-house if it were a dwelling-house, or for the beneficial use and occupation of the house if it were a warehouse, a shop, or other place of business. That was the extent of the easement,—a right to prevent your neighbour from building upon his land so as to obstruct the access of sufficient light and air to such an extent as to render the house substantially less comfortable and enjoyable."

In the same case Lord Justice Mellish said:—

"The right to light and air at the present time by no means depends exclusively upon the statute. A right to light and air may be gained, and in many instances is gained, by implied grants from persons who were the owners of houses upon lands adjoining. Before a house had been erected twenty years, or even if it had been erected twenty years, no light could be gained so long as the land on which any obstruction could be placed was the property of the same owner; but it is perfectly settled that if the owner of a house sell land on which an obstruction might be erected, or sell the house and reserve to himself the land on which the obstruction may be erected, the right to light and air is gained by implied grant from what is called the disposition of the owner of the two tenements."

Lord Chancellor Selborne, in the City of London Brewery Company *v.* Tenant, expressed his complete adherence to the view of the law taken in Kelk *v.* Pearson.

In the recent case of Kino *v.* Rudkin, it was decided by Mr. Justice Fry that, since the Judicature Act, as before it, a plaintiff in an action to restrain an alleged obstruction to ancient lights cannot obtain an injunction unless he proves substantial damage. In Kino *v.* Rudkin the further very important rule was laid down,—that an inquiry as to damages will not be directed where the plaintiff has opened a case of substantial damages and has failed to prove it.

It is impossible to lay down any rule as to what would constitute sufficient damage upon which to ground an application. But the result of the authorities may be, I think, shortly stated thus:—It is not every impediment to the access of light or air which will warrant the interference of the Court by way of injunction, or even entitle the party alleging himself to be injured, to damages. In order to found a title to relief in respect of such an impediment some material or substantial injury must be established, and the onus of proving the injury rests upon the plaintiff.

AS TO THE ANGLE OF FORTY-FIVE DEGREES.

It may be useful, however, to make some few observations as to the doctrine regarding the statutory rule touching the angle of forty-five degrees. The Metropolitan Board of Works, under statutory authority, by a bye-law passed in 1856, prescribed in effect that every new street within the limits of the metropolis must be of the width of 40 ft. at the least, but if the building fronting any street be more than 40 ft. high from the level of the street, then such street must be of a width equal at least to the height of every building above such level. And by the Metropolitan Local Management Act, 1862 (25 & 26 Vict., c. 102, s. 85), it was provided that:—

"No building, except a church or chapel, shall be erected on the side of any new street of a less width than 50 ft., which shall exceed in height the distance from the external wall or front of such building to the opposite side of such street, without the consent in writing of the Metropolitan Board of Works; nor shall the height of any building so erected be at any time subsequently increased so as to exceed such distance without such consent; and in determining the height of such building the measurement shall be taken from the level of the centre of the street immediately opposite the building up to the parapet or eaves of such building."

Lord Selborne, in The City of London Brewery Company *v.* Tenant, after stating that, with regard to the 45 degrees, there was no positive rule of law upon that subject, and that the circumstance that 45 degrees were left unobstructed was merely an element in the question of fact whether the access of light was unduly interfered with, held that there was

"Undoubtedly ground for saying that if the Legislature, when making general regulations as to buildings, considered that when new buildings are erected the light sufficient for the comfortable occupation of them will, as a general rule, be obtained, if the buildings to be erected opposite to them have not a greater angular elevation than 45 degrees; the fact that 45 degrees of sky are left unobstructed may, under ordinary circumstances, be considered *primâ facie* evidence that there is not likely to be material injury."

The question again came under consideration by the Master of the Rolls in Hackett *v.* Baiss. The plaintiff in that case was the owner of extensive messuages in Jewry-street, in the City of London, the owners and occupiers of which had had uninterrupted enjoyment of light for above twenty years. The defendants were erecting a warehouse opposite to the plaintiff's premises on the site of some old buildings, part of which only subtended an angle of 38°, and other part an angle of 27° above the horizon at the centre point of the ground windows of the plaintiff's houses. The defendants desired to build their warehouse 52 ft. high, and had carried it up to the height of 46 ft., which subtended an angle of more than 45° at the foot of the plaintiff's ancient lights by about 1 ft. or 1½ ft. His Lordship said:—

"The real question I have to decide is this:—In a street a good deal narrower than ordinary streets, not being more than 38 ft. 6 in. at any point across, and other parts only 34 ft., is a building owner entitled to erect a building to a height which will obstruct the access of light below the 45 degree angle. I say that as a general rule he is not. In cases of this kind, positive evidence being unobtainable because the building is not erected, you must go upon theory, and that theory, of course, must be the opinion of skilled persons,—persons who have paid attention to the effect of buildings on light. But on this point the Court is not left to guess or to arrive at an arbitrary conclusion upon the evidence of witnesses, because, in the first place, the point has been considered by the Legislature, and after considering the result of professional opinions, the Legislature has adopted the angle of 45 degrees as the proper angle, below which the incidence of light ought not to be permitted to fall, in the case of buildings on the opposite side of an ordinary street; and that view has been sanctioned by the Court, whose decisions are binding upon me, even if I differed from them, which I do not."

And after referring to the City of London Brewery Company *v.* Tenant, his lordship proceeded:—

"So that on being satisfied that 45 degrees are unobstructed, I ought *primâ facie* to come to that conclusion, unless there is something special in the case. Now what is special in this case is in favour of the plaintiff. In the first place, as I have said, the street is rather narrower than it ought to be. The legislative rule applies to a street of the ordinary width. In the next place, there is some positive evidence that the present height of 46 ft., a little over 45 degrees, has interfered with the access of light not to an inconsiderable extent, and has actually caused personal inconvenience to one of the occupiers of the houses, I do not say that that alone would be conclusive."

And an injunction was granted to restrain the defendants from erecting the new building at a greater height than 46 ft. from the pave-

ment or base line. This was not, however, to prevent the defendant from making a sloping roof of a greater height, so long as the angle of incidence of light over the roof to the centre of the ground-floor windows of the plaintiff's houses did not exceed 45 degrees.

The subsequent case of Theed *v.* Debenham is another illustration of what the Court will consider a special case, to which the rule as to the 45 degrees does not apply. In Theed *v.* Debenham, the ancient lights of a sculptor had a north aspect in a street in the metropolis, 31 ft. wide. In the course of his profession he required, not only a direct light, but what is technically termed an under or low light, and which he had hitherto enjoyed. Some of the ancient windows had been enlarged within twenty years. The defendants' old buildings on the opposite side of the street were, as to part, exactly 31 ft. high, and as to the other part, a little less than that height. They intended to raise their new buildings so that their new parapet would be 38 ft. from the pavement, and their ridge of roof about 7 ft. above the new parapet, and they claimed to have a statutory right to raise their building to a height which would subtend an angle of 45 degrees, measured from a base line, level with the centre of the plaintiff's light. It was proved that if the defendants raised the new building to the height proposed the plaintiff would sustain a serious diminution of light, and it was held by Vice-Chancellor Bacon that the statutory regulation as to the height of buildings in streets is not to be taken as limiting the right of prescription to ancient lights, but that such right depends upon the degree and amount of obscuration in each particular case. "In my opinion," said the learned Judge, "they have no more right to take away the light which the plaintiff has been enjoying than they have to take away the front wall of his house," and further, "No man can be heard to say that he may obscure another's ancient light because he has more light than he requires."

On the other hand, where there are no special circumstances, the statutory rule has been held to apply. Thus, in the recent case of Harris *v.* The London and South-Western Bank, heard before Mr. Justice Fry in the last long vacation, an injunction was successfully resisted on the ground that the new building did not subtend the angle of 45 degrees, and that there was no special circumstance to take the case out of the general rule.

ALTERATION OF ANCIENT LIGHTS.

There is yet another subject relating to the *alteration* of ancient lights which ought to be discussed at length, but it is impossible that I can do justice to the subject within the limits of my present paper, and I think, therefore, that I ought merely to refer you to the decision of the House of Lords in Tapling *v.* Jones, which (overruling Renshaw *v.* Bean and Hutchinson *v.* Copestake) decided that the opening of a new window, being in itself an innocent act, could not therefore destroy existing rights in one party, or give new or revive old rights in another, and that, consequently, when there was an ancient light, and then others were added, and an obstruction was raised against the added lights, which, from their position, could not be obstructed without obstructing the ancient light, such obstruction was illegal. And to refer you also to the recent most important case of The National Provincial Plate-Glass Insurance Company *v.* Prudential Assurance Company, in which, not only the question as to the alteration of ancient lights, but the considerations on which the question of injunction or damages depends, were fully discussed. In that case, a building containing ancient light was pulled down and replaced by another, in which the front was set back and a dormer window converted into a skylight, and it was held that the right to reception of light was not lost. That any substantial alteration in the plan of the windows destroys the right (see the judgment of the Master of the Rolls upon the motion for injunction), and that the right remains where any portion of the light which would have passed over the servient tenement through the old windows passes also through the new windows.

Destruction of a Theatre by Fire.—The firemen were called early the other morning to the Cardiff theatre, which they found burning fiercely. The building was soon completely gutted, and all the dresses, scenery, and "properties" were destroyed.

IMPORTANT DISCOVERY IN APULIA.

Much excitement has been created in art circles of Naples by an archæological discovery of great importance. An underground city, another Pompeii, has been discovered near Monte Gargano (in Apulia), by the merest accident, in cleaning out a well. The first building met with, on excavations being commenced, was a temple of Diana; next came a portico, 64 ft. long, of columns without capitals. The works being continued, a subterranean necropolis, of an area of nearly four acres, was finally laid bare. Many important inscriptions have already been brought to light, and some of them have been exhibited in the National Museum at Naples. The discovered city is identical with the old Sipontum (near Arpinum), mentioned by Strabo, Polybius, Livy, and others. It was not overwhelmed by a rain of ashes, but subsided during an earthquake. Its houses are now 20 ft. below the cultivated soil.

The Italian Government has already taken the necessary steps for continuing the excavations on a grand scale. It is being laudably supported by the efforts of the citizens of Manfredonia and its archbishop. The Manfredonia of the present day (founded by the son of Frederick II.) is built partly on the site of classic Sipontum, without any one being aware of the treasures hidden below. Fresh discoveries are now of daily occurrence. Amongst them is a monument erected by the citizens of Sipontum in honour of Pompey after his victory over the pirates. Sipontine coins have also been found. But the greatest yield is expected from the classic necropolis, with its numberless sepulchres.

THE CLUBS IN AUTUMN.

The first indication that a Club, ornithologically and metaphorically speaking, will moult ere long is made by the arrival of a band of experts, skilled artificers who pry about, probe into, and test everything structural and textural, most determinately bent on noting all apparent and hidden defects. Fabrics are scrutinised and held up to the light, just as Old Clo', the Jew, turns about and exposes to view your cast-away coat and castor. The strength of furniture, firm and stable-looking, is tried; the bars of iron framework of grates are knowingly tapped, like the wheels of a railway-carriage by a porter; or the human intellects by a mad doctor endeavouring to ascertain if there be a cracked or sound mind. These parties prowl about in a stealthy manner; every now and then lay their heads together and consult in a low tone of voice, like so many conspirators plotting and keeping secret their crafty designs how best to mulct the Exchequer. A thorough exploration and examination is made of every material thing in the building from top to bottom, with one notable exception—the wine-cellar.

At these times that high functionary, the secretary, emerges from obscurity. Always oracular and mysterious, he now becomes more so, and to such an extent that both these qualities seem to be intensified to the highest degree. He paces slowly about in a meditative mood, evidently anxious about passing and forthcoming events.

We move onward a few weeks, during which the trees have shed their dead leaves and the Clubs their faded feathers. Well-fledged wings are now widely extended, offering shelter to numerous flocks returning from their migrations in foreign parts to settle down in their old haunts and homes. Some high-soaring, far-flying birds of *bon ton*, such as woodcocks and the like, travellers and wanderers, make direct for Pall-mall. Others of less lofty flight and less distinguished plumage distribute themselves in various regions westward, while the unaristocratic and more business-like birds wing their flight eastward, far beyond the Temple and its tottering Bar.

We here have another illustration of the oft-repeated adage as to birds of a feather. On this point of plumage let us reflect a few moments. Most true it is, as we have just shown, that birds of a feather flock together, but we denounce as utterly untrue the popular saying that fine feathers make fine birds. For when returning to our old domicile, after the autumn manœuvres are over, we find a dark, dingy, dismal, dirty dado daubed over and disfiguring the delicate tint which formerly extended from the bead of the surbase to the moulding on the cornice; and further, when we come across flaring flamboyant tracings in passages and on panels, an irresistible feeling arises, that a sort of combination of pot-house and gin-palace style of decoration has been introduced, coarse, pewtery, and glaring.

In an ornithological sense, the conviction is forced upon us that a false and black *rara avis* has entered the land, and we would fain fall back on the true old white swan, even if disfigured and deformed by having two necks.

BOSTON SPA CONGREGATIONAL CHURCH.

The new church for the Congregationalists of Boston Spa is built in the main street of the village, and was opened on the 24th of October last. It consists of a nave with small transepts, porch, lobbies, and tower, and will seat 260 persons. The length of the nave internally is 63 ft., its width 34 ft., the width across the transepts being 43 ft., the whole roofed in one span, with open timbers, and boarded. Its acoustic properties are described as satisfactory. The seats are open benches, and the walls are lined to a height of 3 ft. with wood.

The tower, which is intended to form a staircase to give access to an end gallery to be added at some future date, is 50 ft. high, and has a slated spire, the total height to the top of the finial being about 90 ft. The buildings are enclosed by a low boundary-wall and palisades, and the plot so enclosed includes sufficient space for a minister's house, which it is intended to build when means can be obtained. The design was supplied by Mr. F. Bartram Payton, of Bradford, architect, who superintended the execution of the works. The mason's work was done by Mr. Robert Brelsford, of East Keswick; the joiner's work by Mr. Bake, of Wetherby; the plumber's work by Mr. Story, and the slater's work by Mr. Rawlins, both of Leeds; and the painting by Mr. Walker, of Idle. The heating apparatus (which is Howorth's hot-air system) was supplied by Messrs. Taylor & Parsons, of Bradford, who also supplied the communion rails. The palisades were made by Messrs. Beckwith, of Brighouse; and the gas-fittings were supplied by Messrs. Freeman & Collier, of Manchester. The total cost is about 3,000*l.*, of which amount 372*l.* were paid for the land.

Behind the church, and on the same level, is a school-room, 30 ft. by 25 ft., with separate entrance, class-room, minister's vestry, and lavatory.

The drawing we have engraved was put upon the wood by the Cryptotype process, some particulars of which will be found on another page.

ANCIENT HOUSE AT OCHSENFURTH, BAVARIA.

The old villages, or rather "dwarf towns," of Germany, especially those upon the Rhine, the Main, the Moselle, the Lahn, and the Danube, in parts of Westphalia, Saxony, and Hanover, abound in examples of ancient timber houses. It is, however, highly advisable that drawings of these interesting examples of Mediæval architecture should be made and preserved as records, for every year sees hundreds of these picturesque edifices destroyed.

Many of the ancient timber, and even of the stone-constructed, houses which have been published in this journal have, since they were drawn and engraved, disappeared. As examples, we may mention that the houses at Hildesheim, Boppard, and Wurzburg, of which we gave illustrations some three or four years back, have ceased to exist; and probably the drawings which we published are the only records left of them.

The building of which we give a view in our present number is a good example of what is called "post and pan work." It dates from the commencement of the sixteenth century, and is in a very perfect condition. As will be seen from our illustration, in addition to the perpendicular, horizontal, and diagonal timbers, we have here ogee-curved braces, which in some cases are richly cusped. The stories of the building are separated by flat moulded timbers, consisting of alternate beads and flat hollows, which give a rich architectural effect. As this house is built against the city wall, the front shown in our view is the only one visible.

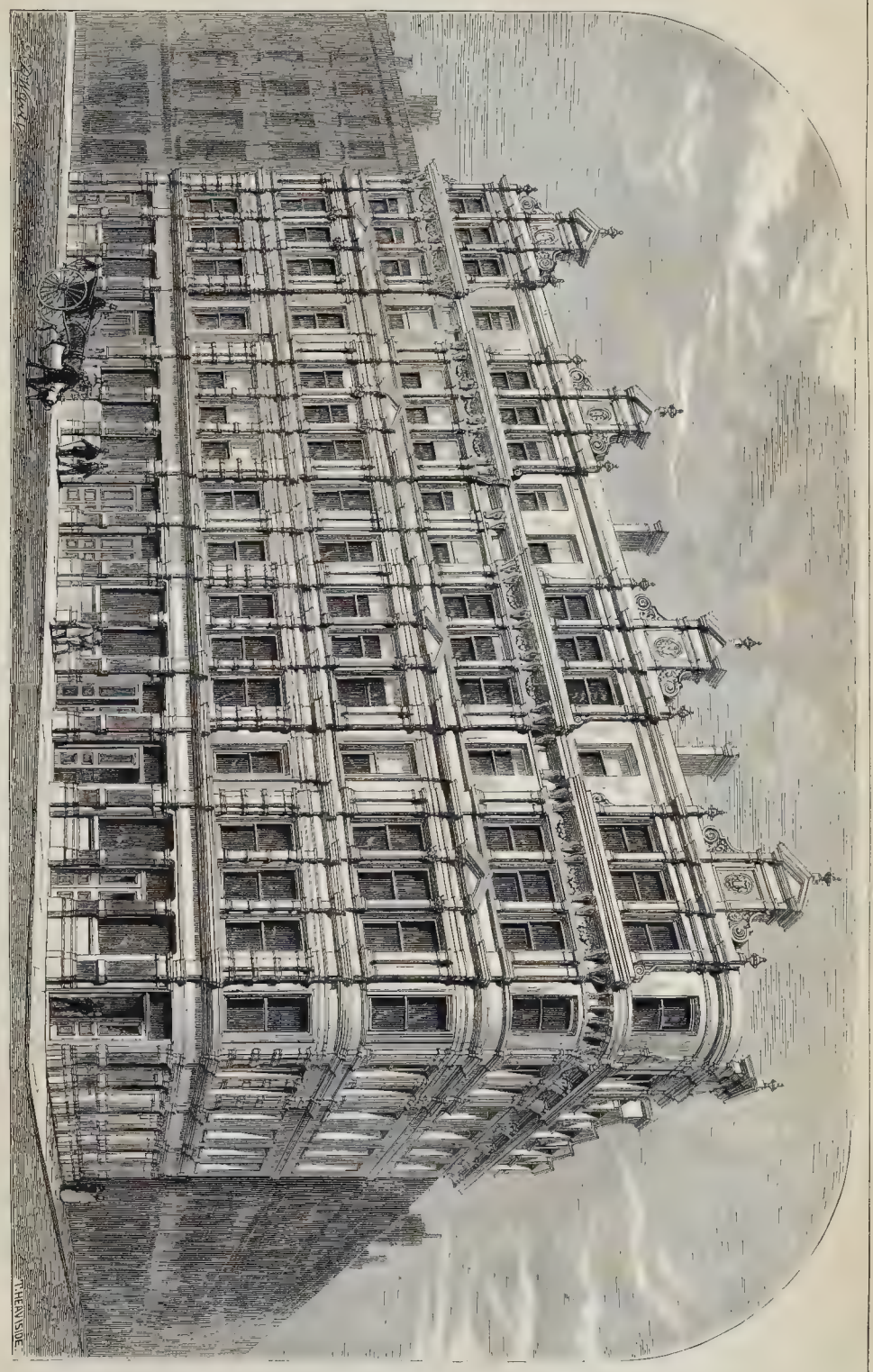
Royal Academy Architects.—On Thursday evening, the 13th inst., Mr. Norman Shaw was elected R.A.



BOSTON SPA CHURCH.—Mr. F. B. Payton, Architect.



ANCIENT HOUSE AT OCHSENFURTH, BAVARIA. Sixteenth Century.



LONDON STREET ARCHITECTURE: HOUSES IN CANNON STREET.—Messrs. Taylor & Locke, Architects.

LONDON STREET ARCHITECTURE: HOUSES IN CANNON STREET.

THE important block of buildings which we illustrate this week is situated in Cannon-street, London, at the junction with Queen Victoria-street, and immediately opposite the Mansion House Station. The principal frontage is to Cannon-street, and measures 112 ft. There is also a return frontage of 50 ft. in Bow-lane. Some difficulty has been experienced, in consequence of the desire of the architects to obtain a uniform façade, whilst the land was subdivided into irregular frontages, and the buildings were erected for different owners.

The corner house is being built for Messrs. Chapman, Bros., for the purpose of a tavern, there being a grill-room in the basement, and smoking and billiard rooms on the upper floors. The adjoining warehouse is being erected for Messrs. C. & J. G. Potter, paper-stainers, of Darwen, Lancashire; the next warehouse, for Messrs. Jonas Brooks & Bros., of Huddersfield, Yorkshire; and the farthest warehouse for Mr. Henry Woods, of London and Paris. The three last-mentioned premises have large packing-rooms in the basement, warehouses on the ground-floor, and offices on the upper floors.

The external walls are built with Tisbury stone, with polished Shap granite pilasters to the ground-floors. The roofs are covered with Broomhall tiles. The sanitary apparatus has been supplied by Messrs. J. G. Stidder & Co. The carving and plaster enrichments have been executed by Messrs. Smith & Finley, and the fittings of the tavern by Messrs. Macey & Taylor. The whole of the works have been carried out by Mr. J. Morter, contractor, of Stratford, from the designs and under the superintendence of Messrs. Taylor & Locke, architects, of Basinghall-street.

THE CRYPTOTYPE PROCESS.

CRYPTOTYPE is a new photographic process for rapidly obtaining pictures upon boxwood blocks for engraving. To persons unacquainted with photography and engraving, it no doubt seems as easy to produce a photographic image upon wood as it is to print a photograph upon albumenised paper, but there are three very great difficulties in the way of printing a photograph upon wood. 1. If an attempt is made to prepare the wood in the same way as sensitive paper is prepared, some change takes place in the wood which turns it to a mahogany colour. 2. The usual photographic preparation also injures the wood. 3. Photographs upon paper have to be subjected to repeated washings; now if boxwood is washed or placed in water it is greatly damaged for engraving purposes. For some years past photographs have been placed upon wood for engraving by dexterously peeling films off glass and transferring them backwards on to boxwood blocks. But a film of collodion on a boxwood block is highly objectionable in several ways. 1. In fine work the engraver does not know whether he has cut through the collodion and reached the wood, and if the wood is not reached, then, when the block is cleaned, the engraver has to re-cut his work, for the fine engraving will have vanished with the film. 2. Sometimes the collodion will peel off like a pancake. 3. At other times it will be brittle, and so pieces of the picture will fly away from the wood at the touch of the graver. A process is known for removing the collodion, but this leaves the print so pale, unsatisfactory, and evanescent, that it rubs off on being touched with the fingers, and in some methods if the block is kept in the light it turns wholly black. Hitherto all attempts have ended in brown or grey pictures, and these colours are objectionable in wood engraving. The process perfected by Mr. Arthur E. Smith, of 15, Mildmay-grove, London, entirely gets over all these difficulties, for the block is never placed in water or washed, there is no preparation of the wood, and there is no collodion. All that is present upon the naked wood is a permanent black image of the object copied. The discovery (particulars for obvious reasons are kept secret) was not accidental. It was only arrived at after nearly three years' incessant daily work in one direction. Nearly every day of all this long period saw a more or less disheartening and often expensive failure. That it is a success there is no room for doubt, as during the last six months it has been largely tested in different directions by many engravers, and always with uniform and perfectly satisfactory results. The process is also adapted for producing an enlarged image on the wood of any object direct from the field of the microscope. If all we hear be correct the process ought to prove of value.

ANCIENT GREEK ART.

ON Saturday evening, the 15th inst., Mr. C. T. Newton, C.B., of the British Museum, delivered the last of the series of lectures on "Greek Art," at the College for Men and Women, Queen-square, Bloomsbury. The three previous lectures have been reported in the *Builder*.

Mr. Newton said that in his previous address he treated of the last stage of archaic art, bringing down the history to the year 460 B.C. The reason he chose that particular date was because Phidias, the pupil of Ageladas, flourished about that time (it being pre-eminently the age of Pericles), and accomplished the greatest work of the whole period. He proposed that evening to deal with the time extending from 460 B.C. to 400 B.C., which might be called the first great period of Athenian art. In the three previous lectures he had traced the development of Greek art in Asia Minor. It was after the great victories of the Persian War that Athens, under a succession of great statesmen, attained to a vast maritime empire, and in that same period she became eminent in literature, there being produced those celebrated dramatic works of her tragedians, Æschylus, Sophocles, and Euripides, while Aristophanes was an unrivalled writer of comedy. There were also produced those architectural works of Phidias which still remained on the Acropolis. The earliest part of this period was very pleasant to contemplate. It was one of those cases in the history of humanity that the mind loved to dwell upon. At the time there was this great development of art, measures were taken by the leading statesman of the age of Pericles to delight and instruct the people, notably by dramatic representations, at which the poor as well as the rich were admitted free. The price of corn was kept down by artificial restrictions; jurors were paid for attendance at tribunals; and as much of the menial work as possible was done by slaves, so that the poorer citizens had an easy time of it. With reference to the costly buildings that were then constructed, the practical question arose, Where did the money come from? The money came from several sources, the principal source being opened up in consequence of the Persian War. The Athenians were successful in crushing the naval power of Persia, after which the battle of Eurymedon was fought, which ended the Persian War. The protection of a number of Greek States on the coast of Asia Minor was then undertaken as a public duty, a maritime confederacy being formed, each member of which bound itself to contribute, either in ships or money, a certain quota towards the common expenses. The result of this was that on the sacred island of Delos there was erected the great temple of Apollo, where the treasure of the confederacy was kept. The Athenians had dominant power in the confederacy, there being, however, a certain equality established among the members. After a time the Athenians got stronger, while the confederacy became relatively weaker, and the treasure was placed under the control of the Athenians themselves, and transferred from Delos to Athens, these allies becoming contributors. The surplus money, after paying the military expenses, was appropriated first of all to the service of the Athenian gods as pleasing and acceptable offerings. He mentioned this circumstance because it was important to know precisely the conditions under which art flourished. They were aware that before the Persian War Athens was almost an unprotected city. There was a wall around the Acropolis which the Persians destroyed; but there was no fortification connecting the harbour of Peiræus from Athens itself. The first thing done was to connect the port by this wall, so as to make the place perfectly secure; and this being accomplished, the military importance of the Acropolis itself was considerably less, and accordingly the Athenians began embellishing it. It was a great rocky citadel, situated on the top of a square craggy rock, 150 ft. high, with a flat summit 1,000 ft. long, 500 ft. broad, and stood in the centre of Athens. All along the coast rose splendid buildings, and the whole of the magnificent prospect was crowned by the Acropolis, where all the most glorious monuments of Athens were assembled. With regard to the architecture of the period, what the domestic buildings were they did not know; but he (Mr. Newton) thought that they were rather of a mean and contemptible kind, being probably built of perishable material, because there were no traces of them left. What they found, however, were the remains of temples which were built with a degree of care and excellence which perhaps had never been surpassed. They knew that the State first appropriated a certain sum for the building of these temples, and that contracts were entered into, he supposed, "for the lowest tender." Surveyors, too, were appointed, and he must say that a temple, in the age of Pericles, was built with the same amount of precision and care as a ship of war would be under Government inspection. For the buildings the finest marble was chosen, and the work was executed with a delicacy which he could only compare to the best cabinet work of the present day. Most minute specifications were prepared of all the materials necessary for the building, each block of marble being perfect for the place for which it was intended. There was, too, an elaborate system of supervision, officers being appointed by the State to superintend the erection of the buildings. With regard to the Erechtheum, the most venerated of all Athenian sanctuaries, at a particular stage the building of it did not get on fast enough, and a commission was appointed to inquire into the reason. All these circumstances showed how well ordered matters were, and the impression that one received from a study of the institutions of Athens in the age of Pericles showed how careful the State was in reference to its public works, the Athenians producing buildings which were the admiration of the world, being models of adoration and reverence. The Propylæa, all built of white marble, formed the entrance to the Parthenon, and its ruins now existed. It was said to be intended for the defence of the Acropolis, but he thought it was now agreed that it was a grand vestibule for processions, because at the time it was erected Athens might be considered clear from invaders. Above the Propylæa stood the colossal statue of Athenè Promachos, which was a work in bronze, and must have been the greatest feat of casting in antiquity. It was by Phidias, and was between 50 ft. and 60 ft. high. It was one of the three statues of Athenè which were placed in the Acropolis. With regard to the Erechtheum, it had always been a puzzle, and was, in fact, two or three temples in one. Before the Persian War there was a very ancient statue of the goddess Athenè, and in the temple where it was placed there was a live olive-tree, which was an object of veneration to the Athenians, and was supposed to be the parent tree from which all the live trees in Persia sprang. There was a curious connexion between this goddess and the olive-tree. Athenè was in some sort a goddess of light—ether—and Attica derived a great deal of its revenue from the excellent oil derived from the olive-trees. The lamp fed by the oil was sacred to her in this temple, and the wick, it was said, only required trimming once a year, which, if true, must have been a very remarkable wick. After the Persian War this ancient statue of Athenè was renewed, and the young ladies of Athens used to bring to it embroidery work as offerings. With respect to the Parthenon, this great temple in a ruined state was still standing, and of its architecture there were a few samples in the British Museum. Parthenon meant the Temple of the Virgin, and in it were deposited the treasures of the State. As regarded the art of making images of gold and ivory, which was known as chryso-elephantine, it was extensively practised amongst the Greeks. Winckelmann had calculated that about 100 statues of this kind were mentioned by the ancients. The combination of gold and ivory was chiefly used in temple statues; and though the execution of the more famous works of this class belonged to an advanced period of art, the use of various materials in the same structure was very ancient, and probably borrowed from the custom of adorning the wooden images of the earliest time with the precious metals. Coming to the question as affecting the resources of the State, Thucydides told them that the goddess, the Pallas of the Parthenon, which was executed by Phidias, had on her person, in gold garments, an immense sum,—he might say a fabulous sum,—the gold being borrowed and converted into money in cases of extreme destitution on the part of the State when money was wanted to pay the soldiers in times of war, and returned in more

prosperous times. It would be very convenient for the Turks at the present day had they such a goddess to borrow from, for, depend upon it, the gold would be melted down to supply "the sinews of war." In the Russian monasteries, large revenues were attached to them, and from what he (Mr. Newton) had been told from a friend, who had recently returned from Russia, the authorities of the monasteries had promised to pay over any amount to carry on this "Holy War." It was in the making of the statue of the Olympian Jupiter that Phidias earned his fame. The Theatre of Dionysius was uncovered by the Germans about the year 1855, and then it was found that the principal seats were set aside for the chief personages of the State,—marble chairs being reserved for them. Last year considerable excavations were made in this place by the Greek Archæological Society, the work being carried out by private subscriptions. With reference to the Temple of Victory, portions of its frieze were now in the British Museum, but the great work of Phidias was the chryso-elephantine statue of the Olympian Jupiter, which had long since disappeared, they not having any clear idea what it was like, having to rely on the descriptions of it given by the ancients; but the Temple of Jupiter in which it was placed had recently been disinterred, owing to the labours of some Germans, who had been sent there to excavate. The principal columns were there, and what was more important the sculptures in the two pediments, one of which, according to Pausanias, was by Alcamenes, and the other by Pæonios, of Mende, had been in great part recovered, showing that the work had been carefully and completely done. This same Pæonios made a victory at Olympia. They had thus undoubted works by particular artists of the age of Pericles. The imperfect execution of the pedimental compositions at Olympia might be illustrated by a comparison of the Phygalian frieze, that of the Erechtheum, and the frieze of the Xanthian monument of Phidias himself. Where there was a great gathering of the most skilful carvers in marble, as at Athens, and also abundant wealth, the execution was almost perfect; when Athens grew poorer, at the end of the Peloponnesian war, the artists were not so well paid, as they saw by the account of the building of the Erechtheum, in which the actual sums paid to individual sculptors of groups and figures were noted. The inferiority of the execution was evident at Phygalies, but still more evident at Olympia, and at Xanthus, in Lycia.

The other two eminent sculptors who flourished about this period were Myron and Praxiteles, the latter being celebrated for his figures of the athletes putting diadems round their heads. With respect to painting, they had nothing to refer to except the vases of the period, some of which were in the British Museum.

In conclusion, Mr. Newton regretted that, owing to pressure of business, he could not pursue the course of lectures, but trusted next autumn he would find it convenient to resume this subject. In the meantime, he hoped that all his hearers would study hard the valuable works of art to be found at the British Museum, for it was the repetition of the impression this subject gave that made ancient art valuable.

A cordial vote of thanks was accorded to Mr. Newton before the meeting separated.

THE DEVELOPMENT OF GOTHIC ARCHITECTURE.

ARCHITECTURAL ASSOCIATION.

In the discussion which followed the reading of Mr. J. J. Stevenson's paper, the substance of which we gave in our last,

Mr. R. Phené Spiers said that if Mr. Stevenson's purpose had been to read the funeral oration of the Gothic style, he had begun, on the principle *de mortuis nil nisi bonum*, by pointing out how truthful Gothic was in its earlier developments. Gradually warming up in his subject, he showed how debased the later forms had become, and pointed out the difficulties which arose in applying the style to modern wants. He had referred to the shams and reproductions of our fathers, and after remarking that doubtless our dislike of the later phases of Gothic was due to the bad copies of forty years ago, he suggested that thirty years hence people would be disgusted with the reproductions of the present day. Therefore Mr. Stevenson hoped that more particular attention would be directed to the "Queen Anne" style, of which he was the apostle. He confessed to being somewhat disappointed with the paper, for Mr. Stevenson generally had many new arguments to bring forward. He believed Mr. Stevenson was about to publish a book,—an architectural history,—and that the paper formed part of the coming book. Now, although of course it was impossible to write an altogether new history of architecture,—for the writer must base his statements on facts,—he regretted that Mr. Stevenson had taken as almost his sole guide M. Viollet-le-Duc, who had totally neglected one of the most important phases of Gothic work,—a phase which must be dealt with in any history of Gothic architecture to be read by Englishmen, viz., fan-vaulting. He disagreed with Mr. Stevenson when he said that the developments of the Gothic style were similar in France, England, and Germany.

Mr. H. W. Brewer did not agree with Mr. Spiers in saying that fan-vaulting was the origin of the four-centred arch. It was a remarkable thing that in churches which had fan-vaulting the windows of the clearstories were not four-centred. In the lady-chapel at Peterborough Cathedral the windows were not four-centred: they were rather sharp than otherwise. Again, King's College Chapel, Cambridge, was entirely covered with fan-vaulting, but with the exception of the east and west windows none of the windows were four-centred. In Henry VII.'s Chapel, at Westminster, if the windows were four-centred at all they were very slightly so. He agreed with Mr. Stevenson that the four-centred arch arose from the desire to give as much light as possible to the upper part of the wall. In Oxfordshire, and some other of the central counties, square-headed windows in the clearstories were quite common; internally a sort of flat segmental arch was used. There was a great deal to be said for Mr. Stevenson's suggestion to call the Perpendicular style the "Horizontal" style; certainly the horizontal lines were a distinguishing feature of the style, and they were often most strikingly emphasised by the massive square towers, cut straight off at the top, as in the fine example of Lavenham Church, Suffolk. Even in so thoroughly Perpendicular a building as King's College Chapel, Cambridge, where there was an enormous number of Perpendicular lines running up to the roof, the perpendicularity of the effect was broken up by angels carrying shields, which tended to impart to the interior the appearance of horizontality. He was glad to hear Mr. Stevenson speak so enthusiastically in favour of the Perpendicular churches, for he (Mr. Brewer) believed Gothic architecture never produced anything more perfect, dignified, and grand, or more fitted for places of worship, than the great Perpendicular churches such as those in Norfolk and Suffolk.

Mr. Maurice B. Adams, in reference to the latter part of Mr. Stevenson's paper, said he did not wish to assume the position of champion of the eminent architects whose works had been referred to, but it seemed to him that the paper took rather a partisan view; it certainly tended towards much that had been put forward in the battle of the styles. Now the true artist would erect a good building in any style, and he thought we should have reason to be proud if we looked back at the revivals of any period from the commencement of the present century. Works of great merit had been produced, and he did not believe that the best of them would ever cease to call forth the admiration of our successors. We had great reason to look back at the Gothic revival with pride, for buildings of the greatest beauty had been produced in it, whatever those who were in favour of other styles might think. If we were to have good buildings we must have good artists, and, as artists were few, good buildings must necessarily be few.

Mr. H. L. Florence said Mr. Stevenson concluded his paper by saying that Gothic architecture in the present day was the artistic expression of an obsolete mode of construction, but he (Mr. Florence) ventured to think that a style which had so many good qualities as had been pointed out by Mr. Stevenson must of necessity, even at the present day, have some life left in it. Its funeral oration had not yet been pronounced. The Cinque-cento, when at its lowest, sprang into a fresh existence; and as Gothic contained many elements capable of use, it might hope for a profitable career in the future. Cinque-cento had been out of fashion for some time, but, shorn of some of its most attractive qualities, it was again the fashion, even with some of the most glaring faults and defects of Gothic engrafted on to it.

Mr. Stevenson, in replying on the discussion, said that the question of fan-vaulting was dealt with in his paper, although he omitted reading that portion to save time. He was inclined to hold that fan-vaulting itself was a thing which especially needed explanation, and that explanation was probably to be found in the desire of the Perpendicular architects to keep their roofs flat. As an architect himself he confessed he should be quite willing, especially as he considered we were living in a feebler age as regarded architecture, and must live, to some extent, on the ideas of our predecessors, to put up buildings designed with features which, though not perhaps useful, were picturesque if not beautiful. But to concede this was to deny the pretensions of Gothic construction to be the outcome of necessity, and was a sad descent for those who had always maintained that Gothic was a true style, and the only true style, and that Classic was all false. Although old forms might be copied and re-used, it was surely a far nobler thing to throw them boldly aside, as did the old Gothic builders themselves, and trust to the necessities of the case to help them to develope new features in consonance with modern requirements. This required enormous skill and art. Engineers had had more opportunities of doing this than architects, for they had been entrusted with the execution of great works ministering to wants which were entirely modern. They had been most successful in their works where they had depended on simplicity and grandeur of outline rather than on applied ornament. At one time he (Mr. Stevenson) was as great an enthusiast as any one for Gothic; but more mature study had convinced him that it was not suited to domestic requirements, inasmuch as to be real it must have vaulting. Modern Gothic churches which were vaulted, such as St. Peter's, Vauxhall, were much more satisfactory than contemporary works not vaulted. Cost precluded the use of vaulting in the majority of cases, and without vaulting Gothic was as insipid as the play of "Hamlet" with the part of the Prince of Denmark omitted.

MORE ABOUT "DAMP."

Sir,—A year since (December 9th, 1876), you printed some observations of mine upon damp,—a subject which naturally comes round again with the season, as recent complaints from your correspondents indicate. I then showed that much of the damp, or even positive wetness, often attributed to the penetration of water through walls, is really due to other causes, such as the condensation of moisture from the air within the house, and the excessive consumption of gas. I desire now to point out, more particularly, the true cause of what is often mistaken for the passage of water copiously through carefully-built walls of brick or stone.

Ask any one that has built a good villa or mansion on an exposed site what he knows about damp, and it is much too probable that you will hear a doleful tale of wet walls and spoilt paper-hangings, though architect and builder have tried to do their best to prevent such a result. All are, of course, agreed that the water passes through the wall. If the brick or stone facing is not very hard it is treated with some indurating or water-proofing solution, with no good effect: so, while further steps are being considered, it may be useful to ask ourselves a few questions as to the behaviour of water in contact with walls in general. In the case of an ordinary house wall, built of good, though probably porous, bricks and a coarse lime-mortar, it is a matter of common observation that the rain "drives through" it, and runs down the inside in streams, as I have seen it run down a first-class mansion. Assuming that it is only 9 in. thick, do we see this regularly happen in common cottages and farm outbuildings, and do we see the rain drive through all 9-in. garden-walls, as must be the case with such structures, as a rule, if the theory of the penetration of rain were the true one? On the contrary, the usual experience is that heavy rain soaks for but a short distance into such brickwork as this, that the next spell of sunshine or drying wind takes most of it out; though, as we know that air will be drawn into a house through the walls, some little moisture may find its way along with it. But, as a fact, the fires which careful people keep up during damp weather amply suffice to keep such walls warm and dry. With regard to a house built with solid walls protected by good overhanging eaves and well warmed, neither water in bulk nor ordinary

damp should be seen, and if it is not dry there must be some defect in workmanship that requires to be studied on the spot.

Perhaps the case of one who has gone to the expense of hollow walls, and who has yet failed to secure dryness, is especially hard. For the first year or more all has gone well, but about the second winter, or in an unusually long wet season, spots of damp are noticed in the best rooms; soon the papering is wet, black, and mouldy, and the rooms uninhabitable. One may count the ties which bond together the two thicknesses of walls by these spots. This will happen, however hard the facing bricks may be, even though set in cement; indeed, such walls are the worst, as the wet which has penetrated into the hollow space is by them prevented from drying outwardly to any extent. The true cause of the mischief will be found in defective gutters and flashings at gables and chimneys, and the remedy will be found in better plumbing, which, however carefully it may be done as a matter of mere workmanship, is generally done without sufficient experience of all the ways in which water will penetrate in cases of unusual exposure to driving rain. A hollow wall will tend to keep a house warm, but unless the roofs are put on with the best and most expensive arrangements of gutters and parapets, they require, even more than solid walls, the protection of overhanging eaves and projecting gables; and chimneys of all houses require greater care in forming the lead flashings than is commonly given. THOMAS BLASHILL.

P.S. The railway arch complained of by one of your correspondents may be dried,—first, by seeing that the covering of asphalte and concrete beneath the permanent way is sound, and then by using a stove, such as Galton's or Musgrave's, which supplies warm air to the room. The case of damp attributed to "sea salt" in the bricks seems due to deficient warmth in the rooms, which one of these stoves in the house would cure. A coarse porous plaster would have been better than Parian for the walls.

A TRUANT-SCHOOL.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE fourth meeting of the present session was held at the Royal Institution, Colquitt-street, on the evening of the 12th of December, the president, Mr. J. M. Hay, in the chair.

A discussion took place with regard to the Council having issued their report on the Model Bye-laws of the Local Government Board to the public before it was adopted by the Society at a general meeting, thus compelling the Society to pass a resolution adopting the report in order to support the dignity of the Council, whose action in the matter was by many considered premature, and finally Mr. Nugent gave notice that he would propose at the next meeting, to be held on January 9th, 1878:—"That the resolution adopting the report of the Council on the Model Bye-laws issued by the Local Government Board be rescinded, and the whole matter more thoroughly discussed."

The designs submitted by the student members for a country church to seat 400,—period, fourteenth century,—being the first subject on the syllabus for this session, were exhibited.

Mr. T. Mellard-Reade, C.E., architect to the Liverpool School Board, then read a paper, of which the following is an abstract, on the "Liverpool School Board's Truant School, Hightown."

Mr. Reade explained that the Liverpool School Board, like other Boards, was met by the difficulty of dealing with truant children, but in Liverpool it was probably worse than in other places, owing to its seafaring character and the extent of its docks, which gave great scope to the truant propensities of the children.

After long and anxious deliberation, the Board effected a compromise between opposing views, and it was decided to divide the schools into two sections—one for Protestants and the other for Roman Catholics, and also to erect them at Hightown, on about two acres of ground.

Being an entire novelty no precedent in planning could be referred to, and the plans which were displayed as illustrations had to be thought out from first principles, strict attention being paid to economy.

The building will accommodate 136 children, 68 in each section. It consists of a main block 165 ft. by 38 ft., principally in two stories, the central portion being carried up one story higher. On the ground-floor in each section are the office, taskmaster's room, with an inspection bay commanding the corridors, ten separate dormitories, kitchen and other offices, and superintendent's parlour. A staircase affords communication between the three floors in the central block. The dining-room and school, with lavatories, are in wings forming one-story annexes. The laundry, wash-house, and drying-rooms, form a central one-story annexe, and can be used alternately by each section. At the south end of the plot are good workrooms made out of the movable wooden schools from Walton-lane. A plunge-bath and small bath heated by the kitchen boiler, are in the main block in each section. On the first floors in each section are two parallel dormitories for twenty-nine boys each, both commanded from the superintendent's bedroom by an inspection bay, rooms for linen and Sunday clothing are provided, together with the necessary bedrooms for officers and servants. On the second story are situated the sick wards, with nurses' rooms and bath-rooms, &c., isolated from the rooms below. The site provides also for play-grounds and kitchen-garden space. The whole building is thoroughly warmed upon Harlow's system, and ventilated by Messrs. Potts & Co., the contractors being Messrs. Boardman Brothers, of Leigh; and the work is rapidly approaching completion.

In conclusion, Mr. Reade expressed a fervent hope that the scheme would prove a success, as it was undoubtedly conceived in a spirit of Christian charity for the reclamation of those unfortunates who, without discipline and control otherwise, from vice to vice go backwards to perdition.

A vote of thanks having been passed to Mr. Reade for his paper, the meeting came to a close.

THE STUDY OF COOKERY.

OUR notice of a recently-published Handbook of Cookery has led to some inquiries, which we briefly answer. The notes will probably not be deemed inappropriate by any of our readers at this season of the year, especially dedicated by Englishmen to feasting.

The National Training School of Cookery at South Kensington is the outcome of the Exhibition of industries and products in connexion with food at the International Exhibition of 1874, when Mr. Buckmaster was engaged to give lectures on cookery, with practical demonstrations by a staff of cooks. The lectures were very popular, and the next year a committee was formed and the school started, the commissioners lending them the iron building where the lectures had been held. The chief object of the school is the training of teachers to give instruction in cookery. Many schools are now in communication with the training school. Some of them are permanent; some only for a time; and much good has already resulted from the spread of a knowledge of good and economical cookery. We are glad to learn that ladies are shortly to be sent to teach it in America (by the Edinburgh School). We are glad to hear too, that the time to qualify a lady to become an instructress is extended from three to five months, and the fee raised to 20*l*. She then obtains a diploma. We strongly recommend young women, if they have the time at their disposal, to go through the course of training at the school, for both good health and good temper are dependent on well-cooked food; and "where is the man that can live without dining?" Cookery is an art, without doubt. Good cooking means economy; bad cooking, waste. Food should be so cooked that it shall retain all the nourishment possible; and without a certain amount of study and care this cannot be done. It is so taught at South Kensington. Sir Henry Cole, in his speech two years since, promised 100*l*. a year to any lady who qualified herself; but this, it seems, can be realised by only a few. The ignorance of women of the working-classes is constantly before us, and if ladies were more competent to instruct the former in their duties the comfort of home-life would be much increased.

The Edinburgh School of Cookery has been requested to send ladies to teach in America, and some are to start early next year. Cookery at South Kensington is taught by scullery work, demonstration lessons, and practice lessons. The demonstration lessons should precede the practice, because in them are shown the methods of preparing and cooking the food, and the pupils are thus better prepared to go into the kitchen to try for themselves. We are much inclined to think that the demonstrations have done much to make cookery popular; but we feel sure that, as the schools increase, they must fall off, because they will have served their purpose; when the novelty has worn off, the pupils want themselves to cook. Many persons have an idea that cookery is to be learnt from a book or these demonstrations; but, as with other arts, it is only by actual practice that a learner can become proficient. A Frenchwoman will make a savoury meal of what an Englishwoman will throw away, simply from the want of knowing how to utilise it. In Paris and Vienna they have better bread than we have, because scientific attention is given to the process. "Here we carry on most of our occupations as if an entire ignorance of their nature were a means of certain success. Is it then to be wondered at, that even in the manufacture of 'our daily bread,' we go to work in an expensive way, and produce an inferior and often injurious article."* An acquaintance with elementary chemistry, also with physiology, is a great advantage in cooking, as the more knowledge we can bring to bear on the simplest thing the more efficiently it will be done, and with the certainty of success. In the scullery the pupils are taught to clean all the utensils, and in nothing is perfect cleanliness so essential as in cooking. It is to be hoped that practical cookery lessons will be adopted in all schools, Board schools especially, as it is through the rising generation that the masses of the people are best reached, and we have heard already of several instances in which the cooking learnt at school has been practised at home to the great comfort and benefit of a sick mother. The Cookery School has a great and good work before it, and we heartily wish it the success that it deserves. The committee of the school have, at the same time, their duties, and must act up to them.

THE CHURCH OF ST. MARY, PATSHULL, NEAR WOLVERHAMPTON.

IN accordance with instructions from the Earl of Dartmouth, the tower of this church has been much altered and improved in the formation of a belfry, to receive a fine peal of six bells, made and hung by Messrs. Mears & Stainbank, of London, who have also applied their chiming apparatus for occasional use.

In making the necessary alterations to the tower the same difficulties had to be met as those which were felt by his Lordship to exist when he gave the instructions with regard to the extension of the church, by adding a north aisle, as described by us some two or three years back, viz., the extreme compactness and simplicity of the normal structure, which rendered it almost impossible to make an alteration in its outline in any direction without giving such alteration the appearance of being an excrescence. His Lordship was also very desirous to retain the general character and form of the original structure.

These difficulties have, however, been overcome, and a great improvement is made in the arrangements for ringing the bells, inasmuch as the ringers have now a commodious chamber (formerly the bell-chamber) approached by an external staircase instead of having to ring from the inside of the church as heretofore, in the position where the bells were formerly hung.

From the main cornice, which is almost on a level with the old ceiling or vaulting of this chamber upwards, the octagonal portion of the tower and dome was wholly removed, and the floor of the new bell-chamber is now at this level; the upper portion of the tower, which forms the new bell-chamber, being reconstructed from this point.

The character of the work is in keeping with the body of the church, consisting of a circular-headed belfry window, on each of the four sides embraced in the Tuscan order, with square quarter pilasters and rusticated angles. From the blocking over the entablature of the order rises the dome upon an appropriate base; this is covered with lead and crowned with a perforated cupola terminal, and gilded ball and vane surmounting the whole. The flag of the vane is the same that stood at the apex of the former dome. The circular windows on three sides of the ringers' chamber are glazed in place of the old louvres; and a handsome iron grille, by Mr. F. A. Skidmore, has been fixed in each. It is proposed to open a window into the church at the west side of the tower, where the niche with a statue of King Charles II. now stands.

* Dr. Lankester.

The entire height of the tower to the top of the vane is 86 ft.; the old tower to the same point was 71 ft.

The builder's work has been executed by Mr. Benjamin Graham, of Huddersfield, who has obtained the stone required for the work from the quarry in Patehull High Park.

An organ is now being built for this church by Messrs. Walker & Sons, of London, and will shortly be placed therein.

The whole of the works have been carried out from the designs and under the supervision of Mr. Wm. C. Banks, architect, of Gracechurch-street, London.

THE PROSPECTS OF ENGINEERS.

LIVERPOOL ENGIEEERING SOCIETY.

This society held its last meeting of the year in the Rooms of the Royal Institution, on Wednesday evening, the 19th inst. Mr. Graham Smith, A.I.C.E., delivered a valedictory address on the "Status and Prospects of Engineers." He said the scientific progress of the profession has been gradual and ceaseless, yet the ancients executed works of greater magnitude than those undertaken at the present day, and among other works, instanced Lake Moerio, an irrigation reservoir, 150 square miles in extent, and the pyramids of Gizeh, constructed 5,000 years back, likewise the causeways seen by Herodotus. He reminded his hearers that Tubal Cain was a worker in metals, and, with a view of showing the ancient lineage of the profession, said that George Smith had ascertained by a tablet that the title, "master of works," existed in Assyria 700 B.C., and that the remains of works are to be found in Egypt, India, China, and all over the world, clearly denoting that the ancients possessed men answering to the description, and filling the position which the engineer of the present day occupies. Among the ancient titles there were those of the "Lord of Canals" and the "Establisher of Irrigation Works." At the present time the British Government does not recognise the leaders of the profession, and does not see fit to give them a fair field and no favour for the employment of their abilities in a country like India. As regards the prospects of the profession, the lecturer said the remuneration while in the rank and file of the profession only amounted to a few guineas a week, and that a man was not likely to make more than 700*l.* or 800*l.* per annum during any portion of his career if content to work under others. There were many appointments exceeding 1,000*l.*, and a few even reaching 5,000*l.* per annum. Although the works of the ancients were vast, they by no means exhibited skill equal to that existing at the present day,—the works of the Suez Canal and Mont Cenis Tunnel, for example, where Nature's barriers to national intercommunication had been removed by the skill of men now living. The blowing up of the mass of rocks in the "Hell Gate," the deepening of the Mississippi mouth; the construction of the East River Bridge, New York; and, lastly, in our own country, the Metropolitan Railway, are all instances of the scientific progress of our profession, and will long remain as monuments to immortalise such names as Lesseps, Sommeiller, Grattoni, Eads, and Fowler. In conclusion, he thanked the members for the kind assistance and co-operation they had at all times afforded him in his endeavours to advance the interests of the Society, and remarked he was about to face the difficulties in the way of establishing a private practice already alluded to, and looked forward to the time when this Society would become one of the standing institutions of the West of England. He hoped that each member would do all that in him lay to achieve this result, ever bearing in mind,—

> "There is a tide in the affairs of men,
> Which, taken at the flood, leads on to fortune."

The Iron Trade.—Belgian iron, for girders and supports is, says the *Sheffield Telegraph*, being delivered in Sheffield at 10*l.* per ton, whereas the cost of English iron for the same purpose is 18*l.* per ton. The same paper believes the Midland Railway Company are about to carry on the manufacture of rails on their own account, and that they have become the purchasers of Messrs. Thorneycroft & Co.'s rolling works at Wolverhampton, at a sum of 45,000*l.*, a very great bargain. It is said that 20 per cent. deposit on the purchase-money has already been paid.

NEW PUBLIC HALL AND MARKET HOUSE, BUILTH.

New buildings, intended to supply the want of proper market accommodation in Builth, have lately been erected by a limited liability company. The site chosen was at the town end of the bridge, and in addition to the market-hall proposed, it was decided to erect a public hall, with shops, offices, &c. The peculiar formation of the site, which is on sidling ground, sloping towards the Wye, led to some ingenuity in the arrangement of the plans. The basement story, which is on the high-water level, is approached from the front street, through an archway, by a broad flight of steps, on the right and left of which are a fishmonger's and a butcher's shop, whence you descend into the market-house, which is 63 ft. long by 33 ft. wide, with a triple span roof constructed of iron and glass. The market is lighted and ventilated, and has a side entrance for the supply of goods by trucks, &c. Around this market-house are nine compact and conveniently-arranged lock-up stalls, adapted for greengrocery, bacon and cheese factors, china and small-ware vendors. The market-house is lighted by gas with star-lights. The remaining portion of this basement story is occupied by store cellars and the usual conveniences, the whole of which are let out to separate tenants. The ground-floor story consists of four shops on the principal front, with plate-glass windows, and a small sitting-room in the rear of each; whilst on the Station-road front is a wine-merchant's office and shoemaker's and outfitter's shops, of special adaptation. At the left angle, being the intersection of the principal street and the Station-road, is a massive entrance, with double doors, which lead to a spacious, broad staircase, continued up to the large public hall over the whole. On the first-floor level, and on the opposite end, is a private entrance and staircase, with ante-rooms and all the requisite conveniences for the comfort of performers, speakers, &c. On the floor-level is the large public hall, 70 ft. long and 30 ft. wide, with ante or cloak room on the landing at the entrance end, and a spacious elevated platform or orchestra at the opposite end, to which are attached two small retiring-rooms. Over the entrance end is a spacious gallery. Accommodation is afforded for 400 persons on the floor-level and 100 in the gallery, making a total of 500. This hall is 28 ft. high, and has a wagon-shaped roof, with curved rib principals. The general construction is bold and massive, the façade being executed in local stone masonry, with freestone dressings. The roofs are covered with Brossley tiles. At the apex, and in the centre of the whole, is a clock-tower. The works were commenced in October last year, and have been carried out by the contractors, Messrs. D. J. & D. Davies, of Cardiff, builders, at a cost of less than 3,500*l.*, from the designs and under the direction of Messrs. Haddon, Brothers, Hereford, architects, whose designs were selected in competition.

THE CAPITAL OF THE METROPOLITAN WATER COMPANIES.

The Parliamentary powers for which the Metropolitan Board of Works have resolved to apply for compulsorily purchasing the several water companies invest the capital of the various companies with a special amount of interest at the present moment. The aggregate capital which the companies are authorised to raise under their present powers amounts to 12,935,960*l.*, of which 11,518,975*l.* are already paid up. The New River Company stands at the head of the list as regards the amount of capital which it has powers to raise. This amount is 2,792,200*l.*, and the New River differs from the rest of the companies, as the whole of this sum has now been paid up, whereas as regards the seven other companies, considerable calls have yet to be made. The next in order to the New River as to the amount of authorised capital, is the East London Company, whose total capital is 2,020,000*l.*, of which 1,875,560*l.* are paid up. Then follows the Southwark and Vauxhall, authorised capital 2,000,000*l.*, paid up 1,789,480*l.*; next comes the Lambeth Company, authorised capital 1,498,000*l.*, paid up 1,256,796*l.*; the Grand Junction Company, authorised capital 1,250,000*l.*, paid up 1,210,115*l.*; the Chelsea Company, authorised capital 1,268,750*l.*, paid up 1,054,300*l.*; the West Middlesex Company, authorised capital 1,355,066*l.*, paid up 933,183*l.*; and lastly the Kent Company, authorised capital 750,000*l.*, paid up 607,340*l.* It will thus be seen that the aggregate amount of capital yet remaining to be paid up by the seven companies who have yet calls to make is 1,416,985*l.* Up to the present time the West Middlesex Company has only paid up about two-thirds of its authorised capital, whilst on the other hand the whole of the Grand Junction Company's authorised capital has been paid up with the exception of about 40,000*l.* As regards the remaining five companies an average of from fifteen to twenty per cent. of capital has yet to be called up.

RAILWAY ITEMS.

The Tay Bridge Station.—The *Dundee Courier* gives a description of the new railway-station which is now in course of construction to accommodate the large accession of traffic which will be brought into Dundee by the opening of the Tay Bridge. The Tay Bridge Station, which is situated on the easternmost part of the ground reclaimed from the river by the Esplanade, and just immediately to the west of South Union-street, from which it will have access, covers in all about 20 acres. The passenger-station is a low-level one, and is in the north part of the ground, while the depôt for the goods has been erected on the level ground some distance to the south. The station is 1,100 ft. in length, about 100 ft. in breadth from wall to wall, and 14 ft. 6 in. below the level of the ground. The platform on the north side is of the same length as the station itself, while on the south side it is 900 ft. in length. At the west end of the building is a dock, 400 ft. long, from which all local trains,—those going to Newport, St. Andrew's, &c.,—will start. Both platforms have a width of 25 ft., but the platforms running parallel with the dock are 35 ft. wide. The station buildings, which are between the two sets of lines, and to the east of the dock for local trains, are built of brick, faced with stone, and are two stories in height. They are 350 ft. in length, 30 ft. in height, and have a uniform width of 27 ft. On the ground-floor at the east end are an office for the station-master and a telegraph office, the latter being on the south and the former on the north. To the west of these is a large left-luggage room, 45 ft. by 26 ft., and provided with lifts. Then there is a first-class refreshment-room, and at the end of it another refreshment-room for second and third class passengers. A gentlemen's first-class waiting-room is then provided, and to the west of it are waiting-rooms for first-class, second-class, and third-class lady passengers, with lavatory intervening, each of the three waiting-rooms being 26 ft. by 18 ft. At the extreme west end of the buildings are a lamp-room, hot-water-room, porter's room, and water-closets. On the upper floor, at the east end, are the ticket offices and two large parcel offices provided with lifts. Over the left-luggage rooms is a spacious dining-room. The main entrance to the station, which is approached from South Union-street by a new street 40 ft. in width, is 40 ft. wide, and the roof is about 12 ft. in height. In the station buildings, at the north end of this entrance, are two hydraulic lifts, each capable of raising five tons. The roof over the platform and rails consists of iron framework and glass, which, with the roof of the goods-shed, will be glazed according to Rendle's system. The goods station, which is wholly built of brick, is 400 ft. long, 150 ft. wide, and about 40 ft. high. Three roofs will be required to span it, and these will be constructed of iron and glass. In it there will be no fewer than five separate lines of rails, all leading to the level of the railway in the esplanade ground, and it will be provided with two platforms, one for arrival and the other for despatch. The means of ingress and egress will be ample. The works are in a forward state, and it is expected that the whole will be finished in the beginning of next year. Mr. Waddell, contractor, has had the construction of the buildings in connexion with the station; while Messrs. Wright, Young, & Co., of Edinburgh, have had the ironwork to execute. The station has been constructed according to a plan drawn by Mr. Bouch, the engineer to the North British Railway Company, and the design has been carried out under the superintendence of Mr. Paterson, C.E.

The Great Northern Company's New Line at Ilkeston.—A Derbyshire paper reports that much delay has been caused in the construction of the Great Northern Railway Company's new line from Ilkeston to Nottingham, by the giving way

of two small iron bridges at Ilkeston. The ground underneath the bridges is undermined by colliery operations, and had given way to such an extent as to cause them to subside. They are being reconstructed. Adjacent to them is a wrought-iron viaduct, 42 ft. high, consisting of nineteen large spans. It carries the line across the River Erewash, which is narrow at the place, as well as the lower part of the Erewash Valley, and the line of the Erewash Valley Railway of the Midland Company. Two lines of permanent rails have been laid down for a considerable distance, in the direction of Answorth Junction, which is in the county of Nottingham, and a mile from Ilkeston. At this junction the line joins that of the Nottingham and Erewash Valley of the Great Northern Company, which was opened about a year ago. The distance from Ilkeston to Nottingham will be about fourteen miles, although it is only eight by the highway. The works in connexion with the station at Ilkeston are in a forward condition. The waiting-rooms are on the opposite side of the line, across which a bridge has been erected for the use of passengers. It is stated that the company intend to open the line from Ilkeston to Derby in January for mineral traffic, but the other portion of the line will not be opened till some months later.

THE LAW OF LANDLORD AND TENANT ON HOUSE-FITTINGS.

AT the Lambeth County-court last week, Mr Goodwin brought an action against Mr. Lucas, his former landlord, to recover 2*l.* 10s., the value of gas-fittings and general house fixtures. The plaintiff stated that last year he occupied a house belonging to the defendant. When he left the house he left behind him a quantity of fittings to the amount claimed, on the understanding that he should receive satisfaction from the next tenant for the value of the fittings in question. The fittings had been detained by the defendant, but he (plaintiff) had received nothing in respect of them.

The defendant denied that he made any such arrangement with the plaintiff as had been stated, and said that he himself had received no satisfaction from the next tenant for the fittings.

The Judge said that if the plaintiff left fittings in a house without making a special bargain with his landlord as to their disposal, they became the property of the landlord on the expiration of the term. In this case it did not appear that any bargain had been made, and, under the circumstances, judgment would be for the defendant.

BREACH OF CONTRACT.

COULSON AND ANOTHER *v.* LE SOCIETÉ ANONYME DE CONSTRUCTION ET DES ATELIERS, &C.

THIS was an action (Queen's Bench) against the defendants, ironfounders and manufacturers, carrying on business at Brussels, and trading with London, Birmingham, and Sheffield, to recover damages for a breach of contract in reference to a large number of iron girders which they had undertaken to manufacture for the plaintiffs, in accordance with a fixed measurement and specifications as to depth, &c., but which, when delivered, were found to be short of the required measurement, for an extensive building, and therefore useless for the object.

The case occupied a considerable portion of the day, and resulted in a verdict for the plaintiffs, with damages.

The Lord Chief Justice said the defence was a most ungracious one, seeing that the girders were not only unfit for the building for which the specifications were given, but for any other building, unless it was constructed for them.

Mr. Wills, Q.C., asked for execution.

The Lord Chief Justice.—Yes; and the speediest that can possibly be.

AMBER ORNAMENTS AND FIGURES.

THESE may be readily made by dissolving amber in chloroform of a proper consistence, and pouring the solution into suitable moulds, allowing the chloroform to evaporate.

The medical properties of amber deserve to be more generally known. If one or two large beads be strung on a silk cord (or twine) and worn round the neck, "next the skin," it heats the body, procures a gentle perspiration, cures rheumatism, palsy, paralysis, tic doloreux, cramp, and debility, and helps the walking powers when lost. JAMES BRUCE.

*** Has our correspondent proved all this?

WITHHOLDING THE FUNDS OF A TRADE UNION.

THE OPERATIVE BRICKLAYERS' SOCIETY.

AT the Lambeth Police-court, on the 8th inst., Alfred Sorrell, treasurer of the Shoreditch branch of the Operative Bricklayers' Society, whose offices are at 5, Hatfield-street, Blackfriars-road, a duly registered society under the Trade Unions Act of 1871, was summoned before Mr. Benson, by Edwin Coulson, general secretary, for withholding the sum of 10*l.* 4s., the moneys of the society.

Mr. Coulson said that defendant had been treasurer of the Shoreditch branch for some years, and it was his duty, according to the 22nd rule of the society, to pay all moneys he received from his branch to the banking stewards. Witness received information that something was wrong with his accounts, and special auditors were appointed to go through the books, when it was found that he withheld 10*l.* 4s. The matter was placed before the executive council, and the defendant attended, and when asked for the money he said he had not got it, and he was given a week to pay it. He, however, had not accounted for it, hence the present proceedings.

In cross-examination by Mr. Washington, witness said that the defendant's lodge had given him twelve months to pay it, but they had not the power to do so, as the money belonged to the whole society.

Mr. Washington, on behalf of the defendant, said he was instructed to say that he had been robbed of the money and 4*l.* in addition. He had the money to pay Mrs. Scott, a widow of one of the members, and deposited it with other money in a box in his bedroom, and one day when they were absent some thief entered the house and stole the money.

Joseph Derry, secretary of the Shoreditch Branch, was called by Mr. Washington, and said that the defendant told the lodge these circumstances, and they passed a resolution giving him twelve months to pay the 10*l.* 4s.

Mr. Benson told the defendant that he was liable to a penalty of 20*l.*, but as the society wished to deal mercifully with him, he should merely order him to pay the 10*l.* 4s. and 2s. costs, and in default of distress he would be imprisoned for six weeks.

ABERYSTWITH.

PUBLIC baths, upon a large scale, are about to be established at this popular seaside resort. The buildings will comprise a gentlemen's swimming-bath, with open-timbered roof, and a gallery round, so as to render the hall suitable for aquatic contests and public entertainments; also a similar bath for ladies, and a number of private baths. Turkish baths will also be provided. It is proposed, in addition, to erect a public library and reading-room, also several shops and a refreshment-room, and to lay out the surplus land as a recreation-ground.

The scheme has been promoted by the townspeople, with a view to supplying a long-felt public want, and in order to render Aberystwith a winter resort for visitors and invalids. The works are to be commenced in January next. The architects are Messrs. Wilson, Son, & Aldwinckle, of London.

DRAWING COPIES.

SIR,—You have no doubt noticed with pleasure the great improvement recently made in all educational class-books and school appliances. Publishers finding an enormous and increasing demand, employ first-rate literary and artistic ability, carefully supervise and arrange, and thus produce class-books which are a national credit. This excellence is seen nearly everywhere but in the Drawing Copies. There it is conspicuous by its absence. In common with most other teachers of drawing, I have been inundated lately with "specimen copies" of drawing-books for children, and I think I shall be supported by nearly all the profession when I say that most of them are simply vile. They are said to be designed (!) by men whose names are wholly unknown, and they consist mostly of unmeaning fragments cut out of South Kensington and other books of "examples," and stuck together without any regard to common-sense or congruity, much less beauty. It is impossible to describe the poverty and absurdity of these things. I send you a few specimens. In one you will see a piece of flat ornament stuck on to the round body of a vase, and both badly copied from former publications. Unfortunately, South Kensington does not help much in this matter, for, so far as I know, the list of "Examples suitable for an Elementary School," has not been altered for ten or fifteen years.

The worst of all this is that these worthless examples are largely used; drawing is now taught in most of our elementary schools, and these things are continually being copied by thousands of children. If nobody cares this will continue to go on, but if you give the powerful aid of your criticism, the educational publishers may be induced to pay as much attention to their "Drawing Copies" as they do to other class-books, and by having them carefully supervised by some competent persons, they may produce something more worthy of themselves and of the times. C. M.

SHAMS AGAIN.

SIR,—It is really surprising that public men should still deem themselves qualified to discuss, off-hand, questions appertaining to the fine arts, questions which are, perhaps, the most difficult of all questions, and questions, indeed, which can only be successfully treated by professional men who have taken the pains to examine them all round,—from every point of view. Public men would not presume to invade the province of the duly-qualified teacher in any other profession, nor do I believe they would make the fine arts an exception in this respect, if they could only be brought to understand the mischief they are unwittingly doing by promulgating erroneous views.

Art is in thrall in this country entirely from want of profound and thorough teaching,—of a right intellectual leading. And there will be no progress till the principles of art have a sounder and clearer exposition than they have at present.

Now, sir, I find that Mr. Secretary Cross, in his address to the students of the Metropolitan Drawing Classes, ran head-on to that dangerous rock of error which is so often mistaken for truth in the sea of art discussion. Mr. Cross became a total wreck in his art-teaching on the evil of outward seemings, or "shams," upon stuccoed bricks, and upon graining, &c. Why, sir, painting itself would fall under the anathema of "shams," for what is it but paint upon canvas *shamming* life? What is acting, but either Mr. Kemble shamming *Brutus*, or Mr. Kean *Richard the Third?* What is the human form but a sham of skin over revolting muscle and bone? or, what the outward face of nature but a superficial screen over unsightly clay? Beauty and art are but outward shows, at their best, of an inward and spiritual grace, and, therefore, more valuable as symbols of intellectual power than the material itself, whatever that may be, even gold itself. The true teaching is that the beautiful should be admired in this symbolical aspect in whatever material it may be presented, and for the humble it must needs be presented in something less costly than gold, silver, marble, and real woods. The skill exhibited in a really clever piece of graining is only something less than that exhibited in a picture; it is a difference in degree, and not of kind; they are both surface shows and shams. The execution of a clever piece of graining requires much more skill than the mere French polishing of a real piece of wood. Believe me, Mr. Editor, it will be well for the fine arts, and well for truth, when people shall prefer a piece of gilt pinchbeck because it is beautiful to either gold or jewels.

W. CAVE THOMAS.

WIDCOMBE BRIDGE.

SIR,—Our attention has been called to a paragraph in your impression of the 24th ult., having reference to the above bridge at Bath.

The timber structure which your correspondent has taken for a wooden bridge is simply staging for the erection of an iron foot-bridge, which we are now constructing, and which we hope to have ready for traffic by the middle of January next.

It is 96 ft. span and 7 ft. 2 in. clear width between the flanges, the main girders being 8 ft. deep. They are of the lattice kind, with vertical angle-iron stiffeners spaced 5 ft. apart. The footway, which will be of 3 in. planking, is carried in angle-iron bearers, which are connected to the vertical stiffeners about the neutral axis of the girder, thus giving a height of parapet of about 4 ft. Such is a brief description of the bridge, and which we trust you will insert in your next impression.

WESTWOOD, BAILLIE, & Co.

Sale of New River Shares.—At the Auction Mart, on the 13th inst., Messrs Edwin Fox & Bousfield held a sale of one-fifth part of a king's share, and eighteen 100*l.* new shares, fully paid. The attendance of buyers was large, and the competition brisk, the prices received being at the rate of 96,200*l.* for the king's share, and 310*l.* 11s. 1d. each for the new shares.

"THE DRAWING-ROOM."

Sir,—Will you grant me space for a few words in answer to your adverse review,—fair enough from your standpoint,—of my little book, "The Drawing-room"?

My plea to be permitted a reply is founded on inaccuracy of quotation. You attribute to me the use of the words, "wholesome chins"; whereas I say "pottery," in reference to fireplaces; and the previous context shows that I allude to the glazed tiles, which allow of the hearth being washed: hence wholesome.

Again, my assertion that a material should not pretend to be that which it is not, is given as a general principle *with exceptions*, these being intended to meet the very thing you quote against me.

The charge of speaking too seriously about trifles I would meet by remarking that if a minor effect is to be produced, a major must be attempted; and we have the authority of Michelangelo against disdain for trifles.

I venture to think that no better defence of the school in which I believe can be found than in the obvious fact that, with the help of fashion, it has subdued the vulgarity of the recent past in decorative art.

Lucy Orrinsmith.

UNOBSTRUCTIVE BEDDING.

Sir,—Much having been done to improve the dwellings of the working classes, more especially in their economical construction and arrangement, I would suggest an improvement in the furnishing which would add largely to the comfort of thousands.

I strongly advocate, from a sanitary point of view, the use of hammocks, for at least the whole of the younger members of the household, in place of the cumbersome bedsteads, mattresses, &c., and I think that were the landlords to supply the necessary attachments as fixtures, hammocks would come largely into use, were it only from their comfort.

The requisite fixings for each hammock are simply two rings firmly fixed to the walls on opposite sides of the room, if a small one; but if the room be over, say, 9 ft. wide, one or both may be a flush ring in the floor; this latter plan necessitates a pair of light legs to support the hammock, which requires no skill in fixing, and may be accomplished in two minutes.

During the day the whole of the hammocks would be struck, and thus leave the room clear as a sitting-room, without any appearance of its being used as a dormitory at night.

Workmen, also, going out to work would find it much to their advantage to take their hammock and blanket with them, rather than, under the present system, have to put up with the roughest and not the cleanest accommodation.

The cost of a full-sized hammock, with a blanket, ought not to exceed 10*s*.

M. I. M. E.

"WORM-EATEN CARVINGS."

If "S. F. C." will carefully observe the beech carvings in the months of July and August he will probably find the enemy in the form of small brown beetles on the surface. I have watched them coming out of the minute holes in so-called "worm-eaten" furniture and floors and swept them up in a dust-pan.

In an old house where they literally swarmed, by keeping vigilant watch for two or three summers I could not collect a dozen where formerly I got hundreds; and I cannot but think that the only effectual way of getting rid of the pest is to seize the opportunity which they afford every season of "catching-'em-alive, oh!"

J. H. S.

Sir,—In reply to your correspondent, "S. F. C.," I believe the only remedy to stop ravages of worm in wood is turpentine. Let delicate carvings be saturated, no harm is done, and any living worm is destroyed. For this purpose I have used large quantities of turpentine.

K. K.

RUNAWAY HORSES.

Sir,—I read in the *Builder* of the 8th inst. the fatal accident to Mr. Lowe by runaway horses. There have been of many these accidents of late. I witnessed one where horse, cab, and lamp-post were smashed. All wheels could be scotched and skidded the moment the driver left or was thrown off his seat; or, if he retained the reins, he would have to rise from his seat, and instantly the wheels would be locked. I have noticed some fine wide openings without guard-posts, apparently left thus till some frightful accident occurs: two on Westminster Bridge; several with a decline from the Strand terminate with steps on to the Victoria Embankment; there is also a short cut into St. James's Park down the Duke of York steps. Blackfriars is the only bridge with lamp-posts on the footway to protect pedestrians from being crushed. We only want a Bishop or a Prime Minister knocked down, then there would be a committee of inquiry.

R. T.

MASTERS AND MEN.

Manchester.—The Manchester master builders held the annual meeting of their association on the 14th inst. The number of non-union joiners employed in that city and neighbourhood was reported greater than had been since the strike began. Owing to the slack season many of the masters have been able to discharge inferior hands and replace them by better workmen. The success of the masters in securing non-union workmen was regarded very satisfactorily, and a general determination was unanimously expressed to retain the non-union men, and to increase their numbers when fresh men are required.

London.—On the 13th inst. a crowded meeting of operative stonemasons was held in the Cambridge Hall, Newman-street, to discuss the position of affairs with regard to the strike, now in its twentieth week. The chair was taken by Mr. H. Broadhurst, who said (we quote from the *Daily News*' report), he had had a long discussion with Mr. Stanley Bird, and spoke of the introduction of foreign labour, &c., but he was sorry to say that the impression left on his mind by this conversation was that there was no possible solution of the question but to continue the course they were pursuing. He much regretted that a disposition existed among some of the employers to continue the struggle till one side or the other were compelled, by sheer necessity, to bring it to a close. He, however, should never suggest the closing of the dispute until they were absolutely beaten, or until he could propose such suggestions as they would find worthy of acceptance. A trying time was coming, and he urged them to be firm, and to abide by the principles of law and order which they had hitherto observed. Let them not allow themselves to be persuaded to commit any offence against the law. A resolution was passed to appoint other delegates to send to the country, &c., as several of those already elected were now at work. One of the delegates, it was stated, was in Germany, and had induced ninety German masons who had been engaged to come over with the last contingent, to return to their homes instead of proceeding to London. It was fully decided to continue in the course which the committee were pursuing, and having agreed to this the meeting took up the consideration of details. Thirteen American masons arrived from New York on the 12th inst. by the steamer *Anglia*. The rapid increase in the supply of masons from both home and foreign sources is so great that many of the master-builders have all the hands they can employ. The supply from Germany has proved so satisfactory that in the case of important contracts several of the large builders have expressed their intention to avail themselves of it.

Wales.—A lock-out of about eighty slate quarrymen took place at Coed Madoc Quarry, Nantlle, on the 7th inst. It appears that some time since a workman threatened the manager, and having been convicted before a magistrate, was discharged in consequence. A deputation from the Quarrymen's Union wished for an explanation. This, Mr. Roberts, the lessee of the quarry, refused to give, not recognising the right of the Union to interfere in the management of the quarry. He also threatened to discharge the workmen who had ceased working if they did not return in a given time. Considerable excitement prevailed, and the cessation of works became general. On the following day, however, the men asked leave to return to work, which was refused.

Technical Education. — The Executive Committee of the Livery Companies of London, formed to promote the establishment of a Technical University, met last week to consider the reports which had been drawn up for their guidance. At the last meeting of the committee it had been determined to procure reports from qualified persons as to the best means of utilising the funds available in the promotion of technical education. These reports were taken into consideration by the committee, and it was decided to meet again for their further discussion.

IMPORTANT CASE UNDER THE METROPOLITAN BUILDING ACT.

WHAT IS A SEPARATE BUILDING? WHAT IS A ROOF?

In accordance with a report presented to the vestry of Camberwell by their surveyor, Mr. J. C. Reynolds, the Vestry, as stated in the *Builder* for Nov. 17 (p. 1159), lately called the attention of the Metropolitan Board to what they considered to be the defective and dangerous construction of some so-called "model" buildings for the working classes, in course of erection by Mr. Nunn, in Choumert-road, Peckham. After inquiry, the Metropolitan Board gave instructions for a summons to be issued against Mr. Nunn for what they considered to be infractions of the Act, and the case came before Mr. Lushington, at the Lambeth Police-court, on the 12th inst. The summons was taken out in the name of Mr. Henry Jarvis, district surveyor for Camberwell, who was, however, only nominally the complainant.

Mr. Biron, who appeared on behalf of the Board, stated the facts of the case, which were not disputed. It appears that in the notice to the District Surveyor of intention to proceed, Mr. Nunn referred to the buildings in question as "two dwelling-houses, about 28 ft. deep, by 120 ft. wide, by 18 ft. high, with two stories." The District Surveyor concluded that the houses were such as would fairly come under the description given of them in the notice, and the structures proceeded. Mr. Jarvis did not make any formal requisition on the builder until the houses were actually roofed in. From the street known as Albert-grove there is an approach 18 ft. 5 in. wide, running along towards the space between two blocks of houses. This approach narrows to 15 ft. 2 in. at the entrance to the block, when it widens out to 26 ft., at which point there is a passage about 3 ft. 9 in. in width running along the block, and giving access to the several tenements. On the outer side of this passage or corridor (which is at present open to the sky, although it is intended to be glazed in), is a wall 9 ft. high, built of proper materials and dimensions for an external wall, although it was contended that it was not an external wall within the meaning of the Act. On the inner or house side of the passage is what Mr. Biron contended is really one of the external walls of the dwellings, though it was only constructed of quartering covered with lath and plaster. Through this wall or partition doors are pierced, each leading into a separate tenement, each tenement containing four rooms, two on the ground floor and two above, and each tenement having its own separate entrance and staircase. The division walls between the several tenements were of the same construction as the inner wall of the passage, the only brickwork in such walls (with the exception to be named) being that used for fireplaces and flues. The block contains about twenty separate dwelling-houses, but Mr. Nunn had caused a proper party-wall of brick to be erected in about the centre of the entire block, except that it did not reach the corridor or passage in question. This party-wall, if carried across the corridor, would admittedly divide the block into two portions, each slightly within the 3,600 ft. limit prescribed by the Act, but Mr. Biron contended that each of the several self-contained dwellings contained in each half of the block so divided came within Sub-section 3 of Section 47 of the Building Act, and was a separate dwelling-house. One great object of the Act was to diminish the risk of fire, and as each separate dwelling was a possible centre of conflagration, it was desirable that there should be a proper wall of brick or some incombustible material separating each dwelling from the one adjoining. As had been stated, what was really one of the external walls of the dwellings (supposing each tenement to be a separate house) and the party-walls were of lath and plaster, so that most of the dwellings were closed in on three sides by means of partitions constructed of combustible materials. (It should be mentioned that the back wall of the buildings is carried up through both stories of proper material and dimensions, so also are the walls at each end of the block.) Another point for the consideration of the magistrate was this: The quarter-partition on the inner or house side of the corridor referred to, and through which access was obtained to the several tenements, was carried up throughout the whole length of the block on the first floor, of practically the same construction, except that it was made to slope or batter slightly (being 3 in. or 4 in. out of the perpendicular), and was lined externally with 1 in. of Portland cement, which was applied directly on to the laths. It would be contended by the defendant that this was a roof; but Mr. Biron maintained that it was not a roof within the meaning of the Act, but an external wall.

The District Surveyor was called, and deposed to the main facts as stated above. It appeared, however, from documents put in, that he was not quite at one with the authorities at Spring Gardens as to some of the points at issue. Asked by Mr. Biron as to whether, in his opinion, the buildings infringed the provisions of the Act, exception was taken to the question, on the ground that it was a matter of fact for the magistrate to decide.

Mr. Lushington upheld the objection, which put out of court the evidence which Mr. Biron was prepared to adduce, by Mr. H. H. Collins and other district surveyors, to the effect that the buildings did contravene the Act.

Cross-examined by Mr. H. Sutton, on behalf of Mr. Nunn, the District Surveyor said that the cement with which the outer face of the alleged roof is covered is an incombustible material.

Mr. H. Sutton, for the defendant, contended that the tenements in question were not separate buildings; that the inner wall of the corridor was not an external wall within the meaning of the Act; and that the superstructure of this wall was a roof.

The Magistrate, in giving his decision on Wednesday last, adopted this view of the case, and dismissed the summons, with 2*l.* 2*s.* costs against the Board.

Proposed New Building Bill.—Any comments at present on the proposed new Bill must be premature. The draft, as revised, is still before Counsel unsettled.

ARCHITECTURE AT THE ROYAL ACADEMY.

PROFESSOR EDWARD M. BARRY, R.A., is about to commence his course of lectures. The following is the programme:—Thursday, Jan. 31, Position of Modern Architects in respect of Architectural Restoration; Feb. 7, Early Military Architecture; Feb. 14, Fifteenth-century Architecture; Feb. 21, Transitional or Elizabethan Architecture; Feb. 28, Italian Renaissance; and March 7, English Renaissance.

We are glad to say that the authorities of the Royal Academy are willing to admit students of those societies, or from private offices, to attend the lectures as far as space may permit. Applications for tickets by such persons, or by others interested in the subject, are to be made to the Professor of Architecture at the Royal Academy, Burlington House, or at 21, Abingdon-street.

ASSISTANT ARCHITECTS' AND DRAUGHTSMEN'S BENEVOLENT SOCIETY.

SIR,—In a presidential address, delivered by me to the Architectural Association five years ago, I took the opportunity of advocating the formation of a society similar to that suggested by your correspondent "Bienfaisance." The matter was not taken up at the time, but if the idea of your correspondents is general amongst architects' assistants and clerks, I shall be happy to do anything in my power to promote such an institution.

With a view to put the matter in a tangible form, I shall be glad to receive the names of those interested in the movement addressed to me at the rooms of the Architectural Association, 9, Conduit-street, W., and if there is sufficient response I will endeavour to arrange for a meeting at an early period to discuss the subject.

J. DOUGLASS MATHEWS.

MANAGEMENT OF COMPETITIONS.

SIR,—So much has already been written upon this subject, both by yourself and your correspondents, that it has become stale and unpalatable, and consequently fails to excite that interest amongst the members of the architectural profession which it imperatively calls for, seeing that it has already become the medium which will tend in the immediate future, if it has not already done so, to rob them of their dignity, and render them little short of ridiculous in the eyes of the British public.

There will be little cause for wonder if architects come into disrepute after we have had a few more disclosures similar to that made in the *Builder* of December 8th, in connexion with the Maidenhead Hospital Competition. Here we have an example of lamentable degeneracy, and a sad lack of *esprit de corps*. It is a sorry sight,—a most pitiful spectacle,—to see the members of a learned profession so frequently made the mere tools and playthings of nameless and, in the majority of cases, illiterate tradesmen.

Cannot architects adopt some method of procedure that shall render competition honourable and a thing to be desired rather than otherwise? The gratuitous system at present in vogue must be discarded, and a fair and proportionate remuneration paid to each competitor.

Architects have but to refuse to compete unless called upon to do so, and even then only when their expenses are guaranteed.

Instead of issuing an alluring and fascinating advertisement, local boards, governing bodies, and committees should select a number of architects and request them to compete, and allow each competitor reasonable compensation for the outlay of time, money, and experience required of them.

Architects have the solution of this problem in their own hands, and have but to refuse, as a body, to compete under any other condition when the disgraceful proceedings at present invariably connected with competitions would cease to be regarded as matters of every-day occurrence.

As already pointed out in the *Builder*, exception to the above regulations might be made in the case of strictly national works.

The baneful results of competition as at present carried out have been frequently pointed out in your journal, and I fear that nothing satisfactory will result from the constant revival of old grievances until a few architects form themselves into a society for the express purpose of discountenancing the usual method of competition. What cannot be done by compulsion within the walls of the Institute may be accomplished by moral suasion from without.

J. G. B.

NEW TOWN HALL, BARROW-IN-FURNESS.

AT a meeting of the New Town Hall Committee, held in the Municipal offices, Barrow-in-Furness, on the 15th of December, 1877, Mr. A. Waterhouse's report on the designs submitted was read, in which he stated that he had come to the conclusion that the first place in the competition should be awarded to "Ima" (150*l.*); second place to "Fortis" (100*l.*); third place to "Rathaus" (50*l.*).

The report having been adopted, the committee proceeded to open the various letters containing the names and addresses of the authors of the designs, by which it appeared that the architect for the designs "Ima" had omitted to inclose his card; "Fortis" was Mr. T. E. Collcutt, 26, Bloomsbury-square. "Rathaus," Mr. H. Perkins and Mr. G. B. Balmer, Park-row, Leeds.

THE MASONS' STRIKE.

SIR,—A great deal has been written lately in reference to the masons' strike. Another contributor appeared last week in the *Builder* signing himself a "Building Artisan," who has gone into many questions that he evidently knows little about, and has dealt very liberally in assertions in reference to the officials connected with the strike, which have no foundation apart from his imaginative brain. If the principle of free trade, as explained by a "Building Artisan," is simply to compel workmen to accept just as much or little as it may be the pleasure of the employers to pay him,—to say the least of it, it is a rather one-sided science. It must be patent to every impartial mind that without organisation a workman who exists only upon the product of his labour is by force of circumstances entirely in the hands of the capitalists, and we know from experience that employers are too willing to avail themselves of any weakness on the part of the men; but should they combine to place themselves in a position somewhat approximate in power to that of the employers, the attention of the public is at once drawn to the tyranny of trade unions, as though the organisation was something apart from the members. It does not seem to occur to the mind of your correspondent that a trade union is a combination of men, formed by themselves, governed by themselves, through officers over whom they have unlimited control.

"A Building Artisan" infers that it is to the interest of every one, save the "foremost in this strike," that it should be settled as early as possible. If he had watched the course of events since the commencement of the strike he would have seen that those to whom he refers have continually been doing their utmost up to the present time to bring about a settlement. I might also inform your correspondent that every member of this committee was at work at his trade up to the day of the strike, and will return to it again as soon as the strike terminates. Your correspondent observes in one part of his very long letter, in referring to the subscriptions of our members, that "It will be said these subscriptions go to the support of the sick and burial fund, &c. True that is one of the objects, which is deserving all due honour, but is it not patent to those who know anything about these matters that the benefit society is but secondary in consideration, the primary object being the maintenance of the strike fund?" If he is one of those who knows anything about it he must know that his statement is not correct, because there is no society that spends anything like the amount of money in trade disputes as in administering benefits; this society, perhaps, spends as much in trade disputes in proportion to its numbers as any society, and the difference between the two items in our accounts is no less than 162,000*l.*, we having spent for trade purposes the sum of 80,000*l.*, and for benevolent purposes no less than 242,000*l.*

"A Building Artisan" has fallen into the same error (if error it is) as many other correspondents in your and other publications, which, considering his signature, is, to say the least, somewhat strange; that is, that we demand the same rate of pay for all, and limit the amount of work executed by some. Such is not the case, and every one connected with the building trades must be well aware of it: with very few exceptions there were but few shops previously to the strike that had not men working for less than the current rate. At the Law Courts, for instance, which was one of the strongest society shops in London, there were many working under the established rate, and no exception was taken to them by our members, because it was known that they were receiving quite as much as they were worth. There is also a system in some firms of booking all work done each day by the men in their employ, and perhaps the most complete system was adopted at the Law Courts, and I am confident that if they could be examined, they would be found to substantiate my assertion, that the society does not limit the amount of work done by its members. All that we require is a standard rate of wages; that is all we ever had or required. Your correspondent asserts, "advisedly and emphatically," that an Englishman's labour is his freehold property, and that he can dispose of it upon any terms that may suit his convenience, and no man or any number of men has any right to interfere in any way, or dictate the terms. I would like to ask him, if trade unions were abolished, how long would the workman be in a position to have a voice in the disposal of his labour? It would be, "Work on our terms or starve." Working men know this, and the day is far distant when the sophistry of a "Building Artisan," or any one else, will have the power to induce working men to turn their backs upon that which has done them much good in the past, and obtained for them so many advantages that would never have been conceded by the employers unless the pressure of an organisation had been brought to bear upon them.

H. NISBET,
Corresponding Secretary, Central Strike Committee.

CHURCH-BUILDING NEWS.

Shoreditch.—On the 18th ult., special services were held in Shoreditch Church, following the repair and cleansing of it. The edifice is one of the five erected close on a century and a half ago, known as Queen Anne's churches, and had Hawksmoor for its architect.

Prestbury.—It has been resolved to restore Prestbury parish church, under the direction of Sir George Gilbert Scott, R.A.

Perry Barr.—Christ Church, Perry Barr, Birmingham, was opened on the 15th ult., after improvement and enlargement to the extent of 300 sittings. The school-rooms have also been enlarged, and the improvements, which have been carried out by Messrs. Rowley & Lynex from a design by Mr. Chatwin, architect, have entailed an expenditure of about 500*l.*

Knighton.—The Parish Church of St. Edward, Knighton, near Ludlow, was re-opened on the 16th ult. by the Bishop of Hereford. The work of restoration commenced in the month of April, 1876, the architect being Mr. Pountney Smith, and the builder Mr. Williams. The cost has been 2,414*l.* 3*s.* 2*d.*, in addition to 318*l.* 14*s.* for the tower and chapel.

Oakamoor.—Oakamoor Church, near Uttoxeter, was re-opened on the 10th ult., after restoration. A new stone vestry has been erected, and the interior of the church has been decorated. The works have been executed under the superintendence of Mr. Peter Ford, builder, Uttoxeter.

Everton.—The new church of St. Cuthbert, in Robson-street, Everton, near Liverpool, has been consecrated by the Bishop of Chester. The permanent edifice thus dedicated supersedes the use of a temporary iron church. The site was given by the Marquis of Salisbury, and the work has been carried out by Mr. J. H. Mullin, Walton-road, from the designs by Messrs. T. D. Barry & Son, architects, Liverpool. Sittings are provided for 750 persons. The church is Early Decorated in style, the materials used being the local red sandstone, lined internally with brick, and plastered, and faced externally with Burnley parpoints. The plan includes a nave 97 ft. in length by 24 ft. 7 in. wide; chancel, 25 ft. long and 22 ft. 7 in. wide; and north and south aisles, 83 ft. long and 13 ft. 8 in. wide. On the south side of the chancel are an organ-chamber and choir vestry, the ministers' vestry being on the opposite side. The chancel contains stalls for the choir and clergy, and the church is furnished

throughout with open benches. A tower 18 ft. square, with spire, rises from the south-west angle, and the entrances are at the western angles. The site being in a sloping situation, advantage has been taken to provide underneath the church a Sunday school, for the reception of 300 children. The total cost has been upwards of 8,000*l.*

Dundee.—The Steeple Church, Dundee, was re-opened on the 25th ult., after renovation and re-decoration. The whole of the plaster ceiling has been renewed by Mr. A. S. Drummond, who has also painted the walls and the roof. The ceiling has been divided into panels painted pale blue, styles buff, while the enriched cornice has undergone a thorough cleaning, and has been done in oil. The walls have been coloured a pale green, and have been divided by shafts with stencilled ornaments. The ceiling has been painted according to a design of Mr. Wm. Alexander, the town's architect. The whole of the roof has been re-slated by Mr. Andrew Battar, while the joinery work and upholstery work have been executed by Mr. William Young and Mrs. Baist respectively.

Collingbourne Ducis.—The parish church of Collingbourne Ducis, Wiltshire, was re opened on the 20th ult., after restoration. The church, which is dedicated to St. Andrew, is of the Late Norman period, with aisles and chancel of later date, and a Perpendicular tower. The arches of the nave are of the transitional period between Norman and Early English, as in many other Wiltshire churches. The chancel was rebuilt in 1856, from designs by Mr. Street, the old windows being preserved. The rest of the building being in great need of repair, and blocked up in the interior with western gallery and unsightly pews, it was resolved last year to consult Mr. Blomfield, the architect, and on receiving his report a year ago, a committee was formed for carrying out the works he recommended. The stonework of the windows, pillars, and arches has now been all carefully restored. The chancel-arch has been removed, and a new one built in its place, in character with the building. The roof has been raised to the ancient pitch, or rather above it, to agree with the chancel pitch as restored by Mr. Street, and covered with Broseley tiles. It is left open in the interior. The pulpit, designed by Mr. Blomfield, carved in oak by Mr. Earp, of Lambeth, on a stone base, is a memorial gift of the sons and daughters of the late Mr. and Mrs. Mackrell. The upper part of the tower being in sound condition, has been left untouched for the present. It has some peculiar features of interest, having been built, it is thought designedly, not at right angles to the church, but with a turn towards the south; and the walls of the central stage being constructed with internal niches, so as to form a dove-cote or pigeon-house, an entrance being left on the south side about 2 ft. square. This feature is believed to be almost unique. The works have been executed by Mr. John Wooldridge, of Hungerford. The total cost, including gifts and the value of old materials, is about 1,300*l.*

Bolton.—The corner-stone of the new Church of St. Bartholomew, Bolton, has just been laid by the Earl of Bradford. The church, which is to be erected at the junction of George-street and Nelson-street, will consist of nave 93 ft. 4 in. by 27 ft. 5 in., chancel 28 ft. by 27 ft. 5 in., south transept 31 ft. 10 in. by 26 ft., south aisle 66 ft. 6 in. by 11 ft. 11 in., north aisle 93 ft. 4 in. by 11 ft. 11 in., organ-chamber at south-east 15 ft. by 15 ft., vestry at north-east 15 ft. by 12 ft., porches at west of north aisle and in the south-east corner of transept, warming chamber under vestry, &c. The nave on the north side will be divided from the aisle by an arcade of seven lofty arches, supported on polished red granite columns, having moulded stone bases and moulded and carved capitals; this arcade will support the clearstory, which will be pierced by seven two-light tracery windows; on the south side will be a similar arcade of five arches, and a large and lofty transept arch, supported on two additional granite columns. The chancel arch will be of large proportions,—very lofty, and richly moulded,—as will also be the jambs supporting it. All the interior stonework will be of Bath stone, except the caps and bases of nave columns, which will be of Cefn stone. The walls will be built of local rubble stone, the inner lining being of brick, and the outer facing of parpoints in courses. All the stone used in the external work is to be from the Stiveton quarries. The whole building will be of the most substantial character throughout. It is not intended at present to erect the tower and spire. The style of the church is Decorated. Owing to the site being almost entirely of made-ground, a considerable expense has been incurred in the foundations, which in every case have been carried down to the hard clay, the foundations on the south and east sides being carried to a depth of 25 ft. The present contracts do not include the completion of the works, but only the items named:—Messrs. Aspinall & Rothwell, for stonework and brickwork of church, 4,660*l.*; Mr. Silas Seddon, for joiner's work in roofs and centreing, 900*l.*; Mr. Phineas Hall, for foundations, 754*l.*; Messrs. Aspinall & Rothwell, ditto, 156*l.*; total, 6,470*l.* Mr. Brearly is the clerk of works. The whole of the works are being carried out from the designs and under the direction of Messrs. T. D. Barry & Son, Liverpool.

Linslade.—The Church of St. Mary, Old Linslade, was reopened on the 29th ult. The church is an ancient structure, and consists of a tower and nave; its dimensions are small. When the London and North-Western Railway Company made their station so near to Leighton Buzzard, a new village sprang up in close proximity, and in consequence a new church, dedicated to St. Barnabas, was built there in 1849. This was found inadequate for the requirements of the growing population, and in 1868, a south aisle and tower were added, and the chancel enlarged. It was then (says the *Bedfordshire Times*) that the sweet peal of bells from the nearly disused church of St. Mary, in question,—some mile and a half from the new village,—were removed to the new tower of St. Barnabas. Stripped of its bells,—save the minute one,—and left to the mercy of the moping owls, the old edifice, which was now used as a mortuary, and for an occasional Sunday afternoon service in the summer, was falling into decay, when the Vicar, the Rev. H. A. Gibson, energetically set to work to obtain a restoration and securing the pecuniary assistance of several of the leading residents and landowners, has, after much hard work, been successful. Mr. Lawrence, the architect, has directed the progress of the work.

Popham (Hants).—A new church has lately been completed at Popham, which has been erected solely at the expense of the Right Hon. Lord Ashburton. It consists of a nave and chancel, with an apsidal termination, a vestry on the south side, west porch, and western bell-turret. The external dressings are of Tisbury stone, the plain surfaces of the walling being filled in with split flint-work, as usually found among the Norfolk churches. The style is Early Gothic, after the manner of the thirteenth century. The nave is fitted up with open benches in pitch-pine, the pulpit and reading-desk, with lectern, being in oak. The roof is open, and formed in stained deal, and the chancel roof is panelled in pitch pine, with carved bosses at the intersections of the ribs, the panels being again divided by early cusping, diagonal ribs, and carved bosses. The walls of the chancel below the cills of the windows are lined with red terra-cotta diaper tiles, consisting of four-leaved flowers. The five lancet windows of the chancel have each a single figure in stained glass, consisting of Our Saviour and the four Evangelists, executed by Messrs. Heaton, Butler, & Bayne. The builders were Messrs. Cornish & Gaymer, of North Walsham, Norfolk; and the stone-carving was by Mr. Harry Hems, of Exeter. The architect was Mr. James K. Colling, of London. The total cost was about 2,000*l.*

DISSENTING CHURCH BUILDING NEWS.

Audley.—The new Wesleyan Chapel at Audley, Staffordshire, just opened, has been erected by Mr. Charles Hayes, of Audley, at a cost of about 3,000*l.*, from designs by Mr. Wm. Watson, architect, Wakefield. It is of Classic design, built of red brick, with Hollington stone dressings; is 60 ft. long, by 45 ft. wide inside, with galleries on both sides three pews deep, and at the end, vestry at the rear, and organ chamber over. Sittings are provided for 750 persons. The fittings are of pitch pine.

Southport.—A new Mission Chapel in connexion with the United Methodist Free Churches, has just been opened in Chatham-road, Birkdale. The building has been designed by Messrs. Maxwell & Tuke, architects, and consists of a large room 42 ft. by 28 ft., 20 ft. high in the centre, and 12 ft. at the sides; a minister's vestry and class-room, each 11 ft. square; and a tea-room 11 ft. by 5 ft., with store-room over. The outside walls are of common brick, with 3 in. cavity, and the front is relieved with patent brick bands and Cefn stone dressings. The dressed woodwork is of red deal, stained and varnished. The roofs are covered with blue Velenbeli slates and red ridge tiles, and overhang at eaves and gables. A vestibule 9 ft. by 4 ft. 6 in. leads into the chapel by swing doors at each side, and at this end of the room fixed benches are placed to seat 80 adults; the remainder of seats are loose forms for 120 adults. Mr. James Cheetham, builder, Southport, has carried out the work, at a cost of 710*l.*

Liverpool.—On the 30th ult. the foundation-stone of a new church and schools for the Primitive Methodist body was laid by the mayor of Liverpool (Alderman A. B. Walker), in Prince's-road, at the junction of Mulgrave-street and Beaconsfield-street, which abut on the new Boulevard near Prince's Park. The chapel will be a parallelogram in form, 75 ft. long and 46 ft. wide. The schoolroom will stand, at a right angle, at the back of the chapel. The ground-floor will contain five class-rooms, and several private rooms; and, in addition to other rooms overhead, there will be a spacious school-room, 75 ft. by 33 ft. The chapel will seat 900 people on the ground-floor and galleries. The sides of the chapel and the elevations of the schools will be carried out in brick with stone dressings, and the front of the chapel and tower in Yorkshire shoddies, with stone dressings. The tower will have an octagonal spire, 110 ft. high, of dressed stone. The architect is Mr. R. Owens, and the contract has been taken by Messrs. Nicholson & Ayre for 6,536*l.*

Irchester.—The memorial stone of a new Primitive Methodist Chapel has been laid at Irchester. It has been designed by Messrs. J. Kerridge & Sons, architects, Wisbeach, and Mr. Roberts, of Wellingborough, is the builder. The structure will be of brick, faced with white "Whittlesea" and Wellingborough "pressed reds." Mr. J. West, Irchester, has accepted the contract to do the carpenter's work.

Aldbrough. — A new Wesleyan Chapel was opened at Aldbrough, near Darlington, on the 16th ult. It is an Italian building, of stone, accommodating 160 persons; the cost has been about 460*l.* The chapel was built by local contractors, from the designs and under the superintendence of Mr. Alfred J. Martin, architect, Darlington.

Whalley Range.—On the 19th ult. the foundation-stone of a new church and school, in connexion with the Presbyterian Church of England, was laid in Upper Chorlton-road, Whalley Range, by the Rev. Dr. M'Kerrow. The entire cost of the buildings is estimated at from 8,000*l.* to 10,000*l.* The building, which is being erected from the designs of Mr. H. R. Price, architect, Manchester, will be in the Early Gothic style, with a spire 127 ft. high rising from the principal entrance. The church will be 90 ft. in length, with a breadth of 45 ft., and will consist of nave, aisles, and transepts with galleries. At the back of the main building there will be a lecture-hall to accommodate 370 persons, and schools are also being built. In the church accommodation will be provided for 750 worshippers.

Sheepshed.—A new Primitive Methodist Chapel has been opened in the village of Sheepshed, Leicestershire. The building is mainly brick, and has been erected by Mr. Faulkes, of Loughborough, the woodwork being executed by Messrs. Johnson. The total cost will reach 700*l.*

Ipswich.—The foundation-stone of a new mission chapel for the Wesleyans has been laid at Ipswich. The building will be of red brick, and will seat about 170 persons; it will cost 400*l.*, exclusive of site. Messrs. Smith & Welham are the builders.

Shoreham (Kent).—On the 14th ult. the memorial stones of a new Wesleyan chapel in the village of Shoreham, Kent, were laid. The building is intended to seat 200 persons, with schoolroom for 100 children. The total cost will be about 1,000*l.* Mr. Charles Bell, of London, is the architect; and Mr. John Willis, of Sevenoaks, is the builder.

Manchester. — The foundation-stone of a Wesleyan School Chapel, in Raby-street, Mossside, was laid on the 24th ult. All internal woodwork is to be of pitch-pine, stained and varnished; the walling externally to consist of white headers, relieved by stock bricks and stonework. Haden's system of warming is adopted. The contract has been undertaken, at a cost of about 3,500*l.*, by Mr. W. W. Harrison, of Greenheys, from the designs of Mr. John Lowe, architect, Manchester.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Portsmouth.—A new Roman Catholic Cathedral is to be erected at Portsmouth. The site, situated between the Edinburgh and the Alfred roads, commencing at the fork as one passes from Portsea, and extending some 50 ft. down the Edinburgh-road, has been purchased of the Government. Plans have been received from Messrs. Hansom, Messrs. J. Hansom & Son, Mr. Wheeler, Mr. Wray, and Mr. J. Crawley, and those of the latter have been selected. The buildings have been arranged with a view of placing the church in the most prominent position, with the tower and spire forming the starting-point of the two ranges of frontages in the Edinburgh and Alfred roads. The church will have three public entrances (a western central door can also be obtained if desired),—two in Edinburgh-road and one in Alfred-road. The church will contain nave, north and south aisles, transept, chancel, two side chapels, baptistery, Calvary, organ-loft, tower and spire, and sacristies. It will afford good accommodation to from 1,000 to 1,155 persons. The church is planned with a view of showing how the whole available ground might be thrown into the church if it were required to serve as a cathedral; if, however, accommodation for 1,000 only be required, it may be advisable to omit one bay of the nave and aisles. The dimensions of the church are to be as follow:—Nave, 140 ft.; chancel, 41 ft.; total length, 181 ft. internal. The breadth will be 59 ft., the nave being 29 ft. wide. The height of the nave will be 60 ft. internal, and the height of the tower and spire 201 ft. The style adopted is Early Decorated. The schools have been arranged with a view of providing three playgrounds, for the boys, the girls, and the infants respectively. The infants' and boys' schools are placed on the ground floor, and the girls on the first floor, over the boys. The girls' and boys' schools are each 70 ft. long by 25 ft. wide, and the infant school 50 ft. by 31 ft.

Newtownards. — The new Roman Catholic Church of St. Patrick, Newtownards, has been solemnly dedicated for worship. It has been erected at the sole cost of the Dowager Marchioness of Londonderry, and occupies a hill looking over towards Scrabo, and commands a view of Strangford Lough. The style chosen is Early Gothic. The church is cruciform in plan, with nave and aisles, transepts, sanctuary, one side chapel to the north-east, and sacristy to the south-east. The nave rests upon a clearstory above the aisles, and abuts, as do the transepts and sanctuary, against a truncated tower at their intersection. The tower is surmounted by a pyramidal slated roof, and engaged at the south-east angle is a circular belfry-turret, pierced with louvre openings in its upper stage, and crowned with a pointed conical roof. The architects are Messrs. Joseph E. Hansom & Sons, London. Mr. Robert Curry, Belfast, was the builder; while Mr. Thomas Stokes acted as clerk of works. The new high altar, which is of Caen stone, relieved by Cork red and Galway green marble columns, has a reredos containing groups and statues, and, together with the statue of St. Patrick, in the west entrance, and also that of St. Joseph, placed in the interior of the church, has been executed by Messrs. Neill & Pearse, Dublin.

Rock Ferry.—The new Roman Catholic Church of St. Anne, Rock Ferry, has been opened for service. The building is Early Decorated in style, and contains nave, chancel, transepts, and side chapels, besides baptistery and tower. The materials used are yellow Stourton stone for the dressings, with facings of Welsh pierrepoints of a bluish tint. The whole of the interior of the chancel and chapels has a facing of Stourton stone. The roof of the nave is carried by five moulded principals, which are supported on stone shafts, the spaces between being divided into panels by moulded ribs of red pine. The chancel and chapels are vaulted with deep moulded ribs, and are lighted with richly-traceried wheel-windows. The whole of the interior fittings are of pitch pine. The entire length of the building is 124 ft., the outside width of nave is 49 ft., and the same, including transept, is 70 ft. The height from floor to apex of roof is 49 ft. The total cost amounts to upwards of 7,000*l.* The building was designed by the late E. Welby Pugin, and has been carried out under the direction of his brothers, Messrs. C. & P. Pugin, architects, by Mr. Woolley, of Chester. The gasfittings are by Mr. Robert Hamilton, Birkenhead.

SCHOOL BUILDING NEWS.

Bedford.—The "St. Paul Allhallow Mission School," Bedford, was opened on the 5th inst. The building is intended to supply a three-fold purpose,—first, as an infant school during the week; secondly, as a Sunday school; and, thirdly, as a mission-room for services on Sunday evenings. The building, which has been erected from plans by Mr. J. Day, diocesan architect, consists of a large room, 62 ft. long and 28 ft. wide, and two class-rooms 20 ft. by 18 ft. each, with boys' and girls' lobby entrances, hat and cloak rooms, and is erected principally with Bedford red bricks and covered with local plain tiles. The works have been carried out by Mr. Samuel Foster, builder and contractor, of Kempston and Bedford, at a cost of 1,030*l.*

SCHOOL BOARD SCHOOLS.

Gateshead.—New schools in Askew-road have just been opened by the Gateshead School Board. The new buildings occupy a commanding site a short distance to the north of Askew-road, the frontage being to the west towards Ulleswater-street. The schools are arranged in three departments, namely, for boys, girls, and infants, and will accommodate 800 children. The outline of the plan, roughly speaking, is in the form of a letter H, of which the infants occupy the central block, and the boys and girls the end wings. In the rear of the schools are large playgrounds, with covered playsheds and conveniences for the three departments; and at the south-west corner of the site, detached from the main buildings, a caretaker's house of four rooms with separate yard and offices and garden space in front have been provided. The boys' and girls' schools and class-rooms are arranged upon the "single principle," with seats three deep upon one side only, the rooms being 21 ft. wide. The heating is effected by means of hot water in pipes and coils, supplied by Messrs. Walker & Emley, Newcastle. Externally the schools are constructed of brick with stone dressings and slated roofs, and a lofty bell-turret rises from the centre of the main block. The late Mr. Joseph Lee was the contractor for the whole of the works. The sub-contractors under Mr. Lee were as follow:—Mr. Grisdale, carpenter; Messrs. R. B. Charlton & Co., plumbers; Messrs. Kirk & Brown, slaters; Mr. Rule, plasterer; Messrs. A. Robertson & Son, painters and glaziers; and Mr. Marley, ironfounder. The whole of the school furniture has been supplied by Mr. John Bowman, of Newcastle. Mr. Lee's contract for the buildings amounted to 6,202*l.*, which equalled a cost of 7*l.* 15*s.* per child. The cost of land, furniture, &c., made the total expenditure amount to about 10*l.* per child. Mr. Edington has acted as clerk of the works, and the buildings have been designed and carried out under the superintendence of Mr. Thomas Oliver, architect, Newcastle.

Denham.—New Board Schools have just been completed upon a site of half an acre in Cheapside, Denham, near Slough. They consist of separate school and class rooms for boys and girls, and infants' school, with master's residence and offices, accommodation being provided for 240 children. The materials used are stock brick, with dressings of red brick and Box-ground stone; the roofs are tiled. Internally the woodwork is stained and varnished, and the walls are painted up to the level of the window-cills. The school and class rooms are heated by the Manchester school grate. There are separate playgrounds, with boundary-walls and iron gates. The contract was taken by Mr. F. Taylor, of New Windsor-street, Uxbridge, for 2,340*l.*, and there have been no extras. The architect was Mr. R. Groom, of London.

Books Received.

Leaves from my Sketch Book. By E. W. COOKE, R.A., with Descriptive Letterpress. Second Series. London: Murray. 1877.

THE sketches in the present volume, twenty-five in number, include fifteen on the Nile, the remainder illustrating Venice and Naples. One in Venice, "The Riva dei Schiavoni," shows admirably some of the principal points in that magical city. On the right the Campanile of St. Mark, the Palace of the Doge, the Ponte della Paglia, the two well-known columns, and the Library of St. Mark; while on the left is seen the imposing Church of Sta. Maria della Salute. Another sketch from the same city, "The Evening Cloud, Venice," is almost a picture in its effect, and recalls to us forcibly a well-remembered sunset seen in the part of the city where,—

> —"from out the waves her structures rise,
> As from the stroke of the enchanter's wand."

Most of the other sketches are slighter, but all are touched in with infinite grace and truthfulness. Mr. Edward Cooke's power of work is something marvellous. "The Exhibition" never opens without a number of fine pictures from his easel; a thousand miles are no obstacle if a new fern is to be obtained; a run up the Nile is taken year by year almost as a matter of course; his collections of old glass and other things of beauty are well known, his presence at the *conversazioni* and other meetings of the season is seldom missed (though he would be very much missed if he were not present), and his sketches are, literally, to be counted in thousands. Few men have friends so numerous and so attached.

The Great Painters of Christendom, from Cimabué to Wilkie. By JOHN FORBES-ROBERTSON. Illustrated. Cassell, Petter, & Galpin; London, Paris, and New York.

MR. FORBES-ROBERTSON'S large volume, to which we have already alluded, is a very favourable specimen of the class of publications which are commonly spoken of or advertised as "Christmas gift-books," and in which a main object is an attractive and handsome appearance, such as will render them suitable as ornamental works to be placed on a drawing-room table. It deserves to be so characterised, not only because it is really very well got up in every way, but because the book is of use in itself, and is by no means so merely ornamental as many other publications of the same kind. It really might be termed "a dictionary of great painters," consisting of a series of short articles giving the main facts about the life and works, and the place occupied in art, by each of the painters included in the list; but it is a dictionary in a much more attractive form than dictionaries usually present. Each article is illustrated by engravings of two or three of the leading works of the painter who is the subject of it, and in many cases by a portrait also: the average of the engravings is up to a good mark, and many of the larger and more important ones are highly-finished works, and give a very good idea of the paintings which they represent. The book does not, as we take it, profess to solve any disputed question in regard to art criticism or art history, but simply to give in a concise and readable form an estimate of the genius of each painter as generally regarded from the point of view of the average of educated lovers of art. Many persons who have not time or opportunity for studying the productions of the art of painting in a more systematic and detailed manner, may find it extremely useful to have at hand a book which will give them in a moment the leading particulars about any great painter on whom they may want a little information, and will briefly remind or instruct them as to his prominent characteristics and favourite subjects, with an illustration or two to assist the description; and the value of the book will not be lessened by the fact that it is a handsome object in itself, printed on beautiful paper and with an artistically-designed cover. Looking through the remarks on the various painters included, we can speak in praise of the general correctness, clearness, and impartiality of the judgments passed on each painter, and the estimate given of his place in the art. We only noticed one decided exception to this rule, in regard to the remarks on Blake. Some of the inherent defects in Blake's art are quite rightly stated, but the author seems to have no perception of the wonderful genius which lightens through their often strange and even grotesque forms of expression, and which has commanded the enthusiastic reverence (it is not too strong a word) of artists who are fully alive to Blake's technical defects; in fact, he misrepresents Blake very much. With this exception, his book is a very good guide to general readers in an estimation of the characteristic qualities of the great painters of Christendom, and as such deserves a good circulation.

Town-hall Competition, Reading.—The design marked "Grosvenor" has been placed first by the committee. The author of it is Mr. William Thomas Sams, the architect of the Grosvenor Gallery.

Miscellanea.

Pervious and Impervious Walls.—Professor Maroker and Dr. Berthold have made a series of experiments in Paris to determine whether the substances used in the construction of our houses allow the passage of noxious gases. They found that bricks, sandstone, and shelly tufa, mortar, and cement, when not kept under water, permit vapours to pass through them very freely, while granite, porphyry, slate limestone, marble, and alabaster are absolutely impermeable. As in many countries the dwellings are constructed principally of brick,—as in England,—or of sandstone, according to the nature of the strata in the district from which stone can be procured, and cellar floors are almost invariably laid with brick,—tiles are the same thing,—or cement, the fact is clear that a vast number of persons reside in places which afford them no protection from injurious effluvia. The inconvenience or danger may be lessened to a considerable extent, even with those porous walls. Thin paper-hangings reduce the penetrability of mortar 17 per cent., and thick glazed paper 40 per cent, but white-washing and lime-whiting not at all. But a double coating of oil-paint renders them absolutely impassable to any deleterious emanations. However, the principal attention should be paid to the cellars, for the fact has been proved that the noxious vapours from sewers,—almost always built of brick,—do find their way through a very considerable thickness of earth, and enter our dwellings in a sort of continuous stream.

Corporation Property.—At the Newcastle Police-court, before Mr. Ald. Hedley and Mr. W. H. Stephenson, two little girls named Sarah Bowes and Mary Ann Cunningham, were summoned for depositing night soil in a grating at the west end of Sandgate, on the 1st inst. A police-constable having proved that the defendants committed the offence, Acting-Superintendent Pringle, in reply to the Bench, said the property in which the girls lived belonged to the Corporation, and there was no place of convenience. Mr. Ald. Hedley remarked that Mr. Pringle had better see Mr. Curry, inspector of nuisances, and ascertain why a proper place of convenience was not provided, and if that were not done a summons should be taken out against the Corporation. The cases were then dismissed. A woman named Annie Christie was summoned for a similar offence. In answer to Mr. Ald. Hedley, she said there was no convenience provided in the property in which she lived. She resided in Sandgate, and she was sure there was no convenience from the Milk Market to the Swirle. Mr. Pringle said there used to be one at the top of Mackham's Chare, but the nearest one at present was at the top of Causey Bank, a considerable distance from the Milk Market. Mr. Ald. Hedley, in dismissing the case, said they would try if they could get the Corporation to provide some place. Has Newcastle a Medical Officer of Health?

Water Supply.—At the half-yearly general meeting of the Southwark and Vauxhall Water Company, on the 13th inst., Mr. Henry Whiting, the chairman, said a matter of which the shareholders were all aware was that the Metropolitan Board of Works were about to apply to Parliament for two Bills—the first to purchase the interest of existing water companies, and the second to enable them to give a new and independent supply of water for drinking and culinary purposes, the extinguishing of fires, and the construction and maintenance of works in connexion therewith. The latter scheme would cost some millions of money, would increase the present water-rates, and would also involve the opening and rearranging of the present pipes, fittings, &c., and would cause a great deal of annoyance to every householder in laying on an additional supply of water. Being anxious to avoid a heavy revenue expenditure in a Parliamentary contest without having ascertained the wishes of the shareholders, the directors would take an early opportunity of asking the shareholders' opinion whether under the circumstances they should act jointly with the other companies, or take an independent stand.

Shutters.—Messrs. Clark & Co. are fixing at the New National Dock at New York two of their patent noiseless steel shutters, 16 ft. 4 in wide by 17 ft. high. The same firm are also fitting about fifty of the same class of shutters to the entrance of the Trocadéro Palace, the Gallery of Fine Arts, and the Machinery Gallery of the Paris Exhibition.

British Archæological Association.—During the meeting of this Association, held on the 5th inst., the discovery of three Roman villas was reported, in addition to the important excavations at Templeborough. The first of these is at Abinger, near Dorking, in a district not hitherto remarkable for Roman remains, notwithstanding the proximity of the Stane-street-road. Traces of several chambers, with tesselated pavements, have already been met with. The second is at Itchen Abbas, Hunts, and Dr. Stevens reported that some trial excavations have shown the existence of two tesselated pavements, and a system of heating almost perfect. The uncovering of these buried remains promises results of interest. Dr. Stevens, in a paper read by Mr. Previté, gave a fully detailed description of a third villa at Preston, near Brighton. Here several apartments were opened, and various antiquarian relics found, many of which are now in the Brighton Museum.

The late Mr. Wornum.—On the 15th inst., at No. 20, Belsize-square, died Mr. Ralph Nicholson Wornum, Keeper and Secretary of the National Gallery, in his sixty-fifth year. Mr. Wornum was a large and useful contributor to the literature of art. Educated at the London University, he went abroad in 1834 to study painting, and on his return wrote largely in various periodicals. In 1846 he was employed to prepare the official catalogue of the National Gallery, and in 1857 was appointed Keeper and Secretary. He published in the meanwhile a compact little "History of Ancient and Modern Painting," and acted as Lecturer on Art to the Government Schools of Design during one period of their chequered existence. Afterwards he issued a "Biographical Catalogue of the Principal Italian Painters," and a "Life of Holbein," and edited, amongst other works, "Walpole's Anecdotes."

Beccles.—At a meeting of the Beccles Town Council on the 6th inst., the committee appointed to consider applications from candidates for the surveyorship, vacant by the death of Mr. G. Fenn, reported in favour of the appointment of a surveyor whose age should not exceed fifty-five, and who should perform the duties of his office personally and not by deputy. The duties proposed by the committee, and elaborately set forth, were agreed to by the council, though one or two members expressed an opinion that it would be impossible to get a suitable man at the money, 75*l.* a year. Councillor Crisp proposed that the council should give 100*l.* a year, and require the whole services of the surveyor, but this was negatived, it being the opinion of the majority that there was not sufficient work to require the entire services of the surveyor. The Council will make the appointment on the 1st of January by ballot.

Fatal Accident in Kentish Town.—Dr. Hardwicke held an inquest at the University Hospital on John Davey, aged thirty-one, an engine-fitter's labourer, in the employ of the Midland Railway Company. On Monday morning last he with others, under the direction of a foreman, named Elliott, was engaged in lifting an engine for repairs at Kentish-town depôt. The hook to which the engine was slung on being lifted, broke, a portion falling on to the head of the deceased, who expired the same evening from the injuries. The weight being lifted was from twelve to fourteen tons. The size of the hook at the fracture was about seven square inches, and according to authority one square inch of metal was capable of lifting 64,000 lb. weight, and therefore the strain on the hook was comparatively light. The hook having been impounded, the jury returned a verdict of "Death from accidental causes."

Lamplighters Superseded.—The ignition of gas-lamps by an electric current has long been adopted in some large public buildings, and the application of the same system to street lamps has frequently been suggested. The method consists in intercepting the electric current by a piece of platinum adjusted over the nipple of the lamp. This becomes red hot and ignites the gas. It is said that in the city of Providence some 220 lamps, extending over a line upwards of nine miles in length, have been electrically connected, and can now be lighted instantaneously, or nearly so, by one man. The system, we are told, has been in operation for some months, and its extension to the 2,500 lamps in Providence is contemplated. It is estimated that a saving of $25,000 a year will be the result, an economy of gas as well of labour being effected by the arrangement.

The Telephone.—On Wednesday evening last Professor Bell gave a second lecture before the Society of Arts on the Telephone. The meeting was held in the hall of the Freemasons' Tavern, in consequence of the large attendance expected, and the chair was taken by Lord Alfred Churchill. The hall was crowded, but a large number of those present heard nothing. Great annoyance was caused by allowing visitors to *stand* in the central avenue.

Over.—A stained-glass window is about to be placed over the western entrance of St. Chad's Church, Over, Cheshire, the subject of which is to be the Ascension. It is the gift of Miss Davenport, of Barton-upon-Irwell, in memory of her parents.

TENDERS.

For corner house, Lewisham Park, S.E. Mr. Horace T. Bonner, architect. Quantities supplied:—

Penny	£2,500	0	0
Bishop	2,436	0	0
Downs	2,428	0	
Kirk	2,357	0	0
Staines (accepted)	2,298	0	0
Sheffield & Prebble	2,294	0	0
Lyons	2,290	0	0

For alterations to the Prince of Wales, Leyton-road, Stratford, for Mr. J. Brewer. Mr. Edward Brown, architect:—

Stamp & Bowtle	£529	0	0
Harbert	360	0	0
Webb (withdrawn)	173	0	0

For alterations at the Royal Oak Public-house, Regent-street, Westminster. Mr. H. W. Budd, architect:—

Godden	£293	0	0
Hockley	259	0	0
Lamble (accepted)	238	0	0

For alterations at the Rising Sun, Fulham, for Mr Wright. Mr. H. J. Newton, architect:—

Hockley	£377	0	0
Smith	350	0	0
Godden	300	0	0
Lamble (accepted)	289	0	0
Bar Fittings.			
Lamble (accepted)	140	0	0

For enlargement of workmen's lodging-house, Nunn-street, Derby, for the Midland Improved Industrial Dwellings Association (Limited). Mr. Geo. E. Isborn, architect. Quantities supplied:—

Thompson	£1,280	0	0
Hind	1,265	0	0
Dennett & Co.	1,252	0	0
J. Wood	1,250	0	0
Bakewell	1,239	0	0
E. Wood (accepted)	1,178	0	0

For new workhouse, Pontardawe, Glamorgan. Mr. J. B. Fowler, architect. Quantities supplied by Mr. S. J. Rooney:—

Morgan	£15,343	0	0
J. Thomas (Neath)	15,234	0	0
Mercer & Lintoff	14,194	0	9
J. Thomas (Cardiff)	13,875	15	3
Jones & Co.	12,564	0	0
Stephens & Bastow	11,999	0	0
David	11,181	0	0
White	11,060	0	0
Watkins & Jenkins	10,700	0	0
Jenkins & Williams	10,677	0	0
Rees	10,109	0	0
Griffiths	9,566	0	0
Rees (accepted)	8,882	0	0

For Workmen's Rest and Temperance-hall, Holloway, Bath. Messrs. Hay & Oliver, architects. Quantities by Mr. A. Deane:—

Stephens & Bastow	£1,799	0	0
Eastabrook & Sons	1,590	0	0
Ambrose	1,503	0	0
Morris & Son	1,490	0	0
Long	1,486	0	0
Bladwell	1,393	0	0
Hill & Gay	1,390	0	0
Morgan & Lovell (accepted)	1,381	8	0

For new schools, Greystoke-place, Fetter-lane, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Messrs. Gardner, Son, & Theobald:—

Browne & Robinson	£7,350	0	0
Tongue	7,148	0	0
Williams & Son	7,145	0	0
Hobson	7,078	0	0
Roberts	7,078	0	0
Clarke & Bracey	7,050	0	0
Brass	6,991	0	0
Nightingale	6,972	0	0
Jerrard	6,958	0	0
Wall, Brothers	6,922	0	0
Lawrence	6,918	0	0
Grover	6,775	0	0
Pritchard	6,775	0	0
Downs & Co.	6,594	0	0

For new hotel, Great Marlow. Mr. W. H. Powell, architect. Quantities supplied:—

Kempsell	£7,880	0	0
Langley	7,685	0	0
Carter	7,300	0	0
Stephens & Bastow	6,999	0	0
Carter & Son	6,999	0	0
Woodbridge	6,910	0	0
Lovell	6,720	0	0
Kearley	6,540	0	0
Gibson	6,275	0	0

The Builder.

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What we have been Doing in 1877.



WHEN, at the commencement of the present year, we were honoured by a visionary interview with the presiding genius of architecture *in propriâ personâ*,* we remember that our visitor ushered in the new year as a helper who would not fail us in the path of progress, if we on our part were not slack to make use of the opportunities he gave us. And now we print "1877" on the head of our page for the last time, and turn round rather anxiously to look back over what has been accomplished in the last twelve months by ourselves and those on whose account we are concerned: to consider whether "something attempted, something done," can be recorded as matter for congratulation.

Putting ourselves aside for the moment, and looking at the events of the past year generally, it is not easy to say that anything has really been fully accomplished which is of great importance. Yet one may call 1877 not an uneventful year in the architectural world, in regard to the number of subjects of real importance, and sometimes novelty, which have been at all events started, discussed, and in some cases carried to a certain extent on their way. Indeed, turning over the weekly records, and putting together the various matters chronicled, we cannot but be struck with their variety, and the large nature of the interests involved in many cases.

Taking architecture pure and simple, however, this has not been a great building year. It has witnessed the completion of the second largest building in progress in England, the Manchester Town Hall, concerning which sufficient has been written by us at various periods in the course of its erection, and which perhaps may be said to have been completed in its architectural essentials even before the commencement of this year. And in regard to the largest English building now in hand, one of the largest ever carried out in modern times, we may note that during the last few months the eastern block of the Law Courts has advanced to that stage at which its external architecture at least may be fairly judged of; perhaps as fairly as when it is finished, for unless London should ever sacrifice untold property to make a grand *place* round the building, it will always be, from its circumstances, one to be regarded in detail rather than as a whole. And partly for this reason we prefer to pass lightly over the Law Courts in its present stage, considering that if there is no promise of the building ever becoming such a grand and expressive architectural whole as the Houses of Parliament present, the very nature of its position would render the appreciation of such a building *en masse* impossible, and that the time for estimating the real merit and success of the building will be when the western portion is up and the interior complete, and we can judge not merely of its internal effect as decorative architecture, but of the manner in which the architectural treatment is subservient to its practical requirements. We wish to express no doubt of a favourable result in this respect: only to remind those concerned that the want of scientific planning and arrangement in our courts is a crying one, and that the provision of ever so much beauty of Gothic detail will not reconcile the legal mind, either professional or lay, to a building that is not a remarkable advance in convenience and scientific planning upon our existing temples of law and equity.

The completion of the new nave of Bristol Cathedral by the same architect who is carrying out the Law Courts is an interesting piece of work, upon which we may give more particulars when we publish our promised illustration of it: interesting in this particular way, that it is an almost solitary instance, in England, of the completion by a modern architect of a cathedral left unfinished by the original builders. It thus stands in quite a different category from "restoration" (about which so much has lately been said), and may be regarded, from the architect's point of view, as a legitimate effort to complete artistically an unfinished design, quite apart from any difference of opinion as to its ritual significance.

Among the works in restoration, great attention has been attracted during the year to what has been done at Tewkesbury, where a distinct stage in the work may be said to have been reached in the completion of the eastern portion of the building. Still greater interest has attached to the similar work of St. Alban's, which, however, has reached no special phase in its progress this year; the intended operation of forcibly adjusting the walls to the perpendicular, one of the most interesting and critical operations that could be performed on a great building (and, as we need not remind our readers, one very rarely undertaken) not having yet been carried out.

Architecture of a more modern and practical character has not been unrepresented, and two buildings may be mentioned as having occasioned more talk than most others, though for very opposite reasons: the Grosvenor Gallery, because though open to criticism, it is on the whole a success even architecturally; the abortive attempt at an opera-house on the Embankment, because it is a failure, and we fear deservedly a failure, carrying its lesson with it in more ways than one: but on this also we have fully commented.* In the meantime, street architecture in its more practical but certainly not less important phases has not been without its successes, as (in regard to London more particularly) our illustrations of the past year will bear testimony; East London is receiving its quota of improvement and ornament in this respect, in some cases in an exceptionally satisfactory manner, in illustration of which we need only refer to the view of the premises in Aldersgate by Mr. Garling (p. 61, *ante*), and to others that are very good if not equal to these; Bishopsgate also has its new bank at the hands of Mr. Chatfeild Clarke, and the classic alley of Walbrook its new club by Mr. Grayson; and, on the whole, we have reason to be satisfied with a good deal of the quality of what has been done in new street architecture; and may observe while on the subject that this matter of street and city architecture, "business architecture," received special comment and illustration at one of the meetings of the last session of the Institute of Architects. Other buildings of a larger class for practical purposes have not been wanting, and have received due place in our illustration pages.

But the largest of these are trivial in comparison with the building scheme which is hanging over our heads, for execution in one way or another, for completing the concentration of the Government offices. This scheme, the main feature of which is, in the Governmental mind, the acquirement of the land immediately north of Great George-street, has attracted a good deal of public interest and public apprehension, on account of the private interests involved, and which must be ruthlessly crushed in carrying out the pet official plan. We devoted considerable space (pp. 852–58, *ante*) to criticising the official scheme, so far as it is yet open to public criticism, and setting forth in words and in a plan a method by which a more grandiose and effective arrangement could be realised, with nearly the same concentration, and without interfering with Great George-street. Since then we have learned that the obliteration of the houses on the Great George-street site is determined on, though, of course, their destruction will not be immediate. In the clean sweep thus threatened will be included one or two of the most artistically and historically interesting of the smaller private houses of old London, a matter of unavailing regret to their present owners. Our objection, however, was not so much to rebuilding the street frontage as to removing everything wholesale, and changing the uses of this particular street by supplanting its offices and chambers, now used by persons whose connexion with Parliamentary business renders it necessary for them to live near the House, with public buildings, and we pointed out

* See *Builder* for January 6th, 1877.

* See especially, *Builder* for October 6th of this year.

the difficulty that might arise from this. As to the street-frontage itself, we hold that it is deficient in dignity and stateliness for a street which forms the approach to the Houses of Parliament from Buckingham Palace, and that in view of the changing nature of the Westminster district now, the southern side will be very probably rebuilt, along with changes in the land in the rear of it, before any great length of time. It is certain that there would in such a case be opportunity for a grand *coup d'œil* in a new street in that position, taken in connexion with Birdcage-walk; and if it is a settled thing that there the remainder of the Government offices are to be, we hope that, at all events, the full architectural advantages of the site will be secured, as some compensation for what will be destroyed. But we would still urge, before it is in reality too late, consideration of the plan proposed in our pages as above referred to, especially in regard to its practical advantage of preserving the business offices in the neighbourhood of "the House" (which in some way or other must necessarily be provided for), and its opportunity for a splendid river front, which would turn to the highest account architecturally the opportunities afforded by the making of the Thames Embankment.

The whole subject of street improvements in London has been engrossing considerable attention during the past year, but with no very satisfactory or definite result so far; the discussions and contentions in regard to the projects of the Metropolitan Board of Works having served rather to show the need of a more despotic and entirely disinterested directing mind in these matters, than to give definite assurance of a speedy and satisfactory settlement of the improvements most urgently needed. We say advisedly a more despotic authority, believing, as we have often suggested before,* that matters of this kind would be managed much better here if there were a permanent Minister of Public Works, chosen for his administrative capacity and knowledge of the subject, and who, while more directly responsible to public opinion than any "Board" can be made to be, would have more power to carry out a scheme on a definite and systematic plan. In reference to the squabble, as it may not unjustly be termed, between the Board of Works and Lord Salisbury's agent in regard to the property adjoining the proposed line of street north from Charing Cross, one could not but feel that it was melancholy to see a scheme so important and so urgent, so plainly for the good and convenience of the public at large, made the ground for a mere contention for "compensation," and although the Board, of course, may say that they are only husbanding the ratepayers' money, we cannot in all these cases afford to wait for the cheapest possible way of securing what is greatly wanted, or to leave it to a body who seem possessed with such a *penchant* for financing to decide whether the best line of street is or is not to be abandoned for the glory of realising something good in the way of return for outlay. Under a more personal and despotic direction (always supposing the command to be vested in a thoroughly fit person) our main route north and south, for which we have been long waiting, would be made by now. As it is, we have only to look back on much talk, some consequent ill-feeling and bickering, and more uncertainty and delay. While on the subject of improvements in routes, however, we may congratulate ourselves that the way has been definitely cleared during the past year for one scheme which will have a very important bearing on the convenience of locomotion in London; we allude, of course, to the completion of the inner circle of the Metropolitan Railway. The practical value of the railway to the public will be just about doubled by this operation, even without the accelerated service which is promised, since the break at the Mansion-house renders the railway nugatory from many points. The increased facility of communication between east and west London, already commenced by the extension of the northern limb of the railway to Aldgate, has a moral as well as a commercial importance; for those who know anything practically of the work of social reform in East London know that nothing is more looked to by those who are in earnest about this than the breaking down of the line of demarcation between east and west, so as to let the one half of London know how the other half lives. Already this is being done in regard to some districts in East London to an extent which would be impossible but for the Aldgate Railway extension.

There have been few years in which public attention has been more directed to the subject of water supply than it has been in the latter part of the present year, in consequence of the promulgation of two important schemes for the supply of two great towns; the double-supply scheme for London, and the Thirlmere scheme for Manchester. Contrary to what is usual, the general public, and the daily papers which more or less represent them, have given manifestation to a popular interest, and even excitement, in regard to these subjects, which are more commonly left to be discussed by engineers and their immediate employers. The water-supply of London constitutes, in fact, a problem coming so near to the personal wants and experiences of its vast mass of inhabitants, and the dissatisfaction felt not only with the quality of water found for them by the companies, but with the *modus operandi* of these bodies in many ways, is so decided, that we cannot wonder that any scheme offering a definite amelioration of the water and a "good deliverance" from the hands of the companies should have excited general interest, which was probably more directly appealed to from the fact that the scheme was propounded and explained on so public an occasion as the meeting of the British Association. To our opinion on Messrs. Bramwell and Easton's scheme, already sufficiently expressed, we see every reason to adhere, viz., that it is in reality a half measure, the success of which, as far as it goes even, is hardly as yet shown to be certain, and that it is at the same time far too costly for a half measure: while its machinery will greatly add to the complication, already great, of the enormous system of supply pipes in London. We have already, since our opinion was first expressed, seen numerous indications that the newspaper enthusiasm for this scheme is abating under second thoughts or better information, and do not expect to see it carried out, though we need hardly say we are among the most urgent in pressing the necessity for a speedy and thorough settlement of the difficulty, before our sanitary sins be visited upon us by some widespread epidemic. It is because we feel the importance of this subject that we have not joined the popular cry against the scheme for supplying Manchester from Thirlmere, though earnestly wishing that a supply may be found elsewhere sufficiently pure and copious to justify letting the Lake district alone. The subject must be debated on practical grounds, and not on the basis of the sentimental lamentations of the Thirlmere Defence Association, who from their tone appear to be (as in so many similar cases) people who have no wish to hear the truth, but only to have their own way, and who are following the common course in such cases of denouncing all who do not accept their views as either unprincipled persons or blockheads.

The London gas supply is a subject of more or less popular interest of the same class, and which has had our special attention during the past year (p. 799, *ante*), but this is a much less pressing matter than water, and on a different footing, since for interiors at least other methods of lighting are possible, and a large proportion of the wealthier inhabitants of London are already taking the remedy into their own hands and dispensing with gas: though this does not affect the serious question of the deficient illumination of many of our streets. But another matter affecting the public health and convenience of London, the behaviour of the river on which the city stands, is a serious business, and nothing definite has been done to meet it yet. In the course of various comments on the subject at more or less length during the year, we have succeeded, we believe, in disposing of the popular but really absurd notion that the northern embankment has anything to do with the flooding of the southern bank; but that the absence of the "throttle-valve" of the old bridges has something to do with the difficulty is very probable. The embanking of the southern bank seems really the only satisfactory way of routing the enemy; and here again we have had the spectacle of delay in taking any course of action while those who imagined that they had opposite interests were disputing whose business it was to pay for it. So nothing has been done, or even determined upon. Perhaps if the members of the Board of Works were compelled themselves to dwell in and meet at Lambeth for a year, there might be something accomplished. It is easy for those who are safe out of the inundations to talk of the folly of being precipitate. Whilst they debate and procrastinate, large districts are living in continual anxiety and even peril. The other piece of recusancy of Father Thames, to the approach of which we have pointed from the first, has been brought into special prominence by Captain Calver's report, to which we gave full consideration last week. Thames is getting insubordinate: he *will* invade our homes, he will *not* remove our sewage. The past year has at least taught us that we have something to learn of his ways yet, old as the connexion is: let us hope the experience will be turned to account in the ensuing year.

Upon the considerations which bear directly upon the health and comfort of actual dwellings in towns there has not been much new light thrown during the past year, and less opportunity than usual for the *Builder* to treat afresh a subject we are justified in calling peculiarly its own. In our articles on "Central London" and the "Health and Growth of London" (pp. 366, 467), we endeavoured to summarise in a practical form some of the general conditions required to meet the wants of middle-class householders; and we may note in this connexion two communications in regard to the dwellings of the poorer classes, one having reference to the "cottage homes of England," and one describing the homes for workmen on the Continent in connexion with Government works at Stuttgart (with an illustration); the two subjects being rather significant in bringing out the contrast between the essentially individual and independent life of the English homestead, and the "patriarchal" system in operation in the Stuttgart homes,—a system by which the tenants have great advantages of comfort and economy at the expense of losing their independence and being "done for" like a set of charity children, or a superior order of paupers, a theory happily quite at variance with that which is becoming more and more prominent in England, even among those who are professed philanthropists. To build comfortable houses and put people into them at a low rate may look very benevolent, but the real work to be done is to find out how houses can be built healthily at a sufficiently low expenditure for the poorest class to rent them on terms consistent with proper economic conditions. Much has of late years been said, done, thought, and written on this head, but the subject perhaps has hardly been specially advanced during the past year. The publication of a new work on "Sanitary Engineering," by Mr. Bailey Denton, which we noticed at some length, has been an important contribution to formulating our knowledge and experience, up to the present date, on the serious practical matters included under that heading, and which must have a bearing on the construction of all classes of dwellings, large and small; and the fact that "half-timber" construction has received some degree of special attention, set on foot in a paper read before the Architectural Association, may be considered as having some bearing on the possibility of a cheap and at the same time picturesque construction, though we should be disposed to think that the solution of this problem was more likely to be found in the direction of such a material as concrete, provided only we can overcome the difficulty of giving an inviting and picturesque appearance to buildings constructed in this not very fascinating material. Another subject directly connected with the safety of town life, the prevention of fires, has received a certain impulse during the past year; the select committee on the subject having at least put on record resolutions expressing dissatisfaction with the present state of things, and recommending a radical reform whereby the fire brigade should become a part of the police force, and the supply of hydrants should be extended; but this latter question is involved in that of the new water supply, and the possibility of securing a constant and sufficient pressure for dispensing with engines altogether. To the special case of theatres and their dangers in regard to fire, we drew attention at some length in an early number of the *Builder* of the past year; but until this matter is in the hands of an authority strong and determined, and at the same time intelligent, there is little chance of anything being done, and our theatres will continue to be traps for the lives of their occupants, in the case not merely of actual fire, but even of a serious alarm. That there is an authority which interferes in the arrangements and programmes of theatres we all know pretty well; but unfortunately it interferes almost

* Most recently in some remarks on "The Supervision of Public Works," p. 391, *ante*.

always in the wrong way and about trivial matters, and seems content to let all the spectators have a chance of being burned, provided it can only keep the dancers' skirts long enough; and even in that humble matter success can hardly be said to be attained.

Several matters bearing upon what may be called the politics of the building profession have demanded more or less recognition during the past year. We have taken due notice of the elaborate and exceedingly well-meant attempt of the leading associated body of architects to formulate its rules on a wider basis, such as may, it is hoped, make them more fitted for general acceptance by those who represent the profession throughout England,—an attempt which, as we have already said, has been conceived and carried out in a spirit which thoroughly deserves success in the main, and it is to be hoped will obtain it, in spite of dissatisfaction at some of the minor details of the working of the new rules. The junior society of architects has also during the past year first put in practice an arrangement for direct official intercommunication with kindred societies in one or two of the largest provincial towns, which societies have thus obtained the advantage of being placed more directly *en rapport* with metropolitan architectural practice, besides the advantages to both parties which always accrue from members of the same profession in different places being brought to a closer union with each other. But, unhappily, whilst architects have thus been stretching forth the right hand of fellowship a little further towards each other, an old breach in the executive branch of building operations has shown itself, one is disposed to fear, in a more serious form than usual during the past year. The conflict between employers and workmen has been carried on with a persistency of purpose, and apparently a completeness of organisation on the part of the latter, which would be in the highest degree admirable if their object was a legitimate one; nor is it for us to say that from one point of view it is not so. The effort to get the best possible return for labour is only what we are all, in fact, bound to in duty to ourselves; and, of course, it would be absurd to argue that combination is in itself an illegitimate means to employ. But it has proved to be, at the best, a most wasteful means, a weapon which recoils against those who employ it; and when to combination is added intimidation of others who are disposed to work, and attempts to interfere with the employers' equally just right to get any work done by those who are best qualified to do it, the movement assumes an aspect absolutely immoral. On this aspect of it we felt justified in expressing ourselves in very strong language in reference to the unfortunately notorious case of the Doulton strike, which was simply an attempt by workmen who were inferior in a certain branch of delicate work to prevent the employers from engaging more highly-skilled persons to do it to their satisfaction. The real way out of strikes, we have said, is arbitration, regarding the question as one merely of wages; but having regard to such a case as the one just alluded to, it is obvious that, as a first condition, it is necessary that the men should be made (by disagreeable experience, if argument fails) to see how utterly illogical and at variance with right principle is the course they have been taking in endeavouring to bring down all workmanship to the level of the worst man, which is what strikes and the operation of trade unions have really been coming to of late.

The promulgation of a new code of model bye-laws for the regulation of building operations in towns has been of interest as an attempt to systematise in a better form than hitherto the requirements necessary for ensuring sound and sanitary structures in towns. From our point of view we have found these laws, into which we went rather recently, very ably framed, and calculated in general to serve the purpose for which they were put together, though we learn that in some provincial towns they are regarded as showing instances of oppressive over-legislation: but objectors should bear in mind that it is absolutely impossible in these cases to legislate so as to please everybody. A large majority of such laws are, in fact, rendered necessary simply because all people who build are not either competent or honest, and must therefore be hedged in by artificial barriers from wronging their neighbours, which can only be done by a hard and fast line. It is for a somewhat similar reason, because some obscure members of the profession have no consciences and no right sense of their responsibilities, that a cry has been raised during the year about another sort of "bye," namely, "bye-commissions," which, by persons who know the profession only through its least eligible or able members, is charitably imagined to be a peculiar vice of architects. The president of the Institute, in a public reply to these insinuations, left, at all events, no doubt that he and his compeers courted full inquiry by those who cared to undertake it, and who, by making the charge, in fact bound themselves to investigate or withdraw it. Another subject which is connected with the relation between the profession and the public, in regard to the rights rather than the duties of the former, is that of art-copyright, which affects architects in common with other artists, and has been made the subject of inquiry by a Select Committee during the year, the results of which are not, at the time of our writing, published.

If we turn from matters of modern and practical interest to those connected with ancient architecture and history, this year has certainly brought out much to interest all educated persons. It has witnessed if not the actual circumstance of Dr. Schliemann's remarkable "find" at Mycenæ, at all events its first detailed promulgation in such a form as to bring it home to the public mind. As we pointed out, when the facts first became known, the importance of this discovery in providing a missing link in the history of the development of early Greek art can hardly be over-rated. We have also had to chronicle the visit of Dr. Schliemann to the Institute of Architects to deliver his lecture upon his Trojan discoveries, and more recently the exhibition of these at South Kensington, in regard to which some remarks will be found in our next issue. Early in the year we had also the publication of Mr. Wood's interesting volume on his Ephesus discoveries, the honours of which he had indeed reaped some time before, but which were thus made accessible, in an eminently "readable" form, to the general public, from whom we are inclined to say they have hardly had the attention and recognition which was due to an Englishman who had made so remarkable a discovery under circumstances of so much difficulty; though from those best qualified to appreciate what he had accomplished Mr. Wood has received all recognition. And among the matters of interest connected with antiquity none has excited more general attention than the acquisition by England of the obelisk which we are now waiting to see put up,—*somewhere*: the whereabouts we still hope is not *yet* fixed; and that there is a chance of a blunder being avoided. Whilst, however, the English public are thus interested in the acquisition of an ancient monument from another country, by an odd but most characteristic inconsistency they have, through the medium of their representatives, chronicled once more the indifference of the majority of them to the preservation of the ancient monuments of their own country, in again rejecting (though by a much smaller majority) Sir J. Lubbock's admirably-conceived and much-needed Bill intended to secure this object, the importance and interest of which it seems impossible to bring within the perception of the House of Commons, as at present constituted.

Among meetings of the year which have had more or less interest for our readers have been the Rubens *fête* at Antwerp; the British Association meeting, at which (as before observed) the new scheme for a London supply of water was given out, but which did not otherwise bring forward so much matter of interest to constructors as is sometimes the case; and the Social Science Congress, at which, as usual, some very valuable sanitary communications were read, and where also several matters peculiarly interesting to architects and artists were brought forward and discussed in the art section. One of these was the question of the principles which should guide us in the restoration of ancient buildings: which we single out for special mention because it has been also so much treated of on other occasions that it may be said to have been one of the leading topics of the year in the architectural world. Whatever we may think of the motives of the gentlemen who have banded themselves together against all restoration, much cannot be said for the logic or common sense exhibited in their way of putting their case, which, if carried out to its complete development, would result simply in leaving all buildings erected before the present century to go to pieces, and which makes no distinction between buildings in daily use and those which are absolute ruins. The extreme views expressed by this association and its adherents have actually had in some cases the effect of driving into a defence of restoration those who had previously been most inclined to oppose it; and though the result of the agitation may have been to render those who were intending to enter on the repair of an ancient structure somewhat more conservative, and more careful to justify every step, than they might otherwise have been, the general impression in the mind of impartial observers has probably been that the movement was the work of some people who wanted a "cry" to come before the public with.

Besides the meetings above alluded to, those of the two leading archæological societies have been of fully their usual interest, and have occupied a corresponding amount of space in our reports; and the Sanitary *Séance* at Leamington has brought forward in a special manner matters of modern and practical importance. And, as a special feature of the year, we must not forget the Caxton Exhibition at South Kensington, which hardly received the degree of public attention which its great interest and unusual character might well have elicited, though its value was fully appreciated by those learned in the special branch of archæology which it illustrated.

During the year we have had to deplore the loss of two of the hardest and ablest workers in the field of architecture; two who, besides, had made themselves specially beloved and respected among a large circle of friends within and without the pale of the profession,—Mr. Edmund Sharpe and Sir Digby Wyatt,—whose labours and whose character received at the time the commemoration they so well deserved at our hands, both on public and private grounds.

If it be permitted, in concluding our brief summary of the leading points in the work of the past year, to make some further claim to have been not backward on our own part, not only in chronicling facts and criticising the proceedings of the day, but in originating suggestions which may be capable of further application, we may recal that, among other things, we have been able to present to our readers an interesting series of articles, still in progress, on the variations and changes in the "household," or the typical plan of house in different eras, with illustrative plans; a series which, we believe, when taken conjointly, will be found to present a great deal of information in a connected and comprehensive form, and in such a manner as to prove in every way matter for agreeable and interesting reading. We have endeavoured to keep the spur applied to those who are concerned with engineering education for India and with the construction of public works in that great dependency, if haply these things may, by dint of much speaking, be put on a more satisfactory footing than at present. We have drawn attention specially to the conditions requisite to enable architecture to contend against the most formidable of all its adversaries, earthquakes (p. 253),—a question which, seeing the apparent changes that are going on in the direction of these disturbances, may possibly come to have more immediate and local consequence for us than it has at present: and we endeavoured to turn to account a serious railway accident of the year, by an inquiry into the real and preventible cause of such a catastrophe under the circumstances in question. The subject of granite and its use in modern architecture, started in our correspondence columns, has attracted a good deal of attention and led to some practical conclusions in regard to the employment of the material for town architecture. Our comments on the subject of "peerage property," and the social and economic effects of accumulation of buildings in a few hands through the operation of leases, led to a correspondence which those who followed it must have admitted to have great practical interest, not the less that the main part in it was sustained by a writer "from the plough," expressing his own personal experience and observation of the difficulties to which we drew attention, and, as we may say, more than corroborating our views. The importance of local museums, and the part they play in the general education of the people, is another matter to which we have endeavoured to draw special attention. And there is one feature in our last year's numbers which we think our regular readers will hardly have failed to observe,—namely, that we have devoted a larger place and a more systematic treatment than before to "foreign affairs,"—to giving both accounts and tolerably numerous illustrations of architectural work on the Continent. Our efforts in this direction, we are glad to be able to

think, have not been without recognition and approval beyond this country; and it may interest our well-wishers to know that some article which we devoted to a description of the doing-and working of the Paris stone-cutters and masons' club, drew from that body the warmest expressions of sympathy, accompanied by the more special compliment of a vote of thanks and a silver medal to the conductor of this journal.

In drawing attention to the endeavour, successful, at least, in this instance (as in some previous cases), to extend the influence of the *Builder* in an international sense, we may be allowed, in conclusion, to remind our readers of what we very much wish them—those who are members of the profession especially—to bear in mind; that our object always has been to extend the interest in architecture and cognate matters *beyond* the circle of the profession,—to appeal to as wide an area of readers as possible, believing that in so doing we are serving the best interests, not only of architecture at large, but of the profession in particular, far more truly than by limiting our columns to the discussion only of the points specially connected with everyday professional practice.

DRAWING AS AN ELEMENT OF EDUCATION.

That the Livery Companies of the City of London are happily awakening to the consciousness of being heirs of the great trade guilds of the Middle Ages, is about the best bit of news that, in these times of strikes and of contests, has for a long time reached our ears. They have been seeking advice, as our readers know, as to the best mode of directing their powerful resources towards the education of handicraftsmen. We can conceive nothing more consistent with the proud traditions of civic and corporate worthies than such a resolve,—taking, of course, the resolve as carried to a successful accomplishment. As to the power and resources of the Companies there can be no doubt. It must not be forgotten that all the most famous and time-honoured educational establishments in this country owe their existence to some such initiation as that now proposed. And the activity which, in spite of many errors and shortcomings, has yet done much to raise the general educational level of the entire country during the last five years, has circled and gathered round these ancient foundations. Had we had no universities, no College of Physicians or of Surgeons, no Inns of Court, no institutions for handing down the oral tradition of learning, and keeping alive the lamp of study, our recent efforts must have been altogether vague and tentative; and the results even far less satisfactory than they have been.

But this question of technical education is new. It is a feature of our day. The cause we take to be this. A mode of handicraft instruction was provided by the old guilds and corporate institutions, which has gradually faded away. In any progress, real or pretended, slow or rapid, there occur demolitions, and when demolition commences in a complex structure, no one can say where it will end. We have of late been sweeping away, as barriers to progress, relics of what formerly were directly educational institutions. Thus we are apt to exclaim against a provision which should exclude any but members of a certain company—let us say in the City of London, by way of example—to exercise a certain craft within that city. Let us put the case of a man of national importance, such as the present First Lord of the Admiralty, or of European fame, such as Baron Tauchnitz, being forbidden to sell newspapers or books within the City of London, unless he were free of the Stationers' Company. At the present time it would be said that such a thing was an incredible relic of the ignorance and superstition of the past. But is that really so? What was the origin of those firm and ancient bonds which we have of late swept away like so many cobwebs? One reason, if not the sole reason, for their original establishment was the ensuring of handicraft education. Each craft, three or four hundred years ago, had not only its admitted principles, but its practice, and also its secrets. To publish those secrets was regarded as a social, or, indeed, a moral offence. The idea of writing handbooks, in which rules should be given by which a man might teach himself to brew, or to work metal, or to build, or, in fact, to become a craftsman of any kind without duly entering into the craft by the appointed door, was undreamt of, and would have been fiercely resented, as well as loudly ridiculed, had it been suggested. And it must be admitted that there is very much to be said in favour of this old-fashioned view. No private study can supply the want of oral teaching and practical training. Of old time, thus, a lad who wanted to become the master of a craft entered by way of an apprenticeship of at least seven years. From the 'prentice he rose to be a journeyman, and thus, by slow degrees, to become a master. A thorough training was thus secured, and in shutting the door against interlopers, the guilds were not only protecting those who had devoted the long time then considered necessary to acquire the practical knowledge of their craft against quacks and interlopers, but at the same time they were supporting the best mode of craftsman-education then known to the world.

Now between that old form of craft education which resulted in the system of apprenticeship, guild organisation, and corporate privileges, the spirit of modern society has waged active war. It has destroyed much,—without replacing what was of essential utility in a system which the increase of population had, perhaps, out-grown. And we have seen, and lamented, the activity of what may be called a fungoid vegetation, as contrasted to the slow, but well-directed growth of the tree. Our trade organisations of late years,—whatever their real aims, and whatever their outcome for good or for evil,—have not been organisations for craft education. Some such institutions, indeed, have sprung up and flourished on the Continent. Such are the schools for the children of the workpeople of Herr Krupp, which are attached to the enormous works of that great German engineer. And nothing can be more sure than that, if in one country we find a careful, well-arranged system of craft education faithfully carried out, while in another we find all craft organisation directed to social or political purposes, leaving education aside,—or even discouraging a workman, as a rule, to do more, better, or cheaper work than his neighbour,—the first-named country is on its way to thrive on the ruin of the last.

On this view, the City Companies are in a position to exert a most wholesome and beneficent influence, if they really betake themselves to the subject of technical education. For the members of each Company, or rather the delegates to whom the preparation of the schemes would be naturally committed, would be in a position to say what would be the proper culture of so much of the educational course of a lad as was special to their own craft. This would lead to that on which we have before insisted as an essential feature of any sound general scheme of education, namely, the division of the course into steps or chapters. It is now admitted that the nation has a duty towards her children. She has to educate them. This may be called a newly-defined duty. But, at all events, that is where we now stand. It is admitted by all our recent legislation, and confirmed by a large and annually-increasing expenditure of public money. But the question has to be put, "Educate for what?" It is this question which, we venture to think, the modern movement has to a great extent blinked. It is this question which any sound system of handicraft education will directly raise. It is, no doubt, a theory which has been carried out in places which it is unnecessary to particularise, that you should educate every child up to a certain level, and then turn him out for a fair scramble for the good things of life. Thus, it is said, the soldier carries the bâton of the marshal in his knapsack. Let us admit that this is sometimes the case. But then it is the *soldier* who does this, not the bricklayer. The utmost that the latter could hope to carry would be, after long mastership of the trowel, the pen with which a great master builder should sign checks for the weekly payment of his men, or tot up his net balance to profit at the end of the year. There is, it is true, a point up to which the education of the young soldier and the young bricklayer would be identical. But this is a point very near the zero of the educational scale. What is required, therefore, to economise the educational power of the country is, so to regulate the primary education as to teach all that is required up to the point when the craft-education branches off. The craft-education, again, while it has a specialty of its own, never requires to reach the point of scientific education. Let us admit that the craftsman and the surgeon, for example, at the same portion of their lives, ought to be occupied in the acquirement of the same grade of education, they will not be engaged in the pursuit of the same species of knowledge. Thus when we hear of such a training as should awaken the understanding of the aspirant, and give him a real interest in his pursuit, we are asked to travel, we think, a little wide of the mark. That awakening of the interest depends far more on persons than on schemes. It depends rather on the teacher than on the curriculum. It is one of the greatest gifts of a born teacher, as, on the other hand, the ready response to the attempt to awaken interest is the indication of what may prove to be genius in the student. Nothing can be more desirable than the awakening and sustaining of this personal interest. Such was one of the aims (and very well secured, too, in the main) of the old guild and apprentice system. But if a course of education be schemed with a view of awakening interest, there is no small danger of its subsiding into the sensational, the dramatic, and the practically useless. A certain amount of drudgery has to be gone through. The only way is to face it. All that can be done to illumine the work of the pupil by the intelligence, the kindness, and the fancy of the master, is well added. But the work must be done,—well done, thoroughly done. Nothing will make up for the want of hard, patient plodding work; and the object of the handicraft course of learning should be to provide that this requisite course of hard work should be given to the objects most useful to the successful pursuit of the trade itself.

For a quarter of a century we have maintained that an elementary course of drawing might be made with great advantage a branch of early, nay, almost primary education. Such is the case, we believe, in Switzerland. And this may be supported for more reasons than one. There is no craft of any kind in which it would not be to the advantage of the craftsman, at all events if he had attained a certain eminence in his craft, to be able to make a sketch of a bit of work he had to do. Whether it be the smith who has to forge a horse-shoe, the bricklayer who has to build a culvert, the saddler who has to invent some convenient martiogale, or riding-strap, for a particularly troublesome horse, — or whatever other instance we may select in which a customer may come to a craftsman and say, "How would you propose to do so and so?" the power of taking a pencil, or a bit of chalk or of charcoal, and making a free-hand sketch, and also of making a sketch to scale, would be of definite utility to the craftsman. Thus as an essential, rightly viewed, of nearly every imaginable part of technical education, an elementary introduction to draughtsmanship would be of signal value. This, then, is the first reason why drawing should be a part of the primary curriculum. It will be of use to the student, at whatever point in the ascending scale of tuition he may afterwards fall into his own special groove.

But there is something more than this in the use of the pencil. Lord Bacon, commenting on the excellent value of the three rudimental acquisitions,—the three Rs, as they have been familiarly termed,—observes that reading makes a full man, spelling a ready man, and writing (under which, of course, arithmetic would in this case be included) an exact man. Far more, however, than the practice of writing, until we come to a very high place in the educational scheme, such as instruction in the writing of reports, *précis*, or specifications,—is drawing calculated to make a man at once exact,—full and ready. We very much question whether any vivid and exact conceptions of either form or size are, as a rule, entertained by those who have never been in any way trained either to draw or to measure. There are, of course, exceptions, in the case of persons with naturally well-developed perceptions of form, size, or weight. But when these functions exist in the mind in a naturally wakeful state, the response of the pupil to the lessons of the drawing-master will be rapid, and even brilliant. We are speaking of the great majority of cases. If it be asked what is the size of a stone, or of a bit of timber; whether a certain bit of cloth is large enough to cover a certain area, or to patch a certain hole; whether a book of such a tallness will stand on a certain shelf; we know, from certain experience, that the wildest guesses will more often than not, be made, even by educated people. And the reason is,—that the eye is not educated to that exact observation which is necessary to the formation of a correct idea. The mental image is vague and shadowy. Still less is the hand trained to express that idea,

whether it be shadowy or otherwise. The fact, then, of setting a child, even of tender years, first to trace the outlines of some simple object presented to his attention on paper or on a slate, and then, when some practice has thus awakened the habit of attention, and familiarised the effort of dilineation, to add exactitude of size by the wholesome canon of the two-foot rule, would probably prove a more efficient stimulus to the power of attention and of control of the use of the hand, than any other that could be substituted for it. It is not with the idea of making all boys or girls draughtsmen or designers, any more than with that of making them all architects, builders, or tapestry workers, that a pencil should be put into the youthful hand. It is for the purpose of teaching the holder how to see, how to realise, the form and size of a thing,—and thus to know something more about it than would otherwise be the case,—that this should be done. And in this, again, two advantages accrue to the pupil. First, by this attention, he learns more about all the objects which he is made to study than would otherwise be the case. Secondly, his attention will be on all occasions more awake, more ready, and more exact, so that his eyes will give him more accurate knowledge of any object that comes within this range, than would otherwise have been the case.

It is evident that the admirable utility, in so many ways, of the adoption of elementary drawing as an integral branch of the most simple and primary education, would be still further apparent if the education advanced beyond the plane of craftsman teaching, to that of professional, or higher technical, skill. How much of the time of the architectural or engineering pupil would be far more usefully employed than it is at present, if on his entry into his pupilage or apprenticeship he had not to make his first acquaintance with the drawing-board and the T-square. A precious portion of time which might be devoted to storing up information of the utmost value, is given by a lad of fourteen, sixteen, or even older, to the acquisition of an elementary handiness in the employment of those simple instruments which probably would have come more readily to him if the lessons had been first given at seven or eight years of age. It is always difficult —it is *the* difficulty in an analysis of educational phenomena—to tell how much of the ease that attends on the draughtsmanship of a lad who begins to use his pencil at a very early age is natural, and how much is acquired. We cannot divide the profits of the partnership between genius and perseverance. In the ordinary course of things, the desire of a child of four or five years old to use a pencil (which may perhaps be checked by a box on the ears for having made an easel of the panels of the drawing-room door, or the paper on the staircase) is probably an indication of natural bent; that is to say, of incipient genius. But the child, though there may be (as in cases we have in view) a certain amount of "go" in his earliest efforts, only slowly and with difficulty acquires the command of his pencil. This slowness and difficulty could hardly be much more if, instead of being driven by an instinctive wish to copy, he had been gently directed, and taught to copy. The born artist would get on quicker than the child of no taste in design. But the actual process of the education of the eye and hand would be found in practice to differ far less in different children than is now assumed to be the case. And, supposing that after four or five years, the non-artistic child had fallen behind the born-artistic child to the extent of 50 per cent. in his facility of using the pencil,—what an enormous gain would that half result prove to him throughout his following life!

There is yet another consideration of very grave importance, which has not, so far as we are aware, hitherto been mentioned. The increase in the number of young persons who wear spectacles is said to be great. In the German universities, and in at least one of our own great colleges, famous for the severity of its examinations, almost every student wears spectacles. Shortsightedness is known to be a disease incident to childhood. It is brought on by certain habits, which are, in fact, those of the student. It is urged by competent judges that the human eye is altering, and that for the worse, under the strain upon the child. There is no doubt that shortsightedness is hereditary, so that each child who has his eyes riveted on a book for a certain time every day is doing harm both to himself and to his future descendants.

Against that kind of monotonous straining of the eye which attends the effort of learning to read, and of continuous reading, the use of the pencil is the best protection, for it requires rapid change in the focus of the eye, which is the great protection against a gradual shortening of that focus. Proper exercise of any organ or faculty is the best preservation of such organ or faculty. Over-use in one direction, and disuse, are both functionally injurious, and are likely, by persistence, to cause injury to the structure of the organ. Independently, then, of the claims of the draughtsman to take an important share in the education of the youth of the country which have hitherto been urged, there is one founded on sanitary, or rather on physiological, reasons. Drawing gives an exact knowledge of size, of form, and of external character in general, which nothing else will give. To learn drawing not only thus to some extent furnishes the mind, but it imparts a power of constantly acquiring exact information which no other study can give And, lastly, the early practice of drawing is calculated to counteract that increasing tendency to shortness of sight which is fostered and aggravated by the riveting of the eyes of a child, for more than a brief period, without interruption, on the pages of a book.

THE VICISSITUDES OF WESTMINSTER AND WHITEHALL.

In the course of an editorial existence, however short, many strange things are encountered and some strange people are interviewed. Towards the close of a year mad brains prepare to put on festive raiment; mad wit follows. It was undoubtedly a madman who last week caught us by the button-hole, and gesticulated rather than said that he was the original genius of a Select Parliamentary Committee, a lineal descendant from him who produced the first vestryman, and a stanch supporter of every municipal institution which bore on its shield an hereditary abracadabra of "DIET, DECREPITUDE, AND DELAY." Necessarily we bowed the bow of attention; we murmured a request—which, to the inevitable horror of all sane men, has been conceded,—that our assailant would put his business in writing. The result is a complete and an unprecedented inability on our part to decline printing

A TALE OF OLD TIME.

Many hundred years ago, when I was younger than I am now, though it was not so "merrie" in England as it is to-day, yet the machine of constitutional government was easier to work, and the will of the wiser men was more quickly enforced, than has been possible, of late, for scores of dull years. I had very little to do in days when churches and cathedrals, palaces and castles grew, bit by bit, upon the open sward, and spread till their dependencies touched. Ah! What a fuss has been made about the remnants that have been preserved to you! If you sanitarians, deluders and deluded as some of you are, could have seen the hovels in which the common human cattle lived,—the men, nevertheless, who fought at Crecy, and who came safe home from Agincourt,—the men, too, who built the Abbey there and the big Hall of Westminster,—you would confess that Nature had a pretty efficient way of her own in overcoming her enemies and working for the general good. But now, forsooth! you pooh-pooh Nature and glorify Art; your creed is that the man, who dare not for his life face the elements, shall breathe his native air filtered through a wall, a crack in a door, or a hole in a roof; and that he, who is the most naturally decrepit is the most deserving of care, both for his own and for posterity's sake. So much for the Survival of the Fittest! For, under your artistic care, the Fittest will not survive. Come back, Memory! to the time when King Edward, third of his name, dismantled a large part of Windsor Castle,—a most uncomfortable residence both before and after he took it in hand. A whole host of workmen are busy at alterations and new buildings all round the Castle Hill. The king has, therefore, come to Westminster, and there will be revels in Hall: jousts, tournaments, and feastings, to last three weeks at the very least. I can see a crowd of holiday-makers straggling along the meadows all the way from Fleet river to Westminster-gate. Urchins are jumping a rivulet which you have long since made a drain; there are a couple of sweethearts just descended from below Strand Bridge, and longing to look into the water, where there will be nothing for them to see but the reflection of themselves. Ivy-bridge, but it has not a name yet, is gay with coloured dresses. I enjoyed the sports then so much that I do not care to remember how low and sensual they were; how contemptible were King and Parliament, knights and people, priests and penitents, in those days. Nevertheless, it is pleasant to remember Geoffrey Chaucer under the big tree in the alley you call Poet's-corner; for Chaucer's hut stood almost on the very spot where they laid the body of Henry VII. Chaucer was in the Office of Works, and on the establishment, too. I saw them, both king and poet, carried to the grave. Time presses though; King Hal is already come to Westminster. The river is alive with barges and small craft; and the monarch's rough joke reaches even the Clock-house that the first Edward built.

Hush! the Cardinal is dead; Henry has won his second love and worn her. Another has succeeded and is gone. A few years and we shall be half through the sixteenth century. A great revolution is taking place; the mischief will be felt for a hundred years, or even more, before the nation can be the better for it. The Church lands are partly distributed among the heads of the nobility. York-place, the metropolitan residence of the Northern archbishop, is transferred to the king, and the Palace of Whitehall will soon command the very gates of Westminster. Henry VIII. had reigned seven-and-twenty years before Parliament gave him an Act to appropriate all the buildings and land on either side of the highway from the Cross at Charing to the doors of Westminster Hall.

It is a story of kings, therefore, and of princes, of archbishops and priests, of noblemen and their dependents, that I tell. But I take it for granted that you know what has been accepted as history by successive generations; and if, speaking as I do from memory, some miserable bookworm of the modern fashion catch me tripping at dates or kings' names,—mere conventionalisms,—I say:—Respectable twaddler, you never smelt Long Ditch, though your grandfather perhaps did; you never saw the King's Street in days before the Select Committees of British Legislation straightened it, cleaned it, drained it, reobristened it, and prepared it to become what a hundred years or so after the death of Lord John Manners,—whilom poet and Chief Commissioner of Works,—it may become: THE MOST MAGNIFICENT AVENUE IN EUROPE!

The original Palace of Westminster formed the sides of what you call Old Palace-yard. The additions made by Henry Tudor lay on the side of St. Margaret's-lane, between it and the Hall. Then it was that New Palace-yard attracted the crowd. From the old Clock-house, close by the fountain which priestly wit caused once to run with wine, I could see then new buildings on all sides. I saw the big Gate-house rise that connected the gables, where the stables next Gwydyr House now stand, with the Tilt-yard on which is your modern Dover House. The great archway for coaches and horses, and smaller passages for pedestrians, remained for nearly 200 years the only entrance from the City of London to the City of Westminster. You moderns have christened it Holbein's Gate. There was a second Gate-house called the King's-gate, which formed the entrance to the King's-street; the road between the two Gate-houses was enclosed on both sides by a wall, having the Privy-garden on the side next Thames. The Cockpit, the Tennis-court, and other buildings lay on the side next the King's-park. The original Whitehall was in the Palace of Westminster,—a hall afterwards the Court of Requests, then the House of Lords. New Whitehall spread along the river side from Westminster Palace to beyond York-place and Charing village, where the king's falcons were kept. A lane, running between hedges, joined the two Gothic churches of St. Martin's and St. Giles'. The gardens of York-place sloped to the water's edge. Further on lay the precinct of the Savoy, some of its buildings washed by the river. There was Somerset Place, its courts and gardens extending from the High-street (now the Strand) to the Thames side; then Milford-lane, and Arundel Place with its gardens running down to the water. Then Paget Place, to be changed to Leicester and again to Essex Place, stood in its gardens next the Temple, and near the Bar. The houses then clustered round St. Clement's, but St. Mary's

was gone, for Somerset, like a sagacious Protector, took it and the land around it to build his Palace. One well-filled building was then thought better than two half empty churches. Pleasant flowers and trees brightened the river; they gave London the reputation for openness and extent that it enjoyed, under Elizabeth and James, among foreigners accustomed to the walled towns of the Continent. Indeed, it was in those days that some of the citizens got a first hankering to live away from their City. Even in the seventeenth century the suburbs became larger than the body of London, and the capital was compared to a Jesuit's hat whose brim is larger than the block. It was Count Gondamar who told his Royal Mistress of Spain that there would be no City left shortly, for all had run from the gates to the suburbs. Indeed, he proved a true prophet. Not many years after, a vast space, denuded of every tenement, lay charred and smoking in its very heart.

Fire gave the opportunity for reform. If people had then appreciated the value of Select Committees and Royal Commissions, the rebuilding of London might have been delayed for forty or fifty years, in order that the thing should be done with scientific method and completeness, and with a view to rigorous economy in its execution. But everybody was in a hurry to begin, and much was made a matter of jobbery and interest. Those churches which were in the gift of a great man, even those that stood in a cluster, were re-erected in preference to others which, before, had not been large enough for their congregation. The City rose again upon its old lines. There were paper plans, but there was no one to initiate or even suggest action; there was no one to reconcile the conflicting claims and obligations of a divided population eager to repair the loss it had sustained. The rebuilding is going on, and the seventeenth century has yet thirty years to run. I shall use them to tell you

A TALE OF WHITEHALL PALACE.

When the Chevalier de Grammont astonished the Court of Charles II., winning hearts from the women and money from the men, a crazy congeries of courtyards and buildings, spreading from Richmond-terrace to Northumberland-avenue inclusive, composed the king's residence—a "palace" as disconnected and unwieldy as it was picturesque. James I., by the influence of his consort, a foreign princess, tried to build a real palace. Inigo Jones made more than one attempt to satisfy his royal patron. He produced one block of building which, like "the finest site in Europe" of subsequent years, is still regarded with admiration by the inimitable complacency of British nature. The space now called "Whitehall," between the Horse Guards and the Banqueting House, was at that time enclosed on three sides. There were some tumble-down old posts, running from Whitehall Gate to Westminster Gate, and they formed a square enclosure in front of the Banqueting House. Within that enclosure I saw Charles I. die. Some time afterwards his son ordered Sir Christopher Wren to devise a mode for building a new palace on the lines set down by his master, Inigo,—a mode which would have incorporated the Banqueting House, a building useful for feasts and orgies such as the Stuarts and the Bourbons loved. Sir Christopher did as he was commanded. Years afterwards, like a patient official, he made two more designs by order of another king, Dutch William Henry by name. Time, though, did not lag, and, eighty years after Charles I. died, cannons were pointed—I think they were sham cannons—across the scene of his execution, from the brick wall that joined Westminster Gate to the Banqueting House, barring the view of Westminster more effectually than Temple Bar even now divides Fleet-street from the Strand.

Just before the second Charles died there was a gatehouse into Scotland-yard not dissimilar in plan to that which exists; but the yard was an open spacious quadrangle. There was another gatehouse leading into what is now Whitehall-place; and now the south side of that place is built upon what was then an open space. The circuitous path from Middle to Little Scotland-yard existed, but through dwellings and offices grouped in picturesque disorder, not through stables, sheds, and a tumble-down museum, as at present. Buildings lined the river from Scotland-dock (at the river end of your Whitehall-place) to the Bowling-green, which was divided from the Privy-garden by a wall. That wall ran almost along the boundary line which now separates Montagu House from Richmond-terrace; and the nation's new Opera-house-foundations lie just without the southern boundary of old Whitehall Palace. Thereabouts (I cannot swear to the exact spot) the Thames flowed in, and mixed with the filthy stream that ran down Gardener's-lane under King-street Bridge, at the foot of the lane, and turned into Channel-row, where the canons' houses were in earlier times. Some of this land, which the Stuart inherited from the Tudor, who got it God only knows how, Charles II. gave away in easy leases to his favourites and children. But a more certain power than kings wield determined the fate of Whitehall. A great fire broke out some three years before 1700; it destroyed the whole palace except about seventy rooms and the Banqueting House. Little by little, buildings got up again, anyhow; my lord This or my lord That found it convenient to remain where his father had been so cheaply lodged. The big houses called Whitehall-gardens stand on the Palace walls; the Duke of Montrose lived on the land where his brother duke of Buccleugh has lately built Montagu House. A Duke of Richmond clung to the spot where the family progenitor and patron had lived and died; Richmond-terrace now marks the site of Richmond House.

The Earl of Rochester's house succumbed only when the way (now Parliament-street) was opened through the Privy-garden into New Palace-yard. It stood at the foot of Downing-street, in the very middle of the present roadway, and formed the corner of King-street,—the only thoroughfare to Westminster until about 1750. Holbein's Gate-house stood also in the roadway; the buildings which before connected it with the Banqueting House were removed only at the beginning of this century. Then it was I saw them take down the King's Gate that covered King's-street between Lord Rochester's and the foot of Downing-street. That was about 1723. People at last gave up all hope of ever seeing a new Palace of Whitehall; the Court had flitted to St. James's and to Kensington.

Over against the park side of Whitehall a new Admiralty was built on the site of Wallingford House. Between it and Holbein's Gate-house were barracks and stables for a detachment of Life Guards and Horse Grenadiers. Under the Dial was a big room where preaching was held on Sundays. The Board of General Officers and the Courts Marshal sat there; and the office of the Judge-Advocate-General, a political sinecure of to-day, was there lodged. The Banqueting House became a chapel for the Georges. Down by the river, where the Woolstaple is, on the bridge of which so many chroniclers have written,—but it was only a wooden jetty,—there is stir and movement. The weathercock in the Privy Garden, which James eyed so often, to see the way of the wind that brought the Dutchman to grateful England, had been long pointing to change. A real bridge is contemplated, to relieve the horseferry that so long formed part of the revenues of Lambeth. Some old tenements must fall, and some narrow lanes must be widened. Authority will take its time. For the present, a bridge to connect the Surrey side with Westminster; a straight street from the bridge to King-street, and afterwards to Storey's Gate; and a street at right angles, to join Whitehall with Westminster, are all that can be accomplished before the eighteenth century has spent half its course. Forty years before the bridge was built, the Clock-house in New Palace-yard, as well as the Palace Gatehouse, at the foot of Union-street, near the corner of St. Margaret's-lane, were removed. They left a decent interval between the ravages of reform. Nevertheless, New Palace-yard has got a brand-new side of private dwelling-houses, and brand-new houses front them on the opposite flank of Bridge-street. The remains of the old gate, by the river-stairs, are levelled; the Round Woolstaple is sold for 840*l.*

Holbein's Gatehouse is gone; Parliament-street is pierced. No more shall the kings of England pass through King-street to Parliament, and all the filth of Dirty-lane heaves to and fro, because, of a surety, the millennium is at hand. There were many there who could have told

A TALE OF WESTMINSTER PALACE.

St. Margaret's-lane was full of people when George II.—dapper little George he has been called since—went to open Parliament some short time after his coronation. His Majesty's Surveyors laid faggots in the deep ruts of King-street, so that the state coach and its eight gallant horses might not stick fast in the mire. When the king was got well through Union-street, his cattle and conductors were fairly puzzled how to enter St. Margaret's-lane. Hell and Paradise lay to the left of them; and as the coach blundered on, the people held fast to the wooden posts that divided the narrow foot-passages from the narrow roadway between. You know Paternoster-row of the present time, and its iron posts between house-front and kennel; imagine the same things in wood begrimed and besmeared. The mud lay deep as far as Heaven and Purgatory, between which and Henry's Apse the Majesty of Britain was borne obliquely to the entrance of the House of Lords. Here, however, there was a little difficulty, for eight horses require not only some circuit of turning-space, but also some length of passage-way. Their eight noses were directed into Dirty-lane while the king descended; free of the royal burden they entered the courtyard of Abingdon House, which used to be on the west side of the lane. Thereby it was possible to turn the coach and so reconduct Majesty to its home. Dirty-lane was about 15 ft. broad from house to house; it was the habitation of the poorest and vilest of the population. St. Margaret's-lane had an advantage over it in breadth of three and even more feet. Twenty years after the coronation of George II. that picturesque lane became St. Margaret's-street, and Dirty-lane was rebaptised as Abingdon-street. In 1793,—just sixty-five years from the day when the inconvenience attending a royal progress to Parliament was felt,—the latter street was still further freed from obstruction.

Nor had the Office of Works failed to take cognisance of the increasing exigencies and requirements of Parliament. The happy union with Scotland had swelled the number of national representatives; and though Sir Christopher Wren raised beautiful wainscot galleries in the Commons' House, which was well matted under-foot, and held 513 gentlemen, yet the wainscoting only concealed the ruined condition of its carved and painted walls. In 1739, the Lords Commissioners of the Treasury directed the Office of Works at Whitehall to prepare designs for a new Palace at Westminster. They were prepared to the recorded satisfaction of the Treasury. They included a façade to the river; the enlargement of Old Palace-yard; the widening of its approaches; and the retention, if not restoration, of St. Stephen's Chapel. The designs, which an impartial critic called "truly admirable," were estimated to cost 167,067*l.* The nation paused to consider a renovation which was to be attended with an outlay so prodigious, preferring, some eighty years afterwards, to spend all but 17,000*l.* of that sum upon the coronation of George IV.

Just a year or so before the French Revolution I saw sorry and sad sights at St. Stephen's. The mob penetrated to the very doors of the Houses; even orderly people peremptorily demanded that popular representation should be made free of aristocratic patronage and corrupt influence. A large increase in the number both of the Commons and the Peers rendered it necessary to make alterations in the Palace; operations commenced in August, 1800. Happily by an Act of 1782 a new Office of Works had been constituted; the first Surveyor on the establishment was Sir W. Chambers. In March, 1796, Mr. James Wyatt was made Surveyor of His Majesty's Works, and under his orders a new House for the Lords was arranged within the old Court of Requests. The interior of the House of Commons (St. Stephen's Chapel) was enlarged. The mutilation of the remaining Mediæval buildings was accomplished with admired precision. St. Stephen's Cloister became a kitchen-yard: the kitchen was a shed abutting against the little Oratory, the lower story of which was converted into a scullery. The huge buttresses of the great Hall were defaced and partly cut away; paintings and sculpture gave place to wainscoting, windows, and stairs. The east window of St. Stephen's was partly filled up with brick-work; three small round-headed windows were inserted; a doorway was cut through the altar wall; holes were made in the octagonal angle-turrets; the parts of the interior which formed Mr. Speaker's residence were duly plastered and renovated. At the end of the last and the beginning of the present century St. Stephen's bell-tower was Mr. Speaker's best staircase; Mr. Speaker's new house ran round two sides of St. Stephen's cloister. Mr. Speaker's garden extended upon an embankment to the

river; but originally St. Stephen's Chapel and the adjoining houses of the vicars were washed by the river, or, at least, only a narrow terrace existed between them and the Thames. The coffee-houses and public-houses which had remained for so many years on either side of the great entrance to Westminster Hall were removed. New coffee-houses occupied the corner where Hell and Paradise and the Coach and Horses public-house rotted before. Heaven and Purgatory were gone; but the Star and Garter public-house flourished next the King's entrance to the House of Lords. A newer building stood on the site of Cotton House; the Cotton-garden remained bounded on one side by Mr. Hatsell's garden, and on the other by Mr. Delaval's house. The only direct entrance from Whitehall to the Broad Sanctuary lay through King-street. Some alleys led into it from St. Margaret-street and a break between the cluster of houses, on each side of St. Margaret's Church and the Abbey, formed a narrow passage from the Old Palace to the churchyard. At the east end of the church was attached the Ordnance Office, not, however, the same Ordnance Office that originally formed part of a group composed of Waghorn's coffee-house, the King's entrance to Parliament, the Ship public-house, and the Cæsar Head.

The sure and steady hand of improvement was at work in the twelfth year of the present century. About eighty years after the plans for a new palace had been approved by the Treasury, Sir John (then plain Mr.) Soane erected in the Grecian style of architecture a new royal entrance, a king's staircase, a royal gallery, a Lords' library, new committee-rooms and offices. Many remains of the ancient palace were then necessarily destroyed. The spirit of progress was astir; the wave of British democracy was rolling, and in '32 gaily rode the good ship that bears the name of

REFORM.

Two years more and an unaccustomed light beamed upon the floor of the House of Lords; doubts were freely entertained whether it could mean "fire." Mrs. Mullencamp, doorkeeper's wife, expressed a conviction to Mrs. Wright, deputy house-keeper, that the House of Peers was on fire. Mr. Richard Weobley, Clerk of the King's Works, observed that a chimney near the Lords seemed to be very much on fire. An inscrutable decree of Providence then made as great a hole in the Palace of Westminster as that which had been made in London, by the same means, 168 years before. On the next day the Office of Woods and Works showed, in a masterly and an exhaustive report, what had and had not been destroyed by the flames. The public mind was calmed with an official assurance that the strictest inquiry was instituted as to the cause of the accidental calamity.

But there was mental agitation in the world of bricks and mortar. After ninety-five years of patient expectation, the architects of Great Britain were unexpectedly, and many said prematurely, put upon their mettle. A Select Committee having considered and reported that plans for a new palace should be delivered into the Office of Woods and Works on or before November 1st, 1835, the Government, in less than two years afterwards, conferred upon Mr. Charles Barry the appointment of Architect, — just ninety-eight years after the truly admirable plans first ordered by the Treasury had been approved, shelved, and forgotten. In the year 1849 began the squabble about the payment of a just remuneration for the architect's services. In full vigour, nine years after, it received in 1857 the assistance of the late Mr. George Russell. His part in browbeating and bullying an honourable man whose great work gave the first and necessary impetus to recent art-education in this country, was performed with accomplished vigour. The disputes which shattered Sir Charles Barry's health did not terminate with his death. The legacy he bequeathed to his son terminated with dismissal at the hands of Mr. Ayrton; and a further squabble about the ownership of Sir Charles Barry's drawings for Westminster Palace ended in the official triumph of Whitehall-place.

The horizontal lines of the Palace were sadly marred, so many said, by the ungainly curve of the bridge that hid the new building from the Whitehall bank of the river. A hundred years and more had elapsed since the bed of Thames received its first burden of

WESTMINSTER BRIDGE.

I was quite a child in the year when Normans sank, —and they continued for many a long year after, —rubble, lime, and sand in the river between London and the old South work. For nearly six hundred years London could boast of only one bridge. It had noble gatehouses, and a chapel, like the early bridges of France. The houses remained upon it till four years after the bridge at Westminster was finished. The width between the houses was not more than a score of feet; the bridge had twenty arches. About 1738-9 they laid the first stone of the first bridge that Westminster built across the Thames, and the last in 1747. The bridge was open three years afterwards. It had thirteen arches and two smaller arches; it had a carriage-way of 28 ft., and footpaths each of 7 ft.

The light of progress that, forty odd years ago, illumined Westminster, was not powerful enough to cross New Palace-yard. The fire that destroyed Westminster Palace spared Bridge-street and the bridge. A Select Committee felt the inconvenience of the fact about the year 1844; so did another in 1846; and another in 1850. The Commissioners of Metropolitan Improvements sat to hear evidence and receive advice. In November, 1846, proposals were made to build a bridge at the Horseferry and another at Charing-cross. It was also proposed to abolish Westminster Bridge. The landed proprietors of Bridge-road, Lambeth, would not hear of such a thing; they appealed with success. Mr. Thomas Page, C.E., showed the necessity of a bridge across the Thames at Scotland-yard, and suggested an approach to it from Charing-cross by a street running parallel with the south-west wall of the Duke of Northumberland's garden. Sir James Pennethorne even thought that a street right through Northumberland House to the suggested bridge was required, but he put forth the idea of expropriating a Duke as Utopian and impracticable. By such a bridge the saving to people coming from the heart of town would have been one-sixth of a mile as compared to the route by Westminster Bridge, and one quarter of a mile as compared to that by Waterloo Bridge. Had Northumberland-avenue led to such a bridge as the one advocated by Mr. Page and Sir James Pennethorne, the land on either side of the Avenue might have been let by this time. But the Commissioners of Metropolitan Improvements urged the claims of Belgrave-square. Take away the bridge from Westminster and people who had carriages and horses would have to go a sixth of a mile out of their way when they chose to visit the New Cut or the Asylum for the Indigent Blind. Engineers and architects, however, urged with some audacity the greater claims of all London over those of a suburban square. Belgravia won. From the 5th to the 23rd of July inclusive of the year 1850 a Select Committee sat principally to consider the report of a Select Committee that sat in 1846 on Westminster Bridge. Thirteen witnesses were examined, and a folio of seventy-five pages was published. In 1851, a Report of the Commissioners who considered the best and most convenient site for a new bridge at Westminster was presented to both Houses of Parliament by command of the Queen. The Report noticed with becoming acumen that three Committees of the Commons had previously sat upon the subject. In 1853, another Select Committee examined twenty-three witnesses, and on the 16th of June of the same year published its minutes.

The bridge question was now fairly started for elucidation. On October 18th, 1854, the contract was signed, and among other conditions, the new bridge was to be ready by June 1st, 1857. On July 1st, 1856, a Select Committee inquired into the actual state of the new structure and the course to be adopted in relation thereto. The inquiry which, with its index and appendix, occupies 123 folio pages, resulted in the opinion that the further progress of the works of new Westminster Bridge should remain suspended until the Government had had an opportunity of considering and deciding on the advice to be offered to Parliament on the subject.

On Friday, the 17th of July, 1857, it was resolved that a Select Committee be appointed to consider the state of Westminster Bridge, and the course to be taken in relation to the works which were suspended. In 1858 the works were again in progress; and the bridge was opened for traffic towards the middle of 1862. Thus, this desirable consummation was attained eighteen years after the necessity of its existence was admitted by the wisdom of Parliament. For eight years of practical work there had been ten years of previous consideration. The approaches to Westminster, begun at the very beginning of the last century by the removal of King's Gate, progressed about the year 1750; one hundred and seven years after, hopes were raised that the slow march of amendment would quicken to a livelier tune. Twenty years have since elapsed, and, in spite of the festive season, the wits of St. Stephen's will neither be merry nor gay; they have bottled up for another explosion, in the Spring, the time-honoured joke of a Select Parliamentary Committee.

THE ECCLESIASTICAL ARCHITECTURE OF RUSSIA IN THREE ERAS.*

II. NATIONAL ART. A.D. 1475-1689.

IN the year 1475, the Czar, Ivan III., invited from Venice the architect Aristotle Fioraventi, for the purpose of erecting various structures projected by him, including the embellishment and fortification of the new capital of Moscow. In the same way as during the Byzantine influence Kief was the centre of the state power, and served as a model for all the towns flourishing at that period, so in the fifteenth century Moscow appears as the capital of the autocratic sovereigns of Russia, and in its turn in its various structures serves as an example for imitation. It must not be supposed that the architects brought over with them and introduced foreign art; on the contrary, at that period Russian architecture had reached a remarkable degree of independence and originality, and if the foreigners did bring with them a knowledge of the styles of the West, the Romanesque and partly Moorish, the national architecture merely made use of them by adapting the same to its requirements, creating quite new and original productions. In the year 1484 began the construction of the brick walls and towers of the Moscow Kremlin; at the same time the foundation was laid by Ivan III. of his new palace on the old spot near the Blagovestchenye (church of the Annunciation). The builder of this structure was Aloyse, from Milan, and of the towers and walls of the Kremlin the Italians, Marco, Antonio, and Petro. The Kremlin of the present day rises in the centre of the town before the traveller in all its quaint originality, and the traveller with aught of the picturesque and antiquarian instincts in him will gaze with wonder not unmixed with admiration at the high stone walls, its curious old towers, and the venerable churches with gilded cupolas. We are indebted to the Italian Petro just named for the Spassky gates of the Kremlin; the tower of these gates, like that of Troitsky gates, carries with it the imprint of the Gothic style, but yet there is a great deal of originality in it. The Spassky gates in particular impress one with their harmonious proportions and lightness, notwithstanding the solidity of their construction; on a rectangular foundation, in the form of a wide square pillar, rises the second story with a row of large and small arches, and a most beautifully-pierced attic, the third story, by its transparency quite smooths off the lines to the steeple. In completion of the composition on the front of the foundation tower is placed a semi-Gothic arch, resting upon two Corinthian pillars. It is through such an entrance that one passes into the Kremlin. These Kremlin structures look both majestic and graceful at the same time. In order to get this impression it is necessary to view them at a distance; it will then be clear what beautiful configurations are hidden in these, to all appearance, heavy forms. The most prominent feature in Byzantine architecture is naturally the dome, and it is to the dome that the Russo-Byzantine has devoted itself in particular. The dome in Classical architecture did not play any important part; a purely hemispherical form of dome carries with it the impress of deadness, and the ancients understood this. The East produced the dome, cherished it, and developed its form in a variety of ways, and handed it over to the West during the Renaissance period, as an element fully elaborated. The Byzantine architecture, sooner than any of the European styles, adopted the dome as a necessary and convenient covering for the transept, but at that period the dome was developed but feebly, and presented the shape of a convex and round vault, rather than an independent form. In this form it came over to Russia at the beginning of its first epoch. We

* See p. 1215, *ante*.

have seen that already in the first Russian churches the number of domes visibly increase, although the dome itself still remains of insignificant proportions. In the Ouspensky and Archangelsky Cathedrals we find the domes already larger than those of Kief and Novgorod. In the sixteenth century Russia came into close contact with Eastern nations, and it is probably owing to this influence that she assumes a new character in her church architecture. In the beginning, the greatest diameter of the dome is at its base; in the course of time this diameter begins to rise further upwards, and, as it were, separating itself from its base by a narrow cylinder; it is in this form that we find the domes on the Kremlin churches; afterwards the diameter continues to rise gradually upwards, the summit of the dome becomes pointed, and the cylinder below the great diameter becomes narrower, in consequence of which we get the shape of an inverted pear. It is this kind of dome that characterises the Byzanto-National style. And thus the domes of the Kremlin cathedrals are considerably lighter and more graceful than those of the first epoch, the drums which support them are of considerable size, and are pierced with long narrow window openings at great intervals. The plans of the structures, the walls, as well as the apses and porticoes, remain the same, but the top part of the walls undergoes a considerable change; along them appear a row of architectural arcs or semicircles, the inside of which is ornamented with rosettes, frescoes, &c. In the Mikhailovsky Cathedral these new decorations are very clearly and distinctly defined; but with this small alteration of the exterior, the church inside experiences a considerable change,—marbles, gilding, sparkling mosaics, and Greek and Byzantine columns disappear, the pillars become round, and both these and the walls are covered with paintings of religious subjects in the most rigid style. The windows become still narrower, and are enclosed with iron bars, and in the church reigns a heavy semi-darkness. The ikonostas of several tiers occupies the principal face in the interior of the church, and quite conceals the altar. All the exterior decorations, the former fantastic forms, which were frequently very light, become low, broad, and heavy. In everything is felt a kind of oppression. The Ouspensky Cathedral was built in 1473, in the time of the metropolitan Philip, but was in the following year destroyed by an earthquake. It was rebuilt by Aristotle, between 1475 and 1479. This church soon became the last resting-place of the Czars, and the tombs of the ancient Czars and grand princes increase still more its sombre, dismal, and austere character. The valuable ikonostas of the cathedral in its pictorial illustrations is supposed to represent the idea of the universal Church, the union of the Old and New Testaments. The Archangelsky or Archangel Cathedral, as it is seen at present, is surmounted with five domes, the height from the top of the middle dome to the floor being 112 ft.; the length, without reckoning the walls is 224 ft.; and the width 140 ft. It was originally built in the time of the Grand Prince Ioann Danilovich, in 1333; it was subsequently, owing to the want of room, replaced by a new church, the foundation of which was laid by order of Ioann Vassilyevich, in 1505. The construction of the cathedral of Michael the Archangel was entrusted to Aloyse, from Milan. We will now call the attention of the reader to one of the most original structures of the Russian Empire. We allude to the Cathedral of Vassily Blazhenny (St. Basile the Blessed), at Moscow. This edifice has attracted the attention of foreigners, who, not being acquainted with the religious habits and customs of the Russian people, as expressed in her ecclesiastical architecture, are unable to understand its importance. Some call this production barbarous, others quaint or grotesque, and others, again, look upon it as the most fantastic architectural production that ever emanated from the human brain. An eminent Russian writer on ecclesiastical archæology gives the following description of this extraordinary production of Russian art.:—

"The Cathedral of Vassili Blazhenny stands on the Kraseny *place*, an expensive area, its eastern side facing the Gastiny Dvor or market; its western the Spassky gates; all leading into the Kremlin; the south faces the descent to the Varvarefka-street. The edifice, situated at the end of the *place*, stands alone. If we look at it from the north side from the side of this place, and, besides, at a distance, we find it presents the form of an irregular group, or, as it were, an aggregation of several churches; but the nearer we come to it the more distinctly appears to us its composition. We have before us a pyramid composed of nine obeliska placed on a quadrangular foundation, somewhat irregular on account of the various additions. If we take away these additions we have the plan of a quadrangle, on each side of which are placed the octagonal basements of four towers out of nine forming the entire structure; the three sides out of eight of these towers project out of the square of the foundation. We have to examine the basement of the edifice, or the body of the church, and the nine towers erected on it. The middle tower is the highest of all, the four next ones reach to about two-thirds of its height, the four smaller ones reach to one-half. This is where we get the impression of a pyramid. The walls of the body or basement of the structure are divided along the whole of their extent by a cornice which runs round the whole of the structure. The lower parts of the walls below this cornice are decorated with small pillars, between which are wide architectural squares, some of which are pierced with small narrow windows. Above the cornice is a row of squares, one-third the size of the above, so that for one lower square there are three upper ones. The smaller squares are ornamented with designs of flowers. Above the small squares are arranged semicircular windows in the form of arches, the number of which correspond with those of the small squares below; a row of these windows goes round the whole of the building, just under the roof. In some parts the windows are increased to the size of three. The roof was formerly of tiles, around which ran an inscription stating the year of its construction and the object with which it was erected. Since 1772 the roof has been replaced by one of sheet iron. We come now to the towers, or the upper and most imposing part of the building, as the basement forms scarcely one-sixth of the total height. The middle tower, the highest one of all, at one-third of its height is decorated with prominent massive cornices; it is exceedingly complicated, and rests on a row of ornamental brackets. The part of the tower above the cornice presents the following features: at the corners of the octagonal body of the tower columns are placed, the lower part of them is plain; two-thirds of their surface have an increased thickness in the form of three bands. Where these bands terminate a small cornice goes round the building.

Below the cornice on each side there are three niches, with small windows, and the same number of niches above the cornice; but the latter are twice the height of the former, with windows in each alternate one, but of the full size of the niche. All these parts are notably in the Gothic style and the details, of great delicacy in the decorations of the window copings, are something after the style of the Renaissance. But for that above the grand cornice, the Byzantine style developes itself in all its splendour. We referred above to the architectural arcs or semicircles on the top edges of the outer walls of the Kremlin cathedral. Above the grand cornice are formed three rows of gigantic architectural semicircles, and between these (at the corners of the octagon) three rows of smaller ones. And now imagine that from this zone of Byzantine arcs rises all at once a Gothic tower, and besides, with receding cornices (the transverse section of it being a star with eight rays) and with a tall Gothic steeple, on the apex of which is placed a purely Byzantine cupola, with its cross and chains. Although all this may be termed architectural daring, still for all that the impression it produces is of the most fascinating kind. The base of the steeple is surrounded by semicircles arranged in groups of six in a pyramidal form; this combination is much appreciated in our architecture, and it can be found in the buildings in the Byzantine style of the present day. The four towers which are placed inside of the four façades differ from each other in their details, but their chief characteristics are common to all of them. The cupolas with their drums are placed on high octagonal basements or towers, and the latter are decorated like the grand tower with semicircles, cornices, and flat ornamentations. The four smaller towers are decorated in the same manner. The latter are of high development, *i.e.*, the greatest diameter is far from the base, and the apex is drawn out. They are covered with sheet-iron, and are painted in variegated colours. The exterior finish of each cupola varies in design: on the western one it consists of diamond-shaped projections, placed close together; on the north-west one it is a network, in the meshes of which are arranged the same kind of diamond-shaped projections; on the northern cupola, the form is that of the runners of the melon curled into spiral forms. Around the base of each cupola is a band in imitation of lacework. The sombre interior of the Cathedral of Vassili Blazhenny is formed of eleven chapels and about the same number of sacristies, dwelling-rooms for the church servants. All these chambers are arranged in two stories, and are joined together by a multitude of corridors, cross passages, &c.

The walls are decorated with holy pictures,—some of them very ancient, others recently restored. The name of the architect is unknown. It is said that the builder in erecting this edifice had in view to bring together the styles of every age and every nation,—according to the words of the Testament,—'Let there be one flock and one shepherd.' The cathedral was built in 1558, in the reign of John the Terrible, who, on the conquest of Kazan, made a vow to erect a church. It suffered considerably during Napoleon's occupation of Moscow in 1812. As to the merits of this marvellous piece of architecture, it is necessary only to look at the designs of ancient Russian structures and the structures in the Byzantine style of the present day, and then examine the cathedral we are describing. There is not a single detail, or line, or method of execution in our national architecture which is not to be found in the cathedral of Vassili Blazhenny. We do not, however, wish to imply that this cathedral created a national architecture,—that it represents its final type,—no; but it has reproduced nearly the whole of it, and in this respect that architectural monument is invaluable, nor can there be denied to the architect genius in the composition. In this cathedral the national art has been fully expressed. After the Polish invasion and the interregnum, the house of Romanoff came to the throne, and upon the establishment of order the national art was again revived. In order to study the architecture of that period it is necessary to refer to the Imperial slobadas (large villages) of Mikhalofsky and Kolomensky and the Novodevitchye Monastery; but the architectural art produced nothing particularly novel, only the old heavy forms became lighter, the details showed more regularity in the pillars and archivolts; but, on the other hand, the ancient Byzantine style of the first period disappears. In restoring the ancient temples the narrow windows became widened, forgetting the necessity for semi-gloom, the walls were strengthened with buttresses, and in the fresco and oil paintings they held blindly to tradition without having caught the merits of the ancient style. Civil architecture began to develop itself to the detriment of church architecture, although the former for the want of elements could not boast of richness of composition, but for these the minutiæ were cultivated in the extreme. As an example may be taken the palace in the village of Kolomenskoye, where Peter the Great was born, who ascended the throne in 1689, and who, by the reviving of the national spirit, gave to architecture, as to everything else, a new direction."

OUR COLONIAL PROGRESS.

The "Statistical Abstract" for the colonial and other possessions of the United Kingdom has just been issued, and it contains a mass of facts showing the material progress of many of our colonies in recent years, and the tables are from authentic sources in regard to the population, expenditure, debt, shipping, trade, banks, railways, agriculture, &c. It may be interesting to summarise some of the facts given in a bulky Blue-book, for many of them have an important bearing upon home interests. The population returns are not generally complete, but those for Australia show that there has been a great growth in the population between the years 1871 and 1875, the numbers having risen to 2,327,882 in the latter year, the increase being especially noticeable in Victoria, South Australia, New Zealand, and Queensland. In regard to revenue, the figures are very much fuller. In India the revenue, slightly over 50,500,000*l.*, has been comparatively stationary of recent years; Ceylon, which had fallen, is now beginning again to rise; at the Mauritius it fluctuates under and over 700,000*l.*; in Labuan it is slowly rising, and has now reached 8,758*l.*; whilst in Hong Kong it has risen irregularly, and is now

186,818*l.* In Australia the increase has been large within the last fifteen years. In 1861, the gross amount of public revenue in New South Wales was 1,843,067*l.*, and it increased to 4,121,996*l.* in 1875; between the same years the revenue of Victoria rose from 2,952,101*l.* to 4,236,423*l.*; of South Australia, from 575,575*l.* to 1,143,312*l.*; of Western Australia, from 67,261*l.* to 157,775*l.*; of Tasmania, from 315,733*l.* to 343,676*l.*; of New Zealand, from 782,023*l.* to 2,813,928*l.*; and of Queensland from 238,239*l.* to 1,261,464*l.*; so that the increase in Australia has been in the total from 6,773,998*l.* to 14,078,574*l.* The revenue of the Falkland Islands has fallen off, and is little more than 4,000*l.*; that of Natal is now over a quarter of a million, and has been doubled in fifteen years, whilst, in that period, that of the Cape of Good Hope has increased from 748,832*l.* to 2,246,179*l.* The Gold Coast, Sierra Leone, Gambia, Bermuda, and Honduras, have also increased; but their amounts are comparatively small. The Dominion of Canada has increased its revenue from 2,851,652*l.* in 1868 to 5,135,149*l.*; Jamaica, having doubled its revenue of 1861, has now over half a million; and Trinidad has also considerably enlarged its receipts. The public debts have been considerably enlarged,—India, to 130,493,284*l.*; the total of Australia to 54,759,347*l.*, of which New Zealand, Victoria, and New South Wales have the largest parts; the Dominion of Canada to 24,168,412*l.*; the West-India Islands to 1,069,502*l.*; and other of the smaller possessions to proportionate amounts.

As regards foreign trade, it may be said that the tonnage of vessels entered and cleared has been considerably added to as regards India; for the Dominion of Canada, it has doubled; and for Australia, it has nearly trebled in fifteen years; whilst of the smaller possessions Jamaica affords perhaps the most satisfactory enlargement of this portion of its trade, the tonnage having increased from 197,376 in 1861 to 766,378 in 1875. The value of the total imports is next given; and of these it may be said that India has added ten millions sterling to the value of her imports in fifteen years, the value now being given as 44,363,160*l.*; Australia has nearly doubled hers, and has now a value of 47,272,839*l.*; the Dominion of Canada has now a total of 25,639,642*l.*; and Malta, one of 10,324,587*l.* The imports from the United Kingdom (included in the sums just stated) were 34,246,716*l.* for India; 23,320,674*l.* for Australia; and 12,572,306*l.* for the Dominion of Canada. The exports have also risen:—India, to 57,984,549*l.*; Australia, to 44,407,000*l.*; and Canada, to 16,226,454*l.*; and about half in each case is sent to the United Kingdom. In regard to some of the chief of these exports, the wool sent out of Australia is now fourfold what it was in 1861, and nearly double in respect of the Cape of Good Hope, whilst Natal has grown to be a considerable shipper. As regards the general class of imports, India is especially increasing her imports of metals, and her exports of rice and tea; Ceylon, her imports of cotton manufactures, and her exports of coffee; Australia has a large and general increase of imports, but her gold exports do not keep pace with the progress of some other of her productions. The rise of the preserved meat trade is noticeable in Queensland; the enlargement of the wool trade in Natal, and the export of copper ore from the Cape of Good Hope; whilst Canada has especially developed her provision export trades.

The acreage of land under wheat is very largely increasing in the Australian Colonies, for whereas it was 747,927 acres in 1861, it was 1,513,419 in 1875; the number of horses in those colonies has also been doubled in the same period; there has been a large increase in the number of horned cattle, and the number of sheep is nearly trebled, whilst the possibilities of bacon are enlarged by almost a duplication of the number of pigs. Coming now in turn to the vital statistics, we find that the gross number of births in the Australian colonies is much enlarged, but the proportion to estimated population is less, it having fallen from 41 per 1,000 in 1861 to 36 in 1875, and varying in the latter year from 29 in Western Australia to 40 in New Zealand. The deaths are doubled in the interval in actual number; and the proportionate number has risen from 16 per 1,000 of the population to 19,—the highest in the parts giving this total being 24 for Queensland, and the lowest 18 for New South Wales and Western Australia. The marriages, it may be noticed, are increased in number, but not in proportion, the general average having fallen from 9 to 7 per 1,000 of the population. The lowest ratio is that of Victoria, and the highest place is jointly occupied by New Zealand and Queensland. The banking statistics cannot be very well tabulated, but generally they show an increase. Those relating to railways may be thus stated:—British India has increased the number of miles open for traffic from 4,832 to 6,497 in five years; Ceylon, in one year less, from 74 to 91; Mauritius, in both years' returns, 66 miles. In Australia, New South Wales had, at the earlier year, 335 miles, and had at the later, 347; Victoria, which had 276, raised that amount to 617; South Australia, from 133, has become the possessor of 274 (inclusive of certain horse railways); Western Australia has now 38 miles of railway open for traffic; Tasmania, 150; New Zealand, 542; and Queensland, 265. Natal has now 5 open miles; Cape of Good Hope, 149 miles; the dominion of Canada, 4,443; Jamaica, 25; and British Guiana, 21 miles. There is thus, broadly looked at, a vast increase in the material prosperity of our colonies; a large development of their resources; and a very great extension of their trade. We share to a large extent in the fruits of these; and we partake to the full in the benefit of their enlarged trade, for the bulk of their exports are sent to us, and the bulk of their imports are delivered from us. We may, therefore, fittingly rejoice in their prosperity, and look to the future to increase its ratio, with the confident hope that we shall continue to preserve and extend our trading connexion with them; for from us they receive yearly accessions to their sinew and strength; yearly their indebtedness to us in monetary matters increases; and yearly the bonds of sympathy and of trade should be strengthened.

THE TELEGRAPH IN GERMANY.

WE took occasion in a former number * to refer to the underground cable laid last year by the German Telegraph Department between Berlin and Halle, as the first of its kind. Since then the principal German telegraph lines have been changed on this principle, while others are in contemplation, so that, within the next few years, Germany will be covered by a network of underground cables. The highly-important route from Berlin to Mainz was completed this summer. And now, another line, of great strategical importance, has just been opened. We refer to the underground cable now connecting Berlin with Hamburg, the principal emporium in Germany, and Kiel, her great naval station. A similar attempt for at least part of this distance had already been made by the whilom Danish government, as early as 1852–53, when it carried out the experiment, at that time considered bold, of having an underground cable laid between the towns of Altona, Neumünster, Rendsburg, and Flensburg. Though the laying-down of the cable was successfully accomplished, its faulty construction, owing to the then yet imperfect state of telegraph engineering, carried with it ultimate and certain failure. In laying the present German cable, the route of the former Danish one was followed, unintentionally, for some distance, when fragments were discovered, of great interest to the telegraph engineer. The former Danish cable consisted of a single copper wire surrounded by an isolating gutta-percha coating, this again being enclosed in a covering of lead, to protect it from injury. Unfortunately, it was soon found that its isolation was most imperfect. Investigations showed that the coating of lead, where the cable had been laid in marshy soil, which is rich in carbonic acid, had been gradually destroyed by the formation of salts of lead, in consequence of which the gutta-percha was brought into immediate contact with the decomposing substances of the soil, deformed, rendered friable, and finally its property of isolation entirely annihilated. But since that time telegraph engineering and cable manufacture have undergone a complete revolution. Cables are now constructed and laid down which, as far as scientific and technical suppositions go, will last, if not for ever, at least for generations.

The underground cable just opened between Berlin and Kiel consists of seven separate copper plaits, separated from each other by a gutta-percha coating, each plait or cord representing a twist of seven single copper wires. The seven copper plaits are formed into a cylindrical rope by means of intertwisted skeins of hemp and a covering of tarred hempen bands, and again protected against external violence by galvanised iron wires twisted round it. This covering of iron wire, finally, is made secure by specially prepared jute spun round it. This description of cable is the first of its kind every single part of which is made in Germany. Dr. Werner Siemens has specially established cable works at Charlottenburg, where every branch of the manufacture of cables, even to the covering of the copper plaits with gutta-percha, is carried on. Regarding the cost of the work, a kilomètre of the deposited cable comes to about 4,500 marks (225*l.*), the whole cable (400 kilomètres long) to 1,800,000 marks (90,000*l.*), or about 360*l.* per English mile.

The cable was formally opened on November 3, at Kiel, in the presence of the German Postmaster-General and a large assemblage, including a number of telegraph engineers and scientific men invited by Dr. Siemens; representatives of the Austrian and English Telegraph Departments being also present. The first messages sent through the cable were addressed to the Emperor William, the Crown Prince of Germany, and Prince Bismarck. Upon this followed highly interesting experiments with Professor Hughes's printing apparatus on the line from Kiel to Berlin, which were entirely satisfactory. Next, trials were made with Dr. Siemens's lamp-black apparatus (already tried on the Transatlantic lines), and Hefener Alteneck's box apparatus. The aim of these novel apparatuses is to work at long distances, with proportionately weak currents and without transfer gear, direct upon the cable lines. Both apparatuses are based upon the Morse principle; but while in the Morse apparatus the type, consisting of strokes and dots, appears in a straight line moving in the middle of the strip, in the new apparatus the system has so far been changed that the Morse signs are produced only in the form of dots, which are placed by the apparatus upon the strip of paper in two parallel rows, separated from each other. With the lamp-black writer the telegraph signs are scratched by a fine point upon a strip of paper to which a coat of lampblack has been applied, and fixed at once by means of alcohol and shellac. The movement of the point is effected by the sliding up and down of a small wire roll, or induction spiral, situated in a hollow magnet. The type produced appears in curve-like dents, similar to graphic representations; the lower points of these dents representing the strokes, the upper points the dots of the ordinary Morse type. With the box apparatus, the Morse type appears upon the receiver in dots, produced partly upon the lower part of the strip of paper, partly upon the upper; the lower points represent the Morse strokes, the upper ones the Morse dots. Messages were sent by means of the lampblack apparatus and box writer, without transmission, upon the cable Kiel-Berlin-Frankfurt, 597 miles, without any disturbance, to the great satisfaction of all present.

* See *Builder* for April 8, 1876.

A NEW CLASS OF WORKMEN.

So much has been said of late about the workman,—using that word in its ordinary acceptation,—that it would seem, at first sight, all but impossible to add more either of novelty or of real importance. But it is far otherwise when we come to analyse the matter, and to look with open eyesight at what is going on all round us, and in special localities every here and there. And more even than this when we come to inquire into the peculiar vocation and mode of work of the workman of past days, and to compare the work then done by him with the work as now turned out of hand by his successor in labour's field,—the modern workman of to-day. It is an important subject of art-thought, not only to society at large, who get the ultimate benefit of a true action, but to those who rule in art; and certainly, if not to these, to the artist who in great measure directs the workman's hand. We are more particularly concerned with those men who are employed in building operations, as stonemasons and stone-carvers, and who so fully exemplify the vocation of the workman, and whose peculiar position at the present moment is causing some anxiety, from the fact of his being here in London brought face to face with foreign competitors.

There is perhaps no more interesting fact in the whole subject of architecture, or in its mode of production and "development," to borrow a convenient and descriptive word, than the special part played by the workman necessarily

in it. Architecture is a Fine Art, fully as much so as sculpture or painting, or music. But in neither of these has the assistant workman so large a part, if, indeed, he has any part legitimately to play in them. Without the workman architecture could not exist, except on paper, so that in this art he is a necessary element, fully as much so, each man in his way, as the architect-designer himself. It depends upon the workman as to how nearly and correctly the work, as it is marked out for him, is brought into form, and the art-thought is realised in material. No matter, indeed, how original or clever the thought, or how accurate and constant the guidance may be, if the executant workman be deficient in skill, or even deficient in appreciative apprehension. It is curious to think of how much he does, and of how much of the final impression made when the structure is finished, depends on the executive power and skill of the workmen who have been employed on it. Trite as the subject may seem, it is in these days all but a new one. Of its import in art no one doubts.

Now, what is a workman? As commonly understood, he is a simple working-man, with a fixed and cut-out task before him, with weekly, or as now, hourly, wages, but having really, as in the instance of the stonemasons, no individual power or art capacity of his own as an artist, still less personality. All are levelled to a sort of mean, and when one man is taken from a certain work, another is at once, and, as a matter of course, put into his place, and goes on with the work. No one, of course, disputes this, as it is the all-but-universal custom, and, indeed, is the main source of the strength of a manufacturing country and age like ours of the present time. That it has its strength there can be no doubt, and out of it, as a system, very great and rapid powers of production necessarily arise; and the quantity of work produced must be far in excess of what would, or perhaps could, otherwise be. Man is brought to a machine level, and he works with all the speed and regularity, and, indeed, accuracy, of machinery, and the world in these days is in rapid course of being covered with the results of this all-potent process. The modern working-man may be compared to a modern soldier. The modern soldier forms part of a huge machine, and fights by rule and method.

But may we not usefully contrast this modern mode of work with that which obtained in the Middle Ages, and during the time, to confine ourselves to that, between the rise of the Romanesque, or "Norman," to the end of the "Perpendicular" Gothic? It is curious to note, in passing, how little the subject of the actual production, or the working out, of the Gothic architecture, from first to last, has been thought of, or has engaged the attention of those who have written so much and so fully about it. And how much of it, and in it, it owes to the workman, putting design for the moment out of the question! If the Gothic buildings of the past be, indeed, famous in these modern days as successive feats of inventive and designing skill, then certainly are their details not a wit less noteworthy and wonderful, and right full of inventive thought, and sentiment, and feeling! It is unnecessary, indeed, to search for special proofs of this, for they are everywhere to be found where the work has been left to show itself, and where "restoration" has not destroyed the vital force and energy. But wherever it is, and of whatever date, one thing has always seemed to our mind to be visibly impressed on it, and to be evidenced by it, *i.e.*, the power of the workman not only to execute but to think, and to embody his thoughts in the material he worked in. Do our modern workmen here do this? Will their German successors do so? If so, in what way?

There are, indeed, many points of difference between the workmen of the Middle Ages, still to confine our thoughts to them, and our present race of workers. The Gothic workman, for example, never copied either his own work or that of the times which preceded him. If there be an example of copied Gothic it must be an exception, and must have come of some peculiar and special accident of the moment. All our Gothic detail is, as all know, and, indeed, are proud to own, if well done, copied from the past of Gothic. The forms of the old and past are reverted to always, and are imitated as nearly as they can be, put into new and, may be, unusual and novel positions, but are copied forms, and do not for a moment pretend to originality. Invention is out of the question. We really cannot even imagine the mental state of the workmen of the twelfth, or thirteenth, or fourteenth, or fifteenth century; so totally unlike is our *modus operandi* to theirs. It is impossible to cite a better example than the capitals of the famous Doge's Palace, of which details may be seen in the Architectural Museum. The mind and thought of the actual workman is there visible, as well as his handwork. Each cap is a study in itself! All are original and uncopied.

And then, again, what was the workman himself *expected* to do? How did he know what was wanted of him, and whence did he get his "details," to use that convenient word? Did he get them from drawings, or had he anything in his head, and at his finger-ends, to work from, and so needed only to be told to get to work? As we cannot but think, after long study of the matter, he must needs have been an artist as well as a workman, and that he must have had the capacity in himself individually to fill up, so to phrase it, the outline drawn by the master-architect of the structure as a whole. Indeed, to speak generally, must there not have been in the antique Greek and in the old Gothic days a class of men sufficiently educated to think out and fully made capable to work out such work,—*thinkers* and *artists*, as well as *workmen?* And is there not here a hint for the future of art, and in these days, now that we are importing systematically workmen from other countries and other nationalities, with, it may be supposed, distinct and national feeling and powers, and with capacities to mould material into forms peculiar and special to themselves? The Gothic of England in the Middle Ages, and the Gothic of Germany, are seen now to have been all but as two different styles of art.

It is impossible thus to glance back and to look attentively at what has been done in Gothic days, when the style was indigenous, and the artistic expression of the day, without a more and more intense longing to know how such work was done, and the position and special power of the *executive* workman. It is impossible to look at the Venetian capitals without at least a dim view of a Phidias, in a certain quaint way, and of his own time, at work on them. It is surely just such men as these that are now wanted. In the work at the new Law Courts what would such not have done? A new order of workmen, with special knowledge and powers, may be for a long time a dream, it is true; but the day will come when the necessity for such will become evident. We do not here intend altogether "figure" cutting, as it is termed, or subjects; but even common masons' work, without more to illustrate it or to explain it than the plain stone itself, as in the Greek work, where all alike is wonderful, or, indeed, at what has always seemed to us really artistic work,—the *rubble* walling of the Middle Ages. As to the Gothic walling of the castles and gateways, a glance at the Tower, or Windsor Castle, or Dover Castle, or at the dull wall which shuts in the school-house at Westminster, will evidence its artistic merit and its difficulty.

THE GENERAL CUSTOM-HOUSE, PEST.

In addition to the increasing commerce which has raised the importance of Pest considerably, there has, within comparatively recent times, been another great factor at work in advancing its progress—the fact, namely, that Hungary received back her constitution, which signal event made Buda-Pest the seat of an independent government. By this change Pest also became the centre of numerous enterprises, such as railway companies, and the necessity arose at once for a number of buildings for offices, termini, and residences for persons there engaged. A feverish activity of building operations set in, especially in the localities situated closer to the banks of the Danube, but more in a western than an eastern direction, which development has since been continued. But this want, far from being at once satisfied, in conjunction with the facility given by the tramways branching in all directions, caused building operations to extend gradually also in other quarters than those which were first selected.

This development of Pest in all directions was very much favoured by the Government, as the new Ringstrasse, an imitation of that of Vienna, the erection of new bridges, a junction railway between Buda and Pest, and other public works, amply prove. The future configuration of Pest, thus indicated by these new works, must be kept in view if we are not to come to the conclusion that the General Custom-house (of which we give an illustration in this number) is not built in a wrong position. This building is, judging by present circumstances, placed somewhat far from the centre of the city, on the lower bank of the Danube at Pest, being distant three-quarters of an hour from the chain bridge connecting Buda with Pest, and perhaps an hour and a half from the central station of the State Railway, and at greater or less distances from all the more important merchants' offices. But another view will prevail as to the best position of the new Custom-house when it is considered that it is connected, or will be connected, with all the termini of Buda-Pest by the junction-railway above mentioned.

The plans for the new General Custom-house were designed by the architect Nikolaus Ybl. The great building was erected principally as a central depôt for all goods coming from abroad destined for the custom-houses of Buda-Pest and the surrounding districts. Only the part towards the back of the river façade will be used for other Government offices. The building, besides its many offices and numerous and spacious warehouses, to which two large courts, covered with glass roofs, belong, contains room for but four family residences.

The building is 468 ft. long and 168 ft. deep. Its cost, *circa* two million florins (200,000*l.*), is not too high when it is considered that the expense for the masons' work and iron work alone is 700,000 florins (70,000*l.*), and that the work of foundation was very expensive on account of the close proximity of the Danube, it having been found necessary to construct a layer of concrete 4 ft. 3 in. thick. But this foundation has likewise made it perfectly safe against the irruption of water. As regards its inner arrangement, it may be remarked that the warehouses may be entered direct from the water-side by tunnels and tramways. Those tunnels are provided with sluice-gates in case of an excessive rise of the river.

Pest has acquired by its General Custom-house not only a handsome edifice, but a new lever for its material progress.

THE HOUSES OF PARLIAMENT, VIENNA.

New Houses of Parliament were not included among the public buildings enumerated in the autograph letter of Francis Joseph, addressed to the Minister Bach, respecting the extension of Vienna, and which were to rise upon the space acquired by the demolition of its fortifications. Only three years later the idea gained ground that a legislative assembly would not shake the foundations of the State, but would rather help to secure them. The building, consequently, has not such a long preliminary history as its *vis-à-vis*, the University. But it is long enough since Minister Schmerling, amid the cheers of the Chamber of Deputies, announced that he was going to ask for funds to build new Houses of Parliament. In the temporary building which was put up in a few weeks in the spring of 1861, constitutionalism felt still only like a makeshift, which was to be discarded as soon as it had served its end. The erection of a palace for the representatives of the people that was to last, and was at the same time to be worthy its purpose, only seemed to confirm the recognition of the new system. But much water was first to flow down the Danube, the constitution was to be suspended, revived, and revised, almost for the second time suspended, dualism and Parliamentary Government were to be established—all things which never entered into the head of Herr von Schmerling—before the construction was commenced in earnest.

The Houses of Parliament are placed at the south-east side of the former Paradeplatz, and flank the new Town-hall. Theophil von Hansen, a master of Greek architecture, found here, in his second home, for the first time an opportunity for displaying his undoubted ability. Hansen is a Dane by birth, resident in Vienna for twenty-eight years, and has had, consequently, to pass through the troublous times during which there was as good as no employment for architects; the work which he executed later being either outside his sphere or not of a striking description. His greatest creation, which is now illustrated in this journal, speaks for itself.

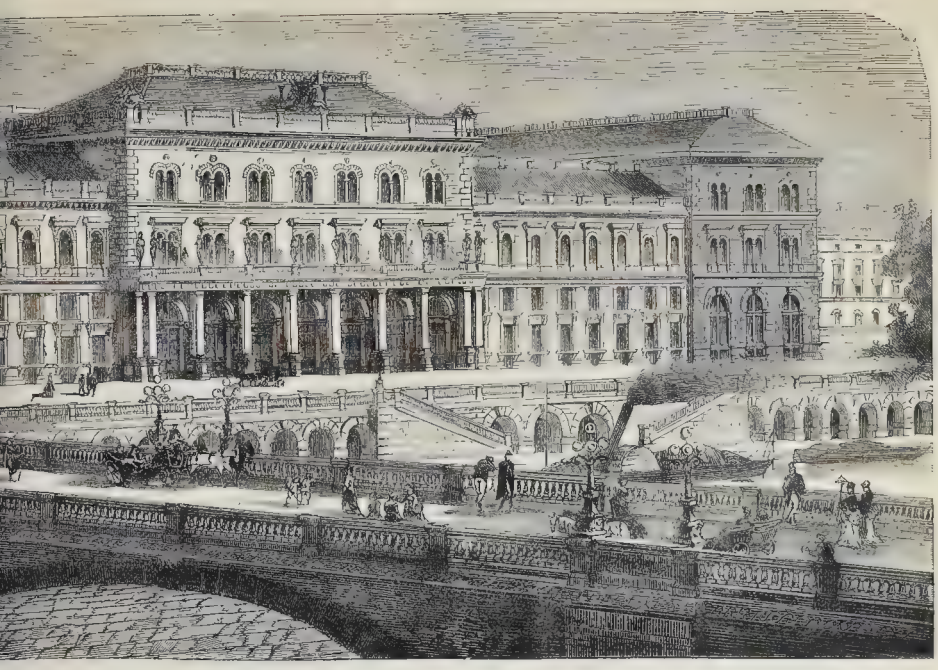
The two Austrian Houses of Parliament are here united under one roof: for each of them a large hall for sittings is appropriated. Round



THE GENERAL CUSTOM-HOU



THE HOUSES OF PARLIAMENT, VIEN



ST.—Herr Nikolaus Ybl, Architect.



—Herr Theophil von Hansen, Architect.

them are grouped a great number of meeting and committee rooms, offices, &c. The architect consequently had to design a double building, the two principal parts of which are shown in the profile, and which are separated, and at the same time united, by such spaces as are used by the two legislatures in common. This central neutral or common part impresses upon the building its principal character. Towards the Ringstrasse, which latter has repeatedly been styled the cestus of Vindobana, a nobly proportioned portico opens, the approach to it forming a gently ascending ramp. The portico opens into a large vestibule, and this again into a spacious hall, which latter is to serve as the future Valhalla of Austria, where statues of her more eminent citizens are to find a worthy place. The centre part, besides, contains the rooms for the ministry, the presidents of both houses, and their offices; as well as the shorthand writers' rooms and refreshment rooms. To the right and left of the great hall the lords and deputies turn to their respective "houses," their committee and lounging rooms. The entrances for the court on the one side and for the public on the other are entirely separated from the members' entrance. Generally speaking, there is no want of means of communication, lobbies, and stairs. Thus the vestibule of the ground-story may be entered also from below the approach, handsome staircases leading into the upper vestibule. The rows of seats for the members of both houses, rising as in an amphitheatre, are surrounded by special lobbies, in order to enable deputies to noiselessly communicate with each other, outside the house, the lobbies being connected by many doors with the latter.

The great halls for the sittings of the two houses are situated back to back, *i.e.*, the seats of the presidents are towards the centre, those of the members at the outside. This arrangement enables the two presidents to communicate with each other by the shortest way; at the same time the members are able to enter the different meeting and consulting rooms direct from the house, while both "lords" and "commons" have equally far to go to reach the spaces for their common use. Thus the entrances to the galleries, and again the latter, are completely separated from the interior localities serving especially for the two "houses." A statue of Austria, as patroness of the house, is to be erected in front. Herr von Hansen expects that the sister arts will have a full share in rendering the Austrian Capitol a place of dignified greatness.

ARCHITECTURAL NOTES ON ST. ALBAN'S ABBEY.*

The Norman Church.—Tradition relates that, about A.D. 303, a man named Alban was beheaded on a gently-sloping hill outside the city walls of the ancient Verulam. Also, that the early Christians built a church upon the spot of the martyrdom; but nothing of importance is recorded until Offa II., king of the Mercians, founded a monastery there in honour of St. Alban, about the year 793. He placed the monastery under the rule of St. Benedict. Between the time of its foundation by Offa and the invasion by the Normans, this monastery was governed by thirteen successive abbots. The rebuilding of the early church, which had been contemplated for many years, was delayed until William the Conqueror, in 1077, appointed Paul of Caen to the abbacy. Abbot Paul was a relative of Lanfranc, Archbishop of Canterbury, who was abbot at St. Stephen's, of Caen, at the time of its erection in 1064. Lanfranc rebuilt Canterbury almost upon the model of St. Stephen's. Paul, who was simply a monk at St. Stephen's, more ambitious, rebuilt St. Alban's on a similar plan, but on a scale vastly exceeding either Canterbury or St. Stephen's, as the following table will show:—

Abbot Paul's church consisted of a nave, with its side aisles; transepts, without aisles; choir, with side aisles; sanctuary, with side aisles and apsidal termination. Paul adapted the levels of the floor to the levels of the site. The floor at the east end seems to have been about 6 in. above the ground-line adjoining, and the floor at the west end about the same amount. The slope of the hill downwards from the east thus allowed a difference of 4 ft. in the floor levels. But he was not contented with this: the slope from the north, southward, was also echoed; the floor is thus 2 ft. 6 in. lower at the south than at the north wall of the transepts. These floor-levels have been frequently modified, but their influence has been considerable on the fate of the building. One of the constant aims from the thirteenth century onwards was here, as elsewhere, to increase the prominence of the high altar. It was ultimately elevated 3 ft. 6 in. above its original level; but the Norman levels in the sanctuary aisles have probably always been maintained, and they dictated the floor-levels of that great extension of the eastern arm which occupied the century in which Mediæval art was attaining, and attained, its greatest excellence. A sufficient elevation was attained for the high altar without the necessity of a crypt, which so frequently formed a feature in the design of the earlier churches. The Norman church was built of tiles collected from the ruins of Verulam. Some measure 21 in. by 12 in. by 2½ in., but the average size is 17 in. by 12 in. by 1½ in.; they are of a deep red colour. The mortar-joints in all the Norman work are in some instances thicker, but as a general rule a little thinner than the tiles themselves. The possession of so immense a bulk of ready-made material excluded stone from any considerable portion of the building; a few shafts and a few capitals, and the impost mouldings of the ground-story and triforium arches were, for constructive reasons, made of Barnack stone, but practically the whole of the building was constructed with Roman tiles. Probably the massiveness of walls and piers was to some extent due to the unlimited supply of tiles. "Cushion" capitals occur in the transepts and tower. These may very possibly be the earliest capitals of this form remaining in England. The division of Norman work into earlier and later, by Mr. Edmund Sharpe, the former terminating about the year 1090, would bring the whole of this church within this earlier period, when "cushion" capitals are very rare,—at any rate, if we accept the statement in the "Gesta," that Abbot Paul built the entire church during the first eleven years of his rule; that is from 1077 to 1088.

The Saxon Balusters.—As to the plan, or state of preservation of the early church in 1077, we have no proof; but it is certain it was no mean structure; and the Normans, although erecting an entirely new building for some definite purpose, retained parts of the destroyed one. It is not improbable this might have been done partly to create a kindlier feeling, and obtain more willing assistance from the Saxons. These relics seem to have been arranged with considerable care in the bays of the triforium arcading of the sanctuary and transepts. Those in the sanctuary would be removed when it was partly pulled down and wholly remodelled in the thirteenth century, but those in the transepts still remain. These balusters are complete in themselves, each having a shaft, capital, and base; but in order to lengthen them, the Normans added capitals and bases. These additions contrast with the original columns in workmanship, material, and design. The new capitals and bases were worked with the axe (as was all the other stone throughout the Norman church). The whole of the plain and moulded surfaces of the original balusters are *worked smooth*,—evidently turned in a lathe. Some of the marks of the turning tools are very fresh. It would thus appear that they could never have been used externally in the Saxon church. The rest of the circular shafts (used alternately with the Saxon ones) are of the Norman period, as indicated by the stone and axe marks: they are not turned, but axed vertically. During the late restoration of the Saxon church on the Castle Cliff at Dover, and also that at Jarrow-on-Tyne, a number of these curious balusters, which had also been reused by the later builders, were exposed to view. Some of the moulded bands of the Dover balusters exactly correspond with the St. Alban's mouldings. Those at Jarrow have a multiplicity of mouldings, consisting mainly of *flattened beads*, without the variety of detail found at St. Alban's and Dover. Fragments of similar balusters were recently discovered at Ely Cathedral with mouldings of the same character as those at St. Alban's, and the marks of the turning-tools very clearly visible.

Abbot John De Cella's Work in the Western Porches. — The Norman church retained its original character till Abbot John de Cella (1195–1214) pulled down the west front. In commencing its reconstruction he made his floor-line in the porches about 3 ft. 6 in. lower than the original floor of the nave of the Norman church. This new level also appears in the north and south aisles. It is possible, though one thinks hardly probable, that De Cella,—who seems to have been somewhat venturesome in his undertakings,—may have vaguely contemplated carrying this lower level along the nave some considerable distance further eastward. It is equally possible that he did not intend to carry it further eastward than the eastern portion of the western bay of the nave, rising to the general floor-level by means of a flight of steps. This last has, for some thirty years last past, been believed—without very much foundation—to have been De Cella's intention; a belief that is likely to embody itself in a solid form ere long—with a flight of steps from the north of the north aisle to the south of the south. For my own part, the floor-levels north and south previously mentioned are difficult to forget. There are in them not only materials for conjecture as to De Cella's intentions, but incontestable evidence that the north aisle retained, till the destruction of St. Andrew's Chapel, the floor-line that De Cella had marked out when he started on the western front. For about 70 ft. from the western wall the north aisle must have been reached by a flight of steps on the aisle side of the ground-story piers; whether this lower floor extended further eastward than this new excavations will determine.

Abbot William de Trumpyngtone's Work in the Western Porches.—Abbot Trumpyngtone took the central and southern porches in hand and speedily carried them to completion. All the new mouldings above the capitals of the central porch and nearly the whole of the mouldings of the southern porch have the same character; there are fewer members in the groups, and the mouldings are coarser in themselves than those in the northern porch. There is no *dog-tooth* in either of these porches. The carving in the north porch and the earlier carving in the central porch has peculiar overlapping curling leaves and strongly-defined stems, and is singularly like that in the choir of Lincoln Cathedral. The later carving in this porch and the whole of the carving in the southern porch is the normal Early English foliage. From this it will be seen that the northern and central porches differ largely from the southern porch. In the omission of central bosses from these vaults both differ from the northern porch. There are in the central porch evidences of individual preferences, over and above the evidence of the change in style. As far as was compatible with maintaining the work already erected and carrying it to a logical completion, Trumpyngtone made modifications in the framework of the design that are hardly credible. For instance, De Cella contemplated reproducing the jambs of the central porch on the nave side, with their clustered marble shafts, thus giving it a greater depth and importance than the lateral porches. But Trumpyngtone built in the two doorways between the clustered jambs. The jointing of these doorways does not range with the jointing of the original jambs. In Mediæval work it was not unfrequent for stones already prepared to be used at a later date. This occurs in the central porch at St. Alban's, but with this difference from other instances,—a difference, as far as my observation goes, making the case unique. Trumpyngtone used stonework prepared by De Cella, but cut away the minor mouldings. De Cella had not worked the whole of the vaulting ribs; Trumpyngtone was unwilling to supply what was wanting with copies of De Cella's stonework. He was equally unwilling to throw aside the stonework already prepared; this strange piece of self-assertion is the result.

* From a paper, read before the Royal Institute of British Architects on the 17th inst., by Mr. James Neale, F.S.A., Associate.

	St. Stephen's, Caen.	Canterbury.	St. Alban's.
Number of bays in the nave	9	9	13
" " " choir	2 besides the apse	2 besides the apse	5 besides the apse
" " in each transept	2 and 1 apsidal chapel	2 and 1 apsidal chapel	3 and 2 apsidal chapels
Total length from east to west,—about	290 ft.	290 ft.	460 ft.
Total length across the transepts from north to south,—about	145 ft.	145 ft.	189 ft.
Length of nave taken from west front to west face of transept,—about	193 ft.	193 ft.	284 ft.
Length of western façade,—about	90 ft.	90 ft.	possibly about 150 ft.

Judging from the carving and the forms of the mouldings, I think the earlier parts of the porches at St. Alban's are a few years later than the choir of Lincoln, and therefore 1200-1205. In the western porch of Ely Cathedral the general design of the lower wall arcading, and of the clustered jambs, is similar to the central western porch at St. Alban's,—but the less undercut mouldings, the withered crumpled carvings, &c., of the Ely porch point to a later date,—probably about 1225.

The Western Towers.—Cutting down his predecessor's work was rather a custom with Trumpyngtone. The porches might have been sufficient for many men, but in the work of the intended western towers he did something equally vigorous. The archway from the north aisle into the tower was destroyed at the time of the fall of St. Andrew's Chapel, with the exception of a portion of the west jamb. On the south side the arches and jambs are more perfect, and the original design of John de Cella (1195-1214) is there exhibited. In the jamb prepared by De Cella, eight clustered marble shafts were arranged for, and six smaller stone shafts, slightly recessed, in the intervals between these marble shafts. De Cella's design is also traceable up to the level of the marble annulet moulding. At this level he discontinued the work. Trumpyngtone carried up the smaller stone shafts to the capitals, but entirely omitted the marble ones. The dimensions of the western towers can be ascertained from the foundations, and their height when further progress was arrested may be supposed to be shown by the height of the existing work. There is weight in the suggestion of the Rev. H. Fowler, that the western towers would almost certainly have been named in the records if they had ever been complete enough to form part of the floor of the building. In truth, the existence of Norman towers,—now a mere conversational commonplace,—should rest on a more solid foundation than the tile and flint work found under the ground level, which might be of any century.

Trumpyngtone's Work in the Nave.—Messrs. Buckler, in their admirable book, "The Architecture of the Abbey Church of St. Alban," 1848, make a special point of the method of the change from the Norman to the Early English work. They say "the Norman walls were not wholly demolished, but the massive tilework was reduced in sufficient proportion to allow it to be cased with ashlar." It is also added that the transformation commenced at the top continuing downwards. A comparison of the Norman and Early English bays will show what miracles of cutting away in the triforium and clearstory passages would have been necessary; and further consideration shows that the ground-story piers, 19 ft. 4 in. high, would have been reduced from about 10 ft. square to octagons of 2 ft. 9 in. across. [The total dimension across the pier is 6 ft. 3⅜ inches. The shafts project from the face of the octagon 12¼ in. The width of the octagon is thus 4 ft. 3½ in. Supposing the stones are 9 in. on bed—less than the average which I find—2 ft. 9¼ in. is the greatest width of the octagon tile core.] The supposition that such transformation began at the top and continued downwards might derive support from the eastern bay of the clearstory, and from the strange form of the east pier of the ground-story, but the mouldings are actually later in date, stage by stage, from the ground-story upwards. In my opinion, the whole casing theory is a work of high imagination, without any,—even the slightest,—support from actual facts. Trumpyngtone intended to vault the nave, and we still see marble vaulting shafts in the spandrels of the ground-story arches, and the abacus at the triforium level cut away to allow the shafts to pass. The clearstory piers on the north side of the nave have sinkings designed to give shadow behind the intended shafts. When the rebuilding had proceeded on the north side as high as the springing line of the triforium arches, Trumpyngtone determined to forego the vaulting, and substituted a wooden roof. The two easternmost of the five Early English bays, on the south side of the nave, were erected some little time after the three adjoining bays and the four bays opposite on the north side. This is evident from the marked change in the mouldings. There is also no preparation on these two bays for vaulting the nave.

Decorated Work in the Nave.—After the fall in 1323 of the Norman bays on the south of the nave, Abbot Eversdone immediately commenced the rebuilding, and it is to him that we are indebted for the design of the five *Decorated* bays eastward of Trumpyngtone's work. I think these Decorated bays on the south side of the nave, and the lady-chapel, are clearly proved to be works of the same period; for in the small niches in the jambs of the lady-chapel windows are exactly the same mouldings to the bases and to the capitals as in the Decorated bays in the nave. These moulded bases to the niches in the lady-chapel are only 1 in. high, although those in the nave are about 1 ft. 5 in. Again, some of the carving is precisely similar in design, the style of the hair and also of the moustache and beard being identical with that of the beads in the nave. Also the same peculiar ball-flower occurs in both the nave and the lady-chapel. The carving in the nave is, indeed, much bolder, and worked with a firmer and more decided hand than that in the lady-chapel. This fact, and many other features, would lead one to conclude that the five Decorated bays in the nave are rather later than the lady-chapel, although designed by the same architect. At Eversdone's death, which occurred at the end of the year 1326, the rebuilding had probably reached as high as the floor of the clearstory-passage, and all above this level was continued by the succeeding abbot, as indicated by a change in the character of the mouldings, which are more shallow and flattened in their outline. An assertion was made some years ago, that "the walls at the backs of the Early English and Decorated arcading were introduced when the steep roofs of the aisles were removed." This assertion has been frequently copied; but the triforium arcades were never, as generally stated, entirely open. 1. The stones of the arches over the triforium bond with the walling at the back of the passage. 2. The masonry joints of the asserted filling-in are continuous with the piers. 3. The mortars used in the external walling, and in the arcade, have the same component parts. 4. There never was any relieving arch or double arcade to support the clearstory wall above (as at Westminster Abbey), which would have been essential had the walls been pierced. 5. The corbels on the south side of the nave, which carried the timbers of the roof over the aisle, are arranged irrespectively of the piers, and some occur in the walling said to be the filling-in of the arches. 6. It is evident the small doorways (still existing) which led from the passages into the roofs over the aisles, and also the corbels, are of the same date as the rest of the arcading.

The Choir and Nave Roofs.—The roof which covers the space between the rood-screen and the tower is formed of twelve principals, having tie-beams and centre-posts. The scantlings of the tie-beams average 15 in. by 12 in., with a clear bearing of 40 ft. The beams, which project 3 in. below the ceiling boards, are chamfered on the lower edge, and by means of these and of painted decoration, the whole surface is divided into panels. The whole of the nave ceiling was treated in the same manner, but at some comparatively recent date it seems to have been necessary to repair it. To save mortising and tenoning the new ceiling joists, boards were simply nailed to the underside of the original beams. A flat unbroken surface was thus given instead of a surface broken by projecting beams, as in the choir. There is much difficulty in deciding whether the roof timbers are of oak or chestnut. Some are clearly of oak, but I am inclined to think the greater part is chestnut; and the opinion is favoured by the fact that the forests of Hertfordshire abounded in chestnut trees.

Recently-discovered Decoration on the Choir Ceiling.—During the summer of 1875 the choir was repaired, and the *distemper* painting touched up. Whilst replacing one of the panels, a workman accidentally rubbed some of the new paint, and beneath it indications of an earlier design were brought to light. One by one the panels were cleansed by peeling off the outer coat of distemper, and a painted design of much beauty was exposed to view. This ceiling consist of sixty-six panels, arranged in eleven rows of six panels each. The two central panels of the middle row contain representations of our Lord and the Virgin, in each of the other rows three of the panels are charged with shields supported by angels; the three alternating panels bearing the monogram ſ ȳ c surrounded by wreaths and vine-leaves. The date of the painting has been put at between 1368 and 1376. I am disposed to think it is much later, because:—1. The painting is on the main beams and panels of a low-pitched roof. The bosses which occur at the junctions of the panels are the original ones, and are certainly much later in date than 1376. 2. The style of the lettering of the inscriptions points to about 1440. 3. The peculiarly-designed lions in the shields on this ceiling strongly resemble those used elsewhere in the middle of the fifteenth century. With reference to the two centre panels in the middle row, evidence of a later date is still stronger, for the canopies are embattled.

The Sanctuary.—The apsidal sanctuary of the Norman church, with the exception of a few alterations by Trumpyngtone (1214-1235), seems to have remained entire until 1257, when it was found necessary to pull down the whole of the eastern part of the church. At the rebuilding, which was immediately commenced, about 50 ft. of the north and south walls were left standing in order to form buttresses to the great tower. All the work eastward has been removed. The square east end of the new design was built upon the connecting wall which crossed the Norman church at the springing of the apse. On setting out the plan of the new design the two first bays occupied the space between the tower and the second Norman buttress to the eastward. Sufficient space was not left between this point and the east end for four bays of the same width (to make six in all); three bays somewhat wider than those to the west were therefore erected (to make five in all). In the three eastern bays seven arches occur in the triforium arcade in each bay, in lieu of six as in the two narrower bays. The vaulting shafts over the new bays continue down within the spandrels of the ground-story arches, but the vaulting shafts over the bays containing blank arches, stop at the triforium string. These bays of the sanctuary were erected just at the change of the style from the Early English to the Decorated. The latter style was not sufficiently far advanced to bring about an alteration in the outline of the clearstory windows.

The Eastern Chapels.—During the excavations in 1872, a cylindrical hole sunk in a block of stone was discovered in the south aisle of the ante-chapel; in this hole was found the lid of a small wooden box of Oriental workmanship, which probably contained the heart of the builder or special benefactor of this chapel. The manuscript in the British Museum states that, although the body of Roger de Nortone reposed elsewhere, yet his heart was buried before the altar of St. Mary of the Four Tapers, in the south aisle of the ante-chapel. This documentary evidence confirms what the architectural details and mouldings would have led us to conclude, namely: that the southern portion of the ante-chapel was erected during the Abbacy of Roger de Nortone (1260–1290). Some portions of the ante-chapel are characteristic of a few years later, notably the mouldings of the eastern window in the north aisle. These, most likely, were a continuation by the succeeding Abbot, John de Berkhamstede (1201–1301). I am disposed to think that when the works eastward of the sanctuary were commenced, the foundations of the whole of the eastern chapels were inserted at one time. The courses of the masonry and the similarly moulded strings are continuous the whole way round the chapels. The sanctuary and the ante-chapel made rapid progress towards completion, but at the time of the accession of Hugh de Eversdone, in 1308,—a period of fifty years from the insertion of the foundations,—the lady-chapel walls had only reached the level of the underside of the window-sills, a height of 10 ft. above the ground. During this period architecture had greatly developed, and the change in the mouldings and other details clearly prove the work could not have been continuous. In corroboration of this we have the record in the *Gesta Abbatum*, where Hugh de Eversdone is described as having "brought to a praiseworthy completion the chapel of the Sacred Virgin in the eastern part of the church, which had been begun many years before." Eversdone is also mentioned as having roofed the nave of the ante-chapel: "Moreover, that place contiguous in the shape of a square chapel, separating the sanctuary from the said chapel, with a ceiling, in the midst of which the Assumption of the Blessed Virgin is figured" (where the shrine of St. Amphibalus is now placed), "he at the same time took pains to finish." From this we gather that the vaulting of the ante-chapel was really never carried above the stone springers. Hugh de Eversdone, abandonig the beautiful features of the central nave and aisles with their vaulting, removed four of the piers, cut down the stone springers, and covered in the space with a

panelled ceiling, and thus entirely altered the design of his predecessor. We gather from the records that Hugh had much difficulty in obtaining money. No doubt he was anxious to complete the ante-chapel, which had been exposed to the weather for many years, and thought it would be wiser to do so quickly, even at the sacrifice of a portion of the original design. The lady-chapel of Hugh is so rich in detail that it might have been suggested that he was anxious to bring his own individual work into increased prominence, and therefore purposely impoverished the ante-chapel.

The Recently-discovered Shrine.—Is it the Work of John de Marynes (1302–1308)?—Some 300 years ago, the beautiful shrine of the Protomartyr was shattered by sacrilegious hands into thousands of pieces. These pieces were used with the common rubble masonry for walling up the arches at the eastern end of the Saints' Chapel when the public passage through the church was formed. When these arches were opened out in the spring of 1872, about 2,000 fragments of Purbeck marble were discovered. Under the guidance of Sir G. G. Scott, these fragments have been ingeniously put together by means of shellac, and the structure was found to exactly fit the marks in the pavement in the centre of the Saints' Chapel,—traditionally regarded as the site of the shrine of St. Alban. The ordinary shrine consisted of three parts: the pedestal, the feretrum, and the canopy. The feretrum, or actual shrine, which contained the relics, was at times carried in procession. There are no remains in England of either a feretrum or canopy. The most perfect remains of pedestals are those of Edward the Confessor, in Westminster Abbey, and Thomas de Cantilupe, in Hereford Cathedral; both of which somewhat resemble the shrine of St. Alban. There are some portions of the shrine of St. Etheldreda at Ely, St. Werburg at Chester, and of the patron saint in St. David's Cathedral. The pedestal is of Purbeck marble, with the exception of the vaulting to the niches, which is of clunch stone, and painted. The general dimensions are about 8 ft. 6 in. long, by 3 ft. 2 in. wide, and 8 ft. 4 in. high from the top of the steps to the cresting. Mr. Ridgway Lloyd, in his pamphlet ("The Shrines of St. Alban, &c."), attributes it to the time of Abbot John de Marynes, chiefly on the authority of a reading in the "Gesta Abbatum." "Abbat John de Marinis caused the tomb and feretrum of St. Alban to be moved, whilst decorating it nobly, and expending on it more than 160 marks." De Marynes died in February, 1308. If by the end of 1307 the whole was completed, we may safely infer the pedestal must have been completed before this time. The mouldings, the carvings, &c., do not, however, contain a single detail that would identify this work with so early a date. 1. The carving is later and more naturalesque than that in the lady-chapel (*circa* 1320). 2. Some tracery on the sides of the niches has the same peculiarity as the tracery of two windows in the north wall of the lady-chapel, but of a still later form. 3. The earliest specimen of good flowing tracery is in the restored portion of the choir of Ely Cathedral, by Alan de Walsingham, commenced in 1322, but this is not reticulated work; whereas that in the shrine is thoroughly so. 4. I fail to find elsewhere rosettes of so early a date as 1307 identical with those on the shrine. 5. The finials have the same descriptions of *crumpled* foliage as those of the east window in the lady-chapel, but of a later character. We all so well remember the incident of the Lincoln Chapter-house, related by Mr. Sharpe, also that of Peterborough Cathedral. These and others of a similar nature must tend to confirm our conviction that the stones speak more truthfully, and must be trusted in preference to any written record. Unfortunately it seems to have been a frequent custom for a chronicler, whether intentionally or through carelessness, to credit a favourite man with work he never did. Mr. Edmund Sharpe, when visiting me at St. Alban's, fully confirmed my notes, and suggested that this structure might be the monumental tomb erected in honour of Eversdone, the abbot who had built and beautified the lady-chapel. This opinion I was not inclined to accept, although I am convinced the date of its erection was not prior to Eversdone's death in 1326, and cannot possibly be of the time of John de Marynes.

Is St. Alban's the longest Cathedral in the Kingdom?—For many years past it has been stated, and with local pride, that St. Alban's is the longest church (now cathedral) in the Kingdom, and each history of the building has gladly availed itself of this tradition. I will give the result of no little painstaking of my own and Mr. Colson's, a fellow of the Institute, and surveyor to the Dean and Chapter of Winchester, who took dimensions specially for these comparisons. It is somewhat difficult to measure the total length of St. Alban's, and the dimensions taken by the north and south walls vary. The whole of my long dimensions have been taken on the axis of the building with an accurate steel tape, in 100 ft. lengths:—

		ft. in.	ft. in.
WINCHESTER ...	From plinth of buttress of east wall of lady-chapel to plinth of west porch	557 9	
ST. ALBAN'S.....	From plinth of buttress of east wall of lady-chapel to face of buttress of west porch	550 1½	
	The extreme length of Winchester Cathedral exceeds that of St. Alban's by	... .	7 7¾
	Although the extreme length of Winchester Cathedral exceeds that of St. Alban's (with its unfinished porches) by 7 ft. 7¾ in., yet the nave of St. Alban's is 3¼ ft. 4½ in. longer than that of Winchester.		
ST. ALBAN'S.....	From western face of main west wall to western face of tower	284 5½	
WINCHESTER ...	From western face of main west wall to western face of tower	275 7	
	The extreme length of St. Alban's nave (as seen on the outside) exceeds that of Winchester Cathedral by	.....	8 10½

The nave of St. Alban's is not only the longest in the kingdom, but the longest in the world. This 8 ft. 10½ in. does not fully represent the apparent excess of length of St. Alban's, as seen on the outside, beyond Winchester. The aisles of the Winchester transepts take off 25 ft. from the length of the nave aisles. There are no aisles to the transepts of St. Alban's. The repetition of the strong unbroken lines of precisely similar length at different levels in the nave and aisles at St. Alban's drives home to the imagination, in a way quite unique, the impression of length.

General Notes. — Contrary to the general custom, we find at St. Alban's the architecture on the north side richer than that on the south:—(1). There is evidence of an intention to embellish this portion of the Norman design in the nave;—part of the impost of the triforium arches being carved on the north side, while on the south there are simply plain stones or tiles. (2.) The Transitional arches of the interlacing arcade in the slype are decorated with a beautiful pattern on the north side; but this has not been carried out on the southern arches. (3.) The north-western porch is much more elaborate than the south-western. (4.) In the nave bays of Trumpyngtone, the north side is richer in detail than the south. It has been suggested that the north side, illumined by the southern suns, would justify additional enrichment. I think, however, at least in Trumpyngtone's case, it was not from local tradition or process of reasoning that this came about, but simply want of money;—which may thus reduce these odd differences to the rank of mere accidents. Many examples were exposed, during the restoration, of lead dowels in the joints of detached shafts. For instance, one of the shafts in the sanctuary, only 4½ in. in diameter, has three dowels in each joint. Sinkings were cut in the upper and lower surfaces of the joints. Holes about ⅛ in. in diameter were drilled through the upper stones in each case, and melted lead poured in, which, when set, formed the dowel. The shafts were often sunk into both capitals and bases. In some instances, however, the shafts were not let into the capitals, but the same system of dowelling was employed. This same system of St. Alban's is more ingenious than that at Westminster Abbey, for at St. Alban's the *dowels only* are lead, but at Westminster a space was left between the capital and the shaft, and by means of one hole (drilled immediately above the necking) lead was poured in, which, when set, formed a collar or bed over the whole surface. This, being exposed to the weather, has broken away the neck moulding, but at St. Alban's they are perfect to this day. In the construction of the fourteenth-century bays on the south side of the nave *oyster-shells* are used with the mortar. In many cases there is a complete bed of shells at the springing of the main arches. The mortar is very hard, and contains much lime. In two of the lady-chapel windows on the north side the upper spandrel is filled with tracery, worked in one stone of 3 ft. 9 in. by 3 ft. 7 in. This tracery is only 2 in. on face and 8 in. deep. In every instance the tracery in these spandrels has broken through in precisely the same places, owing to the settlement of the window arch. In the restoration the new cusping has been jointed at the points of failure in the old work. The average size of tracery stones is about 2 ft. 6 in. by 2 ft. In the ante-chapel wall arcading the new shafts are of clunch stone, and not let into either capitals or bases, but dowelled with slate into both. When fixed, the joints were so tight that the thin blade of a knife could not be inserted, yet within a few months the stone had shrunk ⅛ in. in circular shafts 3 ft. 3 in. long and 3½ in. diameter. In the old work the shafts of like dimensions are mostly in the Barnack stone. Nearly every joint in the arches of the new work (executed in clunch) has shrunk since the time it was fixed. Some laid at ⅛ in. thick are now $\frac{3}{16}$ in. These joints, however, do not affect the solidity of the construction. The clunch used in the interior is in wonderfully good preservation, but wherever exposed to the weather it has decayed. The abaci to the capitals of the ground-story piers of the Early English work are in a stone much harder than the clunch. The architects evidently distrusted the bearing power of the clunch, as in the abaci of the main arches, annulets, strings, &c., at different dates the hard stone was used. I have compared this hard stone, and found it identical with that at Ely, Peterborough, and Bedford, known to be from the Barnack quarries. The Norman stonework is axed; that of the Transition, chiselled; the Early English, bolster-tooled; the Decorated (including the bays on south of nave and the lady-chapel) ashlar is claw-tooled, the mouldings scraped; the Perpendicular, finely scraped.

Periods of Architecture.—The building may be considered as a huge architectural museum, containing work of almost all dates from the beginning of permanent building in England to the suppression of the monastery in the sixteenth century:—Roman, in part of its materials, Saxon, in the turned stone balusters; Norman, in the eastern part of the nave, the transepts, and the central tower; Transitional, in the slype; Early Early English, in the western porches; Middle Early English in the western part of the nave, the choir windows, &c.; Late Early English, in the sanctuary; Early Decorated, in the upper parts of the sanctuary, and the sanctuary aisle windows; Middle Decorated, in the ante-chapel; Late Decorated, in the lady-chapel, the bays on the south side of the nave, and the shrine; Perpendicular, in the screens, north and south windows of transepts, great west window, watching-loft, &c.; Tudor and subsequent styles, in the tombs, brasses, stalls, pulpit, &c.

In the discussion which followed,

Mr. Ridgway Lloyd said he had a few words to say in reference to Mr. Neale's statement that the Decorated bays on the south side of the nave were mainly the work of Eversdone. Without presuming to offer an opinion on an architectural question, he (Mr. Lloyd) would deal with the documentary records on the subject. With regard then, to the construction of the five Decorated bays, following the catastrophe of the 10th of October, 1323, it was ascribed by Mr. Neale to Abbot Eversdone, but documentary evidence showed that the reconstruction of the chief portion of the south side of the church was due to Abbot Michael Mentmore (1335–1349). This statement was contained in the "Gesta Abbatum," and was confirmed by a MS. in the British Museum. There was also a statement in the "Gesta Abbatum" that the shrine referred to was the work of John de Marynes. The general reliability of the records had been confirmed during the progress of the recent works.

Sir Edmund Beckett said he would say nothing upon the antiquarian questions involved, for he did not pretend to be an antiquary: he was only a "builder." As to the history of the St. Alban's Abbey which Mr. Neale had just read, it was in a general way pretty much what had been published before. Generally speaking, all who had had the honour of being acquainted with Sir Gilbert Scott for some time might be said to have known all that was contained in the paper. Although Winchester Cathedral was slightly longer than St. Alban's, the tower of the latter was far superior; indeed, the tower at Win-

chester was rather a failure, being stumpy and squat in appearance. The tower of St. Alban's was one of the finest Norman towers we possessed,—not the finest, which was perhaps that at Tewkesbury. People were continually regretting that the roof of the nave of St. Alban's was not of the old pitch; but it should be remembered that if the old pitch of the roof were to be restored, the tower would lose its distinctive appearance of loftiness; in other words, the tower would be dwarfed by the high-pitched roof. If ever a roof of high-pitch were put over the nave, however, its tendency to dwarf the tower might be diminished by adding in some way to the height of the tower. It would seem that there was at one time something in the nature of an elevated building either in the middle of the tower or at the four corners. A high-pitched roof would be 25 ft. higher than the present roof. He thought that if the turrets which seemed to have existed at one time near the west end of the building were restored they would greatly relieve the long and bare outline of the roof. Where the blank wall existed towards the west end the abbot's house formerly stood, the length of the nave being so great that the cloisters only occupied about half the length. As one of the restoration committee he did not agree with those who would, from mere antiquarian reasons, retain that wall without piercing windows in it. He hoped that funds would soon come in to enable the more imperative works of reparation to be completed, after which they might hope to restore the turrets and the west end, as well as to do something with the great blank wall referred to.

The Rev. W. J. Lawrence, of St. Alban's, expressed regret that in the present age, when so much was spent on mere luxury, it should be difficult to get together funds in order to carry out the mere constructive reparation of the fabric.

Mr. S. Flint Clarkson said Mr. Neale's careful paper had dealt at first hand with much discussible matter. The existence of an apse in the Norman church was, of course, probable, the prototypes of the design being known. Still the only, and not very solid, foundation for that superstructure appeared to be the word "*Concamerationem*," in the "Gesta Abbatum,"—a word that might, to all seeming, stand equally well for a barrel-vault. Some service would be done if instances, in writings of the middle of the thirteenth century, could be pointed out, where that word was clearly used for the semi-dome of an apse. Mr. Neale's courage in disposing of what he had called "the casing theory" might encourage a rash person to hint a doubt as to the sufficiency of the grounds for believing that the Norman church extended so far to the westward as the present west end. There was a strong bias that way, which might be confirmed by discoveries; but on the first blush foundation walls of flint, with courses of tiles in them, would not appear to be below nor beyond the science of the builders of the thirteenth century. Much might be added to what had been said as to the dominant influence of the Norman structure over the works, which in each succeeding age modified its original forms. The central tower, for instance, had preserved the transepts unaltered in the main. It forced the sanctuary and the sanctuary aisles for at least 50 ft.,—practically for their whole length,—to take their present very special shape, in the thirteenth century. Probably to the central tower (or, in other words, to the fact that the Norman building was a splendidly proportioned cruciform church) was due the commencement at the west, when, after a century of pause, the great building abbots began to tamper in earnest with the original design. But it was difficult to go the whole length Mr. Neale would wish, and to attribute, for instance, the level of the floors in the ante-chapel and the lady-chapel to the carrying forward of the Norman levels in the sanctuary aisles. Most probably the eastern arm took, in every part, an additional elevation, bearing relation to that so obvious in the nave of the sanctuary. Saxon balusters (so-called), like those in the transept, could not easily be claimed (as by Mr. Neale) for the sanctuary triforium also. There were six of them on the east side of the south transept, and only two in the north transept, when six at least might have been used there, as in the south. John de Cella's floor-level, in the western portion of the nave, had been spoken about in the paper, with that originality,—that spirit of personal inquiry and of thinking for himself,—which Mr. Neale had shown throughout. His (Mr. Clarkson's) own idea was that De Cella had no very definite purpose in making the change of floor-level. But as plausible conjectures could be put forward, it would evidently be unwise to insist strongly on so elementary a proposition. In addition to Mr. Neale's suggestion of a wish to increase the amount of internal rise eastwards, there might be mentioned the desire to decrease the external acclivity, in the space westward of the doors. Excavations just now in hand might possibly verify the attribution to De Cella of a desire to reach a more solid substratum than that which had probably contributed to the ruin of his first efforts on the spot. Failure from defective foundations seems to have been by no means rare in the building. The extent to which De Cella intended to carry the lower level eastwards had apparently been left by Mr. Neale in what might prove to be an ultimate condition of uncertainty. This was a point of much interest just now, when the restoration of this lower floor-level was to be made,—as part of a radical change in the porches and western front at large, from the ungainly figure maintained since the sixteenth century. The floor of the western bay of the nave being lowered, the same lowered floor-level,—though never before in actual use in the building,—would hereafter be an appropriate part of what might be expected to be in the hands of the architect who had the work in charge, one of the finest of modern ecclesiastical works. One portion of Abbot Trumpyngtone's work,—away from the west end,—in the south transept, furnished evidence of an itching to meddle more and more with the eastern parts of the church. It might also furnish an admirable test-case for any people anxious to contend about principles of restoration. The chapels east of the transept were dark; this transept was much underlighted, even according to the notions of an earlier time, if we were to judge by the amount of original lighting in the north transept. In the Norman design of the south transept the abutting buildings were allowed to prejudice, to what Trumpyngtone considered a painful extent, the lighting of that great area. He, therefore, formed the two strange windows in the west wall of the transept. They were probably blocked up again, when the passage over the cloister-roof was formed,—before the immense south window was inserted, and began to pour in—however modified by coloured glass—enormous floods of light. By odd accident, Trumpyngtone's two windows had been re-opened at the present time, when the clear glass of the great end windows of the transepts admitted an extent of raw light that would be greatly in excess even if entirely unaided.

Sir Gilbert Scott moved, and Mr. Street seconded, a vote of thanks to Mr. Neale for his paper, and both gentlemen highly eulogised the industry and ability which Mr. Neale had displayed in delineating the building, Mr. Street commending Mr. Neale's assiduity and method of work to other architectural students, especially to those who laboured under the delusion that a knowledge of their profession could be learnt from books.

The vote of thanks having been carried,

Mr. Neale briefly replied, and in doing so challenged Sir Edmund Beckett to make good his assertion that the subject-matter of the paper was to be found elsewhere. Mr. Neale has since sent us the following note:—"I feel compelled to make good omissions in my reply, caused by my anxiety to be as brief as possible. To reply fully to all the points raised by Mr. Lloyd and Mr. Clarkson, it would have been necessary that I should have re-opened the question at considerable length. I ought not, however, to have omitted to thank them both, not only for calling attention to important points at the meeting, of which I have much to say hereafter, but also for help at other times. I may confess that to Mr. Clarkson's unsparing criticism, always and for a long time at my service, is due some of the spirit of radical inquiry and of original research which I had hoped, and still hope,—notwithstanding Sir E. Beckett's sweeping imputation of mere copyism,—all who know the abbey thoroughly will find in almost every line of my paper."

The Local Government of London.—The Queen's Printers (Messrs. Eyre & Spottiswoode) have just published copies of a Bill to create a municipality for London, to be introduced next Session; also another Bill, to be introduced into the House of Lords by Lord Camperdown, providing for the direct election of the Metropolitan Board by the ratepayers.

GRANITE MONOLITHS.

Sir,—The readers of the *Builder* and all lovers of architecture would be glad to learn from the statement of Messrs. Freeman & Sons as to the capabilities of modern quarrying in the *Builder* of December 8th that we are not so much excelled in such quiet victories over nature, by ancient nations, as has been supposed; and their mention of "throwing over rocks" containing 1,500 tons of stone calls to mind the fabled feats even of the Titans and Giants in their wars against the gods.

It augurs well for architecture, not for its facility of furnishing "Needles," which are not a want of the age, but for its promise of greater perfection in such architecture as the age does want. It wants large stones for all kinds of memorial pillars, and for monuments generally, it being in the nature of such structures and of pedestals to colossal statues and equestrian statues to demand as large stones as can be procured; and to receive an additional grace from them, and increased expression of durability. It needs also for columns of porticoes and colonnades larger stones than have hitherto in modern times been used, for want of which, in great works, the columns look too often like piled-up cheeses, and almost as unstable. It is most consonant to the nature of all such detached supporting features of architecture, external or internal, as well as attached columns and pilasters, architraves, friezes, cornices, pediments, window and door cases, to be in as long stones as possible. In large columnar edifices large stones are essential often to truth of constructive principle. For want of stones 15 ft. or 16 ft. long, in the Custom House or Revenue Building, Liverpool (where are three octostyle porticoes of columns, 5 ft. 2 in. diam., and intercolumniations of two diameters), the architrave had to become a straight arch.

But largeness of stone, with fewness of joints, is an element of perfection in trabeated or beamed constructions throughout,—in walls as well as columns and dressings,—an element that sublimates and expresses power. It is in the nature of things that it should be such; and increased facilities for obtaining large stones are tantamount to an invention or discovery in building material. While otherwise pleasing, largeness of stones has the practical virtue of rendering walls less dependent on cement, more united, and less liable to unequal settlements. It would favour at any time the pleasing scheme of preparing the materials of an edifice at a distance, so as to avoid noise and bustle on the spot, as in the case of the building of Solomon's temple.

The chief objection to bricks in important structures is not their artificiality nor their colour, which may be made equal to that of any stone. It is their smallness and consequent meanness, and the cut-up look they give by nearness of joints; in saying which I mean no disparagement to that invaluable manufacture, nor to the practice of rustication or the emphasising of the joints as a means of mural relief or texture. I would only suggest that the stones and distance of joints should bear some proportion to the scale of the building in which they appear, and that in horizontal rustication long stones would always be agreeable to the eye, as would long and thick ones in basements and stylobates.

Even the Gothic style, which in drawing more on statical science is more independent of magnitude of material than the Classic, would not be adverse to large stones, which might be used for finials and pinnacles of all kinds, for the last crowning portion of spires, and for detached piers of nave arches, as they might for the piers of bridges in the water. What facility do colossal stones present for the construction of lighthouses!

The most sublime of builders, the ancient Egyptians, showed their predilection for large stones in other works than obelisks. The Great Pyramid seems composed of masses of rock, and still more enormous blocks are found roofing the chambers within. Herodotus speaks of a shrine in the Temple of Latona, at Butos, formed of one stone, having equal sides, each 40 cubits long; and of an edifice at Sais, brought from Elephantine, hewn out of a block 21 cubits by 14 cubits, and 8 cubits deep; and Denon, the French traveller in Egypt, has given representations of several small monolithic temples. But the largest monolith in the world, perhaps, is the Temple of Kylas, an isolated excavation at Ellora, in India, every part of which, exterior

nd interior, which comprises several stories, is tohly and elaborately carved. It differs from ll or most other monoliths in being still attached o the living rock.

The subject suggests to us that perhaps the ge of Colossi is not yet passed, and that the onders of the ancient world in sculpture of robdingnagian proportions are still to be emuated in another and better spirit. Colossal igures are sublime objects; and no modern tation need feel ashamed of a walk of art in which the Greeks in their best days, and in the erson of their most celebrated artist Phidias, have trod before them. It seems to have revived already in the statue of Bavaria, at Munich, 4 ft. high. That statue is of bronze; but stone and marble, if not so durable, or so warm and rich-looking as bronze, are, I fancy, more favourable to the ideal in sculpture,—more suited to, or a less departure from, the complexion of the Caucasian, or highest variety of mankind, than the dark metal. But a walk less trodden by the ancients remains to us, that of animal sculpture: representations of lions, horses, eagles, and the combination of the equine and human forms in the equestrian statue. The lion, one of the subtimest objects of the world, seems a peculiarly fit subject for colossal representation.

Be all this as it may, proprietors of granite and marble, limestone and freestone quarries, may imagine the Genius of Architecture looking down in approbation on their endeavours to supply the largest blocks possible at reasonable rate; and if a price-list could be framed and published showing the ratio of increase in price with increase of size, it would enable architects to include in their designs largeness of stones as a means of impressiveness and power, where desirable to do so.

As I have already intimated, though Cleopatra's Needle is welcome to us as an antiquity, we do not want new needles. I say this with all due deference to the gentlemen of the London Committee for erecting a memorial to the late Prince Consort, who doubtless had peculiar and sufficient reason, in such an exceptional case, to desire the obelisk form. There is more sense in the obelisk as a monumental pillar than in the column. It has its types in nature, and every blade of grass would keep it in countenance. But the obelisk is not beautiful *per se*, and it has no relation to our architectural forms. And if the monolithic needle is not wanted, much less, if possible, is the builded one, of which we have already too many examples; and it is to be hoped that Cleopatra's Needle, when set up in London, will not propagate its species, and stud the land of its exile with young needles, which we could not very reverently call "Victoria Needles." An Egyptian obelisk, formed of one piece of rose-coloured granite, covered with hieroglyphics, and with the lustre of thirty-five centuries of history,—with Pharaonic and patriarchal associations, is a very interesting object. But an obelisk built up of small stones, with only rude joints for hieroglyphics, and without any robe of mystery, is a very different thing, even should it be built on the back of an elephant, or on four balls, as at Dublin; or even should it be varied in its horizontal section to hexagon or to octagon, like one before the Cathedral of Catania, in Sicily. Without the light of other days upon it, no amount of surface decoration can render an obelisk a very delightful object in England.

SAMUEL HUGGINS.

P.S.—The above was written while ignorant, from having seen neither Dr. Schliemann's "Mycenæ," nor your or any other review of it, of the countenance given to my plea for larger stones than have been generally employed in modern architecture, by the association of megalithic construction with the names of Agamemnon and other kings and heroes of the Trojan expedition.

FURTHER NOTES FROM BIRMINGHAM.

THE Birmingham School Board, at their meeting on the 6th inst., accepted the tender of Mr. H. Bennett, builder, of Rugby, to erect new schools in Dixon-road, for the sum of 12,358*l.* 11s. They also voted a precept requiring the sum of 46,500*l.* to meet the expenses of the Board for the coming year, a sum which will require a rate of 8d. in the pound. A great outcry has been raised against this proceeding by a small section of the ratepayers, but the majority appear to recognise the good work now being done by their representatives on the Board, and the money will, on the whole, be cheerfully paid.

An estate at Rubery-hill has been purchased by the Birmingham Town Council, containing about 152 acres, on which they propose to build a new lunatic asylum. Messrs. Martin & Chamberlain have been appointed architects without competition, a proceeding which called forth some expressions of disapproval at the Council meeting on the 7th inst. The outline plans are now awaiting the approval of the Lunacy Commissioners. At the same meeting it was also agreed to purchase 2,396 yards of land in Icknield-street West, on which new public baths are to be erected, and a sum of 520*l.* was voted for new boilers and piping for the Kent-street baths. It was also agreed that a sum not exceeding 10,000*l.* should be spent in laying out, planting, fencing, and erecting a lodge, refreshment-room, and other buildings in Small Heath Park, a recent gift to the town from Miss Ryland, to whose liberality the town is now indebted for two parks.

A new recreation-ground of 4¼ acres area, and of the value of 12,000*l.*, was formally presented to the town on the 1st inst., by Mr. W. Middlemore, a gentleman well known as a philanthropist in connexion with his emigration homes for poor children. The ground is situated on the edge of the borough adjoining Aston, and is well laid out with trees and flower-beds; the walks are covered with asphalte. The garden will doubtless prove a great blessing to the poor inhabitants of the district.

The tender of Messrs. C. Jones & Sons, builders, of Belmont-row, has been accepted for the extension of the Free Public Library, Museum, and Midland Institute.

By a recent Act of Parliament, the Birmingham, Tame, and Rea District Drainage Board was constituted, and the first meeting of the Board was held in the Council-chamber, Moor-street, Birmingham, on the 6th inst., when Alderman Avery was elected chairman, Mr. William Harris was appointed secretary, at a salary of 200*l.* a year; Mr. W. R. Hughes, treasurer, at a salary of 50*l.* a year; and Mr. E. J. Hayes solicitor to the Board, at a salary of 200*l.* a year. As Mr. Hayes is already the town clerk of Birmingham, that appointment will have to be approved by the Town Council, and some difficulties may arise. Mr. Tile, the borough surveyor, has been appointed surveyor to the Board, *pro tem.*, pending the appointment of a permanent surveyor. The Board will, under their authority, take over the whole of the works, sewage farms, &c., in the district, with their staff and plant, as going concerns, and construct intercepting sewers, whereby the whole of the drainage of the watershed will be carried to a common outfall. It is hoped and believed that this arrangement will be superior to the present arrangements, and that no town or village will, as now, be a nuisance to its neighbour. The works esta lished by Scott's Sewage Company for carrying on the manufacture of cement, &c., on the sewage farm at Aston, have been given up to the Sewage Committee.

A great deal of dissatisfaction is expressed by the gasfitters of Birmingham at the practice of the Gas Committee, who have, since the works were taken over from the old companies, not only supplied gas, but pipes and fittings as well. Having a large trade, and the capital of the borough to boot, they are able to compete successfully in most jobs against private traders, and naturally with the result above named.

The Health Committee have recently determined to adopt a new cover to the closet-pans now in very general use throughout the borough, by which, it is said, they become almost hermetically sealed, and to send them in that condition direct to the farms on which their contents are to be utilised. For this purpose they have recently determined to construct two basins on the canal, one at Aston, and another in Anderton-road. The contract for these has been let to Messrs. Davies Brothers, builders, of Waterylane, and the works are now in progress.

The death-rate of the borough for the third quarter of the year is 22·25 per thousand.

The Birmingham Board of Guardians some time ago appointed a deputation to visit and inspect separate schools in order to gain information in erecting the proposed new workhouse schools for Birmingham. They now report that they visited the Reading and Wokingham District Schools, Stockwell Orphanage, the Children's Home, Victoria Park, and the Home for Little Boys at Farningham, Kent. The latter home consists of thirteen cottages, a small infirmary, workshops, store-room, school and chapel, with a separate house for the headmaster (who is also the manager) and the under masters. Each house is under the superintendence of a man and his wife, who are called father and mother, who appear to act as such, and to have the affection of the children. The "father" is also the industrial trainer. The boys over ten years of age work at various trades, and the younger ones are taught to knit and sew. The deputation recommend that the new schools be built and conducted upon the model of the Farningham Home, with some modifications. They also report that they had an interview with the Poor-Law Board (query, Local Government Board?), and returned with a deeper conviction of the wisdom of the adoption here of "cottage homes" for the children. At a meeting of the Board on the 5th inst. this report was approved, and referred to the School Committee.

Birmingham builders sometimes go far afield for their work. The Sheffield Board of Guardians have recently accepted the tender of Mr. J. Garlick, of the Saltley Works, Birmingham, for the erection of their new workhouse at Pitsmoor, at a total cost of 134,800*l.*, and the works are to be commenced at the beginning of the new year.

Many Birmingham builders pride themselves upon the quality of their brickwork, and justly, but few, indeed, seem to have the same feeling as to their joinery. Competition, doubtless, is the main cause of this inferiority, but architects who desire it may easily remedy a state of things which is, in the main, disgraceful.

Birmingham possesses two theatres. An application for a licence to erect another in the Aston-road was recently made to the magistrates without success. The Theatre Royal, situated in New-street, is fitted with very bad entrances. The box-entrance, from New-street, is under one bay of a sort of piazza, in stucco, and is cramped and inconvenient. The pit-entrance is up a long passage, some three yards wide, between a beerhouse and a fruit-shop, and opens upon the back-yard of the beerhouse, with its water, necessaries, &c., through which all must pass to enter, to find a low, crooked, whitewashed passage, fitted with doors and ticket-box. The gallery-entrance abuts upon a piece of waste ground, left by the formation of the new street some years ago, and which is a depository for old bricks and rubbish and nuisances generally. Inside, the gallery is approached by flights of slight deal stairs, which appear to be anything but strong enough to bear a crowd, and would burn very rapidly if fired. The *débouchés* upon the gallery at the top, reminds one of cavernous recesses about the dome of St. Paul's Cathedral, and is almost as dirty and uninviting. The feeling on the part of the management seems to be that anything is good enough for the gods in the gallery and the devils in the pit. The Prince of Wales Theatre is in Broad-street, and has recently acquired a new frontage of lofty shops and dwelling-houses, with box, pit, and stage entrances therein, the gallery having a separate entrance in a side-street, and all are good and very convenient. Each theatre is fairly supported by the public. They have regular stock companies, which are capable of rendering fairly most of our older dramas, and which are frequently supplemented by the addition of "stars" of more or less brightness, whenever it pleases them to appear in this latitude. E. G.

THE LATE MR. JAMES PAIN, ARCHITECT.

ON the 13th inst. died at his residence in Limerick, at the age of ninety-seven, Mr. James Pain, one of the oldest, if not the oldest, architect in the United Kingdom. The deceased gentleman was born in London, of a well-known family distinguished in architectural and building affairs. He served in the office of the late John Nash, by whom he was sent to Ireland to superintend some important works, and eventually, with his brother, Mr. George Richard Pain, settled in Cork and Limerick, in which counties, as well as in the south and west of Ireland generally, the firm of James & G. R. Pain enjoyed for many years an extensive practice. Among their works may be noted Mitchelstown Castle, erected for the Earl of Kingstown, a noble pile in the late Tudor style; Dromoland Castle, for the Earl of Inchiquin; Lough Castle, for Lord Gort; Elm Park, for Lord Clarina; and many others. Adare Manor, the residence of the Earl

of Dunraven, was begun by them, and afterwards passed into the hands of the second Pugin, and finally into those of Mr. P. C. Hardwick. They also designed the Cork Courthouse, possessing a splendid Coriathian portico, referred to by Lord Macaulay in his history, the Cork and Limerick prisons, Thomond and Athlunkard bridges over the Shannon, and several large churches, both Protestant and Roman Catholic, in the cities of Cork and Limerick. Mr. G. R. Pain died at a comparatively early age, but Mr. James Pain continued to reside in Limerick, and to practise his profession till within the last few years. He enjoyed a deservedly high reputation for his upright and honourable course of conduct, both amongst his employers and professional brethren, and, it may be added was highly respected by the working men of the local building trades as a just and impartial judge of the questions which so often arise between them and their employers. Mr. Pain was a distinguished "Mason." His remains were interred in the Cathedral of Limerick on the 17th inst. W. F.

LIMESTONE.

The first of a series of six "Gilchrist Science Lectures for the People" was delivered in the Brighton Dome on the 15th ult. by Dr. W. B. Carpenter, F.R.S., who took for his subject "Limestone." He said that when, about six years ago, he had the great honour of addressing in the Dome the largest audience to whom he ever spoke on a scientific subject, he placed before his hearers the general evidence of the fact, now perfectly familiar to all geologists, that the chalk of our cliffs—that great chalk deposit which, either coming to the surface or buried deep below, covers a very large proportion of the south-west of England and immense areas on the Continent of Europe, stretches into Asia, and is found in America—was all formed really at the bottom of the sea, by the accumulation of the remains of very minute animals, belonging to the group they called *foraminifera*—shells so minute that hundreds of them would only weigh a grain. And at the present time that process of formation was going on in the bed of the Atlantic so extensively that very nearly the whole of that bed, between the coast of Europe and America, was covered with a deposit of white mud, called *globerigin*æ, so termed because composed of the shells of one particular kind of the *foriminifera*. The *Challenger* Expedition had confirmed this fact, and it had found that the formation of this *globerigin*æ was going on over vast areas of other oceans. But there was no part where it was so continuous and extensive as in the North Atlantic, and, therefore, he would direct attention to it there as being most interesting to them. Six years ago he presented a view to them which had become very familiar among geologists, namely, that the mud of which he spoke was really the continuation of that which was being formed in the Old Chalk period,—that the great bed of the Atlantic had been nothing else than what it now was, since the time when the borders of it were raised above the waters; that the process which had resulted in the formation of our chalk cliffs had been going on during the whole of the Tertian period. The table (suspended above the platform) of the principal limestone formations, presenting their geological succession and the chief animal components of each, would show the position of the limestone beds, or rather the calcareous beds in the series. He made the distinction between limestone and calcareous beds, although "calcareous" simply meant composed of lime, because there were many things calcareous which they did not term limestone. For instance, they did not call chalk a limestone in ordinary usage, but it was as much a limestone as marble, or the great carboniferous limestone in the neighbourhood of Bristol, Derbyshire, and Yorkshire. The difference between chalk, marble, and limestone was merely one of, so to speak, texture; the chemical composition of them all was the same. If they took a piece of either, put it into water, and poured into the water a little spirit of salt, or nitric acid, or sulphuric acid, though the others were better, they would have much effervescence, because carbonic acid was given off. All our aërated waters were made in this way,—by treating this limestone or chalk with an acid. Zinc and carbonic acid were the component parts of all, but their texture was different. First, they saw what chalk was. During the visit of the British Association, there was in the temporary museum at Brighton—and he was not sure that it was not now in their present museum—a piece of the white *globerigin*æ mud, which they dredged up from the bed of the Atlantic. Nobody would know the difference between it and chalk, either in chemical composition or in texture, or in microscopical characteristics. It was perfectly true chalk. It was simply carbonate of lime, and its texture was derived from this,—a mere heaping together of separate particles, which were originally distinct minute shells, but were now decayed away. In some beds they were well preserved; in others they were not so. But if they took a piece of what was commonly called limestone,—the compact, hard stone, good for building purposes, or for making roads,—they would not find a friable texture, but a subcrystalline texture; the stone was hard, and broke with a kind of crystalline fracture, and it was obvious that the particles had undergone a considerable re-arrangement. And yet they found in many of these limestones the evidence of their having been composed not so much of minute shells as of larger shells or corals. Some of his hearers had been at Clifton, and seen that magnificent series of limestone rocks which borders the river Avon; or they might have been in Derbyshire, and seen some of the rocks there; or in Somersetshire, and seen the gorge in the Mendip-hills, in which there were limestone beds made up of fossil corals or shells, of which he would afterwards show some actual sections. In a large part of these limestones they would find no evidence of organic structure at all,—nothing that would lead an uninformed person to suppose that animal life had anything to do with the formation of them; and yet he was going to lead them to the conclusion that it had everything to do with them. In fact, there were no limestones of any extent that had not been the result of animal life,—the accumulation and remains of the hard parts of animals of past periods. Take marble. It was a pure white,—the typical marble, the statuary marble,—and something like loaf-sugar in appearance when broken: it was composed of minute crystals, regularly aggregated. There was no peculiar distinction between marble and limestone excepting in the degree of polish they took; but some limestones took a polish like marble, such as those from Derbyshire. There was a greater distinction between limestone and chalk. To take other forms of limestone, there were the Bath stone or Portland stone, which was extensively used in London and the southern counties; the stone, a considerable amount of which they imported from the north of France, and which was technically called oolite, or egg-stone, or roe-stone, because composed of little rounded grains resembling the roe of fish. If the stone were put in water, and an acid added, they would again have gas given off and lime dissolved. It was only another form of the same stone they had been considering, and seemed to have been produced by shells and corals washed by the action of the sea into a fine stone, and subjected to rain, charged with carbonic acid taken from the atmosphere in its descent, which had filtered through and dissolved the surface layers,—the water, charged with carbonic acid, sank deeper, and formed layer after layer around each particle, till each grain resembled an onion, in having coat over coat in concentric spheres, with the layers cemented together by carbonate of lime. He would now proceed to trace the succession these limestones presented from the earliest periods to the present time, being desirous of establishing this fundamental fact: that the larger number of these limestones gave distinct evidence of organic structure, which afforded a strong presumption that one great bed, which had what they called the mountain limestone,—that which underlay the coal-measures of the country, and rose to the elevated regions of Yorkshire, Derbyshire, Somersetshire, and so on,—although it presented in its greatest parts no evidence of organic origin,—also had it. He would explain how it was that it came to lose traces of this. Let them begin at the very beginning, so far as yet known to them. They had a few evidences in this country of a great group of stratified rocks, of much earlier origin than they were formerly acquainted with. The Silurian series they thought was the oldest, but they knew that in North Wales there was a series below that,—the Cambrian, chiefly composed of sandstone and grit. The Laurentian, on the borders of the St. Lawrence, in North America, was another curious rock, very deep down, in which had been discovered a bed of limestone, not pure, but arranged in a regular series of layers alternately between limestone and a mineral called serpentine, which was a compound of silex and magnesia. The opinion was formed that this limestone must also have had an organic origin. It was greatly similar in many respects to the coral reef, and Dr. Dawson, of Montreal, first obtained microscopical evidence of its really being an organic structure, and that upon the basis of his (the learned speaker's) observations upon certain forms of foraminifera. It was a wondrous discovery this. They had limestone of organic structure at the very earliest period at which it was conceivable, so far as they knew at present, that life was introduced into this planet. In the various beds of the upper and lower Silurian in Wales, where there were large quantities of sand and grit, and the great slate deposits, they found certain limestone: in the neighbourhood of Dudley, for instance, the whole of which was clearly composed of organic remains, chiefly a type of the animal called crinoid. There was no doubt the Silurian series was made up of shells, corals, and the remains of the crabs and lobsters of those days. Then they came to the Devonian series, and found some amount of organic origin. They were so full of corals and shells that they had no doubt they were entirely comprised of them. Then they came to the great formation—the Carboniferous, which was pre-eminently a limestone formation. Along the Bristol river they had beds 1,800 ft. alike of this one series in which they could trace no organic structure at all. In certain beds, however, they had evidence of corals. There was one he remembered in his youth—for he was born at Bristol—which was composed entirely of a particular kind of shell. He carried home a mass entirely an aggregation of shells and of stems of the crinoid; but that rock had been blasted away. It was particularly good for road flints, and was carried into the neighbouring counties. And then there was the magnesian limestone found in the North of England. Though limestone united with magnesia, it was clear it was originally formed of the same material. All proved that wherever limestones occurred they presented, more or less distinctly, organic origin. There was one along the south coast of England, which was pre-eminently well marked —the *liassic*. In Dorsetshire the *liassic* cliffs had much clay mixed with them, but he found the substance was entirely composed of shells and the fossil called *belemnite*. There was no doubt it was a clear accumulation at the bottom of the sea, of the shells and fragments of corals which had lived their life in the ocean. Now they came to the *Cretaceous*, and next to the Tertiary series, in which there were very remarkable deposits of limestone. In one there was the largest *foraminifera* they knew of. It was called the *nummilitic* limestone, and went along the south of France, the north of Africa, through the Alps, Hungary, the Carpathian Mountains, and Turkey, into Asia Minor; along the north coast of Africa to Egypt, and it was of that stone the pyramids of Egypt were built. He had examined the rock on which they were erected, as well as the stone of which they were composed, and it was this *nummilitic*. The point he wished them to come to was this: that in the whole series they had most distinct evidence of all these limestones being made up of the aggregation of the skeletons of animals that inhabited the sea. Now and again they had lived in fresh water, as the *Purbeck* limestone showed. Coming back to the carboniferous limestone, they came to ask how it lost all traces of organic origin. They had abundant traces of the metamorphosis of limestones. They had evidence of the purest white marble being a metamorphosed form of *oolite*, mainly, no doubt, through the percolation of water in the neighbourhood of volcanic rocks, the water having power to dissolve the lime and arrange it in crystalline form. There was one instance of this at home. If they went to the Giant's Causeway they would see chalk cliffs with the projecting headlands bored through by the action of the waves, all having the character of the ordinary chalk; but as they approached the Giant's Causeway—a great outbreak of basaltic rock—they would find that this chalk became hard, and when they approached the junction of the chalk with the basaltic rock they would notice that it was converted into a crystalline structure like sugar-candy almost. They called this metamorphic action, and they believed a great deal of it had gone on in the mountain limestone. He should not go into all the arguments, but remark that while

oral reefs had still preserved their character nd were recognised as fossils, his own mind and he minds of other geologists had been coming o the conclusion that the deep-sea beds of the arboniferous limestone had been formed origi- ally, not exactly as the chalk, but of larger hells, and subsequently metamorphosed. They ad good reason to believe they had undergone uch a metamorphosis. Geologists knew well hat the great break between the series of ncient life and the secondary series took place ome time after the conclusion of the palæozoic eriod, that there was then a great crumpling ction in the crust of the globe in our part of he sphere. It did not take place in Russia, but n all our portion of Europe, and in many other arts of the globe this crumpling action caused lateral compression which forced the strata nto folds, brought up the mountain limestone to he elevation which gave it its character, and roke up what were continuous deposits of coal nto what they now called coal basins. In this rumpling motion they now knew that an enor- ous amount of heat was developed, and he elieved that a great deal of the volcanic action n the surface of the globe was produced in this anner. They would, in the course of the ectures, have explained to them the present eological doctrine of mountain-making, and hese volcanic operations going on in various arts of the globe at the present time. They ad here evidences of the production of heat, nd it was just this very production which gave ise to the metamorphoses. Professor Hall had ade a very careful and expansive examination f the carboniferous limestone in different parts f Ireland, and assured him that he had no doubt hatever that the metamorphic action there was ast in proportion to the amount of disturbance; hat where there had been a great deal of this rumpling of the strata, throwing them into olds by the lateral pressure, and where there ad been great heat developed by that pressure, found in the character of the limestone idences of its metamorphosis. Here is what should call a "clincher," not a proof, but a rong probability. Could they point to any area the globe where the carboniferous limestone isted undisturbed pretty nearly as it must ve been formed? Yes, they could in Russia. e he had mentioned to them, Russia was a markable instance. It had its ups and downs a whole, but very little disturbances. Russia as an immense plain till they came to the Ural ountains, and there they found beds of car- oniferous limestone, whose original condition ey believed to be composed of shells, which ey called fugiline. These he would show them the oxy-hydrogen light. They were about e size of the old carraway comfits. The accu- ulation of this mixed fugiline limestone of ussia was equivalent to our carboniferous lime- one. This was the outline of his argument, nd it was attracting a good deal of attention at e present time. Only the other day a gentleman d come to him from Belgium, a curator of one of e principal museums in that country, who had me over to England mainly for the purpose of aring the state of English opinion upon this sub- ct. He was engaged in working out the carboni- rous limestone of Belgium, and had come to him r. Carpenter) to learn his views, and gather any formation which could throw light upon the nclusion to which he was himself coming from s study, as to what was the source of this enor- ous limestone deposit, of which we had so uch in this country, and which was pre-emi- ntly the limestone deposit of geology. They eant that this series of carboniferous mestone was equal in extent to all the st put together. They would, therefore, e this was a very interesting question. all other limestones had this organic origin, d if they could account for the loss of the iginal organic structure of the carboniferous mestone, as he had shown them they could, ere was very stong presumption that this had similar origin,—that those deep-sea beds were ally formed at the bottom of the great ocean nt in the same manner as the chalk, and that ey were raised to the surface by those great erations of level of which he had so often oken, and, either before or after they were sed,—most probably after,—underwent this tamorphosis by the great crumpling up which k place at the end of the palæozoic period. would present them with a series of illustra- ns, and while they were being prepared he uld say a word about the uses of this lime- ne. Of course, one great use was for building, other was for road-making. The roads of Bristol were the first good roads made in this country by Mr. Macadam, who was the surveyor of the Bristol road district, and who worked out the science of roadmaking with the Bristol lime- stone. There were other things still more im- portant; we could do without limestone for building or road-making, but it was impossible to do without it for cement. It had an extra- ordinary power, when it had been highly heated, of absorbing water, which made quicklime the basis of all cements. It would be impossible to smelt our iron without lime, and it was used in iron-making, in soda-making, and in a variety of our manufactures. There was, indeed, no one product more important to us than lime as a means of utilising other products. They would see, therefore, if they could trace all these forma- tions to animal life, what an important work those animals had done for us, and for the arts of human life.

THE LATE MR. JAMES BALLANTINE, OF EDINBURGH.

THE name of this gentleman is familiar to our readers as a glass-painter, but it may not be known to many of them that he was also the author of several books, some of which have gone through two or three editions.

Mr. Ballantine died at his residence, Warriston Lodge, Edinburgh, on the 18th inst., at the age of sixty-nine. His death was not unexpected, as he has for upwards of a year past been sub- ject to severe attacks which have latterly in- creased in violence to such an extent as ultimately to result in paralysis of the brain.

James Ballantine was a self-made man. Born in the West Port of Edinburgh, and bereft of his father when ten years of age, he, with three sisters older than himself, were left to the care of a widowed mother. He was apprenticed to a house-painter in the city, under whom he speedily acquired efficiency as a workman. In these early years he became acquainted with David Roberts, R.A., then scene-painter at the Edinburgh Theatre Royal, and to whom, it is said, he acted as colour-grinder. Having imbibed a feeling for art, Mr. Ballantine entered the School of Design, and attended the anatomy class at the University, with a view to the advancement of his artistic proclivities. Shortly after commencing business as a house-painter, Mr. Ballantine directed his attention to glass-staining, an art then at a very low ebb. At that time the universal prac- tice was that of enamelling the colours on the surface of the glass; but Mr. Ballantine soon discovered the advantages resulting from the introduction of pot-metal, whereby the true sparkle and brilliancy of stained glass are obtained. It is not to be supposed that the true prin- ciples of the art dawned upon Mr. Ballantine at once, for at first his practice tended rather in the direction of producing pictures more suited for canvas than the material he had to deal with; but, with the true artistic feeling, he was ever open to new impressions, and ready to adopt whatever tended to advance the line of art he had adopted. He ever expressed a decided repugnance to adopting the style affected by some of his rivals, of imitating the ill-drawn grotesques of an early period, and aimed at giving his work the highest possible artistic value, with which view he occasionally con- sulted with artists of established position, par- ticularly the late Sir George Harvey, Sir Noel Paton, and Mr. Herdman. Specimens of his work are to be found all over the kingdom, in some parts of the Continent, in the United States, and the colonies.

What first gave Mr. Ballantine an established position as a glass-stainer was the fact of his having been the successful competitor for paint- ing the stained glass for the House of Lords, and from that time onward he has produced many works of great merit. Latterly he has been relieved from the pressure of business by his son, Alexander, who shows an enlightened appreciation of the artistic applicability of coloured glass as a means of high-class deco- ration.

Mr. Ballantine was the author of a treatise upon stained glass; but this is the least of his literary efforts. As a writer of Scottish songs he attained great celebrity, and in his peregri- nations about his native city his ears were fre- quently greeted by hearing his own songs warbled forth more or less melodiously. Some of these he strung together in a narrative en- titled the "Gaberlunzie's Wallet," which at- tained great popularity; and in another work, "The Miller of Deanhaugh," he also embodied poems and songs. These songs and lyrics are characterised by simple pathos and pawky humour; and in his ballads and descriptive pieces he displays a fine feeling for the pathetic and picturesque.

Mr. Ballantine was an enthusiastic admirer of Burns, and at the annual festival of the bard he was never absent when he could possibly be present, and in 1859 he was one of the most zealous promoters of the Burns Centenary, and acted as secretary for the Edinburgh Committee, and upon that occasion several of his songs were sung.

In the artistic embellishment of the city Mr. Ballantine took a lively interest and often an active part. By his exertions the interior of the Burns Monument was put in a proper state, and he was mainly instrumental in securing to the Scott Monument the statues lately added thereto.

Mr. Ballantine was known to a wide circle of friends, his hospitality was generous, and his company much sought after. He possessed a large stock of anecdote and a fund of humour. His kindly face will be missed by many.

"Ilka blade o' grass bears its ain drap o' dew,"

as he himself sang, but the grass fades and dies, and the dew sparkles on it no more.

ENGRAVINGS BY BEHAM.

THE Burlington Club have at present in their gallery an exceedingly interesting collection of old German engravings by the brothers Beham who lived in the earlier half of the sixteenth century. The majority are by Hans Sebald Beham. They combine a good deal of the characteristic German taste for allegory and for quaintly decorative design (a certain degree of German coarseness of conception also), with very fine execution. They include a good many small series of designs of mythological and Christian subjects,—the Labours of Hercules, for instance, and the history of Adam and Eve and the Expul- sion, showing a great deal of fine design and very delicate execution on a small scale. Some of the larger and more coarsely-executed works in line, such as the set illustrative of the "Seven Planets," and their effect upon human society as expressed in various groups, are of great in- terest, and indications of the taste and temper of the period. We understand that these are to be succeeded by a collection of the works of the late Mr. Raven, the landscape-painter, lent by his widow.

WEST CUMBRIAN MINING DISTRICT.

WHILST there has been frequent notice of the growth of the iron mining district of Cleveland, and the coal-mining district of Durham, and whilst the growth of Barrow-in-Furness has not been overlooked, very little attention has been paid to the growth of the mining and iron-making district of West Cumberland. Not only has there been, since the working on a large scale of the ironstone of the district, a growth of some of the many towns which in Lilliputian dimen- sions studded the district, but there has been a development of the decaying hamlets round about the mines. To learn this it is only need- ful to trace the condition of that portion of West Cumberland about two score years ago. There was even then a small iron mine at Egremont; but generally the industries were miscellaneous, and of the olden type and proportions. At that date Cockermouth was making linen, cotton, thread, and hats; Maryport was a considerable little shipbuilding town; Whitehaven was, how- ever, a port of considerable dimensions; but Workington preserved only its ancient fame, and the iron works near it, at Seaton, were dwindling slowly down from their previous importance. Carriers and coaches served the conveyance and travelling needs of the district, helped by an occasional "car," and the country "gigs." The trades of the towns were in small dimensions, except that from Whitehaven and Maryport there was a considerable quantity of coal shipped— chiefly to Ireland. The population of the towns and district was, however, almost stationary; and the villages were, to some extent, in a state of decay, so far as their commercial importance was considered. The development in recent times of the iron-mining industry, and the com- mencement of the steel trade in West Cumber- land, has largely changed the state of the whole country, and has built up a series of industries such as have caused a large influx of population. The demand for iron has caused not only the up- growth of large mining communities in the

centre of the iron-mining district, but it has allowed of the growth of large steel works, of blast furnaces, and of subsidiary industries, at suitable sites along the tract of coast, whilst some of the older industries have been enlarged, and the coal trade has received and is receiving an immense impetus. At Maryport, at Workington, Moss Bay, Whitehaven, and other points on the coast, sets of furnaces have been erected, the small harbours have been utilised, the towns have been increased, and there has been a very great accession to the population alike of the towns and of the country near the great mineral deposits.

Maryport has raised its population from 3,514 in 1821 to 7,443 at the last census; Workington, from 6,415 at the former time, had only risen to about 8,000 at the latter; Whitehaven, from 12,000, has risen to 18,000; but the bulk of the increase in the population has taken place in villages and in a widely-scattered district, and more especially has it manifested itself within the last half-dozen years. The tokens of its increase are seen in the growth of the district, in the building up of institutions, trades, and tokens of the physical, mental, and spiritual life of towns and growing communities, as well as in the uprisal of large industries. At Maryport, co-operation has planted a vigorous shoot, now numbering its members by some 730; and the old town, adding to its ancient shipping, shipbuilding, and general industries the iron manufacture, is extending its boundaries, and planting little hamlets near its pits and works, as well as adding to its clean streets and improving the walks on its "Brow." Workington has felt the depression in what is now its staple trade, but it is recovering therefrom, as the reports of its chief manufacturing company show; whilst the discovery of new seams of coal should give vigour to its trade. Cockermouth, Whitehaven, Cleator, are benefited largely by the up-growth of the iron industry in and around them,—not only directly by the iron works, boiler works, and others of like nature, commenced in the large towns of the district, but also by the fact that they become the market towns of what were the decaying hamlets of a generation ago, which have now been made the populous villages of the iron and iron trades. Something has been done to reduce what were the excessive death-rates,—in one town, there is now a reduction of six per 1,000 in that rate,—and a scheme is now projected in imitation of the larger one of Manchester in regard to Thirlmere, by which water is intended to be brought from one of the smaller lakes for the necessities of some of the towns in that mining district. In meeting the growing educational needs of the district much is now being done, and more is in contemplation, whilst voluntary effort is in some degree meeting the growing religious needs. There yet remains to be provided in some of the towns a fuller development of local government, for Boards of trustees often rule, practically self-elected in great degree, whilst some of the mining villages in the districts are still under the care of olden-style authorities.

Although none of the ports are among the heaviest contributors to the shipbuilding ports of the kingdom, yet Whitehaven has in the last four years raised its contribution from four to ten vessels, of 6,960 tons, and Workington from one to three, of 2,595 tons. Last year there cleared from Workington 663 vessels, of 88,186 tons; from Whitehaven, 1,866 vessels, of 234,560 tons; and from Maryport, 2,002 vessels, of 230,977 tons,—the entrances being much smaller as regards tonnage, because so many of the coastwise vessels were in ballast. There were registered under the Merchant Shipping Act, as belonging to Workington, forty-seven vessels, of 14,363 tons; to Whitehaven, 148 vessels, of 22,139 tons; and to Maryport, ninety-nine vessels, of 24,755 tons. So far as the effect is ascertainable, the development of the iron industry has had the effect of largely adding to the export trade of the ports at which coal and iron are the chief shipments. Last year half a million tons of coal were shipped from Whitehaven, Workington, and Maryport, the bulk being from the latter port. A considerable quantity of iron ore is also shipped at Whitehaven, and from Workington and other ports there is a very large shipment of iron in its crude and manufactured state.

The twin industries of coal and iron have not only revived the trade in these old seaports, but they have built up large industries, and considerable communities have gathered around the mines from which the mineral wealth is drawn. Cumberland, of coal, yields from thirty-seven collieries about 1,400,000 tons, of which it ships one-half to Ireland and to other parts, whilst another large portion is sent by rail out of the district. More valuable is the production of the iron mines, of which in the West Cumberland district there are thirty-one sets, yielding from 29 tons to 271,098 tons yearly; or, in the total, last year, 1,353,910 tons, the value of which is officially stated as 996,046*l*. This value, except that of the adjacent red hematite-yielding district of Furness, is the highest in proportion to yield of our British iron-mining districts. Out of this large quantity of valuable ore nearly a quarter is sent away by sea; another portion, of over 100,000 tons, is sent by rail; and the furnaces in the district use some 900,000 tons—the remainder. In the West Cumberland district there are now forty-nine furnaces built, and, according to the latest "Mineral Statistics," the furnaces in blast were twenty-seven in number, at which some 936,929 tons of coal were used in the manufacture of pig-iron, the quantity of pig-iron made being stated in the same authority as 436,837 tons. As to the finishing iron trade, there are five iron works, including eleven rolling-mills therein, and having attached thereto eighty puddling furnaces. At Workington, the steel manufacture has been planted, and one of the two works has four Bessemer converters, of six tons capacity each, the other has two converters of seven tons each. The growth of these large industries,—that of iron and steel being of recent date,—has caused the development of the district to a very large extent, and there is a tolerable certainty that the maximum growth has not yet been attained. The north-western iron-making district is the repository of the largest deposits of red hematite iron in Britain, and the growing demand for steel for railway purposes, and almost absolute certainty that there will be a further growth of the demand for other allied purposes, will give to the west coast a vast advantage, and, to the fall that advantage will be felt by the mining district of West Cumberland, from which so large a portion of these valuable ores is drawn. It has in one respect the advantage over its neighbouring district of Furness for it has considerable stores of coal to smelt its iron ores. Under such circumstances, and knowing the vast increase accomplished and expectant, in the demand for steel and for the hematite iron of the north-west, the future of West Cumberland should be secure, and should brighten when the cloud which now obscures the iron industries shall pass away. Of that at the present there is no sign, but even during the dulness there are proposals to extend the facilities for the manufacture of steel, and at Maryport the erection of steelworks near to the busy furnaces has been decided on. With prospects thus brightening, even in the midst of the gloom, the dispersal of that gloom should be the precursor of a greater advance in the mining and iron manufacturing district of Cumberland than it has yet known.

COFFER DAMS.

THE INSTITUTION OF CIVIL ENGINEERS.

At the fifth ordinary meeting, held on the 11th inst., Mr. G. R. Stephenson, president, in the chair, a "Description of Coffer-dams used at Dublin, Birkenhead, and Hull," by Mr. W. J. Doherty, C.E., was read.

The coffer-dam at Dublin, from the design of the author, consisted of two rows of main piles of Memel timber, driven at intervals of 12 ft. from centre to centre, with a space of 4 ft. 6 in. between the rows for the puddle. The main piles in the outer row were 32 ft. in length, and in the inner row from 40 ft. to 42 ft. The spaces between the piles of both the outer and inner rows were filled with sheet-piles 6 in. thick. The sheet-piles of the outer row were driven 12 ft. into the ground, and, reaching up to the level of high water, were 28 ft. long. Those in the inner row were of a similar length, driven to the level of the foundation of the new wall, 24 ft. below low water. On the inner sides of the dam the faces of the sheet piles were in a line with the main piles. The piling, for a length of 150 ft., was driven during the winter, when clay could not be readily procured for puddle. The author, therefore, substituted peat-moss, which fairly answered the purpose. After the exclusion of the tidal water, when the dam had been sufficiently strutted against the old wall, a row of piles 25 ft. long was driven on the land side about 32 ft. from the inner side of the dam, and spaced to correspond with the main piles. Between these inner piles 3-in. sheet-piling was driven from the surface of the roadway to below the foundation of the old wall. In this piling there was a recess 10 ft. deep, and from 15 ft. to 20 ft. in length, in which pumps were erected. As the removal of the old wall was proceeded with, the stone of which it had been built was worked up in the new wall. When this masonry and the struts against it from the dam had been removed, whole-baulk struts, 30 ft. long, were inserted between the land row of piles and the coffer-dam. A row of close sheet-piling, 24 ft. to 26 ft. long and 6 in. thick, was then driven along the land side to support the adjacent roadway; it answered also to receive the strutting of the dam. The strata through which the piles were driven consisted of 2 ft. of soft mud, 4 ft. of fine sand, 3 ft. of vegetable deposit, overlying a bed of alluvial clay of from 4 ft. to 11 ft., and a bed of gravel, interspersed with sand, boulders, and in some cases clay. On taking out the excavations for the first length of the wall, the bed of clay gave sufficient puddle for the next length of coffer-dam, and so on to the end of the work. The use of peat-moss was therefore discontinued. The horizontal struts for supporting the coffer-dam and the roadway were 6 ft. apart, vertically, for the three upper tiers; but, as the pressure increased, the distance was diminished to 5 ft. The pressure appeared to reach its greatest intensity at 16 ft. below low water. As it was found that the whole-timber walings were in many instances broken, the distances between the main piles and struts were reduced from 12 ft. to 10 ft. from centre to centre. To prevent the walings from being crushed at the point of contact with the struts, which were frequently indented to the extent of 1½ in., facing-pieces were spiked against the walings on front and back, and against these facing-pieces the ends of the struts were butted. Even when the distances were reduced to 10 ft., these facing-pieces were splintered with the pressure, yet they preserved the walings from injury

The total length of river wall was 2,310 lineal feet, the contract price for which was 131,728*l*., or 57*l*. 10*s*. per lineal foot, exclusive of the dredging of the foreshore.

THE STATE PATRONAGE OF ART.

At a *conversazione* recently held in the Warrington Art Gallery, Mr. Collinson, formerly head-master of the Warrington School of Art, read a paper, in the course of which he said,—Having had the honour to be officially connected with South Kensington for twenty-three years in carrying out art-teaching, I can testify to the value of State support to the country at large. At the Exhibition of 1851, it was discovered that no part of our national character had been so much neglected as the artistic; hence the establishment of South Kensington and the schools of art throughout the kingdom, and I hope soon, like Liverpool and Warrington, they will each have their permanent art gallery, for an art school can only be considered half an institution without a gallery at its back. It is needless to say that the influence of these schools is felt far and wide; and the advance that England has made in the arts as applied to her manufactures is acknowledged on all hands, and by every statesman who has ventured to speak publicly on this subject; and even in France (which country has at different times purchased designs by the students of these schools); also other foreign countries, seeing the advances we were making, have sent agents over to investigate and report upon our system. When recently Mr. Poynter succeeded to office at Kensington, on the death of Mr. Burchett, the late head-master, he felt himself bound publicly to acknowledge to Mr. Redgrave that "he had found ready to his hand the most complete and elaborate system of art-education ever propounded, and one which was the admiration of foreign countries," for the construction of which Mr. Burchett received the gold medal at the Paris Exhibition in 1867. Considering the broad and important results wrought by State aid through the medium of these schools, is it wise to leave the rest to private patronage, while we are still mere infants in art, compared with the great schools of the past? Was it not through State patronage of the highest kind, not perhaps such as a modern House of Commons, but by the Popes, then both the temporal and spiritual rulers of almost all of the civilised world, and by Governments formed of men of birth, letters, and high art-culture, w-

ring the fourteenth, fifteenth, and sixteenth
aturies, courted and encouraged art in the
st munificent manner, that the art of the past
e to a state of perfection which we can
rcely hope to attain? Artists of the highest
k were employed to decorate their churches
l palaces with a splendour never since equalled.
ey were treated with the greatest respect and
sideration,—such as is quite unknown in
dern times. In conclusion, let us glance for
oment at one or two instances. Only in 1454,
o years after the taking of Constantinople by
Turks, and when peace was established, the
tan, being a great admirer of Venetian art,
gged the Venetian Government to send him
e of their artists; and the famous Council of
n, after much deliberation, selected Gentile
llini and sent him in one of the State galleys
Constantinople, where he was received with
ch honour. As an example of the Turkish
manity of those days, there is an interesting
le anecdote on record. Bellini, in token of
homage to the Sultan, presented him with a
ture of the head of John the Baptist after the
apitation. Although admiring it greatly, the
tan began to criticise the appearance of the
k, observing that the shrinking of the severed
ves was not properly expressed. Bellini, not
ming to understand his meaning, Mohammed
ed in one of his slaves, and, commanding him
kneel down, with one stroke of his sabre cut
his head, thus giving the horrified painter a
otical lesson in anatomy. After this Bellini
rned as quickly as possible to Venice, bearing
h him many rich gifts and a letter of strong
ommendation to his own Government. In
rence we find a good example of Government
ronage. In 1401 the members of the chief
ernment acting with the Consoli resolved to
t a second gate in bronze to the Baptistery
St. John, which was to excel if possible all
er such works: and no expense was to be
red in the production. Their resolve was
lished throughout Italy, and many artists
embled in Florence to offer themselves in
petition; but of these seven only were
sen as worthy to compete. The expenses of
h were paid for one year, and studios with
the necessaries were provided. Out of these
enzo Ghiberti was selected for this great
k, amidst the acclamations of the assembly
posed of the artists and the chief govern-
t. The result was the production of those
ndid gates of San Giovanni, which about a
tury afterwards Michelangelo pronounced
thy to be the Gates of Paradise; and they
still the admiration of the world. These are
single examples of what went on in Italy
ing the fourteenth and fifteenth centuries,
in the sixteenth, when we find art brought
ts culminating point in Rome under Pope
us II., by Michelangelo and Raffaelle, and in
ice by Titian and the whole Venetian school.
er these masters, the art of Italy began to
fine, and with that Italy itself. If therefore
country is ever to arrive to a like perfection,
patronage of art must not be left to a few
vate individuals. Corporations may do much,
the State must lead the way.

THE NEW IMPERIAL BUILDINGS AND HOTEL.

THE new Imperial Buildings and Hotel, on the
born Viaduct, which have only recently been
ted from the designs of Mr. Cronk, architect,
e last week offered for sale at the Mart,
enhouse-yard, by direction of the Associa-
of Land Financiers, who are the owners.
re was a large attendance of capitalists and
ers. The particulars described the buildings
consisting of the hotel and ten shops, with
and well-lighted basements, and seven
er floors, covering a ground area of 5,800 ft.
property was said to be held under a
wn lease for eighty years, at a ground-rent
2,500*l.* a year, and producing a gross rental
500*l.* per annum. Adverting to the property
an investment the auctioneer (Mr. Milner)
ed that the tenants of the hotel (the
of which alone is 3,500*l.* per annum) had
ended upwards of 22,000*l.* in furniture
fittings, which in itself was an ample
rantee for the rental, but he added that the
ociation of Land Financiers, who were the
lors, were ready to enter into an arrange-
t with the purchaser guaranteeing the rent.
n the bidding reached 75,000*l.*, the auctioneer
arked that 81,000*l.* was the very least sum
hich the property could be valued, and that
at that price it would pay the purchaser six per cent. There being no further offers beyond 75,000*l.*, the property was withdrawn.

PURIFYING AND SOFTENING WATER.

SIR,—I am much interested by the article in the *Builder* relative to the above. As far as I can gather, in lieu of settling-tanks for clearing the water after softening by the addition of lime-water, Mr. Porter passes the water through a sort of filter-press (except that very little pressure is used), thereby removing the carbonate of lime from the water.

When the cloths are choked it is necessary to remove them from the machine and wash them; and this is the part I do not quite understand. If the cloths are to be hand-washed, why place them in a Porter machine?

Why would not cloths in the shape of ordinary filter-bags, such as are used by sugar-refiners, do equally well, 70 ft. of which, with the attendants, would not cost as many shillings as Mr. Porter's machine does pounds, besides being infinitely less trouble to wash?

It is stated in the article that this hand-washing is an "essentially important and interesting feature in the process." Perhaps so; but I rather fancy Mr. Porter is here making a virtue of necessity, as, without hand-washing, his machine, I gather, would not work for more than ten hours; and, if so, why use a machine at all?

S. W.

LIGHT AND AIR CASE.

CHADWICK *v.* CORBETT AND ANOTHER.

THIS was an action (Exchequer Division) brought to recover compensation or prevention in respect to the wrongful obstruction of light and air. The defendants pleaded, among other things, that the plaintiff had acquiesced in their actions.

The plaintiff held a lease of 15, Coleman-street, in the City of London, dated 24th of June, 1873, for seven years. She took the premises as a coal and coke merchant, and supplied her goods to occupiers of offices in the City. At the time she obtained the lease there was only a wall about 12 ft. high and then an open space of 23 ft. in front of the building. Before the action was brought, however, the defendants had erected a building 48 ft. high close to her premises, and had by so doing obstructed light and air. The defendants pleaded acquiescence on the part of the plaintiff, and that the damages, if any, were only nominal.

Mr. Waddy, after the plaintiff's case had been concluded, submitted there was no case to go to the jury, upon the ground that the plaintiff had failed to establish her enjoyment of the light and air in the manner alleged for a period of twenty years, and also that the action had not been brought until sixteen months had elapsed after the completion of the building by the defendants.

Mr. Justice Lush decided against the learned counsel.

Mr. Waddy then commenced to open the case on behalf of the defendants.

Mr. Justice Lush remarked that unless the defendants were able to establish more than the acquiescence alleged in the statement of defence their case upon that point would fail.

Mr. Waddy submitted that the fact that the buildings complained of were known to be in course of erection by the plaintiff for a period of five months proved acquiescence.

Mr. Justice Lush said he would hold that an actual agreement was necessary.

Mr. Waddy then proceeded to bring the attention of the jury to the question of damages alleged by the plaintiff, which he urged at the most were only nominal.

The Jury ultimately returned a verdict for the defendants.

PORTLAND CEMENT CONCRETE.

SIR,—Will any of your readers kindly inform me where any channelling and curbing is in use made with the above material and cast in *one section*? Any particulars, such as length of time in use, and results, &c., would be acceptable.

SURVEYOR.

VARIORUM.

"FIELD PATHS and Green Lands" is the title of a very pleasant little book by Louis J. Jennings (John Murray), which describes a number of country walks, mostly in Surrey and Sussex. Thus we get for headings "Winchelsea and Rye," "Round about Hastings," "Mayfield," "Hayward's Heath to East Grinstead," and so on. Mr. Jennings is not an archæologist, and his talk is therefore more about the country and the people than of buildings and antiquities, and everything is on the surface. A few trifling views illustrate his gossip.——"The Municipal Corporation's Companion, Diary, Directory, and Year Book of Statistics for 1878" (Waterlow & Sons, and Vickers), contains an immense amount of useful information concerning London, and the various cities and boroughs of the United Kingdom. We cannot too highly praise it.——"Whitaker's Almanac" (1878) is another admirable book of its kind. Amongst the valuable additions to the present edition are a concise Summary of English Constitutional Law, and a Key to the Calendar.

The Chancel of St. Stephen's Church, Avenue-road, Regent's Park, has been decorated by Mr. Rubardt, from designs supplied by Mr. A. P. Goodman.

Miscellanea.

Irrigation *v.* Famine in India.—On the 13th inst. General Sir Arthur Cotton read a paper before the Indian Association at their rooms, Great George-street, Westminster, entitled "The Prevention and Counteraction of Indian Famines." Sir Arthur Cotton's preventive for famines is canal irrigation, and in the course of his paper he dealt with the cost and the results of his scheme. He claimed that India needed above all things, not speedy carriage, but cheap carriage, and that canals were eminently calculated to afford this. Wherever irrigation had been tried it had been most effective in keeping off the famine, while according to Mr. Thornton, the head of the Public Works Department of the India Office, the average return on the whole expense was 7½ per cent. Sir A. Cotton pointed to the great tanks built by the native princes, and still remaining almost intact, as one direction in which the Government might usefully expend capital. He disagreed with those who complained of the hopeless state of India. In spite of our terrible mistakes, that she was rapidly advancing was proved by the increasing railway traffic and the increased consumption of salt. The finances, too, were in a sound state, although no words could express the wickedness of the opium traffic. He maintained that the experience of Godavery, where the revenue had been raised 350,000*l.* a year, showed that the revenue of India could easily be raised by honest and honourable means.

The Ground around St. Paul's Cathedral.—According to the arrangement made between the Common Council and the Dean and Chapter the railings around the inclosure at the east end are to be lowered, and the inclosure laid out and planted as an ornamental garden; the fence of the north-east churchyard (St. Faith's) is to be thrown back at the north-east corner, but the space so given up is not to be thrown into the roadway, but form a paved area in front of the gateway, and the boundary of such area is to be marked by granite posts similar to those around the west area. A portion of the south-eastern churchyard is to be cut off for the widening of the roadway, the gate to be placed further back, and a paved area formed and treated similarly to that of the north-east angle. Many years have passed since we commenced the movement for bringing about some improvement here. We well remember the late Dean Milman saying to us, not very long before his lamented death, "I like everything in the *Builder* but its persistent urging that we should give up or open the enclosed area around the Cathedral. We shall never do so, depend upon it." It will be done, nevertheless.

The St. Pancras Gardens.—The special committee for the laying-out of old St. Pancras and St. Giles-in-the-Fields burying-grounds as gardens have reported to the vestry that the Baroness Burdett-Coutts had evinced her great interest by erecting a marble monument to preserve the head-stone originally standing over the grave of John Walker, author of "Walker's Pronouncing Dictionary"; also, that they had approved of a handsome design for a memorial sun-dial to be erected by her ladyship to the memory of the illustrious dead lying in the grounds, at a cost probably exceeding 5,000*l.*, of a unique character, and of lasting usefulness in recording the names of many distinguished persons buried there. The committee reported further that the sum of 1,000*l.* presented by the Baroness had been expended in the erection of a greenhouse, in accordance with the suggestion of her ladyship.

Roman London.—Some discoveries have recently been made while excavating within the precincts of St. Bartholomew's Hospital. In clearing what was once the site of Pye-corner for the erection of a new library and museum, two stone sarcophagi were exhumed. They were 11 ft. from the surface, situated some 50 ft. from the new buildings in Windmill-court, and at no great distance from the line of the City wall. They lay east and west, are about 7 ft. long, of coarse oolitic stone, have massive lids or covers, and have been identified as Roman. In one two skeletons were found: one of a man with his head to the west, the other of a woman with hers lying towards the east.

The Dragon of Bow Church, after being re-gilt, was safely restored to its lofty place on Saturday last, the 22nd inst.

The Fire Brigades' Association.—The winter general meeting of the council of this Association was held on the 17th inst., at the Midland Grand Hotel, Col. Sir Chas. H. Firth, president, in the chair. The primary object of this Association is the preservation of life and property from fire, and this great object the Association proposes to attain by organising the numerous fire-brigades already existing in the United Kingdom under one council, by educating, training, and rewarding firemen in their brave efforts to carry out the purposes of the Association; and, further, by providing a fund in aid of the widows and orphans of those who too often sacrifice their lives in the discharge of their noble duty. There is another object proposed by this Association in its desire to disseminate the fullest possible information on the subjugation of fires, and to encourage all inventions and appliances which can in any way tend to subdue or alleviate the effects of that devouring element which has wrought so much destruction on the grandest works of man.

Fall of a Building, Edinburgh.—Last week the gable of Milne's Hotel, Edinburgh (in which there had been a fire a few hours previously), suddenly gave way, and crashed through several stories. A number of persons were buried in the ruins. At two o'clock ten persons were missing. A rescuing party was formed, and worked energetically to recover those underneath the *débris*. At five the bodies of two women and a child were extricated, and the exertions of the rescuers were stimulated by hearing distinctly the voice either of a man or a woman some distance within the ruins. At eleven o'clock the workman had not recovered any more bodies. Purvis, a cabdriver, was afterwards got out in a very exhausted state, and taken to the Royal Infirmary, where he died.

Fatal Accident to an Architect.—On the 22nd inst. a melancholy accident happened at the St. David's Station of the Great Western Railway to a professional gentleman well known in Exeter, and has, unhappily, resulted in his death. The deceased was Mr. Joseph Neale, aged 42, an architect, residing at Weston-super-Mare. It appears that Mr. Neale had taken a ticket with the intention of going home to spend Christmas, and intended travelling by the 3·5 train from St. David's. Endeavouring to enter the train when in motion he was knocked down, fell on the rail, and was killed. The deceased was architect for the new chapels at the Wonford House Hospital for the Insane, and the Exminster Asylum. His design for the restoration of Heavitree Church tower recently obtained the first premium.

Baths for Lochee.—At a meeting of the Baths Committee of the Lochee Police Commission, on the 10th inst., two plans of a proposed swimming-bath at Lochee were submitted, the estimated cost being 3,000*l.* and 3,600*l.* respectively. The size of the bath is 60 ft. by 25 ft., and in construction is similar to the second and third class swimming-baths at Dundee. The meeting generally approved of the plan, whose cost is estimated at 3,000*l.*, but it was remitted to the treasurer to bring up a report of the probable revenue.

The Liquefaction of Oxygen has been effected. Most important practical results seem bound to follow.

Dorchester School of Art.—The annual meeting of this school was held on the 19th inst. The president (Mr. John Floyer, M.P.) presided. As stated in the report for the past year fifty-five students sent 625 works to South Kensington. Miss Florence Gundry was adjudicated a third-grade prize, her work being selected for national competition. Mr. Leonard Last had the prize for the best "study from the antique." Mrs. Groves was awarded the prize for advanced water-colour blossoms. Emma Lock was highly commended.

TENDERS.

For putting in foundations, &c. for Salisbury Congregational Church. Messrs. Tarring & Wilkinson, architects:—

		Allow for Old Materials.
Dolman & Harris	£8'0 0 0	£20 0 0
Hale & Sons	707 0 0	30 0 0
Sawkins	591 0 0	33 0 0
Tryhorn (accepted)	567 0 0	20 0 0

For the erection of two villa residences on the Skirbeck Estate, Boston, Lincolnshire, for Mr. J. Storr. Mr. Henry H. Leonard, architect:—

Coney (accepted)	£1,750 0 0

For county lunatic asylum, Devizes, Wilts. Mr. H. Weaver, architect. Quantities supplied:—

Crook	£4,979 10 0
Calder	4,223 7 0
Denner	4,000 0 0
Jones & Co.	3,870 0 0
Stephens & Bastow	3,829 0 0
Sawkins	3,716 0 0
Long	3,686 0 0
Burgess	3,463 0 0
Mulings (accepted)	3,393 0 0

For constructing about seven miles of stoneware pipe sewers, manholes, lampholes, &c., erecting pumping station, chimney-shaft, three cottages, and other buildings, for Basingstoke sewerage. Mr. W. F. Rowell, engineer:—

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Young & Co.	16,977 0 0
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Hookway	13,238 0 0
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Mason	4,798 0 0
Derham	4,781 0 0
Thornwell & Warham	4,574 0 0
Powis	4,601 0 0
Wood	4,450 0 0
Hookway	4,450 0 0
Dace	4,400 0 0
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